Objectives of the ADEOS2/GLI Mission

The combination of GLI+AMSR: Near surface phenomena

1. Carbon cycle and primary production study
2. Energy and water cycle study
3. Global warming study

GLI's 36 channels: too many or not enough?

1. Continuation of long-term products
2. Improvement of the product accuracy with comprehensive retrievals of atmosphere/surface parameters
3. New findings
4. Experiences for channel selection

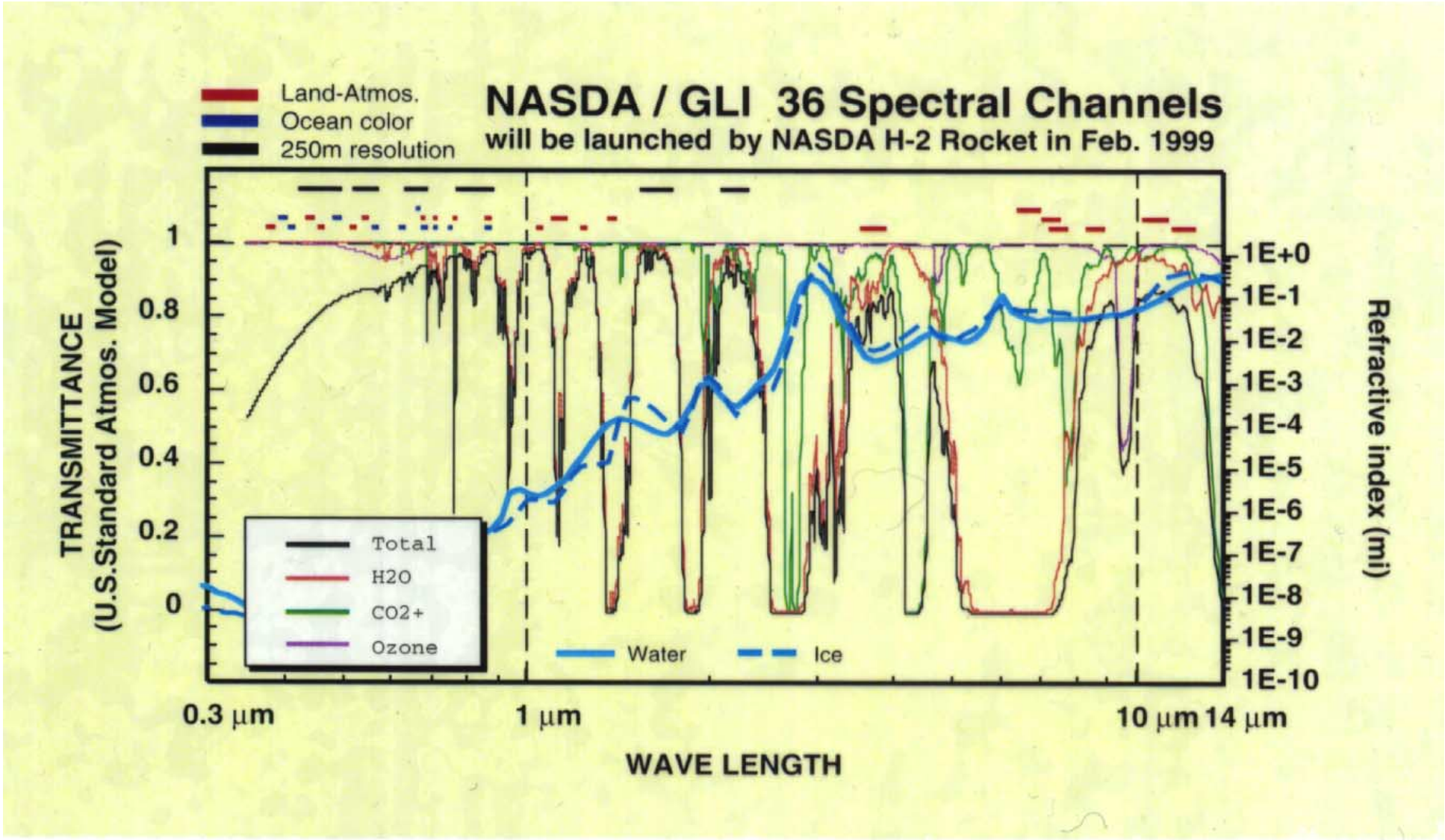


Fig. 21 GLI channels and the atmospheric transmittance (1976 US standard atmosphere model) ..

