GLI Standard Higher Products

File Specification

Ver. 2.00A

Aug. 31, 2004

Revision History

ver.	Date	Page / Section No.	Update contents
1.00	Apr.17, 2000	---	First edition
1.00A	Jul.31, 2000	v	Add chapter 7
		vi	Add section 8.6 - 8.8
		p.1.5-1	Add the name of original document because NDX-000164 was published.
		p.1.5-1	The extension '001' -> '01' (miswriting)
		p.1.5-2	Modify subject of each definition (reflection of original description)
		p.1.5-2	Add description about 'GL2' (reflection of original description)
		p.1.5-4, 5	Modify the description (reflection of original description)
		p.1.5-6 - 10	Update Table 1.4-1 (reflection of original description)
		p.1.6-2	Add the description about dimension order
		p.2-2	Modify the description of "Software ID" : "NNX" -> "NNNX"
		p.2-2	Add QA/QC information
		p.3.3-1	PS resolution : "1km" -> "0.5 arc-min" (Expression "0.5 arc-min" is more accurate than "1km")
		p.3.3-1	Fig.3.3-1 Add the explanation about pixel size
		p.3.3-4	Modify long_name of "l2a_lc_ch1"-"l2a_lc_ch36" : reflectance or radiance are clearly described.
		p.4.3-7	Modify valid_range of CLER_i_e : (0,500)->(0, 5000) Add unit of CLER_i_e : "um" Add new SD, "re_scf" Delete SD, "sre" (slope), "inre" (intercept)
		p.4.3-10	Modify valid_range of CLOP_i_e : (0,100)->(0, 1000) Add new SD, "opt_scf" Delete SD, "sopt" (slope), "inopt" (intercept)
		p.4.3-13	Modify valid_range of CLTT_i_e : (0,273)->(0, 2730) Add new SD, "cltp_scf" Delete SD, "sopt" (slope), "inopt" (intercept)
		p.4.3-15	Modify the contents of CLFR
		p.4.6-1	Add "PGCP"
		p.4.6-2	Fig.4.6-1, 2 : Add the explanation about pixel size
		p.4.6-3	Add "PGCP"
		p.4.6-5	Add the figure to explain 4-coner points position
		p.4.6-6	Add "PGCP"
		p.4.6-8	Add "PGCP"
		p.4.6-8	Modify SD name of "ref_30"-"ref_36" -> "rad_30"-"rad_36" Data name, Long_name are also changed.
		p.4.6-8	Add new SD "c1", absolute calibration coefficient
		p.4.7-1	Fig.4.7-1 : Add the explanation about pixel size
		p.4.7-2	Add the figure to explain 4-coner points position
		p.6.2-5-8	Modify the description of "n", "n2" : delete "for each row" at the end of sentence for more accurate expression.
		p.6.2-8	Modify the contents of CLFR
		p.6.3-4	Add new attribute : "Data Bins #2", "Percent Data Bins #2"
		p.6.3-5-7	Modify the description of "n", "n2" : delete "for each row" at the end of sentence for more accurate expression.
		p.6.4-1	Fig.6.4-1 : Add the explanation about pixel size
		p.6.4-2	Add the figure to explain 4-coner points position
		p.6.4-5	Add new SD, "SNWG_weimean", "SNWI_weimean"
		Chapter 7	Add Level-3 STA Map file specification
		p.8.2-5	Add area definition of atmospheric segment data
		p.8.2-7	Modify miswriting : "Sourh" -> "South", "unconditonal" -> "undonditional"
		p.8.3-6	Modify the description of "grid interval" related to p.3.3-1
		p.8.5-1	Table 8.5-1 : Delete "work_fr(TBD)" file
		p.8.5-6	Delete "work_fr(TBD)"
		Section 8.6	Add minimum reflectance file specification

		Section 8.7	Add ice/water flag file specification
		Section 8.8	Add L2ALC_WK1, 2 file specification
1.00B	Jul.31, 2001	p.1.5-6	Table 1.4-1：separate NRT algorithm
		p.1.7-2	Update explanation. Add figure title
		p.2-2	Modify global attribute name “Primary Inspection Result” -> “Primary Inspection result”
		p.2-2, p.4.2-3, p.4.4-3, p.4.8-3	Move following global attribute from generic header to specific header QA/QC data (L1B succession data)：all QA/QC data (L2/L3 common QA data)："Ancillary Data Characteristic", "AMSR Product Ver."
		p.3.2-4	Modify global attribute name "GPS Flag #1" -> "gps_flag #1"
		p.3.2-6	Modify 2nd dimension name of "blk_data #1" “lines_#1” -> “lines_mt_#1”
		p.3.2-6	Modify 2nd dimension name of "deep_data_v #1" “lines_#1” -> “lines_vn_#1”
		p.3.2-6	Modify 2nd dimension name of "deep_data_s #1" “lines_#1” -> “lines_sw_#1”
		p.3.2-6	Modify 2nd dimension name of "deep_data_mt #1" “lines_#1” -> “lines_mt_#1”
		p.3.2-6	Modify 1st dimension name of "deep_data_2km #1" “chnls” -> “chnlsd2k”
		p.3.2-6	Modify 2nd dimension name of "deep_data_2km #1" “lines_#1” -> “lines_sw_#1”
		p.3.2-6	Modify 1st dimension name of "GPS_nav_dat #1", "GPS_pos_dat #1", "GPS_vel_dat #1" “gpsdata” -> “lgpsdata_#1”
		p.3.2-7	Modify 1st dimension name of Orbit Data #1 group (except "num_rec #1) “odatas” -> “odatas_#1”
		p.3.3-4	Add valid range of “l2a_lc_ch*” and “qc_flag”
		p.3.3-4	Add unit of “l2a_lc_ch*” , “sat_zenith”, “sun_zenith, “sat_azimuth” and “sun_azimuth”
		p.4.2-3	Add QA/QC data
		p.4.2-4	Modify long name of "eng_qual" "Engineering data-out-of range flag" -> "Engineering data-out-of range flags"
		p.4.2-4	Modify type of SD "nav_pxl" and "nav_row" short -> Long
		p.4.2-6	Modify valid range of "CLOP_p" "(-1.0, 100.0)" -> "(0, 100)"
		p.4.3-3, 8.5-2	Modify contents of "Storing Order of Latitude direction"："... to Sourh" -> "... to South"
		p.4.3-8	Separate auxiliary data file names of "CLOP_p", for ice cloud and for water cloud
		p.4.3-3	Add QA/QC data (L2/L3 common QA data)
		p.4.3-6	Modify valid range of "CLER_w_r" "(-1.0, 500.0)" -> "(0, 500)"
		p.4.3-8	Modify valid range of "CLOP_w_r" "(-1.0, 100.0)" -> "(0, 100)"
		p.4.3-9	Modify valid range of "CLOP_i_r" "(-1.0, 100.0)" -> "(0, 100)"
		p.4.3-11	Modify valid range of "CLHT_w_r" "(-1.0, 50.0)" -> "(0, 100)"
		p.4.3-12	Modify valid range of "CLTT_w_r" "(-1.0, 31000.0)" -> "(0, 100)"
		p.4.3-14	Modify valid range of "CLWP_w_r" "TBD" -> "(0, 100)"
		p.4.3-15	Modify long name of "CLFR_5" "... high altitude ..." -> "...middle altitude ..."
		p.4.3-15	Modify long name of "CLFR_6" "... high altitude ..." -> "...middle altitude ..."
		p.4.3-15	Modify long name of "CLFR_10"

	"... ice cloud" -> "...cirrus cloud"
p.4.3-15	Modify valid_range of "CLFR_12", "CLFR_13", "CLFR_14" "(0,500)" -> "(0,31000)"
p.4.3-15	Modify units of "CLFR_12", "CLFR_13", "CLFR_14" "Kelvin" -> "K"
p.4.4-2	Add QA/QC data (L1B succession data)
p.4.4-2	Add QA/QC data (L2/L3 common QA data)
p.4.4-4	Modify long name of "eng_qual" "Engineering data-out-of range flag" -> "Engineering data-out-of range flags"
p.4.4-5	Modify long name of "nLw_520" "... at 525nm" -> "... at 520nm"
p.4.4-5	Modify type of "alpha_78", "tau_868" : "Uchar" -> "Ushort"
p.4.4-5	Modify type of SD "flag" Ushort -> Ulong
p.4.4-5	Modify valid_range of "chla" "(1,920)" -> "(1,9200)"
p.4.4-5	Modify valid_range of "ss" "(1,300)" -> "(1,3000)"
p.4.4-6	Add caption "Bit number starts at LSB (Least Significant Bit)"
p.4.4-7	Modify remarks of "sst" "actual range: 220-322.4" -> "actual range: 263.15-323.15"
p.4.4-7	Modify remarks of "scf" "constant(0.1)" -> " constant(0.01)"
p.4.4-7	Modify remarks of "intercept" " constant(220.0)" -> " constant(263.15)"
p.4.4-8	Bit number shift : 1-16 -> 0-15 Add caption "Bit number starts at LSB (Least Significant Bit)"
p.4.5-3	Add QA/QC data (L2/L3 common QA data)
p.4.5-6	Modify long name of "nLw_520 #1" "... at 525nm" -> "... at 520nm"
p.4.5-6	Modify type of "alpha_78#1", "tau_868#1" : "Uchar" -> "Ushort"
p.4.5-6	Modify all SD name of NL_LR insert blank before "#1". ex.) "nLw_380#1" -> "nLw_380 #1"
p.4.5-6	Modify all dimension name of NL_LR "lines_#1" -> "lines_vn_ #1"
p.4.5-6	Modify dimension name of "chla #1", "k490 #1", "ss #1", "cdom #1", "flag #1" of CS_LR "lines_#1" -> "lines_vn_ #1"
p.4.5-6	Modify type of SD "flag #1" Ushort -> Ulong
p.4.5-6	Modify valid_range of "chla #1" "(1,920)" -> "(1,9200)"
p.4.5-6	Modify valid_range of "ss #1" "(1,300)" -> "(1,3000)"
p.4.5-6	Modify long name of "flag #1" "... for CS_FR #1" -> "... for CS_LR #1"
p.4.5-7	Add caption "Bit number starts at LSB (Least Significant Bit)"
p.4.5-8	Modify remarks of "sst #1" "actual range: 220-322.4" -> "actual range: 263.15-323.15"
p.4.5-8	Modify element number of "scf #1" "(4)" -> "(1)"
p.4.5-8	Modify remarks of "scf #1" "constant(0.1)" -> " constant(0.01)"
p.4.5-8	Modify element number of "intercept #1" "(4)" -> "(1)"
p.4.5-8	Modify remarks of "intercept #1" " constant(220.0)" -> " constant(263.15)"
p.4.5-8	Bit number shift : 1-16 -> 0-15 Add caption "Bit number starts at LSB (Least Significant Bit)"
p.4.5-8	Modify long name of "flag #1" "... for ST_FR #1" -> "... for ST_LR #1"
p.4.6-6	Modify contents of "Resampling Method" (PGCP)

	" "NN": nearest neighbor, "BN": bi-linear, "CC": cubic convolution " -> " "NN": nearest neighbor "
p.4.6-6	Add QA/QC data (L1B succession data) to PGCP
p.4.6-6	Add QA/QC data (L2/L3 common QA data) to ACLC
p.4.6-6,	Modify attribute name : "Area Numger" -> "Area Number"
p.4.6-7	Modify attribute name : "Zone Numger" -> "Zone Number"
p.4.6-9	Modify long name : "Adress ..." -> "Address ..."
p.4.7-5	Modify global attribute name "Zone Numger" -> "Zone Number"
p.4.7-5	Modify 2nd dimension name of "bitarray", "rs_p", "soot" "pxls" -> "pixels"
p.4.7-5	Modify long name of "bitarray" "Surface Classification Flag" -> "Surface classification flag"
p.4.7-5	Modify long name of "nmpix" "Number of Total pixel" -> "Number of total pixel"
p.4.7-5	Modify long name of "n6s" "Number of cloud shadow" -> " Number of cloud shadow pixel"
p.4.7-5	Modify valid_range of "pcn1s", "pcn2s", ..., "pcn9s" "(0,100)" -> "(0.0,100.0)"
p.4.7-5	Modify units of "rs_p" "micro-m" -> "micro meter"
p.4.8-3	Add QA/QC data (L1B succession data) to SNGI_p
p.4.8-4	Modify long name of "eng_qual" "Engineering data-out-of range flag" -> "Engineering data-out-of range flags"
p.4.8-4	Modify long name of "l1b_blk_num" "Number of L1B blocks" -> "Number of L1B blocks (sample/line)"
p.4.8-5	Modify 2nd dimension name of "bitarray", "rs_p", "soot" "pxls" -> "pixels"
p.4.8-5	Modify long name of "bitarray" "Surface Classification Flag" -> "Surface classification flag"
p.4.8-5	Modify long name of "nmpix" "Number of Total pixel" -> "Number of total pixel"
p.4.8-5	Modify long name of "n6s" "Number of cloud shadow" -> " Number of cloud shadow pixel"
p.4.8-5	Modify valid_range of "pcn1s", "pcn2s", ..., "pcn9s" "(0,100)" -> "(0.0,100.0)"
p.4.8-5	Modify units of "rs_p" "micro-m" -> "micro meter"
p.5.2-3, 7.4-3, 7.5.3	Modify attribute name : "Number of Colums" -> "Number of Columns"
p.5.2-5	Modify SD name : "cloud data" -> "cloud_data"
p.5.2-5	Modify valid range of "CLOP_p" "(-1.0, 100.0)" -> "(0, 100)"
p.5.2-5	Modify long name of "nLw_520" : "... at 525 nm" -> "... at 520 nm"
p.5.2-7	Modify Vgroup name "Quality flag of Sea Surface Temperature" -> " Sea Surface Temperature"
p.5.2-7	Modify long name of "scfg" "Surface Classification Flag" -> "Surface classification flag"
p.5.2-7	Modify valid_range of "snwg" "(10,3000)" -> "(0,30000)"
p.5.2-7	Modify units of "snwg" "micro-m" -> "micro meter"
p.5.2-7	Modify valid_range of "snwi" "(0.0,3.0)" -> "(0,30000)"
p.6.2-4 – 6	Add new SD : "begin#2", "begin#3", ..., "begin#19" "extent#2", "extent#3", ..., "extent#19" "bin_num#2", "bin_num#3", ..., "bin_num#19" "nobs#2", "nobs#3", ..., "nobs#19" "nscenes#2", "nscenes#3", ..., "nscenes#19"
p.6.2-4 –10	Add remarks to SDs using nbin/nbin2 as dimension size

	"*If nbin is 0, this parameter is not included in the file."
p.6.2-7	Modify long name of L3Binnned ARAE "... of Aerosol Angstrom Exponent" -> "... of ARAE"
p.6.2-7	Modify long name of L3Binnned AROP "... of Aerosol Optical Thickness" -> "... of AROP"
p.6.2-10	Modify SD name : "CLFRn..." -> "CLFR_n..." (n:1-19) ex.) "CLFR1_max" -> "CLFR_1_max"
p.6.3-1, 7	Modify attribute name, long name : "night" -> "nighttime"
p.6.3-5	Modify remarks of "hsize" "... (0.0833333 (1/12 deg.))" -> "... (1/12 deg./cosφ)"
p.6.3-5 –7	Add remarks to SDs using nbin/nbin2 as dimension size "*If nbin is 0, this parameter is not included in the file."
p.6.3-6	Modify long name of L3Binnned NW "... of NWLR at ..." -> "... of normalized water-leaving radiance at ..."
p.6.3-7	Modify long name of L3Binnned NW "... of LA at ..." -> "... of aerosol radiance at ..." "... of angstrom_exp ..." -> "... of angstrom exponent ..."
p.6.3-7	Modify long name of "SS_sum" in L3Binnned CS "sum of suspended solid" -> " sum of suspended solid weight"
p.6.3-7	Modify long name of "CDOM_sum_sq" in L3Binnned CS "... organic" -> "... organic matter"
p.6.4-4	Modify valid_range of "max_north", "max_south" "(-90, +90)" -> "(-90.0,+90.0)"
p.6.4-4	Modify valid_range of "seam_lon" "(-180, +180)" -> "(-180.0,+180.0)"
p.6.4-4	Modify long name of "seam_lon" "... edge of" -> "... edge of grid"
p.6.4-4, 5	Add remarks to SDs using nbin as dimension size "*If nbin is 0, this parameter is not included in the file."
p.7.2-5	Modify long name of "ARAE" "Aerosol Angstrom Exponent" -> "ARAE"
p.7.2-5	Modify long name of "AROP" "Aerosol Optical Thickness" -> "AROP"
p.7.2-7	Modify SD name : "CLFRn" -> "CLFR_n" (n:1-19) ex.) "CLFR1" -> "CLFR_1"
p.7.3-3	Add new global attribute : "Data Bins#2", "Percent Data Bins#2"
p.7.3-3	Modify SD name : "Number of Colums" -> "Number of Columns"
p.7.3-5	Modify type of "nLw_400", "nLw_412", ..., "nLw710" "Ushort" -> "Byte"
p.7.3-6, 7	Modify type of LA, CHLA, K490, SS, CDOM, ST_all, ST_DayNight "Ushort" -> "Byte"
p.7.3-7	Modify Vgroup name of ST_all and ST_DayNight "Quality flag of Sea Surface Temperature" -> " Sea Surface Temperature"
p.7.5-5	Modify contents of "Software ID(L2A_OA)" "NNX" -> "NNNX"
p.8.2-7	Modify remarks of "SNWG" “0: open ocean, 1: snow free land, 2-: snow grain size” -> “0: no data, 1: open ocean, 2: snow free land, 3-: snow grain size”
p.8.2-7	Modify remarks of "SNWI" “0: open ocean, 1: snow free land, 2-: snow grain size” -> “0: no data, 1: open ocean, 2: snow free land, 3-: snow grain size”
p.8.3-6	Modify global attribute name : "Mising Lines" -> "Missing Lines"
p.8.3-8	Modify title : "Array name" -> "SD name"
p.8.5-2	Add global attribute : "Ancillary Data Characteristic", "AMSR Product Ver."
p.8.5-4	Modify valid_range of "CLER_w_r", "CLOP_w_r", "CLHT_w_r", "CLTT_w_r", "CLTP_w_r" "(-1, ...)" -> "(0, ...)"
p.8.5-5	Modify valid_range of "CLOP_i_r" "(-1, ...)" -> "(0, ...)"
p.8.5-6	Delete SD : "CLER_i_e_sopt", "CLER_i_e_inopt", "CLOP_i_e_sopt", "CLOP_i_e_inopt", "CLTT_i_e_sopt", "CLTT_i_e_inopt"

		p.8.5-6	Add SD : "re_scf", "opt_scf", "cltp_scf"
		p.8.5-6	Modify long name of "CLER_i_e" "Cloud Effective Radius of Cirus Particlues (Ice Cloud by Emission Method)" -> "Cloud Effective Radius of Cirrus Particles (Ice Cloud by Emission Method)"
		p.8.5-6	Modify valid_range of "CLER_i_e " (0, 500) -> (0, 5000)
		p.8.5-6	Modify long name of "CLOP_i_e" "Cloud Optical Thickness of Cirus (Ice Cloud by Emission Method)" -> "Cloud Optical Thickness of Cirrus (Ice Cloud by Emission Method)"
		p.8.5-6	Modify valid_range of "CLOP_i_e " (0, 100) -> (0, 1000)
		p.8.5-6	Modify long name of "CLTT_i_e" "Cloud Top Temperature of Cirus (Ice Cloud by Emission Method)" -> "Cloud Top Temperature of Cirrus (Ice Cloud by Emission Method)"
		p.8.5-6	Modify valid_range of "CLTT_i_e " (0, 273) -> (0, 2730)
1.00C	Feb.28,2002	p.1.5-6	Table 1.4-1 : add NRT product
		p.1.8-1	Add new section “Near Real Time Products”
		p.2-2, p.2-3	Modify contents of "Data Type" “NRT” is added.
		p.2-2, p.2-3	Modify contents of "Orbit Number" -1, 1-57 -> -1, 1-∞
		p.2-4	Delete “Missing Packet”, “Missing Lines”, “Saturated Pixels”, “Saturated Pixels for SWIR 2km”, “Non Saturated Pixels”, “Non Saturated Pixels for SWIR 2km”, “GPS Flag”, “L1B Software ID”, “L1B Parameter Ver.” and “Ancillary Data Characteristic”, “AMSR Product Ver.”
		p.3.2-2	Modify value of "Orbit Number". 1-57 ->1-∞
		p.3.2-6	Modify valid_range of " tilt_flag #1" (1, 4) -> (1, 3)
		p.3.2-6	Delete “scan_angle #1”
		p.4.2-3	Add global attribute : "AMSR Product Ver."
		p.4.4-3	Add global attribute : "Station Name", "Station Latitude", "Station Longitude" (for NRT) and "AMSR Product Ver."
		p.4.2-2	Modify value of "Data Type". “NRT” is added. Modify value of "Orbit Number". 1-57 ->1-∞
		p.4.4-2	Modify value of "Data Type". “NRT” is added. Modify value of "Orbit Number". 1-57 ->1-∞
		p.4.5-2	Modify value of "Orbit Number". 1-57 ->1-∞
		p.4.5-4	Modify valid_range of " tilt_flag #1" (1, 4) -> (1, 3)
		p.4.5-4	Delete “scan_angle #1”
		p.4.6-3	Modify value of "Orbit Number". 1-57 ->1-∞
		p.4.8-2	Modify value of "Orbit Number". 1-57 ->1-∞
		p.5.2-2	Modify value of "Data Type". “NRT” is added. Modify value of "Orbit Number". 1-57 ->1-∞
1.00D	Sep.30,2003	p.1.5-6	Modify Remarks of LTSK10F (remove ‘workfile’)
		p.1.5-7	Modify Area of “CTSK2B1S” 01-05 -> 00
		p.3.2-7	Modify 1 st dimension of “absolute calibration coefficient(VNIR)” Modify remarks of “absolute calibration coefficient(VNIR)”
		p.3.3-3	Modify content of Number of channels 18 -> 17 Remove contents of “9” of “Processing channels” Modify remarks of “Reference Longitude”
		p.3.3-4	Remove l2a_lc_ch9 Modify remarks of GLI Level-2A_LC Data(without obs_time) Remove units of GLI Level-2A_LC Data(l2a_lc_ch1-l2a_lc_ch29) Remove “Absolute Calibration Table”
		p.4.2-6	Modify valid_range of "CLOP_p " (0, 100) -> (0, 20000) Modify remarks of "CLOP_p " -1 -> -1000 Modify remarks of "scf " constant:0.1 -> constant:0.01
		p.4.3-5	Modify valid_range of "ARAE " (-100, 5000) -> (-10, 500) Modify remarks of "ARAE " (1000) -> constant:0.01

	Modify valid_range of "AROP " (0, 5000) -> (0, 500) Modify long_name of "AROP " 0.5 micro -> 500 nm Modify remarks of "AROP " (1000) -> constant:0.01
p.4.3-6	Modify valid_range of "CLER_w_r " (0, 500) -> (0, 10000) Modify remarks of "CLER_w_r " -1 -> -1000 Modify remarks of "scf " constant:0.1 -> constant:0.01
p.4.3-7	Modify valid_range of "CLER_i_e " (0, 5000) -> (0, 32767) Add remarks of "CLER_i_e" 32767:maximum value of short Modify remarks of "re_scf " constant:0.1 -> constant:0.01
p.4.3-8	Modify valid_range of "CLOP_w_r " (0, 100) -> (0, 20000) Add units of "CLOP_w_r " no unit Modify remarks of " CLOP_w_r " -1 -> -1000 Modify remarks of "scf " constant:0.1 -> constant:0.01
p.4.3-9	Modify valid_range of "CLOP_i_r " (0, 100) -> (0, 20000) Add units of "CLOP_i_r " no unit Modify remarks of " CLOP_i_r " -1 -> -1000 Modify remarks of "scf " constant:0.1 -> constant:0.01
p.4.3-10	Add units of "CLOP_i_e " no unit Modify remarks of "opt_scf " constant:0.1 -> constant:0.01
p.4-3-11	Modify valid_range of "CLHT_w_r " (0, 100) -> (0, 5000) Modify remarks of " CLHT_w_r " -1 -> -1000 Modify remarks of "scf " constant:0.1 -> constant:0.01
p.4.3-12	Modify valid_range of "CLTT_w_r " (0, 100) -> (0, 32000) Modify remarks of " CLTT_w_r " -1 -> -1000 Modify remarks of "scf " constant:0.1 -> constant:0.01
p.4.3-13	Modify valid_range of "CLTT_i_e " (0, 2730) -> (0, 27300) Modify Data name of "cltp_scf " Cltp Scale Factor -> Scale Factor for CLTT_i_e Modify remarks of "cltp_scf " constant:0.1 -> constant:0.01
p.4.3-14	Delete Data name and long_name of "CLWP_w_r" /ice Modify valid_range of "CLWP_w_r" (0, 100) -> (0, 32767) Modify remarks of " CLWP_w_r " -1 -> -1000 Add remarks of "CLWP_w_r" 32767:maximum value of short
p.4.3-15	Modify valid_range of "CLFR_1 to 11 " (0, 1000) -> (0, 10000) Add units of "CLFR_1 to 11 " % Modify valid_range of "CLFR_12 to 14 " (0, 31000) -> (0, 32000) Modify valid_range of "CLFR_15 to 18 " (0, 100) -> (0, 20000) Add units of "CLFR_15 to 18 " no units Modify valid_range of "CLFR_19 " (0, 100) -> (0, 10000) Add units of "CLFR_1 to 19 " % Modify remarks of "CLFR_1_scf " to "CLFR_19_scf " constant:1.0 -> constant:0.01
p.4.4-5	Add remarks of "nLw_380" to "tau_865" slope and intercept Add new SD name "par" Modify valid_range of "chla" (1,9200) -> (1,65533)
p.4.4-6	Modify remarks of "chla" actual range:0.01 –92 -> actual range: 0.0015 - 98.2995 Modify remarks of "scf" constant (0.01,0.001,0.01,0.001) -> constant (0.0015, 0.001, 0.01, 0.001)
p.4.5-5	Add remarks of "nLw_380#1" to "tau_865#1" slope and intercept Add new SD name "par" Modify valid_range of "chla#1" (1,9200) -> (1,65533) Modify remarks of "chla" actual range:0.01 –92 -> actual range: 0.0015 - 98.2995 Modify remarks of "scf#1" constant (0.01,0.001,0.01,0.001) -> scale factor for chla, k490, ss and cdom constant (0.0015, 0.001, 0.01, 0.001) Add remarks of "intercept#1" intercept for chla, k490, ss and cdom
p.4.5-7	Modify valid_range of "sst#1" (0,1024) -> (0,6000)
p.4.6-6	Modify data name (“Number of Columns”, “Number of Lines” and “Map Projection”) Modify “StandardLongitude” and “grid interval”

	Modufy “Earth Ellipsoid Type” and ”Reference Longitude”
p.4.6-7	Modify data name (“Number of Columns”) Modufy “Earth Ellipsoid Type” and ”Reference Longitude”
p.4.6-9	Remove “1km surface reflectance ch.9” Modify long_name of Observation time Modify valid_range of rad_ch30- rad_ch36, sat_zenith, sun_zenith, sat_azimuth Modify units of rad_ch30- rad_ch36, sat_zenith, sun_zenith, sat_azimuth, obs_time Modify remarks of ref_ch1- rad_ch36, sat_zenith, sun_zenith, sat_azimuth, obs_time
p.4.6-10	Modify long_name of VGI Remove units of VGI Modify remarks of VGI
p.5.2-5	Modify valid_range of "CLOP_p " (0,100) -> (0,20000) Add units of "CLOP_p " no unit Modify remarks of "CLOP_p " -1 -> -1000 Add valid_range of "nLw_380" to "nLw_710" 0,65535 Add remarks of "nLw_380" to "nLw_710" slope and intercept
p.5.2-6	Add valid_range of "La_749" to "tau_865" Add remarks of "La_749" to "tau_865" slope and intercept Add new SD_name "par" Modify valid_range of "chla" 1,920 -> 1,65533 Modify remarks of "chla" actual range:0.01 - 92 -> actual range: 0.01 -98.2995
p.5.2-7	Modify valid_range of "ss" (1,300) -> (1,3000) Modify valid_range of "sst" (0,1024) -> (0,6000) Modify remarks of "sst" actual range:220 - 322.4 -> actual range: 263.15 - 323.15
p.6.2-7	Modify long_name contained "ARAE " ARAE -> Aerosol Angstrom Exponent Modify long_name contained "AROP " AROP-> Aerosol Optical Thickness at 500 nm Add units of "ARAE_sum" to "AROP_min " no unit Modify long_name contained "CLER_w_r " CLER_w_r-> Cloud Effective Particle Radius (Water Cloud by Reflection Method) Add units of "CLER_w_r_sum","CLER_w_r_max" and "CLER_w_r_min" um Modify long_name contained "sum_sq " sum_sq -> sum of squares Delete remarks of "ARAE_sum" to "CLER_w_r_min"
p.6.2-8	Modify long_name contained "CLER_i_e " CLER_i_e -> Cloud Effective Radius of Cirrus Particles (Ice Cloud by Emission Method) Add units of "CLER_i_e_sum","CLER_i_e_max" and "CLER_i_e_min" um Modify long_name contained "sum_sq " sum_sq -> sum of squares Delete remarks of "ARAE_sum" to "CLER_i_e_min" Modify long_name contained "CLOP_w_r " CLOP_w_r -> Cloud Optical Thickness (Water Cloud by Reflection Method) Modify long_name contained "CLOP_i_r " CLOP_i_r -> Cloud Optical Thickness (Ice Cloud by Reflection Method) Modify long_name contained "CLOP_i_e " CLOP_i_e -> Cloud Optical Thickness of Cirrus (Ice Cloud by Emission Method) Add units of "CLOP_w_r" to "CLOP_i_e " no unit Modify long_name contained "sum_sq " sum_sq -> sum of squares Delete remarks of "CLER_i_e_sum" to "CLOP_i_r_min"
p.6.2-9	Add units of "CLOP_i_e_sum" to "CLOP_i_e_min " no unit Modify long_name contained "CLHT_w_r " CLHT_w_r -> Cloud Top Height (Water Cloud by Reflection Method) Add units of "CLHT_w_r_sum","CLHT_w_r_max" and "CLHT_w_r_min" km Modify long_name contained "CLTT_w_r " CLTT_w_r -> Cloud Top Temperature (Water Cloud by Reflection Method)

			Add units of "CLTT_w_r_sum","CLTT_w_r_max" and "CLTT_w_r_min" K Modify long_name contained "sum_sq " sum_sq -> sum of squares Delete remarks of "CLOP_i_e_sum" to "CLTT_w_r_min"
		p.6.2-10	Modify long_name contained "CLTT_i_e " CLTT_i_e -> Cloud Top Temperature of Cirrus (Ice Cloud by Emission Method) Add units of "CLTT_i_e_sum","CLTT_i_e_max" and " CLTT_i_e_min" K Modify long_name contained "CLWP_w_r" CLWP_w_r -> Cloud Liquid Water Path (Water Cloud by Reflection Method) Add units of "CLWP_w_r_sum", "CLWP_w_r_max" and "CLWP_w_r_min" g/m^2 Modify long_name contained "sum_sq " sum_sq -> sum of squares Delete remarks of "CLTT_i_e_sum" to "CLWP_w_r_min"
		p.6.2-11 p.6.2-12 p.6.2-13	Modify long_name contained "CLFRn (n:1 to 19)" CLFRn -> described by p.4.3-15 Add units of contained "CLFRn (n:1 to 19)" described by p.4.3-15 Delete remarks of "CLFR_1_sum" to "CLFR_19_min"
		p.6.4-3	Add category of "Map Information"
		p.7.2-5	Modify Data name and long_name of "ARAE " ARAE -> Aerosol Angstrom exponent Add units of "ARAE" no unit Modify Data name and long_name of "AROP " AROP -> Aerosol optical thickness at 500 nm Add units of "AROP" no unit Modify Data name and long_name of "CLER_w_r " CLER_w_r -> Cloud Effective Particle Radius(Water Cloud by Reflection Method) Modify Data name and long_name of "CLER_i_e " CLER_i_e -> Cloud Effective Radius of Cirrus Particles (Ice Cloud by Emission Method) Add units of "CLER_w_r " and "CLER_i_e " um Modify Data name and long_name of "CLOP_w_r " CLOP_w_r -> Cloud Optical Thickness (Water Cloud by Reflection Method) Add units of "CLOP_w_r " no unit
		p.7.2-6	Modify Data name and long_name of "CLOP_i_r " CLOP_i_r -> Cloud Optical Thickness (Ice Cloud by Reflection Method) Modify Data name and long_name of "CLOP_i_e " CLOP_i_e -> Cloud Optical Thickness of Cirrus (Ice Cloud by Emission Method) Add units of "CLOP_i_r " and "CLOP_i_e" no unit Modify Data name and long_name of "CLHT_w_r " CLHT_w_r -> Cloud Top Height (Water Cloud by Reflection Method) Add units of "CLHT_w_r" km Modify Data name and long_name of "CLTT_w_r " CLTT_w_r -> Cloud Top Temperature (Water Cloud by Reflection Method) Modify Data name and long_name of "CLTT_i_e " CLTT_i_e -> Cloud Top Height (Ice Cloud by Emission Method) Add units of "CLTT_w_r" and "CLTT_i_e" K
		p.7.2-7	Modify Data name and long_name of "CLWP_w_r " CLWP_w_r -> Cloud Liquid Water Path (Water Cloud by Reflection Method) Add units of "CLWP_w_r" g/m^2 Modify long_name contained "CLFRn (n:1 to 19)" CLFRn -> described by p.4.3-15 Add units of contained "CLFRn (n:1 to 19)" described by p.4.3-15
		p.7.4-3	Modify "Earth Ellipsoid Type", "Reference longitude" and "grid Interval"
		p.7.5-3	Add data name of "Earth Ellipoid Type", "Reference Longitude" and "grid Interval"
		p.8.2-8	Modify 1st dimension of "absolute calibration coefficient (VNIR)" Modify remarks of "absolute calibration coefficient (VNIR)"
		p.8.3-6	Add "8.3.1 Generic Header"(p.8.3-6)

		p.8.3-7	p.8.3-6 -> p.8.3-7 Modify contents of Number of Channels(18-17) Modify contents of Processing Channel(remove 9) Modify “Pixel per Line”,”Number of Lines” and “Pixel per Line2” Modify “Scene Center Latitude”, “Scene Center Longitude” Add “Scene Center Latitude2”, “Scene Center Longitude2” Modify “Resampling Method”, “grid Interval” Remove “Earth Radius”, “Center Longitude” Add “Earth Ellipsoid Type”, “Reference Longitude”, “Resampling Method2” and “grid Interval2”
		p.8.3-8	p.8.3-7 -> p.8.3-8 Modify contents of “absolute calibration coefficient(VNIR)”
		p.8.3-9-8.3-10	p.8.3-8 -> p.8.3-9 Add “Precise Geometric Corected Image”
		p.8.4-2	Modify contents of “umber of Channels”, “Processing channels”
		p.8.4-5	Modify 1st dimension of “absolute calibration coefficient (VNIR)” Modify remarks of “absolute calibration coefficient (VNIR)”
		p.8.5-4	Modify valid_range of "CLER_w_r " (0, 500) -> (0, 10000) Modify remarks of "CLER_w_r " -1 -> -1000 Modify remarks of "CLER_w_r_scf " constant:0.1 -> constant:0.01 Modify valid_range of "CLOP_w_r " (0, 100) -> (0, 20000) Add units of "CLOP_w_r" no unit Modify remarks of "CLOP_w_r " -1 -> -1000 Modify remarks of "CLOP_w_r_scf " constant:0.1 -> constant:0.01 Modify valid_range of "CLHT_w_r " (0, 100) -> (-32768, 5000) Modify remarks of "CLHT_w_r " -1 -> -1000 Modify remarks of "CLHT_w_r_scf " constant:0.1 -> constant:0.01 Modify valid_range of "CLTT_w_r " (0, 100) -> (0, 32000) Modify remarks of "CLTT_w_r " -1 -> -1000 Modify remarks of "CLTT_w_r_scf " constant:0.1 -> constant:0.01 Delete Data name and long_name of "CLWP_w_r " /ice Modify valid_range of "CLWP_w_r " (0, 100) -> (0, 32767) Modify remarks of "CLWP_w_r " -1 -> -1000 Add units of "CLWP_w_r" 32767:maximum value of short Modify valid_range of "CLTP_w_r " (0, 100) -> (-32768, 20000) Modify remarks of "CLTP_w_r " -1 -> -1000 Modify valid_range of "Tbb_ch35" (0,100) -> (0,32767) Modify remarks of "Tbb_ch35" -1 -> -1000 Modify remarks of "Tbb_ch35_scf" constant:0.1 -> constant:0.01 Add remarks of "Tbb_ch35_scf" 32767:maximum value of short.
		p.8.5-5	Modify valid_range of "CLOP_i_r " (0, 100) -> (0, 20000) Modify remarks of "CLOP_i_r " -1 -> -1000 Modify remarks of "scf " constant:0.1 -> constant:0.01 Add units of "CLOP_i_r" no unit
		p.8.5-6	Modify valid_range of "CLER_i_e " (0, 5000) -> (0, 32767) Modify remarks of "re_scf " constant:0.1 -> constant:0.01 Modify remarks of "opt_scf " constant:0.1 -> constant:0.01 Modify valid_range of "CLTT_i_e " (0, 2730) -> (0, 27300) Modify remarks of "cltp_scf " constant:0.1 -> constant:0.01 Modify long_name of "AROP " 0.5 micro -> 500 nm Modify remarks of "AROP_scf " (1000) -> constant:0.001 Modify remarks of "ARAE " and “AROP” -1000.0 -> -2000,-999 Modify remarks of "ARAE_scf " (1000) -> constant:0.001 Add units of "CLOP_i_e" , "AROP" and "ARAE" no unit
		p.1.7-1	Modify contents of the “Bit configuration of GLI pixel”
		p.2-2	Modify contents of the “Data Center” Modify contents of the “Sensor Characteristics”
		p.2-3	Modify contents of the “Data Center” Modify contents of the “Sensor Characteristics”
		p.3.3-4	Modify contents of the “qc-flag”.
		p.3.3-5	Modify contents of the Table 3.3-1.

		p.4.2-3	Modify contents of the “GPS Flag”.
		p.4.3-15	Modify units of the “CLFR_19” %->K
		p.4.4-3	Modify contents of the “GPS Flag”. Modify contents of the “Start argument of Latitude”. Modify contents of the “End argument of Latitude”.
		p.4.4-6	Modify contents of the “QC flag”.
		p.4.5-3	Modify contents of the “Missing Packets #1” and ”Missing Lines #1”. Modify contents of the “Tilt Segment Center Latitude #1” to ”Lower Right Longitude #1”. Modify contents of the “Start argument of Latitude”. Modify contents of the “End argument of Latitude”.
		p.4.5-5	Modify contents of the “Photosynthetically avallable radiation”. Modify contents of the “QC flag #1”.
		p.4.5-7	Modify contents of the “See Surface Temperature #1 ”. Modify contents of the “SST QC flag #1”.
		p.4.6-6	Modify “Standard Longitude” to “Reference Longitude” Remove “Polar Radius” Modify contents of the “GPS Flag”.
		p.4.6-9	Add the items of "no_in_line","no_in_pixel","no_out_line","no_out_pixel","res_flag","prj_flag","ns_flag","ofst_line","ofst_pixel","wlsiz_line","wlsiz_pixel","msh_line","msh_pixel","pitch_line","pitch_pixel","no_in_line_2","no_in_pixel_2","no_out_line_2","no_out_pixel_2","res_flag_2","prj_flag_2","ns_flag_2","ofst_line_2","ofst_pixel_2","wlsiz_line_2","wlsiz_pixel_2","msh_line_2","msh_pixel_2","pitch_line_2",and "pitch_pixel_2" (Data name, SD name, type, long_name). Add “2” to each long_name of “pgci_blk_paddr2” , “pgci_blk_laddr_2”, “pgci_blk_paddr_2” , and “pgci_blk_laddr_2”. Remove the items of “blk_dem” and “blk_dem_2”.
		p.4.8-3	Modify contents of the “GPS Flag”.
		p.5.2-3	Modify contents of the “Parent GPS Flag”. Add the item of “Lower Left Latitude for Mapped Scene” to “Longitude Grid Interval”
		p.5.2-7	Modify contents of the “SST QC flag”.
		p.6.2-13	Modify units of “CLFR_19_sum”,”CLFR_19_max” and “CLFR_19_min” %->K
		p.6.3-7	Modify content of the “sum of angstrom_exp(749/865)” to “sum-sq of Tau_a865”. Modify content of the “sum of chlorophyll a” to ”sum- sq of K490”. Modify content of the “sum of sst(daytime)” to ”sum of sst(nighttime)”.
		p.7.2-7	Modify units of the ”CLFR_19” %->K
		p.4.4-1 p.4.5-1 p.5.2-1	Add new parameter ”Photosynthetically available radiation”
2.00	Jun.21,2004	p1.5-6-11 (Table 1.4-1)	Add new records (Product ID) PRCPW, SNWGS, SNWTS
		p.4.3-15	Add new SD data “CLFR_20” and “CLFR_20_scf”
		p.4.2-1 p.5.2-1 p.5.2-8	Add new product “PRCPW_p”
		p.4.2-5	Add “atsk4 bit flag” to the 16-18 bit field of atsk4 Ice/Water flag generated from ATSK1 algorithm.
		p.6.2-4 p.6.2-5 p.6.2-6	Add new SD data “begin#20”,”extent#20”,”bin_num#20” ”nobs#20”, ”nscenes#20”
		p.6.2-13	Add new SD data “CLFR20_sum”,“CLFR20_sum_sq”, “CLFR20_max”, “CLFR20_min”
		p.7.2-7	Add new SD data “CLFR_20”

		p.8.6-2	Add new GA data “Cloud shadow Flag” and “Solar zenith Angle for storing” , “Sat. zenith Angle for storing” , “Referenced Channel”
		p.8.6-4	Add new SD data “sat_zsenith” and “sun_zenith”, “rel_azimuth”, “scan_time”, “exist_flag”,“cloud_data”, “scan_time_cal”, “Rmin_address”, “land_value”, “water_value”, “LO_flag”
		p.4.2-5	Add “snow over land contaminated with vegetation” class (110) and “bare land with less vegetation” class (111) to the 24-26 bit field of surface classification flag generated from CTSK1 algorithm.
		p.4.7-1	Add new parameters “SNWGS” and “SNWTS” to the data description in Table 4.7-1. Rename “Snow/Cloud flag” and “Snow grain size” to “Surface classification flag” and “Snow grain size (865nm)”, respectively.
		p.4.7-5	Add new SD data “snwgs”, snwts”, and “snwt_sf” to SNGI VG class. Rename preexisting SD data “bitarray”, “rs_p”, “rs_sf”, “soot”, and “soot_sf” to “scfg”, “snwg”, “snwg_sf”, “snwi”, and “snwi_sf”, respectively. Delete SD data of Frequency distribution of snow grain size and impurities “fq_grn_*” and “fq_ipt_*”.
		p.4.8-1	Add new parameters “SNWGS” and “SNWTS” to the data description in Table 4.8-1. Rename “Snow/Cloud flag” and “Snow grain size” to “Surface classification flag” and “Snow grain size (865nm)”, respectively.
		p.4.8-5	Add new SD data “snwgs”, snwts”, and “snwt_sf” to SNGI_p VG class. Rename preexisting SD data “rs_p”, “rs_sf”, “soot”, and “soot_sf” to “snwg”, “snwg_sf”, “snwi”, and “snwi_sf”, respectively. Delete SD data of Frequency distribution of snow grain size and impurities “fq_grn_*” and “fq_ipt_*”.
		p.5.2-1	Add new parameters “SNWGS” and “SNWTS” to the data description in Table 5.2-1. Rename “Snow/Cloud flag” and “Snow grain size” to “Surface classification flag” and “Snow grain size (865nm)”, respectively.
		p.5.2-7	Add new SD data “snwgs” and snwts” to SNGI_p VG class. Rename preexisting SD data “rs_p” and “soot” to “snwg” and “snwi”, respectively.
		p.6.4-1	Add new parameters “SNWGS” and “SNWTS” to the product code in Table 6.4-1. Rename preexisting data description “Snow grain size” to “Snow grain size (865nm)”.
		p.6.4-5	Modify the content (title, long name, remarks) of “SNWI” and “SNWG” data. Add new data “SNWGS” and “SNWTS” to the Specific part (Body).
		p.7.5-1	Add new parameters “SNWGS” and “SNWTS” to the product code in Table 7.5-1. Rename preexisting data description “Snow grain size” to “Snow grain size (865nm)”.
		p.7.5-5	Modify the content (title, long name, remarks) of “SNWI” and “SNWG” data. Add new data “SNWGS” and “SNWTS” to the Specific part (Body).
		p.4.4-1 p.4.5-1 p.5.2-1 p.7.3-1	Delete 3bands of “Aerosol radiance”. Add “Normalized water-leaving radiance by in-water model” (2bands) and “Aerosol albedo at 380 nm”
		p.4.4-5 , 6 p.4.5-4 p.5.2-6 p.7.3-6	Delete SD: La_749, La_1050, La_1240. Add SD : nLw_678, nLw_865, aalb
		p.6.3-7	Delete SD: La_749_sum, La_1050_sum, La_1240_sum, La_749_sum_sq, La_1050_sum_sq, La_1240_sum_sq. Add SD : nLw_678_sum_sq, nLw_865_sum_sq, aalb_sum_sq
		p.4.6-10	Revised data type of “rel_azimuth”: short -> Ushort Change valid range of " rel_azimuth " : 18000 -> 36000
2.00A	Aug.31,2004	p.4.4-5.6 p.4.5-4	Rename SDname and its longname: alpha_78 to angstrom_520 Change mask/flag in quality control information for Ocean Color Add the explanation about the process of PAR in mask region.

		p.4.1-6,8 p.5.2-1 p.5.2-6 p.7.1-4 p.7.3-6	Rename SDname and its longname: alpha_78 to angstrom_520
		p.6.3-7	Rename SDname and its longname: alpha_78_sum to angstrom_520_sum, alpha_78_sum_sq to angstrom_520_sum_sq
		p.2.1-2 p.2.2-1 p.8.3-6	Modify contents of the “Data Center”
		p.8.2-8	Add new SD data “cal_ang”
		p.4.2-3 p.8.5-2 p.8.6-2 p.8.7-2	Add new GA data “Vicarious_Calibration_Table”

Contents

7. Level-3 STA Map Data

8. Others (work file)

Appendix

1. Introduction

1.1 Purpose

This document describes the specifications of ADEOS-II GLI standard higher product file (Level-2A, Level-2 and higher). All data structure, name, data type, dimension size and other information are included in this document.

Basic file format of these files is HDF (see 1.6). The data can be accessed by its name.

1.2 Relevant Documents

GLI product file format is based on following documents.

- Advanced Earth Observing Satellite (ADEOS) OCTS Product Format Description Ver.1.4.1, Apr. 23 1997, NASDA
- HDF User's Guide Version 4.1r1, May 1997, NCSA

1.3 Level Definition

GLI higher products have following product levels.

Level	Description
Level-2A	Common and Basic products for Level-2 products - generated from Level-1B - radiance data, multi-channels - covered 1 path or global instead of scene - source data of all global Level-2 product
Level-2	Retrieved geophysical parameters - generated from Level-2A, some is generated from Level-1B - 4 discipline : atmosphere, ocean, land, cryosphere - 4 data type : scene type, path type, global type, segment type
Level-2Map	Map projected Level-2 data - generated from Level-2
Level-3Binned	Binned statistical data (sum, sum of square, ...) - generated from Level-2 - covered global
Level-3 STA Map	Low resolution global map projected data - generated from Level-3Binned - covered global

1.4 General File Structure

GLI higher products file consists of following 4 parts.

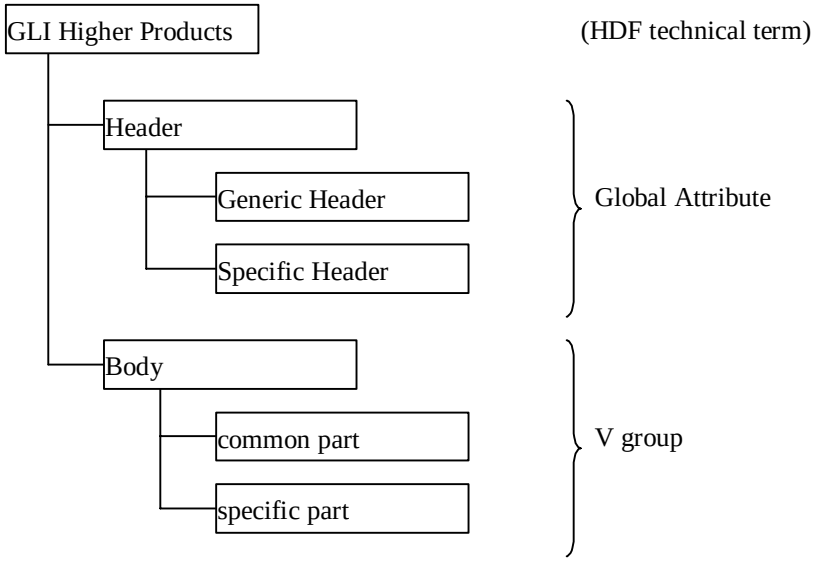
- Generic header
- Specific header
- Common part
- Specific part

Generic header is defined as general-purpose header information. This part is common of all GLI higher products.

Specific header is header information depending on data type. We have 4 data types for Level-2 products, scene, path, global, segment.

Array data is stored in Common part and Specific part. Common part depends on data type like Specific header. If the data type is same, Common part is common.

Specific part is specific data of each geophysical parameter. Geophysical parameter, such as cloud effective radius, sea surface temperature, vegetation index, and so on, is stored here.



Generic Header is described in chapter 2. Other data is described in chapter 3 and after.

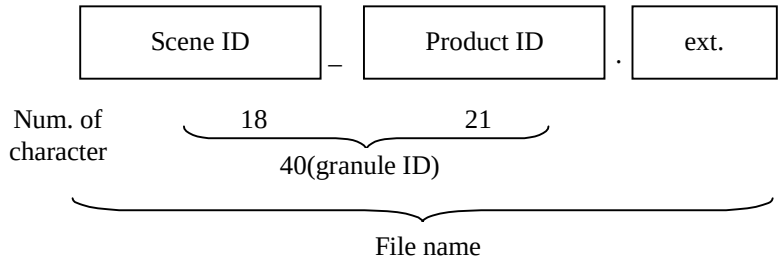
1.5 File name definition

File naming rule is defined in the document "ADEOS-II AMSR/GLI higher products file granule ID rule" (NDX-000164) in Japanese.

Following description is summary version translated to English. If correct and detail information is necessary, please refer above document.

(1) Basic concept

GLI higher products consist of 3 parts : Scene ID, Product ID and extension (ext.).



a. Scene ID

The ID to identify the scene. Or the information related in data acquisition time to specify the data observing area if the product is defined as except scene.

b. '_'

Separator. underscore

c. Product ID

The ID to identify the product specification.

d. Ext.

The extension. '01'

(2) Scope of this rule

All GLI higher products file, Level-2A, Level-2, Level-2Map, Level-3Binned, Level-3Binned Map and work file.

(3) Naming rule

a. Scene ID

i) Level2A_OA, Level-2(scene/path type), Level-2Map, Level-3 ocean spatial binned data (work file)

The scene ID is defined as same as GLI Level-1 product.

[Planning production, Ordering production]

A2GLxYYMMDDPPSSMMT	(18columns)

A2: Satellite name. 'A2': ADEOS-II
GLx: Sensor specification. 'GL1':GLI-1km, 'GL2':GLI-250m
(* 'GL2' is not used now. This is candidate for future use.)
YYMMDD: Observation start date. the dominical year(UT)
PP: Path Number. '01'-'57'
SS: Scene Number. '01'-'26', '00':No specification
MM: Observation mode. 'OD': daytime, 'ON': night, '00': No specification
T: Tilt specification. '1':nadir, '2': backward, '3': forward, '0':No specification

[Near realtime production]

A2GLxYYMMDDPPNNNNN	(18columns)

A2: Satellite name. 'A2': ADEOS-II
GLx: Sensor specification. 'GL1':GLI-1km, 'GL2':GLI-250m
(* 'GL2' is not used now. This is candidate for future use.)
YYMMDD: Observation start date. the dominical year(UT)
PP: Path Number. '01'-'57'
NNNNN: transit time from ascending node

ii) Level2A_LC, Level-2(global/segment type), Level-3Binned (except ocean spatial binned data(work file)), Level-3Binned Map

A2GLxYYMMDDyymmddX	(18columns)

A2: Satellite name. 'A2': ADEOS-II
GLx: Sensor specification. 'GL1':GLI-1km, 'GL2':GLI-250m
(* 'GL2' is not used now. This is candidate for future use.)
YYMMDD: Observation start date. the dominical year(UT)

yymmdd: Observation completion date. the dominical year(UT)
X: always '0'(dummy)

b. Product ID

i) Level-2A_OA/LC, Level-2/2Map, Atmospheric segment data

XYYYYYLMxnnREVverpAAD	(21columns)

X: Production specification (P: planning, O: ordering, N: near realtime, W: work)
See Table 1.4-1

YYYYY: Product code
See Table 1.4-1

L: Processing level('A':Level-2A, '2':Level-2, 'M':Level-2Map)

M: Map projection('0': No specification, 'E': equi-rectangular, 'M': Mercator, 'P': polar stereographic)

xnn: center latitude('000':No specification, 'C00':scene center, 'D00': standard latitude, 'Snn': specified latitude(S90-N90, 5deg. interval, Equator is defined as 'N00'.))

R: Resampling method ('0': No specification, 'B': bilinear, 'N': nearest neighbor, 'C': cubic convolution)

E: Earth ellipsoid ('0': No specification, 'W':WGS84)

V: Direction of map projection('0': No specification, 'T': True North, 'M': Map North)

verp: Product version represented by 4 characters "nnnx". "nnn" means software version ('000'-'999'), "x" means parameter version ('0'-'9','A'-'Z'), which shows the version of external parameter files or local data files (ex. LUT, Look up table) used by the software. When programs delivered to EOC, lower 3 characters of "nnnx" is always 0, product version is "0000", "1000", "2000", etc. Lower 3 characters are valid only in EORC.

AA: Area number('01','02',...) For the product which is not area separated: '00'

D: Day/night discrimination('D': daytime, 'N': :night, '0': No specification (except atmospheric segment type))

ii) Level-3Binned, Level-3Binned Map

XYYYYYLMBBBREVverpAAD	(21columns)

X: Production specification (P: planning, N: near realtime, W: work)
See Table 1.4-1

YYYYY: Product code
See Table 1.4-1

L: Processing level('B':Level-3Binned, 'S':Level-3STA Map)

M: Map projection('0': No specification, 'E': equi-rectangular, 'M': mercator, 'P': polar stereographic)

BBB: Bin type('00P': path (used only for work file), '00D': daily, '004': 4days(used only for work file), '008': 8days, '016':16days, '00M':monthly)

R: Resampling method ('0')

E: Earth ellipsoid ('0')

V: Direction of map projection ('0')

verp: Product version (aforementioned)

AA: Area number (aforementioned)

D: Day/night discrimination ('0')

Table 1.4-1 Product Code List (1/6)

*1: Algorithm ID = Identification to distinguish each executable unit. One algorithm may be assigned to 2 or more algorithm ID.
if it is executed for different input data type/period (ex. L3ASBin).

*2: Product ID = 5 characters code using to identify higher product in granule ID. The length of name is always 5 characters with capital letter.

*3: EXE file name = The name which is called by "system software". If algorithm consists of several programs, EXE file is managing program as entry program.

No.	Level	Algorithm ID*1	Algorithm Code	EXE file name*3	Output Product ID*2	Output Product Code	Production (P)	Area (AA)	Remarks
1	2A	OATSKD	OATSKD	oatskd	L2AOA	Level-2A_OA	P	00	
2		LTSK10D	LTSK10	ltsk10d	LCWK1, LCWK2	Level-2A_LC workfile1, 2	W	01-56	D: daily processing, workfile
3		LTSK10F	LTSK10	ltsk10f	L2ALC	Level-2A_LC	P	01-56	F: final processing
4	2	ATSK1	ATSK1&2/ CTSK1	atsk1	CLFLG	CLFLG_p	P	00	
5		ATSK1_NRT	ATSK1&2/ CTSK1	atsk1	CLFLG	CLFLG_p	N	00	
6		ATSKD	ATSKD	atskd	ATSEG	atmospheric segment data	W	01-07	workfile
7		RMIN4	Rmin generation (4days)	rmin4	RMN04	Rmin(4days)	W	00	workfile
8		RMIN	Rmin generation	rmin	RMN28	Rmin(28days)	W	00	workfile
9		ATSK3R	ATSK3_r	atsk3_r	CWKRW	work_r_w	W	00	workfile
10					CWKRI	work_r_i	W	00	workfile
11		PREATSK3P	pre_ATSK3_p	pre_atsk3_p	CWIFG	ice/water flag	W	00	workfile
12		ATSK3P	ATSK3_p	atsk3_p	CLOPP	CLOP_p	O	00	
13		ATSK6P	ATSK6_p	atsk6_p	PRCPW	PRCPW_p	O	00	
14		ATSK3E	ATSK3_e	atsk3_e	CLWKE	work_e	W	00	workfile
15		ATSK5	ATSK5	atsk5	ARWK0	work_ar	W	00	workfile
16		POSTATSK5	post_ATSK5	post_atsk5	AROP0	AROP	P	00	
17					ARAE0	ARAE	P	00	
18		ATSK16	ATSK16	atsk16	CTTWR	CLTT_w_r	P	00	
19					CHTWR	CLHT_w_r	P	00	
20					CWPWR	CLWP_w_r	P	00	
21					CERWR	CLER_w_r	P	00	
22					COPWR	CLOP_w_r	P	00	
23					COPIR	CLOP_i_r	P	00	
24					CTTIE	CLTT_i_e	P	00	
25					CERIE	CLER_i_e	P	00	
26					COPIE	CLOP_i_e	P	00	
27					CLFR0	CLFR	P	00	
28		OTSK1ALR	OTSK1a_LR	otsk1a_lr	NLLR0	NL_LR	P	00	
29		OTSK2567LR	OTSK2567_LR	otsk2567_lr	CSLR0	CS_LR	P	00	
30		OTSK13LR	OTSK13_LR	otsk13_lr	STLR0	ST_LR	P	00	
31		OTSK1AFR	OTSK1a_FR	otsk1a_fr	NLFR0	NL_FR	O	00	
32		OTSK1AFR_NRT	OTSK1a_FR	otsk1a_fr	NLFR0	NL_FR	N	00	
33		OTSK2567FR	OTSK2567_FR	otsk2567_fr	CSFR0	CS_FR	O	00	

Table 1.4-1 Product Code List (2/6)

No.	Level	Algorithm ID*1	Algorithm Code	EXE file name*3	Output Product ID*2	Output Product Code	Production (P)	Area (AA)	Remarks
34	2	OTSK2567FR_NRT	OTSK2567_FR	otsk2567_fr	CSFR0	CS_FR	N	00	
35		OTSK13FR	OTSK13_FR	otsk13_fr	STFR0	ST_FR	O	00	
36		OTSK13FR_NRT	OTSK13_FR	otsk13_fr	STFR0	ST_FR	N	00	
37		LTSKG	LTSKG	ltskg	PGCP0	PGCP	P	00	
38					PGCI0	PGCI	W	00	workfile
39		LTSK1	LTSK1	ltsk1	ACLC0	ACLC	P	01-56	
40		LTSK9	LTSK9	ltsk9	VGI00	VGI	P	01-05	
41		CTSK2B1G	CTSK2b1_g	ctsk2b1_g	SNGI0	SNGI	P	01-05	
42		CTSK2B1S	CTSK2b1_s	ctsk2b1_s	SNGIP	SNGI_p	O	00	
43	2Map	L2MAPCLFLG	L2Map Generation	l2map_clflg	CLFLG	CLFLG_p(L2Map)	O	00	
44		L2MAPCLOP		l2map_clopp	CLOPP	CLOP_p(L2Map)	O	00	
45		L2MAPPRCPW		l2map_prcpw	PRCPW	PRCPW_p(L2Map)	O	00	
46		L2MAPNL		l2map_nl	NW000	NW	O	00	
47					LA000	LA	O	00	
48					QFOC0	QF_OC	O	00	
49		L2MAPNL_NRT		l2map_nl	NW000	NW	N	00	
50					LA000	LA	N	00	
51					QFOC0	QF_OC	N	00	
52		L2MAPCS		l2map_csst	CHLA0	CHLA	O	00	
53					CDOM0	CDOM	O	00	
54					SS000	SS	O	00	
55					K4900	K490	O	00	
56		L2MAPCS_NRT		l2map_csst	CHLA0	CHLA	N	00	
57					CDOM0	CDOM	N	00	
58					SS000	SS	N	00	
59					K4900	K490	N	00	
60		L2MAPST		l2map_csst	ST000	ST	O	00	
61					QFST0	QF_ST	O	00	
62		L2MAPST_NRT		l2map_csst	ST000	ST	N	00	
63					QFST0	QF_ST	N	00	
64		L2MAPSNGI		l2map_sngi	SNGIP	SNGI_p(L2Map)	O	00	
65	3Bin	L3ASBINWKRW	L3ASBin	l3asbin	CTTWR, COPWR, CERWR, CHTHW, CWPWR	CLTT_w_r, CLOP_w_r, CLER_w_r, CLHT_w_r, CLWP_w_r (L3spatial Bin)	W	00	workfile
66		L3ASBINWKRI			COPWR	CLOP_w_r (L3spatial Bin)	W	00	workfile
67		L3ASBINWKE			CTTIE, CERIE, COPIE	CLTT_i_e, CLER_i_e, CLOP_i_e (L3spatial Bin)	W	00	workfile
68		L3ASBINWKAR			AROP0, ARAE0	AROP, ARAE (L3spatial Bin)	W	00	workfile
69		L3ASBINCLFR			CLFR0	CLFR (L3spatial Bin)	W	00	workfile

Table 1.4-1 Product Code List (3/6)

No.	Level	Algorithm ID*1	Algorithm Code	EXE file name*3	Output Product ID*2	Output Product Code	Production (P)	Area (AA)	Remarks
70	3Bin	L3ATBINCTTWR_D16	L3ATBin	l3atbin	CTTWR	CLTT_w_r (L3Bin, 16days)	P	00	
71		L3ATBINCOPWR_D16			COPWR	CLOP_w_r (L3Bin, 16days)	P	00	
72		L3ATBINCERWR_D16			CERWR	CLER_w_r (L3Bin, 16days)	P	00	
73		L3ATBINCHTWR_D16			CHTWR	CLHT_w_r (L3Bin, 16days)	P	00	
74		L3ATBINCWPWR_D16			CWPWR	CLWP_w_r (L3Bin, 16days)	P	00	
75		L3ATBINCOPIR_D16			COPIR	CLOP_i_r (L3Bin, 16days)	P	00	
76		L3ATBINCTTIE_D16			CTTIE	CLTT_i_e (L3Bin, 16days)	P	00	
77		L3ATBINCERIE_D16			CERIE	CLER_i_e (L3Bin, 16days)	P	00	
78		L3ATBINCOPIE_D16			COPIE	CLOP_i_e (L3Bin, 16days)	P	00	
79		L3ATBINAROP0_D16			AROP0	AROP (L3Bin, 16days)	P	00	
80		L3ATBINARAE0_D16			ARAE0	ARAE (L3Bin, 16days)	P	00	
81		L3ATBINCLFR0_D16			CLFR0	CLFR (L3Bin, 16 days)	P	00	
82		L3ATBINCTTWR_M1			CTTWR	CLTT_w_r (L3Bin, 1month)	P	00	
83		L3ATBINCOPWR_M1			COPWR	CLOP_w_r (L3Bin, 1month)	P	00	
84		L3ATBINCERWR_M1			CERWR	CLER_w_r (L3Bin, 1month)	P	00	
85		L3ATBINCHTWR_M1			CHTWR	CLHT_w_r (L3Bin, 1month)	P	00	
86		L3ATBINCWPWR_M1			CWPWR	CLWP_w_r (L3Bin, 1month)	P	00	
87		L3ATBINCOPIR_M1			COPIR	CLOP_i_r (L3Bin, 1month)	P	00	
88		L3ATBINCTTIE_M1			CTTIE	CLTT_i_e (L3Bin, 1month)	P	00	
89		L3ATBINCERIE_M1			CERIE	CLER_i_e (L3Bin, 1month)	P	00	
90		L3ATBINCOPIE_M1			COPIE	CLOP_i_e (L3Bin, 1month)	P	00	
91		L3ATBINAROP0_M1			AROP0	AROP (L3Bin, 1month)	P	00	
92		L3ATBINARAE0_M1			ARAE0	ARAE (L3Bin, 1month)	P	00	
93		L3ATBINCLFR0_M1			CLFR0	CLFR (L3Bin, 1month)	P	00	
94		L3OSBINNL	L3OSBin	l3osbin	NW000	NW(L3spatial Bin)	W	00	workfile
95					LA000	LA(L3spatial Bin)	W	00	workfile
96		L3OSBINCS			CS000	CS(L3spatial Bin)	W	00	workfile
97		L3OSBINST			ST000	ST(L3spatial Bin)	W	00	workfile

Table 1.4-1 Product Code List (4/6)

No.	Level	Algorithm ID*1	Algorithm Code	EXE file name*3	Output Product ID*2	Output Product Code	Production (P)	Area (AA)	Remarks
98		L3OTBINNW_D1	L3OTBin	l3otbin	NW000	NW(L3Bin, 1day)	P	00	
99		L3OTBINLA_D1			LA000	LA(L3Bin, 1day)	P	00	
100		L3OTBINCS_D1			CS000	CS(L3Bin, 1day)	P	00	
101		L3OTBINST_D1			ST000	ST(L3Bin, 1day)	P	00	
102		L3OTBINNW_D8			NW000	NW(L3Bin, 8days)	P	00	
103		L3OTBINLA_D8			LA000	LA(L3Bin, 8days)	P	00	
104		L3OTBINCS_D8			CS000	CS(L3Bin, 8days)	P	00	
105		L3OTBINST_D8			ST000	ST(L3Bin, 8days)	P	00	
106		L3OTBINNW_M1			NW000	NW(L3Bin, 1month)	P	00	
107		L3OTBINLA_M1			LA000	LA(L3Bin, 1month)	P	00	
108		L3OTBINCS_M1			CS000	CS(L3Bin, 1month)	P	00	
109		L3OTBINST_M1			ST000	ST(L3Bin, 1month)	P	00	
110		L3CSBIN	L3CSBin	l3csbin	SNWG0	SNWG (L3Bin, 16days)	P	01-03	
111					SNWI0	SNWI(L3Bin, 16days)	P	01-03	
112					SNWGS	SNWGS(L3Bin,16days)	P	01-03	
113					SNWTS	SNWTS(L3Bin,16days)	P	01-03	
114		L3CTBINSNWG_M1	L3CTBin	l3ctbin	SNWG0	SNWG(L3Bin, 1month)	P	01-03	
115		L3CTBINSNWI_M1			SNWI0	SNWI(L3Bin, 1month)	P	01-03	
116		L3CTBINSNWGS_M1			SNWGS	SNWGS(L3Bin,1month)	P	01-03	
117		L3CTBINSNWTS_M1			SNWTS	SNWTS(L3Bin,1month)	P	01-03	
118	3StaMap	LTASMAPCTTWR_D16	L3ASMap	l3asmap	CTTWR	CLTT_w_r (L3SMap, 16days)	P	00	
119		LTASMAPCOPWR_D16			COPWR	CLOP_w_r (L3SMap, 16days)	P	00	
120		LTASMAPCERWR_D16			CERWR	CLER_w_r (L3SMap, 16days)	P	00	
121		LTASMAPCHTWR_D16			CHTWR	CLHT_w_r (L3SMap, 16days)	P	00	
122		LTASMAPCWPWR_D16			CWPWR	CLWP_w_r (L3SMap, 16days)	P	00	
123		LTASMAPCOPIR_D16			COPIR	CLOP_i_r (L3SMap, 16days)	P	00	
124		LTASMAPCTTIE_D16			CTTIE	CLTT_i_e (L3SMap, 16days)	P	00	
125		LTASMAPCERIE_D16			CERIE	CLER_i_e (L3SMap, 16days)	P	00	
126		LTASMAPCOPIE_D16			COPIE	CLOP_i_e (L3SMap, 16days)	P	00	
127		LTASMAPAROP0_D16			AROP0	AROP (L3SMap, 16days)	P	00	
128		LTASMAPARAE0_D16			ARAE0	ARAE (L3SMap, 16days)	P	00	
129		LTASMAPCLFR0_D16			CLFR0	CLFR (L3SMap, 16days)	P	00	
130		LTASMAPCTTWR_M1			CTTWR	CLTT_w_r (L3SMap, 1month)	P	00	
131		LTASMAPCOPWR_M1			COPWR	CLOP_w_r (L3SMap, 1month)	P	00	

Table 1.4-1 Product Code List (5/6)

No.	Level	Algorithm ID*1	Algorithm Code	EXE file name*3	Output Product ID*2	Output Product Code	Production (P)	Area (AA)	Remarks
132	3StaMap	LTASMAPCERWR_M1	L3ASMap	l3asmap	CERWR	CLER_w_r (L3SMap, 1month)	P	00	
133		LTASMAPCHTWR_M1			CHTWR	CLHT_w_r (L3SMap, 1month)	P	00	
134		LTASMAPCWPWR_M1			CWPWR	CLWP_w_r (L3SMap, 1month)	P	00	
135		LTASMAPCOPIR_M1			COPIR	CLOP_i_r (L3SMap, 1month)	P	00	
136		LTASMAPCTTIE_M1			CTTIE	CLTT_i_e (L3SMap, 1month)	P	00	
137		LTASMAPCERIE_M1			CERIE	CLER_i_e (L3SMap, 1month)	P	00	
138		LTASMAPCOPIE_M1			COPIE	CLOP_i_e (L3SMap, 1month)	P	00	
139		LTASMAPAROP0_M1			AROP0	AROP (L3SMap, 1month)	P	00	
140		LTASMAPARAE0_M1			ARAE0	ARAE (L3SMap, 1month)	P	00	
141		LTASMAPCLFR0_M1			CLFR0	CLFR (L3SMap, 1month)	P	00	
142		L3OSMAPNW_D1	L3OSMap	l3osmap	NW000	NW(L3SMap, 1day)	P	00	
143		L3OSMAPLA_D1			LA000	LA(L3Smap, 1day)	P	00	
144		L3OSMAPCS_D1			CHLA0	CHLA (L3SMap, 1day)	P	00	
145					CDOM0	CDOM (L3SMap, 1day)	P	00	
146					SS000	SS(L3Smap, 1day)	P	00	
147					K4900	K490 (L3SMap, 1day)	P	00	
148		L3OSMAPST_D1			STALL	ST_all (L3SMap, 1day)	P	00	
149					STDN0	ST_DayNight (L3SMap, 1day)	P	00	
150		L3OSMAPNW_D8			NW000	NW(L3SMap, 8days)	P	00	
151		L3OSMAPLA_D8			LA000	LA(L3SMap, 8days)	P	00	
152		L3OSMAPCS_D8			CHLA0	CHLA (L3SMap, 8days)	P	00	
153					CDOM0	CDOM (L3SMap, 8days)	P	00	
154					SS000	SS(L3SMap, 8days)	P	00	
155					K4900	K490 (L3SMap, 8days)	P	00	
156		L3OSMAPST_D8			STALL	ST_all (L3SMap, 8days)	P	00	
157					STDN0	ST_DayNight (L3SMap, 8days)	P	00	
158		L3OSMAPNW_M1			NW000	NW (L3SMap, 1month)	P	00	
159		L3OSMAPLA_M1			LA000	LA(L3SMap, 1month)	P	00	

Table 1.4-1 Product Code List (6/6)

No.	Level	Algorithm ID*1	Algorithm Code	EXE file name*3	Output Product ID*2	Output Product Code	Production (P)	Area (AA)	Remarks
160	3StaMap	L3OSMAPCS_M1	L3OSMap	l3osmap	CHLA0	CHLA (L3SMap, 1month)	P	00	
161					CDOM0	CDOM (L3SMap, 1month)	P	00	
162					SS000	SS(L3SMap, 1month)	P	00	
163					K4900	K490 (L3SMap, 1month)	P	00	
164		L3OSMAPST_M1			STALL	ST_all (L3SMap, 1month)	P	00	
165					STDN0	ST_DayNight (L3SMap, 1month)	P	00	
166		L3LSMAP	L3LSMap	l3lsmap	VGI00	VGI (L3SMap, 16days)	P	00	
167		L3CSMAPSNWG_D16	L3CSMap	l3csmap	SNWG0	SNWG (L3Smap, 16days)	P	01-03	
168		L3CSMAPSNWI_D16			SNWI0	SNWI (L3Smap, 16days)	P	01-03	
169		L3CSMAPSNWGS_D16			SNWGS	SNWGS(L3Smap,16 days)	P	01-03	
170		L3CSMAPSNWTS_D16			SNWTS	SNWTS(L3SMap,16 days)	P	01-03	
171		L3CSMAPSNWG_M1			SNWG0	SNWG (L3Smap, 1month)	P	01-03	
172		L3CSMAPSNWI_M1			SNWI0	SNWI (L3Smap, 1month)	P	01-03	
173		L3CSMSNWGS_M1			SNWGS	SNWGS(L3Smap, 1month)	P	01-03	
174		L3CSMSNWTS_M1			SNWTS	SNWTS(L3Smap, 1month)	P	01-03	

1.6 Outline of HDF File

(1) Components of HDF

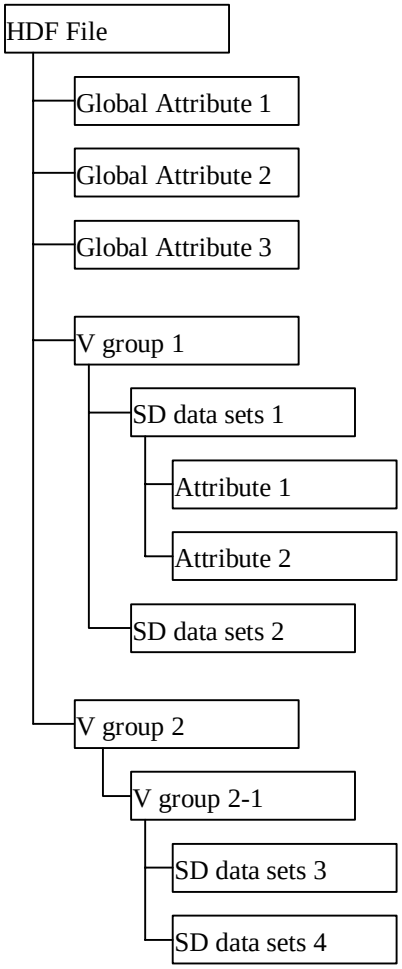
In GLI higher product file, "global attributes", "SD (scientific data) sets" and "V group" are used.

