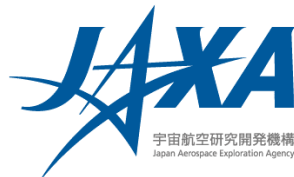




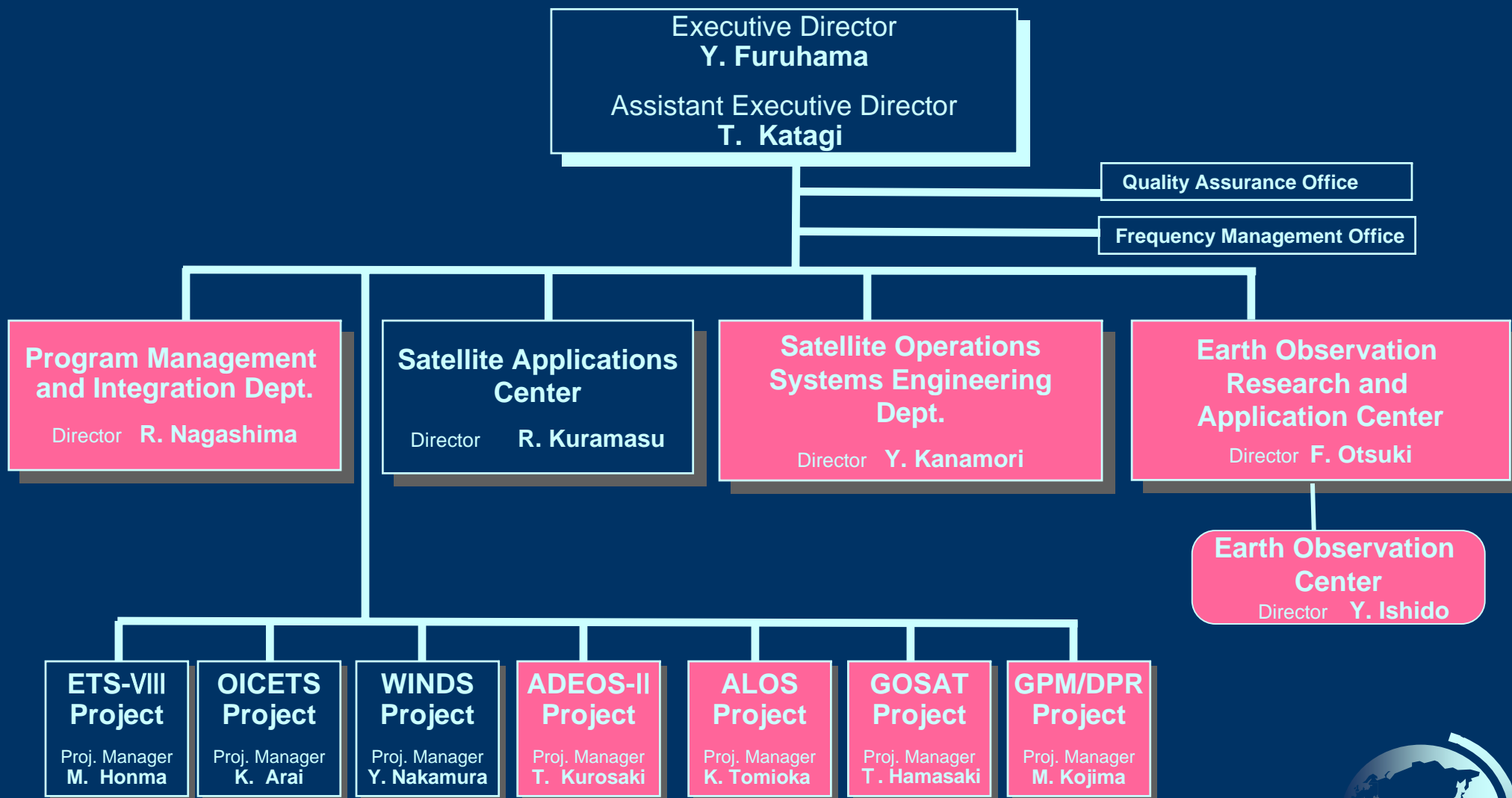
JAXA's EO program status

Earth Observation Research and application Center (EORC)
Japan Aerospace Exploration Agency (JAXA)



Office of Space Applications

As of May 13, 2004



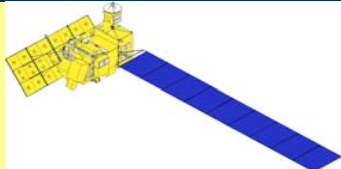
EO Satellite Road Map

2002 ~ 2006

2007 ~ 2011

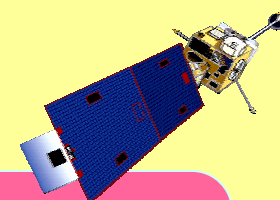
2012 ~ 2017

Measuring land & sea surface



ALOS

PRISM (Optical triplet mode, High resolution sensor ;
Global mapping) : 2 .
5m
PALSAR (L-band Synthetic Aperture Radar ;
Land information, Disaster monitoring) : 10m
AVNIR-2 (Visible & Near Infrared Radiometer ;
Disaster monitoring etc.) : 10m



ALOS F/O

Geostationary high res optical sensor :
10m
High resolution optical sensor : 0.5m
Multiple polarization
Multiple wavelength SAR : 10m

To Operational
Land
Observations

Global monitoring of the Earth's environment

Green House Gas Monitoring
Global Climate Change Monitoring

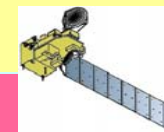


ADEOS-II

ILAS-II : Infrared spectrometer
GLI : Visible & Infrared Imager
AMSR : Microwave Radiometer

GOSAT

GHG and Cloud sensor



GCOM

SGLI :
Visible Land Infrared Imager
AMSR F/O :
Microwave radiometer

To continuous
Global Climate Change
Observations

To continuous
GHG Observations

Global Water Cycle Observation

TRMM

Precipitation Radar : 5Km,
Rain rate : 0.7mm/h
TMI Microwave Radiometer :
(NASA)

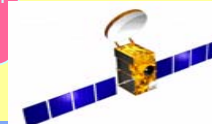
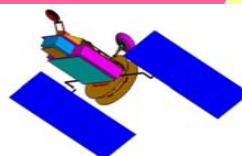
GPM

DPR : Dual Frequency
Precipitation Radar

EarthCARE

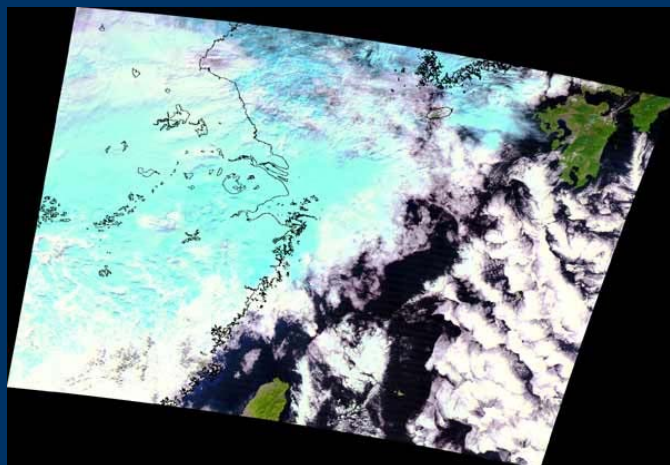
CPR : Cloud Profile Radar
FTS: Fourier Transform
Spectrometer etc.

To continuous
Water Cycle
Observations



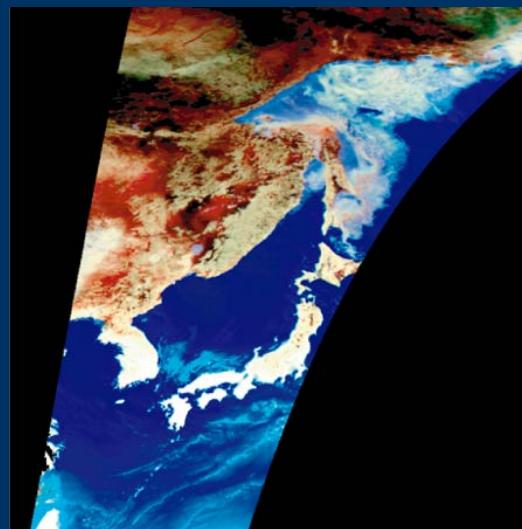
Status of ADEOS-II Mission

- ➡ Observation stopped on October 24th, 2003.
- ➡ Cause investigation is still on-going.
- ➡ AMSR/GLI data were released on December 24th, 2003.



The first image of GLI
(Jan. 25, 2003)

The first image of AMSR
(Jan. 18, 2003)



Advanced Land Observing Satellite (ALOS)

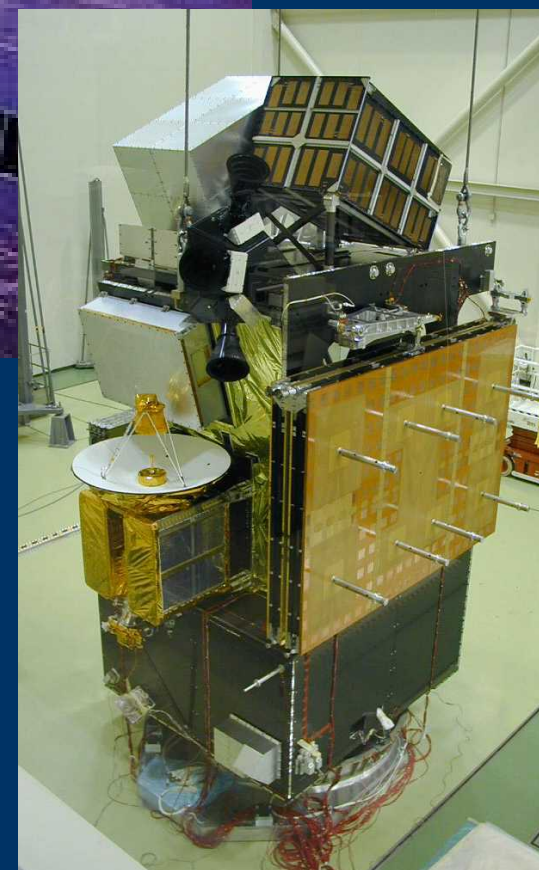
Main Characteristics

Mass	3.9 tons
Orbit	Sun-synchronous Subrecurrent
Altitude	800km
Launch target	FY 2004
Mission life	5 years



Observing Sensors

Panchromatic Remote sensing Instrument for Stereo Mapping (PRISM)
 Advanced Visible and Near Infrared Radiometer type 2 (AVNIR-2)
 Phased Array type L-band Synthetic Aperture Radar (PALSAR)



GPM Reference Concept

OBJECTIVE: Understand the Horizontal and Vertical Structure of Rainfall and Its Microphysical Element. Provide Training for Constellation Radiometers.

