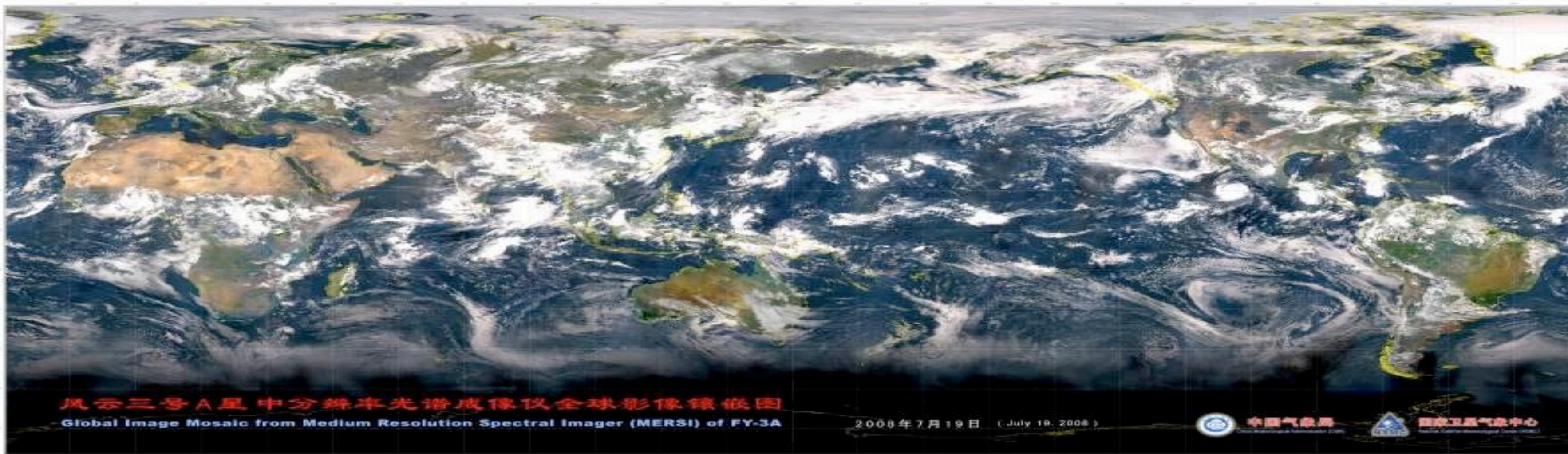


The FY-3B Overview and Current Status



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National Satellite Meteorological Center, CMA

Jan. 23, 2012



Outline

1. Introduction

2. FY-3B SpaceCraft and Payloads

3. FY-3B In-Orbit Checkout

4. FY-3B Data and Products

5. Application examples

6. FY-3 Satellite Programs

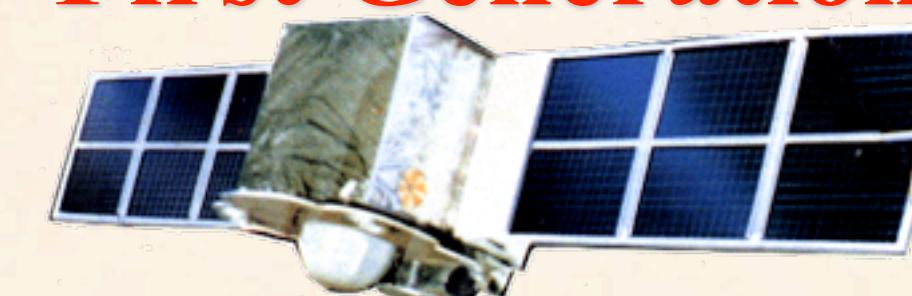
1. Introduction

Chinese FengYun Meteorological Satellites

Polar System

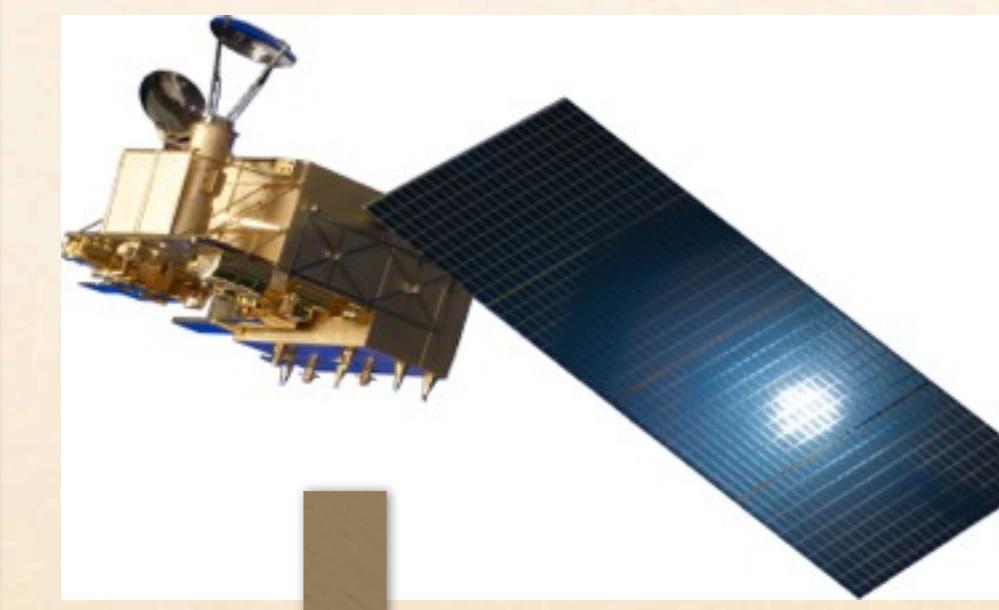
FY
|
1A
1B
1C
1D

First Generation



FY
|
3A
3B
3C
|
3F

Second Generation



Geostationary System

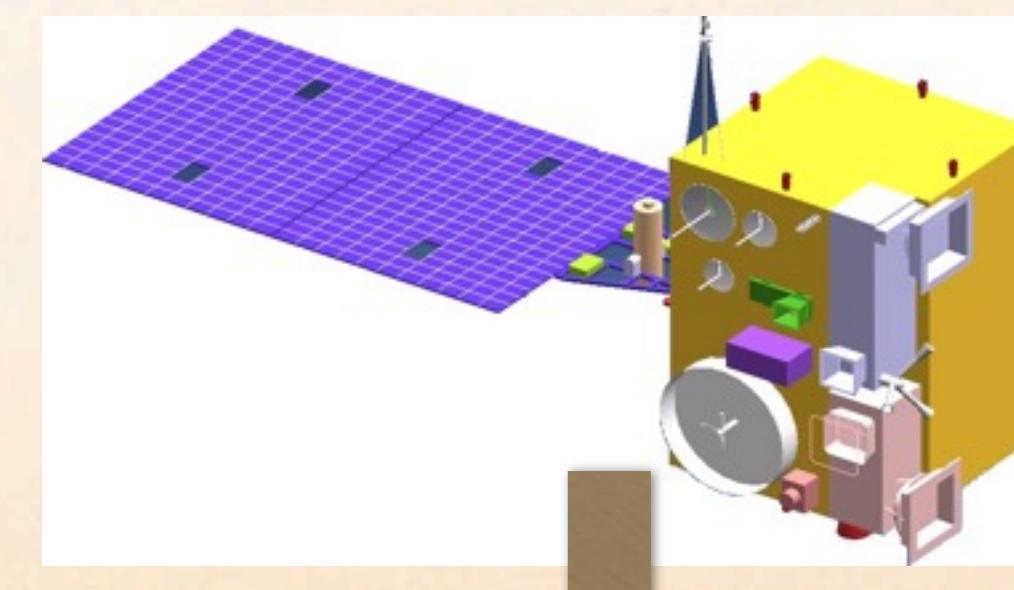
FY
|
2A
2B
2C
2D
2E

First Generation



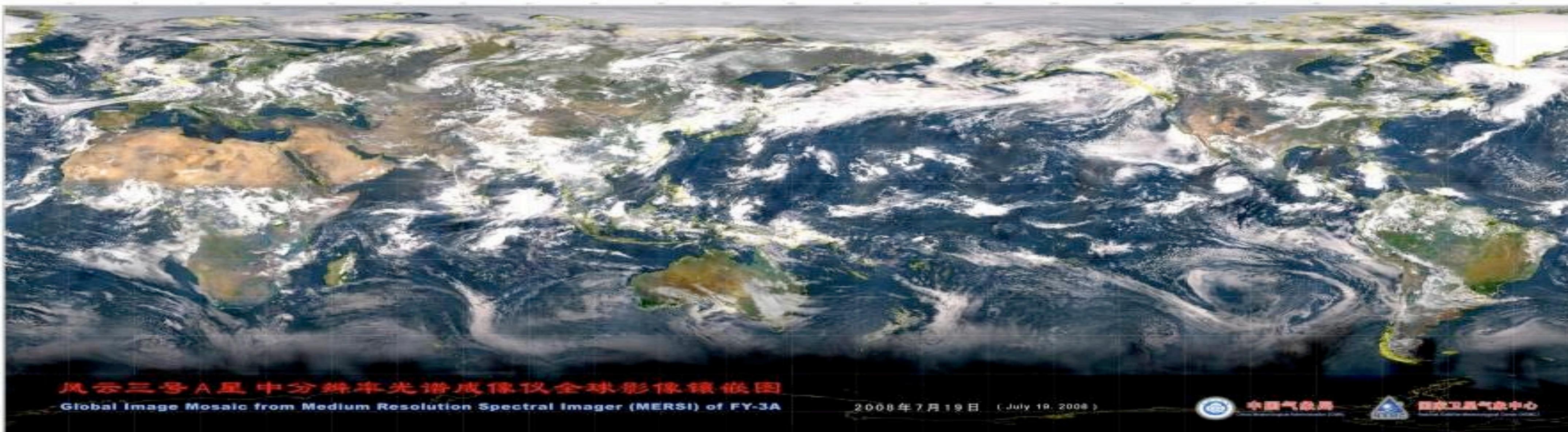
FY
|
4A
4B
4C
|
4F

Second Generation



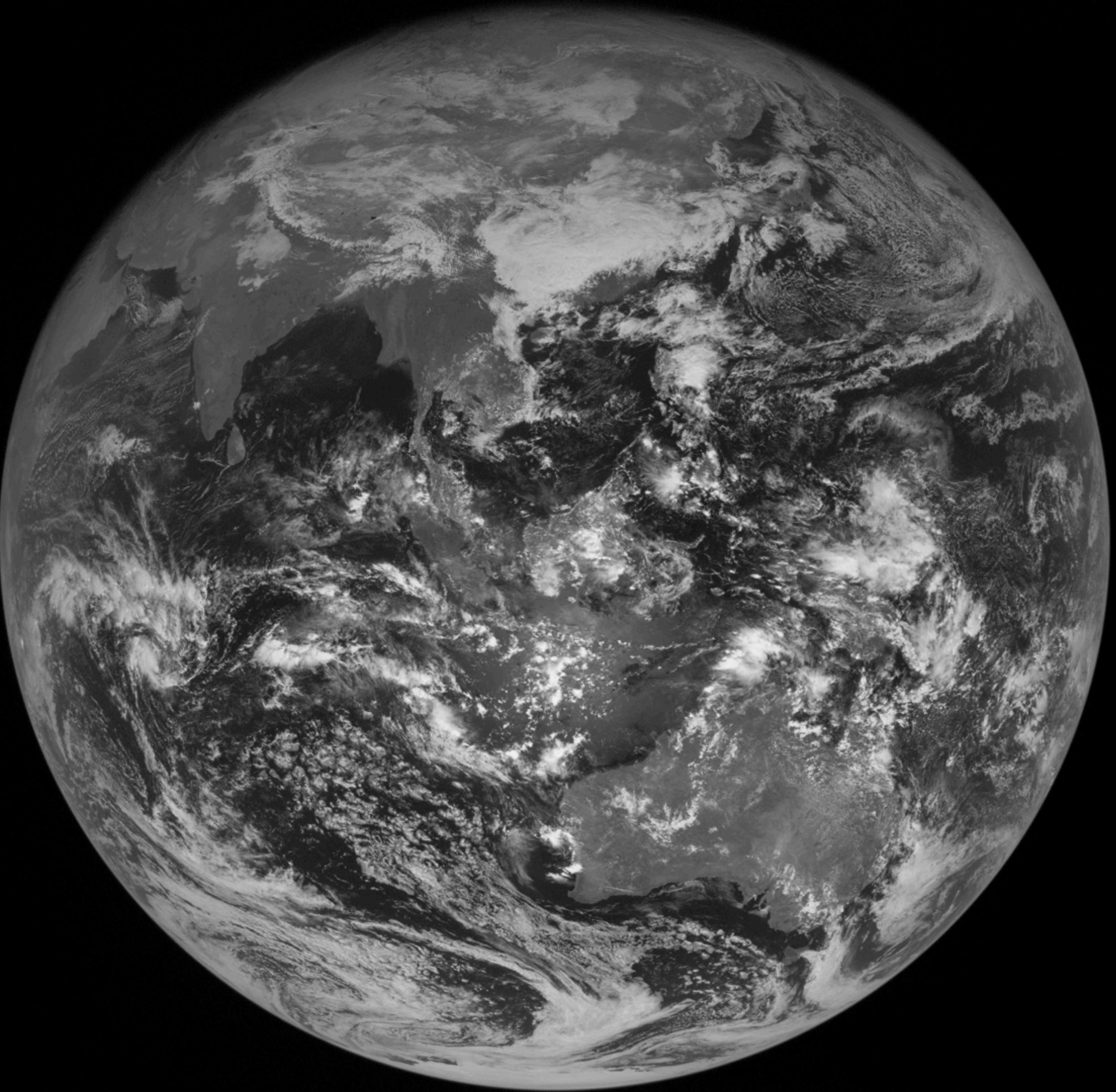
Launched 12 Satellites

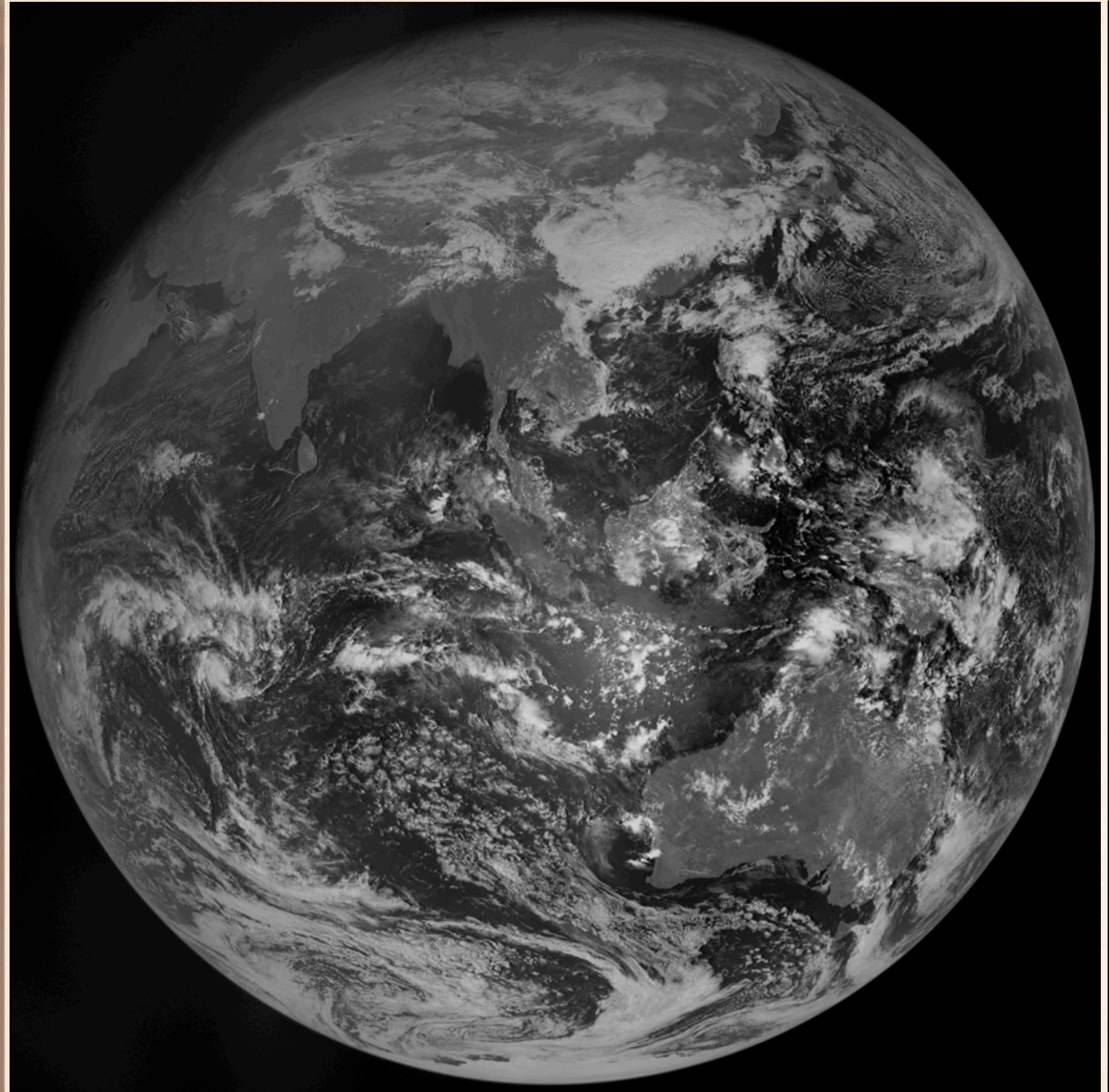
Since Jan. 1969, China began to develop his own meteorological Satellite			
Leo	Launch Data	Geo	Launch Data
FY-1A	Sept. 7, 1988	FY-2A	Jun. 10, 1997
FY-1B	Sept. 3, 1990	FY-2B	Jun. 25, 2000
FY-1C	May 10, 1999	FY-2C	Oct. 18, 2004
FY-1D	May 15, 2002	FY-2D	Dec. 8, 2006
FY-3A	May 27, 2008	FY-2E	Dec. 23, 2008
FY-3B	Nov 5, 2010	FY-2F	Jan.13, 2012



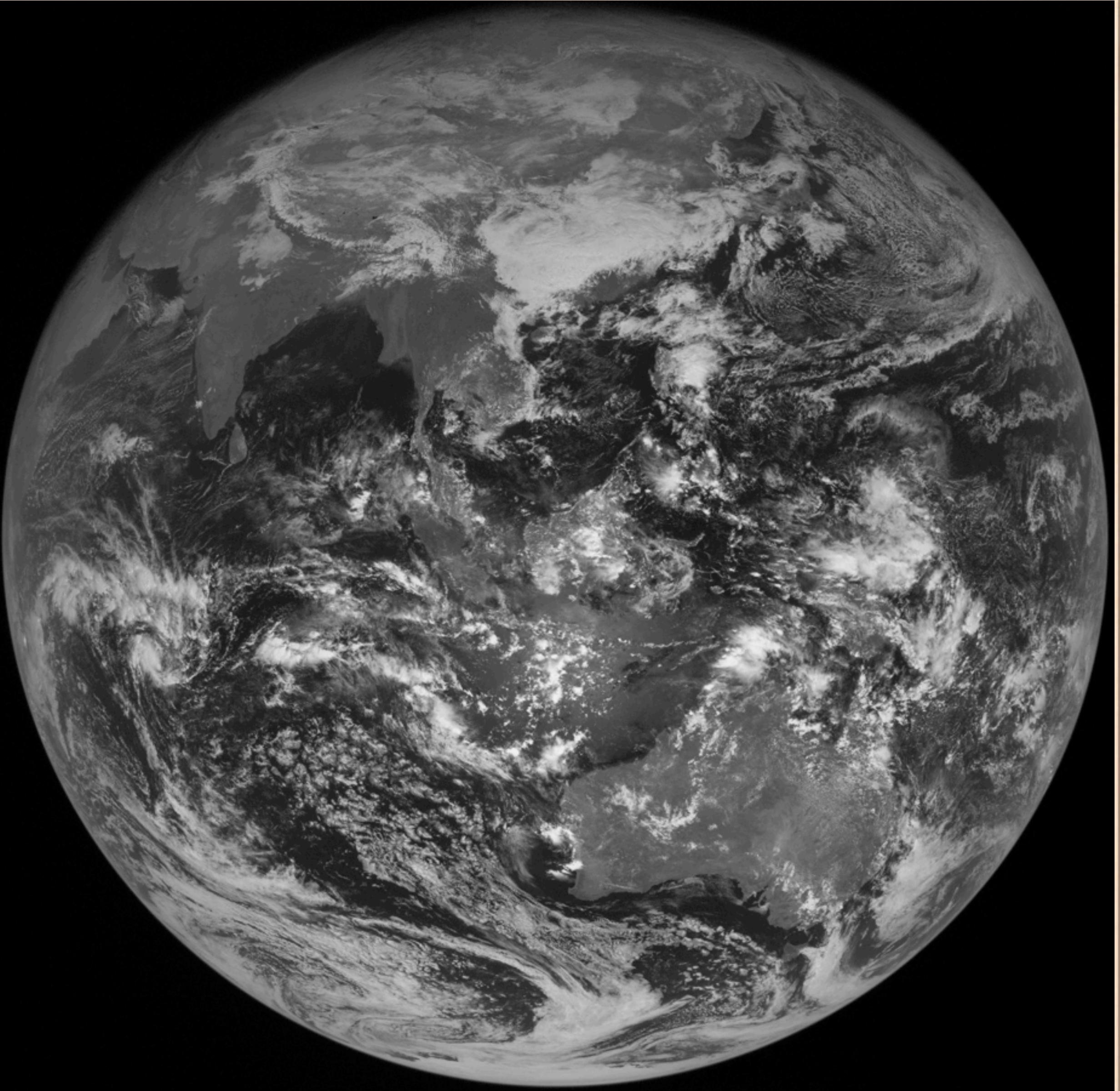
**The Newest Member of
FengYun Satellite Family,
FY-2F was launched on
January 13, 2012.**

**This is First Visible
Channel Image of FY-2F.
2012_01_18_04_10(UTC)**



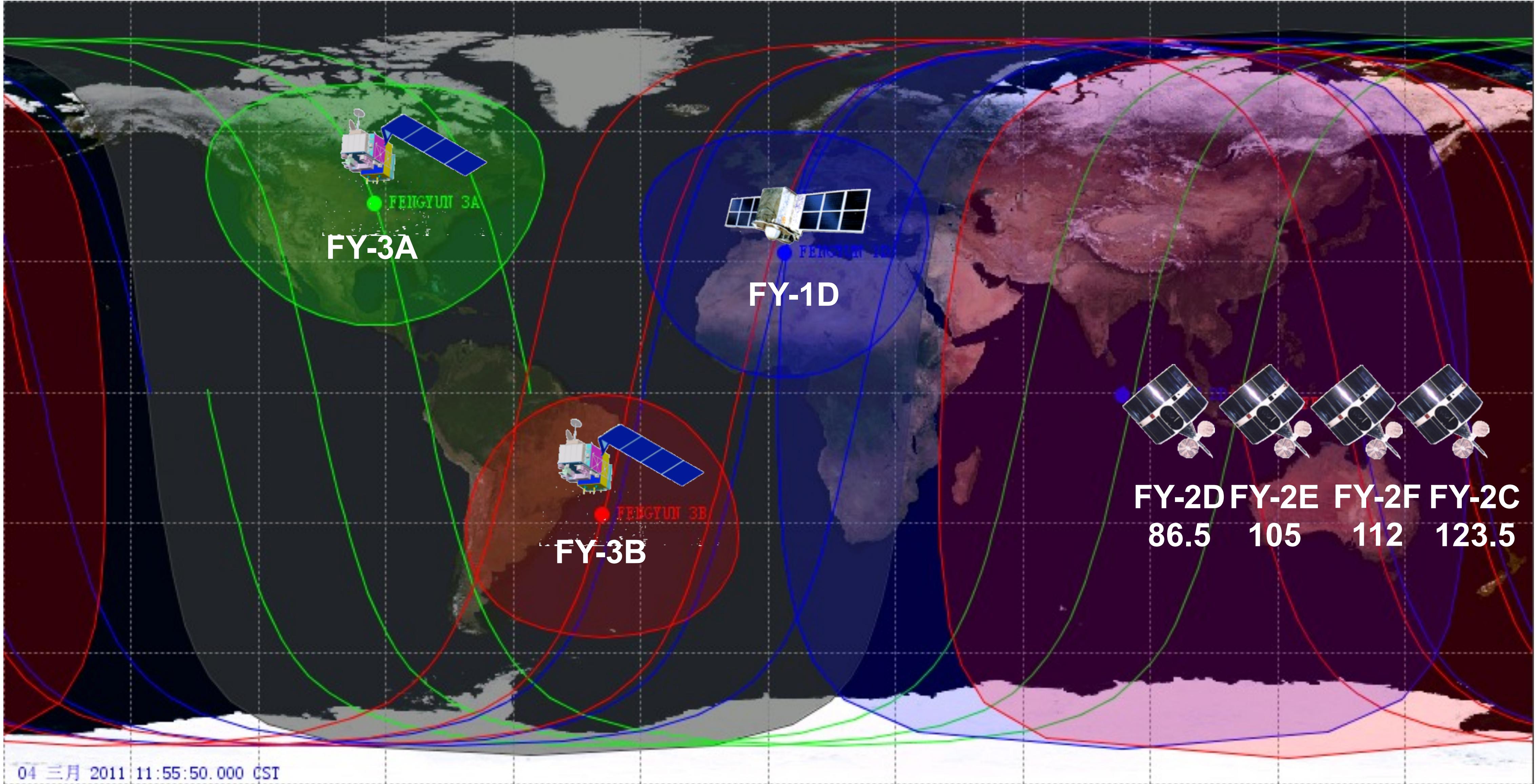


Visible Image of FY-2E:2012-01-18-0400(UTC)