"Global attribute" is attribute information for the file. HDF file can have any number of "global attribute".

"V group" represents hierarchical structure of data items. This works like directory on UNIX system. Each data except "global attribute" is categorized in some "V group". "V group" can include another "V group" in itself.

"SD data sets" is actual data stored area. Generally they are defined as data array. Rank of array dimensions, dimension name, element of each dimensions can be obtained from HDF library. Some "SD data sets" has attributes, long name, units, and valid range.

In GLI higher product file, the name of "global attributes", "SD (scientific data) sets" and "V group" are unique. User can access each data items by its name described this document, "File Specification".



Types of data in this document are shown below. This table includes portable data type for C and Fortran 77. For example, if you use 'int32' instead of 'long', it assures 4 byte integer through the different type of machine.

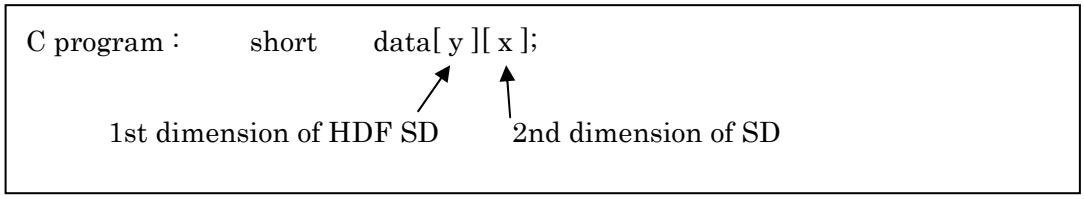
Type	Description	HDF definition	C (HDF)	Fortran77
Ch	character strings	DFNT_CHAR DFNT_CHAR8	char	character
Short	2 byte integer (signed)	DFNT_INT16	int16	integer*2
Ushort	2 byte integer (unsigned)	DFNT_UINT16	uint16	Not supported
Long	4 byte integer (signed)	DFNT_INT32	int32	integer*4
Ulong	4 byte integer (unsigned)	DFNT_UINT32	uint32	Not supported
Real	4 byte real	DFNT_FLOAT32	float32	real*4
Double	8 byte real	DFNT_FLOAT64	float64	real*8
Byte	1 byte integer	DFNT_INT8 DFNT_UINT8	int8 uint8	byte

(2) Dimension order

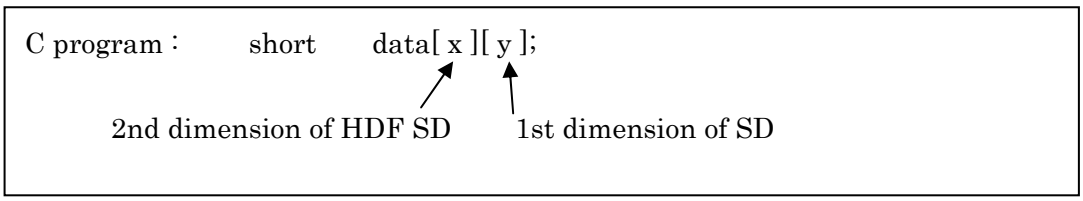
HDF SDs can be defined as multi-dimensional data. In this document, dimension order is described as follows;

1st dimension
2nd dimension
3rd dimension
4th dimension

If you access SD data with C language, the dimension order of C array definition corresponds to HDF SDs.



In the case of Fortran, the dimension order is reversed to HDF SD.



1.7 Notice

(1) Bit configuration of GLI pixel

This bit configuration is common for Level-1B, Level-2A and Atmospheric segment data.

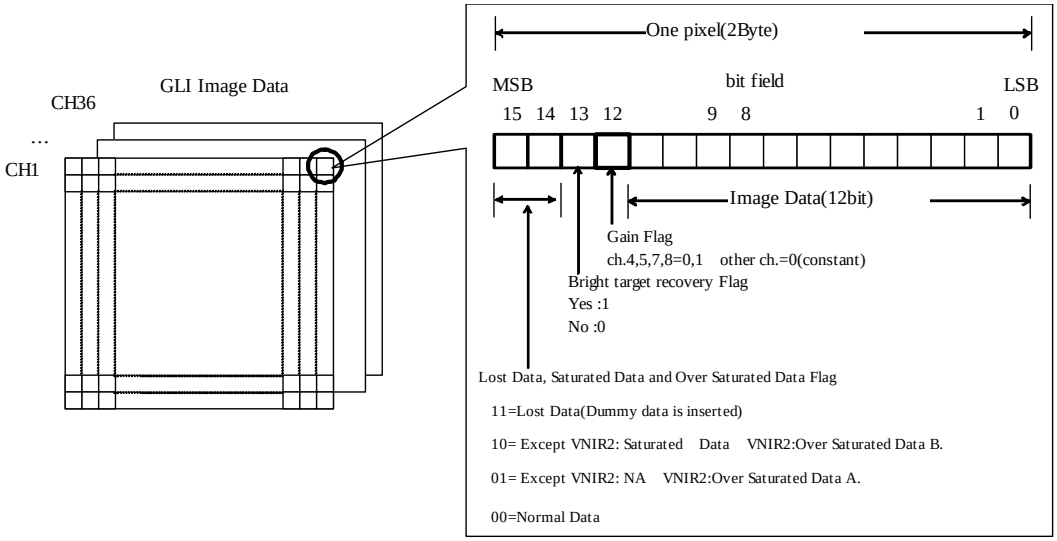


Fig. 1.7-1 GLI pixel bit field

pos.	name	definition	remarks
12	Gain Flag	This flag works only for piece-wise linear channels, ch.4,5,7,8. 1=High gain 0=Normal gain Always 0 for other ch.s	
13	Bright target recovery Flag	1=Saturated pixel exists within N pixel 0=Saturated pixel NOT exist neighbor	
14 15	Lost Data, Saturated Data and Over Saturated Data Flag	11=Lost Data(Dummy data is inserted) 10=Except VNIR2: Saturated Data VNIR2: Over Saturated Data B 01=Except VNIR2: NA VNIR2: Over Saturated Data A 00=Normal Data	

(2) Land/Water Flag attached to Level-1B data

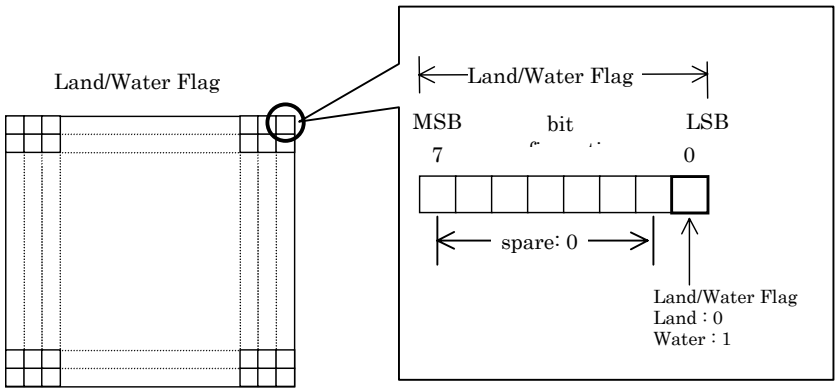


Fig. 1.7-2 GLI Land/Water flag bit field

(3) Definition of Solar/Satellite zenith, azimuth angle

[Zenith angle]

Origin: zenith point

value range: from 0 degree to 180 degree, 90 degree at horizontal line (see Fig.1.7-3)

[Azimuth angle]

Origin: North pole direction, clockwise (eastbound) is positive

value range: equal or larger than -180 degree , less than +180 degree (+180 is not used), -180 deg.=south, -90deg.=west, 0deg.=north, +90deg.=east (see Fig.1.7-4)

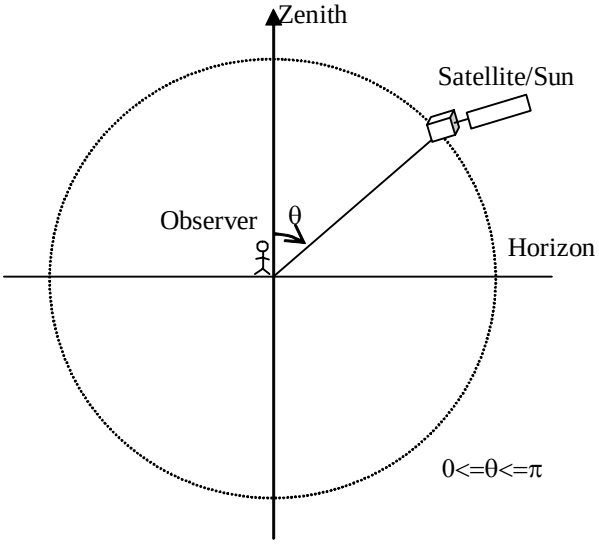


Fig. 1.7-3 definition of zenith angle

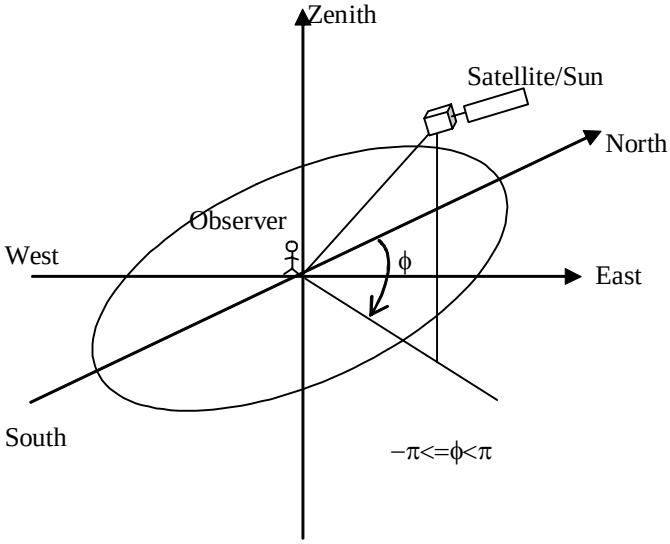


Fig. 1.7-4 definition of azimuth angle

1.8 Near Real Time Products

The products generated by near real time processing are shown in following table. Basically, the file format is the same as standard (order) processing product. But there are small differences between them. The differences are commented at the description of each product.

Level	Product name	Product code	Page
L2	Sea surface temperature	ST_FR	p.4.4-7
	Cloud flags	CLFLG_p	p.4.2-5
	Normalized water-leaving radiance	NL_FR	p.4.4-5
	Chlorophyll, SS and other parameters	CS_FR	p.4.4-5
L2Map	Sea surface temperature	ST	p.5.2-7
	Quality flag for SST	QF_ST	p.5.2-7
	Normalized water-leaving radiance	NW	p.5.2-5
	Aerosol radiance	LA	p.5.2-6
	Quality flag for ocean color	QF_OC	p.5.2-6
	Chlorophyll-a	CHLA	p.5.2-6
	Suspended solid weight	SS	p.5.2-7
	Absorption of colored dissolved organic matter	CDOM	p.5.2-7
	Attenuation coefficient at 490nm	K490	p.5.2-6

The hatched products are delivered to other organizations.

2. Generic Header

2.1 Generic Header

The contents of Generic Header is common and basic information for all GLI higher products. In this chapter, format of Generic Header is shown. In some items, the data value of them is constant for all product (ex. "Mission", "Sensor", "Replacement Flag", etc). The value of some items depends on product type or product specifications ("Title", "Data type", " Map Projection", etc). The detail of values of these items are described later chapter and typical value is shown here.

Generic Header

category	data name	type	count	contents	const.	remarks	source of data: input data	source of data: current process
Mission and Documentation	**Product Name**	Ch		dummy	const.	Product File Name(without PATH)		O:from CIF
	Title	Ch		"GLI Level-2 Data", "GLI Level-3Binned Data", ...	const.			O:cnst. in this prg.
	Data Center	Ch		"JAXA/Earth Observation Center" or "JAXA/Earth Observation Research and application Center"	const.	EOC or EORC (depending on where this is processed)		O:from CIF
	Mission	Ch		"ADEOS-II GLI'	const.	same as input data	O	
	Mission Characteristics	Ch		"Nominal orbit:inclination=98.62(Sun-Synchronous);node=10:15-10:45 AM(descending);eccentricity=<0.0012; altitude=803km;ground speed=6.6km/sec;revolutions per day=14+1/4"	const.	same as input data	O	
	Sensor	Ch		"Global Imager(GLI)'	const.	same as input data	O	
	Sensor Characteristics	Ch		"1km:Number of bands = 30,250m:Number of bands = 6; 1km:Number of detectors per bands = 12,250m:Number of detectors per bands = 48;1km bits per pixel = 13,250m:bits per pixel = 12;Scan period = 1.8sec;1km:bit rate = 3.8676 Mbit/sec,250m:bit rate = 60Mbit/sec"	const.	same as input data	O	
	Data Type	Ch		"scene 1km","scene 250m","path","global","segment","NRT"	const.			O:cnst. in this prg.
	Data Sub-type	Ch		"CLFLG_p","VGI", "SNGI", etc	const.			O:cnst. in this prg.
	Replacement Flag	Ch		"ORIGINAL"	const.			O:cnst. in this prg.
	Software ID	Ch		"NNNX"		processing software version(n.nn) and parameter version(x)		O:from CIF
	File Size	Real	1			product file size with 'MByte' unit		O
	Processing Time	Ch		YYYYMMDD hh:mm:ss.ttt		computer system clock when completing the processing		O
Data Time	**Start Time**	Ch		YYYYMMDD hh:mm:ss.ttt		Observation start time(UTC), same as input data	O	
	End Time	Ch		YYYYMMDD hh:mm:ss.ttt		Observation end time(UTC), same as input data	O	
	Center Time	Ch		YYYYMMDD hh:mm:ss.ttt		Observation center time(UTC), same as input data	O	
	Orbit Number	Long	1	-1, 1-∞		"-1" means that no orbit No. is assigned	O(scene)	O(except scene)
Area Coordinates	**Upper Left Latitude**	Real	1			Latitude of the upper left corner of this image	O(scene)	O(except scene)
	Upper Left Longitude	Real	1			Longitude of the upper left corner of this image	O(scene)	O(except scene)
	Upper Right Latitude	Real	1			Latitude of the upper right corner of this image	O(scene)	O(except scene)
	Upper Right Longitude	Real	1			Longitude of the upper right corner of this image	O(scene)	O(except scene)
	Lower Left Latitude	Real	1			Latitude of the lower left corner of this image	O(scene)	O(except scene)
	Lower Left Longitude	Real	1			Longitude of the lower left corner of this image	O(scene)	O(except scene)
	Lower Right Latitude	Real	1			Latitude of the lower right corner of this image	O(scene)	O(except scene)
	Lower Right Longitude	Real	1			Longitude of the lower right corner of this image	O(scene)	O(except scene)
Map Information	**Map Projection**	Ch		"PS","MER", "EQR","N/A"		PS:Polar Stereographic projection, EQR:Equi-Rectangular, MER: Mercator, N/A:Not Assigned(not map projected)	O(except L2Map)	O:from CIF(L2Map)
QA/QC data (L2/L3 common QA data)	**Primary Inspection result**	Ch		"G": good, "F":fair, "P":poor, "N": no good		Worst value is set if there are several geophysical parameters are included in this product.		O
	QA Percent Interpolated Data	Real	1	Percent (%) of interpolated data		Worst value is set if there are several geophysical parameters are included in this product.		O
	QA Percent Missing Data of this Product	Real	1	Percent (%) of missing data of this product		Worst value is set if there are several geophysical parameters are included in this product.		O

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2.2 Description

Description of each item is shown below.

No.	Data name	Type	Remarks
1	Product Name	Ch	Product file name(without path)
2	Title	Ch	GLI product level definition "GLI Level-2 Data", "GLI Level-2Map Data", ...
3	Data center	Ch	Data processing center "JAXA/Earth Observation Center" or "JAXA/Earth Observation Research and application Center"
4	Mission	Ch	Satellite name and sensor name "ADEOS-II GLI"
5	Mission Characteristics	Ch	"Nominal orbit:inclination=98.62(Sun-Synchronous); node =10:15-10:45 AM(descending); eccentricity=< 0.0012; altitude=803km;ground speed=6.6km/sec; revolutions per day=14+1/4"
6	Sensor	Ch	"Global Imager(GLI)"
7	Sensor Characteristics	Ch	"1km:Number of bands = 30,250m:Number of bands = 6; 1km:Number of detectors per bands = 12,250m:Number of detectors per bands = 48;1km bits per pixel = 13,250m:bits per pixel = 12;Scan period = 1.8sec;1km:bit rate = 3.8676 Mbit/sec,250m:bit rate = 60Mbit/sec"
8	Data type	Ch	Data type (the name defined by area coverage, spatial resolution, and data storing format) "scene 1km" : scene data (1km resolution) "scene 250m" : scene data (250m resolution) "path" : path data (1 orbit) "segment" : atmospheric segment type data (0.25deg (typically) grid global data) "global" : 1km global data consisted by Polar Stereographic projection (polar region) and Equi-rectangular projection (middle latitude region) "NRT" : near real time processed data
9	Data Sub-type	Ch	Product Code
10	Replacement Flag	Ch	"ORIGINAL"
11	File Size	Real	product file size with MByte unit
12	Software ID	Ch	NNX: processing program and parameter version No. NN means program version No., ver.N.N. ex.) ver.1.4 -> "14" X means parameter version No. ("A"-"Z")
13	Processing Time	Ch	process completion time obtained from computer system clock "YYYYMMDD hh:mm:ss.ttt"
14	Start Time	Ch	observation start time "YYYYMMDD hh:mm:ss.ttt"
15	End Time	Ch	observation end time "YYYYMMDD hh:mm:ss.ttt"
16	Center Time	Ch	observation center time "YYYYMMDD hh:mm:ss.ttt"
17	Orbit number	Long	only for scene/path type data (1-∞) for other type, -1 is stored
18	Upper Left Latitude	Real	(latitude, longitude) of 4 corner points of stored data

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19	Upper Left Longitude	Real	area. path data: these items are filled by "0". (not assigned)
20	Upper Right Latitude	Real	
21	Upper Right Longitude	Real	
22	Lower Left Latitude	Real	
23	Lower Left Longitude	Real	
24	Lower Right Latitude	Real	
25	Lower Right Longitude	Real	
26	Map Projection	Ch	available only for map projected products "UTM": Universal Transverse Mercator "PS" : Polar Stereographic "EQR": Equi-Rectanguler "N/A" is set in not projected products (N/A = not assigned")
27	Primary Inspection result	Ch	"G": good, "F":fair, "P":poor, "N": no good
28	QA Percent Interpolated Data	Real	Percent (%) of interpolated data
29	QA Percent Missing Data of this product	Real	Percent (%) of missing data of this product

User can find general characteristics of each products from generic header. Following search parameters are available.

- satellite name and sensor name (No.4, 6)
- processing level and product code (No.2,9)
- program version (No.12)
- GLI observation time (No.14,15,16)
- area coverage(lat., lon.) (No.18-25)
- data processing time (No.13)
- map projection method(No.26)

File size (No.11) is also included in reference to get the product.

Other characteristics are available in specific header. For example, the number of missing lines is included in specific header of scene type product.

Title, Data type and Map Projection is key parameter to define "specific header".

We have following types of specific header.

Title	Data type	Map Projection	types of specific header
GLI Level-2 data	scene 1km	N/A	scene type
		EQR or PS	mapped scene type
	scene 250m	N/A	scene type
	path	N/A	path type
	segment	EQR	segment type
	global	EQR or PS	global type
GLI Level-3Binned data	global	N/A	global binned type
		EQR or PS	global mapped binned type
GLI Level-2Map	scene	EQR or PS or UTM	TBD
GLI Level-3Binned Map	global	EQR or PS	TBD

3. Level-2A Data

3.1 Introduction

Level-2A product is generated from Level-1B and cloud flag products. This product is radiance data (not geophysical parameter calculated). There are 2 types of Level-2A products in GLI.

- Level-2A_OA : for ocean and atmosphere
- Level-2A_LC : for land and cryosphere

Level-2A data is common and basic products for many Level-2 products.

Level-2A_OA is one-path data which means scene-connected data (Level-1B is defined as scene product). Map projection is not performed. 4 pixel and line sampling is done. All GLI channels except 250m resolution ch. are included. (ch.1-19, 24-36 : although ch.28, 29 are 250m resolution, 2km sampled data are also acquired) Some tables which is useful for following ocean and atmosphere processing, cloud flag and land-water flag are attached.

Level-2A_LC is global full resolution map-projected data. Level-2A_LC is separated 56 localized areas because of easy handling for file size. Polar-stereographic projection is done in polar region and separated 4 areas. Middle latitude region is equi-rectangular grid and separated 48 areas (30deg. x 30deg.). The resolution is about 1km. The channels necessary for land and cryosphere algorithms are included. Cloud flag and land-water flag are attached.

3.2 Level-2A_OA

Level-2A_OA product is one path data, scene connected. Level-1B scene size is about 1600km x 1600km and there is some overlapped lines between some scenes. In Level-2A_OA data, the scene is connected and overlapped lines are eliminated as far as tilt angle is same. We call the series of scene which tilt angle is same as "tilt segment". Level-2A_OA consists of several tilt segments. MTIR ch. data are filled in path, but VNIR and SWIR data are filled in only half path because they are worked only in daytime.

Level-2A_OA data is 4(default) pixel and line sampled against 1km resolution. Ch.28 and 29, which is already 2km sampled, are sampled to same resolution as other 1km ch.s Totally ch. 1-19, 24-36 are stored (default).

For easy Level-2 processing, 2 tables (for atmosphere and ocean) are attached. Both table include observation time, pixel and line number, latitude and longitude, satellite zenith and azimuth angle, solar zenith and azimuth angle. The difference of each table is how to select the pixel to register to table. The pixel 4 pixel/line interval on Level-2A_OA image are selected in ocean table. The pixel corresponding to center of atmospheric segment are stored to atmospheric table, the default interval is 0.25 degree for lat. and lon.

Deviation table and cloud flag data are also stored. Deviation table has the information of removed data when sampling. This table is generated for ch.13,27,30,31,35. Cloud flag data is based on CLFLG_p product and sampled. Overlapped lines are also eliminated as same as radiance data.

And "Absolute calibration table" which enables the convert from DN(digital number) to radiance value, "Land-Water Flag", "GPS Orbit Information", etc. are copied from Level-1B data and scene connected.

3.2.1 Generic Header

See chapter 2 for the detail. Some items related this products are shown below.

data name	value
Title	"GLI Level-2A Data"
Data type	"path"
Data Sub-type	"Level-2A_OA"
Orbit Number	1 - 57
Upper Left Latitude	0 (0 means that this data has no meaning)
Upper Left Longitude	0
Upper Right Latitude	0
Upper Right Longitude	0
Lower Left Latitude	0
Lower Left Longitude	0
Lower Right Latitude	0
Lower Right Longitude	0
Map Projection	"N/A"

3.2.2 Specific Header

category	data name	type	count	contents	const.	remarks	source of data: from L1B	source of data: current process
Processing Channels	**Number of Channels**	Ch	3	ex.)32		the number of stored GLI channels		O: from CIF
	Processing Channel	Ch		ex.)1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 24 25 26 27 28 29 30 31 32 33 34 35 36		stored GLI channel No.		O: from CIF
Data Time	**Node Crossing Time**	Ch	22	YYYYMMDD hh:mm:ss.ttt		Node crossing time derived from first scene	O	O(selection)
	Start Year	Short	1			Year of start time	O	O(selection)
	Start Day	Short	1			Day-of-year of start time(January 1 is 0)	O	O(selection)
	Start Millisec	Long	1			Milliseconds-of-day of start time	O	O(selection)
	End Year	Short	1			Year of end time	O	O(selection)
	End Day	Short	1			Day-of-year of end time(January 1 is 0)	O	O(selection)
	End Millisec	Long	1			Milliseconds-of-day of end time	O	O(selection)
	Last Maneuver Start Time	Ch	19	YYYYMMDD hh:mm:ss		Last Maneuver Start Time	O	O(selection)
	Last Maneuver End Time	Ch	19	YYYYMMDD hh:mm:ss		Last Maneuver End Time	O	O(selection)
	Last Maneuver Type	Ch	4	"+dV"or"-dV"or"dI"		Last Maneuver Type. +dV:semi-major axis correction(acceleration),-dV:semi-major axis correction (deceleration),dI:inclination correction	O	O(selection)
Common Information	**Pixels per Scan Line**	Long	1	ex.)309		generally 309 = 1236 pixel / 4 (pixel interval)		O
	Pixel Offset for L2A_OA	Short	1	ex.)2		Pofs, range : 0-(Pit-1)		O: from CIF
	Line Offset for L2A_OA	Short	1	ex.)2		Lofs, range : 0-(Lit-1)		O: from CIF
	Pixel Interval for L2A_OA	Short	1	ex.)4		Pit, Pixel address = Pofs + Pit * n, (n=0,1,2,...)		O: from CIF
	Line Interval for L2A_OA	Short	1	ex.)4		Lit, Line address = Lofs + Lit * n, (n=0,1,2,...)		O: from CIF
	Pixel Interval for Ocean Supplemental Table	Short	1	ex.)16		OST_Pit, Pixel address of ocean suppl. table = Pofs + OST_Pit * n, (n=0,1,2,...)		O: from CIF
	Line Interval for Ocean Supplemental Table	Short	1	ex.)16		OST_Lit, Line address of ocean suppl. table = Lofs + OST_Lit * n, (n=0,1,2,...)		O: from CIF
	Segment Interval for Atmosphere	Real	1	ex.)4		Segment grid interval can be obtained by 1/N degree. When N=4(default), the interval is 1/4 = 0.25		O: from CIF
	Number of Scenes(L1B VNIR)	Short	1	13(usually)				O: from CIF
	Number of Scenes(L1B SWIR)	Short	1	13(usually)				O: from CIF
	Number of Scenes(L1B MTIR)	Short	1	26(usually)				O: from CIF
	Number of Scenes(L1B Scan	Short	1	13(usually)				O: from CIF
	Number of Scenes(L1B Cloud Flag)	Short	1	26(usually)				O: from CIF
	Number of Tilt Segments	Short	1	1-		Total number of tilt segments		O
	VNIR Channel Number	Ch	47	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19	const	GLI channel No. categorized to VNIR		O
	SWIR Channel Number	Ch	17	24 25 26 27 28 29	const	GLI channel No. categorized to SWIR		O
	MTIR Channel Number	Ch	20	30 31 32 33 34 35 36	const	GLI channel No. categorized to MTIR		O
	Deviation Table Channels	Short	1	5		Total number of deviation tables		O: from CIF
	Deviation Channels 1	Short	1	13		GLI channel No. of deviation table		O: from CIF
	Deviation Channels 2	Short	1	27		GLI channel No. of deviation table		O: from CIF
	Deviation Channels 3	Short	1	30		GLI channel No. of deviation table		O: from CIF
	Deviation Channels 4	Short	1	31		GLI channel No. of deviation table		O: from CIF
	Deviation Channels 5	Short	1	35		GLI channel No. of deviation table		O: from CIF
Level-1B Information	**Software ID(L1B)**	Ch	11	"UV********"		Level-1B processing software version ID. If version ID is different between inputted data, warning message is outputted, but L2A_OA data is created.	O	O(selection)
Cloud flag Information	**Software ID(cloud flag)**	Ch	4	"NNNX"		Cloud flag processing software version (N.N) and parameter version (X). If version ID is different between inputted data, warning message is outputted, but L2A_OA data is created.	O	O(selection)

category	data name	type	count	contents	const.	remarks	source of data	
							from L1B	current process
Data Quality#1	**Lines per Tilt #1**	Long	1					O
- #n	**Missing Packets #1**	Long	1				O	O
(n=No. of tilt seg)	**Missing Lines #1**	Long	1				O	O
	Missing Scenes #1	Long	1					O
	gps_flag #1	Ch	4	"OK","NG","MIX"		"OK": GPS data is available for all lines. "NG": GPS data is NOT available for all line "MIX": GPS data is available for some lines.	O	O
Tilt segment time	**TS Start Time #1**	Ch	22	YYYYMMDD hh:mm:ss.ttt				O
	TS End Time #1	Ch	22	YYYYMMDD hh:mm:ss.ttt				O
	TS Center Time #1	Ch	22	YYYYMMDD hh:mm:ss.ttt				O
File Metrix#1-#n	**Saturated Pixels #1**	Long	32			Saturated Pixels for each channels		O
(n=No. of tilt seg)	**Non-Saturated Pixels #1**	Long	32			Non-saturated Pixels for each channels		O
Tilt segment	**Latitude Units #1**	Ch	14	"degrees North"	const			O
position	**Longitude Units #1**	Ch	13	"degrees East"	const			O
#1-#n	**Tilt Segment Center Latitude #1**	Real	1					O
(n=No. of tilt seg)	**Tilt Segment Center Longitude #1**	Real	1					O
	Upper Left Latitude #1	Real	1					O
	Upper Left Longitude #1	Real	1					O
	Upper Right Latitude #1	Real	1					O
	Upper Right Longitude #1	Real	1					O
	Lower Left Latitude #1	Real	1					O
	Lower Left Longitude #1	Real	1					O
	Lower Right Latitude #1	Real	1					O
	Lower Right Longitude #1	Real	1					O
	Orbit Node Longitude #1	Real	1				O	
	Start path number #1	Short	1				O	O(selection)
	Start argument of Latitude #1	Real	1				O	O(selection)
	End path number #1	Short	1				O	O(selection)
	End argument of Latitude #1	Real	1				O	O(selection)
GLI Image	**VNIR Flag #1**	Ch	1	1:data exist, 0:no data				O
Information	**SWIR Flag #1**	Ch	1	1:data exist, 0:no data				O
#1-#n	**MTIR Flag #1**	Ch	1	1:data exist, 0:no data				O
(n=No. of tilt seg)	**Cloud Flag #1**	Ch	1	1:data exist, 0:no data				O
	VNIR Lines #1	Long	1			Total line number of VNIR image		O
	SWIR Lines #1	Long	1			Total line number of SWIR image		O
	MTIR Lines #1	Long	1			Total line number of MTIR image		O
	Cloud Lines #1	Long	1			Total line number of cloud flag data		O
	VNIR Lines Offset #1	Long	1			difference between VNIR image line No. and virtual line No. using in supplemental table		O
	SWIR Lines Offset #1	Long	1			difference between SWIR image line No. and virtual line No. using in supplemental table		O
	MTIR Lines Offset #1	Long	1			difference between MTIR image line No. and virtual line No. using in supplemental table		O
	Cloud Lines Offset #1	Long	1			difference between cloud flag data line No. and virtual line No. using in supplemental table		O
	No. of Ocean Table Elements #1	Short	1	9	const			O
	Ocean Table Lines #1	Long	1			Total line number / line interval of ocean supplemental table + 1		O
	Ocean Table Pixels #1	Long	1			Total pixel number / pixel interval of ocean supplemental table + 1		O
	No. of Atmosphere Table Elements #1	Short	1	9	const			O
	Atmosphere Table Records #1	Long	1					O

3.2.3 Body part

All V group data shown below is stored under "Tilt Segment#n" V group, which is created as much as the number of tilt segment.
In the V group shown below #1 is used as an example.

V group name: Tilt Segment #1 - Tilt Segment #n
VG class name: Tilt_Segment_Data

p : Number of pixels per line("Pixels per Scan Line" in Global Attributes)
lv#1 : Number of lines per current tilt segment("VNIR Lines #1" in Global Attributes)
ls#1 : Number of lines per current tilt segment("SWIR Lines #1" in Global Attributes)
lm#1 : Number of lines per current tilt segment("MTIR Lines #1" in Global Attributes)
lc#1 : Number of lines per current tilt segment("Cloud Lines #1" in Global Attributes)
po#1 : Number of pixels for ocean supplemental table("Ocean Table Pixels #1" in Global Attributes)
lo#1 : Number of lines per current tilt segment("Ocean Table Lines #1" in Global Attributes)
ar#1 : Number of records per current tilt segment("Atmosphere Table Records #1" in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimensi [dim. name]	type	attribute long_name	attribute valid_range	attribute units	remarks	source of data from L1B	source of data current process
GLI Level-2A_OA Data #1 [line data]	**GLI L2A_OA ch.1 data**	**l2a_oa_ch1 #1**	lv#1[lines_vn_#1]	p[pxls]			Ushort	Level-2A_OA ch.1 data, #1			VNIR	O	O(selection)
	GLI L2A_OA ch.2 data	**l2a_oa_ch2 #1**	lv#1[lines_vn_#1]	p[pxls]			Ushort	Level-2A_OA ch.2 data, #1			VNIR	O	O(selection)
	GLI L2A_OA ch.3 data	**l2a_oa_ch3 #1**	lv#1[lines_vn_#1]	p[pxls]			Ushort	Level-2A_OA ch.3 data, #1			VNIR	O	O(selection)
	GLI L2A_OA ch.4 data	**l2a_oa_ch4 #1**	lv#1[lines_vn_#1]	p[pxls]			Ushort	Level-2A_OA ch.4 data, #1			VNIR	O	O(selection)
	GLI L2A_OA ch.5 data	**l2a_oa_ch5 #1**	lv#1[lines_vn_#1]	p[pxls]			Ushort	Level-2A_OA ch.5 data, #1			VNIR	O	O(selection)
	GLI L2A_OA ch.6 data	**l2a_oa_ch6 #1**	lv#1[lines_vn_#1]	p[pxls]			Ushort	Level-2A_OA ch.6 data, #1			VNIR	O	O(selection)
	GLI L2A_OA ch.7 data	**l2a_oa_ch7 #1**	lv#1[lines_vn_#1]	p[pxls]			Ushort	Level-2A_OA ch.7 data, #1			VNIR	O	O(selection)
	GLI L2A_OA ch.8 data	**l2a_oa_ch8 #1**	lv#1[lines_vn_#1]	p[pxls]			Ushort	Level-2A_OA ch.8 data, #1			VNIR	O	O(selection)
	GLI L2A_OA ch.9 data	**l2a_oa_ch9 #1**	lv#1[lines_vn_#1]	p[pxls]			Ushort	Level-2A_OA ch.9 data, #1			VNIR	O	O(selection)
	GLI L2A_OA ch.10 data	**l2a_oa_ch10 #1**	lv#1[lines_vn_#1]	p[pxls]			Ushort	Level-2A_OA ch.10 data, #1			VNIR	O	O(selection)
	GLI L2A_OA ch.11 data	**l2a_oa_ch11 #1**	lv#1[lines_vn_#1]	p[pxls]			Ushort	Level-2A_OA ch.11 data, #1			VNIR	O	O(selection)
	GLI L2A_OA ch.12 data	**l2a_oa_ch12 #1**	lv#1[lines_vn_#1]	p[pxls]			Ushort	Level-2A_OA ch.12 data, #1			VNIR	O	O(selection)
	GLI L2A_OA ch.13 data	**l2a_oa_ch13 #1**	lv#1[lines_vn_#1]	p[pxls]			Ushort	Level-2A_OA ch.13 data, #1			VNIR	O	O(selection)
	GLI L2A_OA ch.14 data	**l2a_oa_ch14 #1**	lv#1[lines_vn_#1]	p[pxls]			Ushort	Level-2A_OA ch.14 data, #1			VNIR	O	O(selection)
	GLI L2A_OA ch.15 data	**l2a_oa_ch15 #1**	lv#1[lines_vn_#1]	p[pxls]			Ushort	Level-2A_OA ch.15 data, #1			VNIR	O	O(selection)
	GLI L2A_OA ch.16 data	**l2a_oa_ch16 #1**	lv#1[lines_vn_#1]	p[pxls]			Ushort	Level-2A_OA ch.16 data, #1			VNIR	O	O(selection)
	GLI L2A_OA ch.17 data	**l2a_oa_ch17 #1**	lv#1[lines_vn_#1]	p[pxls]			Ushort	Level-2A_OA ch.17 data, #1			VNIR	O	O(selection)
	GLI L2A_OA ch.18 data	**l2a_oa_ch18 #1**	lv#1[lines_vn_#1]	p[pxls]			Ushort	Level-2A_OA ch.18 data, #1			VNIR	O	O(selection)
	GLI L2A_OA ch.19 data	**l2a_oa_ch19 #1**	lv#1[lines_vn_#1]	p[pxls]			Ushort	Level-2A_OA ch.19 data, #1			VNIR	O	O(selection)
	GLI L2A_OA ch.24 data	**l2a_oa_ch24 #1**	ls#1[lines_sw_#1]	p[pxls]			Ushort	Level-2A_OA ch.24 data, #1			SWIR	O	O(selection)
	GLI L2A_OA ch.25 data	**l2a_oa_ch25 #1**	ls#1[lines_sw_#1]	p[pxls]			Ushort	Level-2A_OA ch.25 data, #1			SWIR	O	O(selection)
	GLI L2A_OA ch.26 data	**l2a_oa_ch26 #1**	ls#1[lines_sw_#1]	p[pxls]			Ushort	Level-2A_OA ch.26 data, #1			SWIR	O	O(selection)
	GLI L2A_OA ch.27 data	**l2a_oa_ch27 #1**	ls#1[lines_sw_#1]	p[pxls]			Ushort	Level-2A_OA ch.27 data, #1			SWIR	O	O(selection)
	GLI L2A_OA ch.28 data	**l2a_oa_ch28 #1**	ls#1[lines_sw_#1]	p[pxls]			Ushort	Level-2A_OA ch.28 data, #1			SWIR	O	O(selection)
	GLI L2A_OA ch.29 data	**l2a_oa_ch29 #1**	ls#1[lines_sw_#1]	p[pxls]			Ushort	Level-2A_OA ch.29 data, #1			SWIR	O	O(selection)
	GLI L2A_OA ch.30 data	**l2a_oa_ch30 #1**	lm#1[lines_mt_#1]	p[pxls]			Ushort	Level-2A_OA ch.30 data, #1			MTIR	O	O(selection)
	GLI L2A_OA ch.31 data	**l2a_oa_ch31 #1**	lm#1[lines_mt_#1]	p[pxls]			Ushort	Level-2A_OA ch.31 data, #1			MTIR	O	O(selection)
	GLI L2A_OA ch.32 data	**l2a_oa_ch32 #1**	lm#1[lines_mt_#1]	p[pxls]			Ushort	Level-2A_OA ch.32 data, #1			MTIR	O	O(selection)
	GLI L2A_OA ch.33 data	**l2a_oa_ch33 #1**	lm#1[lines_mt_#1]	p[pxls]			Ushort	Level-2A_OA ch.33 data, #1			MTIR	O	O(selection)
	GLI L2A_OA ch.34 data	**l2a_oa_ch34 #1**	lm#1[lines_mt_#1]	p[pxls]			Ushort	Level-2A_OA ch.34 data, #1			MTIR	O	O(selection)
	GLI L2A_OA ch.35 data	**l2a_oa_ch35 #1**	lm#1[lines_mt_#1]	p[pxls]			Ushort	Level-2A_OA ch.35 data, #1			MTIR	O	O(selection)
	GLI L2A_OA ch.36 data	**l2a_oa_ch36 #1**	lm#1[lines_mt_#1]	p[pxls]			Ushort	Level-2A_OA ch.36 data, #1			MTIR	O	O(selection)
Ocean Supplemental Table	**Observation date**	**o_scan_time #1**	lo#1[ocean_lines_#1]	po#1[ocean_pxls]			Double	Ocean Grid Scan-line Time, #1		day(MJD)	MJD expression. The data observed same scan equals same		O
	Pixel No.	**o_pxl_no #1**	po#1[ocean_pxls]				Short	Ocean Grid Pixel Number, #1			on L2A_OA image coordinate		O
	Line No.	**o_line_no #1**	lo#1[ocean_lines_#1]				Short	Ocean Grid Line Number, #1			on L2A_OA image coordinate		O
	Latitude	**o_lat #1**	lo#1[ocean_lines_#1]	po#1[ocean_pxls]			Real	Ocean Grid Latitude, #1	(-90.0, 90.0)	deg	latitude of sampled point. pseudo-affine transformation is used for interpolation.		O
	Longitude	**o_lon #1**	lo#1[ocean_lines_#1]	po#1[ocean_pxls]			Real	Ocean Grid Longitude, #1	(-180.0, 180.0)	deg	longitude of sampled point. pseudo-affine transformation is used for interpolation.		O
	Satellite Zenith Angle	**o_sat_theta #1**	lo#1[ocean_lines_#1]	po#1[ocean_pxls]			Real	Ocean Grid Satellite Zenith Angle, #1	(0.0, 180.0)	deg	from L1B "solar/satellite angle information". bi-linear is used for interpolation.		O
	Satellite Azimuth Angle	**o_sat_phai #1**	lo#1[ocean_lines_#1]	po#1[ocean_pxls]			Real	Ocean Grid Satellite Azimuth Angle, #1	(-180.0, 180.0)	deg	from L1B "solar/satellite angle information". bi-linear is used for interpolation.		O
	Solar Zenith Angle	**o_sun_theta #1**	lo#1[ocean_lines_#1]	po#1[ocean_pxls]			Real	Ocean Grid Solar Zenith Angle, #1	(0.0, 180.0)	deg	from L1B "solar/satellite angle information". bi-linear is used for interpolation.		O
	Solar Azimuth Angle	**o_sun_phai #1**	lo#1[ocean_lines_#1]	po#1[ocean_pxls]			Real	Ocean Grid Solar Azimuth Angle, #1	(-180.0, 180.0)	deg	from L1B "solar/satellite angle information". bi-linear is used for interpolation.		O
Atmosphere Supplemental Table #1	**Observation date**	**a_scan_time #1**	ar#1[atmo_#1]				Double	Atmosphere Grid Scan-line Time,		day(MJD)	MJD expression. The data observed same scan equals same		O
	Pixel No.	**a_pxl_no #1**	ar#1[atmo_#1]				Short	Atmosphere Grid Pixel Number, #1			L2A_OA pixel position obtained from (lat., lon.) by nearest neighbor		O
	Line No.	**a_line_no #1**	ar#1[atmo_#1]				Short	Atmosphere Grid Line Number, #1			L2A_OA pixel position obtained from (lat., lon.) by nearest neighbor		O

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimensi [dim. name]	type	attribute			remarks	source of data	
								long_name	valid_range	units		from L1B	current process
	Latitude	**a_lat #1**	ar#1[atmo_#1]				Real	Atmosphere Grid Latitude, #1	(-90.0, 90.0)	deg	latitude of atmospheric segment. pseudo-affine transformation is used for resampling.		O
	Longitude	**a_lon #1**	ar#1[atmo_#1]				Real	Atmosphere Grid Longitude, #1	(-180.0, 180.0)	deg	longitude of atmospheric segment. pseudo-affine transformation is used for resampling.		O
	Satellite Zenith Angle	**a_sat_theta #1**	ar#1[atmo_#1]				Real	Atmosphere Grid Satellite Zenith Angle, #1	(0.0, 180.0)	deg	from L1B "solar/satellite angle information". bi-linear is used for interpolation.		O
	Satellite Azimuth Angle	**a_sat_phai #1**	ar#1[atmo_#1]				Real	Atmosphere Grid Satellite Azimuth Angle, #1	(-180.0, 180.0)	deg	from L1B "solar/satellite angle information". bi-linear is used for interpolation.		O
	Solar Zenith Angle	**a_sun_theta #1**	ar#1[atmo_#1]				Real	Atmosphere Grid Solar Zenith Angle, #1	(0.0, 180.0)	deg	from L1B "solar/satellite angle information". bi-linear is used for interpolation.		O
	Solar Azimuth Angle	**a_sun_phai #1**	ar#1[atmo_#1]				Real	Atmosphere Grid Solar Azimuth Angle, #1	(-180.0, 180.0)	deg	from L1B "solar/satellite angle information". bi-linear is used for interpolation.		O
Deviation Table for Data #1	**Deviation 1**	**dev_1 #1**	lv#1[lines_vn_#1]	p[pxls]			Real	Deviation 1, #1			Deviation of removed pixel surrounded L2A_OA pixel		O
	Deviation 2	**dev_2 #1**	ls#1[lines_sw_#1]	p[pxls]			Real	Deviation 2, #1			Deviation of removed pixel surrounded L2A_OA pixel		O
	Deviation 3	**dev_3 #1**	lm#1[lines_mt_#1]	p[pxls]			Real	Deviation 3, #1			Deviation of removed pixel surrounded L2A_OA pixel		O
	Deviation 4	**dev_4 #1**	lm#1[lines_mt_#1]	p[pxls]			Real	Deviation 4, #1			Deviation of removed pixel surrounded L2A_OA pixel		O
	Deviation 5	**dev_5 #1**	lm#1[lines_mt_#1]	p[pxls]			Real	Deviation 5, #1			Deviation of removed pixel surrounded L2A_OA pixel		O
Cloud Flag Dataset	**cloud flag data**	**cloud_data #1**	lc#1[lines_#1]	p[pxls]			Ulong	Cloud Flag Data, #1			4byte(32bit) flag data	O	O(selection)

n : Number of lines per current tilt segment("Lines per Tilt #1" in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimensi [dim. name]	type	attribute			remarks	source of data	
								long_name	valid_range	units		from L1B	current process
ADEOS-II Raw Data #1	**Black Body Data**	**blk_data #1**	number of channels(7) [chnls]	l_mt1[lines_mt_#1]	number of samples(30) [nsampb]		Ushort	Black body data			*The line No. does NOT correspond to image line No. due to geometric correction performed in Level-1B processing. * only 1km MTIR	O	
	Deep Space Data(VNIR)	**deep_data_v #1**	number of channels(19) [chnlsv]	l_vn1[lines_vn_#1]	number of samples(28)		Ushort	Deep space data			The number of samples is 28 for 1km VNIR/SWIR, 20 for 1kmMTIR	O	
	Deep Space Data(SWIR)	**deep_data_s #1**	number of channels(4) [chnlss]	l_vn1[lines_sw_#1]	number of samples(28)		Ushort	Deep space data			The number of samples is 28 for 1km VNIR/SWIR, 20 for 1kmMTIR	O	
	Deep Space Data(MTIR)	**deep_data_mt #1**	number of channels(7) [chnlsmt]	l_vn1[lines_mt_#1]	number of samples(20) [nsampdmt]		Ushort	Deep space data			The number of samples is 28 for 1km VNIR/SWIR, 20 for 1kmMTIR	O	
	Deep Space Data(SWIR 2km sampling)	**deep_data_2km #1**	number of channels(2) [chnlsd2k]	l_sw1[lines_sw_#1]	number of samples(14) [nsampd2k]		Ushort	Deep space data for 2km			Only for 1km SWIR. The number of samples is 14	O	
	Wall Clump Data	**wall_clump #1**	number of channels(7)[chnls]	l_mt1[lines_#1]	number of samples(10) [nsampw]		Ushort	Wall clump signal			Only for 1km MTIR. The number of samples is 10	O	
Converted Telemetry #1	**Satellite Time Counter**	**sc_time #1**	n[lines_#1]				Ulong	Spacecraft counter time				O	
	GPS Timing	**GPS_timing #1**	n[lines_#1]				Real	GPS timing	(0.0, 59.999)	sec		O	
	GPS Navigation Time	**GPS_nav_time #1**	n[lines_#1]				Real	GPS navigation time	(0.0, 59.999)	sec		O	
	GPS Position	**GPS_pos #1**	n[lines_#1]	dim of vector(3)[vec]			Double	GPS position		km		O	
	GPS Velocity	**GPS_vel #1**	n[lines_#1]	dim of vector(3)[vec]			Double	GPS velocity		km/sec		O	
	Spacecraft Attitude Angle	**sc_att #1**	n[lines_#1]	dim of vector(3)[vec]			Real	Spacecraft attitude roll,pitch,yaw	(-32.7, 32.7)	deg		O	
	Spacecraft Attitude Rate	**sc_attr #1**	n[lines_#1]	dim of vector(3)[vec]			Real	Spacecraft attitude rate	(-32.7, 32.7)	deg		O	
	Orbit Number	**orbit_num #1**	n[lines_#1]				Ushort	Orbit number	(1, 57)			O	
	Orbit Timer	**orbit_timer #1**	n[lines_#1]				Ushort	Orbit timer	(1, 6054)	sec		O	
Converted Supplement #1	**Scan Start Time Offset**	**scan_off #1**	n[lines_#1]				Ulong	Scan start time offset				O	
	Operation Mode	**opr_mode #1**	n[lines_#1]				Ushort	Operation mode	(0, 4)		0: Observation mode(daylight),1:Observation mode(night), 2:Sunlight Calib., 3:Internal light Calib., 4:Electrical Calib.	O	
	Tilt Angle Flag	**tilt_flag #1**	n[lines_#1]				Ushort	Tilt angle flag	(1, 3)		1:+20deg., 2:0deg., 3:-20deg.	O	
	Tilt Angle for Scan Line	**tilt_angle #1**	n[lines_#1]				Real	Tilt angle for scan line	(-20.0, 20.0)			O	
	Scan Mirror Surface	**mirror_surface #1**	n[lines_#1]				Byte	Scan mirror	(0, 1)		0:A surface, 1:B surface	O	
	Halogen light	**halogen_light #1**	n[lines_#1]	monitor number of halogen light (2)[hal]			Real	Halogen light				O	
	Halogen Temperature	**halogen_temp #1**	n[lines_#1]	monitor number of halogen light (2)[hal]			Real	Halogen temperature		deg		O	
	Black Body Temperature	**black_temp #1**	n[lines_#1]	number of black body temperature element(5)[bbt]			Real	Black body temperature		deg		O	
	Optics Temperature	**optics_temp #1**	n[lines_#1]	number of optics temperature element (5)[opt]			Real	Optics temperature		deg		O	

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimensi [dim. name]	type	attribute			remarks	source of data	
								long_name	valid_range	units		from L1B	current process
	Diffuser Temperature	**diffuser_temp #1**	n[lines_#1]				Real	Diffuser temperature		deg		O	
	Sun Light	**sunlight #1**	n[lines_#1]	sample number of sunlight (2)[sun]			Real	Sun light				O	
	MTIR Detector Temperature	**mtdet_temp #1**	n[lines_#1]				Real	MTIR detector temperature		deg		O	
	Electric Calibration Signal	**ele_signal #1**	n[lines_#1]	number of electrical calibration signals (12)[ele]			Real	Electric calibration signal		volt		O	
	Lamp Drive Voltage 1	**lamp_vol1 #1**	n[lines_#1]				Real	Lamp drive voltage 1		volt		O	
	Lamp Drive Voltage 2	**lamp_vol2 #1**	n[lines_#1]				Real	Lamp drive voltage 2		volt		O	
Navigation #1	**Orbit Position Vector in ECR**	**orb_vec #1**	n[lines_#1]	dim of vector(3)[vec]			Real	Orbit position vector at scan line time in ECR	(-7200.0, 7200.0)	km	Satellite position in ECR reference at scan start time in every scan. This position is calculated from GPS or orbital data server by interpolation.	O	
	Orbit Velocity in ECR	**orb_vel #1**	n[lines_#1]	dim of vector(3)[vec]			Real	Orbit velocity at scan line time in ECR	(-8.0, 8.0)	km/sec	Satellite position in ECR reference at scan start time in every scan. This position is calculated from GPS or orbital data server by interpolation.	O	
	Reference Sun Vector in ECR	**sun_ref #1**	n[lines_#1]	dim of vector(3)[vec]			Real	Reference Sun vector in ECR frame			Solar vector from view point to sun in ECR reference at scan start time in every scan.	O	
	Satellite Attitude Angle	**att_ang #1**	n[lines_#1]	dim of vector(3)[vec]			Real	Computed roll,pitch,yaw	(-180.0, 180.0)	degrees	Satellite attitude at scan start time in every scan.	O	
Sensor Tilt #1	**Tilt Status**	**tilt_seg #1**	(1)(no name)				Short	Tilt segment number	(0, 2)			O	
GPS Orbit Data #1	**Number of GPS data**	**gps_points #1**	(1)(no name)				Long	Number of GPS data			This block is connected "orbit data(GPS works)" on L1B with reference to "GPS navigation time".	O	O(selection)
	UTC-TAI	**utc_tai #1**	(1)(no name)				Long	UTC-TAI				O	O(selection)
(when GPS works right)	**UT1R-TAI**	**ut1r_tai #1**	(1)(no name)				Double	UT1R-TAI				O	O(selection)
	Polar Motion Parameters	**polar_motion #1**	(2)[pairs]				Double	Polar motion parameters				O	O(selection)
	GPS Navigation Time	**GPS_nav_dat #1**	number of GPS data[lgpsdata] ("gps_points				Double	GPS navigation time				O	O(selection)
	GPS Position	**GPS_pos_dat #1**	number of GPS data[lgpsdata] ("gps_points	dim of vector(3)[vec]			Double	GPS position		km		O	O(selection)
	GPS Velocity	**GPS_vel_dat #1**	number of GPS data[lgpsdata] ("gps_points	dim of vector(3)[vec]			Double	GPS velocity		km/sec		O	O(selection)
Orbit Data #1	**Number of Orbit Data Record**	**num_rec #1**	(1)(no name)				Long	Number of records			One record of this data covers 1 day (UTC0:00-23:59). Usually only one record is stored here, but if the data include day boundary, 2 records are stored. "Orbit data start date" and "Number of records" on L1B are used to create this block.	O	O(selection)
	Orbit Data Precision	**precision #1**	number of orbit data record [odatas_#1] ("num_rec #1")				Short	Orbit data precision			prediction value or determined value. In L2A_OA, determined value is stored.	O	O(selection)
(when GPS doesn't work)	**UTC-TAI**	**o_utc_tai #1**	number of orbit data record [odatas_#1] ("num_rec #1")				Long	UTC-TAI		sec		O	O(selection)
	UT1R-TAI	**o_ut1r_tai #1**	number of orbit data record [odatas_#1] ("num_rec #1")				Double	UT1R-TAI		sec		O	O(selection)
	Polar Motion Parameters	**o_polar_motion #**	number of orbit data record [odatas_#1] ("num_rec #1")	(2)[pairs]			Double	Polar motion parameters			Xpm,Ypm	O	O(selection)
	Orbit Data Start Time	**o_start_date #1**	number of orbit data record [odatas_#1] ("num_rec #1")	(22)(no name)			Ch	Orbit data start date			YYYYYMMDD hh:mm:ss.000 (UTC)	O	O(selection)
	Orbit Data Interval	**o_interval #1**	number of orbit data record [odatas_#1] ("num_rec #1")				Double	Data interval time		sec	Data interval in one record(60sec.)	O	O(selection)
	Number of Orbit Data	**o_num_points #1**	number of orbit data record [odatas_#1] ("num_rec #1")				Long	Number of data points			Number of orbit data in one record(1440)	O	O(selection)
	Spacecraft Position	**o_sc_pos #1**	number of orbit data record [odatas_#1] ("num_rec #1")	number of data[odatap] ("o_num_points")	dim of vector(3)[vec]		Double	Spacecraft position	(-7200.0, 7200.0)	km		O	O(selection)
	Spacecraft Velocity	**o_sc_vel #1**	number of orbit data record [odatas_#1] ("num_rec #1")	number of data[odatap] ("o_num_points")	dim of vector(3)[vec]		Double	Spacecraft velocity	(-8.0, 8.0)	km/sec		O	O(selection)
Land-Ocean Flag #1	**land value**	**land_value #1**					Byte	Land pixel value			1(const.) the value that means 'Land'	O	
	water value	**water_value #1**					Byte	Water pixel value			0(const.) the value that means 'Water'	O	
	land/ocean flag	**L0_flag #1**	n[lines_#1]	p[pxls]			Byte	Land-Water flag image	(0, 1)		Land/Water flag for each pixel	O	O(selection)
Absolute Calibration Table #1	**absolute calibration coefficient (VNIR)**	**gcal_v #1**	number of channels(23) [chnlsvpw]				Real	Gcal			For VNIR. The number of VNIR channels is 4ch.s larger than actual number because of piecewise linear channels. The storing order is ch. 1 2 3 4H 4N 5H 5N 6 7H 7N 8H 8N 9 10 11 ... 17 18 19 (H:high gain, N:normal gain)	O	
	absolute calibration coefficient (SWIR)	**gcal_s #1**	number of channels(4) [chnlss]				Real	Gcal			For SWIR	O	

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimensi [dim. name]	type	attribute			remarks	source of data	
								long_name	valid_range	units		from L1B	current process
	absolute calibration coefficient (SWIR 2km)	**gcal_2km #1**	number of channels(2) [chnls2k]				Real	Gcal 2km			For SWIR 2km	O	
	absolute calibration coefficient (VNIR)	**gsys_v #1**	number of channels(23) [chnlsvpw]				Real	Gsys			For VNIR. The number of VNIR channels is 4ch.s larger than actual number because of piecewise linear channels. The storing order is ch. 1 2 3 4H 4N 5H 5N 6 7H 7N 8H 8N 9 10 11 ... 17 18 19 (H:high gain, N:normal gain)	O	
	absolute calibration coefficient (SWIR)	**gsys_s #1**	number of channels(4) [chnlss]				Real	Gsys			For SWIR	O	
	absolute calibration coefficient (SWIR 2km)	**gsys_2km #1**	number of channels(2) [chnls2k]				Real	Gsys 2km			For SWIR 2km	O	
	absolute calibration table	**c1 #1**	number of channels(7) [chnlsmt]				Real	C1			For MTIR	O	

3.3 Level-2A_LC

Level-2A_LC is map-projected global full resolution product. This data is generated each 16days and most cloud-free pixel is selected, mosaicking is performed.

Level-2A_LC product consists of 56 areas. Each area is an independent file. (Fig.3.3-1)

Northern and southern 4 area is polar-stereographic projected. Each area is separated in 90 deg. longitude. The resolution is about 0.5 arc-min.

Middle 48 areas are equi-rectangular grid. The area size is 30deg. lat. by 30deg. lon. The resolution is 0.5 arc-min.

Each pixel has solar and satellite zenith/azimuth angle, observation date. This is because adjacent pixels have no relationship each other. In 16 days, there are 4 opportunities in one ground point at least because ADEOS-II recurrent period is 4 days. The time difference of adjacent pixels are 16 days in maximum. The observation condition of each pixel is different.

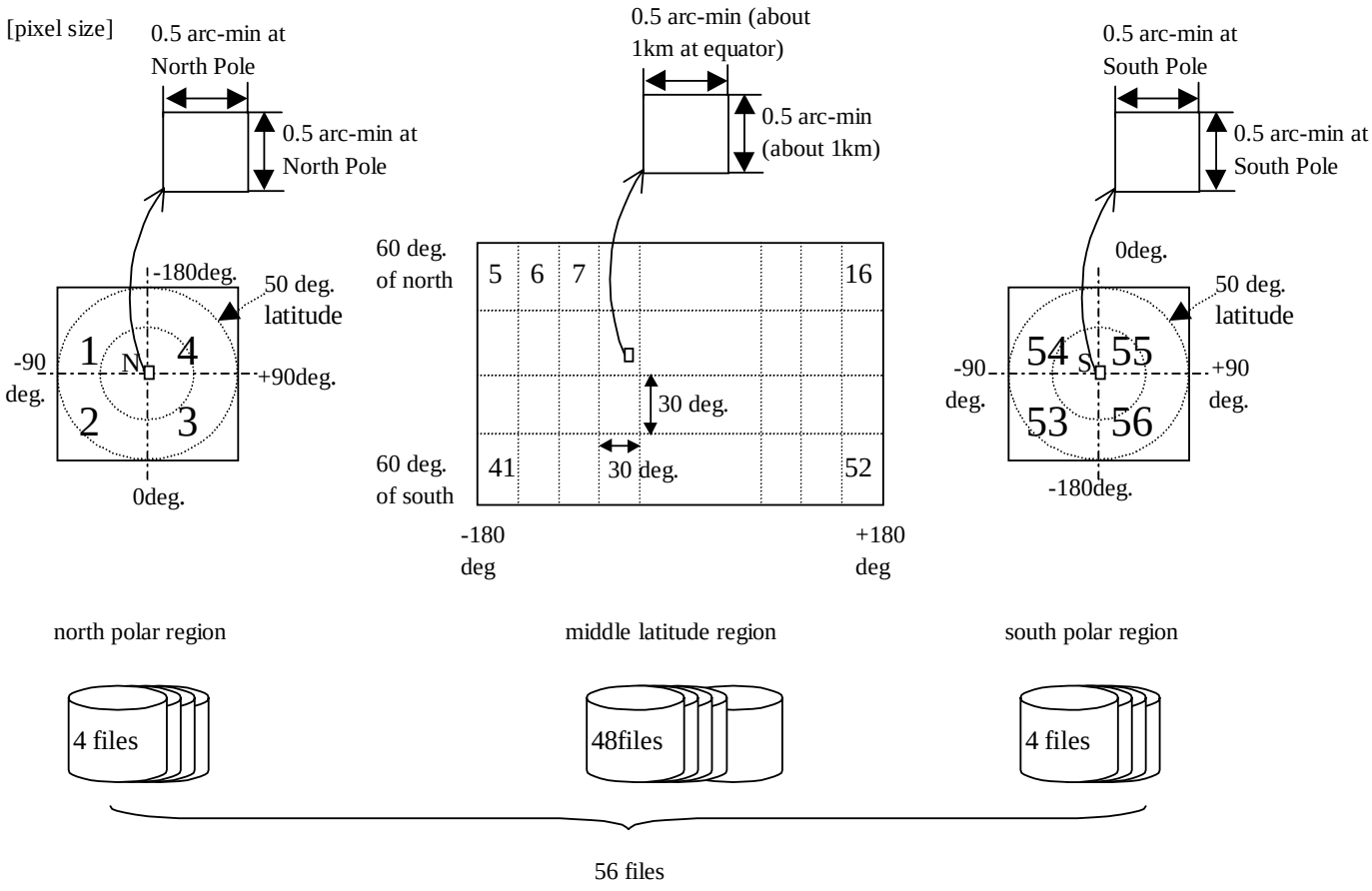


Fig.3.3-1 Level-2A_LC Area Separation

3.3.1 Generic Header

See chapter 2 for the detail. Some items related this products are shown below.

For north polar region:

data name	value
Title	"GLI Level-2A Data"
Data type	"global"
Data Sub-type	"Level-2A_LC"
Orbit Number	-1 (-1 means that this data has no meaning)
Upper Left Latitude	* (the value depends on area No.)
Upper Left Longitude	*
Upper Right Latitude	*
Upper Right Longitude	*
Lower Left Latitude	*
Lower Left Longitude	*
Lower Right Latitude	*
Lower Right Longitude	*
Map Projection	"PS"

For middle latitude region:

data name	value
Title	"GLI Level-2A Data"
Data type	"global"
Data Sub-type	"Level-2A_LC"
Orbit Number	-1 (-1 means that this data has no meaning)
Upper Left Latitude	* (the value depends on area No.)
Upper Left Longitude	*
Upper Right Latitude	*
Upper Right Longitude	*
Lower Left Latitude	*
Lower Left Longitude	*
Lower Right Latitude	*
Lower Right Longitude	*
Map Projection	"EQR"

For south polar region:

data name	value
Title	"GLI Level-2A Data"
Data type	"global"
Data Sub-type	"Level-2A_LC"
Orbit Number	-1 (-1 means that this data has no meaning)
Upper Left Latitude	* (the value depends on area No.)
Upper Left Longitude	*
Upper Right Latitude	*
Upper Right Longitude	*
Lower Left Latitude	*
Lower Left Longitude	*
Lower Right Latitude	*
Lower Right Longitude	*
Map Projection	"PS"

3.3.2 Specific Header

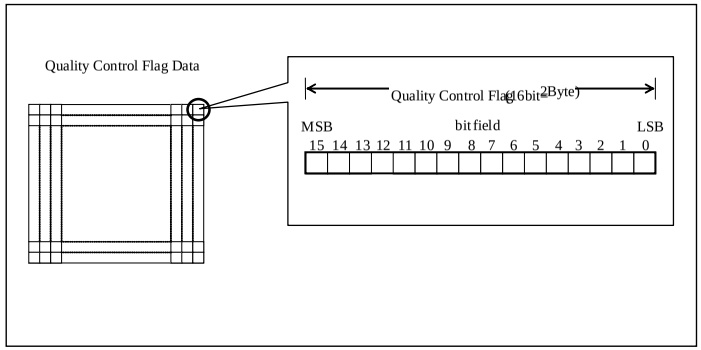
category	data name	type	count	contents	const.	remarks
Processing Channels	Number of Channels	Ch	3	17		the number of channels stored in this file
	Processing Channel	Ch	variable	1 5 8 13 15 17 19 24 26 27 28 29 30 31 34 35 36		the channel number stored in this file
Data Time	Start Year	Short	1			year of Start Time
	Start Day	Short	1			day-of-year of Start Time(0 on Jan. 1st)
	Start Millisec	Long	1			milliseconds-of-day of Start Time
	End Year	Short	1			year of End Time
	End Day	Short	1			day-of-year of End Time(0 on Jan. 1st)
	End Millisec	Long	1			milliseconds-of-day of End Time
Area Coordinates	Latitude Units	Ch	14	"degrees North"	const.	Units used for all latitude values in this product
	Longitude Units	Ch	13	"degrees East"	const.	Units used for all longitude values in this product
Map Information	Area Number	Ushort	1	1-56		area number of this data defined from1 to 56
	Number of Columns	Long	1	depending on map projection method		the number of pixels per 1 line
	Number of Lines	Long	1	depending on map projection method		the number of lines
	Resampling Method	Ch	3	"NN"	const.	Nearest Neighbor
	Earth Ellipsoid Type	Ch	1	"WGS84"	const.	
	Reference Longitude	Real	1	(ex.)0.0		"0.0"(dummy) is stored for EQR projection.
	grid interval	Real	1	(ex.)0.5		[unit] arc-minute of angle

3.3.3 Body part

Vgroup name [VG class name]	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
							long_name	valid_range	units	
GLI Level-2A_LC Data [Map Projected Data]	l2a_lc_ch1	the number of lines[lines]	the number of pixels[pixels]			Ushort	Level-2A_LC ch.1 reflectance	(0, 20000)		physical value=0.0001*storing value
	l2a_lc_ch5	the number of lines[lines]	the number of pixels[pixels]			Ushort	Level-2A_LC ch.5 reflectance	(0, 20000)		physical value=0.0001*storing value
	l2a_lc_ch8	the number of lines[lines]	the number of pixels[pixels]			Ushort	Level-2A_LC ch.8 reflectance	(0, 20000)		physical value=0.0001*storing value
	l2a_lc_ch13	the number of lines[lines]	the number of pixels[pixels]			Ushort	Level-2A_LC ch.13 reflectance	(0, 20000)		physical value=0.0001*storing value
	l2a_lc_ch15	the number of lines[lines]	the number of pixels[pixels]			Ushort	Level-2A_LC ch.15 reflectance	(0, 20000)		physical value=0.0001*storing value
	l2a_lc_ch17	the number of lines[lines]	the number of pixels[pixels]			Ushort	Level-2A_LC ch.17 reflectance	(0, 20000)		physical value=0.0001*storing value
	l2a_lc_ch19	the number of lines[lines]	the number of pixels[pixels]			Ushort	Level-2A_LC ch.19 reflectance	(0, 20000)		physical value=0.0001*storing value
	l2a_lc_ch24	the number of lines[lines]	the number of pixels[pixels]			Ushort	Level-2A_LC ch.24 reflectance	(0, 20000)		physical value=0.0001*storing value
	l2a_lc_ch26	the number of lines[lines]	the number of pixels[pixels]			Ushort	Level-2A_LC ch.26 reflectance	(0, 20000)		physical value=0.0001*storing value
	l2a_lc_ch27	the number of lines[lines]	the number of pixels[pixels]			Ushort	Level-2A_LC ch.27 reflectance	(0, 20000)		physical value=0.0001*storing value
	l2a_lc_ch28	the number of lines[lines]	the number of pixels[pixels]			Ushort	Level-2A_LC ch.28 reflectance	(0, 20000)		physical value=0.0001*storing value (2km sampled data is used)
	l2a_lc_ch29	the number of lines[lines]	the number of pixels[pixels]			Ushort	Level-2A_LC ch.29 reflectance	(0, 20000)		physical value=0.0001*storing value (2km sampled data is used)
	l2a_lc_ch30	the number of lines[lines]	the number of pixels[pixels]			Ushort	Level-2A_LC ch.30 radiance	(0, 4095)	w/m^2/micro-m/sr	physical value=c1[0]*storing value(same as L1B DN)
	l2a_lc_ch31	the number of lines[lines]	the number of pixels[pixels]			Ushort	Level-2A_LC ch.31 radiance	(0, 4095)	w/m^2/micro-m/sr	physical value=c1[1]*storing value(same as L1B DN)
	l2a_lc_ch34	the number of lines[lines]	the number of pixels[pixels]			Ushort	Level-2A_LC ch.34 radiance	(0, 4095)	w/m^2/micro-m/sr	physical value=c1[4]*storing value(same as L1B DN)
	l2a_lc_ch35	the number of lines[lines]	the number of pixels[pixels]			Ushort	Level-2A_LC ch.35 radiance	(0, 4095)	w/m^2/micro-m/sr	physical value=c1[5]*storing value(same as L1B DN)
	l2a_lc_ch36	the number of lines[lines]	the number of pixels[pixels]			Ushort	Level-2A_LC ch.36 radiance	(0, 4095)	w/m^2/micro-m/sr	physical value=c1[6]*storing value(same as L1B DN)
	sat_zenith	the number of lines[lines]	the number of pixels[pixels]			Ushort	Satellite Zenith Angle	(0, 18000)	Degree	physical value=0.01*storing value
	sun_zenith	the number of lines[lines]	the number of pixels[pixels]			Ushort	Solar Zenith Angle	(0, 18000)	Degree	physical value=0.01*storing value
	sat_azimuth	the number of lines[lines]	the number of pixels[pixels]			Short	Satellite Azimuth Angle	(-18000, 18000)	Degree	physical value=0.01*storing value
	sun_azimuth	the number of lines[lines]	the number of pixels[pixels]			Short	Solar Azimuth Angle	(-18000, 18000)	Degree	physical value=0.01*storing value
	obs_time	the number of lines[lines]	the number of pixels[pixels]			Double	Observation time		day(MJD)	Observation time of each pixel. MJD expression
Cloud Flag Dataset [Map Projected Data]	cloud_data	the number of lines[lines]	the number of pixels[pixels]			Ulong	Cloud Flag Data			4byte(32bit) flag see 4.2.4 (CLFLG_p)
Quality Flag [Map Projected Data]	qc_flag	the number of lines[lines]	the number of pixels[pixels]			Ushort	Quality Control Flag			16bit quality control flag(including land/water flag) for each pixels see Table 3.3-1

Table 3.3-1 QUALITY CONTROL FLAG BIT CONFIGURATION

bit field	Description	Key
0	Composite method	0 = CMVC / 1 = other method
1	Land/Water flag(from L/O flag)	0 = Ocean or nodata / 1 = Land
2-4	Surface classification flag(from CTSK1)	000 = snow over ice 001 = sea ice 010 = cloud shadow 011 = land 100 = open water 101 = snow over land 111 = spare
5-15	spare	



4. Level-2 Data

4.1 Introduction

Level-2 product is geophysical parameter data. This is generated mostly from Level-2A and from Level-1B products. We can define 4 discipline, atmosphere, ocean, land, cryosphere in GLI project and 7 types in total.

- Atmosphere (pixel by pixel analysis)
- Atmosphere (segment analysis)
- Ocean (full resolution)
- Ocean (low resolution)
- Land (global)
- Cryosphere (global)
- Cryosphere (scene)

Atmosphere has 2 types of file. One is pixel by pixel, which uses Level-1B data directly. Another is segment analysis, which uses atmospheric segment data (see 8.2) and done once per 4 days.

Ocean also has 2 types. One is full resolution type, which uses Level-1B data. Another is low resolution type, which is derived from Level-2A_OA data (see 3.2).

Land has only 1 type, global. This type is based on Level-2A_LC data (see 3.3)

Cryosphere has 2 types, global and scene. Global type is derived from Level-2A_LC and scene type is from Level-1B.

4.2 Atmosphere (pixel by pixel analysis)

Each product file has only one geophysical parameter. Totally 2 product files exist. (Table 4.2-1)

Table 4.2-1 List of atmosphere (pixel by pixel analysis) Level-2 products

No.	Classification	Product Code	Description
1	Cloud property	CLFLG_p	Cloud flag
2		CLOP_p	Cloud Optical Thickness
3	Water vapor property	PRCPW_p	Precipitable water

The file structure of this type is similar to Level-1B. You can regard these product as Level-1B but the radiance data is replaced to geophysical parameter. Some parameters in Level-1B are eliminated.

The scene size is about 1600km x 1680km. Map projection is not done.

