

SGLI & GLI data policy

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Multi-Agency Data Sharing session



1. GCOM-C1 data distribution

1. Svalbard downlink station

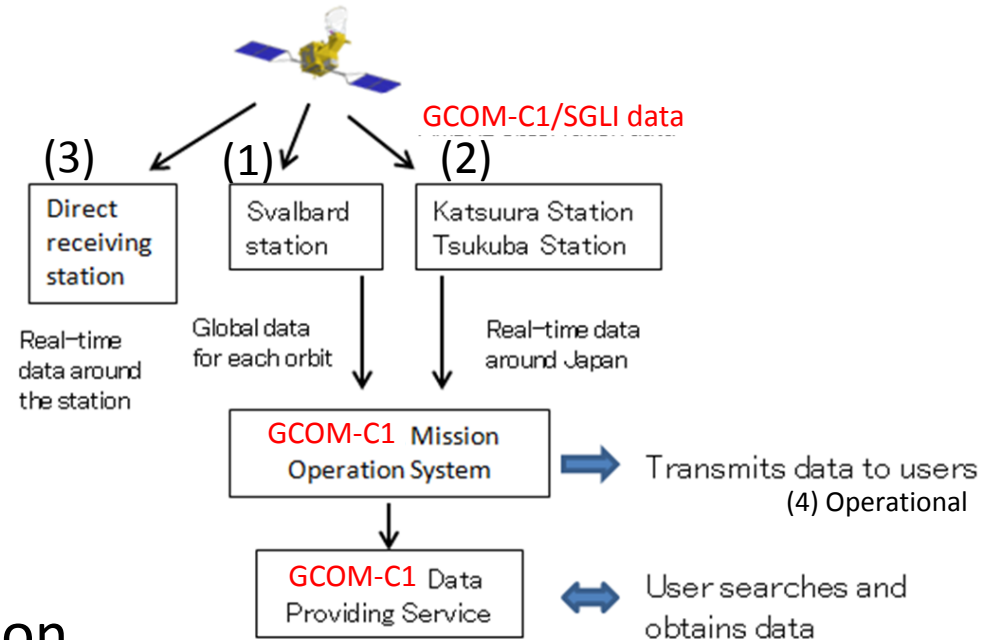
- Global observation data downlink including all the 250-m & 1-km observation mode (Raw data: about 6GB/path)
- 14 or 15 passes (~90G)/day

2. Japanese near-real time station

- Near-real time data distribution to specific users
- A backup of the Svalbard station

3. Direct downlink capability to other local stations

- Organization that desires the direct reception of GCOM data ((3) and (4)) is required to make agreement individually with JAXA.



