

Products from FY2C Meteorological Satellite

Xu Jianmin

May 30 2005

FY2C Data Processing Team

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Content

- **General introduction to FY2C**
- FY2 image registration, navigation, calibration status
- **Products from FY2C**

FY2 Meteorological Satellite



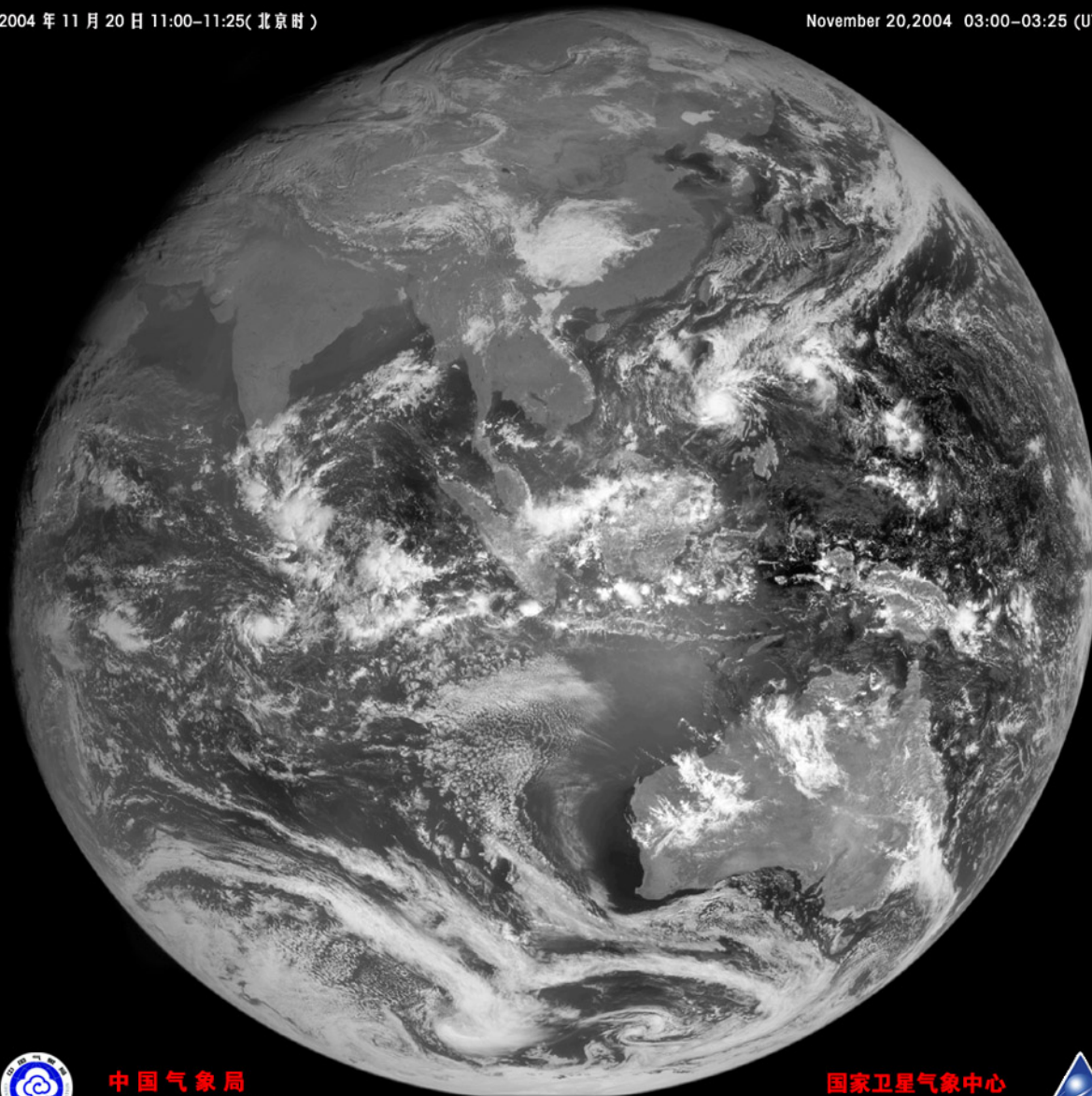
FY-2C 5 Channel Radiometer

Channel	Wavelength (μm)
VIS	0.55 \square 0.90
IR1	10.3 \square 11.3
IR2	11.5 \square 12.5
IR3	6.3 \square 7.6
IR4	3.5 \square 4.0

FY-2C 可见光图像 (0.55-0.9 μm)

2004 年 11 月 20 日 11:00-11:25(北京时间)

November 20, 2004 03:00-03:25 (UTC)



中国气象局
China Meteorological Administration

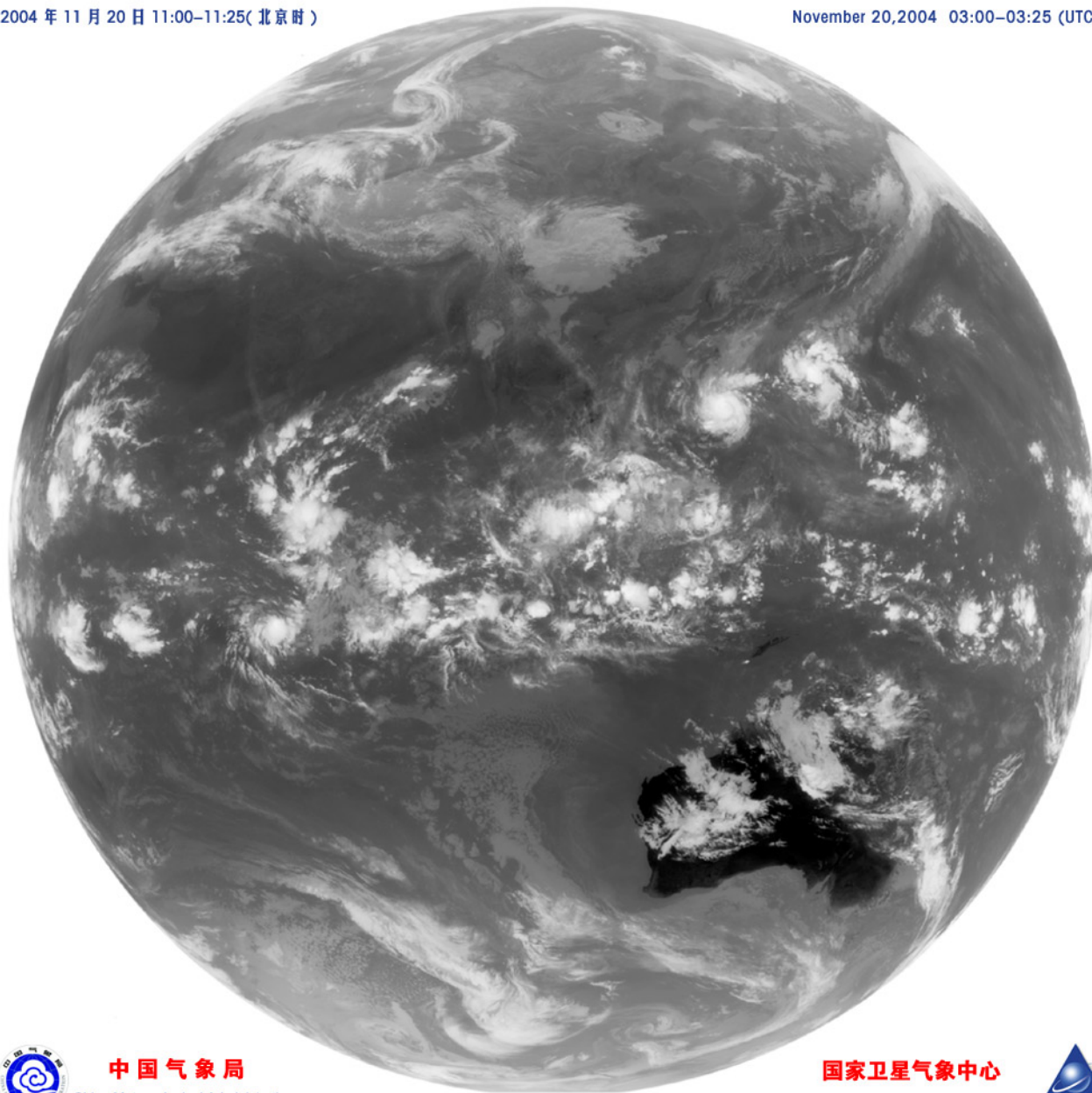
国家卫星气象中心
National Satellite Meteorological Center



FY-2C 长波红外图像 (10.3-11.3 μm)

2004 年 11 月 20 日 11:00-11:25(北京时间)

November 20, 2004 03:00-03:25 (UTC)



中国气象局
China Meteorological Administration

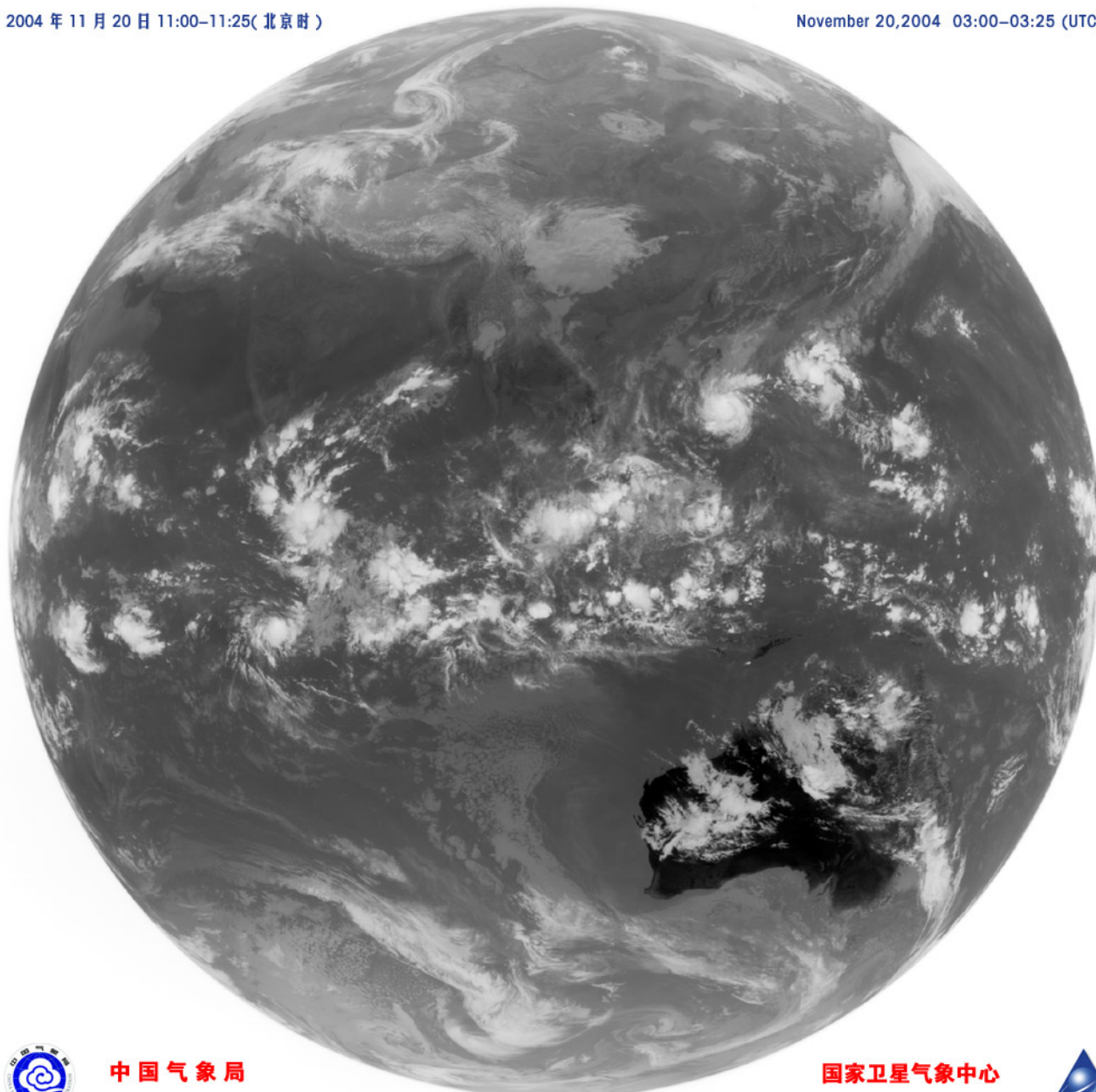
国家卫星气象中心
National Satellite Meteorological Center



FY-2C 长波红外分裂窗图像 (11.5-12.5 μm)

2004 年 11 月 20 日 11:00-11:25(北京时)

November 20, 2004 03:00-03:25 (UTC)



中国气象局

China Meteorological Administration

国家卫星气象中心

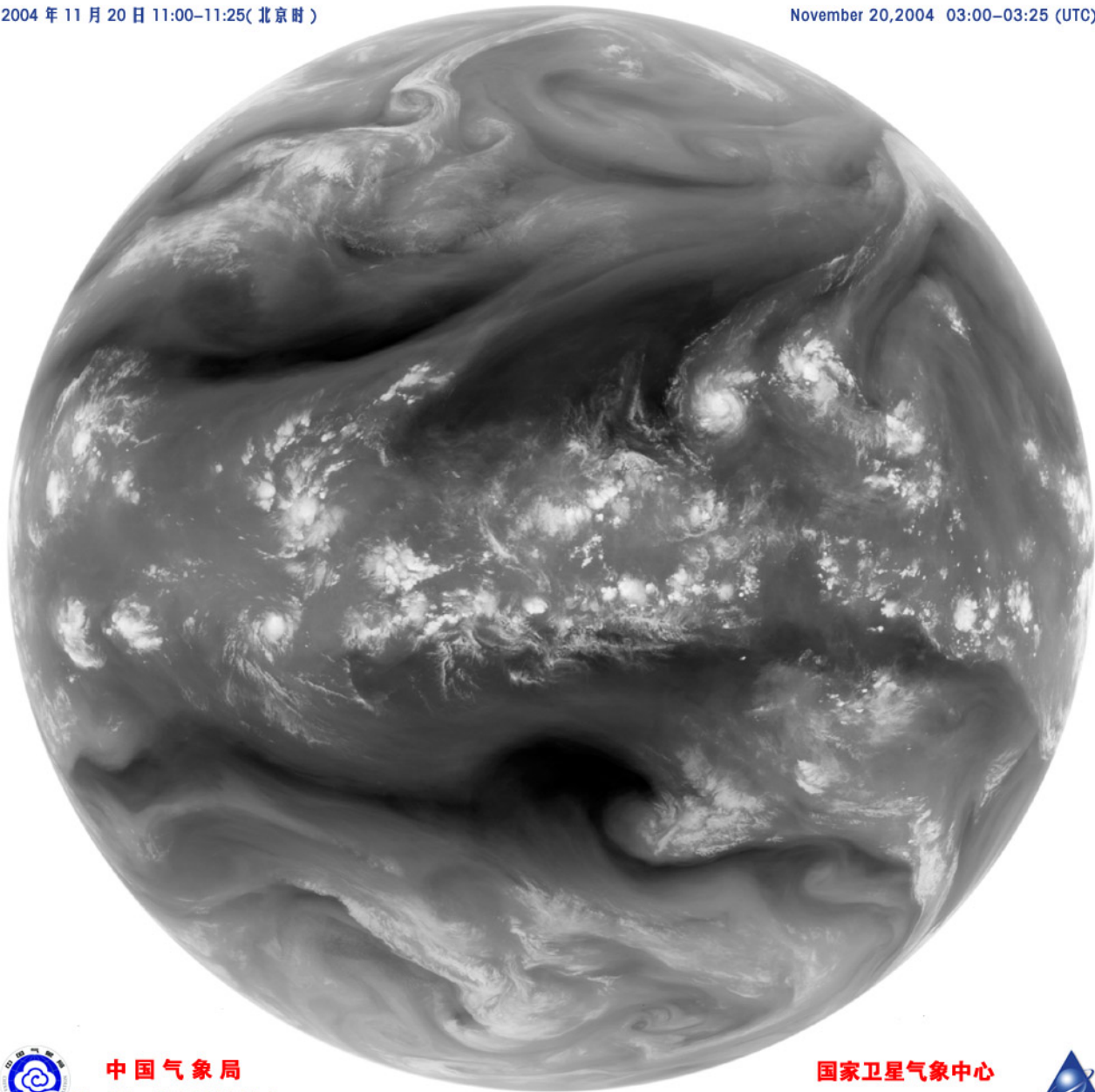
National Satellite Meteorological Center



FY-2C 水汽图像 (6.3-7.6 μm)

2004 年 11 月 20 日 11:00-11:25(北京时)

November 20, 2004 03:00-03:25 (UTC)



中国气象局

China Meteorological Administration

国家卫星气象中心

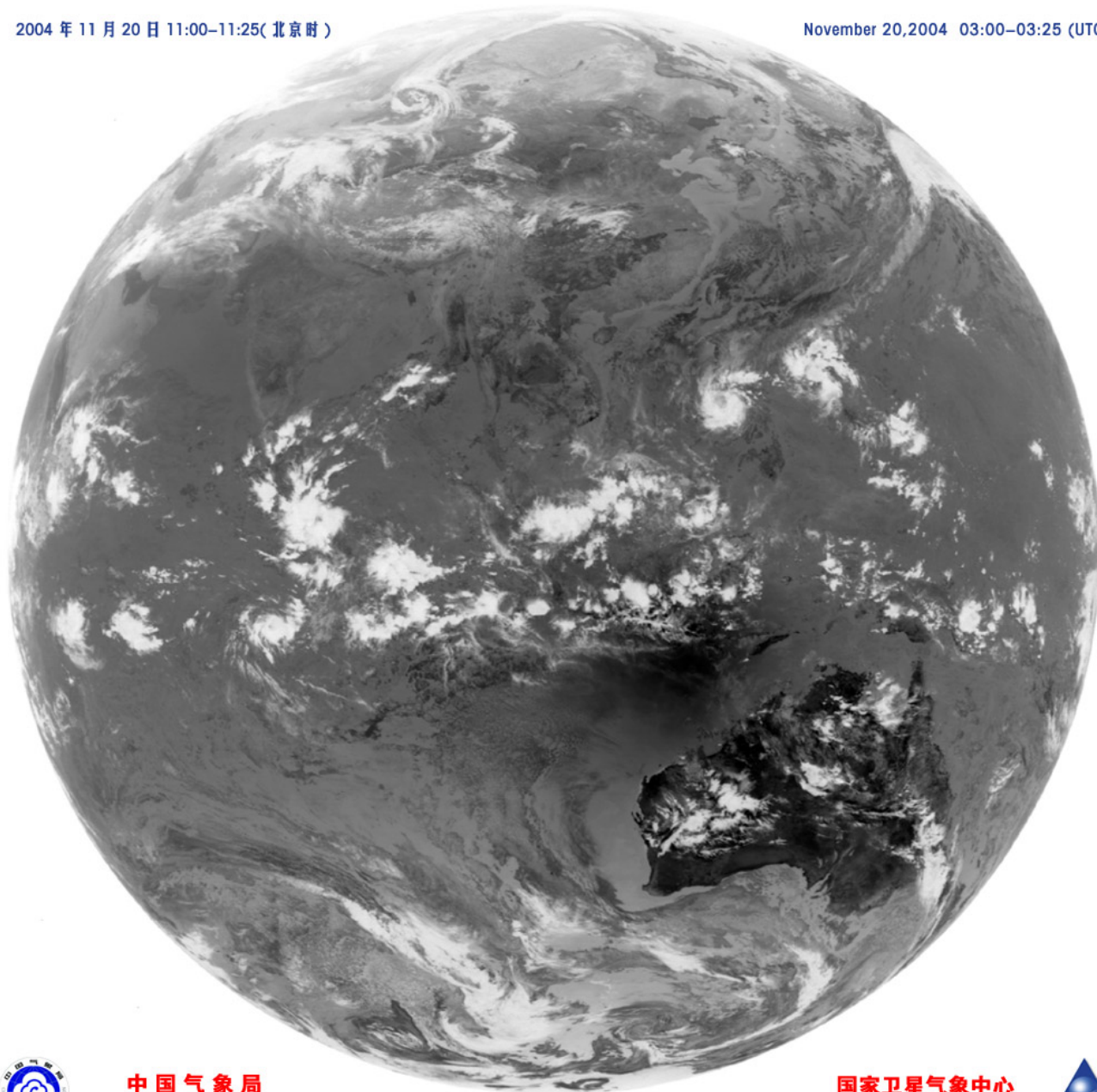
National Satellite Meteorological Center



FY-2C 中波红外图像 (3.5-4.0 μm)

2004 年 11 月 20 日 11:00-11:25(北京时间)

November 20, 2004 03:00-03:25 (UTC)



中国气象局
China Meteorological Administration

国家卫星气象中心
National Satellite Meteorological Center

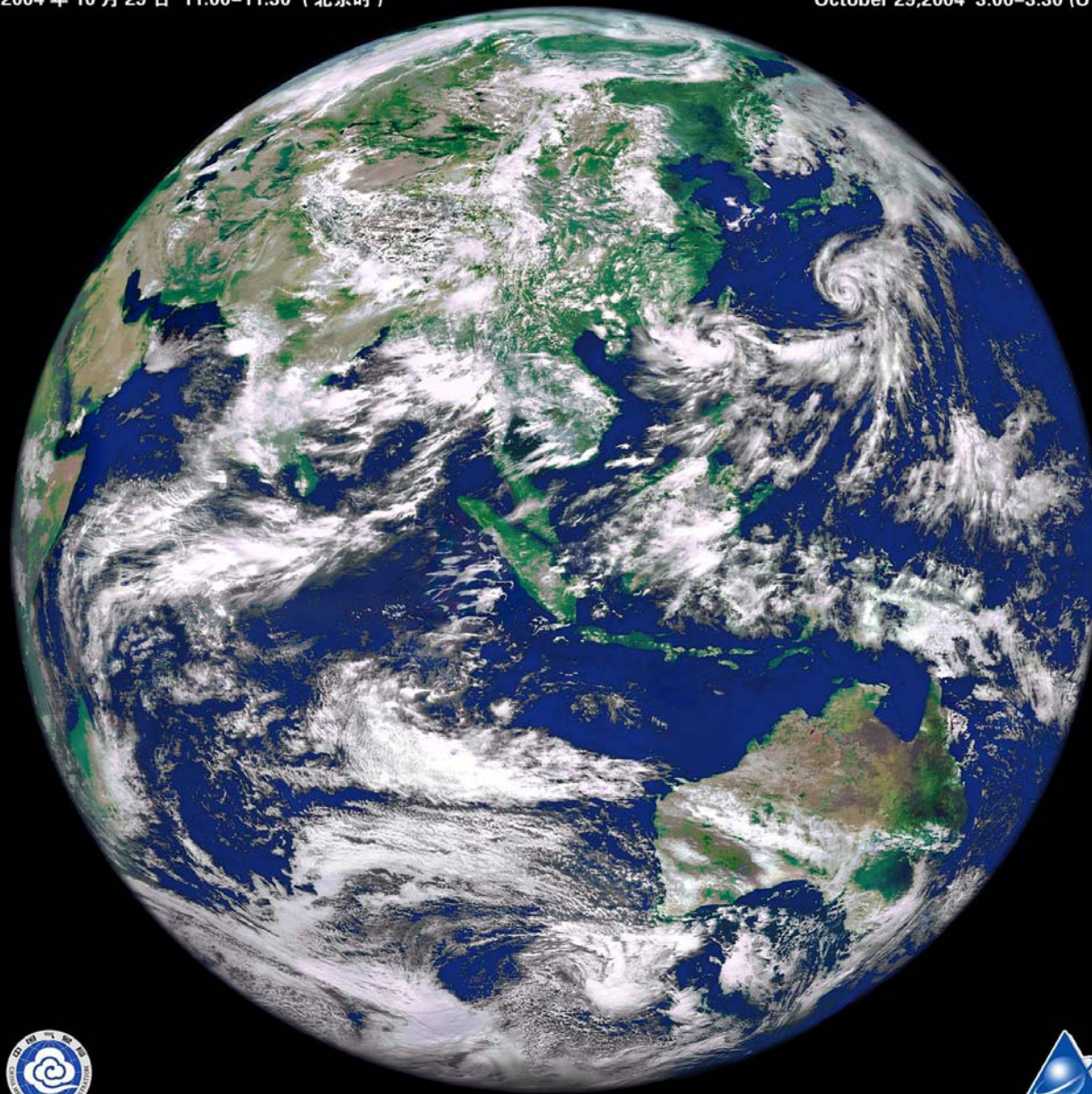


风云二号C星第一幅可见光图像

FIRST VIS IMAGE OF FY-2C

2004年10月29日 11:00-11:30 (北京时间)

October 29, 2004 3:00-3:30 (UTC)



中国气象局 国家卫星气象中心



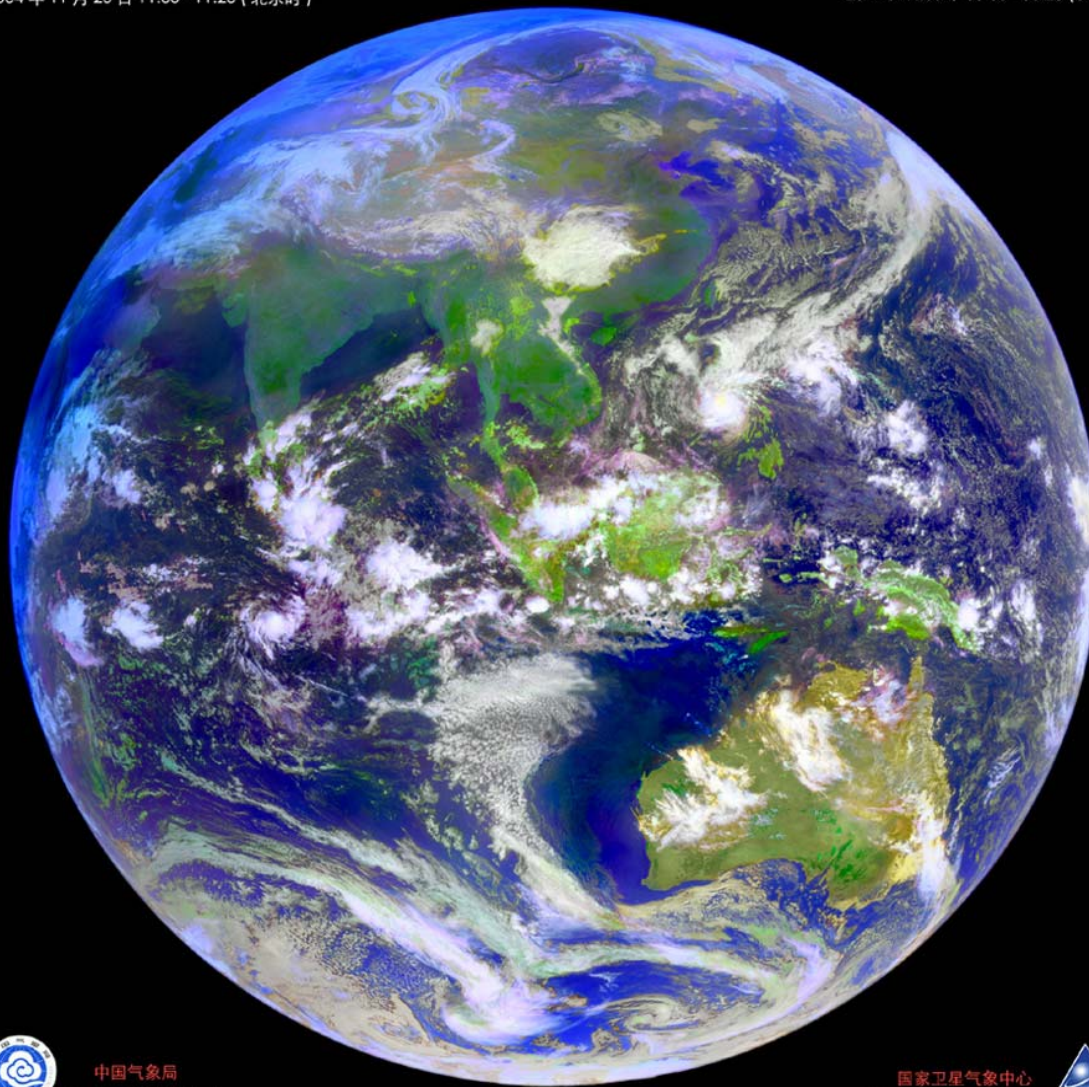
National Satellite Meteorological Center / China Meteorological Administration (NSMC/CMA)

风云二号 C 星第一幅彩色合成图像

THE FIRST COLOR COMPOSITE IMAGE OF FY-2C

2004 年 11 月 20 日 11:00 - 11:25 (北京时间)

20 Nov. 2004, 03:00 - 03:25 (UTC)



中国气象局

China Meteorological Administration

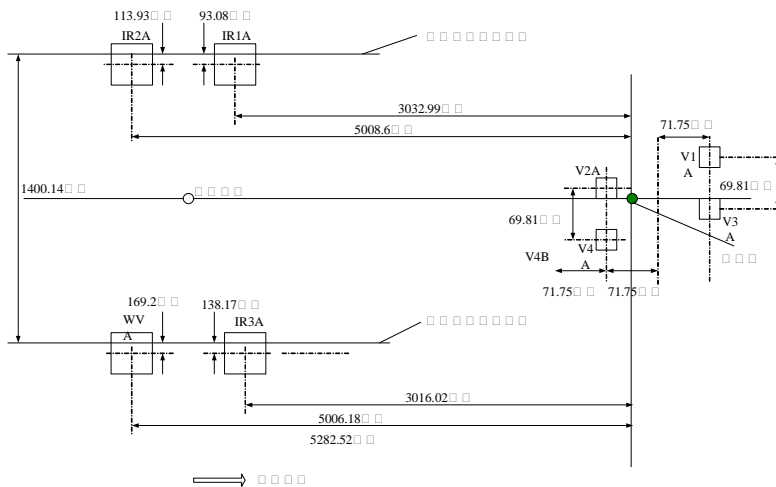
国家卫星气象中心

National Satellite Meteorological Center



Status on Image Registration Navigation and Calibration

Image Registration



- For FY2C Satellite, multi channel observation is such realized:
- Sensors of different channels are located at difference places of the focus plane. Filters are put on the sensor in low temperature condition. By such way, better S/N ratio is gain.
- Image registration is performed at ground.

IR1,IR2

VIS

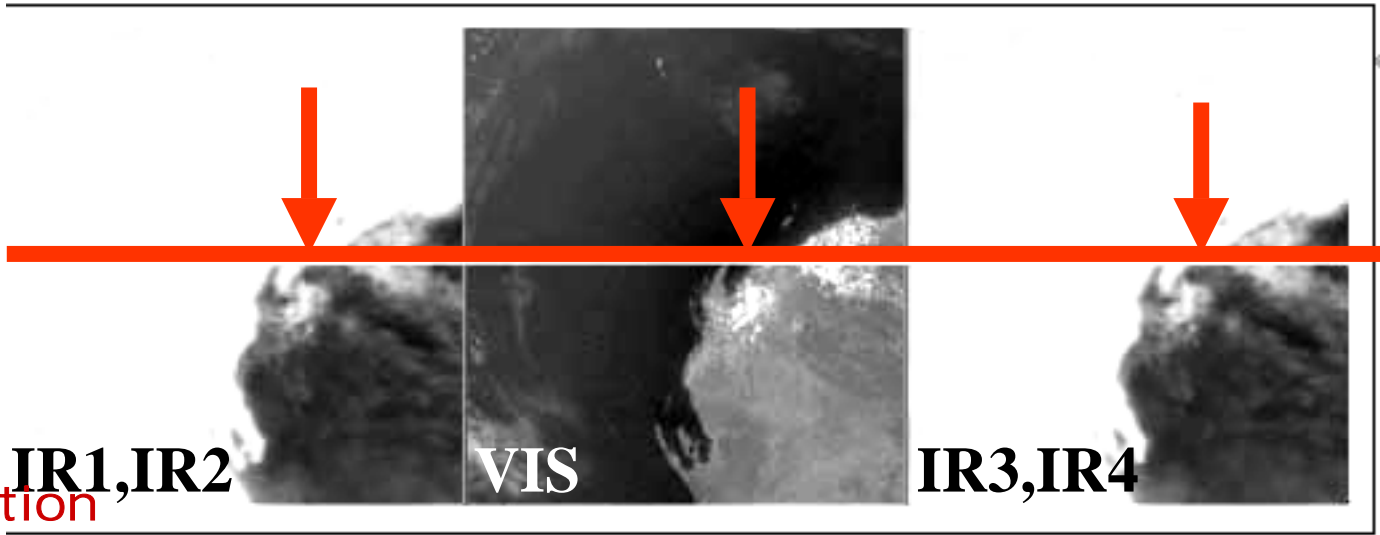
IR3,IR4



Before registration



4 Line Bias



After registration

IR1,IR2

VIS

IR3,IR4

in line direction

Registration in Column Direction

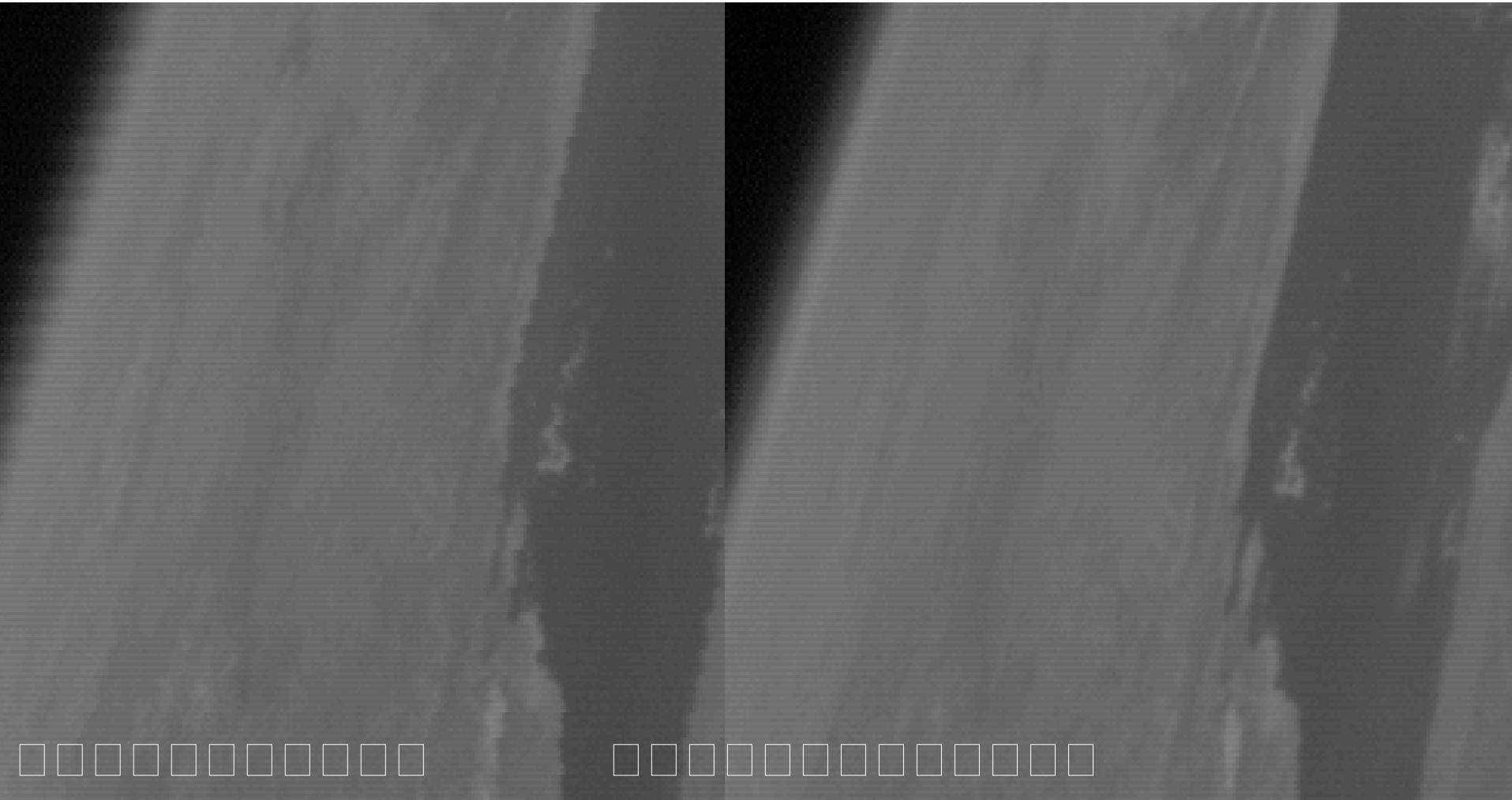
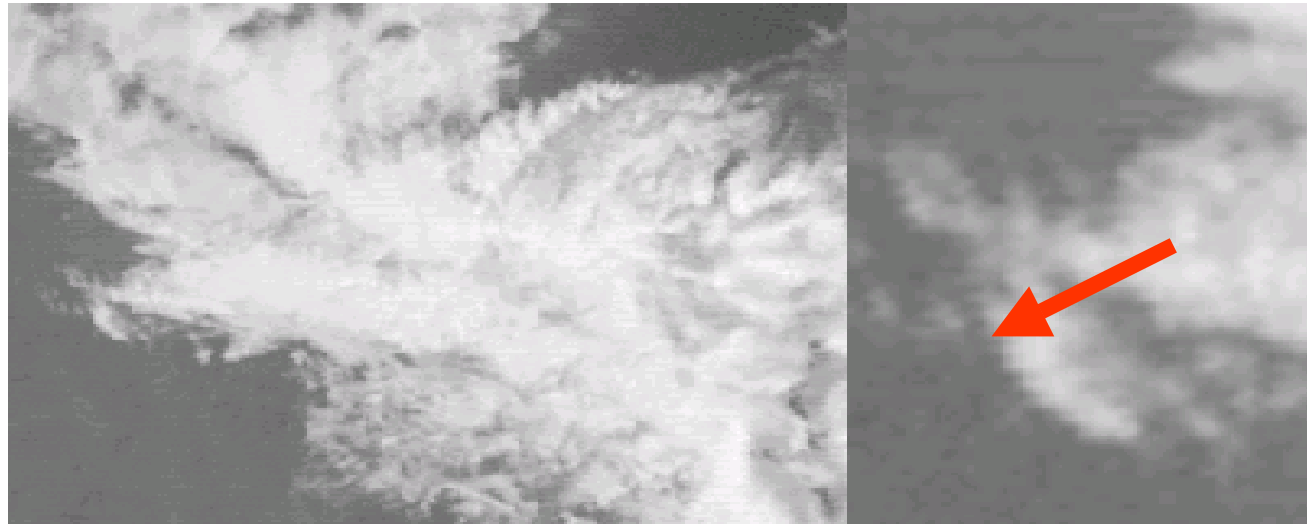


Image Registration Results

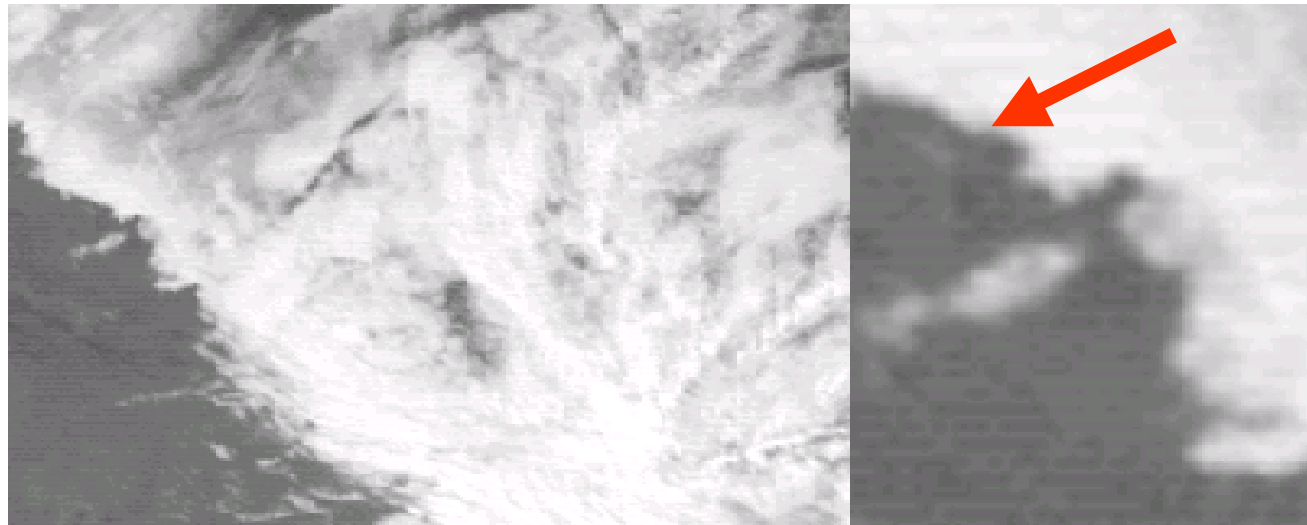


Before

After



Before Image Registration



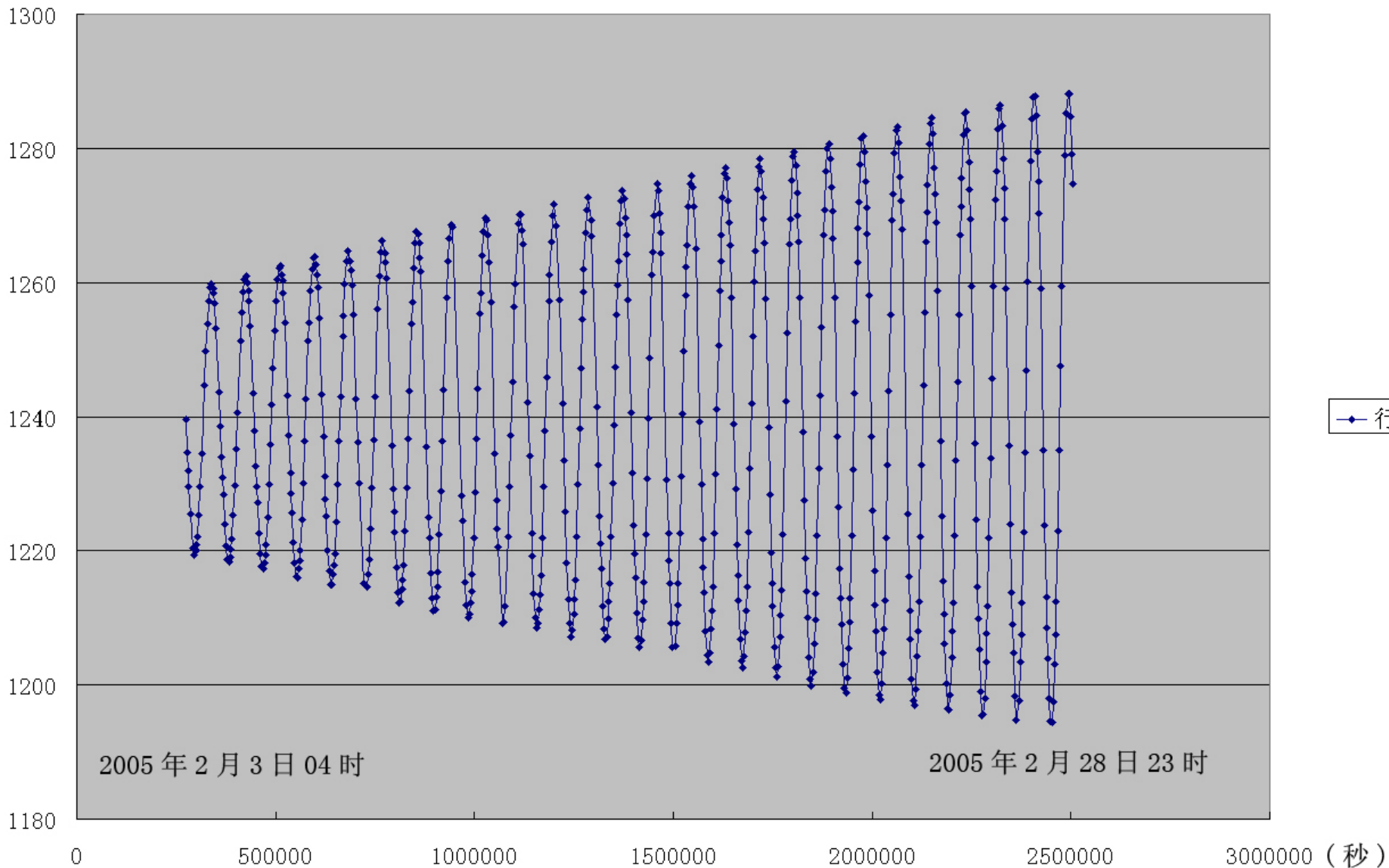
After Image Registration

Image Navigation

- FY2C image navigation grid is gained by the solution of a mathematical model.
- Time series of the past full disk image center and the satellite position are known data for the model.
- 13 parameters for image navigation are gained. 12 of them can be treated as constant in 24 hours.
- All navigation process is done automatically. No any land mark registration or manual operation is performed.
- Except 1 or 2 days after orbital and attitude control, the accuracy of prediction grid is IR pixel level.

Time series of the past full disk image center

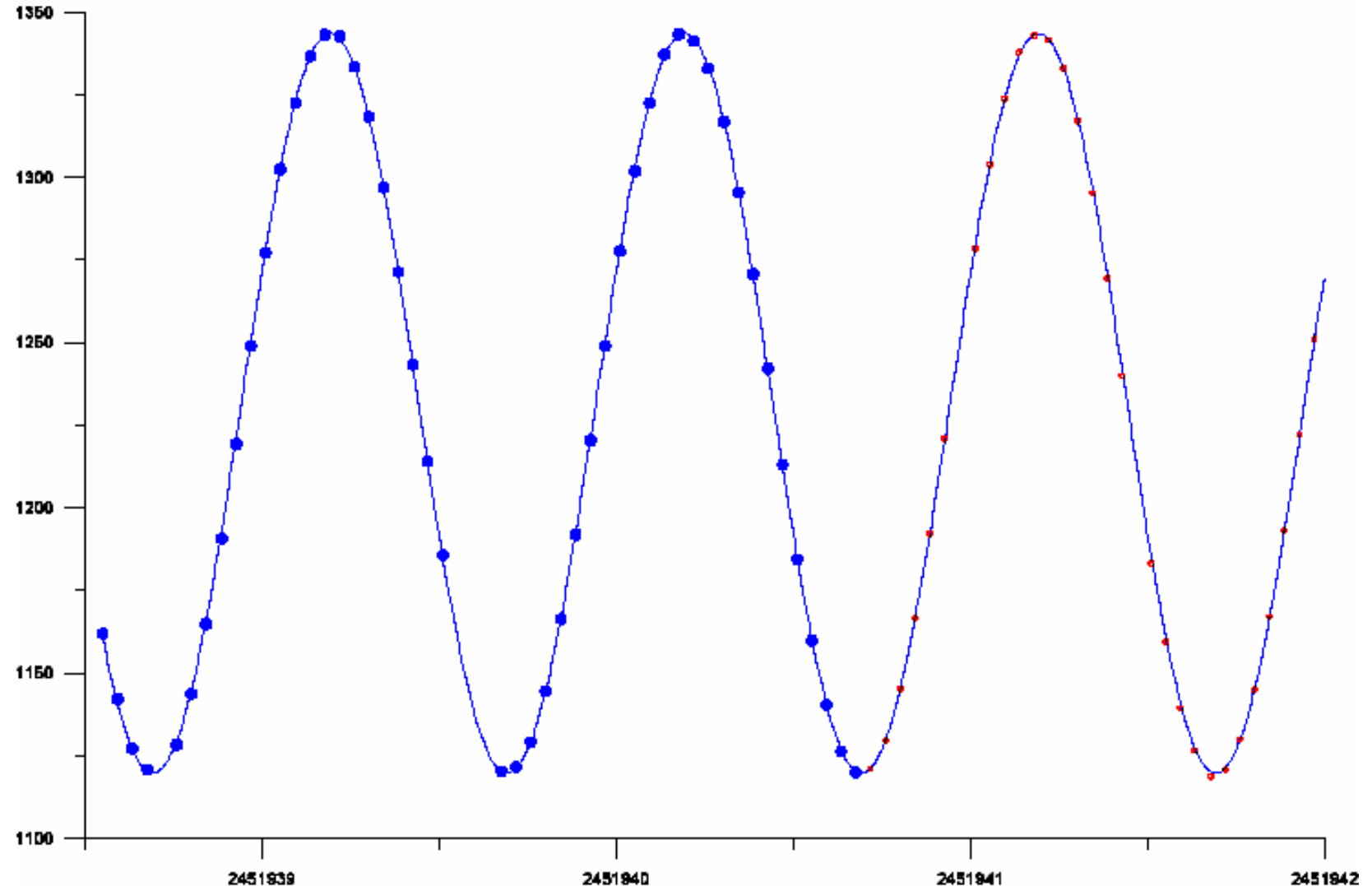
行号



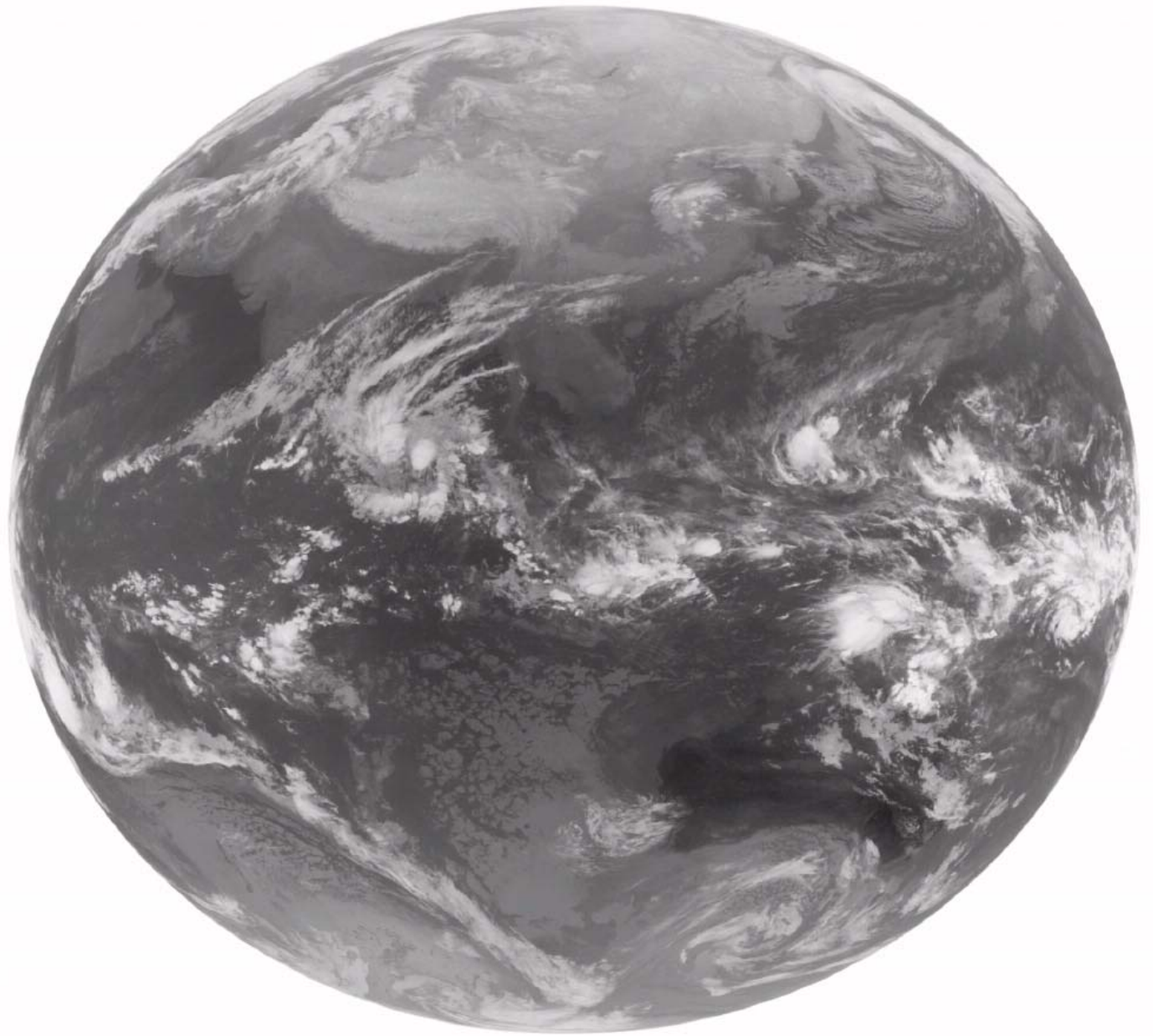
Full disk image center is predictable

sin fitter of image center line position

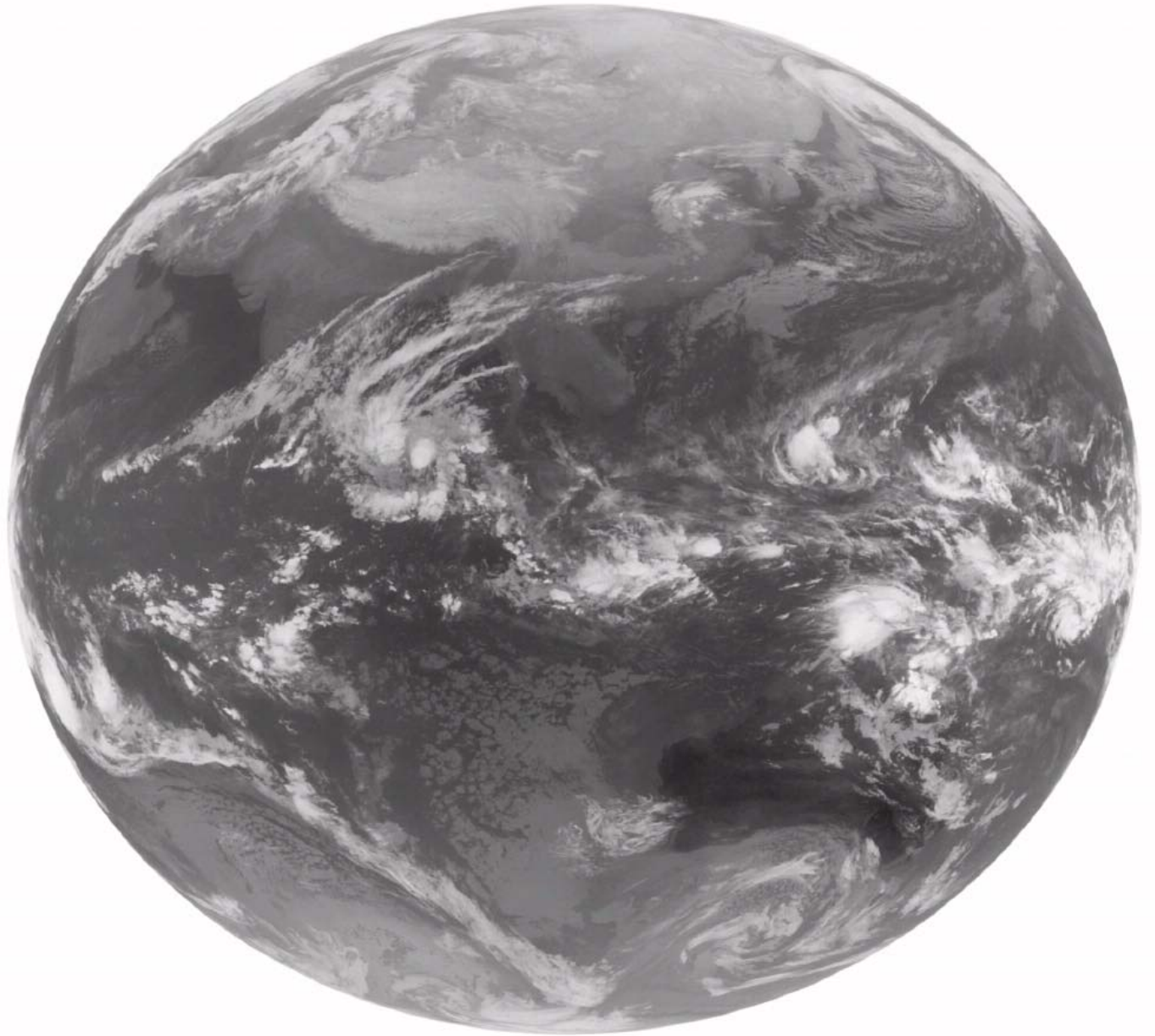
point: real position
blue point: point used by sinfitter



Time
series of
the past full
disk image
center,
notice the
vertical
movement
of the
image