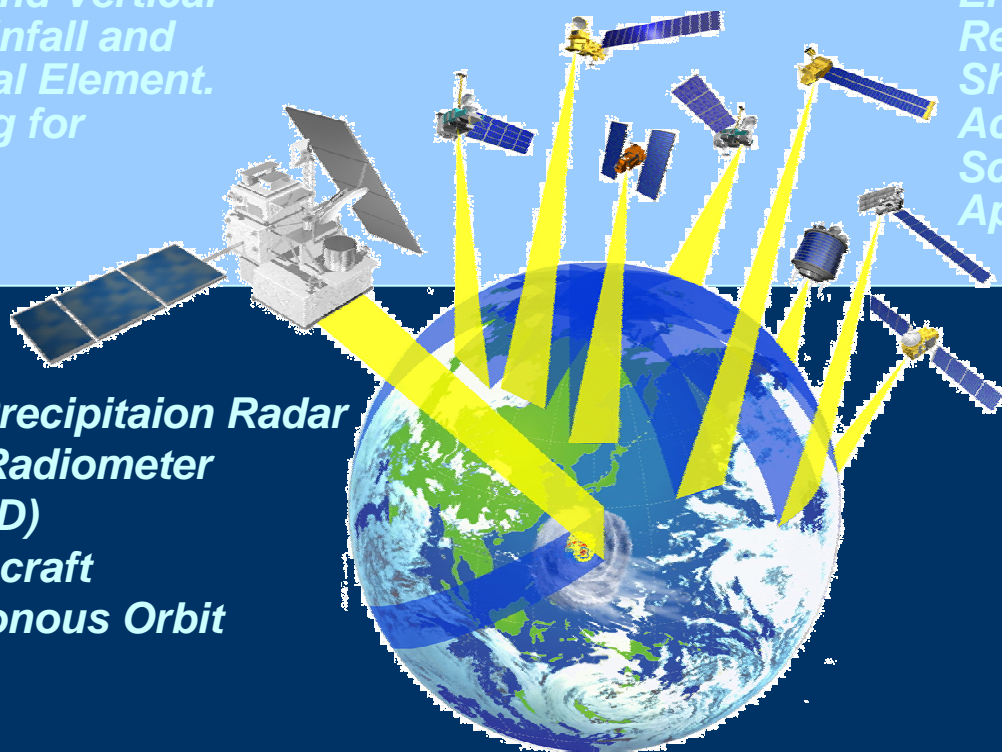
OBJECTIVE: Provide Enough Sampling to Reduce Uncertainty in Short-term Rainfall Accumulations. Extend Scientific and Societal Applications.

Core Satellite

- Dual-frequency Precipitation Radar
- Multi-frequency Radiometer
- H2-A Launch (TBD)
- TRMM-like Spacecraft
- Non-Sun Synchronous Orbit
- ~65° Inclination
- ~400 km Altitude
- ~5 km Horizontal Resolution
- 250 m / 500m Vertical Resolution

Precipitation Validation Sites

- Global Ground Based Rain Measurement



Constellation Satellites

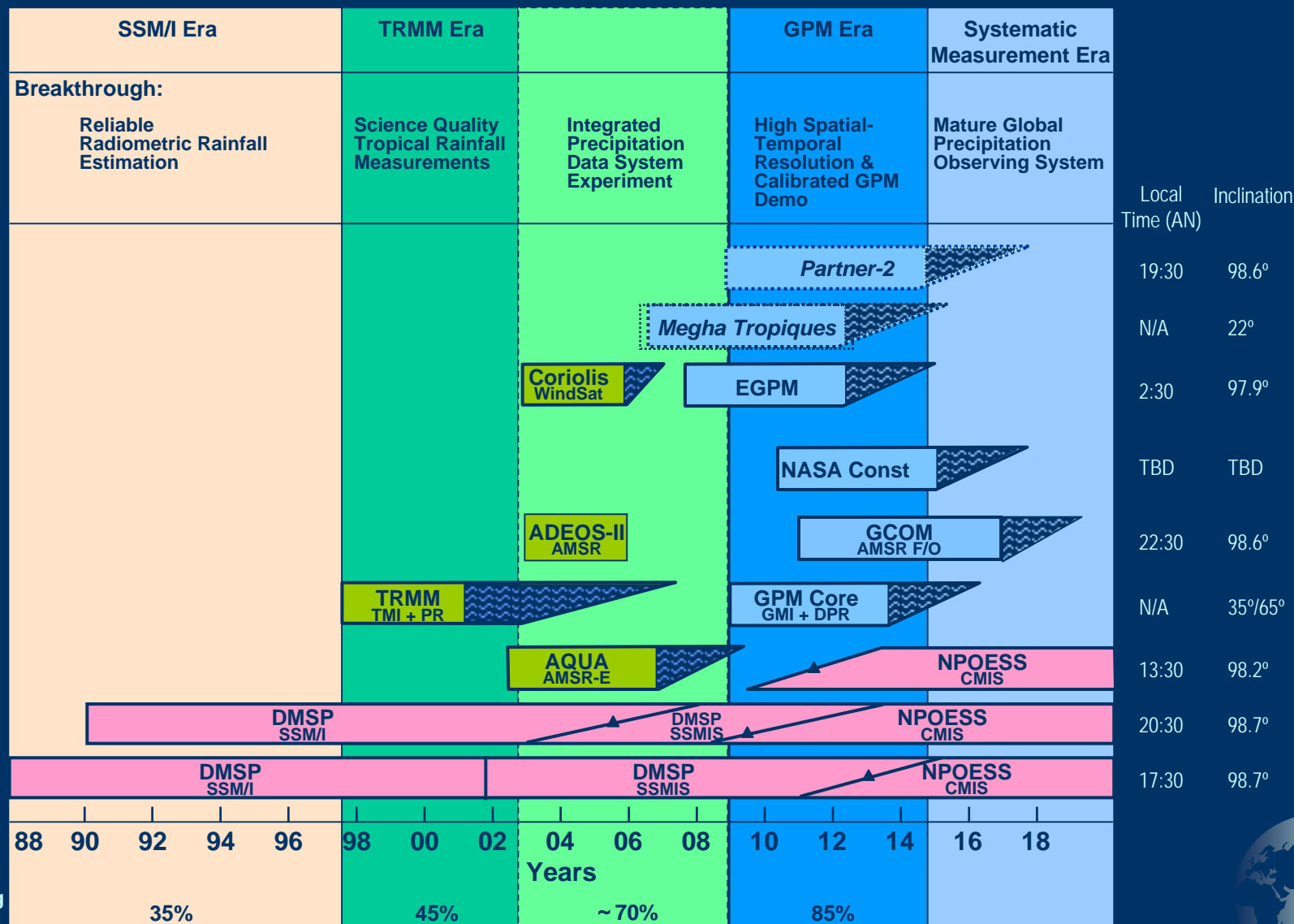
- Small Satellites with Microwave Radiometers
- Aggregate Revisit Time, 3 Hour goal
- Sun-Synchronous Polar Orbits
- ~600 km Altitude

Global Precipitation Processing Center

- Capable of Producing Global Precipitation Data Products as Defined by GPM Partners



Constellation Build-Up



Courtesy of NASA

Greenhouse gas Observing Satellite (GOSAT)

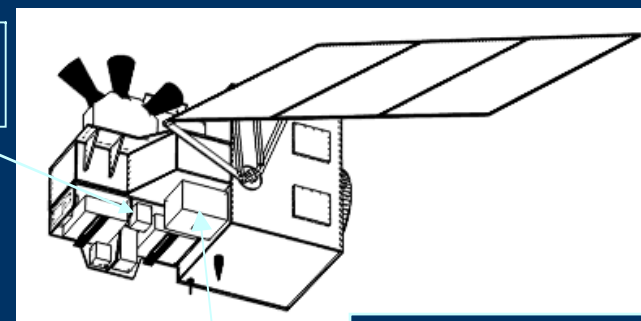
• GOSAT

(JAXA/MOE/NIES)

- Observation of GHGs incl. CO₂.
- Observation of Cloud etc...

(GHG : Green House Gas)

GHG sensor
Observation of GHGs etc.



Mass : About 1.65 ton
Altitude : About 620 km
Orbit : Inclined

Cloud sensor
Observation of Cloud etc.

➡ *Monitoring of CO₂ distribution
in response to Kyoto protocol.*

➡ *Contributing to IGOS Carbon Theme
and Atmospheric Chemistry Theme*



EarthCARE

Equal partnership cooperation between ESA and Japan
Report for assessment jointly developed and submitted to
Granada meeting in October for selection for phase-A study 2001-2003.