4.2.1 Generic Header

See chapter 2 for the detail. Some items related this products are shown below.

data name	value
Title	"GLI Level-2 Data"
Data type	"scene 1km" or "NRT"
Data Sub-type	Product Code (see Table 4.2-1)
Orbit Number	1-∞
Upper Left Latitude	* (appropriate value is set, depending on the scene)
Upper Left Longitude	*
Upper Right Latitude	*
Upper Right Longitude	*
Lower Left Latitude	*
Lower Left Longitude	*
Lower Right Latitude	*
Lower Right Longitude	*
Map Projection	"N/A"

4.2.2 Specific Header

category	data name	type	count	contents	const.	remarks	source of data: Level-1B	source of data: this process
Data Time	**Node Crossing Time**	Ch	22	YYYYMMDD hh:mm:ss.ttt		Descending node crossing time(UTC)	O	
	Start Year	Short	1			Year of the "Start Time"	O	
	Start Day	Short	1			Day-of-Year of the "Start Time"(Jan. 1 is defined as 0)	O	
	Start Millisec	Long	1			Milliseconds-of-day of the "Start Time"	O	
	End Year	Short	1			Year of the "End Time"	O	
	End Day	Short	1			Day-of-Year of the "End Time"(Jan. 1 is defined as 0)	O	
	End Millisec	Long	1			Milliseconds-of-day of the "End Time"	O	
	Last Maneuver Start Time	Ch	18	YYYYMMDD hh:mm:ss		Last Maneuver Start Time	O	
	Last Maneuver End Time	Ch	18	YYYYMMDD hh:mm:ss		Last Maneuver End Time	O	
	Last Maneuver Type	Ch	4	"+dV"or"-dV"or"dI"		Last Maneuver Type. +dV:semi-major axis correction(acceleration),-dV:semi-major axis correction (deceleration),dI:inclination correction	O	
Data Quality	**Pixels per Scan Line**	Long	1			Number of pixels per scan line(This depends on the resolution, 1km/250m/2km)		O
	Number of Scan Lines	Long	1			Number of scan lines in the scene (This is not number of lines)	O	
	Lines per Scan	Long	1	12, 48		Number of lines per scan. 12:1km, 48:250m	O	
Scene Coordinates	**Latitude Units**	Ch	14	"degrees North"	const.	Units used for all latitude values in this product	O	
	Longitude Units	Ch	13	"degrees East"	const.	Units used for all longitude values in this product	O	
	Scene Center Latitude	Real	1				O	
	Scene Center Longitude	Real	1				O	
	Orbit Node Longitude	Real	1				O	
	Start path number	Short	1				O	
	Start argument of Latitude	Real	1				O	
	End path number	Short	1				O	
	End argument of Latitude	Real	1				O	
QA/QC data (L1B succession data)	**Missing Packets**	Long	1	the number of missing packet		only 1km data.	O	
	Missing Frames	Long	1			only 250m data.	O	
	Missing Lines	Long	1	the number of missing lines			O	
	Saturated Pixels	Long	1	the number of saturated pixels			O	
	Saturated Pixels for SWIR 2km	Long	1	the number of saturated pixels for SWIR 2km		using SWIR ch.s only	O	
	Non-Saturated Pixels	Long	1	the number of non saturated pixels			O	
	Non-Saturated Pixels for SWIR 2km	Long	1	the number of non saturated pixels for SWIR 2km		using SWIR ch.s only	O	
	GPS Flag	Ch	3	"OK","NG","TE","TX"		Normal:"OK", Time retrieval from TT:"NG",Time retrieval from ST:"TX",GPSR error:"TE"	O	
	L1B Software ID	Ch					O	
	L1B Parameter Ver.	Ch					O	
QA/QC data (L2/L3 common QA data)	**Ancillary Data Characteristic**	Ch		"STD": used standard data, "SUB": used substitution data		the products using ancillary data only Worst value is set if there are several geophysical parameters are included in this product.		O
	AMSR Product Ver.	Ch				the products using AMSR products only		O
Calibration Table	**Vicarious_Calibration_Table**	Ch	27			Vicarious Calibration Table file name only CLOP_p and PRCPW_p It is not vicarious calibration, if it is NULL.		O

200A

4.2.3 Common Part(Body)

s : Number of scans("Number of Scan Lines" of Data Quality in Global Attributes)
m : Number of column direction address calculating latitude and longitude(dimension of V group "l1b_pos_samp" in Scan-Line Attribute)
n : Number of row direction address calculating latitude and longitude(dimension of V group "l1b_pos_line" in Scan-Line Attribute)
g : Number of GPS data points(V group "gps_points" in GPS Orbit Data)
o : Number of orbit data records(V group "num_rec" in Orbit Data)
nc: Number of column direction address calculating zenith/azimuth angle(dimension of Vgroup "nav_pxl" in Scan Geometry)
nr: Number of raw direction address calculating zenith/azimuth angle(dimension of Vgroup "nav_row" in Scan Geometry)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks	source of data	
								long_name	valid_range	units		Level-1B	this proc.
Scan-Line Attributes [Scan_Line_Data]	**Scan time**	**msec**	s [rec]				Long	Scan-line time, milliseconds of day	(0, 86400000)	msec	UTC. Milliseconds of day. Usual valid range is (0, 86399999), but when leap seconds is inserted, the range becomes (0, 86400000)	O	
	Scan start time	**scan_start**	s [rec]	length of strings(22)			Ch	Scan Start Time			Scan Start Time(UTC)	O	
	Missing frame flag	**miss_qual**	s [rec]				Byte	Missing frame flag				O	
	Telemetry failure flag	**eng_qual**	s [rec]				Byte	Engineering data-out-of-range flags				O	
	Block interval	**l1b_blk_int**	2 [pairs]				Short	L1B block interval (sample/line)			the interval of lat./lon. block grid	O	
	Block number	**l1b_blk_num**	2 [pairs]				Short	Number of L1B blocks (sample/line)			the number of lat./lon. blocks	O	
	Block pixel position	**l1b_pos_samp**	m [blk_samp]				Long	Column direction address of pixels			block position address for pixel direction	O	
	Block line position	**l1b_pos_line**	n [blk_line]				Long	Row direction address of pixels			block position address for line direction	O	
	Discontinuity flag for lat./lon.	**l1b_bound**	2 [pairs]				Long	Over boundary flag (latitude/longitude)			Discontinuity flag for latitude and longitude bounda	O	
	Latitude at block point	**l1b_blk_lat**	n [blk_line]	m [blk_samp]			Double	Block point latitude			Latitude at block point	O	
	Longitude at block point	**l1b_blk_lon**	n [blk_line]	m [blk_samp]			Double	Block point longitude			Longitude at block point	O	
	Affin coefficient for each block	**l1b_blk_affin**	n-1 [blk_line_m1]	m-1 [blk_samp_m1]	8 [affin]		Double	Block coefficient			Pseudo affin coefficient for each block When converting from (x,y) to (u,v), pseudo affin transformation is as follows; u = a*x*y + b*x + c*y + d, v = e*x*y + f*x + g*y + h, and storing order of coefficients is from a to h	O	
Converted Supplement [Scan_Line_Data]	**Operation mode**	**opr_mode**	s [rec]				Ushort	Operation mode	(0, 15)			O	
	Tilt angle flag	**tilt_flag**	s [rec]				Ushort	Tilt angle flag				O	
	Tilt angle	**tilt_angle**	s [rec]				Real	Tilt angle for scan line	(-20.0, 20.0)	deg		O	
	Scan mirror surface	**mirror_surface**	s [rec]				Byte	Scan mirror surface	(0, 1)			O	
	Scan angle	**scan_angle**	s [rec]	sampling No. of scan angle [sa]			Real	Scan angle				O	
Sensor Tilt [Scan_Line_Data]	**Tilt Status**	**tilt_seg**	(1)				Short	Tilt segment number	(0, 2)		0: no tilt, 1:forward tilt(+18.5deg), 2:backward tilt(-18.5 deg)	O	
Scan Geometry [Scan_Line_Data]	**Column direction address of navigation**	**nav_pxl**	nc [navpxls]				Long	Column direction address of navigation data				O	
	Row direction address of navigation data	**nav_row**	nr [navrows]				Long	Row direction address of navigation data				O	
	Solar zenith angle	**solar_zenith**	nr [navrows]	nc [navpxls]			Real	Solar zenith angle	(0.0, 180.0)	deg		O	
	Solar azimuth angle	**solar_azimuth**	nr [navrows]	nc [navpxls]			Real	Solar azimuth angle	(-180.0, 180.0)	deg		O	
	Spacecraft zenith angle	**sc_zenith**	nr [navrows]	nc [navpxls]			Real	Spacecraft zenith angle	(0.0, 180.0)	deg		O	
	Spacecraft azimuth angle	**sc_azimuth**	nr [navrows]	nc [navpxls]			Real	Spacecraft azimuth angle	(-180.0, 180.0)	deg		O	

4.2.4 Specific Part(Body)

(1) Cloud Flag (CLFLG_p)

p : Number of pixels per line("Pixels per Scan Line" of Data Quality in Global Attributes)
l : Number of lines per scene(="Number of Scan Lines" x "Lines per Scan" of Data Quality in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
GLI Cloud Flag Data [geophysical parameter]	**Cloud Flag**	**cloud_data**	l [lines]	p [pixels]			Ulong	Cloud Flag			see table 4.2-2 for bit configuration
	Number of Total pixel	**n_total_pixel**	(1)				Ulong	Number of Total pixel			
	Ratio of 99% prob. clear pixel	**r_99%_clear**	(1)				Real	Ratio of 99% prob. clear pixel	(0.0, 100.0)	%	
	Ratio of 95% prob. clear pixel	**r_95%_clear**	(1)				Real	Ratio of 95% prob. clear pixel	(0.0, 100.0)	%	
	Ratio of 66% prob. clear pixel	**r_66%_clear**	(1)				Real	Ratio of 66% prob. clear pixel	(0.0, 100.0)	%	
	Ratio of cloud pixel	**r_cloud**	(1)				Real	Ratio of cloud pixel	(0.0, 100.0)	%	

Table 4.2-2 CLOUD MASK BIT CONFIGURATION

bit field	Algorithm	Description		Key
0-1	ATSK1	Unobstructed FOV Quality Flag		00 = cloud 01 = 66% prob. clear 10 = 95% prob. clear 11 = 99% prob. clear
2		Processing Path Flags	Day / Night Flag	0 = Night / 1 = Day
3			Sunglint Flag	0 = Yes / 1 = No
4			Snow / Ice Background Flag	0 = Yes/ 1 = No
5-6			Land / Water Flag	00 = Water/ 01 = Coastal 10 = Desert / 11 = Land
7		Additional Information	Non-cloud obstruction Flag	0 = Yes / 1 = No
8			Thin Cirrus Detected (solar)	0 = Yes / 1 = No
9			Shadow Found	0 = Yes / 1 = No
10		1-km Cloud Flags	Result from Group I Tests	0 = Yes / 1 = No
11			Result from Group II Tests	0 = Yes / 1 = No
12			Result from Group III Tests	0 = Yes / 1 = No
13			Result from Group IV Tests	0 = Yes / 1 = No
14			Result from Group V Tests	0 = Yes / 1 = No
15		*Spare*		
16-18		ATSK4 Ice/Water Flag		000 = not cloud 001 = Water cloud 010 = Ice cloud 011 = Mixed cloud 111 = Uncertain
19		Dummy Flag		0 = not dummy / 1 = dummy (valid for bit 1-20)
20		Using Channel Flag	Used channel 28 and 29	0 = not used / 1 = used (valid for bit 1-20)
21	CTSK1	Snow/Cloud descrimination	Execution flag	0 = not executed / 1 = executed (valid for bit 21-26)
22-23			Cloud confidence level flag	00 = clear sky 01 = high-confidence cloudy confidence = 100% 10 = middle-confidence cloudy 50% < confidence < 100% 11 = low-confidence cloudy 0% < confidence < 50%
24-26			Surface classification flag	000 = snow over ice 001 = sea ice 010 = cloud shadow on snow 011 = land with vegetation 100 = open water 101 = snow over land 110 = snow over land contaminated with vegetation 111 = bare land with less vegetation
27-31		Spare		

(2) Cloud Optical Thickness (CLOP_p)

p : Number of pixels per line("Pixels per Scan Line" of Data Quality in Global Attributes)
l : Number of lines per scene(="Number of Scan Lines" x "Lines per Scan" of Data Quality in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
Cloud Optical Thickness [geophysical parameter]	**Cloud Optical Thickness**	**CLOP_p**	l [lines]	p [pixels]			Short	Cloud Optical Thickness	(0, 20000)	no unit	-1000: invalid value
	Scale Factor	**scf**	(1)				Real	Scale Factor			constant : 0.01
	Quality Flag	**qf**	l [lines]	p [pixels]			Byte	Quality Flag			0: error. singular matrix in-sub.ludcmp- 0=normal / 1=error 1: poor.ktt.gt.ntrial 0=enough / 1=poor 2: not use 3: not use 4: unexpected CLOP 0=expected / 1=unexpected 5: not use 6: not use 7: ancillary data type 0=JMA objective analysis data 1=Climatology data
	Method of Analysis	**method**	(1)				Ushort	Method of Analysis	(1, 3)		
	Non-absorption ch. Number	**ch_nabs**	(1)				Ushort	Non-absorption ch. Number	(1, 36)		
	Absorption ch. Number	**ch_abs**	(1)				Ushort	Absorption ch. Number	(1, 36)		
	Thermal ch. Number	**ch_tml**	(1)				Ushort	Thermal ch. Number	(1, 36)		
	Ground Albedo Coefficient (ABS ch.)	**coef_galb_abs**	(1)				Real	Ground Albedo Coefficient (ABS ch.)	(0.0, 1.0)		
	Ground Albedo Coefficient (TML ch.)	**coef_galb_tml**	(1)				Real	Ground Albedo Coefficient (TML ch.)	(0.0, 1.0)		
	Ground Surface Reflection Correction	**gnd_sf_correc**	(1)				Ch	Ground Surface Reflection Correction			"Y" or "N"
	Ground Thermal Correction	**gnd_tml_correc**	(1)				Ch	Ground Thermal Correction			"Y" or "N"
	Cloud Thermal Correction	**cl_tml_correc**	(1)				Ch	Cloud Thermal Correction			"Y" or "N"
	Atmosphere Thermal Correction (ABS. ch.)	**at_tml_correc_abs**	(1)				Ch	Atmosphere Thermal Correction (ABS. ch.)			"Y" or "N"
	Atmosphere Thermal Correction (TML. ch.)	**at_tml_correc_tml**	(1)				Ch	Atmosphere Thermal Correction (TML. ch.)			"Y" or "N"
	Name of Ground Albedo File	**fn_galb**	(1)				Ch	Name of Ground Albedo File			
	Name of Grid System Definition File (ice cloud)	**fn_gsys_i**	(1)				Ch	Name of Grid System Definition File (ice cloud)			
	Name of LUT for Non-absorption ch. (ice cloud)	**fn_LUT_nabs_i**	(1)				Ch	Name of LUT for Non-absorption ch. (ice cloud)			
	Name of LUT for Absorption ch. (ice cloud)	**fn_LUT_abs_i**	(1)				Ch	Name of LUT for Absorption ch. (ice cloud)			
	Name of LUT for Transmissivities Reflec. of Non-abs and ABS. (ice cloud)	**fn_LUT_trans_i**	(1)				Ch	Name of LUT for Transmissivities Reflec. of Non-abs and ABS. (ice cloud)			
	Name of LUT for Transmissivities	**fn_LUT_trans_tml_i**	(1)				Ch	Name of LUT for Transmissivities of Thermal (ice cloud)			
	Name of LUT for Transmissivities	**fn_LUT_trans_tml2_i**	(1)				Ch	Name of LUT for Transmissivities of Thermal2 (ice cloud)			
	Name of LUT for Active Atmosphere Correction (ABS ch.) (ice cloud)	**fn_LUT_act_abs_i**	(1)				Ch	Name of LUT for Active Atmosphere Correction (ABS ch.) (ice cloud)			
	Name of LUT for Active Atmosphere Correction (TML ch.) (ice cloud)	**fn_LUT_act_tml_i**	(1)				Ch	Name of LUT for Active Atmosphere Correction (TML ch.) (ice cloud)			
	Name of Response Data for the Basic Sensor used by Making Tables. (ice cloud)	**fn_RD_bsensor_i**	(1)				Ch	Name of Response Data for the Basic Sensor used by Making Tables. (ice cloud)			
	Name of Response Data for the Corresponding Sensor. (ice cloud)	**fn_RD_csensor_i**	(1)				Ch	Name of Response Data for the Corresponding Sensor. (ice cloud)			

	Name of Grid System Definition File (water cloud)	**fn_gsys_w**	(1)				Ch	Name of Grid System Definition File (water cloud)			
	Name of LUT for Non-absorption ch. (water cloud)	**fn_LUT_nabs_w**	(1)				Ch	Name of LUT for Non-absorption ch. (water cloud)			
	Name of LUT for Absorption ch. (water cloud)	**fn_LUT_abs_w**	(1)				Ch	Name of LUT for Absorption ch. (water cloud)			
	Name of LUT for Transmissivities Reflec. of Non-abs and ABS. (water cloud)	**fn_LUT_trans_w**	(1)				Ch	Name of LUT for Transmissivities Reflec. of Non-abs and ABS. (water cloud)			
	Name of LUT for Transmissivities	**fn_LUT_trans_tml_w**	(1)				Ch	Name of LUT for Transmissivities of Thermal (water cloud)			
	Name of LUT for Transmissivities	**fn_LUT_trans_tml2_w**	(1)				Ch	Name of LUT for Transmissivities of Thermal2 (water cloud)			
	Name of LUT for Active Atmosphere Correction (ABS ch.) (water cloud)	**fn_LUT_act_abs_w**	(1)				Ch	Name of LUT for Active Atmosphere Correction (ABS ch.) (water cloud)			
	Name of LUT for Active Atmosphere Correction (TML ch.) (water cloud)	**fn_LUT_act_tml_w**	(1)				Ch	Name of LUT for Active Atmosphere Correction (TML ch.) (water cloud)			
	Name of Response Data for the Basic Sensor used by Making Tables. (water cloud)	**fn_RD_bsensor_w**	(1)				Ch	Name of Response Data for the Basic Sensor used by Making Tables. (water cloud)			
	Name of Response Data for the Corresponding Sensor. (water cloud)	**fn_RD_csensor_w**	(1)				Ch	Name of Response Data for the Corresponding Sensor. (water cloud)			
	Number of Total Pixels	**n_total_pixel**	(1)				Long	Number of Total Pixels			
	Re-analysis Ratio	**r_reanalysis**	(1)				Real	Re-analysis Ratio	(0.0, 100.0)	%	
	Error Ratio	**r_error**	(1)				Real	Error Ratio	(0.0, 100.0)	%	

(3) Water vapor property (PRCPW_p)

p : Number of pixels per line("Pixels per Scan Line" of Data Quality in Global Attributes)
l : Number of lines per scene(="Number of Scan Lines" x "Lines per Scan" of Data Quality in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
PRCPW_p [geophysical parameter]	**Surface classification flag**	**bitarray**	l [lines]	p [pixels]			Byte	Surface classification flag			
	Number of total pixel	**nmpix**	(1)				Long	Number of total pixel			
	Number of 100% cloud pixel	**n2s**	(1)				Long	Number of 100% cloud pixel			
	Number of 50-100% cloud pixel	**n3s**	(1)				Long	Number of 50-100% cloud pixel			
	Number of 0-50% cloud pixel	**n4s**	(1)				Long	Number of 0-50% cloud pixel			
	Number of snow covered ocean pixel	**n1s**	(1)				Long	Number of snow covered ocean pixel			
	Number of sea-ice pixel	**n5s**	(1)				Long	Number of sea-ice pixel			
	Number of land pixel	**n7s**	(1)				Long	Number of land pixel			
	Number of water pixel	**n8s**	(1)				Long	Number of water pixel			
	Number of snow covered land	**n9s**	(1)				Long	Number of snow covered land pixel			
	Number of bad data pixel	**nbads**	(1)				Long	Number of bad data pixel			
	Number of cloud shadow pixel	**n6s**	(1)				Long	Number of cloud shadow pixel			
	Ratio of cloud pix. with 100%	**pcn2s**	(1)				Real	Ratio of cloud pix. with 100% conf.	(0.0, 100.0)	%	
	Ratio of cloud pix. with 50-100% conf.	**pcn3s**	(1)				Real	Ratio of cloud pix. with 50-100% conf.	(0.0, 100.0)	%	
	Ratio of cloud pix. with 0-50%	**pcn4s**	(1)				Real	Ratio of cloud pix. with 0-50% conf.	(0.0, 100.0)	%	
	Ratio of snow covered ocean	**pcn1s**	(1)				Real	Ratio of snow covered ocean	(0.0, 100.0)	%	
	Ratio of sea ice	**pcn5s**	(1)				Real	Ratio of sea ice	(0.0, 100.0)	%	
	Ratio of land	**pcn7s**	(1)				Real	Ratio of land	(0.0, 100.0)	%	
	Ratio of water	**pcn8s**	(1)				Real	Ratio of water	(0.0, 100.0)	%	
	Ratio of snow covered land	**pcn9s**	(1)				Real	Ratio of snow covered land	(0.0, 100.0)	%	
	Ratio of cloud shadow	**pcn6s**	(1)				Real	Ratio of cloud shadow	(0.0, 100.0)	%	
	Precipitable water (two-channel)	**rs_p**	l [lines]	p [pixels]			Short	Precipitable water (two-channel)	(0, 5000)	mm	actual valid range : 0.0 - 50.0 mm bad data = -1000 bad data: out o f actual valid range
	Scale factor of precip. water (2ch)	**rs_sf**	(1)				Short	Scale factor of precip. water (2ch), actual value=rs_p * rs_sf			100

Freq. distribution of precip. water: 0-	**fq_grn_1**	(1)				Long	Freq. distribution of precip. water: 0-10			
Freq. distribution of precip. water: 10-	**fq_grn_2**	(1)				Long	Freq. distribution of precip. water: 10-20			
Freq. distribution of precip. water: 20-	**fq_grn_3**	(1)				Long	Freq. distribution of precip. water: 20-30			
Freq. distribution of precip. water: 30-	**fq_grn_4**	(1)				Long	Freq. distribution of precip. water: 30-40			
Freq. distribution of precip. water: 40-	**fq_grn_5**	(1)				Long	Freq. distribution of precip. water: 40-50			
Spare	**fq_grn_6**	(1)				Long	Spare			
Spare	**fq_grn_7**	(1)				Long	Spare			
Freq. distribution of precip. water: baddata	**fq_grn_bads**	(1)				Long	Freq. distribution of precip. water: baddata			
Precipitable water (three-channel)	**soot**	l [lines]	p [pixels]			Short	Precipitable water (three-channel)	(0, 5000)	mm	actual valid range : 0.0 - 50.0 mm bad data = -1000 bad data: out o f actual valid range
Scale factor of precip. water (3ch)	**soot_sf**	(1)				Short	Scale factor of precip. water (3ch), actual value=soot*soot_sf			100
Freq. distribution of precip. water: 0-	**fq_ipt_1**	(1)				Long	Freq. distribution of precip. water: 0-10			
Freq. distribution of precip. water: 10-	**fq_ipt_2**	(1)				Long	Freq. distribution of precip. water: 10-20			
Freq. distribution of precip. water: 20-	**fq_ipt_3**	(1)				Long	Freq. distribution of precip. water: 20-30			
Freq. distribution of precip. water: 30-	**fq_ipt_4**	(1)				Long	Freq. distribution of precip. water: 30-40			
Freq. distribution of precip. water: 40-	**fq_ipt_5**	(1)				Long	Freq. distribution of precip. water: 40-50			
Spare	**fq_ipt_6**	(1)				Long	Spare			
Spare	**fq_ipt_7**	(1)				Long	Spare			
Spare	**fq_ipt_8**	(1)				Long	Spare			
Spare	**fq_ipt_9**	(1)				Long	Spare			
Spare	**fq_ipt_10**	(1)				Long	Spare			
Freq. distribution of precip. water: baddata	**fq_ipt_bads**	(1)				Long	Freq. distribution of precip. water: baddata			

4.3 Atmosphere (segment analysis)

Each product file has only one geophysical parameter. Totally 12 product files exist. (Table 4.3-1)

Table 4.3-1 List of atmosphere (segment analysis) Level-2 products

No.	Classification	Product Code	Description
1	Aerosol property	ARAE	Aerosol Angstrom Exponent
2		AROP	Aerosol Optical Thickness
3	Cloud property	CLER_w_r	Cloud Effective Particle Radius of water cloud by reflection method
4		CLER_i_e	Cloud Effective Particle Radius of ice cloud by emission method
5		CLOP_w_r	Cloud Optical Thickness of water cloud by reflection method
6		CLOP_i_r	Cloud Optical Thickness of ice cloud by reflection method
7		CLOP_i_e	Cloud Optical Thickness of ice cloud by emission method
8		CLHT_w_r	Cloud Top Height of water cloud by reflection method
9		CLTT_w_r	Cloud Top Temperature of water cloud by reflection method
10		CLTT_i_e	Cloud Top Temperature of ice cloud by emission method
11		CLWP_w_r	Cloud Liquid Water Path of water cloud by reflection method
12		CLFR	Cloud fraction

The file structure of this type is similar to atmospheric segment data (see 6.2). Equi-rectangular projection is done and covers the globe. Default segment grid interval is 0.25 degree.

4.3.1 Generic Header

See chapter 2 for the detail. Some items related this products are shown below.

data name	value
Title	"GLI Level-2 Data"
Data type	"segment"
Data Sub-type	Product Code (see Table 4.3-1)
Orbit Number	-1 (-1 means that this data has no meaning)
Upper Left Latitude	90.0
Upper Left Longitude	-180.0
Upper Right Latitude	90.0
Upper Right Longitude	180.0
Lower Left Latitude	-90.0
Lower Left Longitude	-180.0
Lower Right Latitude	-90.0
Lower Right Longitude	180.0
Map Projection	"EQR"

4.3.2 Specific Header

category	data name	type	count	contents	const.	remarks
Data Time	**Start Year**	Short	1			Year of start time
	Start Day	Short	1			Day-of-year of start time(January 1 is 0
	Start Millisec	Long	1			Milliseconds-of-day of start time
	End Year	Short	1			Year of end time
	End Day	Short	1			Day-of-year of end time(January 1 is 0
	End Millisec	Long	1			Milliseconds-of-day of end time
Segment Information	**Latitude Units**	Ch	14	"degrees North'	const.	Units used for all latitude values in this product
	Longitude Units	Ch	13	"degrees East'	const.	Units used for all longitude values in this product
	Storing Order of Latitude direction	Ch	19	"From North to South'	const.	Storing Order of Latitude direction
	Storing Order of Longitude direction	Ch	17	"From West to East'	const.	Storing Order of Longitude direction
	Segment Interval	Ushort	1	ex.) 4		Segment grid interval can be obtained by 1/N degree. When N=4(default), the interval is 1/4 = 0.25 degre This value is derived from L2A_OA data.
	lat_nseg	Long	1			721(when 0.25 degree interval
	lon_nseg	Long	1			1440(when 0.25 degree interval in nighttime), 240(when 0.25 degree interval in daytime for each are
	total_nseg	Long	1			1038240(when 0.25 degree interval in nighttime), 173040(when 0.25 degree interval in daytime for each are
QA/QC data (L2/L3 common QA data)	**Ancillary Data Characteristic**	Ch		"STD": used standard data, "SUB": used substitution data		the products using ancillary data only Worst value is set if there are several geophysical parameters are included in this product.

4.3.3 Common Part(Body)

Not assigned

4.3.4 Specific Part(Body)

(1) Aerosol Angstrom Exponent (ARAE)

nx : Number of pixels per line("lon_nseg" in Global Attributes)
ny : Number of lines("lat_nseg" in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
ARAE [geophysical parameter]	**Aerosol Angstrom exponent**	**ARAE**	ny[lat_n]	nx[lon_n]			Short	Aerosol Angstrom exponent	(-10, 500)	no unit	-1000: invalid value
	ARAE Scale Factor	**ARAE_scf**	(1)				Real	ARAE Scale Factor			constant : 0.01

(2) Aerosol Optical Thickness (AROP)

nx : Number of pixels per line("lon_nseg" in Global Attributes)
ny : Number of lines("lat_nseg" in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
AROP [geophysical parameter]	**Aerosol optical thickness**	**AROP**	ny[lat_n]	nx[lon_n]			Short	Aerosol optical thickness at 500 nm	(0, 500)	no unit	-1000: invalid value
	AROP Scale Factor	**AROP_scf**	(1)				Real	AROP Scale Factor			constant : 0.01

(3) Cloud Effective Particle Radius of Water Cloud by Reflection Method (CLER_w_r)

nx : Number of pixels per line("lon_nseg" in Global Attributes)
ny : Number of lines("lat_nseg" in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
CLER_w_r [geophysical parameter]	**Cloud Effective Particle Radius (Water Cloud by Reflection Method)**	**CLER_w_r**	ny[lat_n]	nx[lon_n]			Short	Cloud Effective Particle Radius (Water Cloud by Reflection	(0, 10000)	um	-1000: invalid value
	Scale Factor	**scf**	(1)				Real	Scale Factor			constant : 0.01
	Quality Flag	**qf**	ny[lat_n]	nx[lon_n]			Byte	Quality Flag			0: error. singular matrix in-sub.ludcmp- 0=normal / 1=error 1: poor.ktt.gt.ntrial 0=enough / 1=poor 2: unexpected CLTT 0=expected / 1=unexpected 3: unexpected CLER 0=expected / 1=unexpected 4: unexpected CLOP 0=expected / 1=unexpected 5: unexpected CLHT 0=expected / 1=unexpected 6: unexpected CLWP 0=expected / 1=unexpected 7: ancillary data type 0=JMA objective analysis data 1=Climatology data
	Method of Analysis	**method**	(1)				Ushort	Method of Analysis	(1, 3)		
	Non-absorption ch. Number	**ch_nabs**	(1)				Ushort	Non-absorption ch. Number	(1, 36)		
	Absorption ch. Number	**ch_abs**	(1)				Ushort	Absorption ch. Number	(1, 36)		
	Thermal ch. Number	**ch_tml**	(1)				Ushort	Thermal ch. Number	(1, 36)		
	Ground Albedo Coefficient (ABS ch.)	**coef_galb_abs**	(1)				Real	Ground Albedo Coefficient (ABS ch.)	(0.0, 1.0)		
	Ground Albedo Coefficient (TML ch.)	**coef_galb_tml**	(1)				Real	Ground Albedo Coefficient (TML ch.)	(0.0, 1.0)		
	Ground Surface Reflection Correction	**gnd_sf_correc**	(1)				Ch	Ground Surface Reflection Correction			"Y" or "N"
	Ground Thermal Correction	**gnd_tml_correc**	(1)				Ch	Ground Thermal Correction			"Y" or "N"
	Cloud Thermal Correction	**cl_tml_correc**	(1)				Ch	Cloud Thermal Correction			"Y" or "N"
	Atmosphere Thermal Correction (ABS. ch.)	**at_tml_correc_abs**	(1)				Ch	Atmosphere Thermal Correction (ABS. ch.)			"Y" or "N"
	Atmosphere Thermal Correction (TML. ch.)	**at_tml_correc_tml**	(1)				Ch	Atmosphere Thermal Correction (TML. ch.)			"Y" or "N"
	Name of Grid System Definition File	**fn_gsys**	(1)				Ch	Name of Grid System Definition File			
	Name of Ground Albedo File	**fn_galb**	(1)				Ch	Name of Ground Albedo File			
	Name of LUT for Non-absorption ch.	**fn_LUT_nabs**	(1)				Ch	ch.			
	Name of LUT for Absorption ch.	**fn_LUT_abs**	(1)				Ch	Name of LUT for Absorption ch.			
	Name of LUT for Transmissivities Reflec. of Non-abs and ABS.	**fn_LUT_trans**	(1)				Ch	Name of LUT for Transmissivities Reflec. of Non-abs and ABS.			
	Name of LUT for Transmissivities of Thermal	**fn_LUT_trans_tml**	(1)				Ch	Name of LUT for Transmissivities of Thermal			
	Name of LUT for Transmissivities of Thermal2	**fn_LUT_trans_tml2**	(1)				Ch	Name of LUT for Transmissivities of Thermal2			
	Name of LUT for Active Atmosphere Correction (ABS ch.)	**fn_LUT_act_abs**	(1)				Ch	Name of LUT for Active Atmosphere Correction (ABS ch.)			
	Name of LUT for Active Atmosphere Correction (TML ch.)	**fn_LUT_act_tml**	(1)				Ch	Name of LUT for Active Atmosphere Correction (TML ch.)			
	Name of Response Data for the Basic Sensor used by Making	**fn_RD_bsensor**	(1)				Ch	Name of Response Data for the Basic Sensor used by Making			
	Name of Response Data for the Corresponding Sensor.	**fn_RD_csensor**	(1)				Ch	Name of Response Data for the Corresponding Sensor.			
	Number of Total Pixels	**n_total_pixel**	(1)				Long	Number of Total Pixels			
	Re-analysis Ratio	**r_reanalysis**	(1)				Real	Re-analysis Ratio	(0.0, 100.0)	%	
	Error Ratio	**r_error**	(1)				Real	Error Ratio	(0.0, 100.0)	%	

(4) Cloud Effective Particle Radius of Ice Cloud by Emission Method (CLER_i_e)

nx : Number of pixels per line("lon_nseg" in Global Attributes)
ny : Number of lines("lat_nseg" in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
CLER_i_e [geophysical parameter]	**Cloud Effective Radius of Cirrus Particles (Ice Cloud by Emission Method)**	**CLER_i_e**	ny[lat_n]	nx[lon_n]			Short	Cloud Effective Radius of Cirrus Particles (Ice Cloud by Emission Method)	(0, 32767)	um	-1000: invalid value 32767:maximum value of short
	Re Scale Factor	**re_scf**	(1)				Real	Scale Factor for CLER_i_e			constant : 0.01

(5) Cloud Optical Thickness of Water Cloud by Reflection Method (CLOP_w_r)

nx : Number of pixels per line("lon_nseg" in Global Attributes)
ny : Number of lines("lat_nseg" in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
CLOP_w_r [geophysical parameter]	**Cloud Optical Thickness (Water Cloud by Reflection Method)**	**CLOP_w_r**	ny[lat_n]	nx[lon_n]			Short	Cloud Optical Thickness (Water Cloud by Reflection	(0, 20000)	no unit	-1000: invalid value
	Scale Factor	**scf**	(1)				Real	Scale Factor			constant : 0.01
	Quality Flag	**qf**	ny[lat_n]	nx[lon_n]			Byte	Quality Flag			0: error. singular matrix in-sub.ludcmp- 0=normal / 1=error 1: poor.ktt.gt.ntrial 0=enough / 1=poor 2: unexpected CLTT 0=expected / 1=unexpected 3: unexpected CLER 0=expected / 1=unexpected 4: unexpected CLOP 0=expected / 1=unexpected 5: unexpected CLHT 0=expected / 1=unexpected 6: unexpected CLWP 0=expected / 1=unexpected 7: ancillary data type 0=JMA objective analysis data 1=Climatology data
	Method of Analysis	**method**	(1)				Ushort	Method of Analysis	(1, 3)		
	Non-absorption ch. Number	**ch_nabs**	(1)				Ushort	Non-absorption ch. Number	(1, 36)		
	Absorption ch. Number	**ch_abs**	(1)				Ushort	Absorption ch. Number	(1, 36)		
	Thermal ch. Number	**ch_tml**	(1)				Ushort	Thermal ch. Number	(1, 36)		
	Ground Albedo Coefficient (ABS ch.)	**coef_galb_abs**	(1)				Real	Ground Albedo Coefficient (ABS ch.)	(0.0, 1.0)		
	Ground Albedo Coefficient (TML ch.)	**coef_galb_tml**	(1)				Real	Ground Albedo Coefficient (TML ch.)	(0.0, 1.0)		
	Ground Surface Reflection Correction	**gnd_sf_correc**	(1)				Ch	Ground Surface Reflection Correction			"Y" or "N"
	Ground Thermal Correction	**gnd_tml_correc**	(1)				Ch	Ground Thermal Correction			"Y" or "N"
	Cloud Thermal Correction	**cl_tml_correc**	(1)				Ch	Cloud Thermal Correction			"Y" or "N"
	Atmosphere Thermal Correction (ABS. ch.)	**at_tml_correc_abs**	(1)				Ch	Atmosphere Thermal Correction (ABS. ch.)			"Y" or "N"
	Atmosphere Thermal Correction (TML. ch.)	**at_tml_correc_tml**	(1)				Ch	Atmosphere Thermal Correction (TML. ch.)			"Y" or "N"
	Name of Grid System Definition File	**fn_gsys**	(1)				Ch	Name of Grid System Definition File			
	Name of Ground Albedo File	**fn_galb**	(1)				Ch	Name of Ground Albedo File			
	Name of LUT for Non-absorption ch.	**fn_LUT_nabs**	(1)				Ch	ch.			
	Name of LUT for Absorption ch.	**fn_LUT_abs**	(1)				Ch	Name of LUT for Absorption ch.			
	Name of LUT for Transmissivities Reflec. of Non-abs and ABS.	**fn_LUT_trans**	(1)				Ch	Name of LUT for Transmissivities Reflec. of Non-abs and ABS.			
	Name of LUT for Transmissivities of Thermal	**fn_LUT_trans_tml**	(1)				Ch	Name of LUT for Transmissivities of Thermal			
	Name of LUT for Transmissivities of Thermal2	**fn_LUT_trans_tml2**	(1)				Ch	Name of LUT for Transmissivities of Thermal2			
	Name of LUT for Active Atmosphere Correction (ABS ch.)	**fn_LUT_act_abs**	(1)				Ch	Name of LUT for Active Atmosphere Correction (ABS ch.)			
	Name of LUT for Active Atmosphere Correction (TML ch.)	**fn_LUT_act_tml**	(1)				Ch	Name of LUT for Active Atmosphere Correction (TML ch.)			
	Name of Response Data for the Basic Sensor used by Making	**fn_RD_bsensor**	(1)				Ch	Name of Response Data for the Basic Sensor used by Making			
	Name of Response Data for the Corresponding Sensor.	**fn_RD_csensor**	(1)				Ch	Name of Response Data for the Corresponding Sensor.			
	Number of Total Pixels	**n_total_pixel**	(1)				Long	Number of Total Pixels			
	Re-analysis Ratio	**r_reanalysis**	(1)				Real	Re-analysis Ratio	(0.0, 100.0)	%	
	Error Ratio	**r_error**	(1)				Real	Error Ratio	(0.0, 100.0)	%	

(6) Cloud Optical Thickness of Ice Cloud by Reflection Method (CLOP_i_r)

nx : Number of pixels per line("lon_nseg" in Global Attributes)
ny : Number of lines("lat_nseg" in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
CLOP_i_r [geophysical parameter]	**Cloud Optical Thickness (Ice Cloud by Reflection Method)**	**CLOP_i_r**	ny[lat_n]	nx[lon_n]			Short	Cloud Optical Thickness (Ice Cloud by Reflection Method)	(0, 20000)	no unit	-1000: invalid value
	Scale Factor	**scf**	(1)				Real	Scale Factor			constant : 0.01
	Quality Flag	**qf**	ny[lat_n]	nx[lon_n]			Byte	Quality Flag			0: error. singular matrix in-sub.ludcmp- 0=normal / 1=error 1: poor.ktt.gt.ntrial 0=enough / 1=poor 2: unexpected CLTT 0=expected / 1=unexpected 3: unexpected CLER 0=expected / 1=unexpected 4: unexpected CLOP 0=expected / 1=unexpected 5: unexpected CLHT 0=expected / 1=unexpected 6: unexpected CLWP 0=expected / 1=unexpected 7: ancillary data type 0=JMA objective analysis data 1=Climatology data
	Method of Analysis	**method**	(1)				Ushort	Method of Analysis	(1, 3)		
	Non-absorption ch. Number	**ch_nabs**	(1)				Ushort	Non-absorption ch. Number	(1, 36)		
	Absorption ch. Number	**ch_abs**	(1)				Ushort	Absorption ch. Number	(1, 36)		
	Thermal ch. Number	**ch_tml**	(1)				Ushort	Thermal ch. Number	(1, 36)		
	Ground Albedo Coefficient (ABS ch.)	**coef_galb_abs**	(1)				Real	Ground Albedo Coefficient (ABS ch.)	(0.0, 1.0)		
	Ground Albedo Coefficient (TML ch.)	**coef_galb_tml**	(1)				Real	Ground Albedo Coefficient (TML ch.)	(0.0, 1.0)		
	Ground Surface Reflection Correction	**gnd_sf_correc**	(1)				Ch	Ground Surface Reflection Correction			"Y" or "N"
	Ground Thermal Correction	**gnd_tml_correc**	(1)				Ch	Ground Thermal Correction			"Y" or "N"
	Cloud Thermal Correction	**cl_tml_correc**	(1)				Ch	Cloud Thermal Correction			"Y" or "N"
	Atmosphere Thermal Correction (ABS. ch.)	**at_tml_correc_abs**	(1)				Ch	Atmosphere Thermal Correction (ABS. ch.)			"Y" or "N"
	Atmosphere Thermal Correction (TML. ch.)	**at_tml_correc_tml**	(1)				Ch	Atmosphere Thermal Correction (TML. ch.)			"Y" or "N"
	Name of Grid System Definition File	**fn_gsys**	(1)				Ch	Name of Grid System Definition File			
	Name of Ground Albedo File	**fn_galb**	(1)				Ch	Name of Ground Albedo File			
	Name of LUT for Non-absorption ch.	**fn_LUT_nabs**	(1)				Ch	ch.			
	Name of LUT for Absorption ch.	**fn_LUT_abs**	(1)				Ch	Name of LUT for Absorption ch.			
	Name of LUT for Transmissivities Reflec. of Non-abs and ABS.	**fn_LUT_trans**	(1)				Ch	Name of LUT for Transmissivities Reflec. of Non-abs and ABS.			
	Name of LUT for Transmissivities of Thermal	**fn_LUT_trans_tml**	(1)				Ch	Name of LUT for Transmissivities of Thermal			
	Name of LUT for Transmissivities of Thermal2	**fn_LUT_trans_tml2**	(1)				Ch	Name of LUT for Transmissivities of Thermal2			
	Name of LUT for Active Atmosphere Correction (ABS ch.)	**fn_LUT_act_abs**	(1)				Ch	Name of LUT for Active Atmosphere Correction (ABS ch.)			
	Name of LUT for Active Atmosphere Correction (TML ch.)	**fn_LUT_act_tml**	(1)				Ch	Name of LUT for Active Atmosphere Correction (TML ch.)			
	Name of Response Data for the Basic Sensor used by Making	**fn_RD_bsensor**	(1)				Ch	Name of Response Data for the Basic Sensor used by Making			
	Name of Response Data for the Corresponding Sensor.	**fn_RD_csensor**	(1)				Ch	Name of Response Data for the Corresponding Sensor.			
	Number of Total Pixels	**n_total_pixel**	(1)				Long	Number of Total Pixels			
	Re-analysis Ratio	**r_reanalysis**	(1)				Real	Re-analysis Ratio	(0.0, 100.0)	%	
	Error Ratio	**r_error**	(1)				Real	Error Ratio	(0.0, 100.0)	%	

(7) Cloud Optical Thickness of Ice Cloud by Emission Method (CLOP_i_e)

nx : Number of pixels per line("lon_nseg" in Global Attributes)
ny : Number of lines("lat_nseg" in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
CLOP_i_e [geophysical parameter]	**Cloud Optical Thickness of Cirrus (Ice Cloud by Emission Method)**	**CLOP_i_e**	ny[lat_n]	nx[lon_n]			Short	Cloud Optical Thickness of Cirus (Ice Cloud by Emission Method)	(0, 1000)	no unit	-1000: invalid value
	Opt Scale Factor	**opt_scf**	(1)				Real	Scale Factor for CLOP_i_e			constant : 0.01

(8) Cloud Top Height of Water Cloud by Reflection Method (CLHT_w_r)

nx : Number of pixels per line("lon_nseg" in Global Attributes)
ny : Number of lines("lat_nseg" in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
CLHT_w_r [geophysical parameter]	**Cloud Top Height (Water Cloud by Reflection Method)**	**CLHT_w_r**	ny[lat_n]	nx[lon_n]			Short	Cloud Top Height (Water Cloud by Reflection	(0, 5000)	km	-1000: invalid value
	Scale Factor	**scf**	(1)				Real	Scale Factor			constant : 0.01
	Quality Flag	**qf**	ny[lat_n]	nx[lon_n]			Byte	Quality Flag			0: error. singular matrix in-sub.ludcmp- 0=normal / 1=error 1: poor.ktt.gt.ntrial 0=enough / 1=poor 2: unexpected CLTT 0=expected / 1=unexpected 3: unexpected CLER 0=expected / 1=unexpected 4: unexpected CLOP 0=expected / 1=unexpected 5: unexpected CLHT 0=expected / 1=unexpected 6: unexpected CLWP 0=expected / 1=unexpected 7: ancillary data type 0=JMA objective analysis data 1=Climatology data
	Method of Analysis	**method**	(1)				Ushort	Method of Analysis	(1, 3)		
	Non-absorption ch. Number	**ch_nabs**	(1)				Ushort	Non-absorption ch. Number	(1, 36)		
	Absorption ch. Number	**ch_abs**	(1)				Ushort	Absorption ch. Number	(1, 36)		
	Thermal ch. Number	**ch_tml**	(1)				Ushort	Thermal ch. Number	(1, 36)		
	Ground Albedo Coefficient (ABS ch.)	**coef_galb_abs**	(1)				Real	Ground Albedo Coefficient (ABS ch.)	(0.0, 1.0)		
	Ground Albedo Coefficient (TML ch.)	**coef_galb_tml**	(1)				Real	Ground Albedo Coefficient (TML ch.)	(0.0, 1.0)		
	Ground Surface Reflection Correction	**gnd_sf_correc**	(1)				Ch	Ground Surface Reflection Correction			"Y" or "N"
	Ground Thermal Correction	**gnd_tml_correc**	(1)				Ch	Ground Thermal Correction			"Y" or "N"
	Cloud Thermal Correction	**cl_tml_correc**	(1)				Ch	Cloud Thermal Correction			"Y" or "N"
	Atmosphere Thermal Correction (ABS. ch.)	**at_tml_correc_abs**	(1)				Ch	Atmosphere Thermal Correction (ABS. ch.)			"Y" or "N"
	Atmosphere Thermal Correction (TML. ch.)	**at_tml_correc_tml**	(1)				Ch	Atmosphere Thermal Correction (TML. ch.)			"Y" or "N"
	Name of Grid System Definition File	**fn_gsys**	(1)				Ch	Name of Grid System Definition File			
	Name of Ground Albedo File	**fn_galb**	(1)				Ch	Name of Ground Albedo File			
	Name of LUT for Non-absorption ch.	**fn_LUT_nabs**	(1)				Ch	Name of LUT for Non-absorption ch.			
	Name of LUT for Absorption ch.	**fn_LUT_abs**	(1)				Ch	Name of LUT for Absorption ch.			
	Name of LUT for Transmissivities Reflec. of Non-abs and ABS.	**fn_LUT_trans**	(1)				Ch	Name of LUT for Transmissivities Reflec. of Non-abs and ABS.			
	Name of LUT for Transmissivities of Thermal	**fn_LUT_trans_tml**	(1)				Ch	Name of LUT for Transmissivities of Thermal			
	Name of LUT for Transmissivities of Thermal2	**fn_LUT_trans_tml2**	(1)				Ch	Name of LUT for Transmissivities of Thermal2			
	Name of LUT for Active Atmosphere Correction (ABS ch.)	**fn_LUT_act_abs**	(1)				Ch	Name of LUT for Active Atmosphere Correction (ABS ch.)			
	Name of LUT for Active Atmosphere Correction (TML ch.)	**fn_LUT_act_tml**	(1)				Ch	Name of LUT for Active Atmosphere Correction (TML ch.)			
	Name of Response Data for the Basic Sensor used by Making	**fn_RD_bsensor**	(1)				Ch	Name of Response Data for the Basic Sensor used by Making			
	Name of Response Data for the Corresponding Sensor.	**fn_RD_csensor**	(1)				Ch	Name of Response Data for the Corresponding Sensor.			
	Number of Total Pixels	**n_total_pixel**	(1)				Long	Number of Total Pixels			
	Re-analysis Ratio	**r_reanalysis**	(1)				Real	Re-analysis Ratio	(0.0, 100.0)	%	
	Error Ratio	**r_error**	(1)				Real	Error Ratio	(0.0, 100.0)	%	

(9) Cloud Top Temperature of Water Cloud by Reflection Method (CLTT_w_r)

nx : Number of pixels per line("lon_nseg" in Global Attributes)
ny : Number of lines("lat_nseg" in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
CLTT_w_r [geophysical parameter]	**Cloud Top Temperature (Water Cloud by Reflection Method)**	**CLTT_w_r**	ny[lat_n]	nx[lon_n]			Short	Cloud Top Temperature (Water Cloud by Reflection	(0, 32000)	K	-1000: invalid value
	Scale Factor	**scf**	(1)				Real	Scale Factor			constant : 0.01
	Quality Flag	**qf**	ny[lat_n]	nx[lon_n]			Byte	Quality Flag			0: error. singular matrix in-sub.ludcmp- 0=normal / 1=error 1: poor.ktt.gt.ntrial 0=enough / 1=poor 2: unexpected CLTT 0=expected / 1=unexpected 3: unexpected CLER 0=expected / 1=unexpected 4: unexpected CLOP 0=expected / 1=unexpected 5: unexpected CLHT 0=expected / 1=unexpected 6: unexpected CLWP 0=expected / 1=unexpected 7: ancillary data type 0=JMA objective analysis data 1=Climatology data
	Method of Analysis	**method**	(1)				Ushort	Method of Analysis	(1, 3)		
	Non-absorption ch. Number	**ch_nabs**	(1)				Ushort	Non-absorption ch. Number	(1, 36)		
	Absorption ch. Number	**ch_abs**	(1)				Ushort	Absorption ch. Number	(1, 36)		
	Thermal ch. Number	**ch_tml**	(1)				Ushort	Thermal ch. Number	(1, 36)		
	Ground Albedo Coefficient (ABS ch.)	**coef_galb_abs**	(1)				Real	Ground Albedo Coefficient (ABS ch.)	(0.0, 1.0)		
	Ground Albedo Coefficient (TML ch.)	**coef_galb_tml**	(1)				Real	Ground Albedo Coefficient (TML ch.)	(0.0, 1.0)		
	Ground Surface Reflection Correction	**gnd_sf_correc**	(1)				Ch	Ground Surface Reflection Correction			"Y" or "N"
	Ground Thermal Correction	**gnd_tml_correc**	(1)				Ch	Ground Thermal Correction			"Y" or "N"
	Cloud Thermal Correction	**cl_tml_correc**	(1)				Ch	Cloud Thermal Correction			"Y" or "N"
	Atmosphere Thermal Correction (ABS. ch.)	**at_tml_correc_abs**	(1)				Ch	Atmosphere Thermal Correction (ABS. ch.)			"Y" or "N"
	Atmosphere Thermal Correction (TML. ch.)	**at_tml_correc_tml**	(1)				Ch	Atmosphere Thermal Correction (TML. ch.)			"Y" or "N"
	Name of Grid System Definition File	**fn_gsys**	(1)				Ch	Name of Grid System Definition File			
	Name of Ground Albedo File	**fn_galb**	(1)				Ch	Name of Ground Albedo File			
	Name of LUT for Non-absorption ch.	**fn_LUT_nabs**	(1)				Ch	ch.			
	Name of LUT for Absorption ch.	**fn_LUT_abs**	(1)				Ch	Name of LUT for Absorption ch.			
	Name of LUT for Transmissivities Reflec. of Non-abs and ABS.	**fn_LUT_trans**	(1)				Ch	Name of LUT for Transmissivities Reflec. of Non-abs and ABS.			
	Name of LUT for Transmissivities of Thermal	**fn_LUT_trans_tml**	(1)				Ch	Name of LUT for Transmissivities of Thermal			
	Name of LUT for Transmissivities of Thermal2	**fn_LUT_trans_tml2**	(1)				Ch	Name of LUT for Transmissivities of Thermal2			
	Name of LUT for Active Atmosphere Correction (ABS ch.)	**fn_LUT_act_abs**	(1)				Ch	Name of LUT for Active Atmosphere Correction (ABS ch.)			
	Name of LUT for Active Atmosphere Correction (TML ch.)	**fn_LUT_act_tml**	(1)				Ch	Name of LUT for Active Atmosphere Correction (TML ch.)			
	Name of Response Data for the Basic Sensor used by Making	**fn_RD_bsensor**	(1)				Ch	Name of Response Data for the Basic Sensor used by Making			
	Name of Response Data for the Corresponding Sensor.	**fn_RD_csensor**	(1)				Ch	Name of Response Data for the Corresponding Sensor.			
	Number of Total Pixels	**n_total_pixel**	(1)				Long	Number of Total Pixels			
	Re-analysis Ratio	**r_reanalysis**	(1)				Real	Re-analysis Ratio	(0.0, 100.0)	%	
	Error Ratio	**r_error**	(1)				Real	Error Ratio	(0.0, 100.0)	%	

(10) Cloud Top Temperature of Ice Cloud by Emission Method (CLTT_i_e)

nx : Number of pixels per line("lon_nseg" in Global Attributes)
ny : Number of lines("lat_nseg" in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
CLTT_i_e [geophysical parameter]	**Cloud Top Temperature of Cirrus (Ice Cloud by Emission Method)**	**CLTT_i_e**	ny[lat_n]	nx[lon_n]			Short	Cloud Top Temperature of Cirus (Ice Cloud by Emission Method)	(0, 27300)	K	-1000: invalid value
	Scale Factor for CLTT_i_e	**cltp_scf**	(1)				Real	Scale Factor for CLTT_i_e			constant : 0.01

(11) Cloud Liquid Water Path of Water Cloud by Reflection Method (CLWP_w_r)

nx : Number of pixels per line("lon_nseg" in Global Attributes)
ny : Number of lines("lat_nseg" in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
CLWP_w_r [geophysical parameter]	**Cloud Liquid Water Path (Water Cloud by Reflection Method)**	**CLWP_w_r**	ny[lat_n]	nx[lon_n]			Short	Cloud Liquid Water Path (Water Cloud by Reflection	(0, 32767)	g/m^2	-1000: invalid value 32767:maximum value of short
	Scale Factor	**scf**	(1)				Real	Scale Factor			constant : 0.1
	Quality Flag	**qf**	ny[lat_n]	nx[lon_n]			Byte	Quality Flag			0: error. singular matrix in-sub.ludcmp- 0=normal / 1=error 1: poor.ktt.gt.ntrial 0=enough / 1=poor 2: unexpected CLTT 0=expected / 1=unexpected 3: unexpected CLER 0=expected / 1=unexpected 4: unexpected CLOP 0=expected / 1=unexpected 5: unexpected CLHT 0=expected / 1=unexpected 6: unexpected CLWP 0=expected / 1=unexpected 7: ancillary data type 0=JMA objective analysis data 1=Climatology data
	Method of Analysis	**method**	(1)				Ushort	Method of Analysis	(1, 3)		
	Non-absorption ch. Number	**ch_nabs**	(1)				Ushort	Non-absorption ch. Number	(1, 36)		
	Absorption ch. Number	**ch_abs**	(1)				Ushort	Absorption ch. Number	(1, 36)		
	Thermal ch. Number	**ch_tml**	(1)				Ushort	Thermal ch. Number	(1, 36)		
	Ground Albedo Coefficient (ABS ch.)	**coef_galb_abs**	(1)				Real	Ground Albedo Coefficient (ABS ch.)	(0.0, 1.0)		
	Ground Albedo Coefficient (TML ch.)	**coef_galb_tml**	(1)				Real	Ground Albedo Coefficient (TML ch.)	(0.0, 1.0)		
	Ground Surface Reflection Correction	**gnd_sf_correc**	(1)				Ch	Ground Surface Reflection Correction			"Y" or "N"
	Ground Thermal Correction	**gnd_tml_correc**	(1)				Ch	Ground Thermal Correction			"Y" or "N"
	Cloud Thermal Correction	**cl_tml_correc**	(1)				Ch	Cloud Thermal Correction			"Y" or "N"
	Atmosphere Thermal Correction (ABS. ch.)	**at_tml_correc_abs**	(1)				Ch	Atmosphere Thermal Correction (ABS. ch.)			"Y" or "N"
	Atmosphere Thermal Correction (TML. ch.)	**at_tml_correc_tml**	(1)				Ch	Atmosphere Thermal Correction (TML. ch.)			"Y" or "N"
	Name of Grid System Definition File	**fn_gsys**	(1)				Ch	Name of Grid System Definition File			
	Name of Ground Albedo File	**fn_galb**	(1)				Ch	Name of Ground Albedo File			
	Name of LUT for Non-absorption ch.	**fn_LUT_nabs**	(1)				Ch	ch.			
	Name of LUT for Absorption ch.	**fn_LUT_abs**	(1)				Ch	Name of LUT for Absorption ch.			
	Name of LUT for Transmissivities Reflec. of Non-abs and ABS.	**fn_LUT_trans**	(1)				Ch	Name of LUT for Transmissivities Reflec. of Non-abs and ABS.			
	Name of LUT for Transmissivities of Thermal	**fn_LUT_trans_tml**	(1)				Ch	Name of LUT for Transmissivities of Thermal			
	Name of LUT for Transmissivities of Thermal2	**fn_LUT_trans_tml2**	(1)				Ch	Name of LUT for Transmissivities of Thermal2			
	Name of LUT for Active Atmosphere Correction (ABS ch.)	**fn_LUT_act_abs**	(1)				Ch	Name of LUT for Active Atmosphere Correction (ABS ch.)			
	Name of LUT for Active Atmosphere Correction (TML ch.)	**fn_LUT_act_tml**	(1)				Ch	Name of LUT for Active Atmosphere Correction (TML ch.)			
	Name of Response Data for the Basic Sensor used by Making	**fn_RD_bsensor**	(1)				Ch	Name of Response Data for the Basic Sensor used by Making			
	Name of Response Data for the Corresponding Sensor.	**fn_RD_csensor**	(1)				Ch	Name of Response Data for the Corresponding Sensor.			
	Number of Total Pixels	**n_total_pixel**	(1)				Long	Number of Total Pixels			
	Re-analysis Ratio	**r_reanalysis**	(1)				Real	Re-analysis Ratio	(0.0, 100.0)	%	
	Error Ratio	**r_error**	(1)				Real	Error Ratio	(0.0, 100.0)	%	

(12) Cloud fraction (CLFR)

nx : Number of pixels per line("lon_nseg" in Global Attributes)
ny : Number of lines("lat_nseg" in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
CLFR [geophysical parameter]	**Cloud statistics (detail)**	**CLFR_1**	ny[lat_n]	nx[lon_n]			Short	Fraction of high altitude and thin thickness cloud	(0, 10000)	%	Invalid data = -1000
		CLFR_2	ny[lat_n]	nx[lon_n]			Short	Fraction of high altitude and middle thickness cloud	(0, 10000)	%	Invalid data = -1000
		CLFR_3	ny[lat_n]	nx[lon_n]			Short	Fraction of high altitude and dense thickness cloud	(0, 10000)	%	Invalid data = -1000
		CLFR_4	ny[lat_n]	nx[lon_n]			Short	Fraction of middle altitude and thin thickness cloud	(0, 10000)	%	Invalid data = -1000
		CLFR_5	ny[lat_n]	nx[lon_n]			Short	Fraction of middle altitude and middle thickness cloud	(0, 10000)	%	Invalid data = -1000
		CLFR_6	ny[lat_n]	nx[lon_n]			Short	Fraction of middle altitude and dense thickness cloud	(0, 10000)	%	Invalid data = -1000
		CLFR_7	ny[lat_n]	nx[lon_n]			Short	Fraction of low altitude and thin thickness cloud	(0, 10000)	%	Invalid data = -1000
		CLFR_8	ny[lat_n]	nx[lon_n]			Short	Fraction of low altitude and middle thickness cloud	(0, 10000)	%	Invalid data = -1000
		CLFR_9	ny[lat_n]	nx[lon_n]			Short	Fraction of low altitude and dense thickness cloud	(0, 10000)	%	Invalid data = -1000
		CLFR_10	ny[lat_n]	nx[lon_n]			Short	Fraction of cirrus cloud	(0, 10000)	%	Invalid data = -1000
		CLFR_11	ny[lat_n]	nx[lon_n]			Short	Fraction of total cloud	(0, 10000)	%	Invalid data = -1000
		CLFR_12	ny[lat_n]	nx[lon_n]			Short	Cloud top temperatue in high altitude cloud	(0, 32000)	K	Invalid data = -1000
		CLFR_13	ny[lat_n]	nx[lon_n]			Short	Cloud top temperatue in middle altitude cloud	(0, 32000)	K	Invalid data = -1000
		CLFR_14	ny[lat_n]	nx[lon_n]			Short	Cloud top temperatue in low altitude cloud	(0, 32000)	K	Invalid data = -1000
		CLFR_15	ny[lat_n]	nx[lon_n]			Short	Cloud optical thickness in high altitude cloud	(0, 20000)	no unit	Invalid data = -1000
		CLFR_16	ny[lat_n]	nx[lon_n]			Short	Cloud optical thickness in middle altitude cloud	(0, 20000)	no unit	Invalid data = -1000
		CLFR_17	ny[lat_n]	nx[lon_n]			Short	Cloud optical thickness in low altitude cloud	(0, 20000)	no unit	Invalid data = -1000
		CLFR_18	ny[lat_n]	nx[lon_n]			Short	Cloud optical thickness in ice cloud	(0, 20000)	no unit	Invalid data = -1000
		CLFR_19	ny[lat_n]	nx[lon_n]			Short	Index of Imhomogeneity	(0, 10000)	K	Invalid data = -1000
		CLFR_20	ny[lat_n]	nx[lon_n]			Short	Fraction of Ice Cloud by Reflection method	(0, 10000)	%	Invalid data = -1000
		CLFR_1_scf	(1)				Real	Scale factor for CLFR_1			constant : 0.01
		CLFR_2_scf	(1)				Real	Scale factor for CLFR_2			constant : 0.01
		CLFR_3_scf	(1)				Real	Scale factor for CLFR_3			constant : 0.01
		CLFR_4_scf	(1)				Real	Scale factor for CLFR_4			constant : 0.01
		CLFR_5_scf	(1)				Real	Scale factor for CLFR_5			constant : 0.01
		CLFR_6_scf	(1)				Real	Scale factor for CLFR_6			constant : 0.01
		CLFR_7_scf	(1)				Real	Scale factor for CLFR_7			constant : 0.01
		CLFR_8_scf	(1)				Real	Scale factor for CLFR_8			constant : 0.01
		CLFR_9_scf	(1)				Real	Scale factor for CLFR_9			constant : 0.01
		CLFR_10_scf	(1)				Real	Scale factor for CLFR_10			constant : 0.01
		CLFR_11_scf	(1)				Real	Scale factor for CLFR_11			constant : 0.01
		CLFR_12_scf	(1)				Real	Scale factor for CLFR_12			constant : 0.01
		CLFR_13_scf	(1)				Real	Scale factor for CLFR_13			constant : 0.01
		CLFR_14_scf	(1)				Real	Scale factor for CLFR_14			constant : 0.01
		CLFR_15_scf	(1)				Real	Scale factor for CLFR_15			constant : 0.01
		CLFR_16_scf	(1)				Real	Scale factor for CLFR_16			constant : 0.01
		CLFR_17_scf	(1)				Real	Scale factor for CLFR_17			constant : 0.01
		CLFR_18_scf	(1)				Real	Scale factor for CLFR_18			constant : 0.01
		CLFR_19_scf	(1)				Real	Scale factor for CLFR_19			constant : 0.01
		CLFR_20_scf	(1)				Real	Scale factor for CLFR_20			constant : 0.01

4.4 Ocean (full resolution)

There are 3 Level-2 products. Each product file has several geophysical parameters. (Table 4.4-1) These products are generated from Level-1B product.

Table 4.4-1 List of ocean (full resolution) Level-2 products

No.	Classification	Product Code	Description
1	Atmospheric Correction	NL_FR	This file includes 20 parameters. - Normalized water-leaving radiance (13bands) - Aerosol radiance(1bands) - Normalized water-leaving radiance by in-water model (2bands) - Aerosol albedo at 380 nm - Angstrom exponent(520/865) - Aerosol thickness (Tau_a865) - Photosynthetically available radiation - 4-byte quality flag(QF_OC)
2	In-water Particles	CS_FR	This file includes 5 parameters. - Chlorophyll-a (CHLA) - Absorption of colored dissolved organic matter(CDOM) - Attenuation coefficient at 490nm (K490) - Suspended solid weight (SS) - 4-byte quality flag (QF_OC)
3	Sea Surface Temperature	ST_FR	This file includes 2 parameters. - Bulk Sea surface temperature(SST_b) - 2-byte quality flag (QF_ST)

200A

The file structure of this type is similar to Level-1B. You can regard these product as Level-1B but the radiance data is replaced to geophysical parameter. Some parameters in Level-1B are eliminated.

The scene size is about 1600km x 1680km. Map projection is not done.