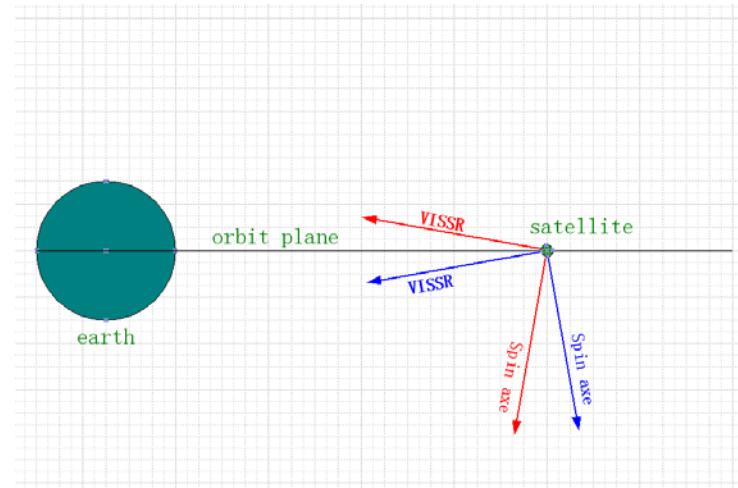
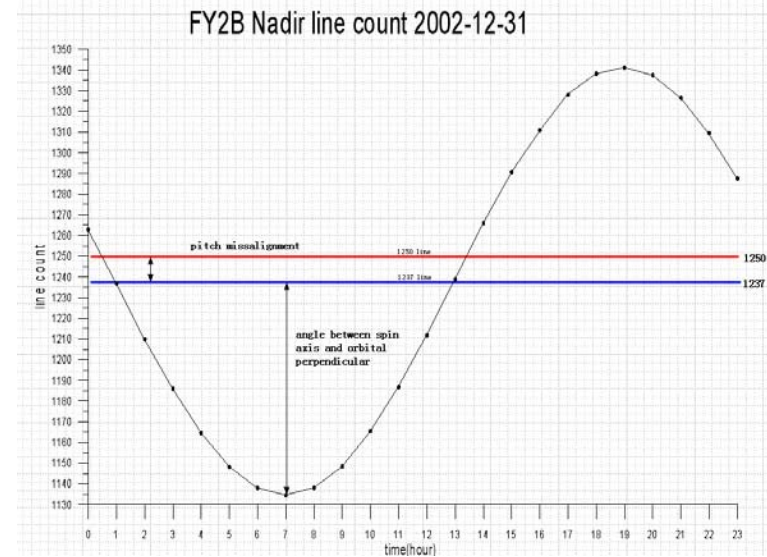
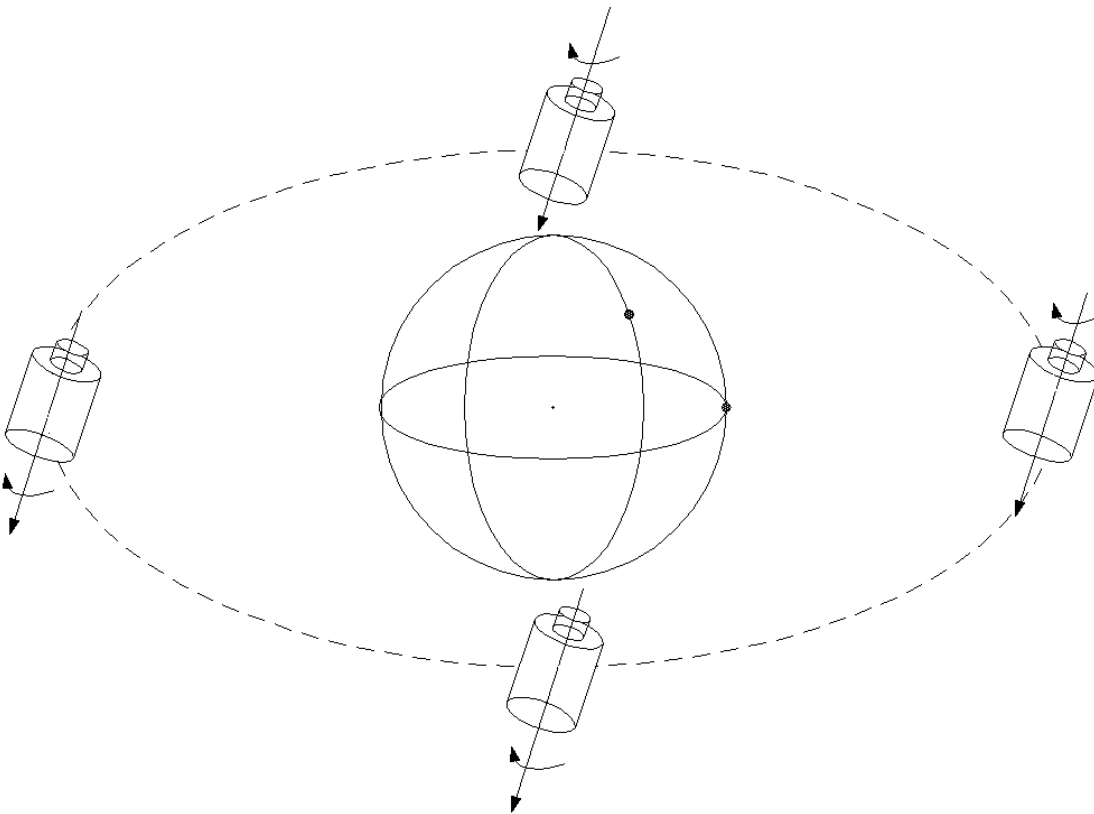


Put Earth
center at
the origin,
there is a
tendency
of turning
motion



Explanation to the phenomena

卫星姿态参数的周日变化

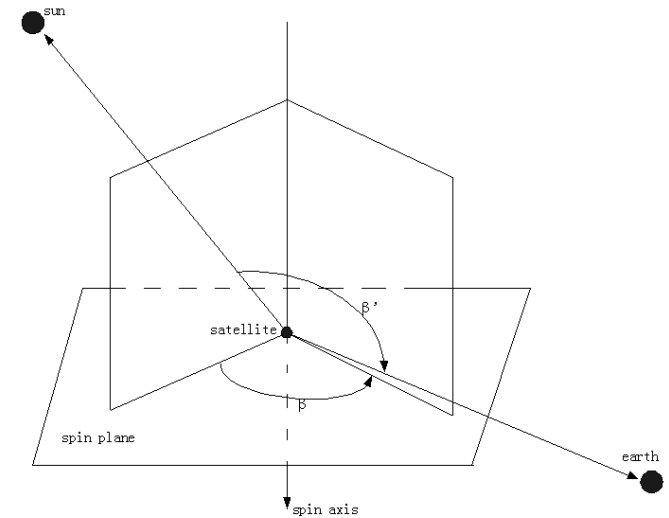
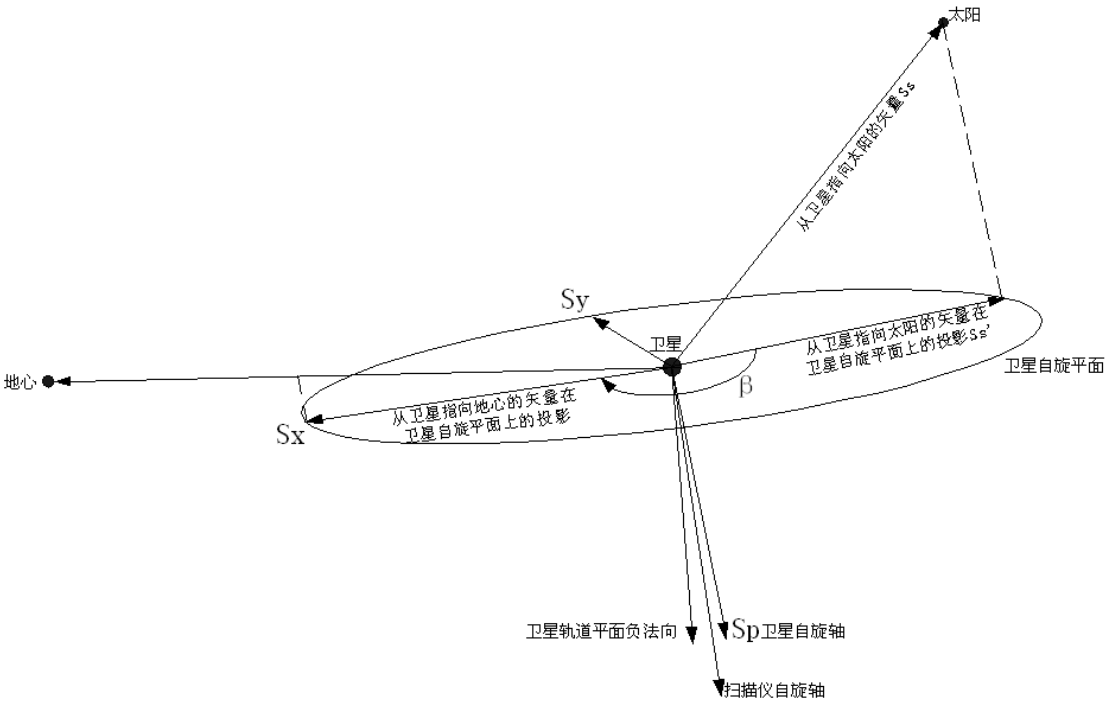


Mathematical model

- $\text{SATVIEW} \cdot \text{VISSR} = \cos(\varphi + \zeta)$
- Known **Observation Vector**
SATVIEW Angle between Earth center and Image center lines φ
- For Attitude Vector **VISSR**
Missalignment ζ

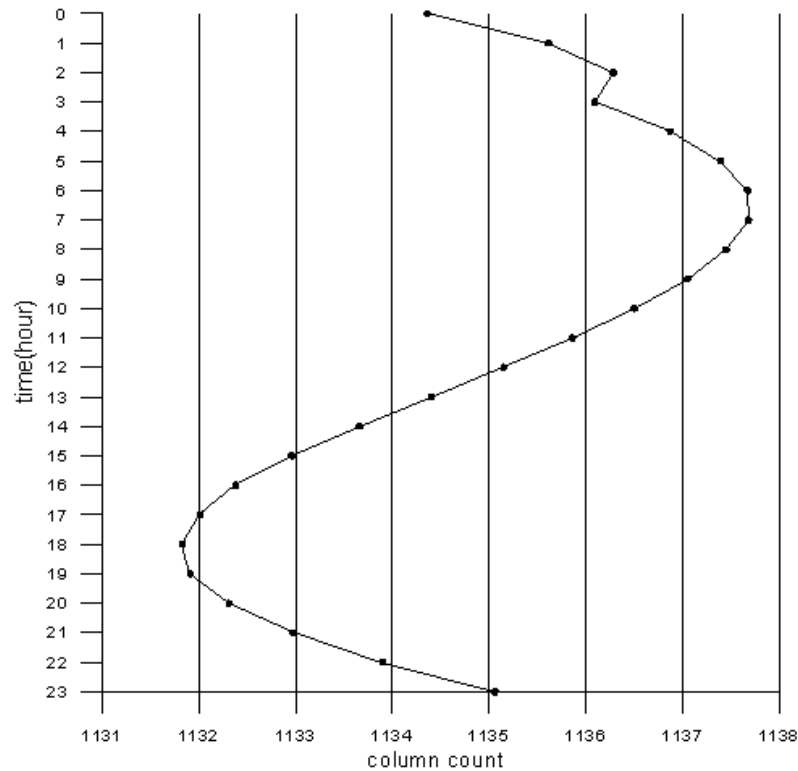
Earth center column position is gain by the angle between the sun and the earth viewing from the satellite

第一轴指向太阳的卫星将动量坐标系



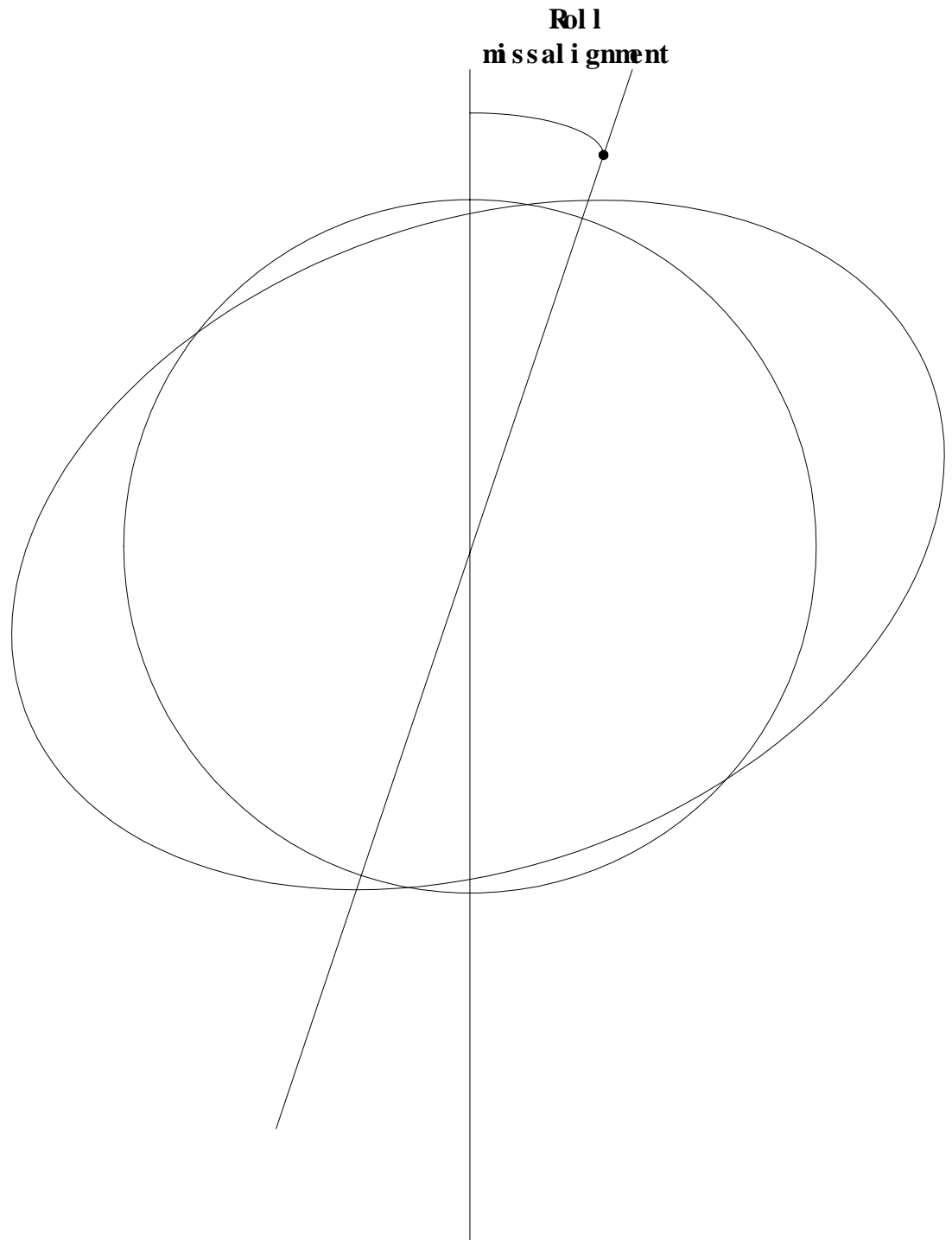
Earth center column position time series
consists of a beautiful sine wave again

Nadir column count



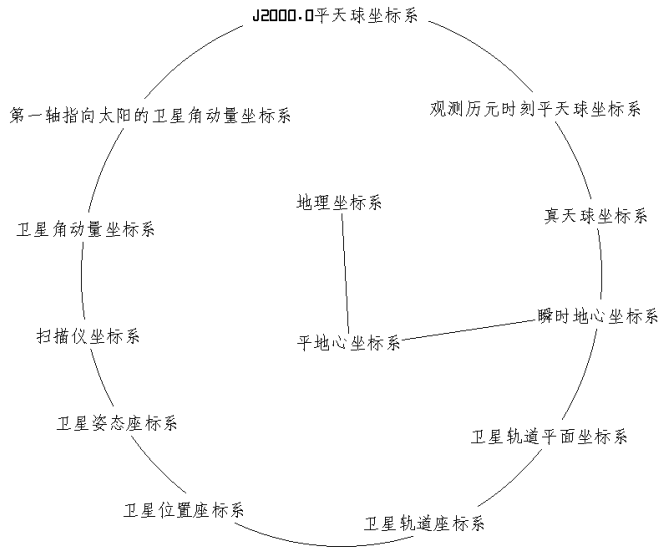
The residual
is minimal but
measurable
by
the third
component of
misalignment

GOES
did not define
this
parameter



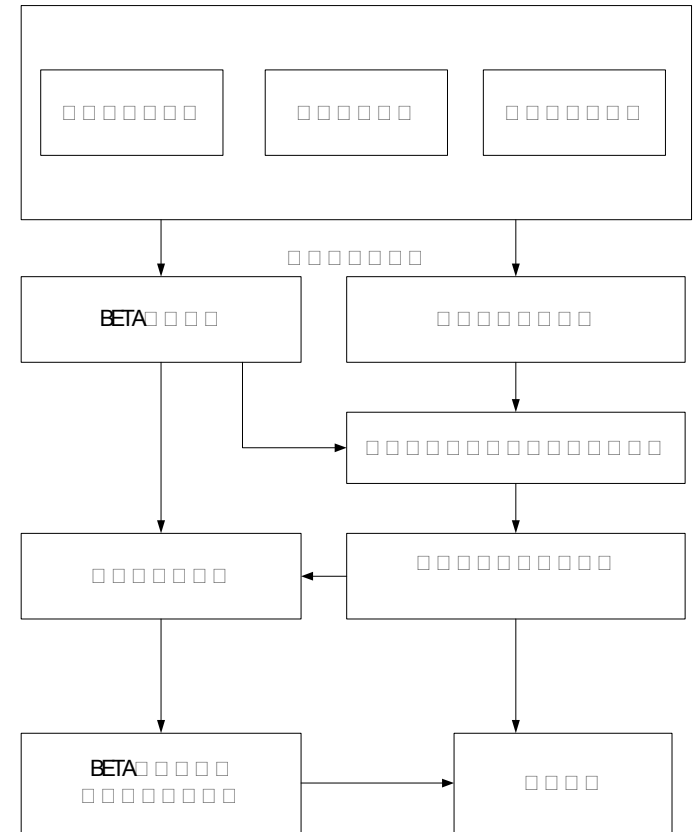
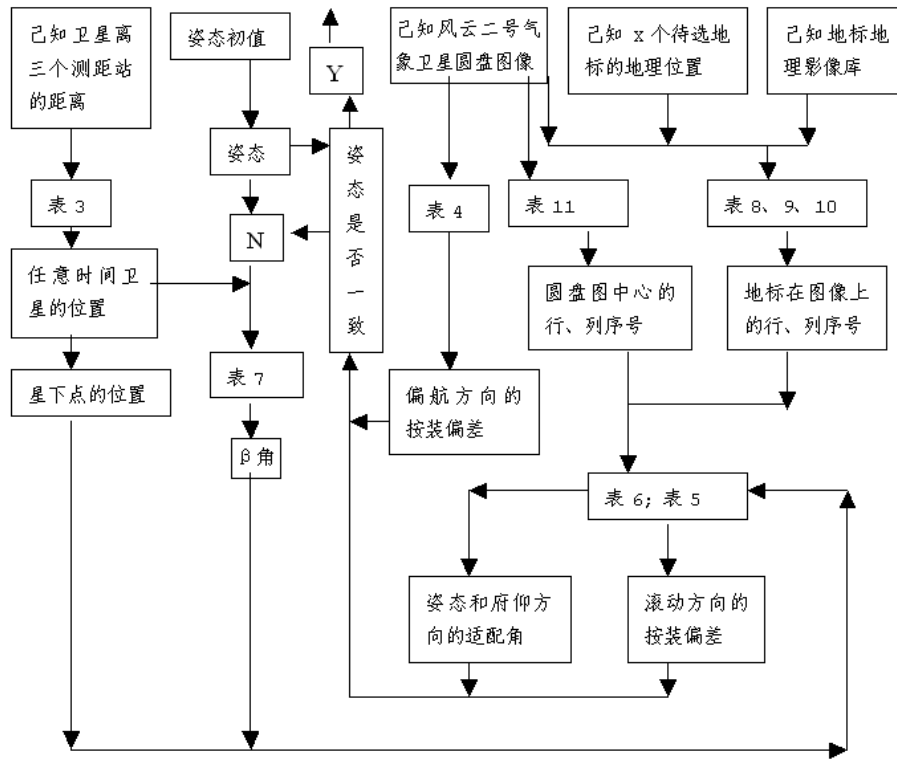
The key of the solution
is coordinate transition

coordinate transition

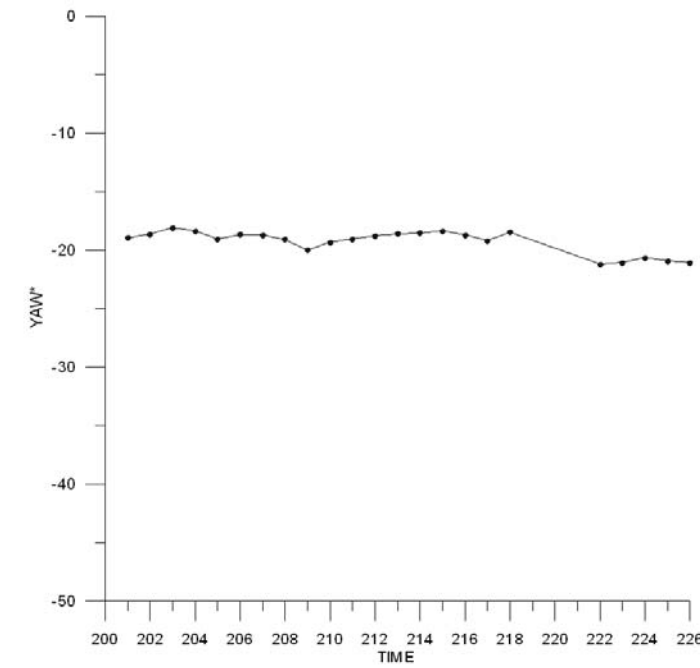
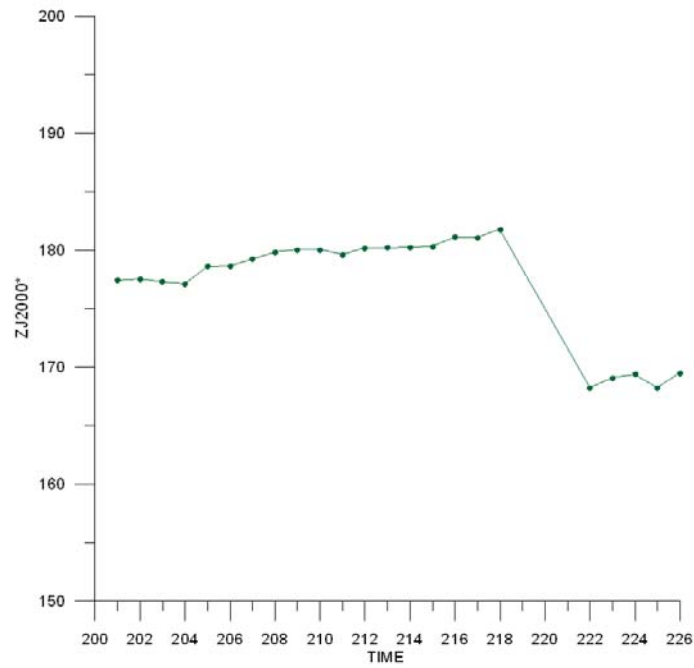
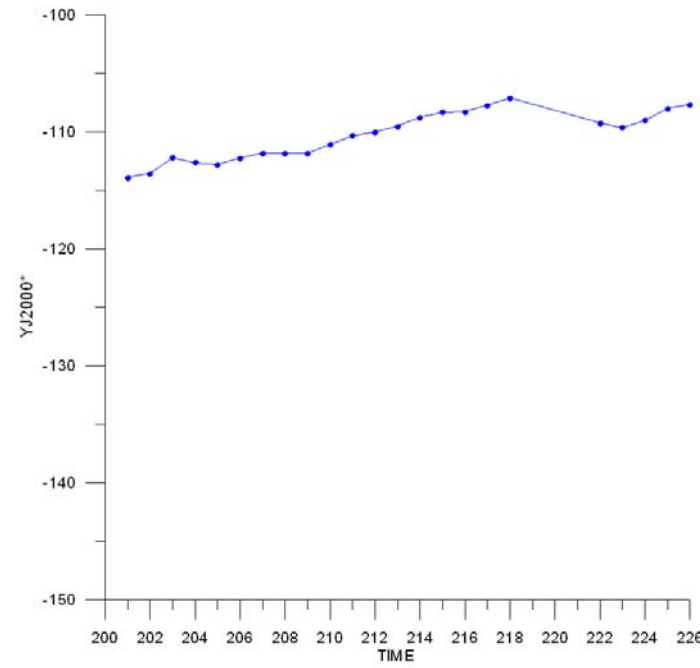
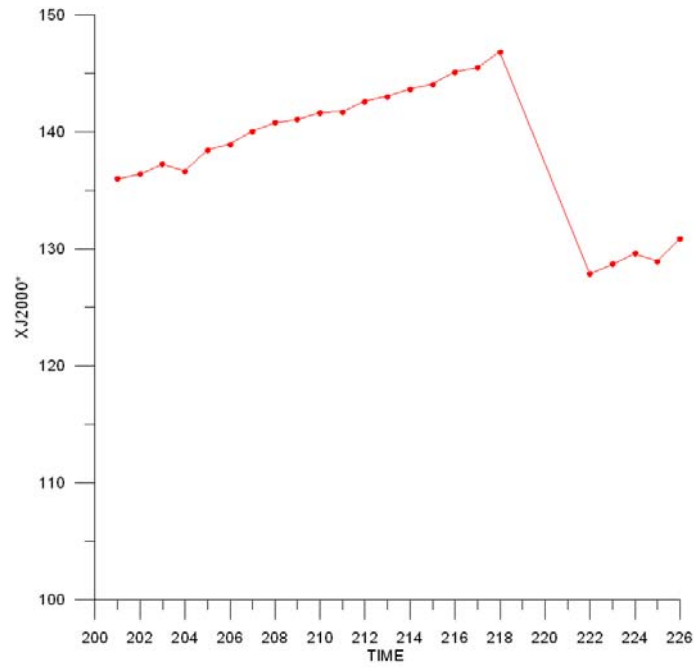


$$\begin{pmatrix} Y_1 \\ Y_2 \\ Y_3 \end{pmatrix} = \begin{pmatrix} A_{11} & A_{12} & A_{13} \\ A_{21} & A_{22} & A_{23} \\ A_{31} & A_{32} & A_{33} \end{pmatrix} \cdot \begin{pmatrix} X_1 \\ X_2 \\ X_3 \end{pmatrix} + \begin{pmatrix} B_1 \\ B_2 \\ B_3 \end{pmatrix}$$

FY2C navigation equation solution process (Total automatic)



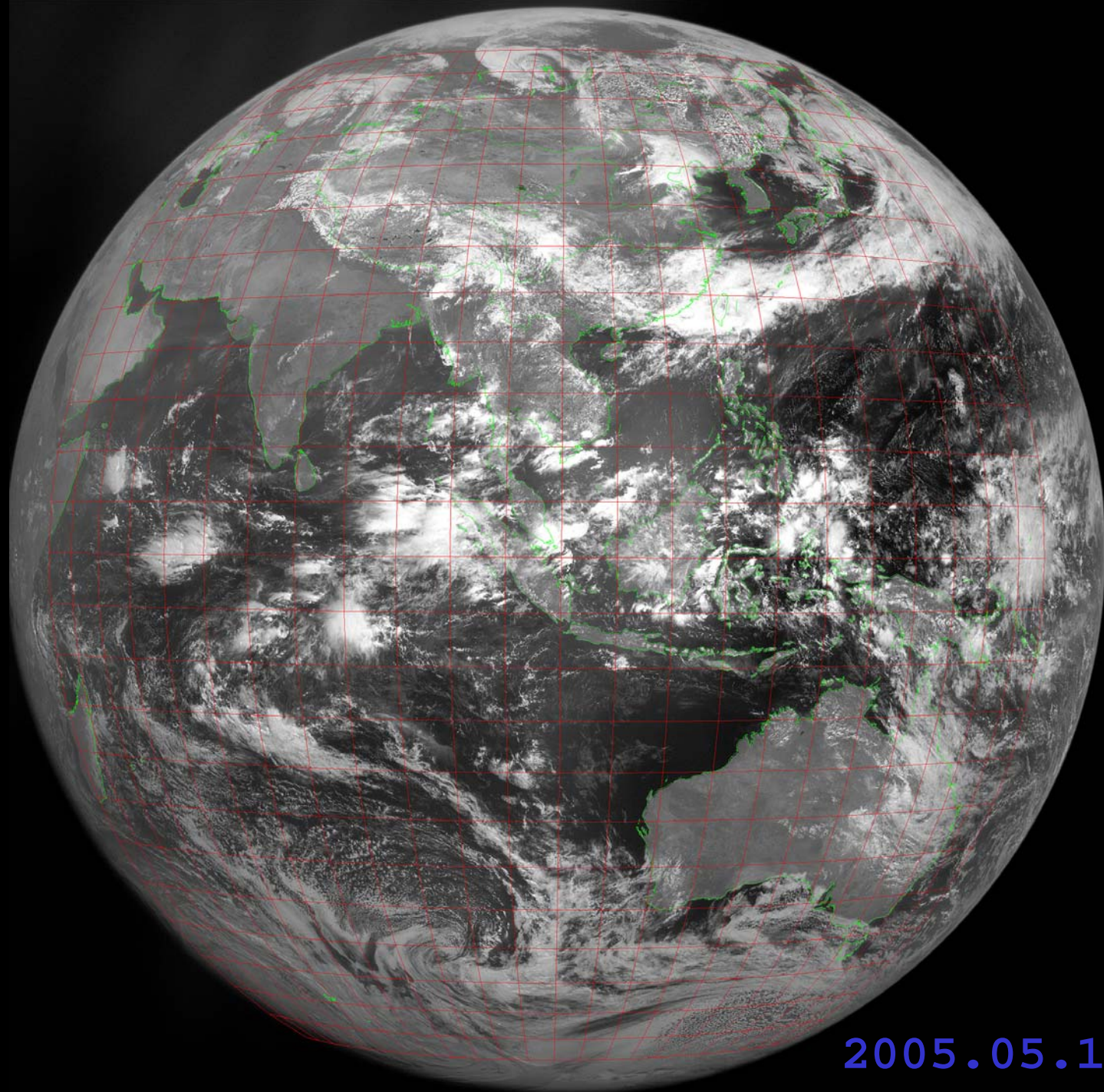
Solution



*Y coordinate unit =angle/0.000140

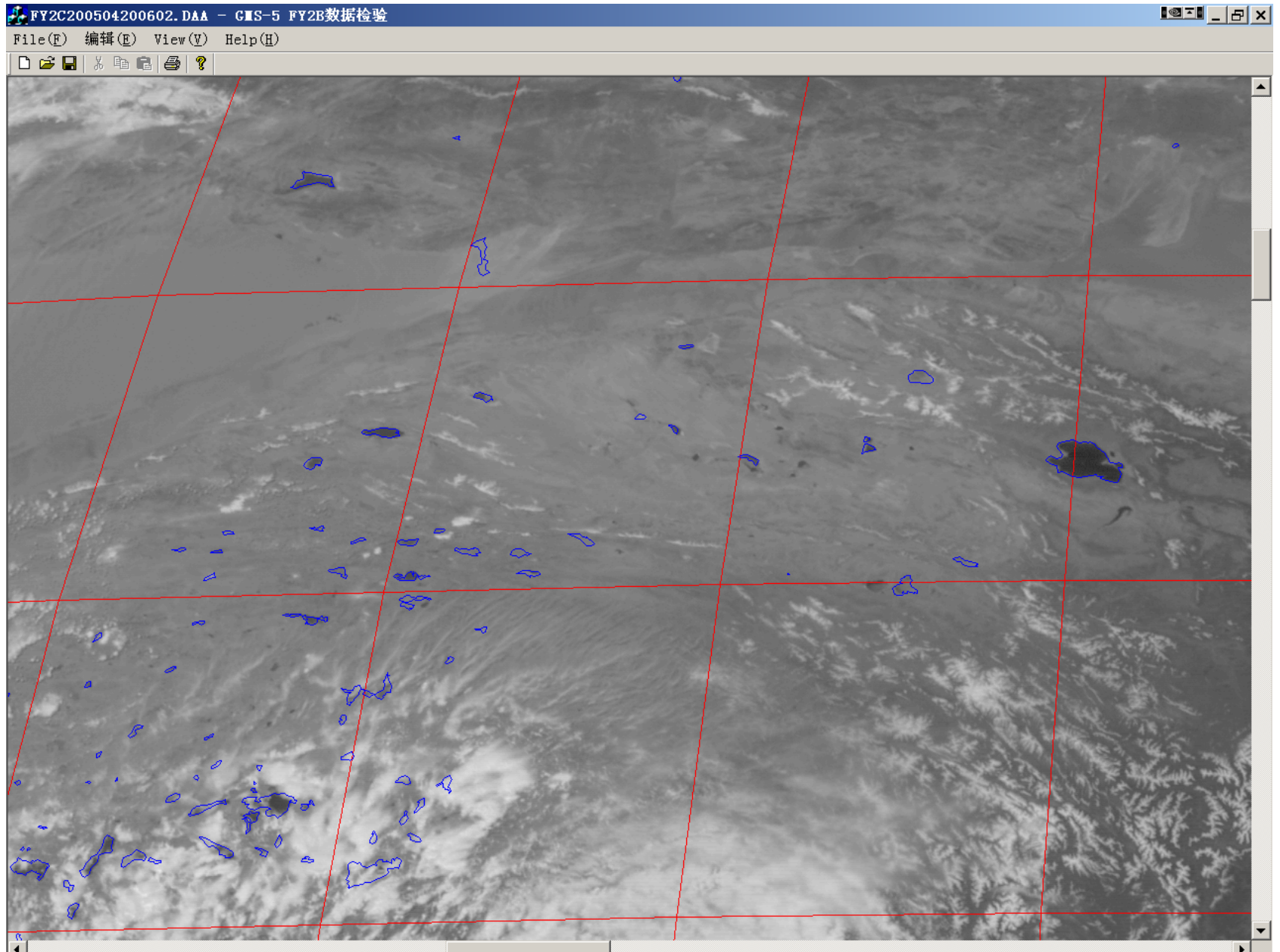
F
Y
2
C

g
r
i
d

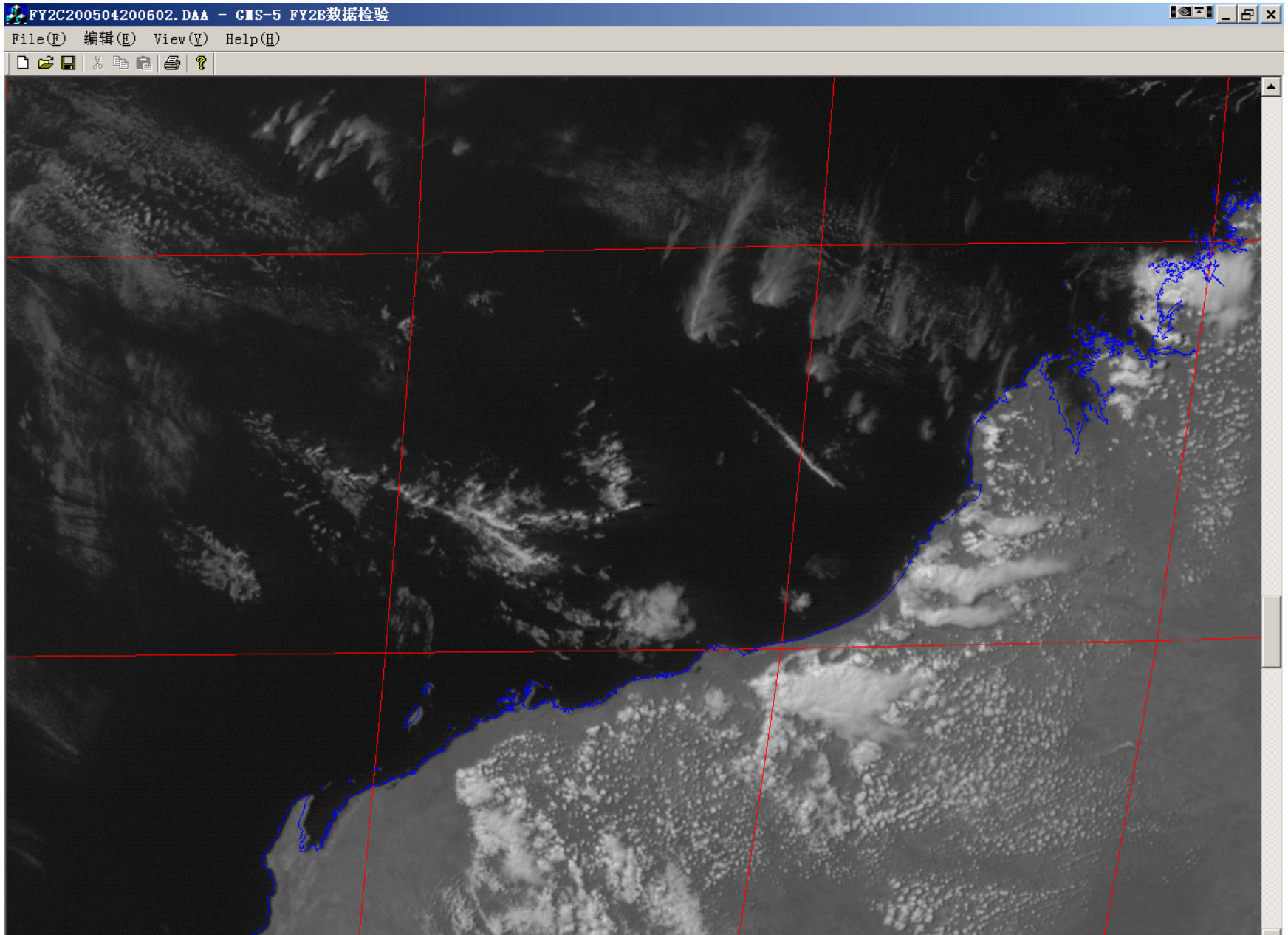


2005.05.10.04

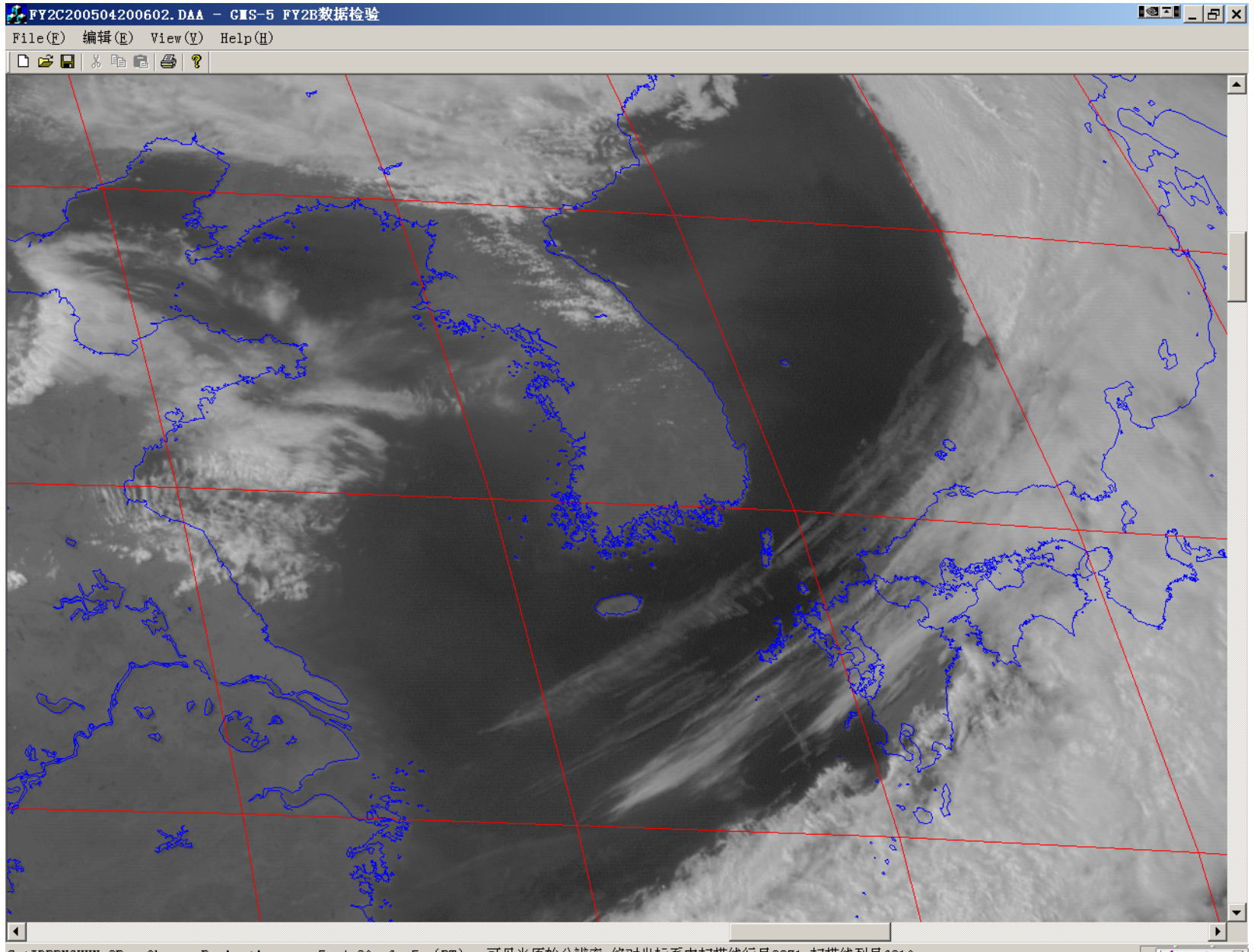
2005.4.20:06



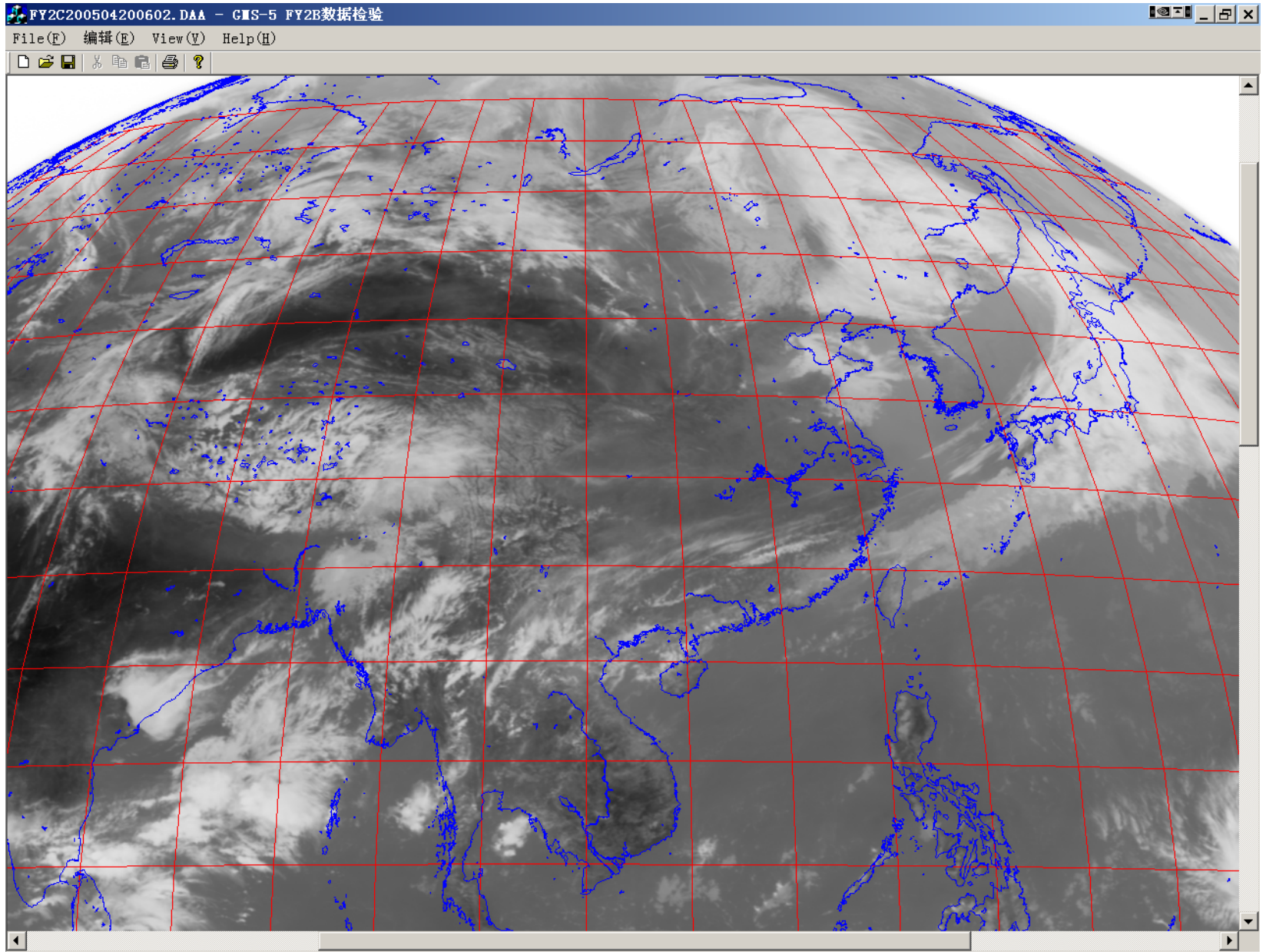
2005.4.20:06



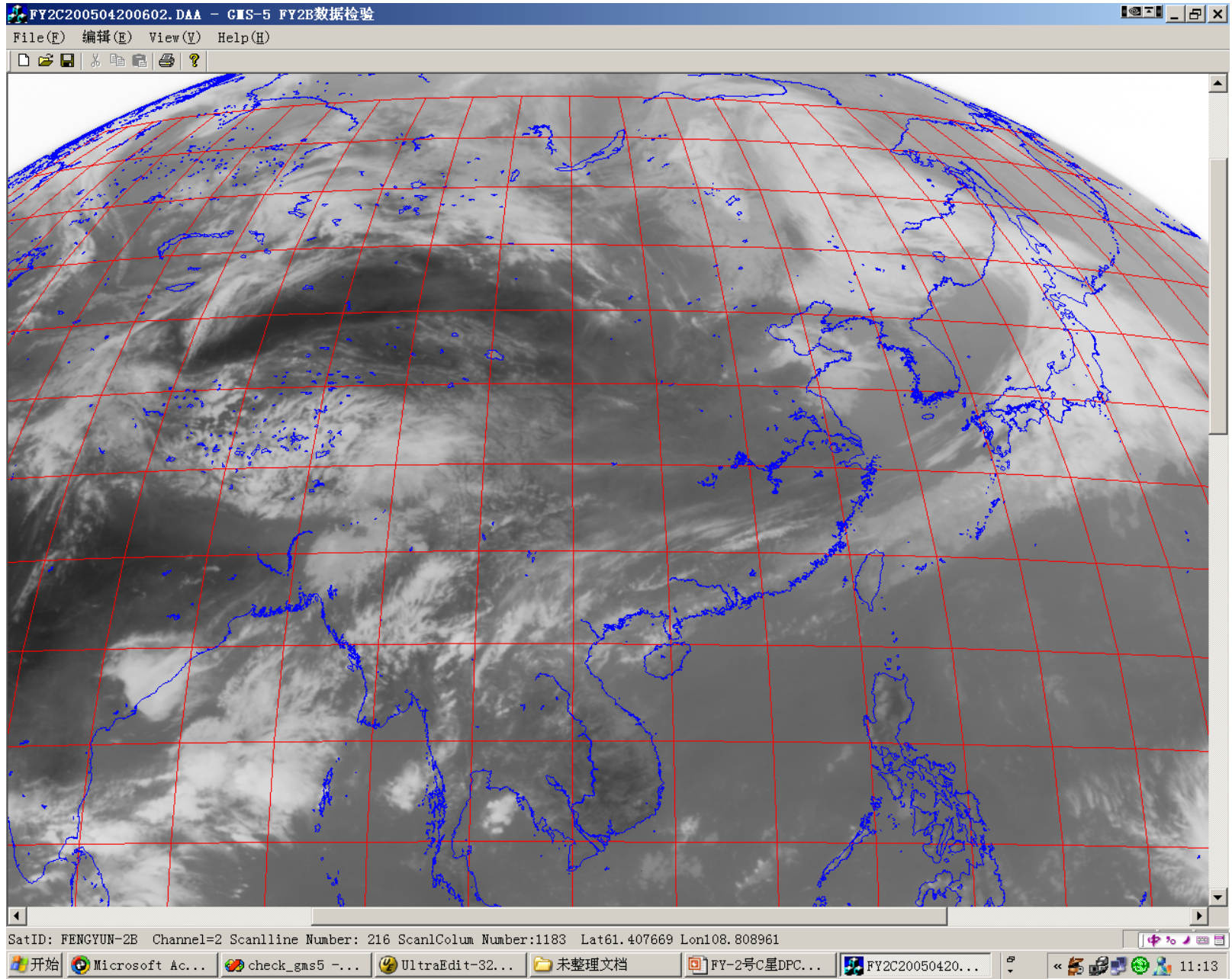
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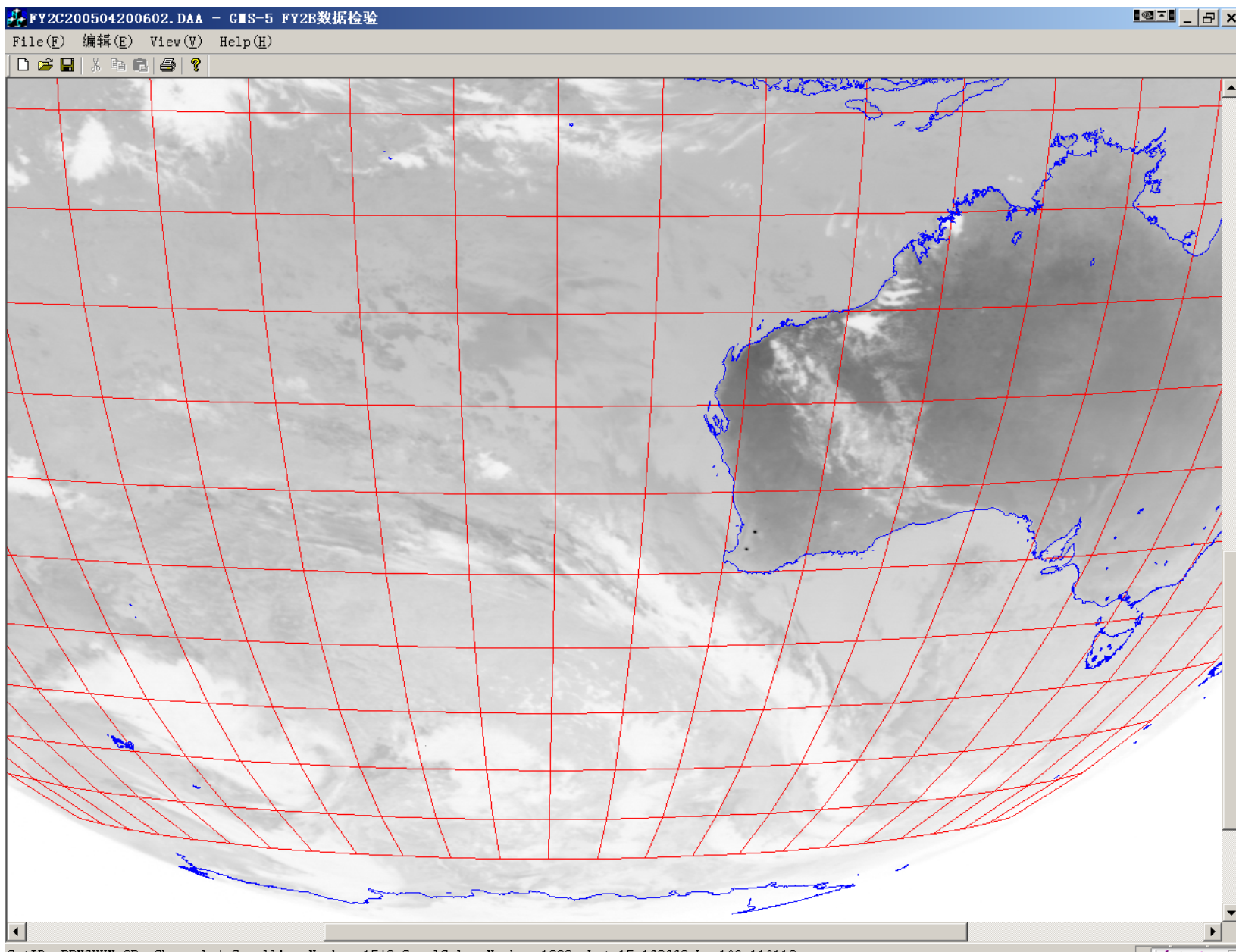
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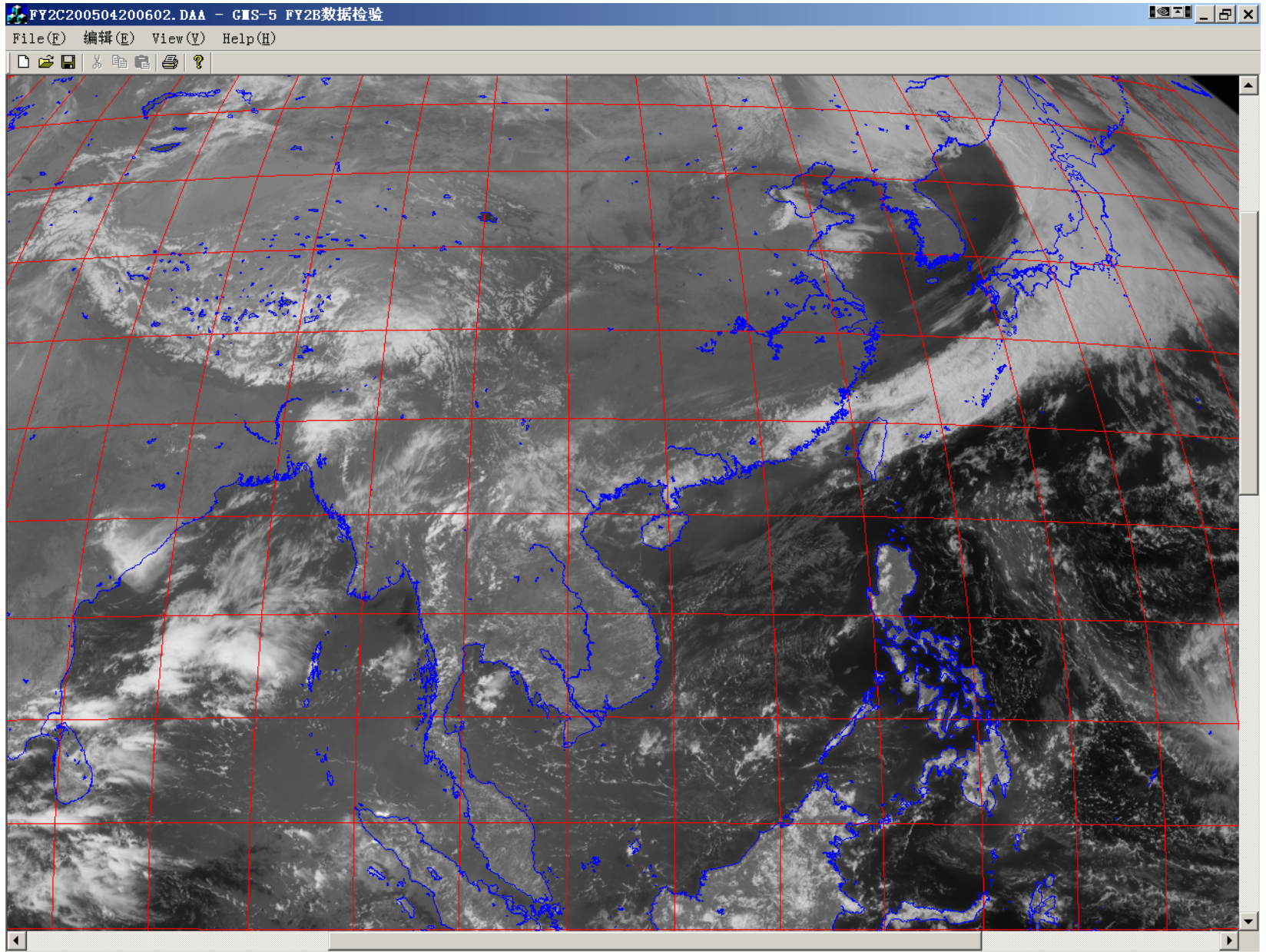
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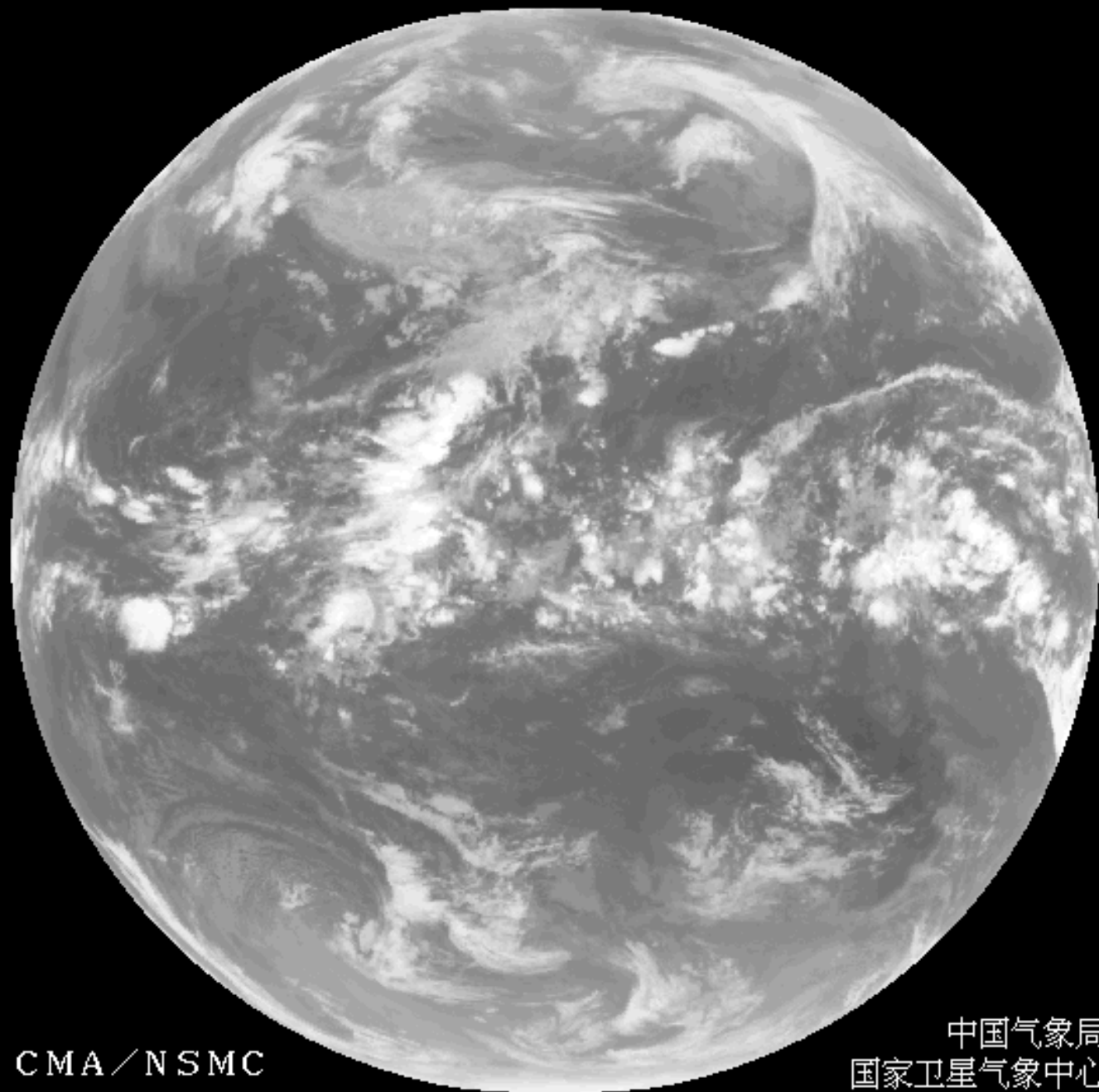