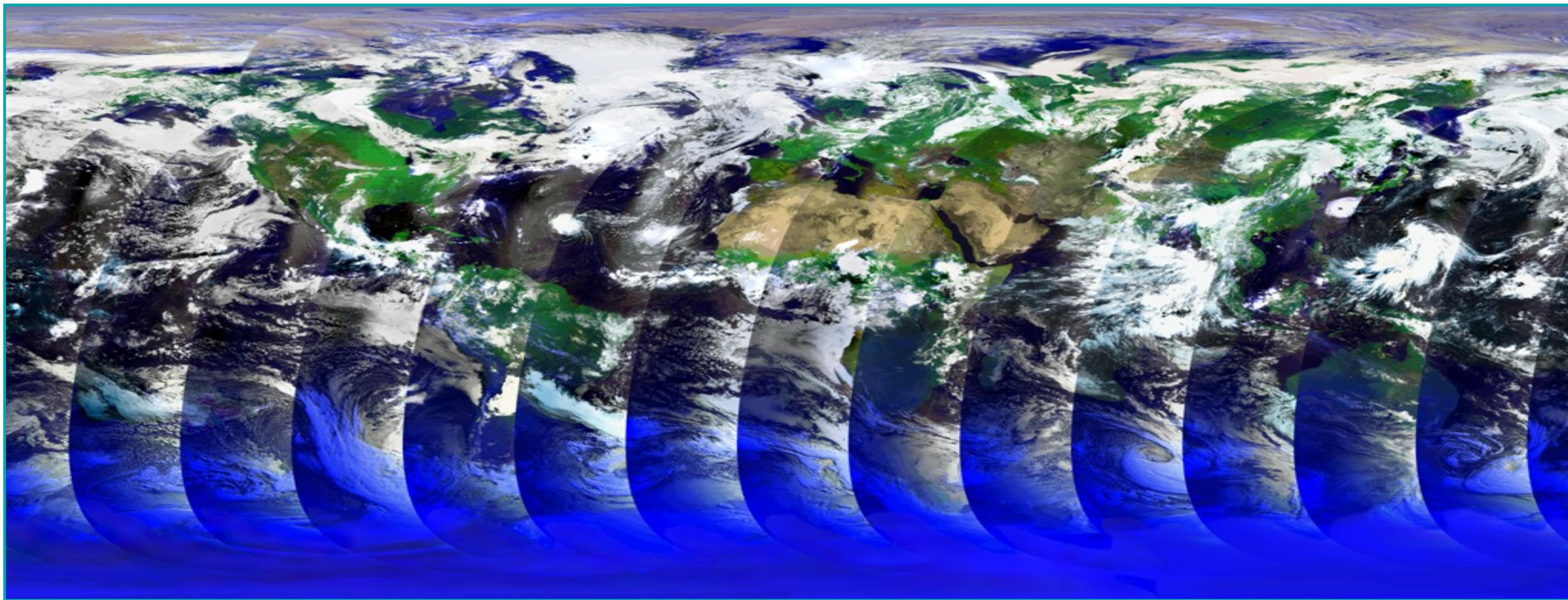


Visible Image of FY-2F:2012-01-18-0410(UTC)

On-orbit 7 Satellites



FengYun LEO. Satellites: FY-1



Instruments:

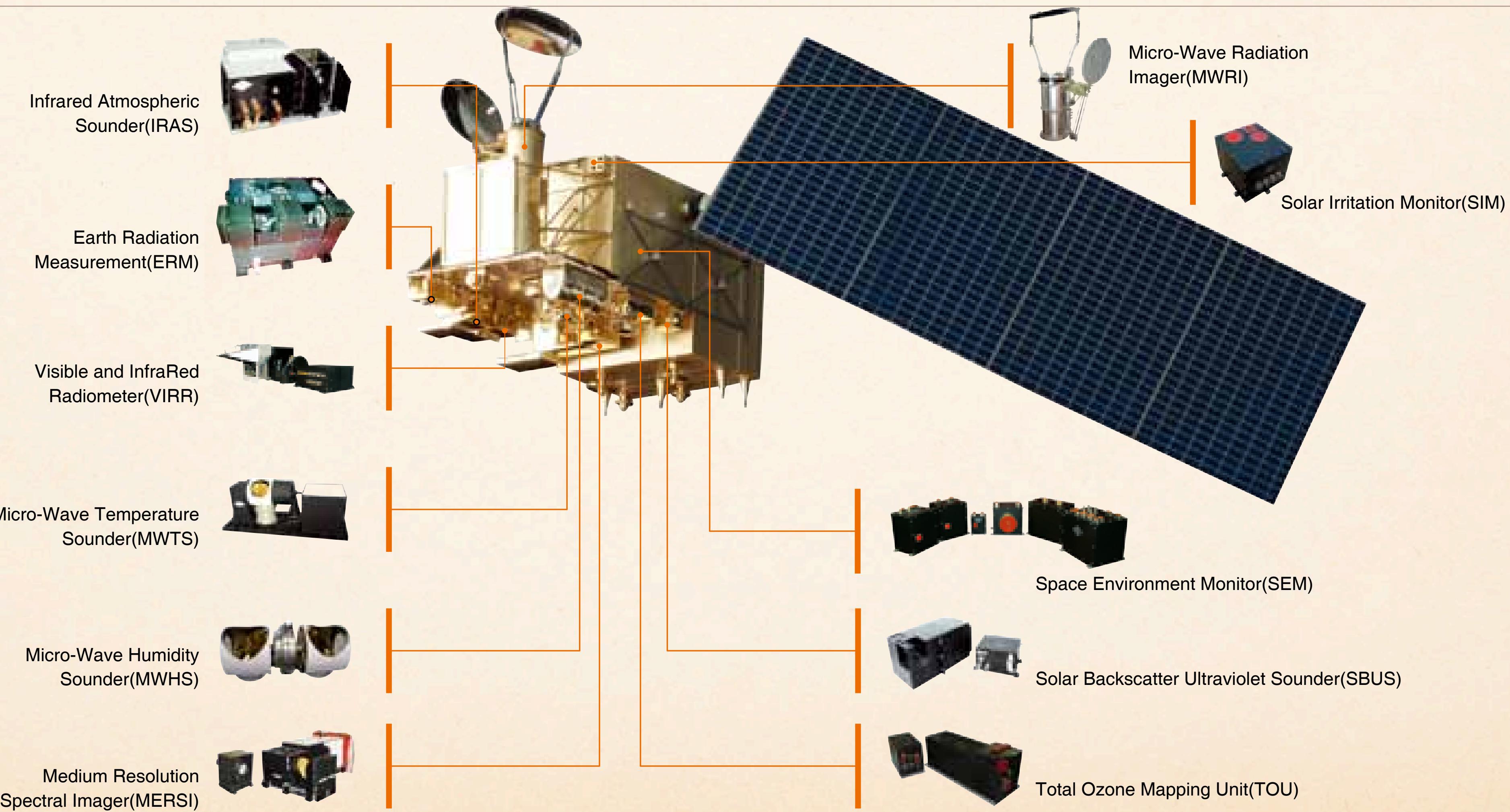
- ✓ 10 chl. Visible and Infrared radiometer.
- ✓ Space Environment Monitor

Transmission:

- ✓ HRPT: 1.3308Mbps (DB)
- ✓ GDPT: 1.3308Mbps

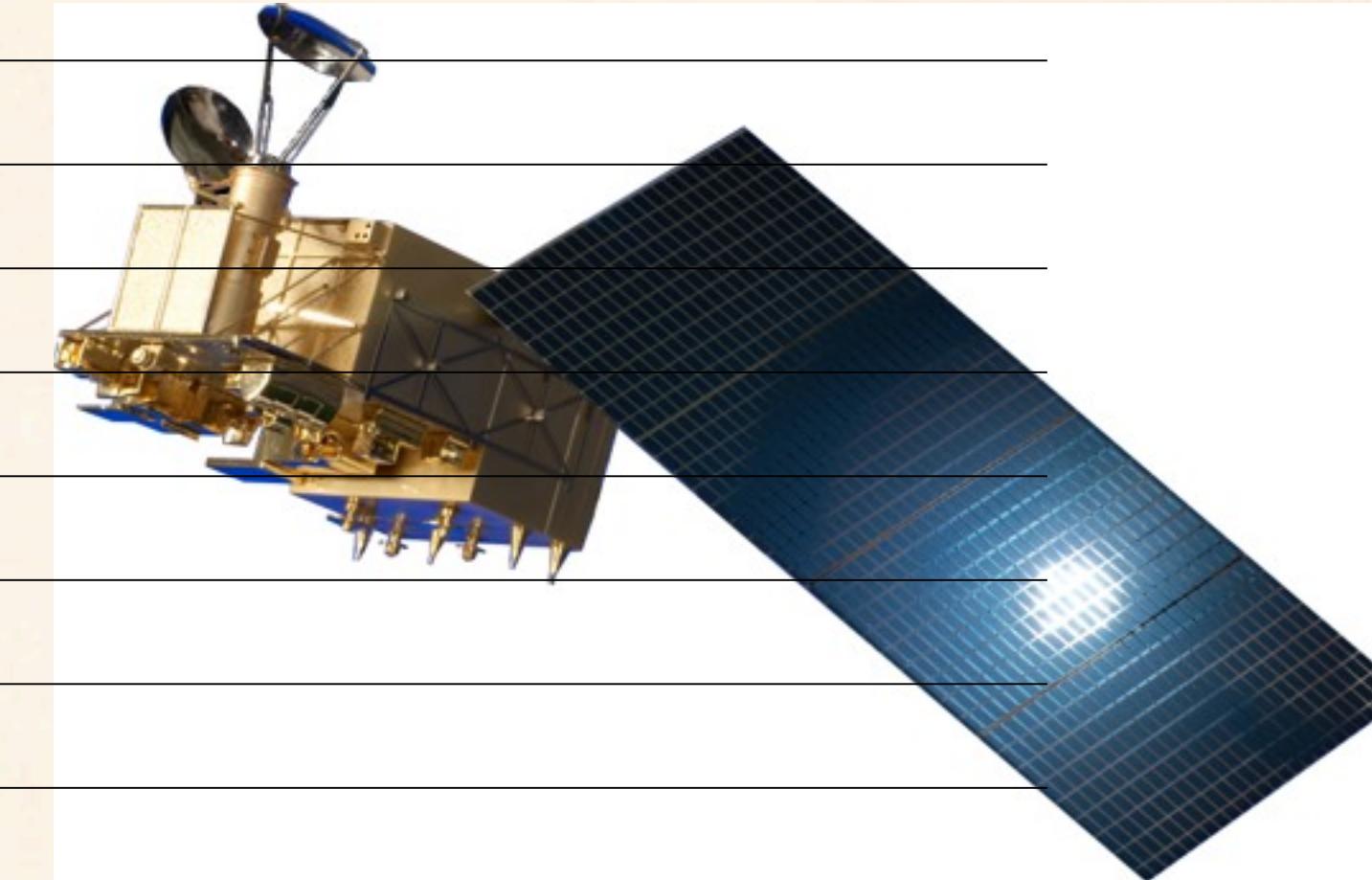
No.	Status	Launch	Druation
FY-1A	Exp. (dead)	Sept.7, 1988	6 months
FY-1B	Exp. (dead)	Sept.3, 1900	8 months
FY-1C	Op. (dead)	May 10, 1999	>7 years
FY-1D	Op.	May 15, 2002	>9 years

2. FY-3B SPACECRAFT AND PAYLOADS



The Major Technical Specifications of The FY-3B Satellite

Satellite Mass:	2298.5 Kg
Launch Size:	4380mm × 2000mm × 2000mm (X.Y.Z)
Size in Flight:	4440mm × 1000mm × 3790mm (X.Y.Z)
Orbit	Sun-synchronous orbit
Nominal orbit height:	836Km
Inclination:	98.75°
One revolution cycle:	101.603 minutes
Orbital eccentricity:	0.0025
Revolutions/day:	14.1728
Orbital distance:	2827.6Km (at equator)
Return cycle:	5.5 days
Local time at descending point:	13:40 ~ 14:00
Remote sensing instruments (payloads):	Visible and Infrared Radiometer (VIRR), Infrared Atmospheric Sounder (IRAS), Micro-Wave Temperature Sounder (MWTS), Micro-Wave Humidity Sounder (MWHS), Medium Resolution Spectral Imager (MERSI), Solar Backscatter Ultraviolet Sounder (SBUS) and Total Ozone Unit (TOU), Micro-Wave Radiation Imager (MWRI) , Solar Irradiation Monitor (SIM), Earth Radiation Measurement (ERM) and Space Environment Monitor (SEM)
Data transmission:	Real time: L band; QPSK modulation; Bit rate: 4.2 Mbps X band; QPSK modulation; Bit rate: 18.7 Mbps
Delayed transmission:	X band; QPSK modulation; Bit rate: 93Mbps
Solid data recorder capacity:	144 Gbits
Altitude direction accuracy:	≤ 0.3° (X,Y,Z)
Altitude measurement accuracy:	≤ 0.05° (X,Y,Z)
Altitude stability:	≤ 0.008° /s (X,Y,Z)
Solar panel array:	Total area: 22.464m ²
Designed life time:	3 years

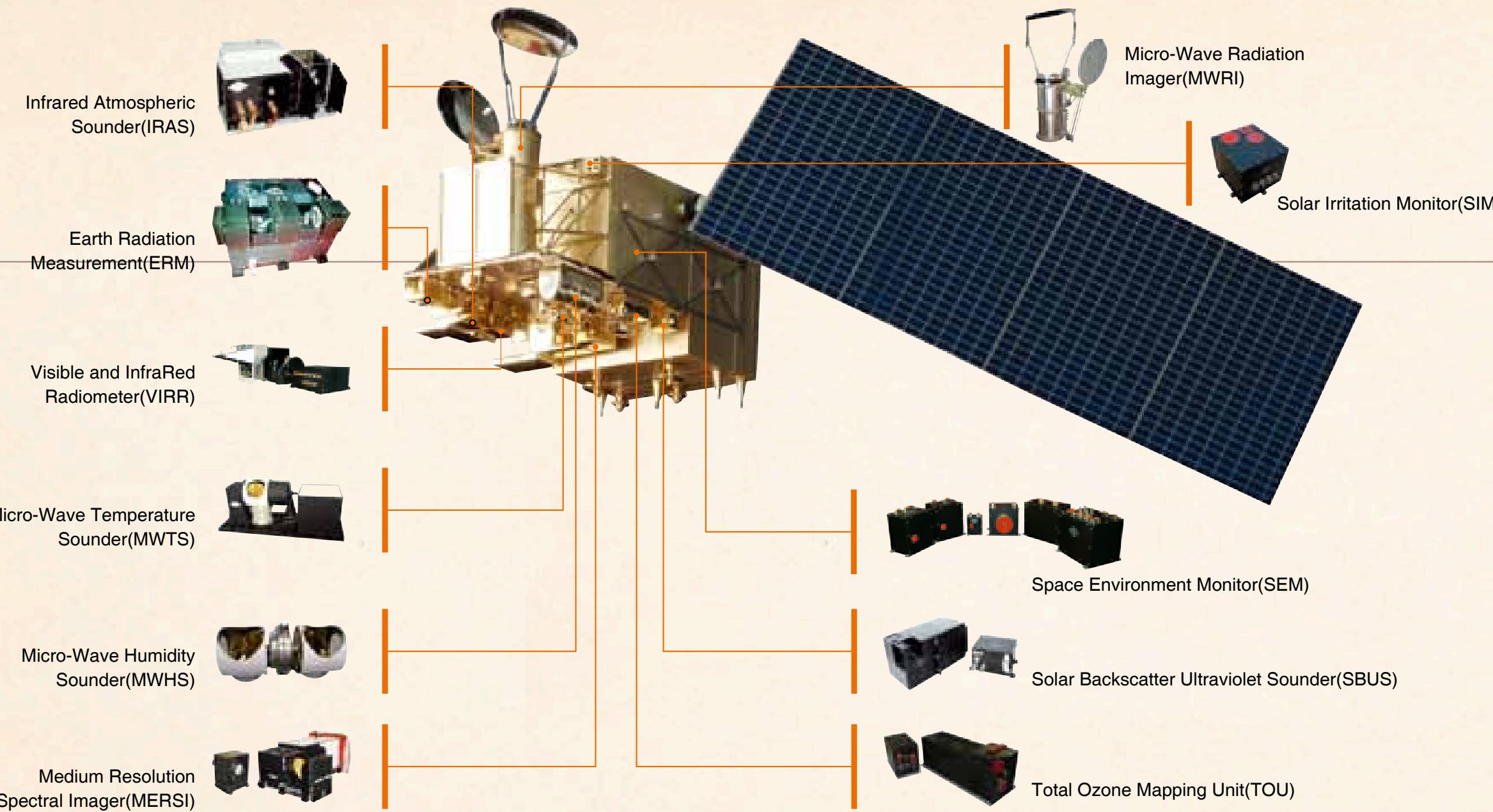


2. FY-3B SPACECRAFT AND PAYLOADS

- Atmospheric sounding
- Microwave Imaging
- Optical Imaging from Km to 250m
- Atmospheric composition: Ozone
- Radiation budget for earth system

Name of Instrument	Number of Channels	Spectral range	Swath Width (Km)	Spatial Resolution at Sub point (Km)
VIRR	10	0.43 – 12.5 μ m	2800	1.1
MERSI	20	0.41 – 12.5 μ m	2800	0.25 ~ 1
MWRI	10	10 – 89GHz	2800	15 ~ 85
IRAS	26	0.69 – 15.5 μ m	2250	17
MWTS	4	50 – 57 GHz	2200	50 ~ 75
MWHS	5	150 – 183 GHz	2700	15
SBUS	12	0.16 – 0.4 μ m	---	200
TOU	6	0.3~0.36 μ m	3000	50
ERM	4	0.2~50 μ m	2300	28
SIM	1	0.2~50 μ m	---	---
SEM	---	---	---	---

FengYun LEO. Satellites: FY-3



II instruments on board FY-3A/B, including:

VIRR: Visible and Infra-Red Radiometer

MERSI: Medium Resolution Spectral Imager

IRAS: Infrared Atmospheric Sounder

MWTS: MicroWave Temperature Sounder

MWHS: MicroWave Humidity Sounder

MWRI: MicroWave Radiation Imager

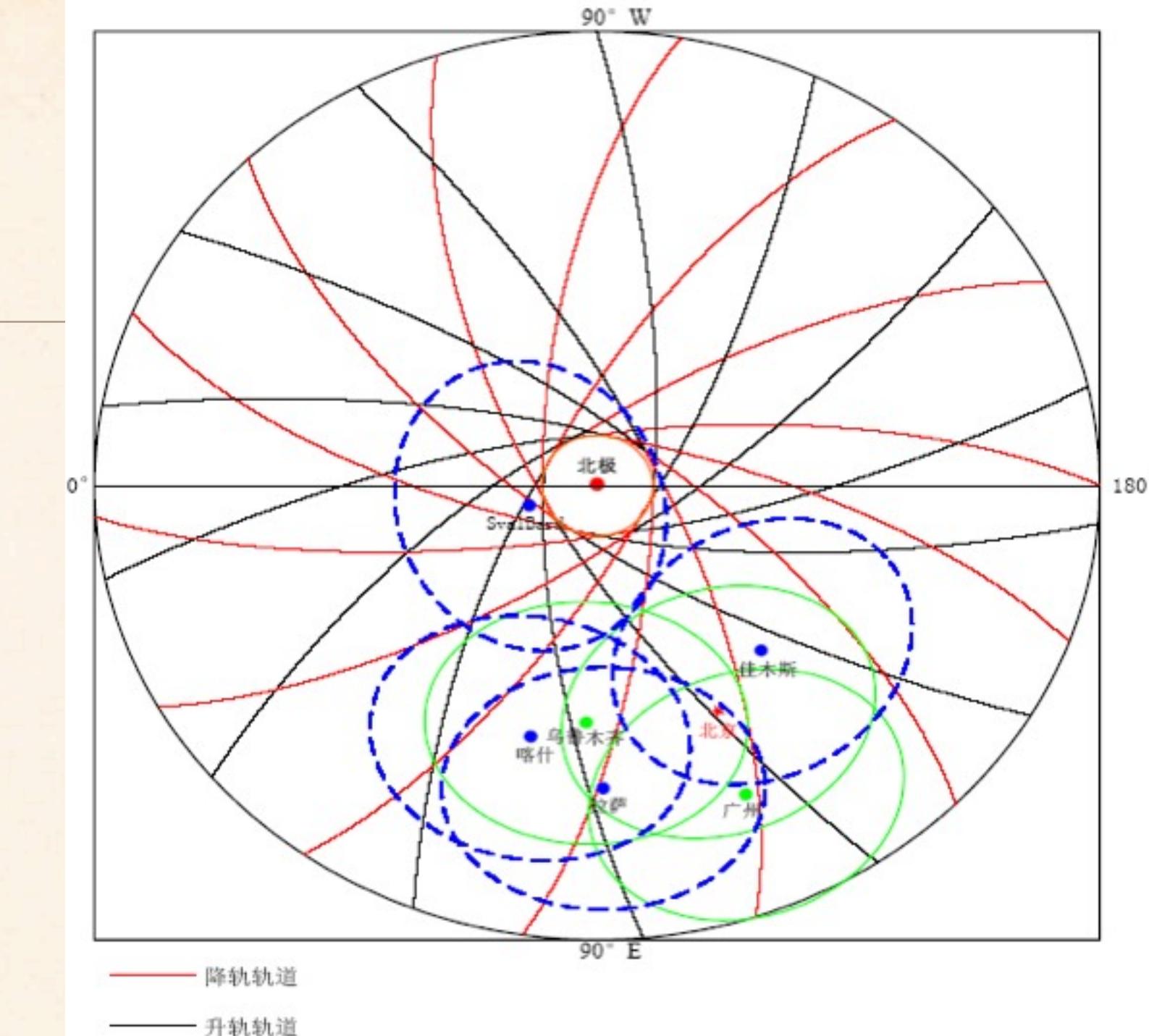
SBUS: Solar Backscatter Ultraviolet Sounder

TOU: Total Ozone mapping Unit

SIM: Solar Irritation Monitor

ERM: Earth Radiation Monitor

SEM: Space Environment Monitor



Station Name	Longitude	Latitude
Beijing Station	116° 16' 36" E	40° 03' 06" N
Guangzhou Station	113° 20' 20" E	23° 09' 52" N
Wulumuqi Station	87° 34' 08" E	43° 52' 17" N
Jiamusi Station	130° 22' 48" E	46° 45' 20" N
Kiruna Station	21° 02' E	67° 32' N

PAYLOADS ON BOARD FY-3B

-- Imaging instruments

Payload name	Major characteristics	Purpose
Visible and InfraRed Radiometer (VIRR)	<i>Spectral range: 0.43~12.5μm</i> <i>Channel numbers: 10</i> <i>Cross track scanning: ±55.4°</i> <i>Spatial resolution: 1.1 KM</i>	<i>Cloud, vegetation, snow and ice, SST, LST, water vapour, aerosol, ocean colour , etc.</i>
Medium Resolution Spectral Imager (MERSI)	<i>Spectral range: 0.41~12.5μm</i> <i>Channel numbers: 20</i> <i>Cross track scanning: ±55.4°</i> <i>Spatial resolution: 0.25~1KM</i>	<i>True colour imagery, cloud, vegetation, snow and ice, ocean colour, aerosol, rapid response products (fires, flooding, etc.</i>
Microwave Radiation Imager (MWRI)	<i>Frequency range: 10.65~150GHz</i> <i>Channel numbers: 12 (6 frequencies with H,V polarization)</i> <i>Conical scanning: 110.8°</i> <i>Spatial resolution: 15-80 KM</i>	<i>Rainfall, soil moisture, cloud liquid water, sea surface parameters</i>

PAYLOADS ON BOARD FY-3B

--Sounding instruments

Payload name	Major characteristics	Purpose
<i>Infrared Atmospheric Sounder (IRAS)</i>	<i>Spectral range: 0.69~15.5μm</i> <i>Channel numbers: 26</i> <i>Cross track scanning: ±49.5°</i> <i>Spatial resolution: 17.0 KM</i>	<i>Atmospheric temperature profile, atmospheric humidity profile, total ozone content, cirrus, aerosol, etc</i>
<i>Microwave Atmospheric Temperature Sounder (MWTS)</i>	<i>Frequency range: 50~57GHz</i> <i>Channel numbers: 4</i> <i>Cross track scanning: ±48.6°</i> <i>Spatial resolution : 50~75 KM</i>	<i>Atmospheric temperature profile, rainfall, cloud liquid water, surface parameters, etc.</i>
<i>Microwave Atmospheric Humidity Sounder (MWHS)</i>	<i>Frequency range: 150~183GHz</i> <i>Channel numbers: 5</i> <i>Cross track scanning: ±48.95°</i> <i>Spatial resolution (SSP): 15 KM</i>	<i>Atmospheric humidity profile, water vapour, rainfall, cloud liquid water, etc.</i>

PAYLOADS ON BOARD FY-3A

-- *other instruments*

Payload name	Major characteristics	Purpose
<i>Total Ozone mapping Unit (TOU)</i>	<i>Spectral range: 309~361nm Channel numbers: 6 Cross track scanning: ±56.0° Spatial resolution: 50 KM</i>	<i>Total Ozone Distribution</i>
<i>Solar Backscatter Ultraviolet Sounder (SBUS)</i>	<i>Spectral range: 252~280nm Channel numbers: 12 Cross track scanning: ±56.0° Spatial resolution : 200 KM</i>	<i>Ozone Profile, Total ozone amount.</i>
<i>Earth Radiation Measurement (ERM)</i>	<i>Spectral range: 0.5-50μm Channel numbers: 2</i>	<i>Total Earth Radiation Earth Radiance</i>
<i>Solar Irradiation Monitor (SIM)</i>	<i>Spectral range: 0.5-50μm Channel numbers: 1</i>	<i>Solar Irradiation</i>
<i>Space Environment Monitor (SEM)</i>	<i>Protons: 3 – 300MeV Electrons: 0.15-5.7MeV</i>	<i>High Energy Protons High Energy Electrons Heavy Ions</i>

VIRR Specifications and its Typical Products

Channel	Wavelength (μm)	$\text{NE}\Delta\rho$ (%)/ $\text{NE}\Delta T$ (@300k)	Dynamic range (ρ or k)
1	0.58-0.68	<0.1%	0-100%
2	0.84-0.89	<0.1%	0-100%
3	3.55-3.93	<0.3k	180-350k
4	10.3-11.3	<0.2k	180-330k
5	11.5-12.5	<0.2k	180-330k
6	1.55-1.64	<0.15%	0-90%
7	0.43-0.48	<0.05%	0-50%
8	0.48-0.53	<0.05%	0-50%
9	0.53-0.58	<0.05%	0-50%
10	1.325-1.395	<0.19%	0-90%

- Cloud amount, cloud classification, cloud physical properties
- Fog
- Fires spots around the world
- Aerosols at sea
- Outgoing long-wave radiation
- Snow/ice
- Sea surface temperature & land surface temperature
- Atmospheric precipitable water at sea
- Surface albedo
- Vegetation index
- Leaf area index

MERSI Specifications and its Typical Products

Band	Central Wave Length (μm)	Spectral Bandwidth (μm)	Spatial Resolution (m)	$\text{NE}\Delta p (\%) / \text{NE}\Delta T(@300k)$	Dynamic range (ρ or k)
1	0.470	0.05	250	<0.45	>100%
2	0.550	0.05	250	<0.4	>100%
3	0.650	0.05	250	<0.3	>100%
4	0.865	0.05	250	<0.3	>100%
5	11.25	2.5	250	<0.4 K	330k
6	0.412	0.02	1000	<0.1	>80%
7	0.443	0.02	1000	<0.1	80%
8	0.490	0.02	1000	<0.05	>80%
9	0.520	0.02	1000	<0.05	>80%
10	0.565	0.02	1000	<0.05	>80%
11	0.650	0.02	1000	<0.05	>80%
12	0.685	0.02	1000	<0.05	>80%
13	0.765	0.02	1000	<0.05	>80%
14	0.865	0.02	1000	<0.05	>80%
15	0.905	0.02	1000	<0.10	90%
16	0.940	0.02	1000	<0.10	90%
17	0.980	0.02	1000	<0.10	90%
18	1.030	0.02	1000	<0.10	90%
19	1.640	0.05	1000	<0.05	90%
20	2.130	0.05	1000	<0.05	>90%

- Medium-resolution 250 m imagery products
- Land surface reflectivity
- Vegetation index
- Land cover types
- Ocean color
- Aerosol
- Atmospheric precipitable water (total water vapor)
- Two bands failure.

