

GLI Standard Higher Algorithm Implementation Status

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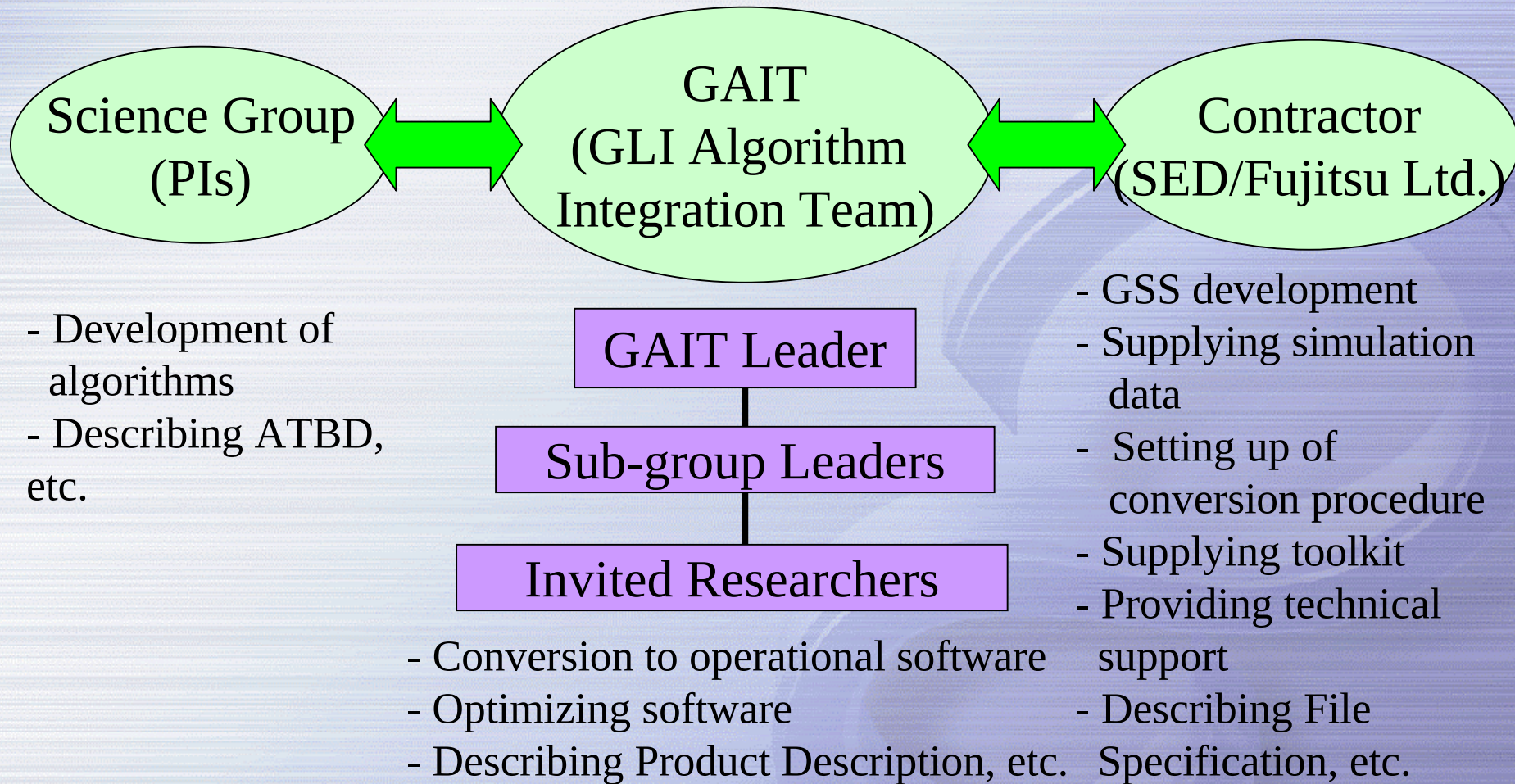
Outline

Topics:

- (1) GAIT organization**
- (2) Progress of this year
(since Kanazawa GLI workshop)**
- (3) Future Plan**