2005.4.20:06



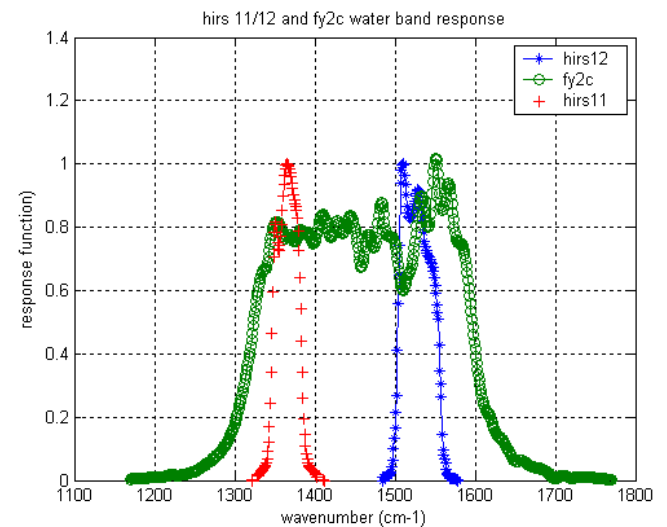
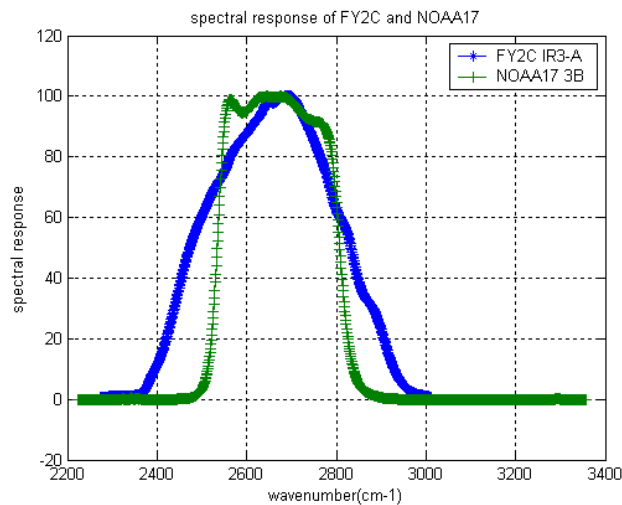
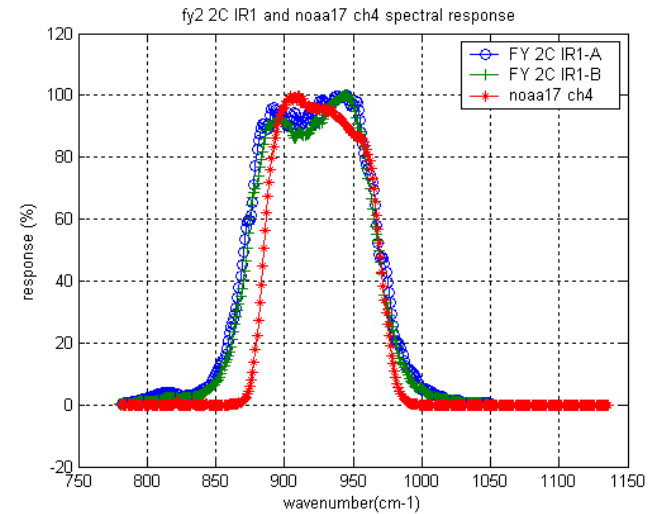
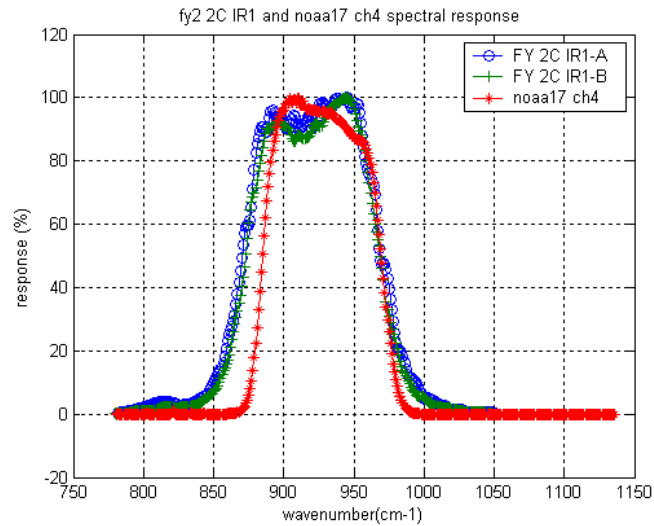
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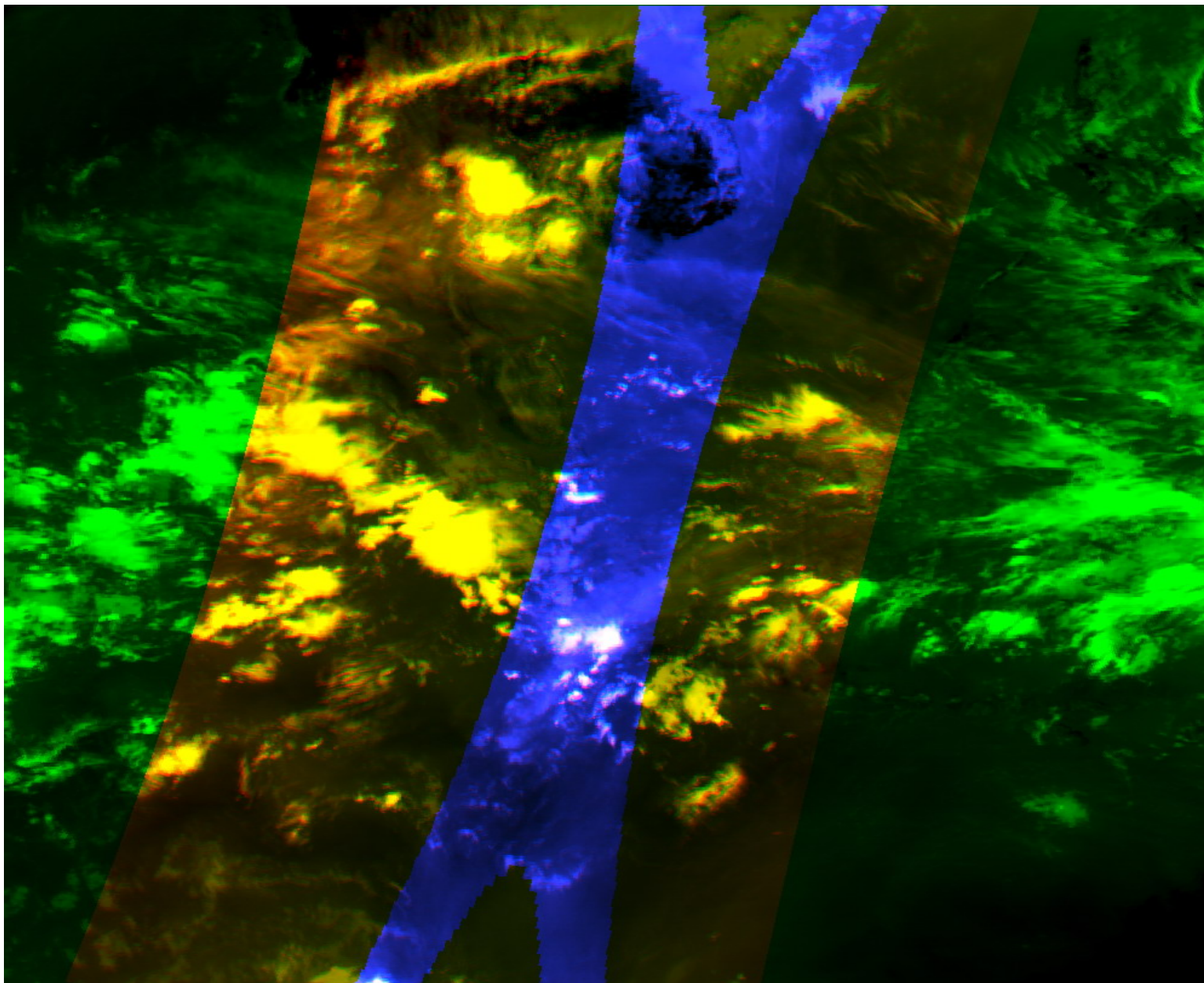


Calibration with NOAA

Spectrum Registration

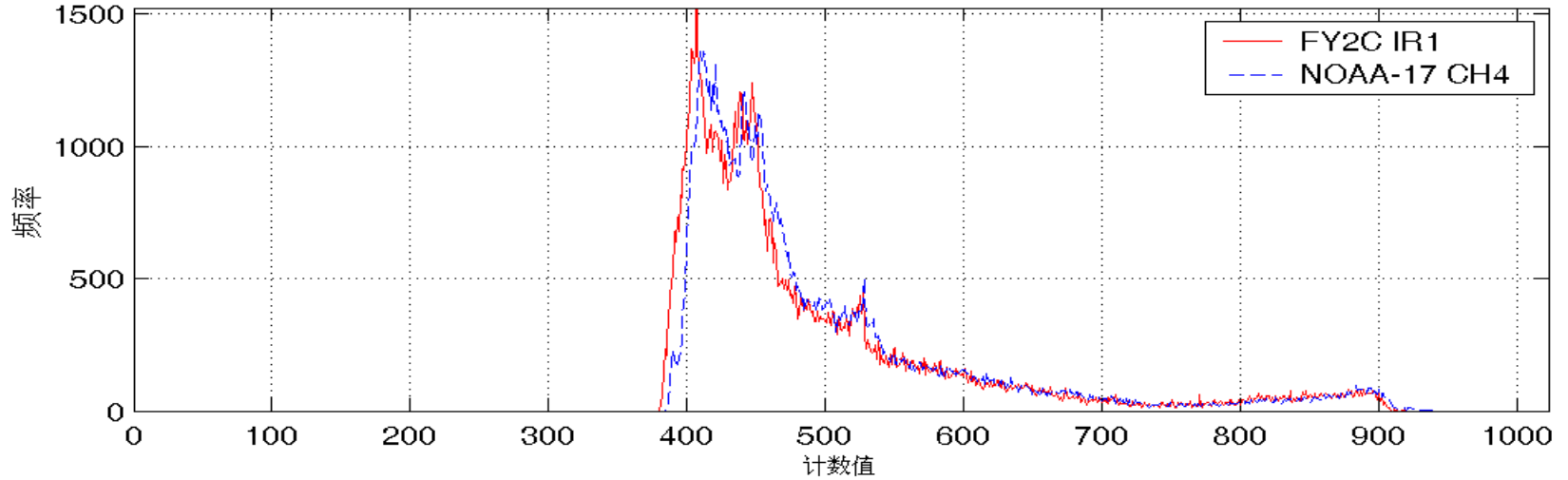


Geographic registration

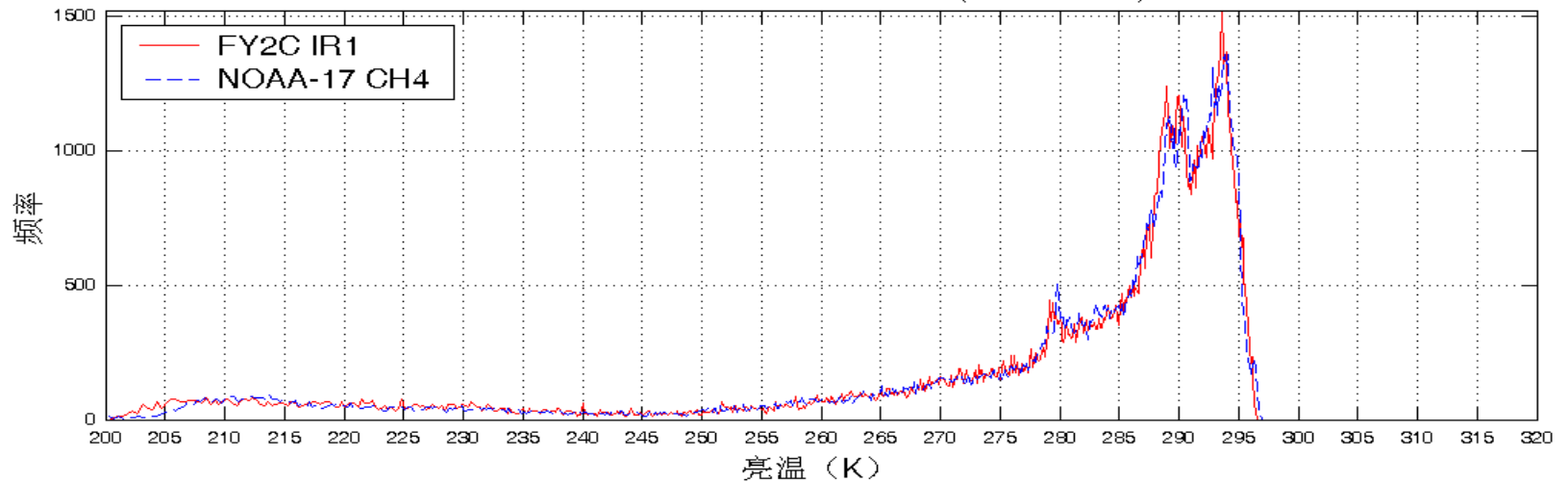


FY-2C IR1 measurement and BT compared with NOAA

FY-2C与NOAA卫星红外1计数值比对(2004112819)

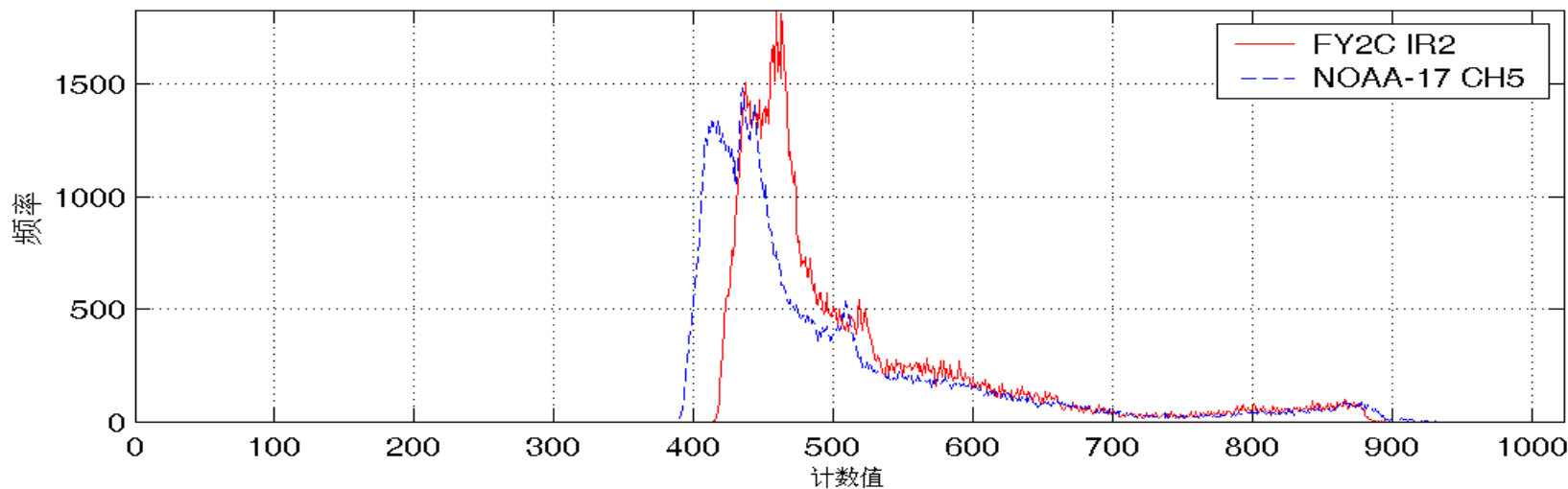


FY-2C与NOAA卫星红外1亮温比对(2004112819)

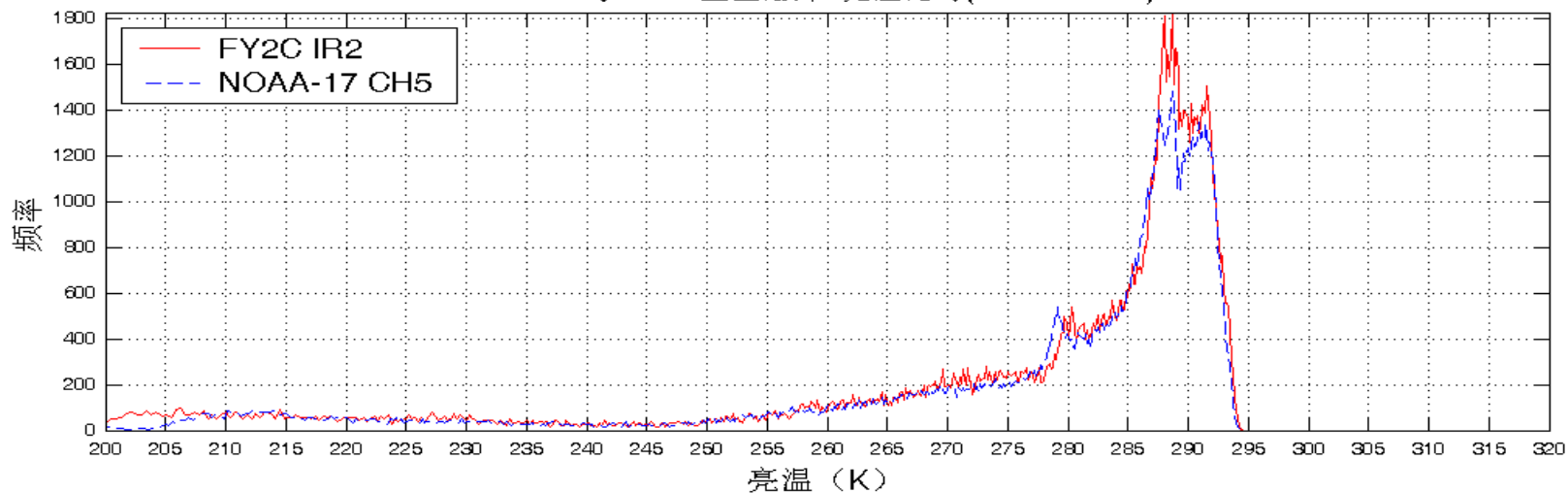


FY-2C IR2 measurement and BT compared with NOAA

FY-2C与NOAA卫星红外2计数值比对(2004112819)

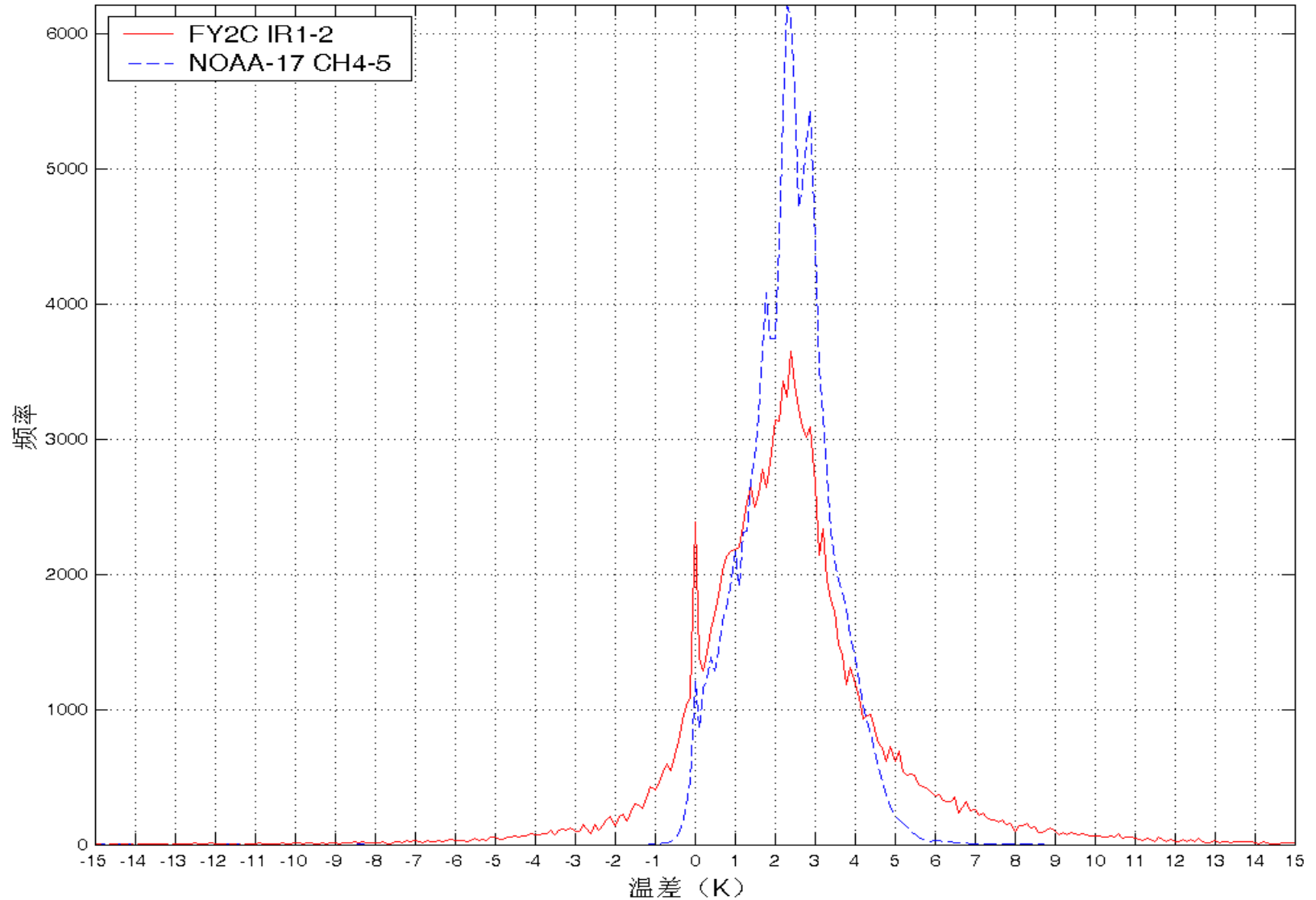


FY-2C与NOAA卫星红外2亮温比对(2004112819)



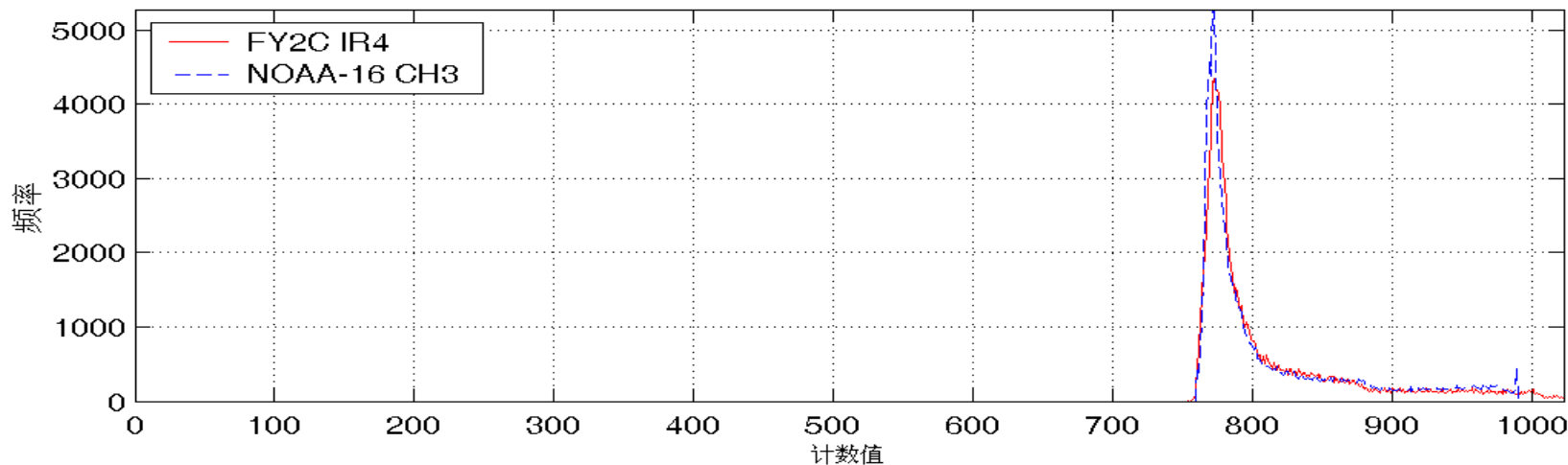
FY-2C split window difference compared with NOAA

FY-2C与NOAA卫星红外分裂窗温差比对(2004112819)

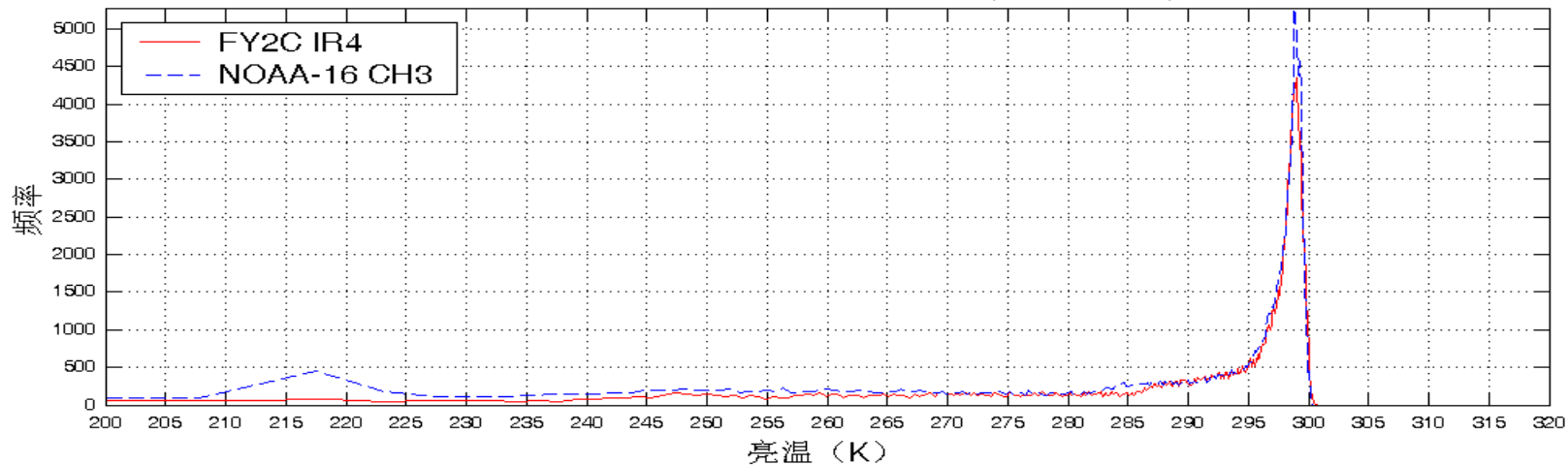


FY-2C IR4 measurement and BT compared with NOAA

FY-2C与NOAA卫星中波红外计数值比对(2005041019)



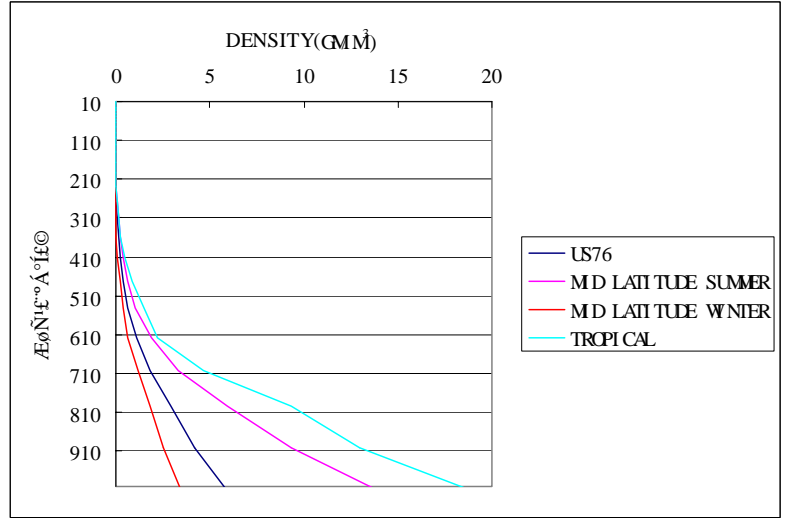
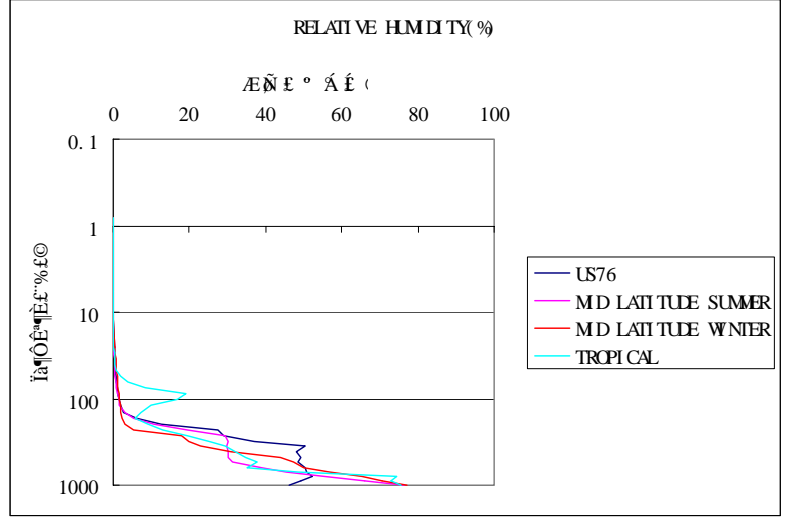
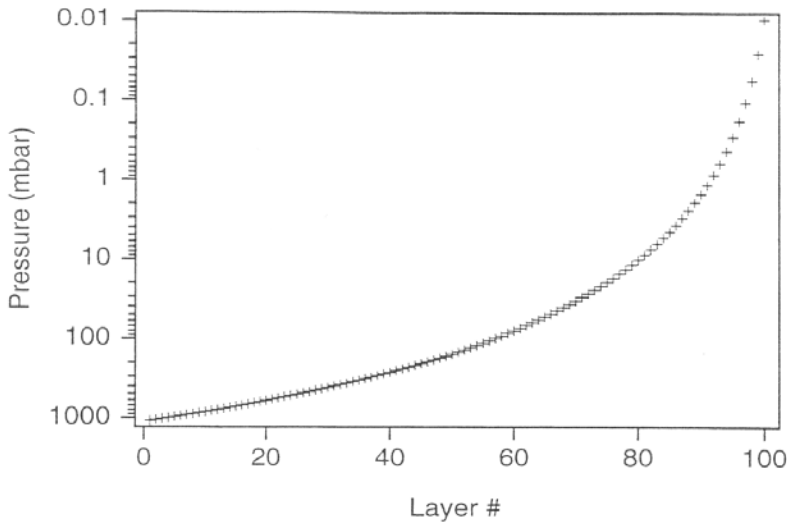
FY-2C与NOAA卫星中波红外亮温比对(2005041019)



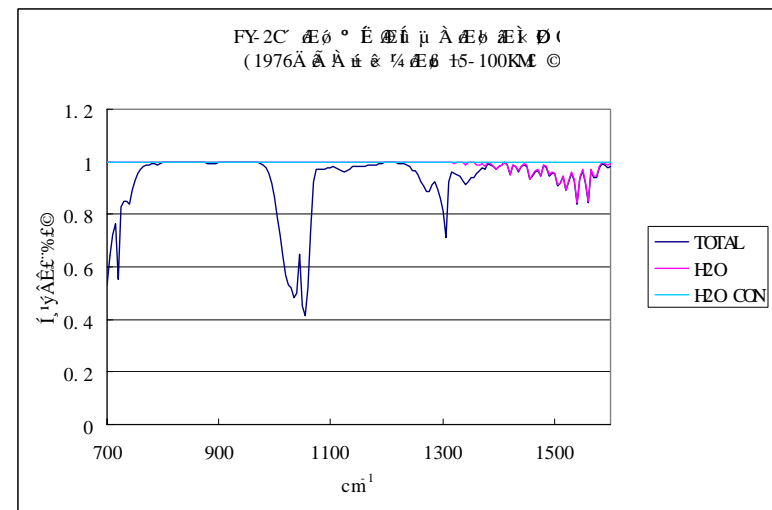
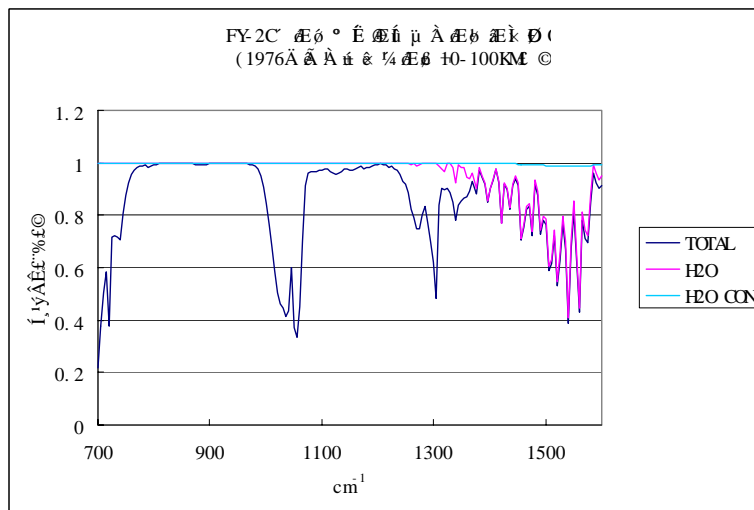
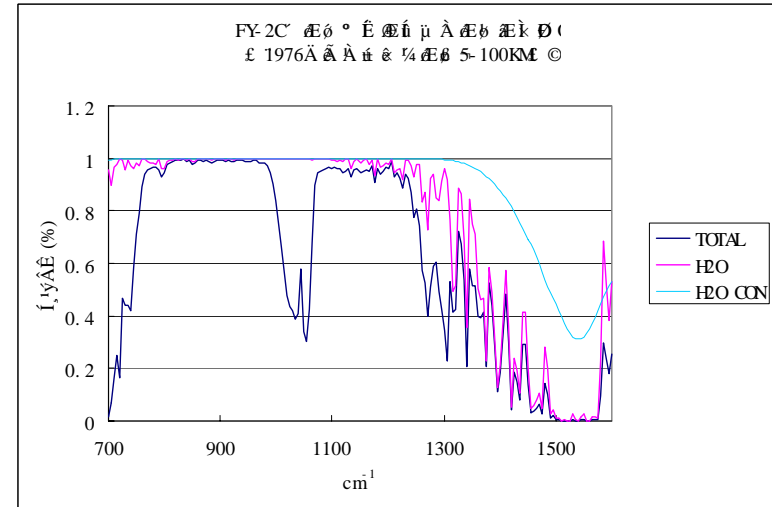
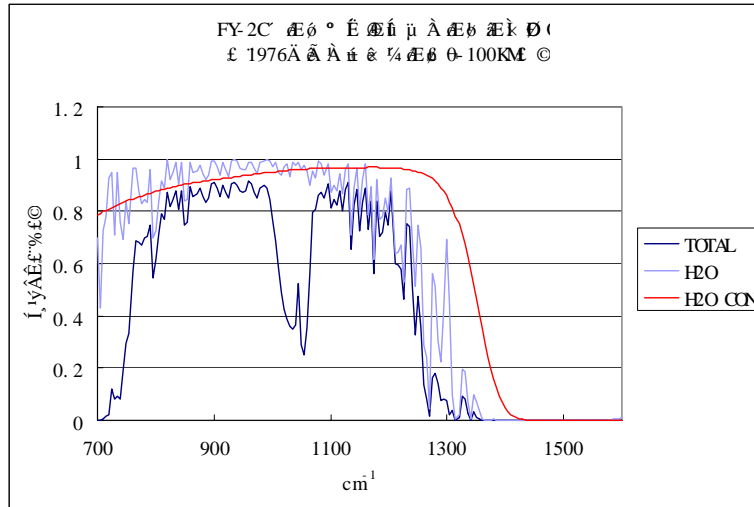
Atmospheric radiation reduction look up tables

The atmosphere is divided into 53 layers. In each layer, atmospheric conditions are constructed by the combination of 11 temperature and 11 humidity measurements. In each layer with each atmospheric status, the atmospheric optical depths in the layers are gained by integration with MODTRAN. In the integration, the atmospheric optical depths are consists of three major parts: water vapour line absorption/emit, water vapour continuous absorption/emit and absorption/emit by other atmospheric compositions. The spectrum resolution in the integration is wave number with unit cm^{-1} . The integration spectrum scope is from 700 to 1200 for FY2B IR channel and from 1300 to 1600 for FY2B WV channel.

The atmosphere is divided into 53 layers. In each layer, atmospheric conditions are constructed by the combination of 11 temperature and 11 humidity measurements.

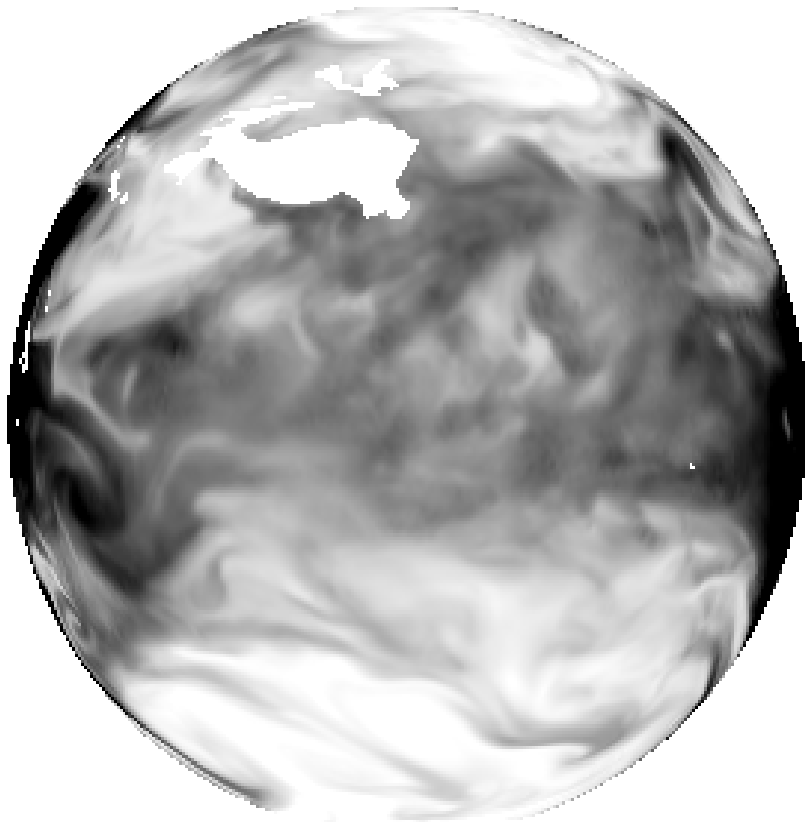


Atmospheric transmission from dif. layers to 100km

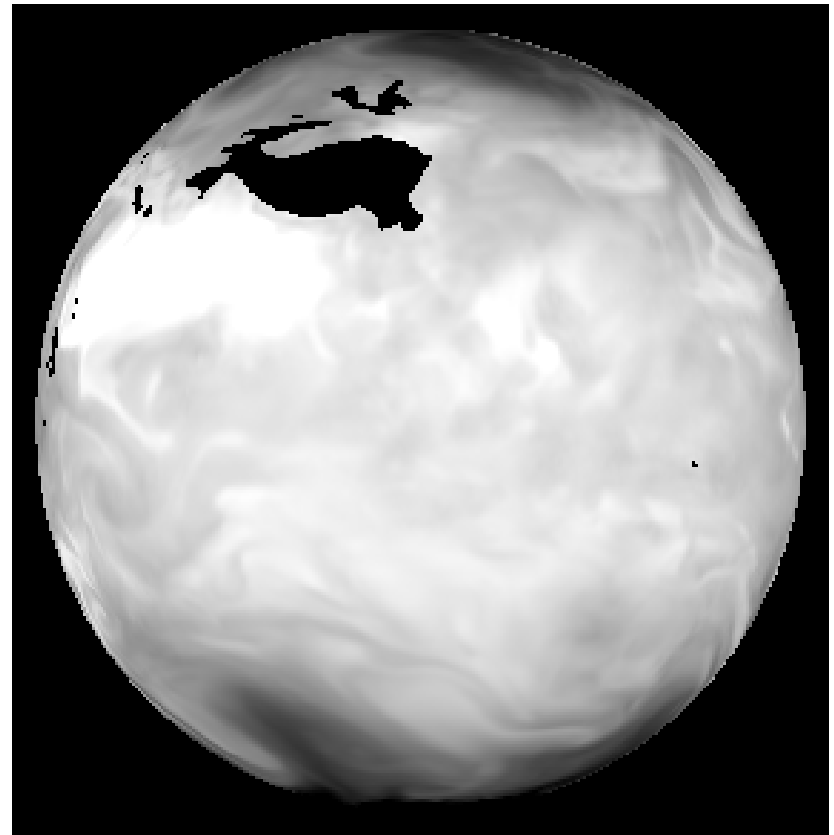


Look up Table

Wave Num (cm ⁻¹)	Temp. Prof. Nb. 1			...Temp. Prof. Nb. i ...	Temp. Prof. Nb. 11			
	P ₁	...P _i ...	P _N	P ₁	...P _i ...	P _N	
700	O	P	T		I	C	A	L
701							
...
1599	T	H	I		C	K		
1600	N	E	S		S			

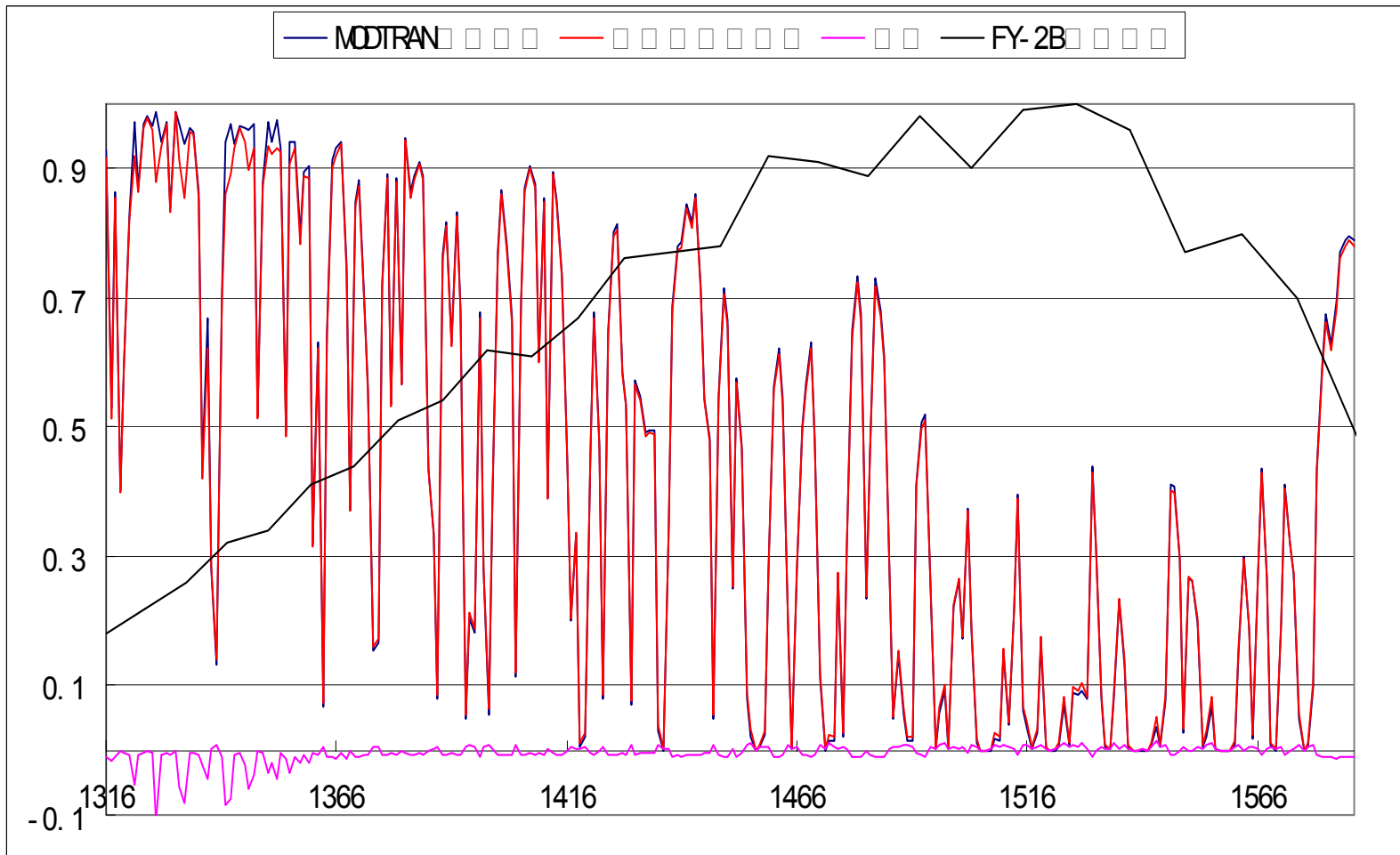


**Layer 05 □ 800hPa □
Atmosphere Reduction
Example**



**Layer 05 □ 800hPa □ Incident
Radiation**

IR Atmosphere Reduction



7.183km--7.476km, Compare with MODTRAN

Products from FY2C

Name of Product	Coverage	Time/Day
Wind	50°N-50°S 55°E-155°E	4
SST	60°N-60°S 45°E-165°E	8
Upper Troposphere Humidity	60°N-60°S 45°E-165°E	8
ISCCP Data set	60°N-60°S 45°E-165°E	8
Precipitation Index	60°N-60°S 45°E-165°E	8
Precipitation Estimation	60°N-60°S 45°E-165°E	4
Cloud Classification	60°N-60°S 45°E-165°E	8
Cloud Amount	60°N-60°S 45°E-165°E	8
Humidity Profile from Cloud	50°N-50°S 55°E-155°E	8
Perceptible Water in Clear Sky Region	60°N-60°S 45°E-165°E	8
Outgoing Long wave Radiation	60°N-60°S 45°E-165°E	8
Solar Irradiance	60°N-60°S 45°E-165°E	1
Snow Cover	60°N-60°S 45°E-165°E	1
Sea Ice	60°N-60°S 45°E-165°E	1
Flood Monitoring	China	1
Soil Moisture	60°N-60°S 45°E-165°E	1
Fire Monitoring	China	24
Tropical Cyclone Position and Intensity	Western Pacific and India Ocean	24
Sand Storm Monitoring	China and Mongolia	8
Fog	China	24
TBB	60°N-60°S 45°E-165°E	8

Cloud Classification

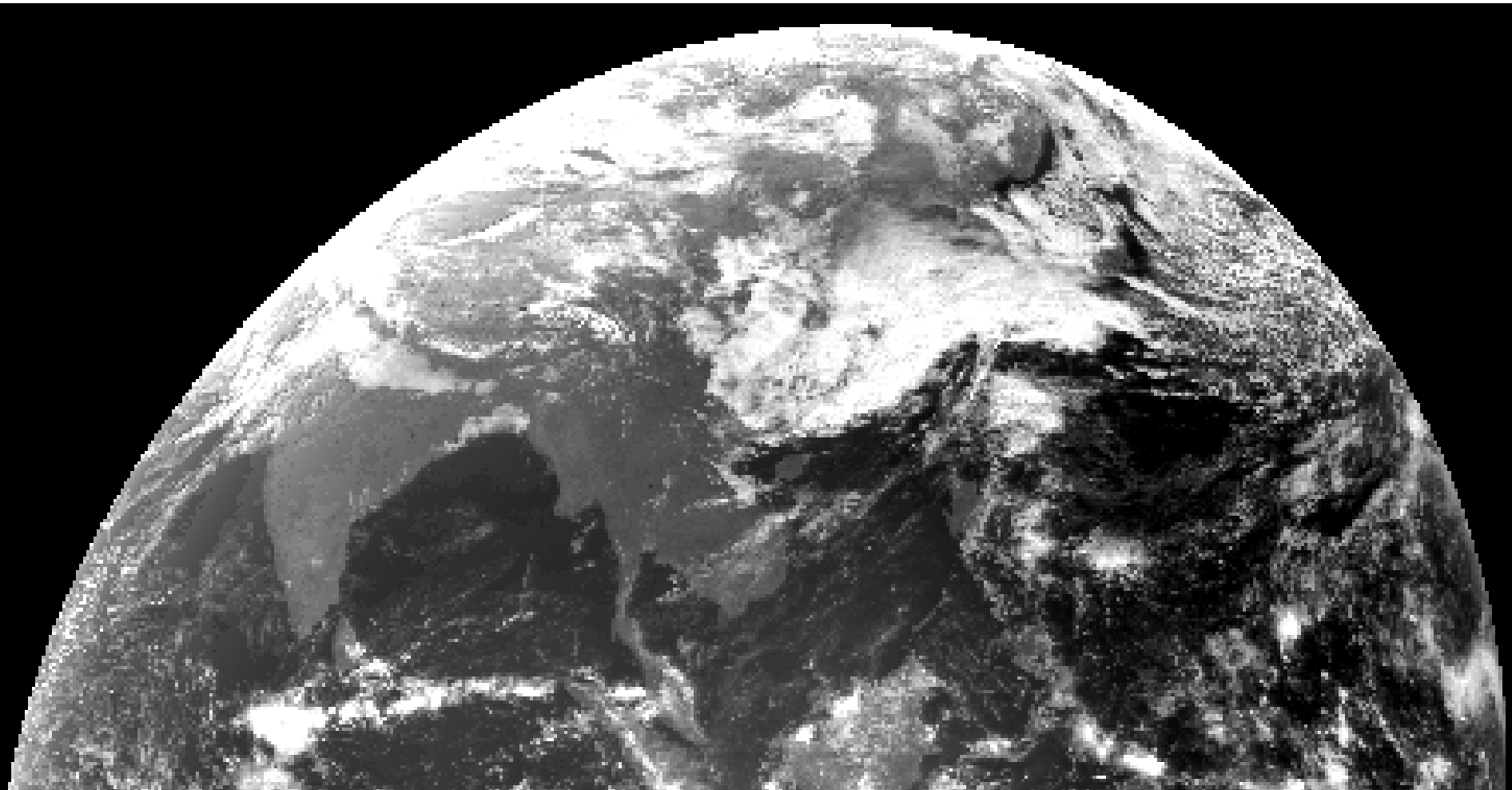
Cloud Classification

- Cloud filtering mainly performs three jobs:
- To separate high cloud from low cloud and surface named as high cloud detection.
- To separate cloud from surface named as cloud detection.
- Cloud Classification.

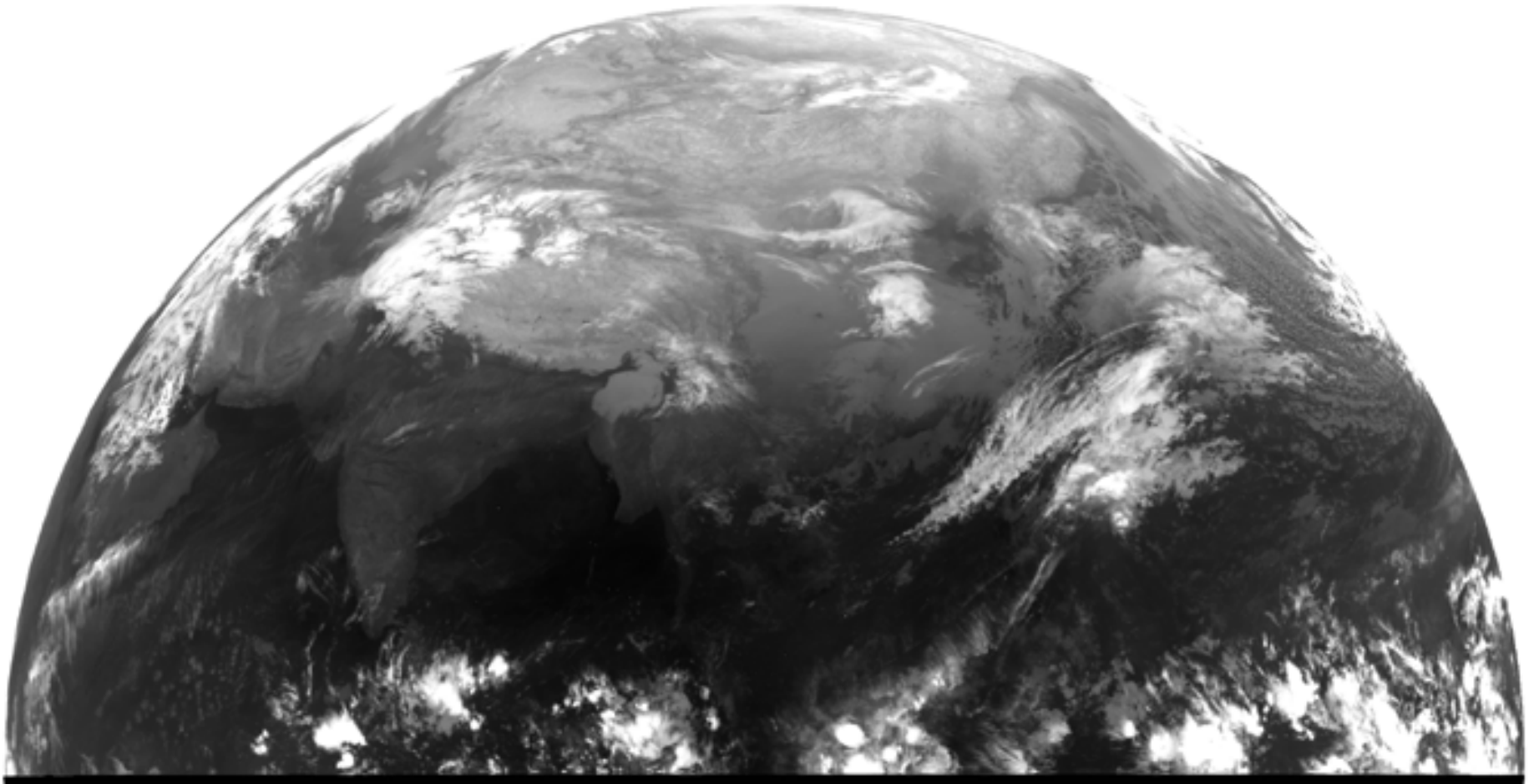
Why cloud classification job have to be done by the above mentioned three steps

- High cloud detection can be detected with WV-IR relationship. High cloud is defined relative to sea level altitude.
- High cloud detection does not work in Tibetan Plateau.
- Cloud is defined relative to topography.

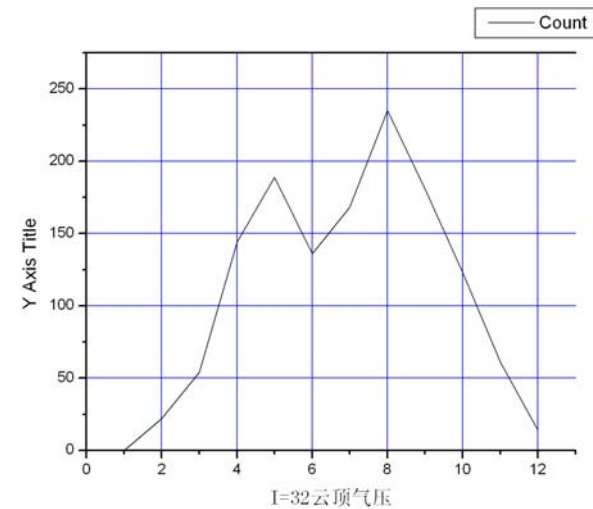
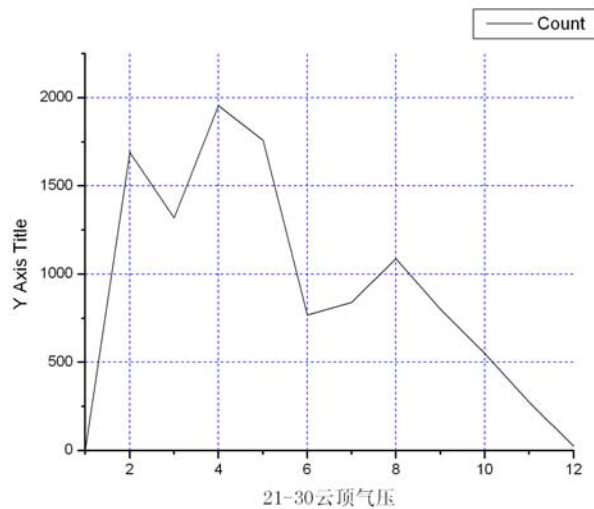
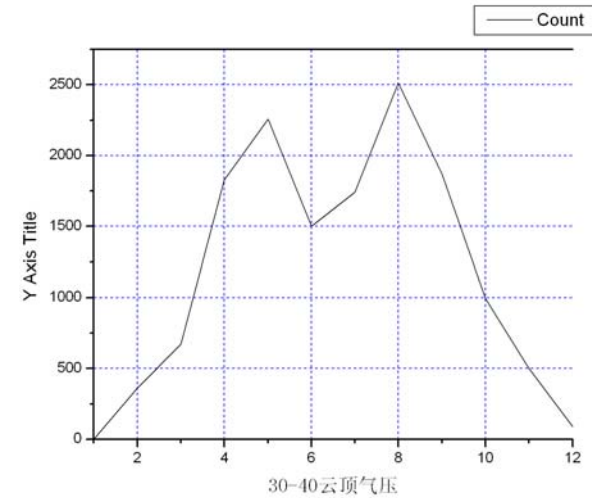
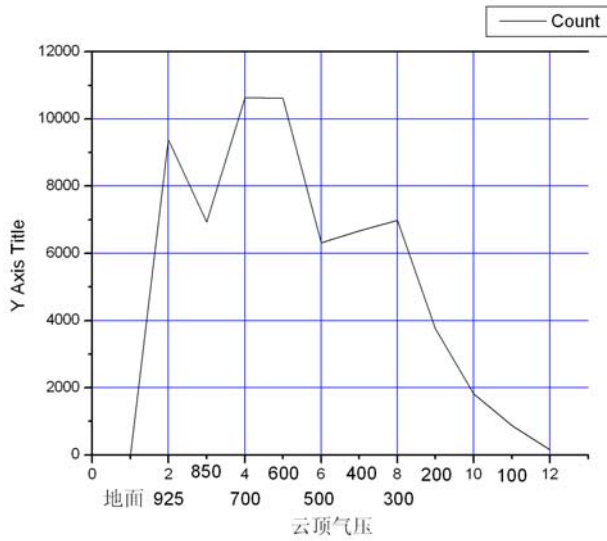
VIS Image



IR Image



Statistics show that cloud top is relatively less appear in mid troposphere around 500 hPa

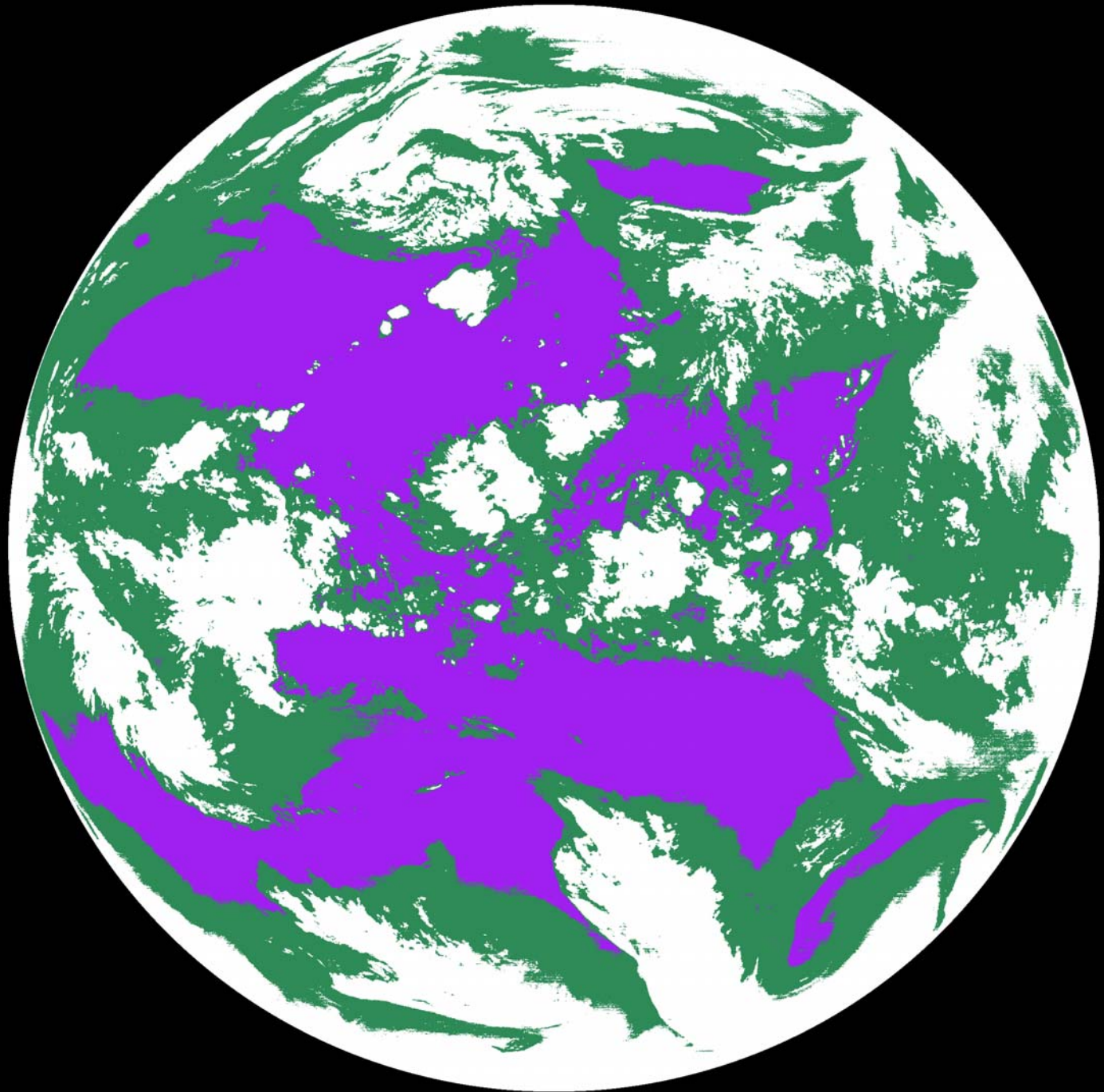


High cloud detection

- Performed on the pixel bases with infrared and water vapour channels.
- Atmospheric reduction corrections are made.
- Correlation between the two channel measurements is calculated for each pixel in a 9 pixel area around it.
- This procedure runs well except in Tibetan Plateau where some ground features are shown in winter water vapour images and are catalogued as high cloud. Thus in Tibetan Plateau, high cloud pixels should pass cloud detection procedure as well.