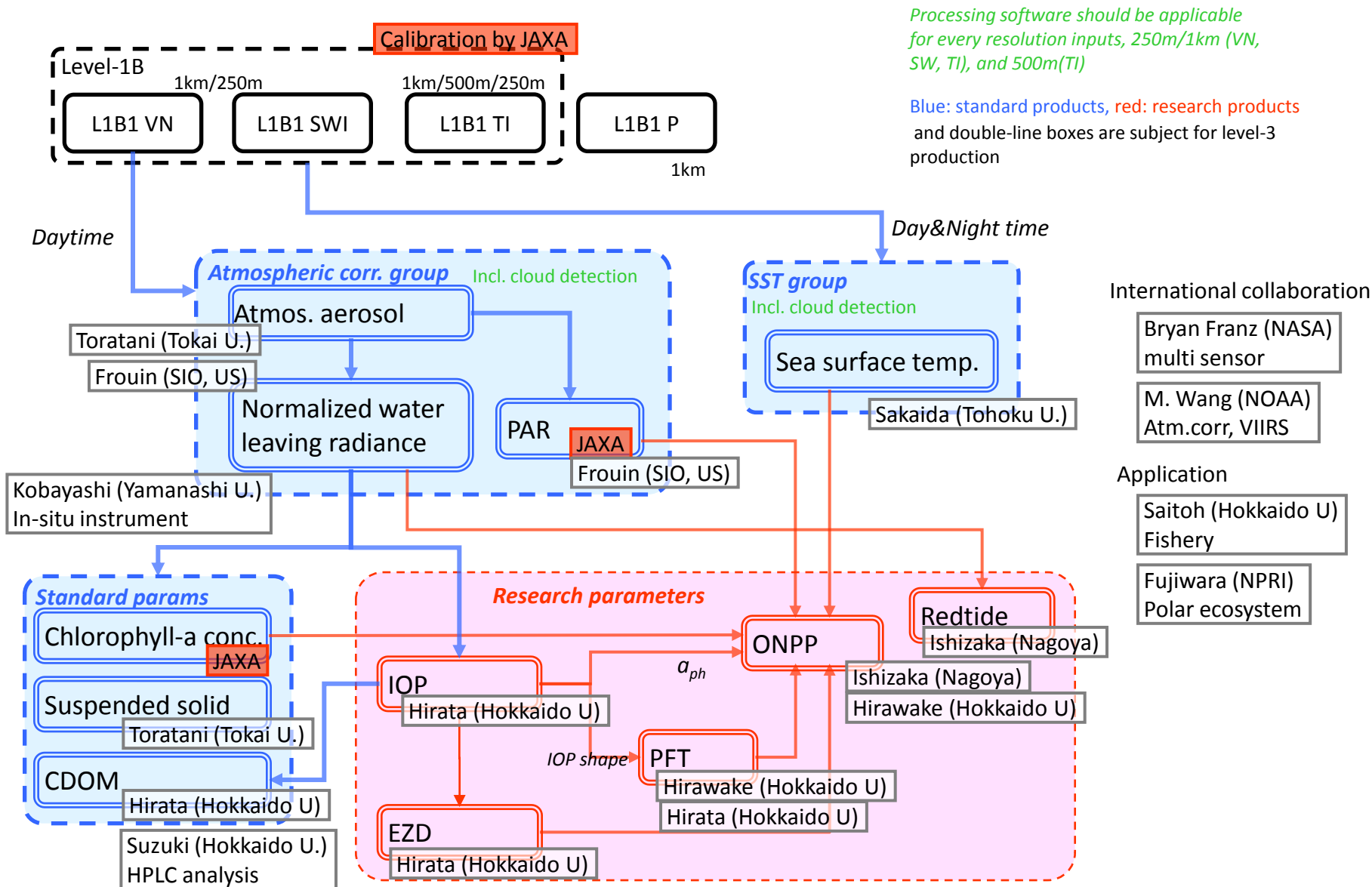
- All the land and coastal area will be operated by the 250m (500m for TIR) mode
- The coastal area is defined by covering the continental shelf or 200 sea-mile, but small islands are defined as the offshore
 - All SGLI data (VNR, SWIR, and TIR) by 250-m mode around Japan (Japanese direct receiving area)
 - Thermal 250m mode in both day and night time in some specific areas
 - Stable boundary between the 1-km and 250-m modes
 - Antarctic is by 1-km mode except for some Cal/Val targets

Basic observation modes		VNR-NP	VNR-PL	SW1-2, 4	SW3	TIR 1-2
1	Day-land/coast-T250	250m	1km	1km	250m	250m**
2	Day-land/coast-T500					500m
3	Twilight-land/coast-T250	1km	1km	1km	250m	250m**
4	Twilight-land/coast-T500					500m
5	Day-offshore/polar	1km	1km	1km	1km	1km
6	Night-land-T250	OFF	OFF	1km	250m	250m**
7	Night-land-T500					500m
8	Night-coast-T250	OFF	OFF	OFF	OFF	250m**
9	Night-coast-T500					500m
10	Night-offshore/polar	OFF	OFF	OFF	OFF	1km

*: Cal/val or other special modes can be planned three months before the operation

