

## ReadMe for the Northern Polar Region Cryosphere Data (NPRCD)

This is ReadMe file for the NPRCD. The NPRCD data files contain snow and ice data suites derived from Global Imager (GLI) and Advanced Microwave Scanning Radiometer (AMSR) projected on the same EASE-Grid (5km resolution) with the same spatial coverage covering the whole snow and ice cover extents in the Northern Hemisphere. Data are stored in HDF format (and gzipped). The definition of file naming convention and SD array names are described below.

A. Filename: GLISSSSSS\_EEEEEE\_NPROD16\_CTSKM\_ES5KM\_300.hdf

where *SSSSSS*: start date of observation

*EEEEEE*: end date of observation

For example the following file name denotes the snow and ice data averaged over 16-day from April 7 to 22, 2003 with the spatial resolution of 5km on EASE-Grid (ES5KM). The last three digits (300) just indicate a version number of this product (meaning the GLI products Ver.3.0).

(E.g.) GLI030407\_030422\_NPROD16\_CTSKM\_ES5KM\_300.hdf

### B. SD array definition:

All SD data listed below have the same dimensions, i.e., 2650 pixels by 2200 lines (2 dimensions).

Data name	SD name	type	units	scale
16-day average TOA reflectance at ch05	ch05_460nm_ave	int16	%	0.01
16-day average TOA reflectance at ch08	ch08_545nm_ave	int16	%	0.01
16-day average TOA reflectance at ch13	ch13_678nm_ave	int16	%	0.01
16-day average TOA reflectance at ch19	ch19_865nm_ave	int16	%	0.01
16-day average TOA reflectance at ch24	ch24_1050nm_ave	int16	%	0.01
16-day average TOA reflectance at ch26	ch26_1240nm_ave	int16	%	0.01
16-day average TOA reflectance at ch27	ch27_1380nm_ave	int16	%	0.01
16-day average TOA reflectance at ch28	ch28_1640nm_ave	int16	%	0.01
16-day average TOA reflectance at ch35	ch35_10800nm_ave	int16	K	0.01
Snow and ice cover extents	snow_ice_flag	uint8	- (*1)	-
16-day average snow surface temperature	snwts_ave	int16	K	0.01
Standard deviation of snow surface temperature	snwts_std	int16	K	0.01
16-day average mass fraction of snow impurity	snwi_ave	int16	ppmw	0.0001
Standard deviation of mass fraction of snow impurity	snwi_std	int16	ppmw	0.0001
16-day average snow grain size in the shallow layer [0-20cm]	snwg_ave	int16	um	0.1
Standard deviation of snow grain size in the shallow layer [0-20cm]	snwg_std	int16	um	0.1
16-day average snow grain size in the top surface layer [0-2cm]	snwgs_ave	int16	um	0.1
Standard deviation of snow grain size in the top surface layer [0-2cm]	snwgs_std	int16	um	0.1
16-day average sea-ice concentration by AMSR	sic_ave	int16	%	0.1
Standard deviation of sea-ice concentration by AMSR	sic_std	int16	%	0.01
16-day average snow water equivalent (snow depth) by AMSR	swe_ave	int16	mm	1.0
Standard deviation of snow water equivalent (snow depth) by AMSR	swe_std	int16	mm	0.1
Elevation averaged over the 16days within each cell [apprx.5kmx5km]	height_ave	uint8	m	1.0

\*1 Legend of snow\_ice\_flag: 1: snow over land, 2: sea-ice, 3: land, 4: ocean, 0: fill value

Fill value for all data except snow\_ice\_flag: -9999

### C. Notes:

- All data files are compressed with gzip command. You have to uncompress the file with gunzip command.
- Definition of the TOA reflectance is as follows,  
$$\text{TOA reflectance (\%)} = \text{PI} * \text{I} / (\text{F}_0 * \cos\text{SZA}) * 100.0$$

where I: satellite observed radiance  
F<sub>0</sub>: solar irradiance at the satellite elevation  
SZA: solar zenith angle

Stored reflectances are an average of daily TOA reflectances of the clear pixels during the 16-day temporal interval (i.e., cloudy pixels are eliminated in the averaging.).
- 16-day average maps of the GLI snow physical parameters (snwts, snwi, snwg, snwgs) are also generated from daily maps using only clear and snow pixels which have valid physical values defined in the lookup tables.

### D. References:

For further details of the data production as well as the scientific basis and the validation, please refer to the following papers.

- Stamnes K., W. Li, H. Eide, Te. Aoki, M. Hori, and R. Storvolde, 2007: ADEOS-II/GLI Snow/Ice Products – Part I: Scientific Basis, Remote Sensing of Environment, 111, 258-273.
- Aoki, Te., M. Hori, H. Motoyoshi, T. Tanikawa, A. Hachikubo, K. Sugiura, T. J. Yasunari, R. Storvold, H. A. Eide, K. Stamnes, W. Li, J. Nieke, Y. Nakajima, and F. Takahashi, 2007: ADEOS-II/GLI snow/ice products - Part II: Validation results, Remote Sensing of Environment, , 111, 274-290.
- Hori, M., Te. Aoki, K. Stamnes, W. Li, 2007: ADEOS-II/GLI snow/ice products - Part III: Retrieved results, Remote Sensing of Environment, 111, 291-336.

### E. Data Citation:

Hori, M., Te. Aoki, K. Stamnes, and W. Li. 2007. GLI 16-day Average Northern Polar Region Cryosphere Data. Tsukuba, Ibaraki, Japan: Earth Observation Research Center/Japan Aerospace Exploration Agency. Digital media.

### E. Contact us:

For additional information, please contact us via e-mail (the contact address is shown at the GLI web, <http://suzaku.eorc.jaxa.jp/GLI/index.html>) with a subject “(e.g.) Questions on the GLI NPRCD”.