In high cloud detection stage, image pixels are subject to one of the following three groups

- low cloud or clear sky
- High Cloud
- Unknown



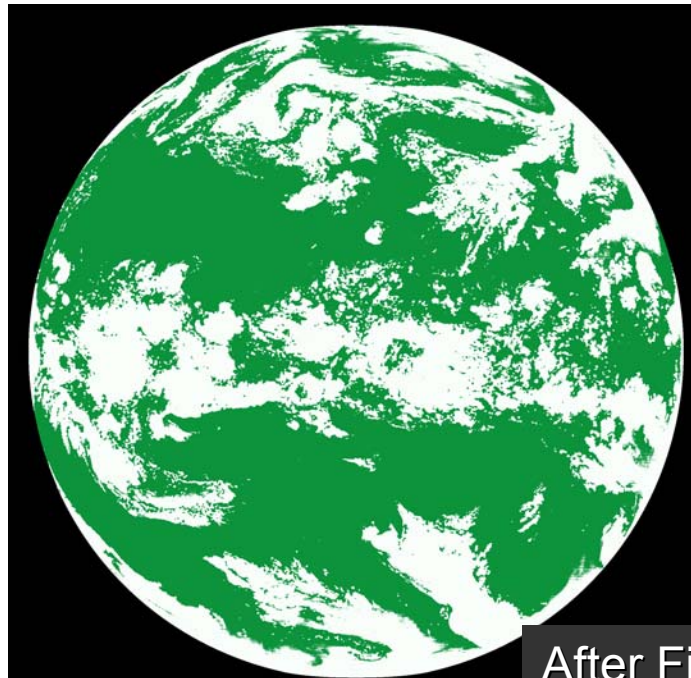
IR/WV correlation is used to separate high cloud from the others.

On the correlation distribution figures □Left□ are noisy.

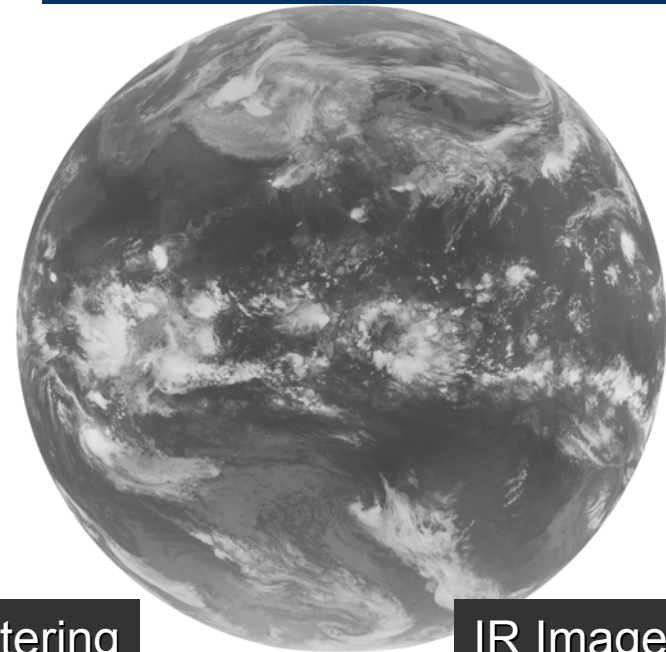


IR/WV correlation

After filtering high cloud is shown

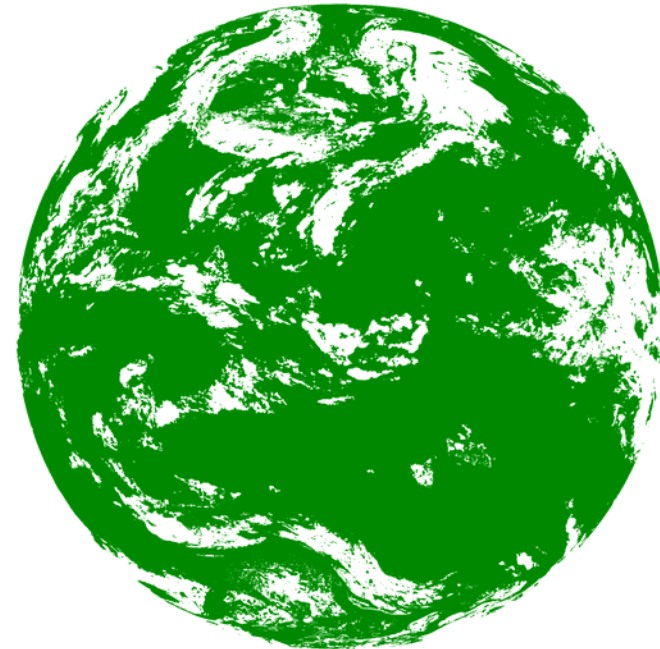
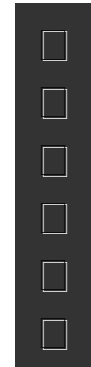
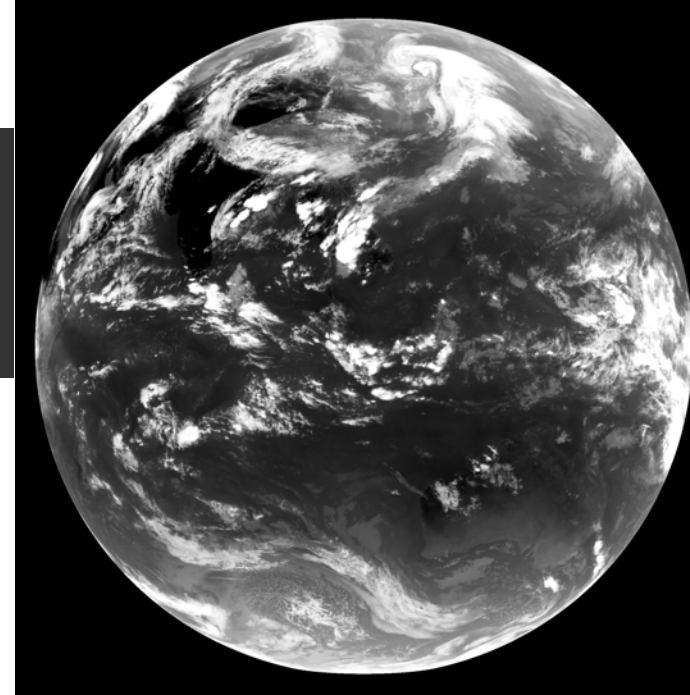
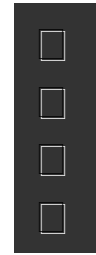
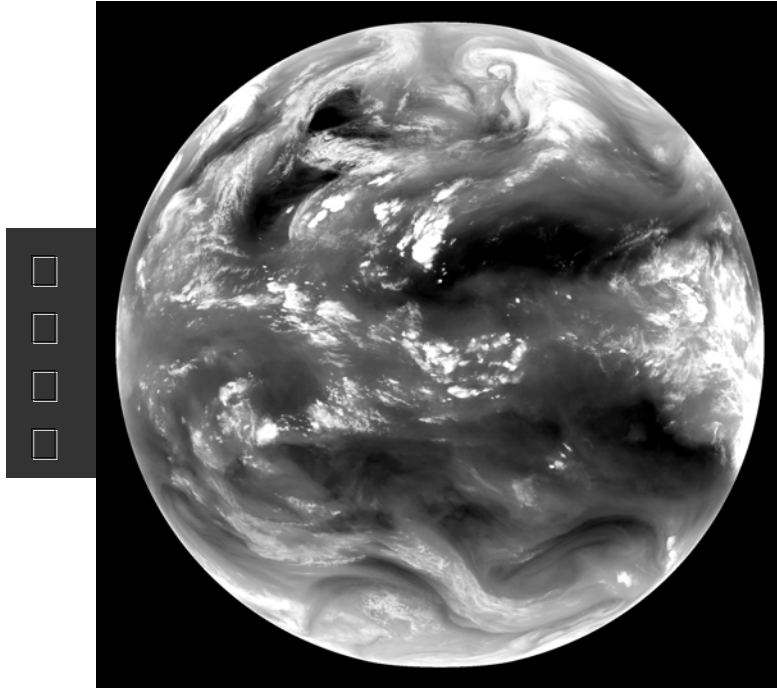


After Filtering

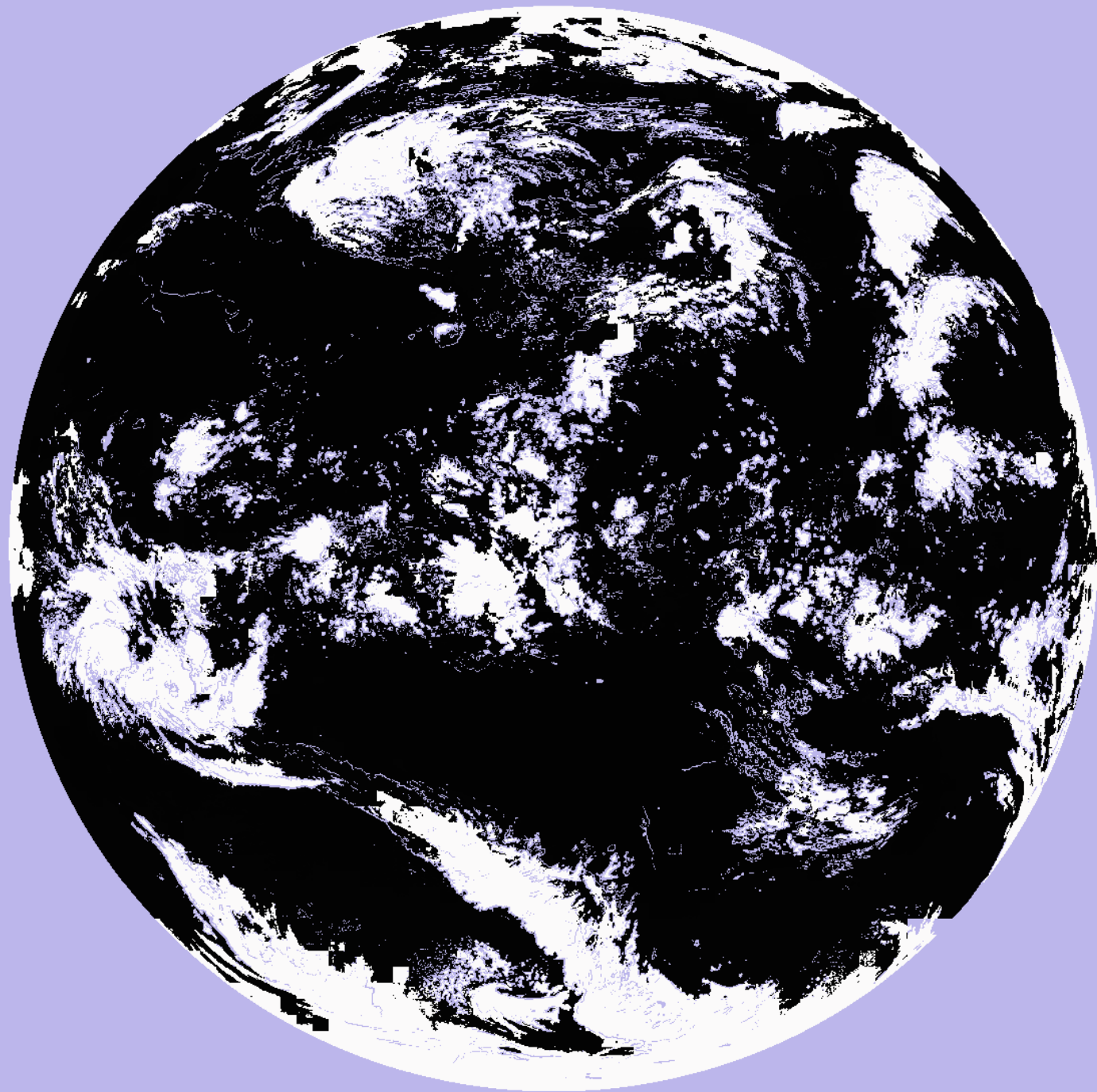


IR Image

High Cloud Detection



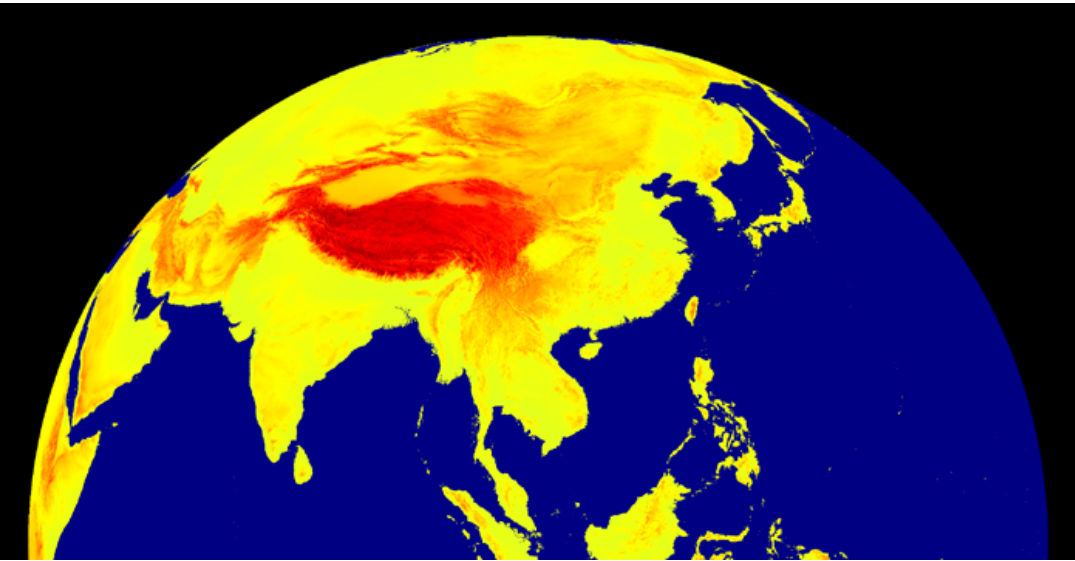
FY2C 200504190456 (UTC) □



Cloud Detection

Cloud detection

- Cloud detection is performed with dynamical threshold method on the segment bases.
- Segment size is 32×32 pixels.
- Infrared and visible channels are basic data; water vapour channel is also used.
- In land area, different surface elevations and land characters are separate.
- In ocean area, deviation analysis is made.



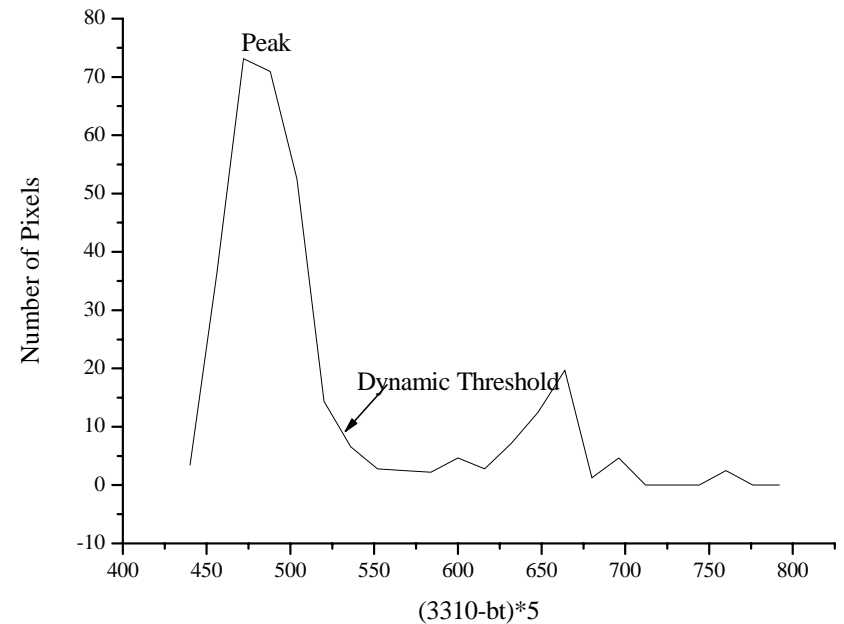
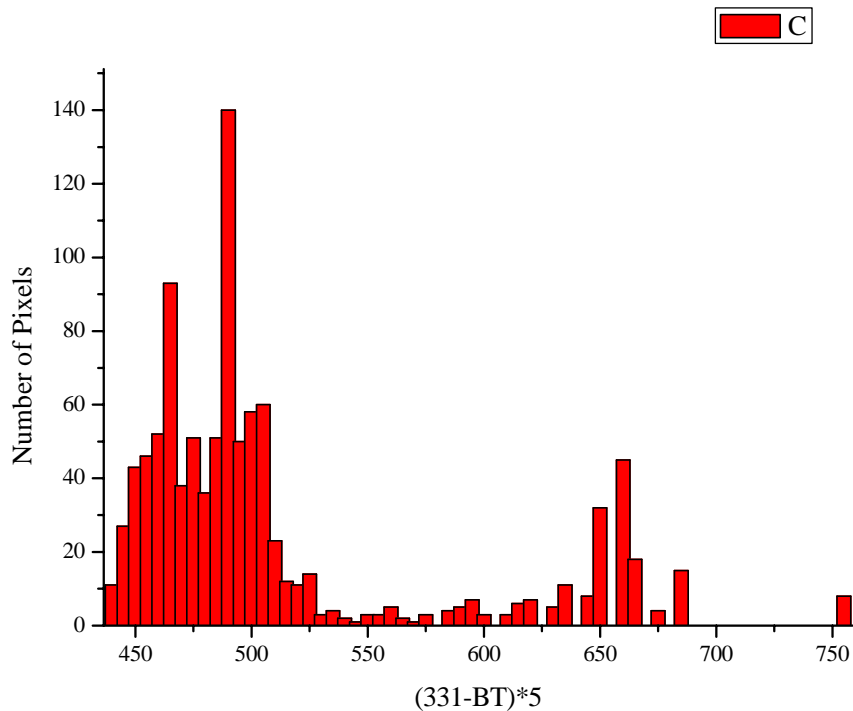
**In land area,
different
surface
elevations and
land characters
are separate.**



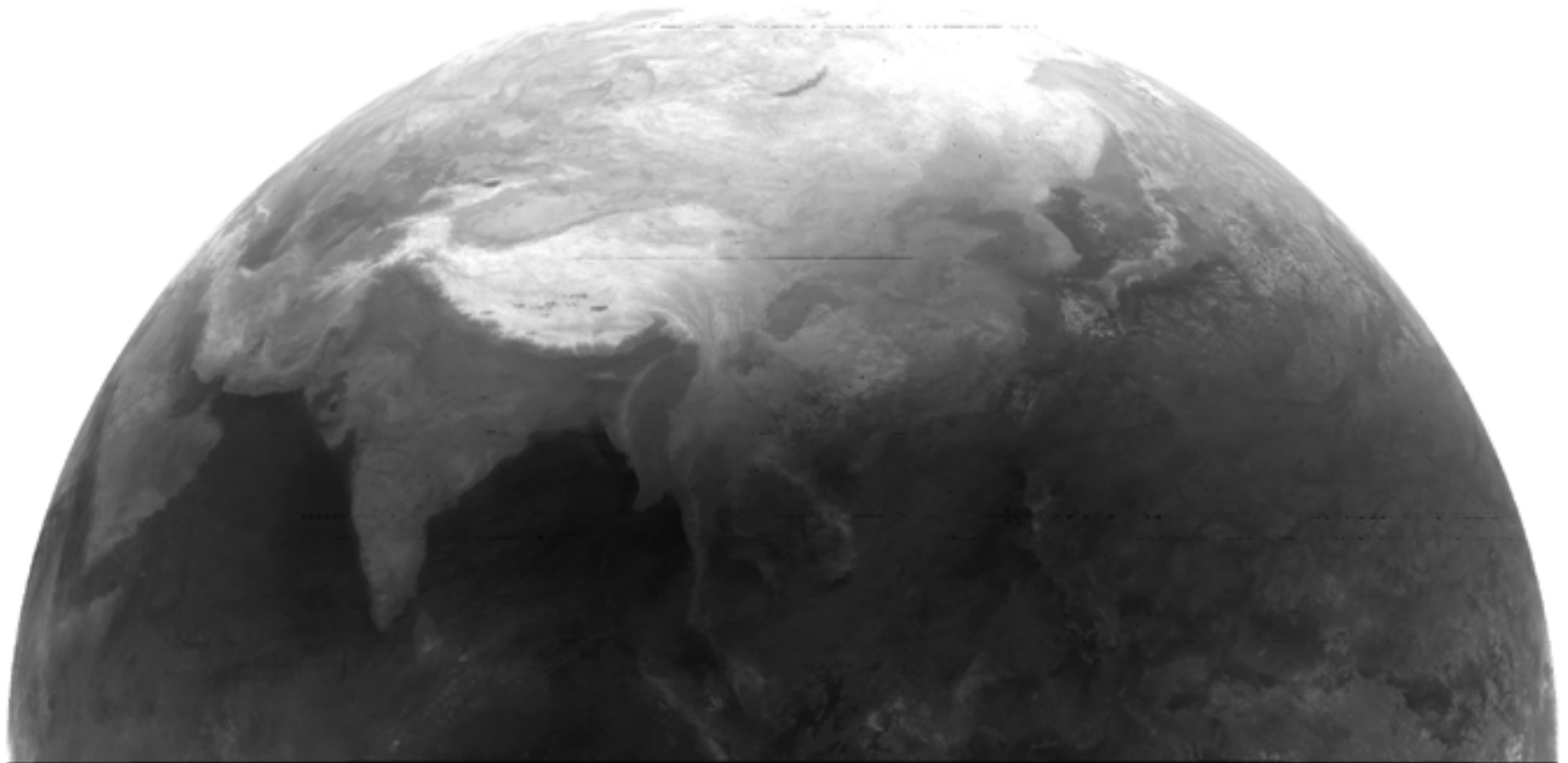
Dynamic thresholds for each segment are created through three steps

- **At first, individual image at a specific time of a day is carefully analysed to find dynamical thresholds at different channels for the day and the segment.**
- **Secondly, historical data for that time in the past 15 days is summarized to find dynamical thresholds for the segment.**
- **Thirdly, diurnal variation of the dynamical thresholds in a day for the segment is harmonized to remove and revise inappropriate values.**

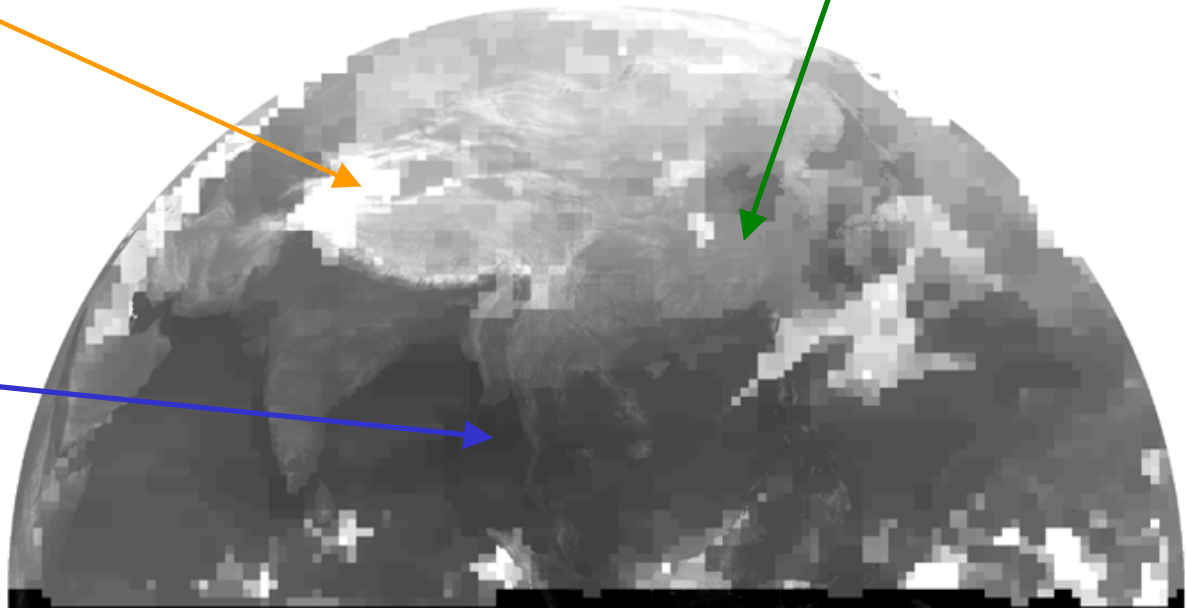
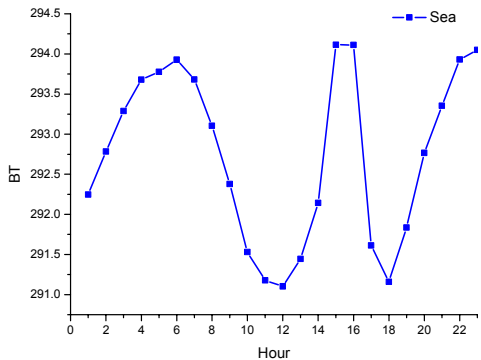
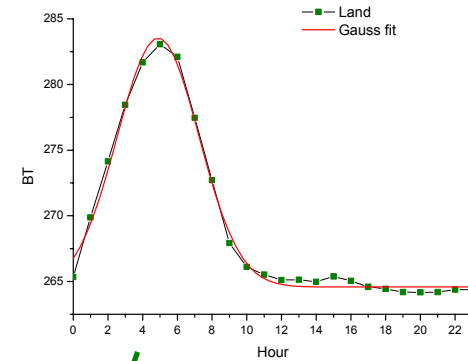
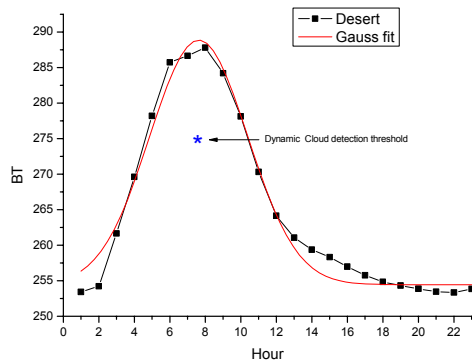
After Vittorio, threshold is at the point with max slope variation (maximum scaled second derivate of histogram), rather than at the bottom of the histogram.



Historical data for the local time of a day in the past 15 days is summarized to find dynamical thresholds for the segment.



Diurnal variation of the dynamical thresholds in a day is harmonized to remove inappropriate values.

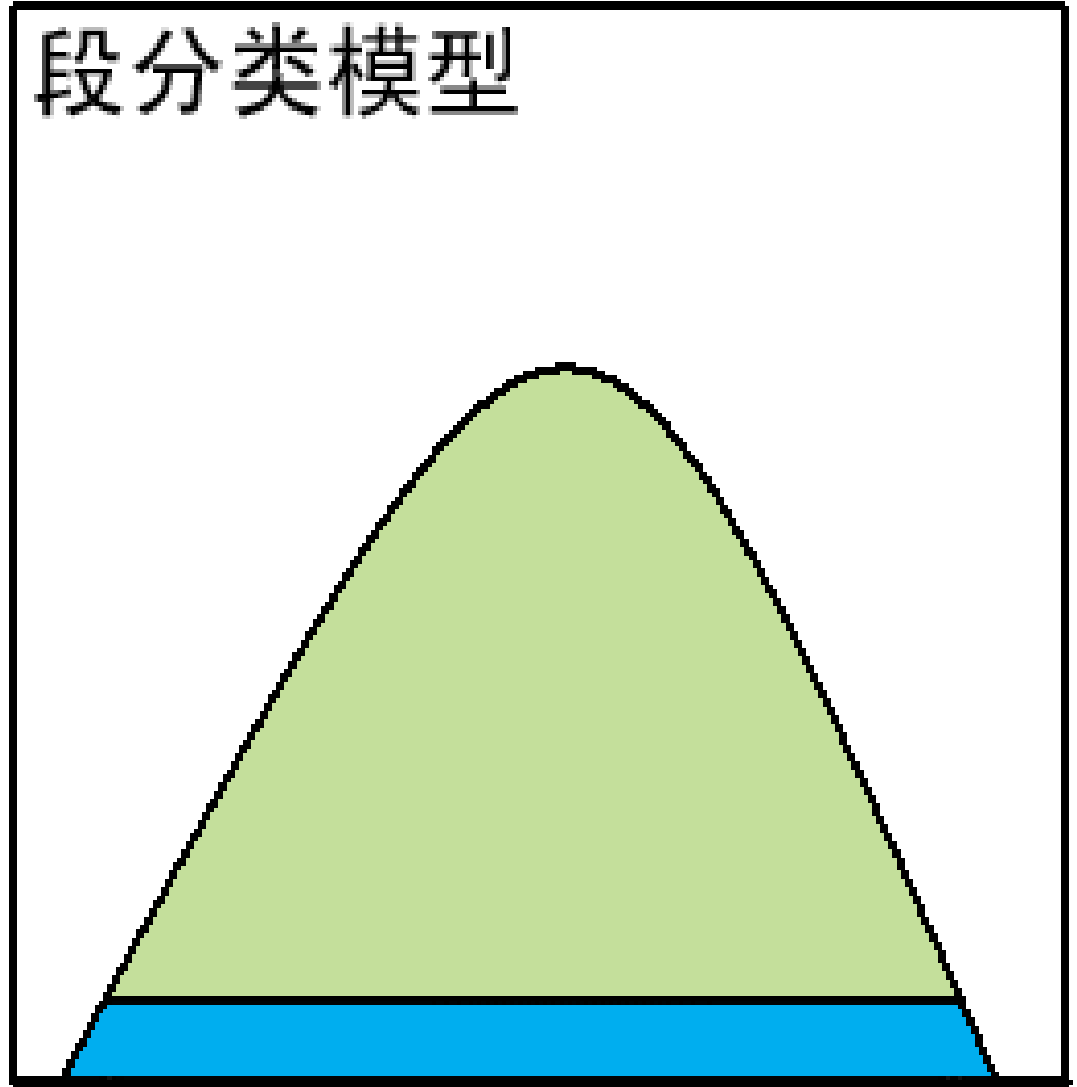


Cloud classification mainly depends on IR/WV scatter diagram analysis.
It is complementary with histogram and deviation analysis

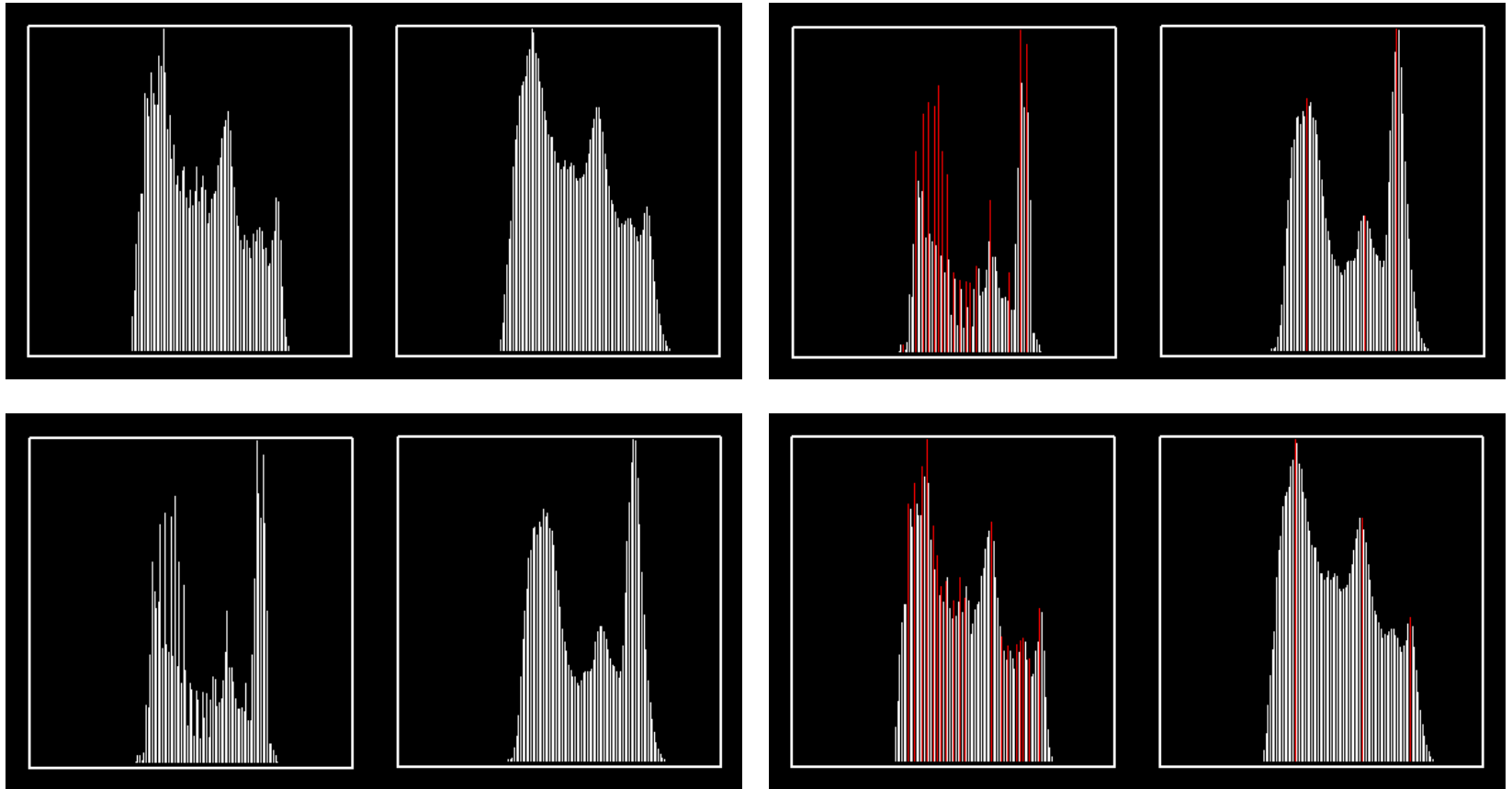
- Groups from histogram and deviation analysis are tested at the IR/WV scatter diagrams.
- The groups with most steep slopes are Cb cloud and dense cirrus cloud. Cb cloud is characterized with close or even negative WV-IR differences.
- The groups with most flat slopes are As or Ns clouds.
- The thin cirrus is characterized with slope between the above two groups.

段分类模型

Histogram
is
performed
for uniform
pixels

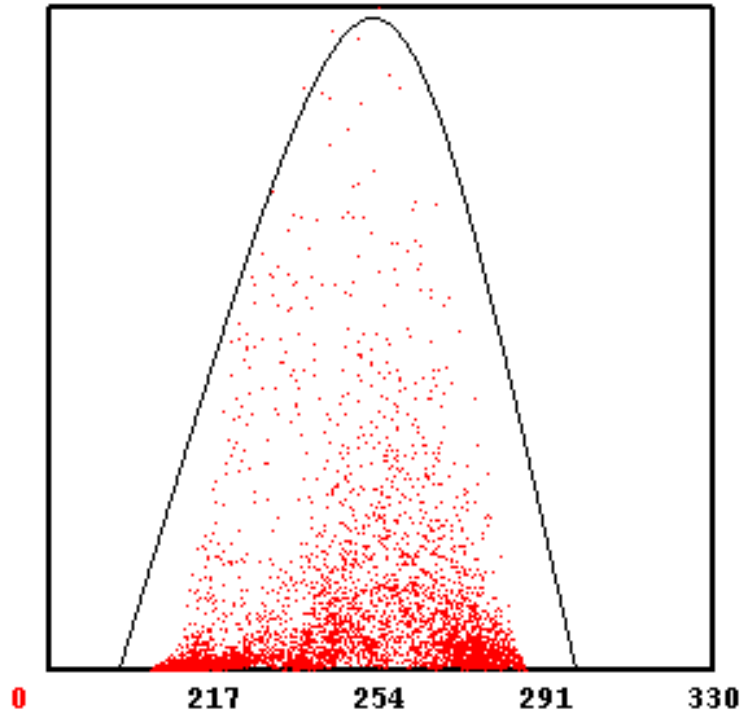


Histogram Analysis

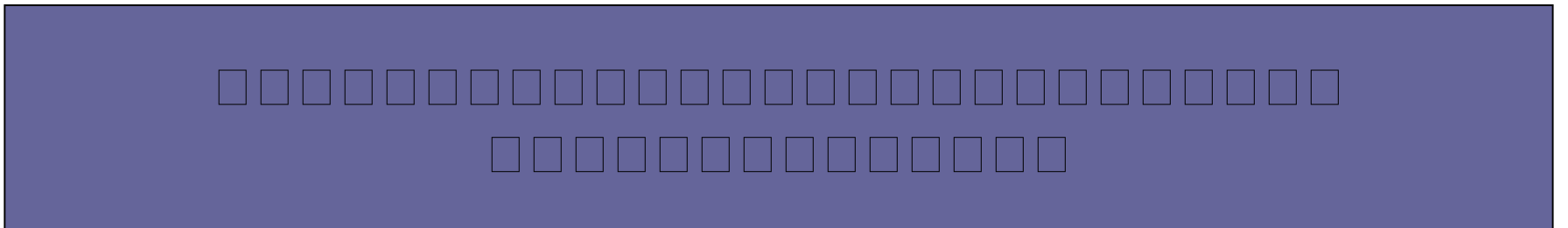
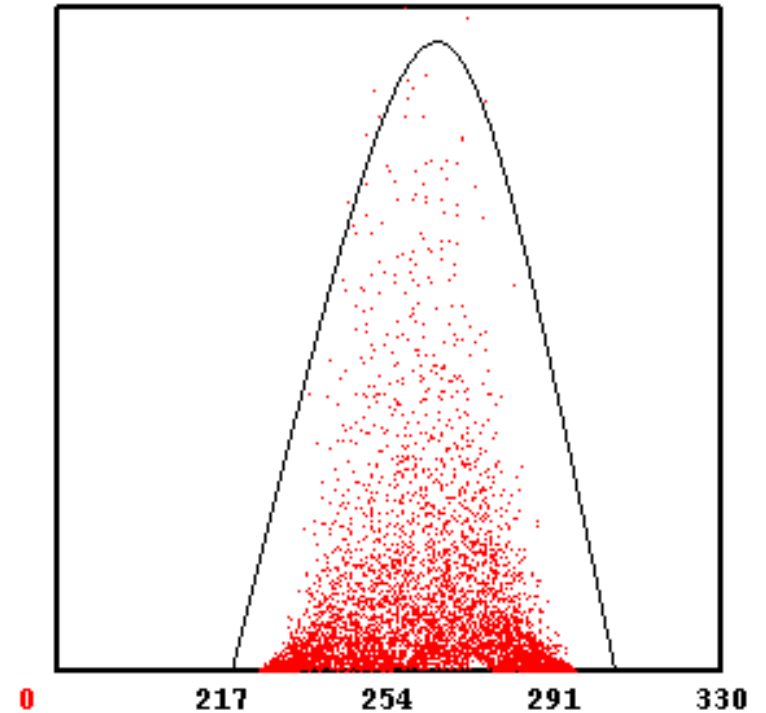


Upper part at deviation analysis are mixing pixels

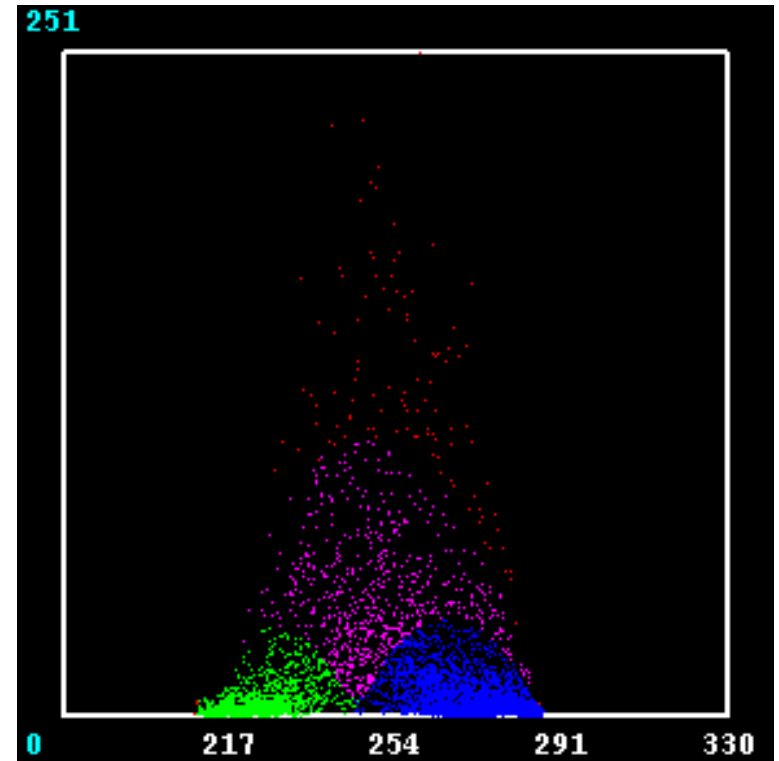
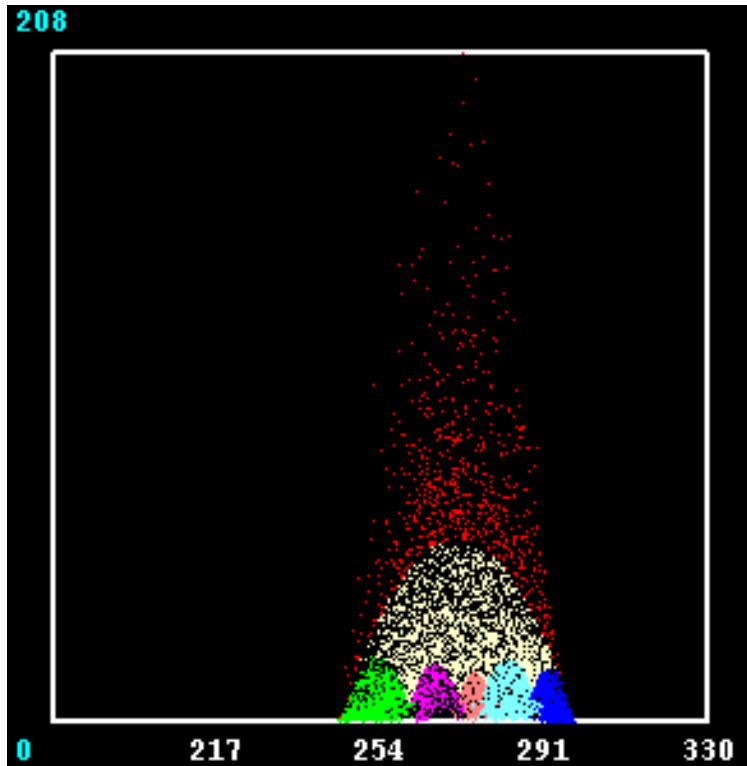
217



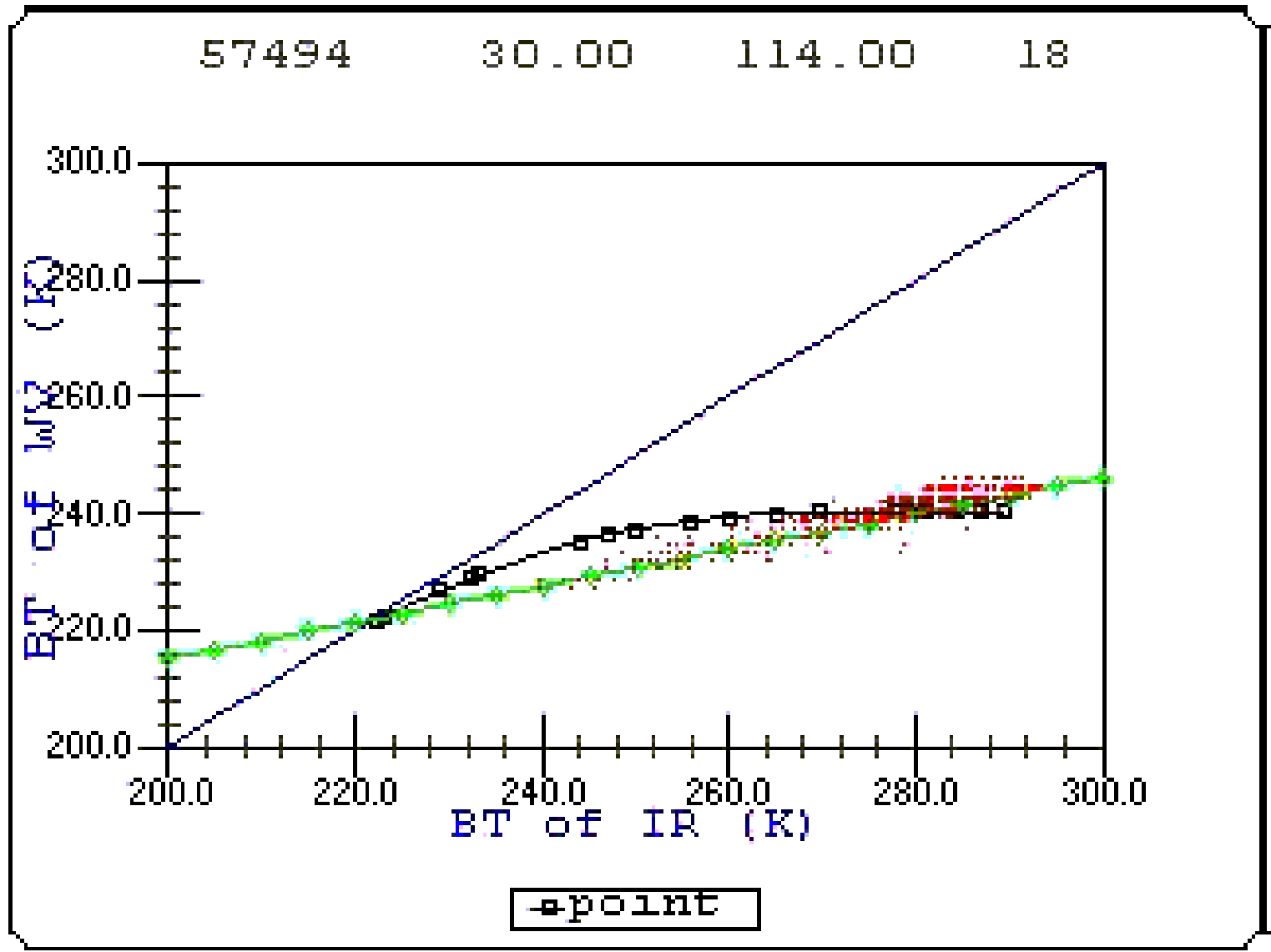
236



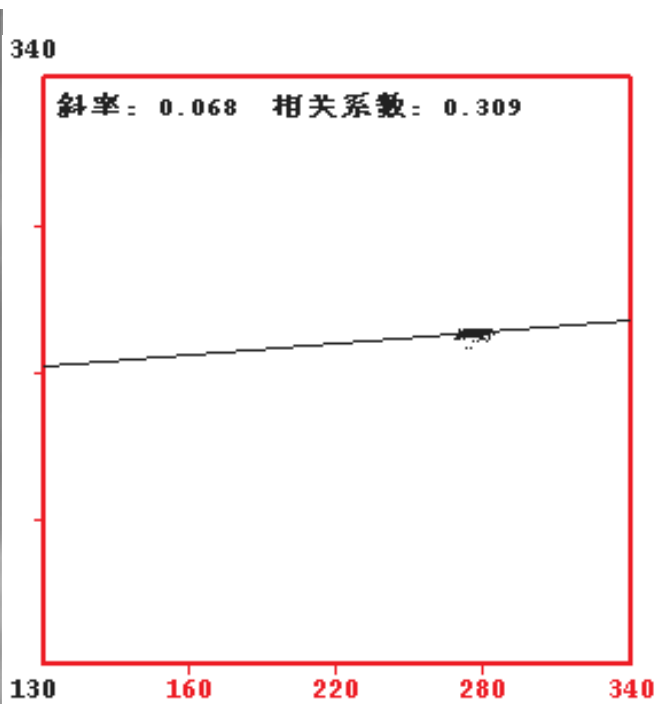
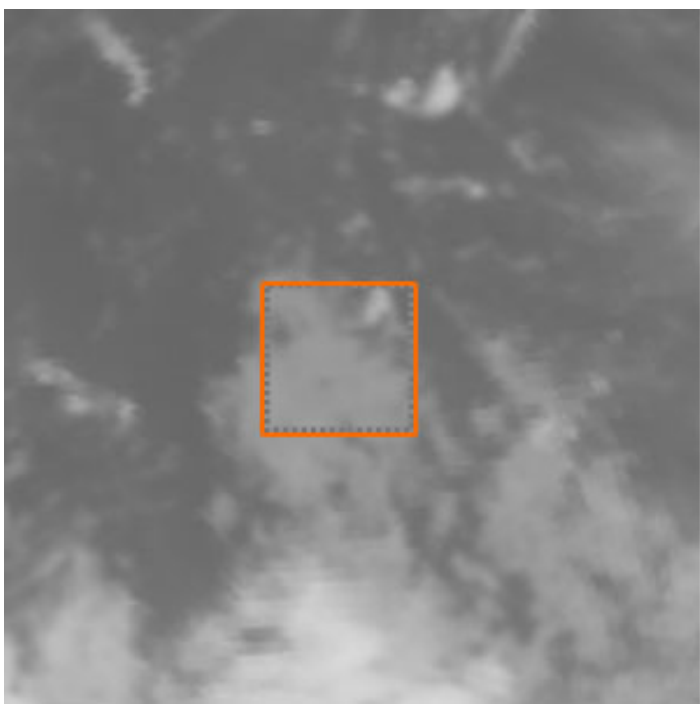
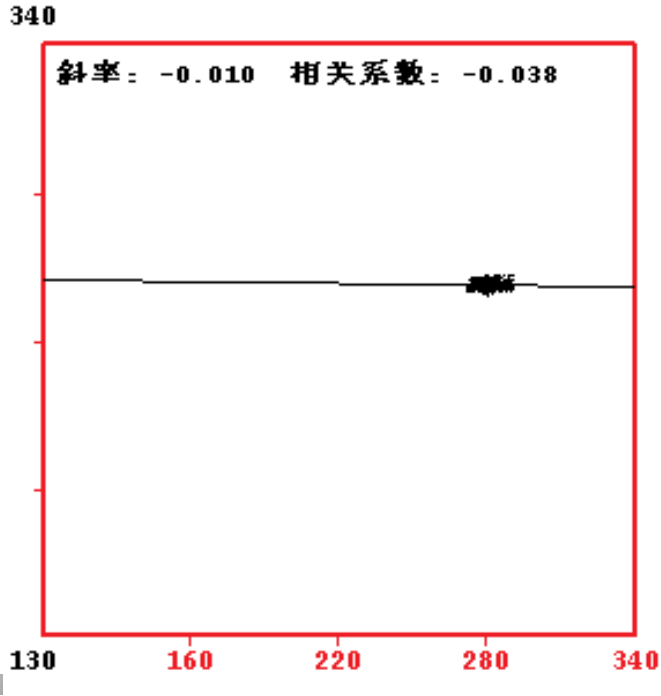
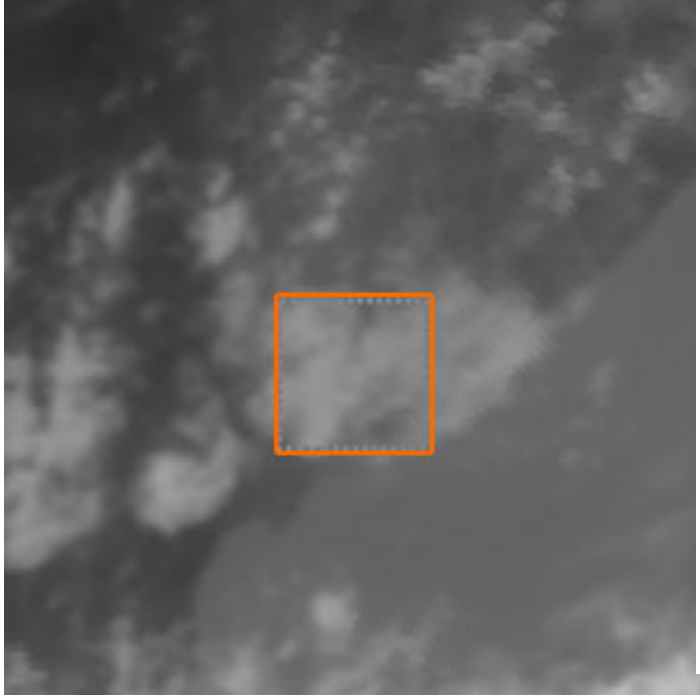
With histogram and deviation analysis,
several groups are gain



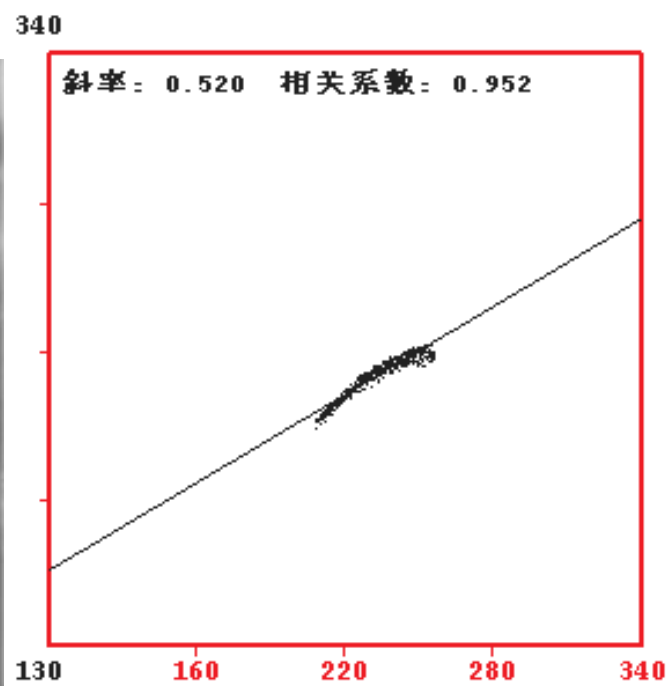
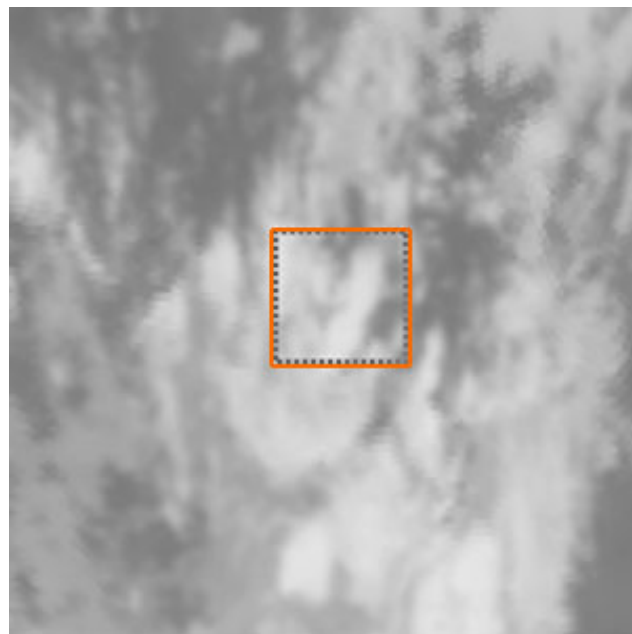
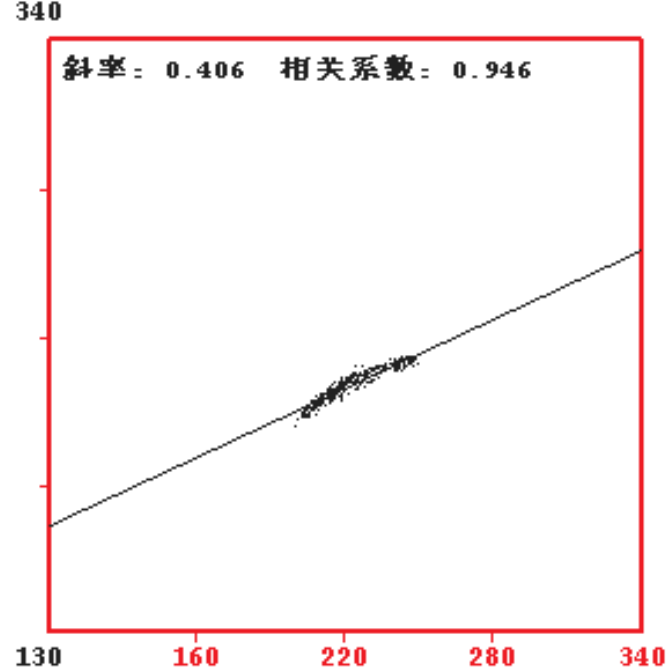
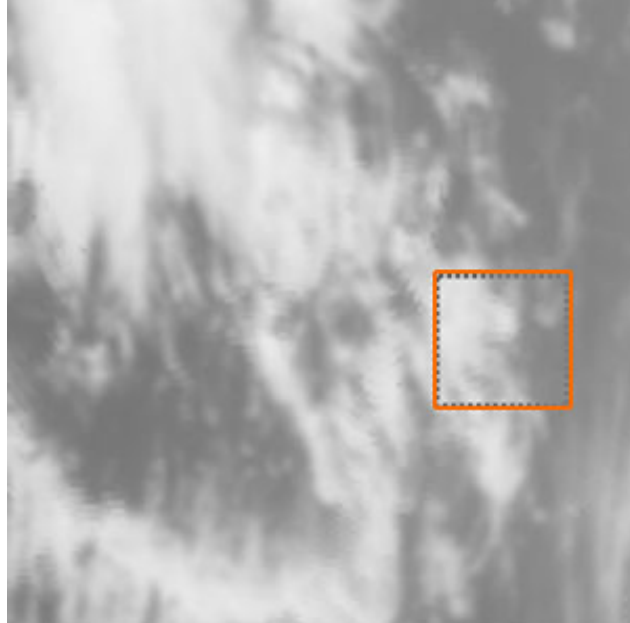
Groups from histogram and deviation analysis
are tested at the IR/WV scatter diagrams



