GCOM Missions

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ADEOS Ⅱ

- Launched on 14, Dec. 2002
- Stopped Operation on 25 Oct. 2003
- Power generation decreased from 6kW to 1 kW within 3 minutes
- 7.5 hours after power generation decrease, ADEOS Ⅱ has stopped its operation

GCOM Mission

- ADEOS Ⅱ Follow On
- Contribute to GEOSS
- Climate, Weather, Water, Ecosystems, Agriculture, etc.
- Mainly focused to global warming & water cycle
- Long term continuous monitoring

Operational Use

- NWP Input
- Fisheries
- Navigation
- Coastal Management
- Deforestation Monitoring
- Fire Warning

Scientific Targets

- Clarify Radiative Forcing of Aerosols
- Validation of Climate Models
- Accurate NPP Estimate

GCOM Satellites

- After the ADEOS Ⅱ accident, it was decided to divide the ADEOS Ⅱ F/O into two small satellites
- They are GCOM-W which carries AMSR F/O and GCOM-C which carries GLI F/O
- The GCOM mission is composed of 3 sets of satellites, covering more than 13 years with 1 year overlaps

GCOM-W1

- Target : Water cycle
- Sensors : AMSR F/O, SeaWinds F/O
- Launch date : 2010
- Orbit : 700km altitude (tentative), sun synchronous, 13:30 ascending node time

Tentative Schedule(GCOM-W)

- Research phase start : 1998/4
- Developmental research start : 2006/10
- Development start : 2007/4
- Launch : 2010

AMSR F/O

- Continuation of AMSR & AMSR-E
- High accuracy hot load
- 12 bits quantization levels for all channels
- Eliminate temperature channels

AMSR F/O Spec.

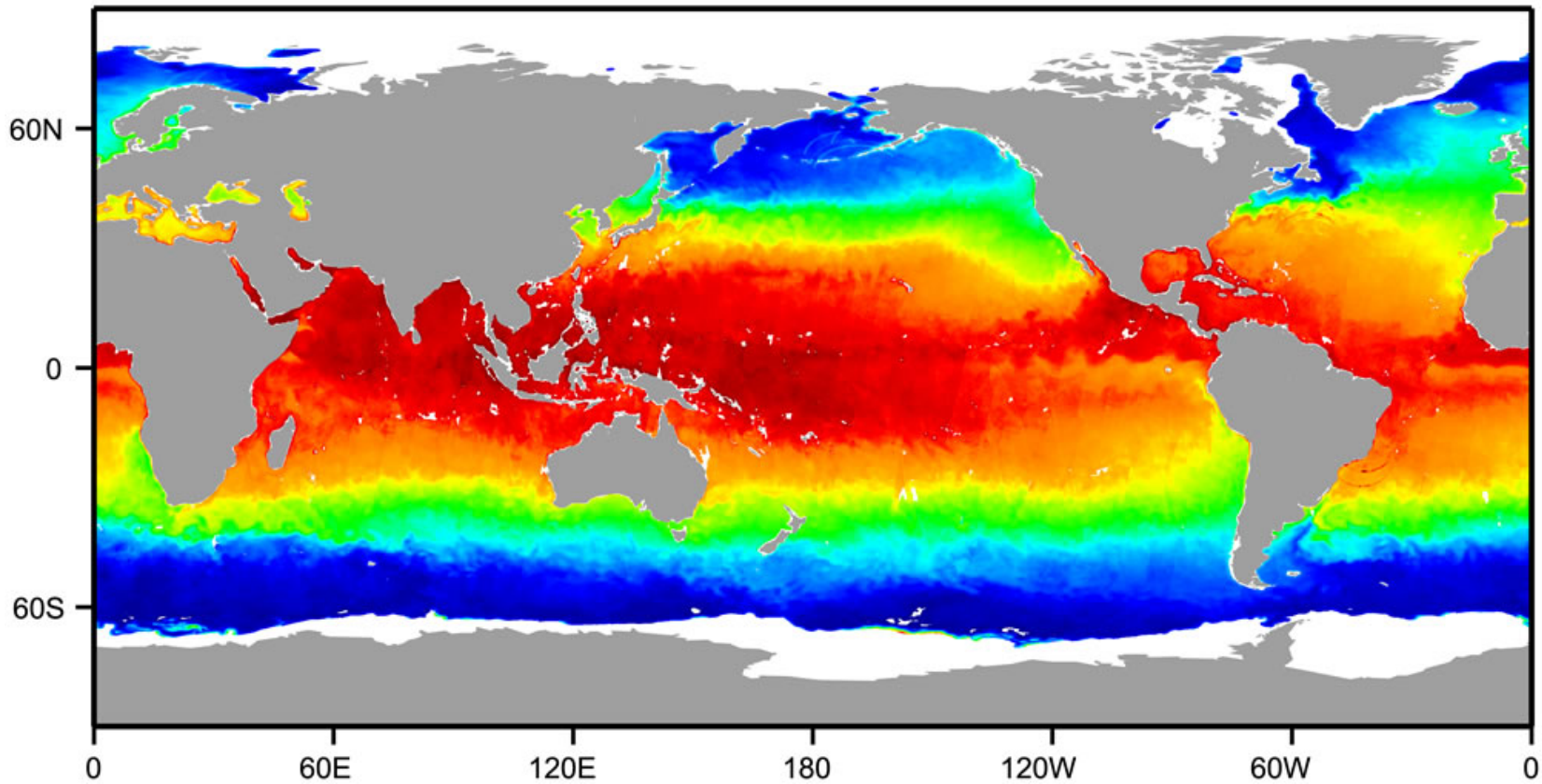
- antenna：parabolic, conical scan
- antenna aperture：2m
- swath width：1400km(TBR)
- quantization：12bit
- incident angle：55°
- cross polarization：< -20dB
- dynamic range：2.7K-340K
- accuracy：1-3K