- **Mission**

- Vertical profile of clouds, aerosol
- Interaction between clouds and aerosol
- Cloud stability and precipitation

- **Orbit**

- Sun synchronous
- Equator crossing time 13:30
- Altitude 380km

- **Instrument**

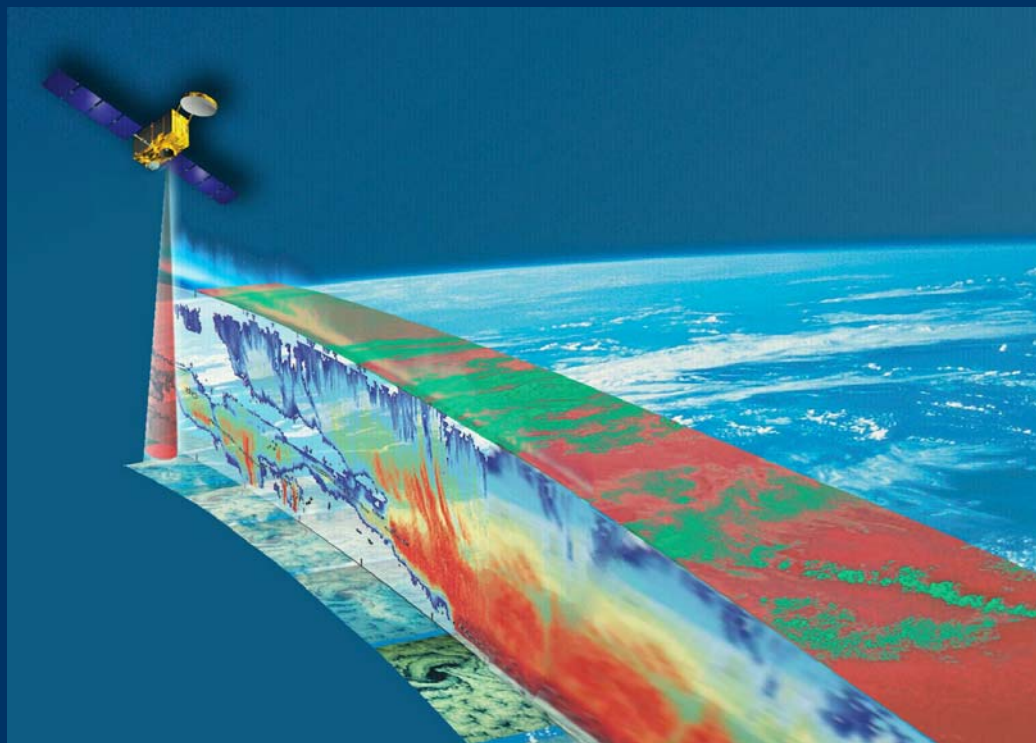
- CPR (cloud Profile Radar)
- LIDAR
- MSI (Multi-Spectral Imager)
- BBR (Broad Band Radiometer)
- FTS (Fourier Transform Spectrometer)

- **Proposed task sharing**

- NASDA (CPR, FTS, Launch)
- ESA (LIDAR, MSI, BBR, Spacecraft)

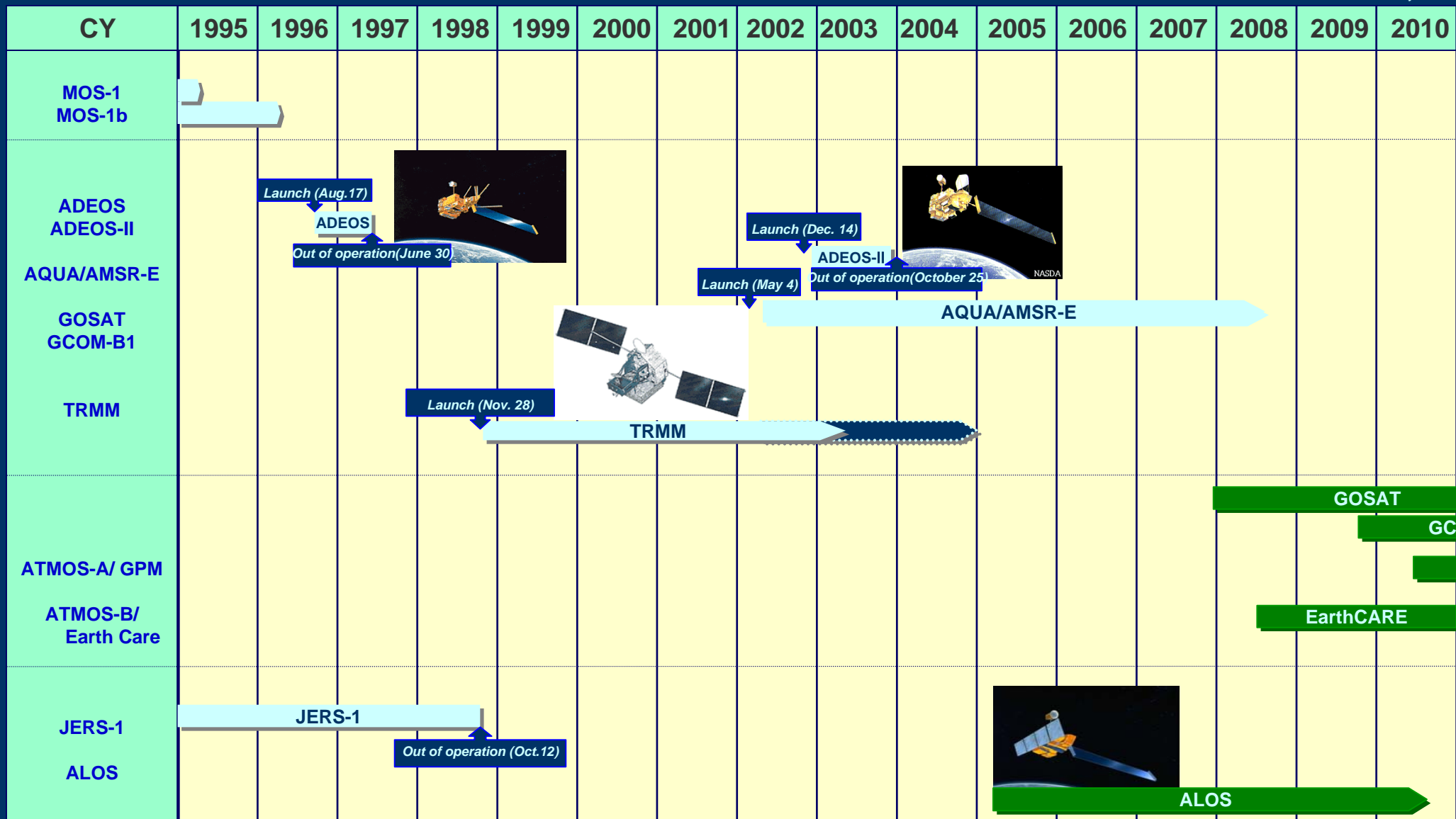
- **Launch target**

- TBD



Earth Observation Satellite Program in Japan

As of February 2004



Operation

Plan

Image of GWC (1)

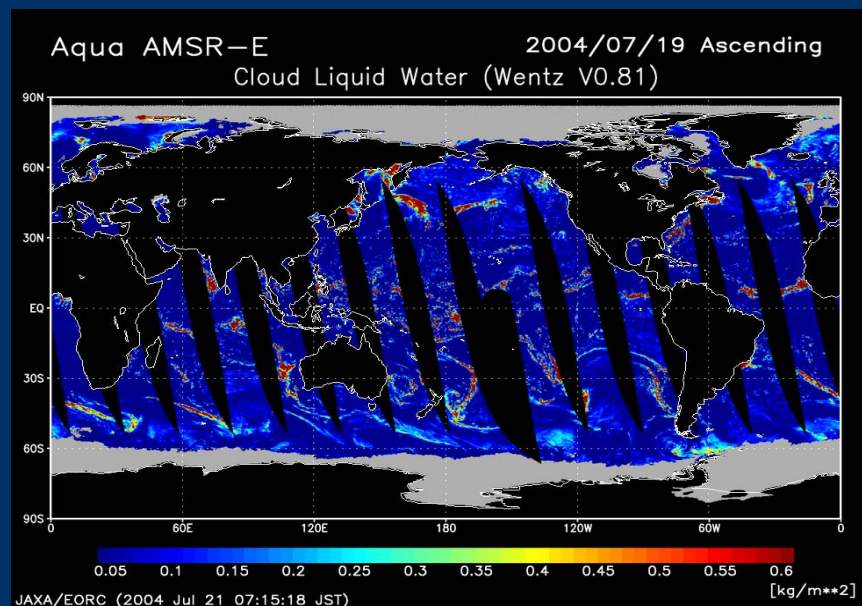
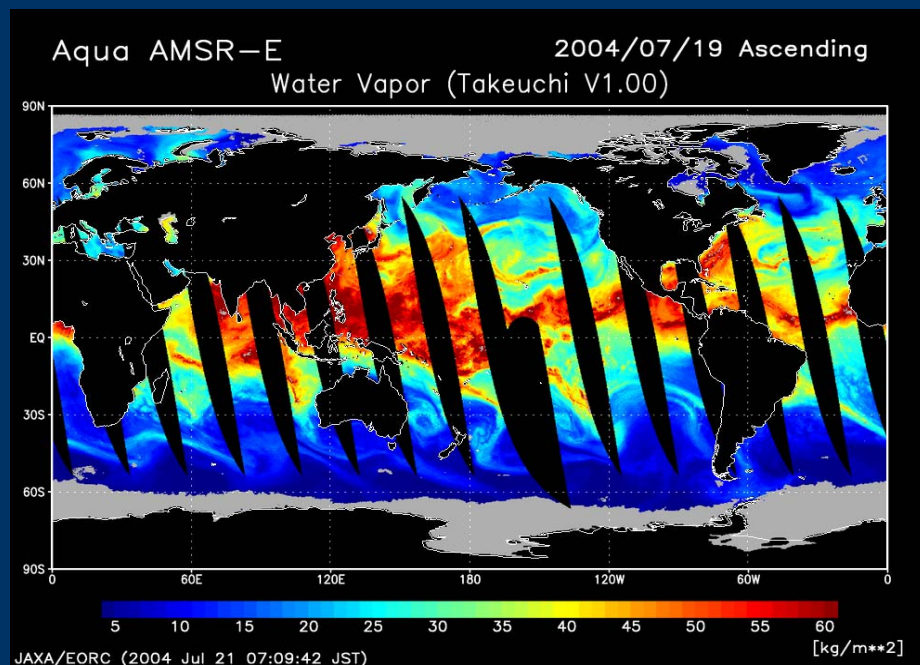


Image of GWC (2)