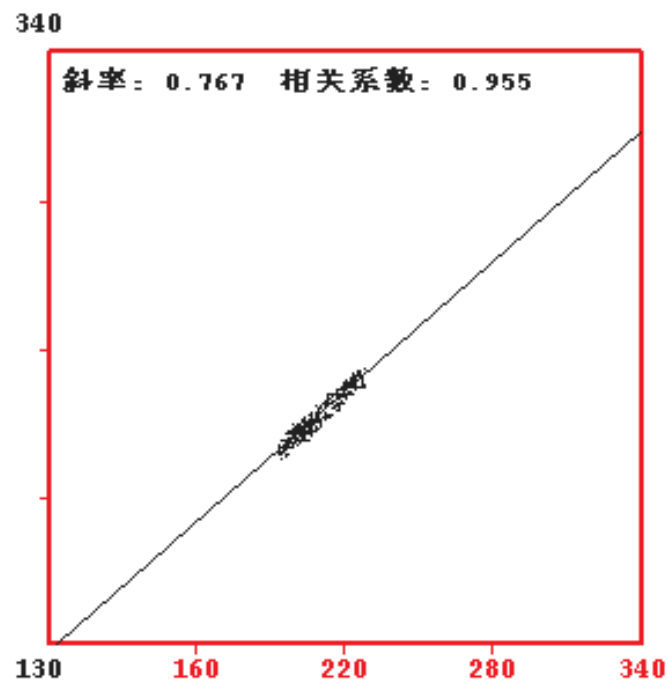
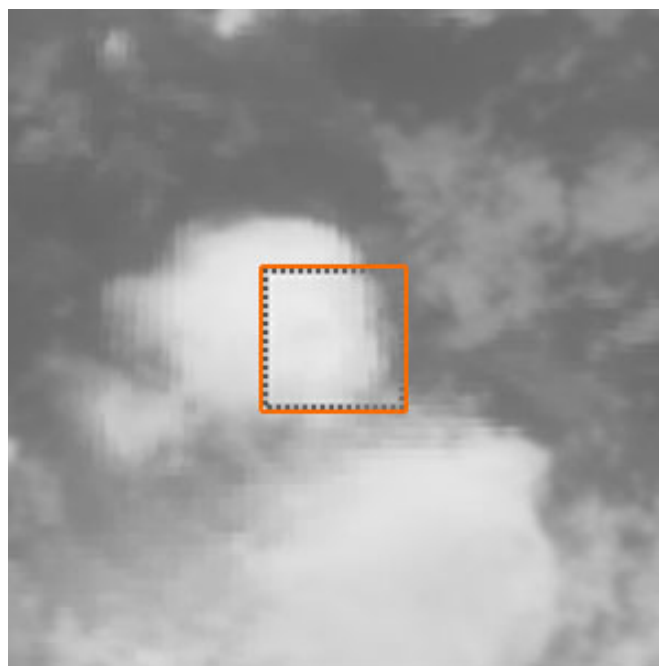
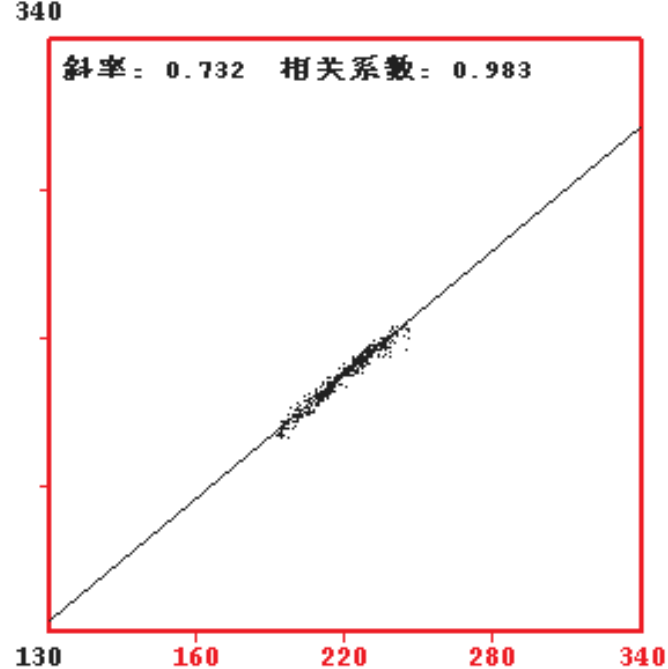
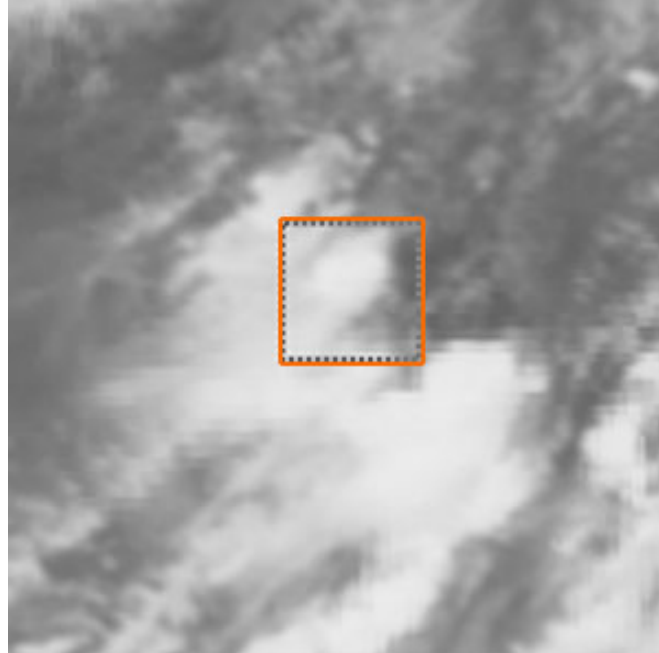
Medium cloud is associated with flat sloop



Thin cirrus
cloud is
associated
with
middle
sloop

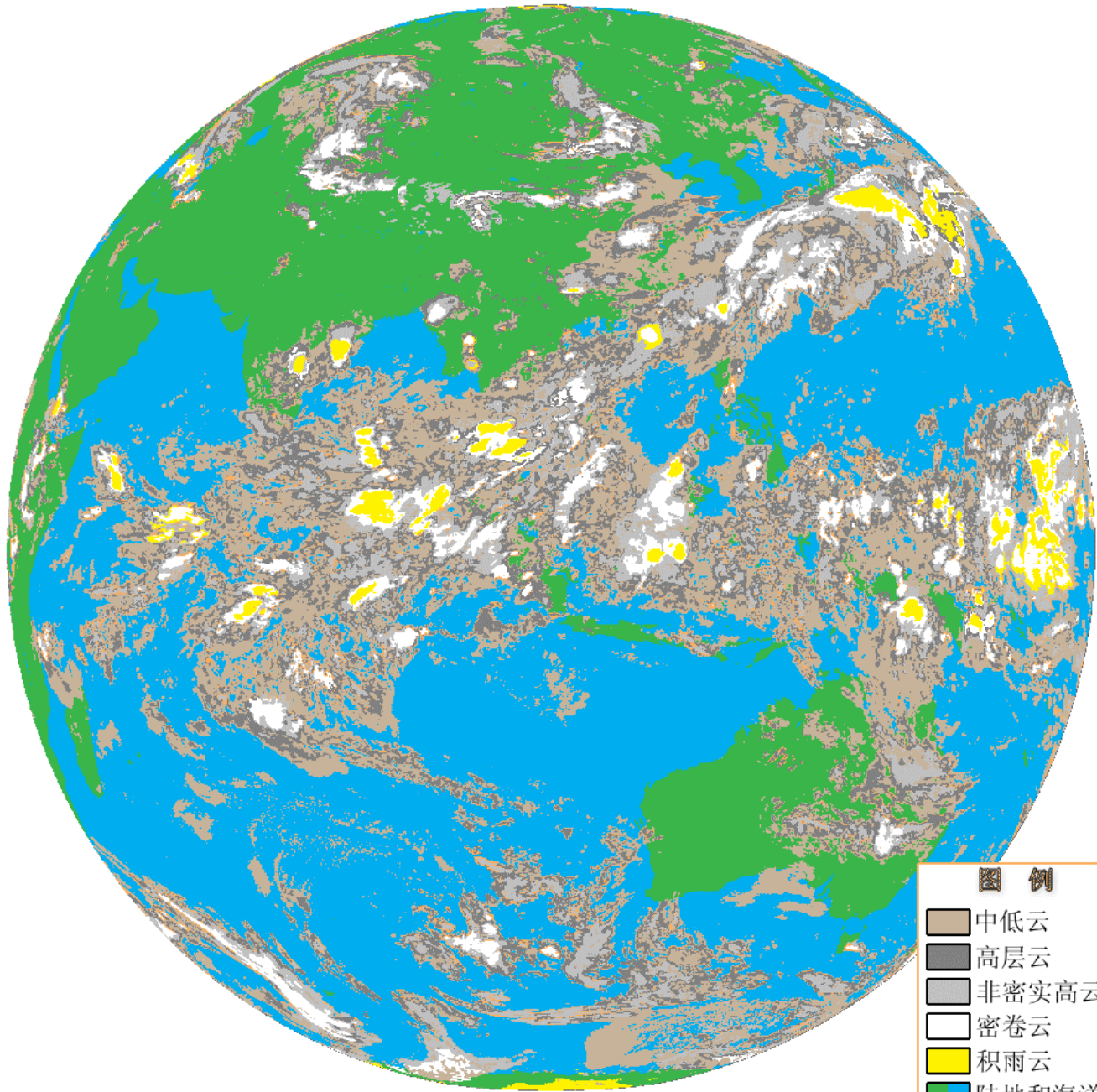


Cb or Thik
cirrus
cloud is
associated
with steep
sloop

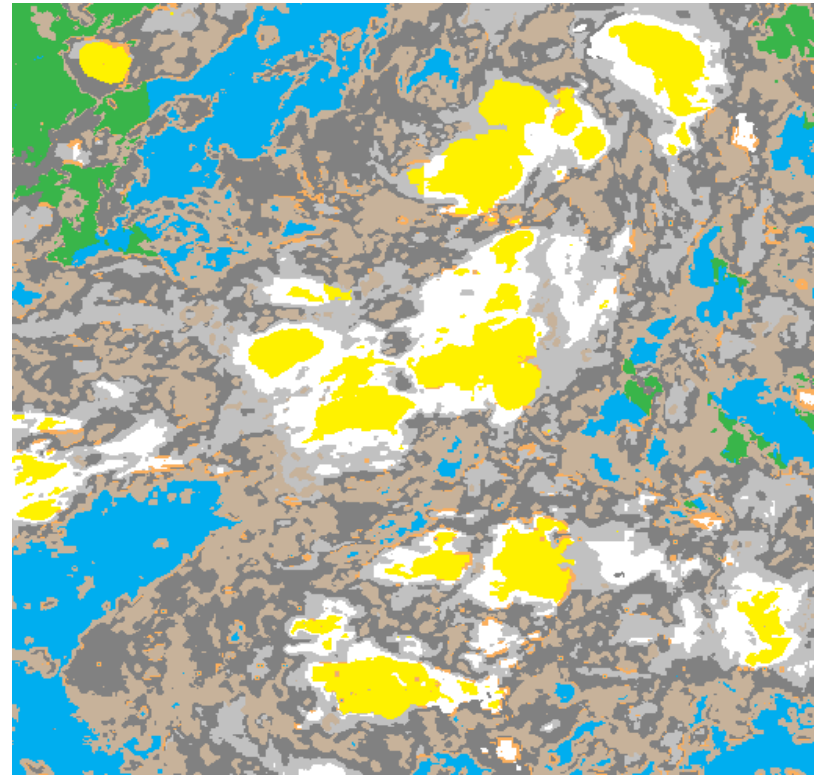
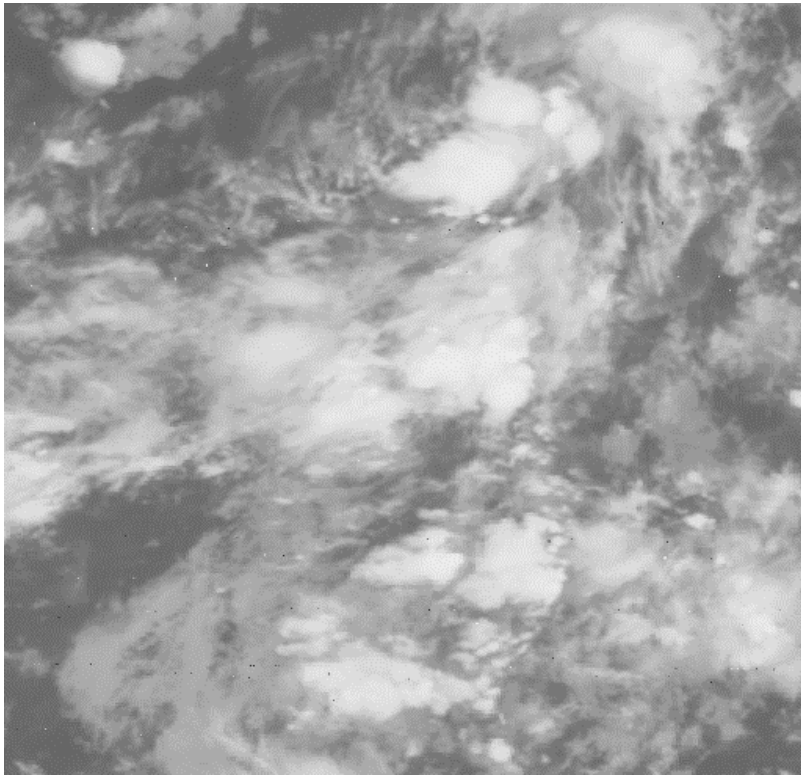


Cloud Classification

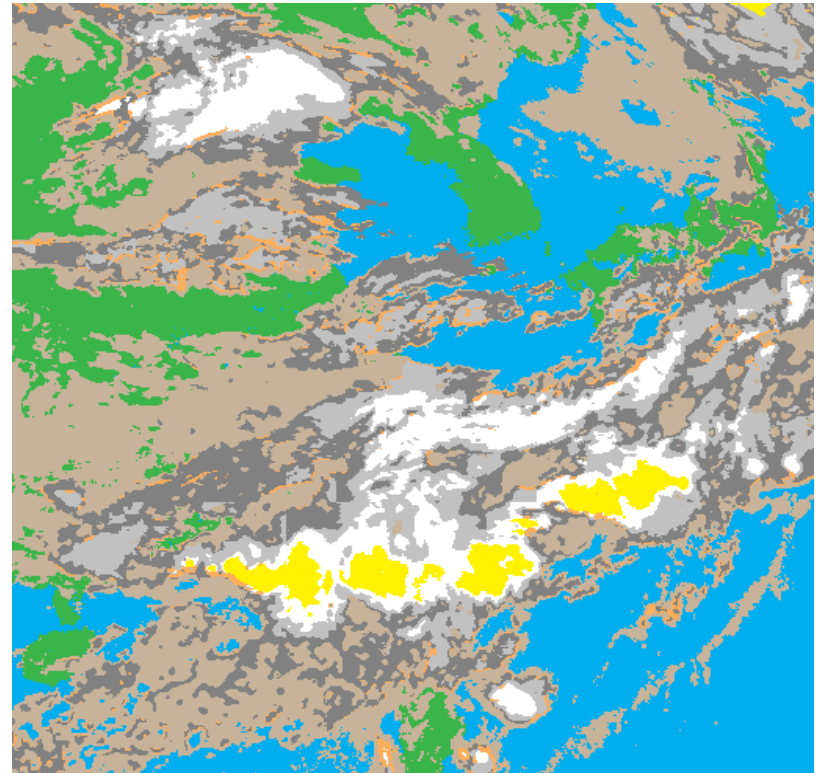
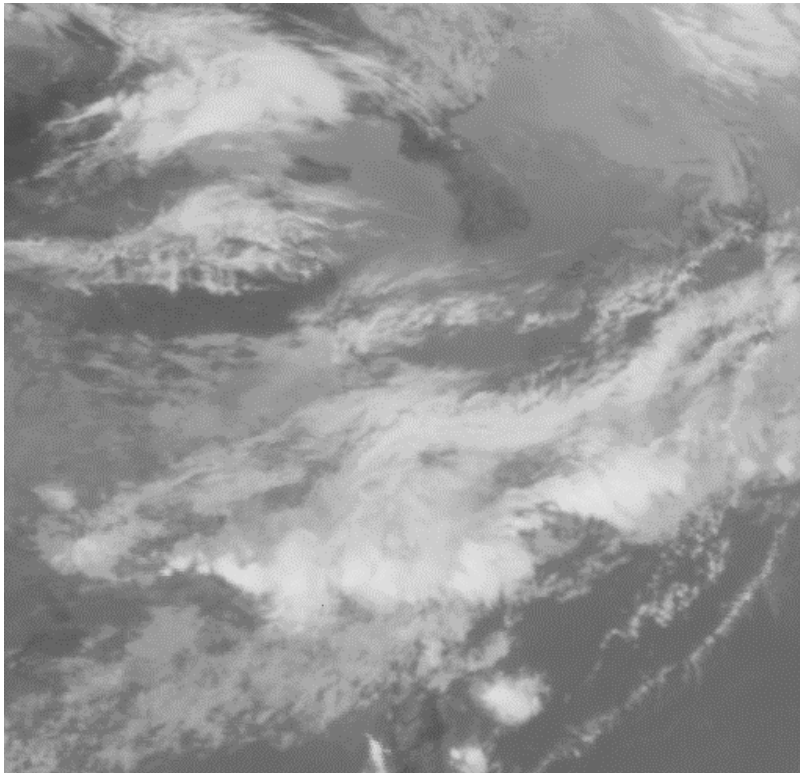
- **Cb cloud** or **Dense cirrus cloud** □ The groups with most steep slopes are Cb cloud or dense cirrus cloud. **Cb cloud is characterized with close or even negative WV-IR differences, while Dense cirrus cloud is not.**
- The groups with most flat slopes are **As or Ns clouds.**
- The thin cirrus is characterized with slope between the above two groups.
- **Upper part at deviation analysis are mixing pixels.**
- **Pixels detected as cloud in cloud detection step, but not detected as high cloud in high cloud detection step are grouped as low cloud (stratus or cumulus).**
- **Pixels detected as surface in cloud detection step are surface.**

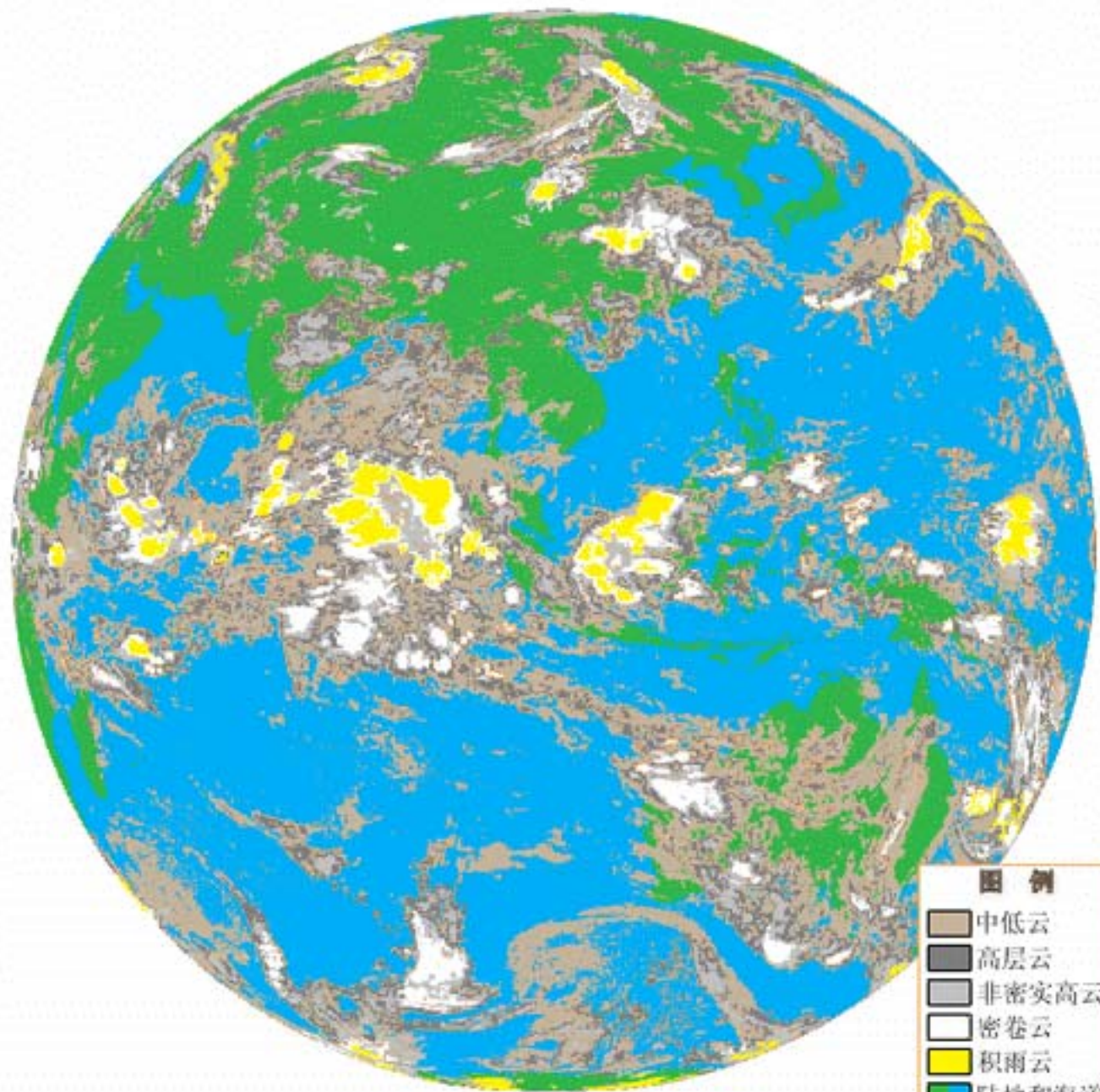


IR image and cloud classification

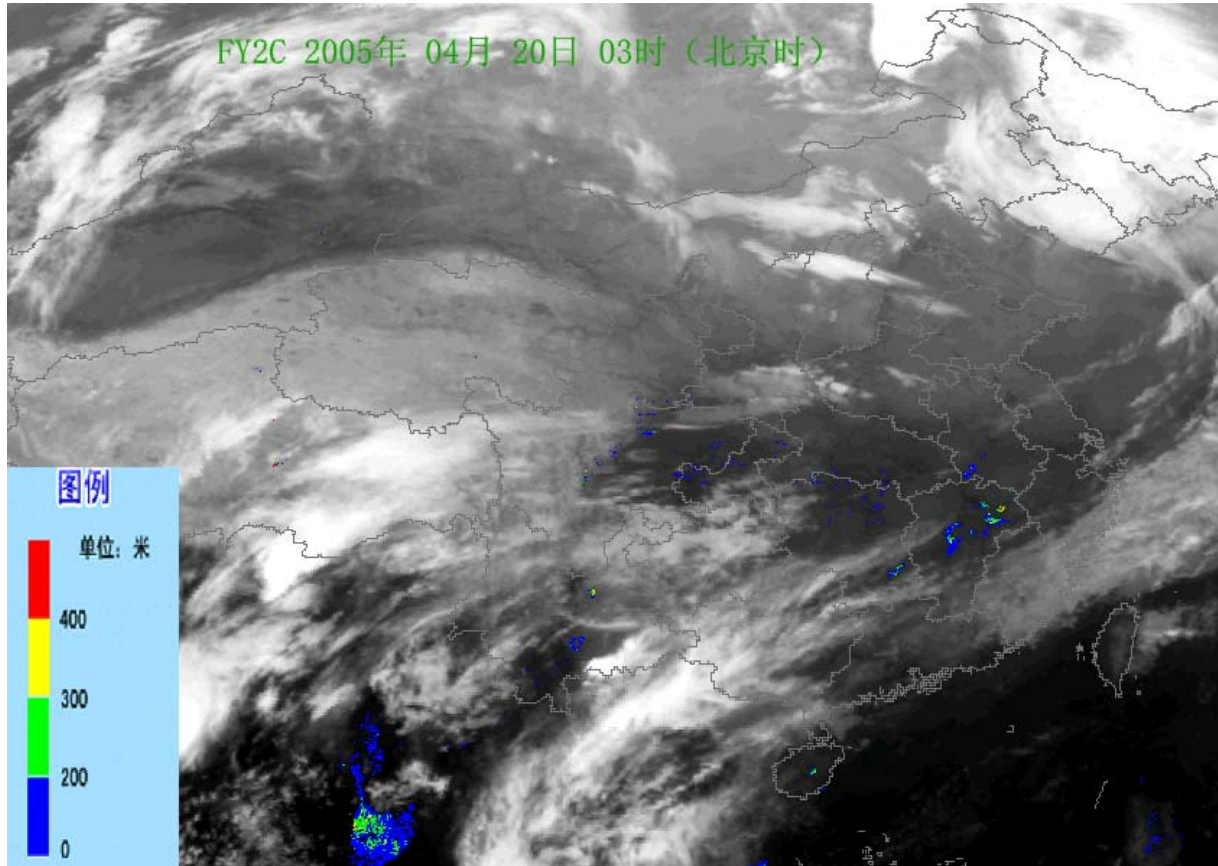


IR image and cloud classification





FY2C Fog



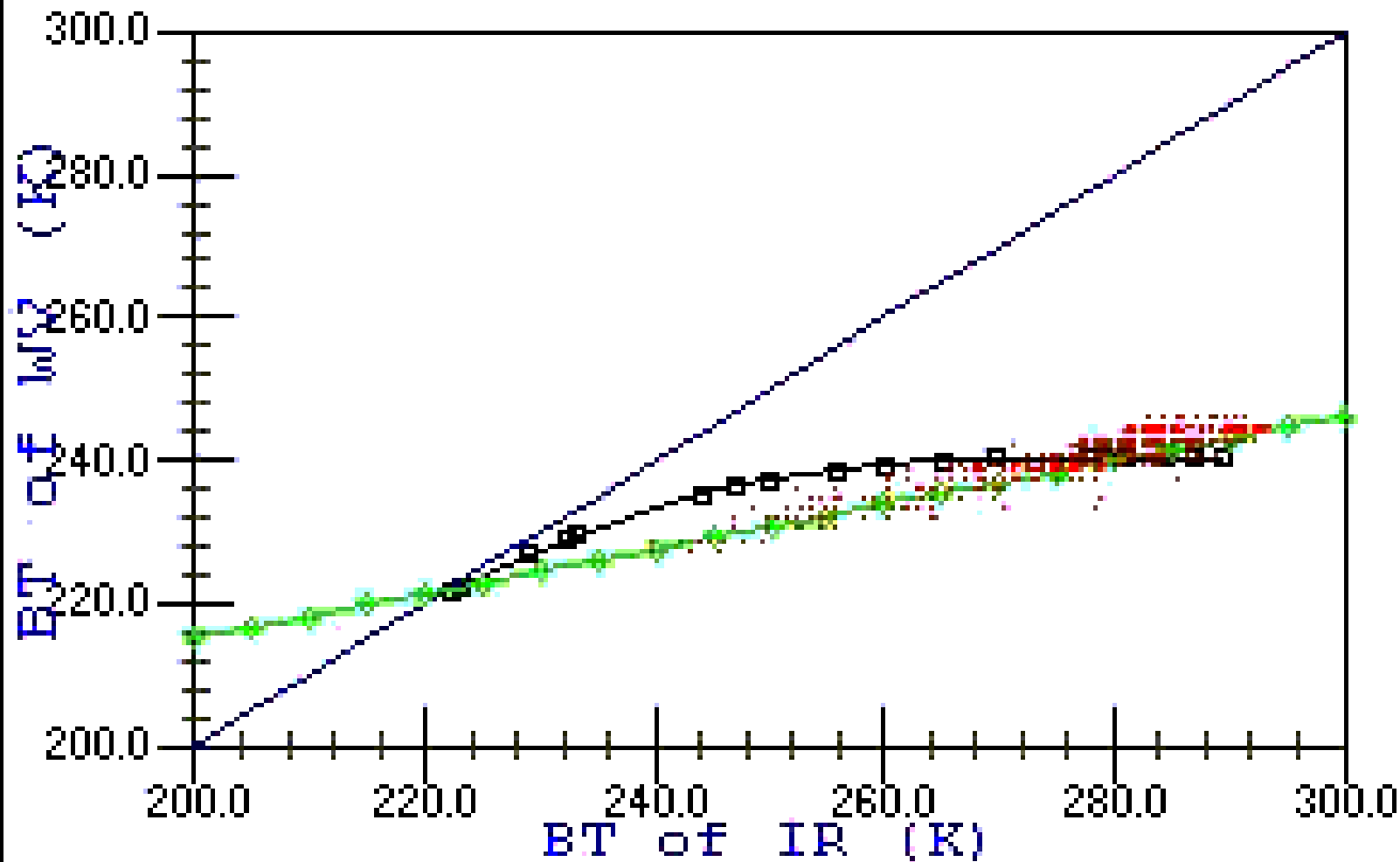
Atmospheric motion vectors

57494

30.00

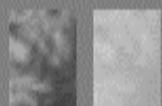
114.00

18



□ point

原订证温度 224.52 该处斜率 .30
订证之前温度 248.96



行= 13 列= 15

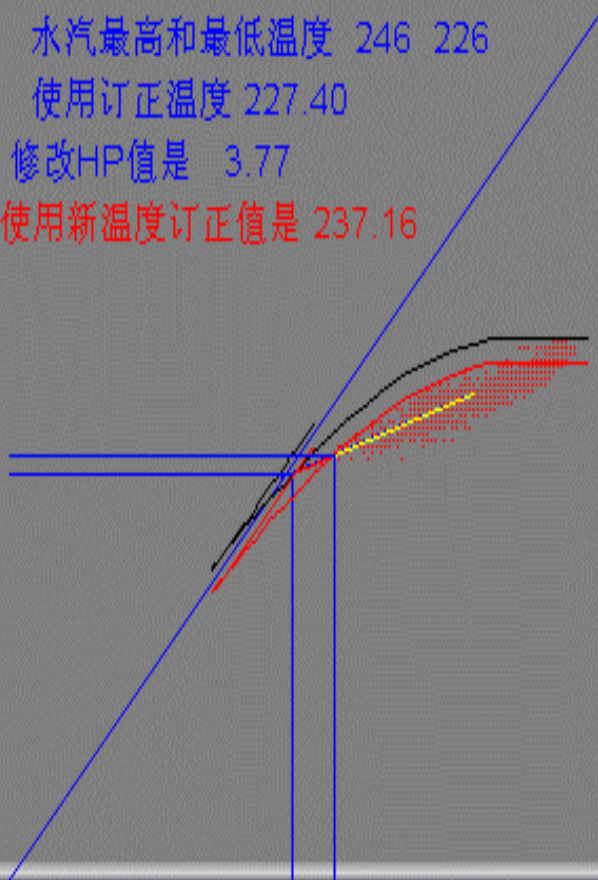
红外最高和最低温度 294 236

水汽最高和最低温度 246 226

使用订正温度 227.40

修改HP值是 3.77

使用新温度订正值是 237.16



相交的点号为26
相交处IR温度 227.40
相交处WV温度 225.39

相交的点号为28
相交处IR温度 237.16
相交处WV温度 228.34

[点击这里返回](#)

HP	IR	WV	HP	IR	WV
1.09	232.40	233.46	200.99	218.64	218.72
1.72	232.14	233.20	223.43	221.96	221.32
2.68	231.73	232.79	247.38	225.51	223.98
5.95	230.33	231.39	272.89	230.14	227.43
8.34	229.31	230.37	300.00	235.17	230.84
11.61	227.91	228.97	328.68	239.99	233.88
13.80	226.97	228.03	358.99	245.08	236.70
15.53	226.23	227.28	390.85	250.42	239.52
21.00	223.89	224.94	424.39	254.97	241.65
24.31	222.48	223.59	459.64	259.29	243.14
29.13	220.43	221.55	496.64	263.78	244.63
35.65	217.63	218.84	535.24	267.38	245.61
43.10	214.45	215.75	575.55	270.84	246.44
51.52	211.25	212.71	617.48	274.42	247.26
60.99	209.74	211.33	661.19	277.88	247.26
71.54	208.28	210.00	706.57	281.37	247.26
83.23	208.18	209.92	753.60	285.25	247.26
96.12	208.06	209.80	802.34	288.95	247.26
110.26	209.53	211.11	852.77	292.44	247.26
125.64	211.77	213.05	904.82	294.77	247.26
142.39	214.22	215.17	958.30	297.13	247.26
160.49	216.00	216.72			
180.01	217.23	217.65			

原订证温度 227.52 该处斜率 .37
订证之前温度 227.84



行= 44 列= 20

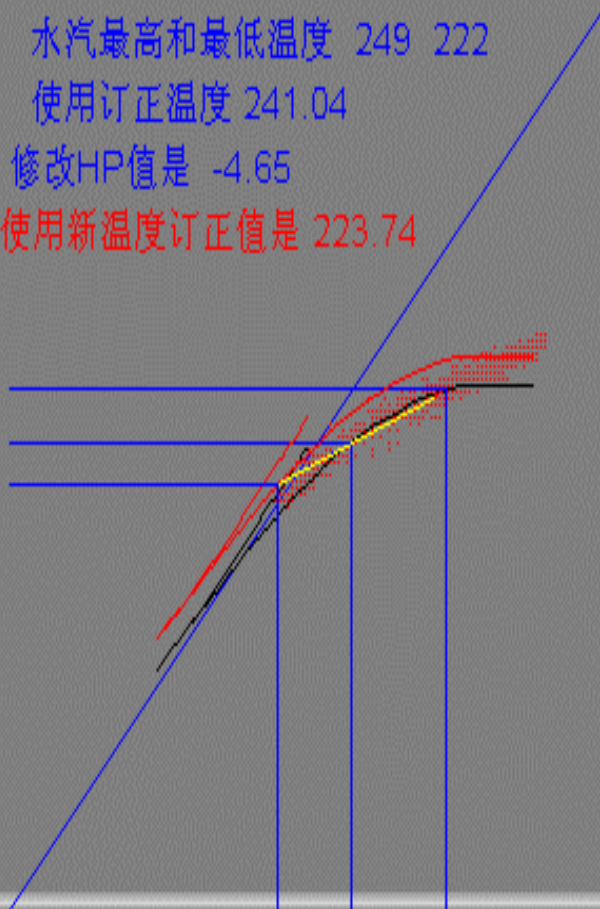
红外最高和最低温度 286 222

水汽最高和最低温度 249 222

使用订正温度 241.04

修改HP值是 -4.65

使用新温度订正值是 223.74



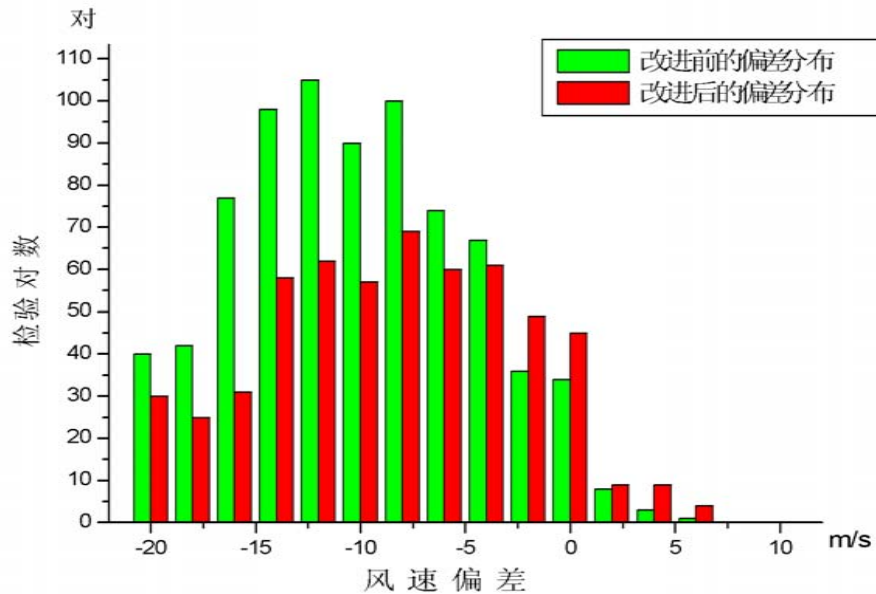
相交的点号为27
相交处IR温度 241.04
相交处WV温度 232.54
相交的点号为33
相交处IR温度 264.00
相交处WV温度 241.08

相交的点号为24
相交处IR温度 223.74
相交处WV温度 226.11

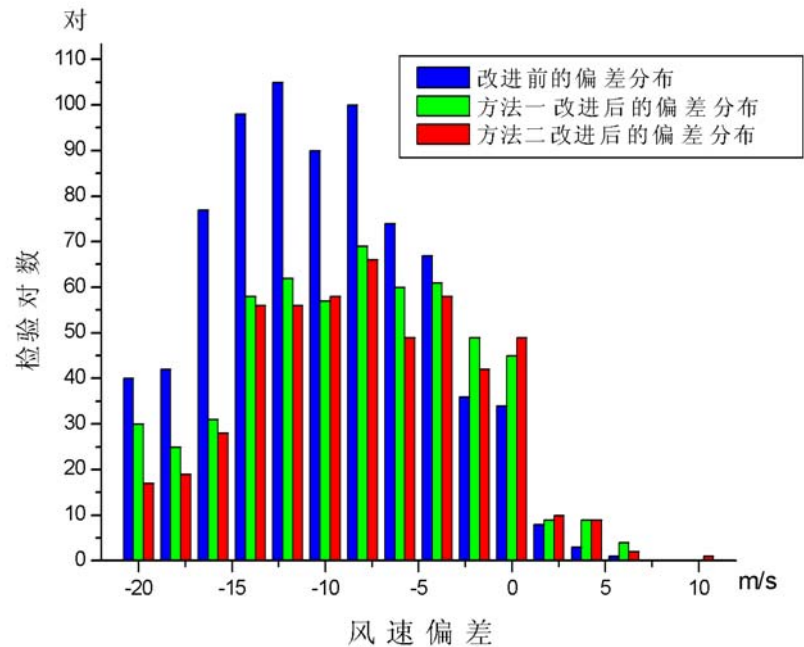
[点击这里返回](#)

HP	IR	WV	HP	IR	WV
1.09	231.26	232.32	200.99	221.71	219.97
1.72	230.93	232.00	223.43	226.72	223.67
2.68	230.44	231.50	247.38	232.06	227.30
5.95	228.75	229.82	272.89	237.38	230.60
8.34	227.52	228.59	300.00	242.99	233.58
11.61	225.83	226.90	328.68	247.19	235.63
13.80	224.70	225.77	358.99	251.58	237.40
15.53	223.81	224.88	390.85	256.15	239.02
21.00	220.99	222.06	424.39	259.97	240.27
24.31	219.28	220.39	459.64	263.41	240.97
29.13	216.80	217.92	496.64	266.90	241.60
35.65	213.65	214.83	535.24	269.22	241.60
43.10	210.08	211.34	575.55	271.30	241.60
51.52	206.07	207.49	617.48	273.61	241.60
60.99	201.62	203.29	661.19	275.85	241.60
71.54	197.26	199.26	706.57	278.00	241.60
83.23	196.31	198.41	753.60	279.68	241.60
96.12	195.26	197.45	802.34	280.98	241.60
110.26	197.44	199.38	852.77	282.31	241.60
125.64	201.19	202.64	904.82	282.91	241.60
142.39	205.27	206.22	958.30	284.19	241.60
160.49	210.14	210.48			
180.01	215.75	215.13			

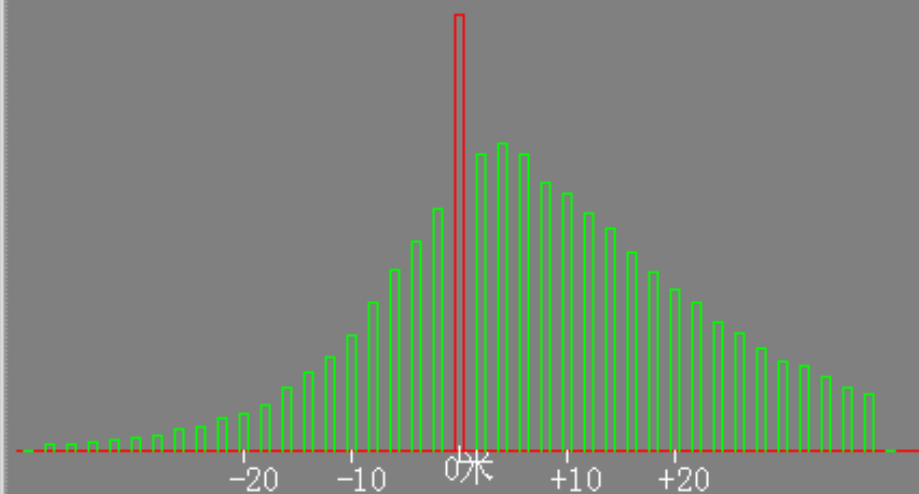
With GMS data 28-31
 May 2003 □ after radiation
 calculation □ mean
 absolute difference is
 reduced from 13.80 m/s to
 11.88 m/s □ RMS from
 16.09 m/s to 14.60 m/s □



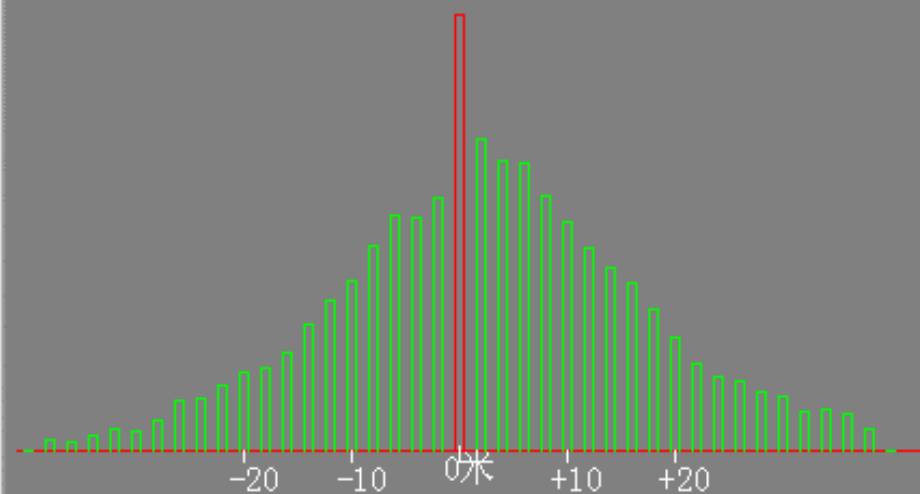
With GMS data 28-31 May 2003 □
 after radiation curve adjusted
 mean absolute difference is
 reduced from 11.88 m/s to 11.07
 m/s □ RMS from 14.6 m/s to
 13.64 m/s □



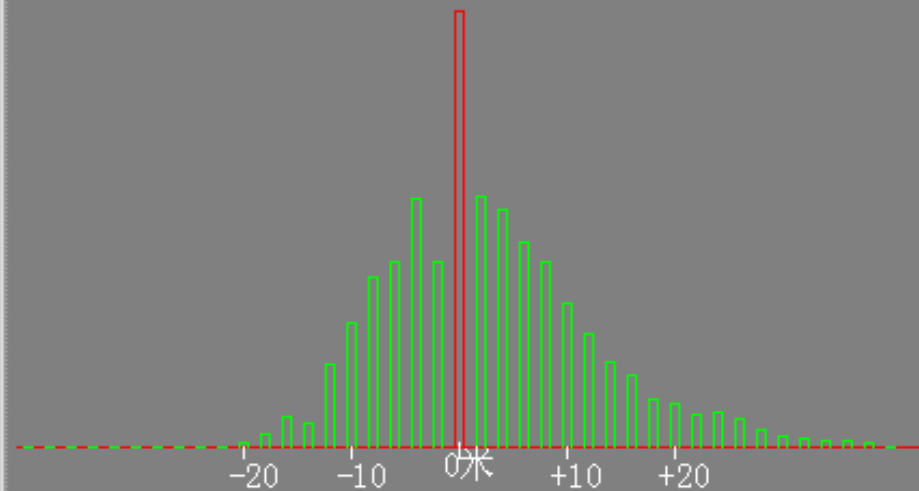
云导风高层风与探空资料风均方差为 15.752730
云导风高层风与探空资料风绝对值差为 12.258380
云导风高层风与探空资料风平均误差为 6.858512
高层风与探空资料风样本数 172354

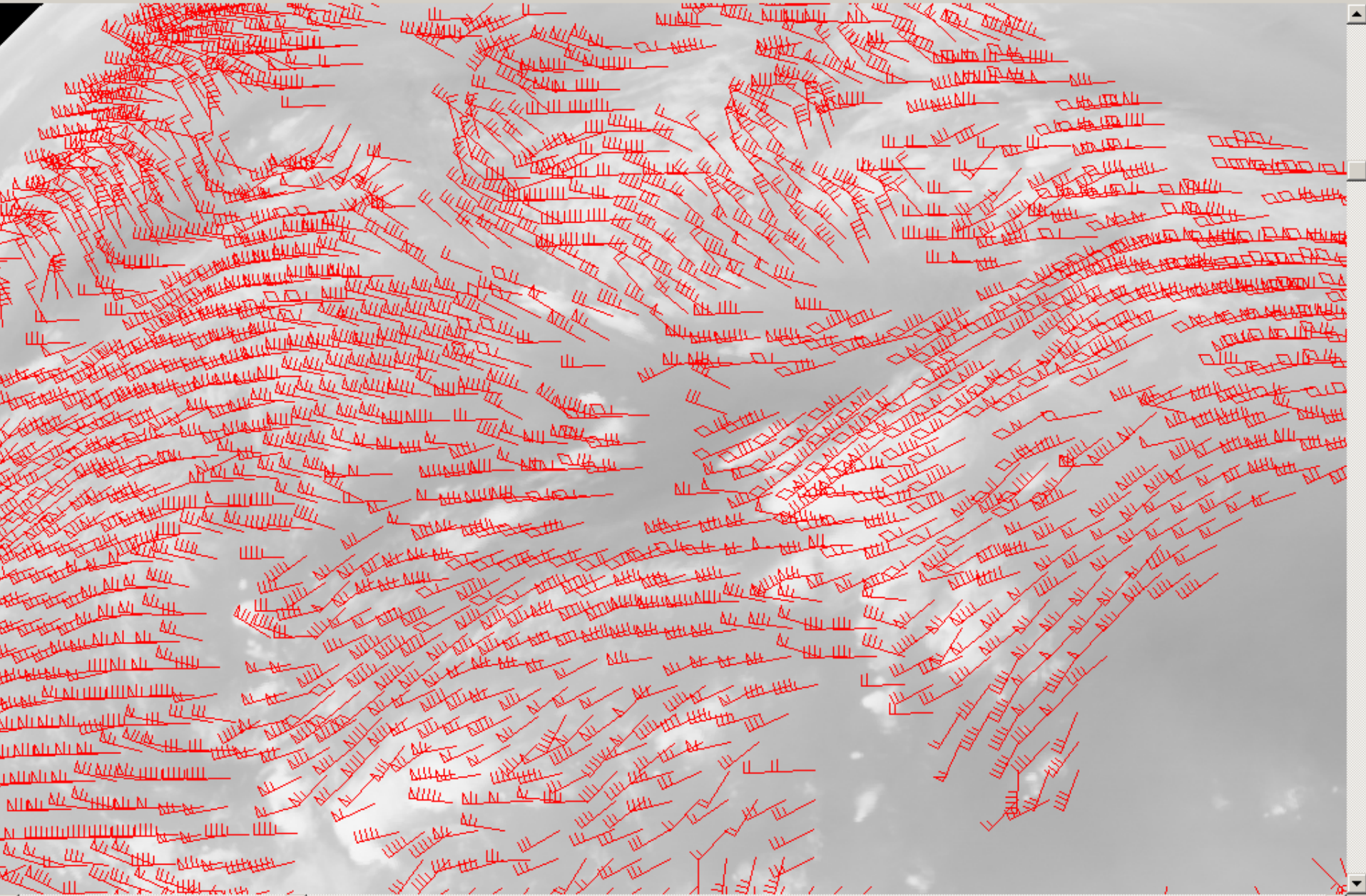


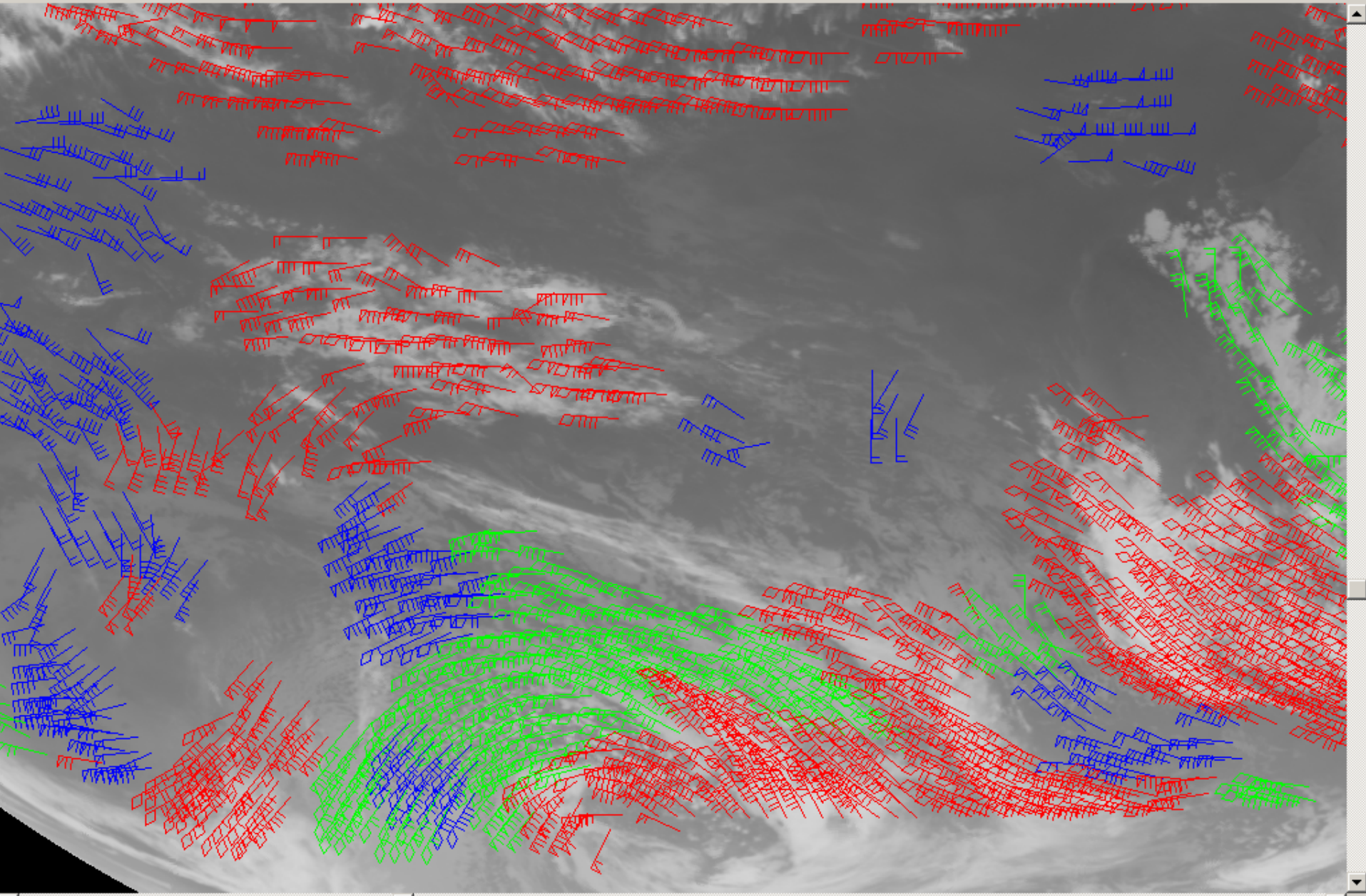
云导风中层风与探空资料风均方差为 14.382170
云导风中层风与探空资料风绝对值差为 11.181310
云导风中层风与探空资料风平均误差为 2.394216
中层风与探空资料风样本数 17980

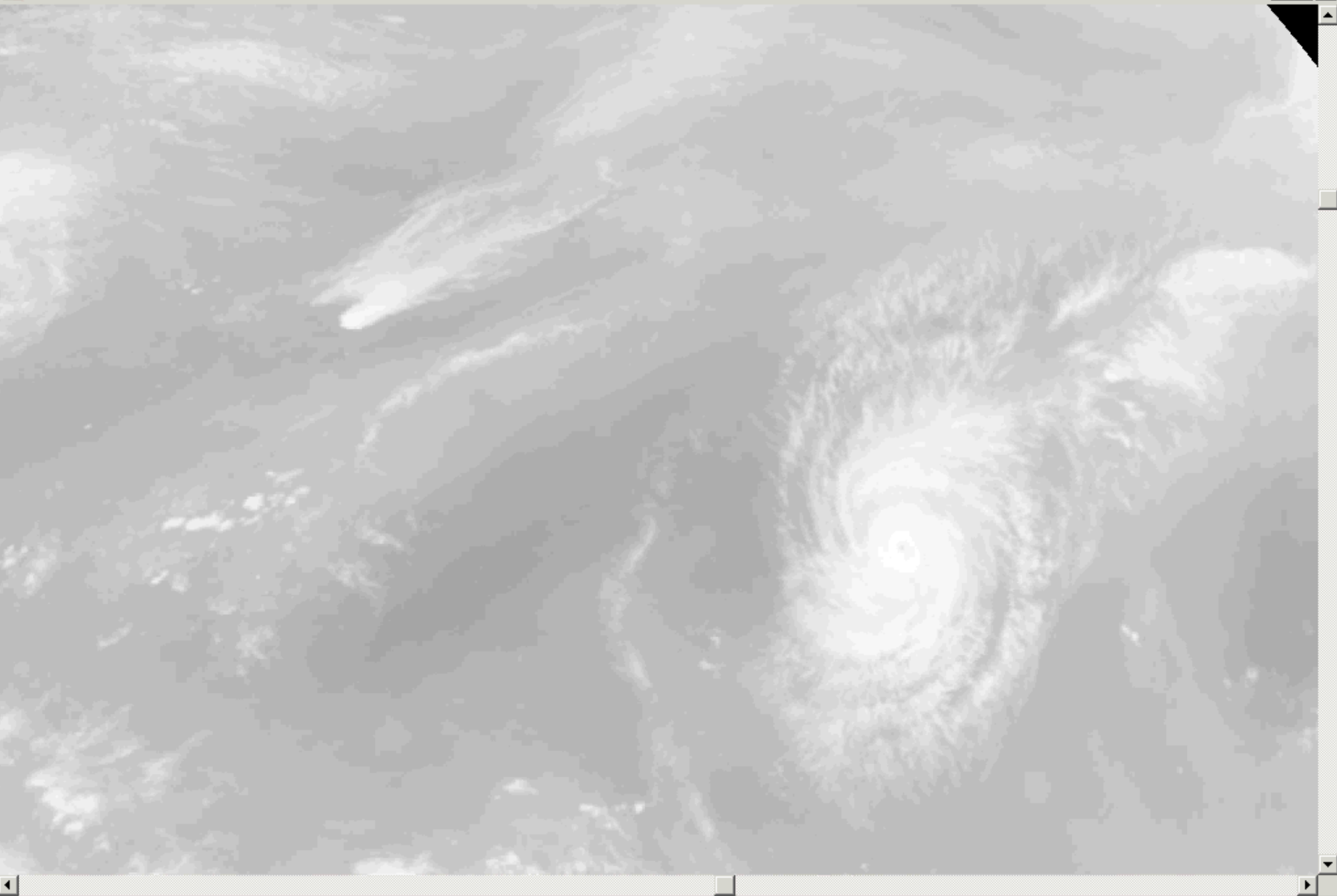


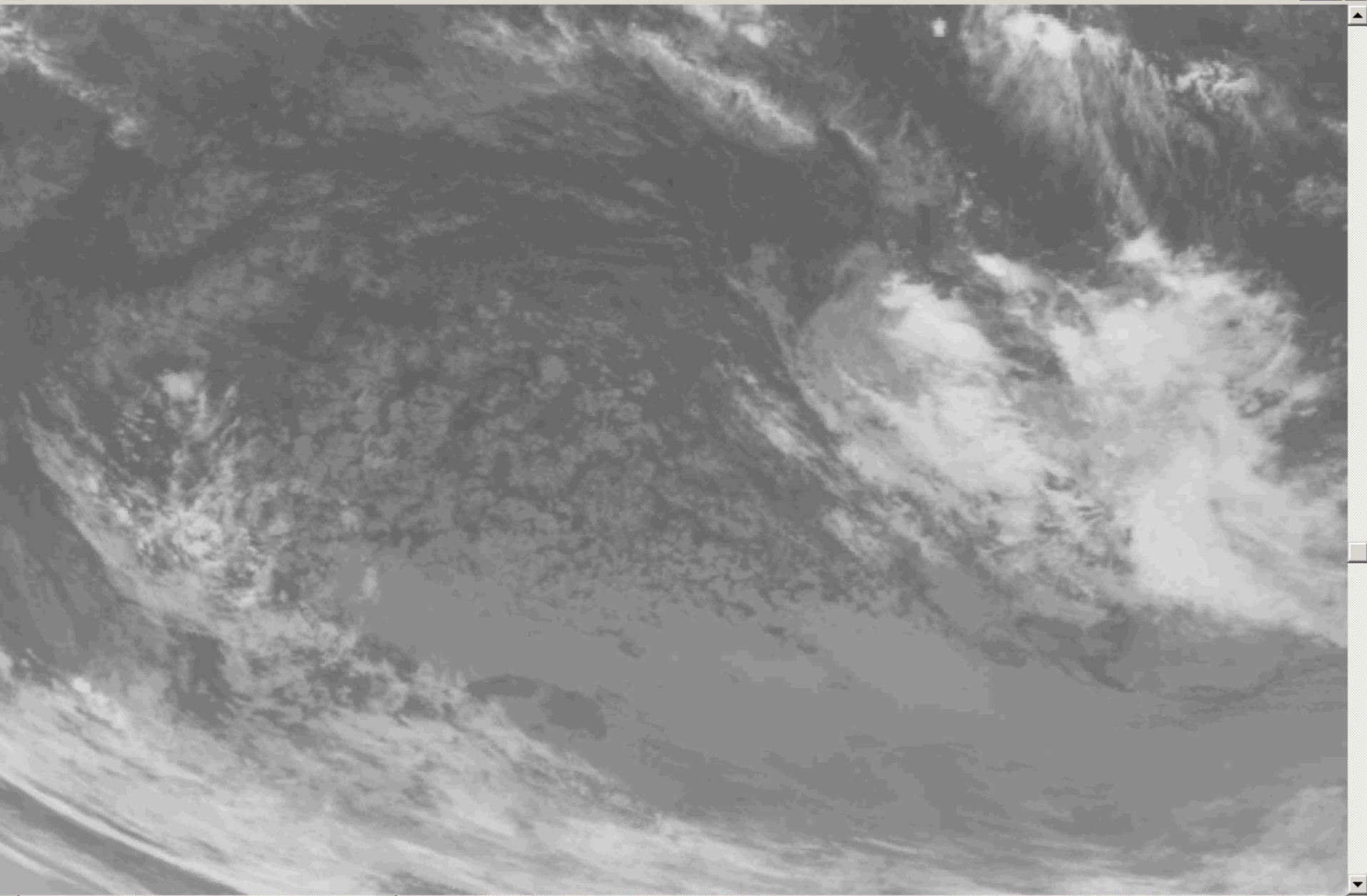
云导风低层风与探空资料风均方差为 10.125030
云导风低层风与探空资料风绝对值差为 7.466383
云导风低层风与探空资料风平均误差为 2.583142
低层风与探空资料风样本数 12196