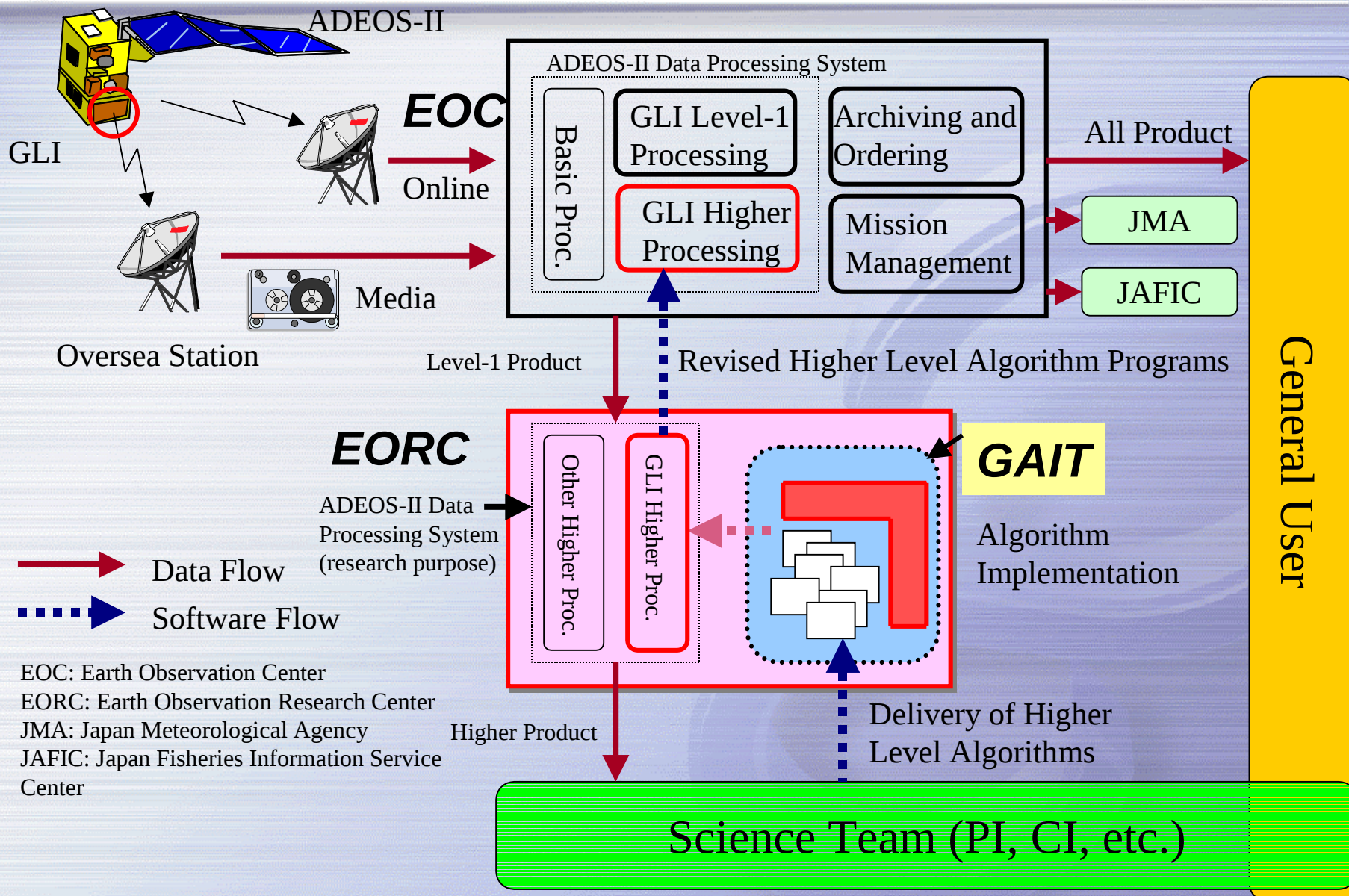


GAIT Organization



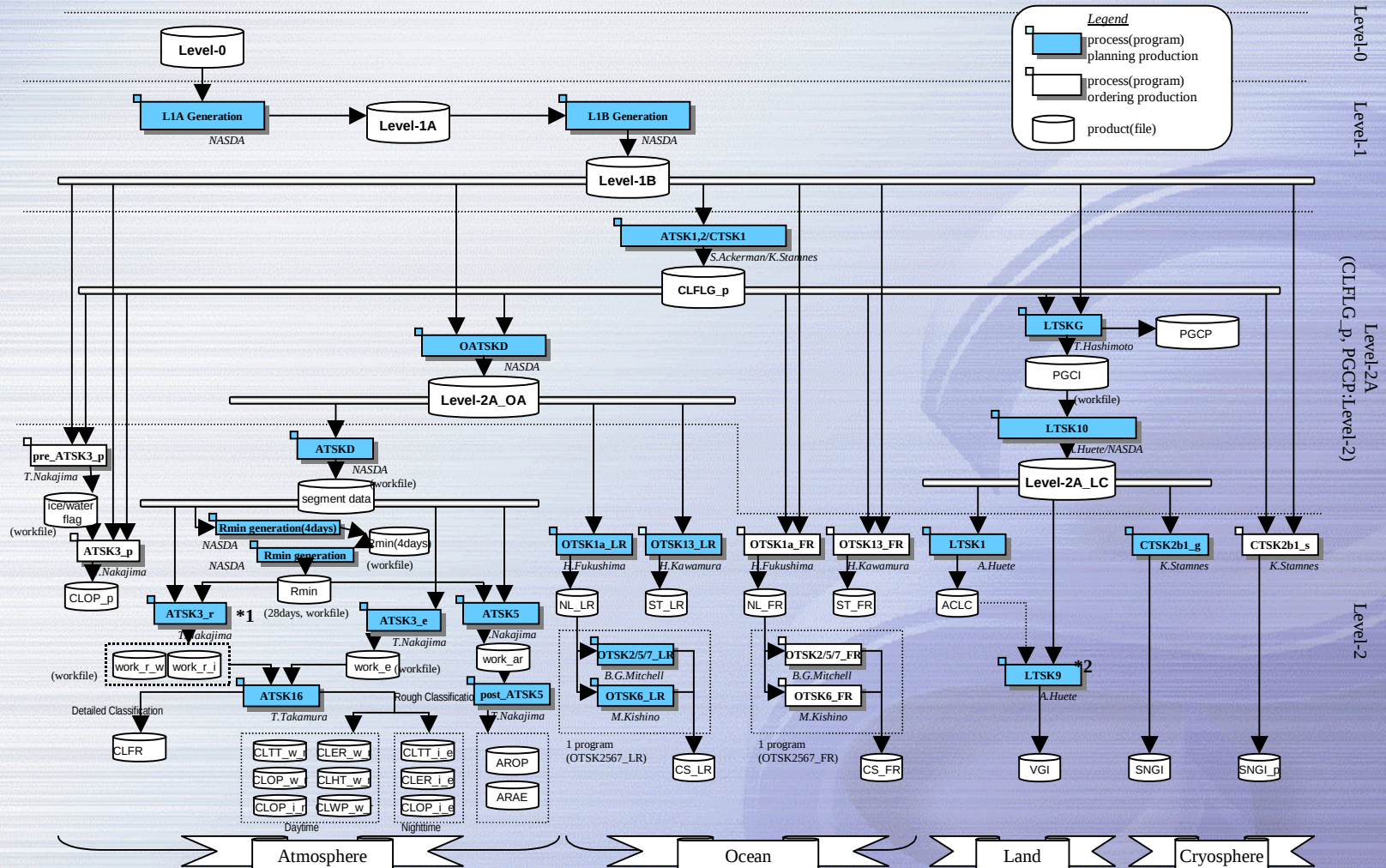


Our Position in NASDA



GLI Standard Products Flow (~Level 2)

Ver.1.9a
May. 29, 2000



*1) ATSK3_r should be executed 2 times. One is to calculate *_w_r products and another is for *_i_r products.

*2) The input data of LTSK9 is L2A_LC at the launch time. But ACLC will be used instead of L2A_LC after ACLC validated.