**: 250m mode is limited by downlink data volume per a path

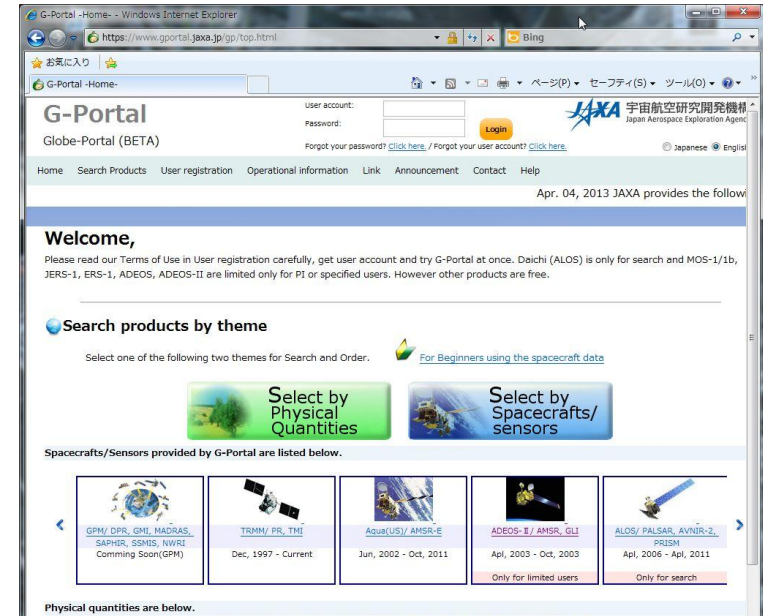
GCOM-C Operation Flow (Ocean)



2. User interface (a common system for SGLI and GLI)



- An on-line data provision system will be constructed for SGLI
 - ✓ <https://www.gportal.jaxa.jp/gp/top.html>



- Access procedure
 - ✓ Registration and make an *account* on the G-portal webpage
 - ✓ Download by (a) or (b)
 - (a) Web search & download
 - (b) (Web search &) S-FTP:
 - > sftp -oPort=*XXXX account*@sftp.gportal.jaxa.jp
 - > cd /userdir/*account/orderID*
 - > get *filename*

Guideline of the GCOM data use



The guideline of GLI data is same

(A) Non-commercial purpose

- Free of charge for the on-line distribution system (G-portal: <https://www.gportal.jaxa.jp/gp/top.html>)
- Users are required to make a special agreement to use the near-real-time data (JAXA to be identified them as “Special User”)
- Users can freely use and open products developed by themselves
- Indication of the credits is required when publishing the GCOM data, modified data, and application results
- Re-distribution of original data is not allowed in principle. However, the permission can be requested if they identify their users and yearly report the usage (number and results) to JAXA

(A-I) Research purposes with a research agreement with JAXA

- Users are requested to make an research agreement with JAXA (e.g., PI)
- Standard and research products, and related information
- Available from the initial calibration and validation period

(A-II) General use with on-line registration

- Users are requested to input name, affiliation and purposes, and provide the research results (e.g., papers)
- Standard products, and related information through the JAXA webpage or the G-portal
- Available after the calibration and validation period (about one-year after the launch)

(b) Commercial purpose

- Making agreement of intellectual property utilization rights and paying royalties are required
- Data is provided through the G-portal basically

3. In-situ data

- Generally, in situ data policy depends on the data providers (because observation funded 100% by JAXA is few)
- **Data providers can define the disclosure levels** when they submit the data
- The various in-situ data will be collected and available through a simple webpage (**under construction**)
- Some will be just a link to the original data web site
- We have defined some access levels as follows.
 - (A) JAXA/EORC
 - (B) GCOM PI team
 - (C) Registered Users (there is a link to the registration form)
 - (D) Common Users (Free Access)
- Terms and Conditions of In-situ Data Use
 - ✓ The GCOM-C1 in-situ database is for research purposes only.
 - ✓ Contact (mail) to in-situ data providers before paper submission
 - ✓ Submit reprints of your papers to JAXA after publication.
 - ✓ Acknowledge the use of JAXA's database.
 - ✓ Acknowledge the organization which acquired the in-situ data.
 - ✓ Redistribution of the in-situ data you downloaded on this site is prohibited