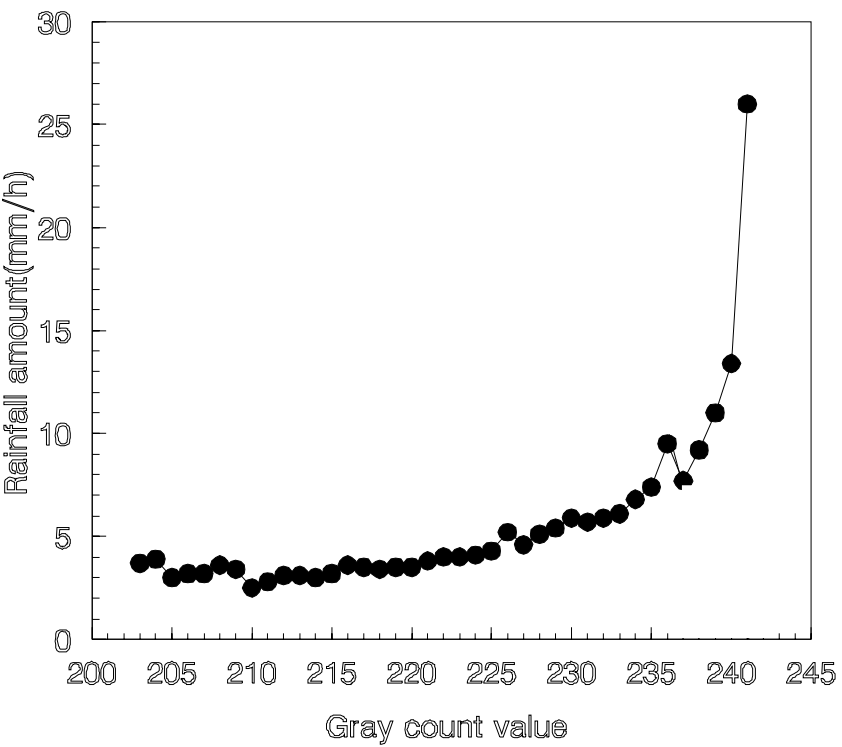




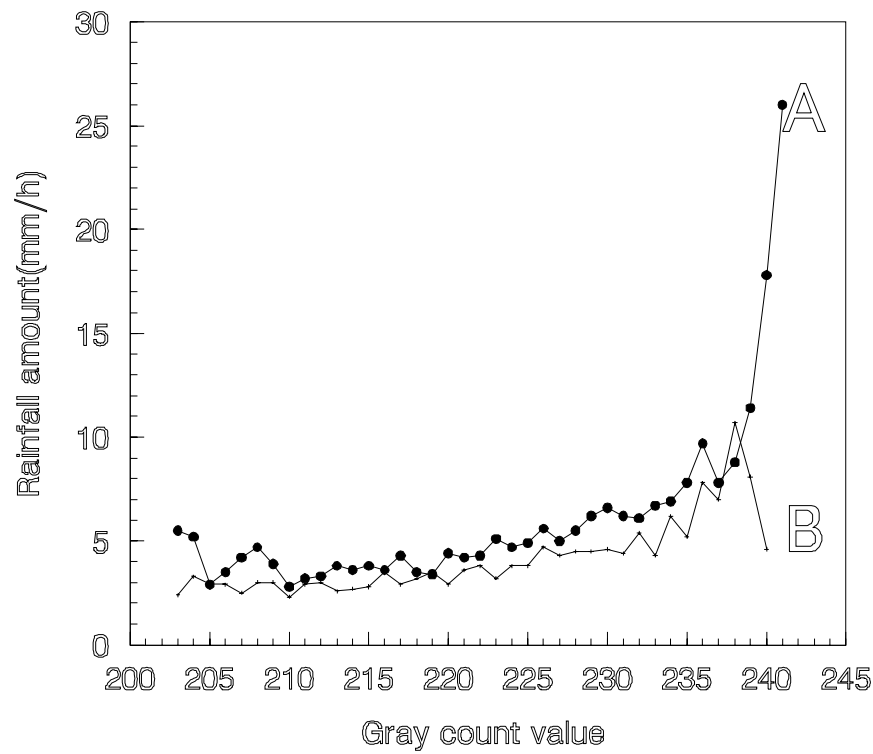


Precipitation Estimation

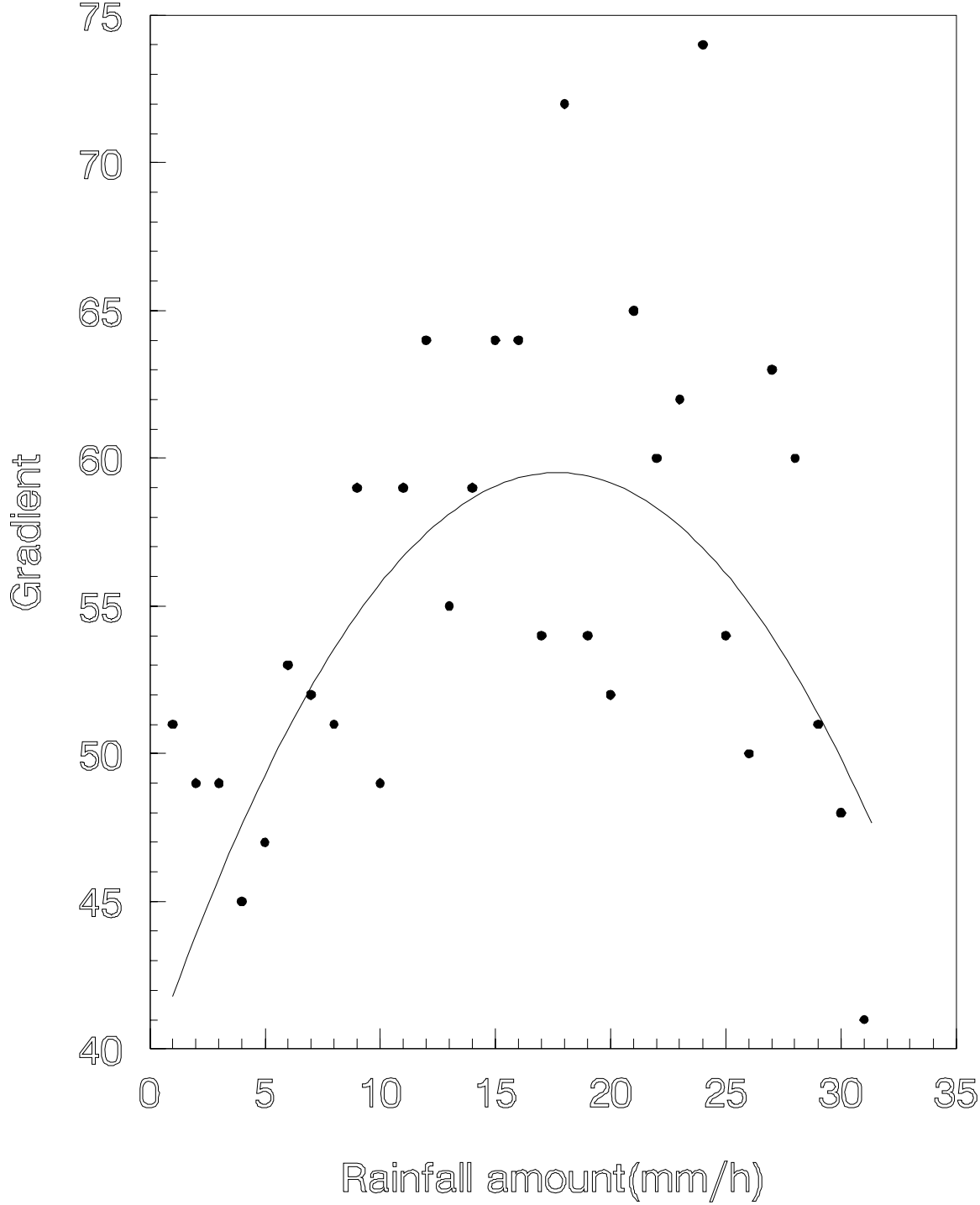
For expanding cloud, lower cloud top temperature means higher precipitation rate



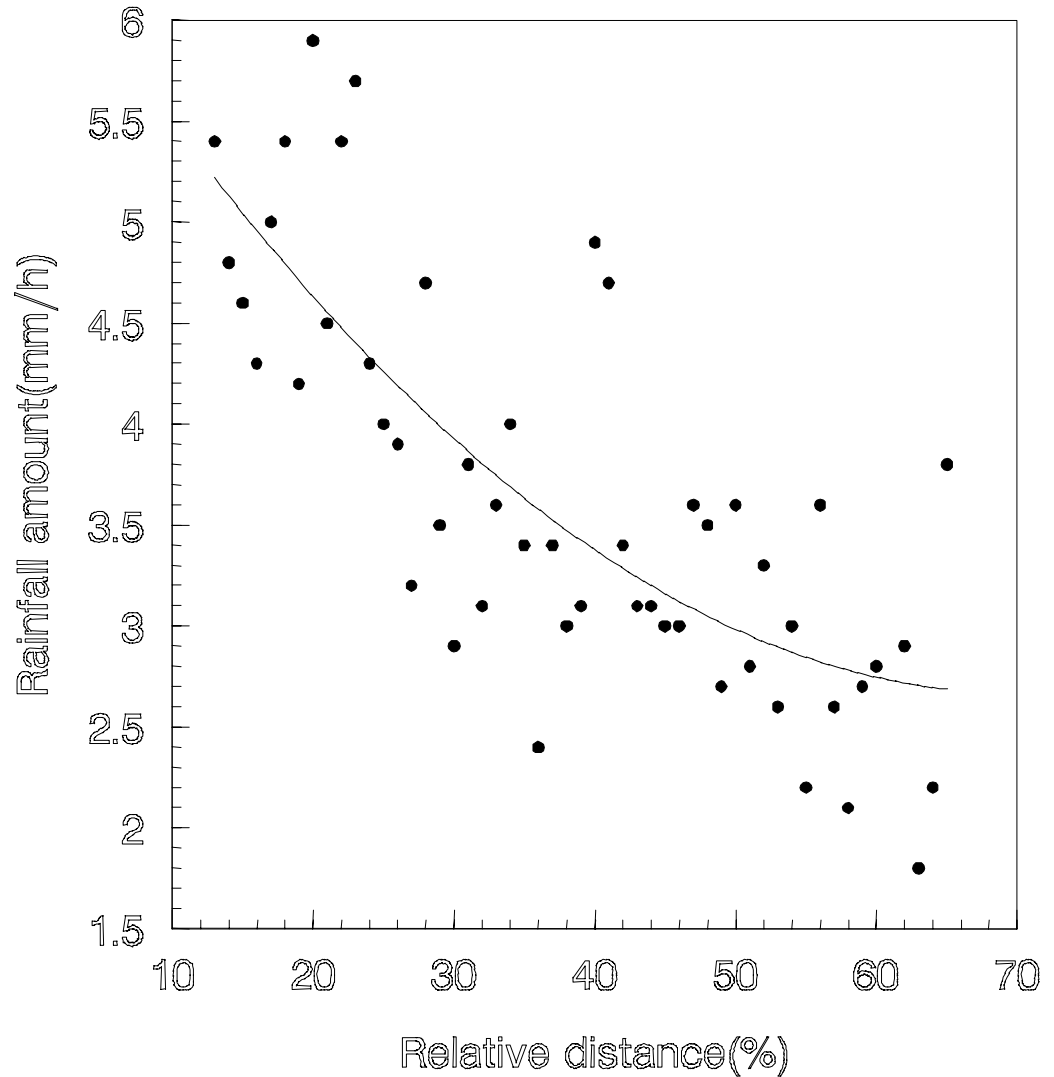
For contracting cloud, lower cloud top temperature means higher precipitation rate



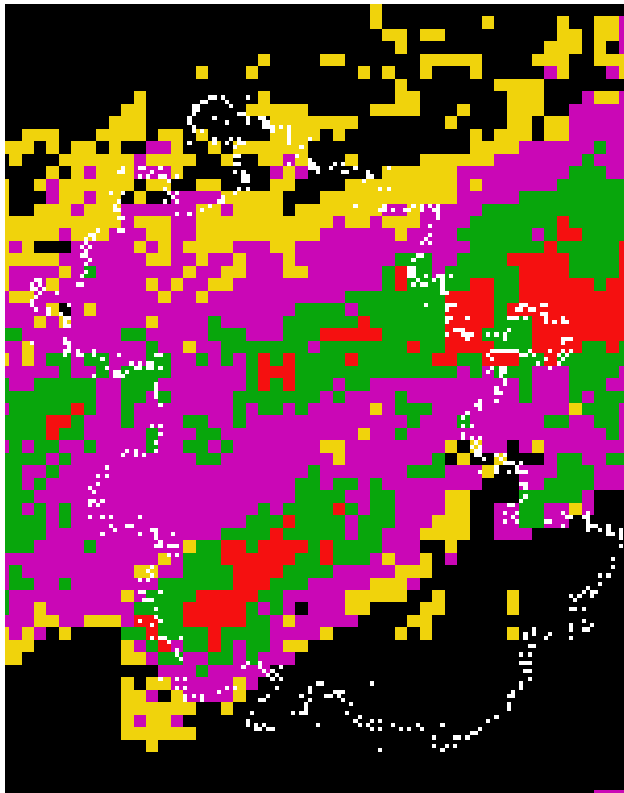
Cloud top temperature gradient and precipitation rate



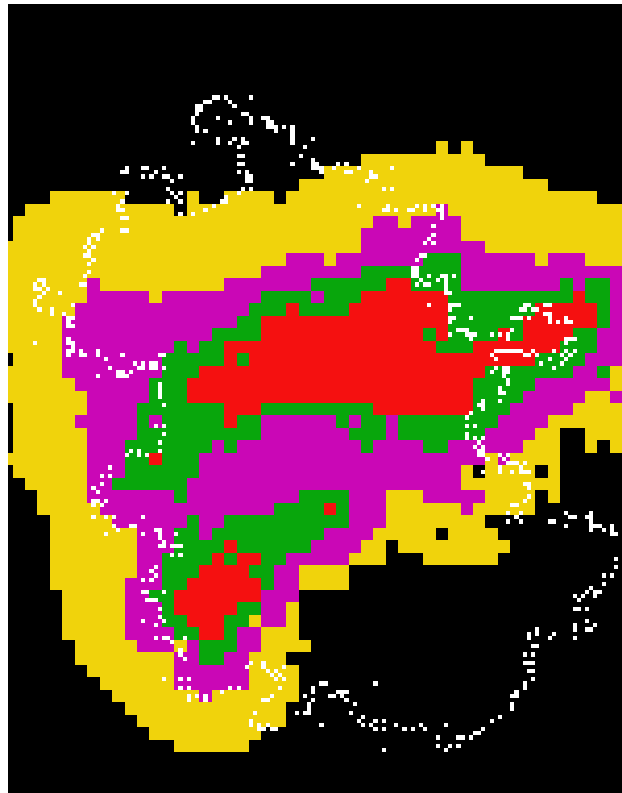
Distance
from
convective
core and
precipitation
rate



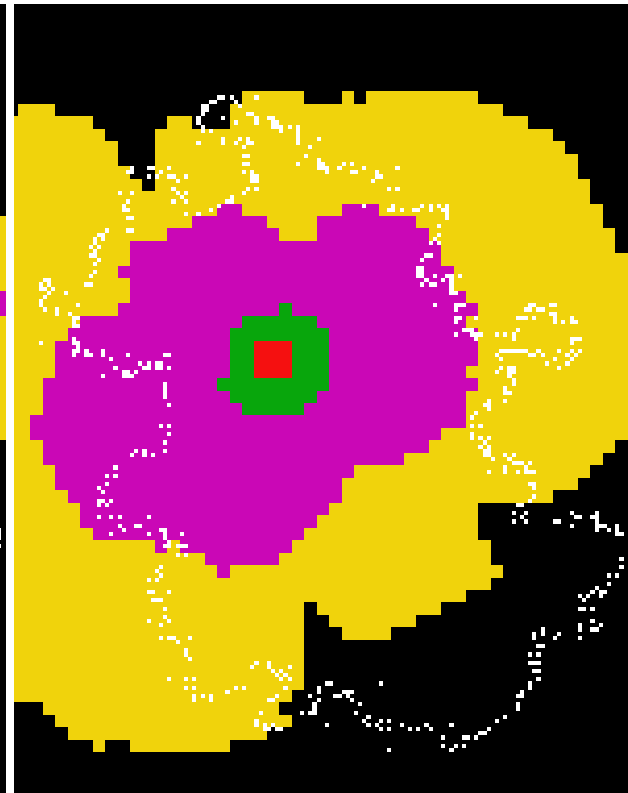
Merge with rainfall gage data



Merged data



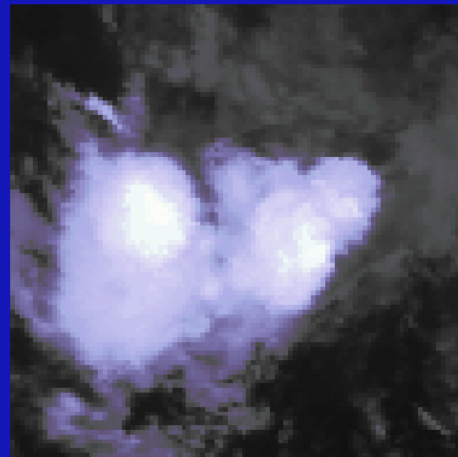
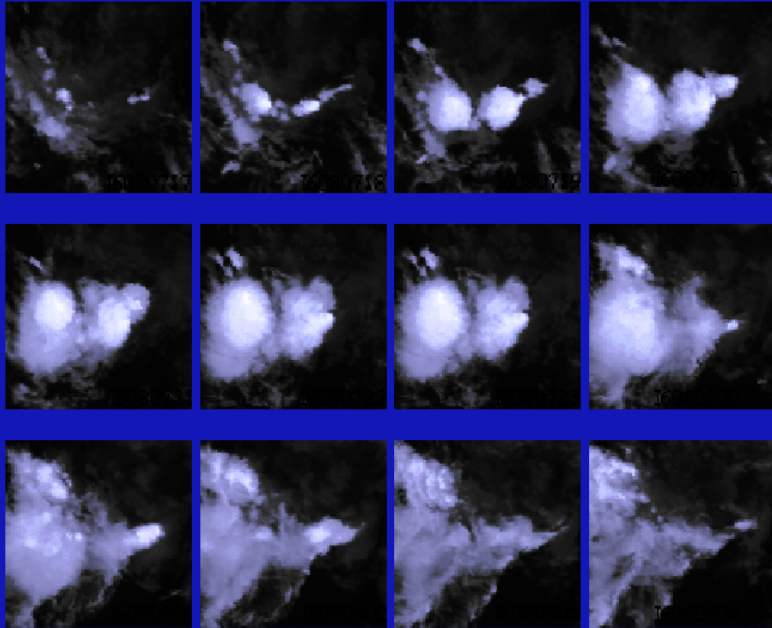
Dense rainfall gage data



Rainfall gage data

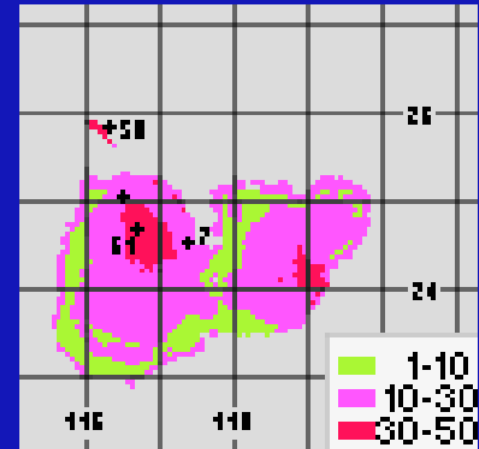
Example

96年8月7日17时----8日04时红外云图

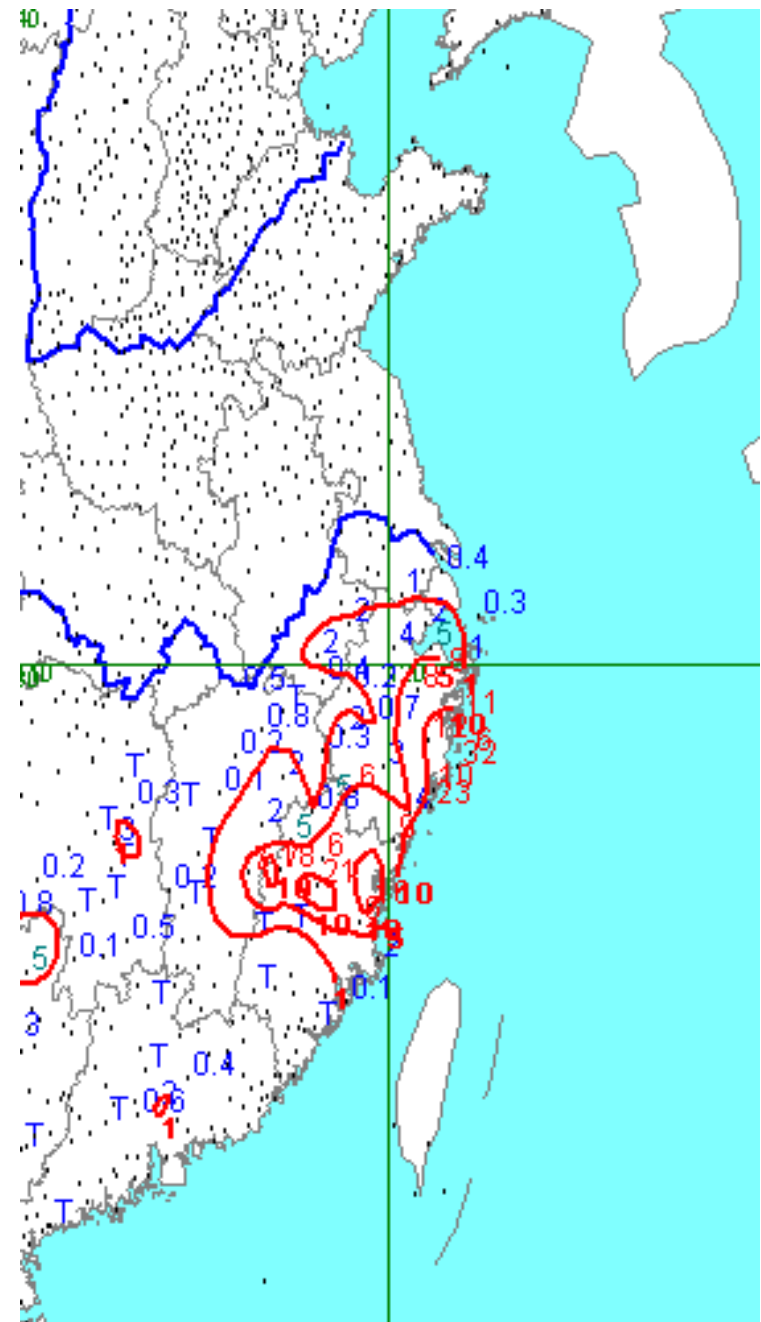
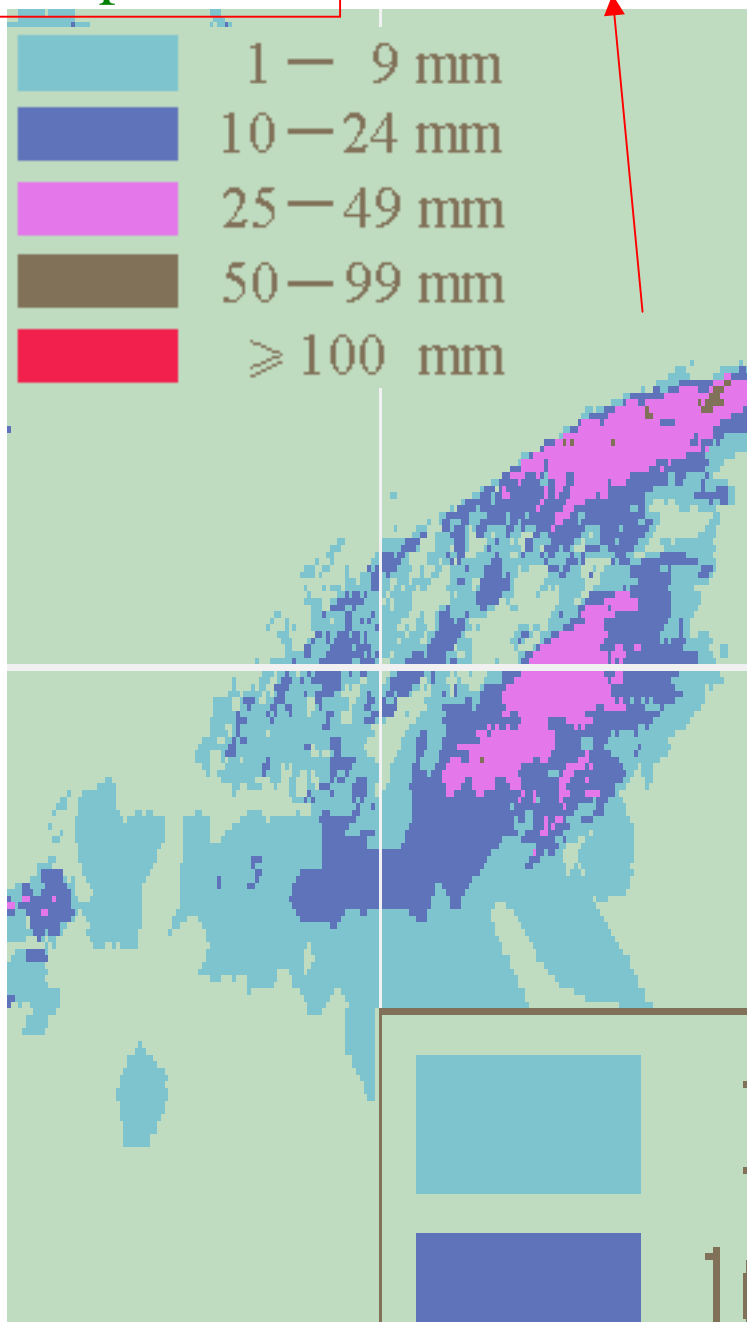


96年8月7日21时卫星云图

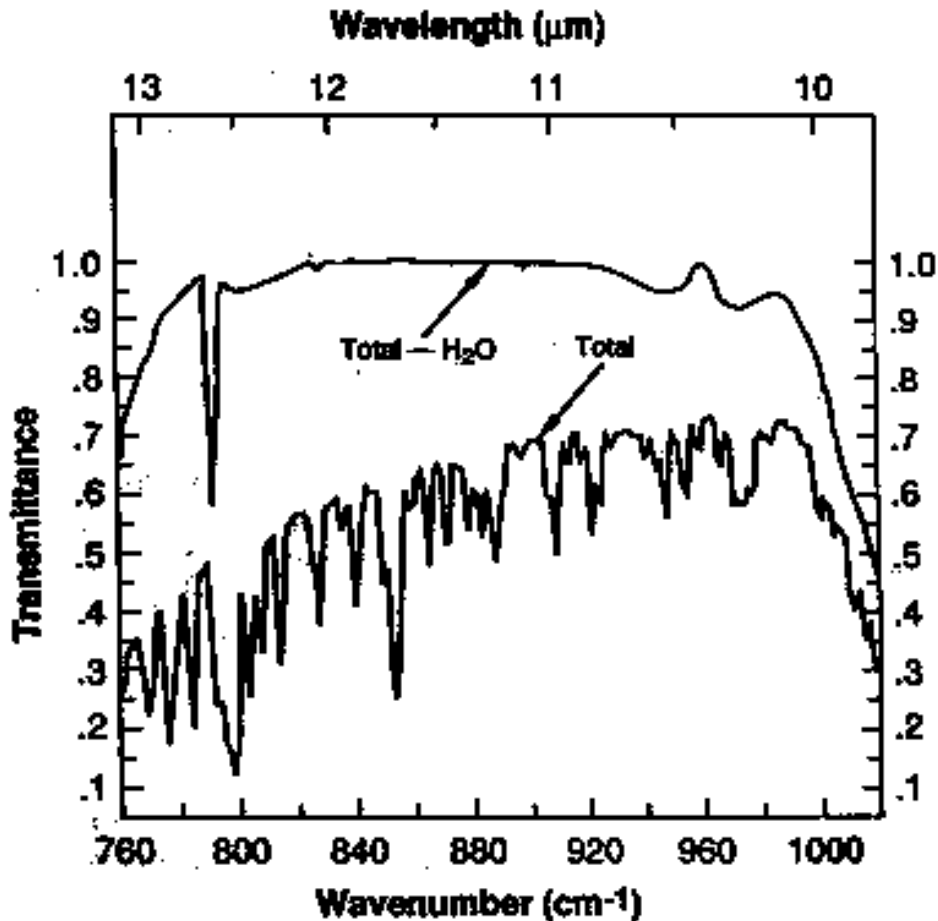
96年8月7日21时降水估计结果



6 hourly precipitation



FY2C total precipitable water in clear sky region

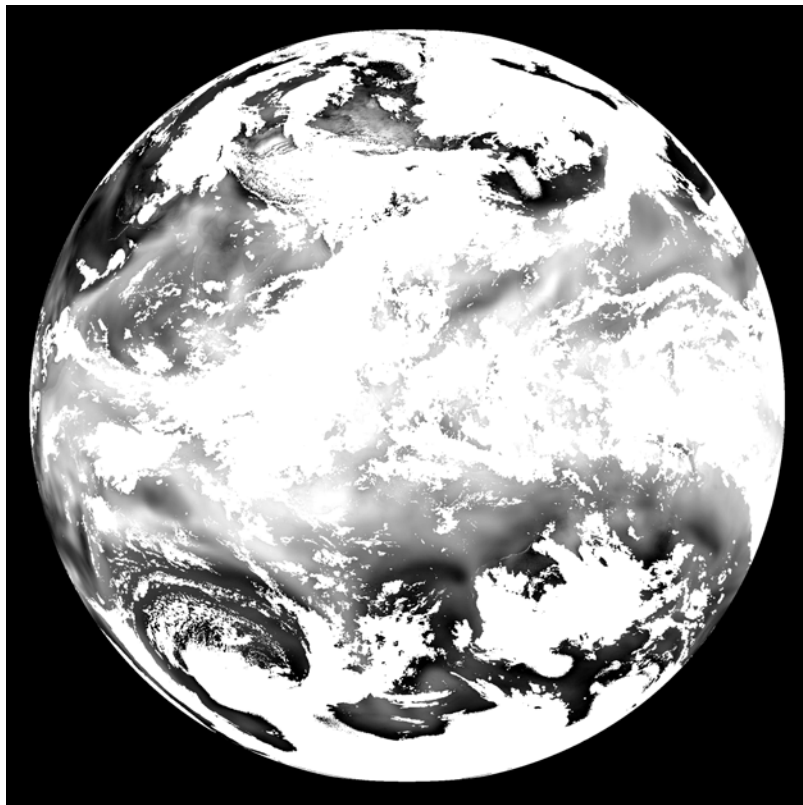


Total perceptible water is derived from two split window channels.

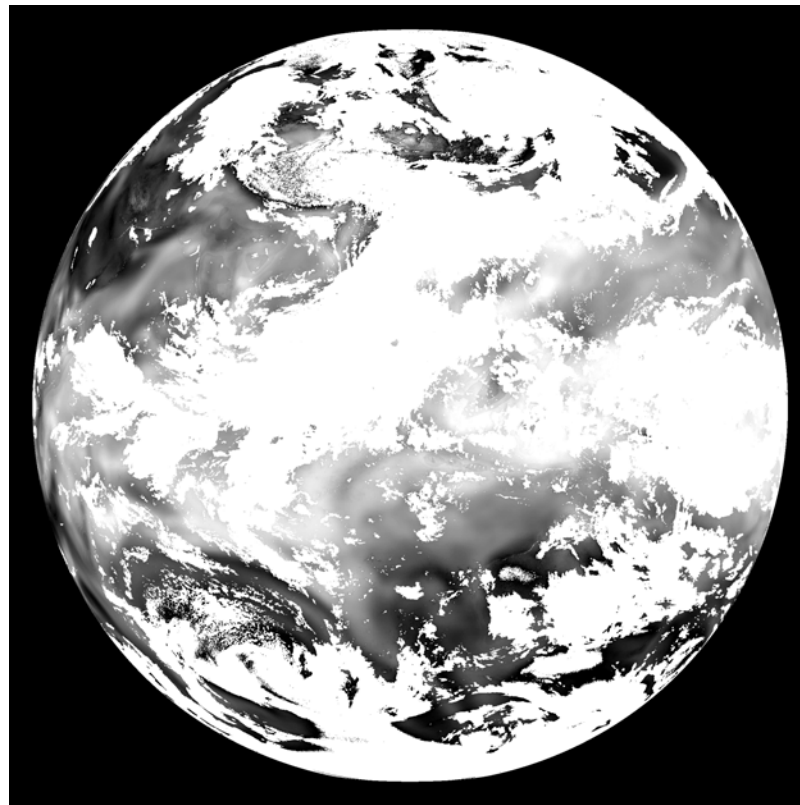
IR1: 10.3~11.3 μm

IR2: 11.5~12.5 μm

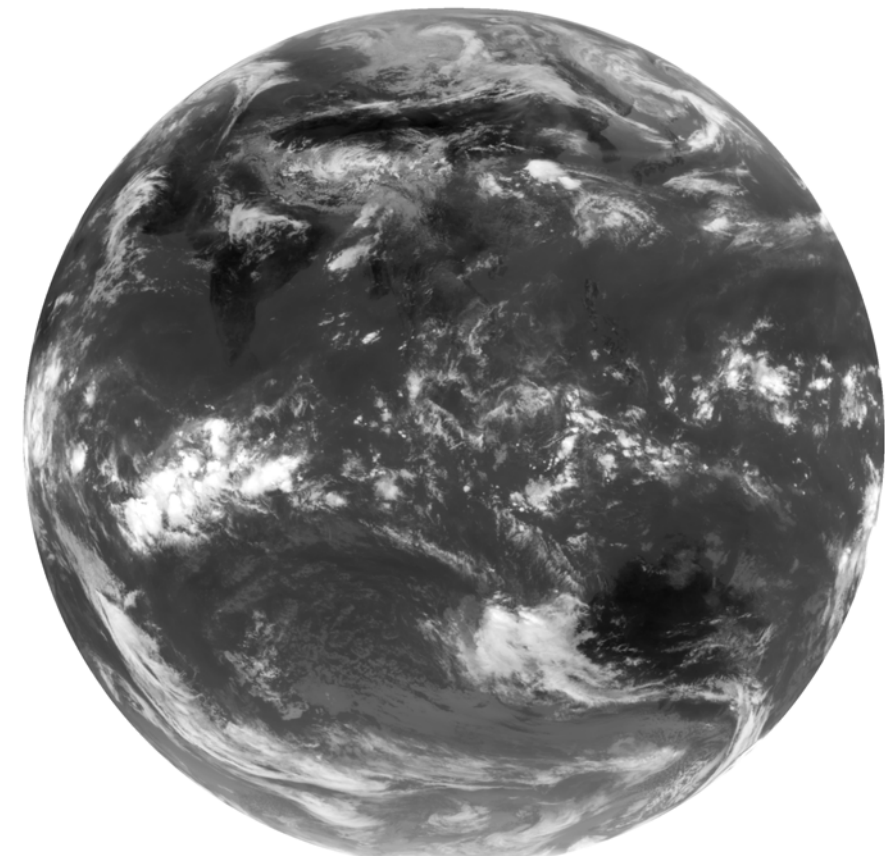
FY2C_TPW_MLT_NOM_2
0050507_0600_a.bmp



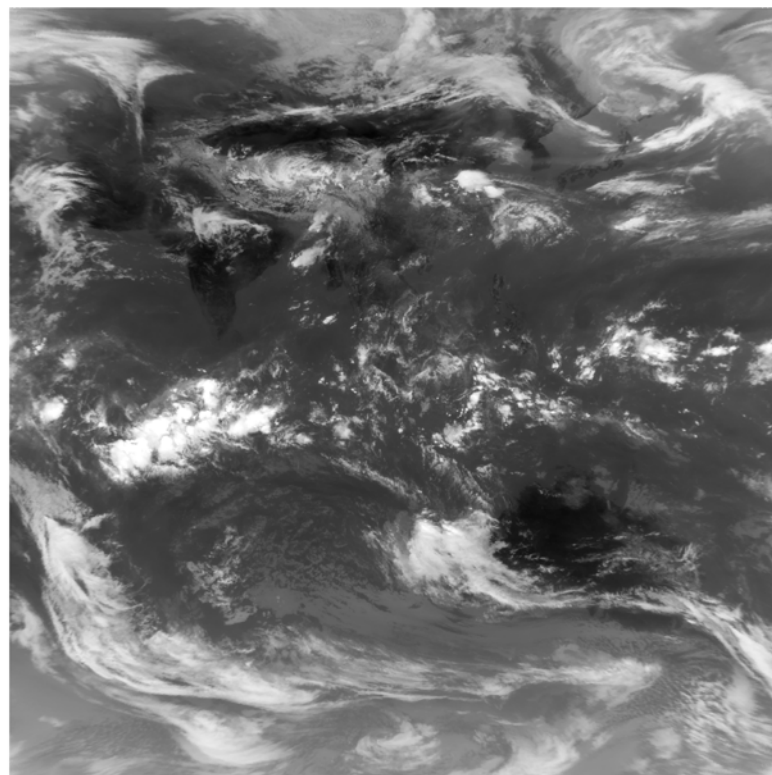
FY2C_TPW_MLT_NOM_2
0050508_0600_a.bmp



FY2C OLR

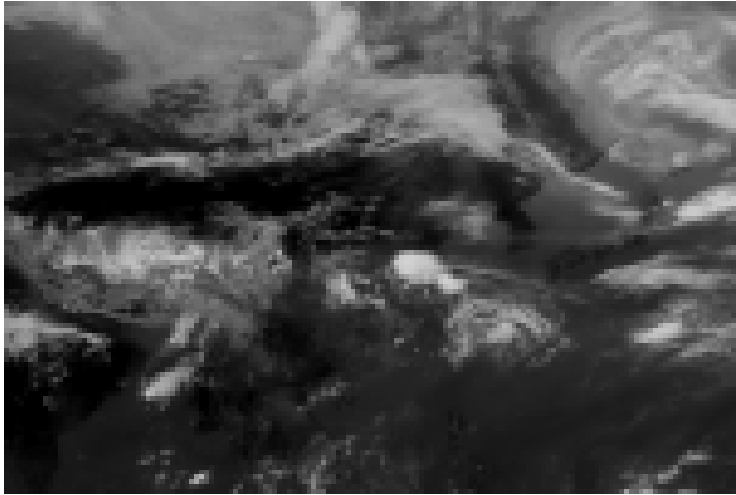


FY-2C实时OLR产品灰度图像 (2005年4月29日04时56分, 单位: 瓦/米**2)

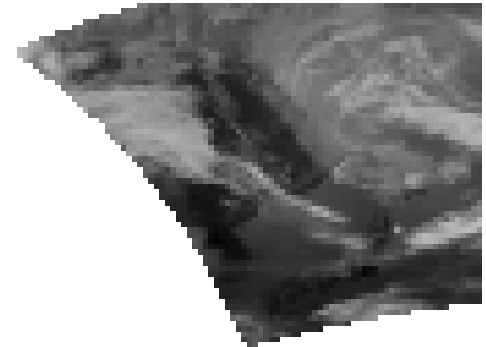


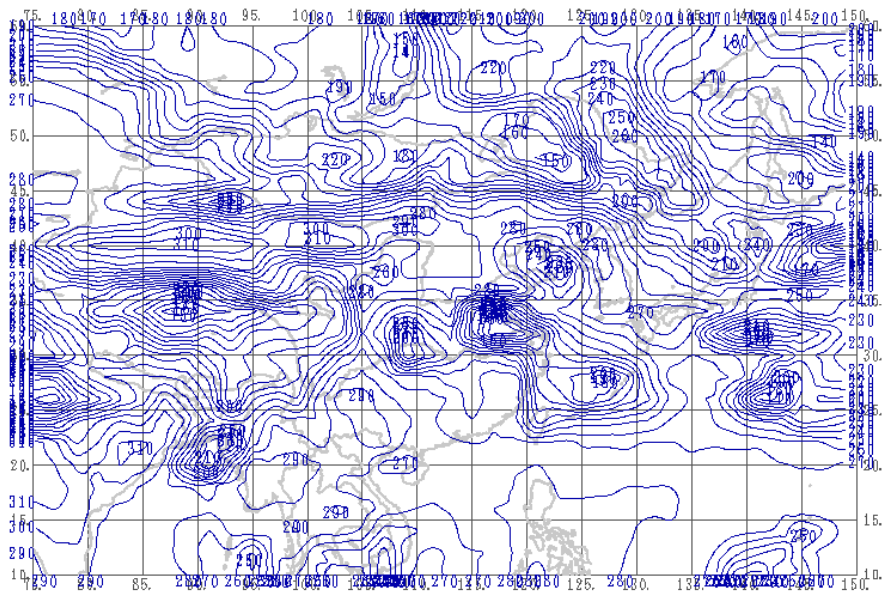
等经纬度投影OLR格点场灰度图像 (60N-60S、45E-165E
RES=0.1*0.1)

FY2C/NOAA OLR comparison

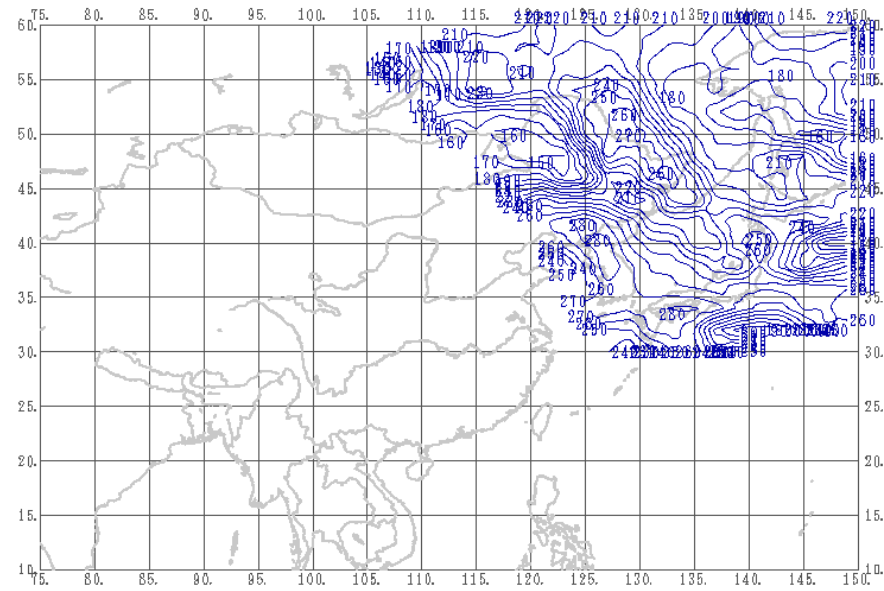


- FY-2C □ NOAA-16 □ □
- OLR □ 10N-60N □ 75E-
- 150E □ RES=0.5*0.5





FY-2C实时OLR产品等值线图 (2005年4月29日04时56分局部, 单位: 瓦/米**2)

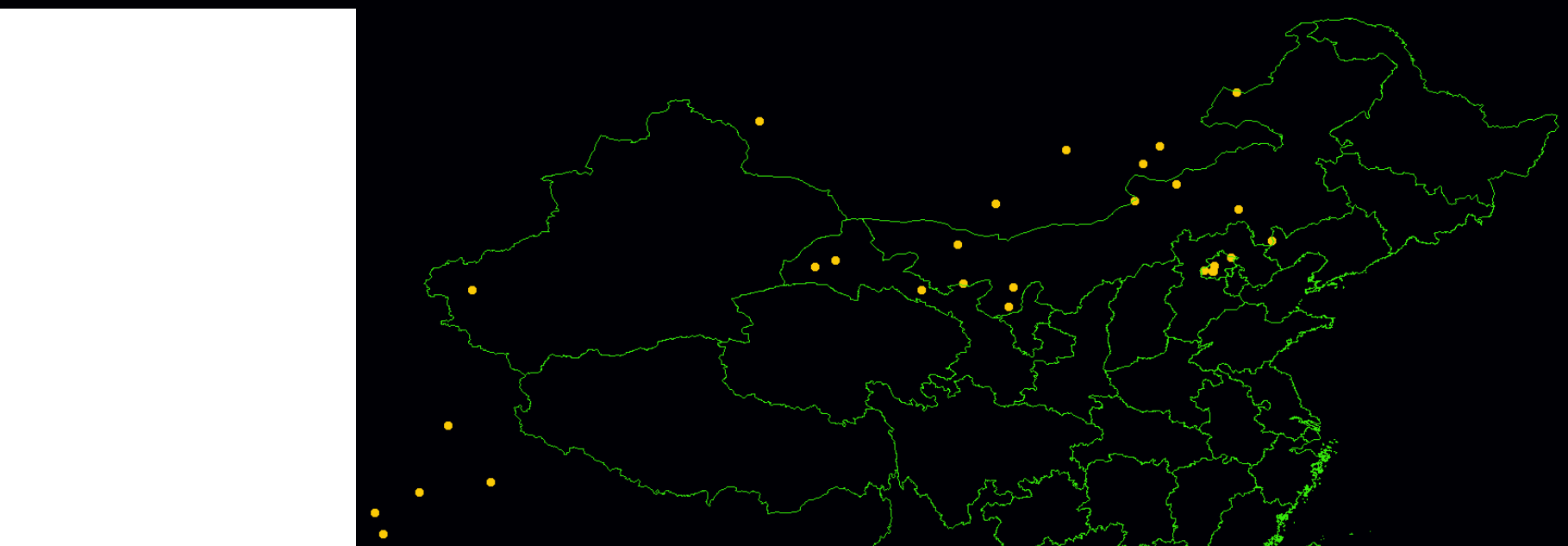
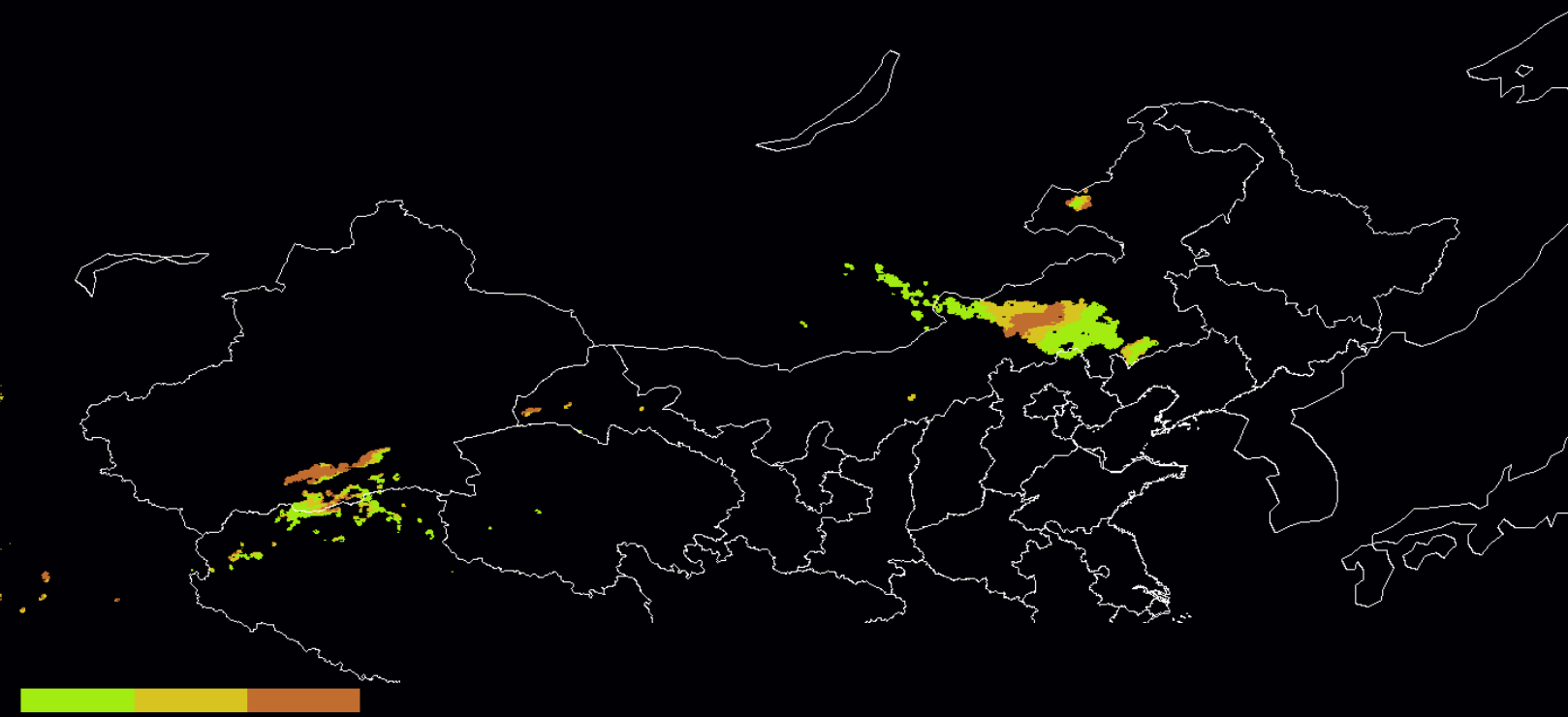


NOAA-16实时OLR产品等值线图 (2005年4月29日04时44分, 单位: 瓦/米**2)