4.4.1 Generic Header

See chapter 2 for the detail. Some items related this products are shown below.

data name	value
Title	"GLI Level-2 Data"
Data type	"scene 1km" or "NRT"
Data Sub-type	Product Code (see Table 4.4-1)
Orbit Number	1-∞
Upper Left Latitude	* (appropriate value is set, depending on the scene)
Upper Left Longitude	*
Upper Right Latitude	*
Upper Right Longitude	*
Lower Left Latitude	*
Lower Left Longitude	*
Lower Right Latitude	*
Lower Right Longitude	*
Map Projection	"N/A"

4.4.2 Specific Header

category	data name	type	count	contents	const.	remarks	source of data: Level-1B	source of data: this process
Data Time	**Node Crossing Time**	Ch	22	YYYYMMDD hh:mm:ss.ttt		Descending node crossing time(UTC)	O	
	Start Year	Short	1			Year of the "Start Time"	O	
	Start Day	Short	1			Day-of-Year of the "Start Time"(Jan. 1 is defined as 0)	O	
	Start Millisec	Long	1			Milliseconds-of-day of the "Start Time'	O	
	End Year	Short	1			Year of the "End Time"	O	
	End Day	Short	1			Day-of-Year of the "End Time"(Jan. 1 is defined as 0)	O	
	End Millisec	Long	1			Milliseconds-of-day of the "End Time'	O	
	Last Maneuver Start Time	Ch	19	YYYYMMDD hh:mm:ss		Last Maneuver Start Time	O	
	Last Maneuver End Time	Ch	19	YYYYMMDD hh:mm:ss		Last Maneuver End Time	O	
	Last Maneuver Type	Ch	4	"+dV"or"-dV"or"dI"		Last Maneuver Type. +dV:semi-major axis correction(acceleration),-dV:semi-major axis correctio (deceleration),dI:inclination correction	O	
Data Quality	**Pixels per Scan Line**	Long	1			Number of pixels per scan line(This depends on the resolution, 1km/250m/2km)		O
	Number of Scan Lines	Long	1			Number of scan lines in the scene (This is not number of lines)	O	
	Lines per Scan	Long	1	12, 48		Number of lines per scan. 12:1km, 48:250m	O	
	Missing Frames	Long	1			only 250m data.	O	
	Missing Lines	Long	1				O	
	GPS Flag	Ch	4	"OK","NG","TE","TX"		Normal:"OK", Time retrieval from TT:"NG",Time retireval from ST:"TX", GPSR error:"TE	O	
	Missing Packets	Long	1			only 1km data.	O	
Scene Coordinates	**Latitude Units**	Ch	14	"degrees North"	const.	Units used for all latitude values in this product	O	
	Longitude Units	Ch	13	"degrees East"	const.	Units used for all longitude values in this product	O	
	Scene Center Latitude	Real	1				O	
	Scene Center Longitude	Real	1				O	
	Orbit Node Longitude	Real	1				O	
	Start path number	Short	1				O	
	Start argument of Latitude	Real	1			argument of latitude at beginning of the scene	O	
	End path number	Short	1				O	
	End argument of Latitude	Real	1			argument of latitude at end of the scene	O	
QA/QC data (L1B succession data)	**Missing Packets**	Long	1	the number of missing packet		only 1km data.	O	
	Missing Frames	Long	1			only 250m data.	O	
	Missing Lines	Long	1	the number of missing lines			O	
	Saturated Pixels	Long	1	the number of saturated pixels			O	
	Non-Saturated Pixels	Long	1	the number of non saturated pixels			O	
	L1B Software ID	Ch					O	
	L1B Parameter Ver.	Ch					O	
	Station Name	Ch				NRT case only	O	
	Station Latitude	Real	1			NRT case only	O	
	Station Longitude	Real	1			NRT case only	O	
QA/QC data (L2/L3 common QA data)	**Ancillary Data Characteristic**	Ch		"STD": used standard data, "SUB": used substitution data		the products using ancillary data only Worst value is set if there are several geophysical parameters are included in this product.		O
	AMSR Product Ver.	Ch				the products using AMSR products only		O

4.4.3 Common Part(Body)

s : Number of scans("Number of Scan Lines" of Data Quality in Global Attributes)
m : Number of column direction address calculating latitude and longitude(dimension of V group "l1b_pos_samp" in Scan-Line Attribute)
n : Number of row direction address calculating latitude and longitude(dimension of V group "l1b_pos_line" in Scan-Line Attribute)
g : Number of GPS data points(V group "gps_points" in GPS Orbit Data)
o : Number of orbit data records(V group "num_rec" in Orbit Data)
nc: Number of column direction address calculating zenith/azimuth angle(dimension of Vgroup "nav_pxl" in Scan Geometry)
nr: Number of raw direction address calculating zenith/azimuth angle(dimension of Vgroup "nav_row" in Scan Geometry)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks	source of data	
								long_name	valid_range	units		Level-1B	this proc.
Scan-Line Attributes [Scan_Line_Data]	**Scan time**	**msec**	s [rec]				Long	Scan-line time, milliseconds of day	(0, 86400000)	msec	UTC. Milliseconds of day. Usual valid range is (0, 86399999), but when leap seconds is inserted, the range becomes (0, 86400000)	O	
	Scan start time	**scan_start**	s [rec]	length of strings(22)			Ch	Scan Start Time			Scan Start Time(UTC)	O	
	Missing frame flag	**miss_qual**	s [rec]				Byte	Missing frame flag				O	
	Telemetry failure flag	**eng_qual**	s [rec]				Byte	Engineering data-out-of-range flags				O	
	Block interval	**l1b_blk_int**	2 [pairs]				Short	L1B block interval (sample/line)			the interval of lat./lon. block grid	O	
	Block number	**l1b_blk_num**	2 [pairs]				Short	Number of L1B blocks (sample/line)			the number of lat./lon. blocks	O	
	Block pixel position	**l1b_pos_samp**	m [blk_samp]				Long	Column direction address of pixels			block position address for pixel direction	O	
	Block line position	**l1b_pos_line**	n [blk_line]				Long	Row direction address of pixels			block position address for line direction	O	
	Discontinuity flag for lat./lon.	**l1b_bound**	2 [pairs]				Long	Over boundary flag (latitude/longitude)			Discontinuity flag for latitude and longitude bounda	O	
	Latitude at block point	**l1b_blk_lat**	n [blk_line]	m [blk_samp]			Double	Block point latitude			Latitude at block point		
	Longitude at block point	**l1b_blk_lon**	n [blk_line]	m [blk_samp]			Double	Block point longitude			Longitude at block point		
	Affin coefficient for each block	**l1b_blk_affin**	n-1 [blk_line_m1]	m-1 [blk_samp_m1]	8 [affin]		Double	Block coefficient			Pseudo affin coefficient for each block When converting from (x,y) to (u,v), pseudo affin transformation is as follows; u = a*x*y + b*x + c*y + d, v = e*x*y + f*x + g*y + h, and storing order of coefficients is from a to h	O	
Converted Supplement [Scan_Line_Data]	**Operation mode**	**opr_mode**	s [rec]				Ushort	Operation mode	(0, 15)			O	
	Tilt angle flag	**tilt_flag**	s [rec]				Ushort	Tilt angle flag				O	
	Tilt angle	**tilt_angle**	s [rec]				Real	Tilt angle for scan line	(-20.0, 20.0)	deg		O	
	Scan mirror surface	**mirror_surface**	s [rec]				Byte	Scan mirror surface	(0, 1)			O	
	Scan angle	**scan_angle**	s [rec]	sampling No. of scan angle [sa]			Real	Scan angle				O	
Sensor Tilt [Scan_Line_Data]	**Tilt Status**	**tilt_seg**	(1)				Short	Tilt segment number	(0, 2)		0: no tilt, 1:forward tilt(+18.5deg), 2:backward tilt(-18.5 deg)	O	
Scan Geometry [Scan_Line_Data]	**Column direction address of navigation**	**nav_pxl**	nc [navpxls]				Short	Column direction address of navigation data				O	
	Row direction address of navigation data	**nav_row**	nr [navrows]				Short	Row direction address of navigation data				O	
	Solar zenith angle	**solar_zenith**	nr [navrows]	nc [navpxls]			Real	Solar zenith angle	(0.0, 180.0)	deg		O	
	Solar azimuth angle	**solar_azimuth**	nr [navrows]	nc [navpxls]			Real	Solar azimuth angle	(-180.0, 180.0)	deg		O	
	Spacecraft zenith angle	**sc_zenith**	nr [navrows]	nc [navpxls]			Real	Spacecraft zenith angle	(0.0, 180.0)	deg		O	
	Spacecraft azimuth angle	**sc_azimuth**	nr [navrows]	nc [navpxls]			Real	Spacecraft azimuth angle	(-180.0, 180.0)	deg		O	

4.4.4 Specific Part(Body)

(1) Atmospheric Correction (NL_FR)

p : Number of pixels per line("Pixels per Scan Line" of Data Quality in Global Attributes)
l : Number of lines per scene(="Number of Scan Lines" x "Lines per Scan" of Data Quality in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks	
								long_name	valid_range	units		
NL_FR [geophysical parameter]	**Normalized water-leaving radiance at 380 nm**	**nLw_380**	l [lines]	p [pxls]			Ushort	Normalized water-leaving radiance at 380 nm		mW cm^-2 um^-1 sr^-1	slope=0.0010, intercept=0.0	
	Normalized water-leaving radiance at 400 nm	**nLw_400**	l [lines]	p [pxls]			Ushort	Normalized water-leaving radiance at 400 nm		mW cm^-2 um^-1 sr^-1	slope=0.0010, intercept=0.0	
	Normalized water-leaving radiance at 412 nm	**nLw_412**	l [lines]	p [pxls]			Ushort	Normalized water-leaving radiance at 412 nm		mW cm^-2 um^-1 sr^-1	slope=0.0010, intercept=0.0	
	Normalized water-leaving radiance at 443 nm	**nLw_443**	l [lines]	p [pxls]			Ushort	Normalized water-leaving radiance at 443 nm		mW cm^-2 um^-1 sr^-1	slope=0.0010, intercept=0.0	
	Normalized water-leaving radiance at 460 nm	**nLw_460**	l [lines]	p [pxls]			Ushort	Normalized water-leaving radiance at 460 nm		mW cm^-2 um^-1 sr^-1	slope=0.0010, intercept=0.0	
	Normalized water-leaving radiance at 490 nm	**nLw_490**	l [lines]	p [pxls]			Ushort	Normalized water-leaving radiance at 490 nm		mW cm^-2 um^-1 sr^-1	slope=0.0010, intercept=0.0	
	Normalized water-leaving radiance at 520 nm	**nLw_520**	l [lines]	p [pxls]			Ushort	Normalized water-leaving radiance at 520 nm		mW cm^-2 um^-1 sr^-1	slope=0.0010, intercept=0.0	
	Normalized water-leaving radiance at 545 nm	**nLw_545**	l [lines]	p [pxls]			Ushort	Normalized water-leaving radiance at 545 nm		mW cm^-2 um^-1 sr^-1	slope=0.0010, intercept=0.0	
	Normalized water-leaving radiance at 565 nm	**nLw_565**	l [lines]	p [pxls]			Ushort	Normalized water-leaving radiance at 565 nm		mW cm^-2 um^-1 sr^-1	slope=0.0010, intercept=0.0	
	Normalized water-leaving radiance at 625 nm	**nLw_625**	l [lines]	p [pxls]			Ushort	Normalized water-leaving radiance at 625 nm		mW cm^-2 um^-1 sr^-1	slope=0.0010, intercept=0.0	
	Normalized water-leaving radiance at 666 nm	**nLw_666**	l [lines]	p [pxls]			Ushort	Normalized water-leaving radiance at 666 nm		mW cm^-2 um^-1 sr^-1	slope=0.0010, intercept=0.0	
	Normalized water-leaving radiance at 680 nm	**nLw_680**	l [lines]	p [pxls]			Ushort	Normalized water-leaving radiance at 680 nm		mW cm^-2 um^-1 sr^-1	slope=0.0010, intercept=0.0	
	Normalized water-leaving radiance at 710 nm	**nLw_710**	l [lines]	p [pxls]			Ushort	Normalized water-leaving radiance at 710 nm		mW cm^-2 um^-1 sr^-1	slope=0.0010, intercept=0.0	
	Normalized water-leaving radiance at 678 nm	**nLw_678**	l [lines]	p [pxls]			Ushort	Normalized water-leaving radiance at 678 nm by in-water model		mW cm^-2 um^-1 sr^-1	slope=0.0010, intercept=0.0	
	Normalized water-leaving radiance at 865 nm	**nLw_865**	l [lines]	p [pxls]			Ushort	Normalized water-leaving radiance at 865 nm by in-water model		mW cm^-2 um^-1 sr^-1	slope=1.0E-5, intercept=0.0	200A
	Aerosol radiance at 865 nm	**La_865**	l [lines]	p [pxls]			Ushort	Aerosol radiance at 865 nm		mW cm^-2 um^-1 sr^-1	slope=0.0010, intercept=0.0	
	Aerosol albedo at 380 nm	**aalb**	l [lines]	p [pxls]			Ushort	Aerosol albedo at 380 nm			slope=0.0010, intercept=0.0	
	Angstrom exponent derived from 520 and 865 nm	**angstrom_520**	l [lines]	p [pxls]			Ushort	Angstrom exponent derived from 520 and 865 nm			slope=1.0E-4, intercept=-3.0	200A
	Aerosol optical thickness at 865nm	**tau_865**	l [lines]	p [pxls]			Ushort	Aerosol optical thickness at 865 nm			slope=1.0E-4, intercept=0.0	
	Photosynthetically available radiation	**par**	l [lines]	p [pxls]			Ushort	Photosynthetically available radiation		Ein m^-2 D^	slope=0.0020, intercept=0.0	
	Level 2 quality information	**l2_flags**	l [lines]	p [pxls]			Ulong	32-bit Level 2 quality control masks and flags			Table 4.4-2	

(2) In-water Particles (CS_FR)

p : Number of pixels per line("Pixels per Scan Line" of Data Quality in Global Attributes)
l : Number of lines per scene(="Number of Scan Lines" x "Lines per Scan" of Data Quality in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
CS_FR [geophysical parameter]	**Chlorophyll_a**	**chla**	l [lines]	p [pixels]			Ushort	Chlorophyll_a concentration	(1, 65533)	mg/m^3	actual range: 0.0015 - 98.2995
	K490	**k490**	l [lines]	p [pixels]			Ushort	Attenuation at 490 nm	(22, 1670)	1/m	actual range: 0.022 - 1.67
	Suspended solid	**ss**	l [lines]	p [pixels]			Ushort	Suspended solid concentration	(1, 3000)	g/m^3	actual range: 0.01 - 30
	CDOM	**cdom**	l [lines]	p [pixels]			Ushort	CDOM absorption at 440nm	(1, 1000)	1/m	actual range: 0.001 - 1
	Scale factor	**scf**	(4)				Float	Scale Factor			scale factor for chla, k490, ss and cdom constant (0.0015, 0.001, 0.01, 0.001)
	Intercept	**intercept**	(4)				Float	Intercept			intercept for chla, k490, ss and cdom constant (0.0, 0.0, 0.0, 0.0)
	QC flag	**l2_flags**	l [lines]	p [pixels]			Ulong	32-bit Level 2 quality control masks and flags			Table 4.4-2

32 BIT GLI OCEAN COLOR LEVEL-2 QUALITY CONTROL INFORMATION (MASK/FLAG)

Category	Bit No.	Name	Level-2 Mask/Flag	Level-3 Binning		Note
			Version-1,2	Version-1	Version-2	
Sensor Characteristics	0	Incomplete Ocean Band(s)	Mask*	No	No	The pixel misses observation at one or more bands in specific GLI ocean color channels (Band 4, 5, 7, 8, 13, 16, 18, 19).
	1	Incomplete Band(s)	Flag	No	No	The pixel misses observation at one or more bands in the ocean color channels (including
	2	Saturation/Knee point	Flag	Yes	Yes	The pixel has radiance larger than the knee (Band 4,5,7,8) or saturation (Band 2,3,4,5,7,8
	3	Bright Target	Flag	Yes	Yes	Measured radiance might be affected by electrical over-/under-shoot.
	4	(Spare)				
Atmospheric Correction	5	Land	Mask*	No	No	Land pixel (Coast line data base is used.)
	6	Cloud/Ice (1)	Mask	No	No	Cloud or Ice pixel.
	7	Cloud/Ice (2)	Flag	No	No	Cloud or Ice pixel (by a relaxed criterion)
	8	Near Cloud (1)	Flag	No	No	The pixel is contaminated by cloud shadow, or cloud edge. Identified by a simple "blotch b
	9	Near Cloud (2)	Flag	No	No	The pixel is contaminated by secondary atmospheric scattering from bright cloud/ice
	10	Large Solar Zenith Angle	Flag	No	No	The pixel has large solar zenith angle.
	11	Large Satellite Zenith Angle	Flag	No	No	The pixel has large spacecraft zenith angle.
	12	Sun Glint	Mask	No	No	The pixel may be contaminated by sun-glint.
	13	Sun Glint Correction	Flag	Yes	Yes	Sun-glint correction is applied to this pixel.
	14	Aerosol Model Selection Error (Out of range)	Flag	Yes	Yes	The estimated epsilon value is higher (lower) than that of the highest (lowest) epsilon model.
	15	Atmospheric Correction Failure	Mask	No	No	Atmospheric correction failure
	16	High tauA(865)	Flag	Yes	Yes	The pixel has tauA(865) value larger than a threshold.
	17	Negative nLw	Flag	Yes	Yes	The pixel has negative nLw value in one or more bands (Band2, 3, 4, 5, 7, 8) * If the physical values are expressed as "signed", this field is not necessary.
	18	Low nLw(545)	Flag	Yes	No	The pixel has nLw(545) less than a fixed threshold (default 0.20mW/cm^2/um/sr).
	19	Lack of Ozone Data	Flag	Yes	Yes	0: TOMS or TOVS data is used. 1: Climatological data is used.
	20	Lack of Wind Data **	Flag	Yes	Yes	0: Objective analysis data is used; 1: SeaWinds or AMSR or Climatological data is used
	21	Whitecap	Flag	Yes	Yes	Measured radiance may be affected by whitecap. [0,0] : negligible (W.S.=0~6m/s); [0,1] : moderate (W.S.=6~12m/s); [1,0]: strong *The information whether whitecap correction is applied or not is described in the HDF
	22					
	23	Alternative Band	Flag	Yes	Yes	Alternative band is used in atmospheric correction for this pixel.
	24	Absorptive aerosol	Flag	Yes	Yes	Absorptive aerosol correction is applied to this pixel.
	25	Iteration Failed	Flag	Yes	Yes	Number of iteration is more than a threshold (default 10 times) for this pixel.
In-Water	26	Shallow Water	Flag	Yes	Yes	Pixel location is judged to be shallow based on the bathymetry data base
	27	Turbid Case 2	Flag	Yes	Yes	"Turbid case 2 water" pixel.
	28	Coccolithophore	Flag	Yes	Yes	"Coccolithophore bloom" pixel.
	29	Red Tide	Flag	Yes	Yes	"Red tide" pixel.
	30	(Spare)				
	31	(Spare)				

* Note: PAR is processed except for Mask*.
** Note: Lacked area in the ancillary data is processed as follows.
1) If a serious lack exists in the ancillary data, all of the data in the scene is replaced the other source and the replacement sc
2) If the lacked area in the ancillary data is small, the lacked area is interpolated from around data and the flag field corresponds to the interpc

MSB LSB

31	30	29		0

Bit number starts at LSB (Least Significant Bit)

200A
200A
200A
200A
200A
20 200A

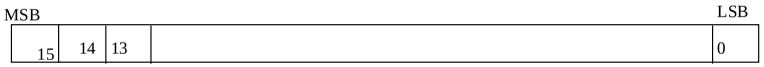
(3) Sea Surface Temperature (ST_FR)

p : Number of pixels per line("Pixels per Scan Line" of Data Quality in Global Attributes)
l : Number of lines per scene(="Number of Scan Lines" x "Lines per Scan" of Data Quality in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
ST_FR [geophysical parameter]	**Sea Surface Temperature**	**sst**	l [lines]	p [pixels]			Ushort	GLI bulk sea surface temperature of full resolution	(0,6000)	Kelvin	actual range: 263.15 - 323.15
	Scale factor	**scf**	(1)				Float	Scale Factor			constant (0.01)
	Intercept	**intercept**	(1)				Float	Intercept			constant (263.15)
	SST QC flag	**flag**	l [lines]	p [pixels]			Ushort	Quality flag or mask for ST_FR			Table 4.4-3

Table 4.4-3 16bit GLI SST Quality Flag

Bit No.	Name	value	Level-2 Mask/Flag		Level-3 Binning		Note
			Phase-1	Phase-2	Phase-1	Phase-2	Phase-1: Before initial validations / Phase-2: After initial validation
0	Land/Sea	0=Sea / 1=Land	Mask	Mask	No	No	From L1B land/sea flag
1	Cloud	0=Clear / 1=Cloudy	Mask	Mask	No	No	From cloud detection algorithm by Dr. Sakaida
2	Lack of observation	0=No / 1=Yes	Mask	Mask	No	No	Insufficient band set or some err in L1B data quality
3	Large emission angle	0=No / 1=Yes	Flag	Flag	No	No	This is set in Satellite zenith angle >55degree.
4	Out of valid range	0=No / 1=Yes	Flag	Flag	Yes	No	The threshold of the difference between GLI SST and climate SST is *TBD*. When abs(Estimated SST -Climate SST)> threshold map, Flag in L2.
5	Day/Night	0=Day / 1=Night	Flag	Flag	Yes	Yes	This is depend on the Day/Night definition of the SST estimation algorithm (coefficients). If there is no distinction in the algorithm, the threshold is set by the solar zenith angle of 90 degrees. These Day/Night are separately binned in L3binned SST.
6	Sunglint area	0=No / 1=Yes	Flag	Flag	Yes	Yes	This is set in the sunglint area in the cloud detection algorithm.
7	Forward tilt	0=No / 1=Yes	Flag	Flag	Yes	Yes	This is a caution of the TI calibration problem in the tilting operation. Forward means +20 degree (to be exact, 18.5 degree). The information is got from L1B header.
8	Backward tilt	0=No / 1=Yes	Flag	Flag	Yes	Yes	This is a caution of the TI calibration problem in the tilting operation. Backward means -20 degree.
9-10	Ackermann's four cloud class	00=cloudy 01=probably cloud 10=confident clear 11=high confidence clear	Flag	Flag	Yes	Yes	
11-15	Spare		-	-	-	-	



Bit number starts at LSB (Least Significant Bit)

4.5 Ocean (low resolution)

There are 3 Level-2 products. Each product file has several geophysical parameters. (Table 4.5-1) These products are generated from Level-2A_OA product.

Table 4.5-1 List of ocean (low resolution) Level-2 products

No.	Classification	Product Code	Description
1	Atmospheric Correction	NL_LR	This file includes 20 parameters. - Normalized water-leaving radiance (13bands) - Aerosol radiance(1bands) - Normalized water-leaving radiance by in-water model (2bands) - Aerosol albedo at 380 nm - Angstrom exponent(520/865) - Aerosol thickness (Tau_a865) - Photosynthetically available radiation - 4-byte quality flag(QF_OC)
2	In-water Particles	CS_LR	This file includes 5 parameters. - Chlorophyll-a (CHLA) - Absorption of colored dissolved organic matter(CDOM) - Attenuation coefficient at 490nm (K490) - Suspended solid weight (SS) - 4-byte quality flag (QF_OC)
3	Sea Surface Temperature	ST_LR	This file includes 2 parameters. - Bulk Sea surface temperature(SST_b) - 2-byte quality flag (QF_ST)

200A

The file structure of this type is similar to Level-2A_OA. You can regard these product as Level-2A_OA but the radiance data is replaced to geophysical parameter. Some parameters in Level-2A_OA are eliminated.

This image covers one path (orbit). Map projection is not done. The resolution is approximately 4km.

4.5.1 Generic Header

See chapter 2 for the detail. Some items related this products are shown below.

data name	value
Title	"GLI Level-2 Data"
Data type	"path"
Data Sub-type	Product Code (see Table 4.5-1)
Orbit Number	1-∞
Upper Left Latitude	0 (0 means that this data has no meaning)
Upper Left Longitude	0
Upper Right Latitude	0
Upper Right Longitude	0
Lower Left Latitude	0
Lower Left Longitude	0
Lower Right Latitude	0
Lower Right Longitude	0
Map Projection	"N/A"

4.5.2 Specific Header

category	data name	type	count	contents	const.	remarks
Data Time	**Node Crossing Time**	Ch	22	YYYYMMDD hh:mm:ss.ttt		Node crossing time derived from first scene
	Start Year	Short	1			Year of start time
	Start Day	Short	1			Day-of-year of start time(January 1 is 0)
	Start Millisec	Long	1			Milliseconds-of-day of start time
	End Year	Short	1			Year of end time
	End Day	Short	1			Day-of-year of end time(January 1 is 0)
	End Millisec	Long	1			Milliseconds-of-day of end time
	Last Maneuver Start Time	Ch	19	YYYYMMDD hh:mm:ss		Last Maneuver Start Time
	Last Maneuver End Time	Ch	19	YYYYMMDD hh:mm:ss		Last Maneuver End Time
	Last Maneuver Type	Ch	4	"+dV"or"-dV"or"dI"		Last Maneuver Type. +dV:semi-major axis correction(acceleration),-dV:semi-major axis correction (deceleration),dI:inclination correction
Common Information	**Pixels per Line**	Long	1	ex.)309		generally 309 = 1236 pixel / 4 (pixel interval)
	Pixel Offset for L2A_OA	Short	1	ex.)2		Pofs, range : 0-(Pit-1)
	Line Offset for L2A_OA	Short	1	ex.)2		Lofs, range : 0-(Lit-1)
	Pixel Interval for L2A_OA	Short	1	ex.)4		Pit, Pixel address = Pofs + Pit * n, (n=0,1,2,...)
	Line Interval for L2A_OA	Short	1	ex.)4		Lit, Line address = Lofs + Lit * n, (n=0,1,2,...)
	Pixel Interval for Ocean Supplemental Table	Short	1	ex.)16		OST_Pit, Pixel address of ocean suppl. table = Pofs + OST_Pit * n, (n=0,1,2,...)
	Line Interval for Ocean Supplemental Table	Short	1	ex.)16		OST_Lit, Line address of ocean suppl. table = Lofs + OST_Lit * n, (n=0,1,2,...)
	Segment Interval for Atmosphere	Real	1	ex.)4		Segment grid interval can be obtained by 1/N degree. When N=4(default), the interval is 1/4 = 0.25 degree.
	Number of Tilt Segments	Short	1	1-		Total number of tilt segments
QA/QC data (L2/L3 common QA data)	**Ancillary Data Characteristic**	Ch		"STD": used standard data, "SUB": used substitution data		the products using ancillary data only Worst value is set if there are several geophysical parameters are included in this product.

Following data is stored repeatedly as much as tilt segment number

category	data name	type	count	contents	const.	remarks
Data Quality#1 - #n (n=No. of tilt seg)	**Lines per Tilt #1**	Long	1			
	Missing Packets #1	Long	1			
	Missing Lines #1	Long	1			
	GPS Flag #1	Ch	4	"OK","NG","MIX"		"OK": GPS data is available for all lines. "NG": GPS data is NOT available for all lines. "MIX": GPS data is available for some lines.
Tilt segment time	**TS Start Time #1**	Ch	22	YYYYMMDD hh:mm:ss.ttt		
	TS End Time #1	Ch	22	YYYYMMDD hh:mm:ss.ttt		
	TS Center Time #1	Ch	22	YYYYMMDD hh:mm:ss.ttt		
tilt segment position #1-#n (n=No. of tilt seg)	**Latitude Units #1**	Ch	14	"degrees North"	const	
	Longitude Units #1	Ch	13	"degrees East"	const	
	Tilt Segment Center Latitude #1	Real	1			
	Tilt Segment Center Longitude #1	Real	1			
	Upper Left Latitude #1	Real	1			
	Upper Left Longitude #1	Real	1			
	Upper Right Latitude #1	Real	1			
	Upper Right Longitude #1	Real	1			
	Lower Left Latitude #1	Real	1			
	Lower Left Longitude #1	Real	1			
	Lower Right Latitude #1	Real	1			
	Lower Right Longitude #1	Real	1			
	Orbit Node Longitude #1	Real	1			
	Start path number #1	Short	1			
	Start argument of Latitude #1	Real	1			argument of latitude at the begininng of tilt segment #1
	End path number #1	Short	1			
	End argument of Latitude #1	Real	1			argument of latitude at the end of tilt segment #1
GLI Image Information #1-#n (n=No. of tilt seg)	**Lines Offset #1**	Long	1			difference between geophysical parameter data line No. and virtual line No. using in supplemental table
	No. of Ocean Table Elements #1	Short	1	9	const	
	Ocean Table Lines #1	Long	1			
	Ocean Table Pixels #1	Long	1			

4.5.3 Common Part(Body

All V group data shown below is stored under "Tilt Segment#n" V group, which is created as much as the number of tilt segment.
'#1' is used as an example in the V group shown below

V group name: Tilt Segment #1 - Tilt Segment #n
VG class name: Tilt_Segment_Data

p : Number of pixels per line("Pixels per Scan Line" in Global Attributes)
l#1 : Number of lines per current tilt segment("Lines per Tilt #1" in Global Attributes)
po#1 : Number of pixels for ocean supplemental table("Ocean Table Pixels #1" in Global Attributes)
lo#1 : Number of lines per current tilt segment("Ocean Table Lines #1" in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
Ocean Supplemental Table #1	**Observation date**	**o_scan_time #1**	lo#1[ocean_lines_#1]	po#1[ocean_pxls]			Double	Ocean Grid Scan-line Time, #1		day(MJD)	MJD expression.
	Pixel No.	**o_pxl_no #1**	po#1[ocean_pxls]				Short	Ocean Grid Pixel Number, #1			
	Line No.	**o_line_no #1**	lo#1[ocean_lines_#1]				Short	Ocean Grid Line Number, #1			
	Latitude	**o_lat #1**	lo#1[ocean_lines_#1]	po#1[ocean_pxls]			Real	Ocean Grid Latitude, #1	(-90.0, 90.0)	deg	
	Longitude	**o_lon #1**	lo#1[ocean_lines_#1]	po#1[ocean_pxls]			Real	Ocean Grid Longitude, #1	(-180.0, 180.0)	deg	
	Satellite Zenith Angle	**o_sat_theta #1**	lo#1[ocean_lines_#1]	po#1[ocean_pxls]			Real	Ocean Grid Satellite Zenith Angle, #1	(0.0, 180.0)	deg	
	Satellite Azimuth Angle	**o_sat_phai #1**	lo#1[ocean_lines_#1]	po#1[ocean_pxls]			Real	Ocean Grid Satellite Azimuth Angle, #1	(-180.0, 180.0)	deg	
	Solar Zenith Angle	**o_sun_theta #1**	lo#1[ocean_lines_#1]	po#1[ocean_pxls]			Real	Ocean Grid Solar Zenith Angle, #1	(0.0, 180.0)	deg	
	Solar Azimuth Angle	**o_sun_phai #1**	lo#1[ocean_lines_#1]	po#1[ocean_pxls]			Real	Ocean Grid Solar Azimuth Angle, #1	(-180.0, 180.0)	deg	
Converted Supplement #1	**Operation Mode**	**opr_mode #1**	num of lines[lines_#1]				Ushort	Operation mode	(0, 4)		0: Observation mode(daylight),1:Observation mode(night), 2:Sunlight Calib., 3:Internal light Calib., 4:Electrical Calib.
	Tilt Angle Flag	**tilt_flag #1**	num of lines[lines_#1]				Ushort	Tilt angle flag	(1, 3)		1:+20deg., 2:0deg., 3:-20deg.
	Tilt Angle for Scan Line	**tilt_angle #1**	num of lines[lines_#1]				Real	Tilt angle for scan line	(-20.0, 20.0)		
	Scan Mirror Surface	**mirror_surface #1**	num of lines[lines_#1]				Byte	Scan mirror	(0, 1)		0:A surface, 1:B surface
Sensor Tilt #1	**Tilt Status**	**tilt_seg #1**	(1)				Short	Tilt segment number	(0, 2)		

4.5.4 Specific Part(Body

All V group data shown below is stored under "Tilt Segment#n" V group, which is created as much as the number of tilt segment.
'#1' is used as an example in the V group shown below

V group name: Tilt Segment #1 - Tilt Segment #n (same as Common Part)
VG class name: Tilt_Segment_Data (same as Common Part)

(1) Atmospheric Correction (NL_LR

p : Number of pixels per line("Pixels per Scan Line" in Global Attributes)
l#1 : Number of lines per current tilt segment("Lines per Tilt #1" in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks	
								long_name	valid_range	units		
NL_LR #1 [geophysical parameter]	**Normalized water-leaving radiance at 380 nm #1**	**nLw_380 #1**	l#1[lines_vn_#1]	p [pxls]			Ushort	Normalized water-leaving radiance at 380 nm #1		mW cm^-2 um^-1 sr^-1	slope=0.0010, intercept=0.0	
	Normalized water-leaving radiance at 400 nm #1	**nLw_400 #1**	l#1[lines_vn_#1]	p [pxls]			Ushort	Normalized water-leaving radiance at 400 nm #1		mW cm^-2 um^-1 sr^-1	slope=0.0010, intercept=0.0	
	Normalized water-leaving radiance at 412 nm #1	**nLw_412 #1**	l#1[lines_vn_#1]	p [pxls]			Ushort	Normalized water-leaving radiance at 412 nm #1		mW cm^-2 um^-1 sr^-1	slope=0.0010, intercept=0.0	
	Normalized water-leaving radiance at 443 nm #1	**nLw_443 #1**	l#1[lines_vn_#1]	p [pxls]			Ushort	Normalized water-leaving radiance at 443 nm #1		mW cm^-2 um^-1 sr^-1	slope=0.0010, intercept=0.0	
	Normalized water-leaving radiance at 460 nm #1	**nLw_460 #1**	l#1[lines_vn_#1]	p [pxls]			Ushort	Normalized water-leaving radiance at 460 nm #1		mW cm^-2 um^-1 sr^-1	slope=0.0010, intercept=0.0	
	Normalized water-leaving radiance at 490 nm #1	**nLw_490 #1**	l#1[lines_vn_#1]	p [pxls]			Ushort	Normalized water-leaving radiance at 490 nm #1		mW cm^-2 um^-1 sr^-1	slope=0.0010, intercept=0.0	
	Normalized water-leaving radiance at 520 nm #1	**nLw_520 #1**	l#1[lines_vn_#1]	p [pxls]			Ushort	Normalized water-leaving radiance at 520 nm #1		mW cm^-2 um^-1 sr^-1	slope=0.0010, intercept=0.0	
	Normalized water-leaving radiance at 545 nm #1	**nLw_545 #1**	l#1[lines_vn_#1]	p [pxls]			Ushort	Normalized water-leaving radiance at 545 nm #1		mW cm^-2 um^-1 sr^-1	slope=0.0010, intercept=0.0	
	Normalized water-leaving radiance at 565 nm #1	**nLw_565 #1**	l#1[lines_vn_#1]	p [pxls]			Ushort	Normalized water-leaving radiance at 565 nm #1		mW cm^-2 um^-1 sr^-1	slope=0.0010, intercept=0.0	
	Normalized water-leaving radiance at 625 nm #1	**nLw_625 #1**	l#1[lines_vn_#1]	p [pxls]			Ushort	Normalized water-leaving radiance at 625 nm #1		mW cm^-2 um^-1 sr^-1	slope=0.0010, intercept=0.0	
	Normalized water-leaving radiance at 666 nm #1	**nLw_666 #1**	l#1[lines_vn_#1]	p [pxls]			Ushort	Normalized water-leaving radiance at 666 nm #1		mW cm^-2 um^-1 sr^-1	slope=0.0010, intercept=0.0	
	Normalized water-leaving radiance at 680 nm #1	**nLw_680 #1**	l#1[lines_vn_#1]	p [pxls]			Ushort	Normalized water-leaving radiance at 680 nm #1		mW cm^-2 um^-1 sr^-1	slope=0.0010, intercept=0.0	
	Normalized water-leaving radiance at 710 nm #1	**nLw_710 #1**	l#1[lines_vn_#1]	p [pxls]			Ushort	Normalized water-leaving radiance at 710 nm #1		mW cm^-2 um^-1 sr^-1	slope=0.0010, intercept=0.0	
	Normalized water-leaving radiance at 678 nm #1	**nLw_678 #1**	l#1[lines_vn_#1]	p [pxls]			Ushort	Normalized water-leaving radiance at 678 nm by in-water model #1		mW cm^-2 um^-1 sr^-1	slope=0.0010, intercept=0.0	
	Normalized water-leaving radiance at 865 nm #1	**nLw_865 #1**	l#1[lines_vn_#1]	p [pxls]			Ushort	Normalized water-leaving radiance at 865 nm by in-water model #1		mW cm^-2 um^-1 sr^-1	slope=1.0E-5, intercept=0.0	200A
	Aerosol radiance at 865 nm #1	**La_865 #1**	l#1[lines_vn_#1]	p [pxls]			Ushort	Aerosol radiance at 865 nm #1		mW cm^-2 um^-1 sr^-1	slope=0.0010, intercept=0.0	
	Aerosol albedo at 380 nm #1	**aalb #1**	l#1[lines_vn_#1]	p [pxls]			Ushort	Aerosol albedo at 380 nm #1			slope=0.0010, intercept=0.0	
	Angstrom exponent derived from 520 and 865 nm #1	**angstrom_520 #1**	l#1[lines_vn_#1]	p [pxls]			Ushort	Angstrom exponent derived from 520 and 865 nm #1			slope=1.0E-4, intercept=-3.0	200A
	Aerosol optical thickness at 865nm #1	**tau_865 #1**	l#1[lines_vn_#1]	p [pxls]			Ushort	Aerosol optical thickness at 865nm #1			slope=1.0E-4, intercept=0.0	
	Photosynthetically available radiation	**par #1**	l#1[lines_vn_#1]	p [pxls]			Ushort	Photosynthetically available radiation #1		Ein m^-2 D^-	slope=0.0020, intercept=0.0	
	Level 2 quality information #1	**l2_flags #1**	l#1[lines_vn_#1]	p [pxls]			Ulong	32-bit Level 2 quality control masks and flags #1			Table 4.5-2	

(2) In-water Particles (CS_LR)

p : Number of pixels per line("Pixels per Scan Line" in Global Attributes)
l#1 : Number of lines per current tilt segment("Lines per Tilt #1" in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
CS_LR #1 [geophysical parameter]	**Chlorophyll_a #1**	**chla #1**	l#1[lines_vn_#1]	p [pxls]			Ushort	Chlorophyll_a concentration #1	(1, 65533)	mg/m^3	actual range: 0.0015 -98.2995
	K490 #1	**k490 #1**	l#1[lines_vn_#1]	p [pxls]			Ushort	Attenuation at 490 nm #1	(22, 1670)	1/m	actual range: 0.022 - 1.67
	Suspended solid #1	**ss #1**	l#1[lines_vn_#1]	p [pxls]			Ushort	Suspended solid concentration #1	(1, 3000)	g/m^3	actual range: 0.01 - 30
	CDOM #1	**cdom #1**	l#1[lines_vn_#1]	p [pxls]			Ushort	CDOM absorption at 440nm #1	(1, 1000)	1/m	actual range: 0.001 - 1
	Scale factor #1	**scf #1**	(4)				Float	Scale Factor #1			scale factor for chla, k490, ss and cdom constant (0.0015, 0.001, 0.01, 0.001)
	Intercept #1	**intercept #1**	(4)				Float	Intercept #1			intercept for chla, k490, ss and cdom constant (0.0, 0.0, 0.0, 0.0)
	QC flag #1	**l2_flags #1**	l#1[lines_vn_#1]	p [pxls]			Ulong	32-bit Level 2 quality control masks and flags #1			Table 4.5-2

32 BIT GLI OCEAN COLOR LEVEL-2 QUALITY CONTROL INFORMATION (MASK/FLAG

Category	Bit No.	Name	Level-2 Mask/Flag	Level-3 Binning		Note
			Version-1,2	Version-1	Version-2	
Sensor Characteristics	0	Incomplete Ocean Band(s)	Mask*	No	No	The pixel misses observation at one or more bands in specific GLI ocean color channels (Band 4, 5, 7, 8, 13, 16, 18, 19).
	1	Incomplete Band(s)	Flag	No	No	The pixel misses observation at one or more bands in the ocean color channels (including 1.05-
	2	Saturation/Knee	Flag	Yes	Yes	The pixel has radiance larger than the knee (Band 4,5,7,8) or saturation (Band 2,3,4,5,7,8)
	3	Bright Target	Flag	Yes	Yes	Measured radiance might be affected by electrical over-/under-shoot.
	4	(Spare)				
Atmospheric Correction	5	Land	Mask*	No	No	Land pixel (Coast line data base is used.)
	6	Cloud/Ice (1)	Mask	No	No	Cloud or Ice pixel.
	7	Cloud/Ice (2)	Flag	No	No	Cloud or Ice pixel (by a relaxed criterion)
	8	Near Cloud (1)	Flag	No	No	The pixel is contaminated by cloud shadow, or cloud edge. Identified by a simple "blotch by one
	9	Near Cloud (2)	Flag	No	No	The pixel is contaminated by secondary atmospheric scattering from bright cloud/ice reflection.
	10	Large Solar Zenith Angle	Flag	No	No	The pixel has large solar zenith angle.
	11	Large Satellite Zenith Angle	Flag	No	No	The pixel has large spacecraft zenith angle.
	12	Sun Glint	Mask	No	No	The pixel may be contaminated by sun-glint.
	13	Sun Glint	Flag	Yes	Yes	Sun-glint correction is applied to this pixel.
	14	Aerosol Model Selection Error (Out of range)	Flag	Yes	Yes	The estimated epsilon value is higher (lower) than that of the highest (lowest) epsilon model.
	15	Atmospheric Correction Failure	Mask	No	No	Atmospheric correction failure
	16	High tauA(865)	Flag	Yes	Yes	The pixel has tauA(865) value larger than a threshold.
	17	Negative nLw	Flag	Yes	Yes	The pixel has negative nLw value in one or more bands (Band2, 3, 4, 5, 7, 8). * If the physical values are expressed as "signed", this field is not necessary.
	18	Low nLw(545)	Flag	Yes	No	The pixel has nLw(545) less than a fixed threshold (default 0.20mW/cm^2/um/sr).
	19	Lack of Ozone	Flag	Yes	Yes	0: TOMS or TOVS data is used. 1: Climatological data is used.
	20	Lack of Wind Data	Flag	Yes	Yes	0: Objective analysis data is used; 1 : SeaWinds or AMSR or Climatological data is used
	21	Whitecap	Flag	Yes	Yes	Measured radiance may be affected by whitecap.
	22					[0,0] : negligible (W.S.=0~6m/s); [0,1] : moderate (W.S.=6~12m/s); [1,0]: strong *The information whether whitecap correction is applied or not is described in the HDF global
	23	Alternative Band	Flag	Yes	Yes	Alternative band is used in atmospheric correction for this pixel.
	24	Absorptive aerosol	Flag	Yes	Yes	Absorptive aerosol correction is applied to this pixel.
	25	Iteration Failed	Flag	Yes	Yes	Number of iteration is more than a threshold (default 10 times) for this pixel.
In-Water	26	Shallow Water	Flag	Yes	Yes	Pixel location is judged to be shallow based on the bathymetry data base.
	27	Turbid Case 2	Flag	Yes	Yes	"Turbid case 2 water" pixel.
	28	Coccolithophore	Flag	Yes	Yes	"Coccolithophore bloom" pixel.
	29	Red Tide	Flag	Yes	Yes	"Red tide" pixel.
	30	(Spare)				
	31	(Spare)				

200A

200A

200A

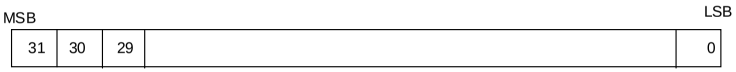
* Note: PAR is processed except for Mask*.

200A

** Note: Lacked area in the ancillary data is processed as follows.

1) If a serious lack exists in the ancillary data, all of the data in the scene is replaced the other source and the replacement s

2) If the lacked area in the ancillary data is small, the lacked area is interpolated from around data and the flag field corresponds to the inte



Bit number starts at LSB (Least Significant Bit)

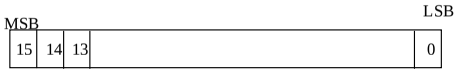
(3) Sea Surface Temperature (ST_LR

p : Number of pixels per line("Pixels per Scan Line" in Global Attributes)
l#1 : Number of lines per current tilt segment("Lines per Tilt #1" in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
ST_LR #1 [geophysical parameter]	**Sea Surface Temperature #1**	**sst #1**	l #1[lines #1]	p [pixels]			Ushort	GLI bulk sea surface temperature of low resolution #1	(0,6000)	Kelvin	actual range: 263.15 - 323.15
	Scale factor #1	**scf #1**	(1)				Float	Scale Factor #1			constant (0.01)
	Intercept #1	**intercept #1**	(1)				Float	Intercept #1			constant (263.15)
	SST QC flag #1	**flag #1**	l #1[lines#1]	p [pixels]			Ushort	Quality flag or mask for ST_LR #1			Table 4.5-3

Table 4.5-3 QF_ST bit configuration

Bit No.	Name	value	Level-2 Mask/Flag		Level-3 Binning		Note
			Phase-1	Phase-2	Phase-1	Phase-2	Phase-1: Before initial validations / Phase-2: After initial validation
0	Land/Sea	0=Sea / 1=Land	Mask	Mask	No	No	From L1B land/sea flag
1	Cloud	0=Clear / 1=Cloudy	Mask	Mask	No	No	From cloud detection algorithm by Dr. Sakaida
2	Lack of observation	0=No / 1=Yes	Mask	Mask	No	No	Insufficient band set or some err in L1B data quality
3	Large emission angle	0=No / 1=Yes	Flag	Flag	No	No	This is set in Satellite zenith angle >55degree.
4	Out of valid range	0=No / 1=Yes	Flag	Flag	Yes	No	The threshold of the difference between GLI SST and climate SST is *TBD*. When abs(Estimated SST -Climate SST)> threshold map, Flag in L2.
5	Day/Night	0=Day / 1=Night	Flag	Flag	Yes	Yes	This is depend on the Day/Night definition of the SST estimation algorithm (coefficients). If there is no distinction in the algorithm, the threshold is set by the solar zenith angle of 90 degrees. These Day/Night are separately binned in L3binned SST.
6	Sunglint area	0=No / 1=Yes	Flag	Flag	Yes	Yes	This is set in the sunglint area in the cloud detection algorithm.
7	Forward tilt	0=No / 1=Yes	Flag	Flag	Yes	Yes	This is a caution of the TI calibration problem in the tilting operation. Forward means +20 degree (to be exact, 18.5 degree). The information is got from L1B header.
8	Backward tilt	0=No / 1=Yes	Flag	Flag	Yes	Yes	This is a caution of the TI calibration problem in the tilting operation. Backward means -20 degree.
9-10	Ackermann's four cloud class	00=cloudy 01=probably cloud 10=confident clear 11=high confidence clear	Flag	Flag	Yes	Yes	
11-15	Spare		-	-	-	-	



Bit number starts at LSB (Least Significant Bit)

4.6 Land (global)

Each product file has only one geophysical parameter. Totally 3 product files exist. (Table 4.6-1)

Table 4.6-1 List of land Level-2 products

No.	Classification	Product Code	Description
1	Precise geometric correction	PGCP	Precise geometric corrected parameter
2	Atmospheric correction	ACLC	Atmospheric corrected data for land and cryosphere
3	Vegetation index	VGI	Vegetation index

PGCP is Precise geometric corrected parameter. This data is not image data. This is a result of precise geometric correction based on GCP matching. User can obtain precise geometric corrected image by applying PGCP and Level-1B to the map projection program which will be provided by NASDA. Although this is not image, this file is classified to scene type because this data is always used with Level-1B.

ACLC is basically same as Level-2A_LC except each pixel is atmospheric corrected. This covers the globe and map projected (polar stereographic in polar region and equi-rectangular in middle latitude region). The spatial resolution is 0.5 arc-min. The pixel value is radiance data.

VGI is vegetation index data for each pixel of Level-2A_LC or ACLC.

As these land global product is huge, they are separated to several files.

ACLC consists of 56 regions as same as Level-2A_LC. Each region is an independent file (Fig.4.6-1).

VGI consists of 5 zones. Each region is an independent file (Fig.4.6-2).

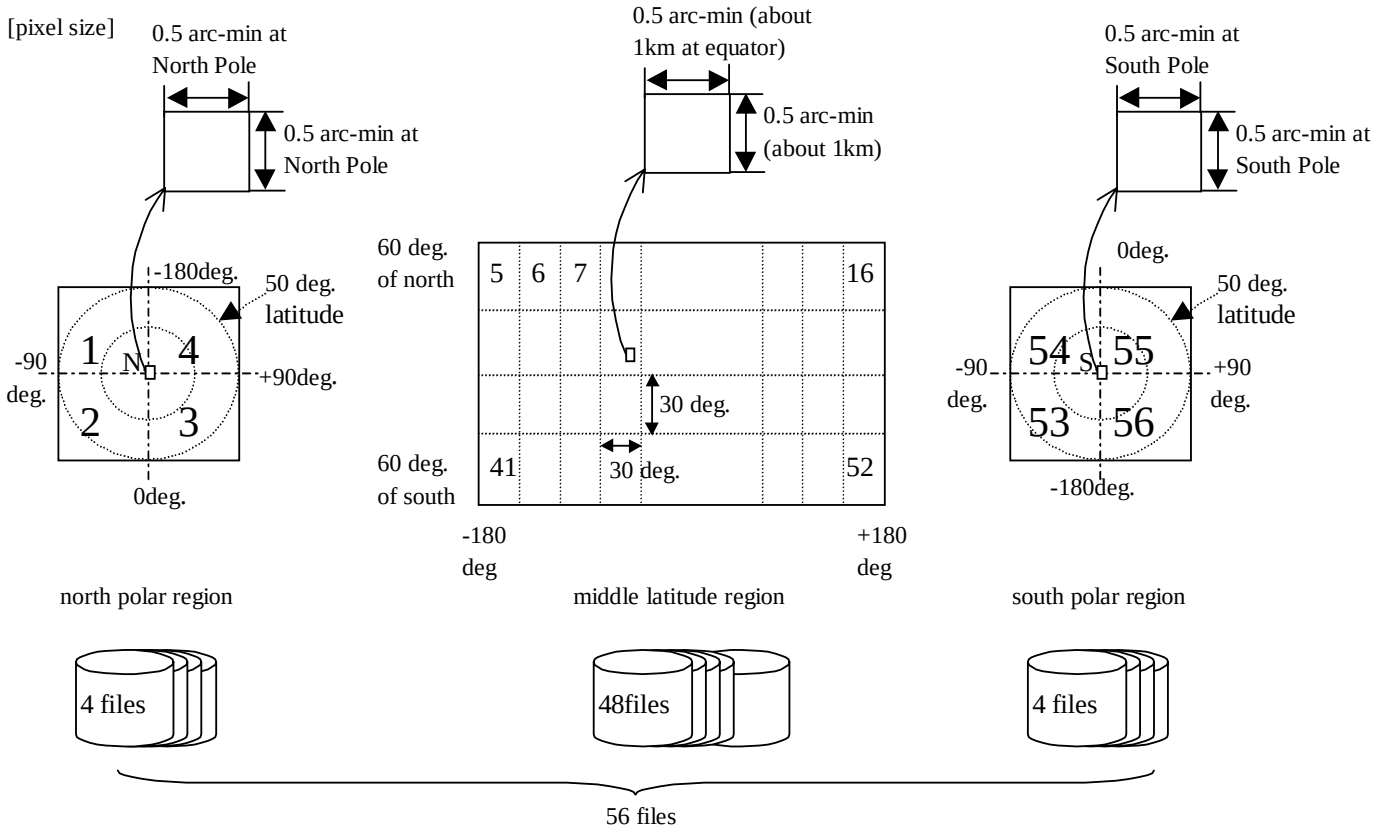


Fig.4.6-1 ACLC Area Separation

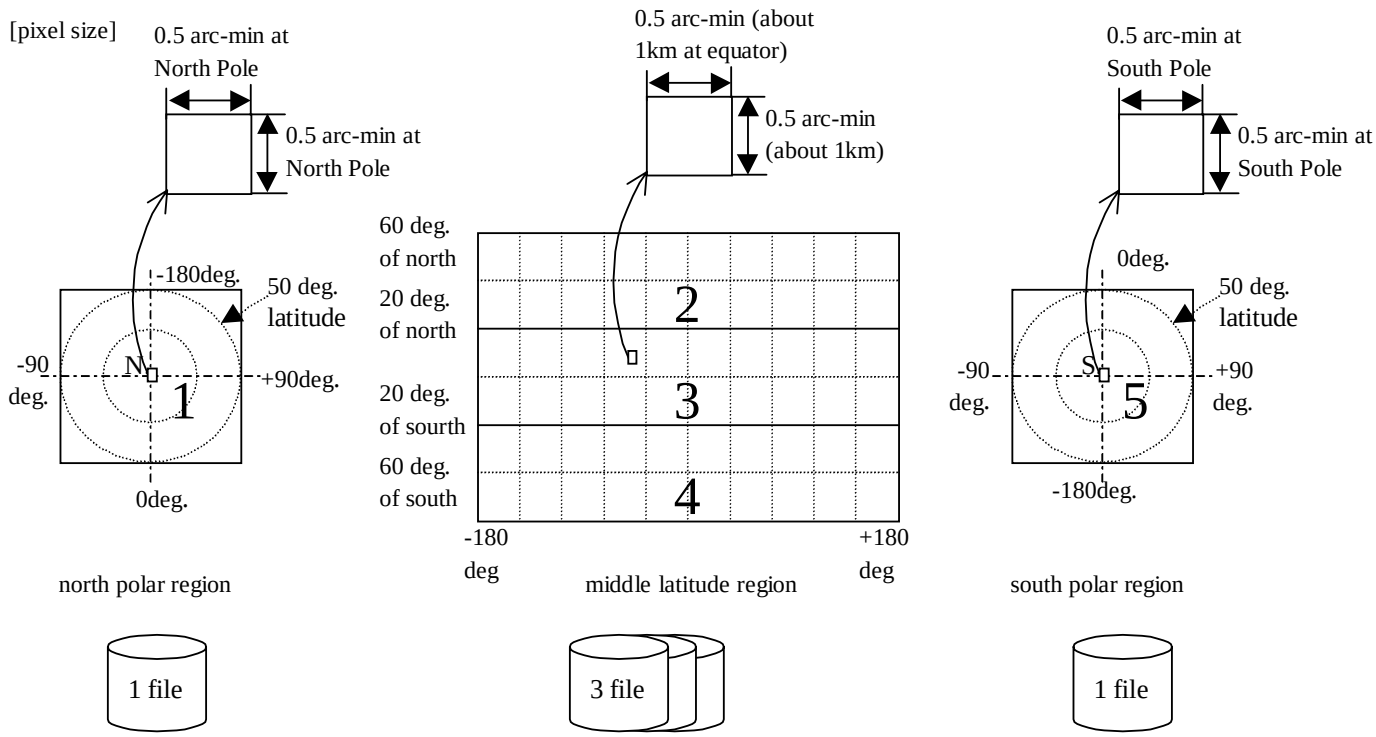


Fig.4.6-2 VGI Zone Separation

4.6.1 Generic Header

See chapter 2 for the detail. Some items related this products are shown below.

(1) PGCP

data name	value
Title	"GLI Level-2 Data"
Data type	"scene 1km"
Data Sub-type	"PGCP"
Orbit Number	1-∞
Upper Left Latitude	* (appropriate value is set, depending on the scene)
Upper Left Longitude	*
Upper Right Latitude	*
Upper Right Longitude	*
Lower Left Latitude	*
Lower Left Longitude	*
Lower Right Latitude	*
Lower Right Longitude	*
Map Projection	"N/A"

(2) ACLC

For north polar region:

data name	value
Title	"GLI Level-2 Data"
Data type	"global"
Data Sub-type	"ACLC"
Orbit Number	-1 (-1 means that this data has no meaning)
Upper Left Latitude	* (the value depends on area No.)
Upper Left Longitude	*
Upper Right Latitude	*
Upper Right Longitude	*
Lower Left Latitude	*
Lower Left Longitude	*
Lower Right Latitude	*
Lower Right Longitude	*
Map Projection	"PS"

For middle latitude region:

data name	value
Title	"GLI Level-2 Data"
Data type	"global"
Data Sub-type	"ACLC"
Orbit Number	-1 (-1 means that this data has no meaning)
Upper Left Latitude	* (the value depends on area No.)
Upper Left Longitude	*
Upper Right Latitude	*
Upper Right Longitude	*
Lower Left Latitude	*
Lower Left Longitude	*
Lower Right Latitude	*
Lower Right Longitude	*
Map Projection	"EQR"

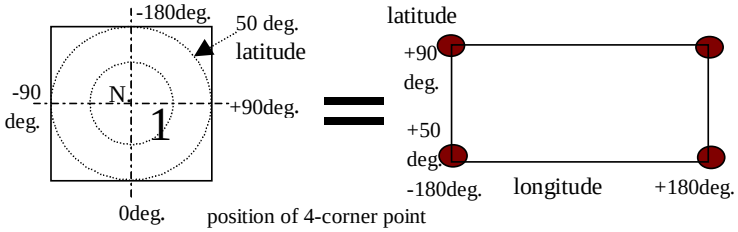
For south polar region:

data name	value
Title	"GLI Level-2 Data"
Data type	"global"
Data Sub-type	"ACLC"
Orbit Number	-1 (-1 means that this data has no meaning)
Upper Left Latitude	* (the value depends on area No.)
Upper Left Longitude	*
Upper Right Latitude	*
Upper Right Longitude	*
Lower Left Latitude	*
Lower Left Longitude	*
Lower Right Latitude	*
Lower Right Longitude	*
Map Projection	"PS"

(3) VGI

For north polar region:

data name	value
Title	"GLI Level-2 Data"
Data type	"global"
Data Sub-type	"VGI"
Orbit Number	-1 (-1 means that this data has no meaning)
Upper Left Latitude	90.0
Upper Left Longitude	-180.0
Upper Right Latitude	90.0
Upper Right Longitude	180.0
Lower Left Latitude	50.0
Lower Left Longitude	-180.0
Lower Right Latitude	50.0
Lower Right Longitude	180.0
Map Projection	"PS"



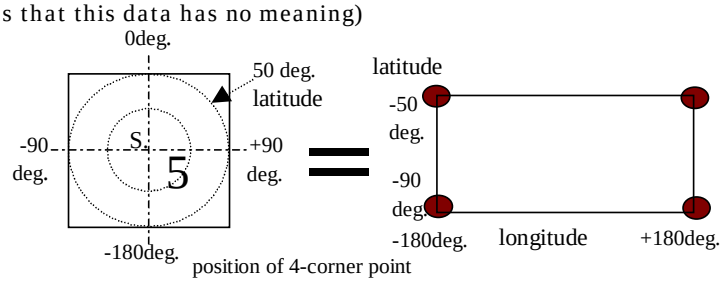
position of 4-corner point

For middle latitude region:

data name	value		
Title	"GLI Level-2 Data"		
Data type	"global"		
Data Sub-type	"VGI"		
Orbit Number	-1 (-1 means that this data has no meaning)		
Upper Left Latitude	60.0	20.0	-20.0
Upper Left Longitude	-180.0		
Upper Right Latitude	60.0	20.0	-20.0
Upper Right Longitude	180.0		
Lower Left Latitude	20.0	-20.0	-60.0
Lower Left Longitude	-180.0		
Lower Right Latitude	20.0	-20.0	-60.0
Lower Right Longitude	180.0		
Map Projection	"EQR"		

For south polar region:

data name	value
Title	"GLI Level-2 Data"
Data type	"global"
Data Sub-type	"VGI"
Orbit Number	-1 (-1 means that this data has no meaning)
Upper Left Latitude	-50.0
Upper Left Longitude	-180.0
Upper Right Latitude	-50.0
Upper Right Longitude	180.0
Lower Left Latitude	-90.0
Lower Left Longitude	-180.0
Lower Right Latitude	-90.0
Lower Right Longitude	180.0
Map Projection	"PS"



position of 4-corner point

4.6.2 Specific Header

(1) Precise Geometric Corrected Parameter (PGCP)

category	data name	type	count	contents	const.	remarks	source of data: input data	source of data: this process
Map information	**Number of Columns**	Long	1			(If "Map Projection"="MIX", the value in the case of EQR is stored.)		O
	Number of Lines	Long	1			(If "Map Projection"="MIX", the value in the case of EQR is stored.)		O
	Number of Columns2	Long	1			(stored only when "Map Projection"="MIX". And the value in the case of PS is stored here.)		
	Number of Lines2	Long	1			(stored only when "Map Projection"="MIX". And the value in the case of PS is stored here.)		O
	Map Projection	Ch	1	"EQR": Equi-rectangular, "PS": polarstereographic, "MIX": orverlapped				O
	Resampling Method	Ch	1	"NN": nearest neighbor				O
	Earth Ellipsoid Type	Ch	1	"WGS84"	const.			O
	Reference Longitude	Real	1	(ex.)0.0		stored only when PS. reference longitude of PS projection.		O
	grid interval	Real	1	(ex.)0.5		[unit] arc-minute of angle		O
	Equatorial Radius	Real	1					O
QA/QC data (L1B succession data)	**Missing Packets**	Long	1	the number of missing packet		only 1km data.	O	
	Missing Frames	Long	1			only 250m data.	O	
	Missing Lines	Long	1	the number of missing lines			O	
	Saturated Pixels	Long	1	the number of saturated pixels			O	
	Saturated Pixels for SWIR 2km	Long	1	the number of saturated pixels for SWIR 2km		using SWIR ch.s only	O	
	Non-Saturated Pixels	Long	1	the number of non saturated pixels			O	
	Non-Saturated Pixels for SWIR 2km	Long	1	the number of non saturated pixels for SWIR 2km		using SWIR ch.s only	O	
	GPS Flag	Ch	4	"OK","NG","TE","TX"		Normal:"OK", Time retrieval from TT:"NG",Time retrieval from ST:"TX",GPSR error:"TE"	O	
	L1B Software ID	Ch					O	
	L1B Parameter Ver.	Ch					O	

(2) Atmospheric correction (ACLC)

category	data name	type	count	contents	const.	remarks	source of data: input data	source of data: this process
Data Time	**Start Year**	Short	1			year of Start Time	O	
	Start Day	Short	1			day-of-year of Start Time(0 on Jan. 1st)	O	
	Start Millisec	Long	1			milliseconds-of-day of Start Time	O	
	End Year	Short	1			year of End Time	O	
	End Day	Short	1			day-of-year of End Time(0 on Jan. 1st)	O	
	End Millisec	Long	1			milliseconds-of-day of End Time	O	
Area Coordinates	**Latitude Units**	Ch	14	"degrees North"	const.	Units used for all latitude values in this product	O	
	Longitude Units	Ch	13	"degrees East"	const.	Units used for all longitude values in this product	O	
Map Information	**Area Number**	Ushort	1	1-56		area number of this data defined from1 to 56	O	
	Number of Columns	Long	1			the number of pixels in one line	O	
	Number of Lines	Long	1			the number of lines in this data	O	
	Resampling Method	Ch	3	"NN"	const.	Nearest Neighbor	O	
	Earth Ellipsoid Type	Ch	1	"WGS84"	const.		O	
	Reference Longitude	Real	1	(ex.)0.0		"0.0"(dummy) is stored for EQR projection.	O	
	grid interval	Real	1	(ex.)0.5		[unit] arc-minute of angle	O	
QA/QC data (L2/L3 common QA data)	**Ancillary Data Characteristic**	Ch		"STD": used standard data, "SUB": used substitution data		Worst value is set if there are several geophysical parameters are included in this product.		O

(3) Vegetation index (VGI)

category	data name	type	count	contents		remarks	source of data	
					const.		input data	this process
Data Time	**Start Year**	Short	1			year of Start Time	O	
	Start Day	Short	1			day-of-year of Start Time(0 on Jan. 1st)	O	
	Start Millisec	Long	1			milliseconds-of-day of Start Time	O	
	End Year	Short	1			year of End Time	O	
	End Day	Short	1			day-of-year of End Time(0 on Jan. 1st)	O	
	End Millisec	Long	1			milliseconds-of-day of End Time	O	
Area Coordinates	**Latitude Units**	Ch	14	"degrees North"	const.	Units used for all latitude values in this product	O	
	Longitude Units	Ch	13	"degrees East"	const.	Units used for all longitude values in this product	O	
Map Information	**Zone Number**	Ushort	1	1-5		zone number of this data defined from 1 to 5		O
	Number of Columns	Long	1			the number of pixels in one line		O
	Number of Lines	Long	1			the number of lines in this data		O
	Resampling Method	Ch	3	"NN"	const.	Nearest Neighbor	O	
	Earth Ellipsoid Type	Ch	1	"WGS84"	const.		O	
	Reference Longitude	Real	1	(ex.)0.0		"0.0"(dummy) is stored for EQR projection.	O	
	grid interval	Real	1	(ex.)0.5		[unit] arc-minute of angle	O	

4.6.3 Common Part(Body)

Not assigned

4.6.4 Specific Part(Body)

(1) Precise Geometric Corrected Parameter (PGCP)

m: the number of grid on PGCI, pixel direction
n: the number of grid on PGCI, line direction

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
PGCP	**pgci_blk_paddr**	**pgci_blk_paddr**	m [blk_pixel]				Short	PGCP			
[geophysical parameter]	**pgci_blk_laddr**	**pgci_blk_laddr**	n [blk_line]				Short	Address for line direction of PGCP			
	blk_l1b_paddr	**blk_l1b_paddr**	n [blk_line]	m [blk_pixel]			Short	Pixel No. of L1B corresponding to PGCP grid			
	blk_l1b_laddr	**blk_l1b_laddr**	n [blk_line]	m [blk_pixel]			Short	Line No. of L1B corresponding to PGCP grid			
	no_in_line	**no_in_line**					Long	Number of Input Image (Line)			
	no_in_pixel	**no_in_pixel**					Long	Number of Input Image (Pixel)			
	no_out_line	**no_out_line**					Long	Number of Output Image (Line)			
	no_out_pixel	**no_out_pixel**					Long	Number of Output Image (Pixel)			
	res_flag	**res_flag**					Long	Resolution Flag			
	prj_flag	**prj_flag**					Long	Projection Flag			
	ns_flag	**ns_flag**					Long	Polar Flag			
	ofst_line	**ofst_line**					Long	Line Offset			
	ofst_pixel	**ofst_pixel**					Long	Pixel Offset			
	wlsiz_line	**wlsiz_line**					Long	Whole Image Size (Line)			
	wlsiz_pixel	**wlsiz_pixel**					Long	Whole Image Size (Pixel)			
	msh_line	**msh_line**					Long	Number of Meshes (Line)			
	msh_pixel	**msh_pixel**					Long	Number of Meshes (Pixel)			
	pitch_line	**pitch_line**					Long	Resampling Pitch (Line)			
	pitch_pixel	**pitch_pixel**					Long	Resampling Pitch (Pixel)			

* Following data are stored only when "Map Projection" equals "MIX". The values when "PS" projection are stored to following table and the values when "EQR" projection are stored to above table

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
PGCP	**pgci_blk_paddr_2**	**pgci_blk_paddr_2**	m [blk_pixel]				Short	PGCP2			
[geophysical parameter]	**pgci_blk_laddr_2**	**pgci_blk_laddr_2**	n [blk_line]				Short	PGCP2			
	blk_l1b_paddr_2	**blk_l1b_paddr_2**	n [blk_line]	m [blk_pixel]			Short	Pixel No. of L1B corresponding to PGCP2 grid			
	blk_l1b_laddr_2	**blk_l1b_laddr_2**	n [blk_line]	m [blk_pixel]			Short	Line No. of L1B corresponding to PGCP2 grid			
	no_in_line_2	**no_in_line_2**					Long	Number of Input Image (Line)2			
	no_in_pixel_2	**no_in_pixel_2**					Long	Number of Input Image (Pixel)2			
	no_out_line_2	**no_out_line_2**					Long	Number of Output Image (Line)2			
	no_out_pixel_2	**no_out_pixel_2**					Long	Number of Output Image (Pixel)2			
	res_flag_2	**res_flag_2**					Long	Resolution Flag2			
	prj_flag_2	**prj_flag_2**					Long	Projection Flag2			
	ns_flag_2	**ns_flag_2**					Long	Polar Flag2			
	ofst_line_2	**ofst_line_2**					Long	Line Offset2			
	ofst_pixel_2	**ofst_pixel_2**					Long	Pixel Offset2			
	wlsiz_line_2	**wlsiz_line_2**					Long	Whole Image Size (Line)2			
	wlsiz_pixel_2	**wlsiz_pixel_2**					Long	Whole Image Size (Pixel)2			
	msh_line_2	**msh_line_2**					Long	Number of Meshes (Line)2			
	msh_pixel_2	**msh_pixel_2**					Long	Number of Meshes (Pixel)2			
	pitch_line_2	**pitch_line_2**					Long	Resampling Pitch (Line)2			
	pitch_pixel_2	**pitch_pixel_2**					Long	Resampling Pitch (Pixel)2			

(2) Atmospheric correction (ACLC)

p : Number of pixels per line ("Number of Pixel" in Global Attributes)
l : Number of lines ("Number of Line" in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
ACLC [geophysical parameter]	**1km surface reflectance ch.1**	**ref_ch1**	l [lines]	p [pixels]			Ushort	1km surface reflectance ch.1	(0, 20000)		physical value=0.0001*storing value
	1km surface reflectance ch.5	**ref_ch5**	l [lines]	p [pixels]			Ushort	1km surface reflectance ch.5	(0, 20000)		physical value=0.0001*storing value
	1km surface reflectance ch.8	**ref_ch8**	l [lines]	p [pixels]			Ushort	1km surface reflectance ch.8	(0, 20000)		physical value=0.0001*storing value
	1km surface reflectance ch.13	**ref_ch13**	l [lines]	p [pixels]			Ushort	1km surface reflectance ch.13	(0, 20000)		physical value=0.0001*storing value
	1km surface reflectance ch.15	**ref_ch15**	l [lines]	p [pixels]			Ushort	1km surface reflectance ch.15	(0, 20000)		physical value=0.0001*storing value
	1km surface reflectance ch.17	**ref_ch17**	l [lines]	p [pixels]			Ushort	1km surface reflectance ch.17	(0, 20000)		physical value=0.0001*storing value
	1km surface reflectance ch.19	**ref_ch19**	l [lines]	p [pixels]			Ushort	1km surface reflectance ch.19	(0, 20000)		physical value=0.0001*storing value
	1km surface reflectance ch.24	**ref_ch24**	l [lines]	p [pixels]			Ushort	1km surface reflectance ch.24	(0, 20000)		physical value=0.0001*storing value
	1km surface reflectance ch.26	**ref_ch26**	l [lines]	p [pixels]			Ushort	1km surface reflectance ch.26	(0, 20000)		physical value=0.0001*storing value
	1km surface reflectance ch.27	**ref_ch27**	l [lines]	p [pixels]			Ushort	1km surface reflectance ch.27	(0, 20000)		physical value=0.0001*storing value
	1km surface reflectance ch.28	**ref_ch28**	l [lines]	p [pixels]			Ushort	1km surface reflectance ch.28	(0, 20000)		ditto (2km sampled data is used)
	1km surface reflectance ch.29	**ref_ch29**	l [lines]	p [pixels]			Ushort	1km surface reflectance ch.29	(0, 20000)		ditto (2km sampled data is used)
	1km radiance ch.30	**rad_ch30**	l [lines]	p [pixels]			Ushort	1km radiance ch.30	(0, 4095)	w/m^2/micro-m/sr	physical value=c1[0]*storing value(same as L1B DN)
	1km radiance ch.31	**rad_ch31**	l [lines]	p [pixels]			Ushort	1km radiance ch.31	(0, 4095)	w/m^2/micro-m/sr	physical value=c1[1]*storing value(same as L1B DN)
	1km radiance ch.34	**rad_ch34**	l [lines]	p [pixels]			Ushort	1km radiance ch.34	(0, 4095)	w/m^2/micro-m/sr	physical value=c1[4]*storing value(same as L1B DN)
	1km radiance ch.35	**rad_ch35**	l [lines]	p [pixels]			Ushort	1km radiance ch.35	(0, 65535)	w/m^2/micro-m/sr	physical value=c1[5]*storing value(same as L1B DN)
	1km radiance ch.36	**rad_ch36**	l [lines]	p [pixels]			Ushort	1km radiance ch.36	(0, 4095)	w/m^2/micro-m/sr	physical value=c1[6]*storing value(same as L1B DN)
	Satellite zenith angle	**sat_zenith**	l [lines]	p [pixels]			Ushort	Satellite Zenith Angle	(0, 18000)	Degree	physical value=0.01*storing value
	Solar zenith angle	**sun_zenith**	l [lines]	p [pixels]			Ushort	Solar Zenith Angle	(0, 18000)	Degree	physical value=0.01*storing value
	Relative azimuth angle	**rel_azimuth**	l [lines]	p [pixels]			UShort	Relative Azimuth Angle	(0, 36000)	Degree	physical value=0.01*storing value
	Observation time	**obs_time**	l [lines]	p [pixels]			Double	Observation time		day(MJD)	Observation time of each pixel. MJD expression
Quality Flag [Map Projected Data]	**Quality_Flag**	**qc_flag**	l[lines]	p [pixels]			Ushort	Quality Control Flag			see Table 4.6-1
Absolute Calibration Table [Calibration Data]	**Absolute calibration coefficient**	**c1**	number of channels(7) [chnlsmt]				Real	C1			For MTIR (ch.30-36)

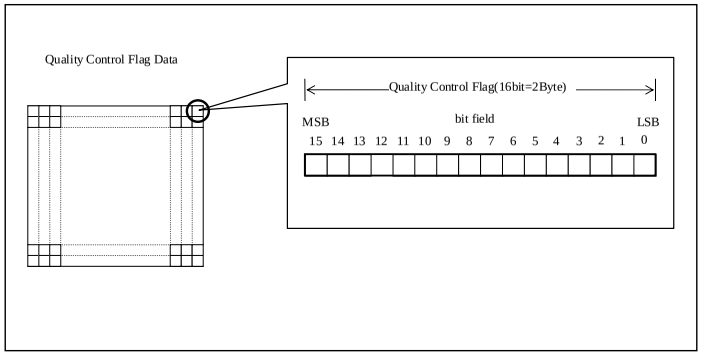
(3) Vegetation index (VGI)

p : Number of pixels per line ("Number of Pixel" in Global Attributes)
l : Number of lines ("Number of Line" in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
VGI [geophysical parameter]	**1km 16days NDVI**	**NDVI**	l [lines]	p [pixels]			Short	Normalized Difference Vegetation Index	(-2000, 10000)		physical value=0.0001*storing value
	1km 16days EVI	**EVI**	l [lines]	p [pixels]			Short	Enhanced Vegetation Index	(-2000, 10000)		physical value=0.0001*storing value

Table 4.6-1 QUALITY CONTROL FLAG BIT CONFIGURATION

bit field	Description	Key
0	Composite method	0 = CMVC / 1 = other method
1	Land/Water flag(from L/O flag)	0 = Ocean or nodata / 1 = Land
2-4	Surface classification flag(from CTSK1)	000 = snow over ice 001 = sea ice 010 = cloud shadow 011 = land 100 = open water 101 = snow over land 111 = spare
5	Atmospheric correction flag	0 = not applied 1 = applied
6-15	spare	



4.7 Cryosphere (global)

Each product file has several geophysical parameters. Totally 1 product files exist. (Table 4.7-1)

Table 4.7-1 List of cryosphere (global) Level-2 products

No.	Classification	Product Code	Description
1	Snow property	SNGI	This file includes 5 parameters. - Snow impurities (SNWI) - Snow grain size (865nm) (SNWG) - Snow grain size (1640nm) (SNWGS) - Snow surface temperature (SNWTS) - Surface classification flag (SCFG)

SNGI covers the globe and map projected (polar stereographic in polar region and equi-rectangular in middle latitude region). The spatial resolution is 0.5 arc-min.

This consists of 4 zone. Each region is an independent file (Fig.4.7-1). The equator zone is not included in these product.

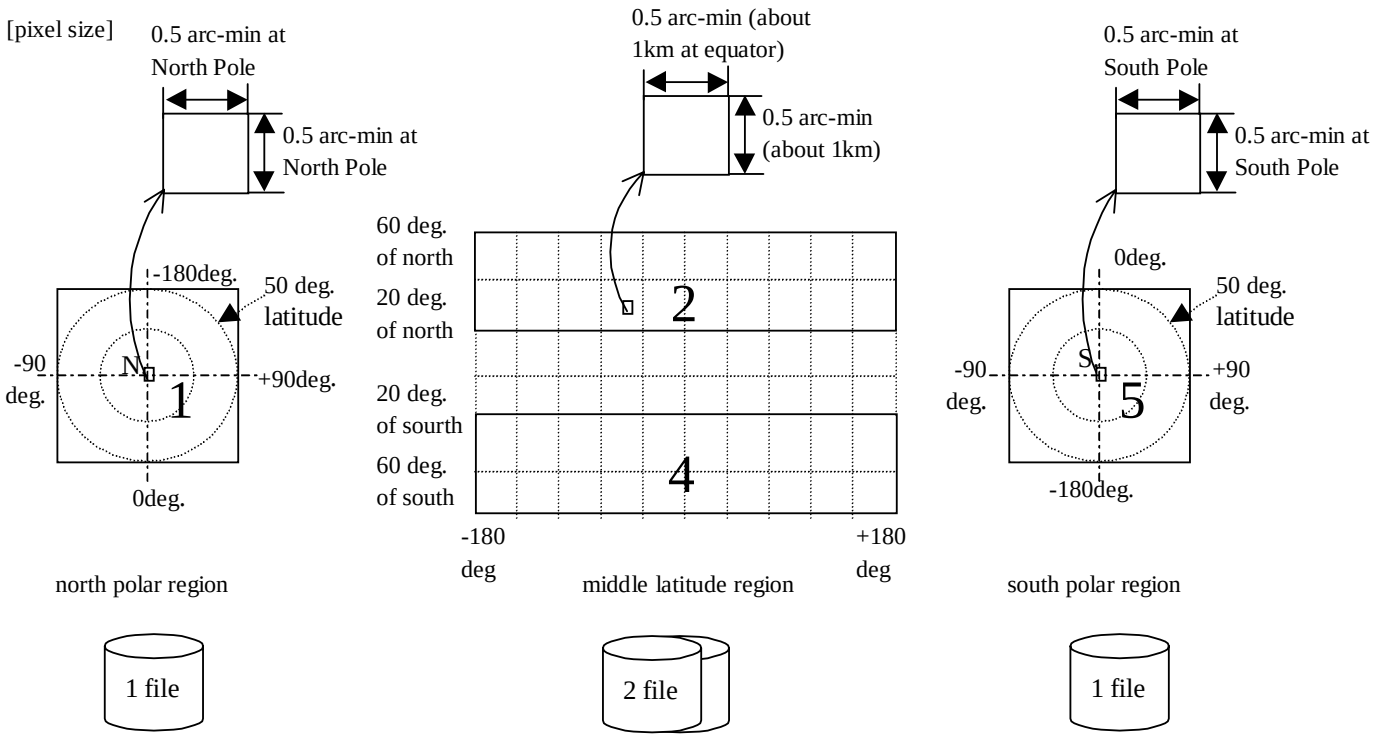


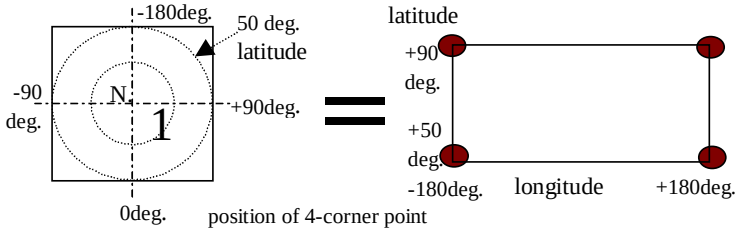
Fig.4.7-1 SNGI Zone Separation

4.7.1 Generic Header

See chapter 2 for the detail. Some items related this products are shown below.

For north polar region:

data name	value
Title	"GLI Level-2 Data"
Data type	"global"
Data Sub-type	"SNGI"
Orbit Number	-1 (-1 means that this data has no meaning)
Upper Left Latitude	90.0
Upper Left Longitude	-180.0
Upper Right Latitude	90.0
Upper Right Longitude	180.0
Lower Left Latitude	50.0
Lower Left Longitude	-180.0
Lower Right Latitude	50.0
Lower Right Longitude	180.0
Map Projection	"PS"

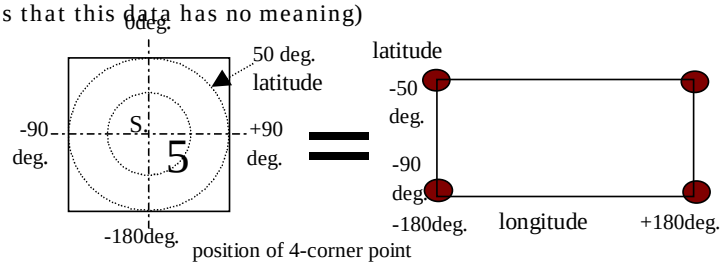


For middle latitude region:

data name	value	
Title	"GLI Level-2 Data"	
Data type	"global"	
Data Sub-type	"SNGI"	
Orbit Number	-1 (-1 means that this data has no meaning)	
Upper Left Latitude	60.0 (zone 2)	-20.0 (zone 4)
Upper Left Longitude	-180.0	
Upper Right Latitude	60.0 (zone 2)	-20.0 (zone 4)
Upper Right Longitude	180.0	
Lower Left Latitude	20.0 (zone 2)	-60.0 (zone 4)
Lower Left Longitude	-180.0	
Lower Right Latitude	20.0 (zone 2)	-60.0 (zone 4)
Lower Right Longitude	180.0	
Map Projection	"EQR"	

For south polar region:

data name	value
Title	"GLI Level-2 Data"
Data type	"global"
Data Sub-type	"SNGI"
Orbit Number	-1 (-1 means that this data has no meaning)
Upper Left Latitude	-50.0
Upper Left Longitude	-180.0
Upper Right Latitude	-50.0
Upper Right Longitude	180.0
Lower Left Latitude	-90.0
Lower Left Longitude	-180.0
Lower Right Latitude	-90.0
Lower Right Longitude	180.0
Map Projection	"PS"



4.7.2 Specific Header

category	data name	type	count	contents	const.	remarks
Data Time	**Start Year**	Short	1			year of Start Time
	Start Day	Short	1			day-of-year of Start Time(0 on Jan. 1st)
	Start Millisec	Long	1			milliseconds-of-day of Start Time
	End Year	Short	1			year of End Time
	End Day	Short	1			day-of-year of End Time(0 on Jan. 1st)
	End Millisec	Long	1			milliseconds-of-day of End Time
Area Coordinates	**Latitude Units**	Ch	14	"degrees North"	const.	Units used for all latitude values in this product
	Longitude Units	Ch	13	"degrees East"	const.	Units used for all longitude values in this product
Map Information	**Zone Number**	Ushort	1	1, 2, 4, 5		zone number of this data defined from 1 to 5 (3 is lacked)
	Number of Pixel	Long	1			the number of pixels in one line
	Number of Line	Long	1			the number of lines in this data
	Resampling Method	Ch	3	"NN"	const.	Nearest Neighbor
	Earth Ellipsoid Type	Ch	1	"WGS84"	const.	
	Reference Longitude	Real	1	(ex.)0.0		stored only when PS. reference longitude of PS projection.
	grid interval	Real	1	(ex.)0.5		[unit] arc-minute of angle

4.7.3 Common Part(Body)

Not assigned

4.7.4 Specific Part(Body)

(1) Snow property (SNGI)

p : Number of pixels per line ("Number of Pixel" in Global Attributes)
l : Number of lines ("Number of Line" in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
SNGI_p [geophysical parameter]	**Surface classification flag**	**scfg**	l [lines]	p [pixels]			Byte	Surface classification flag			Flag value: 0 = not executed, 1 = snow over ice, 3 = high-confidence cloudy, 5 = middle-confidence cloudy, 7 = low-confidence cloudy, 9 = sea ice, 17 = cloud shadow on snow, 25 = land with vegetation, 33 = open ocean, 41 = snow over land, 49 snow over land contaminated with vegetation, 57 = bare land with less vegetation
	Number of total pixel	**nmpix**	(1)				Long	Number of total pixel			
	Number of 100% cloud pixel	**n2s**	(1)				Long	Number of 100% cloud pixel			
	Number of 50-100% cloud pixel	**n3s**	(1)				Long	Number of 50-100% cloud pixel			
	Number of 0-50% cloud pixel	**n4s**	(1)				Long	Number of 0-50% cloud pixel			
	Number of snow covered ocean pixel	**n1s**	(1)				Long	Number of snow covered ocean pixel			
	Number of sea-ice pixel	**n5s**	(1)				Long	Number of sea-ice pixel			
	Number of land pixel	**n7s**	(1)				Long	Number of land pixel			
	Number of water pixel	**n8s**	(1)				Long	Number of water pixel			
	Number of snow covered land pixel	**n9s**	(1)				Long	Number of snow covered land pixel			
	Number of bad data pixel	**nbads**	(1)				Long	Number of bad data pixel			
	Number of cloud shadow pixel	**n6s**	(1)				Long	Number of cloud shadow pixel			
	Ratio of cloud pix. with 100% conf.	**pcn2s**	(1)				Real	Ratio of cloud pix. with 100% conf.	(0.0, 100.0)	%	
	Ratio of cloud pix. with 50-100% conf.	**pcn3s**	(1)				Real	Ratio of cloud pix. with 50-100%	(0.0, 100.0)	%	
	Ratio of cloud pix. with 0-50% conf.	**pcn4s**	(1)				Real	Ratio of cloud pix. with 0-50% conf.	(0.0, 100.0)	%	
	Ratio of snow covered ocean	**pcn1s**	(1)				Real	Ratio of snow covered ocean	(0.0, 100.0)	%	
	Ratio of sea ice	**pcn5s**	(1)				Real	Ratio of sea ice	(0.0, 100.0)	%	
	Ratio of land	**pcn7s**	(1)				Real	Ratio of land	(0.0, 100.0)	%	
	Ratio of water	**pcn8s**	(1)				Real	Ratio of water	(0.0, 100.0)	%	
	Ratio of snow covered land	**pcn9s**	(1)				Real	Ratio of snow covered land	(0.0, 100.0)	%	
	Ratio of cloud shadow	**pcn6s**	(1)				Real	Ratio of cloud shadow	(0.0, 100.0)	%	
	Snow impurities	**snwi**	l [lines]	p [pixels]			Short	Snow impurities as soot	(0, 30000)	ppmw	actual valid range : 0.0000 - 3.0000 ppmw bad data = -1000, other = -4000 bad data: snow pixel but bad snwi value, other: not snow pixel
	Snow grain size (865nm)	**snwg**	l [lines]	p [pixels]			Short	Snow grain size retrieved with 865nm band	(0, 30000)	micro meter	actual valid range : 0.0 - 3000.0 micro-m bad data = -1000, other = -4000 bad data: snow pixel but bad snwg value, other: not snow pixel
	Snow grain size (1640nm)	**snwgs**	l [lines]	p [pixels]			Short	Snow grain size retrieved with 1640nm band	(0, 30000)	micro meter	actual valid range : 0.0 - 3000.0 micro-m bad data = -1000, other = -4000 bad data: snow pixel but bad snwgs value, other: not snow pixel
	Snow surface temperature	**snwts**	l [lines]	p [pixels]			Short	Snow surface temperature	(0, 30000)	Kelvin	actual valid range : 0.0000 - 300.0 Kelvin bad data = -1000, other = -4000 bad data: snow pixel but bad snwts value, other: not snow pixel
	Scale factor of snow impurities	**snwi_sf**	(1)				Short	Scale factor of snow impurities			actual value = snwi * snwi_sf
	Scale factor of snow grain size	**snwg_sf**	(1)				Short	Scale factor of snow grain size			actual value = (snwg or snwgs) * snwg_sf
	Scale factor of snow surface temperature	**snwt_sf**	(1)				Short	Scale factor of snow surface temperature			actual value = snwts * snwt_sf

4.8 Cryoshpere (scene)

There is 1 Level-2 product. Each product file has several geophysical parameters. (Table 4.8-1) These products are generated from Level-1B product.