Definition of the disclosure level (DL) of in-situ data

Disclosure level to be set by data provider		JAXA/ EORC	PIs related GCOM	Registere d users	General users	Usage
A	EORC Internal use only	○	×	×	×	1) Cal & Val of GCOM products and/or applications for Earth sciences (such as scatter plots, statistics from which raw data cannot be reproduced) are possible to be published. It is necessary to describe the use of JAXA's database and the organization of data acquisition in the acknowledgement (follow the JAXA's policy on data use). 2) Redistribution of the raw data is prohibited.
B	GCOM related PIs only	○	○	×	×	1) Cal & Val of GCOM products and/or applications for Earth sciences are possible to be published. It is necessary to agree with data provider about how to acknowledge the favor (e.g., including data provider as a co-author or in the acknowledgement) and to describe the use of JAXA's database and the organization of data acquisition in the acknowledgement(follow the JAXA's policy on data use). 2) Data use beyond the objectives of the SGLI mission is prohibited . 3) Redistribution of the raw data is prohibited.
C	Registered users	○	○	○	×	1) User registration is required. 2) Applications for Earth sciences are possible to be published. It is necessary to submit an application form to JAXA prior to the publication. Also, it is necessary to to describe the use of JAXA's database and the organization of data acquisition in the acknowledgement(follow the JAXA's policy on data use). 3) Redistribution of the raw data is prohibited.
D	Open to the public (no limitation)	○	○	○	○	1) It is necessary to describe the use of JAXA's database when using the data and publishing results. It is also necessary to report the results of publication to JAXA (follow the JAXA's policy on data use). 2) Redistribution of the raw data is prohibited.

4. Summary

1. SGLI resolution modes and data downlink

- All land and coastal area will be observed by the fine resolution mode (250m of VNR-SWIR and 250m or 500m for TIR)
- Global observation data will be downlinked to the Svalbard station including all the 250m observation mode (Raw data: about 6GB/path)
- Direct downlink capability to local stations (A Japanese near-real time station for near-real time data distribution to specific users)
- Organization that desires the direct reception of GCOM data is required to make agreement individually with JAXA

2. SGLI (and GLI) data policy

- Free of charge for the on-line distribution system for non-commercial purposes
- Two category users of the research purposes: with research agreement and or on-line registration
- Making agreement of intellectual property utilization rights and paying royalties are required for commercial purposes

3. In-situ data

- Data policy (access levels (A)~(D) and acknowledge way) can be set by in-situ data providers

GCOM-C products accuracy targets (Standard-1)



Area	group	Product	Day/night	Grid size	Release threshold* ¹	Standard accuracy* ¹	Target accuracy* ¹
Common	radiance	TOA radiance (including system geometric correction)	TIR and land 2.2μm: both Other VNR,SWI: daytime (+special operation)	VNR,SWI Land/coast: 250m, offshore: 1km, polarimetry:1km TIR Land/coast: 500m, offshore: 1km	Radiometric 5% (absolute* ³)* ⁵ Geometric<1pixel	VNR,SWI: 5% (absolute* ³), 1% (relative* ⁴) TIR: 0.5K (@300K) Geometric<0.5pixel	VNR,SWI: 3% (absolute* ³), 0.5% (relative* ⁴) TIR: 0.5K (@300K) Geometric<0.3pixel
Land	Surface reflectance	Precise geometric correction	both	250m	<1pixel* ⁶	<0.5pixel* ⁶	<0.25pixel* ⁶
		Atmospheric corrected reflectance (incl. cloud detection)	Daytime	250m	0.3 (<=443nm), 0.2 (>443nm) (scene) * ⁷	0.1 (<=443nm), 0.05 (>443nm) (scene) * ⁷	0.05 (<=443nm), 0.025 (>443nm) (scene)* ⁷
	Vegetation and carbon cycle	Vegetation index		250m	Grass:25%(scene), forest:20%(scene)	Grass:20%(scene), forest:15%(scene)	Grass:10%(scene), forest:10%(scene)
		Above-ground biomass		1km	Grass:50%, forest: 100%	Grass:30%, forest:50%	Grass:10%, forest:20%
		Vegetation roughness index		1km	Grass&forest: 40% (scene)	Grass& forest:20% (scene)	Grass&forest:10% (scene)
		Shadow index		250m, 1km	Grass&forest: 30% (scene)	Grass& forest:20% (scene)	Grass&forest:10% (scene)
		fAPAR		250m	Grass:50%, forest: 50%	Grass:30%, forest:20%	Grass:20%, forest:10%
		Leaf area index		250m	Grass:50%, forest: 50%	Grass:30%, forest:30%	Grass:20%, forest:20%
	tempera ture	Surface temperature	Both	500m	<3.0K (scene)	<2.5K (scene)	<1.5K (scene)