MWRI Specifications and its Typical Products

Frequency (GHz)	10.65	18.7	23.8	36.5	89
Polarization	V.H	V.H	V.H	V.H	V.H
Bandwidth (MHz)	180	200	400	900	2×2300
Sensitivity (K)	<0.5	<0.5	<0.8	<0.5	<1.0
Calibration Accuracy (excl. sensitivity) (K)	1.0	2.0	2.0	2.0	2.0
Spatial Resolution (Km)	45X75	26x43	23X37	14X24	7.2X12

- precipitation and cloud-water, atmospheric precipitable water
- sea surface temperature and wind speed
- soil moisture and temperature
- snow cover

IRAS Specifications and its Typical Products

Channel No.	Number of waves (cm ⁻¹)	Central wavelength (μm)	Half-power bandwidth (cm ⁻¹)	Gas-absorbing Components	Maximum temperature (K)	NEΔN (mW/m ² ·sr·cm ⁻¹)	Maximum contribution level (hPa)
1	669	14.95	3	CO ₂	>280	<4.00	30
2	680	14.71	10	CO ₂	>265	<0.80	60
3	690	14.49	12	CO ₂	>250	<0.60	100
4	703	14.22	16	CO ₂	>260	<0.35	400
5	716	13.97	16	CO ₂	>275	<0.32	600
6	733	13.84	16	CO ₂ /H ₂ O	>290	<0.36	800
7	749	13.35	16	CO ₂ /H ₂ O	>300	<0.30	900
8	802	12.47	30	window domain	>330	<0.20	land surface
9	900	11.11	35	window domain	>330	<0.15	land surface
10	1030	9.71	25	O ₃	>280	<0.20	25
11	1345	7.43	50	H ₂ O	>330	<0.23	800
12	1365	7.33	40	H ₂ O	>285	<0.30	700
13	1533	6.52	55	H ₂ O	>275	<0.30	500
14	2188	4.57	23	N ₂ O	>310	<0.009	1000
15	2210	4.57	23	N ₂ O	>290	<0.004	950
16	2235	4.47	23	CO ₂ /N ₂ O	>280	<0.006	700
17	2245	4.45	23	CO ₂ /N ₂ O	>266	<0.006	400
18	2388	4.19	25	CO ₂	>320	<0.003	atmosphere
19	2515	3.98	35	window domain	>340	<0.003	land surface
20	2660	3.76	100	window domain	>340	<0.002	land surface
21	14500	0.69	1000	window domain	>100%A	<0.10%A	cloud
22	11299	0.885	385	window domain	>100%A	<0.10%A	land surface
23	10638	0.94	550	H ₂ O	>100%A	<0.10%A	land surface
24	10638	0.94	200	H ₂ O	>100%A	<0.10%A	land surface
25	8065	1.24	650	H ₂ O	>100%A	<0.10%A	land surface
26	6098	1.64	450	H ₂ O	>100%A	<0.10%A	land surface

- Atmospheric temperature profile
- Atmospheric humidity profile
- Outgoing long-wave radiation

MWTS Specifications and its Typical Products

Channel Serial No.	Central Frequency (GHz)	Main Absorption Gas	Bandwidth (MHz)	NEΔT(k)	Antenna Beam Efficiency (%)	Dynamic Range (K)	Calibration Accuracy (K)
1	50.30	window domain	180	<0.5	>90	3-340	<1.2
2	53.596±0.115	O2	2×170	<0.4	>90	3-340	<1.2
3	54.94	O2	400	<0.4	>90	3-340	<1.2
4	57.290	O2	330	<0.4	>90	3-340	<1.2

Typical products:

- atmospheric temperature profile
- Microwave surface emissivity

MWHS Specifications and its Typical Products

Channel No.	Central Frequency (GHz)	Main Absorption Gas	Bandwidth (MHz)	NEΔT(K)	Frequency Stability (MHz)	Antenna Beam Efficiency	Working Mechanism of Receivers	Dynamic Range (K)
1	150(V)	window domain	1000	<0.9	50	≥95%	double sideband	3-340
2	150(H)	window domain	1000	<0.9	50	≥95%	double sideband	3-340
3	183.31±1	H ₂ O	500	<1.1	30	≥95%	double sideband	3-340
4	183.31±3	H ₂ O	1000	<0.9	30	≥95%	double sideband	3-340
5	183.31±7	H ₂ O	2000	<0.9	30	≥95%	double sideband	3-340

Typical products:

- Atmospheric humidity profiles
- Precipitation intensity
- Cloud-ice-water Thickness

TOU/SBUS Specifications and its Typical Products

Channel	Wavelength (nm)	Bandwidth (nm)
1	308.68±0.15	1+0.3, -0
2	312.59±0.15	1+0.3, -0
3	317.61±0.15	1+0.3, -0
4	322.40±0.15	1+0.3, -0
5	331.31±0.15	1+0.3, -0
6	360.11±0.25	1+0.3, -0

TOU Typical Product:

- global total ozone

Channel	Central Wavelength(nm)	Band Width (nm)
1	252.00±0.05	1+0.2, -0
2	273.62±0.05	1+0.2, -0
3	283.10±0.05	1+0.2, -0
4	287.70±0.05	1+0.2, -0
5	292.29±0.05	1+0.2, -0
6	297.59±0.05	1+0.2, -0
7	301.97±0.05	1+0.2, -0
8	305.87±0.05	1+0.2, -0
9	312.57±0.05	1+0.2, -0
10	317.56±0.05	1+0.2, -0
11	331.26±0.05	1+0.2, -0
12	339.89±0.05	1+0.2, -0
Cloud Photometer	379.00±1.00	3+0.3

SBUS Typical Product:

- global vertical ozone profile

ERM/SIM Specifications and its Typical Products

Channels	0.2~>3.8μm	0.2~50μm
View Field	2°×2°	2°×2°
Scanning	±50°	±50°
Radiance	0~370Wm ⁻² Sr ⁻¹	0~500Wm ⁻² Sr ⁻¹
Calibration Accuracy	1%	0.8%
Sensitivity	0.4Wm ⁻² Sr ⁻¹	0.4Wm ⁻² Sr ⁻¹
Stability	<1%	<1%

Irradiance Measurement Range	100~1400 Wm ⁻²
Spectral Range	0.2~50μm
Sensitivity	0.2 Wm ⁻²
Calibration Accuracy	0.5%
2-year stability	0.02%

ERM Typical Products:

- Reflected solar radiation flux
- Outgoing Longwave Radiation Flux

SIM Typical Products:

- Solar constant

3. FY-3B IN-ORBIT CHECKOUT

In-Orbit Checkout for FY-3B Platform

System Name	Tested Functions	Tested Parameters
Orbit and altitude control system	2	13
Data transmission and communication channel system	3	39
Power system	6	24
Thermal control system	9	74
Telemetry and telecontrol system	6	18
Data management system	10	110
Data acquiring and playing back system	6	/
Total	42	278

3. FY-3B IN-ORBIT CHECKOUT

In-Orbit Checkout for FY-3B Payloads

Payloads Name	Tested functions item	Tested parameters
VIRR	12	102
MERSI	14	1200: Two bands failure
IRAS	10	249
MWTS	15	56
MWHS	11	62
MWRI	13	120
SBUS	6	50
TOU	8	30
SIM	4	10
ERM	4	20
SEM	6	39
Total	103	1938

4. FY-3 DATA AND PRODUCTS

Discipline	Measurement	FY-3B Instruments
Atmosphere	Cloud/Fog Properties	MERSI VIRR IRAS MWRI MWHS
	Total Water Vapor	VIRR MERSI MWRI
	Precipitation	MWHS MWRI
	Aerosol Properties	MERSI VIRR
	Atmospheric Temperature and Humidity	IRAS MWTS MWHS
	Total Ozone and Ozone Profile	TOU SBUS IRAS
	Land Cover	VIRR MERSI
Land	Surface Temperature	VIRR
	Vegetation Dynamics	VIRR MERSI
	Fire and Flood Monitoring	VIRR MERSI
	Surface Wetness	MWRI
Ocean	Sea Surface Temperature	VIRR MWRI
	Sea Surface color	MERSI
Cryosphere	Sea Ice	MERSI VIRR MWRI
	Snow Cover	VIRR MWHS MERSI MWRI
Radiation Budget	Earth's Radiation and Solar Irradiance	ERM SIM
Space Environment	High Energy Particles	SEM
	Radiation Dose	

FY-3 Operational Products

(Atmospheric and Cloud) (1/4)



No.	The name of product	Resolution km	Coverage	Accuracy
1	Cloud Mask	Lw resolution	Granule	5%-20%
2	Cloud Top Temperature	5 km	Granule	0.5-2.0K
3	Cloud Top Height	5 km	Granule	50hpa
4	Cloud Optical Thickness	5 Km	global	5%-20%
5	Cloud Type	5 Km	global	5%-20%
6	Cloud Cover(total amount, high cloud)	5 Km, 10 Km	global	5%-20%
7	Outgoing Long-wave Radiation at TOA	5 Km、50Km、17 Km	global	3-8 W/ m ²
8	Aerosol over Ocean	1Km、10 Km	Ocean	15%-30%
9	Fog Detection	1 Km	Granule	RMS < 0.25
10	Total Precipitable Water	1 Km、5 Km、50 Km、27X45	land Ocean	15%-25% 10%-20%

FY-3 Operational Products

(Atmospheric and Cloud) (2/4)

No.	The name of product	Resolution km	Coverage	Accuracy
11	Precipitation Rate at the ground	18X30 km	global	30%
12	Atmospheric Temperature Profile 1000-10hPa	50km	global	1.5-2.5K
13	Humidity Profile 1000-300hPa	50km	global	15%-25%
14	Geopotential Height 1000-10hPa	50km	global	TBD
15	Atmospheric Stability Index	50km	global	TBD
16	Total Ozone	50km、17km	global	8-15%
17	Ozone Profile	200 Km	global	8-15%
18	Flux at TOA from ERM scanner	35Km	Orbit/Regional/ global	LW:10Wm ⁻² SW:30Wm ⁻²
19	Flux at TOA from ERM non scanner	120°	Orbit	LW:10Wm ⁻² SW:30Wm ⁻²

FY-3 Operational Products

(Land and Sea Surface) (3/4)

No.	The name of product	Resolution	Coverage	Accuracy
1	Vegetation Index Normalized Differential Vegetation Index	250m, 1Km	Global	5%-10%
2	Land Cover (Vegetation Type)	250m, 1 Km	Global	15%-20%
3	Snow Cover	1Km, 5Km	Global	10%-20%
4	Land Surface Reflectivity	250m, 1Km	Global	TBD
5	Land Surface Temperature	1, 25, 50X85km	Global	1.0-2.0K
6	Flooding Index	50X85, 25 km	Global	TBD
7	Global Fire Area	1km	Global	5%
8	Sea Surface Temperature	1, 5, 50 Km	Global Ocean	1.0-1.5K
9	Ocean Color/Chlorophyll	1 Km, 10 Km	Global Ocean	15%-20%
10	Sea-Ice cover	250m, 1km	Global Ocean	5%-15%



FY-3 Operational Products

(Space Weather) (4/4)

No.	The name of product	Resolution	Coverage	Accuracy
1	Solar Proton	20km	Global	15%
2	Solar Ion	50km×50km	Global	20%
3	Solar Electron	50km×50km	Global	20%
4	Potential	50km×50km	Global	20%
5	radiant dose	50km×50km	Global	20%
6	Single event	50km×50km		20%



FY-3 Experiment Products (1/2)

(Atmospheric, Cloud, Land and Sea Surface)

No.	The name of product	Resolution	Coverage	Accuracy
1	Aerosol over land	5 Km, 10 Km	Global	15%-30%
2	Cloud water total column	18X30 km	Global	20%-30%
3	Tropical Cyclone Intensity Estimation	75km	Global	10 hPa
4	Wind Vector over Polar region	5Km	Polar circles	TBD
5	Ice Water Paths Index	20km	Middle and low Latitude	TBD
6	Bidirectional Reflectance Distribution Function	1 Km	Global	20%
7	Leaf Area Index	1 Km	Global	15%-20%
8	Fraction of Photosynthesis Active Radiation (FPAR)	1 Km	Global	15%-20%

FY-3 Experiment Products (2/2)

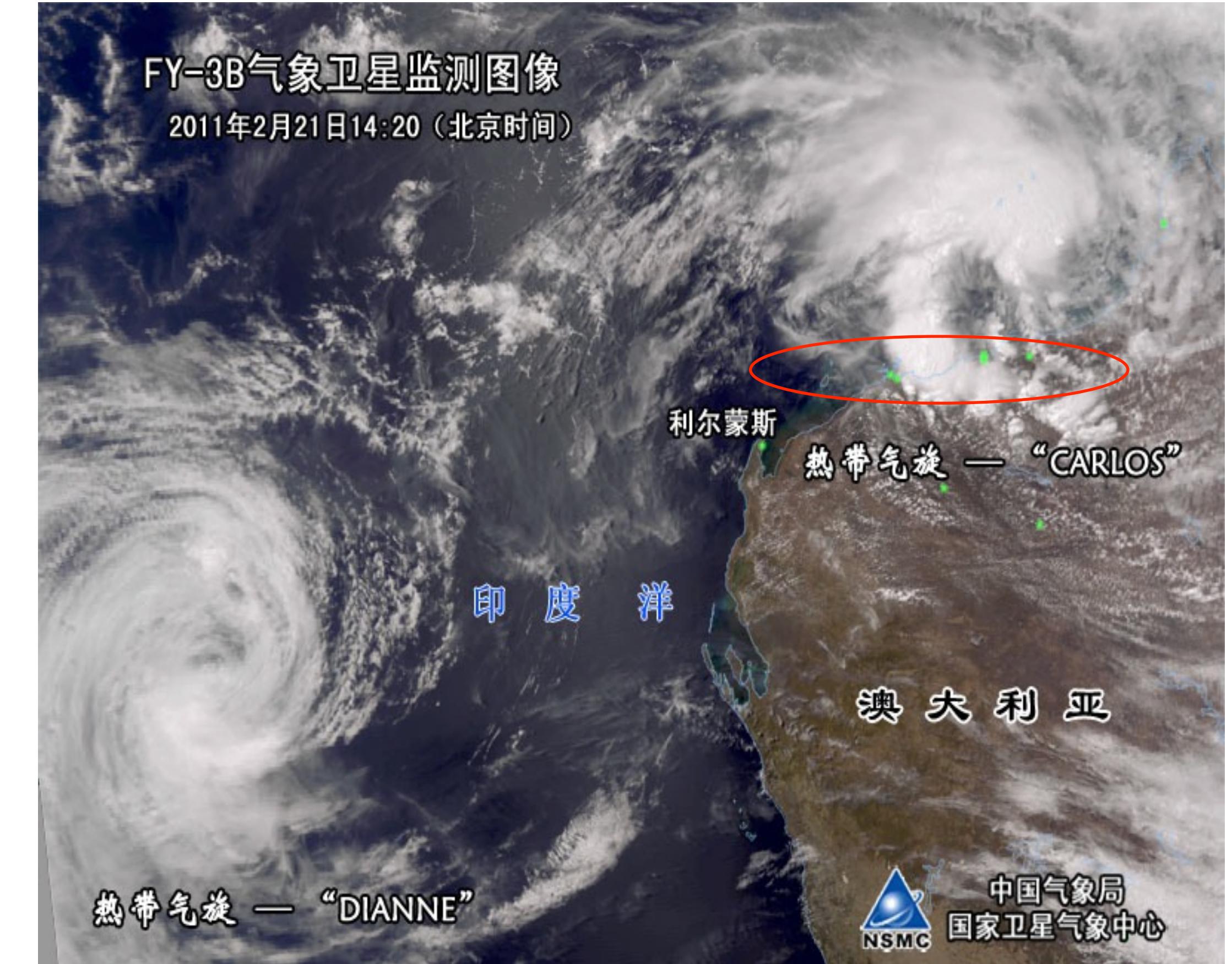
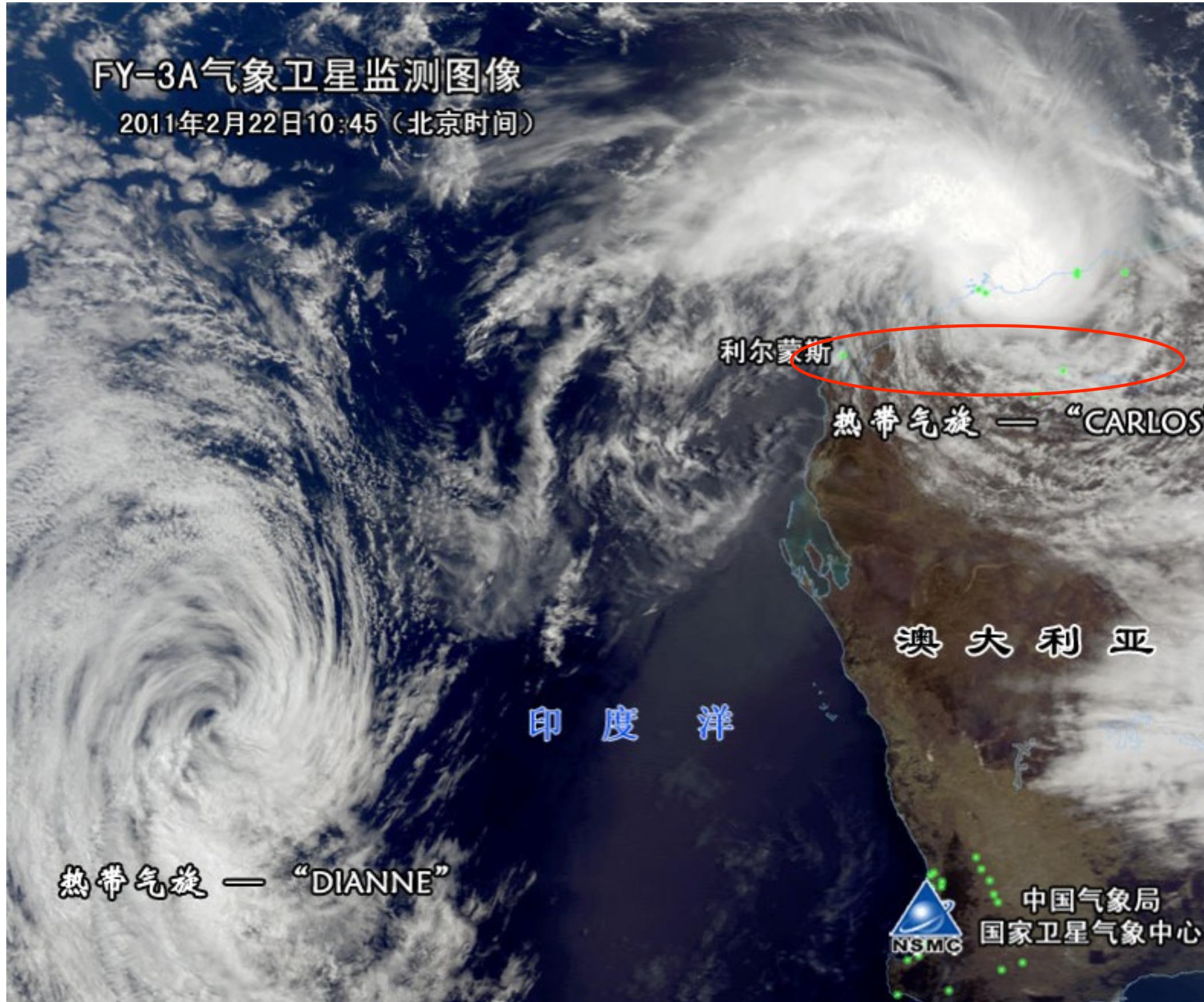
(Atmospheric, Cloud, Land and Sea Surface)

No.	The name of product	Resolution	Coverage	Accuracy
9	Net primary production	1 Km	Global	15%-20%
10	Drought Index	5 Km, 25 km	Global	25%
11	Snow Depth	25 Km	Global	30% or 3cm
12	Snow Water Equivalent	25 Km	Global	30% or 2cm
13	Surface Soil Moisture	50X85, 25 km	Global	15%-30%
14	Surface MicroWave Emissivity	75km	Global	TBD
15	Wind Speed over Sea Surface	30X50 km	Global ocean	3m/s
16	Polar Snow cover Extension	25km	North and south pole	10%-20%
17	Radiant belt Proton		Global	30%

5. APPLICATION EXAMPLES

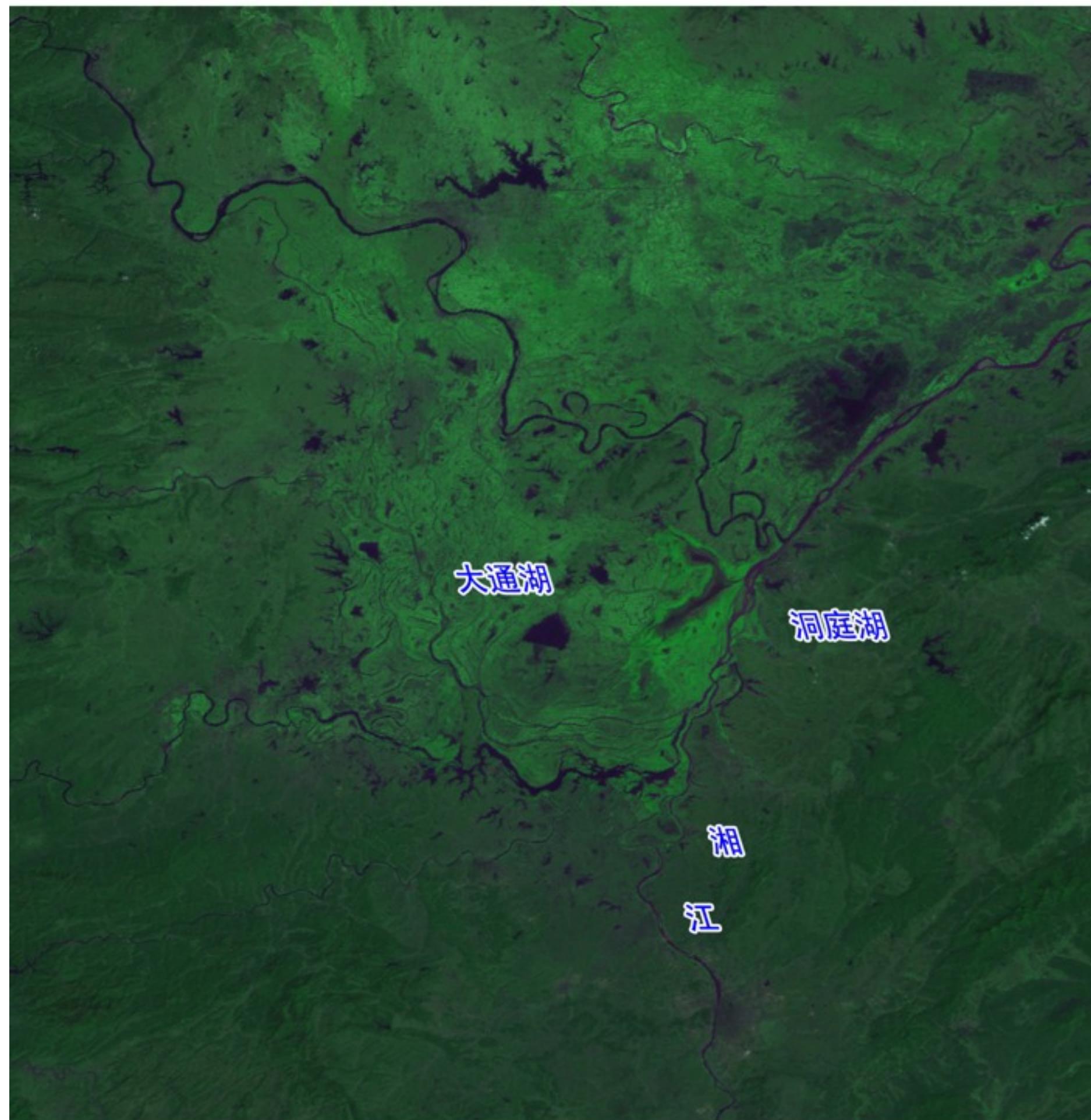
- ✓ Global Weather System Monitoring
- ✓ Typhoon
- ✓ Sea and Inland water body Monitoring
- ✓ Fire
- ✓ Global Ozone Monitoring
- ✓ City hot island Monitoring
- ✓ Etc.