Table 4.8-1 List of cryosphere (scene) Level-2 products

No.	Classification	Product Code	Description
1	Snow property	SNGI_p	This file includes 5 parameters. - Snow impurities (SNWI) - Snow grain size (865nm) (SNWG) - Snow grain size (1640nm) (SNWGS) - Snow surface temperature (SNWTS) - Surface classification flag (SCFG)

The file structure of this type is similar to Level-1B. You can regard these product as Level-1B but the radiance data is replaced to geophysical parameter. Some parameters in Level-1B are eliminated.

The scene size is about 1600km x 1680km. Map projection is not done.

4.8.1 Generic Header

See chapter 2 for the detail. Some items related this products are shown below.

data name	value
Title	"GLI Level-2 Data"
Data type	"scene 1km"
Data Sub-type	Product Code (see Table 4.8-1)
Orbit Number	1-∞
Upper Left Latitude	* (appropriate value is set, depending on the scene)
Upper Left Longitude	*
Upper Right Latitude	*
Upper Right Longitude	*
Lower Left Latitude	*
Lower Left Longitude	*
Lower Right Latitude	*
Lower Right Longitude	*
Map Projection	"N/A"

4.8.2 Specific Header

category	data name	type	count	contents	const.	remarks	source of data: Level-1B	source of data: this process
Data Time	**Node Crossing Time**	Ch	22	YYYYMMDD hh:mm:ss.ttt		Descending node crossing time(UTC)	O	
	Start Year	Short	1			Year of the "Start Time"	O	
	Start Day	Short	1			Day-of-Year of the "Start Time"(Jan. 1 is defined as 0)	O	
	Start Millisec	Long	1			Milliseconds-of-day of the "Start Time"	O	
	End Year	Short	1			Year of the "End Time"	O	
	End Day	Short	1			Day-of-Year of the "End Time"(Jan. 1 is defined as 0)	O	
	End Millisec	Long	1			Milliseconds-of-day of the "End Time"	O	
	Last Maneuver Start Time	Ch	19	YYYYMMDD hh:mm:ss		Last Maneuver Start Time	O	
	Last Maneuver End Time	Ch	19	YYYYMMDD hh:mm:ss		Last Maneuver End Time	O	
	Last Maneuver Type	Ch	4	"+dV"or"-dV"or"dI"		Last Maneuver Type. +dV:semi-major axis correction(acceleration),-dV:semi-major axis correction (deceleration),dI:inclination correction	O	
Data Quality	**Pixels per Scan Line**	Long	1			Number of pixels per scan line(This depends on the resolution, 1km/250m/2km)		O
	Number of Scan Lines	Long	1			Number of scan lines in the scene (This is not number of lines)	O	
	Lines per Scan	Long	1	12, 48		Number of lines per scan. 12:1km, 48:250m	O	
	Missing Frames	Long	1			only 250m data.	O	
	Missing Lines	Long	1				O	
	GPS Flag	Ch	4	"OK","NG","TE","TX"		Normal:"OK", Time retrieval from TT:"NG",Time retrieval from ST:"TX",GPSR error:"TE"	O	
	Missing Packets	Long	1			only 1km data.	O	
Scene Coordinates	**Latitude Units**	Ch	14	"degrees North"	const.	Units used for all latitude values in this product	O	
	Longitude Units	Ch	13	"degrees East"	const.	Units used for all longitude values in this product	O	
	Scene Center Latitude	Real	1				O	
	Scene Center Longitude	Real	1				O	
	Orbit Node Longitude	Real	1				O	
	Start path number	Short	1				O	
	Start argument of Latitude	Real	1				O	
	End path number	Short	1				O	
	End argument of Latitude	Real	1				O	
QA/QC data (L1B succession data)	**Missing Packets**	Long	1	the number of missing packet		only 1km data.	O	
	Missing Frames	Long	1			only 250m data.	O	
	Missing Lines	Long	1	the number of missing lines			O	
	Saturated Pixels	Long	1	the number of saturated pixels			O	
	Saturated Pixels for SWIR 2km	Long	1	the number of saturated pixels for SWIR 2km		using SWIR ch.s only	O	
	Non-Saturated Pixels	Long	1	the number of non saturated pixels			O	
	Non-Saturated Pixels for SWIR 2km	Long	1	the number of non saturated pixels for SWIR 2km		using SWIR ch.s only	O	
	GPS Flag	Ch	4	"OK","NG","TE","TX"		Normal:"OK", Time retrieval from TT:"NG",Time retrieval from ST:"TX",GPSR error:"TE"	O	
	L1B Software ID	Ch					O	
	L1B Parameter Ver.	Ch					O	

4.8.3 Common Part(Body)

s : Number of scans("Number of Scan Lines" of Data Quality in Global Attributes)
m : Number of column direction address calculating latitude and longitude(dimension of V group "l1b_pos_samp" in Scan-Line Attribute)
n : Number of row direction address calculating latitude and longitude(dimension of V group "l1b_pos_line" in Scan-Line Attribute)
g : Number of GPS data points(V group "gps_points" in GPS Orbit Data)
o : Number of orbit data records(V group "num_rec" in Orbit Data)
nc: Number of column direction address calculating zenith/azimuth angle(dimension of Vgroup "nav_pxl" in Scan Geometry)
nr: Number of raw direction address calculating zenith/azimuth angle(dimension of Vgroup "nav_row" in Scan Geometry)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks	source of data	
								long_name	valid_range	units		Level-1B	this proc.
Scan-Line Attributes [Scan_Line_Data]	**Scan time**	**msec**	s [rec]				Long	Scan-line time, milliseconds of day	(0, 86400000)	msec	UTC. Milliseconds of day. Usual valid range is (0, 86399999), but when leap seconds is inserted, the range becomes (0, 86400000)	O	
	Scan start time	**scan_start**	s [rec]	length of strings(22)			Ch	Scan Start Time			Scan Start Time(UTC)	O	
	Missing frame flag	**miss_qual**	s [rec]				Byte	Missing frame flag				O	
	Telemetry failure flag	**eng_qual**	s [rec]				Byte	Engineering data-out-of-range flags				O	
	Block interval	**l1b_blk_int**	2 [pairs]				Short	L1B block interval(sample/line)			the interval of lat./lon. block grid	O	
	Block number	**l1b_blk_num**	2 [pairs]				Short	Number of L1B blocks(sample/line)			the number of lat./lon. blocks	O	
	Block pixel position	**l1b_pos_samp**	m [blk_samp]				Long	Column direction address of pixels			block position address for pixel direction	O	
	Block line position	**l1b_pos_line**	n [blk_line]				Long	Row direction address of pixels			block position address for line direction	O	
	Discontinuity flag for lat./lon.	**l1b_bound**	2 [pairs]				Long	Over boundary flag (latitude/longitude)			Discontinuity flag for latitude and longitude boundar	O	
	Latitude at block point	**l1b_blk_lat**	n [blk_line]	m [blk_samp]			Double	Block point latitude			Latitude at block point	O	
	Longitude at block point	**l1b_blk_lon**	n [blk_line]	m [blk_samp]			Double	Block point longitude			Longitude at block point	O	
	Affin coefficient for each block	**l1b_blk_affin**	n-1 [blk_line_m1]	m-1 [blk_samp_m1]	8 [affin]		Double	Block coefficient			Pseudo affin coefficient for each block When converting from (x,y) to (u,v), pseudo affin transformation is as follows; u = a*x*y + b*x + c*y + d, v = e*x*y + f*x + g*y + h, and storing order of coefficients is from a to h	O	
Converted Supplement [Scan_Line_Data]	**Operation mode**	**opr_mode**	s [rec]				Ushort	Operation mode	(0, 15)			O	
	Tilt angle flag	**tilt_flag**	s [rec]				Ushort	Tilt angle flag				O	
	Tilt angle	**tilt_angle**	s [rec]				Real	Tilt angle for scan line	(-20.0, 20.0)	deg		O	
	Scan mirror surface	**mirror_surface**	s [rec]				Byte	Scan mirror surface	(0, 1)			O	
	Scan angle	**scan_angle**	s [rec]	sampling No. of scan angle [sa]			Real	Scan angle				O	
Sensor Tilt [Scan_Line_Data]	**Tilt Status**	**tilt_seg**	(1)				Short	Tilt segment number	(0, 2)		0: no tilt, 1:forward tilt(+18.5deg), 2:backward tilt(-18.5 deg)	O	
Scan Geometry [Scan_Line_Data]	**Column direction address of navigation data**	**nav_pxl**	nc [navpxls]				Short	Column direction address of navigation data				O	
	Row direction address of navigation data	**nav_row**	nr [navrows]				Short	Row direction address of navigation data				O	
	Solar zenith angle	**solar_zenith**	nr [navrows]	nc [navpxls]			Real	Solar zenith angle	(0.0, 180.0)	deg		O	
	Solar azimuth angle	**solar_azimuth**	nr [navrows]	nc [navpxls]			Real	Solar azimuth angle	(-180.0, 180.0)	deg		O	
	Spacecraft zenith angle	**sc_zenith**	nr [navrows]	nc [navpxls]			Real	Spacecraft zenith angle	(0.0, 180.0)	deg		O	
	Spacecraft azimuth angle	**sc_azimuth**	nr [navrows]	nc [navpxls]			Real	Spacecraft azimuth angle	(-180.0, 180.0)	deg		O	

4.8.4 Specific Part(Body)

(1) Snow property (SNGI_p)

p : Number of pixels per line("Pixels per Scan Line" of Data Quality in Global Attributes)
l : Number of lines per scene(="Number of Scan Lines" x "Lines per Scan" of Data Quality in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
SNGI_p [geophysical parameter]	**Surface classification flag**	**scfg**	l [lines]	p [pixels]			Byte	Surface classification flag			Flag value: 0 = not executed, 1 = snow over ice, 3 = high-confidence cloudy, 5 = middle-confidence cloudy, 7 = low-confidence cloudy, 9 = sea ice, 17 = cloud shadow on snow, 25 = land with vegetation, 33 = open ocean, 41 = snow over land, 49 snow over land contaminated with vegetation, 57 = bare land with less vegetation
	Number of total pixel	**nmpix**	(1)				Long	Number of total pixel			
	Number of 100% cloud pixel	**n2s**	(1)				Long	Number of 100% cloud pixel			
	Number of 50-100% cloud pixel	**n3s**	(1)				Long	Number of 50-100% cloud pixel			
	Number of 0-50% cloud pixel	**n4s**	(1)				Long	Number of 0-50% cloud pixel			
	Number of snow covered ocean pixel	**n1s**	(1)				Long	Number of snow covered ocean pixel			
	Number of sea-ice pixel	**n5s**	(1)				Long	Number of sea-ice pixel			
	Number of land pixel	**n7s**	(1)				Long	Number of land pixel			
	Number of water pixel	**n8s**	(1)				Long	Number of water pixel			
	Number of snow covered land pixel	**n9s**	(1)				Long	Number of snow covered land pixel			
	Number of bad data pixel	**nbads**	(1)				Long	Number of bad data pixel			
	Number of cloud shadow pixel	**n6s**	(1)				Long	Number of cloud shadow pixel			
	Ratio of cloud pix. with 100% conf.	**pcn2s**	(1)				Real	Ratio of cloud pix. with 100% conf.	(0.0, 100.0)	%	
	Ratio of cloud pix. with 50-100% conf.	**pcn3s**	(1)				Real	Ratio of cloud pix. with 50-100% conf.	(0.0, 100.0)	%	
	Ratio of cloud pix. with 0-50% conf.	**pcn4s**	(1)				Real	Ratio of cloud pix. with 0-50% conf.	(0.0, 100.0)	%	
	Ratio of snow covered ocean	**pcn1s**	(1)				Real	Ratio of snow covered ocean	(0.0, 100.0)	%	
	Ratio of sea ice	**pcn5s**	(1)				Real	Ratio of sea ice	(0.0, 100.0)	%	
	Ratio of land	**pcn7s**	(1)				Real	Ratio of land	(0.0, 100.0)	%	
	Ratio of water	**pcn8s**	(1)				Real	Ratio of water	(0.0, 100.0)	%	
	Ratio of snow covered land	**pcn9s**	(1)				Real	Ratio of snow covered land	(0.0, 100.0)	%	
	Ratio of cloud shadow	**pcn6s**	(1)				Real	Ratio of cloud shadow	(0.0, 100.0)	%	
	Snow impurities	**snwi**	l [lines]	p [pixels]			Short	Snow impurities as soot	(0, 30000)	ppmw	actual valid range : 0.0000 - 3.0000 ppmw bad data = -1000, other = -4000 bad data: snow pixel but bad snwi value,
	Snow grain size (865nm)	**snwg**	l [lines]	p [pixels]			Short	Snow grain size retrieved with 865nm band	(0, 30000)	micro meter	actual valid range : 0.0 - 3000.0 micro-m bad data = -1000, other = -4000 bad data: snow pixel but bad snwg value,
	Snow grain size (1640nm)	**snwgs**	l [lines]	p [pixels]			Short	Snow grain size retrieved with 1640nm band	(0, 30000)	micro meter	actual valid range : 0.0 - 3000.0 micro-m bad data = -1000, other = -4000 bad data: snow pixel but bad snwgs value,
	Snow surface temperature	**snwts**	l [lines]	p [pixels]			Short	Snow surface temperature	(0, 30000)	Kelvin	actual valid range : 0.0000 - 300.0 Kelvin bad data = -1000, other = -4000 bad data: snow pixel but bad snwts value,
	Scale factor of snow impurities	**snwi_sf**	(1)				Short	Scale factor of snow impurities			actual value = snwi * snwi_sf
	Scale factor of snow grain size	**snwg_sf**	(1)				Short	Scale factor of snow grain size			actual value = (snwg or snwgs) * snwg_sf
	Scale factor of snow surface temperatur	**snwt_sf**	(1)				Short	Scale factor of snow surface temperature			actual value = snwts * snwt_sf

5. Level-2Map Data

5.1 Introduction

Level-2Map product is map-projected geophysical parameter data. This is generated from Level-2 scene type products. Original L2 data would belong to following categories:

- Atmosphere (pixel by pixel analysis)
- Ocean (full resolution)
- Cryosphere (scene)

5.2 Level-2Map data

There are 13 Level-2Map products. Each product file has one or several geophysical parameters. (Table 5.2-1) These products are generated from Level-2 product.

Table 5.2-1 List of Level-2Map products

No.	Classification	Product Code	Description
1	Atmosphere	CLFLG_p	Cloud flag
2		CLOP_p	Cloud Optical Thickness
3		PRCPW_p	Precipitable water
4	Ocean	NW	Normalized water-leaving radiance (13bands)
5		LA	Aerosol radiance(1bands), Normalized water-leaving radiance by in-water model (2bands), Aerosol albedo at 380 nm, Angstrom exponent(520/865), Aerosol thickness (Tau_a865) Photosynthetically available radiation
6		QF_OC	4-byte quality flag (from NL product)
7		CHLA	Chlorophyll-a
8		CDOM	Absorption of colored dissolved organic matter
9		K490	Attenuation coefficient at 490nm
10		SS	Suspended solid weight
11		ST	Bulk Sea surface temperature
12		QF_ST	2-byte quality flag
13	Cryosphere	SNGI_p	This file includes 3 parameters. - Surface classification flag (SCFG) - Snow impurities (SNWI) - Snow grain size (865nm) (SNWG) - Snow grain size (1640nm) (SNWGS) - Snow surface temperature (SNWTS)

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There are 3 Map projection method, equi-rectangular(EQR), Mercator and Polar stereographic projection(PS). These map projection method and other projection parameters are stored in L2Map file.

5.2.1 Generic Header

See chapter 2 for the detail. Some items related this products are shown below.

data name	value
Title	"GLI Level-2Map Data"
Data type	"scene 1km" or "NRT"
Data Sub-type	Product Code (see Table 5.2-1)
Orbit Number	1-∞
Upper Left Latitude	* (appropriate value is set, depending on the scene)
Upper Left Longitude	*
Upper Right Latitude	*
Upper Right Longitude	*
Lower Left Latitude	*
Lower Left Longitude	*
Lower Right Latitude	*
Lower Right Longitude	*
Map Projection	"EQR" or "MER" or "PS"

5.2.2 Specific Header

category	data name	type	count	contents	const.	remarks	source of data: Level-2	source of data: this process
Data Time	**Node Crossing Time**	Ch	22	YYYYMMDD hh:mm:ss.ttt		Descending node crossing time(UTC)	O	
	Start Year	Short	1			Year of the "Start Time"	O	
	Start Day	Short	1			Day-of-Year of the "Start Time"(Jan. 1 is defined as 0)	O	
	Start Millisec	Long	1			Milliseconds-of-day of the "Start Time"	O	
	End Year	Short	1			Year of the "End Time"	O	
	End Day	Short	1			Day-of-Year of the "End Time"(Jan. 1 is defined as 0)	O	
	End Millisec	Long	1			Milliseconds-of-day of the "End Time"	O	
	Last Maneuver Start Time	Ch	18	YYYYMMDD hh:mm:ss		Last Maneuver Start Time	O	
	Last Maneuver End Time	Ch	18	YYYYMMDD hh:mm:ss		Last Maneuver End Time	O	
	Last Maneuver Type	Ch	4	"+dV"or"-dV"or"dI"		Last Maneuver Type. +dV:semi-major axis correction(acceleration),-dV:semi-major axis correction (deceleration),dI:inclination correction	O	
Parent Product Information	**Parent Pixels per Scan Line**	Long	1			Number of pixels per scan line of parent product(This depends on the resolution, 1km/250m/2km)	O	
	Parent Number of Scan Lines	Long	1			Number of scan lines in the scene of parent product(This is not number of lines)	O	
	Parent Lines per Scan	Long	1	12, 48		Number of lines per scan of parent product 12:1km, 48:250m	O	
	Parent Missing Frames	Long	1			only 250m data.	O	
	Parent Missing Lines	Long	1				O	
	Parent GPS Flag	Ch	3	"OK","NG","TE","TX"		Normal:"OK", Time retrieval from TT:"NG",Time retireval from ST:"TX", GPSR error:"TE"	O	
	Parent Missing Packets	Long	1			only 1km data.	O	
Scene Coordinates	**Latitude Units**	Ch	14	"degrees North"	const.	Units used for all latitude values in this product	O	
	Longitude Units	Ch	13	"degrees East"	const.	Units used for all longitude values in this product	O	
	Scene Center Latitude	Real	1				O	
	Scene Center Longitude	Real	1				O	
	Orbit Node Longitude	Real	1				O	
	Start path number	Short	1				O	
	Start argument of Latitude	Real	1				O	
	End path number	Short	1				O	
	End argument of Latitude	Real	1				O	
Map Information	**Number of Columns**	Long	1					O
	Number of Lines	Long	1					O
	Pixel Spacing	Real	1			Length of one pixel along to reference latitude (unit: m)		O
	Resampling Method	Ch	3	"NN" or "BL" or "CC"		NN: Nearest Neighbor, BL: Bi-linear, CC: Cubic convolution		O
	Standard Latitude	Real	1			Reference latitude of map projection		O
	Standard Longitude	Real	1			Reference longitude of map projection		O
	Earth Ellipsoid Type	Ch	6	"WGS84"	const.			O
	Equatorial Radius	Real	1	6378137.0	const.	Equatorial radius of the Earth (m)		O
	Polar Radius	Real	1	6356752.3	const.	Polar radius of the Earth (m)		O
	Lower Left Latitude for Mapped Scene	Real	1			Latitude at Lower Left point of map		O
	Lower Left Longitude for Mapped Scene	Real	1			Longitude at Lower Left point of map		O
	Upper Left Latitude for Mapped Scene	Real	1			Latitude at Upper Left point of map		O
	Upper Left Longitude for Mapped Scene	Real	1			Longitude at Upper Left point of map		O
	Lower Right Latitude for Mapped Scene	Real	1			Latitude at Lower Right point of map		O
	Lower Right Longitude for Mapped Scene	Real	1			Longitude at Lower Right point of map		O
	Upper Right Latitude for Mapped Scene	Real	1			Latitude at Upper Right point of map		O
	Upper Right Longitude for Mapped Scene	Real	1			Longitude at Upper Right point of map		O
	Latitude Grid Interval	Real	1			Latitude Grid Interval (degree): For EQR only.		O
	Longitude Grid Interval	Real	1			Longitude Grid Interval (degree): For EQR only.		O
	Slope	Real	13[NW] 6[LA] 3[SNGI_p] 1(other)			real value = Intercept + Slope * storing value For flag product (CLFLG_p, QF_OC, QF_ST) this item has no meaning.		O
	Intercept	Real	13[NW] 6[LA] 3[SNGI_p 1(other)			real value = Intercept + Slope * storing value For flag product (CLFLG_p, QF_OC, QF_ST) this item has no meaning.		O

5.2.3 Common Part(Body)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks	source of data	
								long_name	valid_range	units		Level-2	this process
Sensor Tilt [Scan_Line_Data]	**Tilt Status**	**tilt_seg**	(1)				Short	Tilt segment number	(0, 2)		0: no tilt, 1:forward tilt(+18.5deg), 2:backward tilt(-18.5 deg)	0	

5.2.4 Specific Part(Body)

(1) Cloud Flag (CLFLG_p)

p : Number of columns per line("Number of Columns" of Map information in Global Attributes)
l : Number of lines(="Number of Lines" of Map information in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
GLI Cloud Flag Data [geophysical parameter]	**Cloud Flag**	**cloud_data**	l [lines]	p [pixels]			Ulong	Cloud Flag			see table 4.2-4 for bit configuration

(2) Cloud Optical Thickness (CLOP_p)

p : Number of columns per line("Number of Columns" of Map information in Global Attributes)
l : Number of lines(="Number of Lines" of Map information in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
Cloud Optical Thickness [geophysical parameter]	**Cloud Optical Thickness**	**CLOP_p**	l [lines]	p [pixels]			Short	Cloud Optical Thickness	(0, 20000)	no unit	-1000: invalid value

(3) Normalized water-leaving radiance (NW)

p : Number of columns per line("Number of Columns" of Map information in Global Attributes)
l : Number of lines(="Number of Lines" of Map information in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
Normalized water-leaving radiance [geophysical parameter]	**Normalized water-leaving radiance at 380 nm**	**nLw_380**	l [lines]	p [pixels]			Ushort	Normalized water-leaving radiance at 380 nm		mW cm^-2 um^-1 sr^-1	slope=0.0010, intercept=0.0
	Normalized water-leaving radiance at 400 nm	**nLw_400**	l [lines]	p [pixels]			Ushort	Normalized water-leaving radiance at 400 nm		mW cm^-2 um^-1 sr^-1	slope=0.0010, intercept=0.0
	Normalized water-leaving radiance at 412 nm	**nLw_412**	l [lines]	p [pixels]			Ushort	Normalized water-leaving radiance at 412 nm		mW cm^-2 um^-1 sr^-1	slope=0.0010, intercept=0.0
	Normalized water-leaving radiance at 443 nm	**nLw_443**	l [lines]	p [pixels]			Ushort	Normalized water-leaving radiance at 443 nm		mW cm^-2 um^-1 sr^-1	slope=0.0010, intercept=0.0
	Normalized water-leaving radiance at 460 nm	**nLw_460**	l [lines]	p [pixels]			Ushort	Normalized water-leaving radiance at 460 nm		mW cm^-2 um^-1 sr^-1	slope=0.0010, intercept=0.0
	Normalized water-leaving radiance at 490 nm	**nLw_490**	l [lines]	p [pixels]			Ushort	Normalized water-leaving radiance at 490 nm		mW cm^-2 um^-1 sr^-1	slope=0.0010, intercept=0.0
	Normalized water-leaving radiance at 520 nm	**nLw_520**	l [lines]	p [pixels]			Ushort	Normalized water-leaving radiance at 520 nm		mW cm^-2 um^-1 sr^-1	slope=0.0010, intercept=0.0
	Normalized water-leaving radiance at 545 nm	**nLw_545**	l [lines]	p [pixels]			Ushort	Normalized water-leaving radiance at 545 nm		mW cm^-2 um^-1 sr^-1	slope=0.0010, intercept=0.0
	Normalized water-leaving radiance at 565 nm	**nLw_565**	l [lines]	p [pixels]			Ushort	Normalized water-leaving radiance at 565 nm		mW cm^-2 um^-1 sr^-1	slope=0.0010, intercept=0.0
	Normalized water-leaving radiance at 625 nm	**nLw_625**	l [lines]	p [pixels]			Ushort	Normalized water-leaving radiance at 625 nm		mW cm^-2 um^-1 sr^-1	slope=0.0010, intercept=0.0
	Normalized water-leaving radiance at 666 nm	**nLw_666**	l [lines]	p [pixels]			Ushort	Normalized water-leaving radiance at 666 nm		mW cm^-2 um^-1 sr^-1	slope=0.0010, intercept=0.0
	Normalized water-leaving radiance at 680 nm	**nLw_680**	l [lines]	p [pixels]			Ushort	Normalized water-leaving radiance at 680 nm		mW cm^-2 um^-1 sr^-1	slope=0.0010, intercept=0.0
	Normalized water-leaving radiance at 710 nm	**nLw_710**	l [lines]	p [pixels]			Ushort	Normalized water-leaving radiance at 710 nm		mW cm^-2 um^-1 sr^-1	slope=0.0010, intercept=0.0

(4) Aerosol radiance (LA)

p : Number of columns per line("Number of Columns" of Map information in Global Attributes)
l : Number of lines(="Number of Lines" of Map information in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
Aerosol radiance [geophysical parameter]	**Aerosol radiance at 865 nm**	**La_865**	l [lines]	p [pixels]			Ushort	Aerosol radiance at 865 nm		mW cm^-2 um^-1 sr^-1	slope=0.0010, intercept=0.0
	Normalized water-leaving radiance at 678 nm by in-water model	**nLw_678**	l [lines]	p [pixels]			Ushort	Normalized water-leaving radiance at 678 nm by in-water model		mW cm^-2 um^-1 sr^-1	slope=0.0010, intercept=0.0
	Normalized water-leaving radiance at 865 nm by in-water model	**nLw_865**	l [lines]	p [pixels]			Ushort	Normalized water-leaving radiance at 865 nm by in-water model		mW cm^-2 um^-1 sr^-1	slope=0.0001, intercept=0.0
	Aerosol albedo at 380 nm	**aalb**	l [lines]	p [pixels]			Ushort	Aerosol albedo at 380 nm			slope=0.0010, intercept=0.0
	Angstrom exponent derived from 520 and 865 nm	**angstrom_520**	l [lines]	p [pixels]			Ushort	Angstrom exponent derived from 520 and 865 nm			slope=1.0E-5, intercept=-3.0
	Aerosol optical thickness at 865nm	**tau_865**	l [lines]	p [pixels]			Ushort	Aerosol optical thickness at 865nm			slope=1.0E-4, intercept=0.0
	Photosynthetically available radiation	**par**	l [lines]	p [pixels]			Ushort	Photosynthetically available radiation		Ein m^-2 D^-1	slope=0.0020, intercept=0.0

200A

(5) Quality flag of normalized water-leaving radiance (QF_OC)

p : Number of columns per line("Number of Columns" of Map information in Global Attributes)
l : Number of lines(="Number of Lines" of Map information in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
Quality flag of NL [geophysical parameter]	**Quality flag of normalized water-leaving radiance**	**l2_flags**	l [lines]	p [pixels]			Ulong	32-bit Level 2 quality control masks and flags			Table 4.4-2

(6) Chlorophyll-a (CHLA)

p : Number of columns per line("Number of Columns" of Map information in Global Attributes)
l : Number of lines(="Number of Lines" of Map information in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
Chlorophyll_a [geophysical parameter]	**Chlorophyll_a**	**chla**	l [lines]	p [pixels]			Ushort	Chlorophyll_a concentration	1, 65533	mg/m^3	actual range: 0.01 -98.2995

(7) Attenuation coefficient at 490nm (K490)

p : Number of columns per line("Number of Columns" of Map information in Global Attributes)
l : Number of lines(="Number of Lines" of Map information in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
Attenuation coefficient at 490nm [geophysical parameter]	**K490**	**k490**	l [lines]	p [pixels]			Ushort	Attenuation at 490 nm	(22, 1670)	1/m	actual range: 0.022 - 1.67

(8) Suspended solid weight (SS)

p : Number of columns per line("Number of Columns" of Map information in Global Attributes)
l : Number of lines(="Number of Lines" of Map information in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
Suspended solid weight [geophysical parameter]	**Suspended solid**	**ss**	l [lines]	p [pixels]			UShort	Suspended solid concentration	(1, 3000)	g/m^3	actual range: 0.01 - 30

(9) Absorption of colored dissolved organic matter (CDOM)

p : Number of columns per line("Number of Columns" of Map information in Global Attributes)
l : Number of lines(="Number of Lines" of Map information in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
Absorption of colored dissolved organic matter [geophysical parameter]	**CDOM**	**cdom**	l [lines]	p [pixels]			UShort	CDOM absorption at 440nm	(1, 1000)	1/m	actual range: 0.001 - 1

(10) Sea Surface Temperature (ST)

p : Number of columns per line("Number of Columns" of Map information in Global Attributes)
l : Number of lines(="Number of Lines" of Map information in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
Sea Surface Temperature [geophysical parameter]	**Sea Surface Temperature**	**sst**	l [lines]	p [pixels]			UShort	GLI bulk sea surface temperature of full resolution	(0,6000)	Kelvin	actual range: 263.15 - 323.15

(11) Quality flag of Sea Surface Temperature (QF_ST)

p : Number of columns per line("Number of Columns" of Map information in Global Attributes)
l : Number of lines(="Number of Lines" of Map information in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
Quality flag of Sea Surface Temperature [geophysical parameter]	**SST QC flag**	**flag**	l [lines]	p [pixels]			UShort	Quality flag or mask for ST			see Table4.4-3

(12) Snow property (SNGI_p)

p : Number of columns per line("Number of Columns" of Map information in Global Attributes)
l : Number of lines(="Number of Lines" of Map information in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
SNGI_p	**Surface classification flag**	**scfg**	l [lines]	p [pixels]			Ushort	Surface classification flag			Upper byte is always 0
[geophysical parameter]	**Snow impurities**	**snwi**	l [lines]	p [pixels]			Short	Snow impurities as soot	(0, 30000)	ppmw	
	Snow grain size (865nm)	**snwg**	l [lines]	p [pixels]			Short	Snow grain size retrieved with 865nm band	(0, 30000)	micro meter	
	Snow grain size (1640nm)	**snwgs**	l [lines]	p [pixels]			Short	Snow grain size retrieved with 1640nm band	(0, 30000)	micro meter	
	Snow surface temperature	**snwts**	l [lines]	p [pixels]			Short	Snow surface temperature	(0, 30000)	Kelvin	

(13) Water vapor property (PRCPW_p)

p : Number of columns per line("Number of Columns" of Map information in Global Attributes)

l : Number of lines(="Number of Lines" of Map information in Global Attributes)

Vgroup name	Data name	SD name	1st dimension	2nd dimension	3rd dimension	4th dimension	type	attribute			remarks
[VG class name]			[dim. name]	[dim. name]	[dim. name]	[dim. name]		long_name	valid_range	units	
PRCPW_p	**Surface classification flag**	**bitarray**	l [lines]	p [pixels]			Ushort	Surface classification flag			
[geophysical parameter]	**Precipitable water (two-channel)**	**rs_p**	l [lines]	p [pixels]			Short	Precipitable water (two-channel)	(0, 5000)	mm	
	Precipitable water (three-channel)	**soot**	l [lines]	p [pixels]			Short	Precipitable water (three-channel)	(0, 5000)	mm	

6. Level-3 Binned Data

6.1 Introduction

Level-3Binned product is generated from Level-2 products. There are 3 types of Level-3Binned products in GLI.

- Atmosphere
- Ocean
- Cryosphere

The definition of these products is different each other.

Atmosphere Level-3Binned product is map-projected equi-rectangular data. It covers the globe. The size of Bin is 1/4 deg.

Ocean Level-3Binned product is NOT map-projected. The Bin size is approximately 9km x 9km.

Cryosphere Level-3Binned product is map-projected but separated to 3 zones, equi-rectangular region (whole globe), north hemisphere (from equator to north pole), south hemisphere (from equator to south pole). North hemisphere and south hemisphere are PS (polar stereographic) projected. The size of each Bin is 1/12 deg.

6.2 Atmosphere

Each product file has only one geophysical parameter. Totally 12 product files exist. (Table 6.2-1)

Table 6.2-1 List of atmosphere Level-3Binned products

No.	Classification	Product Code	Description
1	Aerosol property	ARAE	Aerosol Angstrom Exponent
2		AROP	Aerosol Optical Thickness
3	Cloud property	CLER_w_r	Cloud Effective Particle Radius of water cloud by reflection method
4		CLER_i_e	Cloud Effective Particle Radius of ice cloud by emission method
5		CLOP_w_r	Cloud Optical Thickness of water cloud by reflection method
6		CLOP_i_r	Cloud Optical Thickness of ice cloud by reflection method
7		CLOP_i_e	Cloud Optical Thickness of ice cloud by emission method
8		CLHT_w_r	Cloud Top Height of water cloud by reflection method
9		CLTT_w_r	Cloud Top Temperature of water cloud by reflection method
10		CLTT_i_e	Cloud Top Temperature of ice cloud by emission method
11		CLWP_w_r	Cloud Liquid Water Path of water cloud by reflection method
12		CLFR	Cloud fraction

The concept of atmospheric bin is shown in Fig.6.2-1. The bin interval is assumed in 0.25 deg. If bin interval is changed, the bin numbering definition will be varied.

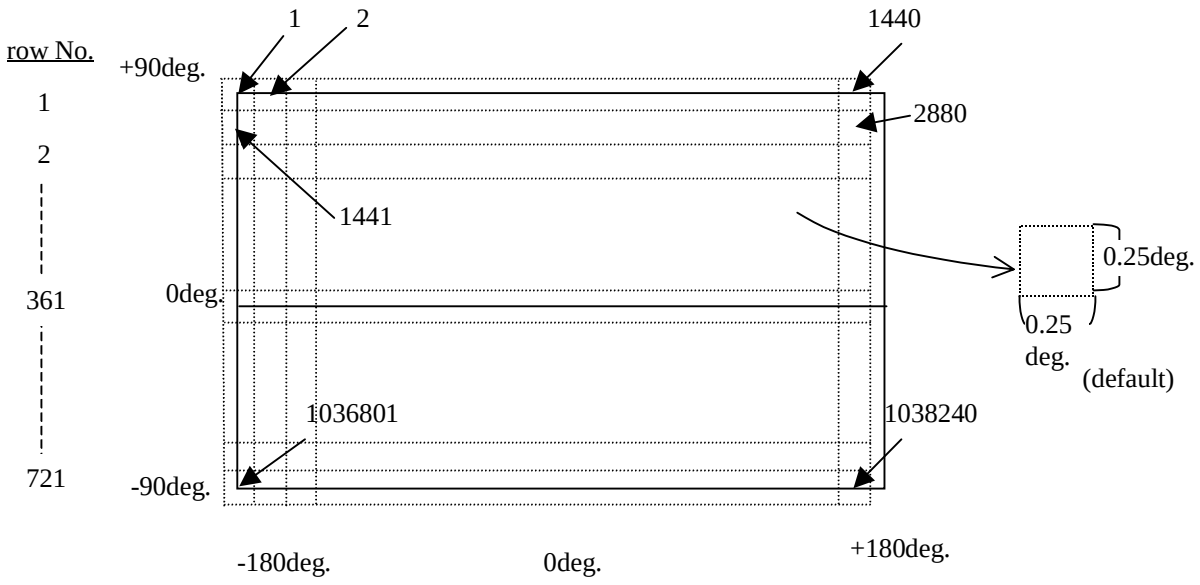


Fig.6.2-1 Definition of atmosphere bin

The bin interval is assumed in 0.25 deg. If bin interval is changed, the bin numbering definition will be varied.

6.2.1 Generic Header

See chapter 2 for the detail. Some items related this products are shown below.

data name	value
Title	"GLI Level-3Binned Data"
Data type	"global"
Data Sub-type	Product Code (see Table 6.2-1)
Orbit Number	-1 (-1 means that this data has no meaning)
Upper Left Latitude	90.0
Upper Left Longitude	-180.0
Upper Right Latitude	90.0
Upper Right Longitude	180.0
Lower Left Latitude	-90.0
Lower Left Longitude	-180.0
Lower Right Latitude	-90.0
Lower Right Longitude	180.0
Map Projection	"EQR"

6.2.2 Specific Header

CIF:control information file

category	data name	type	count	contents		remarks	source of data	
					const.		input data	current process
Bin Information	**Binning Period**	Ch		"16days", "month"		Binning Period		O
	Data Bins	Long	1			Number of bins in this products (1-1038240)		O
	Percent Data Bins	Real	1			Percentage of number of bins in this product by number of total bins (Data Bins / 1038240 * 100)		O
Data Time	**Start Year**	Short	1			year of Start Time	O	O
	Start Day	Short	1			day-of-year of Start Time(0 on Jan. 1st)	O	O
	Start Millisec	Long	1			milliseconds-of-day of Start Time	O	O
	End Year	Short	1			year of End Time	O	O
	End Day	Short	1			day-of-year of End Time(0 on Jan. 1st)	O	O
	End Millisec	Long	1			milliseconds-of-day of End Time	O	O
Area Coordinates	**Latitude Units**	Ch	14	"degrees North"	const.	Units used for all latitude values in this product		O (constant)
	Longitude Units	Ch	13	"degrees East"	const.	Units used for all longitude values in this product		O (constant)

6.2.3 Common Part (Body)

n : Sum of the number of bins actually stored (sum of "extent" in "BinIndex" V group)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
Grid [Geometry]	**Number of equatorial bins**	**bins**	(1)				Long	Number of equatorial bins			Number of equatorial bins (1440)
	Earth's radius in km	**radius**	(1)				Double	Earth's radius in km			Earth's radius in km (6378.137)
	Northernmost latitude in grid	**max_north**	(1)				Real	Northernmost latitude in grid	(-90.0, 90.0)	degree	Northernmost latitude in grid (90.0)
	Southernmost latitude in grid	**max_south**	(1)				Real	Southernmost latitude in grid	(-90.0, 90.0)	degree	Southernmost latitude in grid (-90.0)
	Longitude of western edge of grid	**seam_lon**	(1)				Real	Longitude of western edge of grid	(-180.0, 180.0)	degree	Longitude of western edge of grid (-180.0)
BinIndex [Index]	**Index No. of each row**	**row_num**	721[row]				Long	Index number of row	(1, 721)		Index No. of each row corresponding to BinIndex record
	Bin height	**vsize**	721[row]				Double	North-south extent of bin		degree	North-south extent (degrees latitude) of bins for each row (0.25)
	Bin width	**hsize**	721[row]				Double	East-west extent of bin		degree	East-west extent (degrees longitude) of bins for each row (0.25)
	Bin number of first bin for each row	**start_num**	721[row]				Long	Bin number of first bin for each row	(1, 1038240)		Bin number of first bin for each row. the value is constant. (row 0 : 1, row 1 : 1441, ..., row n : (n-1)*1440+1) (cf. "begin")
	Bin number of first data-containing bin for each row	**begin**	721[row]				Long	Bin number of first data-containing bin for each row	(1, 1038240)		Bin number of first data-containing bin for each row. the value changes by data storage. (cf. "start_num")
	Bin number of first data-containing bin for each row#2	**begin#2**	721[row]				Long	Bin number of first data-containing bin for each row#2	(1, 1038240)		Bin number of first data-containing bin for each row. the value changes by data storage. (cf. "start_num") This data is stored only in CLFR.
	Bin number of first data-containing bin for each row#3	**begin#3**	721[row]				Long	Bin number of first data-containing bin for each row#3	(1, 1038240)		Bin number of first data-containing bin for each row. the value changes by data storage. (cf. "start_num") This data is stored only in CLFR.
	Bin number of first data-containing bin for each row#4	**begin#4**	721[row]				Long	Bin number of first data-containing bin for each row#4	(1, 1038240)		Bin number of first data-containing bin for each row. the value changes by data storage. (cf. "start_num") This data is stored only in CLFR.
	Bin number of first data-containing bin for each row#5	**begin#5**	721[row]				Long	Bin number of first data-containing bin for each row#5	(1, 1038240)		Bin number of first data-containing bin for each row. the value changes by data storage. (cf. "start_num") This data is stored only in CLFR.
	Bin number of first data-containing bin for each row#6	**begin#6**	721[row]				Long	Bin number of first data-containing bin for each row#6	(1, 1038240)		Bin number of first data-containing bin for each row. the value changes by data storage. (cf. "start_num") This data is stored only in CLFR.
	Bin number of first data-containing bin for each row#7	**begin#7**	721[row]				Long	Bin number of first data-containing bin for each row#7	(1, 1038240)		Bin number of first data-containing bin for each row. the value changes by data storage. (cf. "start_num") This data is stored only in CLFR.
	Bin number of first data-containing bin for each row#8	**begin#8**	721[row]				Long	Bin number of first data-containing bin for each row#8	(1, 1038240)		Bin number of first data-containing bin for each row. the value changes by data storage. (cf. "start_num") This data is stored only in CLFR.
	Bin number of first data-containing bin for each row#9	**begin#9**	721[row]				Long	Bin number of first data-containing bin for each row#9	(1, 1038240)		Bin number of first data-containing bin for each row. the value changes by data storage. (cf. "start_num") This data is stored only in CLFR.
	Bin number of first data-containing bin for each row#10	**begin#10**	721[row]				Long	Bin number of first data-containing bin for each row#10	(1, 1038240)		Bin number of first data-containing bin for each row. the value changes by data storage. (cf. "start_num") This data is stored only in CLFR.
	Bin number of first data-containing bin for each row#11	**begin#11**	721[row]				Long	Bin number of first data-containing bin for each row#11	(1, 1038240)		Bin number of first data-containing bin for each row. the value changes by data storage. (cf. "start_num") This data is stored only in CLFR.
	Bin number of first data-containing bin for each row#12	**begin#12**	721[row]				Long	Bin number of first data-containing bin for each row#12	(1, 1038240)		Bin number of first data-containing bin for each row. the value changes by data storage. (cf. "start_num") This data is stored only in CLFR.
	Bin number of first data-containing bin for each row#13	**begin#13**	721[row]				Long	Bin number of first data-containing bin for each row#13	(1, 1038240)		Bin number of first data-containing bin for each row. the value changes by data storage. (cf. "start_num") This data is stored only in CLFR.
	Bin number of first data-containing bin for each row#14	**begin#14**	721[row]				Long	Bin number of first data-containing bin for each row#14	(1, 1038240)		Bin number of first data-containing bin for each row. the value changes by data storage. (cf. "start_num") This data is stored only in CLFR.
	Bin number of first data-containing bin for each row#15	**begin#15**	721[row]				Long	Bin number of first data-containing bin for each row#15	(1, 1038240)		Bin number of first data-containing bin for each row. the value changes by data storage. (cf. "start_num") This data is stored only in CLFR.
	Bin number of first data-containing bin for each row#16	**begin#16**	721[row]				Long	Bin number of first data-containing bin for each row#16	(1, 1038240)		Bin number of first data-containing bin for each row. the value changes by data storage. (cf. "start_num") This data is stored only in CLFR.
	Bin number of first data-containing bin for each row#17	**begin#17**	721[row]				Long	Bin number of first data-containing bin for each row#17	(1, 1038240)		Bin number of first data-containing bin for each row. the value changes by data storage. (cf. "start_num") This data is stored only in CLFR.
	Bin number of first data-containing bin for each row#18	**begin#18**	721[row]				Long	Bin number of first data-containing bin for each row#18	(1, 1038240)		Bin number of first data-containing bin for each row. the value changes by data storage. (cf. "start_num") This data is stored only in CLFR.
	Bin number of first data-containing bin for each row#19	**begin#19**	721[row]				Long	Bin number of first data-containing bin for each row#19	(1, 1038240)		Bin number of first data-containing bin for each row. the value changes by data storage. (cf. "start_num") This data is stored only in CLFR.
	Bin number of first data-containing bin for each row#20	**begin#20**	721[row]				Long	Bin number of first data-containing bin for each row#20	(1, 1038240)		Bin number of first data-containing bin for each row. the value changes by data storage. (cf. "start_num") This data is stored only in CLFR.
	Number of bins actually stored for each row	**extent**	721[row]				Long	Number of bins actually stored for each row	(0, 1440)		Number of bins actually stored for each row.
	Number of bins actually stored for each row#2	**extent#2**	721[row]				Long	Number of bins actually stored for each row#2	(0, 1440)		Number of bins actually stored for each row. This data is stored only in CLFR.
	Number of bins actually stored for each row#3	**extent#3**	721[row]				Long	Number of bins actually stored for each row#3	(0, 1440)		Number of bins actually stored for each row. This data is stored only in CLFR.
	Number of bins actually stored for each row#4	**extent#4**	721[row]				Long	Number of bins actually stored for each row#4	(0, 1440)		Number of bins actually stored for each row. This data is stored only in CLFR.
	Number of bins actually stored for each row#5	**extent#5**	721[row]				Long	Number of bins actually stored for each row#5	(0, 1440)		Number of bins actually stored for each row. This data is stored only in CLFR.

	Number of bins actually stored for each row#6	**extent#6**	721[row]				Long	Number of bins actually stored for each row#6	(0, 1440)		Number of bins actually stored for each row. This data is stored only in CLFR.
	Number of bins actually stored for each row#7	**extent#7**	721[row]				Long	Number of bins actually stored for each row#7	(0, 1440)		Number of bins actually stored for each row. This data is stored only in CLFR.
	Number of bins actually stored for each row#8	**extent#8**	721[row]				Long	Number of bins actually stored for each row#8	(0, 1440)		Number of bins actually stored for each row. This data is stored only in CLFR.
	Number of bins actually stored for each row#9	**extent#9**	721[row]				Long	Number of bins actually stored for each row#9	(0, 1440)		Number of bins actually stored for each row. This data is stored only in CLFR.
	Number of bins actually stored for each row#10	**extent#10**	721[row]				Long	Number of bins actually stored for each row#10	(0, 1440)		Number of bins actually stored for each row. This data is stored only in CLFR.
	Number of bins actually stored for each row#11	**extent#11**	721[row]				Long	Number of bins actually stored for each row#11	(0, 1440)		Number of bins actually stored for each row. This data is stored only in CLFR.
	Number of bins actually stored for each row#12	**extent#12**	721[row]				Long	Number of bins actually stored for each row#12	(0, 1440)		Number of bins actually stored for each row. This data is stored only in CLFR.
	Number of bins actually stored for each row#13	**extent#13**	721[row]				Long	Number of bins actually stored for each row#13	(0, 1440)		Number of bins actually stored for each row. This data is stored only in CLFR.
	Number of bins actually stored for each row#14	**extent#14**	721[row]				Long	Number of bins actually stored for each row#14	(0, 1440)		Number of bins actually stored for each row. This data is stored only in CLFR.
	Number of bins actually stored for each row#15	**extent#15**	721[row]				Long	Number of bins actually stored for each row#15	(0, 1440)		Number of bins actually stored for each row. This data is stored only in CLFR.
	Number of bins actually stored for each row#16	**extent#16**	721[row]				Long	Number of bins actually stored for each row#16	(0, 1440)		Number of bins actually stored for each row. This data is stored only in CLFR.
	Number of bins actually stored for each row#17	**extent#17**	721[row]				Long	Number of bins actually stored for each row#17	(0, 1440)		Number of bins actually stored for each row. This data is stored only in CLFR.
	Number of bins actually stored for each row#18	**extent#18**	721[row]				Long	Number of bins actually stored for each row#18	(0, 1440)		Number of bins actually stored for each row. This data is stored only in CLFR.
	Number of bins actually stored for each row#19	**extent#19**	721[row]				Long	Number of bins actually stored for each row#19	(0, 1440)		Number of bins actually stored for each row. This data is stored only in CLFR.
	Number of bins actually stored for each row#20	**extent#20**	721[row]				Long	Number of bins actually stored for each row#20	(0, 1440)		Number of bins actually stored for each row. This data is stored only in CLFR.
	The maximum number of bins for each row	**max**	721[row]				Long	The maximum number of bins for each row			The maximum number of bins for each row (1440)
BinList [DataMain]	**Index No. of this bin (b)**	**bin_num**[*1]	n [nbin]				Long	Bin number (b)	(1, 1038240)		Index No. of this bin (b)
	Index No. of this bin (b)#2	**bin_num#2**[*1]	n [nbin]				Long	Bin number (b)#2	(1, 1038240)		Index No. of this bin (b). This data is stored only in CLFR.
	Index No. of this bin (b)#3	**bin_num#3**[*1]	n [nbin]				Long	Bin number (b)#3	(1, 1038240)		Index No. of this bin (b). This data is stored only in CLFR.
	Index No. of this bin (b)#4	**bin_num#4**[*1]	n [nbin]				Long	Bin number (b)#4	(1, 1038240)		Index No. of this bin (b). This data is stored only in CLFR.
	Index No. of this bin (b)#5	**bin_num#5**[*1]	n [nbin]				Long	Bin number (b)#5	(1, 1038240)		Index No. of this bin (b). This data is stored only in CLFR.
	Index No. of this bin (b)#6	**bin_num#6**[*1]	n [nbin]				Long	Bin number (b)#6	(1, 1038240)		Index No. of this bin (b). This data is stored only in CLFR.
	Index No. of this bin (b)#7	**bin_num#7**[*1]	n [nbin]				Long	Bin number (b)#7	(1, 1038240)		Index No. of this bin (b). This data is stored only in CLFR.
	Index No. of this bin (b)#8	**bin_num#8**[*1]	n [nbin]				Long	Bin number (b)#8	(1, 1038240)		Index No. of this bin (b). This data is stored only in CLFR.
	Index No. of this bin (b)#9	**bin_num#9**[*1]	n [nbin]				Long	Bin number (b)#9	(1, 1038240)		Index No. of this bin (b). This data is stored only in CLFR.
	Index No. of this bin (b)#10	**bin_num#10**[*1]	n [nbin]				Long	Bin number (b)#10	(1, 1038240)		Index No. of this bin (b). This data is stored only in CLFR.
	Index No. of this bin (b)#11	**bin_num#11**[*1]	n [nbin]				Long	Bin number (b)#11	(1, 1038240)		Index No. of this bin (b). This data is stored only in CLFR.
	Index No. of this bin (b)#12	**bin_num#12**[*1]	n [nbin]				Long	Bin number (b)#12	(1, 1038240)		Index No. of this bin (b). This data is stored only in CLFR.
	Index No. of this bin (b)#13	**bin_num#13**[*1]	n [nbin]				Long	Bin number (b)#13	(1, 1038240)		Index No. of this bin (b). This data is stored only in CLFR.
	Index No. of this bin (b)#14	**bin_num#14**[*1]	n [nbin]				Long	Bin number (b)#14	(1, 1038240)		Index No. of this bin (b). This data is stored only in CLFR.
	Index No. of this bin (b)#15	**bin_num#15**[*1]	n [nbin]				Long	Bin number (b)#15	(1, 1038240)		Index No. of this bin (b). This data is stored only in CLFR.
	Index No. of this bin (b)#16	**bin_num#16**[*1]	n [nbin]				Long	Bin number (b)#16	(1, 1038240)		Index No. of this bin (b). This data is stored only in CLFR.
	Index No. of this bin (b)#17	**bin_num#17**[*1]	n [nbin]				Long	Bin number (b)#17	(1, 1038240)		Index No. of this bin (b). This data is stored only in CLFR.
	Index No. of this bin (b)#18	**bin_num#18**[*1]	n [nbin]				Long	Bin number (b)#18	(1, 1038240)		Index No. of this bin (b). This data is stored only in CLFR.
	Index No. of this bin (b)#19	**bin_num#19**[*1]	n [nbin]				Long	Bin number (b)#19	(1, 1038240)		Index No. of this bin (b). This data is stored only in CLFR.
	Index No. of this bin (b)#20	**bin_num#20**[*1]	n [nbin]				Long	Bin number (b)#20	(1, 1038240)		Index No. of this bin (b). This data is stored only in CLFR.
	number of observations (pixels) in this bin (N(b))	**nobs**[*1]	n [nbin]				Short	number of observations in this bin (N(b))			number of observations (pixels) in this bin (N(b))
	number of observations (pixels) in this bin (N(b))#2	**nobs#2**[*1]	n [nbin]				Short	number of observations in this bin (N(b))#2			number of observations (pixels) in this bin (N(b)) This data is stored only in CLFR.
	number of observations (pixels) in this bin (N(b))#3	**nobs#3**[*1]	n [nbin]				Short	number of observations in this bin (N(b))#3			number of observations (pixels) in this bin (N(b)) This data is stored only in CLFR.
	number of observations (pixels) in this bin (N(b))#4	**nobs#4**[*1]	n [nbin]				Short	number of observations in this bin (N(b))#4			number of observations (pixels) in this bin (N(b)) This data is stored only in CLFR.
	number of observations (pixels) in this bin (N(b))#5	**nobs#5**[*1]	n [nbin]				Short	number of observations in this bin (N(b))#5			number of observations (pixels) in this bin (N(b)) This data is stored only in CLFR.
	number of observations (pixels) in this bin (N(b))#6	**nobs#6**[*1]	n [nbin]				Short	number of observations in this bin (N(b))#6			number of observations (pixels) in this bin (N(b)) This data is stored only in CLFR.
	number of observations (pixels) in this bin (N(b))#7	**nobs#7**[*1]	n [nbin]				Short	number of observations in this bin (N(b))#7			number of observations (pixels) in this bin (N(b)) This data is stored only in CLFR.
	number of observations (pixels) in this bin (N(b))#8	**nobs#8**[*1]	n [nbin]				Short	number of observations in this bin (N(b))#8			number of observations (pixels) in this bin (N(b)) This data is stored only in CLFR.

number of observations (pixels) in this bin (N(b))#9	**nobs#9**[*1]	n [nbin]				Short	number of observations in this bin (N(b))#9			number of observations (pixels) in this bin (N(b)) This data is stored only in CLFR.
number of observations (pixels) in this bin (N(b))#10	**nobs#10**[*1]	n [nbin]				Short	number of observations in this bin (N(b))#10			number of observations (pixels) in this bin (N(b)) This data is stored only in CLFR.
number of observations (pixels) in this bin (N(b))#11	**nobs#11**[*1]	n [nbin]				Short	number of observations in this bin (N(b))#11			number of observations (pixels) in this bin (N(b)) This data is stored only in CLFR.
number of observations (pixels) in this bin (N(b))#12	**nobs#12**[*1]	n [nbin]				Short	number of observations in this bin (N(b))#12			number of observations (pixels) in this bin (N(b)) This data is stored only in CLFR.
number of observations (pixels) in this bin (N(b))#13	**nobs#13**[*1]	n [nbin]				Short	number of observations in this bin (N(b))#13			number of observations (pixels) in this bin (N(b)) This data is stored only in CLFR.
number of observations (pixels) in this bin (N(b))#14	**nobs#14**[*1]	n [nbin]				Short	number of observations in this bin (N(b))#14			number of observations (pixels) in this bin (N(b)) This data is stored only in CLFR.
number of observations (pixels) in this bin (N(b))#15	**nobs#15**[*1]	n [nbin]				Short	number of observations in this bin (N(b))#15			number of observations (pixels) in this bin (N(b)) This data is stored only in CLFR.
number of observations (pixels) in this bin (N(b))#16	**nobs#16**[*1]	n [nbin]				Short	number of observations in this bin (N(b))#16			number of observations (pixels) in this bin (N(b)) This data is stored only in CLFR.
number of observations (pixels) in this bin (N(b))#17	**nobs#17**[*1]	n [nbin]				Short	number of observations in this bin (N(b))#17			number of observations (pixels) in this bin (N(b)) This data is stored only in CLFR.
number of observations (pixels) in this bin (N(b))#18	**nobs#18**[*1]	n [nbin]				Short	number of observations in this bin (N(b))#18			number of observations (pixels) in this bin (N(b)) This data is stored only in CLFR.
number of observations (pixels) in this bin (N(b))#19	**nobs#19**[*1]	n [nbin]				Short	number of observations in this bin (N(b))#19			number of observations (pixels) in this bin (N(b)) This data is stored only in CLFR.
number of observations (pixels) in this bin (N(b))#20	**nobs#20**[*1]	n [nbin]				Short	number of observations in this bin (N(b))#20			number of observations (pixels) in this bin (N(b)) This data is stored only in CLFR.
number of scenes contributing to this bin (Nseg(b))	**nscenes**[*1]	n [nbin]				Short	number of scenes contributing to this bin (Nseg(b))			number of scenes contributing to this bin (Nseg(b))
number of scenes contributing to this bin (Nseg(b)) #2	**nscenes#2**[*1]	n [nbin]				Short	number of scenes contributing to this bin (Nseg(b))#2			number of scenes contributing to this bin (Nseg(b)) This data is stored only in CLFR.
number of scenes contributing to this bin (Nseg(b)) #3	**nscenes#3**[*1]	n [nbin]				Short	number of scenes contributing to this bin (Nseg(b))#3			number of scenes contributing to this bin (Nseg(b)) This data is stored only in CLFR.
number of scenes contributing to this bin (Nseg(b)) #4	**nscenes#4**[*1]	n [nbin]				Short	number of scenes contributing to this bin (Nseg(b))#4			number of scenes contributing to this bin (Nseg(b)) This data is stored only in CLFR.
number of scenes contributing to this bin (Nseg(b)) #5	**nscenes#5**[*1]	n [nbin]				Short	number of scenes contributing to this bin (Nseg(b))#5			number of scenes contributing to this bin (Nseg(b)) This data is stored only in CLFR.
number of scenes contributing to this bin (Nseg(b)) #6	**nscenes#6**[*1]	n [nbin]				Short	number of scenes contributing to this bin (Nseg(b))#6			number of scenes contributing to this bin (Nseg(b)) This data is stored only in CLFR.
number of scenes contributing to this bin (Nseg(b)) #7	**nscenes#7**[*1]	n [nbin]				Short	number of scenes contributing to this bin (Nseg(b))#7			number of scenes contributing to this bin (Nseg(b)) This data is stored only in CLFR.
number of scenes contributing to this bin (Nseg(b)) #8	**nscenes#8**[*1]	n [nbin]				Short	number of scenes contributing to this bin (Nseg(b))#8			number of scenes contributing to this bin (Nseg(b)) This data is stored only in CLFR.
number of scenes contributing to this bin (Nseg(b)) #9	**nscenes#9**[*1]	n [nbin]				Short	number of scenes contributing to this bin (Nseg(b))#9			number of scenes contributing to this bin (Nseg(b)) This data is stored only in CLFR.
number of scenes contributing to this bin (Nseg(b)) #10	**nscenes#10**[*1]	n [nbin]				Short	number of scenes contributing to this bin (Nseg(b))#10			number of scenes contributing to this bin (Nseg(b)) This data is stored only in CLFR.
number of scenes contributing to this bin (Nseg(b)) #11	**nscenes#11**[*1]	n [nbin]				Short	number of scenes contributing to this bin (Nseg(b))#11			number of scenes contributing to this bin (Nseg(b)) This data is stored only in CLFR.
number of scenes contributing to this bin (Nseg(b)) #12	**nscenes#12**[*1]	n [nbin]				Short	number of scenes contributing to this bin (Nseg(b))#12			number of scenes contributing to this bin (Nseg(b)) This data is stored only in CLFR.
number of scenes contributing to this bin (Nseg(b)) #13	**nscenes#13**[*1]	n [nbin]				Short	number of scenes contributing to this bin (Nseg(b))#13			number of scenes contributing to this bin (Nseg(b)) This data is stored only in CLFR.
number of scenes contributing to this bin (Nseg(b)) #14	**nscenes#14**[*1]	n [nbin]				Short	number of scenes contributing to this bin (Nseg(b))#14			number of scenes contributing to this bin (Nseg(b)) This data is stored only in CLFR.
number of scenes contributing to this bin (Nseg(b)) #15	**nscenes#15**[*1]	n [nbin]				Short	number of scenes contributing to this bin (Nseg(b))#15			number of scenes contributing to this bin (Nseg(b)) This data is stored only in CLFR.
number of scenes contributing to this bin (Nseg(b)) #16	**nscenes#16**[*1]	n [nbin]				Short	number of scenes contributing to this bin (Nseg(b))#16			number of scenes contributing to this bin (Nseg(b)) This data is stored only in CLFR.
number of scenes contributing to this bin (Nseg(b)) #17	**nscenes#17**[*1]	n [nbin]				Short	number of scenes contributing to this bin (Nseg(b))#17			number of scenes contributing to this bin (Nseg(b)) This data is stored only in CLFR.
number of scenes contributing to this bin (Nseg(b)) #18	**nscenes#18**[*1]	n [nbin]				Short	number of scenes contributing to this bin (Nseg(b))#18			number of scenes contributing to this bin (Nseg(b)) This data is stored only in CLFR.
number of scenes contributing to this bin (Nseg(b)) #19	**nscenes#19**[*1]	n [nbin]				Short	number of scenes contributing to this bin (Nseg(b))#19			number of scenes contributing to this bin (Nseg(b)) This data is stored only in CLFR.
number of scenes contributing to this bin (Nseg(b)) #20	**nscenes#20**[*1]	n [nbin]				Short	number of scenes contributing to this bin (Nseg(b))#20			number of scenes contributing to this bin (Nseg(b)) This data is stored only in CLFR.

*1: If nbin is 0, this parameter is not included in the file.