Common note:

*1: The "release threshold" is minimum levels for the first data release at one year from launch. The "standard" and "research" accuracies correspond to full- and extra success criteria of the mission respectively. Accuracies are shown by RMSE basically.

Radiance data note:

*2: TOA radiance is derived from sensor output with the sensor characteristics, and other products are physical parameters estimated using algorithms including knowledge of physical, biological and optical processes

*3: absolute error is defined as offset + noise

*4: relative error is defined as relative errors among channels, FOV, and so on.

*5: Release threshold of radiance is defined as estimated errors from vicarious, onboard solar diffuser, and onboard blackbody calibration because of lack of long-term moon samples

Land data note:

*6: Defined as RMSD from GCP

*7: Defined with land reflectance~0.2, solar zenith<30deg, and flat surface. Release threshold is defined with AOT@500nm<0.25

GCOM-C products accuracy targets (Standard-2)



Area	Group	Product	Day/night	Grid size	Release threshold ^{*1}	Standard accuracy ^{*1}	Target accuracy ^{*1}	
Atmosphere	Cloud	Cloud flag/Classification	Both	1km	10% (with whole-sky camera)	Incl. below cloud amount	Incl. below cloud amount	
		Classified cloud fraction	Daytime	1km (scene), 0.1deg (global)	20% (on solar irradiance) ^{*8}	15%(on solar irradiance) ^{*8}	10%(on solar irradiance) ^{*8}	
		Cloud top temp/height	Both		1K ^{*9}	3K/2km (top temp/height) ^{*10}	1.5K/1km (temp/height) ^{*10}	
		Water cloud OT/effective radius	Daytime		10%/30% (CloudOT/radius) ^{*11}	100% (as cloud liquid water ^{*13})	50% ^{*12} / 20% ^{*13}	
		Ice cloud optical thickness			30% ^{*11}	70% ^{*13}	20% ^{*13}	
	Aerosol over the ocean	0.1(Monthly τ_a 670,865) ^{*14}			0.1(scene τ_a 670,865) ^{*14}	0.05(scene τ_a 670,865)		
	aerosol	Land aerosol by near ultra violet	0.15(Monthly τ_a 380) ^{*14}	0.15(scene τ_a 380) ^{*14}	0.1(scene τ_a 380)			
		Aerosol by Polarization	0.15(Monthly τ_a 670,865) ^{*14}	0.15(scene τ_a 670,865) ^{*14}	0.1(scene τ_a 670,865)			
Ocean		Ocean color	Normalized water leaving radiance (incl. cloud detection)	Daytime	250m (coast) 1km (offshore) 4~9km (global)	60% (443~565nm)	50% (<600nm) 0.5W/m²/str/um (>600nm)	30% (<600nm) 0.25W/m²/str/um (>600nm)
	Atmospheric correction param		80% (AOT@865nm)			50% (AOT@865nm)	30% (AOT@865nm)	
	Photosynthetically available radiatioin		20% (10km/month)			15% (10km/month)	10% (10km/month)	
	In-water	Chlorophyll-a concentration	-60~+150% (offshore)			-60~+150%	-35~+50% (offshore), -50~+100% (coast)	
		Suspended solid concentration	-60~+150% (offshore)			-60~+150%	-50~+100%	
		Colored dissolved organic matter	-60~+150% (offshore)			-60~+150%	-50~+100%	
	temperat ure	Sea surface temperature	Both	500m (coast) 1km (offshore) 4~9km (global)	0.8K (daytime)	0.8K (day&night time)	0.6K (day&night time)	
	Cryosphere	Area/ distributi on	Snow and Ice covered area (incl. cloud detection)	Daytime	250m (scene) 1km (global)	10% (vicarious val with other sat. data)	7%	5%
			OKhotsk sea-ice distribution		250m	10%	5%	3%
Surface propertie s		Snow and ice surface Temperature	500m (scene) 1km (global)		5K (vicarious val with other sat. data and climatology)	2K	1K	
		Snow grain size of shallow layer	250m (scene) 1km (global)		100%(vicarious val with climatology between temp-size)	50%	30%	