Mesoscale convective clouds cluster monitoring by FY-3B (afternoon) comparing with FY-3A (morning)



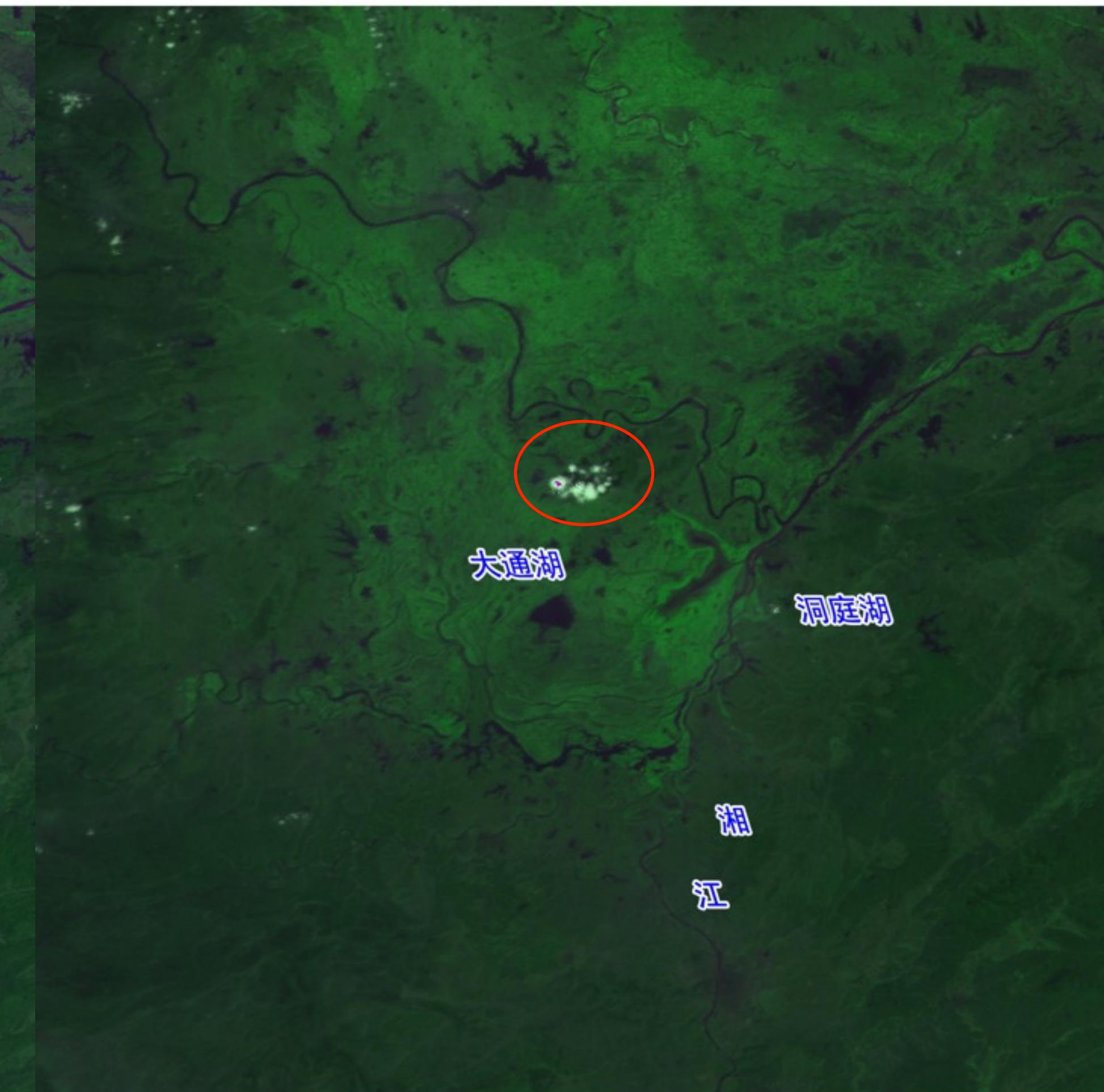
The convective clouds developed in the brink of the tropical cyclone CARLOS

FY-3A气象卫星洞庭湖流域水体监测图
(2011年3月29日11时10分)



中国气象局国家卫星气象中心

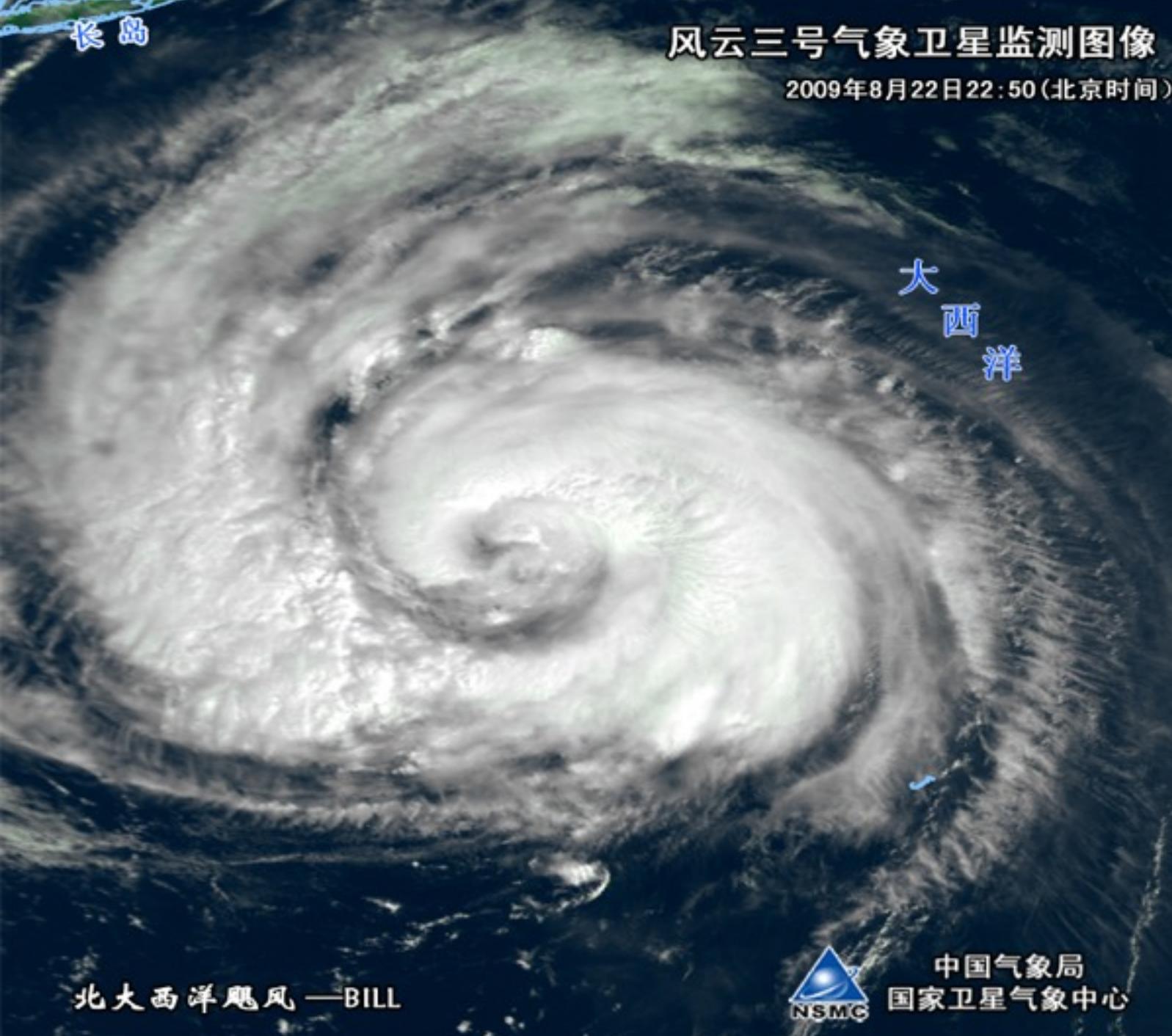
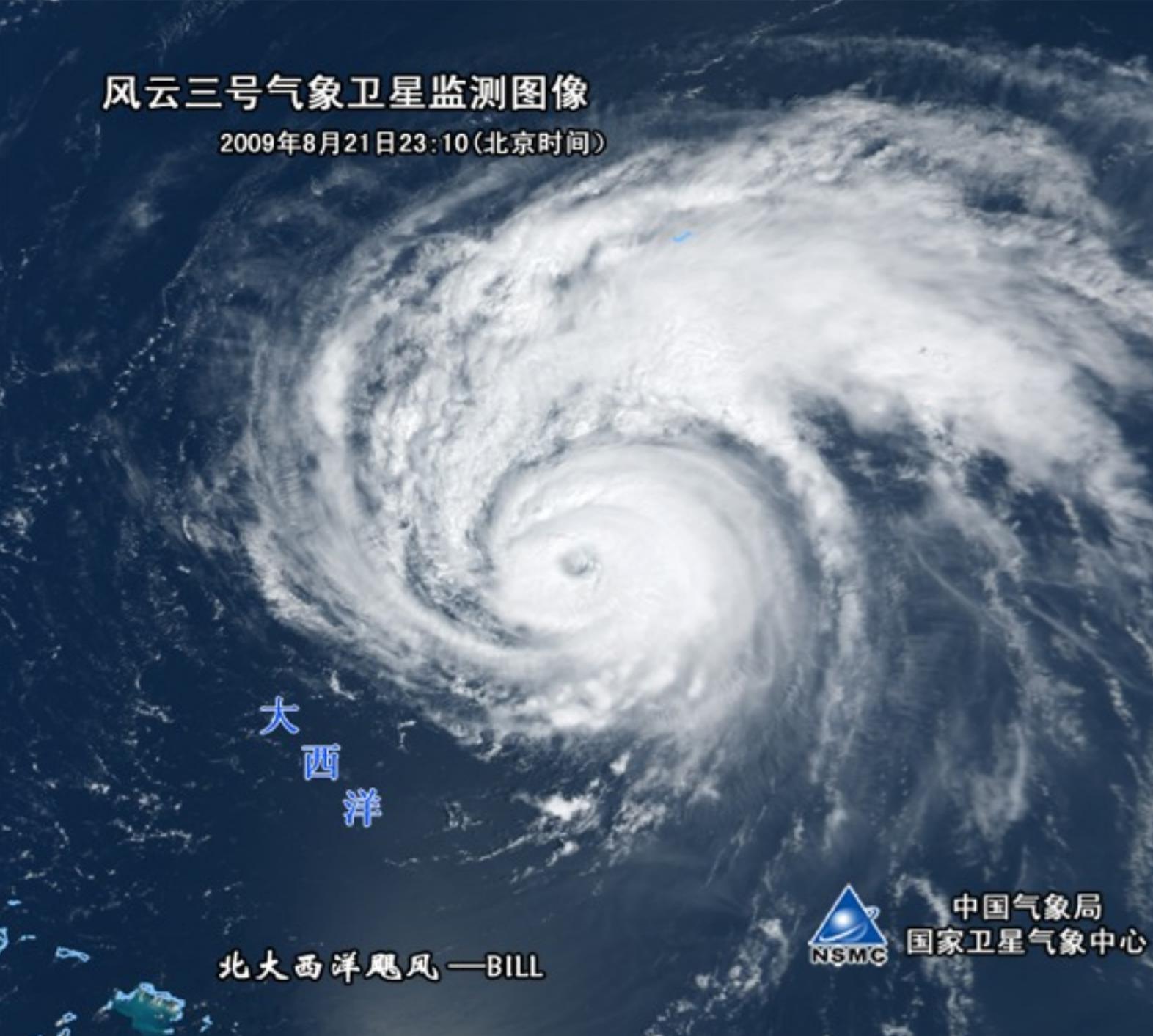
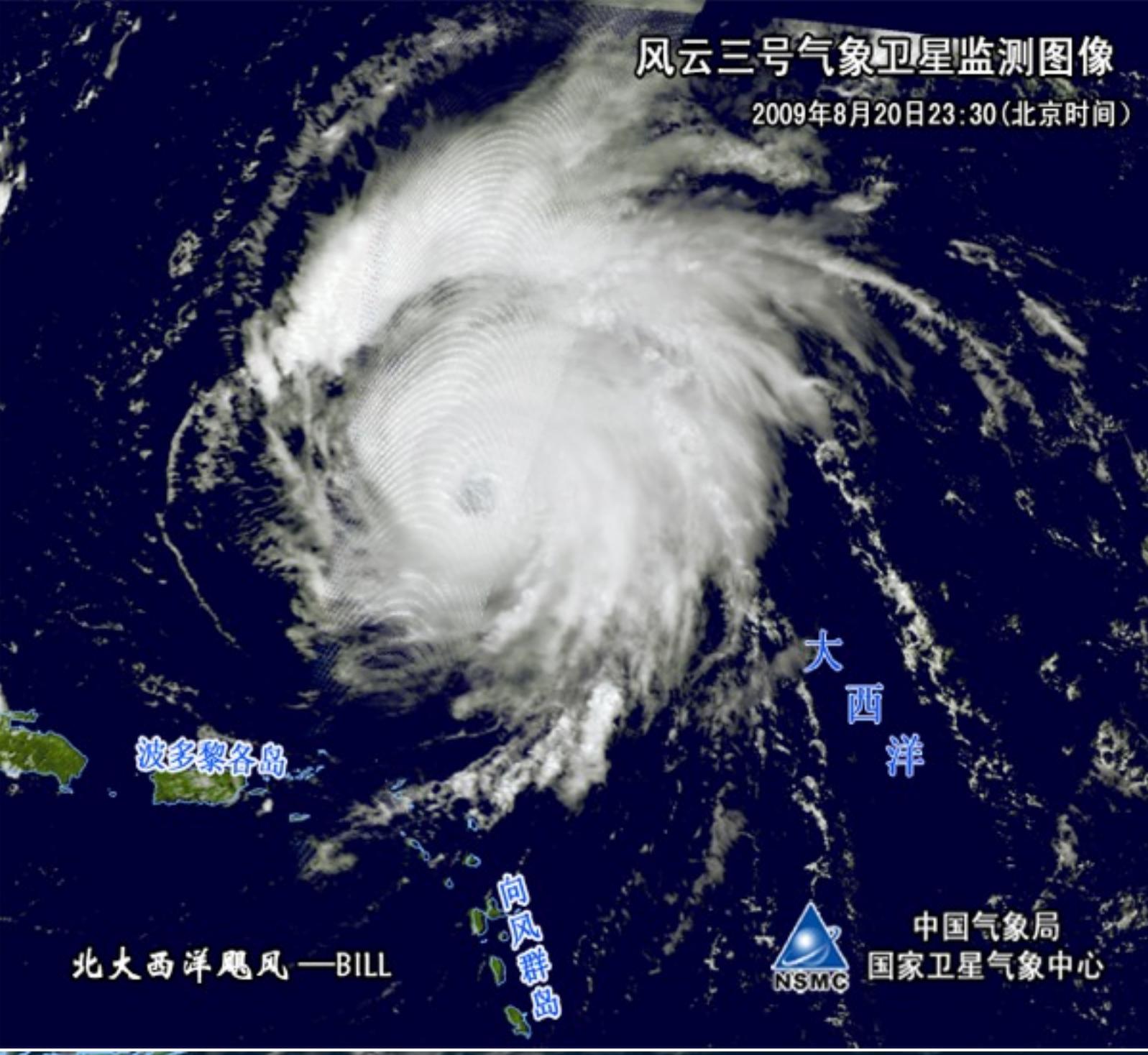
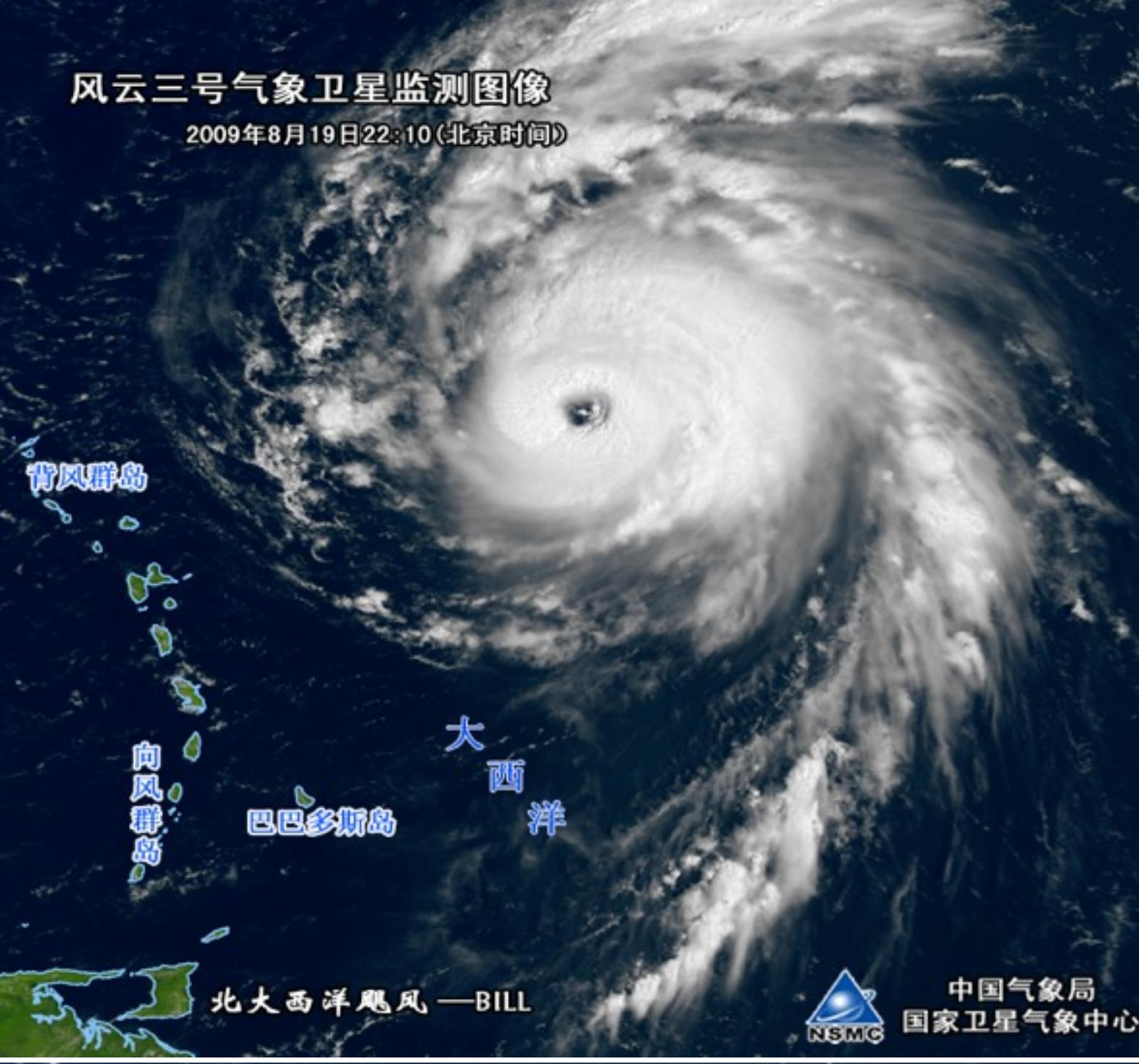
FY-3B气象卫星洞庭湖流域水体监测图
(2011年3月29日13时15分)



中国气象局国家卫星气象中心

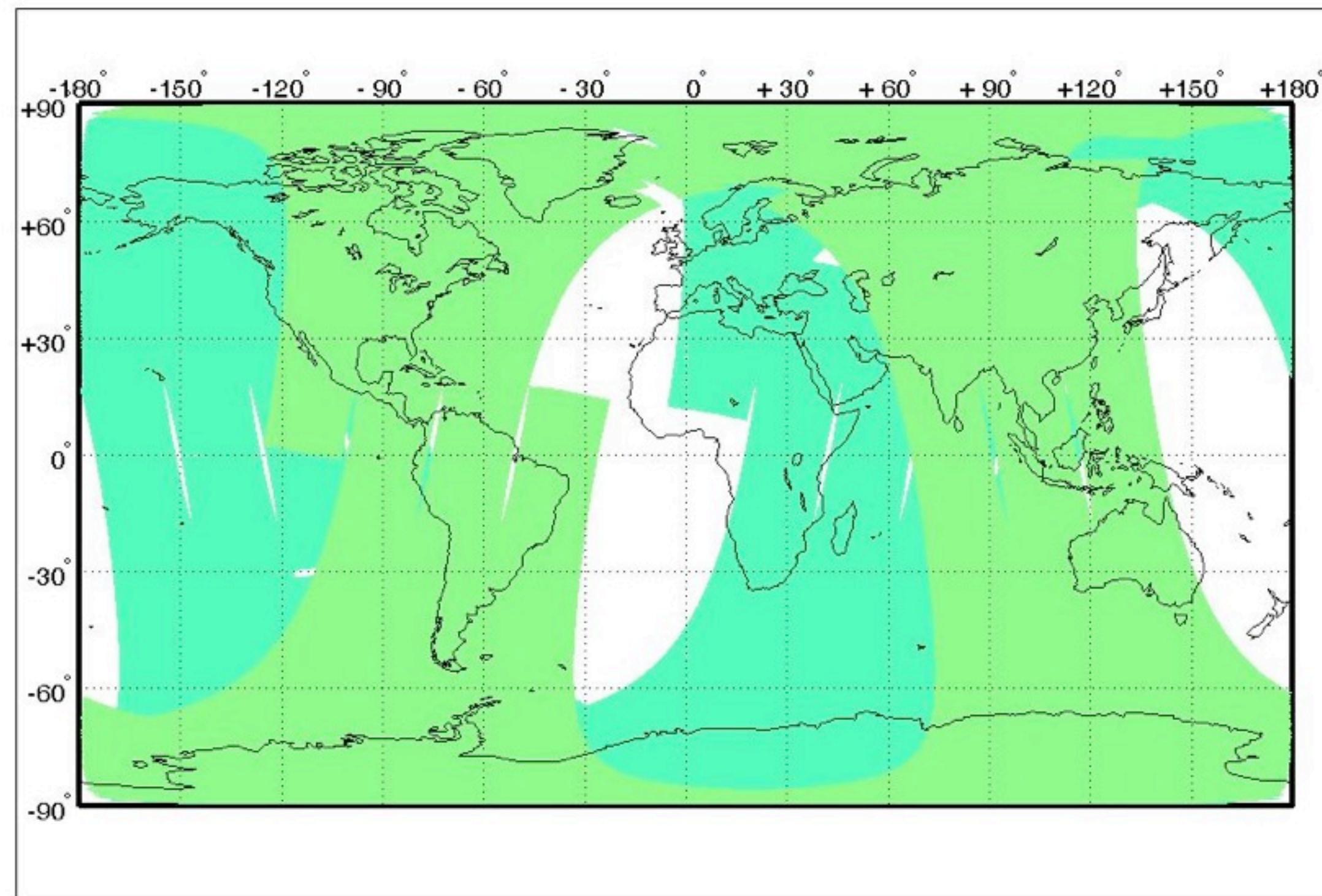
**Micorscale convective clouds monitoring by
FY-3B afternoon comparing with FY-3A morning (alone the Dongting Lake)**