6.2.4 Specific Part (Body)

(1) Aerosol Angstrom Exponent (ARAE)

n : Sum of the number of bins actually stored (sum of "extent" in "BinIndex" V group)
*** If n [nbin] is 0, following all SD are not included in the file.**

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
ARAE	**sum of ARAE**	**ARAE_sum**	n [nbin]				Real	sum of Aerosol Angstrom Exponent		no unit	
[DataSubordinate]	**sum-sq of ARAE**	**ARAE_sum_sq**	n [nbin]				Real	sum of squares of Aerosol Angstrom Exponent		no unit	
	maximum of ARAE	**ARAE_max**	n [nbin]				Real	maximum of Aerosol Angstrom Exponent		no unit	
	minimum of ARAE	**ARAE_min**	n [nbin]				Real	minimum of Aerosol Angstrom Exponent		no unit	

(2) Aerosol Optical Thickness (AROP)

n : Sum of the number of bins actually stored (sum of "extent" in "BinIndex" V group)
*** If n [nbin] is 0, following all SD are not included in the file.**

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
AROP	**sum of AROP**	**AROP_sum**	n [nbin]				Real	sum of Aerosol Optical Thickness at 500 nm		no unit	
[DataSubordinate]	**sum-sq of AROP**	**AROP_sum_sq**	n [nbin]				Real	sum of squares of Aerosol Optical Thickness nm		no unit	
	maximum of AROP	**AROP_max**	n [nbin]				Real	maximum of Aerosol Optical Thickness nm		no unit	
	minimum of AROP	**AROP_min**	n [nbin]				Real	minimum of Aerosol Optical Thickness nm		no unit	

(3) Cloud Effective Particle Radius of Water Cloud by Reflection Method (CLER_w_r)

n : Sum of the number of bins actually stored (sum of "extent" in "BinIndex" V group)
*** If n [nbin] is 0, following all SD are not included in the file.**

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
CLER_w_r	**sum of CLER_w_r**	**CLER_w_r_sum**	n [nbin]				Real	sum of Cloud Effective Particle Radius (Water Cloud by Reflection Method)		um	
[DataSubordinate]	**sum-sq of CLER_w_r**	**CLER_w_r_sum_sq**	n [nbin]				Real	sum of squares of of Cloud Effective Particle Radius (Water Cloud by Reflection			
	maximum of CLER_w_r	**CLER_w_r_max**	n [nbin]				Real	maximum of Cloud Effective Particle Radius (Water Cloud by Reflection Method)		um	
	minimum of CLER_w_r	**CLER_w_r_min**	n [nbin]				Real	minimum of Cloud Effective Particle Radius (Water Cloud by Reflection Method)		um	

(4) Cloud Effective Particle Radius of Ice Cloud by Emission Method (CLER_i_e)

n : Sum of the number of bins actually stored (sum of "extent" in "BinIndex" V group)
*** If n [nbin] is 0, following all SD are not included in the file.**

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
CLER_i_e	**sum of CLER_i_e**	**CLER_i_e_sum**	n [nbin]				Real	sum of Cloud Effective Radius of Cirrus Particles (Ice Cloud by Emission Method)		um	
[DataSubordinate]	**sum-sq of CLER_i_e**	**CLER_i_e_sum_sq**	n [nbin]				Real	sum of squares Cloud Effective Radius of Cirrus Particles (Ice Cloud by Emission Method)			
	maximum of CLER_i_e	**CLER_i_e_max**	n [nbin]				Real	maximum of Cloud Effective Radius of Cirrus Particles (Ice Cloud by Emission Method)		um	
	minimum of CLER_i_e	**CLER_i_e_min**	n [nbin]				Real	minimum of Cloud Effective Radius of Cirrus Particles (Ice Cloud by Emission Method)		um	

(5) Cloud Optical Thickness of Water Cloud by Reflection Method (CLOP_w_r)

n : Sum of the number of bins actually stored (sum of "extent" in "BinIndex" V group)
*** If n [nbin] is 0, following all SD are not included in the file.**

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
CLOP_w_r	**sum of CLOP_w_r**	**CLOP_w_r_sum**	n [nbin]				Real	sum of Cloud Optical Thickness (Water Cloud by Reflection Method)		no unit	
[DataSubordinate]	**sum-sq of CLOP_w_r**	**CLOP_w_r_sum_sq**	n [nbin]				Real	sum of squares of Cloud Optical Thickness (Water Cloud by Reflection Method)		no unit	
	maximum of CLOP_w_r	**CLOP_w_r_max**	n [nbin]				Real	maximum of Cloud Optical Thickness (Water Cloud by Reflection Method)		no unit	
	minimum of CLOP_w_r	**CLOP_w_r_min**	n [nbin]				Real	minimum of Cloud Optical Thickness (Water Cloud by Reflection Method)		no unit	

(6) Cloud Optical Thickness of Ice Cloud by Reflection Method (CLOP_i_r)

n : Sum of the number of bins actually stored (sum of "extent" in "BinIndex" V group)
*** If n [nbin] is 0, following all SD are not included in the file.**

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
CLOP_i_r	**sum of CLOP_i_r**	**CLOP_i_r_sum**	n [nbin]				Real	sum of Cloud Optical Thickness (Ice Cloud by Reflection Method)		no unit	
[DataSubordinate]	**sum-sq of CLOP_i_r**	**CLOP_i_r_sum_sq**	n [nbin]				Real	sum of squares of Cloud Optical Thickness (Ice Cloud by Reflection Method)		no unit	
	maximum of CLOP_i_r	**CLOP_i_r_max**	n [nbin]				Real	maximum of Cloud Optical Thickness (Ice Cloud by Reflection Method)		no unit	
	minimum of CLOP_i_r	**CLOP_i_r_min**	n [nbin]				Real	minimum of Cloud Optical Thickness (Ice Cloud by Reflection Method)		no unit	

(7) Cloud Optical Thickness of Ice Cloud by Emission Method (CLOP_i_e)

n : Sum of the number of bins actually stored (sum of "extent" in "BinIndex" V group)
*** If n [nbin] is 0, following all SD are not included in the file.**

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
CLOP_i_e	**sum of CLOP_i_e**	**CLOP_i_e_sum**	n [nbin]				Real	sum of Cloud Optical Thickness of Cirrus (Ice Cloud by Emission Method)		no unit	
[DataSubordinate]	**sum-sq of CLOP_i_e**	**CLOP_i_e_sum_sq**	n [nbin]				Real	sum of squares of Cloud Optical Thickness of Cirrus (Ice Cloud by Emission		no unit	
	maximum of CLOP_i_e	**CLOP_i_e_max**	n [nbin]				Real	maximum of Cloud Optical Thickness of Cirrus (Ice Cloud by Emission Method)		no unit	
	minimum of CLOP_i_e	**CLOP_i_e_min**	n [nbin]				Real	minimum of Cloud Optical Thickness of Cirrus (Ice Cloud by Emission Method)		no unit	

(8) Cloud Top Height of Water Cloud by Reflection Method (CLHT_w_r)

n : Sum of the number of bins actually stored (sum of "extent" in "BinIndex" V group)
*** If n [nbin] is 0, following all SD are not included in the file.**

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
CLHT_w_r	**sum of CLHT_w_r**	**CLHT_w_r_sum**	n [nbin]				Real	sum of Cloud Top Height (Water Cloud by Reflection Method)		km	
[DataSubordinate]	**sum-sq of CLHT_w_r**	**CLHT_w_r_sum_sq**	n [nbin]				Real	sum of squares of Cloud Top Height (Water Cloud by Reflection Method)			
	maximum of CLHT_w_r	**CLHT_w_r_max**	n [nbin]				Real	maximum of Cloud Top Height (Water Cloud by Reflection Method)		km	
	minimum of CLHT_w_r	**CLHT_w_r_min**	n [nbin]				Real	minimum of Cloud Top Height (Water Cloud by Reflection Method)		km	

(9) Cloud Top Temperature of Water Cloud by Reflection Method (CLTT_w_r)

n : Sum of the number of bins actually stored (sum of "extent" in "BinIndex" V group)
*** If n [nbin] is 0, following all SD are not included in the file.**

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
CLTT_w_r	**sum of CLTT_w_r**	**CLTT_w_r_sum**	n [nbin]				Real	sum of Cloud Top Temperature (Water Cloud by Reflection Method)		K	
[DataSubordinate]	**sum-sq of CLTT_w_r**	**CLTT_w_r_sum_sq**	n [nbin]				Real	sum of squares of Cloud Top Temperature (Water Cloud by Reflection Method)			
	maximum of CLTT_w_r	**CLTT_w_r_max**	n [nbin]				Real	maximum of Cloud Top Temperature (Water Cloud by Reflection Method)		K	
	minimum of CLTT_w_r	**CLTT_w_r_min**	n [nbin]				Real	minimum of Cloud Top Temperature (Water Cloud by Reflection Method)		K	

(10) Cloud Top Temperature of Ice Cloud by Emission Method (CLTT_i_e)

n : Sum of the number of bins actually stored (sum of "extent" in "BinIndex" V group)
*** If n [nbin] is 0, following all SD are not included in the file.**

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
CLTT_i_e	**sum of CLTT_i_e**	**CLTT_i_e_sum**	n [nbin]				Real	sum of Cloud Top Temperature of Cirrus (Ice Cloud by Emission Method)		K	
[DataSubordinate]	**sum-sq of CLTT_i_e**	**CLTT_i_e_sum_sq**	n [nbin]				Real	sum of squares of Cloud Top Temperature of Cirrus (Ice Cloud by Emission Method)			
	maximum of CLTT_i_e	**CLTT_i_e_max**	n [nbin]				Real	maximum of Cloud Top Temperature of Cirrus (Ice Cloud by Emission Method)		K	
	minimum of CLTT_i_e	**CLTT_i_e_min**	n [nbin]				Real	minimum of Cloud Top Temperature of Cirrus (Ice Cloud by Emission Method)		K	

(11) Cloud Liquid Water Path of Water Cloud by Reflection Method (CLWP_w_r)

n : Sum of the number of bins actually stored (sum of "extent" in "BinIndex" V group)
*** If n [nbin] is 0, following all SD are not included in the file.**

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
CLWP_w_r	**sum of CLWP_w_r**	**CLWP_w_r_sum**	n [nbin]				Real	sum of Cloud Liquid Water Path (Water Cloud by Reflection Method)		g/m^2	
[DataSubordinate]	**sum-sq of CLWP_w_r**	**CLWP_w_r_sum_sq**	n [nbin]				Real	sum of squares of Cloud Liquid Water Path (Water Cloud by Reflection Method)			
	maximum of CLWP_w_r	**CLWP_w_r_max**	n [nbin]				Real	maximum of Cloud Liquid Water Path (Water Cloud by Reflection Method)		g/m^2	
	minimum of CLWP_w_r	**CLWP_w_r_min**	n [nbin]				Real	minimum of Cloud Liquid Water Path (Water Cloud by Reflection Method)		g/m^2	

(12) Cloud fraction (CLFR)

n : Sum of the number of bins actually stored (sum of "extent" in "BinIndex" V group)
*** If n [nbin] is 0, following all SD are not included in the file.**

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
CLFR	**sum of CLFR1**	**CLFR_1_sum**	n [nbin]				Real	sum of Fraction of high altitude and thin thickness cloud		%	
[DataSubordinate]	**sum-sq of CLFR1**	**CLFR_1_sum_sq**	n [nbin]				Real	sum of squares of Fraction of high altitude and thin thickness cloud			
	maximum of CLFR1	**CLFR_1_max**	n [nbin]				Real	maximum of Fraction of high altitude and thin thickness		%	
	minimum of CLFR1	**CLFR_1_min**	n [nbin]				Real	minimum of Fraction of high altitude and thin thickness		%	
	sum of CLFR2	**CLFR_2_sum**	n [nbin]				Real	sum of Fraction of high altitude and middle thickness cloud		%	
	sum-sq of CLFR2	**CLFR_2_sum_sq**	n [nbin]				Real	sum of squares of Fraction of high altitude and middle thickness cloud			
	maximum of CLFR2	**CLFR_2_max**	n [nbin]				Real	maximum of Fraction of high altitude and middle thickness cloud		%	
	minimum of CLFR2	**CLFR_2_min**	n [nbin]				Real	minimum of Fraction of high altitude and middle thickness cloud		%	
	sum of CLFR3	**CLFR_3_sum**	n [nbin]				Real	sum of Fraction of high altitude and dense thickness cloud		%	
	sum-sq of CLFR3	**CLFR_3_sum_sq**	n [nbin]				Real	sum of squares of Fraction of high altitude and dense thickness cloud			
	maximum of CLFR3	**CLFR_3_max**	n [nbin]				Real	maximum of Fraction of high altitude and dense thickness		%	
	minimum of CLFR3	**CLFR_3_min**	n [nbin]				Real	minimum of Fraction of high altitude and dense thickness		%	
	sum of CLFR4	**CLFR_4_sum**	n [nbin]				Real	sum of Fraction of middle altitude and thin thickness		%	
	sum-sq of CLFR4	**CLFR_4_sum_sq**	n [nbin]				Real	sum of squares of Fraction of middle altitude and thin thickness cloud			
	maximum of CLFR4	**CLFR_4_max**	n [nbin]				Real	maximum of Fraction of middle altitude and thin thickness		%	
	minimum of CLFR4	**CLFR_4_min**	n [nbin]				Real	minimum of Fraction of middle altitude and thin thickness		%	
	sum of CLFR5	**CLFR_5_sum**	n [nbin]				Real	sum of Fraction of middle altitude and middle thickness		%	
	sum-sq of CLFR5	**CLFR_5_sum_sq**	n [nbin]				Real	sum of squares of Fraction of middle altitude and middle thickness cloud			
	maximum of CLFR5	**CLFR_5_max**	n [nbin]				Real	maximum of Fraction of middle altitude and middle thickness cloud		%	
	minimum of CLFR5	**CLFR_5_min**	n [nbin]				Real	minimum of Fraction of middle altitude and middle thickness cloud		%	
	sum of CLFR6	**CLFR_6_sum**	n [nbin]				Real	sum of Fraction of middle altitude and dense thickness		%	
	sum-sq of CLFR6	**CLFR_6_sum_sq**	n [nbin]				Real	sum of squares of Fraction of middle altitude and dense thickness cloud			
	maximum of CLFR6	**CLFR_6_max**	n [nbin]				Real	maximum of Fraction of middle altitude and dense thickness		%	
	minimum of CLFR6	**CLFR_6_min**	n [nbin]				Real	minimum of Fraction of middle altitude and dense thickness		%	
	sum of CLFR7	**CLFR_7_sum**	n [nbin]				Real	sum of Fraction of low altitude and thin thickness cloud		%	
	sum-sq of CLFR7	**CLFR_7_sum_sq**	n [nbin]				Real	sum of squares of Fraction of low altitude and thin thickness			

maximum of CLFR7	**CLFR_7_max**	n [nbin]				Real	maximum of Fraction of low altitude and thin thickness		%	
minimum of CLFR7	**CLFR_7_min**	n [nbin]				Real	minimum of Fraction of low altitude and thin thickness		%	
sum of CLFR8	**CLFR_8_sum**	n [nbin]				Real	sum of Fraction of low altitude and middle thickness cloud		%	
sum-sq of CLFR8	**CLFR_8_sum_sq**	n [nbin]				Real	sum of squares of Fraction of low altitude and middle thickness cloud			
maximum of CLFR8	**CLFR_8_max**	n [nbin]				Real	maximum of Fraction of low altitude and middle thickness cloud		%	
minimum of CLFR8	**CLFR_8_min**	n [nbin]				Real	minimum of Fraction of low altitude and middle thickness cloud		%	
sum of CLFR9	**CLFR_9_sum**	n [nbin]				Real	sum of Fraction of low altitude and dense thickness cloud		%	
sum-sq of CLFR9	**CLFR_9_sum_sq**	n [nbin]				Real	sum of squares of Fraction of low altitude and dense			
maximum of CLFR9	**CLFR_9_max**	n [nbin]				Real	maximum of Fraction of low altitude and dense thickness		%	
minimum of CLFR9	**CLFR_9_min**	n [nbin]				Real	minimum of Fraction of low altitude and dense thickness		%	
sum of CLFR10	**CLFR_10_sum**	n [nbin]				Real	sum of Fraction of cirrus cloud		%	
sum-sq of CLFR10	**CLFR_10_sum_sq**	n [nbin]				Real	sum of squares of Fraction of cirrus cloud			
maximum of CLFR10	**CLFR_10_max**	n [nbin]				Real	maximum of Fraction of cirrus cloud		%	
minimum of CLFR10	**CLFR_10_min**	n [nbin]				Real	minimum of Fraction of cirrus cloud		%	
sum of CLFR11	**CLFR_11_sum**	n [nbin]				Real	sum of Fraction of total cloud		%	
sum-sq of CLFR11	**CLFR_11_sum_sq**	n [nbin]				Real	sum of squares of Fraction of total cloud			
maximum of CLFR11	**CLFR_11_max**	n [nbin]				Real	maximum of Fraction of total cloud		%	
minimum of CLFR11	**CLFR_11_min**	n [nbin]				Real	minimum of Fraction of total cloud		%	
sum of CLFR12	**CLFR_12_sum**	n [nbin]				Real	sum of Cloud top temperatue in high altitude cloud		K	
sum-sq of CLFR12	**CLFR_12_sum_sq**	n [nbin]				Real	sum of squares of Cloud top temperatue in high altitude			
maximum of CLFR12	**CLFR_12_max**	n [nbin]				Real	maximum of Cloud top temperatue in high altitude		K	
minimum of CLFR12	**CLFR_12_min**	n [nbin]				Real	minimum of Cloud top temperatue in high altitude		K	
sum of CLFR13	**CLFR_13_sum**	n [nbin]				Real	sum of Cloud top temperatue in middle altitude cloud		K	
sum-sq of CLFR13	**CLFR_13_sum_sq**	n [nbin]				Real	sum of squares of Cloud top temperatue in middle altitude cloud			
maximum of CLFR13	**CLFR_13_max**	n [nbin]				Real	maximum of Cloud top temperatue in middle altitude cloud		K	
minimum of CLFR13	**CLFR_13_min**	n [nbin]				Real	minimum of Cloud top temperatue in middle altitude cloud		K	
sum of CLFR14	**CLFR_14_sum**	n [nbin]				Real	sum of Cloud top temperatue in low altitude cloud		K	
sum-sq of CLFR14	**CLFR_14_sum_sq**	n [nbin]				Real	sum of squares of Cloud top temperatue in low altitude			
maximum of CLFR14	**CLFR_14_max**	n [nbin]				Real	maximum of Cloud top temperatue in low altitude		K	
minimum of CLFR14	**CLFR_14_min**	n [nbin]				Real	minimum of Cloud top temperatue in low altitude		K	
sum of CLFR15	**CLFR_15_sum**	n [nbin]				Real	sum of Cloud optical thickness in high altitude cloud		no unit	
sum-sq of CLFR15	**CLFR_15_sum_sq**	n [nbin]				Real	sum of squares of Cloud optical thickness in high altitude cloud		no unit	
maximum of CLFR15	**CLFR_15_max**	n [nbin]				Real	maximum of Cloud optical thickness in high altitude cloud		no unit	

minimum of CLFR15	**CLFR_15_min**	n [nbin]				Real	minimum of Cloud optical thickness in high altitude cloud		no unit	
sum of CLFR16	**CLFR_16_sum**	n [nbin]				Real	sum of Cloud optical thickness in middle altitude cloud		no unit	
sum-sq of CLFR16	**CLFR_16_sum_sq**	n [nbin]				Real	sum of squares of Cloud optical thickness in middle altitude		no unit	
maximum of CLFR16	**CLFR_16_max**	n [nbin]				Real	maximum of Cloud optical thickness in middle altitude		no unit	
minimum of CLFR16	**CLFR_16_min**	n [nbin]				Real	minimum of Cloud optical thickness in middle altitude		no unit	
sum of CLFR17	**CLFR_17_sum**	n [nbin]				Real	sum of Cloud optical thickness in low altitude cloud		no unit	
sum-sq of CLFR17	**CLFR_17_sum_sq**	n [nbin]				Real	sum of squares of Cloud optical thickness in low altitude cloud		no unit	
maximum of CLFR17	**CLFR_17_max**	n [nbin]				Real	maximum of Cloud optical thickness in low altitude cloud		no unit	
minimum of CLFR17	**CLFR_17_min**	n [nbin]				Real	minimum of Cloud optical thickness in low altitude cloud		no unit	
sum of CLFR18	**CLFR_18_sum**	n [nbin]				Real	sum of Cloud optical thickness in ice cloud		no unit	
sum-sq of CLFR18	**CLFR_18_sum_sq**	n [nbin]				Real	sum of squares of Cloud optical thickness in ice cloud		no unit	
maximum of CLFR18	**CLFR_18_max**	n [nbin]				Real	maximum of Cloud optical thickness in ice cloud		no unit	
minimum of CLFR18	**CLFR_18_min**	n [nbin]				Real	minimum of Cloud optical thickness in ice cloud		no unit	
sum of CLFR19	**CLFR_19_sum**	n [nbin]				Real	sum of Index of Imhomogeneity		K	
sum-sq of CLFR19	**CLFR_19_sum_sq**	n [nbin]				Real	sum of squares of Index of Imhomogeneity			
maximum of CLFR19	**CLFR_19_max**	n [nbin]				Real	maximum of Index of Imhomogeneity		K	
minimum of CLFR19	**CLFR_19_min**	n [nbin]				Real	minimum of Index of Imhomogeneity		K	
sum of CLFR20	**CLFR_20_sum**	n [nbin]				Real	sum of Fraction of Ice Cloud by Reflection method		%	
sum-sq of CLFR20	**CLFR_20_sum_sq**	n [nbin]				Real	sum of squares of Fraction of Ice Cloud by Reflection method			
maximum of CLFR20	**CLFR_20_max**	n [nbin]				Real	maximum of Fraction of Ice Cloud by Reflection method		%	
minimum of CLFR20	**CLFR_20_min**	n [nbin]				Real	minimum of Fraction of Ice Cloud by Reflection method		%	

6.3 Ocean

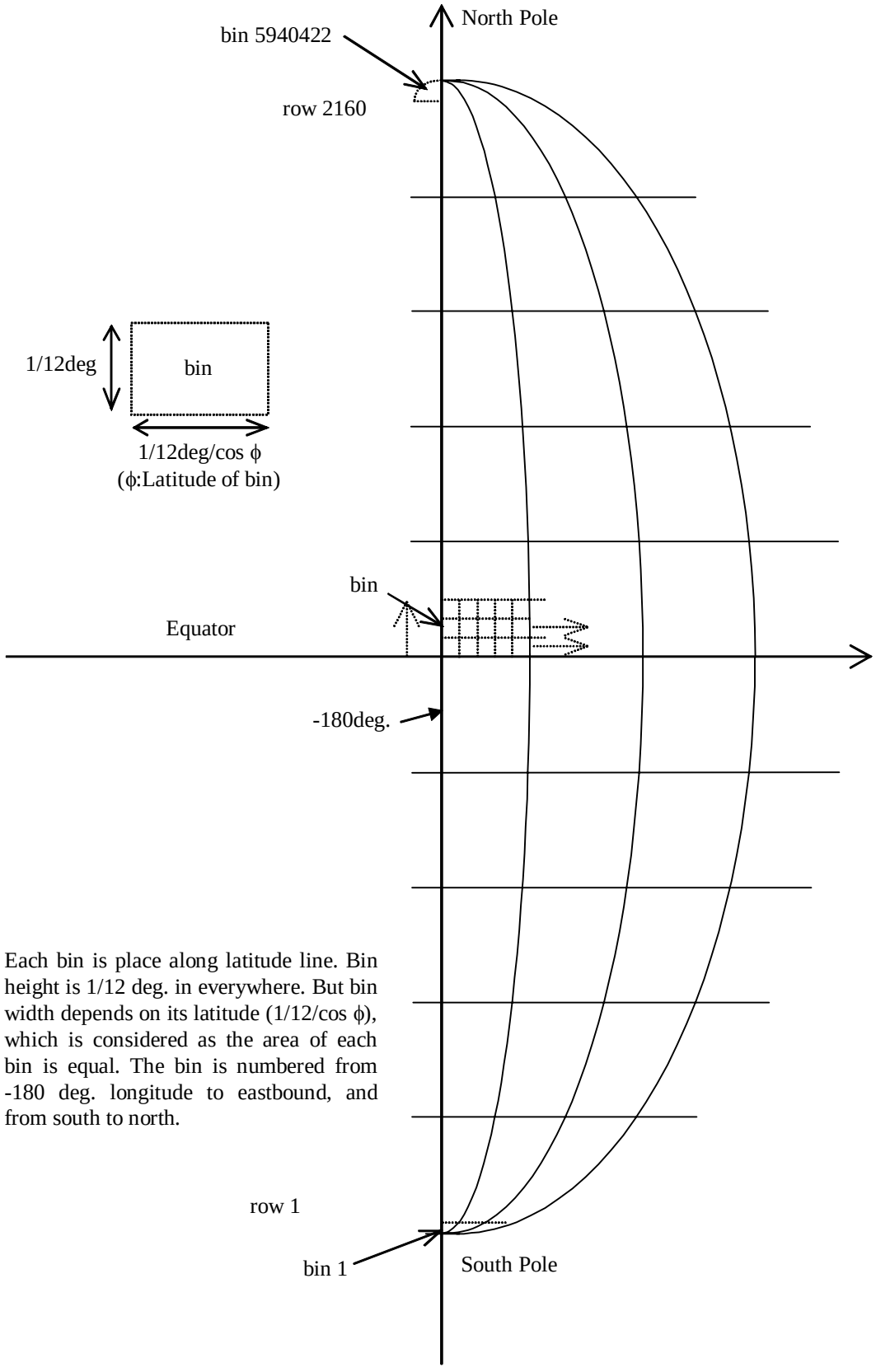
There are 4 ocean Level-3 Binned products. Each product file has several geophysical parameters. (Table 6.3-1) NL and La are generated from NL_LR Level-2 product. CS and ST is generated from CS and ST Level-2 product respectively.

Table 6.3-1 List of ocean Level-3Binned products

No.	Classification	Product Code	Description
1	Atmospheric Correction	NW	This file includes 13 parameters. - Normalized water-leaving radiance (13bands)
2		LA	This file includes 6 parameters. - Aerosol radiance(4bands) - Angstrom exponent(749/865) - Aerosol thickness (Tau_a865)
3	In-water Particles	CS	This file includes 4 parameters. - Chlorophyll-a (CHLA) - Absorption of colored dissolved organic matter(CDOM) - Attenuation coefficient at 490nm (K490) - Suspended solid weight (SS)
4	Sea Surface Temperature	ST*)	This file includes 2 parameters. - Bulk Sea surface temperature(SST_b) [daytime] - Bulk Sea surface temperature(SST_b) [nighttime]

*) ST data includes both of daytime and night SST data separetely. ST has 2 sets of bin information (ex. "extent" and "extent#2" in "BinIndex" Vgroup) because data contained bin is different between daytime and night. "xxxx" means the data for daytime and "xxxx#2" is for night.

The definition of ocean bin is shown in Fig.6.3-1



Each bin is place along latitude line. Bin height is 1/12 deg. in everywhere. But bin width depends on its latitude (1/12/cos ϕ), which is considered as the area of each bin is equal. The bin is numbered from -180 deg. longitude to eastbound, and from south to north.

Fig.6.3-1 Definition of ocean bin

6.3.1 Generic Header

See chapter 2 for the detail. Some items related this products are shown below.

data name	value
Title	"GLI Level-3Binned Data"
Data type	"global"
Data Sub-type	Product Code (see Table 6.3-1)
Orbit Number	-1 (-1 means that this data has no meaning)
Upper Left Latitude	0 (0 means that this data has no meaning)
Upper Left Longitude	0
Upper Right Latitude	0
Upper Right Longitude	0
Lower Left Latitude	0
Lower Left Longitude	0
Lower Right Latitude	0
Lower Right Longitude	0
Map Projection	"N/A"

6.3.2 Specific Header

CIF:control information file

category	data name	type	count	contents		remarks	source of data	
					const.		input data	current process
Bin Information	**Binning Period**	Ch		"day", "8days", "month"		Binning Period		O
	Period Start Year	Short	1			year of start of binning period defining time range of "time_rec" of V group "BinList" (cf."Start Year")		O
	Period Start Day	Short	1			day-of-year of start of binning period defining time range of "time_rec" of V group "BinList" (cf."Start Day")		O
	Period End Year	Short	1			year of end of binning period defining time range of "time_rec" of V group "BinList" (cf."End Year")		O
	Period End Day	Short	1			day-of-year of end of binning period defining time range of "time_rec" of V group "BinList" (cf."End Year")		O
	Data Bins	Long	1			Number of bins in this products (1-5940422)		O
	Data Bins#2	Long	1			Number of bins in this products (1-5940422) This data is stored only in ST (data for ST night)		O
	Percent Data Bins	Real	1			Percentage of number of bins in this product by number of total bins (Data Bins / 5940422 * 100)		O
	Percent Data Bins#2	Real	1			Percentage of number of bins in this product by number of total bins (Data Bins / 5940422 * 100) This data is stored only in ST (data for ST night)		O
Data Time	**Start Year**	Short	1			year of Start Time	O	O
	Start Day	Short	1			day-of-year of Start Time(0 on Jan. 1st)	O	O
	Start Millisec	Long	1			milliseconds-of-day of Start Time	O	O
	End Year	Short	1			year of End Time	O	O
	End Day	Short	1			day-of-year of End Time(0 on Jan. 1st)	O	O
	End Millisec	Long	1			milliseconds-of-day of End Time	O	O
Area Coordinates	**Latitude Units**	Ch	14	"degrees North"	const.	Units used for all latitude values in this product		O (constant)
	Longitude Units	Ch	13	"degrees East"	const.	Units used for all longitude values in this product		O (constant)

6.3.3 Common Part (Body)

n : Sum of the number of bins actually stored (sum of "extent" in "BinIndex" V group)
n2 : Sum of the number of bins actually stored (sum of "extent#2" in "BinIndex" V group)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
SEAGrid [Geometry]	**Number of equatorial bins**	**bins**	(1)				Long	Number of equatorial bins			Number of equatorial bins (4320)
	Earth's radius in km	**radius**	(1)				Double	Earth's radius in km			Earth's radius in km (6378.137)
	Northernmost latitude in grid	**max_north**	(1)				Real	Northernmost latitude in grid	(-90.0, 90.0)	degree	Northernmost latitude in grid (90.0)
	Southernmost latitude in grid	**max_south**	(1)				Real	Southernmost latitude in grid	(-90.0, 90.0)	degree	Southernmost latitude in grid (-90.0)
	Longitude of western edge of grid	**seam_lon**	(1)				Real	Longitude of western edge of grid	(-180.0, 180.0)	degree	Longitude of western edge of grid (-180.0)
BinIndex [Index]	**Index No. of each row**	**row_num**	2160[row]				Long	Index number of row	(1, 721)		Index No. of each row corresponding to BinIndex record
	Bin height	**vsize**	2160[row]				Double	North-south extent of bin		degree	North-south extent (degrees latitude) of bins for each row. (0.0833333 (1/12 deg.))
	Bin width	**hsize**	2160[row]				Double	East-west extent of bin		degree	East-west extent (degrees longitude) of bins for each row. (1/12 deg./cosφ)
	Bin number of first bin for each row	**start_num**	2160[row]				Long	Bin number of first bin for each row	(1, 5940420)		Bin number of first bin for each row. the value is constant. (row 0 : 1, row 1 : 4, ..., row 2159 : 5940420) (cf. "begin")
	Bin number of first data-containing bin for each row	**begin**	2160[row]				Long	Bin number of first data-containing bin for each row	(1, 5940420)		Bin number of first data-containing bin for each row. the value changes by data storage. (cf. "start_num")
	Bin number of first data-containing bin for each row #2	**begin#2**	2160[row]				Long	Bin number of first data-containing bin for each row #2	(1, 5940420)		Bin number of first data-containing bin for each row. the value changes by data storage. (cf. "start_num") This data is stored only in ST (data for ST night)
	Number of bins actually stored for each row	**extent**	2160[row]				Long	Number of bins actually stored for each row	(0, 4320)		Number of bins actually stored for each row
	Number of bins actually stored for each row #2	**extent#2**	2160[row]				Long	Number of bins actually stored for each row #2	(0, 4320)		Number of bins actually stored for each row. This data is stored only in ST (data for ST night)
	The maximum number of bins for each row	**max**	2160[row]				Long	The maximum number of bins for each row	(3, 4320)		The maximum number of bins for each row
BinList	**Index No. of this bin (b)**	**bin_num**[*1]	n [nbin]				Long	Bin number (b)	(1, 5940422)		Index No. of this bin (b)
	Index No. of this bin (b) #2	**bin_num#2**[*1]	n2 [nbin2]				Long	Bin number (b)#2	(1, 5940422)		Index No. of this bin (b). This data is stored only in ST (data for ST night)
	number of observations (pixels) in this bin (N(b))	**nobs**[*1]	n [nbin]				Short	number of observations in this bin (N(b))			number of observations (pixels) in this bin (N(b))
	number of observations (pixels) in this bin (N(b)) #2	**nobs#2**[*1]	n2 [nbin2]				Short	number of observations in this bin (N(b))#2			number of observations (pixels) in this bin (N(b)). This data is stored only in ST (data for ST night)
	number of scenes contributing to this bin (Nseg(b))	**nscenes**[*1]	n [nbin]				Short	number of scenes contributing to this bin (Nseg(b))			number of scenes contributing to this bin (Nseg(b))
	number of scenes contributing to this bin (Nseg(b)) #2	**nscenes#2**[*1]	n2 [nbin2]				Short	number of scenes contributing to this bin (Nseg(b))#2			number of scenes contributing to this bin (Nseg(b)). This data is stored only in ST (data for ST night)
	time record flag	**time_rec**[*1]	n [nbin]				Short	time record flag			time record flag
	time record flag #2	**time_rec#2**[*1]	n2 [nbin2]				Short	time record flag#2			night)
	sum of the weights (W(b))	**weights**[*1]	n [nbin]				Real	sum of the weights (W(b))			sum of the weights (W(b))
	sum of the weights (W(b))	**weights#2**[*1]	n2 [nbin2]				Real	sum of the weights (W(b))#2			sum of the weights (W(b)). This data is stored only in ST (data for ST night)
	number of all pixels	**num_allpixel**	(1)				Double	number of total pixels			the number of total all pixels
	number of valid pixels	**num_validpixel**	(1)				Double	number of total valid pixels			the number of total valid pixels
	Quality Flag Sets of Ocean Color	**flagsets_oc**	32 [nbits_qfoc]				Double	Quality Flag Sets for Ocean Color			The frequency of each bit of QF_OC. This data is stored only in NL, LA, CS.
	Quality Flag Sets of SST	**flagsets_st**	16 [nbits_qfst]				Double	Quality Flag Sets for SST			ST.

*1: If nbin or nbin2 is 0, this parameter is not included in the file.

6.3.4 Specific Part (Body)

(1) Normalized Water-leaving Radiance

n : Sum of the number of bins actually stored (sum of "extent" in "BinIndex" V group)
*** If n [nbin] is 0, following all SD are not included in the file.**

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
NL	**sum of NWLR at 380nm**	**nLw_380_sum**	n [nbin]				Real	sum of normalized water-leaving radiance at 380nm			sum of normalized water-leaving radiance at 380nm
[DataSubordinate]	**sum-sq of NWLR at 380nm**	**nLw_380_sum_sq**	n [nbin]				Real	sum-sq of normalized water-leaving radiance at 380nm			sum of squares of normalized water-leaving radiance at 380nm
	sum of NWLR at 400nm	**nLw_400_sum**	n [nbin]				Real	sum of normalized water-leaving radiance at 400nm			sum of normalized water-leaving radiance at 400nm
	sum-sq of NWLR at 400nm	**nLw_400_sum_sq**	n [nbin]				Real	sum-sq of normalized water-leaving radiance at 400nm			sum of squares of normalized water-leaving radiance at 400nm
	sum of NWLR at 412nm	**nLw_412_sum**	n [nbin]				Real	sum of normalized water-leaving radiance at 412nm			sum of normalized water-leaving radiance at 412nm
	sum-sq of NWLR at 412nm	**nLw_412_sum_sq**	n [nbin]				Real	sum-sq of normalized water-leaving radiance at 412nm			sum of squares of normalized water-leaving radiance at 412nm
	sum of NWLR at 443nm	**nLw_443_sum**	n [nbin]				Real	sum of normalized water-leaving radiance at 443nm			sum of normalized water-leaving radiance at 443nm
	sum-sq of NWLR at 443nm	**nLw_443_sum_sq**	n [nbin]				Real	sum-sq of normalized water-leaving radiance at 443nm			sum of squares of normalized water-leaving radiance at 443nm
	sum of NWLR at 460nm	**nLw_460_sum**	n [nbin]				Real	sum of normalized water-leaving radiance at 460nm			sum of normalized water-leaving radiance at 460nm
	sum-sq of NWLR at 460nm	**nLw_460_sum_sq**	n [nbin]				Real	sum-sq of normalized water-leaving radiance at 460nm			sum of squares of normalized water-leaving radiance at 460nm
	sum of NWLR at 490nm	**nLw_490_sum**	n [nbin]				Real	sum of normalized water-leaving radiance at 490nm			sum of normalized water-leaving radiance at 490nm
	sum-sq of NWLR at 490nm	**nLw_490_sum_sq**	n [nbin]				Real	sum-sq of normalized water-leaving radiance at 490nm			sum of squares of normalized water-leaving radiance at 490nm
	sum of NWLR at 520nm	**nLw_520_sum**	n [nbin]				Real	sum of normalized water-leaving radiance at 520nm			sum of normalized water-leaving radiance at 520nm
	sum-sq of NWLR at 520nm	**nLw_520_sum_sq**	n [nbin]				Real	sum-sq of normalized water-leaving radiance at 520nm			sum of squares of normalized water-leaving radiance at 520nm
	sum of NWLR at 545nm	**nLw_545_sum**	n [nbin]				Real	sum of normalized water-leaving radiance at 545nm			sum of normalized water-leaving radiance at 545nm
	sum-sq of NWLR at 545nm	**nLw_545_sum_sq**	n [nbin]				Real	sum-sq of normalized water-leaving radiance at 545nm			sum of squares of normalized water-leaving radiance at 545nm
	sum of NWLR at 565nm	**nLw_565_sum**	n [nbin]				Real	sum of normalized water-leaving radiance at 565nm			sum of normalized water-leaving radiance at 565nm
	sum-sq of NWLR at 565nm	**nLw_565_sum_sq**	n [nbin]				Real	sum-sq of normalized water-leaving radiance at 565nm			sum of squares of normalized water-leaving radiance at 565nm
	sum of NWLR at 625nm	**nLw_625_sum**	n [nbin]				Real	sum of normalized water-leaving radiance at 625nm			sum of normalized water-leaving radiance at 625nm
	sum-sq of NWLR at 625nm	**nLw_625_sum_sq**	n [nbin]				Real	sum-sq of normalized water-leaving radiance at 625nm			sum of squares of normalized water-leaving radiance at 625nm
	sum of NWLR at 666nm	**nLw_666_sum**	n [nbin]				Real	sum of normalized water-leaving radiance at 666nm			sum of normalized water-leaving radiance at 666nm
	sum-sq of NWLR at 666nm	**nLw_666_sum_sq**	n [nbin]				Real	sum-sq of normalized water-leaving radiance at 666nm			sum of squares of normalized water-leaving radiance at 666nm
	sum of NWLR at 680nm	**nLw_680_sum**	n [nbin]				Real	sum of normalized water-leaving radiance at 680nm			sum of normalized water-leaving radiance at 680nm
	sum-sq of NWLR at 680nm	**nLw_680_sum_sq**	n [nbin]				Real	sum-sq of normalized water-leaving radiance at 680nm			sum of squares of normalized water-leaving radiance at 680nm
	sum of NWLR at 710nm	**nLw_710_sum**	n [nbin]				Real	sum of normalized water-leaving radiance at 710nm			sum of normalized water-leaving radiance at 710nm
	sum-sq of NWLR at 710nm	**nLw_710_sum_sq**	n [nbin]				Real	sum-sq of normalized water-leaving radiance at 710nm			sum of squares of normalized water-leaving radiance at 710nm

(2) Aerosol Radiance

n : Sum of the number of bins actually stored (sum of "extent" in "BinIndex" V group)
*** If n [nbin] is 0, following all SD are not included in the file.**

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
LA	**sum of LA at 865nm**	**La_865_sum**	n [nbin]				Real	sum of aerosol radiance at 865nm			sum of aerosol radiance at 865nm
[DataSubordinate]	**sum-sq of LA at 865nm**	**La_865_sum_sq**	n [nbin]				Real	sum-sq of aerosol radiance at 865nm			sum of squares of aerosol radiance at 865nm
	sum of NLWR at 678nm by in-water mod	**nLw_678_sum**	n [nbin]				Real	sum of normalized water-leaving radiance at 678nm by in-waterm model			sum of mnormalized water-leaving radiance at 678nm by in-water model
	sum-sq of NLWR at 678nm by in-water n	**nLw_678_sum_sq**	n [nbin]				Real	sum-sq of normalized water-leaving radiance at 678nm			sum-sq of mnormalized water-leaving radiance at 678nm by in-water model
	sum of NLWR at 865nm by in-water mod	**nLw_865_sum**	n [nbin]				Real	sum of normalized water-leaving radiance at865nm by in-waterm model			sum of mnormalized water-leaving radiance at 865nm by in-water model
	sum-sq of NLWR at 865nm by in-water n	**nLw_865_sum_sq**	n [nbin]				Real	sum-sq of normalized water-leaving radiance at 865nm			sum-sq of mnormalized water-leaving radiance at 865nm by in-water model
	sum of Aerosol albedo at 380 nm	**aalb_sum**	n [nbin]				Real	sum of aerosol albedo at 380			sum of absorbtive aerosol at 380 nm
	sum-sq of Aerosol albedo at 380 nm	**aalb_sum_sq**	n [nbin]				Real	sum-sq of aerosol albedo at 380 nm			sum-sq of absorbtive aerosol at 380 nm
	sum of angstrom_exp(520/865)	**angstrom_520_sum**	n [nbin]				Real	sum of angstrom exponent derived from 520 and 865nm			sum of angstrom exponent(520/865)
	sum-sq of angstrom_exp(520/865)	**angstrom_520_sum_sq**	n [nbin]				Real	sum-sq of angstrom exponent derived from 520 and 865nm			sum of squares of angstrom exponent(520/865)
	sum of Tau_a865	**tau_a865_sum**	n [nbin]				Real	sum of Tau_a865			sum of Tau_a865
	sum-sq of Tau_a865	**tau_a865_sum_sq**	n [nbin]				Real	sum-sq of Tau_a865			sum of squares of Tau_a865

200A

(3) In-water Particles

n : Sum of the number of bins actually stored (sum of "extent" in "BinIndex" V group)
*** If n [nbin] is 0, following all SD are not included in the file.**

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
CS	**sum of chlorophyll a**	**chla_a_sum**	n [nbin]				Real	sum of chlorophyll a			sum of chlorophyll a
[DataSubordinate]	**sum-sq of chlorophyll a**	**chla_a_sum_sq**	n [nbin]				Real	sum-sq of chlorophyll a			sum of squares of chlorophyll a
	sum of suspended solid weight	**ss_sum**	n [nbin]				Real	sum of suspended solid weight			sum of suspended solid weight
	sum-sq of suspended solid weight	**ss_sum_sq**	n [nbin]				Real	sum-sq of suspended solid weight			sum of squares of suspended solid weight
	sum of absorption of colored dissolved organic matter	**cdom_sum**	n [nbin]				Real	sum of absorption of colored dissolved organic matter			sum of absorption of colored dissolved organic matter
	sum-sq of absorption of colored dissolved organic matter	**cdom_sum_sq**	n [nbin]				Real	sum-sq of absorption of colored dissolved organic matter			sum of squares of absorption of colored dissolved organic matter
	sum of K490	**k_490_sum**	n [nbin]				Real	sum of K490			sum of K490
	sum-sq of K490	**k_490_sum_sq**	n [nbin]				Real	sum-sq of K490			sum of squares of K490

(4) Sea Surface Temperature

n : Sum of the number of bins actually stored (sum of "extent" in "BinIndex" V group)
n2 : Sum of the number of bins actually stored (sum of "extent#2" in "BinIndex" V group)
*** If n [nbin] or n2 [nbin2] is 0, following SDs are not included in the file respectively.**

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
ST	**sum of sst (daytime)**	**SST_daytime_sum**	n [nbin]				Real	sum of SST (daytime)			sum of SST (daytime)
[DataSubordinate]	**sum-sq of sst (daytime)**	**SST_daytime_sum_sq**	n [nbin]				Real	sum-sq of SST (daytime)			sum of squares of SST (daytime)
	sum of sst (nighttime)	**SST_nighttime_sum**	n2 [nbin2]				Real	sum of SST (nighttime)			sum of SST (nighttime)
	sum-sq of sst (nighttime)	**SST_nighttime_sum_sq**	n2 [nbin2]				Real	sum-sq of SST (nighttime)			sum of squares of SST (nighttime)

6.4 Cryosphere

Each product file has only one geophysical parameter. Totally 2 product files exist. (Table 6.4-1)

Table 6.4-1 List of cryosphere Level-3Binned products

No.	Classification	Product Code	Description
1	Snow property	SNWI	Snow impurities
2		SNWG	Snow grain size retrieved with 865nm band
3		SNWGS	Snow grain size retrieved with 1640nm band
4		SNWTS	Snow surface temperature

Cryosphere product consists of 3 regions. Each region is an independent file. In the case of SNWG, you can see 3 files, SNWG for north polar region, SNWG for middle latitude region and SNWG for south polar region.(Fig.6.4-1)

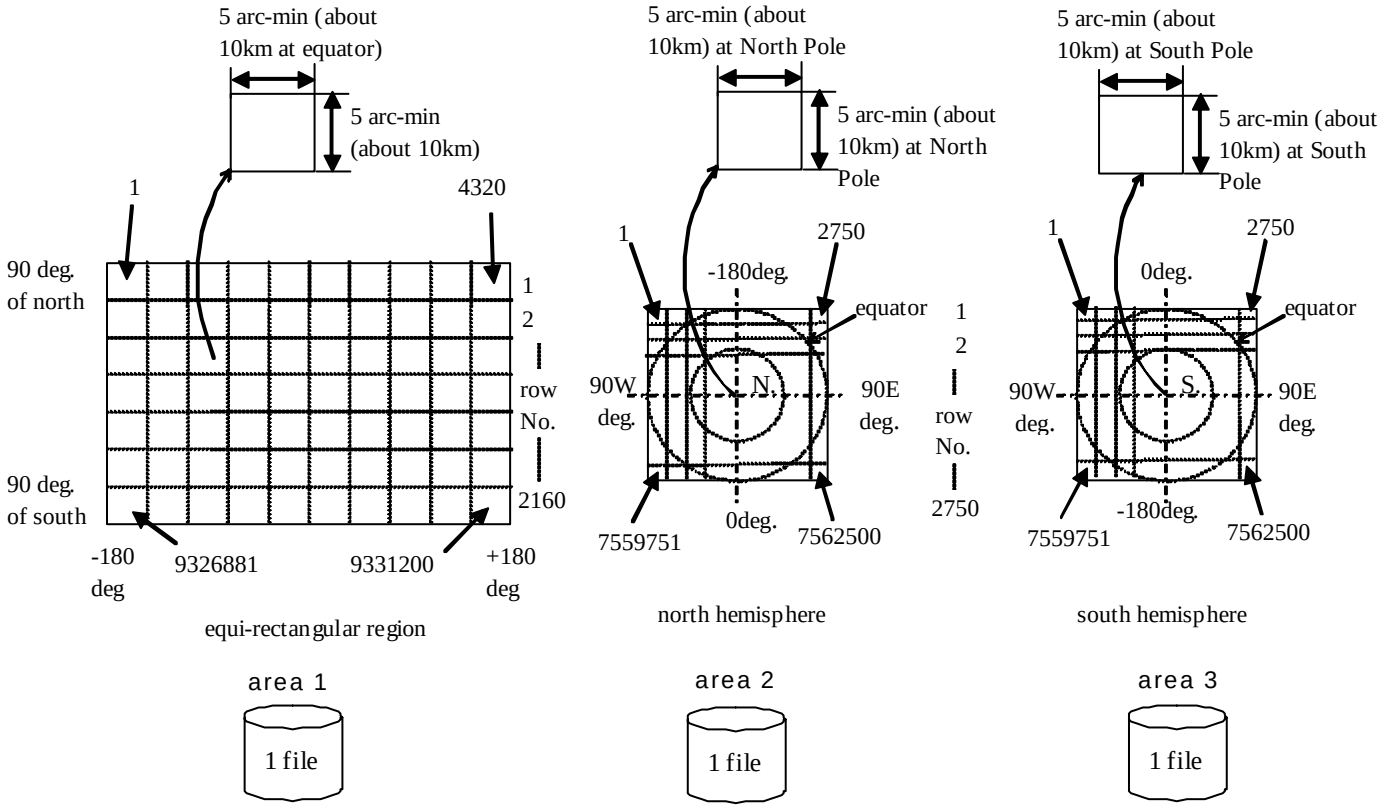


Fig.6.4-1 Cryosphere L3-Bin Region Separation

6.4.1 Generic Header

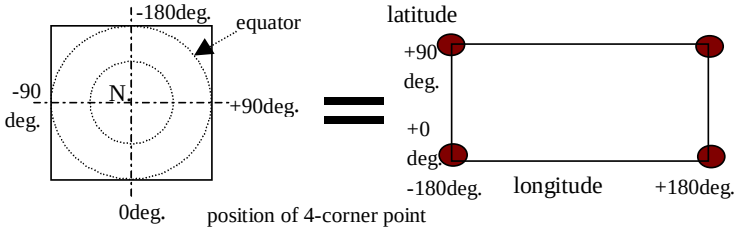
See chapter 2 for the detail. Some items related this products are shown below.

For equi-rectangular region(area 1):

data name	value
Title	"GLI Level-3Binned Data"
Data type	"global"
Data Sub-type	Product Code (see Table 6.4-1)
Orbit Number	-1 (-1 means that this data has no meaning)
Upper Left Latitude	90.0
Upper Left Longitude	-180.0
Upper Right Latitude	90.0
Upper Right Longitude	180.0
Lower Left Latitude	-90.0
Lower Left Longitude	-180.0
Lower Right Latitude	-90.0
Lower Right Longitude	180.0
Map Projection	"EQR"

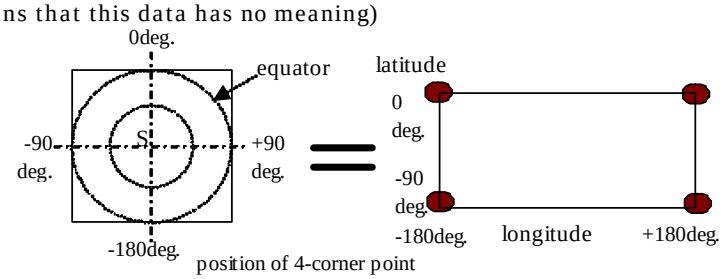
For north hemisphere(area 2):

data name	value
Title	"GLI Level-3Binned Data"
Data type	"global"
Data Sub-type	Product Code (see Table 6.4-1)
Orbit Number	-1 (-1 means that this data has no meaning)
Upper Left Latitude	90.0
Upper Left Longitude	-180.0
Upper Right Latitude	90.0
Upper Right Longitude	180.0
Lower Left Latitude	0.0
Lower Left Longitude	-180.0
Lower Right Latitude	0.0
Lower Right Longitude	180.0
Map Projection	"PS"



For south hemisphere(area 3):

data name	value
Title	"GLI Level-3Binned Data"
Data type	"global"
Data Sub-type	Product Code (see Table 6.4-1)
Orbit Number	-1 (-1 means that this data has no meaning)
Upper Left Latitude	0.0
Upper Left Longitude	-180.0
Upper Right Latitude	0.0
Upper Right Longitude	180.0
Lower Left Latitude	-90.0
Lower Left Longitude	-180.0
Lower Right Latitude	-90.0
Lower Right Longitude	180.0
Map Projection	"PS"



6.4.2 Specific Header

CIF:control information file

category	data name	type	count	contents		remarks	source of data	
					const.		input data	current process
Bin Information	**Binning Period**	Ch		"16days", "month"		Binning Period		O
	Data Bins	Long	1			Number of bins in this products		O
	Percent Data Bins	Real	1			Percentage of number of bins in this product by number of total bins		O
Data Time	**Start Year**	Short	1			year of Start Time	O	O
	Start Day	Short	1			day-of-year of Start Time(0 on Jan. 1st)	O	O
	Start Millisec	Long	1			milliseconds-of-day of Start Time	O	O
	End Year	Short	1			year of End Time	O	O
	End Day	Short	1			day-of-year of End Time(0 on Jan. 1st)	O	O
	End Millisec	Long	1			milliseconds-of-day of End Time	O	O
Area Coordinates	**Latitude Units**	Ch	14	"degrees North"	const.	Units used for all latitude values in this product		O (constant)
	Longitude Units	Ch	13	"degrees East"	const.	Units used for all longitude values in this product		O (constant)
Map Information	**Earth Ellipsoid Type**	Ch	1	"WGS84"	const.		O	
	Reference Longitude	Real	1	(ex.)0.0		stored only when PS. reference longitude of PS projection.	O	
	grid interval	Real	1	(ex.)0.5		[unit] arc-minute of angle	O	

6.4.3 Common Part (Body)

n : Sum of the number of bins actually stored (sum of "extent" in "BinIndex" V group)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
SEAGrid	**Number of equatorial bins**	**bins**	(1)				Long	Number of equatorial bins			Number of equatorial bins (4320:EQR, 2750:NP,SP)
[Geometry]	**Earth's radius in km**	**radius**	(1)				Double	Earth's radius in km			Earth's radius in km (6378.137)
	Northernmost latitude in grid	**max_north**	(1)				Real	Northernmost latitude in grid	(-90.0, 90.0)	degree	Northernmost latitude in grid. The value depends on the region. 90.0: north hemisphere, equi-rectangular 0.0 : south hemisphere
	Southernmost latitude in grid	**max_south**	(1)				Real	Southernmost latitude in grid	(-90.0, 90.0)	degree	Southernmost latitude in grid. The value depends on the region. 0.0 : north hemisphere -90: equi-rectangular, south hemisphere
	Longitude of western edge of grid	**seam_lon**	(1)				Real	Longitude of western edge of grid	(-180.0, 180.0)	degree	Longitude of western edge of grid (-180.0)
BinIndex	**Index No. of each row**	**row_num**	2750: north/south hemisphere. 2160: EQR. reg., [row]				Long	Index number of row	(1, 2750): NH,SH (1, 2160): EQR		Index No. of each row corresponding to BinIndex record
[Index]	**Bin height**	**vsize**	2750: north/south hemisphere. 2160: EQR. reg., [row]				Double	North-south extent of bin		degree	North-south extent (degrees latitude) of bins for each row. (0.0833333 (1/12 deg.))
	Bin width	**hsize**	2750: north/south hemisphere. 2160: EQR. reg., [row]				Double	East-west extent of bin		degree	East-west extent (degrees longitude) of bins for each row. (0.0833333 (1/12 deg.))
	Bin number of first bin for each row	**start_num**	2750: north/south hemisphere. 2160: EQR. reg., [row]				Long	Bin number of first bin for each row	(1, 7559751): NP,SP (1, 9326881): EQR		Bin number of first bin for each row. the value is constant. (cf. "begin")
	Bin number of first data-containing bin for each row	**begin**	2750: north/south hemisphere. 2160: EQR. reg., [row]				Long	Bin number of first data-containing bin for each row	(1, 7562500): NP,SP (1, 9331200): EQR		Bin number of first data-containing bin for each row. the value changes by data storage. (cf. "start_num")
	Number of bins actually stored for each row	**extent**	2750: north/south hemisphere. 2160: EQR. reg., [row]				Long	Number of bins actually stored for each row	(0, 2750): NP,SP (0, 4320): EQR		Number of bins actually stored for each row
	The maximum number of bins that can be stored for each row	**max**	2750: north/south hemisphere. 2160: EQR. reg., [row]				Long	The maximum number of bins that can be stored for each row			The maximum number of bins that can be stored for each row. This value is determined by the definition of bin grid. (4320:EQR,
BinList	**Index No. of this bin (b)**	**bin_num**[*1]	n [nbin]				Long	Bin number (b)	(1, 7562500): NP,SP (1, 9331200):EQR		Index No. of this bin (b)
[DataMain]	**number of observations (pixels) in this bin (N(b))**	**nobs**[*1]	n [nbin]				Short	number of observations in this bin (N(b))			number of observations (pixels) in this bin (N(b))
	number of scenes contributing to this bin (Nseg(b))	**nscenes**[*1]	n [nbin]				Short	number of scenes contributing to this bin (Nseg(b))			number of scenes contributing to this bin (Nseg(b))

*1: If nbin is 0, this parameter is not included in the file.

NP: north polar region, SP: south polar region, mid: middle latitude region

6.4.4 Specific Part (Body)

(1) Snow Impurities (SNWI)

n : Sum of the number of bins actually stored (sum of "extent" in "BinIndex" V group)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
SNWI [DataSubordinate]	**sum of SNWI**	**SNWI_sum**[*1]	n [nbin]				Real	sum of Snow impurities as soot			sum of Snow impurities as soot
	sum-sq of SNWI	**SNWI_sum_sq**[*1]	n [nbin]				Real	sum-sq of Snow impurities as soot			sum of squares of Snow impurities as soot
	maximum of SNWI	**SNWI_max**[*1]	n [nbin]				Real	maximum of Snow impurities as soot			maximum of Snow impurities as soot
	minimum of SNWI	**SNWI_min**[*1]	n [nbin]				Real	minimum of Snow impurities as soot			minimum of Snow impurities as soot
	weighted mean of SNWI	**SNWI_weimean**[*1]	n [nbin]				Real	weighted mean of Snow impurities as soot			**[monthly Bin only]** weighted mean value of Snow impurities as soot

*1: If nbin is 0, this parameter is not included in the file.

(2) Snow Grain Size retrieved with 865nm band (SNWG)

n : Sum of the number of bins actually stored (sum of "extent" in "BinIndex" V group)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
SNWG [DataSubordinate]	**sum of SNWG**	**SNWG_sum**[*1]	n [nbin]				Real	sum of Snow grain size (865nm)			sum of Snow grain size (865nm)
	sum-sq of SNWG	**SNWG_sum_sq**[*1]	n [nbin]				Real	sum-sq of Snow grain size (865nm)			sum of squares of Snow grain size (865nm)
	maximum of SNWG	**SNWG_max**[*1]	n [nbin]				Real	(865nm)			maximum of Snow grain size (865nm)
	minimum of SNWG	**SNWG_min**[*1]	n [nbin]				Real	minimum of Snow grain size (865nm)			minimum of Snow grain size (865nm)
	weighted mean of SNWG	**SNWG_weimean**[*1]	n [nbin]				Real	weighted mean of Snow grain size (865nm)			**[monthly Bin only]** weighted mean value of Snow grain size (865nm)

*1: If nbin is 0, this parameter is not included in the file.

(3) Snow Grain Size retrieved with 1640nm band (SNWGS)

n : Sum of the number of bins actually stored (sum of "extent" in "BinIndex" V group)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
SNWGS [DataSubordinate]	**sum of SNWGS**	**SNWGS_sum**[*1]	n [nbin]				Real	sum of Snow grain size (1640nm)			sum of Snow grain size (1640nm)
	sum-sq of SNWGS	**SNWGS_sum_sq**[*1]	n [nbin]				Real	sum-sq of Snow grain size (1640nm)			sum of squares of Snow grain size (1640nm)
	maximum of SNWGS	**SNWGS_max**[*1]	n [nbin]				Real	(1640nm)			maximum of Snow grain size (1640nm)
	minimum of SNWGS	**SNWGS_min**[*1]	n [nbin]				Real	(1640nm)			minimum of Snow grain size (1640nm)
	weighted mean of SNWGS	**SNWGS_weimean**[*1]	n [nbin]				Real	weighted mean of Snow grain size (1640nm)			**[monthly Bin only]** weighted mean value of Snow grain size (1640nm)

*1: If nbin is 0, this parameter is not included in the file.

(4) Snow Surface Temperature (SNWTS)

n : Sum of the number of bins actually stored (sum of "extent" in "BinIndex" V group)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
SNWTS [DataSubordinate]	**sum of SNWTS**	**SNWTS_sum**[*1]	n [nbin]				Real	sum of Snow surface temperature			sum of Snow surface temperature
	sum-sq of SNWTS	**SNWTS_sum_sq**[*1]	n [nbin]				Real	sum-sq of Snow surface temperature			sum of squares of Snow surface temperature
	maximum of SNWTS	**SNWTS_max**[*1]	n [nbin]				Real	temperature			maximum of Snow surface temperature
	minimum of SNWTS	**SNWTS_min**[*1]	n [nbin]				Real	temperature			minimum of Snow surface temperature
	weighted mean of SNWTS	**SNWTS_weimean**[*1]	n [nbin]				Real	weighted mean of Snow surface temperature			**[monthly Bin only]** weighted mean value of Snow surface temperature

*1: If nbin is 0, this parameter is not included in the file.

7. Level-3 STA Map Data

7.1 Introduction

Level-3 STA Map product is generated from Level-3 Binned products (from Level-2 products only for Land). Level-3 STA Map is global low resolution mapped data. There are 4 types of Level-3 STA Map products in GLI.

- Atmosphere
- Ocean
- Land
- Cryosphere

The definition of these products is almost same but the spatial resolution and map projection method is different.

Atmosphere Level-3 STA Map product is map-projected equi-rectangular data. It covers the globe. The size of grid is 1/4 deg.

Ocean Level-3 STA Map product is 4096 x 2048 equi-rectangular data. It covers the globe.

Land Level-3 STA Map product is map-projected equi-rectangular data. It covers the globe. The size of grid is 1/12 deg.

Cryosphere Level-3 STA Map product is map-projected but separated to 3 zones, equi-rectangular region (whole globe), north hemisphere (from equator to north pole), south hemisphere (from equator to south pole). North hemisphere and south hemisphere are PS (polar stereographic) projected. The size of each grid is 1/12 deg.

Some products has 2 or more temporal series. For example, there are 2 SNWG (snow grain size) Level-3 STA Map products, for 16 days and for a month. But file specification is same regardless of temporal binning period.

7.2 Atmosphere

Each product file has only one geophysical parameter. Totally 12 product files exist. (Table 7.2-1)

Table 7.2-1 List of atmosphere Level-3Binned products

No.	Classification	Product Code	Description
1	Aerosol property	ARAE	Aerosol Angstrom Exponent
2		AROP	Aerosol Optical Thickness
3	Cloud property	CLER_w_r	Cloud Effective Particle Radius of water cloud by reflection method
4		CLER_i_e	Cloud Effective Particle Radius of ice cloud by emission method
5		CLOP_w_r	Cloud Optical Thickness of water cloud by reflection method
6		CLOP_i_r	Cloud Optical Thickness of ice cloud by reflection method
7		CLOP_i_e	Cloud Optical Thickness of ice cloud by emission method
8		CLHT_w_r	Cloud Top Height of water cloud by reflection method
9		CLTT_w_r	Cloud Top Temperature of water cloud by reflection method
10		CLTT_i_e	Cloud Top Temperature of ice cloud by emission method
11		CLWP_w_r	Cloud Liquid Water Path of water cloud by reflection method
12		CLFR	Cloud fraction

The concept of atmospheric bin is shown in Fig.7.2-1. This definition is same as Level-3Binned grid. The bin interval is assumed in 0.25 deg. If bin interval is changed, the bin numbering definition will be varied.

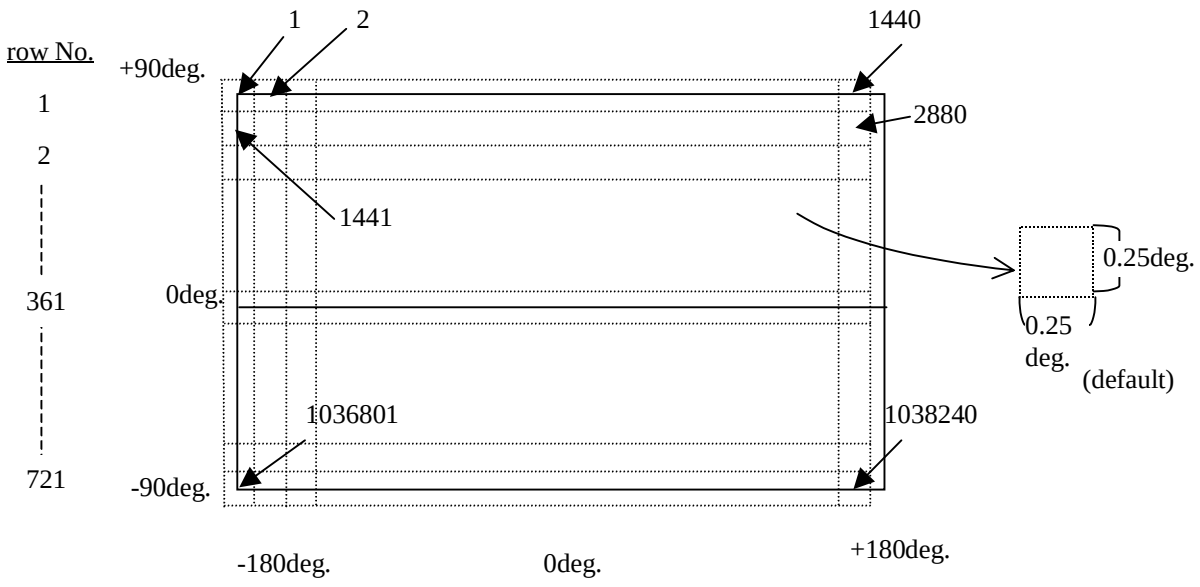


Fig.7.2-1 Definition of atmosphere bin

The bin interval is assumed in 0.25 deg. If bin interval is changed, the bin numbering definition will be varied.

7.2.1 Generic Header

See chapter 2 for the detail. Some items related this products are shown below.

data name	value
Title	"GLI Level-3 STA Map Data"
Data type	"global"
Data Sub-type	Product Code (see Table 7.2-1)
Orbit Number	-1 (-1 means that this data has no meaning)
Upper Left Latitude	90.0
Upper Left Longitude	-180.0*1
Upper Right Latitude	90.0
Upper Right Longitude	180.0*1
Lower Left Latitude	-90.0
Lower Left Longitude	-180.0*1
Lower Right Latitude	-90.0
Lower Right Longitude	180.0*1
Map Projection	"EQR"

*1: Longitude range can be changed by processing parameter.

7.2.2 Specific Header

CIF:control information file

category	data name	type	count	contents	const.	remarks	source of data: input data	source of data: current process
Bin Information	**Binning Period**	Ch		"16days", "month"		Binning Period	O	
	Data Bins	Long	1			Number of bins in parent products (1-1038240)	O	
	Percent Data Bins	Real	1			Percentage of number of bins in parent product by number of total bins (Data Bins / 1038240 * 100)	O	
Data Time	**Start Year**	Short	1			year of Start Time	O	
	Start Day	Short	1			day-of-year of Start Time(0 on Jan. 1st)	O	
	Start Millisec	Long	1			milliseconds-of-day of Start Time	O	
	End Year	Short	1			year of End Time	O	
	End Day	Short	1			day-of-year of End Time(0 on Jan. 1st)	O	
	End Millisec	Long	1			milliseconds-of-day of End Time	O	
Area Coordinates	**Latitude Units**	Ch	14	"degrees North"	const.	Units used for all latitude values in this product		O (constant)
	Longitude Units	Ch	13	"degrees East"	const.	Units used for all longitude values in this product		O (constant)
Map Information	**Number of Columns**	Long	1				O	
	Number of Lines	Long	1				O	
Data Description	**Scaling**	Ch		"linear" or "logarithmic"				O
	Scaling Equation	Ch		"Slope*L3SM_data+Intercept=Parameter value" or "Base**((Slope*L3SM_data)+Intercept)=Parameter value"				O
	Base	Real	1			this item is stored only if "logarithmic" is selected only.		O
	Slope	Real	1					O
	Intercept	Real	1					O

7.2.3 Common Part (Body)

Not assigned

7.2.4 Specific Part (Body)

(1) Aerosol Angstrom Exponent (ARAE)

p : Number of columns per line("Number of Columns" of Map information in Global Attributes)
l : Number of lines(="Number of Lines" of Map information in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
ARAE [geophysical parameter]	**Aerosol Angstrom exponent (ARAE)**	**ARAE**	l [lines]	p [pixels]			Short	Aerosol Angstrom exponent		no unit	Aerosol Angstrom Exponent (real value = slope * this value + intercept)

(2) Aerosol Optical Thickness (AROP)

p : Number of columns per line("Number of Columns" of Map information in Global Attributes)
l : Number of lines(="Number of Lines" of Map information in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
AROP [geophysical parameter]	**Aerosol optical thickness (AROP)**	**AROP**	l [lines]	p [pixels]			Short	Aerosol optical thickness at 500 nm		no unit	Aerosol Optical Thickness (real value = slope * this value + intercept)

(3) Cloud Effective Particle Radius of Water Cloud by Reflection Method (CLER_w_r)

p : Number of columns per line("Number of Columns" of Map information in Global Attributes)
l : Number of lines(="Number of Lines" of Map information in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
CLER_w_r [geophysical parameter]	**Cloud Effective Particle Radius (Water Cloud by Reflection Method)**	**CLER_w_r**	l [lines]	p [pixels]			Short	Cloud Effective Particle Radius (Water Cloud by Reflection		um	CLER_w_r (real value = slope * this value + intercept)

(4) Cloud Effective Particle Radius of Ice Cloud by Emission Method (CLER_i_e)

p : Number of columns per line("Number of Columns" of Map information in Global Attributes)
l : Number of lines(="Number of Lines" of Map information in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
CLER_i_e [geophysical parameter]	**Cloud Effective Radius of Cirrus Particles (Ice Cloud by Emission Method)**	**CLER_i_e**	l [lines]	p [pixels]			Short	Cloud Effective Radius of Cirrus Particles (Ice Cloud by Emission Method)		um	CLER_i_e (real value = slope * this value + intercept)

(5) Cloud Optical Thickness of Water Cloud by Reflection Method (CLOP_w_r)

p : Number of columns per line("Number of Columns" of Map information in Global Attributes)
l : Number of lines(="Number of Lines" of Map information in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
CLOP_w_r [geophysical parameter]	**Cloud Optical Thickness (Water cloud by Reflection Method)**	**CLOP_w_r**	l [lines]	p [pixels]			Short	Cloud Optical Thickness (Water cloud by Reflection Method)		no unit	CLOP_w_r (real value = slope * this value + intercept)

(6) Cloud Optical Thickness of Ice Cloud by Reflection Method (CLOP_i_r)

p : Number of columns per line("Number of Columns" of Map information in Global Attributes)
l : Number of lines(="Number of Lines" of Map information in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
CLOP_i_r [geophysical parameter]	**Cloud Optical Thickness (Ice Cloud by Reflection Method)**	**CLOP_i_r**	l [lines]	p [pixels]			Short	Cloud Optical Thickness (Ice Cloud by Reflection Method)		no unit	CLOP_i_r (real value = slope * this value + intercept)

(7) Cloud Optical Thickness of Ice Cloud by Emission Method (CLOP_i_e)

p : Number of columns per line("Number of Columns" of Map information in Global Attributes)
l : Number of lines(="Number of Lines" of Map information in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
CLOP_i_e [geophysical parameter]	**Cloud Optical Thickness of Cirrus (Ice Cloud by Emission Method)**	**CLOP_i_e**	l [lines]	p [pixels]			Short	Cloud Optical Thickness of Cirrus (Ice Cloud by Emission Method)		no unit	CLOP_i_e (real value = slope * this value + intercept)

(8) Cloud Top Height of Water Cloud by Reflection Method (CLHT_w_r)

p : Number of columns per line("Number of Columns" of Map information in Global Attributes)
l : Number of lines(="Number of Lines" of Map information in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
CLHT_w_r [geophysical parameter]	**Cloud Top Height (Water Cloud by Reflection Method)**	**CLHT_w_r**	l [lines]	p [pixels]			Short	Cloud Top Height (Water Cloud by Reflection Method)		km	CLHT_w_r (real value = slope * this value + intercept)

(9) Cloud Top Temperature of Water Cloud by Reflection Method (CLTT_w_r)

p : Number of columns per line("Number of Columns" of Map information in Global Attributes)
l : Number of lines(="Number of Lines" of Map information in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
CLTT_w_r [geophysical parameter]	**Cloud Top Temperature (Water Cloud by Reflection Method)**	**CLTT_w_r**	l [lines]	p [pixels]			Short	Cloud Top Temperature (Water Cloud by Reflection Method)		K	CLTT_w_r (real value = slope * this value + intercept)

(10) Cloud Top Temperature of Ice Cloud by Emission Method (CLTT_i_e)

p : Number of columns per line("Number of Columns" of Map information in Global Attributes)
l : Number of lines(="Number of Lines" of Map information in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
CLTT_i_e [geophysical parameter]	**Cloud Top Temperature Cirrus (Ice Cloud by Emission Method)**	**CLTT_i_e**	l [lines]	p [pixels]			Short	Cloud Top Temperature Cirrus (Ice Cloud by Emission Method)		K	CLTT_i_e (real value = slope * this value + intercept)

(11) Cloud Liquid Water Path of Water Cloud by Reflection Method (CLWP_w_r)

p : Number of columns per line("Number of Columns" of Map information in Global Attributes)
l : Number of lines(="Number of Lines" of Map information in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
CLWP_w_r [geophysical parameter]	**Cloud Liquid Water Path (Water Cloud by Reflection Method)**	**CLWP_w_r**	l [lines]	p [pixels]			Short	Cloud Liquid Water Path (Water Cloud by Reflection Method)		g/m^2	CLWP_w_r (real value = slope * this value + intercept)

(12) Cloud fraction (CLFR)

p : Number of columns per line("Number of Columns" of Map information in Global Attributes)
l : Number of lines(="Number of Lines" of Map information in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
CLFR [geophysical parameter]	**Cloud statistics (detail)**	**CLFR_1**	l [lines]	p [pixels]			Short	Fraction of high altitude and thin thickness cloud		%	CLFR1 (real value = slope * this value + intercept)
		CLFR_2	l [lines]	p [pixels]			Short	Fraction of high altitude and middle thickness cloud		%	CLFR2 (real value = slope * this value + intercept)
		CLFR_3	l [lines]	p [pixels]			Short	Fraction of high altitude and dense thickness cloud		%	CLFR3 (real value = slope * this value + intercept)
		CLFR_4	l [lines]	p [pixels]			Short	Fraction of middle altitude and thin thickness cloud		%	CLFR4 (real value = slope * this value + intercept)
		CLFR_5	l [lines]	p [pixels]			Short	Fraction of middle altitude and middle thickness cloud		%	CLFR5 (real value = slope * this value + intercept)
		CLFR_6	l [lines]	p [pixels]			Short	Fraction of middle altitude and dense thickness cloud		%	CLFR6 (real value = slope * this value + intercept)
		CLFR_7	l [lines]	p [pixels]			Short	Fraction of low altitude and thin thickness cloud		%	CLFR7 (real value = slope * this value + intercept)
		CLFR_8	l [lines]	p [pixels]			Short	Fraction of low altitude and middle thickness cloud		%	CLFR8 (real value = slope * this value + intercept)
		CLFR_9	l [lines]	p [pixels]			Short	Fraction of low altitude and dense thickness cloud		%	CLFR9 (real value = slope * this value + intercept)
		CLFR_10	l [lines]	p [pixels]			Short	Fraction of cirrus cloud		%	CLFR10 (real value = slope * this value + intercept)
		CLFR_11	l [lines]	p [pixels]			Short	Fraction of total cloud		%	CLFR11 (real value = slope * this value + intercept)
		CLFR_12	l [lines]	p [pixels]			Short	Cloud top temperature in high altitude cloud		K	CLFR12 (real value = slope * this value + intercept)
		CLFR_13	l [lines]	p [pixels]			Short	Cloud top temperature in middle altitude cloud		K	CLFR13 (real value = slope * this value + intercept)
		CLFR_14	l [lines]	p [pixels]			Short	Cloud top temperature in low altitude cloud		K	CLFR14 (real value = slope * this value + intercept)
		CLFR_15	l [lines]	p [pixels]			Short	Cloud optical thickness in high altitude cloud		no unit	CLFR15 (real value = slope * this value + intercept)
		CLFR_16	l [lines]	p [pixels]			Short	Cloud optical thickness in middle altitude cloud		no unit	CLFR16 (real value = slope * this value + intercept)
		CLFR_17	l [lines]	p [pixels]			Short	Cloud optical thickness in low altitude cloud		no unit	CLFR17 (real value = slope * this value + intercept)
		CLFR_18	l [lines]	p [pixels]			Short	Cloud optical thickness in ice cloud		no unit	CLFR18 (real value = slope * this value + intercept)
		CLFR_19	l [lines]	p [pixels]			Short	Index of Imhomogeneity		K	CLFR19 (real value = slope * this value + intercept)
		CLFR_20	l [lines]	p [pixels]			Short	Fraction of Ice Cloud by Reflection method		%	CLFR20 (real value = slope * this value + intercept)

7.3 Ocean

There are 8 ocean Level-3 STA Map products. The contents of each product file is shown below (Table 7.3-1). NW and LA are generated from NW and LA Level-3 Binned product respectively. CHLA, CDOM, K490 and SS are generated from CS Level-3 Binned product. ST_all and ST_DayNight are generated from ST Level-3 Binned product.

Table 7.3-1 List of ocean Level-3Binned products

No.	Classification	Product Code	Description
1	Atmospheric Correction	NW	This file includes 13 parameters. - Normalized water-leaving radiance (13bands)
2		LA	This file includes 6 parameters. - Aerosol radiance(1bands) - Normalized water-leaving radiance by in-water model (2bands) -Aerosol albedo at 380 nm - Angstrom exponent(750/865) - Aerosol thickness (Tau_a865)
3	In-water Particles	CHLA	Chlorophyll-a
4		CDOM	Absorption of colored dissolved organic matter
5		K490	Attenuation coefficient at 490nm
6		SS	Suspended solid weight
7	Sea Surface Temperature	ST_all	Bulk Sea surface temperature (all data averaged)
8		ST_DayNight	Bulk Sea surface temperature (day/night separately averaged) This file includes 2 parameters. - Daytime bulk sea surface temperature - Nighttime bulk sea surface temperature

200A

The definition of ocean bin is shown in Fig.7.3-1

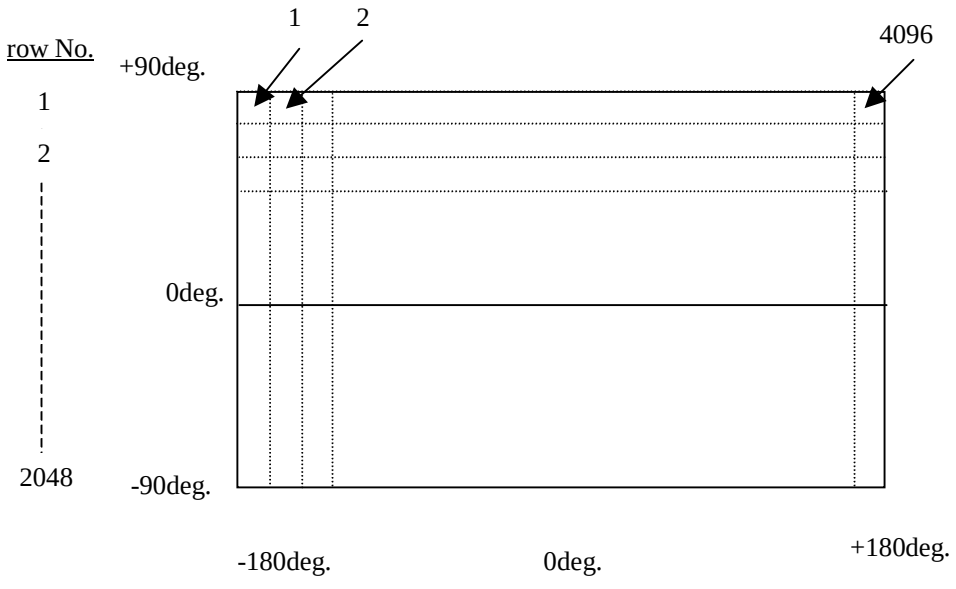


Fig.7.3-1 Definition of ocean bin

7.3.1 Generic Header

See chapter 2 for the detail. Some items related this products are shown below.

data name	value
Title	"GLI Level-3 STA Map Data"
Data type	"global"
Data Sub-type	Product Code (see Table 7.3-1)
Orbit Number	-1 (-1 means that this data has no meaning)
Upper Left Latitude	90.0
Upper Left Longitude	-180.0*1
Upper Right Latitude	90.0
Upper Right Longitude	180.0*1
Lower Left Latitude	-90.0
Lower Left Longitude	-180.0*1
Lower Right Latitude	-90.0
Lower Right Longitude	180.0*1
Map Projection	"EQR"

*1: Longitude range can be changed by processing parameter.