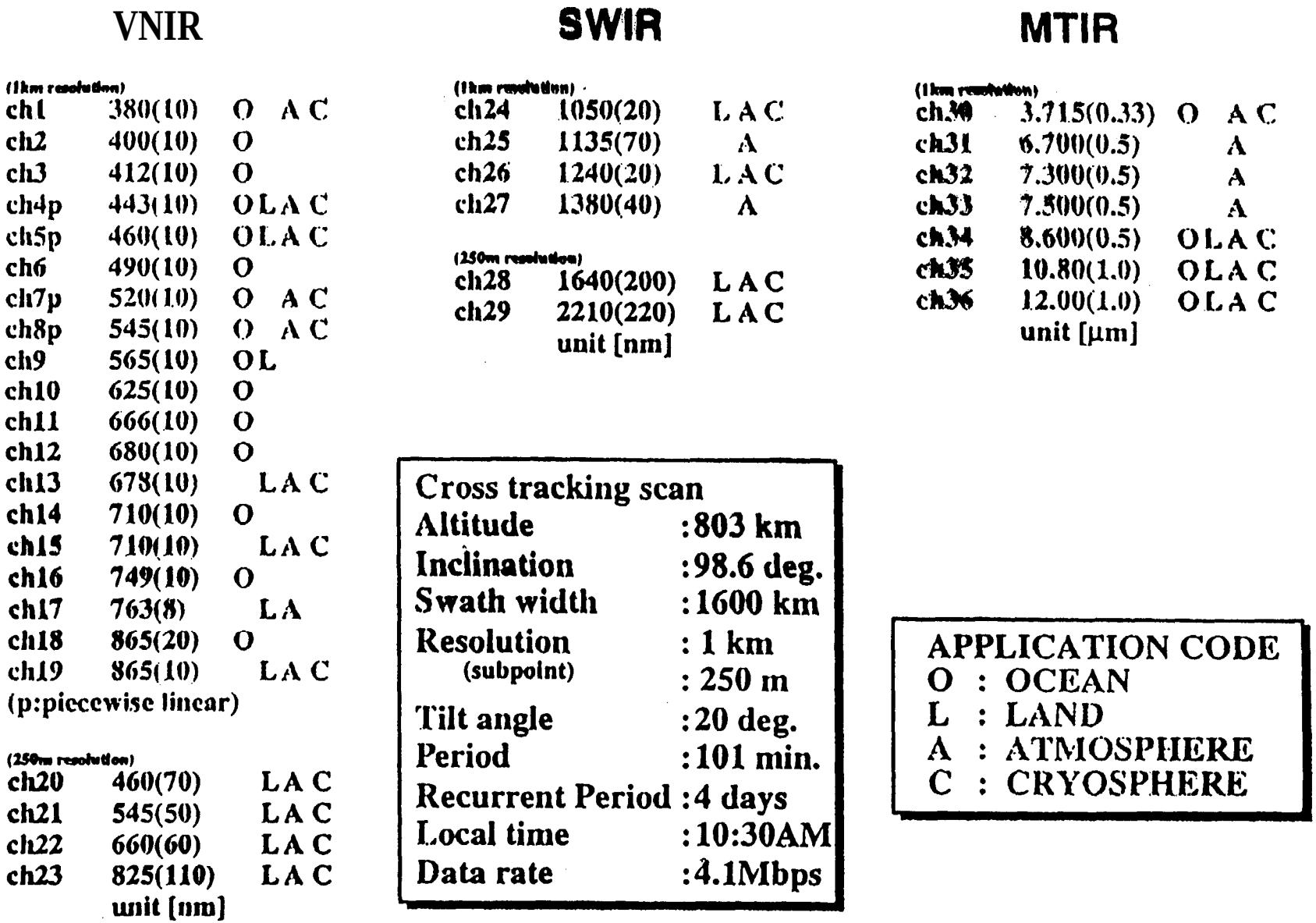