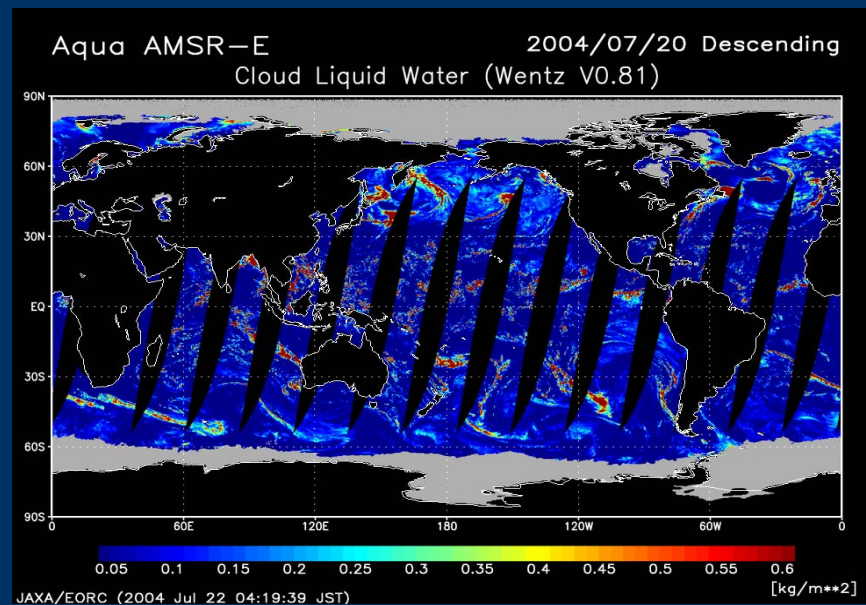
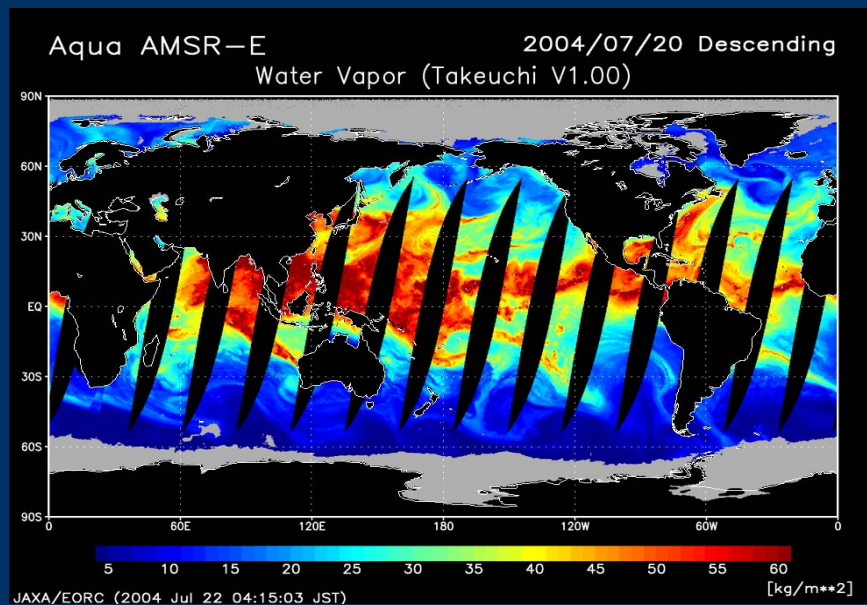


Image of GWC (3)

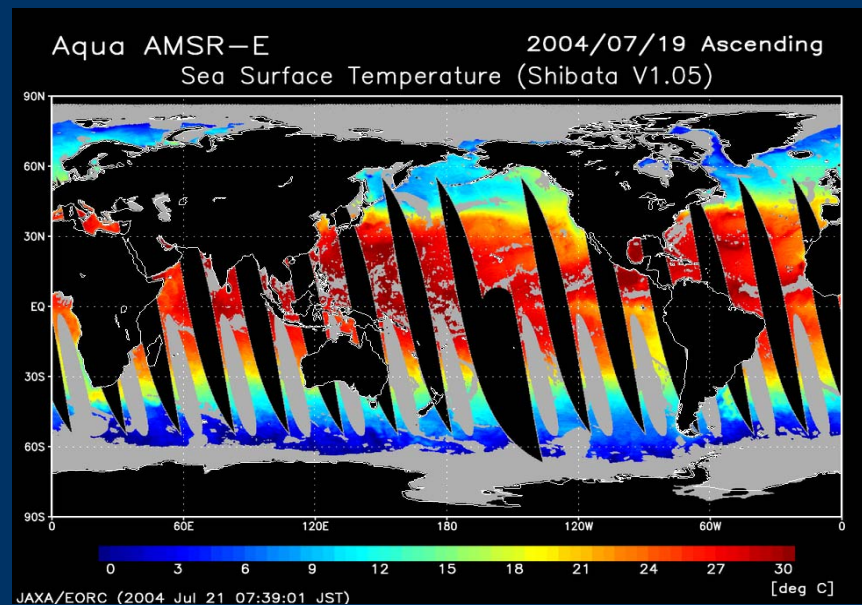
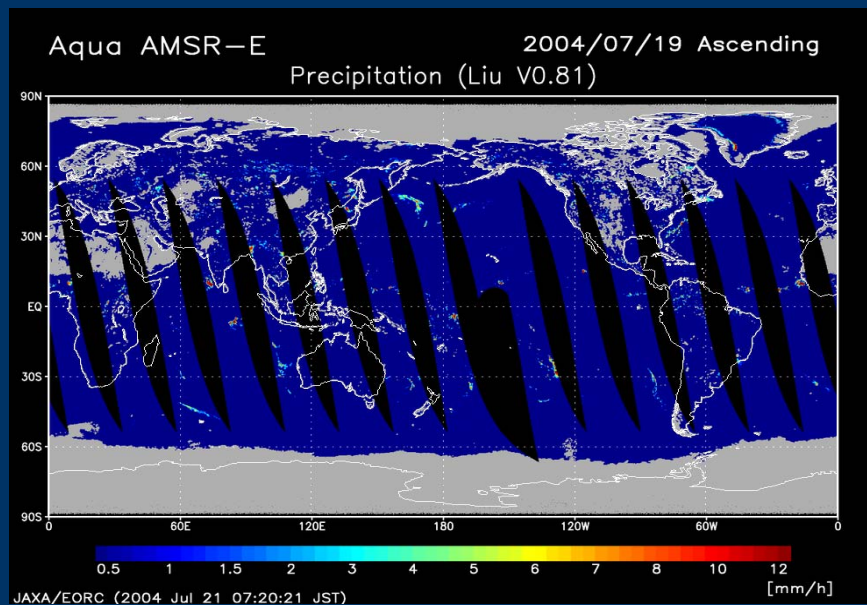
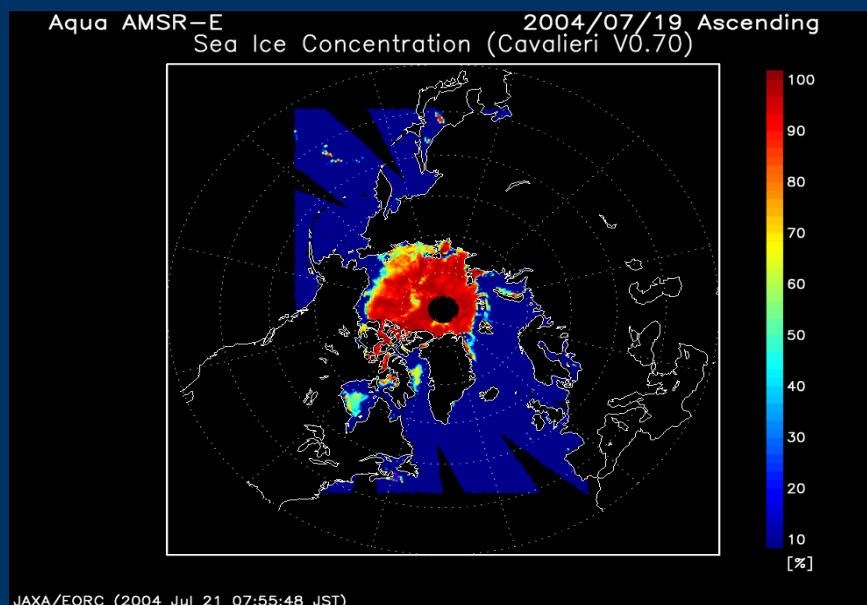
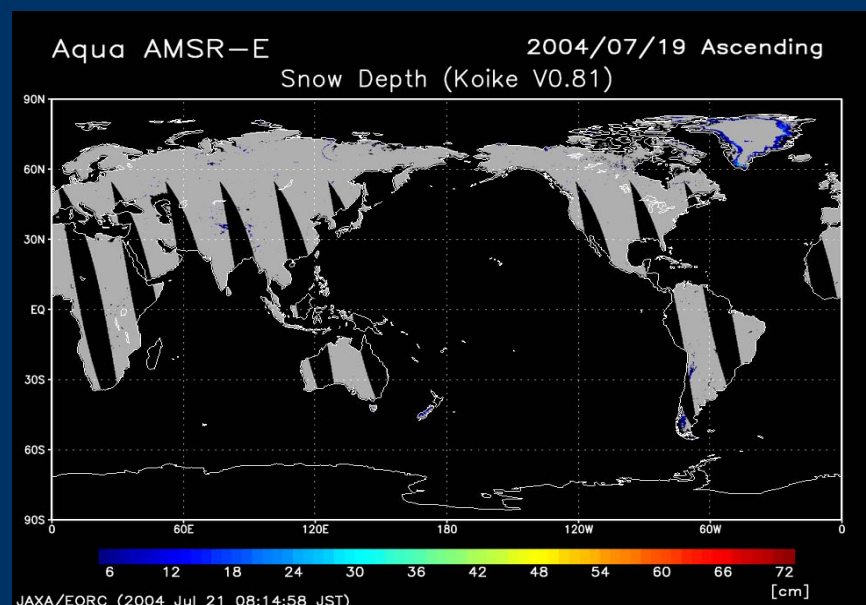


Image of GWC (4)