No change since last year

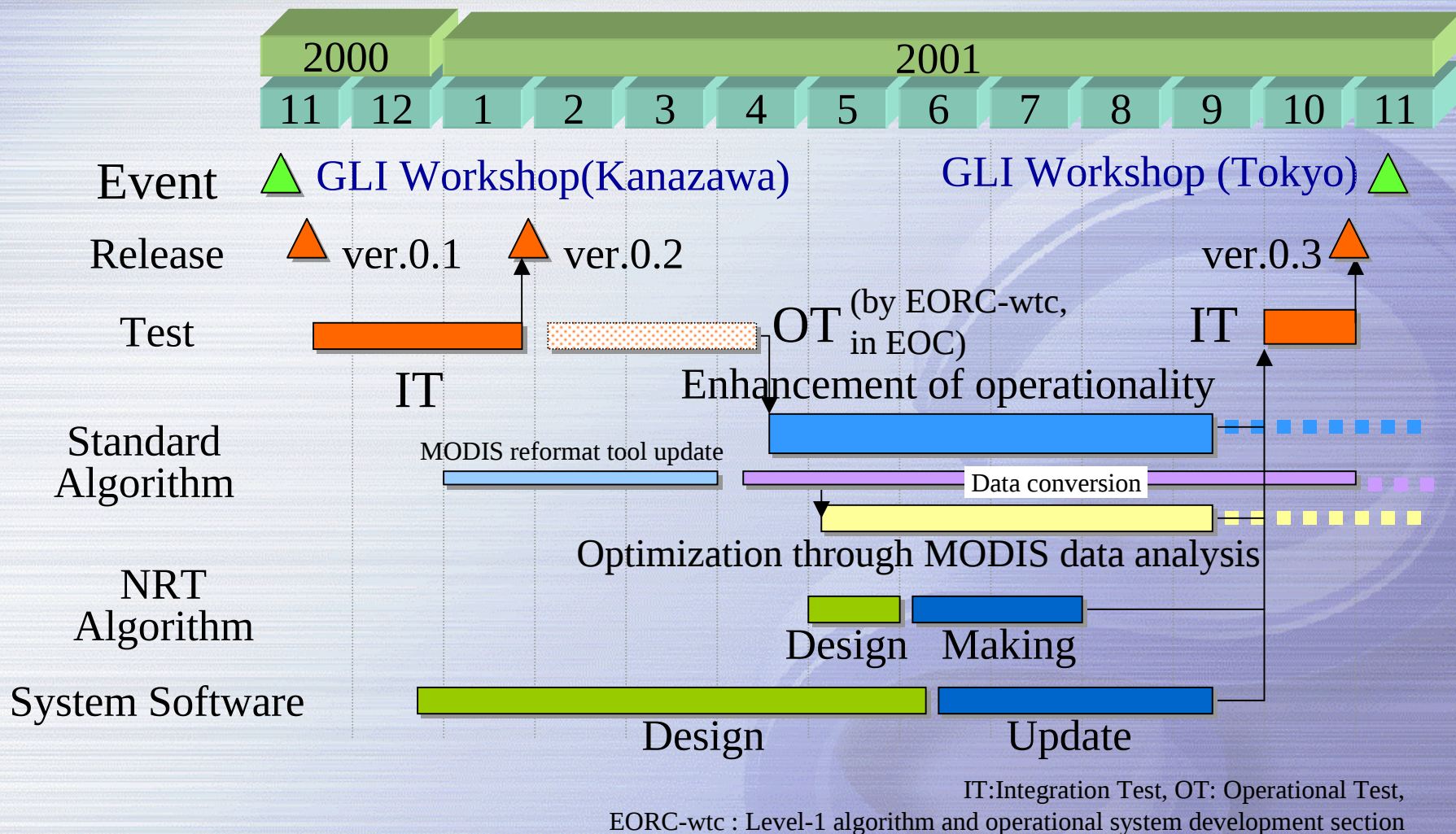


Progress of this year

- (1) Schedule of last year
- (2) Update of standard algorithms
- (3) Update of MODIS reformat tool
- (4) Near real time algorithms
- (5) Update of System Software
- (6) Release of Ver.0.3 algorithms



GLI Algorithm Implementation Schedule





Update of standard algorithms (1/2)

History:

<i>ver.</i>	<i>release date</i>	<i>remarks</i>
0.1	Nov., 2000	- A lot of problems were found during an acceptance test by EORC-wtc in EOC. - Early delivery of improved version was required.
0.2	Jan., 2001	- Acceptance test in EOC was passed. - Then OT (operational test) was performed in EOC. - Problems found in OT were almost solved. - Additional improvement related to operational use was requested.
0.3	Nov., 2001	- Remained problems were fixed. - Enhancement of operability, such as error processing, result code and processing speed was performed. - New GLI L1B file format was supported.



Update of standard algorithms (2/2)

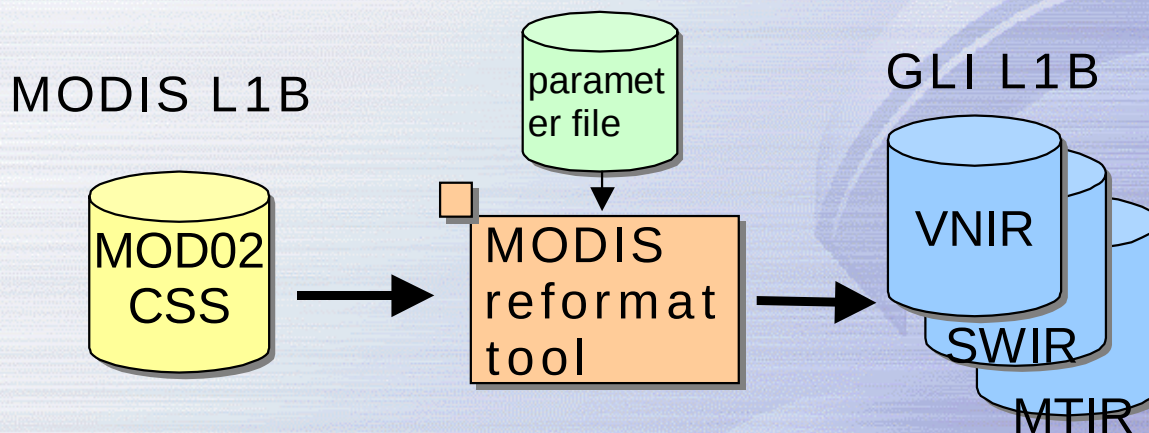
Update contents

1. Error processing
 - (1) Enhancement of parameter inconsistency check.
 - (2) Set appropriate processing result code, product quality code.
 - (3) Output processing result file even if error happens.
2. Support for new L1B file format
(attribute “Parameter Ver.” is added.)
3. Support for new higher products file format
(SD “scan_angle” was eliminated from L2A_OA/L2 product)