Monitoring Hurricane

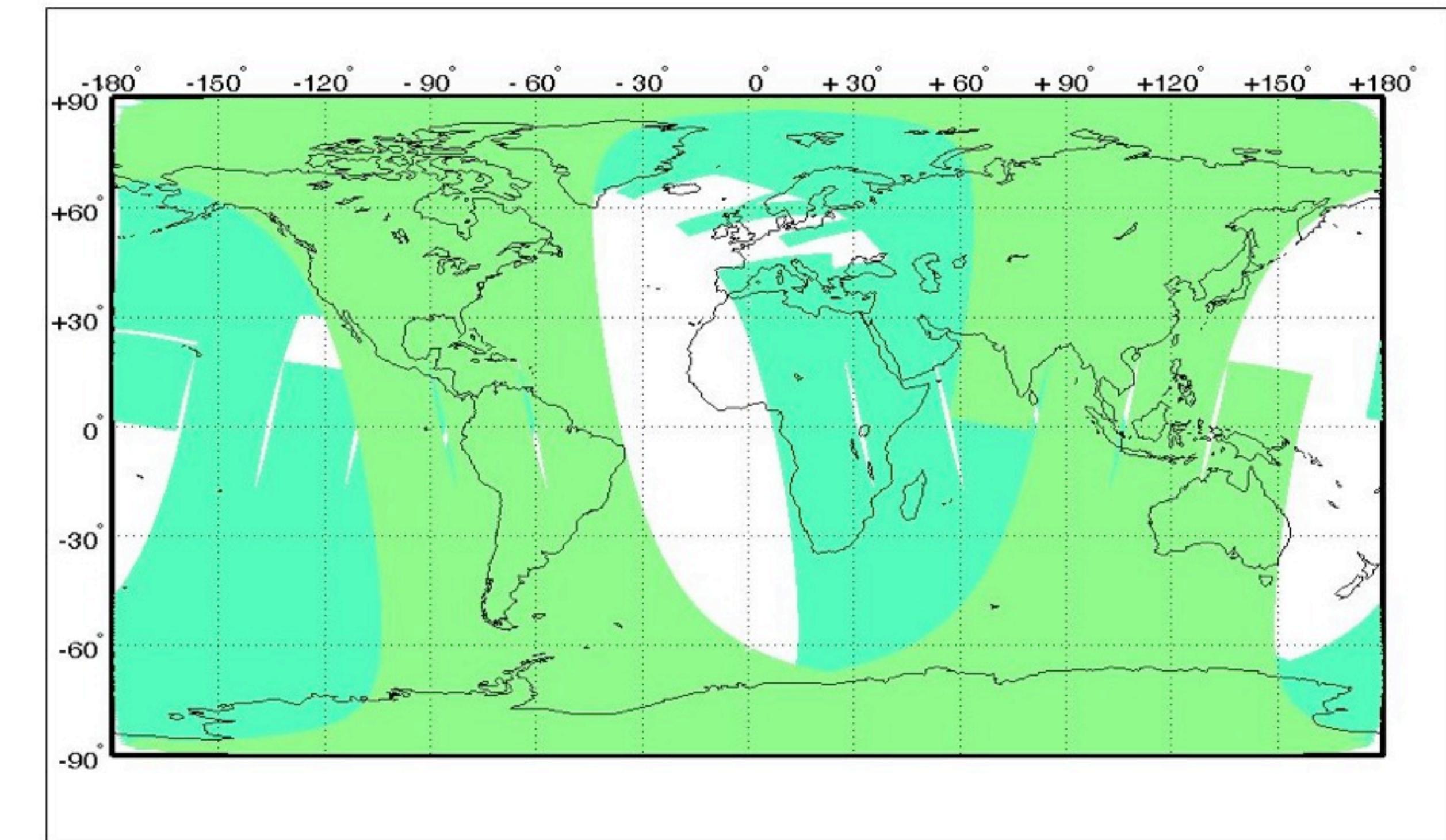


Converage for NWP data assimilate per 6 hours by FY-3A and FY-3B

GLOBE-20110324-(03-09)-MWHS 绿色: fy3b 蓝绿: fy3a

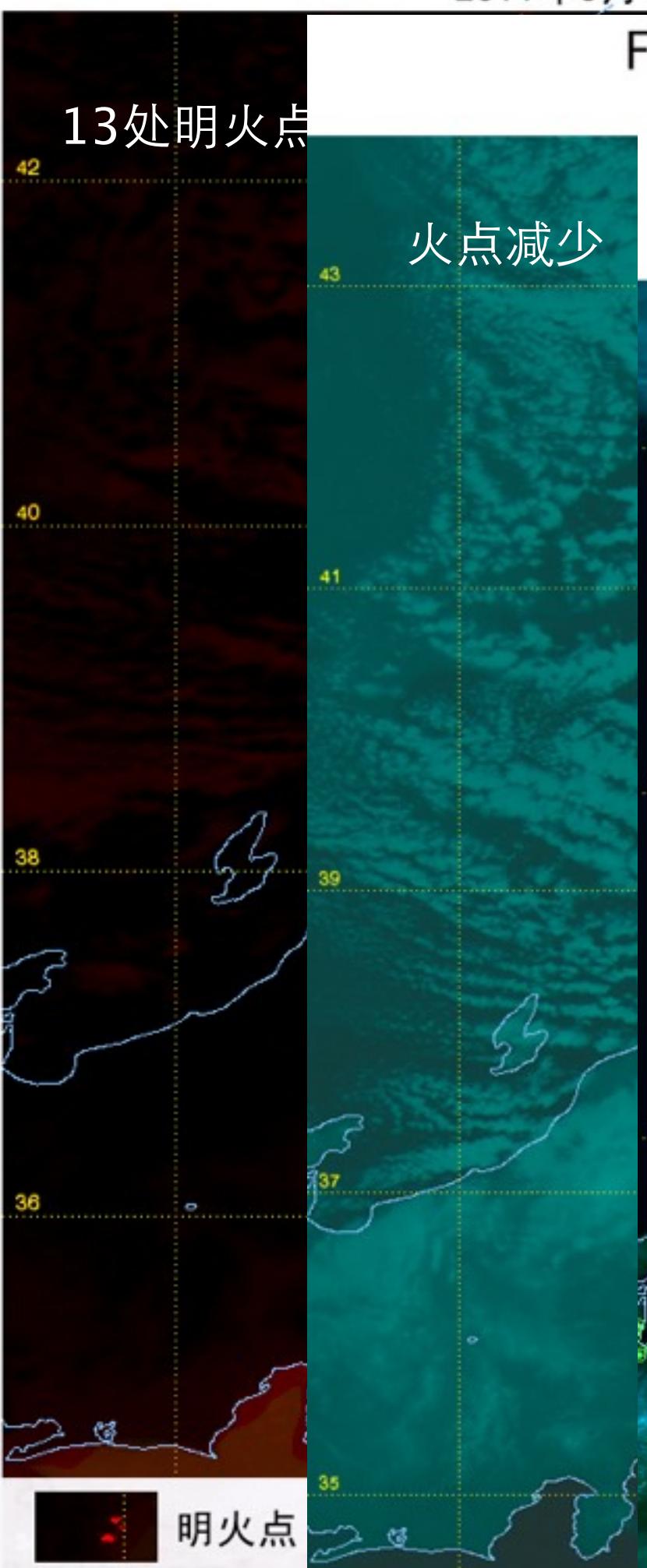


GLOBE-20110324-(15-21)-MWHS 绿色: fy3b 蓝绿: fy3a



FY3A/VIRR气象卫星日本火情监测图

2011年3月11日19:50(北京时)



FY3B/VIRR气象卫星日本火情监测图

2011年3月12日00:35(北京时)

FY3B/VIRR气象卫星日本火情监测图

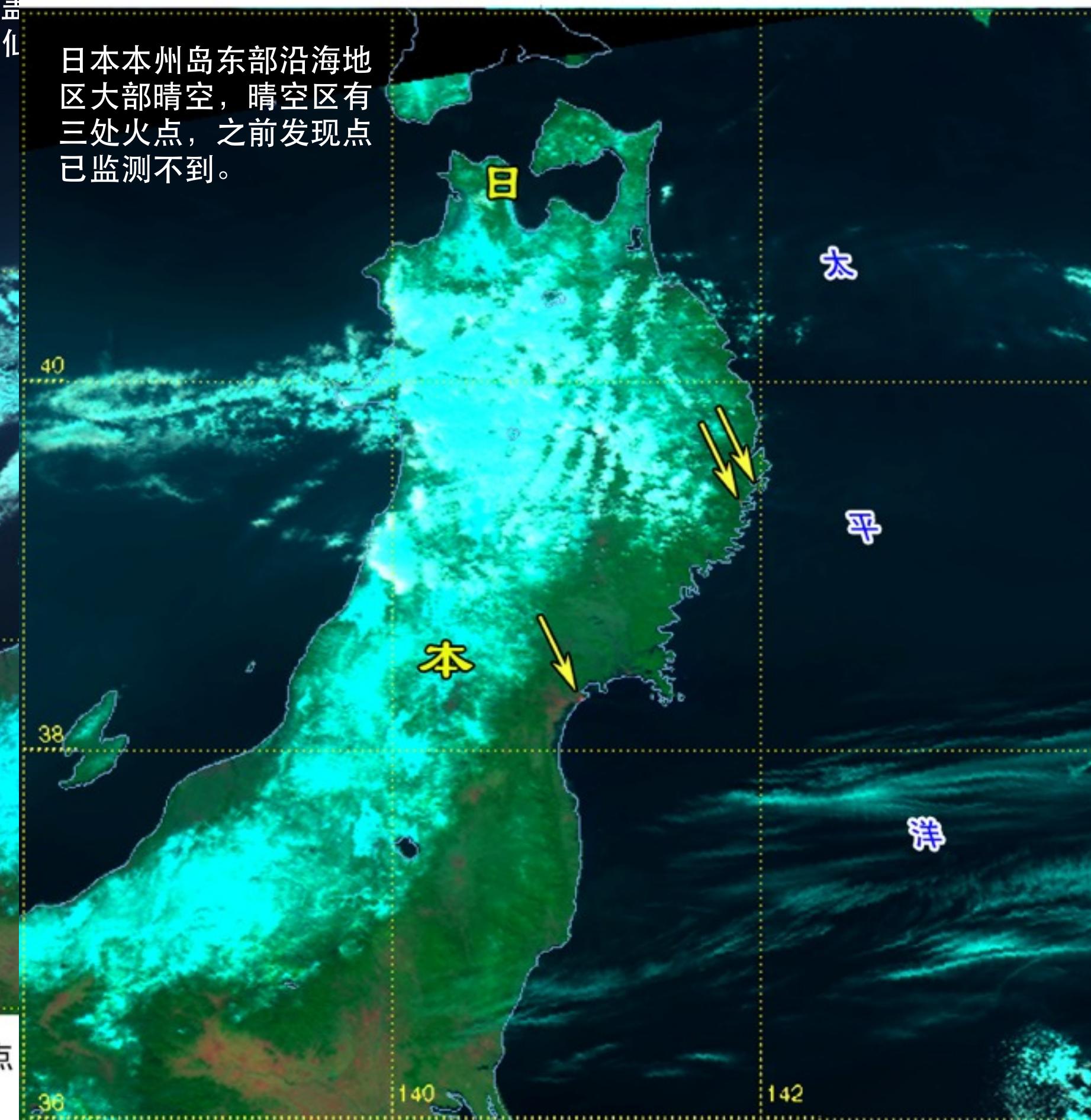
2011年3月12日11:55(北京时)

FY3A/VIRR气象卫星日本火情监测图

2011年3月13日09:30(北京时)

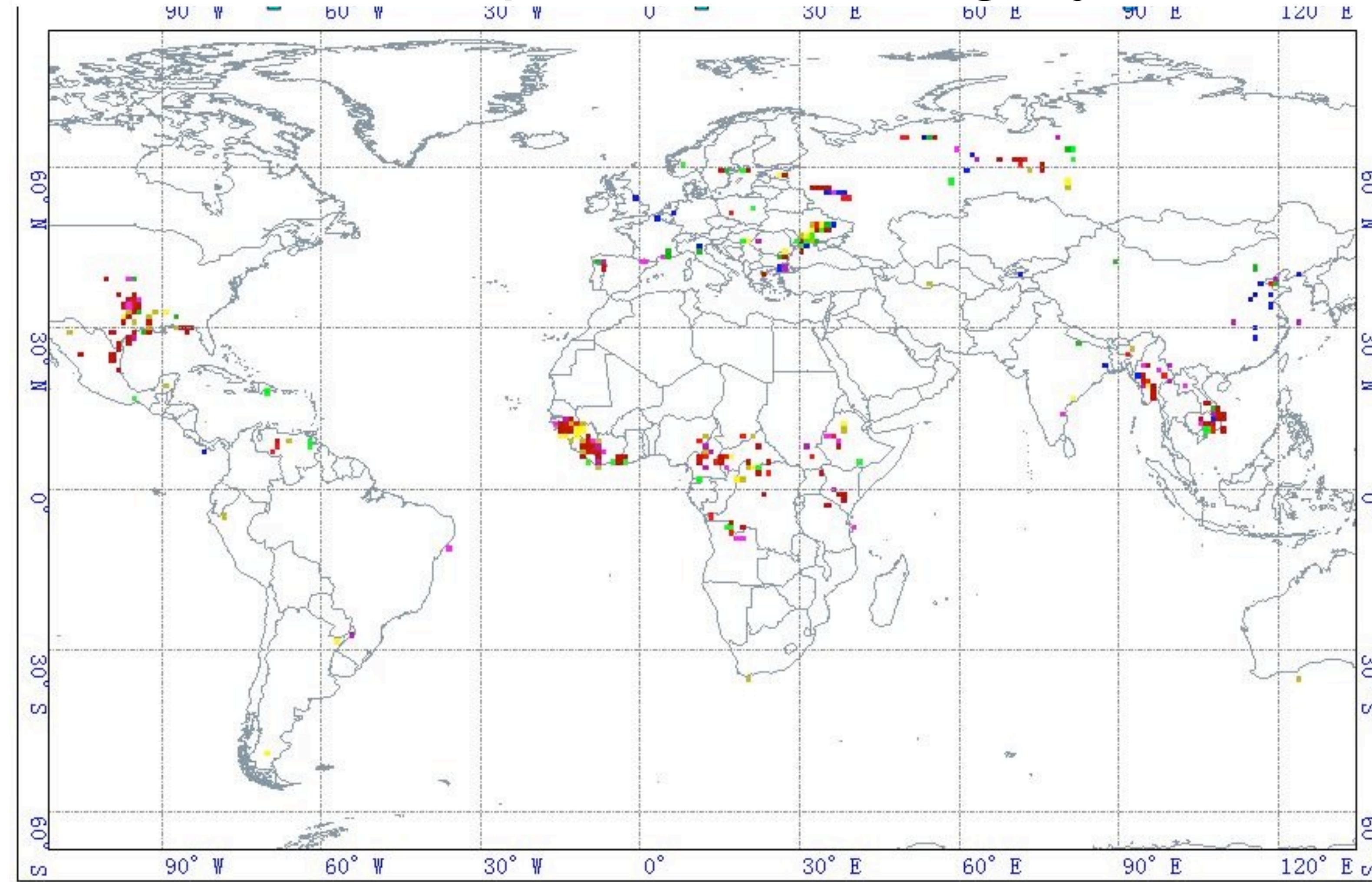
FY3B/VIRR气象卫星日本火情监测图

2011年3月13日11:35(北京时)

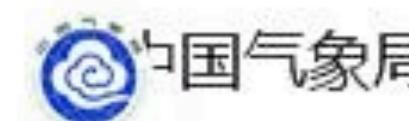


Hot Spots Monitoring after Japan Earthquake from FY-3A/B

Global Hot Spots Monitoring by FY-3B



图例

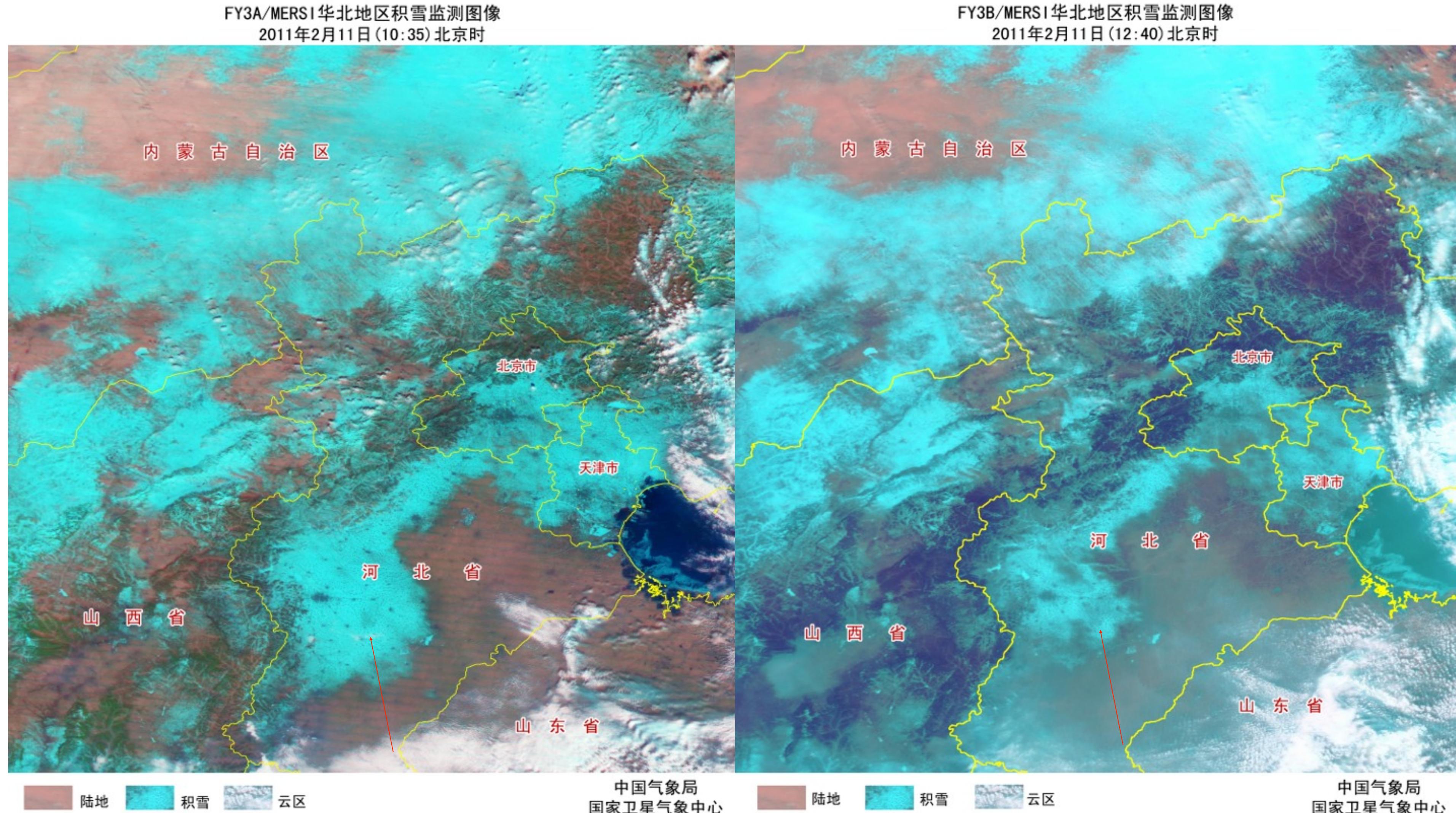


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国家卫星气象中心
NSMC

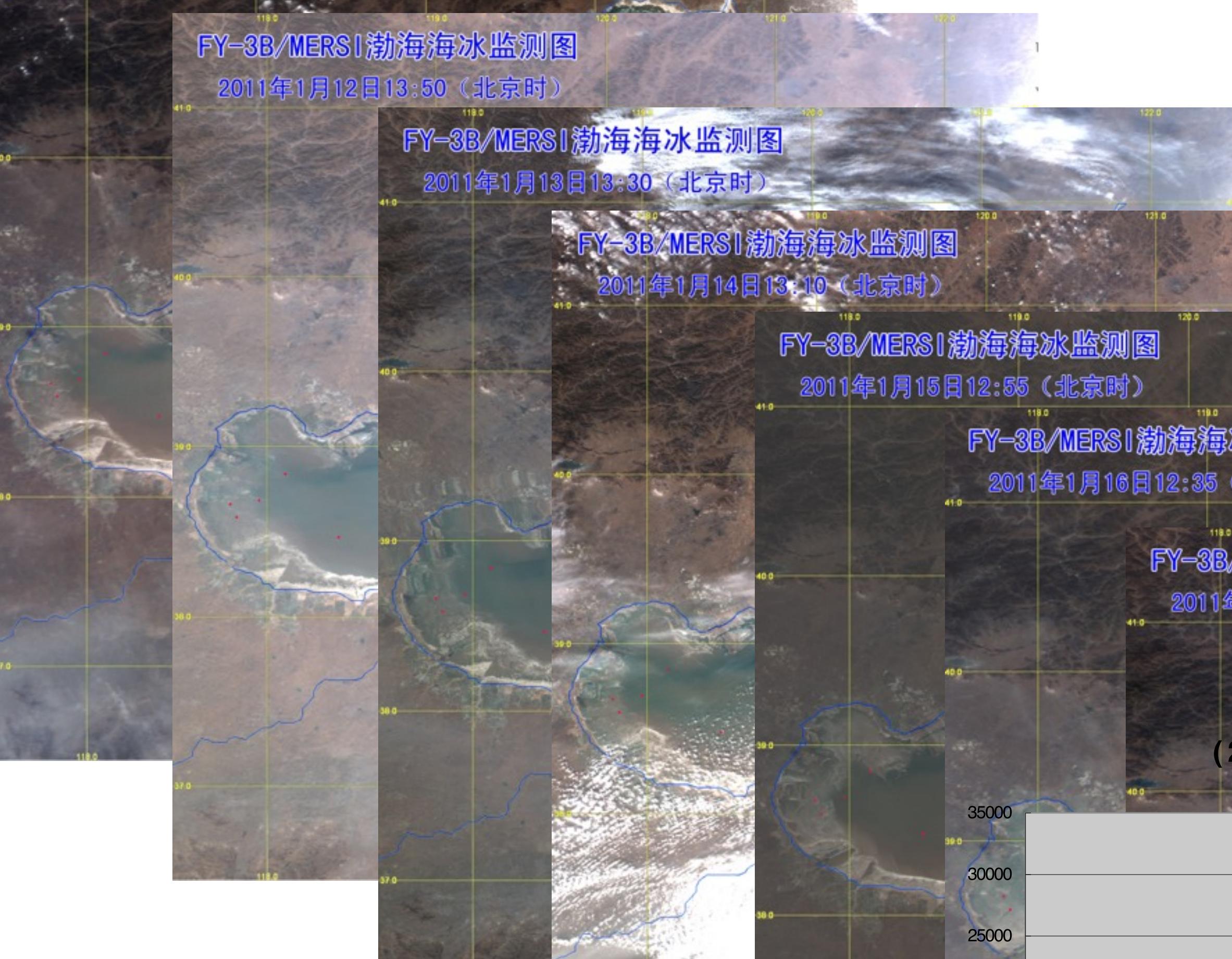
Snow monitoring by FY-3B (afternoon) comparing with FY-3A (morning)



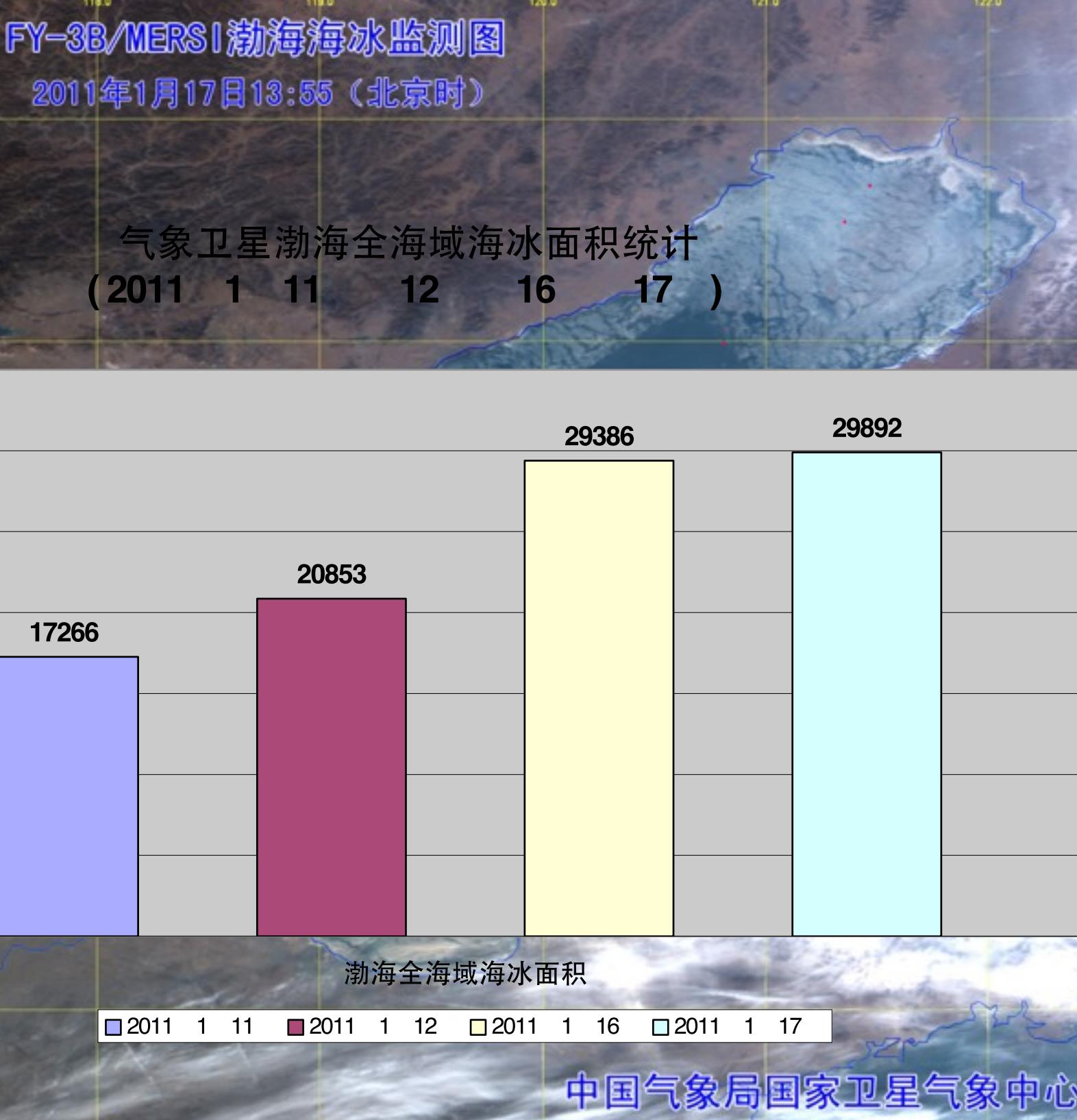
The snow area in the morning

The snow has melted in the afternoon

FY-3B/MERSI渤海海冰监测图
2011年1月11日12:30 (北京时)