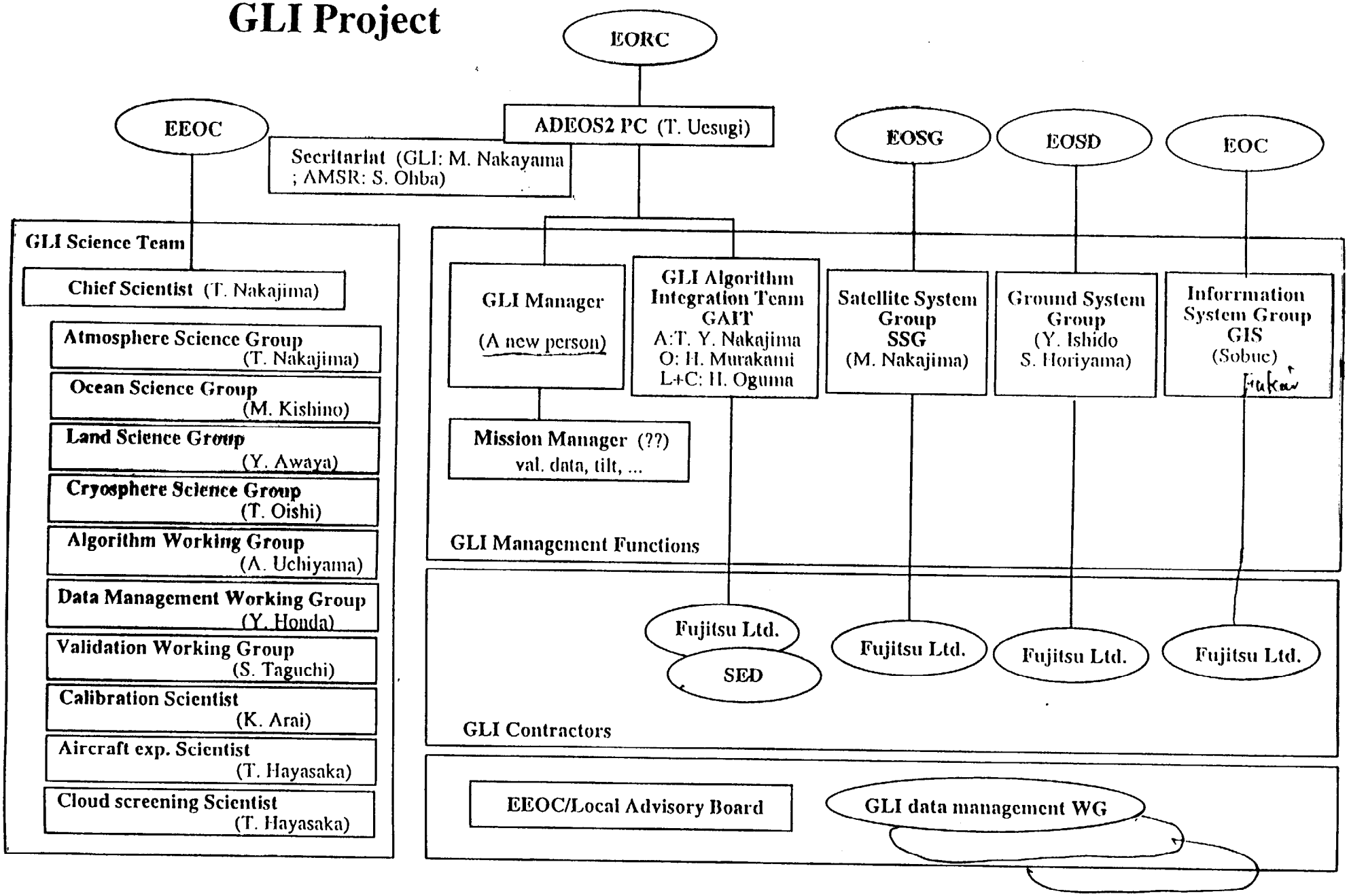