frequency (GHz)	IFOV (km)	band width(MHz)	NEΔT (K, 1σ)	quantization
6.9	50	350	0.3	12
10.65	50	100	0.6	12
18.7	25	200	0.6	12
23.8	25	400	0.5	12
36.5	15	1000	0.5	12
89.0	5	3000	1.0	12

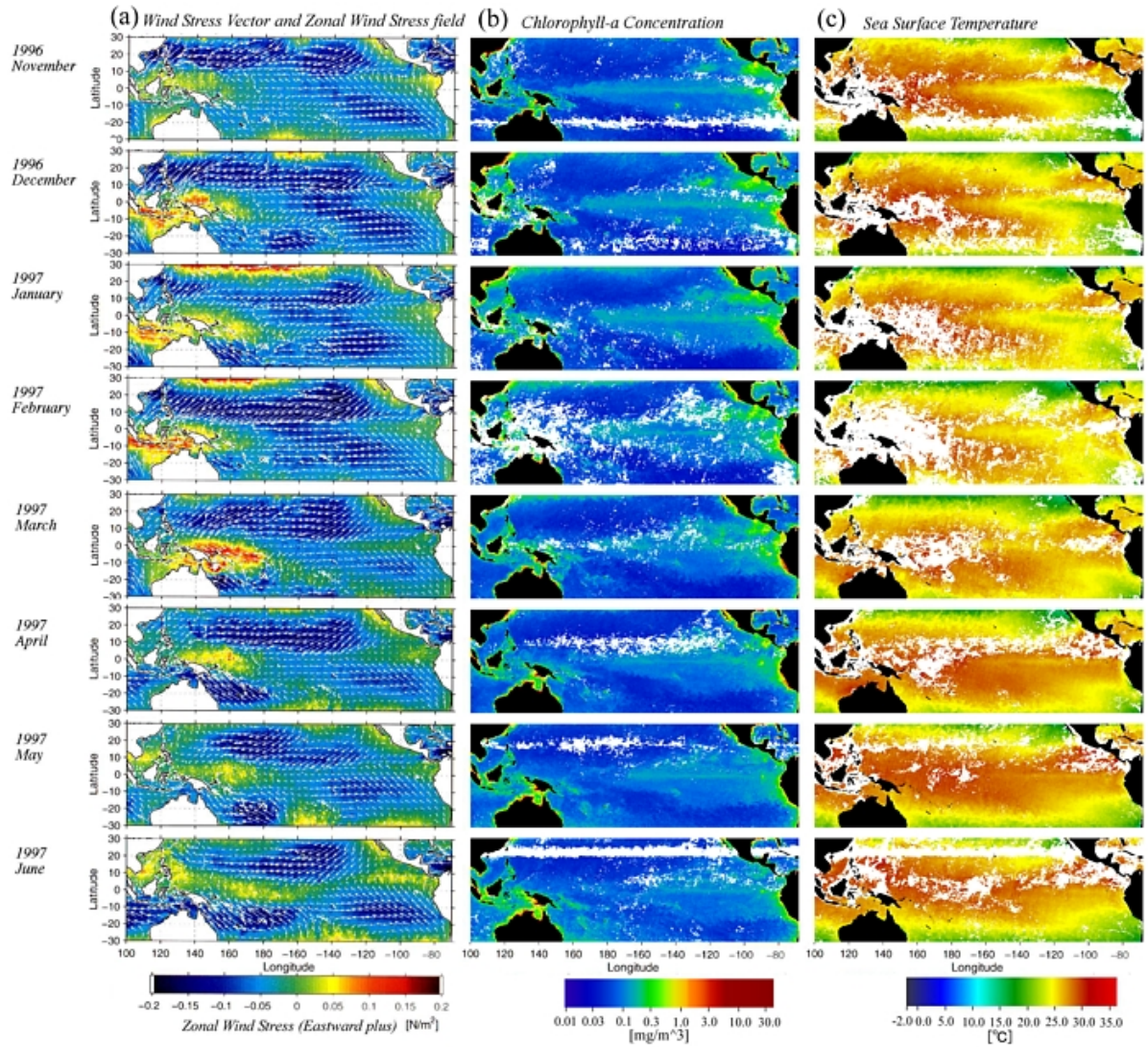
SeaWinds F/O

- NSCAT and SeaWinds continuation
- Ku band scatterometer
- High accuracy sea surface winds speed & direction
- Asking NASA to provide
- Options
- large aperture antenna
- addition of C-band

SST Jun'02 (AMSR-E)



El Nino onset ’96-’97(ADEOS)



GCOM-C1

- Target : Energy cycle, Carbon cycle
- Sensor : SGLI
- Launch date : 2011
- Orbit : 800km altitude, sun synchronous, 10:30 descending node time

Tentative Schedule(GCOM-C1)

- Research phase start : 1998/4
- Developmental research start : 2006/10
- Development start : 2007/4
- Launch : 2011

SGLI

- Wide spectrum coverage
- UV, VIS, NIR, SWIR, TIR
- Polarization measurements
- Multiple angle observation
- Multiple telescopes
- Small IFOV : 250m (VIS-NIR)
  500m (TIR)

VNIR

Ch.	central wavelength [nm]	IFOV [m]	⊿λ [nm]	Lλ [W/m^2/str/μm]	L_{max}. [W/m^2/str/μm]	S/N
VN1	380	250	10	60	210	250
VN2	412	250	10	75	250	400
VN3	443	250	10	64	400	300
VN4	490	250	10	53	120	400
VN5	530	250	20	41	350	250
VN6	565	250	20	33	90	400
VN7	670	250	10	23	62	400
VN8	670	250	20	25	210	250
VN9	865	250	20	8	30	400
VN10	763	1000	40	350	350	400
VN11	865	250	20	30	300	200