Update of MODIS reformat tool(1/3)

MOD02CSS (coarse by subsample) are newly supported in addition to MOD021km.

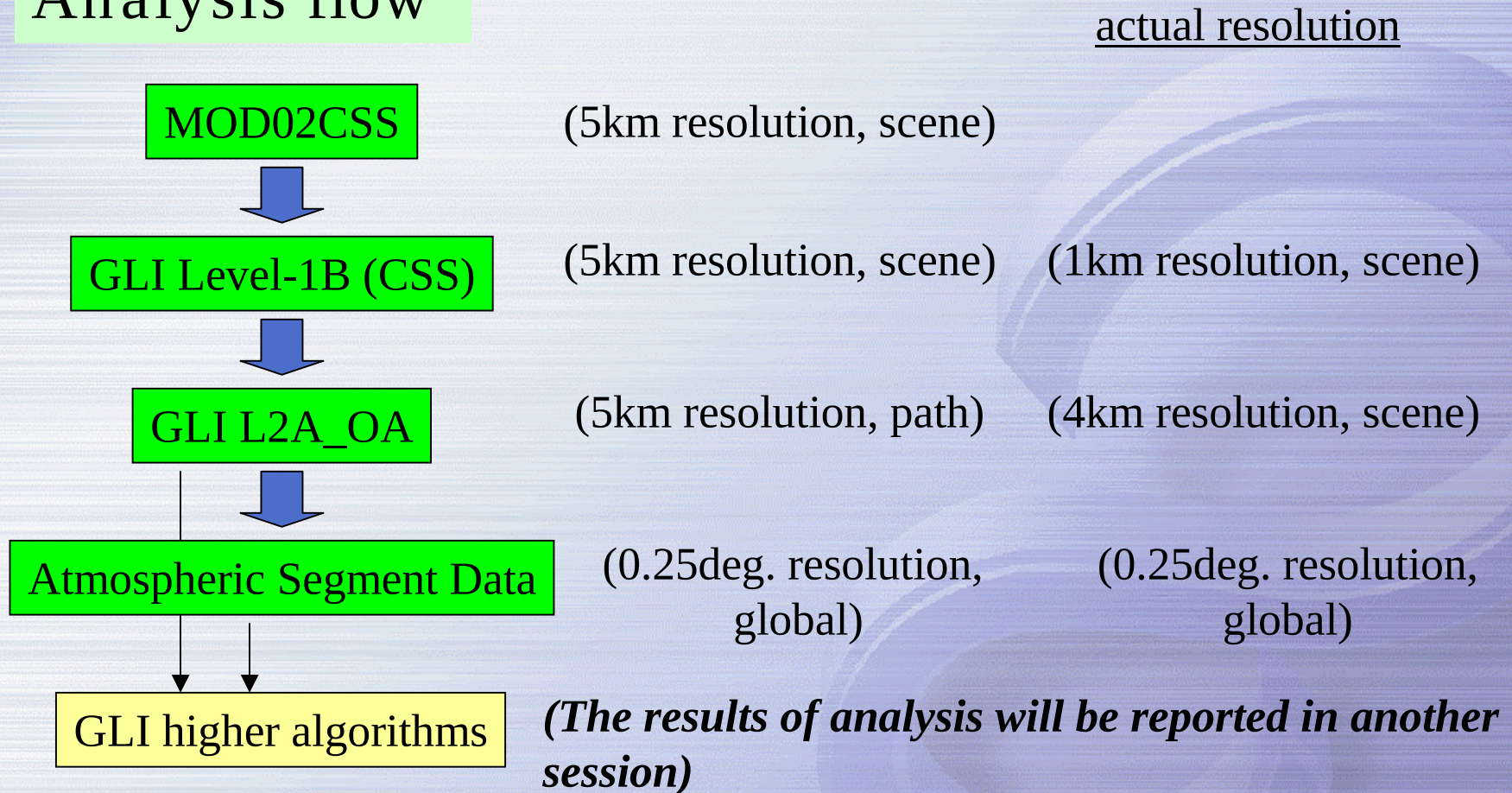


This tool enables us to analyze real earth observation data with GLI product format both of 1km scene and 0.5deg. global data.