Sea Ice Monitoring by FY-3B

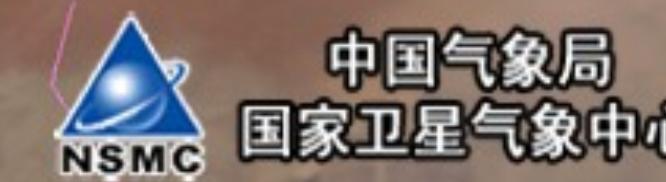


FY-3A气象卫星监测图像

2011年3月26日15:35 (北京时间)

沙特阿拉伯

波斯湾



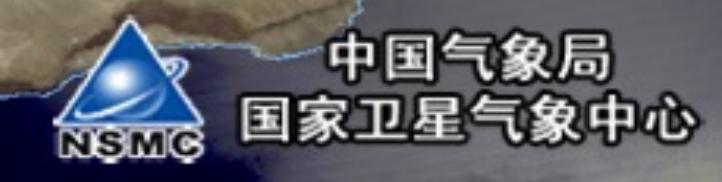
中国气象局
国家卫星气象中心

FY-3B气象卫星监测图像

2011年3月26日17:30 (北京时间)

波斯湾

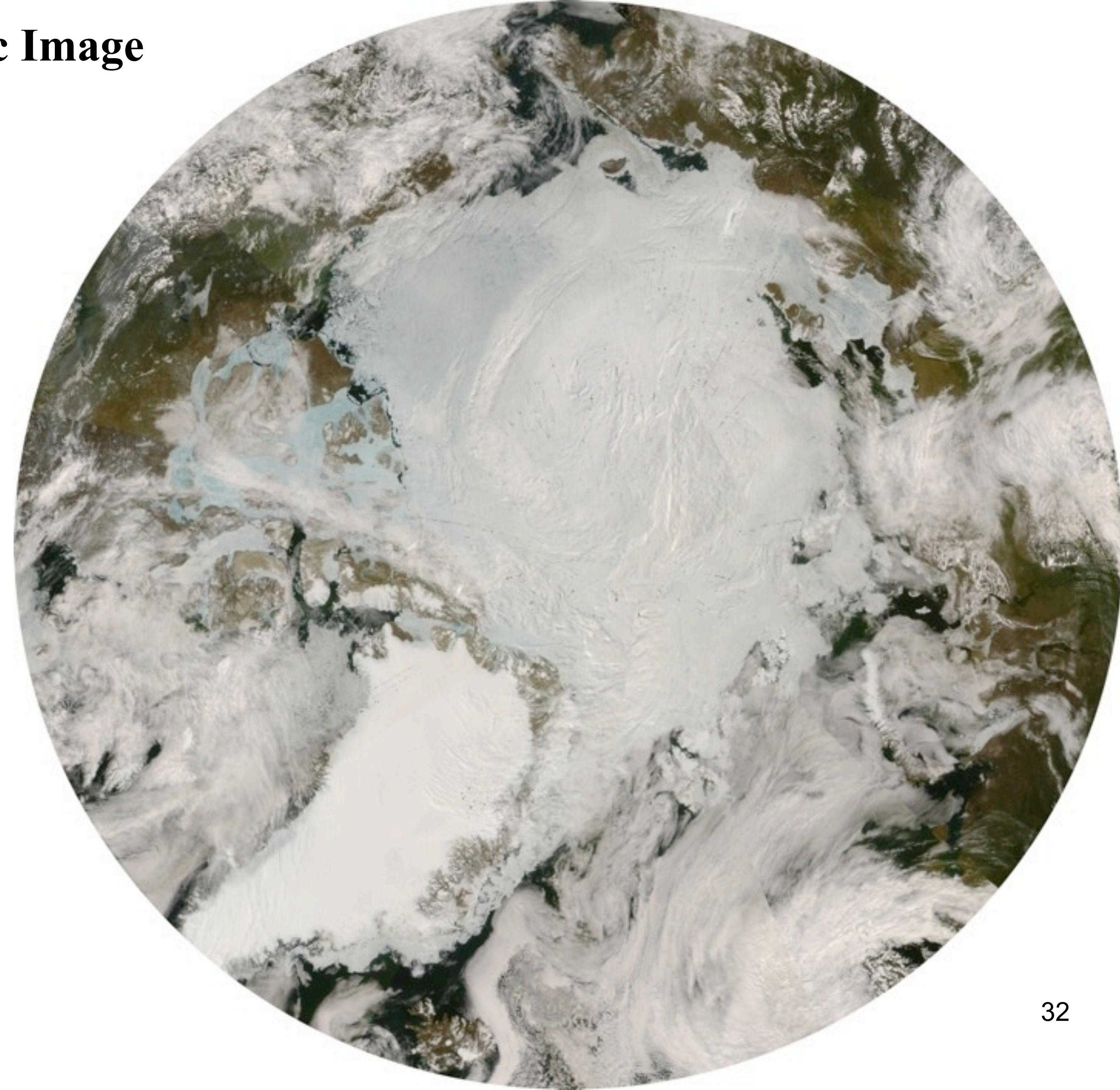
沙特阿拉伯

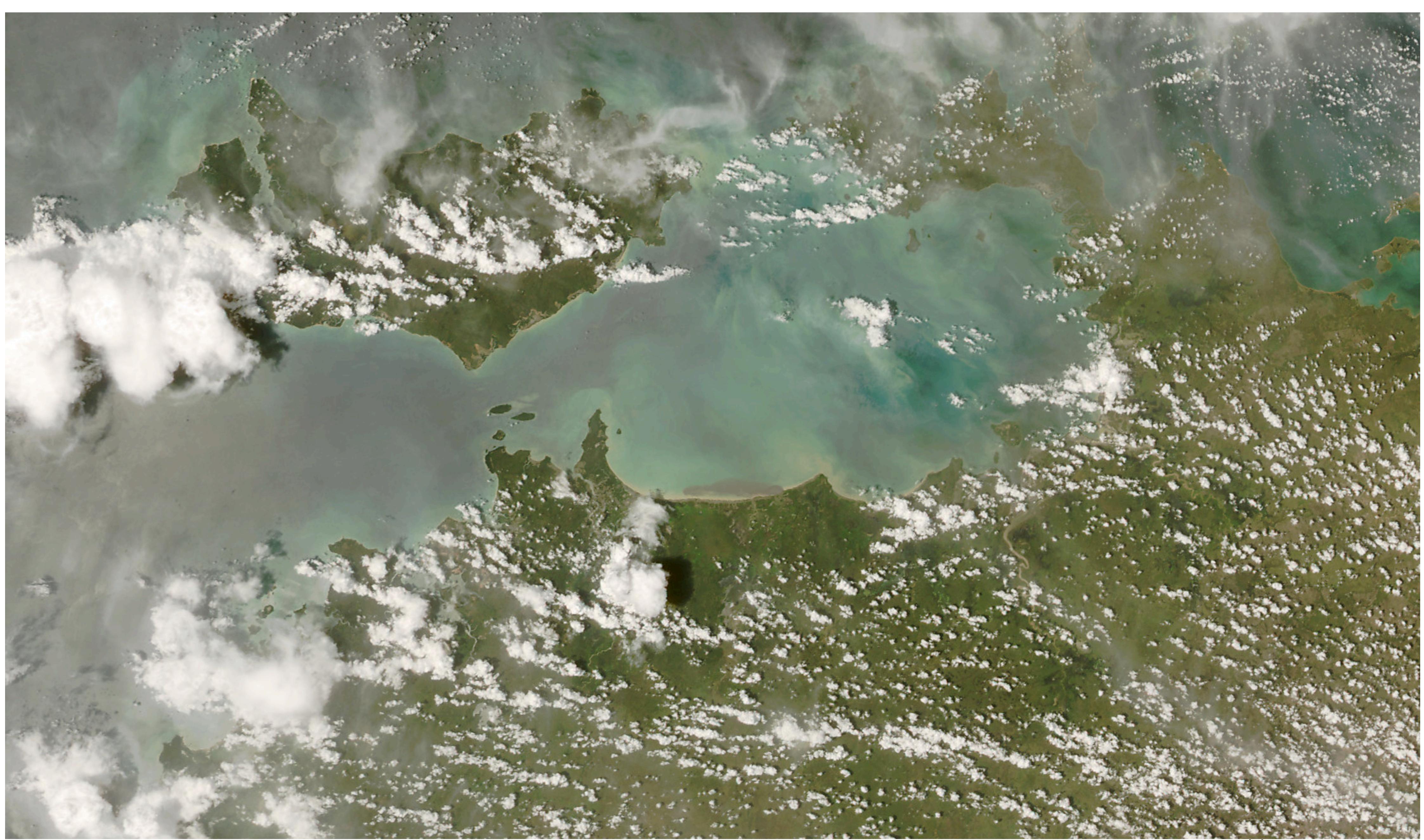


中国气象局
国家卫星气象中心

Dust monitoring in the Arabian Peninsula
on 26, March 2011 by FY-3A and FY-3B

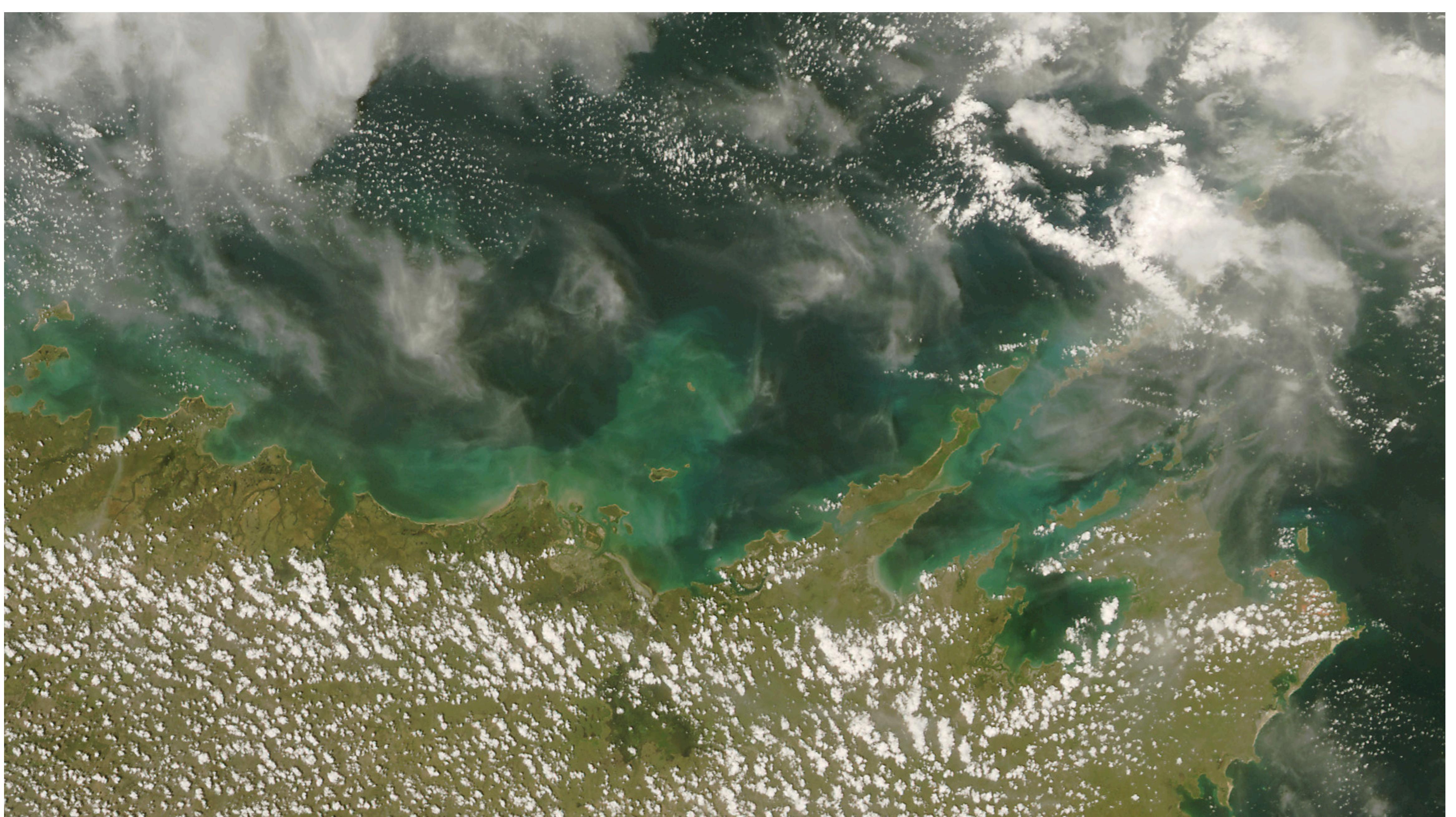
FY-3B/MERSI Arctic Image
2011-06-21





44

FY-3B/MERSI Three RGB Bands Composition True Color 250m Resolution Image: North Australia 2012-01-04:03:02:01(UTC)

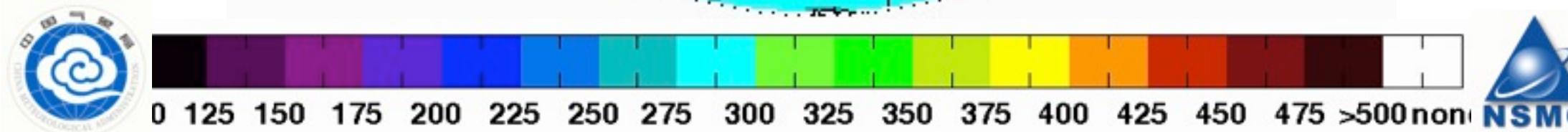
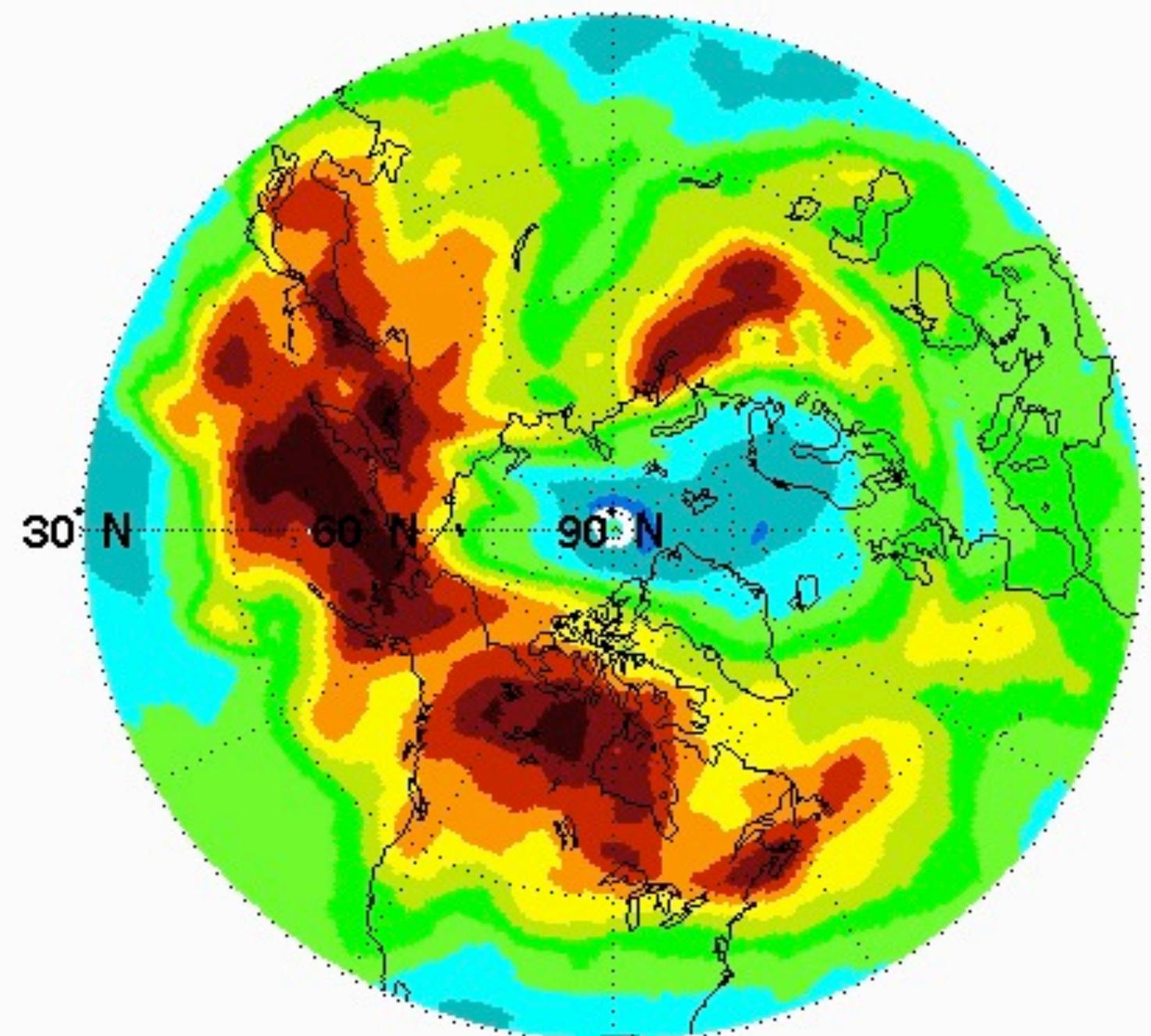


45

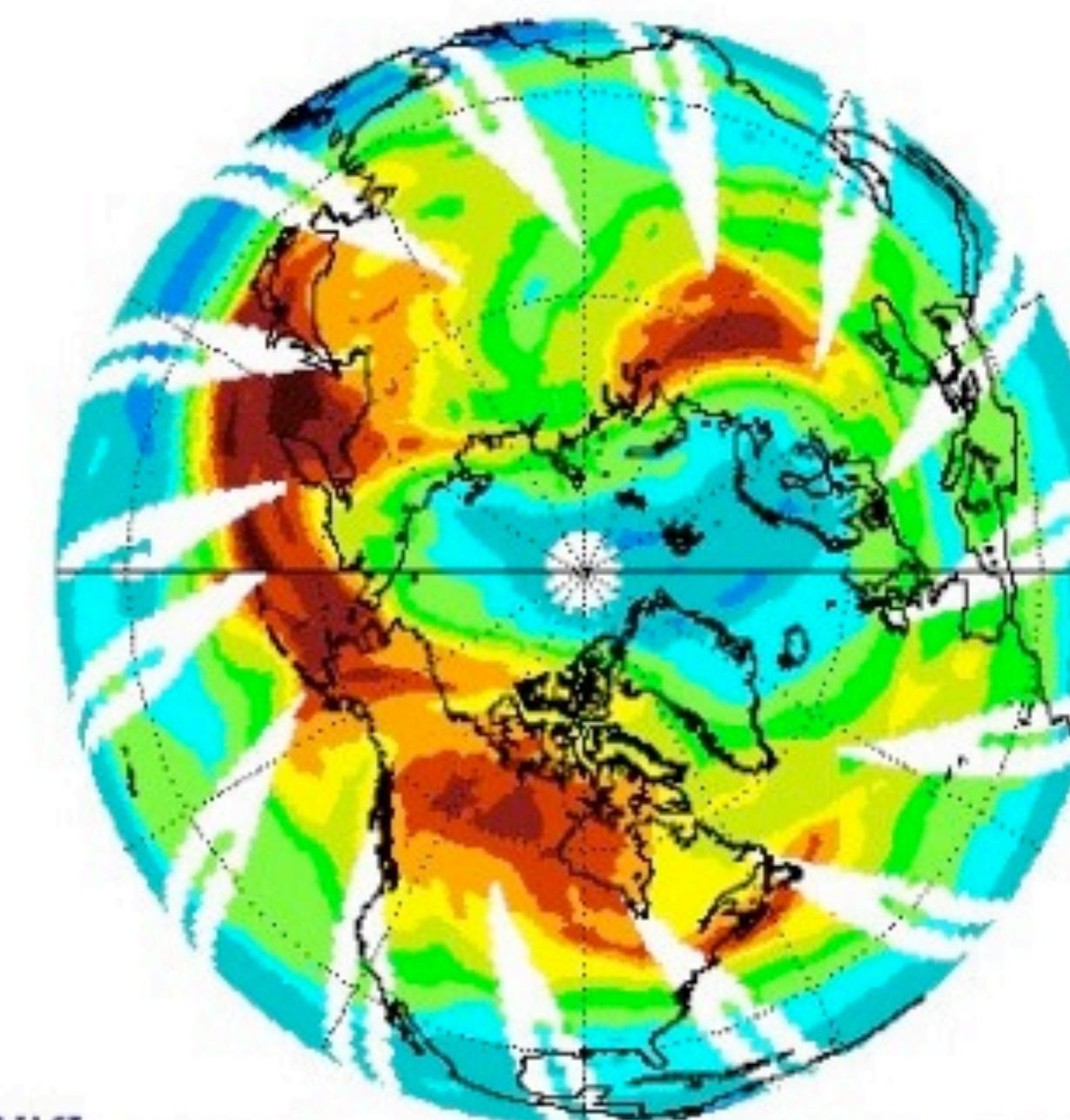
FY-3B/MERSI Three RGB Bands Composition True Color 250m Resolution Image: North Australia 2012-01-04:03:02:01(UTC)