SWI+TMI

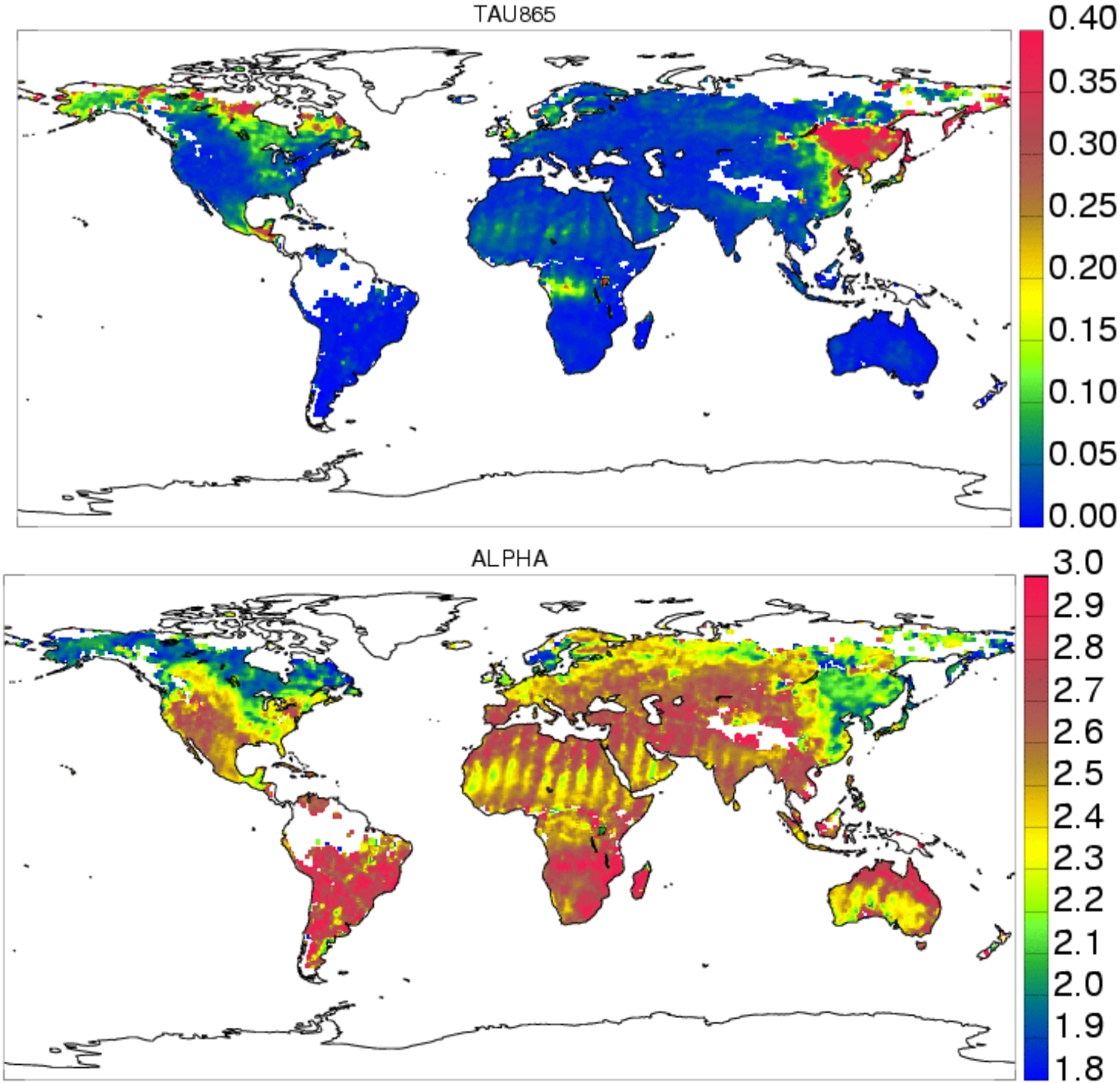
Ch.	central wavelemgth [μm]	IFOV [m]	⊿λ [μm]	Lλ [W/m^2/str/μm] or Tstd[K]	Lmax[W/m^2/str/μm] or Tmax[K]	S/N or NEdT@300[K]
SW1	1.05	250 or 1000?	0.02	71	303	473
SW2	1.64	250	0.15	22.9	82	1145
SW3	2.21	250	0.05	6.7	38	720
T1	10.8	1000	0.7	300	340	0.1
T2	12.0	1000	1.0	300	340	0.1