Update of MODIS reformat tool(2/3)

Analysis flow





Update of MODIS reformat tool(3/3)

Data
reference

GLI L1B

[GLI Level-1B Data]

l1b_ch1_data^{*1}

...

l1b_ch19_data

[Calibration]

DN - radiance conversion
factor (gcal, gsys, c1)

[Scan Geometry]

Solar, Satellite zenith /
azimuth angle
(solar_zenith, solar_azimuth,
sc_zenith, sc_azimuth)

[Scan Line Attribute]

Latitude, Longitude
(l1b blk lat, l1b blk lon)

[Land/Water Flag]

Land/Water Flag
(lang_water_flag)

[Earth View Data]

Ev_250_Sub5km_RefSB_Band1

Ev_250_Sub5km_RefSB_Band2

Ev_500_Sub5km_RefSB_Band3

...

Ev_500_Sub5km_RefSB_Band7

EV_1KM_Sub5km_RefSB_Band8

...

EV_1KM_Sub5km_RefSB_Band19

EV_1KM_Sub5km_Emissive_Band20

...

EV_1KM_Sub5km_Emissive_Band25

EV_1KM_Sub5km_RefSB_Band26

EV_1KM_Sub5km_Emissive_Band27

...

EV_1KM_Sub5km_Emissive_Band36

EV_1KM_Sub5km_RefSB_Band13hi

EV_1KM_Sub5km_RefSB_Band14hi

[Scan Geometry Data]

SensorZenith

SensorAzimuth

SolarZenith

SolarAzimuth

[Geolocation Data]

Latitude

Longitude

MOD02
CSS

*1 : VNIR = ch.1-19,
SWIR = ch.24-29,
MTIR = ch.30-36



Near real time (NRT) algorithms development (1/3)

What is a “Near real time” product ?

- a. The products that are generated within several hours after Level-0 data receiving
- b. Supplied only to specific agency
- c. NRT L1B file structure is slightly different from standard L1B
- d. NRT higher algorithms are newly prepared based on standard higher algorithms



Near real time (NRT) algorithms development (2/3)

[Characteristics of NRT L1B]

- Regional (vicinity of ground station only)
- Not divided to 'scene' (1 image is visible path from ground station)
- Not divided to VNIR/SWIR/MTIR
- Some attributes are added

[Characteristics of NRT Higher Products]

- Restricted geophysical parameters
(Level-2 SST, Level-2 Map NWLR, CHLA, SST)



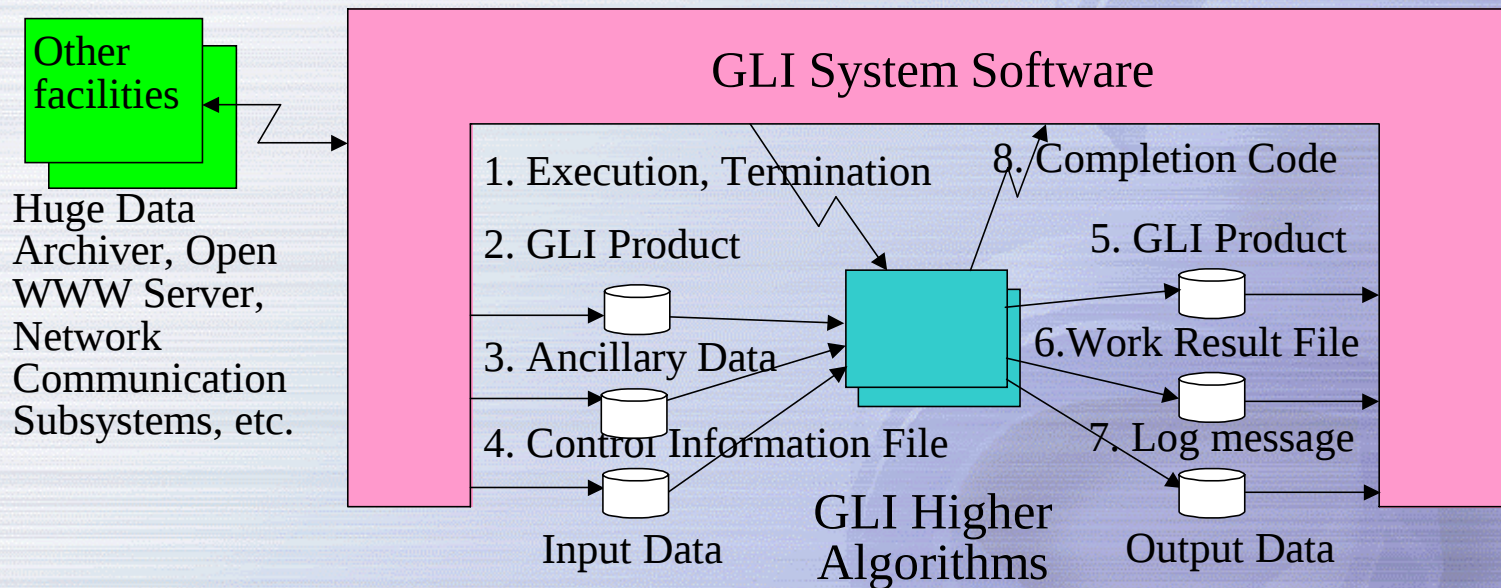
Near real time (NRT) algorithms development (3/3)