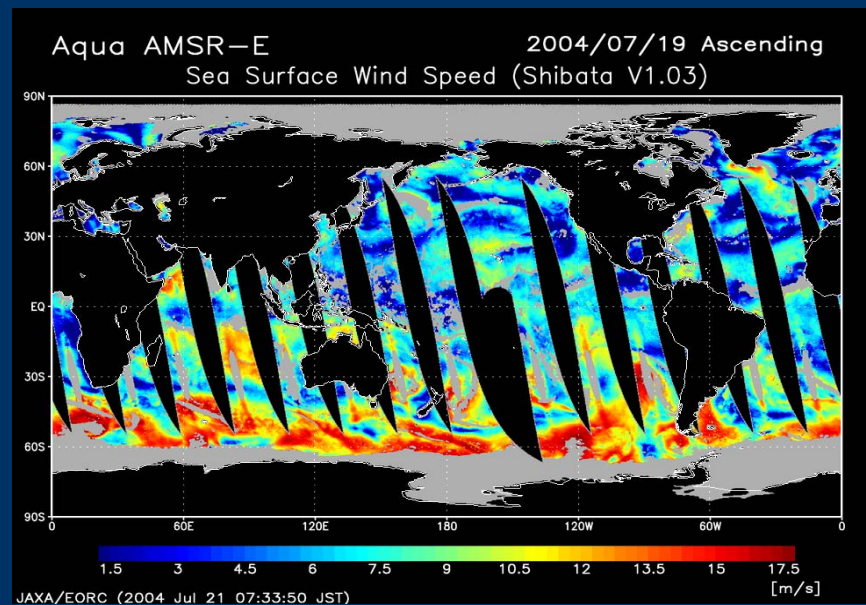
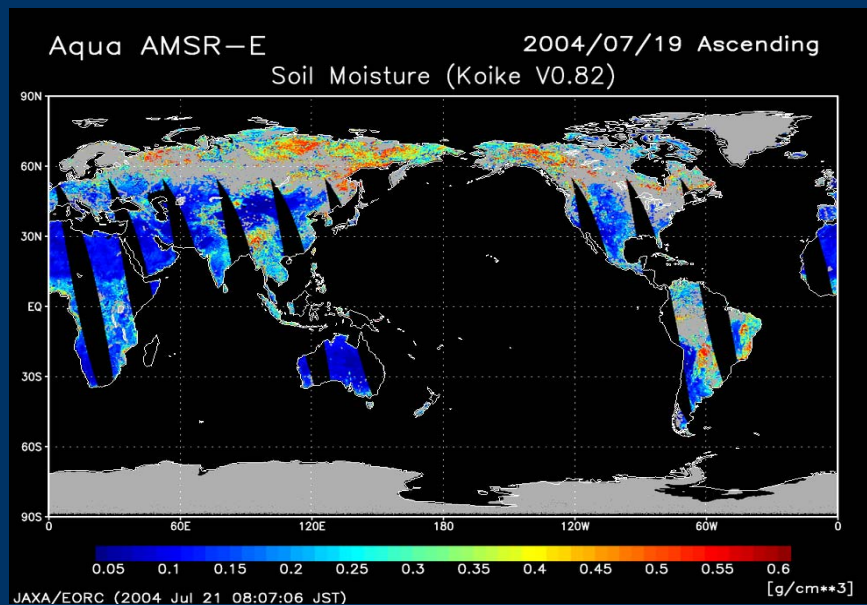
JAXA/EORC (2004 Jul 21 07:55:48 JST)



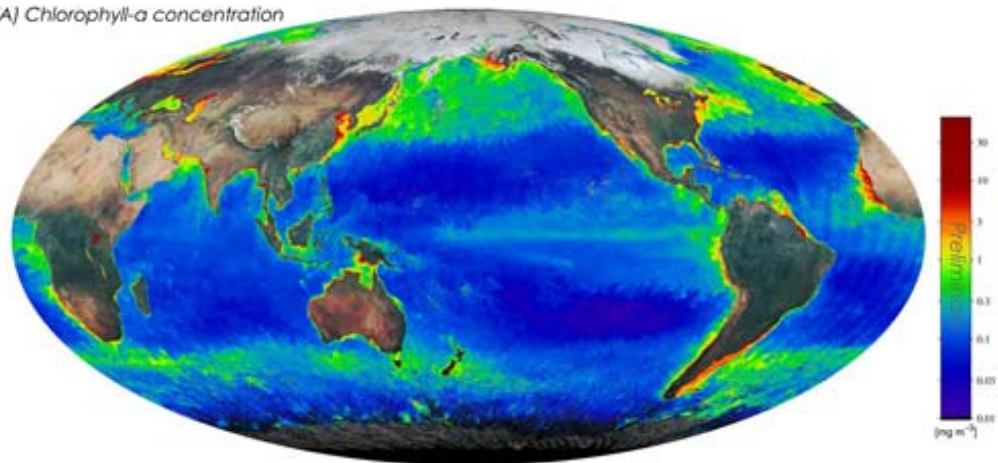
JAXA/EORC (2004 Jul 21 08:14:58 JST)



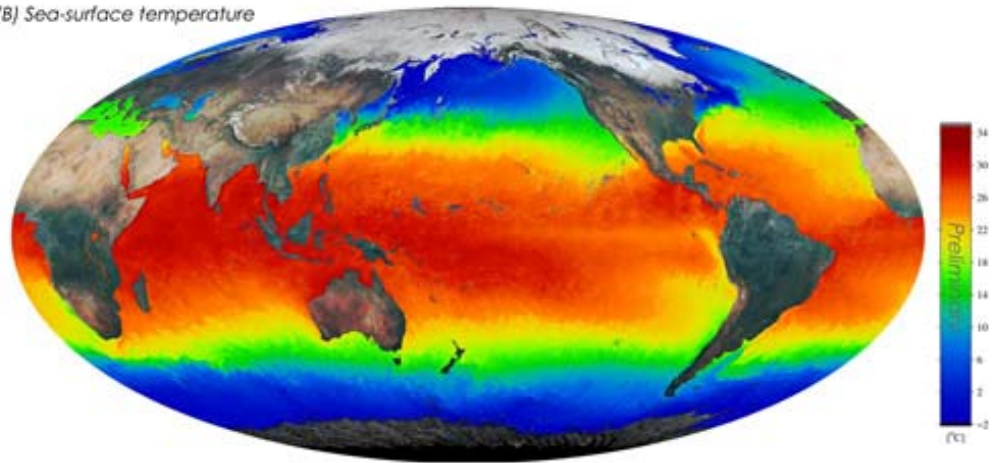
Image of GWC (5)