Polarization channels (3 directions)

Ch.	central wavelength [nm]	IFOV [m]	$\Delta\lambda$ [nm]	$L\lambda$ [$W/m^2/str/\mu m$]	L_{max}. [$W/m^2/str/\mu m$]	S/N
678-P1	670-P1	1000	20	25	250	250
678-P2	670-P2	1000	20	25	250	250
678-P3	670-P3	1000	20	25	250	250
865-P1	865-P1	1000	20	30	300	250
865-P2	865-P2	1000	20	30	300	250
865-P3	865-P3	1000	20	30	300	250

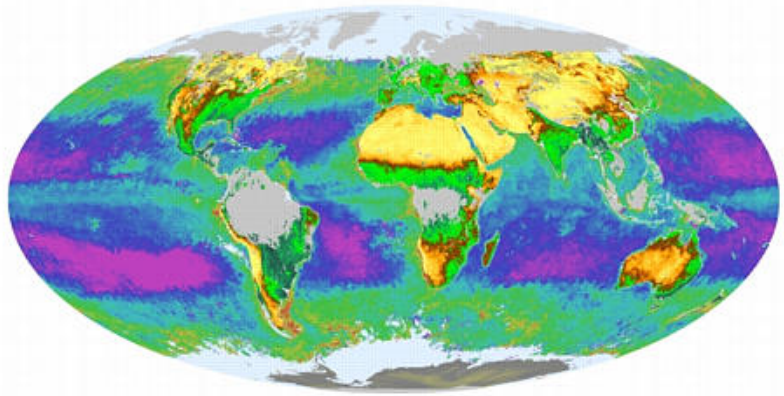
SWI+TMI

Ch.	central wavelength [μm]	IFOV[m]	$\Delta\lambda$[μm]	L_λ[W/m^2/str/μm] or Tstd[K]	L_{max}[W/m^2/str/μm] or T_{max}[K]	S/Nor NEdT@300[K]
SW1	1.05	1000	0.02	57	248	500
SW2	1.38	1000	0.02	8	103	150
SW3	1.64	250	0.2	3	50	57
SW4	2.21	1000	0.05	1.9	20	211
T1	10.8	500	0.7	300	340	0.2
T2	12.0	500	0.7	300	340	0.2


TAU865
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
ALPHA
3.0
2.9
2.8
2.7
2.6
2.5
2.4
2.3
2.2
2.1
2.0
1.9
1.8