Level	Discipline	Number	Algorithm code
Level-2A	---	4	OASKD, ATSKD, LTSK10 (LTSK10d, LTSK10f)
Level-2	atmosphere	10	ATSK1/2/CTSK1, RMIN4, RMIN, ATSK3_r, ATSK3_e, ATSK5, post_ATSK5, ATSK16, pre_ATSK3_p, ATSK3_p
	ocean	6	OTSK1a_LR, OTSK2567_LR, OTSK13_LR, OTSK1a_FR, OTSK2567_FR, OTSK13_FR
	land	3	LTSKG, LTSK1, LTSK9
	cryosphere	2	CTSK2b1_g, CTSK2b1_g (CTSK1)
Level-2Map	---	5	L2Map_CLFLG, L2Map_CLOP, L2Map_NL, L2Map_CS/ST, L2Map_SNGI
Level-3 Binned	---	6	L3ASBin, L3ATBin, L3OSBin, L3OTBin, L3CSBin, L3CTBin
Level-3 STA Map	---	4	L3ASMap, L3OSMap, L3LSMap, L3CSMap
Level-2 NRT	---	New 4	ATSK1/2/CTSK1(NRT), OTSK1a_FR (NRT), OTSK2567_FR (NRT), OTSK13_FR (NRT)
Level-2 Map NRT	---	New 2	L2Map_NL (NRT), L2Map_CS/ST (NRT)
Total		46	



Update of System Software(1/4)

“System Software” is a data processing platform constructed in EORC. Though EOC system is designed to manufacture GLI products based on predefined procedure, “System Software” is designed to test or research new higher algorithms.





Update of System Software (2/4)

[Update contents]

1. New communication interfaces to other facilities were added

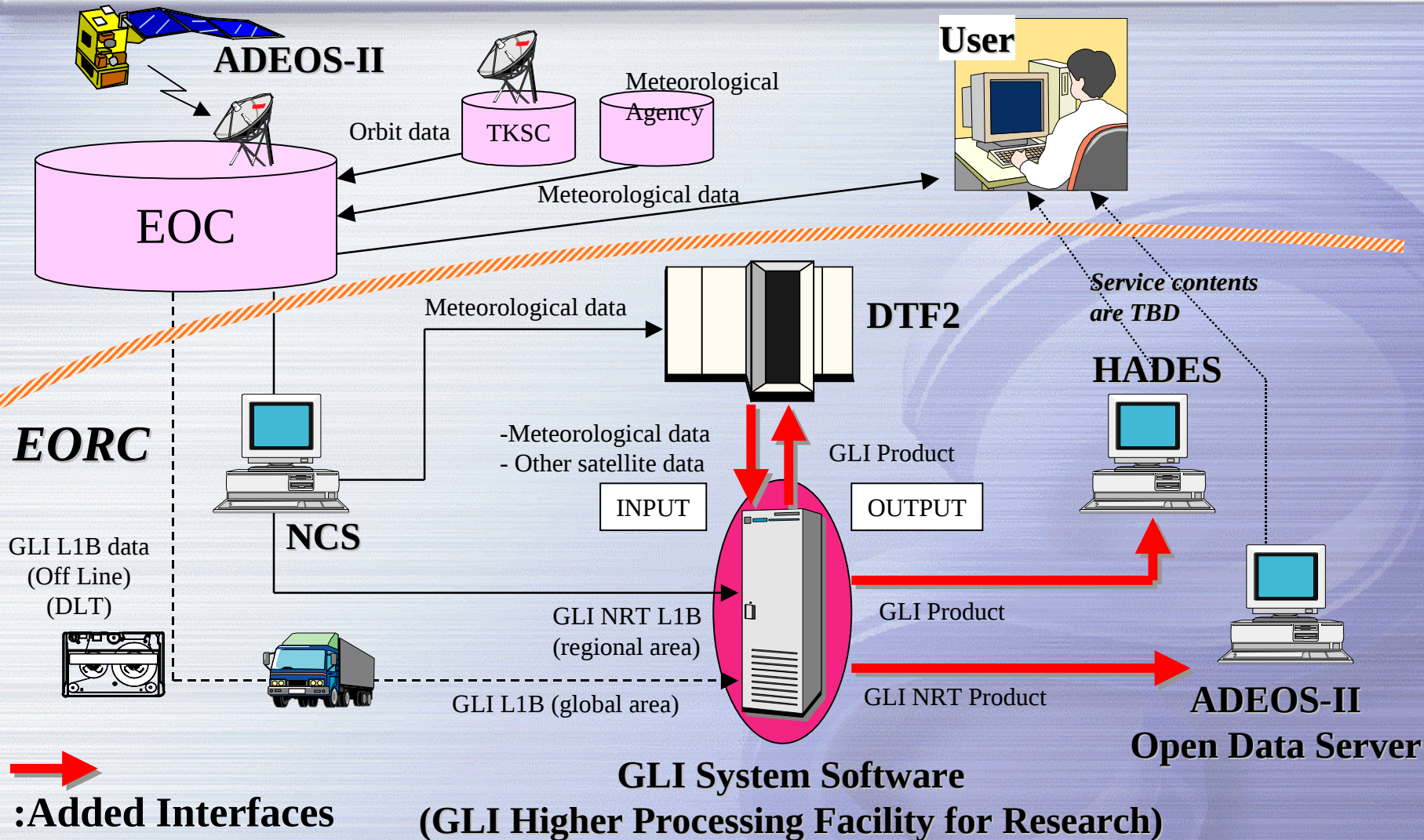
DTF2 : Mass data storage facility in EORC