Low Ozone Amount Area near North Polar Region

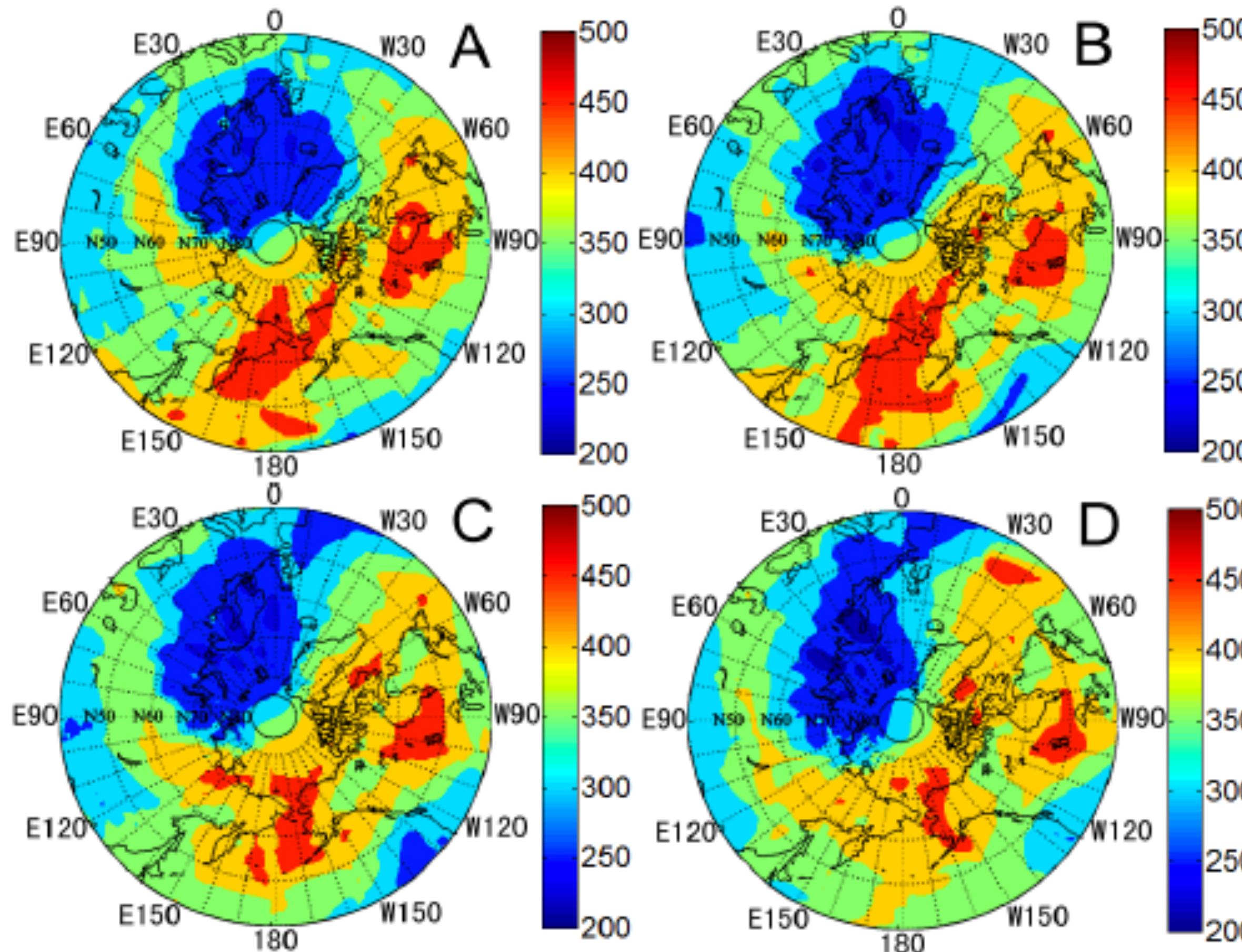
FY-3 Total Ozone for Mar 26, 2011



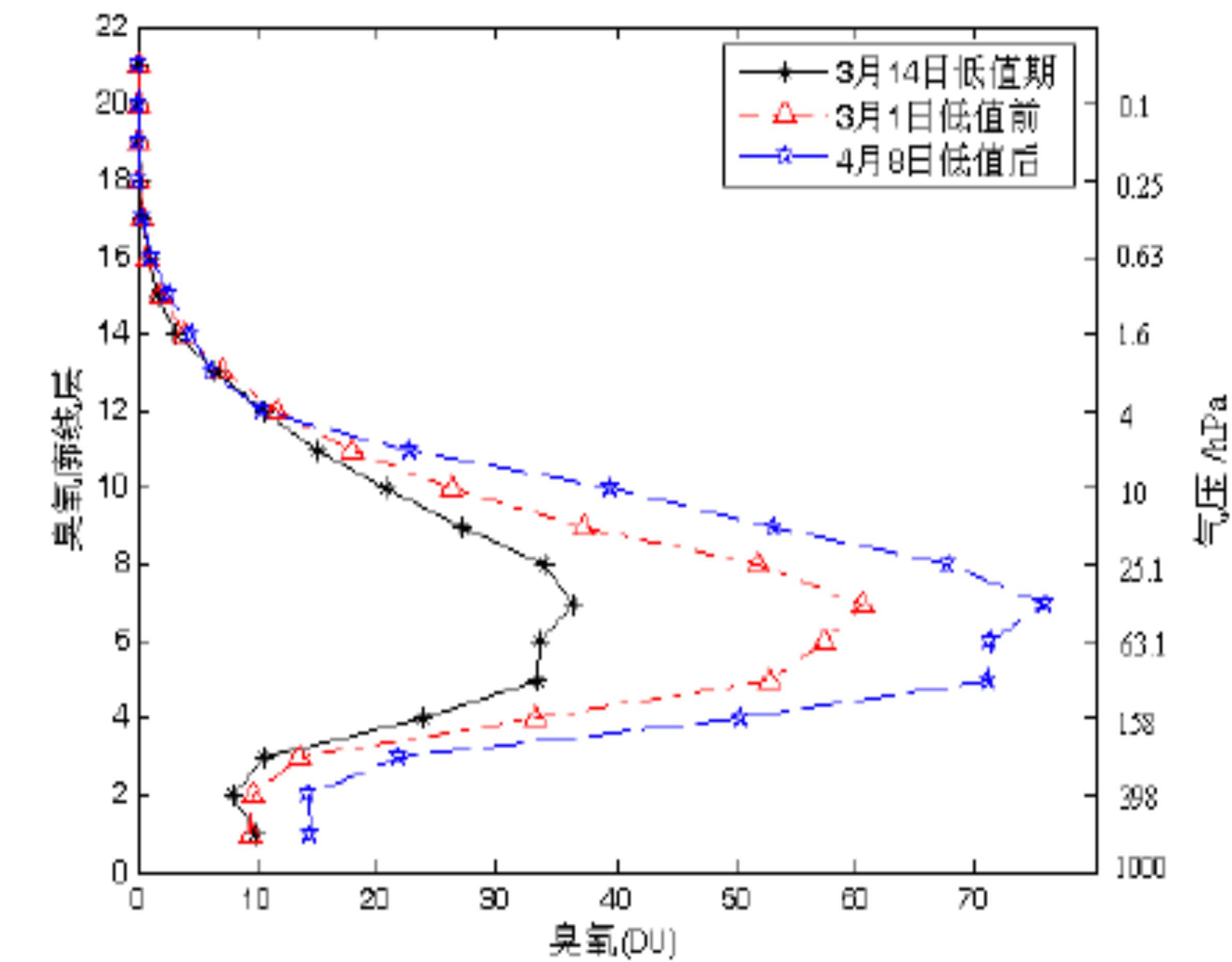
OMI Total Ozone for Mar 26, 2011



Ozone Low Near The Arctic Area



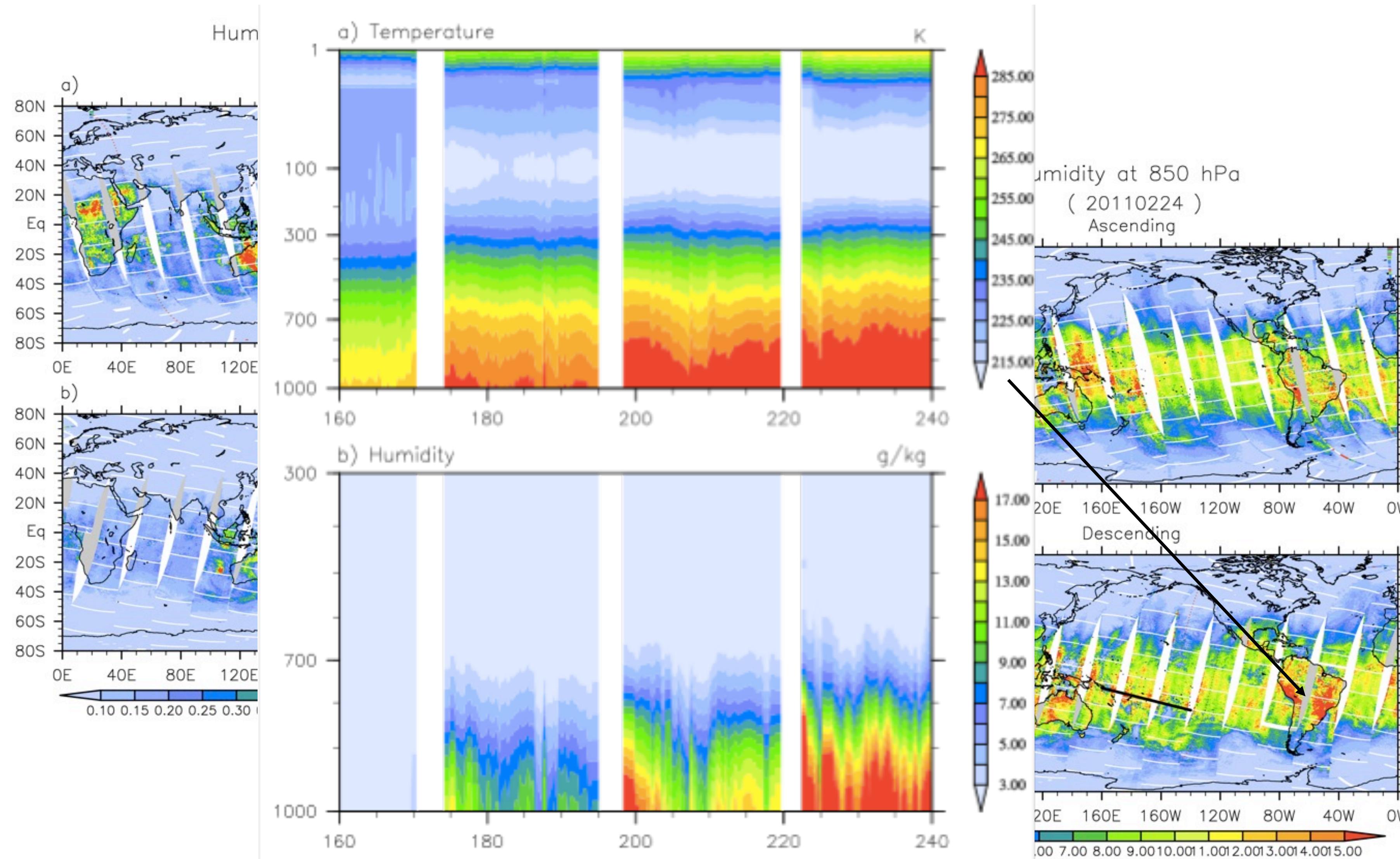
4 Days Total Ozone from 2011-3-28 to 31



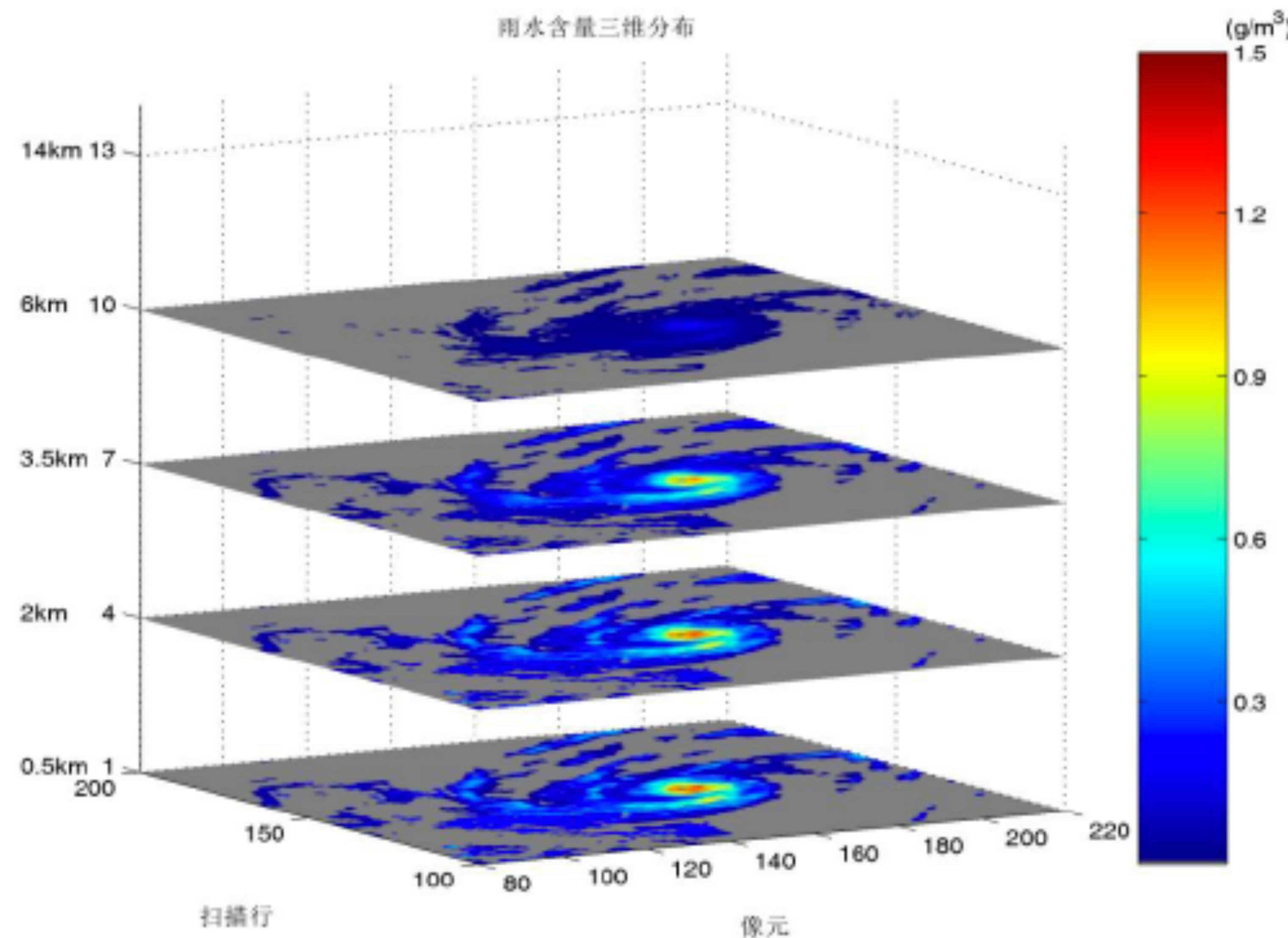
Ozone Profile at 71.11N&77.09

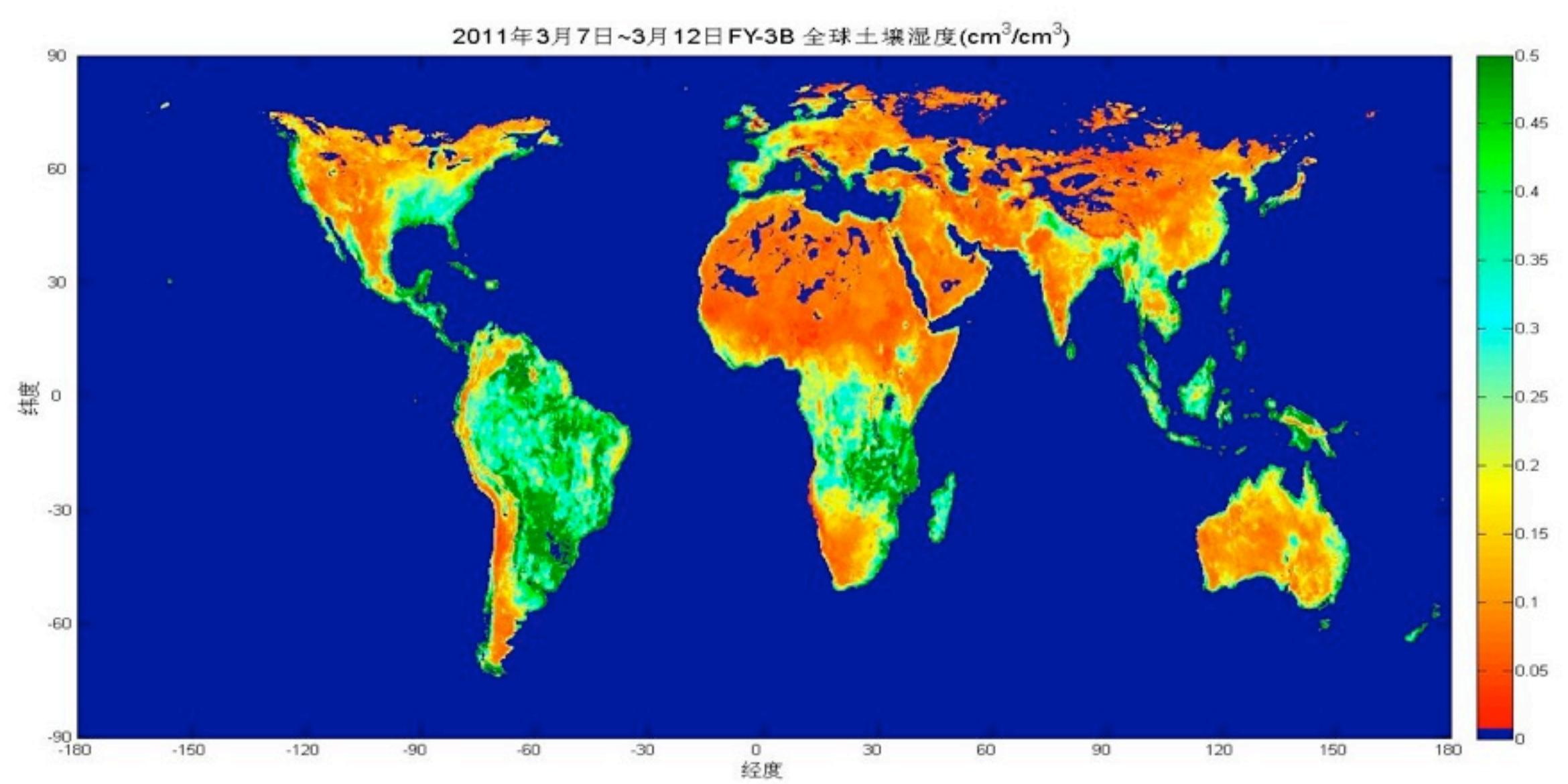
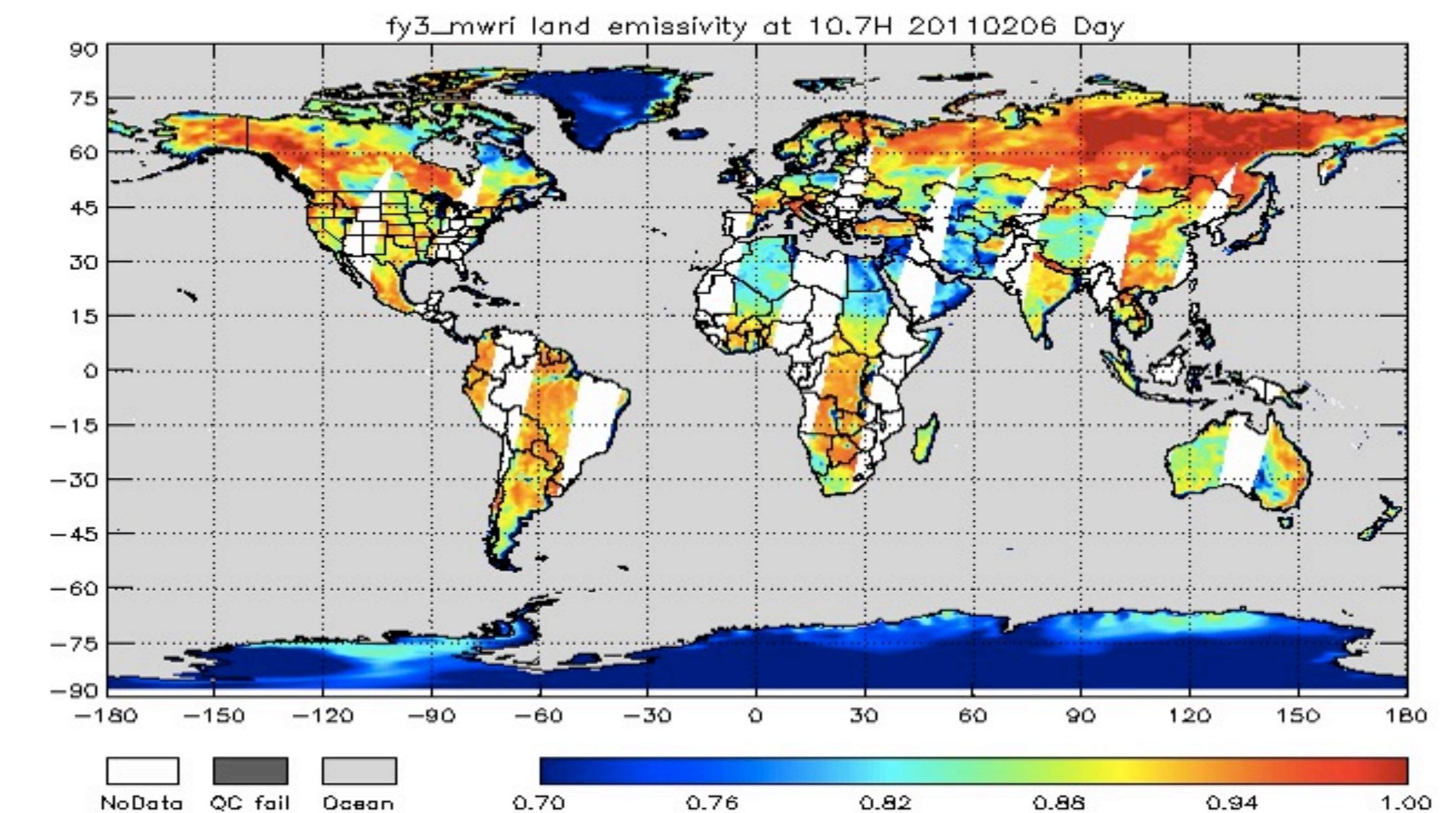
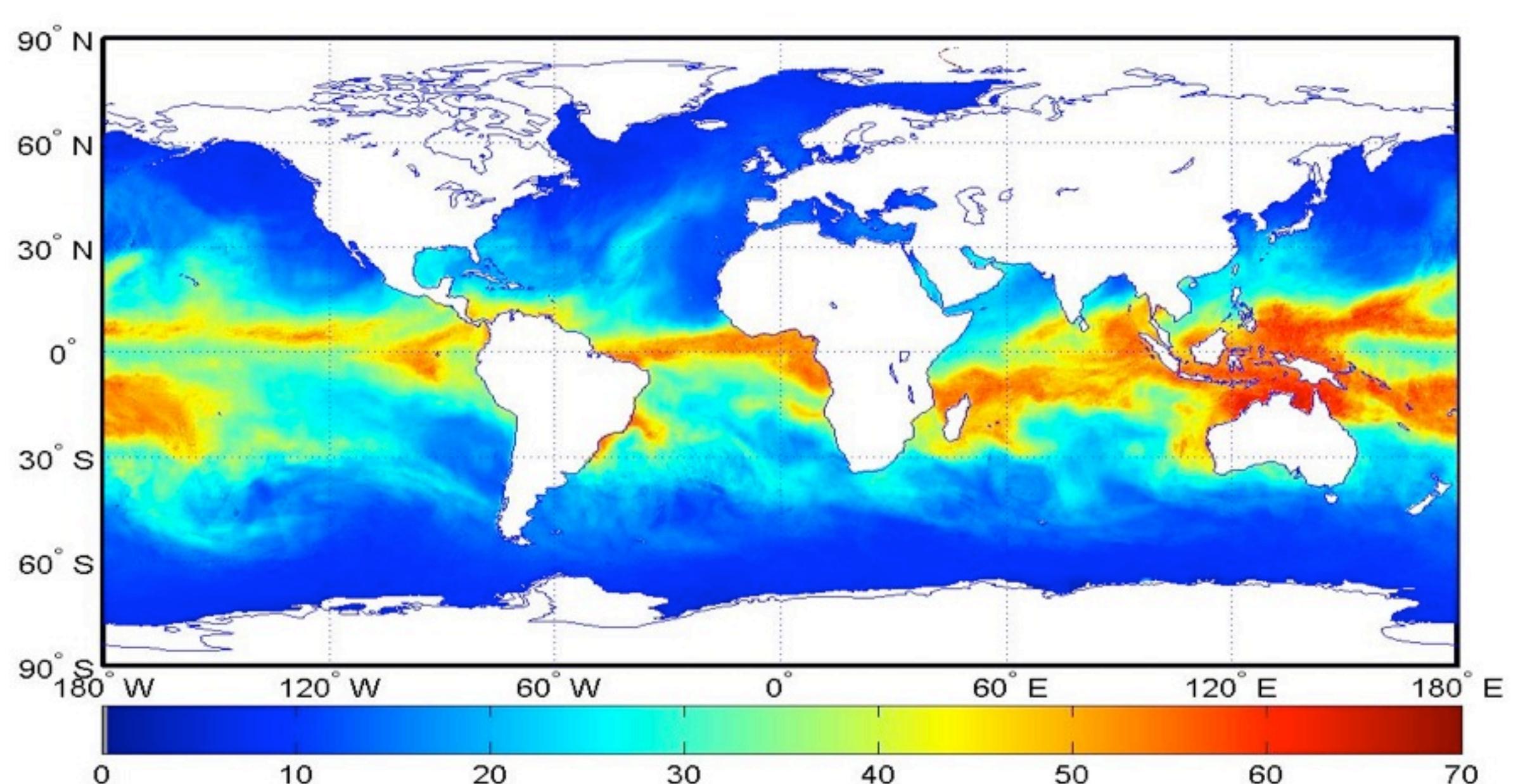
Provided by Hu Fuxiang

Global Moisture Profile from IRAS/MWTS/MWHS of FY-3B (20110224)