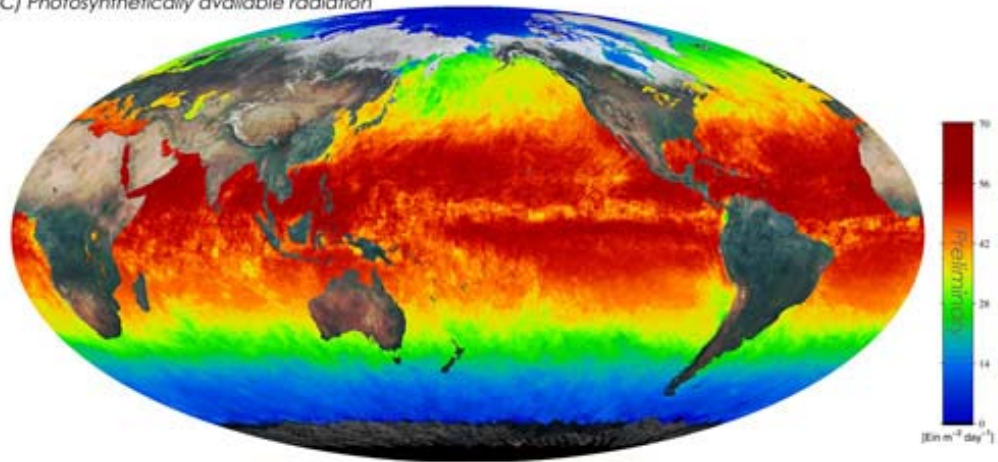
(A) Chlorophyll-a concentration



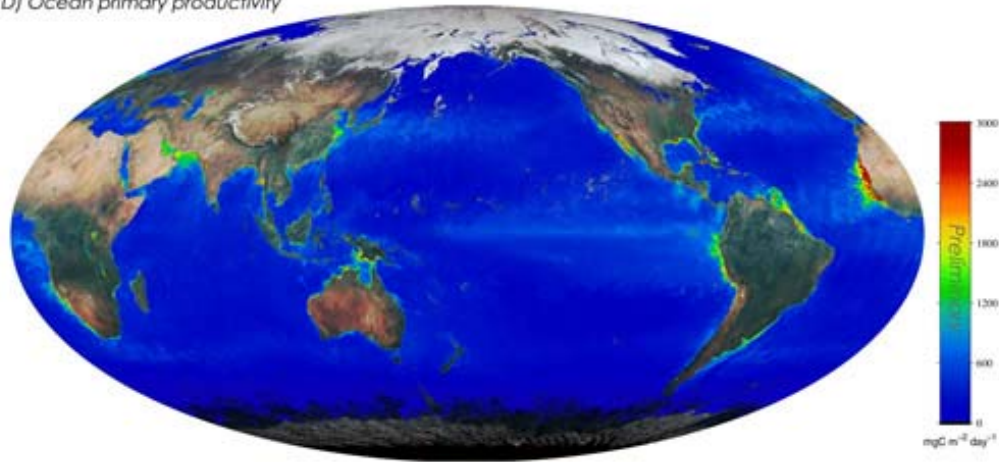
(B) Sea-surface temperature



(C) Photosynthetically available radiation



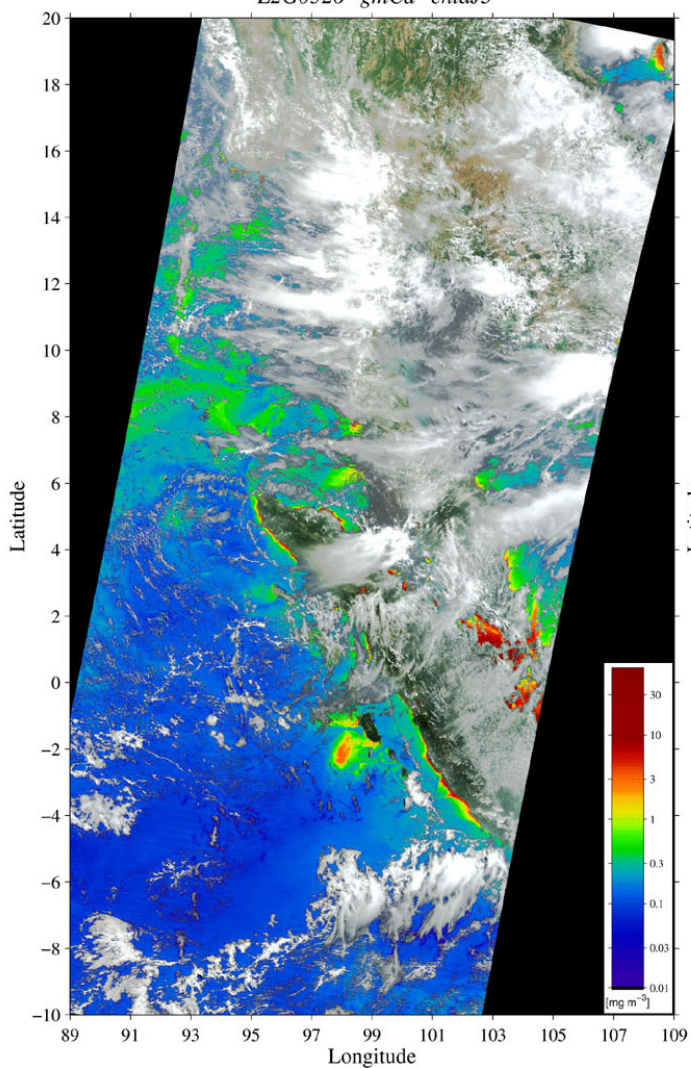
(D) Ocean primary productivity



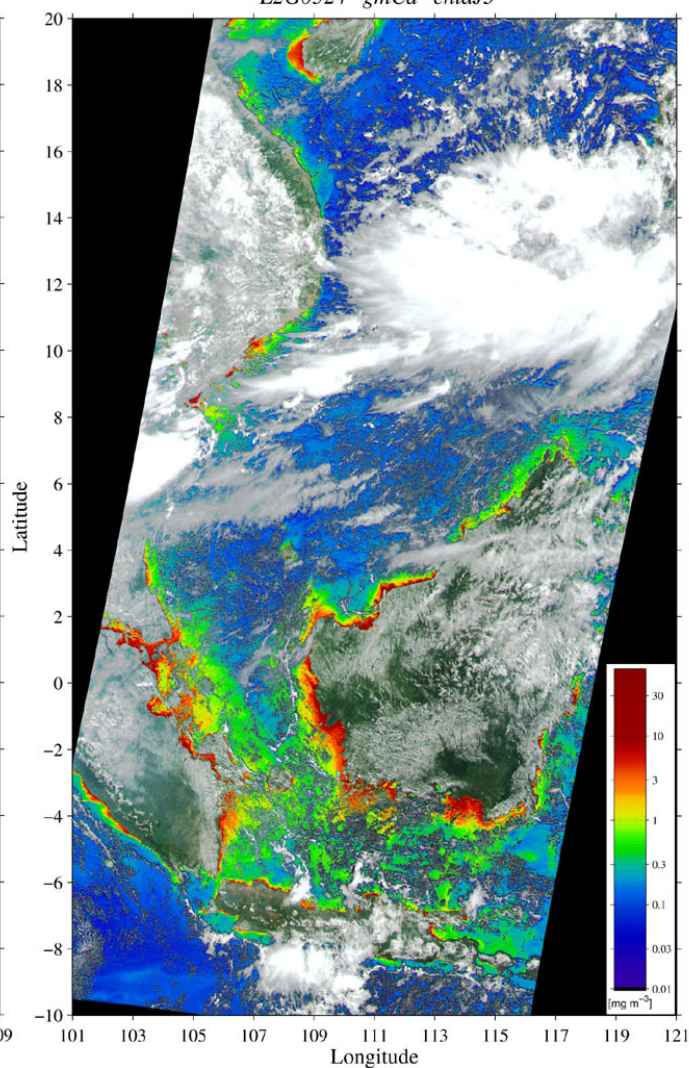
Processed by H. Murakami, W-Z. Chen, K. Hosoda, and K. Sasaoka, Algorithms by H. Fukushima, R. Frouin, B.G. Mitchell, H. Kawamura, and I. Asanuma



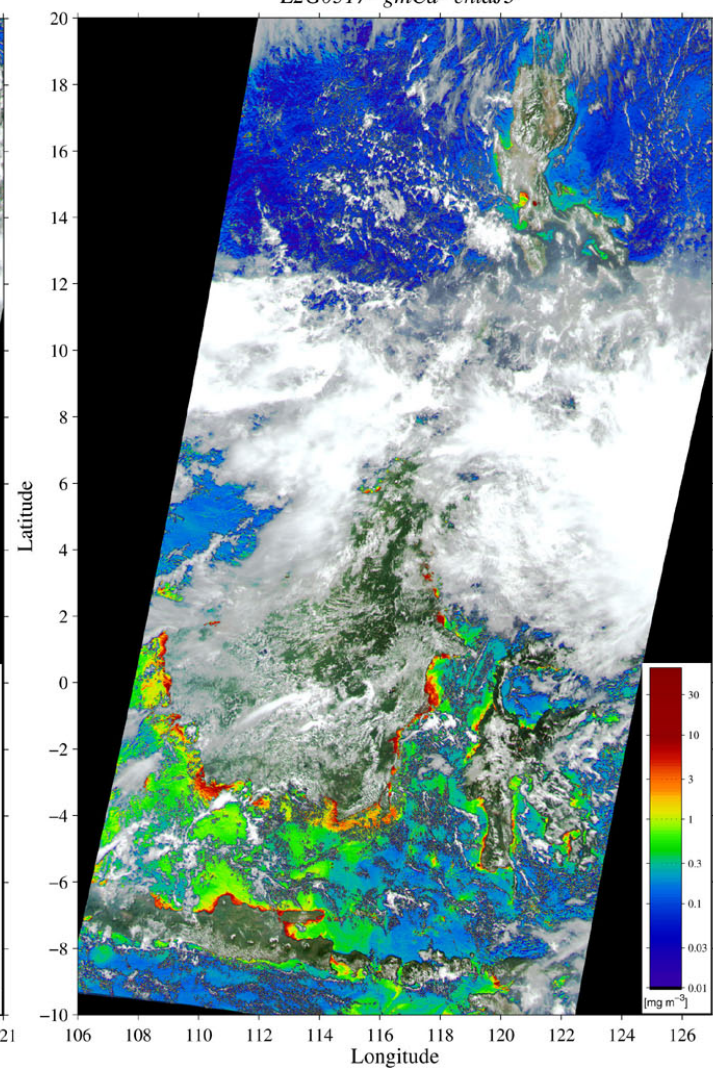
L2G0526-gmCd-chlaJ3



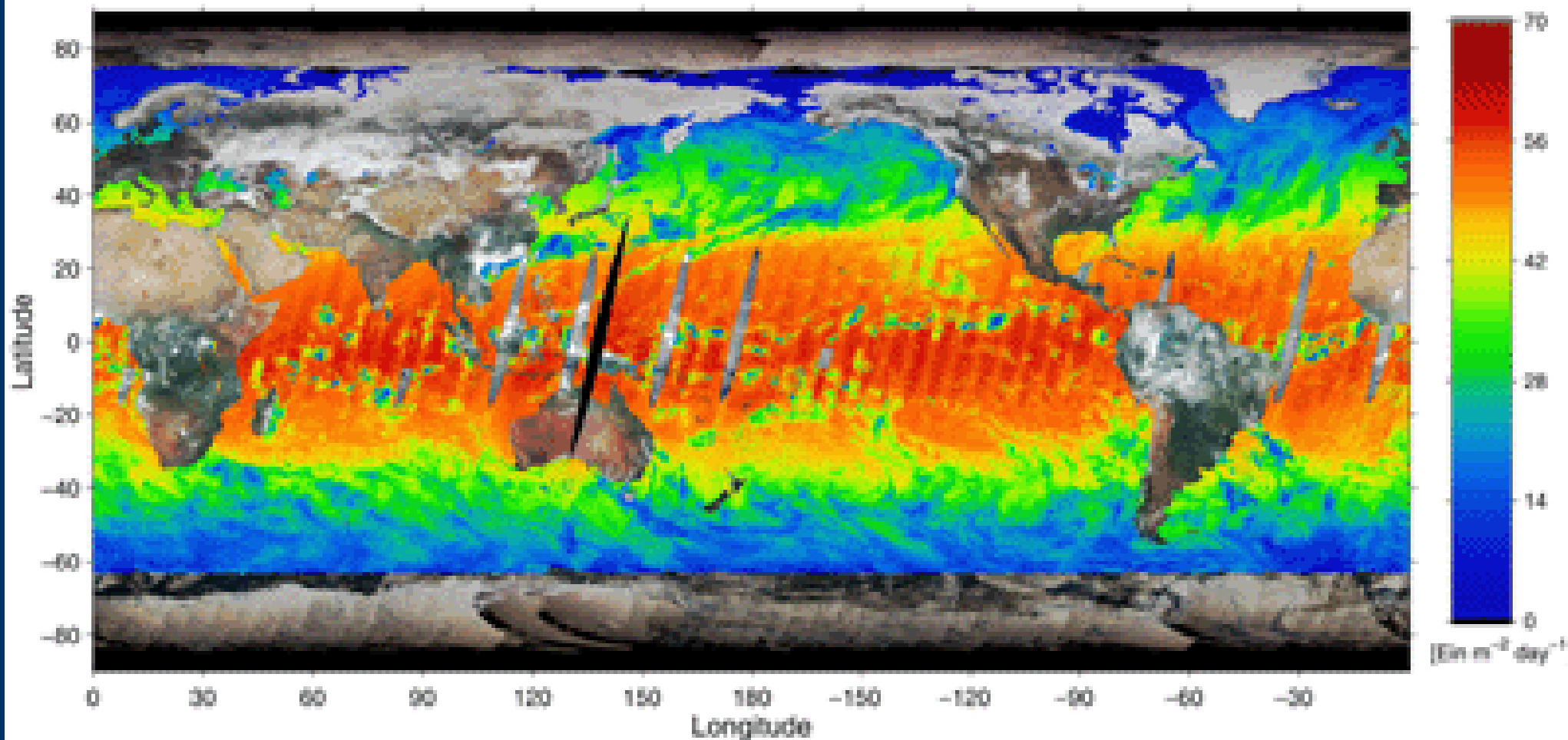
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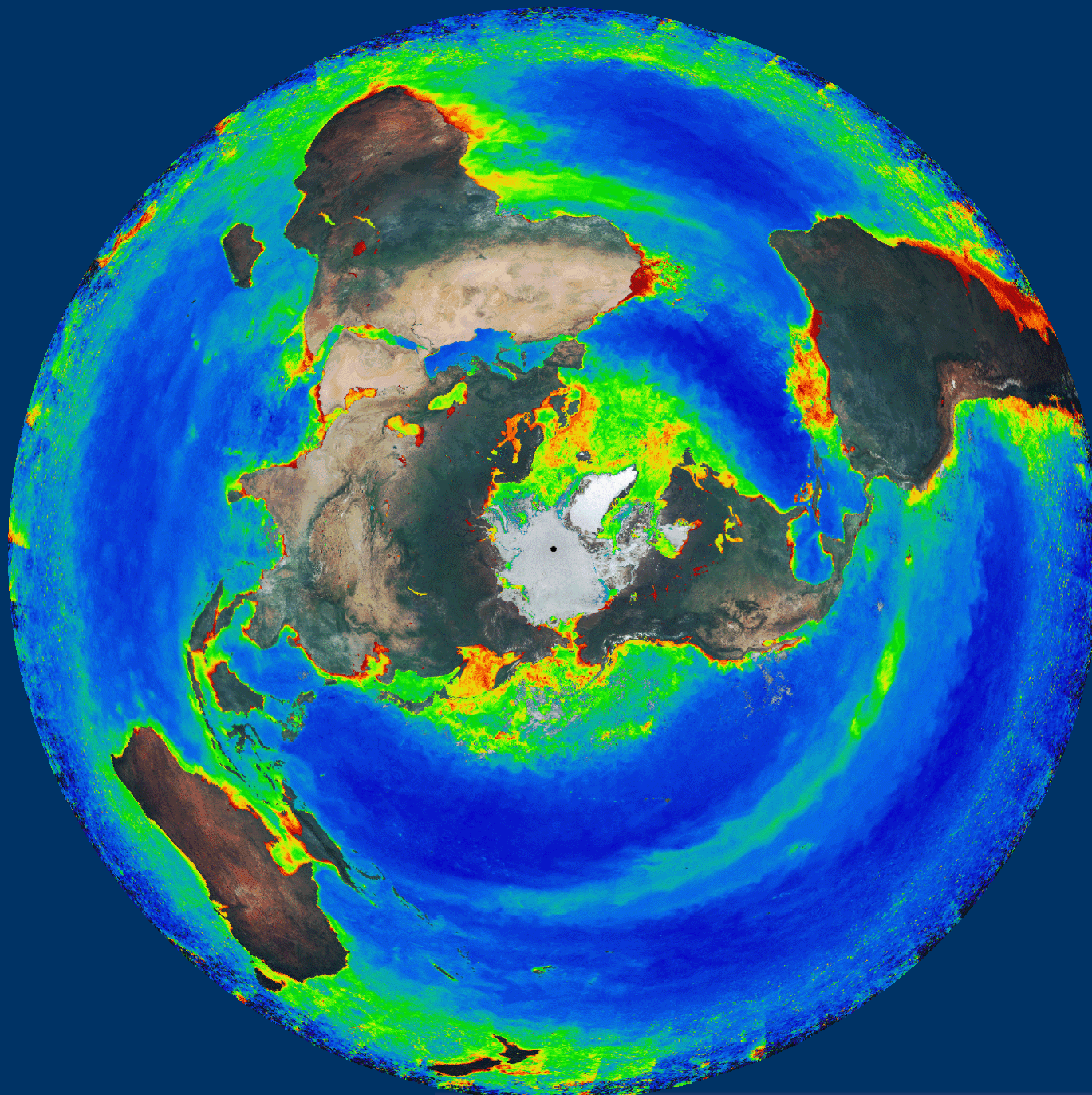