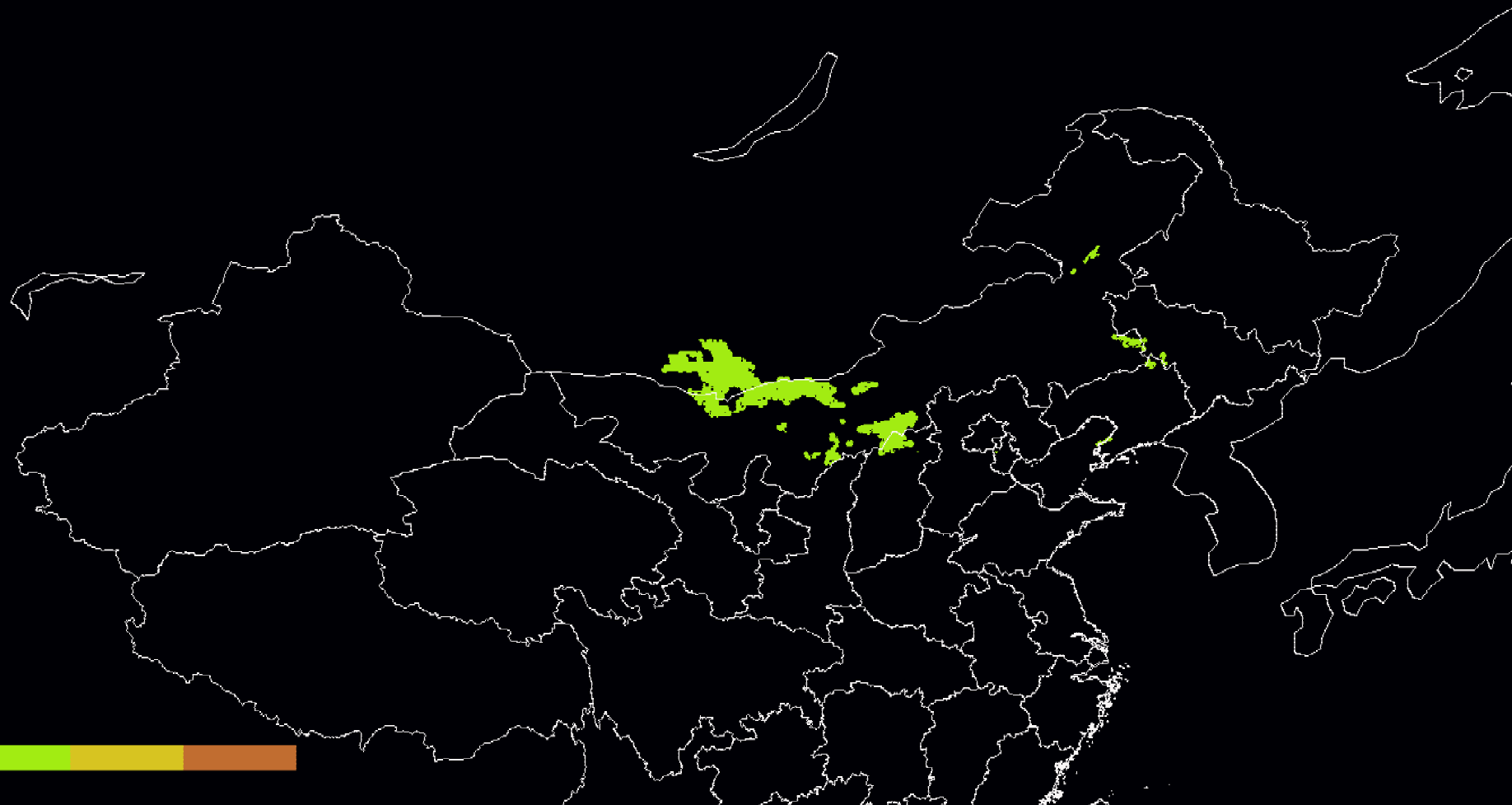
TBB



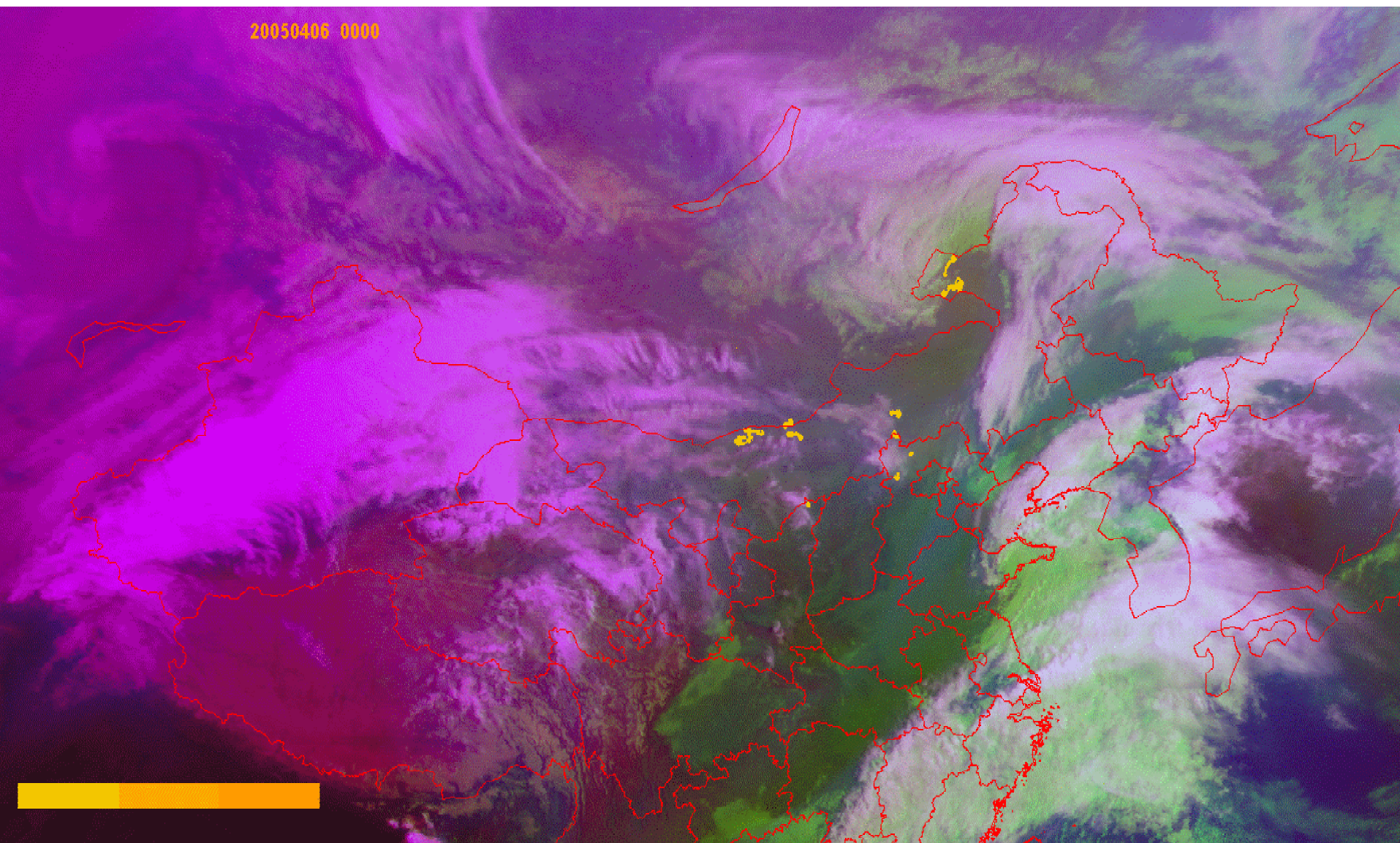
Sand Storm



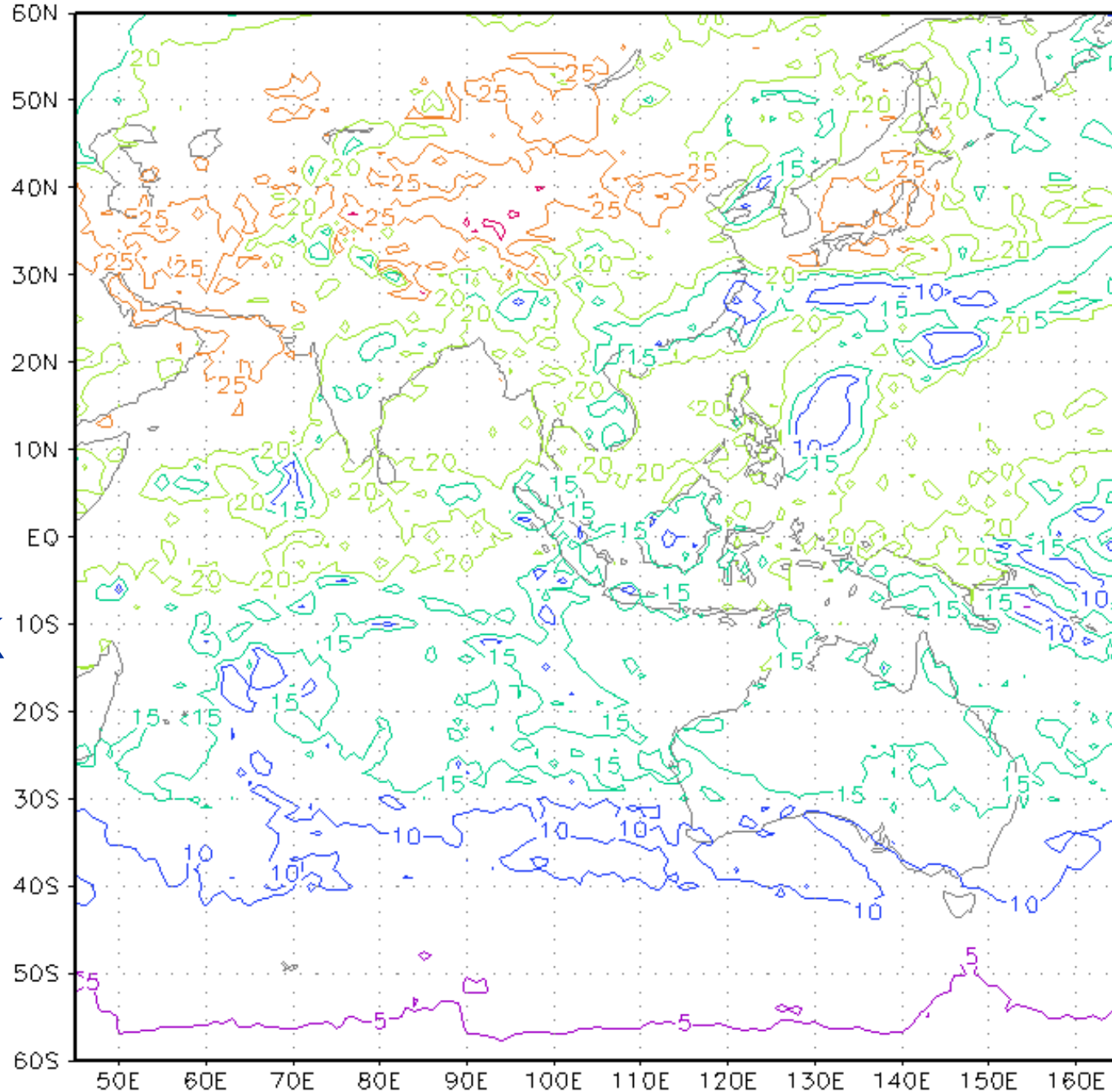
20050428 0000 FY-2C 沙尘暴监测产品



20050406 0000

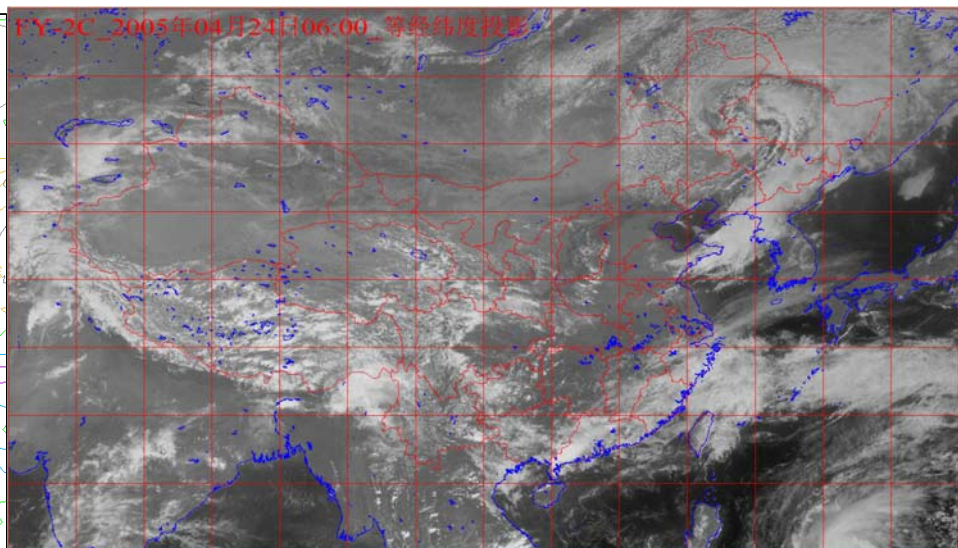
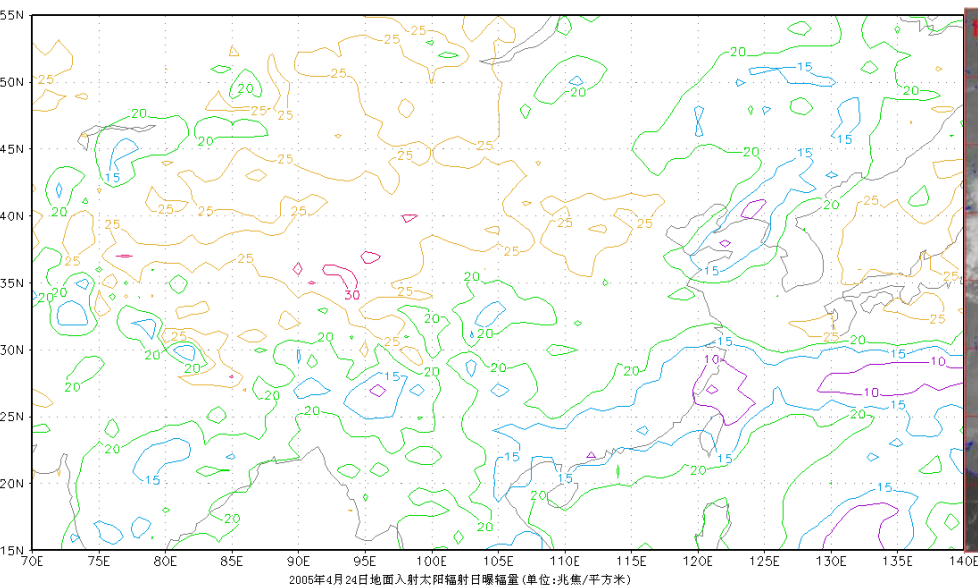


Solar irradiance for the disk



2005年4月24日FY2C卫星观测范围内的地面入射太阳辐射日曝辐量(单位:兆焦/平方米)

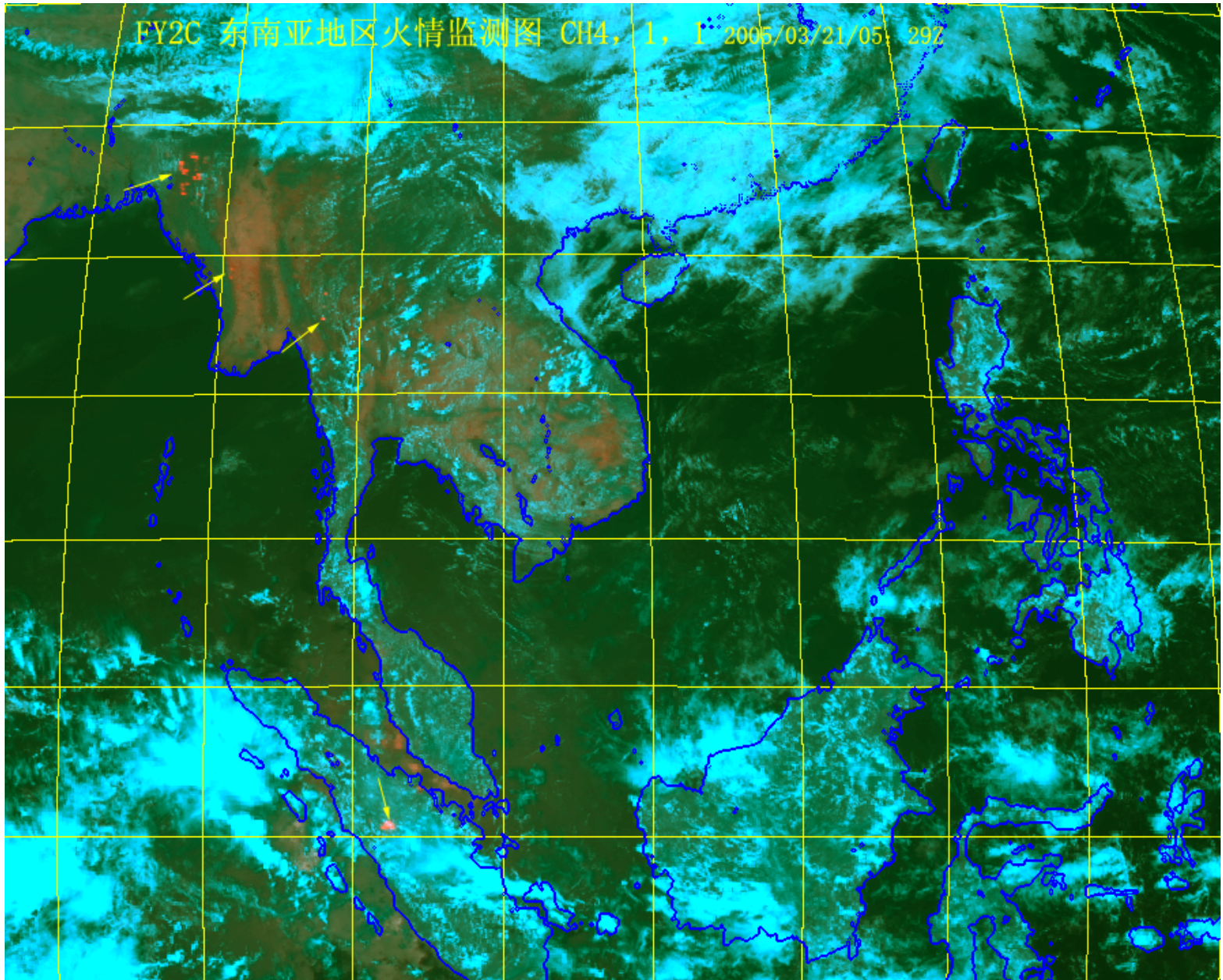
Solar irradiance for China region at 24 April 2005/06Z



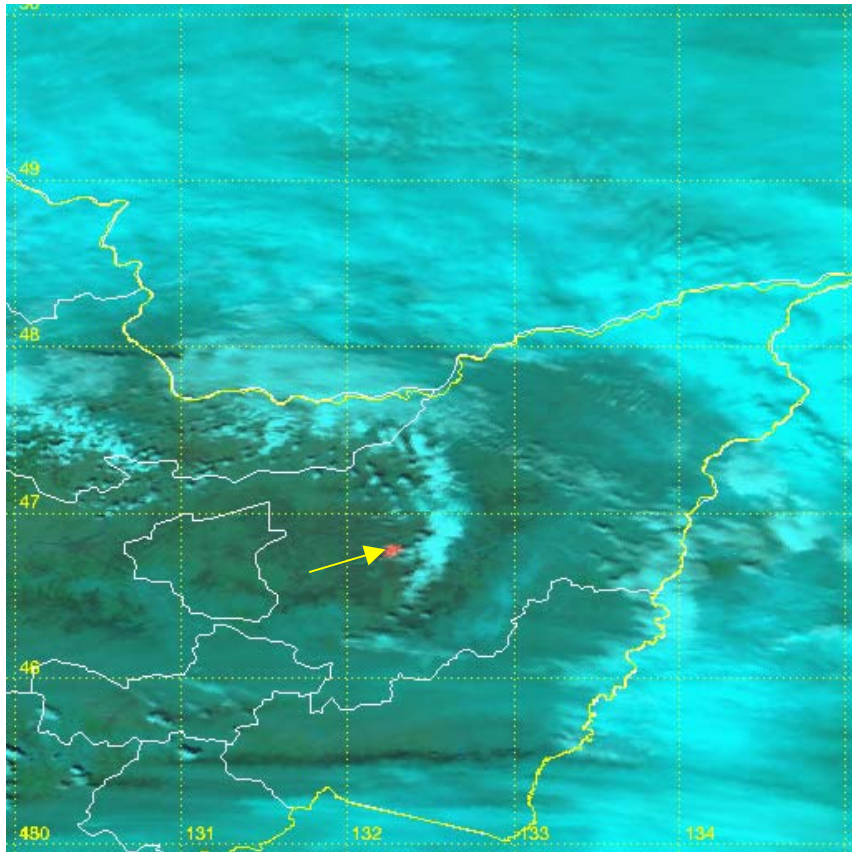
Solar irradiance

VIS image

FY2C fire monitoring in south east Asia □ March 21 2005 0529Z □

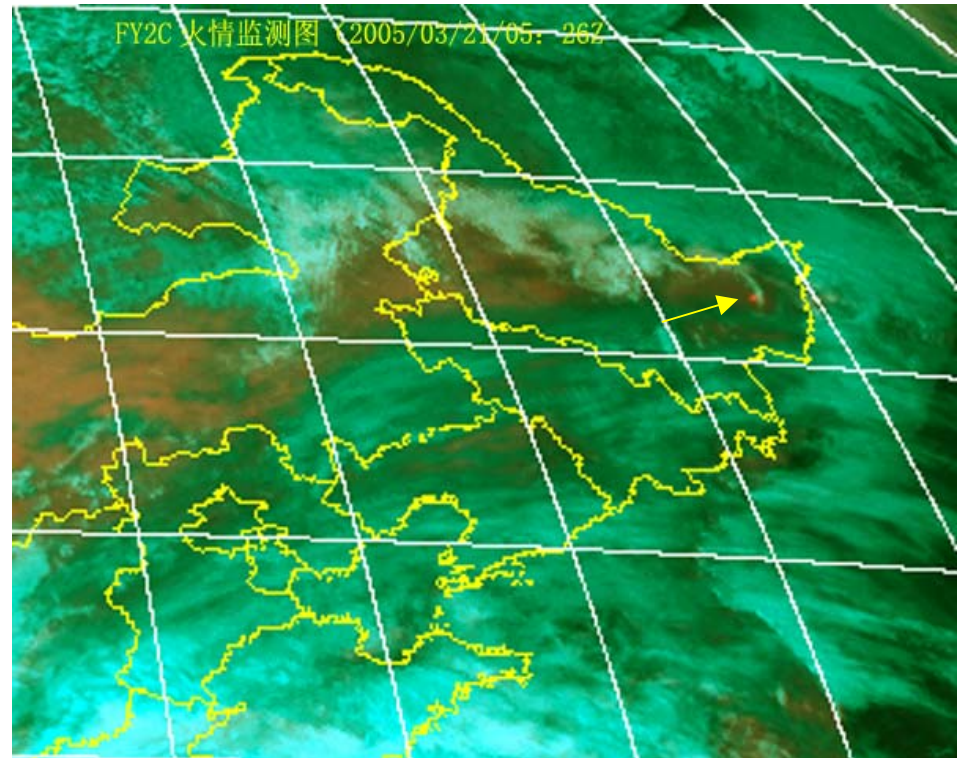


FY2C fire monitoring compared with NOAA-16



NOAA-16 fire monitoring

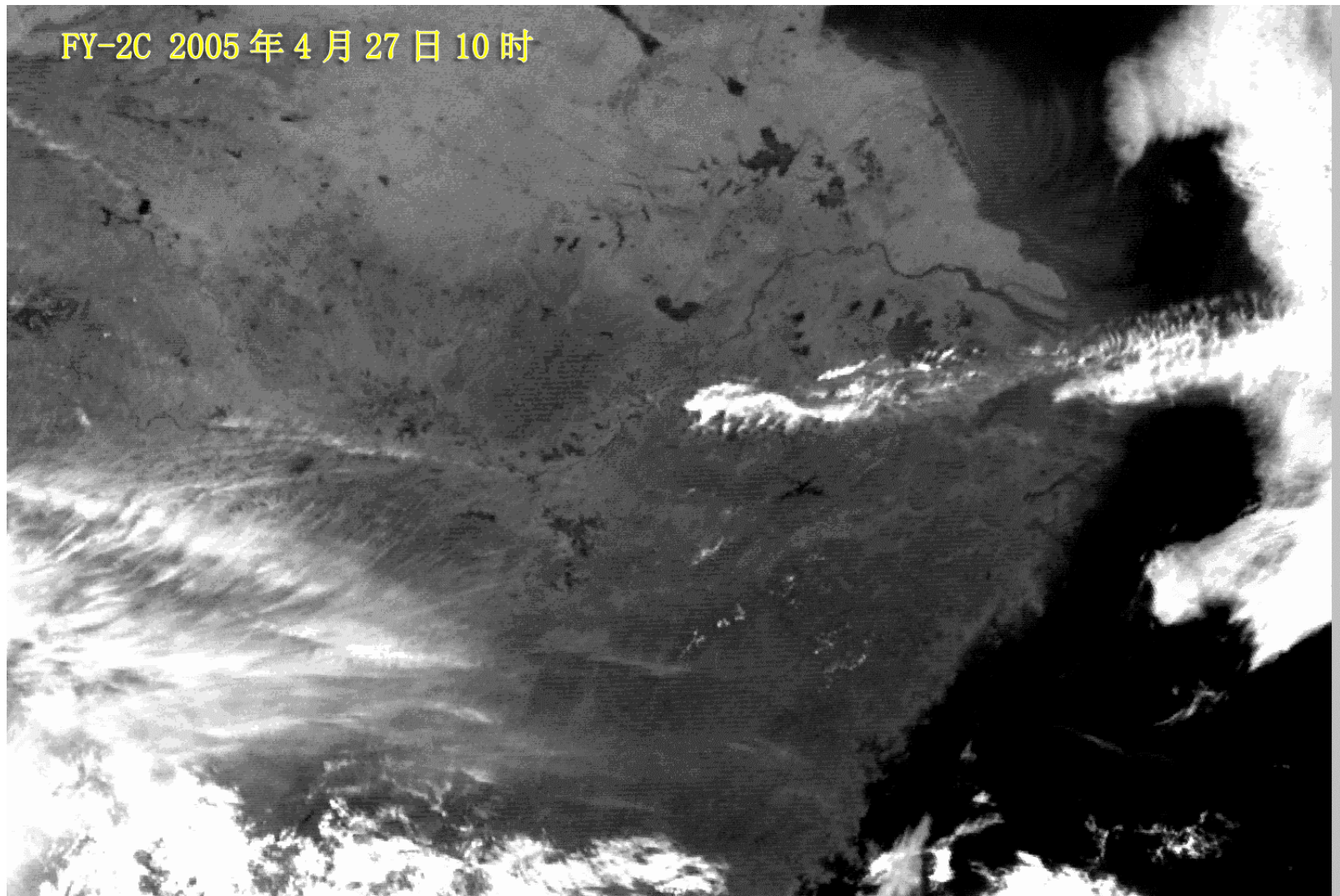
2005/03/21/05 □ 26Z



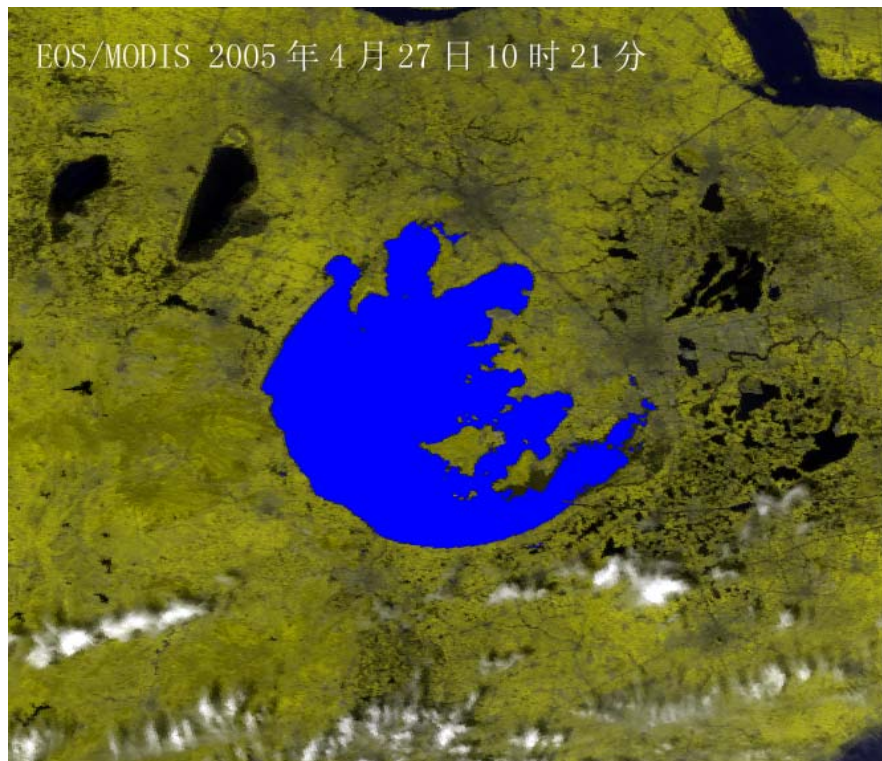
FY2C fire monitoring

2005/03/21/05 □ 26z

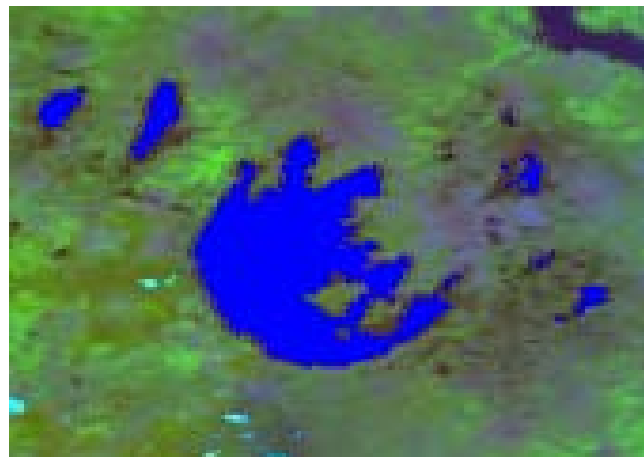
FY2C Flood Monitoring



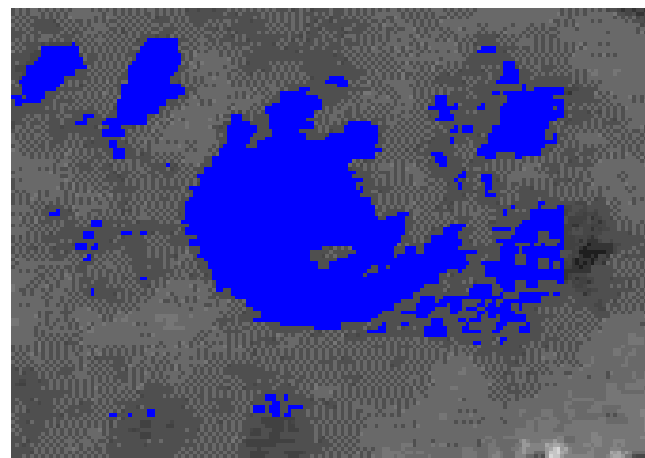
FY-2C 2005 4 27 10 -14



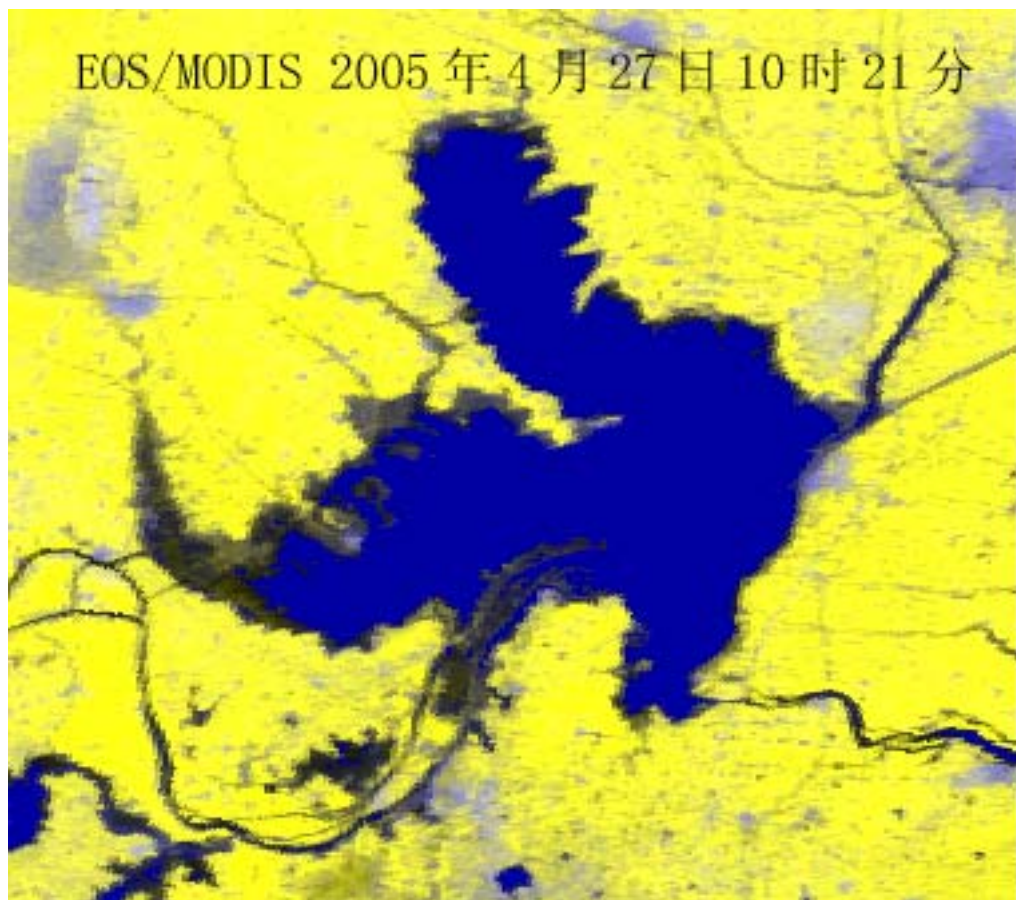
EOS/MODIS 200504271021



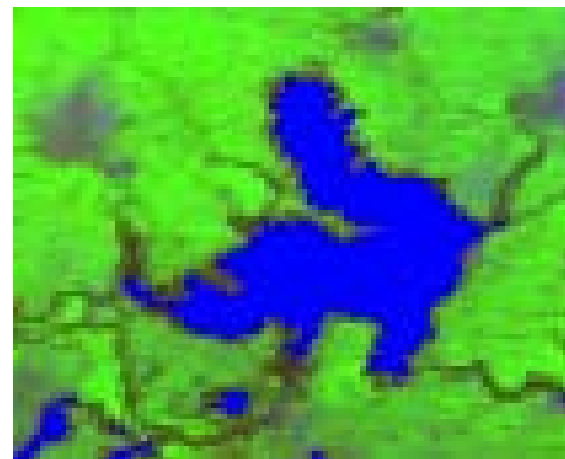
NOAA-16 200504271441



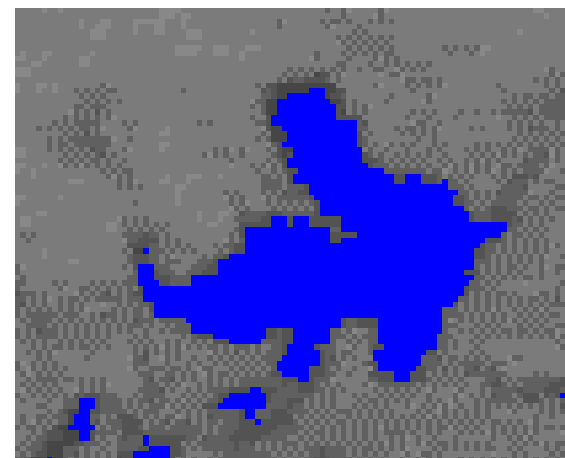
FY-2C 200504271100



EOS/MODIS 200504271021



NOAA-16 200504271441

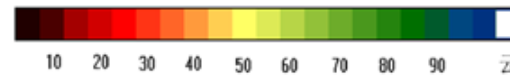
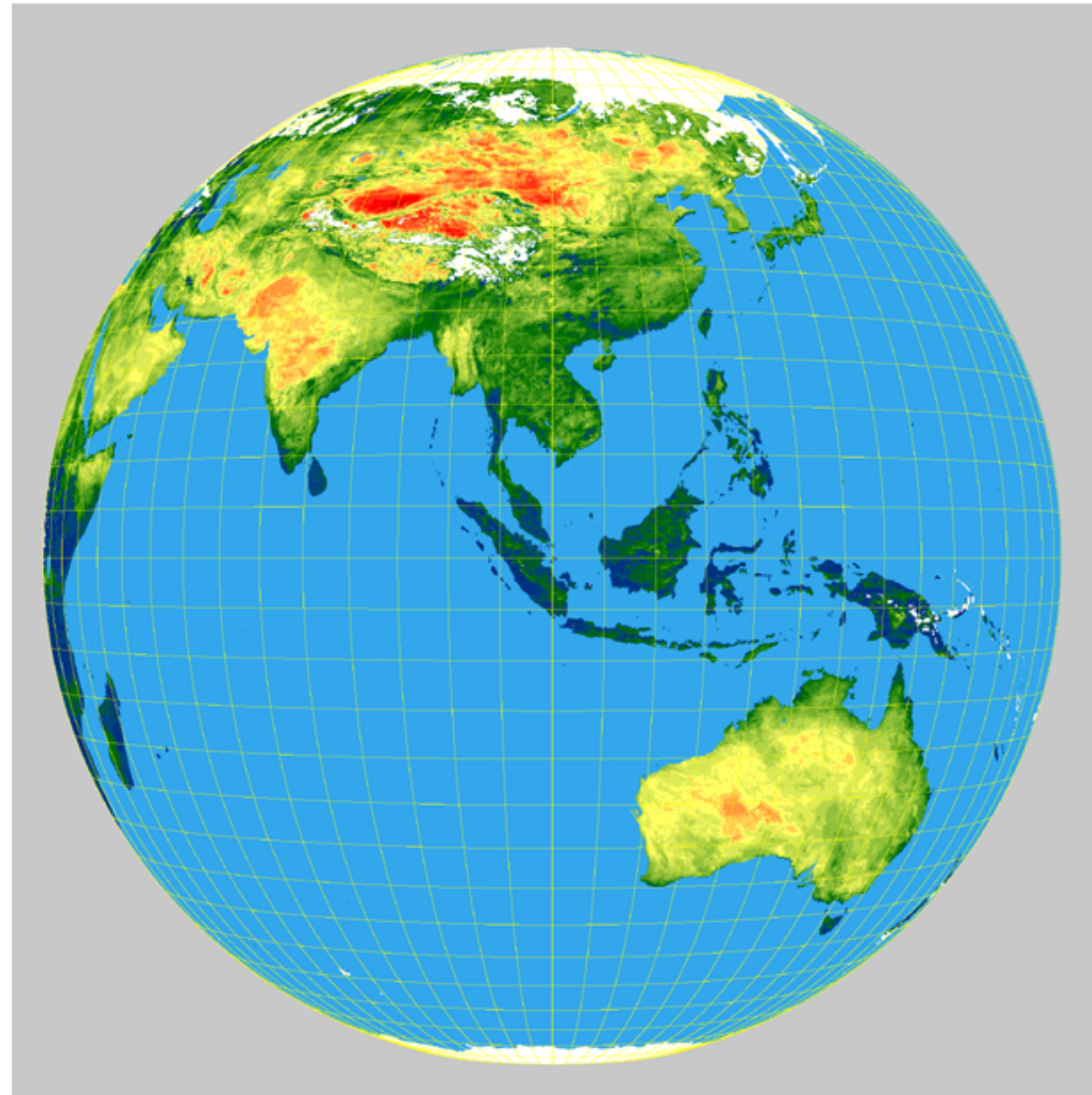


FY-2C 200504271100

FY2C静止气象卫星旬土壤湿度图

2005年4月中旬

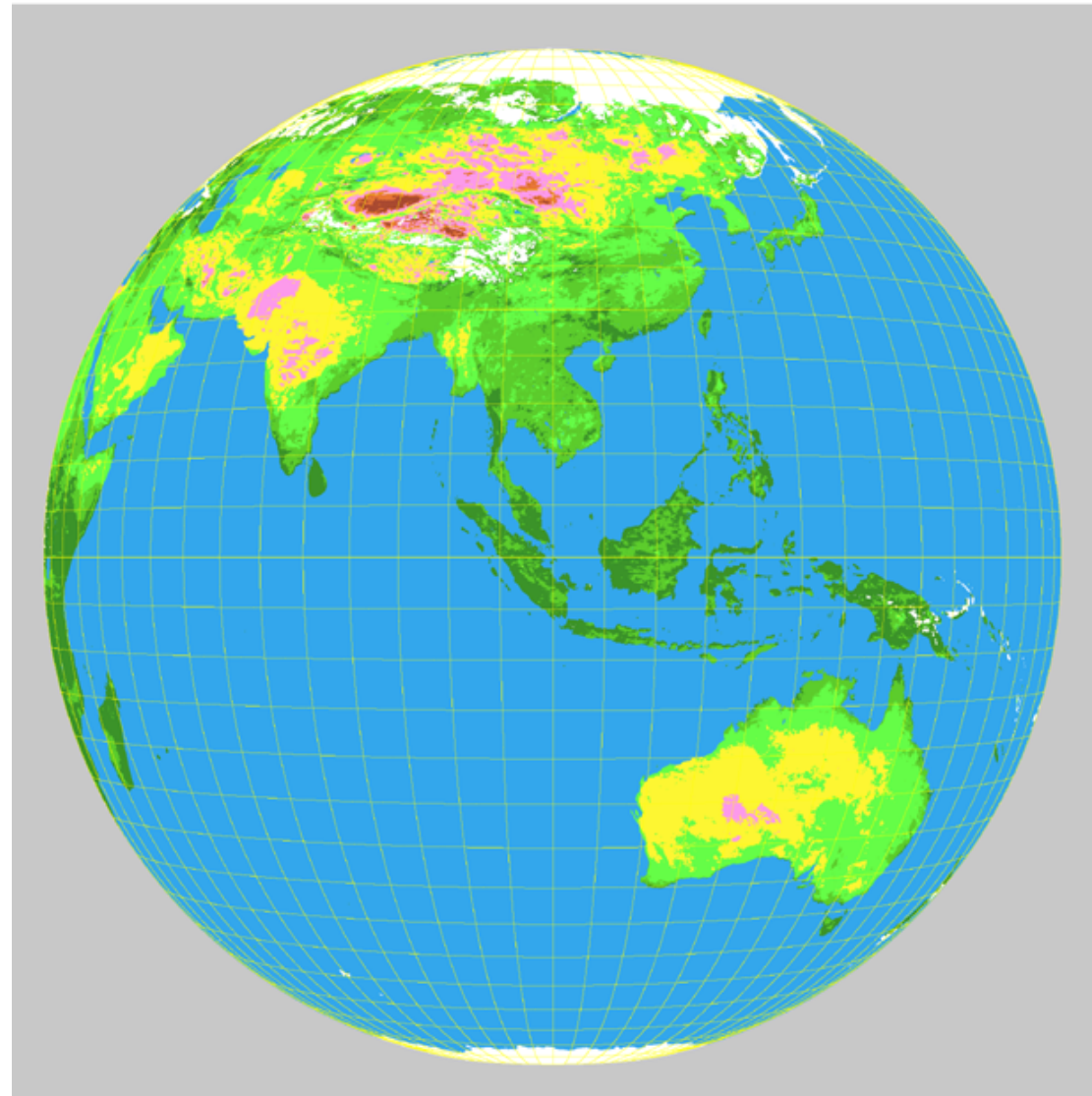
Soil
moisture
estimated
with ground
temperature
tendency



FY2C静止气象卫星旬干旱监测图

2005年4月中旬

Drought grade



重旱



中旱



轻旱



正常



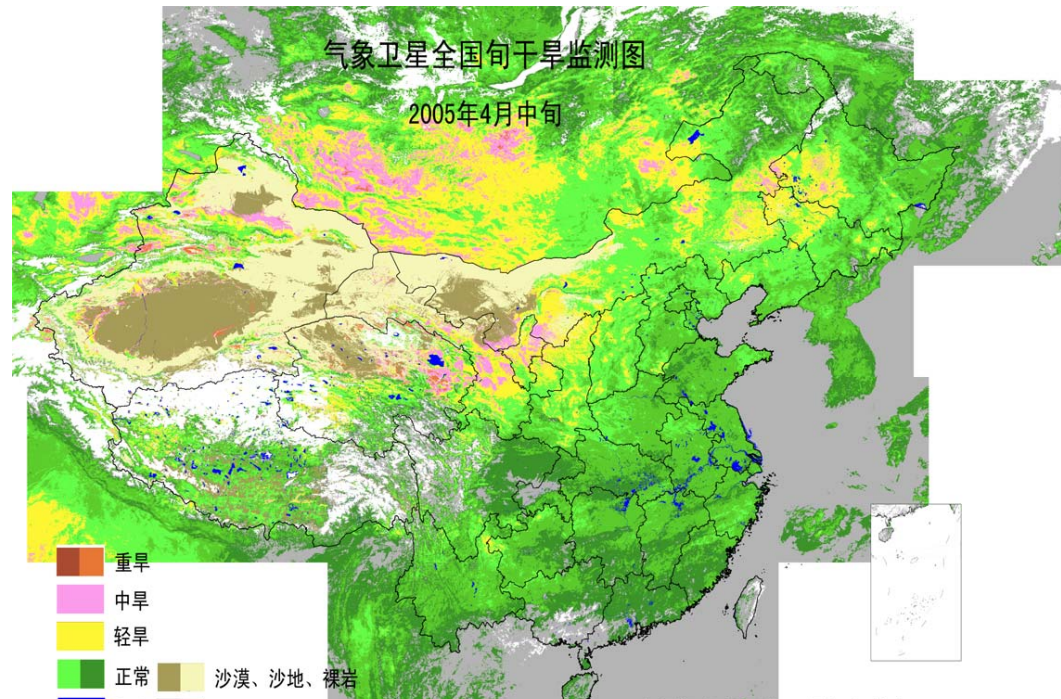
水体



云、雪

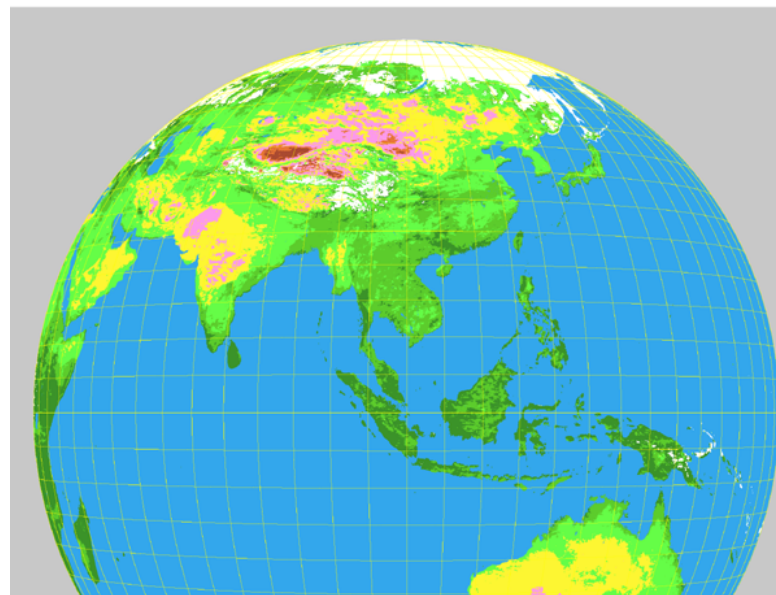
气象卫星全国旬干旱监测图

2005年4月中旬

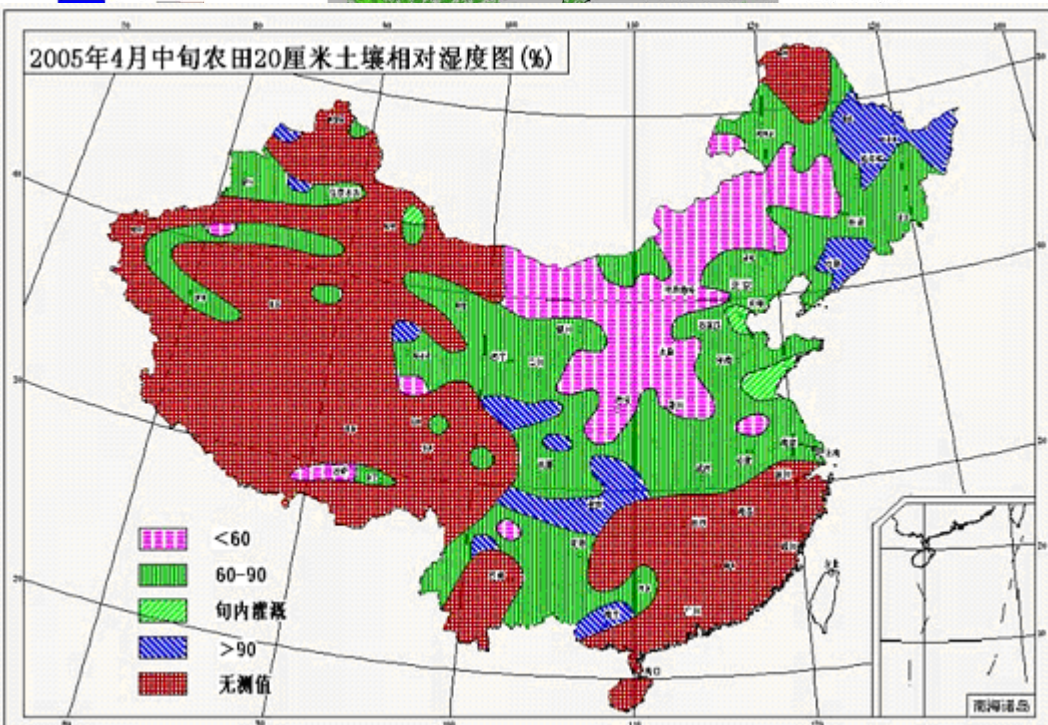


FY2C静止气象卫星旬干旱监测图

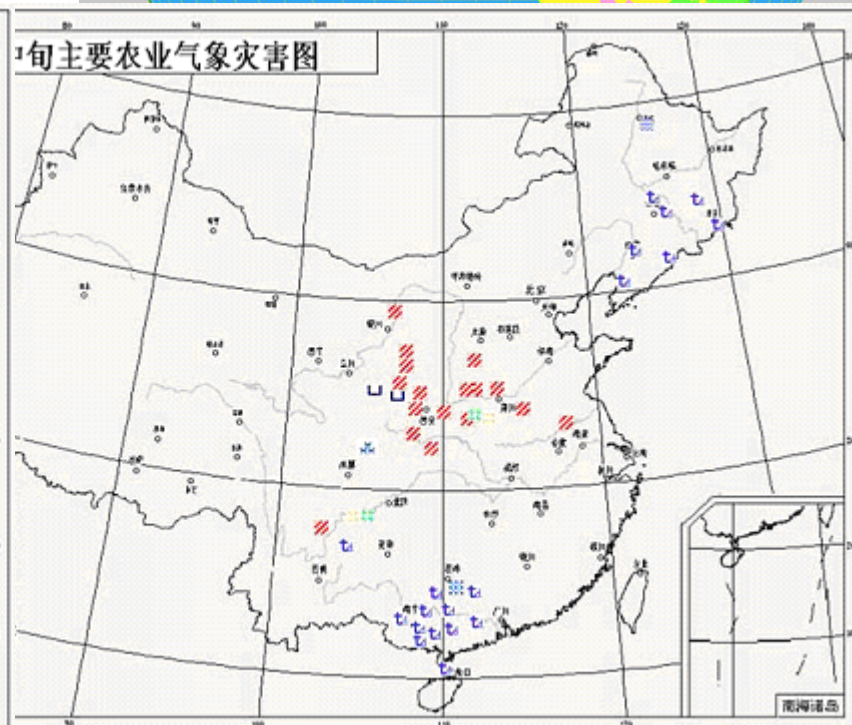
2005年4月中旬



2005年4月中旬农田20厘米土壤相对湿度图(%)



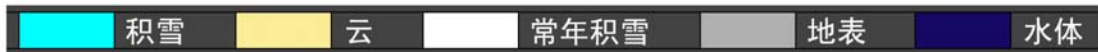
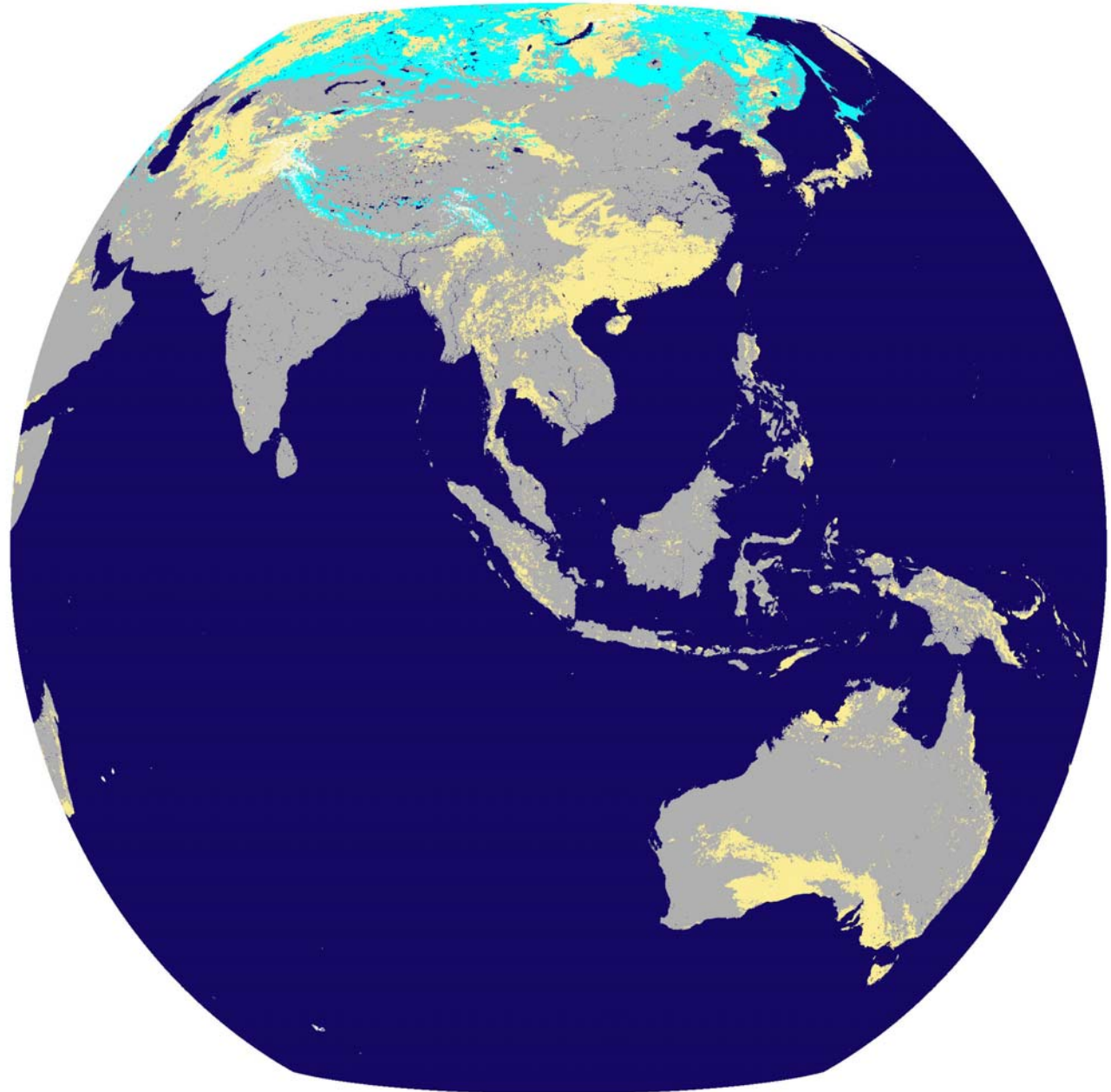
1旬主要农业气象灾害图



FY2C日积雪覆盖产品 2005年3月15日

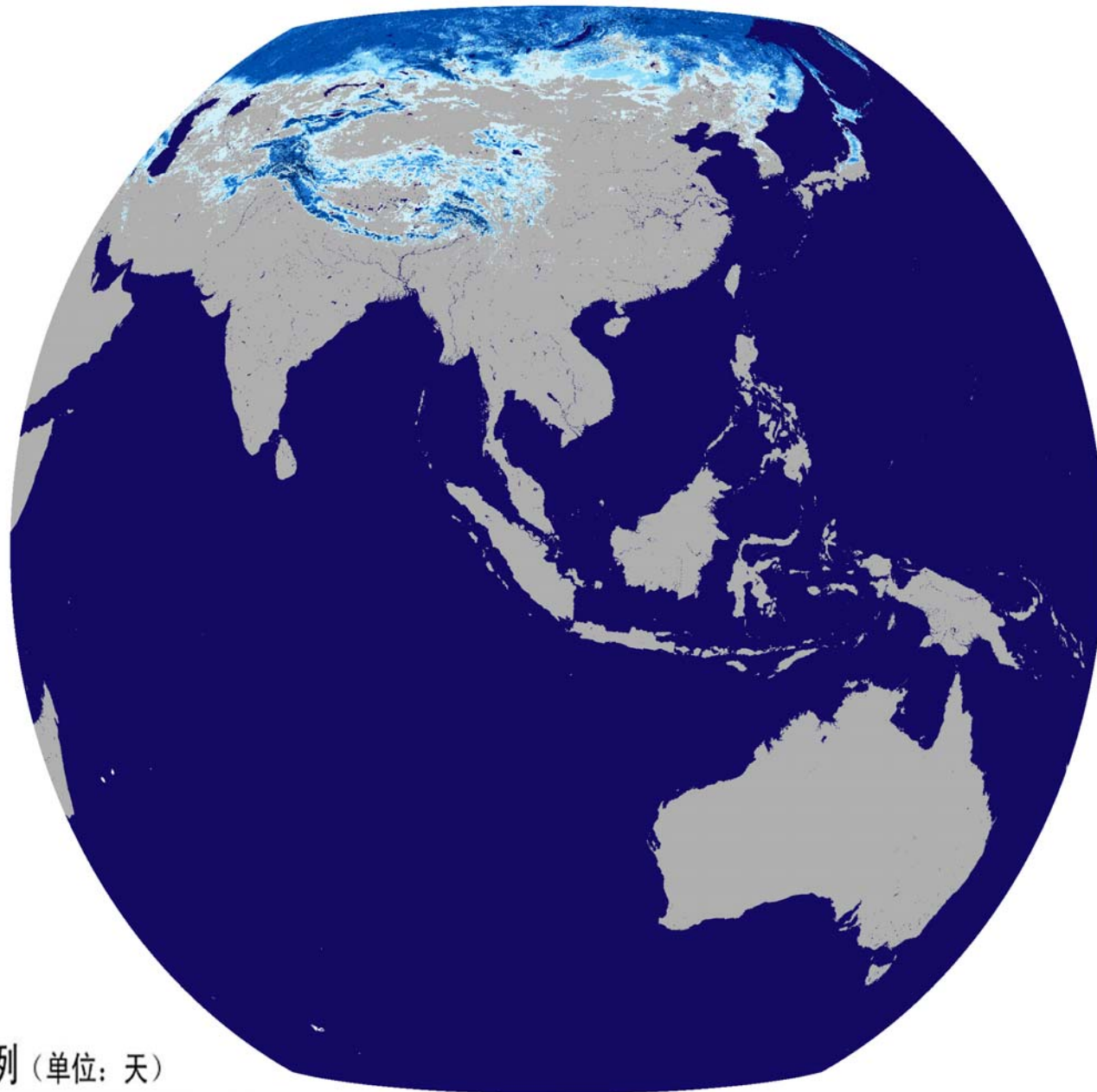
FY2C snow cover

-
-
-
-
-
-
-
-



FY20月积雪天数统计产品 2005年3月14日—4月14日

Snowy
days in
the
month



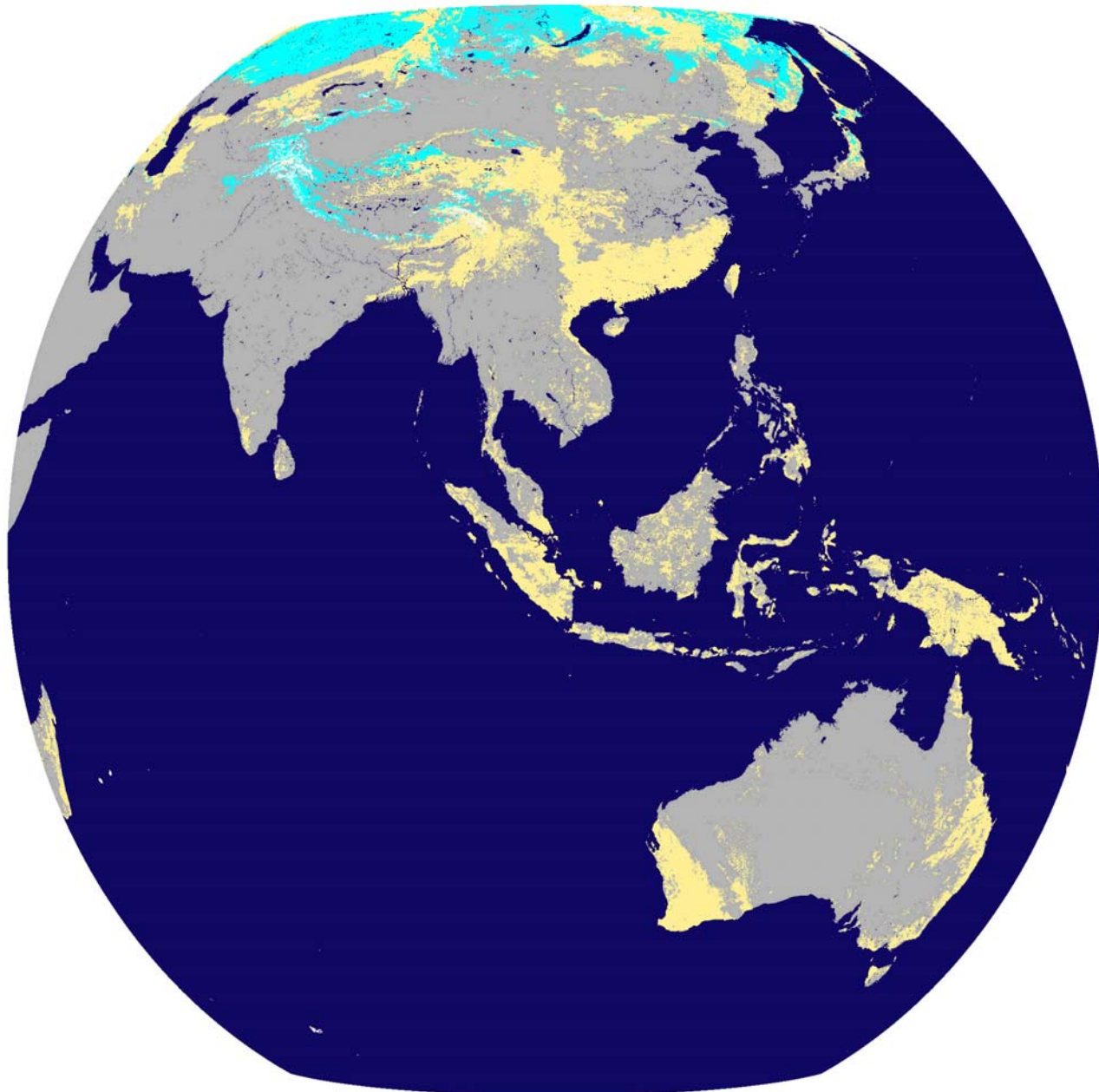
图例 (单位: 天)