7.3.2 Specific Header

CIF:control information file

category	data name	type	count	contents	const.	remarks	source of data: input data	source of data: current process
Bin Information	**Binning Period**	Ch		"1day", "8days", "month"		Binning Period	O	
	Data Bins	Long	1			Number of bins in parent products (1-5940422)	O	
	Data Bins#2	Long	1			Number of bins in this products (1-5940422) This data is stored only in ST_DayNight (data for ST	O	
	Percent Data Bins	Real	1			Percentage of number of bins in parent product by number of total bins (Data Bins / 5940422 * 100)	O	
	Percent Data Bins#2	Real	1			Percentage of number of bins in this product by number of total bins (Data Bins / 5940422 * 100) This data is stored only in ST_DayNight (data for ST night)	O	
Data Time	**Start Year**	Short	1			year of Start Time	O	
	Start Day	Short	1			day-of-year of Start Time(0 on Jan. 1st)	O	
	Start Millisec	Long	1			milliseconds-of-day of Start Time	O	
	End Year	Short	1			year of End Time	O	
	End Day	Short	1			day-of-year of End Time(0 on Jan. 1st)	O	
	End Millisec	Long	1			milliseconds-of-day of End Time	O	
Area Coordinates	**Latitude Units**	Ch	14	"degrees North"	const.	Units used for all latitude values in this product		O (constant)
	Longitude Units	Ch	13	"degrees East"	const.	Units used for all longitude values in this product		O (constant)
Map Information	**Number of Columns**	Long	1	4096				O (from CIF)
	Number of Lines	Long	1	2048				O (from CIF)
Data Description	**Scaling**	Ch	13[NW] 6[LA] 2[ST_Day Night] 1(others)	"linear" or "logarithmic"		Set this parameter for each geophysical parameters. The order of the value is same as SD storing order (ex. NW: nLw_380, nLw_400, ..., nLw_710) "logarithmic" for CHLA, SS, CDOM, K490 "linear" for others		O
	Scaling Equation	Ch	13[NW] 6[LA] 2[ST_Day Night] 1(others)	"Slope*L3SM_data+Intercept=Parameter value" or "Base**((Slope*L3SM_data)+Intercept)=Parameter value"		"Base**((Slope*L3SM_data)+Intercept)=Parameter value" for CHLA "Slope*L3SM_data+Intercept=Parameter value" for others		O
	Base	Real	13[NW] 6[LA] 2[ST_Day Night] 1(others)			This item is valid only in the case of "logarithmic" conversion.		O
	Slope	Real	13[NW] 6[LA] 2[ST_Day Night] 1(others)					O
	Intercept	Real	13[NW] 6[LA] 2[ST_Day Night] 1(others)					O

7.3.3 C ommon Part (Body)

Not assigned

7.3.4 Specific Part (Body)

(1) Normalized water-leaving radiance (NW)

p : Number of columns per line("Number of Columns" of Map information in Global Attributes)
l : Number of lines(="Number of Lines" of Map information in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
Normalized water-leaving radiance [geophysical parameter]	**Normalized water-leaving radiance at 380 nm**	**nLw_380**	l [lines]	p [pixels]			Byte	Normalized water-leaving radiance at 380 nm		mW cm^-2 um^-1 sr^-1	
	Normalized water-leaving radiance at 400 nm	**nLw_400**	l [lines]	p [pixels]			Byte	Normalized water-leaving radiance at 400 nm		mW cm^-2 um^-1 sr^-1	
	Normalized water-leaving radiance at 412 nm	**nLw_412**	l [lines]	p [pixels]			Byte	Normalized water-leaving radiance at 412 nm		mW cm^-2 um^-1 sr^-1	
	Normalized water-leaving radiance at 443 nm	**nLw_443**	l [lines]	p [pixels]			Byte	Normalized water-leaving radiance at 443 nm		mW cm^-2 um^-1 sr^-1	
	Normalized water-leaving radiance at 460 nm	**nLw_460**	l [lines]	p [pixels]			Byte	Normalized water-leaving radiance at 460 nm		mW cm^-2 um^-1 sr^-1	
	Normalized water-leaving radiance at 490 nm	**nLw_490**	l [lines]	p [pixels]			Byte	Normalized water-leaving radiance at 490 nm		mW cm^-2 um^-1 sr^-1	
	Normalized water-leaving radiance at 520 nm	**nLw_520**	l [lines]	p [pixels]			Byte	Normalized water-leaving radiance at 525 nm		mW cm^-2 um^-1 sr^-1	
	Normalized water-leaving radiance at 545 nm	**nLw_545**	l [lines]	p [pixels]			Byte	Normalized water-leaving radiance at 545 nm		mW cm^-2 um^-1 sr^-1	
	Normalized water-leaving radiance at 565 nm	**nLw_565**	l [lines]	p [pixels]			Byte	Normalized water-leaving radiance at 565 nm		mW cm^-2 um^-1 sr^-1	
	Normalized water-leaving radiance at 625 nm	**nLw_625**	l [lines]	p [pixels]			Byte	Normalized water-leaving radiance at 625 nm		mW cm^-2 um^-1 sr^-1	
	Normalized water-leaving radiance at 666 nm	**nLw_666**	l [lines]	p [pixels]			Byte	Normalized water-leaving radiance at 666 nm		mW cm^-2 um^-1 sr^-1	
	Normalized water-leaving radiance at 680 nm	**nLw_680**	l [lines]	p [pixels]			Byte	Normalized water-leaving radiance at 680 nm		mW cm^-2 um^-1 sr^-1	
	Normalized water-leaving radiance at 710 nm	**nLw_710**	l [lines]	p [pixels]			Byte	Normalized water-leaving radiance at 710 nm		mW cm^-2 um^-1 sr^-1	

(2) Aerosol radiance (LA)

p : Number of columns per line("Number of Columns" of Map information in Global Attributes)
l : Number of lines(="Number of Lines" of Map information in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
Aerosol radiance [geophysical parameter]	**Aerosol radiance at 865 nm**	**La_865**	l [lines]	p [pixels]			Byte	Aerosol radiance at 865 nm		mW cm^-2 um^-1 sr^-1	
	Normalized water-leaving radiance at 678 nm by in-water model	**nLw_678**	l [lines]	p [pixels]			Byte	Normalized water-leaving radiance at 678 nm by in-water model		mW cm^-2 um^-1 sr^-1	
	Normalized water-leaving radiance at 865 nm by in-water model	**nLw_865**	l [lines]	p [pixels]			Byte	Normalized water-leaving radiance at 865 nm by in-water model		mW cm^-2 um^-1 sr^-1	
	aerosol albedo at 380 nm	**aalb**	l [lines]	p [pixels]			Byte	aerosol albedo at 380 nm			
	Angstrom exponent at 749 and 865 nm	**angstrom_520**	l [lines]	p [pixels]			Byte	Angstrom exponent derived from 520 and 865 nm			
	Aerosol optical thickness at 865nm	**tau_865**	l [lines]	p [pixels]			Byte	Aerosol optical thickness at 865nm			

200A

(3) Chlorophyll-a (CHLA)

p : Number of columns per line("Number of Columns" of Map information in Global Attributes)
l : Number of lines(="Number of Lines" of Map information in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
Chlorophyll_a [geophysical parameter]	**Chlorophyll_a**	**chla**	l [lines]	p [pixels]			Byte	Chlorophyll_a concentration		mg/m^3	

(4) Attenuation coefficient at 490nm (K490)

p : Number of columns per line("Number of Columns" of Map information in Global Attributes)
l : Number of lines(="Number of Lines" of Map information in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
Attenuation coefficient at 490nm [geophysical parameter]	**K490**	**k490**	l [lines]	p [pixels]			Byte	Attenuation at 490 nm		1/m	

(5) Suspended solid weight (SS)

p : Number of columns per line("Number of Columns" of Map information in Global Attributes)
l : Number of lines(="Number of Lines" of Map information in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
Suspended solid weight [geophysical parameter]	**Suspended solid**	**ss**	l [lines]	p [pixels]			Byte	Suspended solid concentration		g/m^3	

(6) Absorption of colored dissolved organic matter (CDOM)

p : Number of columns per line("Number of Columns" of Map information in Global Attributes)
l : Number of lines(="Number of Lines" of Map information in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
Absorption of colored dissolved organic matter [geophysical parameter]	**CDOM**	**cdom**	l [lines]	p [pixels]			Byte	CDOM absorption at 440nm		1/m	

(7) Sea Surface Temperature(all) (ST_all)

p : Number of columns per line("Number of Columns" of Map information in Global Attributes)
l : Number of lines(="Number of Lines" of Map information in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
Sea Surface Temperature [geophysical parameter]	**Sea Surface Temperature all**	**sst_all**	l [lines]	p [pixels]			Byte	GLI bulk sea surface temperature		Kelvin	

(8) Sea Surface Temperature(daytime/nighttime) (ST_DayNight)

p : Number of columns per line("Number of Columns" of Map information in Global Attributes)
l : Number of lines(="Number of Lines" of Map information in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
Sea Surface Temperature [geophysical parameter]	**Sea Surface Temperature (Daytime)**	**sst_daytime**	l [lines]	p [pixels]			Byte	GLI bulk sea surface temperature for daytime		Kelvin	
	Sea Surface Temperature (Nighttime)	**sst_nighttime**	l [lines]	p [pixels]			Byte	GLI bulk sea surface temperature for nighttime		Kelvin	

7.4 Land

Each product file has only one geophysical parameter. Totally 1 product file exists. (Table 7.4-1)

Table 7.4-1 List of land Level-3Binned products

No.	Classification	Product Code	Description
1	Vegetation index	VGI	Vegetation index

Land product consists of only 1 regions, which corresponds to cryosphere L3 STA Map area 1. This product is generated from Level-2 product. All zone of Level-2 product is connected and northern and southern polar stereographic region is projected to equi-rectangular. The spatial resolution is 5 arc-min (1/12 deg.).

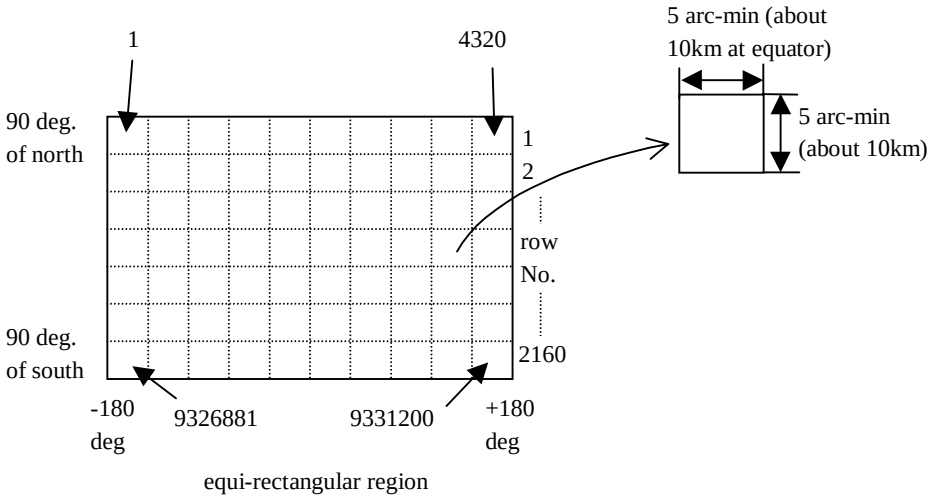


Fig.7.4-1 Land L3-STA Map Region Separation

7.4.1 Generic Header

See chapter 2 for the detail. Some items related this products are shown below.

data name	value
Title	"GLI Level-3 STA Map Data"
Data type	"global"
Data Sub-type	Product Code (see Table 7.4-1)
Orbit Number	-1 (-1 means that this data has no meaning)
Upper Left Latitude	90.0
Upper Left Longitude	-180.0*1
Upper Right Latitude	90.0
Upper Right Longitude	180.0*1
Lower Left Latitude	-90.0
Lower Left Longitude	-180.0*1
Lower Right Latitude	-90.0
Lower Right Longitude	180.0*1
Map Projection	"EQR"

*1: Longitude range can be changed by processing parameter.

7.4.2 Specific Header

CIF:control information file

category	data name	type	count	contents	const.	remarks	source of data: input data	source of data: current process
Bin Information	**Binning Period**	Ch		"16days"		Binning Period		O
Data Time	**Start Year**	Short	1			year of Start Time	O	
	Start Day	Short	1			day-of-year of Start Time(0 on Jan. 1st)	O	
	Start Millisec	Long	1			milliseconds-of-day of Start Time	O	
	End Year	Short	1			year of End Time	O	
	End Day	Short	1			day-of-year of End Time(0 on Jan. 1st)	O	
	End Millisec	Long	1			milliseconds-of-day of End Time	O	
Area Coordinates	**Latitude Units**	Ch	14	"degrees North"	const.	Units used for all latitude values in this product		O (constant)
	Longitude Units	Ch	13	"degrees East"	const.	Units used for all longitude values in this product		O (constant)
Map Information	**Number of Columns**	Long	1	4320				O (from CIF)
	Number of Lines	Long	1	2160				O (from CIF)
	Earth Ellipsoid Type	Ch	1	"WGS84"	const.		O	
	Reference Longitude	Real	1	(ex.)0.0		"0.0"(dummy) is stored for EQR projection.	O	
	grid interval	Real	1	(ex.)0.5		[unit] arc-minute of angle	O	
Data Description	**Scaling**	Ch		"linear" or "logarithmic"				O
	Scaling Equation	Ch		"Slope*L3SM_data+Intercept=Parameter value" or "Base**((Slope*L3SM_data)+Intercept)=Parameter value"				O
	Base	Real	1			this item is stored only if "logarithmic" is selected only.		O
	Slope	Real	1					O
	Intercept	Real	1					O

7.4.3 Common Part (Body)

Not assigned

7.4.4 Specific Part (Body)

(1) Vegetation Index (VGI)

p : Number of columns per line("Number of Columns" of Map information in Global Attributes)
l : Number of lines(="Number of Lines" of Map information in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
VGI [geophysical parameter]	**NDVI**	**NDVI**	l [lines]	p [pixels]			Byte	NDVI			NDVI (real value = slope * this value + intercept)
	EVI	**EVI**	l [lines]	p [pixels]			Byte	EVI			EVI (real value = slope * this value + intercept)

7.5 Cryosphere

Each product file has only one geophysical parameter. Totally 2 product files exist. (Table 7.5-1)

Table 7.5-1 List of cryosphere Level-3Binned products

No.	Classification	Product Code	Description
1	Snow property	SNWI	Snow impurities
2		SNWG	Snow grain size retrieved with 865nm band
3		SNWGS	Snow grain size retrieved with 1640nm band
4		SNWTS	Snow surface temperature

Cryosphere product consists of 3 regions. Each region is an independent file. In the case of SNWG, you can see 3 files, SNWG for north polar region, SNWG for middle latitude region and SNWG for south polar region.(Fig.7.5-1) This is same as Level-3Binned data.

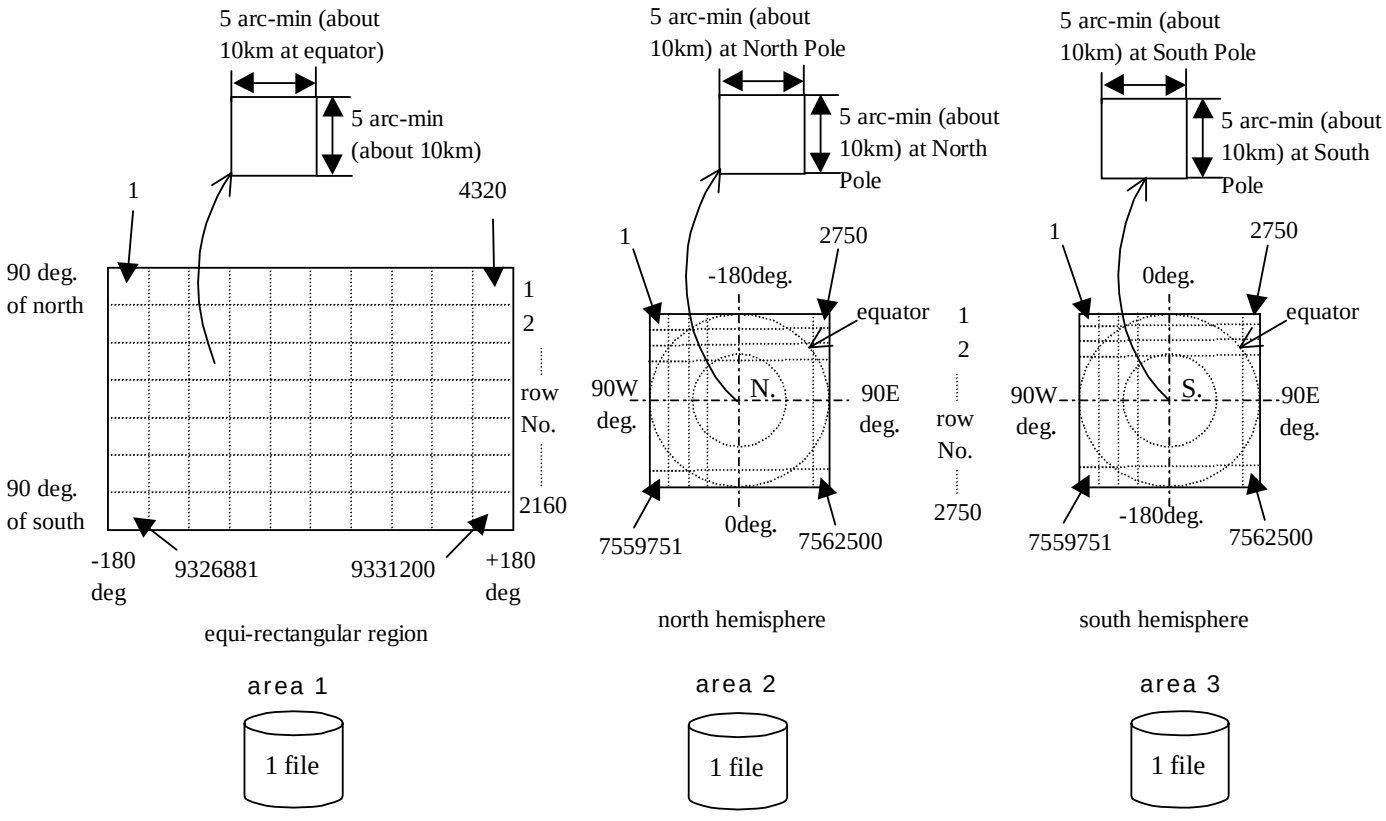


Fig.7.5-1 Cryosphere L3-STA Map Region Separation

7.5.1 Generic Header

See chapter 2 for the detail. Some items related this products are shown below.

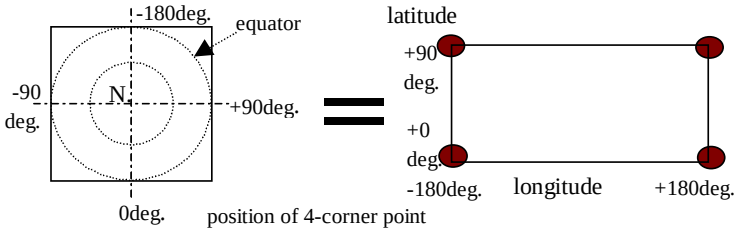
For equi-rectangular region(area 1):

data name	value
Title	"GLI Level-3 STA Map Data"
Data type	"global"
Data Sub-type	Product Code (see Table 7.5-1)
Orbit Number	-1 (-1 means that this data has no meaning)
Upper Left Latitude	90.0
Upper Left Longitude	-180.0*1
Upper Right Latitude	90.0
Upper Right Longitude	180.0*1
Lower Left Latitude	-90.0
Lower Left Longitude	-180.0*1
Lower Right Latitude	-90.0
Lower Right Longitude	180.0*1
Map Projection	"EQR"

*1: Longitude range can be changed by processing parameter.

For north hemisphere(area 2):

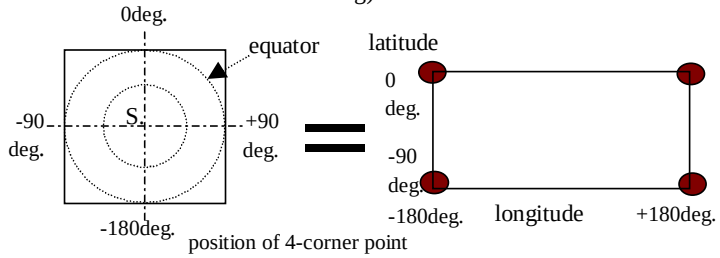
data name	value
Title	"GLI Level-3 STA Map Data"
Data type	"global"
Data Sub-type	Product Code (see Table 7.5-1)
Orbit Number	-1 (-1 means that this data has no meaning)
Upper Left Latitude	90.0
Upper Left Longitude	-180.0
Upper Right Latitude	90.0
Upper Right Longitude	180.0
Lower Left Latitude	0.0
Lower Left Longitude	-180.0
Lower Right Latitude	0.0
Lower Right Longitude	180.0
Map Projection	"PS"



position of 4-corner point

For south hemisphere(area 3):

data name	value
Title	"GLI Level-3 STA Map Data"
Data type	"global"
Data Sub-type	Product Code (see Table 7.5-1)
Orbit Number	-1 (-1 means that this data has no meaning)
Upper Left Latitude	0.0
Upper Left Longitude	-180.0
Upper Right Latitude	0.0
Upper Right Longitude	180.0
Lower Left Latitude	-90.0
Lower Left Longitude	-180.0
Lower Right Latitude	-90.0
Lower Right Longitude	180.0
Map Projection	"PS"



position of 4-corner point

7.5.2 Specific Header

CIF:control information file

category	data name	type	count	contents	const.	remarks	source of data: input data	source of data: current process
Bin Information	**Binning Period**	Ch		"16days", "month"		Binning Period		O
Data Time	**Start Year**	Short	1			year of Start Time	O	
	Start Day	Short	1			day-of-year of Start Time(0 on Jan. 1st)	O	
	Start Millisec	Long	1			milliseconds-of-day of Start Time	O	
	End Year	Short	1			year of End Time	O	
	End Day	Short	1			day-of-year of End Time(0 on Jan. 1st)	O	
	End Millisec	Long	1			milliseconds-of-day of End Time	O	
Area Coordinates	**Latitude Units**	Ch	14	"degrees North"	const.	Units used for all latitude values in this product		O (constant)
	Longitude Units	Ch	13	"degrees East"	const.	Units used for all longitude values in this product		O (constant)
Map Information	**Number of Columns**	Long	1	4320 for EQR 2750 for PS			O	
	Number of Lines	Long	1	2160 for EQR 2750 for PS			O	
	Earth Ellipsoid Type	Ch	1	"WGS84"	const.		O	
	Reference Longitude	Real	1	(ex.)0.0		stored only when PS. reference longitude of PS projection.	O	
	grid interval	Real	1	(ex.)0.5		[unit] arc-minute of angle	O	
Data Description	**Scaling**	Ch		"linear" or "logarithmic"				O
	Scaling Equation	Ch		"Slope*L3SM_data+Intercept=Parameter value" or "Base**((Slope*L3SM_data)+Intercept)=Parameter value"				O
	Base	Real	1			this item is stored only if "logarithmic" is selected only.		O
	Slope	Real	1					O
	Intercept	Real	1					O

7.5.3 Common Part (Body)

Not assigned

7.5.4 Specific Part (Body)

(1) Snow Impurities (SNWI)

p : Number of columns per line("Number of Columns" of Map information in Global Attributes)
l : Number of lines(="Number of Lines" of Map information in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
SNWI [geophysical parameter]	**SNWI**	**SNWI**	l [lines]	p [pixels]			Byte	Snow impurities as soot			Snow impurities as soot (real value = slope * this value + intercept) Value 0 = "no data", 1 = "open ocean", 2 = "snow free land", 3-255 = snow impurities (0-3 ppmw)

(2) Snow Grain Size retrieved with 865nm band (SNWG)

p : Number of columns per line("Number of Columns" of Map information in Global Attributes)
l : Number of lines(="Number of Lines" of Map information in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
SNWG [geophysical parameter]	**SNWG**	**SNWG**	l [lines]	p [pixels]			Byte	Snow grain size retrieved with 865nm band			Snow grain size (real value = slope * this value + intercept) Value 0 = "no data", 1 = "open ocean", 2 = "snow free land", 3-255 = snow grain size (0-3000 micro meter)

(3) Snow Grain Size retrieved with 1640nm band (SNWGS)

p : Number of columns per line("Number of Columns" of Map information in Global Attributes)
l : Number of lines(="Number of Lines" of Map information in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
SNWGS [geophysical parameter]	**SNWGS**	**SNWGS**	l [lines]	p [pixels]			Byte	Snow grain size retrieved with 1640nm band			Snow grain size (real value = slope * this value + intercept) Value 0 = "no data", 1 = "open ocean", 2 = "snow free land", 3-255 = snow grain size (0-3000 micro meter)

(4) Snow Surface Temperature (SNWTS)

p : Number of columns per line("Number of Columns" of Map information in Global Attributes)
l : Number of lines(="Number of Lines" of Map information in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
SNWTS [geophysical parameter]	**SNWTS**	**SNWTS**	l [lines]	p [pixels]			Byte	Snow surface temperature			Snow surface temperature (real value = slope * this value + intercept) Value 0 = "no data", 1 = "open ocean", 2 = "snow free land", 3-255 = snow surface temperature (175-275 Kelvin)

8. Others

8.1 Introduction

In this chapter the files except product are shown. That data are called "work file". These files are internal files and never delivered to users. We have following work files.

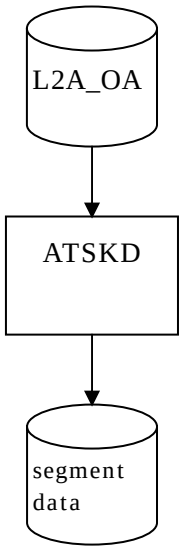
- Atmospheric Segment Data
- Precise Geometric Corrected Image Data
- Scene Connected L1B Data
- Atmosphere Daily Segment Analysis Data

Atmospheric Segment Data is used for segment analysis in atmosphere algorithms. This data is daily global data. The spatial resolution is 0.25 deg.(default). This file includes 32 channels, radiance data.

Precise Geometric Corrected Image Data is map projected scene data. But the main characteristic is that this data is precisely geometrical corrected by GCP (Ground Control Point) matching. The data is projected as same as Level-2A_LC.

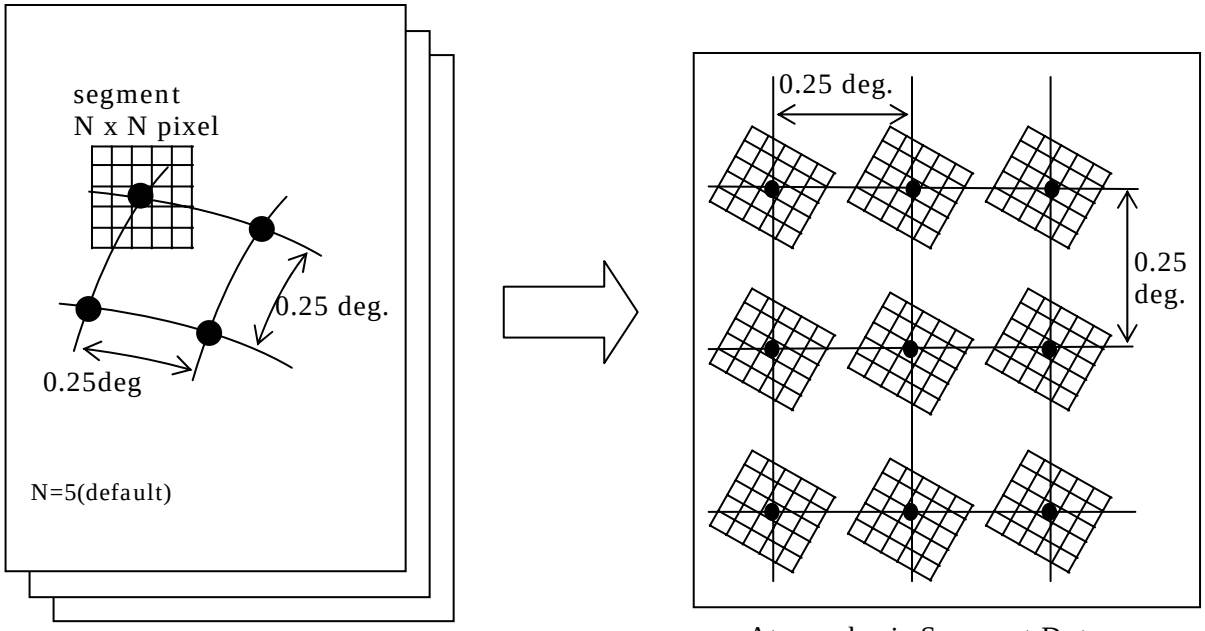
8.2 Atmospheric Segment Data

(1) outline



"Atmospheric Segment Data" is the data set to be used in order to produce the standard products higher than or equal to Level-2. This concept is adopted only by the atmospheric group at this time.

The "Atmospheric Segment Data" is made from the Level-2A_OA (4 pixels and 4 lines sampled data set from original resolution). At first, you could set the Segment Center Points at the 0.25 x 0.25 degrees interval both in latitude and longitude direction (A-window : 0.25 degrees). Around the Segment Center Points, you could make the segment array (5 pixels and 5 lines) just along with the image pixel and line direction. You have to retain the array sequence in two dimensional manner for such as spatial coherence method analysis.



L2A_OA data(14 or 15 path for one day)

Atmospheric Segment Data

One segment data set is made of 14 or 15 orbit data (T-window : 1 days). Daytime data set and nighttime data set is generated respectively. As there is only one segment data in each grid point, some condition is considered when the data is extracting from L2A_OA.

The segment data set also has other information for each Segment Center Point, such as time (in UTC), pixel, line, Latitude, longitude, solar zenith angle, satellite zenith angle,

and solar-satellite relative azimuthal angle.

(2) path No. and segment data

Satellite ADEOS-II recurrent period is 4 days, which equals to 57 paths. 8 atmospheric segment data will be generated for 4 days(8=2(day/night) x 4days). Daytime segment data is separated to 6 localized areas which size is 60 degree longitude x 180 degree latitude. Night segment data is stored in one file. There is 7 files for each day and 28 files for 4 days.

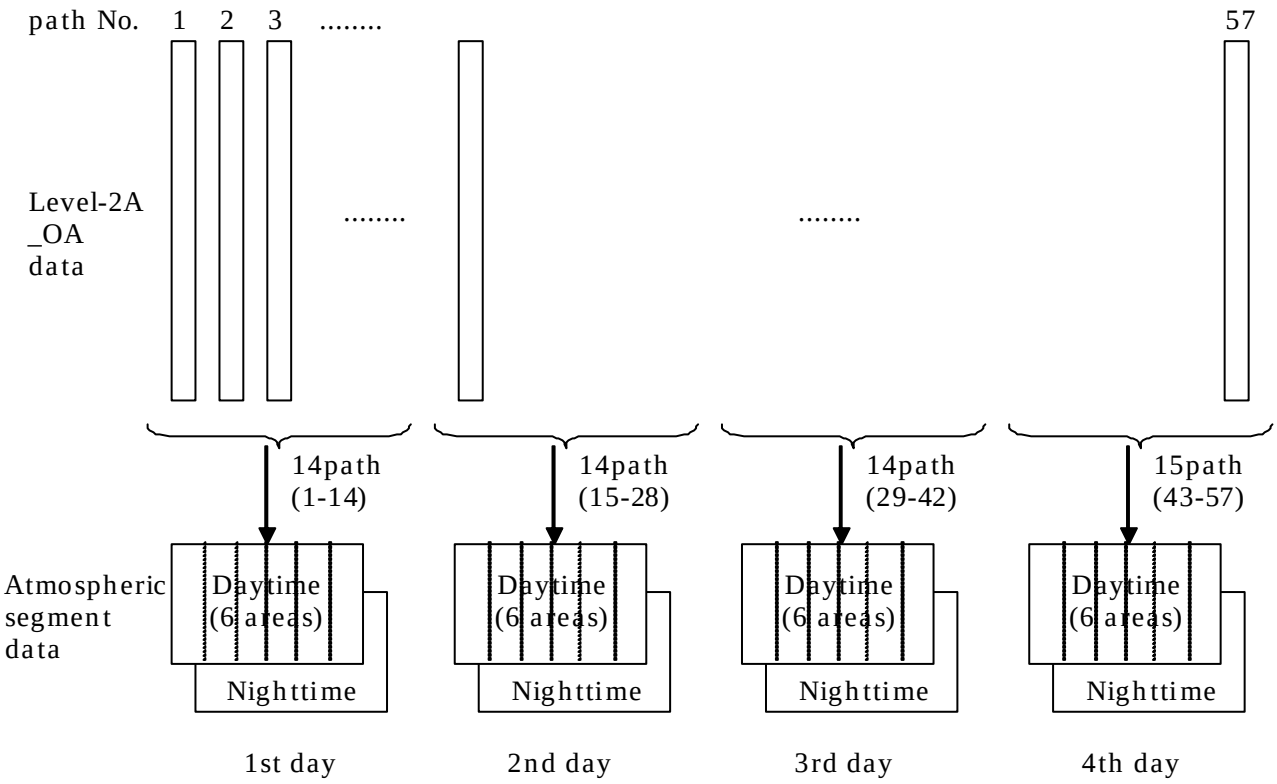


Fig.8.2-1 relationship between Level-2A_OA data and atmospheric segment data

(3) storing channels

The difference between daytime data and nighttime data is only the number of storing channels. In daytime, all channels except 250m ch.(ch.20-23) are stored. On the other hand, only MTIR ch.s are stored in nighttime.

Please be aware of day/night discrimination of segment data is different from one of sensor operation mode. The day/night discrimination of sensor operation is determined by observation requirement from ground, but in the case of segment data solar zenith angle determines daytime or nighttime. When we use VNIR and SWIR channels, we call that mode as "daytime" operation mode and that is no connection with natural (depending on sun altitude) daytime period.

When the day/night border is different, some data is eliminated and some data is lacked.

When it is nighttime in segment data, only MTIR data is stored, even if it is daytime in sensor operation mode (there are VNIR/SWIR/MTIR data). VNIR/SWIR data are not stored.

If it is daytime in segment data, each segment has 30 channels' data. When sensor operation mode is nighttime, dummy data is filled.

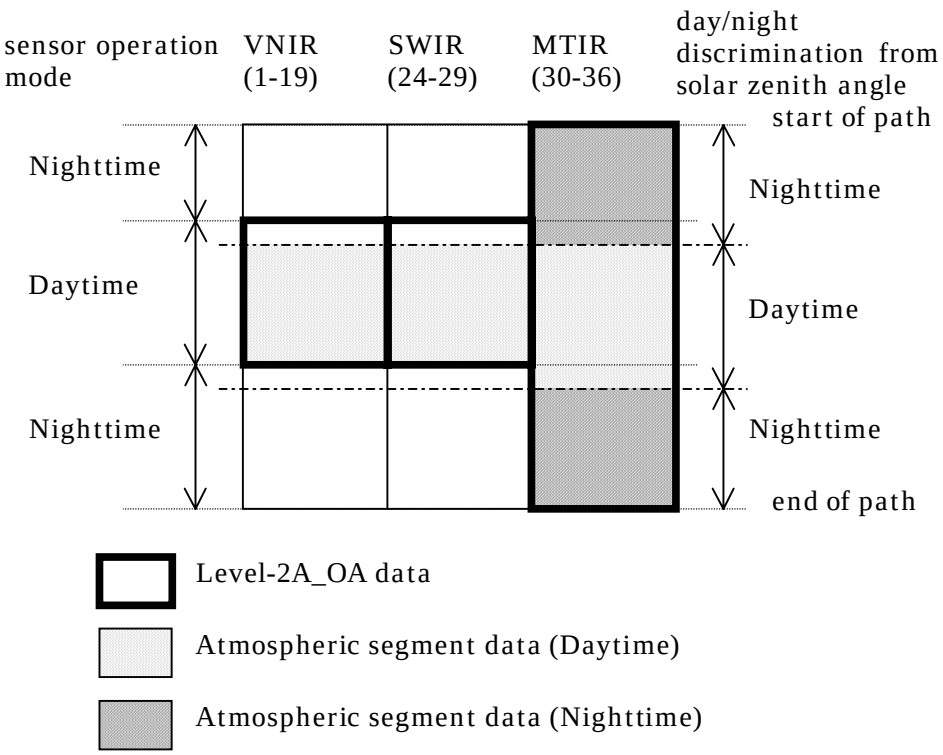


Fig.8.2-2 Day/Night definition of atmospheric segment data

(4) technical specifications

[data composition in segment]

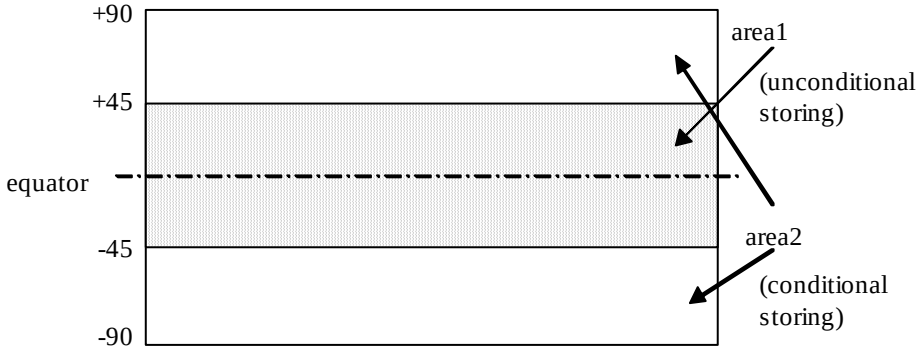
- image data(default:5x5 pixels,ch.1-19,24-36(30-36 only in nighttime))
- satellite zenith angle(at segment center pixel)
- solar zenith angle(at segment center pixel)
- relative azimuth angle(at segment center pixel)
- observation time(at segment center pixel)
- cloud flag(the area size is same as image data)
- land/water flag(the area size is same as image data)

[segment data specification]

- Area Coverage: global(default: 0.25degree grid interval for both of latitude/longitude)
- 2 data/day (for daytime and nighttime) (daytime data is separated to 6 localized data in 60 deg. longitude)
- daytime/nighttime is defined by solar zenith angle, NOT satellite operation mode.
- there is only one segment data in each grid point
- if there is a chance to several observation to same grid point, satellite/solar zenith angle is used to choose best observation.(see "data storing rule")

[data storing rule]

Atmospheric Segment Data is 2-dimensional 1-layer data. Data storing rule is shown below.



area1: All data are stored without any tests so far as only one observation exists in one segment. If 2 or more data exists, earliest data is stored.
area2: Satellite zenith angle is tested. If satellite zenith angle is larger than 30 degree, that data is unadopted. If there is plural data in one segment, the data which was observed in least solar zenith angle (solar altitude is higher) is stored.

1. If segment center latitude is NOT larger than 45 degree*,

1-1 if the segment has already some data,

1-2 then current data is NOT stored.

1-3 else current data is stored.

2. If segment center latitude is larger than 45 degree*,

2-1 If satellite zenith angle is larger than 30 degree*,

2-2 then current data is NOT stored.

2-3 else if the segment has already some data,

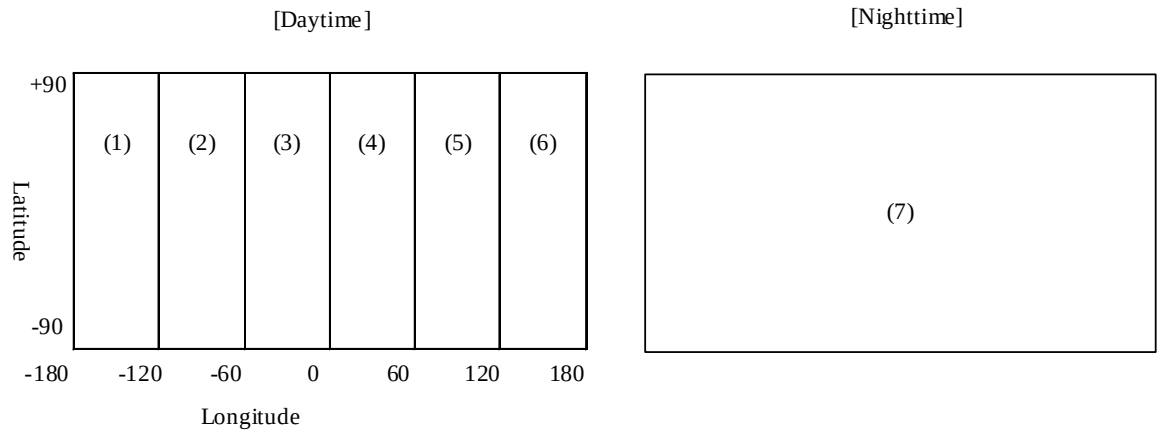
2-3-1 then comparing solar zenith angle and adopt the data which is observed in smaller angle.

2-3-2 else the current data is stored.

*:these value can be specified as a external parameter

(5) area definition

Definition of area No. is shown below.



8.2.1 Generic Header

See chapter 2 for the detail. Some items related this products are shown below.

data name	value
Title	"GLI Level-2 work file"
Data type	"segment"
Data Sub-type	"Atmospheric Segment Data"
Orbit Number	-1 (-1 means that this data has no meaning)
Upper Left Latitude	90.0
Upper Left Longitude	daytime: -180.0 or -120.0 or -60.0 or 0.0 or 60.0 or 120.0 night: -180.0
Upper Right Latitude	90.0
Upper Right Longitude	daytime: -120.25 or -60.25 or -0.25 or 59.75 or 119.75 or 179.75 night: 179.75
Lower Left Latitude	-90.0
Lower Left Longitude	daytime: -180.0 or -120.0 or -60.0 or 0.0 or 60.0 or 120.0 night: -180.0
Lower Right Latitude	-90.0
Lower Right Longitude	daytime: -120.25 or -60.25 or -0.25 or 59.75 or 119.75 or 179.75 night: 179.75
Map Projection	"EQR"

8.2.2 Specific Header

category	data name	type	count	contents		remarks
					const.	
Processing	**Number of Channels**	Ch	1	32 or 7		the number of including GLI channels(daytime:32ch.,nighttime:7ch.)
Channel	**Processing Channel**	Ch		ex.)1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 24 25 26 27 28 29 30 31 32 33 34 35 36		Including GLI channel No.(daytime:1-19,24-36, nighttime:30-36)
Data Time	**Start Year**	Short	1			Year of start time
	Start Day	Short	1			Day-of-year of start time(January 1 is 0)
	Start Millisec	Long	1			Milliseconds-of-day of start time
	End Year	Short	1			Year of end time
	End Day	Short	1			Day-of-year of end time(January 1 is 0)
	End Millisec	Long	1			Milliseconds-of-day of end time
Segment Information	**Latitude Units**	Ch	14	"degrees North"	const.	Units used for all latitude values in this product
	Longitude Units	Ch	13	"degrees East"	const.	Units used for all longitude values in this product
	Storing Order of Latitude direction	Ch	19	"From North to South"	const.	Storing Order of Latitude direction
	Storing Order of Longitude direction	Ch	17	"From West to East"	const.	Storing Order of Longitude direction
	Segment Interval	Ushort	1	ex.) 4		Segment grid interval can be obtained by 1/N degree. When N=4(default), the interval is 1/4 = 0.25 degree. This value is derived from L2A_OA data.
	lat_nseg	Long	1			721(when 0.25 degree interval)
	lon_nseg	Long	1			1440(when 0.25 degree interval in nighttime), 240(when 0.25 degree interval in daytime for each area)
	total_nseg	Long	1			1038240(when 0.25 degree interval in nighttime), 173040(when 0.25 degree interval in daytime for each area)
	x_segsize	Ushort	1	5		5
	y_segsize	Ushort	1	5		5
	day_night_discrimination	Ch	9	"daytime" or "night"		daytime / night discrimination of this data
	Dawn Solar Zenith Angle	Real	1	ex.)90		Boundary solar zenith angle to discriminate between daytime and nighttime
	Max Lat. for unconditional storing	Real	1	ex.)45		Boundary latitude to check by satellite zenith angle or not
	Sat. Zenith Angle for storing	Real	1	ex.)30		Boundary satellite zenith angle to store or not
Level-2A_OA Information	**Software ID(L2A_OA)**	Ch	4	NNNX		Level-2A_OA processing software version N.N and parameter version X. If version ID is different between inputted L2A_OA data, warning message is outputted, but segment data is created.

8.2.3 Specific Part (Body)

nx : Number of pixels per line("lon_nseg" of Segment Information in Global Attributes)
ny : Number of lines per scene("lat_nseg" of Segment Information in Global Attributes)
p : Number of pixels per segment(="x_segsize" x "y_segsize" of Segment Information in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
GLI Level-2 Atm. Seg. [Segment Grid]	**GLI Atmospheric segment ch.1 data**	**atmseg_ch1**	ny[lat_n]	nx[lon_n]	p[pxls]		Ushort	Level-2 Atm. Seg. ch.1 data			daytime only
	GLI Atmospheric segment ch.2 data	**atmseg_ch2**	ny[lat_n]	nx[lon_n]	p[pxls]		Ushort	Level-2 Atm. Seg. ch.2 data			daytime only
	GLI Atmospheric segment ch.3 data	**atmseg_ch3**	ny[lat_n]	nx[lon_n]	p[pxls]		Ushort	Level-2 Atm. Seg. ch.3 data			daytime only
	GLI Atmospheric segment ch.4 data	**atmseg_ch4**	ny[lat_n]	nx[lon_n]	p[pxls]		Ushort	Level-2 Atm. Seg. ch.4 data			daytime only
	GLI Atmospheric segment ch.5 data	**atmseg_ch5**	ny[lat_n]	nx[lon_n]	p[pxls]		Ushort	Level-2 Atm. Seg. ch.5 data			daytime only
	GLI Atmospheric segment ch.6 data	**atmseg_ch6**	ny[lat_n]	nx[lon_n]	p[pxls]		Ushort	Level-2 Atm. Seg. ch.6 data			daytime only
	GLI Atmospheric segment ch.7 data	**atmseg_ch7**	ny[lat_n]	nx[lon_n]	p[pxls]		Ushort	Level-2 Atm. Seg. ch.7 data			daytime only
	GLI Atmospheric segment ch.8 data	**atmseg_ch8**	ny[lat_n]	nx[lon_n]	p[pxls]		Ushort	Level-2 Atm. Seg. ch.8 data			daytime only
	GLI Atmospheric segment ch.9 data	**atmseg_ch9**	ny[lat_n]	nx[lon_n]	p[pxls]		Ushort	Level-2 Atm. Seg. ch.9 data			daytime only
	GLI Atmospheric segment ch.10 data	**atmseg_ch10**	ny[lat_n]	nx[lon_n]	p[pxls]		Ushort	Level-2 Atm. Seg. ch.10 data			daytime only
	GLI Atmospheric segment ch.11 data	**atmseg_ch11**	ny[lat_n]	nx[lon_n]	p[pxls]		Ushort	Level-2 Atm. Seg. ch.11 data			daytime only
	GLI Atmospheric segment ch.12 data	**atmseg_ch12**	ny[lat_n]	nx[lon_n]	p[pxls]		Ushort	Level-2 Atm. Seg. ch.12 data			daytime only
	GLI Atmospheric segment ch.13 data	**atmseg_ch13**	ny[lat_n]	nx[lon_n]	p[pxls]		Ushort	Level-2 Atm. Seg. ch.13 data			daytime only
	GLI Atmospheric segment ch.14 data	**atmseg_ch14**	ny[lat_n]	nx[lon_n]	p[pxls]		Ushort	Level-2 Atm. Seg. ch.14 data			daytime only
	GLI Atmospheric segment ch.15 data	**atmseg_ch15**	ny[lat_n]	nx[lon_n]	p[pxls]		Ushort	Level-2 Atm. Seg. ch.15 data			daytime only
	GLI Atmospheric segment ch.16 data	**atmseg_ch16**	ny[lat_n]	nx[lon_n]	p[pxls]		Ushort	Level-2 Atm. Seg. ch.16 data			daytime only
	GLI Atmospheric segment ch.17 data	**atmseg_ch17**	ny[lat_n]	nx[lon_n]	p[pxls]		Ushort	Level-2 Atm. Seg. ch.17 data			daytime only
	GLI Atmospheric segment ch.18 data	**atmseg_ch18**	ny[lat_n]	nx[lon_n]	p[pxls]		Ushort	Level-2 Atm. Seg. ch.18 data			daytime only
	GLI Atmospheric segment ch.19 data	**atmseg_ch19**	ny[lat_n]	nx[lon_n]	p[pxls]		Ushort	Level-2 Atm. Seg. ch.19 data			daytime only
	GLI Atmospheric segment ch.24 data	**atmseg_ch24**	ny[lat_n]	nx[lon_n]	p[pxls]		Ushort	Level-2 Atm. Seg. ch.24 data			daytime only
	GLI Atmospheric segment ch.25 data	**atmseg_ch25**	ny[lat_n]	nx[lon_n]	p[pxls]		Ushort	Level-2 Atm. Seg. ch.25 data			daytime only
	GLI Atmospheric segment ch.26 data	**atmseg_ch26**	ny[lat_n]	nx[lon_n]	p[pxls]		Ushort	Level-2 Atm. Seg. ch.26 data			daytime only
	GLI Atmospheric segment ch.27 data	**atmseg_ch27**	ny[lat_n]	nx[lon_n]	p[pxls]		Ushort	Level-2 Atm. Seg. ch.27 data			daytime only
	GLI Atmospheric segment ch.28 data	**atmseg_ch28**	ny[lat_n]	nx[lon_n]	p[pxls]		Ushort	Level-2 Atm. Seg. ch.28 data			daytime only
	GLI Atmospheric segment ch.29 data	**atmseg_ch29**	ny[lat_n]	nx[lon_n]	p[pxls]		Ushort	Level-2 Atm. Seg. ch.29 data			daytime only
	GLI Atmospheric segment ch.30 data	**atmseg_ch30**	ny[lat_n]	nx[lon_n]	p[pxls]		Ushort	Level-2 Atm. Seg. ch.30 data			
	GLI Atmospheric segment ch.31 data	**atmseg_ch31**	ny[lat_n]	nx[lon_n]	p[pxls]		Ushort	Level-2 Atm. Seg. ch.31 data			
	GLI Atmospheric segment ch.32 data	**atmseg_ch32**	ny[lat_n]	nx[lon_n]	p[pxls]		Ushort	Level-2 Atm. Seg. ch.32 data			
	GLI Atmospheric segment ch.33 data	**atmseg_ch33**	ny[lat_n]	nx[lon_n]	p[pxls]		Ushort	Level-2 Atm. Seg. ch.33 data			
	GLI Atmospheric segment ch.34 data	**atmseg_ch34**	ny[lat_n]	nx[lon_n]	p[pxls]		Ushort	Level-2 Atm. Seg. ch.34 data			
	GLI Atmospheric segment ch.35 data	**atmseg_ch35**	ny[lat_n]	nx[lon_n]	p[pxls]		Ushort	Level-2 Atm. Seg. ch.35 data			
	GLI Atmospheric segment ch.36 data	**atmseg_ch36**	ny[lat_n]	nx[lon_n]	p[pxls]		Ushort	Level-2 Atm. Seg. ch.36 data			
	Satellite zenith angle(theta)	**sat_zenith**	ny[lat_n]	nx[lon_n]			Ushort	Satellite Zenith Angle	(0, 18000)		scale factor=0.01(correct value=storing value*0.01)
	Solar zenith angle(theta0)	**sun_zenith**	ny[lat_n]	nx[lon_n]			Ushort	Solar Zenith Angle	(0, 18000)		scale factor=0.01(correct value=storing value*0.01)
	Relative azimuth angle(delta-phi)	**rel_azimuth**	ny[lat_n]	nx[lon_n]			Ushort	Relative Azimuth Angle	(0, 18000)		scale factor=0.01(correct value=storing value*0.01)
	Calibration Angle	**cal_ang**	ny[lat_n]	nx[lon_n]			Real	Calibration Angle			
	Observation time	**scan_time**	ny[lat_n]	nx[lon_n]			Double	Scan time		day(MJD)	MJD expression. hour/min./sec. is expressed as decimal fraction of day.
Data Exist Flag	**Data exist flag**	**exist_flag**	ny[lat_n]	nx[lon_n]			Byte	Data Exist Flag	(0, 1)		0:no data is stored, 1:data exist in this segment
Cloud Flag Dataset	**cloud flag data**	**cloud_data**	ny[lat_n]	nx[lon_n]	p[pxls]		Ulong	Cloud Flag Data			cloud flag data
Land-Ocean Flag	**land value**	**land_value**					Byte	Land pixel value			1(const.) the value that means 'Land'
	water value	**water_value**					Byte	Water pixel value			0(const.) the value that means 'Water'
	land/ocean flag	**L0_flag**	ny[lat_n]	nx[lon_n]	p[pxls]		Byte	Land-Water flag image	(0, 1)		Land/Water flag for each pixel
Absolute Calibration Table	**absolute calibration coefficient (VNIR)**	**gcal_v**	number of channels(23) [chnlsvpw]				Real	Gcal			For VNIR. The number of VNIR channels is 4ch.s larger than actual number because of piecewise linear channels. The storing order is ch.1 2 3 4H 4N 5H 5N 6 7H 7N 8H 8N 9 10 11 ... 17 18 19 (H:high gain, N:normal gain)
	absolute calibration coefficient (SWIR)	**gcal_s**	number of channels(4) [chnlss]				Real	Gcal			For SWIR
	absolute calibration coefficient (SWIR 2km)	**gcal_2km**	number of channels(2) [chnls2k]				Real	Gcal 2km			For SWIR 2km
	absolute calibration coefficient (VNIR)	**gsys_v**	number of channels(23) [chnlsvpw]				Real	Gsys			For VNIR. The number of VNIR channels is 4ch.s larger than actual number because of piecewise linear channels. The storing order is ch.1 2 3 4H 4N 5H 5N 6 7H 7N 8H 8N 9 10 11 ... 17 18 19 (H:high gain, N:normal gain)
	absolute calibration coefficient (SWIR)	**gsys_s**	number of channels(4) [chnlss]				Real	Gsys			For SWIR
	absolute calibration coefficient (SWIR 2km)	**gsys_2km**	number of channels(2) [chnls2k]				Real	Gsys 2km			For SWIR 2km
	absolute calibration table	**c1**	number of channels(7) [chnlsmt]				Real	C1			For MTIR

200A

8.3 Precise Geometric Corrected Image (PGCI) Data

This data is temporary data to generate Level-2A_LC data. This has large relationship to Level-2A_LC.

PGCI is map projected scene data. The projection method is same as Level-2A_LC (see section 3.3). 2 map projection method is applied. : polar-stereographic (PS) projection (polar region), equi-rectanguler (EQR) projection (middle latitude region). These region have overlapped area.

The pixel value of PGCI is radiance. The channels which should be stored to Level-2A_LC are included.

The position on Level-2A_LC image area is attached. Scan geometry data, Cloud flag, Land/Water Flag, Observation time are attached.

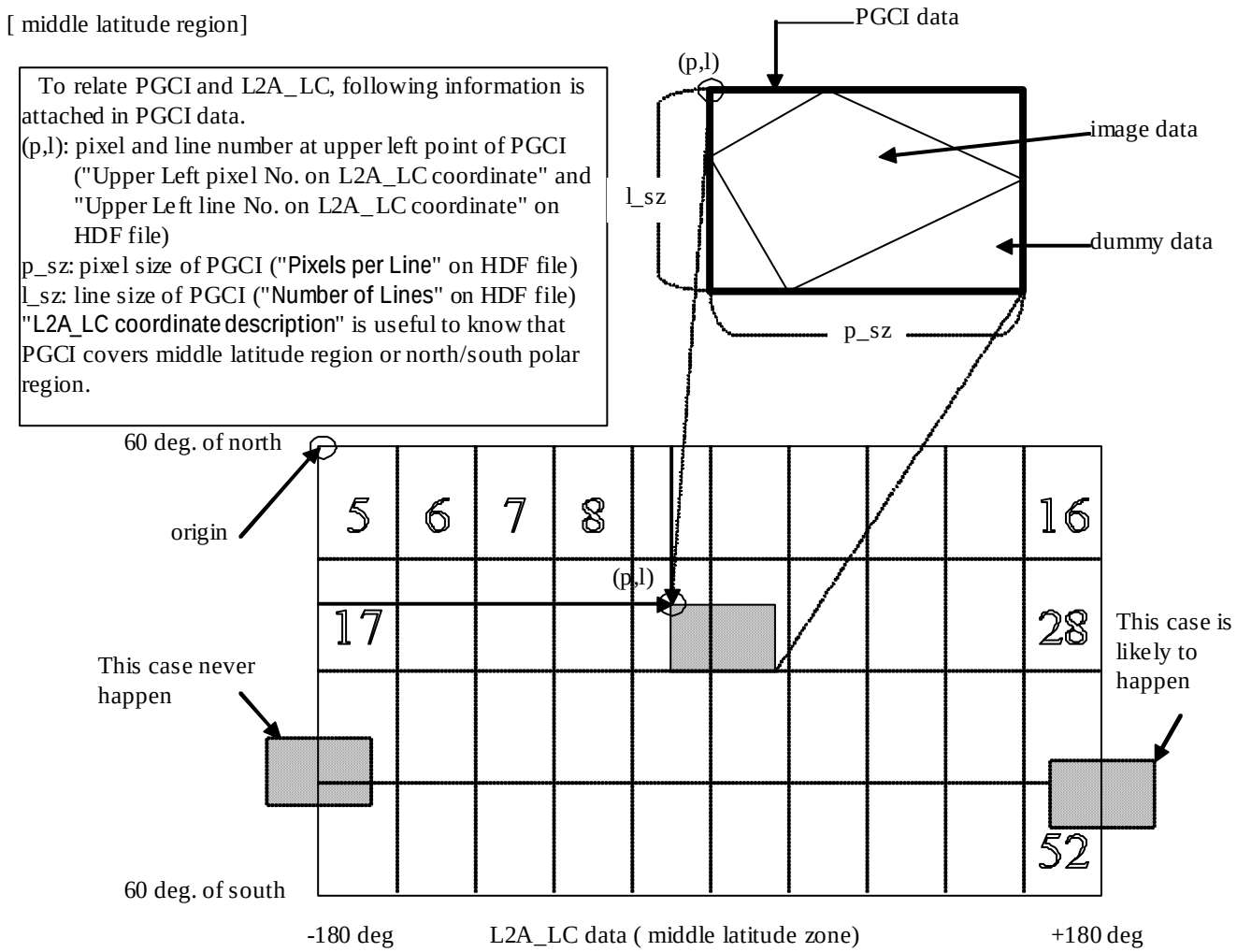


Fig.8.3-1 relationship between PGCI and Level-2A_LC (middle lat. region)

[polar region]

It is necessary of pixel and line number of upper left points (p,l) and sign of north side or south side. Pixel size (p_sz) and line size (l_sz) are attached too.
Projection condition also should be defined in advance.
ex.) earth radius, center longitude earth is sphere or ellipsoid, etc.

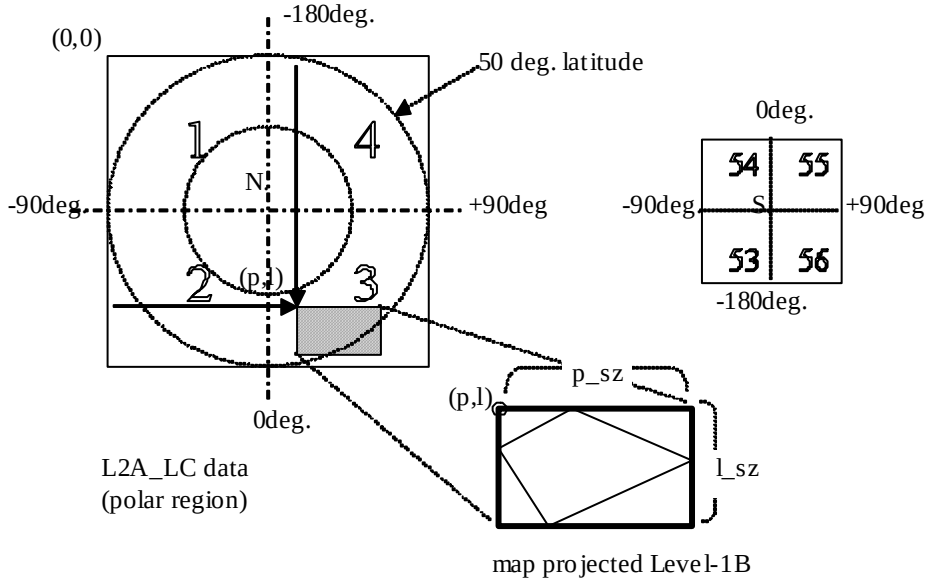


Fig.8.3-2 relationship between PGCI and Level-2A_LC (polar region)

If Level-1B data covers 50-60 deg. latitude area, 2 projected data is generated.

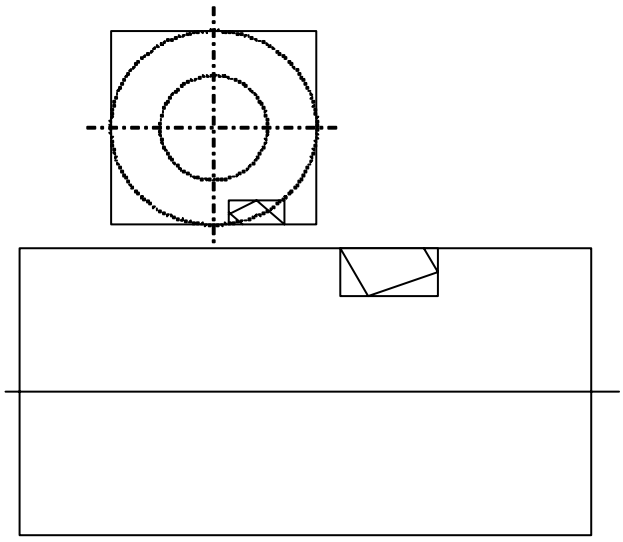


Fig.8.3-3 PGCI in overlapped area

There is 2 ways to determine the grid point. One is to put the grid point at the corner of pixel. The another is to set the grid point at the center of pixel. In GLI, former definition is adopted.

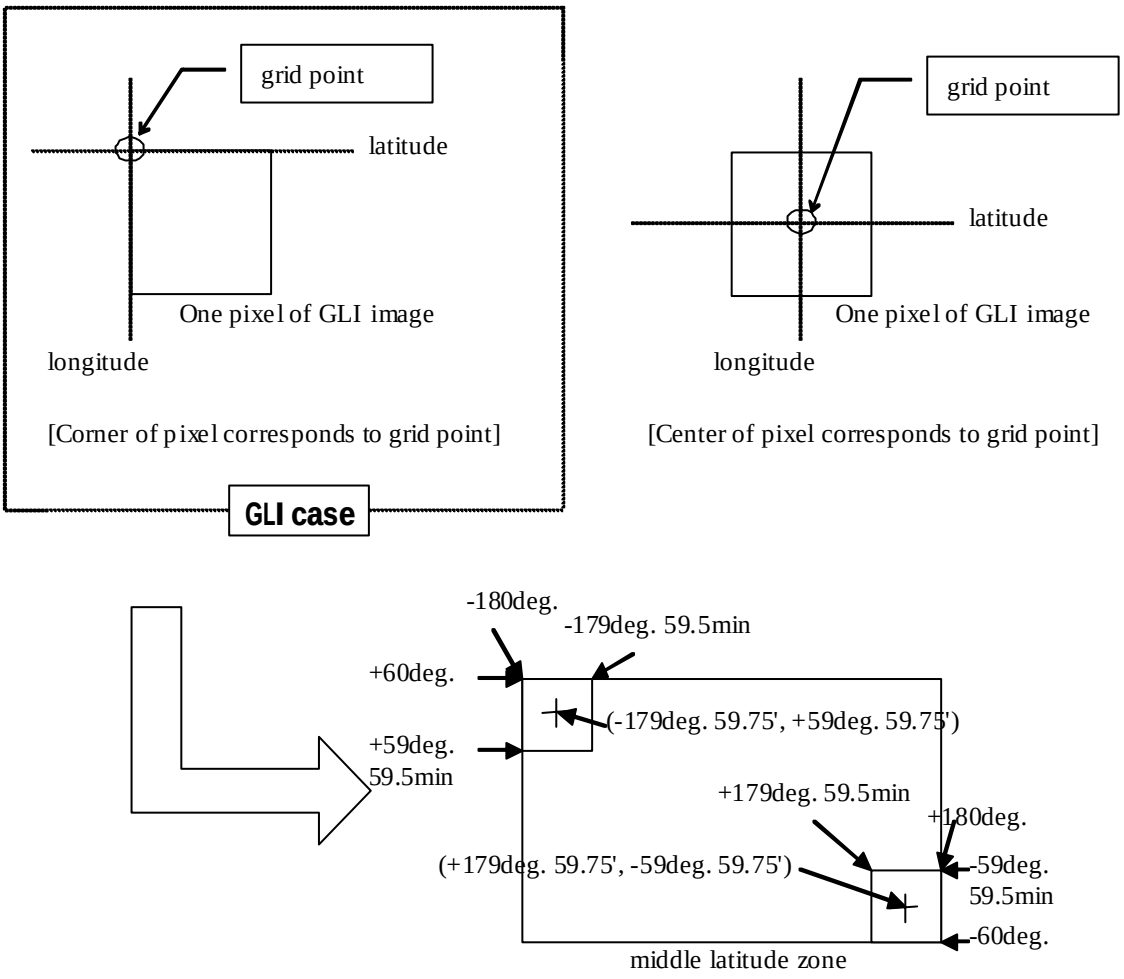
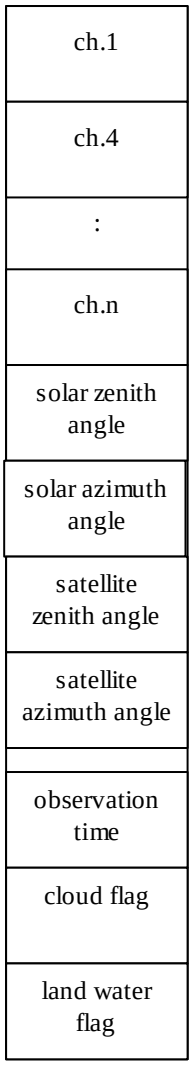


Fig.8.3-4 grid definition of PGCI

Map projected Level-1B data format



Each data is 2 dimension array.
Element data size is different for each, for example, GLI image is 2 byte, but land/water flag is 1 byte.

Fig.8.3-5 data structure of PGCI

8.3.1 Generic Header

See chapter 2 for the detail. Some items related this products are shown below.

For north polar region:

data name	value
Title	"GLI Level-2 work file"
Data type	"scene"
Data Sub-type	"PGCI"
Orbit Number	1-57
Upper Left Latitude	* (appropriate value is set)
Upper Left Longitude	*
Upper Right Latitude	*
Upper Right Longitude	*
Lower Left Latitude	*
Lower Left Longitude	*
Lower Right Latitude	*
Lower Right Longitude	*
Map Projection	"PS"

For middle latitude region:

data name	value
Title	"GLI Level-2 work file"
Data type	"scene"
Data Sub-type	"PGCI"
Orbit Number	1-57
Upper Left Latitude	* (appropriate value is set)
Upper Left Longitude	*
Upper Right Latitude	*
Upper Right Longitude	*
Lower Left Latitude	*
Lower Left Longitude	*
Lower Right Latitude	*
Lower Right Longitude	*
Map Projection	"EQR"

For south polar region:

data name	value
Title	"GLI Level-2 work file"
Data type	"scene"
Data Sub-type	"PGCI"
Orbit Number	1-57
Upper Left Latitude	* (appropriate value is set)
Upper Left Longitude	*
Upper Right Latitude	*
Upper Right Longitude	*
Lower Left Latitude	*
Lower Left Longitude	*
Lower Right Latitude	*
Lower Right Longitude	*
Map Projection	"PS"

8.3.1 Generic Header

category	data name	type	count	contents	const.	remarks	source of data: input data	source of data: current process
Mission and Documentation	**Product Name**	Ch		dummy	const.	Product File Name(without PATH)		O:from CIF
	Title	Ch		"GLI Level-2 work file"	const.			O:cnst. in this prg.
	Data Center	Ch		"JAXA/Earth Observation Center" or "JAXA/Earth Observation Research and application Center"	const.	EOC or EORC (depending on where this is processed)		O:from CIF
	Mission	Ch		"ADEOS-II GLI"	const.	same as input data	O	
	Mission Characteristics	Ch		"Nominal orbit:inclination=98.62(Sun-Synchronous);node =10:15-10:45 AM(descending);eccentricity=<0.0012; altitude=803km;ground speed=6.6km/sec;revolutions per day=14+1/4"	const.	same as input data	O	
	Sensor	Ch		"Global Imager(GLI)'	const.	same as input data	O	
	Sensor Characteristics	Ch		"1km:Number of bands = 30,250m:Number of bands = 6; 1km:number of detectors per bands = 12,250m:number of detectors per bands = 48;1km bits per pixel = 13,250m:bits per pixel = 12;scan period = 1.8sec;1km:bit rate = 3.867 Mbit/sec,250m:bit rate = 60Mbit/sec"	const.	same as input data	O	
	Data Type	Ch		"scene"	const.			O:cnst. in this prg.
	Data Sub-type	Ch		"PGCI"	const.			O:cnst. in this prg.
	Replacement Flag	Ch		"ORIGINAL"	const.			O:cnst. in this prg.
	Software ID	Ch		"NNNX"		processing software version(n.nn) and parameter version(x)		O:from CIF
	File Size	Real	1			product file size with 'MByte' unit		O
	Processing Time	Ch		YYYYMMDD hh:mm:ss.ttt		computer system clock when completing the processing		O
Data Time	**Start Time**	Ch		YYYYMMDD hh:mm:ss.ttt		Observation start time(UTC), same as input data	O	
	End Time	Ch		YYYYMMDD hh:mm:ss.ttt		Observation end time(UTC), same as input data	O	
	Center Time	Ch		YYYYMMDD hh:mm:ss.ttt		Observation center time(UTC), same as input data	O	
	Orbit Number	Long	1	1-57				O
Area Coordinates	**Upper Left Latitude**	Real	1			Latitude of the upper left corner of this image (If "Map Projection"="MIX", the value in the case of EQR is stored.)		O
	Upper Left Longitude	Real	1			Longitude of the upper left corner of this image (If "Map Projection"="MIX", the value in the case of EQR is stored.)		O
	Upper Right Latitude	Real	1			Latitude of the upper right corner of this image (If "Map Projection"="MIX", the value in the case of EQR is stored.)		O
	Upper Right Longitude	Real	1			Longitude of the upper right corner of this image (If "Map Projection"="MIX", the value in the case of EQR is stored.)		O
	Lower Left Latitude	Real	1			Latitude of the lower left corner of this image (If "Map Projection"="MIX", the value in the case of EQR is stored.)		O
	Lower Left Longitude	Real	1			Longitude of the lower left corner of this image (If "Map Projection"="MIX", the value in the case of EQR is stored.)		O
	Lower Right Latitude	Real	1			Latitude of the lower right corner of this image (If "Map Projection"="MIX", the value in the case of EQR is stored.)		O
	Lower Right Longitude	Real	1			Longitude of the lower right corner of this image (If "Map Projection"="MIX", the value in the case of EQR is stored.)		O
	Upper Left Latitude2	Real	1			Latitude of the upper left corner of this image (stored only when "Map Projection"="MIX". And the value in the case of PS is stored here.)		O
	Upper Left Longitude2	Real	1			Longitude of the upper left corner of this image (stored only when "Map Projection"="MIX". And the value in the case of PS is stored here.)		O
	Upper Right Latitude2	Real	1			Latitude of the upper right corner of this image (stored only when "Map Projection"="MIX". And the value in the case of PS is stored here.)		O
	Upper Right Longitude2	Real	1			Longitude of the upper right corner of this image (stored only when "Map Projection"="MIX". And the value in the case of PS is stored here.)		O
	Lower Left Latitude2	Real	1			Latitude of the lower left corner of this image (stored only when "Map Projection"="MIX". And the value in the case of PS is stored here.)		O
	Lower Left Longitude2	Real	1			Longitude of the lower left corner of this image (stored only when "Map Projection"="MIX". And the value in the case of PS is stored here.)		O
	Lower Right Latitude2	Real	1			Latitude of the lower right corner of this image (stored only when "Map Projection"="MIX". And the value in the case of PS is stored here.)		O
	Lower Right Longitude2	Real	1			Longitude of the lower right corner of this image (stored only when "Map Projection"="MIX". And the value in the case of PS is stored here.)		O
Map Information	**Map Projection**	Ch		"PS", "EQR","MIX"		PS:Polar Stereographic projection, EQR:Equi-Rectangular, MIX: including both of PS and EQR		O
QA/QC data (L2/L3 common QA data)	**Primary Inspection result**	Ch		"G": good, "F":fair, "P":poor, "N": no good		Worst value is set if there are several geophysical parameters are included in this product.		O
	QA Percent Interpolated Data	Real	1	Percent (%) of interpolated data		Worst value is set if there are several geophysical parameters are included in this product.		O
	QA Percent Missing Data of this Product	Real	1	Percent (%) of missing data of this product		Worst value is set if there are several geophysical parameters are included in this product.		O

200A

8.3.2 Specific Header

category	data name	type	count	contents	const.	remarks	data source: input data	data source: current process
Processing	**Number of Channels**	Ch	3	17		the number of channels stored in this file		O:from CIF
Channels	**Processing Channel**	Ch	variable	1 5 8 13 15 17 19 24 26 27 28 29 30 31 34 35 36		the channel number stored in this file		O:from CIF
Data Time	**Node Crossing Time**	Ch	22	YYYYMMDD hh:mm:ss.ttt		Descending node crossing time(UTC)	O	
	Start Year	Short	1			year of Start Time	O	O
	Start Day	Short	1			day-of-year of Start Time(0 on Jan. 1st)	O	O
	Start Millisec	Long	1			milliseconds-of-day of Start Time	O	O
	End Year	Short	1			year of End Time	O	O
	End Day	Short	1			day-of-year of End Time(0 on Jan. 1st)	O	O
	End Millisec	Long	1			milliseconds-of-day of End Time	O	O
	Last Maneuver Start Time	Ch	19	YYYYMMDD hh:mm:ss		Last Maneuver Start Time	O	
	Last Maneuver End Time	Ch	19	YYYYMMDD hh:mm:ss		Last Maneuver End Time	O	
	Last Maneuver Type	Ch	4	"+dV"or"-dV"or"dI"		Last Maneuver Type. +dV:semi-major axis correction(acceleration),-dV:semi-major axis correction (deceleration),dI:inclination correction	O	
Data Quality	**Pixels per Line**	Long	1			Number of pixels per line(This value is different from the number of pixels of L1B data) (If "Map Projection"="MIX", the value in the case of EQR is stored.)		O
	Number of Lines	Long	1			Number of lines per scene (This value is different from the number of lines of L1B data) (If "Map Projection"="MIX", the value in the case of EQR is stored.)		O
	Pixels per Line2	Long	1			Number of pixels per line(This value is different from the number of pixels of L1B data) (stored only when "Map Projection"="MIX". And the value in the case of PS is stored		O
	Number of Lines2	Long	1			Number of lines per scene (This value is different from the number of lines of L1B data) (stored only when "Map Projection"="MIX". And the value in the case of PS is		O
	Missing Packets	Long	1			Number of missing packets in this scene (copy from L1B data)	O	
	Missing Lines	Long	1			Number of missing lines in this scene (copy from L1B data)	O	
	GPS Flag	Ch	4	"OK","NG"		"OK": orbit information from GPS data is available, "NG": not available	O	
Scene Coordinates	**Latitude Units**	Ch	14	"degrees North"	const.	Units used for all latitude values in this product		O:cnst. in this prg.
	Longitude Units	Ch	13	"degrees East"	const.	Units used for all longitude values in this product		O::cnst. in this prg.
	Scene Center Latitude	Real	1			(If "Map Projection"="MIX", the value in the case of EQR is stored.)	O	
	Scene Center Longitude	Real	1			(If "Map Projection"="MIX", the value in the case of EQR is stored.)	O	
	Scene Center Latitude2	Real	1			(stored only when "Map Projection"="MIX". And the value in the case of PS is stored	O	
	Scene Center Longitude2	Real	1			(stored only when "Map Projection"="MIX". And the value in the case of PS is stored	O	
	Orbit Node Longitude	Real	1				O	
	Start path number	Short	1				O	
	Start argument of Latitude	Real	1				O	
	End path number	Short	1				O	
	End argument of Latitude	Real	1				O	
Map Information	**Resampling Method**	Ch	3	"NN"	const.	Nearest Neighbour (If "Map Projection"="MIX", the value in the case of EQR is stored.)		O::cnst. in this prg.
	Earth Ellipsoid Type	Ch	1	"WGS84"	const.			O::cnst. in this prg.
	Reference Longitude	Real	1	(ex.)0.0		stored only when PS. reference longitude of PS projection.		O
	grid interval	Real	1	(ex.)0.5		[unit] arc-minute of angle (If "Map Projection"="MIX", the value in the case of EQR is stored.)		O
	Resampling Method2	Ch	3	"NN"	const.	Nearest Neighbour (stored only when "Map Projection"="MIX". And the value in the case of PS is stored here.)		O::cnst. in this prg.
	grid interval2	Real	1	(ex.)0.5		[unit] arc-minute of angle (stored only when "Map Projection"="MIX". And the value in the case of PS is stored here.)		O

8.3.3 Common Part(Body)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
Absolute Calibration Table	**absolute calibration coefficient (VNIR)**	**gcal_v**	number of channels(23) [chnlsvpw]				Real	Gcal			For VNIR. The number of VNIR channels is 4ch.s larger than actual number because of piecewise linear channels. The storing order is ch.1 2 3 4H 4N 5H 5N 6 7H 7N 8H 8N 9 10 11 ... 17 18 19 (H:high gain, N:normal gain)
	absolute calibration coefficient (SWIR)	**gcal_s**	number of channels(4) [chnlss]				Real	Gcal			For SWIR
	absolute calibration coefficient (SWIR 2km)	**gcal_2km**	number of channels(2) [chnls2k]				Real	Gcal 2km			For SWIR 2km
	absolute calibration coefficient (VNIR)	**gsys_v**	number of channels(23) [chnlsvpw]				Real	Gsys			For VNIR. The number of VNIR channels is 4ch.s larger than actual number because of piecewise linear channels. The storing order is ch.1 2 3 4H 4N 5H 5N 6 7H 7N 8H 8N 9 10 11 ... 17 18 19 (H:high gain, N:normal gain)
	absolute calibration coefficient (SWIR)	**gsys_s**	number of channels(4) [chnlss]				Real	Gsys			For SWIR
	absolute calibration coefficient (SWIR 2km)	**gsys_2km**	number of channels(2) [chnls2k]				Real	Gsys 2km			For SWIR 2km
	absolute calibration table	**c1**	number of channels(7) [chnlsmt]				Real	C1			For MTIR

8.3.4 Specific Part (Body)

V Group Name [VG Class Name]	SD name	Dimension 1 [Dimension Name]	Dimension 2 [Dimension Name]	Dimension 3 [Dimension Name]	Dimension 4 [Dimension Name]	Type	Attribute long_name	Attribute valid_range	Attribute units	Comments
Precise Geometric Corrected Image [Map Projected Data]	**PGCI_ch1**	the number of lines[lines]	the number of pixels[pixels]			Ushort	Precise Geometric Corrected Image ch.1 data		W/m^2/micro-m/sr	
	PGCI_ch5	the number of lines[lines]	the number of pixels[pixels]			Ushort	Precise Geometric Corrected Image ch.5 data		W/m^2/micro-m/sr	
	PGCI_ch8	the number of lines[lines]	the number of pixels[pixels]			Ushort	Precise Geometric Corrected Image ch.8 data		W/m^2/micro-m/sr	
	PGCI_ch13	the number of lines[lines]	the number of pixels[pixels]			Ushort	Precise Geometric Corrected Image ch.13 data		W/m^2/micro-m/sr	
	PGCI_ch15	the number of lines[lines]	the number of pixels[pixels]			Ushort	Precise Geometric Corrected Image ch.15 data		W/m^2/micro-m/sr	
	PGCI_ch17	the number of lines[lines]	the number of pixels[pixels]			Ushort	Precise Geometric Corrected Image ch.17 data		W/m^2/micro-m/sr	
	PGCI_ch19	the number of lines[lines]	the number of pixels[pixels]			Ushort	Precise Geometric Corrected Image ch.19 data		W/m^2/micro-m/sr	
	PGCI_ch24	the number of lines[lines]	the number of pixels[pixels]			Ushort	Precise Geometric Corrected Image ch.24 data		W/m^2/micro-m/sr	
	PGCI_ch26	the number of lines[lines]	the number of pixels[pixels]			Ushort	Precise Geometric Corrected Image ch.26 data		W/m^2/micro-m/sr	
	PGCI_ch27	the number of lines[lines]	the number of pixels[pixels]			Ushort	Precise Geometric Corrected Image ch.27 data		W/m^2/micro-m/sr	
	PGCI_ch28	the number of lines[lines]	the number of pixels[pixels]			Ushort	Precise Geometric Corrected Image ch.28 data		W/m^2/micro-m/sr	2km sampled data is used
	PGCI_ch29	the number of lines[lines]	the number of pixels[pixels]			Ushort	Precise Geometric Corrected Image ch.29 data		W/m^2/micro-m/sr	2km sampled data is used
	PGCI_ch30	the number of lines[lines]	the number of pixels[pixels]			Ushort	Precise Geometric Corrected Image ch.30 data		W/m^2/micro-m/sr	
	PGCI_ch31	the number of lines[lines]	the number of pixels[pixels]			Ushort	Precise Geometric Corrected Image ch.31 data		W/m^2/micro-m/sr	
	PGCI_ch34	the number of lines[lines]	the number of pixels[pixels]			Ushort	Precise Geometric Corrected Image ch.34 data		W/m^2/micro-m/sr	
	PGCI_ch35	the number of lines[lines]	the number of pixels[pixels]			Ushort	Precise Geometric Corrected Image ch.35 data		W/m^2/micro-m/sr	
	PGCI_ch36	the number of lines[lines]	the number of pixels[pixels]			Ushort	Precise Geometric Corrected Image ch.36 data		W/m^2/micro-m/sr	
	sat_zenith	the number of lines[lines]	the number of pixels[pixels]			Ushort	Satellite Zenith Angle (theta)	0,18000	degree	scale factor=0.01(correct value=storing value*0.01)
	sun_zenith	the number of lines[lines]	the number of pixels[pixels]			Ushort	Solar Zenith Angle (theta 0)	0,18000	degree	scale factor=0.01(correct value=storing value*0.01)
	sat_azimuth	the number of lines[lines]	the number of pixels[pixels]			Short	Satellite Azimuth Angle (phi)	-18000,18000	degree	scale factor=0.01(correct value=storing value*0.01)
	sun_azimuth	the number of lines[lines]	the number of pixels[pixels]			Short	Solar Azimuth Angle (phi 0)	-18000,18000	degree	scale factor=0.01(correct value=storing value*0.01)
	obs_time	the number of lines[lines]	the number of pixels[pixels]			Double	Observation Time		day (MJD)	
Land-Ocean Flag [Parameter]	**land_value**					Byte	Land pixel value			1(const.) the value that means 'Land'
	water_value					Byte	Water pixel value			0(const.) the value that means 'Water'
	L0_flag	the number of lines[lines]	the number of pixels[pixels]			Byte	Land-Water flag image	0, 1		Land/Water flag for each pixel
Cloud Flag Dataset [Map Projected Data]	**cloud_data**	the number of lines[lines]	the number of pixels[pixels]			Ulong				
L2A_LC coordinates [Parameter]	**L2A_LC coordinate description**	(1)				Ushort	L2A_LC coordinate description			"1": north polar region, "2": middle latitude region, "3": south polar region
	Upper Left pixel No. on L2A_LC coordinate	(1)				Long	Upper Left pixel No. on L2A_LC coordinate			the pixel No. of left upper point of this image on Level-2A_LC coordinate
	Upper Left line No. on L2A_LC coordinate	(1)				Long	Upper Left line No. on L2A_LC coordinate			the line No. of left upper point of this image on Level-2A_LC coordinate

* Following data are stored only when "Map Projection" equals "MIX". The values when "PS" projection are stored to following table and the values when "EQR" projection are stored to above table.