Fig. 22 Central wavelengths and bandwidths.

GLI Project


EORC
EEOC
ADEOS2 PC (T. Uesugi)
Secritariat (GLI: M. Nakayama ; AMSR: S. Ohba)
EOSG
EOSD
EOC
GLI Science Team
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Ocean Science Group (M. Kishino)
Land Science Group (Y. Awaya)
Cryosphere Science Group (T. Oishi)
Algorithm Working Group (A. Uchiyama)
Data Management Working Group (Y. Honda)
Validation Working Group (S. Taguchi)
Calibration Scientist (K. Arai)
Aircraft exp. Scientist (T. Hayasaka)
Cloud screening Scientist (T. Hayasaka)
GLI Manager (A new person)
GLI Algorithm Integration Team GAIT A:T. Y. Nakajima O: H. Murakami L+C: H. Oguma
Satellite System Group SSG (M. Nakajima)
Ground System Group (Y. Ishido S. Horiyama)
Information System Group GIS (Sobue)
Mission Manager (??) val. data, tilt, ...
GLI Management Functions
Fujitsu Ltd.
SED
Fujitsu Ltd.
Fujitsu Ltd.
Fujitsu Ltd.
GLI Contractors
EEOC/Local Advisory Board
GLI data management WG

GLI Ocean Channel

VNIR				TIR	
Band	nm	Band	nm	Band	μm
1	380	9	565	30	3.745
2	400	10	625	34	8.6
3	412	11	666	35	10.8
4	443	12	680	36	12.0
5	460	13	710		
6	490	14	749		
7	520	15	865		
8	545				

http://www.eorc.nasda.go.jp/

ADEOS-II/GLI/adeos2.html/

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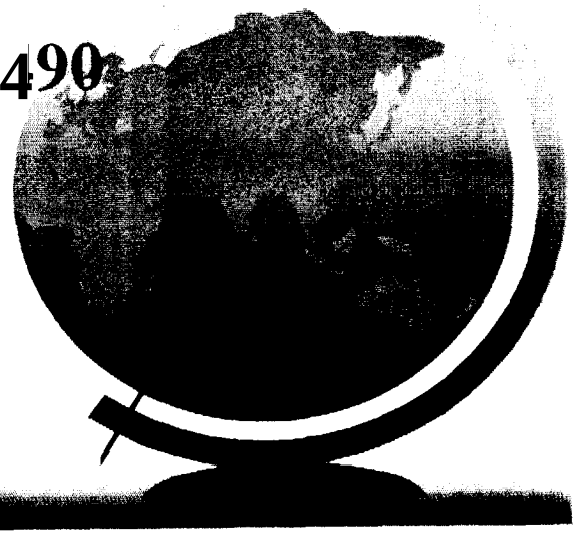
Algorithms for Standard Products

- **Atmospheric Correction**
  - **Water leaving radiance**
- **Bio-optical Algorithms**
  - **Chl. a, Suspended solid, CDOM, K490**
- **Sea Surface Temperature**
  - **Bulk SST**



Algorithms for Research Products

- Accessory pigment
  - Carotenoid, Phycobilin
- Phytoplankton species
  - Trichodesmium, Coccolithus
- Natural fluorescence
- PAR
- Primary Production
  - Ecosystem method, Fluorescen
- Absorption of suspended particles
- SST skin

GLI Product

- Global — 4 km resolution — Standard
- Local — 1 km resolution — Request
- I-LAC — 1 km resolution — Chl. a, SST