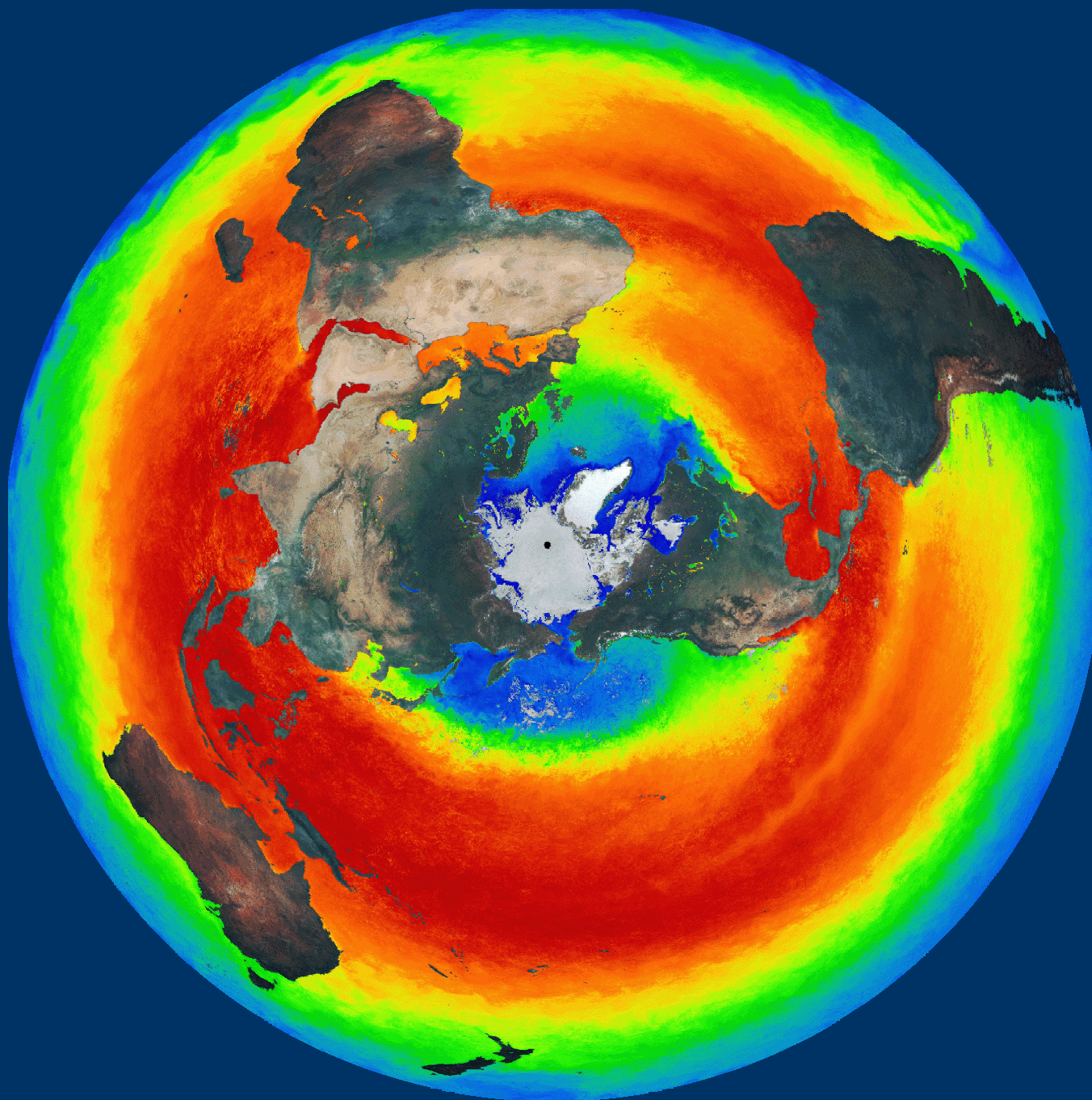
L2G0517-gmCd-chlaJ3



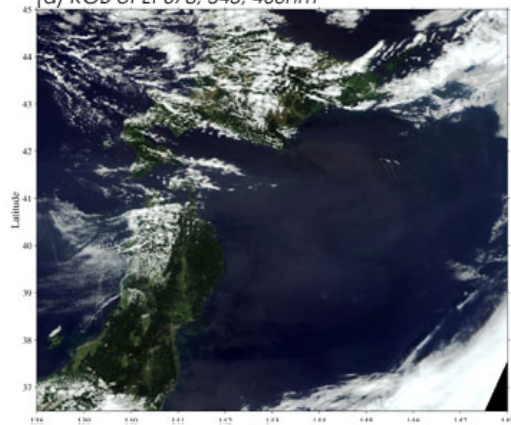
L2G0319Av4dd-dparT3



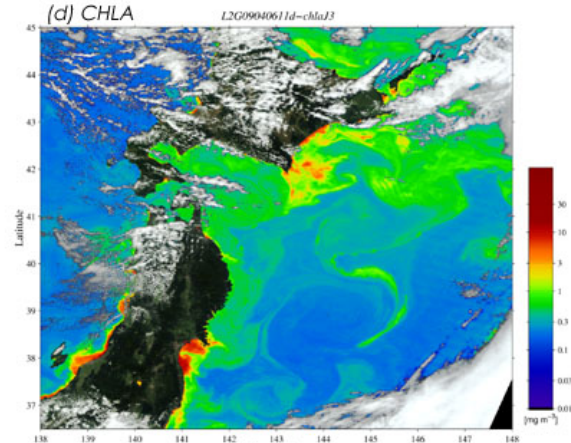




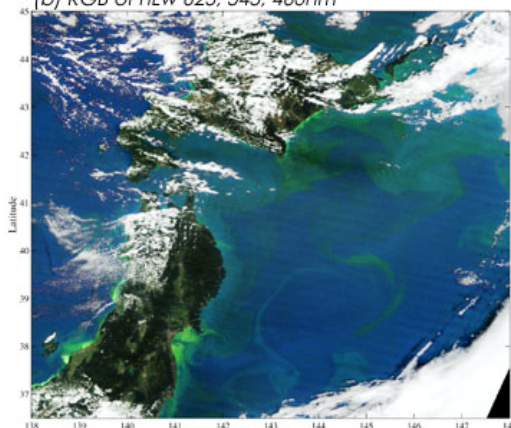
(a) RGB of Lt 678, 545, 460nm



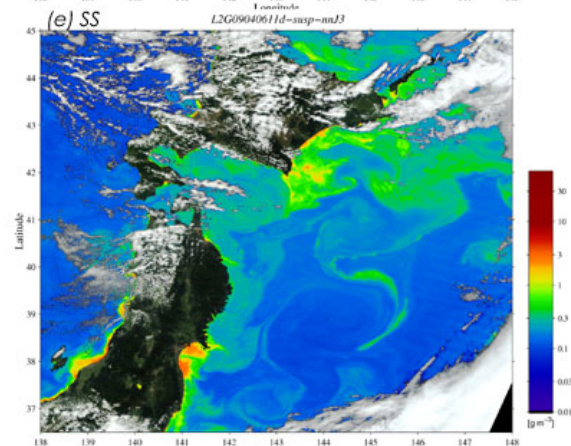
(d) CHLA



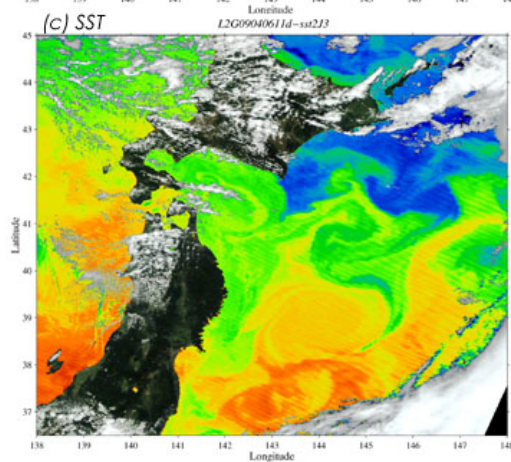
(b) RGB of nLw 625, 545, 460nm