V Group Name [VG Class Name]	SD name	Dimension 1 [Dimension Name]	Dimension 2 [Dimension Name]	Dimension 3 [Dimension Name]	Dimension 4 [Dimension Name]	Type	Attribute long_name	Attribute valid_range	Attribute units	Comments
Precise Geometric Corrected Image [Map Projected Data]	**PGCI_ch1_2**	the number of lines[lines]	the number of pixels[pixels]			Ushort	Precise Geometric Corrected Image ch.1 data		W/m^2/micro-m/sr	
	PGCI_ch5_2	the number of lines[lines]	the number of pixels[pixels]			Ushort	Precise Geometric Corrected Image ch.5 data		W/m^2/micro-m/sr	
	PGCI_ch8_2	the number of lines[lines]	the number of pixels[pixels]			Ushort	Precise Geometric Corrected Image ch.8 data		W/m^2/micro-m/sr	
	PGCI_ch13_2	the number of lines[lines]	the number of pixels[pixels]			Ushort	Precise Geometric Corrected Image ch.13 data		W/m^2/micro-m/sr	
	PGCI_ch15_2	the number of lines[lines]	the number of pixels[pixels]			Ushort	Precise Geometric Corrected Image ch.15 data		W/m^2/micro-m/sr	
	PGCI_ch17_2	the number of lines[lines]	the number of pixels[pixels]			Ushort	Precise Geometric Corrected Image ch.17 data		W/m^2/micro-m/sr	
	PGCI_ch19_2	the number of lines[lines]	the number of pixels[pixels]			Ushort	Precise Geometric Corrected Image ch.19 data		W/m^2/micro-m/sr	
	PGCI_ch24_2	the number of lines[lines]	the number of pixels[pixels]			Ushort	Precise Geometric Corrected Image ch.24 data		W/m^2/micro-m/sr	
	PGCI_ch26_2	the number of lines[lines]	the number of pixels[pixels]			Ushort	Precise Geometric Corrected Image ch.26 data		W/m^2/micro-m/sr	
	PGCI_ch27_2	the number of lines[lines]	the number of pixels[pixels]			Ushort	Precise Geometric Corrected Image ch.27 data		W/m^2/micro-m/sr	
	PGCI_ch28_2	the number of lines[lines]	the number of pixels[pixels]			Ushort	Precise Geometric Corrected Image ch.28 data		W/m^2/micro-m/sr	2km sampled data is used
	PGCI_ch29_2	the number of lines[lines]	the number of pixels[pixels]			Ushort	Precise Geometric Corrected Image ch.29 data		W/m^2/micro-m/sr	2km sampled data is used
	PGCI_ch30_2	the number of lines[lines]	the number of pixels[pixels]			Ushort	Precise Geometric Corrected Image ch.30 data		W/m^2/micro-m/sr	
	PGCI_ch31_2	the number of lines[lines]	the number of pixels[pixels]			Ushort	Precise Geometric Corrected Image ch.31 data		W/m^2/micro-m/sr	
	PGCI_ch34_2	the number of lines[lines]	the number of pixels[pixels]			Ushort	Precise Geometric Corrected Image ch.34 data		W/m^2/micro-m/sr	

V Group Name [VG Class Name]	SD name	Dimension 1 [Dimension Name]	Dimension 2 [Dimension Name]	Dimension 3 [Dimension Name]	Dimension 4 [Dimension Name]	Type	Attribute long_name	Attribute valid_range	Attribute units	Comments
	PGCI_ch35_2	the number of lines[lines]	the number of pixels[pixels]			Ushort	Precise Geometric Corrected Image ch.35 data		W/m^2/micro-m/sr	
	PGCI_ch36_2	the number of lines[lines]	the number of pixels[pixels]			Ushort	Precise Geometric Corrected Image ch.36 data		W/m^2/micro-m/sr	
	sat_zenith_2	the number of lines[lines]	the number of pixels[pixels]			Ushort	Satellite Zenith Angle (theta)	0,18000	degree	scale factor=0.01(correct value=storing value*0.01)
	sun_zenith_2	the number of lines[lines]	the number of pixels[pixels]			Ushort	Solar Zenith Angle (theta 0)	0,18000	degree	scale factor=0.01(correct value=storing value*0.01)
	sat_azimuth_2	the number of lines[lines]	the number of pixels[pixels]			Short	Satellite Azimuth Angle (phi)	-18000,18000	degree	scale factor=0.01(correct value=storing value*0.01)
	sun_azimuth_2	the number of lines[lines]	the number of pixels[pixels]			Short	Solar Azimuth Angle (phi 0)	-18000,18000	degree	scale factor=0.01(correct value=storing value*0.01)
	obs_time_2	the number of lines[lines]	the number of pixels[pixels]			Double	Observation Time		day (MJD)	
Land-Ocean Flag [Parameter]	**land_value_2**					Byte	Land pixel value			1(const.) the value that means 'Land'
	water_value_2					Byte	Water pixel value			0(const.) the value that means 'Water'
	L0_flag_2	the number of lines[lines]	the number of pixels[pixels]			Byte	Land-Water flag image	0, 1		Land/Water flag for each pixel
Cloud Flag Dataset [Map Projected Data]	**cloud_data_2**	the number of lines[lines]	the number of pixels[pixels]			Ulong				
L2A_LC coordinates [Parameter]	**L2A_LC coordinate description_2**	(1)				Ushort	L2A_LC coordinate description			"1": north polar region, "2": middle latitude region, "3": south polar region
	Upper Left pixel No. on L2A_LC	(1)				Long	Upper Left pixel No. on L2A_LC coordinate			the pixel No. of left upper point of this image on Level-2A_LC coordinate
	Upper Left line No. on L2A_LC coordinate_2	(1)				Long	Upper Left line No. on L2A_LC coordinate			the line No. of left upper point of this image on Level-2A_LC coordinate

8.4 Scene Connected L1B Data

This data is temporary data to generate PGCI data. This file is almost same structure as Level-2A, but the spatial resolution is same as Level-1B (original resolution).

This data has 1 path observation but it may be split to several "segment" if tilt operation or maneuver operation is done.

8.4.1 Generic Header

See chapter 2 for the detail. Some items related this products are shown below.

data name	value
Title	"GLI Level-2 work file"
Data type	"path"
Data Sub-type	"scene connected L1B"
Orbit Number	1 - 57
Upper Left Latitude	0.0
Upper Left Longitude	0.0
Upper Right Latitude	0.0
Upper Right Longitude	0.0
Lower Left Latitude	0.0
Lower Left Longitude	0.0
Lower Right Latitude	0.0
Lower Right Longitude	0.0
Map Projection	"N/A"

8.4.2 Specific Header

category	data name	type	count	contents	const.	remarks	source of data: from L1B	source of data: current process
Processing	**Number of Channels**	Ch	3	ex.) 3		the number of stored GLI channels		O: from CIF
Channels	**Processing Channel**	Ch		ex.) 5 3 19		stored GLI channel No.		O: from CIF
Data Time	**Node Crossing Time**	Ch	22	YYYYMMDD hh:mm:ss.ttt		Node crossing time derived from first scene	O	O(selection)
	Start Year	Short	1			Year of start time	O	O(selection)
	Start Day	Short	1			Day-of-year of start time(January 1 is 0)	O	O(selection)
	Start Millisec	Long	1			Milliseconds-of-day of start time	O	O(selection)
	End Year	Short	1			Year of end time	O	O(selection)
	End Day	Short	1			Day-of-year of end time(January 1 is 0)	O	O(selection)
	End Millisec	Long	1			Milliseconds-of-day of end time	O	O(selection)
	Last Maneuver Start Time	Ch	19	YYYYMMDD hh:mm:ss		Last Maneuver Start Time	O	O(selection)
	Last Maneuver End Time	Ch	19	YYYYMMDD hh:mm:ss		Last Maneuver End Time	O	O(selection)
	Last Maneuver Type	Ch	4	"+dV"or"-dV"or"dI"		Last Maneuver Type. +dV:semi-major axis correction(acceleration),-dV:semi-major axis correctior (deceleration),dI:inclination correction	O	O(selection)
Common	**Pixels per Scan Line**	Long	1	ex.)1236		same as Level-1B		O
Information	**Pixel Offset for L1B path**	Short	1	ex.)0(No offset)		Pofs, range : 0-(Pit-1)		O: from CIF
	Line Offset for L1B path	Short	1	ex.)0(No offset)		Lofs, range : 0-(Lit-1)		O: from CIF
	Pixel Interval for L1B path	Short	1	ex.)1(No sampling, original resolution)		Pit, Pixel address = Pofs + Pit * n, (n=0,1,2,...)		O: from CIF
	Line Interval for L1B path	Short	1	ex.)1(No sampling, original resolution)		Lit, Line address = Lofs + Lit * n, (n=0,1,2,...)		O: from CIF
	Pixel Interval for Ocean Supplemental Table	Short	1	ex.)12		OST_Pit, Pixel address of ocean suppl. table = Pofs + OST_Pit * n, (n=0,1,2,...)		O: from CIF
	Line Interval for Ocean Supplemental Table	Short	1	ex.)12		OST_Lit, Line address of ocean suppl. table = Lofs + OST_Lit * n, (n=0,1,2,...)		O: from CIF
	Number of Scenes(L1B VNIR)	Short	1	ex.)13				O: from CIF
	Number of Scenes(L1B SWIR)	Short	1	ex.)13				O: from CIF
	Number of Scenes(L1B MTIR)	Short	1	ex.)26				O: from CIF
	Number of Scenes(L1B Scan	Short	1	13(usually)				O: from CIF
	Number of Scenes(L1B Cloud Flag)	Short	1	26(usually)				O: from CIF
	Number of Tilt Segments	Short	1	1-		Total number of tilt segments		O
	VNIR Channel Number	Ch		ex.) 1 5 8 9 13 15 17 19	const	GLI channel No. categorized to VNIR		O
	SWIR Channel Number	Ch		ex.) 24 26 27	const	GLI channel No. categorized to SWIR		O
	MTIR Channel Number	Ch		ex.) 30 31 34 35 36	const	GLI channel No. categorized to MTIR		O
Level-1B Information	**Software ID(L1B)**	Ch	11	"UV********"		Level-1B processing software version ID. If version ID is different between inputted data, warnin message is outputted, but this data is created.	O	O(selection)
Cloud flag Information	**Software ID(cloud flag)**	Ch	4	"NNX"		Cloud flag processing software version (N.N) and parameter version (X). If version ID is different betwee inputted data, warning message is outputted, but this data is created.	O	O(selection)

category	data name	type	count	contents	const.	remarks	source of data	
							from L1B	current process
Data Quality#1	**Lines per Tilt #1**	Long	1					O
- #n	**Missing Packets #1**	Long	1	dummy			O	O
(n=No. of tilt seg)	**Missing Lines #1**	Long	1	dummy			O	O
	Missing Scenes #1	Long	1	dummy				O
	GPS Flag #1	Ch	4	"OK","NG","MIX"		"OK": GPS data is available for all lines. "NG": GPS data is NOT available for all line "MIX": GPS data is available for some lines.	O	O
Tilt segment time	**TS Start Time #1**	Ch	22	YYYYMMDD hh:mm:ss.ttt				O
	TS End Time #1	Ch	22	YYYYMMDD hh:mm:ss.ttt				O
	TS Center Time #1	Ch	22	YYYYMMDD hh:mm:ss.ttt				O
File Metrix#1-#n	**Saturated Pixels #1**	Long	32			Saturated Pixels for each channels		O
(n=No. of tilt seg)	**Non-Saturated Pixels #1**	Long	32			Non-saturated Pixels for each channels		O
Tilt segment	**Latitude Units #1**	Ch	14	"degrees North"	const			O
position	**Longitude Units #1**	Ch	13	"degrees East"	const			O
#1-#n	**Tilt Segment Center Latitude #1**	Real	1	dummy				O
(n=No. of tilt seg)	**Tilt Segment Center Longitude #1**	Real	1	dummy				O
	Upper Left Latitude #1	Real	1	dummy				O
	Upper Left Longitude #1	Real	1	dummy				O
	Upper Right Latitude #1	Real	1	dummy				O
	Upper Right Longitude #1	Real	1	dummy				O
	Lower Left Latitude #1	Real	1	dummy				O
	Lower Left Longitude #1	Real	1	dummy				O
	Lower Right Latitude #1	Real	1	dummy				O
	Lower Right Longitude #1	Real	1	dummy				O
	Orbit Node Longitude #1	Real	1	dummy			O	
	Start path number #1	Short	1				O	O(selection)
	Start argument of Latitude #1	Real	1				O	O(selection)
	End path number #1	Short	1				O	O(selection)
	End argument of Latitude #1	Real	1				O	O(selection)
GLI Image	**VNIR Flag #1**	Ch	1	1:data exist, 0:no data				O
Information	**SWIR Flag #1**	Ch	1	1:data exist, 0:no data				O
#1-#n	**MTIR Flag #1**	Ch	1	1:data exist, 0:no data				O
(n=No. of tilt seg)	**Cloud Flag #1**	Ch	1	1:data exist, 0:no data				O
	VNIR Lines #1	Long	1			Total line number of VNIR image		O
	SWIR Lines #1	Long	1			Total line number of SWIR image		O
	MTIR Lines #1	Long	1			Total line number of MTIR image		O
	Cloud Lines #1	Long	1			Total line number of cloud flag data		O
	VNIR Lines Offset #1	Long	1			difference between VNIR image line No. and virtual line No. using in supplemental table		O
	SWIR Lines Offset #1	Long	1			difference between SWIR image line No. and virtual line No. using in supplemental table		O
	MTIR Lines Offset #1	Long	1			difference between MTIR image line No. and virtual line No. using in supplemental table		O
	Cloud Lines Offset #1	Long	1			difference between cloud flag data line No. and virtual line No. using in supplemental table		O
	No. of Ocean Table Elements #1	Short	1	9	const			O
	Ocean Table Lines #1	Long	1			Total line number / line interval of ocean supplemental table + 1		O
	Ocean Table Pixels #1	Long	1			Total pixel number / pixel interval of ocean supplemental table + 1		O

8.4.3 Body part

All V group data shown below is stored under "Tilt Segment#n" V group, which is created as much as the number of tilt segment.
In the V group shown below #1 is used as an example.

V group name: Tilt Segment #1 - Tilt Segment #r
VG class name: Tilt_Segment_Data

p : Number of pixels per line("Pixels per Scan Line" in Global Attributes)
lv#1 : Number of lines per current tilt segment("VNIR Lines #1" in Global Attributes)
ls#1 : Number of lines per current tilt segment("SWIR Lines #1" in Global Attributes)
lm#1 : Number of lines per current tilt segment("MTIR Lines #1" in Global Attributes)
lc#1 : Number of lines per current tilt segment("Cloud Lines #1" in Global Attributes)
po#1 : Number of pixels for ocean supplemental table("Ocean Table Pixels #1" in Global Attributes)
lo#1 : Number of lines per current tilt segment("Ocean Table Lines #1" in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks	source of data	
								long_name	valid_range	units		from L1B	current process
GLI L1B Path Data #1 [line data] *Actual stored ch. is only the ch.s specified to process. (see "Processing Channel" in specific header)	**GLI 1path L1B ch.1 data**	**l1b_path_ch1 #1**	lv#1[lines_vn_#1]	p[pxls]			Ushort	1-path L1B ch.1 data, #1			VNIR	O	O(selection)
	GLI 1path L1B ch.2 data	**l1b_path_ch2 #1**	lv#1[lines_vn_#1]	p[pxls]			Ushort	1-path L1B ch.2 data, #1			VNIR	O	O(selection)
	GLI 1path L1B ch.3 data	**l1b_path_ch3 #1**	lv#1[lines_vn_#1]	p[pxls]			Ushort	1-path L1B ch.3 data, #1			VNIR	O	O(selection)
	GLI 1path L1B ch.4 data	**l1b_path_ch4 #1**	lv#1[lines_vn_#1]	p[pxls]			Ushort	1-path L1B ch.4 data, #1			VNIR	O	O(selection)
	GLI 1path L1B ch.5 data	**l1b_path_ch5 #1**	lv#1[lines_vn_#1]	p[pxls]			Ushort	1-path L1B ch.5 data, #1			VNIR	O	O(selection)
	GLI 1path L1B ch.6 data	**l1b_path_ch6 #1**	lv#1[lines_vn_#1]	p[pxls]			Ushort	1-path L1B ch.6 data, #1			VNIR	O	O(selection)
	GLI 1path L1B ch.7 data	**l1b_path_ch7 #1**	lv#1[lines_vn_#1]	p[pxls]			Ushort	1-path L1B ch.7 data, #1			VNIR	O	O(selection)
	GLI 1path L1B ch.8 data	**l1b_path_ch8 #1**	lv#1[lines_vn_#1]	p[pxls]			Ushort	1-path L1B ch.8 data, #1			VNIR	O	O(selection)
	GLI 1path L1B ch.9 data	**l1b_path_ch9 #1**	lv#1[lines_vn_#1]	p[pxls]			Ushort	1-path L1B ch.9 data, #1			VNIR	O	O(selection)
	GLI 1path L1B ch.10 data	**l1b_path_ch10 #1**	lv#1[lines_vn_#1]	p[pxls]			Ushort	1-path L1B ch.10 data, #1			VNIR	O	O(selection)
	GLI 1path L1B ch.11 data	**l1b_path_ch11 #1**	lv#1[lines_vn_#1]	p[pxls]			Ushort	1-path L1B ch.11 data, #1			VNIR	O	O(selection)
	GLI 1path L1B ch.12 data	**l1b_path_ch12 #1**	lv#1[lines_vn_#1]	p[pxls]			Ushort	1-path L1B ch.12 data, #1			VNIR	O	O(selection)
	GLI 1path L1B ch.13 data	**l1b_path_ch13 #1**	lv#1[lines_vn_#1]	p[pxls]			Ushort	1-path L1B ch.13 data, #1			VNIR	O	O(selection)
	GLI 1path L1B ch.14 data	**l1b_path_ch14 #1**	lv#1[lines_vn_#1]	p[pxls]			Ushort	1-path L1B ch.14 data, #1			VNIR	O	O(selection)
	GLI 1path L1B ch.15 data	**l1b_path_ch15 #1**	lv#1[lines_vn_#1]	p[pxls]			Ushort	1-path L1B ch.15 data, #1			VNIR	O	O(selection)
	GLI 1path L1B ch.16 data	**l1b_path_ch16 #1**	lv#1[lines_vn_#1]	p[pxls]			Ushort	1-path L1B ch.16 data, #1			VNIR	O	O(selection)
	GLI 1path L1B ch.17 data	**l1b_path_ch17 #1**	lv#1[lines_vn_#1]	p[pxls]			Ushort	1-path L1B ch.17 data, #1			VNIR	O	O(selection)
	GLI 1path L1B ch.18 data	**l1b_path_ch18 #1**	lv#1[lines_vn_#1]	p[pxls]			Ushort	1-path L1B ch.18 data, #1			VNIR	O	O(selection)
	GLI 1path L1B ch.19 data	**l1b_path_ch19 #1**	lv#1[lines_vn_#1]	p[pxls]			Ushort	1-path L1B ch.19 data, #1			VNIR	O	O(selection)
	GLI 1path L1B ch.24 data	**l1b_path_ch24 #1**	ls#1[lines_sw_#1]	p[pxls]			Ushort	1-path L1B ch.24 data, #1			SWIR	O	O(selection)
	GLI 1path L1B ch.25 data	**l1b_path_ch25 #1**	ls#1[lines_sw_#1]	p[pxls]			Ushort	1-path L1B ch.25 data, #1			SWIR	O	O(selection)
	GLI 1path L1B ch.26 data	**l1b_path_ch26 #1**	ls#1[lines_sw_#1]	p[pxls]			Ushort	1-path L1B ch.26 data, #1			SWIR	O	O(selection)
	GLI 1path L1B ch.27 data	**l1b_path_ch27 #1**	ls#1[lines_sw_#1]	p[pxls]			Ushort	1-path L1B ch.27 data, #1			SWIR	O	O(selection)
	GLI 1path L1B ch.30 data	**l1b_path_ch30 #1**	lm#1[lines_mt_#1]	p[pxls]			Ushort	1-path L1B ch.30 data, #1			MTIR	O	O(selection)
	GLI 1path L1B ch.31 data	**l1b_path_ch31 #1**	lm#1[lines_mt_#1]	p[pxls]			Ushort	1-path L1B ch.31 data, #1			MTIR	O	O(selection)
	GLI 1path L1B ch.32 data	**l1b_path_ch32 #1**	lm#1[lines_mt_#1]	p[pxls]			Ushort	1-path L1B ch.32 data, #1			MTIR	O	O(selection)
	GLI 1path L1B ch.33 data	**l1b_path_ch33 #1**	lm#1[lines_mt_#1]	p[pxls]			Ushort	1-path L1B ch.33 data, #1			MTIR	O	O(selection)
	GLI 1path L1B ch.34 data	**l1b_path_ch34 #1**	lm#1[lines_mt_#1]	p[pxls]			Ushort	1-path L1B ch.34 data, #1			MTIR	O	O(selection)
	GLI 1path L1B ch.35 data	**l1b_path_ch35 #1**	lm#1[lines_mt_#1]	p[pxls]			Ushort	1-path L1B ch.35 data, #1			MTIR	O	O(selection)
	GLI 1path L1B ch.36 data	**l1b_path_ch36 #1**	lm#1[lines_mt_#1]	p[pxls]			Ushort	1-path L1B ch.36 data, #1			MTIR	O	O(selection)
Ocean Supplemental Table	**Observation date**	**o_scan_time #1**	lo#1[ocean_lines_#1]	po#1[ocean_pxls]			Double	Ocean Grid Scan-line Time, #1		day(MJD)	MJD expression. The data observed same scan equals same		O
	Pixel No.	**o_pxl_no #1**	po#1[ocean_pxls]				Short	Ocean Grid Pixel Number, #1			on image coordinate		O
	Line No.	**o_line_no #1**	lo#1[ocean_lines_#1]				Short	Ocean Grid Line Number, #1			on image coordinate		O
	Latitude	**o_lat #1**	lo#1[ocean_lines_#1]	po#1[ocean_pxls]			Real	Ocean Grid Latitude, #1	(-90.0, 90.0)	deg	latitude of sampled point. pseudo-affine transformation is used for interpolation.		O
	Longitude	**o_lon #1**	lo#1[ocean_lines_#1]	po#1[ocean_pxls]			Real	Ocean Grid Longitude, #1	(-180.0, 180.0)	deg	longitude of sampled point. pseudo-affine transformation is used for interpolation.		O
	Satellite Zenith Angle	**o_sat_theta #1**	lo#1[ocean_lines_#1]	po#1[ocean_pxls]			Real	Ocean Grid Satellite Zenith Angle #1	(0.0, 180.0)	deg	from L1B "solar/satellite angle information". bi-linear is used for interpolation.		O
	Satellite Azimuth Angle	**o_sat_phai #1**	lo#1[ocean_lines_#1]	po#1[ocean_pxls]			Real	Ocean Grid Satellite Azimuth Angle, #1	(-180.0, 180.0)	deg	from L1B "solar/satellite angle information". bi-linear is used for interpolation.		O
	Solar Zenith Angle	**o_sun_theta #1**	lo#1[ocean_lines_#1]	po#1[ocean_pxls]			Real	Ocean Grid Solar Zenith Angle, #1	(0.0, 180.0)	deg	from L1B "solar/satellite angle information". bi-linear is used for interpolation.		O
	Solar Azimuth Angle	**o_sun_phai #1**	lo#1[ocean_lines_#1]	po#1[ocean_pxls]			Real	Ocean Grid Solar Azimuth Angle, #1	(-180.0, 180.0)	deg	from L1B "solar/satellite angle information". bi-linear is used for interpolation.		O
Cloud Flag Dataset	**cloud flag data**	**cloud_data #1**	lc#1[lines_#1]	p[pxls]			Ulong	Cloud Flag Data, #1			4byte(32bit) flag data	O	O(selection)

n : Number of lines per current tilt segment("Lines per Tilt #1" in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks	source of data	
								long_name	valid_range	units		from L1B	current process
Navigation #1	**Orbit Position Vector in ECR**	**orb_vec #1**	n[lines_#1]	dim of vector(3)[vec]			Real	Orbit position vector at scan line time in ECR	(-7200.0, 7200.0)	km	Satellite position in ECR reference at scan start time in every scan. This position is calculated from GPS or orbital data server by interpolation.	O	
	Orbit Velocity in ECR	**orb_vel #1**	n[lines_#1]	dim of vector(3)[vec]			Real	Orbit velocity at scan line time in ECR	(-8.0, 8.0)	km/sec	Satellite position in ECR reference at scan start time in every scan. This position is calculated from GPS or orbital data server by interpolation.	O	
	Reference Sun Vector in ECR	**sun_ref #1**	n[lines_#1]	dim of vector(3)[vec]			Real	Reference Sun vector in ECR frame			Solar vector from view point to sun in ECR reference at scan start time in every scan.	O	
	Satellite Attitude Angl	**att_ang #1**	n[lines_#1]	dim of vector(3)[vec]			Real	Computed roll,pitch,yaw	(-180.0, 180.0)	degrees	Satellite attitude at scan start time in every scan.	O	
Sensor Tilt #1	**Tilt Status**	**tilt_seg #1**	(1)(no name)				Short	Tilt segment number	(0, 2)			O	
Land-Ocean Flag #1	**land value**	**land_value #1**					Byte	Land pixel value			1(const.) the value that means 'Land'	O	
	water value	**water_value #1**					Byte	Water pixel value			0(const.) the value that means 'Water'	O	
	land/ocean flag	**L0_flag #1**	n[lines_#1]	p[pxls]			Byte	Land-Water flag image	(0, 1)		Land/Water flag for each pixe	O	O(selection)
Absolute Calibration Table #1	**absolute calibration coefficient (VNIR)**	**gcal_v #1**	number of channels(23) [chnlsvpw]				Real	Gcal			For VNIR. The number of VNIR channels is 4ch.s larger than actual number because of piecewise linear channels. The storing order is ch.1 2 3 4H 4N 5H 5N 6 7H 7N 8H 8N 9 10 11 ... 17 18 19 (H:high gain, N:normal gain).	O	
	absolute calibration coefficien (SWIR)	**gcal_s #1**	number of channels(4) [chnlss]				Real	Gcal			For SWIR	O	
	absolute calibration coefficien (SWIR 2km)	**gcal_2km #1**	number of channels(2) [chnls2k]				Real	Gcal 2km			For SWIR 2km	O	
	absolute calibration coefficient (VNIR)	**gsys_v #1**	number of channels(23) [chnlsvpw]				Real	Gsys			For VNIR. The number of VNIR channels is 4ch.s larger than actual number because of piecewise linear channels. The storing order is ch.1 2 3 4H 4N 5H 5N 6 7H 7N 8H 8N 9 10 11 ... 17 18 19 (H:high gain, N:normal gain).	O	
	absolute calibration coefficien (SWIR)	**gsys_s #1**	number of channels(4) [chnlss]				Real	Gsys			For SWIR	O	
	absolute calibration coefficien (SWIR 2km)	**gsys_2km #1**	number of channels(2) [chnls2k]				Real	Gsys 2km			For SWIR 2km	O	
	absolute calibration table	**c1 #1**	number of channels(7) [chnlsmt]				Real	C1			For MTIR	O	

8.5 Atmosphere Daily Segment Analysis Data

These files are daily atmosphere segment analysis data. These are used to generate Level-2 products every 4 days or Level-3 Binned products every 16 days/1 month.

The list of files are shown below (Table 8.5-1)

Table 8.5-1 List of atmosphere daily segment analysis data

No.	Classification	Product Code	Description
1	Aerosol property	work_ar	Daily aerosol parameter. Source of ARAE and AROP.
2	Cloud property	work_r_w	Daily water cloud parameter by reflection method. Source of CLER_w_r, CLOP_w_r, CLHT_w_r, CLTT_w_r and CLWP_w_r.
3		work_r_i	Daily ice cloud parameter by reflection method. Source of CLOP_i_r.
4		work_e	Daily ice cloud parameter by emission method. Source of CLER_i_e, CLOP_i_e and CLTT_i_e.

8.5.1 Generic Header

See chapter 2 for the detail. Some items related this products are shown below.

data name	value
Title	"GLI Level-2 work file"
Data type	"segment"
Data Sub-type	Product Code (see Table 8.5-1)
Orbit Number	-1 (-1 means that this data has no meaning)
Upper Left Latitude	90.0
Upper Left Longitude	-180.0
Upper Right Latitude	90.0
Upper Right Longitude	179.75
Lower Left Latitude	-90.0
Lower Left Longitude	-180.0
Lower Right Latitude	-90.0
Lower Right Longitude	179.75
Map Projection	"EQR"

8.5.2 Specific Header

category	data name	type	count	contents	const.	remarks
Data Time	**Start Year**	Short	1			Year of start time
	Start Day	Short	1			Day-of-year of start time(January 1 is 0)
	Start Millisec	Long	1			Milliseconds-of-day of start time
	End Year	Short	1			Year of end time
	End Day	Short	1			Day-of-year of end time(January 1 is 0)
	End Millisec	Long	1			Milliseconds-of-day of end time
Segment Information	**Latitude Units**	Ch	14	"degrees North"	const.	Units used for all latitude values in this product
	Longitude Units	Ch	13	"degrees East"	const.	Units used for all longitude values in this product
	Storing Order of Latitude direction	Ch	19	"From North to South"	const.	Storing Order of Latitude direction
	direction	Ch	17	"From West to East"	const.	Storing Order of Longitude direction
	Segment Interval	Ushort	1	ex.) 4		Segment grid interval can be obtained by 1/N degree. When N=4(default), the interval is 1/4 = 0.2 degree. This value is derived from L2A_OA data.
	lat_nseg	Long	1			721(when 0.25 degree interval)
	lon_nseg	Long	1			1440(when 0.25 degree interval in nighttime), 240(when 0.25 degree interval in daytime for each area)
	x_segsize	Ushort	1	5		the number of pixels for x direction in one segment
	y_segsize	Ushort	1	5		the number of pixels for y direction in one segment
	total_nseg	Long	1			1038240(when 0.25 degree interval in nighttime), 173040(when 0.25 degree interval in daytime for each area)
	pixel_selection	Ushort	1	ex.) 1		Pixel selection method No. from one segment (work_r_w/i: 1-4, work_e: 0, work_ar:TBD)
QA/QC data (L2/L3 common QA data)	**Ancillary Data Characteristic**	Ch		"STD": used standard data, "SUB": used substitution data		the products using ancillary data only Worst value is set if there are several geophysical parameters are included in this product.
	AMSR Product Ver.	Ch				the products using AMSR products only
Calibration Table	**Vicarious_Calibration_Table**	Ch	27			Vicarious Calibration Table file name It is not vicarious calibration, if it is NULL.

8.5.3 Common Part(Body)

Not assigned

8.5.4 Specific Part(Body)

(1) Cloud Property : Water Cloud by Reflection Method (work_r_w)

nx : Number of pixels per line("lon_nseg" in Global Attributes)
ny : Number of lines("lat_nseg" in Global Attributes)
p: Number of pixels per segment (="x_segsize" * "y_segsize" of Segment Information in Global Attributes

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
work_r_w [geophysical parameter]	**Cloud Effective Particle Radius (Water Cloud by Reflection Method)**	**CLER_w_r**	ny[lat_n]	nx[lon_n]	p[pxls]		Short	Cloud Effective Particle Radius (Water Cloud by Reflection Method)	(0, 10000)	um	-1000: invalid value
	CLER_w_r Scale Factor	**CLER_w_r_scf**	(1)				Real	Scale Factor			constant : 0.01
	Cloud Optical Thickness (Water Cloud by Reflection Method)	**CLOP_w_r**	ny[lat_n]	nx[lon_n]	p[pxls]		Short	Cloud Optical Thickness (Water Cloud by Reflection Method)	(0, 20000)	no unit	-1000: invalid value
	CLOP_w_r Scale Factor	**CLOP_w_r_scf**	(1)				Real	Scale Factor			constant : 0.01
	Cloud Top Height (Water Cloud by Reflection Method)	**CLHT_w_r**	ny[lat_n]	nx[lon_n]	p[pxls]		Short	Cloud Top Height (Water Cloud by Reflection Method)	(-32768, 5000)	km	-1000: invalid value
	CLHT_w_r Scale Factor	**CLHT_w_r_scf**	(1)				Real	Scale Factor			constant : 0.01
	Cloud Top Temperature (Water Cloud by Reflection Method)	**CLTT_w_r**	ny[lat_n]	nx[lon_n]	p[pxls]		Short	Cloud Top Temperature (Water Cloud by Reflection Method)	(0, 32000)	K	-1000: invalid value
	CLTT_w_r Scale Factor	**CLTT_w_r_scf**	(1)				Real	Scale Factor			constant : 0.01
	Cloud Liquid Water Path (Water Cloud by Reflection Method)	**CLWP_w_r**	ny[lat_n]	nx[lon_n]	p[pxls]		Short	Cloud Liquid Water Path (Water Cloud by Reflection Method)	(0, 32767)	g/m^2	-1000: invalid value 32767:maximum value of short
	CLWP_w_r Scale Factor	**CLWP_w_r_scf**	(1)				Real	Scale Factor			constant : 0.1
	Cloud Top Pressure (Water Cloud by Reflection Method)	**CLTP_w_r**	ny[lat_n]	nx[lon_n]	p[pxls]		Short	Cloud Top Pressure (Water Cloud by Reflection Method)	(-32768, 20000)	hPa	-1000: invalid value
	CLTP_w_r Scale Factor	**CLTP_w_r_scf**	(1)				Real	Scale Factor			constant : 0.1
	Quality Flag	**qf**	ny[lat_n]	nx[lon_n]	p[pxls]		Short	Quality Flag			0: error. singular matrix in-sub.ludcmp- (0=normal / 1=error) 1: poor.ktt.gt.ntrial (0=enough / 1=poor) 2: unexpected CLTT (0=expected / 1=unexpected) 3: unexpected CLER (0=expected / 1=unexpected) 4: unexpected CLOP (0=expected / 1=unexpected) 5: unexpected CLHT (0=expected / 1=unexpected) 6: unexpected CLWP (0=expected / 1=unexpected) 7: ancillary data type (0=JMA objective analysis data, 1=Climatology data) 8: unexpected CLTP (0=expected / 1=unexpected) 9: cirrus flag (0=not cirrus / 1=cirrus)
	Brightness Temperature of ch35	**Tbb_ch35**	ny[lat_n]	nx[lon_n]	p[pxls]		Short	Brightness Temperature of ch35	(0, 32767)	K	-1000: invalid value 32767:maximum value of short
	Tbb_ch35 Scale Factor	**Tbb_ch35_scf**	(1)				Real	Scale Factor			constant : 0.01
	Method of Analysis	**method**	(1)				Ushort	Method of Analysis	(1, 3)		
	Non-absorption ch. Number	**ch_nabs**	(1)				Ushort	Non-absorption ch. Number	(1, 36)		
	Absorption ch. Number	**ch_abs**	(1)				Ushort	Absorption ch. Number	(1, 36)		
	Thermal ch. Number	**ch_tml**	(1)				Ushort	Thermal ch. Number	(1, 36)		
	Ground Albedo Coefficient (ABS ch.)	**coef_galb_abs**	(1)				Real	Ground Albedo Coefficient (ABS ch.)	(0.0, 1.0)		
	Ground Albedo Coefficient (TML ch.)	**coef_galb_tml**	(1)				Real	Ground Albedo Coefficient (TML ch.)	(0.0, 1.0)		
	Ground Surface Reflection Correction	**gnd_sf_correc**	(1)				Ch	Ground Surface Reflection Correction			"Y" or "N"
	Ground Thermal Correction	**gnd_tml_correc**	(1)				Ch	Ground Thermal Correction			"Y" or "N"
	Cloud Thermal Correction	**cl_tml_correc**	(1)				Ch	Cloud Thermal Correction			"Y" or "N"
	Atmosphere Thermal Correction (ABS. ch.)	**at_tml_correc_abs**	(1)				Ch	Atmosphere Thermal Correction (ABS. ch.)			"Y" or "N"
	Atmosphere Thermal Correction (TML. ch.)	**at_tml_correc_tml**	(1)				Ch	Atmosphere Thermal Correction (TML. ch.)			"Y" or "N"
	Name of Grid System Definition File	**fn_gsys**	(1)				Ch	Name of Grid System Definition File			
	Name of Ground Albedo File	**fn_galb**	(1)				Ch	Name of Ground Albedo File			
	Name of LUT for Non-absorption ch.	**fn_LUT_nabs**	(1)				Ch	Name of LUT for Non-absorption ch.			
	Name of LUT for Absorption ch.	**fn_LUT_abs**	(1)				Ch	Name of LUT for Absorption ch.			
	Name of LUT for Transmissivities Reflec. of Non-abs and ABS.	**fn_LUT_trans**	(1)				Ch	Name of LUT for Transmissivities Reflec. of Non-abs and ABS.			
	Name of LUT for Transmissivities of Thermal	**fn_LUT_trans_tml**	(1)				Ch	Name of LUT for Transmissivities of Thermal			
	Name of LUT for Transmissivities of Thermal2	**fn_LUT_trans_tml2**	(1)				Ch	Name of LUT for Transmissivities of Thermal2			

	Name of LUT for Active Atmosphere Correction (ABS ch.)	**fn_LUT_act_abs**	(1)				Ch	Name of LUT for Active Atmosphere Correction (ABS ch.)			
	Name of LUT for Active Atmosphere Correction (TML ch.)	**fn_LUT_act_tml**	(1)				Ch	Name of LUT for Active Atmosphere Correction (TML ch.)			
	Name of Response Data for the Basic Sensor used by Making Tables.	**fn_RD_bsensor**	(1)				Ch	Name of Response Data for the Basic Sensor used by Making Tables.			
	Name of Response Data for the Corresponding Sensor.	**fn_RD_csensor**	(1)				Ch	Name of Response Data for the Corresponding Sensor.			
	Number of Total Pixels	**n_total_pixel**	(1)				Long	Number of Total Pixels			
	Re-analysis Ratio	**r_reanalysis**	(1)				Real	Re-analysis Ratio	(0.0, 100.0)	%	
	Error Ratio	**r_error**	(1)				Real	Error Ratio	(0.0, 100.0)	%	

(2) Cloud Property : Ice Cloud by Reflection Method (work_r_i)

nx : Number of pixels per line("lon_nseg" in Global Attributes)
ny : Number of lines("lat_nseg" in Global Attributes)
p: Number of pixels per segment (="x_segsize" * "y_segsize" of Segment Information in Global Attributes

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
work_r_i [geophysical parameter]	**Cloud Optical Thickness (Ice Cloud by Reflection Method)**	**CLOP_i_r**	ny[lat_n]	nx[lon_n]	p[pxls]		Short	Cloud Optical Thickness (Ice Cloud by Reflection Method)	(0, 20000)	no unit	-1000: invalid value
	Scale Factor	**scf**	(1)				Real	Scale Factor			constant : 0.01
	Quality Flag	**qf**	ny[lat_n]	nx[lon_n]	p[pxls]		Short	Quality Flag			0: error. singular matrix in-sub.ludcmp- (0=normal / 1=error) 1: poor.ktt.gt.ntrial (0=enough / 1=poor) 2: unexpected CLTT (0=expected / 1=unexpected) 3: unexpected CLER (0=expected / 1=unexpected) 4: unexpected CLOP (0=expected / 1=unexpected) 5: unexpected CLHT (0=expected / 1=unexpected) 6: unexpected CLWP (0=expected / 1=unexpected) 7: ancillary data type (0=JMA objective analysis data, 1=Climatology data) 8: unexpected CLTP (0=expected / 1=unexpected) 9: cirrus flag (0=not cirrus / 1=cirrus)
	Method of Analysis	**method**	(1)				Ushort	Method of Analysis	(1, 3)		
	Non-absorption ch. Number	**ch_nabs**	(1)				Ushort	Non-absorption ch. Number	(1, 36)		
	Absorption ch. Number	**ch_abs**	(1)				Ushort	Absorption ch. Number	(1, 36)		
	Thermal ch. Number	**ch_tml**	(1)				Ushort	Thermal ch. Number	(1, 36)		
	Ground Albedo Coefficient (ABS ch.)	**coef_galb_abs**	(1)				Real	Ground Albedo Coefficient (ABS ch.)	(0.0, 1.0)		
	Ground Albedo Coefficient (TML ch.)	**coef_galb_tml**	(1)				Real	Ground Albedo Coefficient (TML ch.)	(0.0, 1.0)		
	Ground Surface Reflection Correction	**gnd_sf_correc**	(1)				Ch	Ground Surface Reflection Correction			"Y" or "N"
	Ground Thermal Correction	**gnd_tml_correc**	(1)				Ch	Ground Thermal Correction			"Y" or "N"
	Cloud Thermal Correction	**cl_tml_correc**	(1)				Ch	Cloud Thermal Correction			"Y" or "N"
	Atmosphere Thermal Correction (ABS. ch.)	**at_tml_correc_abs**	(1)				Ch	Atmosphere Thermal Correction (ABS. ch.)			"Y" or "N"
	Atmosphere Thermal Correction (TML. ch.)	**at_tml_correc_tml**	(1)				Ch	Atmosphere Thermal Correction (TML. ch.)			"Y" or "N"
	Name of Grid System Definition File	**fn_gsys**	(1)				Ch	Name of Grid System Definition File			
	Name of Ground Albedo File	**fn_galb**	(1)				Ch	Name of Ground Albedo File			
	Name of LUT for Non-absorption ch.	**fn_LUT_nabs**	(1)				Ch	Name of LUT for Non-absorption ch.			
	Name of LUT for Absorption ch.	**fn_LUT_abs**	(1)				Ch	Name of LUT for Absorption ch.			
	Name of LUT for Transmissivities Reflec. of Non-abs and ABS.	**fn_LUT_trans**	(1)				Ch	Name of LUT for Transmissivities Reflec. of Non-abs and ABS.			
	Name of LUT for Transmissivities of Thermal	**fn_LUT_trans_tml**	(1)				Ch	Name of LUT for Transmissivities of Thermal			
	Name of LUT for Transmissivities of Thermal2	**fn_LUT_trans_tml2**	(1)				Ch	Name of LUT for Transmissivities of Thermal2			
	Name of LUT for Active Atmosphere Correction (ABS ch.)	**fn_LUT_act_abs**	(1)				Ch	Name of LUT for Active Atmosphere Correction (ABS ch.)			

	Name of LUT for Active Atmosphere Correction (TML ch.)	**fn_LUT_act_tml**	(1)				Ch	Name of LUT for Active Atmosphere Correction (TML ch.)			
	Name of Response Data for the Basic Sensor used by Making Tables.	**fn_RD_bsensor**	(1)				Ch	Name of Response Data for the Basic Sensor used by Making Tables.			
	Name of Response Data for the Corresponding Sensor.	**fn_RD_csensor**	(1)				Ch	Name of Response Data for the Corresponding Sensor.			
	Number of Total Pixels	**n_total_pixel**	(1)				Long	Number of Total Pixels			
	Re-analysis Ratio	**r_reanalysis**	(1)				Real	Re-analysis Ratio	(0.0, 100.0)	%	
	Error Ratio	**r_error**	(1)				Real	Error Ratio	(0.0, 100.0)	%	

(3) Cloud Property : Ice Cloud by Emission Method (work_e)

nx : Number of pixels per line("lon_nseg" in Global Attributes)
ny : Number of lines("lat_nseg" in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
work_e [geophysical parameter]	**Cloud Effective Radius of Cirrus Particles (Ice Cloud by Emission Method)**	**CLER_i_e**	ny[lat_n]	nx[lon_n]			Short	Cloud Effective Radius of Cirrus Particles (Ice Cloud by Emission Method)	(0, 32767)	um	-1000: invalid value 32767:maximum value of short
	Re Scale Factor	**re_scf**	(1)				Real	Scale Factor for CLER_i_e			constant : 0.01
	Cloud Optical Thickness of Cirrus (Ice Cloud by Emission Method)	**CLOP_i_e**	ny[lat_n]	nx[lon_n]			Short	Cloud Optical Thickness of Cirrus (Ice Cloud by Emission Method	(0, 1000)	no unit	-1000: invalid value
	Opt Scale Factor	**opt_scf**	(1)				Real	Scale Factor for CLOP_i_e			constant : 0.01
	Cloud Top Temperature of Cirrus (Ice Cloud by Emission Method)	**CLTT_i_e**	ny[lat_n]	nx[lon_n]			Short	Cloud Top Temperature of Cirrus (Ice Cloud by Emission Method	(0, 27300)	K	-1000: invalid value
	Cltp Scale Factor	**cltp_scf**	(1)				Real	Scale Factor for CLTT_i_e			constant : 0.01

(4) Aerosol Property (work_ar)

nx : Number of pixels per line("lon_nseg" in Global Attributes)
ny : Number of lines("lat_nseg" in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
work_ar	**Aerosol optical thickness (AROP)**	**AROP**	ny[lat_n]	nx[lon_n]			Short	Aerosol optical thickness at 500 nm	(0, 5000)	no unit	-2000,-999: invalid value
	AROP scale factor	**AROP_scf**	(1)				Real	AROP Scale Factor			constant : 0.001
	Aerosol Angstrom exponent (ARAE)	**ARAE**	ny[lat_n]	nx[lon_n]			Short	Aerosol Angstrom exponent	(-100, 5000)	no unit	-2000,-999: invalid value
[geophysical parameter]	**ARAE scale factor**	**ARAE_scf**	(1)				Real	ARAE Scale Factor			constant : 0.001

8.6 Minimum Reflectance Data (Rmin)

Minimum reflectance data are computed from atmospheric segment data for certain period. Minimum reflectance pixel in each segment is selected and the value is stored in this file. Grid definition is same as atmospheric segment.

Table 8.6-1 List of minimum reflectance

No.	Classification	Product Code	Description
1	Minimum reflectance	Rmin(4days)	Minimum reflectance from 4 days
2		Rmin(28days)	Minimum reflectance from 28 days

8.6.1 Generic Header

See chapter 2 for the detail. Some items related this products are shown below.

data name	value
Title	"GLI Level-2 work file"
Data type	"segment"
Data Sub-type	Product Code (see Table 8.6-1)
Orbit Number	-1 (-1 means that this data has no meaning)
Upper Left Latitude	90.0
Upper Left Longitude	-180.0
Upper Right Latitude	90.0
Upper Right Longitude	179.75
Lower Left Latitude	-90.0
Lower Left Longitude	-180.0
Lower Right Latitude	-90.0
Lower Right Longitude	179.75
Map Projection	"EQR"

8.6.2 Specific Header

category	data name	type	count	contents	const.	remarks	source of data: from input data	source of data: current process
Processing	**Number of Channels**	Ch	1	25		the number of including GLI channels(daytime:32ch.,nighttime:7ch.)		O: from CIF
Channel	**Processing Channel**	Ch		ex.)1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 24 25 26 27		Including GLI channel No.(daytime:1-19,24-36, nighttime:30-36)		O: from CIF
Data Time	**Start Year**	Short	1			Year of start time	O	O(selection)
	Start Day	Short	1			Day-of-year of start time(January 1 is 0)	O	O(selection)
	Start Millisec	Long	1			Milliseconds-of-day of start time	O	O(selection)
	End Year	Short	1			Year of end time	O	O(selection)
	End Day	Short	1			Day-of-year of end time(January 1 is 0)	O	O(selection)
	End Millisec	Long	1			Milliseconds-of-day of end time	O	O(selection)
Segment	**Latitude Units**	Ch	14	"degrees North"	const.	Units used for all latitude values in this product	O	
Information	**Longitude Units**	Ch	13	"degrees East"	const.	Units used for all longitude values in this product	O	
	Storing Order of Latitude direction	Ch	19	"From North to South"	const.	Storing Order of Latitude direction	O	
	Storing Order of Longitude direction	Ch	17	"From West to East"	const.	Storing Order of Longitude direction	O	
	Segment Interval	Ushort	1	ex.) 4		Segment grid interval can be obtained by 1/N degree. When N=4(default), the interval is 1/4 = 0.25 degree. This value is derived from L2A_OA data.	O	
	lat_nseg	Long	1			721(when 0.25 degree interval)	O	
	lon_nseg	Long	1			1440(when 0.25 degree interval in nighttime), 240(when 0.25 degree interval in daytime for each area)	O	
	total_nseg	Long	1			1038240(when 0.25 degree interval in nighttime), 173040(when 0.25 degree interval in daytime for each area)	O	
	Cloud Shadow Flag	Ushort	1			The existence of the cloud shadow flag decision processing(0:No Exist ,		O: from Makefile
	Solar Zenith Angle for storing	Real	1	ex.)70		Solar Zenith Angle for storing		O(selection)
	Sat. Zenith Angle for storing	Real	1	ex.)90		Satellite Zenith Angle for storing		O(selection)
	Referenced Channel	Short	1	ex.)5		Referenced Channel No.		O(selection)
Calibration Table	**Vicarious_Calibration_Table**	Ch	27			Vicarious Calibration Table file name. only Rmin(4days) It is not vicarious calibration, if it is NULL.		O: from CIF

8.6.3 Common Part(Body)

Not assigned

8.6.4 Specific Part (Body)

nx : Number of pixels per line("lon_nseg" of Segment Information in Global Attributes
ny : Number of lines per scene("lat_nseg" of Segment Information in Global Attributes

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
Min. Refl. [Segment Grid]	Minimum Reflectance ch.1	**Rmin_ch1**	ny[lat_n]	nx[lon_n]			Ushort	Minimum Reflectance ch.1	(0, 1000)	permil	daytime only
	Minimum Reflectance ch.2	**Rmin_ch2**	ny[lat_n]	nx[lon_n]			Ushort	Minimum Reflectance ch.2	(0, 1000)	permil	daytime only
	Minimum Reflectance ch.3	**Rmin_ch3**	ny[lat_n]	nx[lon_n]			Ushort	Minimum Reflectance ch.3	(0, 1000)	permil	daytime only
	Minimum Reflectance ch.4	**Rmin_ch4**	ny[lat_n]	nx[lon_n]			Ushort	Minimum Reflectance ch.4	(0, 1000)	permil	daytime only
	Minimum Reflectance ch.5	**Rmin_ch5**	ny[lat_n]	nx[lon_n]			Ushort	Minimum Reflectance ch.5	(0, 1000)	permil	daytime only
	Minimum Reflectance ch.6	**Rmin_ch6**	ny[lat_n]	nx[lon_n]			Ushort	Minimum Reflectance ch.6	(0, 1000)	permil	daytime only
	Minimum Reflectance ch.7	**Rmin_ch7**	ny[lat_n]	nx[lon_n]			Ushort	Minimum Reflectance ch.7	(0, 1000)	permil	daytime only
	Minimum Reflectance ch.8	**Rmin_ch8**	ny[lat_n]	nx[lon_n]			Ushort	Minimum Reflectance ch.8	(0, 1000)	permil	daytime only
	Minimum Reflectance ch.9	**Rmin_ch9**	ny[lat_n]	nx[lon_n]			Ushort	Minimum Reflectance ch.9	(0, 1000)	permil	daytime only
	Minimum Reflectance ch.10	**Rmin_ch10**	ny[lat_n]	nx[lon_n]			Ushort	Minimum Reflectance ch.10	(0, 1000)	permil	daytime only
	Minimum Reflectance ch.11	**Rmin_ch11**	ny[lat_n]	nx[lon_n]			Ushort	Minimum Reflectance ch.11	(0, 1000)	permil	daytime only
	Minimum Reflectance ch.12	**Rmin_ch12**	ny[lat_n]	nx[lon_n]			Ushort	Minimum Reflectance ch.12	(0, 1000)	permil	daytime only
	Minimum Reflectance ch.13	**Rmin_ch13**	ny[lat_n]	nx[lon_n]			Ushort	Minimum Reflectance ch.13	(0, 1000)	permil	daytime only
	Minimum Reflectance ch.14	**Rmin_ch14**	ny[lat_n]	nx[lon_n]			Ushort	Minimum Reflectance ch.14	(0, 1000)	permil	daytime only
	Minimum Reflectance ch.15	**Rmin_ch15**	ny[lat_n]	nx[lon_n]			Ushort	Minimum Reflectance ch.15	(0, 1000)	permil	daytime only
	Minimum Reflectance ch.16	**Rmin_ch16**	ny[lat_n]	nx[lon_n]			Ushort	Minimum Reflectance ch.16	(0, 1000)	permil	daytime only
	Minimum Reflectance ch.17	**Rmin_ch17**	ny[lat_n]	nx[lon_n]			Ushort	Minimum Reflectance ch.17	(0, 1000)	permil	daytime only
	Minimum Reflectance ch.18	**Rmin_ch18**	ny[lat_n]	nx[lon_n]			Ushort	Minimum Reflectance ch.18	(0, 1000)	permil	daytime only
	Minimum Reflectance ch.19	**Rmin_ch19**	ny[lat_n]	nx[lon_n]			Ushort	Minimum Reflectance ch.19	(0, 1000)	permil	daytime only
	Minimum Reflectance ch.24	**Rmin_ch24**	ny[lat_n]	nx[lon_n]			Ushort	Minimum Reflectance ch.24	(0, 1000)	permil	daytime only
	Minimum Reflectance ch.25	**Rmin_ch25**	ny[lat_n]	nx[lon_n]			Ushort	Minimum Reflectance ch.25	(0, 1000)	permil	daytime only
	Minimum Reflectance ch.26	**Rmin_ch26**	ny[lat_n]	nx[lon_n]			Ushort	Minimum Reflectance ch.26	(0, 1000)	permil	daytime only
	Minimum Reflectance ch.27	**Rmin_ch27**	ny[lat_n]	nx[lon_n]			Ushort	Minimum Reflectance ch.27	(0, 1000)	permil	daytime only
	Minimum Reflectance ch.28	**Rmin_ch28**	ny[lat_n]	nx[lon_n]			Ushort	Minimum Reflectance ch.28	(0, 1000)	permil	daytime only
	Minimum Reflectance ch.29	**Rmin_ch29**	ny[lat_n]	nx[lon_n]			Ushort	Minimum Reflectance ch.29	(0, 1000)	permil	daytime only
	Satellite zenith angle(theta)	**sat_zenith**	ny[lat_n]	nx[lon_n]			Ushort	Satellite Zenith Angle	(0, 18000)		scale factor=0.01(correct value=storing value*0.01
	Solar zenith angle (theta0)	**sun_zenith**	ny[lat_n]	nx[lon_n]			Ushort	Solar Zenith Angle	(0, 18000)		scale factor=0.01(correct value=storing value*0.01
	Relative azimuth angle(delta-phi)	**rel_azimuth**	ny[lat_n]	nx[lon_n]			Ushort	Relative Azimuth Angle	(0, 18000)		scale factor=0.01(correct value=storing value*0.01
	Observation time	**scan_time**	ny[lat_n]	nx[lon_n]			Double	Scan Time		day(MJD)	MJD expression. hour/min./sec. is expressed as decimal fraction of day.
Data Exist Flag	Data exist flag	**exist_flag**	ny[lat_n]	nx[lon_n]			Byte	Data Exist Flag	(0,1)		0:no data is stored, 1:data exist in this Minimum Refrectance
Cloud Flag Dataset	cloud flag data	**cloud_data**	ny[lat_n]	nx[lon_n]			Ulong	Cloud Flag Data			cloud flag data
Reference Data	Scan time in calendar format	**scan_time_cal**	ny[lat_n]	nx[lon_n]	length of strings(22)		Ch	Scan time in calendar format			UTC expression.
	Minimum Reflectance pixel address	**Rmin_address**	ny[lat_n]	nx[lon_n]			Ushort	Minimum Reflectance Pixel address	(0,24)		0-24:select pixel address
Land-Ocean Flag	land value	**land_value**					Byte	Land pixel value			1(const.) the value that means 'Land
	water value	**water_value**					Byte	Water pixel value			0(const.) the value that means 'Water
	land/ocean flag	**L0_flag**	ny[lat_n]	nx[lon_n]			Byte	Land-Water flag image	(0, 1)		

8.7 Ice/Water Flag Data

Ice / Water flag data are computed to give a cloud phase information to pixel by pixel analysis of cloud property.

Table 8.7-1 List of ice/water flag

No.	Classification	Product Code	Description
1	Ice/Water flag	Ice/Water flag	Ice cloud / Water cloud discrimination

8.7.1 Generic Header

See chapter 2 for the detail. Some items related this products are shown below.

data name	value
Title	"GLI Level-2 work file"
Data type	"scene 1km"
Data Sub-type	Product Code (see Table 8.7-1)
Orbit Number	1-57
Upper Left Latitude	* (appropriate value is set, depending on the scene)
Upper Left Longitude	*
Upper Right Latitude	*
Upper Right Longitude	*
Lower Left Latitude	*
Lower Left Longitude	*
Lower Right Latitude	*
Lower Right Longitude	*
Map Projection	"N/A"

8.7.2 Specific Header

category	data name	type	count	contents	const.	remarks	source of data: Level-1B	source of data: this process
Data Time	**Start Year**	Short	1			Year of the "Start Time"	O	
	Start Day	Short	1			Day-of-Year of the "Start Time"(Jan. 1 is defined as 0)	O	
	Start Millisec	Long	1			Milliseconds-of-day of the "Start Time"	O	
	End Year	Short	1			Year of the "End Time"	O	
	End Day	Short	1			Day-of-Year of the "End Time"(Jan. 1 is defined as 0)	O	
	End Millisec	Long	1			Milliseconds-of-day of the "End Time"	O	
Data Quality	**Pixels per Scan Line**	Long	1			Number of pixels per scan line(This depends on the resolution, 1km/250m/2km)		O
	Number of Scan Lines	Long	1			Number of scan lines in the scene (This is not number of lines)	O	
	Lines per Scan	Long	1	12, 48		Number of lines per scan. 12:1km, 48:250m	O	
Calibration Table	**Vicarious_Calibration_Table**	Ch	27			Vicarious Calibration Table file name. It is not vicarious calibration, if it is NULL.		O

200A

8.7.3 Common Part(Body)

Not assigned

8.7.4 Specific Part(Body)

p : Number of pixels per line("Pixels per Scan Line" of Data Quality in Global Attributes)
l : Number of lines per scene(="Number of Scan Lines" x "Lines per Scan" of Data Quality in Global Attributes)

Vgroup name [VG class name]	Data name	SD name	1st dimension [dim. name]	2nd dimension [dim. name]	3rd dimension [dim. name]	4th dimension [dim. name]	type	attribute			remarks
								long_name	valid_range	units	
Ice/Water Flag [geophysical parameter]	**Ice Water Flag**	**iw_flag**	l [lines]	p [pixels]			Short	Ice Water Flag			-1: invalid value, 0: water cloud, 1: ice cloud

8.8 Level-2A_LC Workfile1, 2 (L2ALC_WK1, 2)

These data are temporary generated to calculate L2A_LC. LTSK10 performs cloud free composite day by day. But there are 2 criteria for composite, NDVI and scan geometry angle. Although composite period is 16 days, we can store only 2 candidates because its huge file size, which are called Level-2A_LC Workfile 1 and 2.

The data format is exactly same as Level-2A_LC (see section 3.3).

Table 8.8-1 List of Level-2A_LC Workfile

No.	Classification	Product Code	Description
1	Level-2A_LC Workfile	L2ALC_WK1	Workfile for cloud free composite image (primary candidate)
2		L2ALC_WK2	Workfile for cloud free composite image (secondary candidate)

Appendix

A. Differences between ver.0.0 and ver.1.00

ver.	Date	Page / Section No.	Update contents
0.0	Oct. 7,1999	---	First edition
1.00	Apr.17, 2000	p.1.4-3	granule ID rule is updated to refer the latest draft version.
		p.1.4-5	Add Table 1.4-1 (Product Code List for Product File)
		p.1.5-1	Add HDF data type definition for C and Fortran 77 to the bottom table
		p.2-2	source of data of "Map Projection" : Add remark for L2Map
		p.3.2-3	Add "Pixel Offset for L2A_OA" and "Line Offset for L2A_OA"
		p.3.2-3	Revised some remarks
		p.3.2-4	Add "TS Start Time #1", "TS End Time #1", "TS Center Time #1"
		p.3.2-4	Ocean Table Lines/Pixels : Add remarks
		p.3.2-5	Pixel No.: delete 1st dimension(lines).
		p.3.2-5	Line No.: delete 2nd dimension(pixels)
		p.3.2-6	Cloud Flag Data: type: Ushort -> Ulong
		p.3.2-6	Deep Space Data is separated to Deep Space Data for VNIR, SWIR, SWIR 2km, and MTIR.
		p.3.2-7	Change data type of "GPS Navigation Time": Real -> Dobule
		p.3.2-8	"land_value", "water_value", "land/ocean flag" Add long name
		p.3.2-8	Absolute Calibration Table is changed caused by Level-1B product specification.
		p.3.3-1	Revised area No. definition in Fig.3.3-1
		p.3.3-3	"Area Numger" -> "Area Number"
		p.3.3-4	Cloud Flag Data: type: Ushort -> Ulong
		p.3.3-4	Absolute Calibration Table is changed caused by Level-1B product specification.
		p.3.3-5	Change Table No. : 1-1 -> 3.3-1 Delete cloud flag bit configuration (see 4.2.4)
		p.4.2-4	Change V group name : "Scan-Line Attribute" -> "Scan-Line Attributes"
		p.4.2-4	Add "Scan start time"
		p.4.2-4	Change data type of "miss_qual" : Ushort -> Byte
		p.4.2-4	Add : scan_start, l1b_blk_int, l1b_blk_num, l1b_pos_samp, l1b_pos_line, l1b_bound, l1b_blk_lat, l1b_blk_lon, l1b_blk_affin
		p.4.2-4	Delete : pxl, row, lat, lon, block
		p.4.2-4	Change valid range value of "opr_mode": "0,4" -> "0,15"
		p.4.2-5	Change SD name of cloud flag : "clflg" -> "cloud_data" To unify the name through CLFLG_p, L2A_OA, L2A_LC, PGCI and atmospheric segment data
		p.4.2-5	Update cloud flag table, Table 4.2-2 : 16bit -> 32bit
		p.4.3-1	Delete CLTY from Table 4.3-1
		p.4.3-5	Changed SD name : "RALF" -> "ARAE", "RTAUA" -> "AROP"
		p.4.3-5	Add new SD : "ARAE_scf", "AROP_scf"
		p.4.3-5	Changed data type of "ARAE", "AROP" : REAL -> Short
		p.4.3-5, 7,10,13	Add remarks (-1000.0: invalid value)
		p.4.3-14	Changed unit of "CLWP_w_r" : "g/cm^3" -> "g/m^2"
		p.4.3-15	Delete CLTY
		p.4.4-4	Change V group name : "Scan-Line Attribute" -> "Scan-Line Attributes"
		p.4.4-4	Add "Scan start time"
		p.4.4-4	Change data type of "miss_qual" : Ushort -> Byte
		p.4.4-4	Add : scan_start, l1b_blk_int, l1b_blk_num, l1b_pos_samp, l1b_pos_line, l1b_bound, l1b_blk_lat, l1b_blk_lon, l1b_blk_affin
		p.4.4-4	Delete : pxl, row, lat, lon, block
		p.4.4-4	Change valid range value of "opr_mode": "0,4" -> "0,15"

		p.4.4-6	Update Table 4.4-2, QF_OC
		p.4.4-7	Revised dimension size of "scf", "intercept" : "(4)" -> "(1)"
		p.4.4-7	Add Table 4.4-3, QF_ST
		p.4.5-3	Add "Pixel Offset for L2A_OA" and "Line Offset for L2A_OA"
		p.4.5-3	Revised some remarks
		p.4.5-3	Add "TS Start Time #1", "TS End Time #1", "TS Center Time #1"
		p.4.5-5	Pixel No.: delete 1st dimension(lines).
		p.4.5-5	Line No.: delete 2nd dimension(pixels)
		p.4.5-7	Update Table 4.4-2, QF_OC
		p.4.5-8	Add Table 4.4-3, QF_ST
		p.4.6-1	Revised area No. definition in Fig.4.6-1
		p.4.6-5	Revised attribute name of "VGI": "Area Number" -> "Zone Number". (table is separated to 2 for "ACLC" and "VGI")
		p.4.6-7	Revised Japanese title to English one
		p.4.7-1	Revised zone No. definition in Fig.4.7-1
		p.4.7-2	Add zone No. to middle latitude region's table
		p.4.7-3	Revised attribute name : "Area Number" -> "Zone Number".
		p.4.7-5	Revised product name : SNGI_p -> SNGI
		p.4.7-5	Add new SD : "n6s", "pcn6s"
		p.4.7-5	Changed SD name : "f_grn_*" -> "fq_grn_*"
		p.4.7-5	Revised data type of "rs_p" and "soot" : Real -> Short Add "rs_sf", "soot_sf" (sf: scale factor)
		p.4.8-4	Change V group name : "Scan-Line Attribute" -> "Scan-Line Attributes"
		p.4.8-4	Add "Scan start time"
		p.4.8-4	Change data type of "miss_qual" : Ushort -> Byte
		p.4.8-4	Add : scan_start, l1b_blk_int, l1b_blk_num, l1b_pos_samp, l1b_pos_line, l1b_bound, l1b_blk_lat, l1b_blk_lon, l1b_blk_affin
		p.4.8-4	Delete : pxl, row, lat, lon, block
		p.4.8-4	Change valid range value of "opr_mode": "0,4" -> "0,15"
		p.4.8-5	Add new SD : "n6s", "pcn6s"
		p.4.8-5	Changed SD name : "f_grn_*" -> "fq_grn_*"
		p.4.8-5	Revised data type of "rs_p" and "soot" : Real -> Short Add "rs_sf", "soot_sf" (sf: scale factor)
		Chapter 5	Insert a specification of Level-2Map data. Later chapter is shifted.
		p.6.2-1	Delete CLTY from Table 6.2-1
		p.6.2-1	Revised Fig.6.2-1
		p.6.2-4	Change valid range of "row_num" : 720 -> 721
		p.6.2-6	Delete CLTY
		p.6.2-7	Revised configuration of CLFR
		p.6.3-5,6,7	Revised notation on the table "n: Number of bins ..." -> "n: Sum of the number of bins ..." "n2: Number of bins ..." -> "n: Sum of the number of bins ..."
		p.6.3-5	Change data type of "flagsets_oc", "flagsets_st" : Long -> Double
		p.6.3-7	Delete "chlor_a_median" from CS
		p.6.3-7	Delete "SST_day_maximum", "SST_night_maximum" from ST
		p.6.4-1	Revised Fig.6.4-1. PS area gets wider. area No. is defined
		p.6.4-2	Revised Upper and Lower latitude value of area 2 and 3
		p.6.4-4	Define dimension size and valid range in relation to PS projection
		Chapter 7	Insert a title of Level-3 STA Map data. The contents is TBD. Later chapter is shifted.
		p.8.1-1	Revised the list of work file.
		p.8.2-8	Reversed dimension order, nx and ny : nx - ny -> ny - nx
		p.8.2-8	Revised data type of "cloud_data": Ushort -> Ulong
		p.8.2-8	"land_value", "water_value", "land/ocean flag" Add long name
		p.8.2-8	Absolute Calibration Table is changed caused by Level-1B product specification.
		p.8.3-7	Absolute Calibration Table is changed caused by Level-1B

			product specification.
		p.8.3-8	Revised data type of "cloud_data": Ushort -> Ulong
		p.8.3-8	"land_value", "water_value", "land/ocean flag" Add long name
		p.8.4	Add "8.4 Scene Connected L1B Data"
		p.8.5	Add "8.5 Atmosphere Daily Segment Analysis Data"
2.00	Jun.11, 2004	p.4.6-6	Revised data type of “rel_azimuth”: short -> Ushort Change valid range of " rel_azimuth " : 18000 -> 36000