  Near Japanese Islands

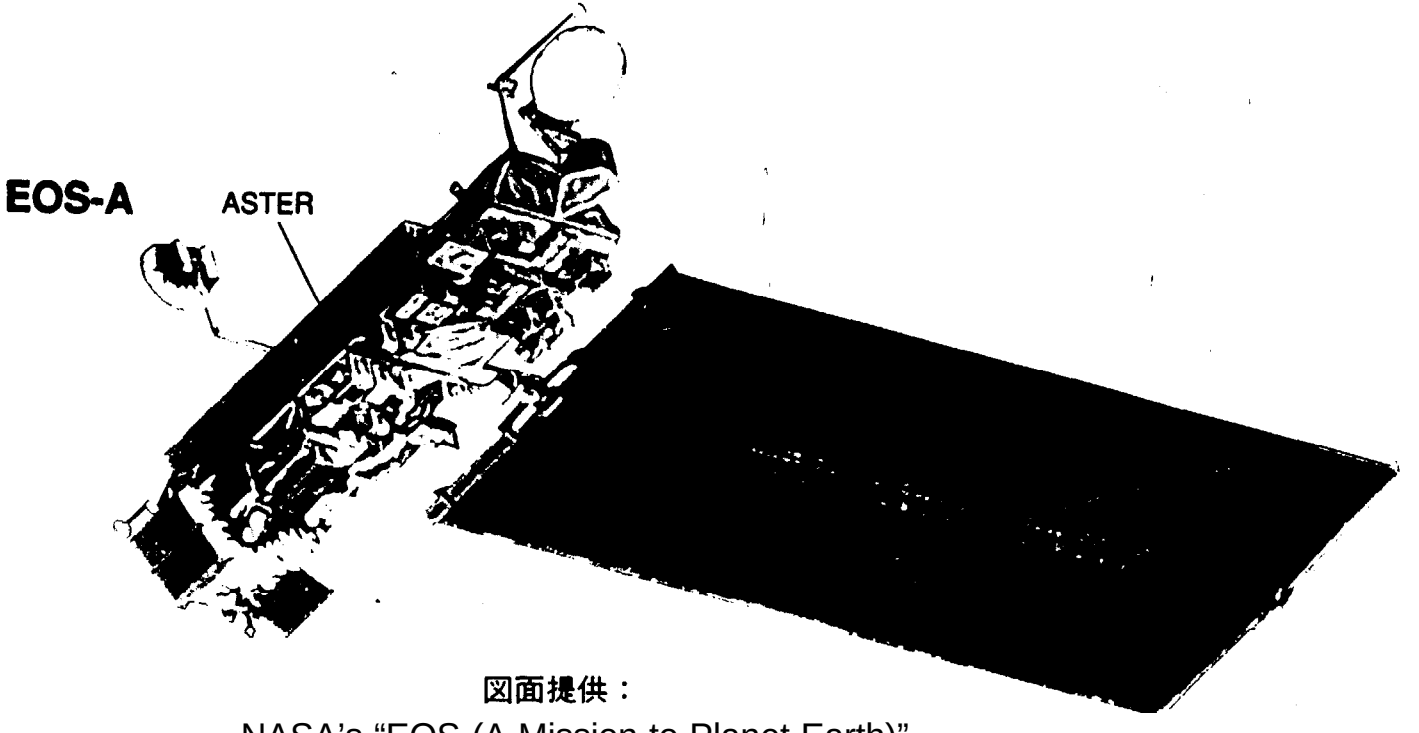
  continuation with OCTS I-LAC

- CROSS CALIBRATION
  GLI and MODIS

- Validate GLI Products with MODIS Products.

ASTER

The Advanced Spaceborne Thermal Emission and Reflection radiometer



図面提供：
NASA’s “EOS (A Mission to Planet Earth)”

CHARACTERISTIC	VNIR	SWIR	TIR
Spectral Bands (band number: μm) (N: Nadir; B: Backward)	1: 0.52 - 0.60 2: 0.63 - 0.69 3N: 0.76 - 0.86 3B: 0.76 - 0.86	4: 1.600 - 1.700 5: 2.145 - 2.185 6: 2.185 - 2.225 7: 2.235 - 2.285 8: 2.295 - 2.365 9: 2.360 - 2.430	10 : 8.125 - 8.475 11: 8.475 - 8.825 12: 8.925 - 9.275 13: 10.25 - 10.95 14: 10.95 - 11.65
Ground Resolution (m)	15	30	90
Data Rate (Mbit s^{-1})	62	23	4.2
Scan Method	Push broom	Push broom	Whisk broom
Cross-Track Pointing (degrees)	±24	±8.55	±8.55
Cross-Track Pointing (center pixel to center pixel; km)	646	232	232
Swath Width (km/# pixels)	60/4000	60/2000	60/667
IFOV (μrad) Nadir Backward	 21.3±0.2 18.6±0.2	 42.6±	 127.8±
Detector Type	Si	PtSi-Si	HgCdTe
MTF at Nyquist Frequency Along track Cross track	 ≥0.20 ≥0.25	 ≥0.20 ≥0.25	 ≥0.20 ≥0.25
Quantization (bits)	8	8	12

Table 2-2. ASTER subsystem specifications

Proposal for ASTER-MODIS Joint Observation

- Objective
  - Validate ASTER SST with MODIS SST.
  - Study sub-pixel phenomena in a MODIS pixel

- Location
  - Pacific Ocean, off the coast of Shikoku Island, Japan
  - 260 km(NS) by 430 km(EW)

- Frequency: three times per year

- ASTER Observation: Image strip between Shikoku and Kuroshio current
  Shikoku Island : Ground control point
  Coastal Water : “Cold” target
  Kuroshio Water : “Hot” target

- ASTER Oceanography working group has sent a Science Team Acquisition Request(STAR) for Shikoku.