Atmosphere note:

*8: Comparison with in-situ observation on monthly 0.1-degree

*9: Vicarious val. on sea surface and comparison with objective analysis data

*10: Inter comparison with airplane remote sensing on water clouds of middle optical thickness

*11: Release threshold is defined by vicarious val with other satellite data (e.g., global monthly statistics in the mid-low latitudes)

*12: Comparison with cloud liquid water by in-situ microwave radiometer

*13: Comparison with optical thickness by sky-radiometer (the difference can be large due to time-space inconsistency and large error of the ground measurements)

*14: Estimated by experience of aerosol products by GLI and POLDER

GCOM-C products accuracy targets (Research product)



Area	Group	Product	Day/night	Grid size	Release threshold*1
Land	Application	Land net primary production	Daytime	1km	30% (yearly)
		Water stress trend	N/A	500m	10% *15 (error judgment rate)
		Fire detection index	Both	500m	20% *16 (error judgment rate)
		Land cover type	Daytime	250m	30% (error judgment rate)
		Land surface albedo		1km	10%
Atmosphere	Cloud	Water cloud geometrical thickness	Daytime	1km (scene), 0.1deg (global)	300m
	Radiation budget	Long-wave radiation flux			Downward 10W/m2, upward 15W/m2 (monthly)
		Short-wave radiation flux			Downward 13W/m2, upward 10W/m2
Ocean	Ocean color	Euphotic zone depth	Daytime	250m (coast), 1km (offshore), 4~9km (global)	30%
	In-water	Inherent optical properties			a(440): RMSE<0.25, bbp(550): RMSE<0.25
	Application	Ocean net primary productivity		500m (coast), 1km (offshore), 4~9km (global)	70% (monthly)
		Phytoplankton functional type		250m (coast), 1km (offshore), 4~9km (global)	error judgment rate of large/ small phytoplankton dominance<20%; or error judgment rate of the dominant phytoplankton functional group <40%
		Redtide			error judgment rate <20%
		multi sensor merged ocean color		250m (coast), 1km (offshore)	-35~+50% (offshore), -50~+100% (coast)
		multi sensor merged SST		500m (coast), 1km (offshore)	0.8K (day&night time)
Cryosphere	Area/distribution	Snow and ice classification	N/A	1km	10%
		Snow covered area in forest and mountain	Daytime	250m	30%
	Surface propaties	Snow grain size of subsurface layer		1km	50%
		Snow grain size of top layer		250m(scene), 1km (global)	50%
		Snow and ice albedo		1km	7%
		Snow impurity		250m(scene), 1km (global)	50%
		Ice sheet surface roughness	N/A	1km	0.05 (height/width)
	Boundary	Ice sheet boundary monitoring	N/A	250m	<500m

Research product note:

*15: Evaluate in semiarid regions (steppe climate etc.)

*16: Fires >1000K occupying >1/1000 on 1km pixel at night (using 2.2um of 1 km and thermal infrared channels)