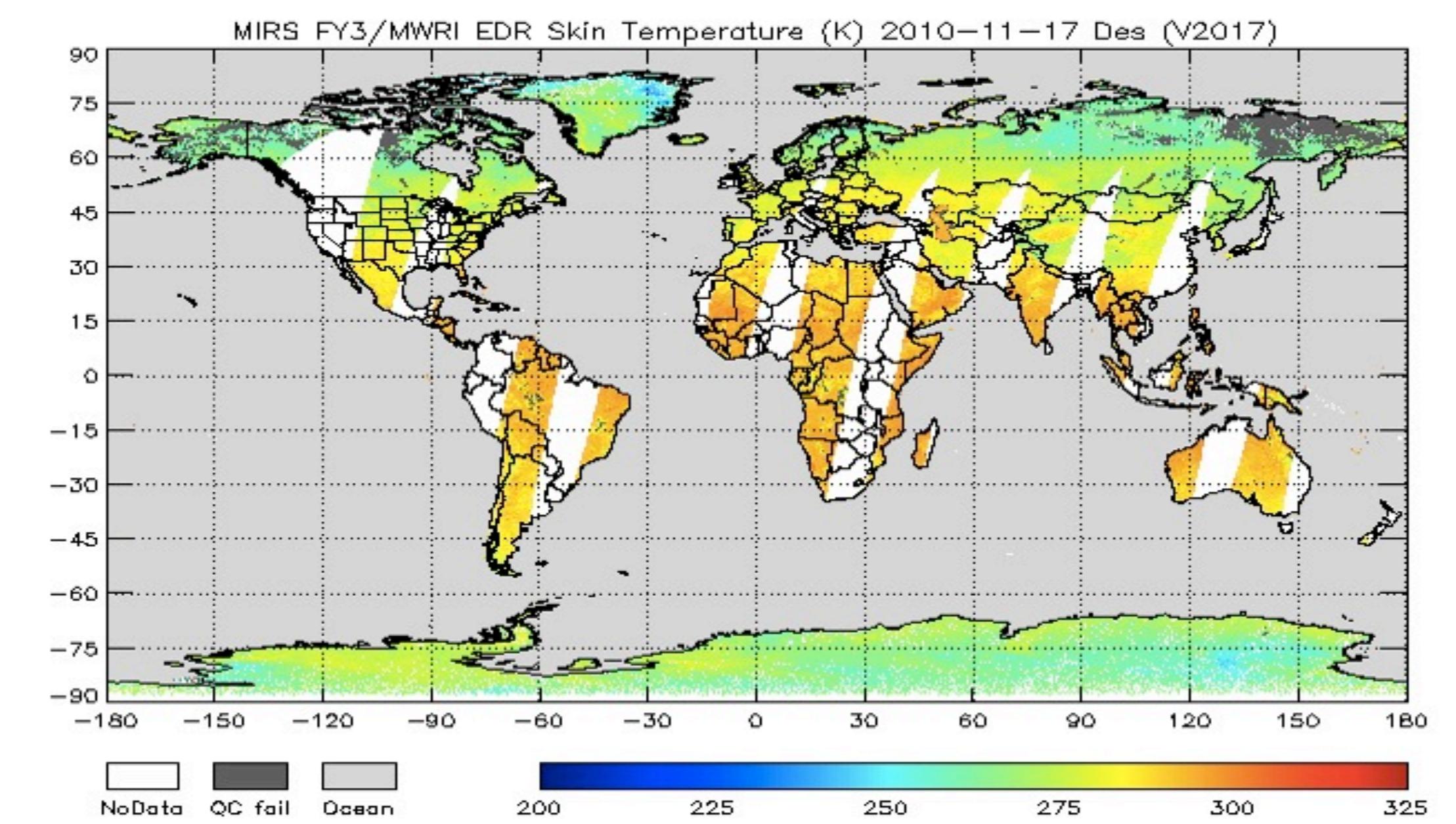


Precipitation 3D Structure of Typhoon Saoda Using MWRI 89GHz Channel Data





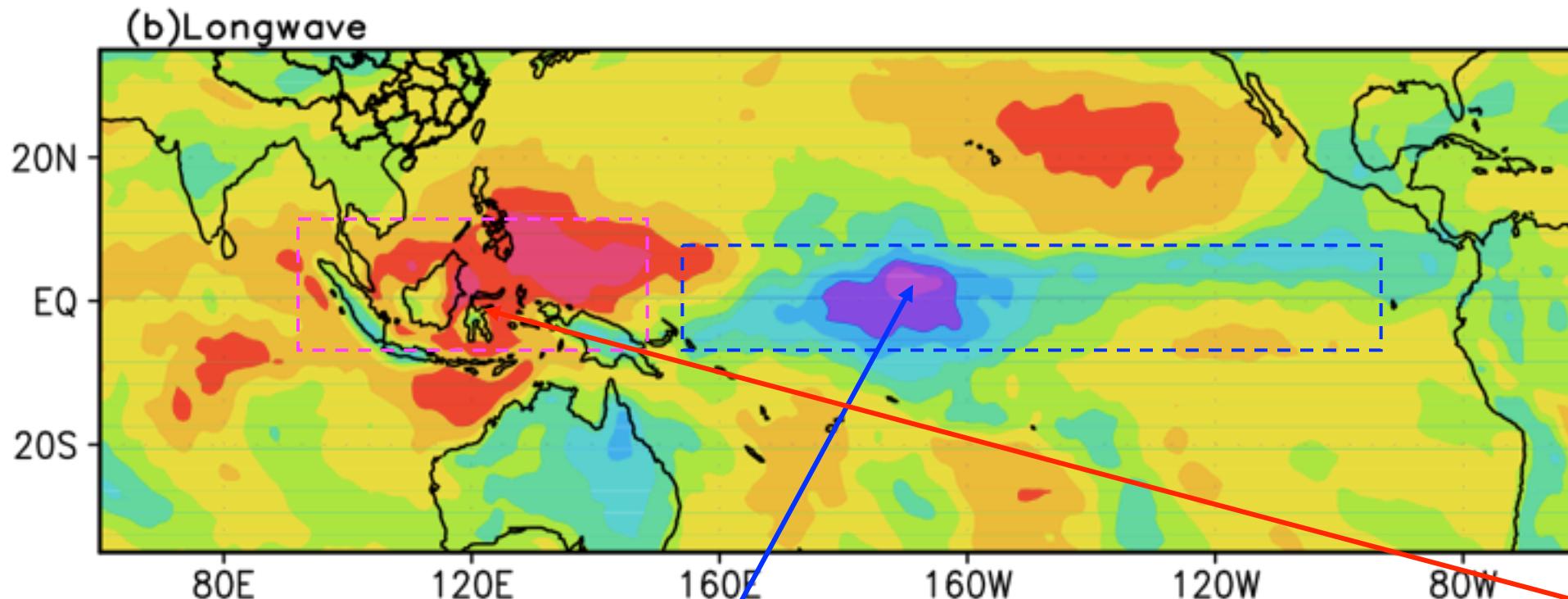
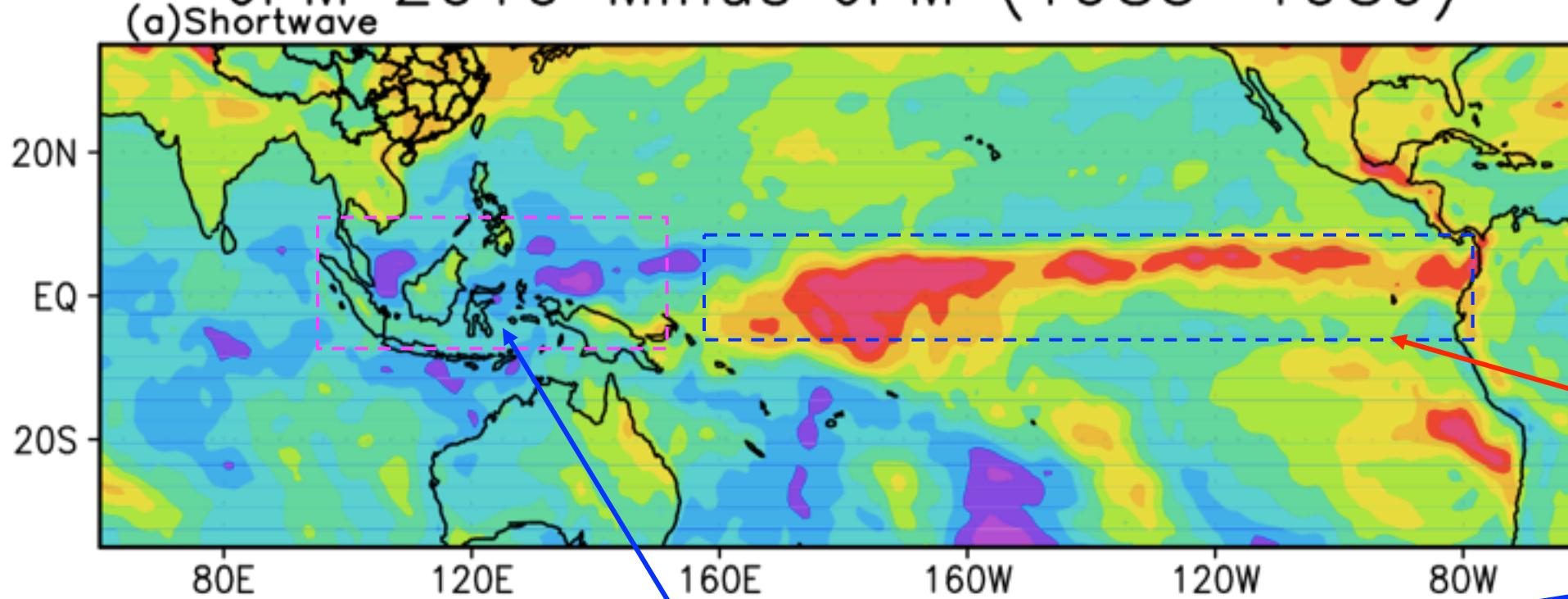
Soil Moisture from MWRI



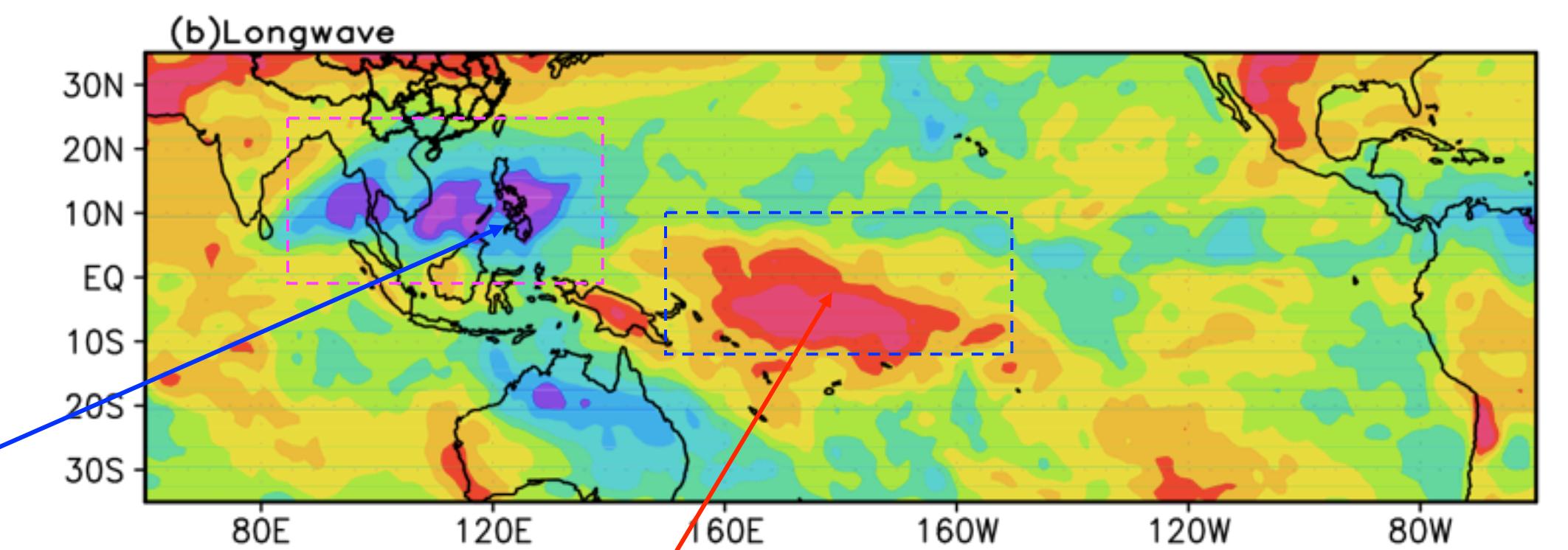
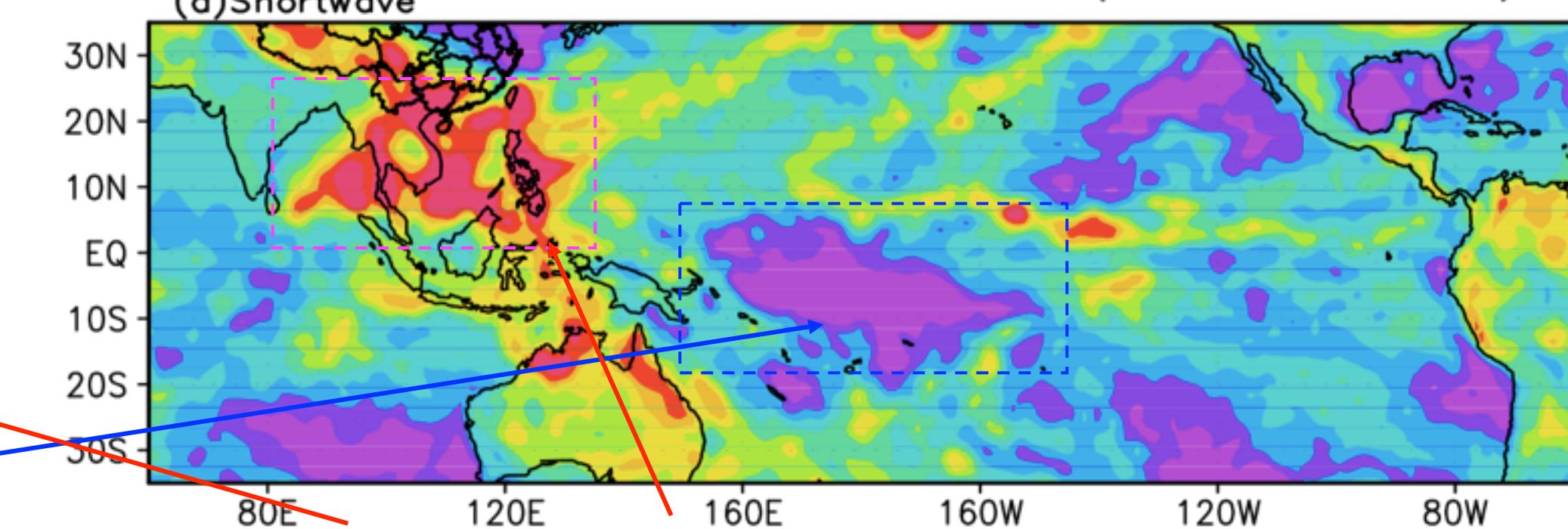
Land Surface Temperature from MWRI

Radiance Pattern in Shortwave and Longwave derived from FY-3A and FY-3B in year El Niño(2010) and year La Niña(2011)

ERM-Derived ENSO Radiative Anomalies
JFM 2010 Minus JFM (1985–1989)



FY3B ERM-Derived Radiative Anomalies
March 2011 Minus March (1985–1989)



6. FY-3 SATELLITES PROGRAMS

❖ Current Satellite Programs

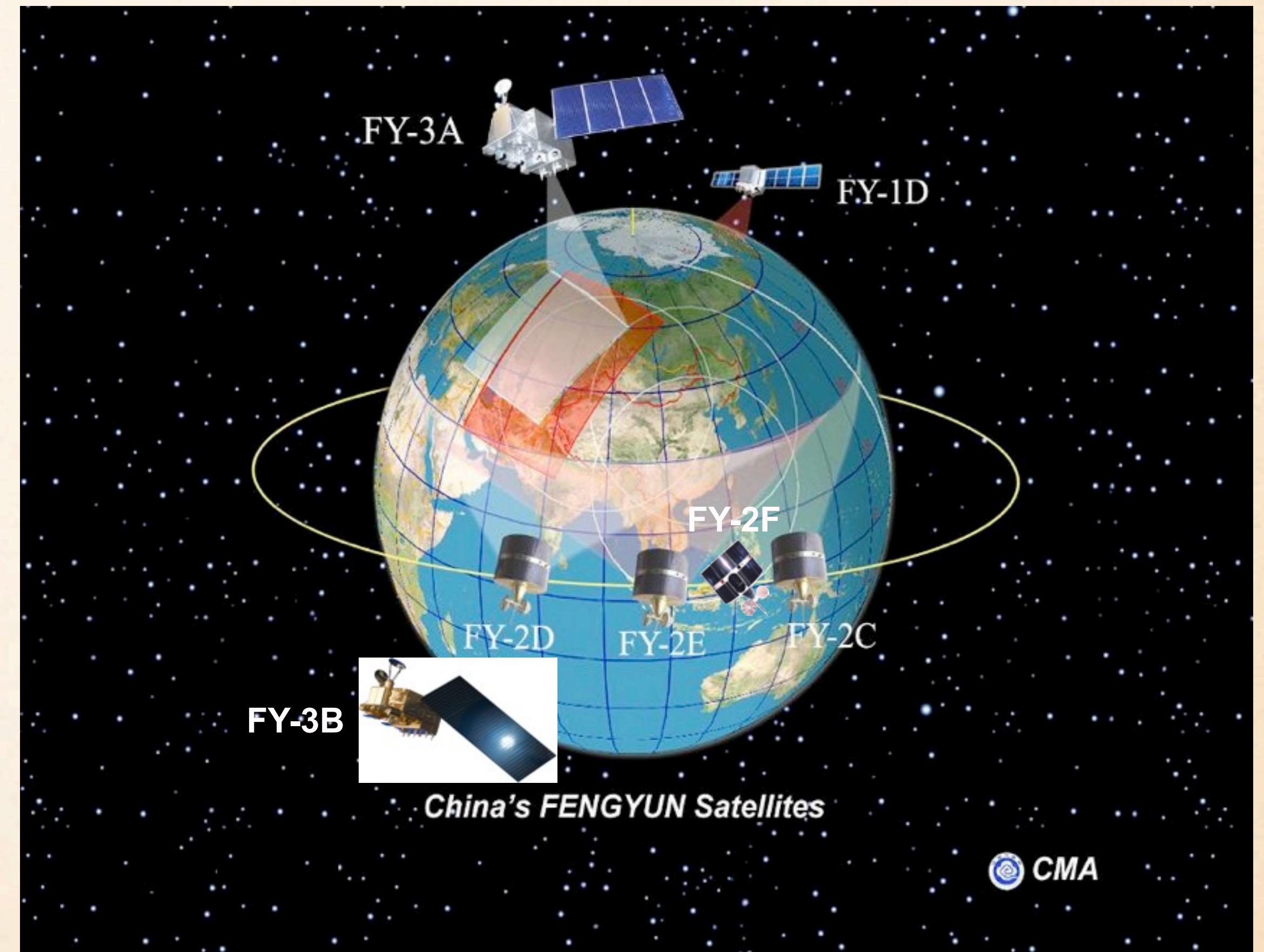
- FY-2C/D/E/F(operational, geo.)
- FY-3A/B(R&D, polar),FY-1D

Future Satellite Programs

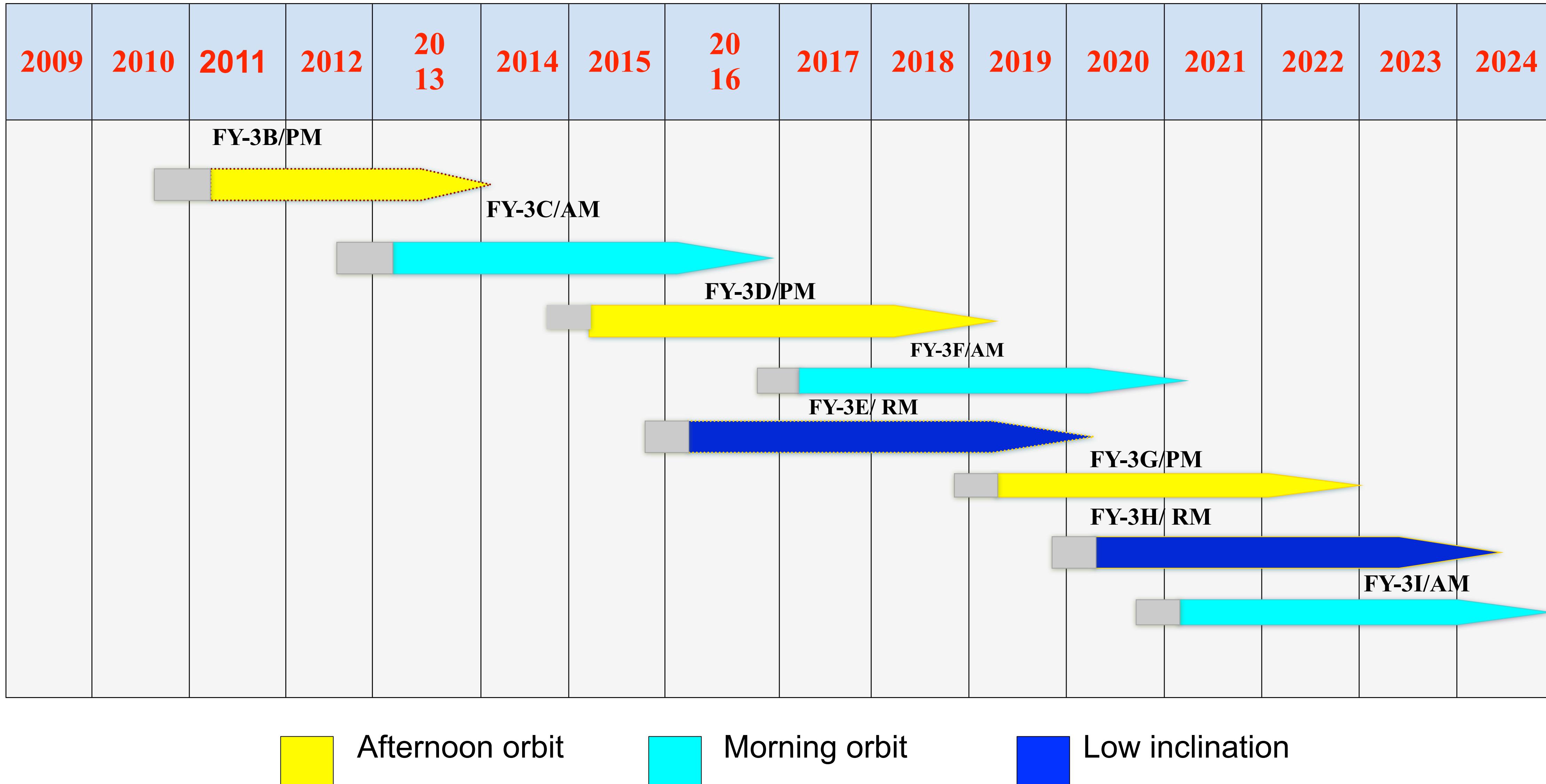
- FY-3C/D/E/F (operational, polar)
- FY-3/RM (rainfull measurement, low inclination)
- FY-4A(R&D, geo)
- FY-4B/C (operational, geo.)

Others

- EO Satellites (NOAA, Meteosat, MTSAT, EOS etc.)
- Ground System with 24/7 Satellite operations and data processing



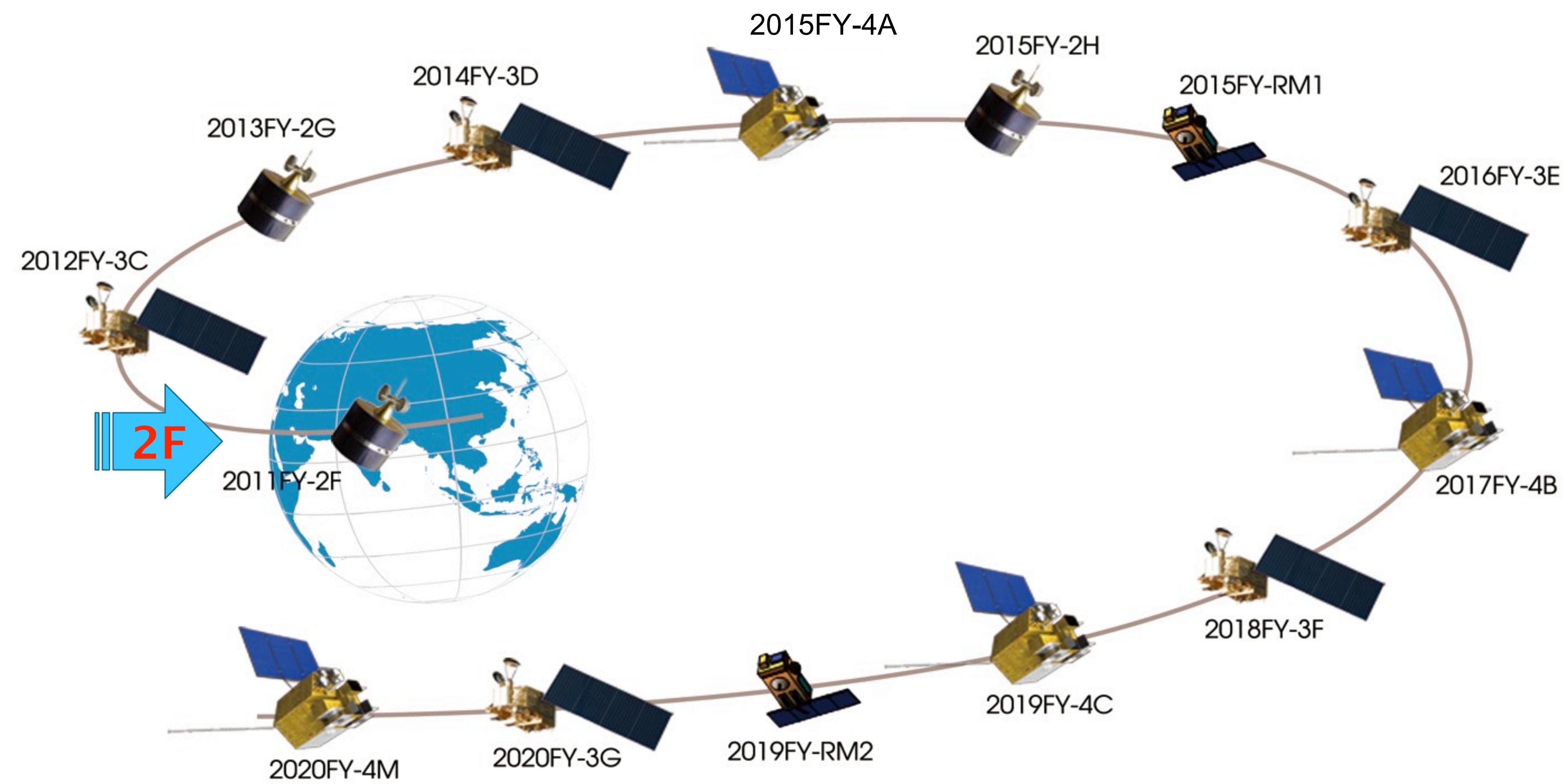
FY-3 polar orbiting satellites Launch schedule 2010-2020



Payload Configuration

FY-3 OPERATIONAL SATELLITE INSTRUMENTS	FY-3C	FY-3D	FY-3E	FY-3D
MERSI – Medium Resolution Spectral Imager (II)	▲	▲	▲	▲
MWTS (to be Improved)	▲	▲	▲	▲
MWHS – Microwave Humidity Sounder (to be Improved)	▲	▲	▲	▲
MWRI – Microwave Radiation Imager	▲	▲	NA	▲
SWMR -Sea Wind Measurement Radar	NA	NA	▲	NA
IHSAS – Infrared Hyper-spectral Atmospheric Sounder	NA	▲	▲	▲
GRO – GPS radio occultation	NA	▲	▲	▲
ERM – Earth Radiation Measurement	▲	NA	▲	NA
SIM – Solar irritation Monitor (Trace to the Sun)	▲	NA	▲	NA
SES – Space Environment Suite	▲	▲	▲	▲
IRAS – Infrared Atmospheric Sounder	▲	NA	NA	NA
VIRR – visible and Infrared Radiometer	▲	NA	NA	NA
SBUS – Solar Backscattered Ultraviolet Sounder	▲	NA	NA	NA
TOU – Total Ozone Unit	▲	NA	NA	NA

2010 — 2020 Feng Yun Satellite Program





Thank you ! ! !