HADES : Common data server in EORC

ADEOS-II open data server : Data server for ADEOS-II products

2. Operation management function was improved

Update of System Software (3/4)





Update of System Software (4/4)

[Operation management function was improved]

GUI-base operation was developed to avoid error operation.





Ver.0.3 release (Oct., 2001)

- (1) Outline of integration test (IT)
- (2) Test environment
- (3) Test data
- (4) Results



Outline of Integration Test

Purpose

Interface check between GLI System Software
and updated GLI higher algorithms

Place EORC(harumi)

Date Oct. 2 – Oct. 24, 2001

Subject All GLI higher algorithms including
NRT algorithms



Test Environment

Machine:	SGI Origin2000
CPU:	MIPS R10000 Processor Chip Revision: 3.4 250MHz × 16
Main memory size:	512 Mbytes for each CPU
Disk size:	2048 Gbytes (RAID3)
OS:	IRIX6.5
Compilers: C Fortran	MIPSpro Compilers: Version 7.3 MIPSpro Compilers: Version 7.3
MIPS Application Binary Interface(ABI):	-64 (*1)
Used software:	NCSA HDF library 4.1r1 SDP Toolkit ver5.2.1 EOC Toolkit ver1.3 EORC Common Library ver1.6 LSF ver3.2

*1) “-64” means generating 64bit mode application software.



Test Data

Two types of GLI Level-1B simulation data are prepared for our project. L1 simulator data was used in this test.

MODIS reformat GLI data

- Actual Earth observation data
- GLI products format
- No tilt image
- Orbit, attitude, other observation parameter is different from them of GLI

Level-1 Simulator Data (GSD (GLI Synthetic Data))

(→ *GLI Level-1 Simulator Session*)

- Simulated data, not real but true value is known
- GLI products format
- Tilt image included
- Orbit, attitude, other observation parameter is GLI's one.

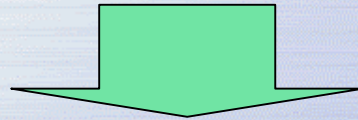


Test Results

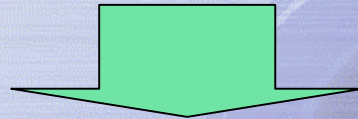
Integration Test

Finally following items were confirmed:

- Interfaces between system software and algorithms
- Error processing, log message function



All of algorithms were passed to IT except
LTSKG. (The test of LTSKG is postponed under the
agreement with EORC-wtc)



Ver.0.3 was released.



Future Plan

- a. Brush up of GLI algorithms will be performed continuously.
- b. Ver.1.0 (launch version) of GLI algorithms will be prepared.
- c. Training of operation system will be planned.



Conclusion

- a. Standard algorithms were updated and optimized.
- b. Near Real Time algorithms were newly developed.
- c. MODIS reformat tool and system software were updated.
- d. Integration test was successfully completed and ver.0.3 was released.



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