- Availability of MODIS SST data...


N
5 km
ASTER TIR
N
5 km
NOAA AVHRR
N
5 km
LANDSAT TM

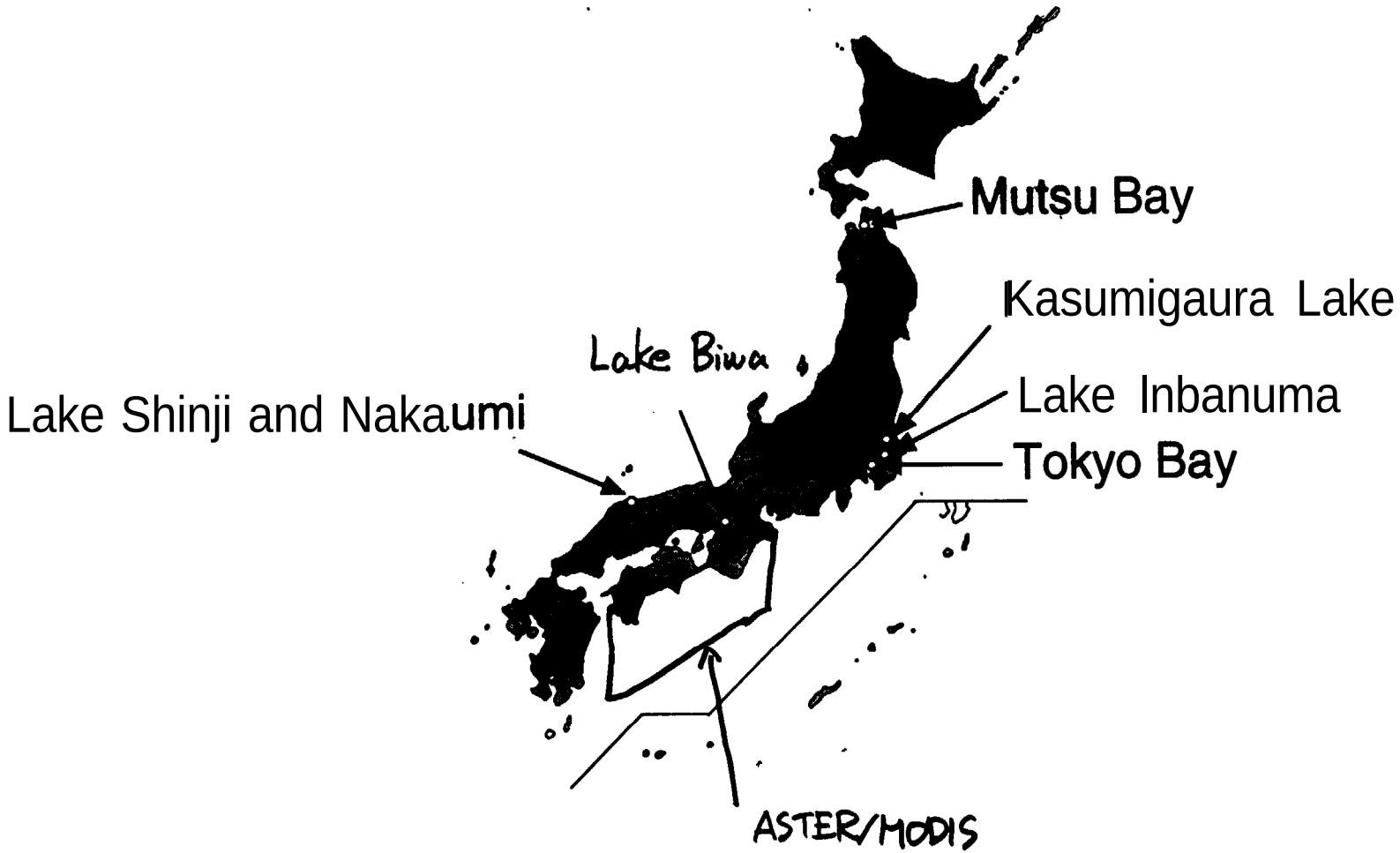
ASTER for MODIS SST

- Sub-pixel cloud fragment
  - ASTER can locate cloud fragments as small as 15 m (VNIR), 30 m (SWIR), and 90 m (TIR) which MODIS cannot identify.