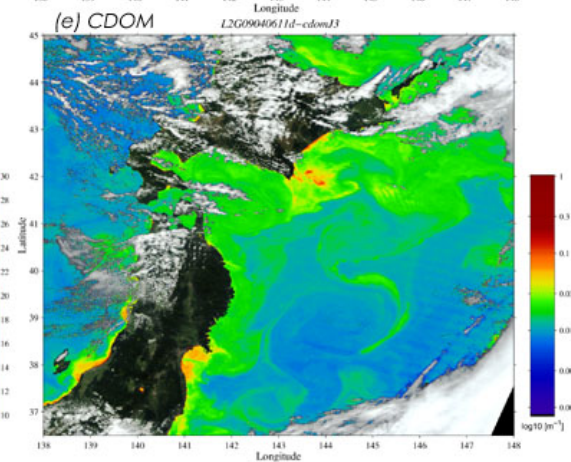
(e) SS

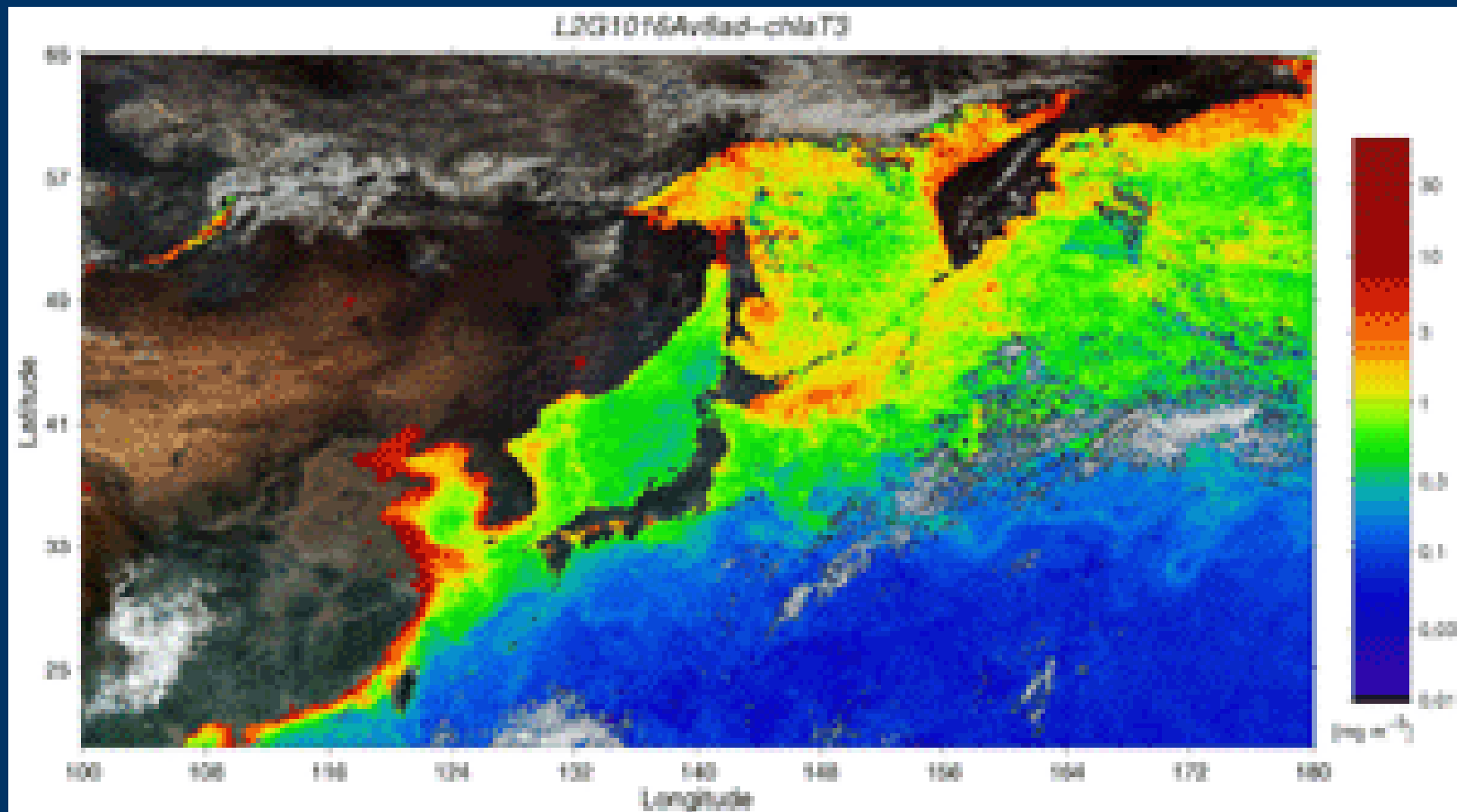


(c) SST



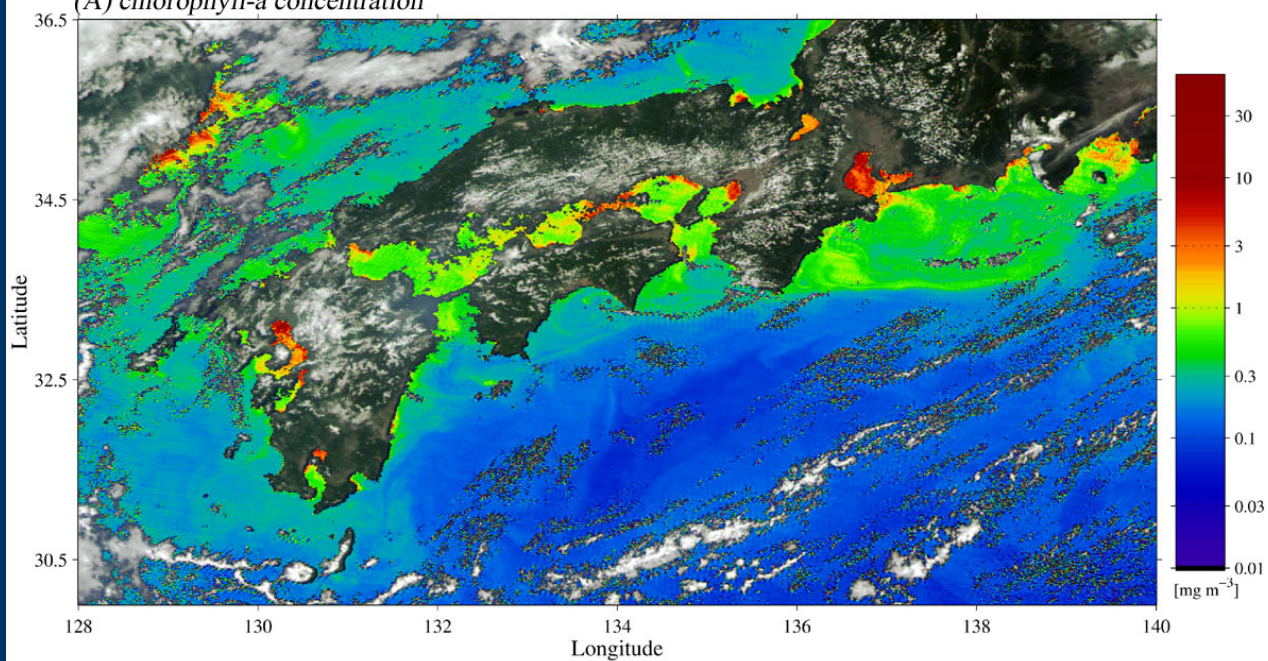
(e) CDOM



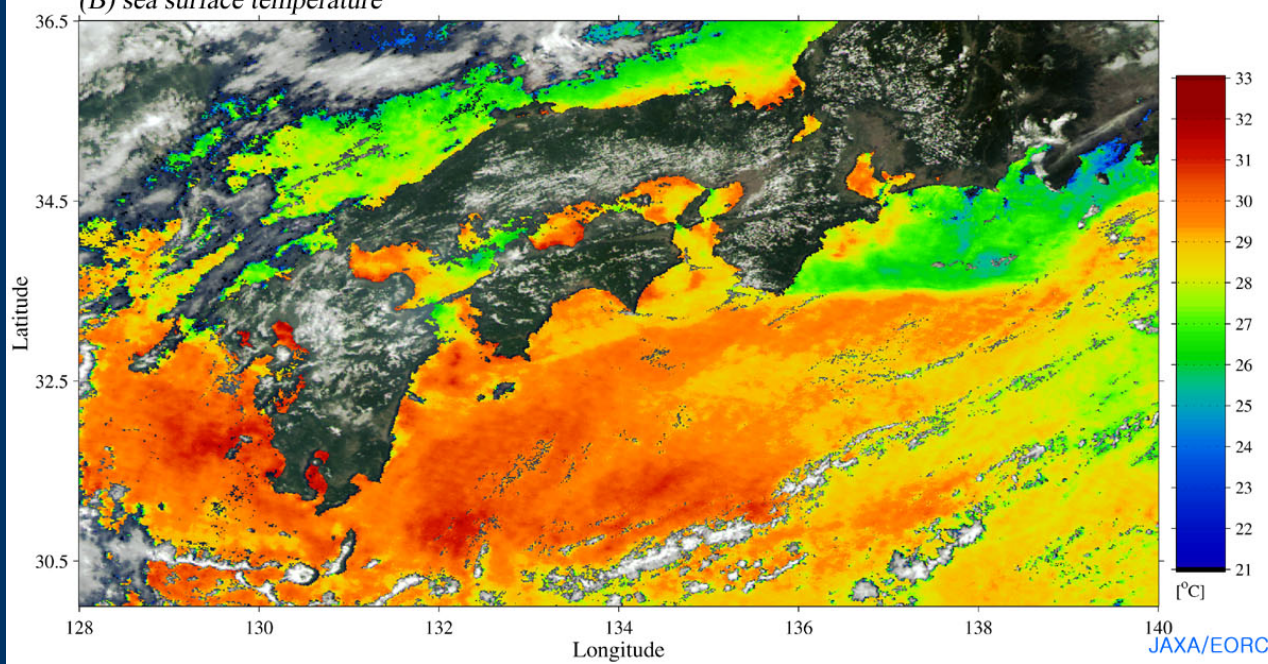


GLI ocean observation of the western Japan summer (23 Aug. 2003, P06 S12)

(A) chlorophyll-a concentration



(B) sea surface temperature



GLI 250m ocean products (26 May 2003, p47s11)