FY2C日积雪覆盖产品 2005年3月31日

**Snow
cover
movie**

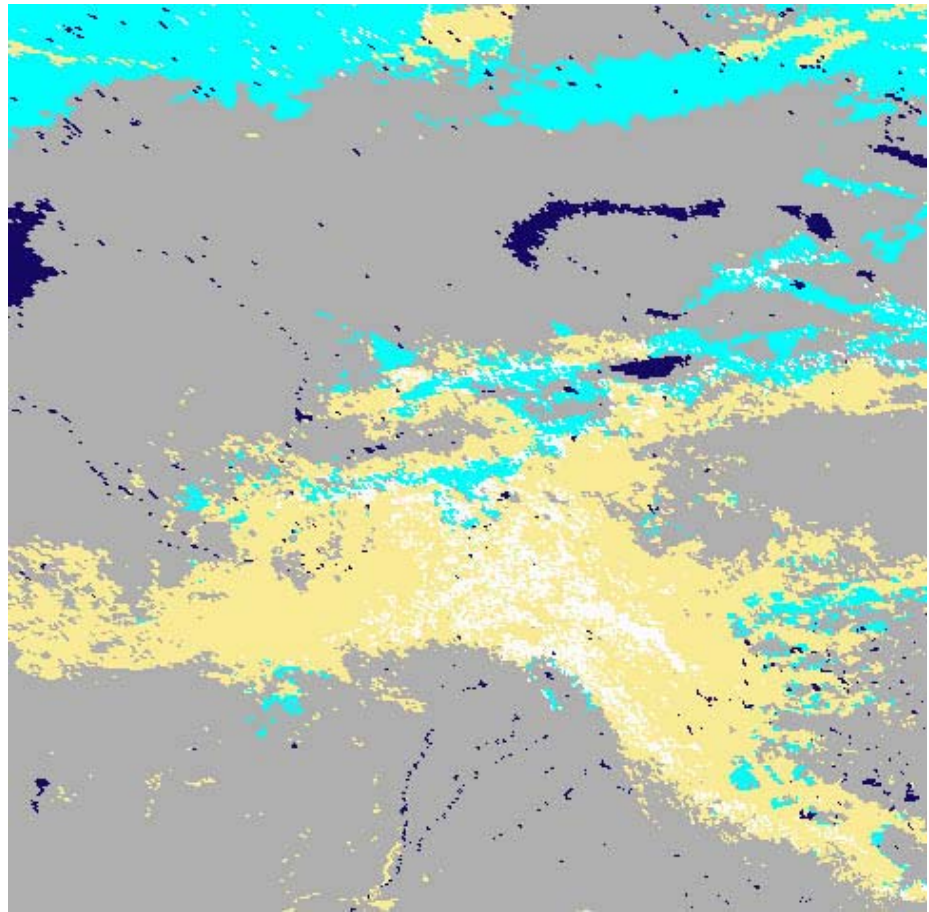
**9-31
March
2005**



积雪 云 常年积雪 地表 水体

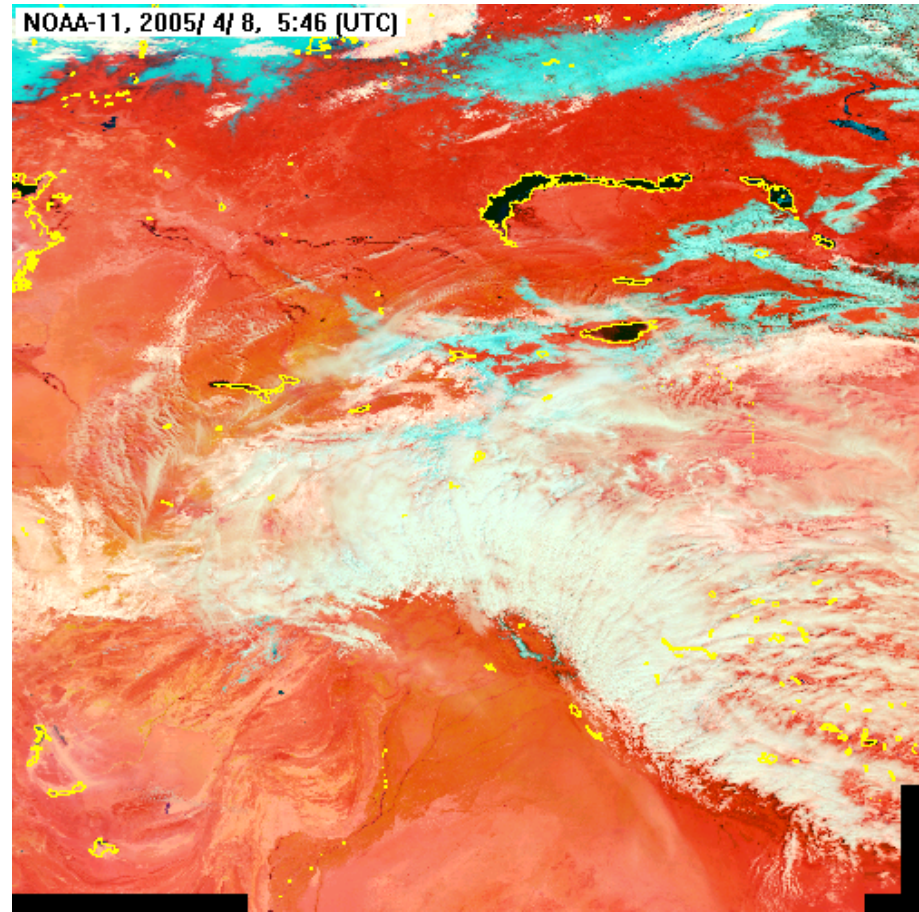
FY2C snow cover

2005 4 8

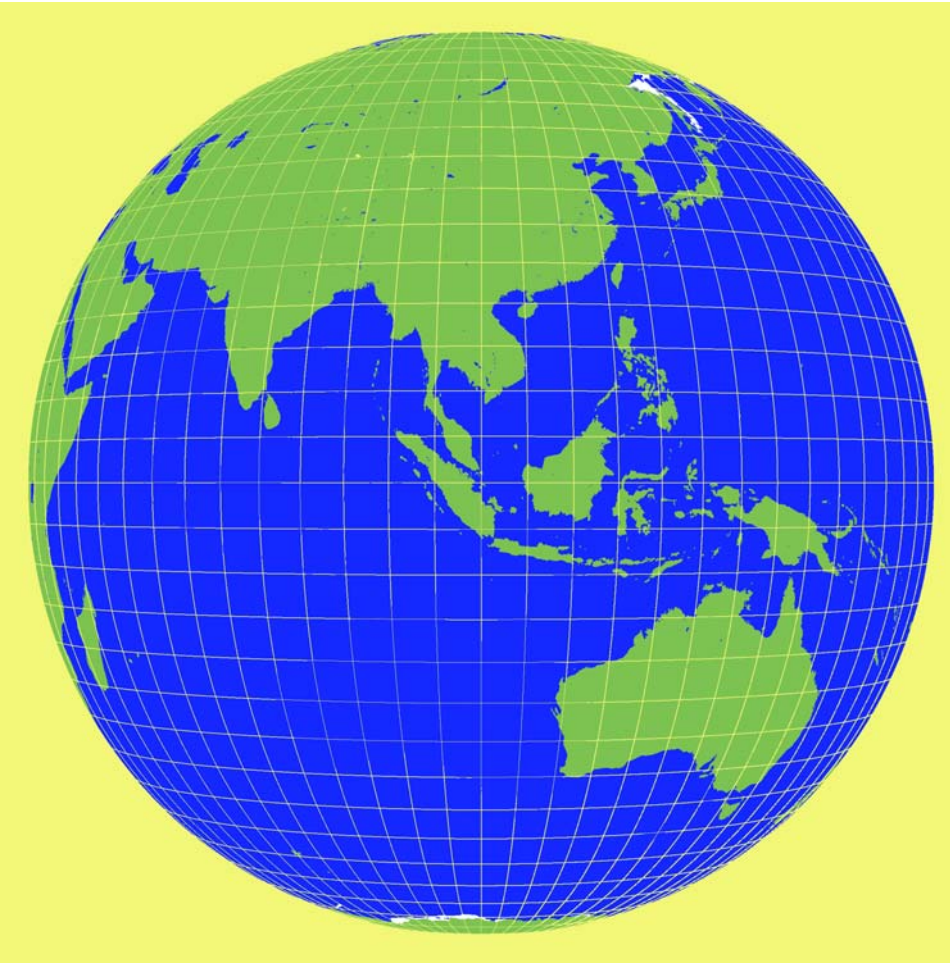
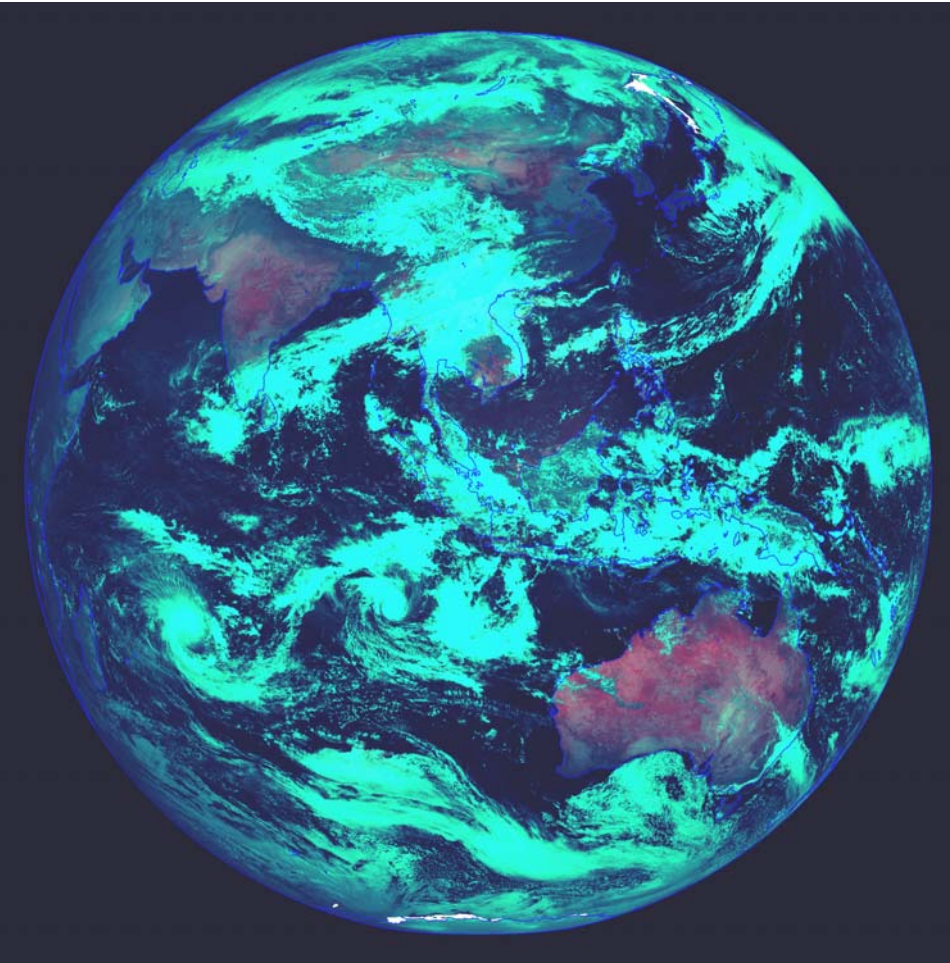


NOAA17 snowcover

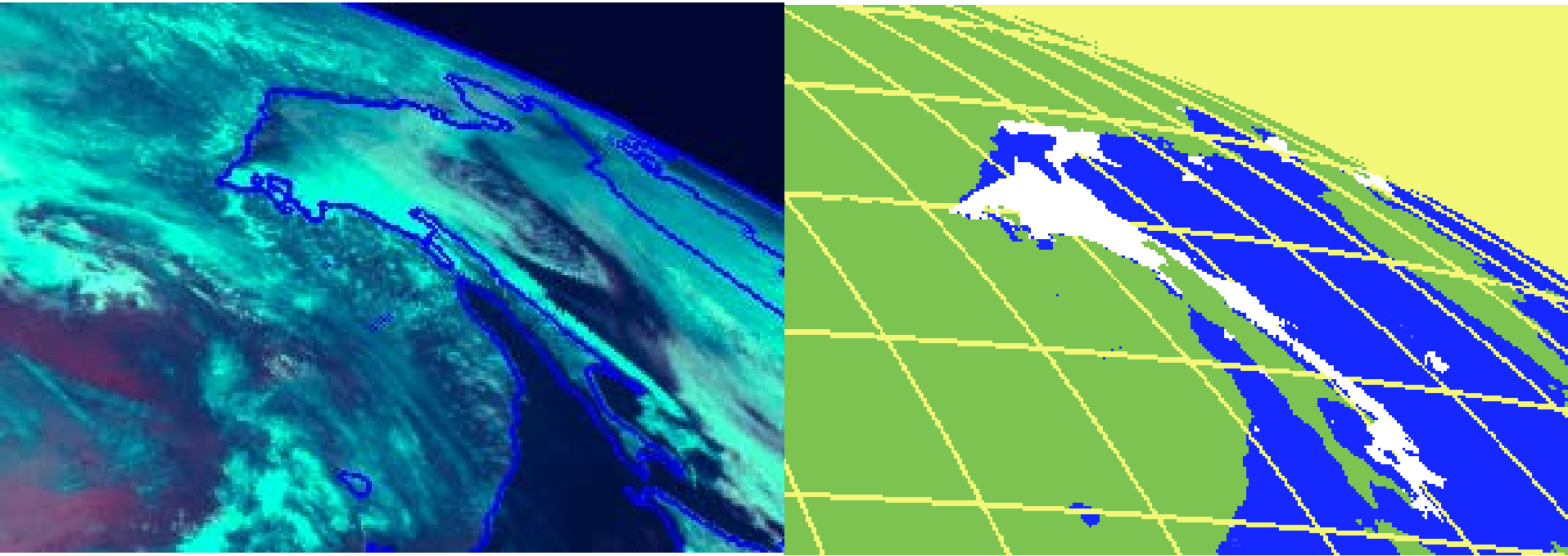
2005 4 8 13 46



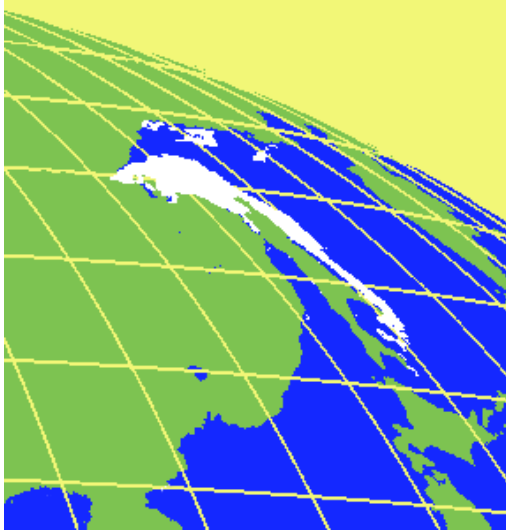
FY20 Sea Ice



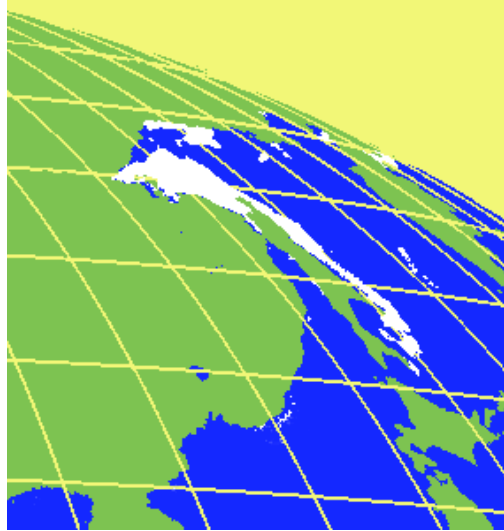
Regional Sea Ice



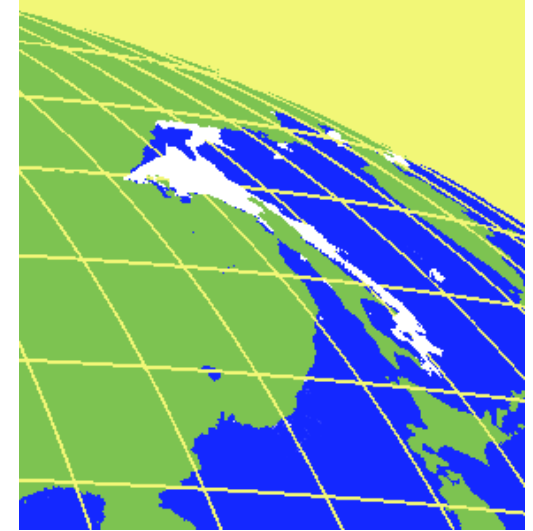
Regional Sea Ice(FY2C ,2005.04.04.0200~0700)



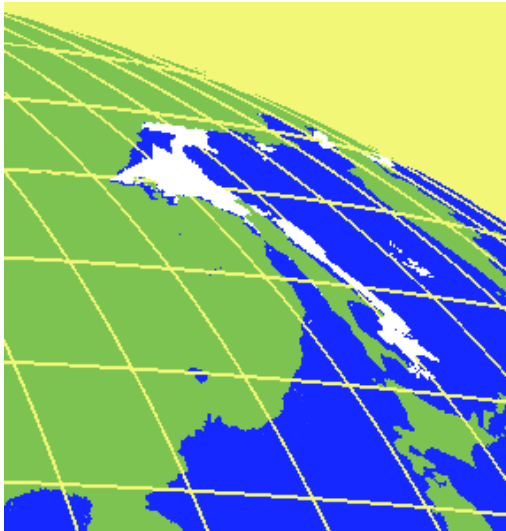
FY2C 2005/04/04/02:00Z



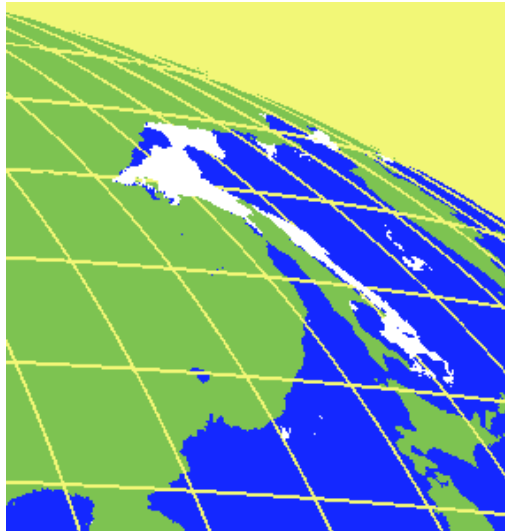
FY2C 2005/04/04/03:00Z



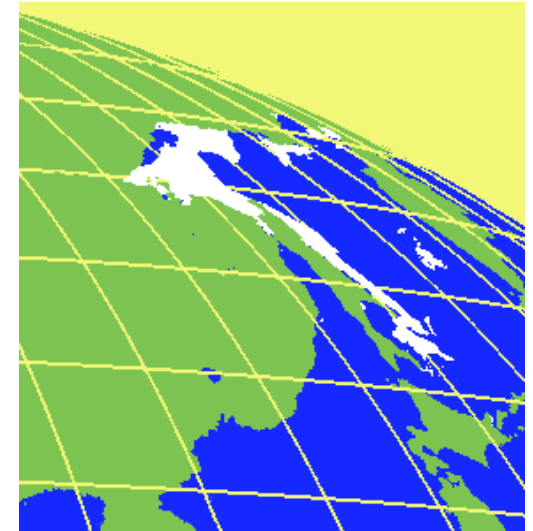
FY2C 2005/04/04/04:00Z



FY2C 2005/04/04/04:56Z

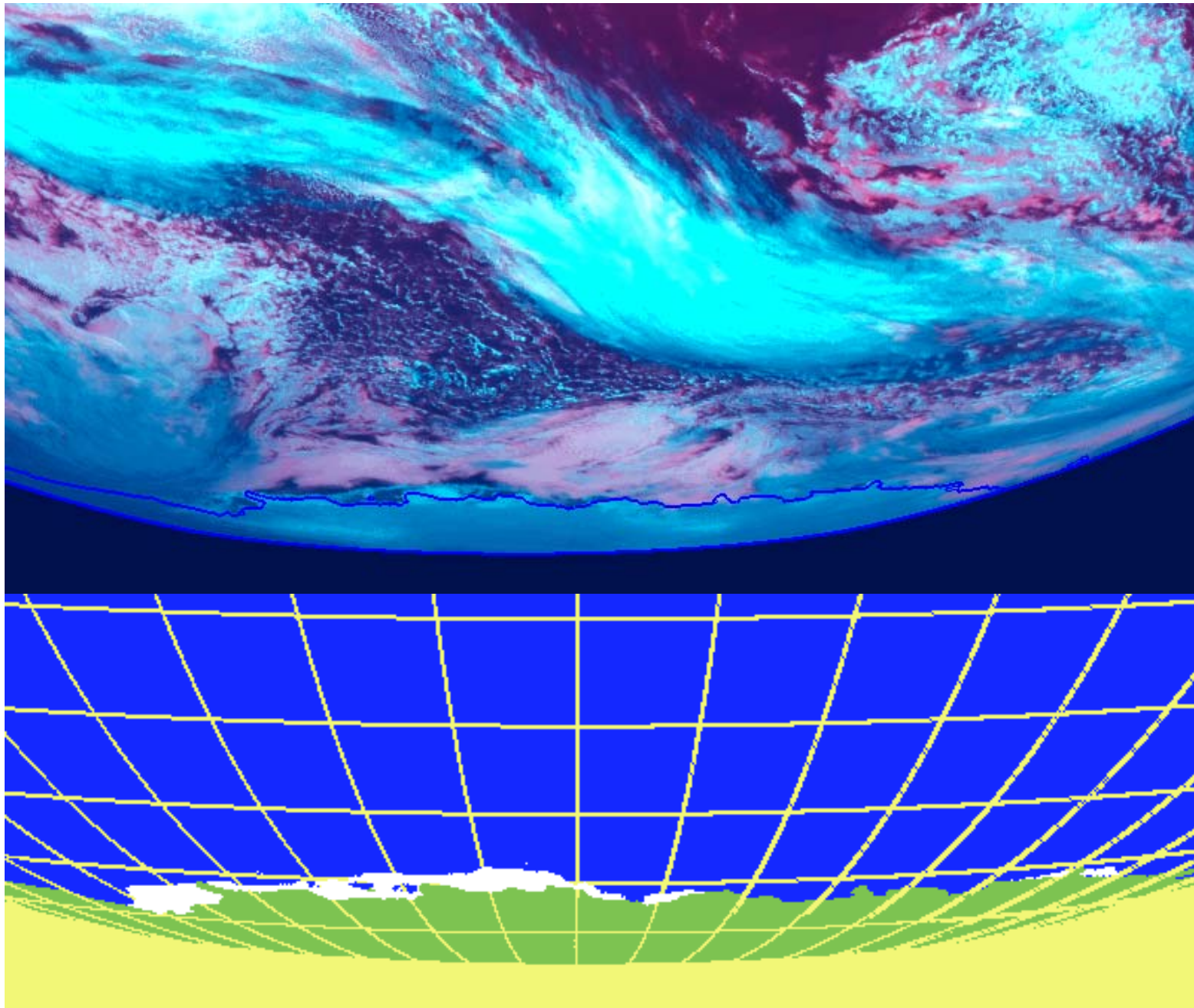


FY2C 2005/04/04/06:00Z

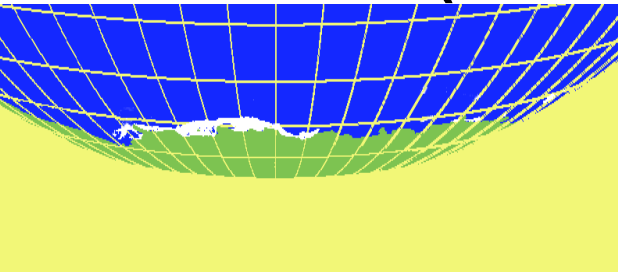


FY2C 2005/04/04/07:00Z

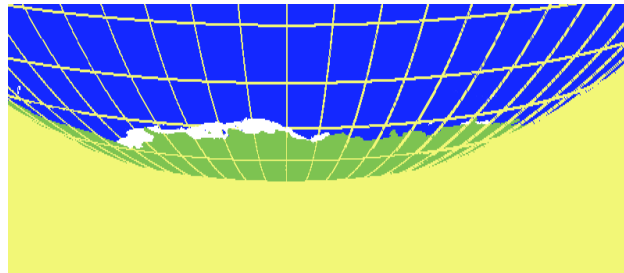
Regional Sea Ice □ Antarctic □



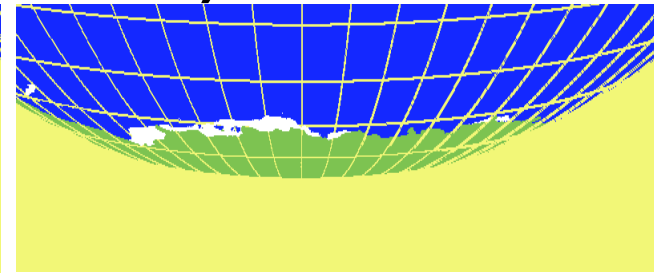
Regional Sea Ice □Antarctic□ (FY2C ,2005.04.04.0200~0700)



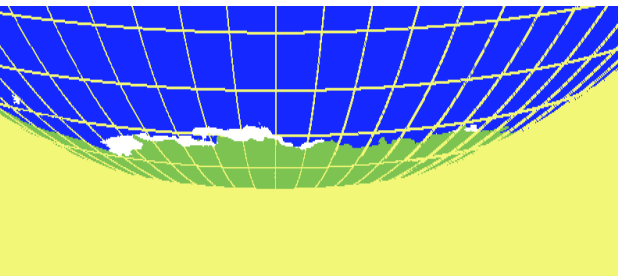
FY2C 2005/04/04/02:00Z



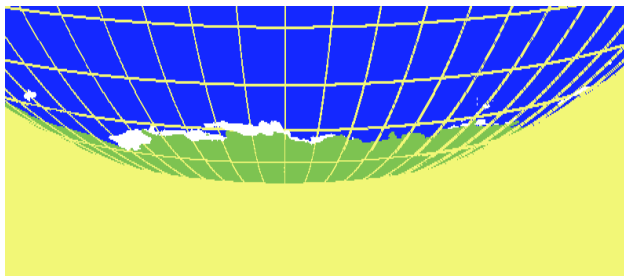
FY2C 2005/04/04/03:00Z



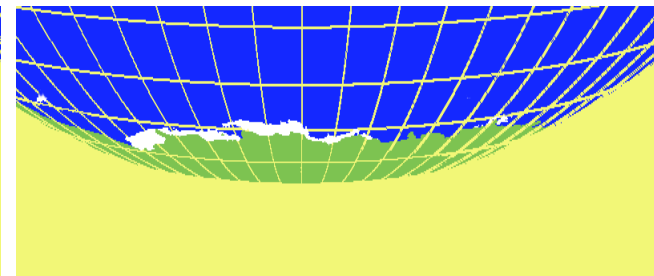
FY2C 2005/04/04/04:00Z



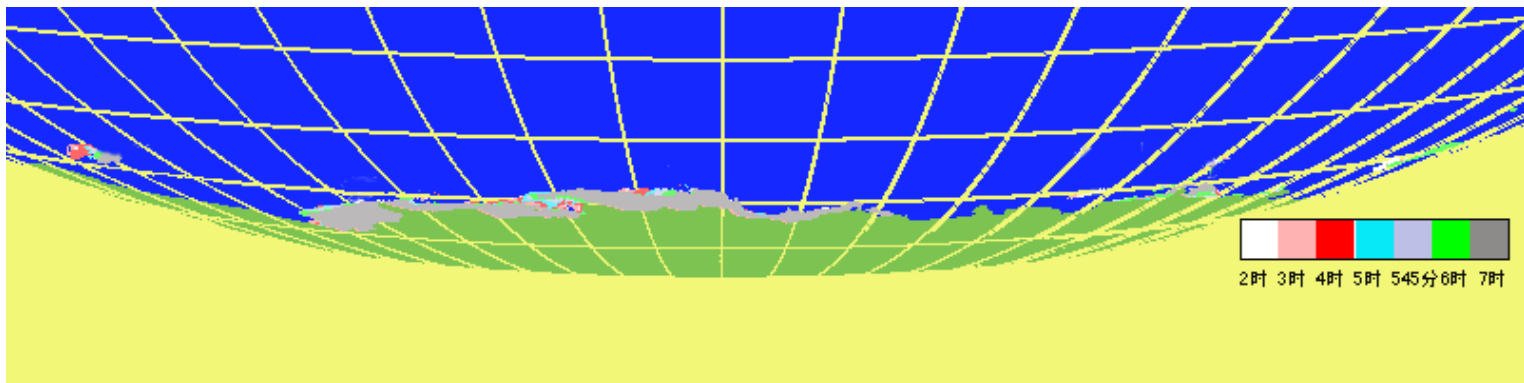
FY2C 2005/04/04/04:56Z



FY2C 2005/04/04/06:00Z



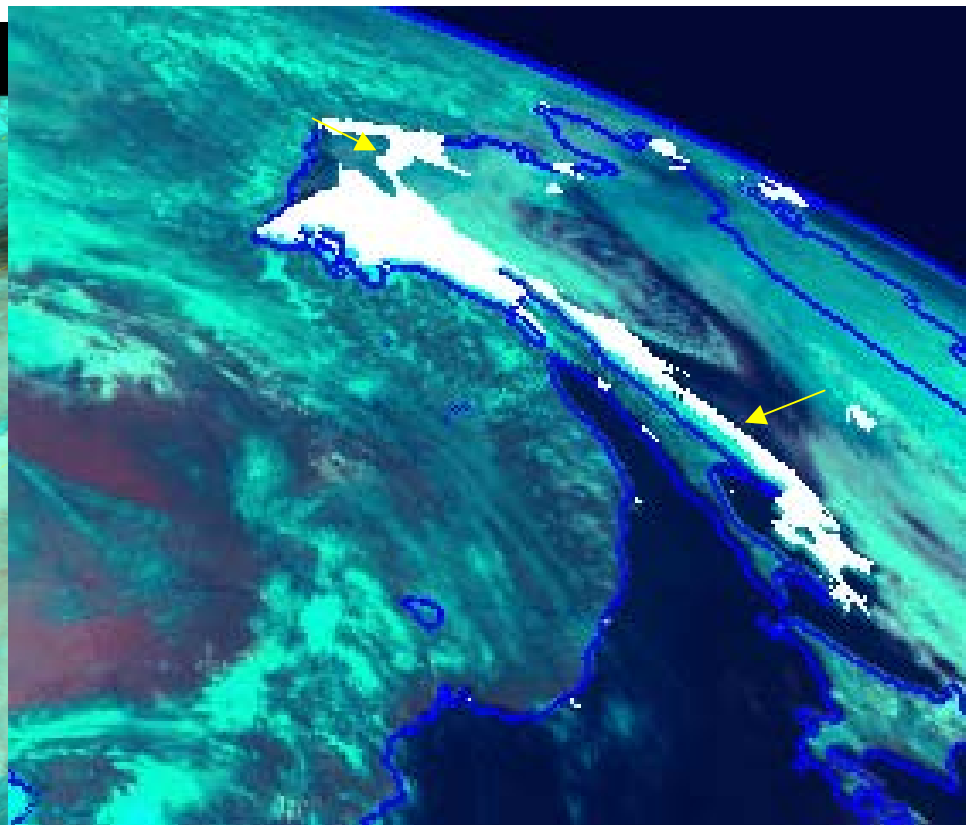
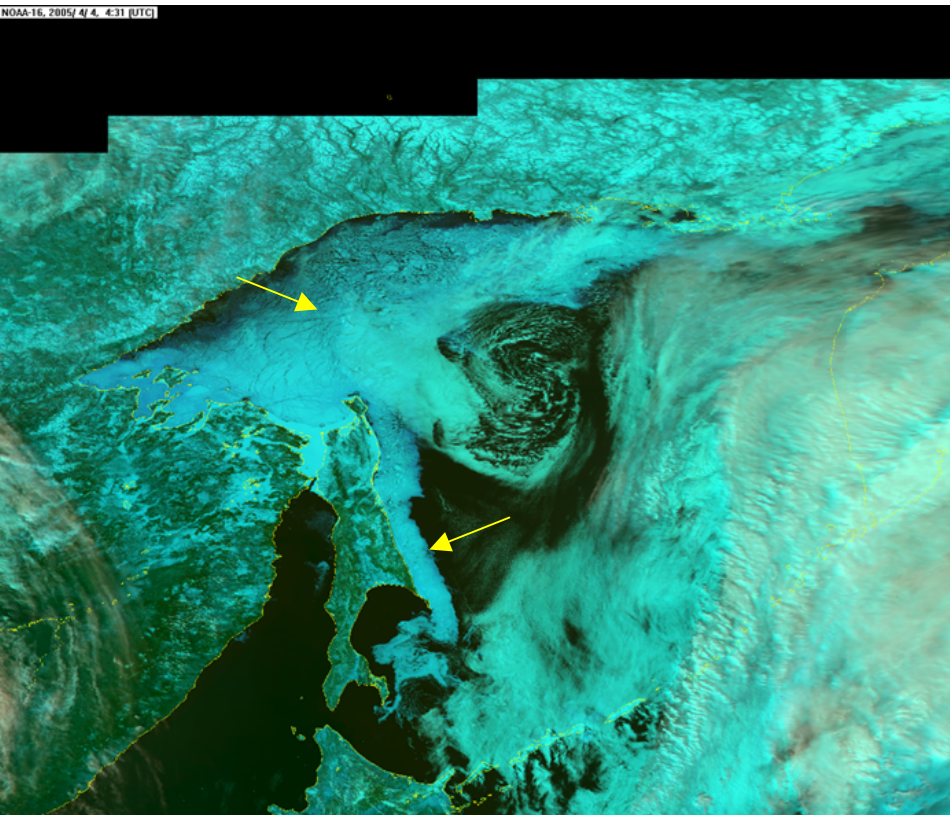
FY2C 2005/04/04/07:00Z



FY2C 2005/04/04/02:00 -07:00Z □□□□□□□□□□

Sea ice compare with NOAA

NOAA-16, 2005/04/04, 4:31 [UTC]

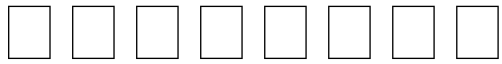


NOAA-16 Sea ice

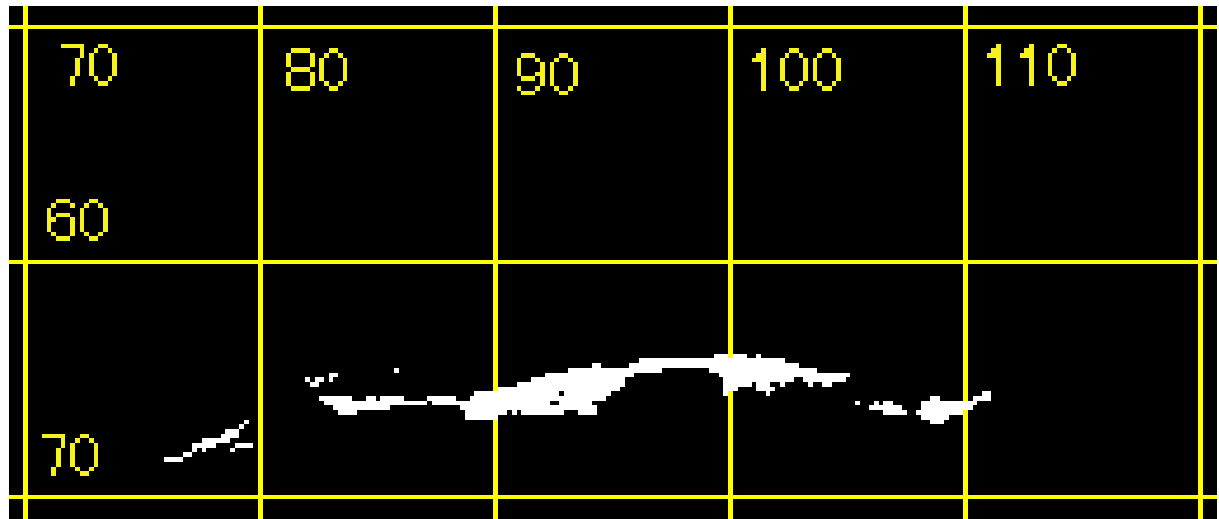
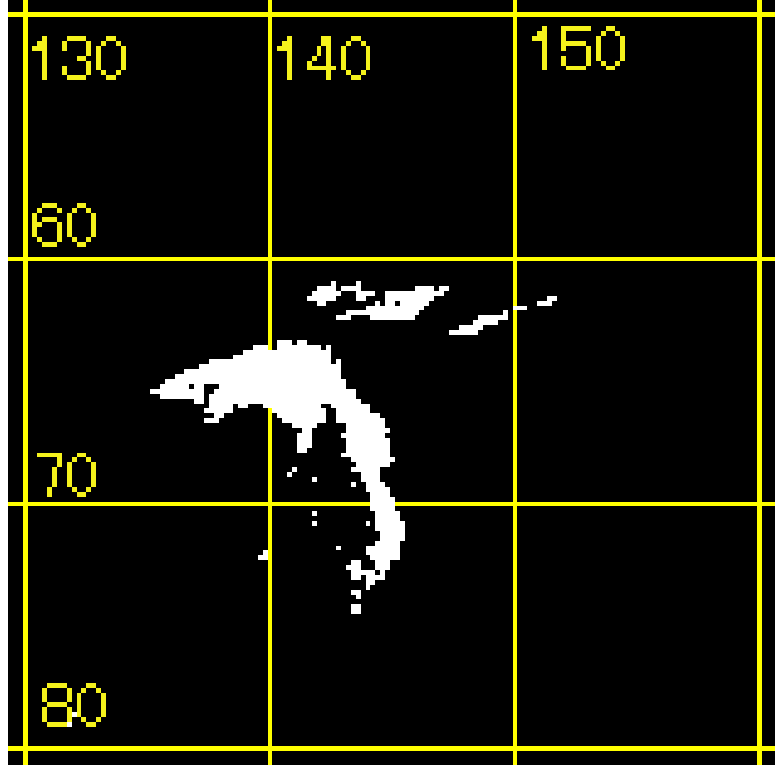
2005/04/04/04 □ 31Z

FY2C Sea ice

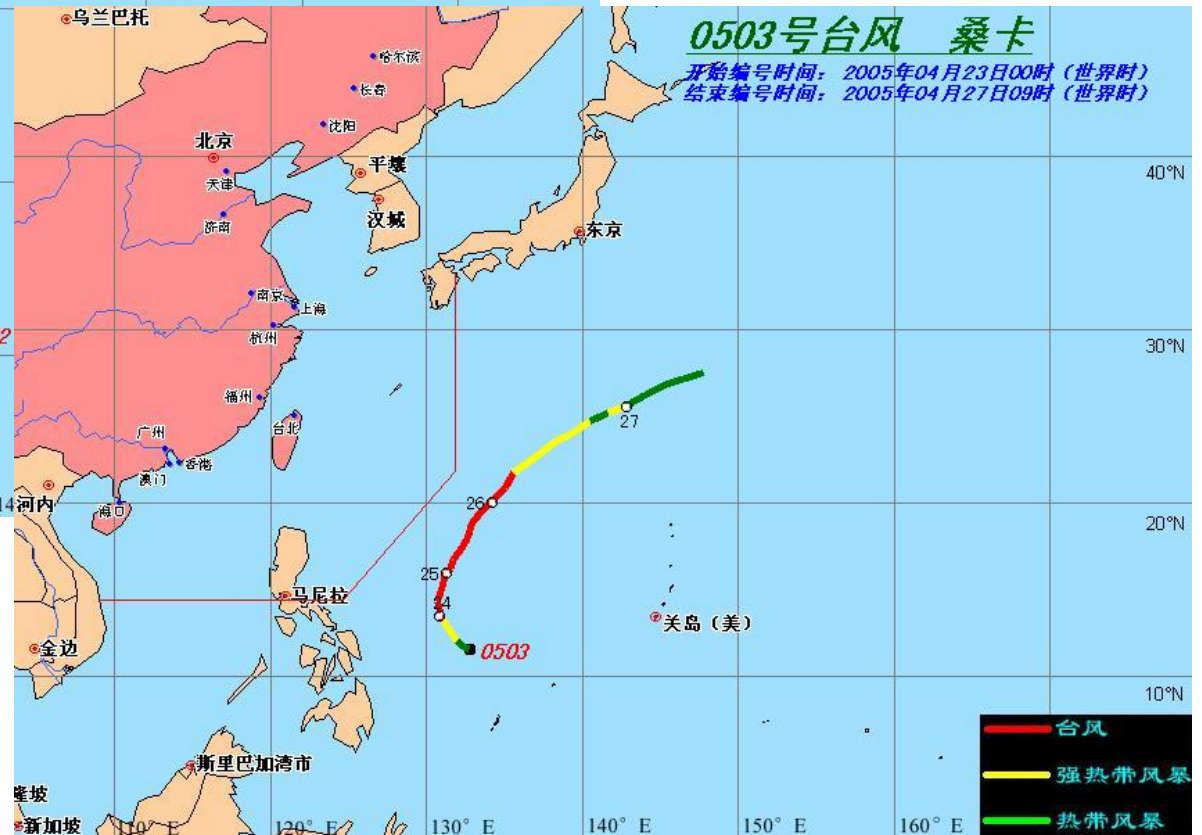
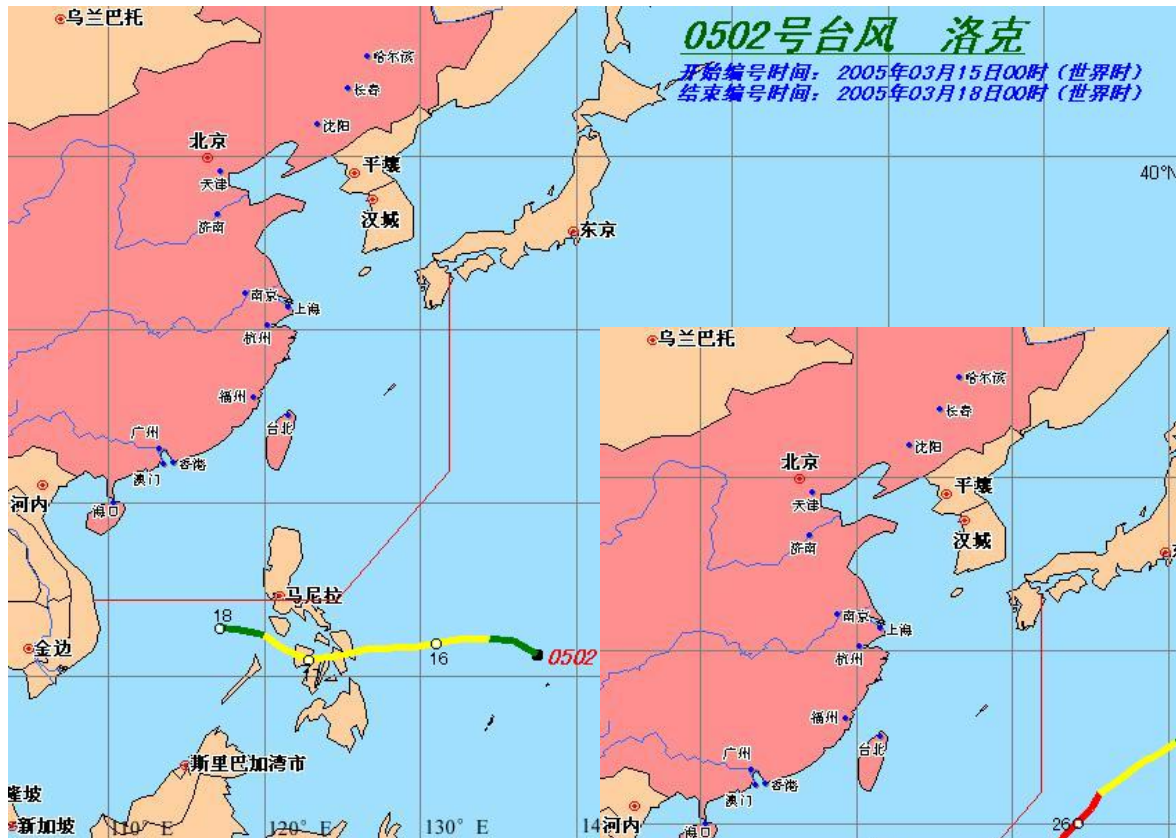
2005/04/04/04 □ 00Z



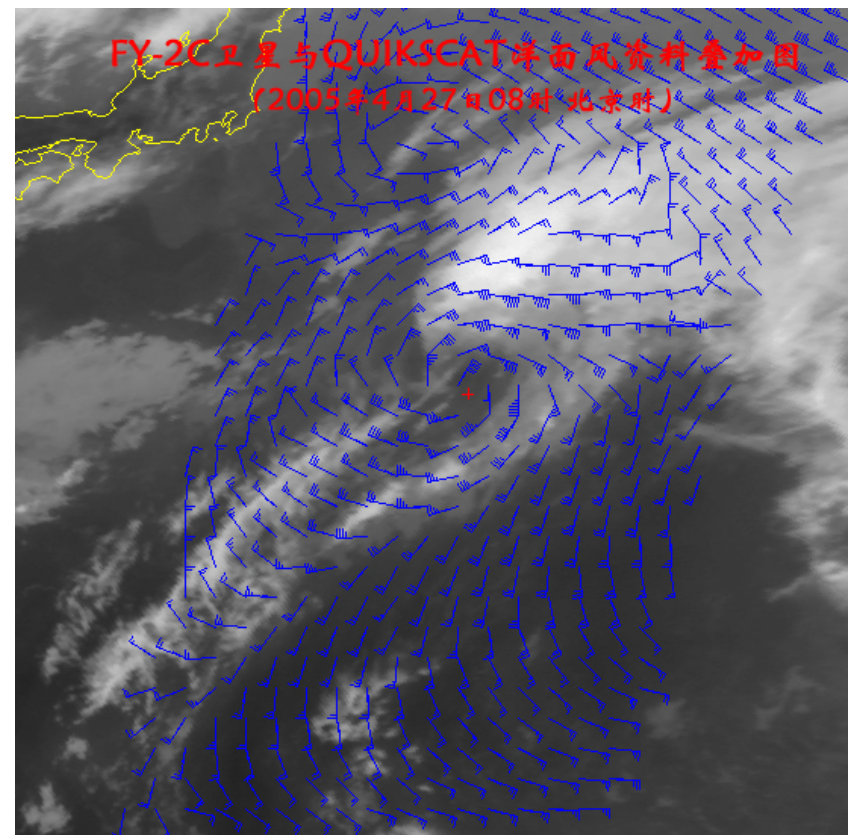
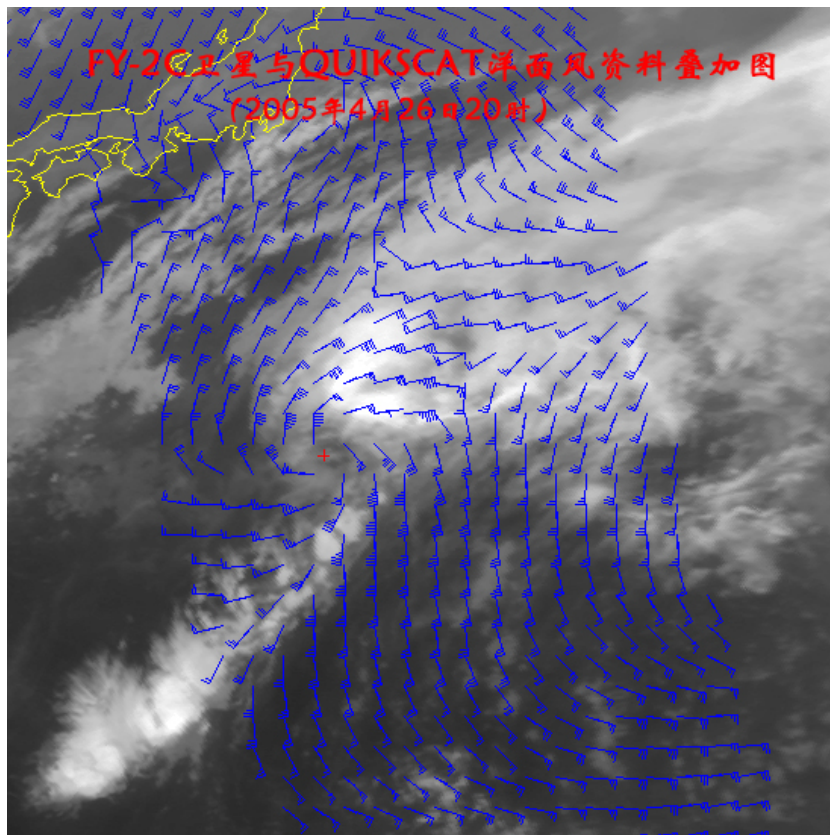
FY2C 2005/04/04/02:00Z



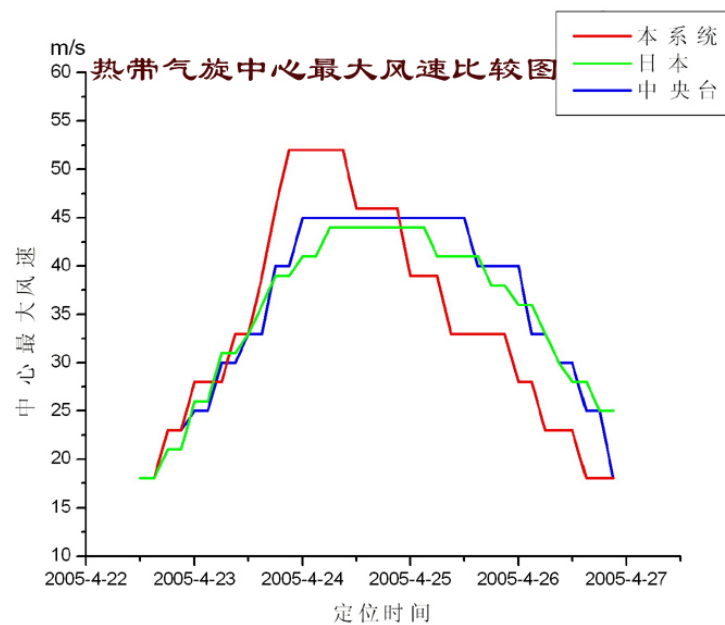
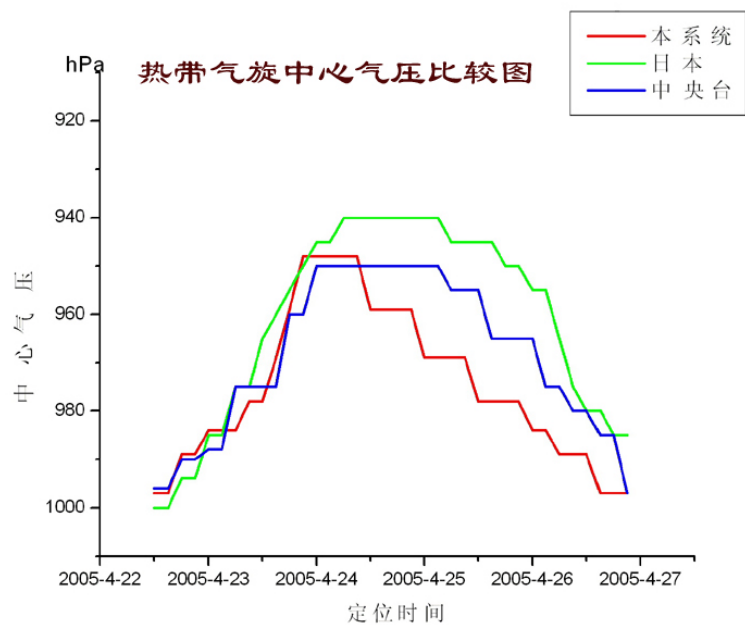
Tropical Cyclone



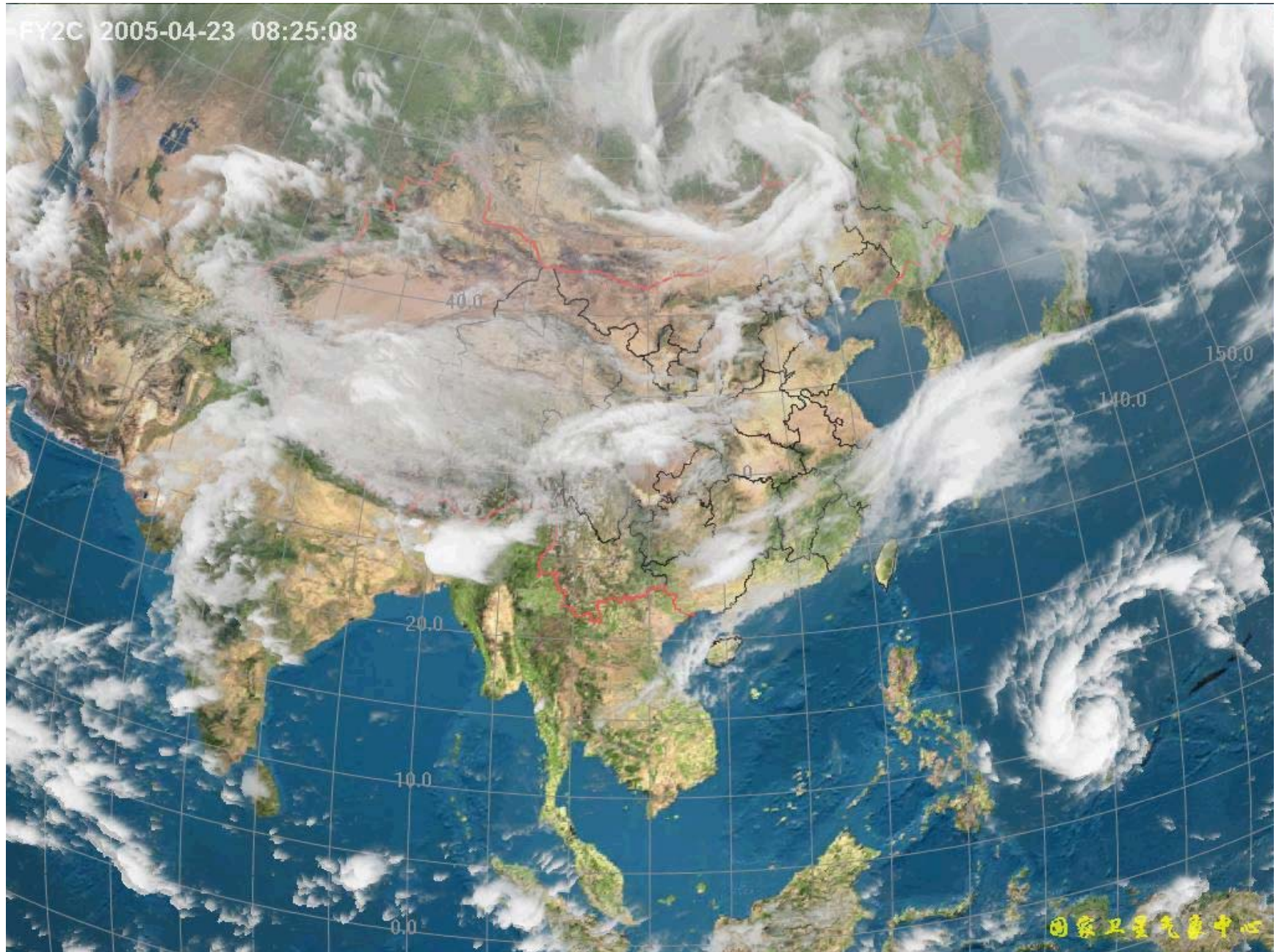
Tropical Cyclone position compared with QUIKSCAT



Tropical Cyclone Intensity Estimation

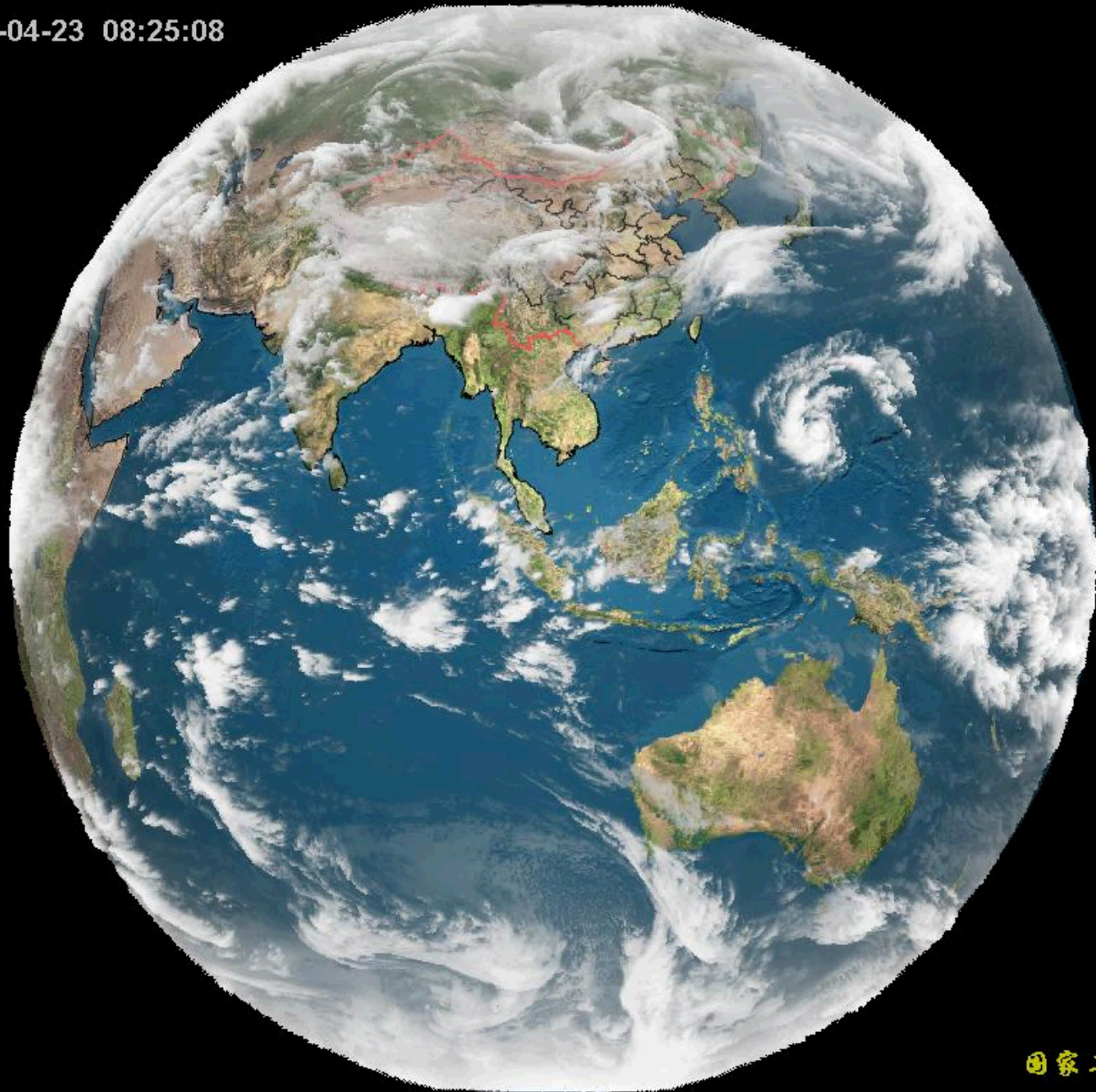


FY2C Image Broadcasted by TV



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FY2C 2005-04-23 08:25:08



End