- Detailed structure of oceanic fronts and so. on.
  - ASTER can act as "ZOOM-UP" lens for MODIS and show detailed thermal structures of sea surface phenomena while MODIS provides synoptic view of the same event.

ASTER Oceanography Validation Sites in Japan

Geological Survey of Japan



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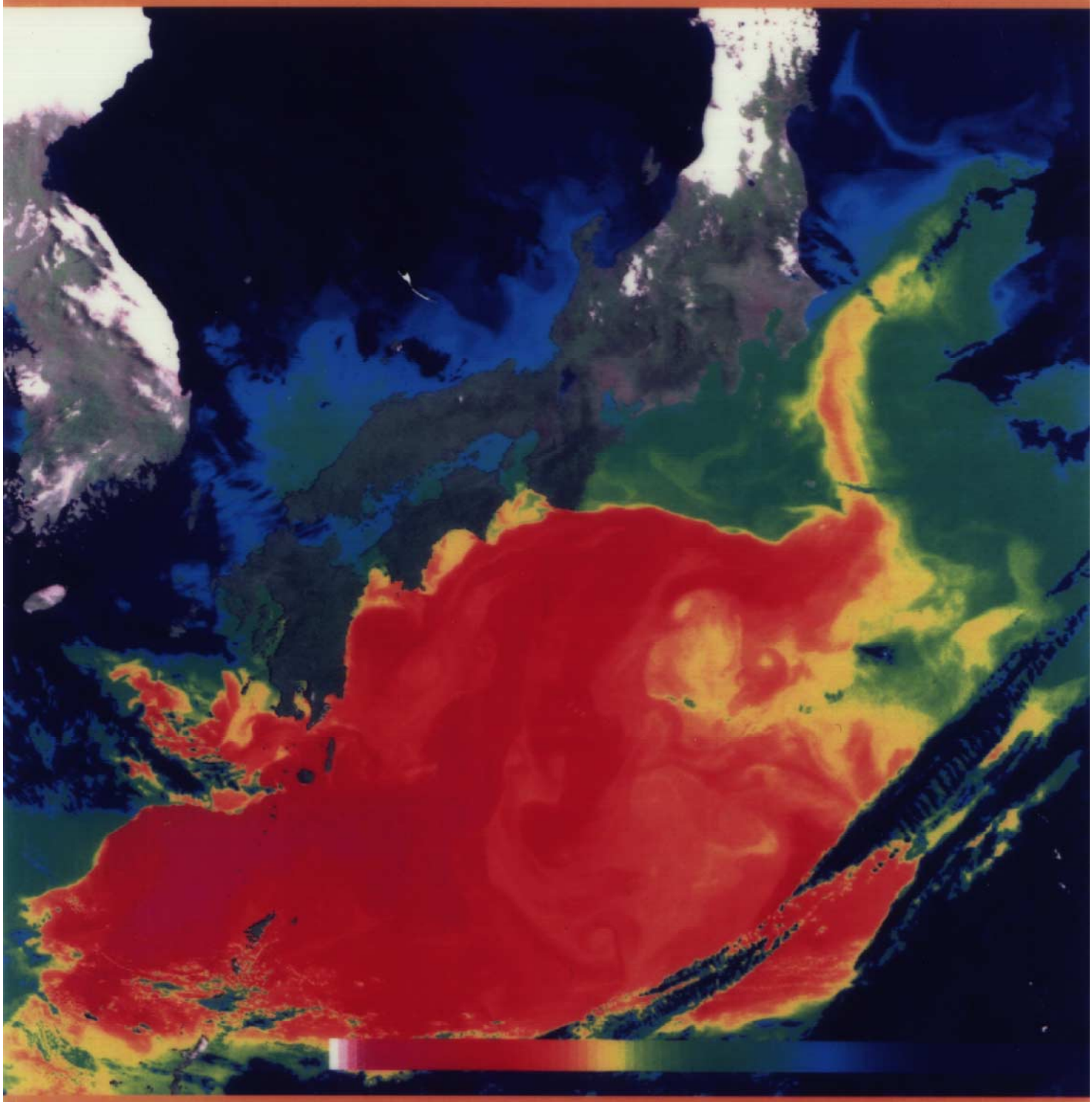

社団法人　日本リモートセンシング学会

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