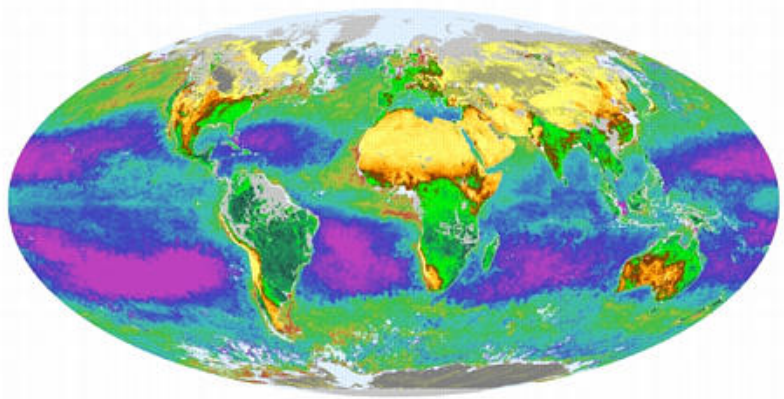
Global Biosphere

November 1996



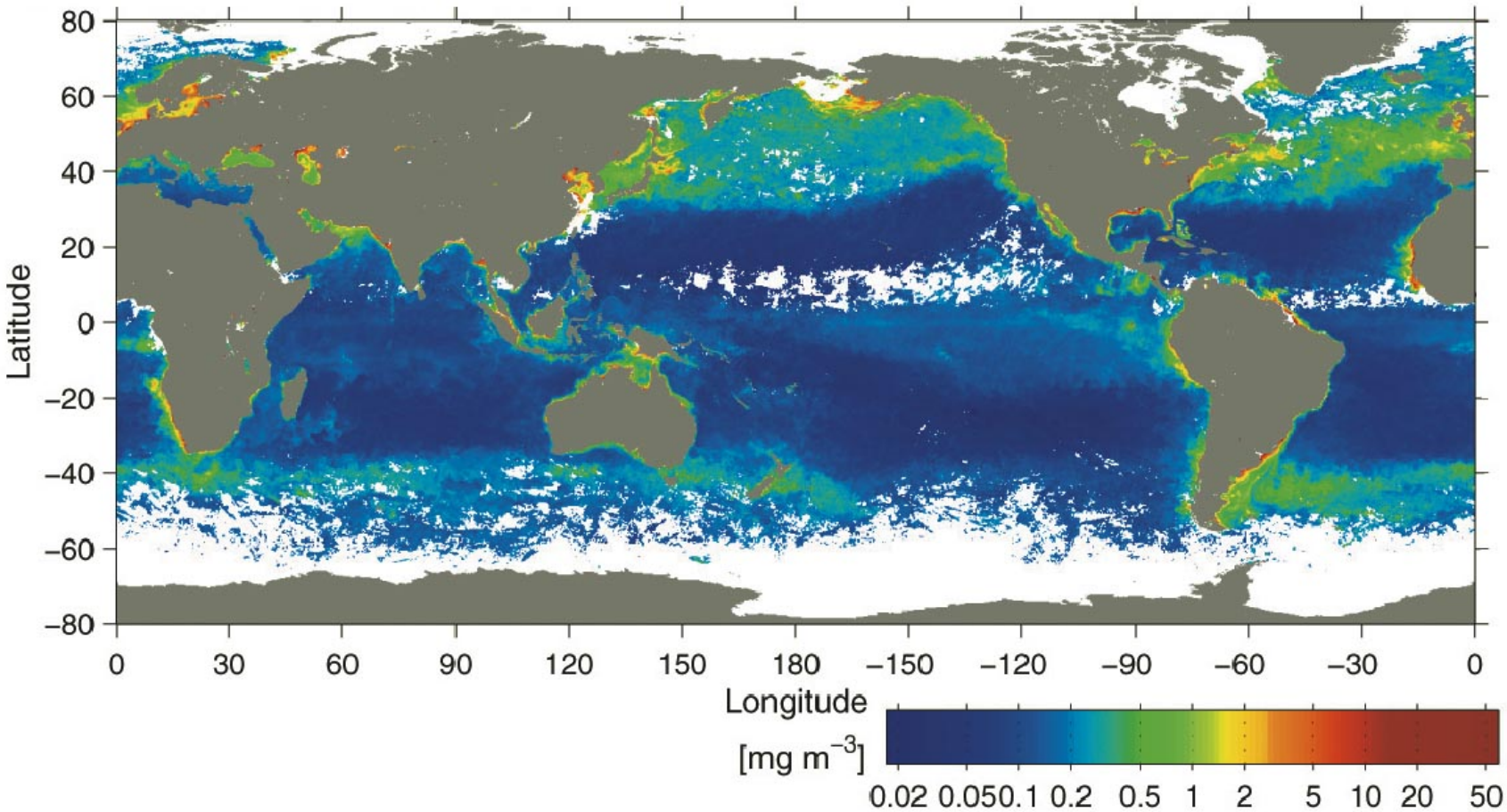
Chlorophyl content 0.03 — 6 mg/m^3
Vegetation index -0.05 — 0.9

February 1997



POLDER data: CNES/NASDA
processing over land: CESBIO/LOA/LSCE
processing over ocean: LOA/LSCE

Chlorophyll (OCTS)



Future Schedule

- 2014 : GCOM-W2
- 2015 : GCOM-C2
- 2018 : GCOM-W3
- 2019 : GCOM-C3