



国家海洋局  
第二海洋研究所

IOCCG  
International Ocean-Colour Coordinating Group



卫星海洋环境动力学  
国家重点实验室

# Highlights of Chinese OC missions

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# HY-1 series satellites

## Ocean color satellites

**HY-1A** launched on May 15, 2002

**HY-1B** launched April 11, 2007.

1. **COCTS**- Chinese Ocean Color and Temperature Scanner (Ten bands)
2. **CZI**- Coastal Zone Imager (4 bands CCD Cameral)

# COCTS bands and detecting object

Band ( micro m )	Main detecting object
0.402~0.422	Yellow substance、 water pollution
0.433~0.453	Chlorophyll absorption
0.480~0.500	Chlorophyll、 sea ice、 pollutant
0.510~0.530	Chlorophyll、 water depth、 pollutant、 suspended sediment
0.555~0.575	Chlorophyll、 vegetation、 sand
0.660~0.680	Fluorescence、 suspended sediment、 atmospheric correction、 aerosol
<b>0.740~0.760</b>	Suspended sediment、 atmospheric correction、 vegetation
0.845~0.885	Atmospheric correction、 water vapor
10.30~11.40	Surface temperature
11.40~12.50	Surface temperature

**HY-1B**

**HY-1A**

# HY-2 series satellites

**HY-2A** launched on August 16,2011

Satellite	Payload	Monitor Para.	Object
HY-2A	<b>Scatterometer</b> <b>Altimeter</b>  <b>Radiometer</b>	<i>Main Parameter:</i> Sea Surface Wind Sea Surface height, Significant wave height, Gravity field and Ocean Circumfluence Sea Surface Temperature <i>Secondary Parameter:</i> Sea Level,Sea wind speed, Sea Ice and Vapor content	Ocean State Forecast Storm Warn Topography Study Ocean Dynamic Process Median Scale Weather Process and Global Change

# FY-3 series satellites

➤ **FY-3A** launched  
on May 7, 2008

➤ **FY-3B** launched  
on Nov. 5, 2010

➤ **FY-3C** launched  
on Sep. 23, 2013

Band	Wavelength (μm)	Resolution
1	0.445-0.495	250m
2	0.525-0.575	250m
3	0.625-0.675	250m
4	0.84-0.89	250m
5	10.25-12.75	250m
6	0.402-0.422	1000m
7	0.433-0.453	1000m
8	0.48-0.5	1000m
9	0.51-0.53	1000m
10	0.555-0.575	1000m
11	0.64-0.66	1000m
12	0.675-0.695	1000m
13	0.755-0.775	1000m
14	0.855-0.875	1000m
15	0.895-0.915	1000m
16	0.93-0.95	1000m
17	0.97-0.99	1000m
18	1.02-1.04	1000m
19	1.615-1.665	1000m
20	2.105-2.155	1000m

# HJ-1 series satellites

➤ **HJ-1A** launched on Sep. 6, 2008

➤ **HJ-1B** launched on Sep. 6, 2008

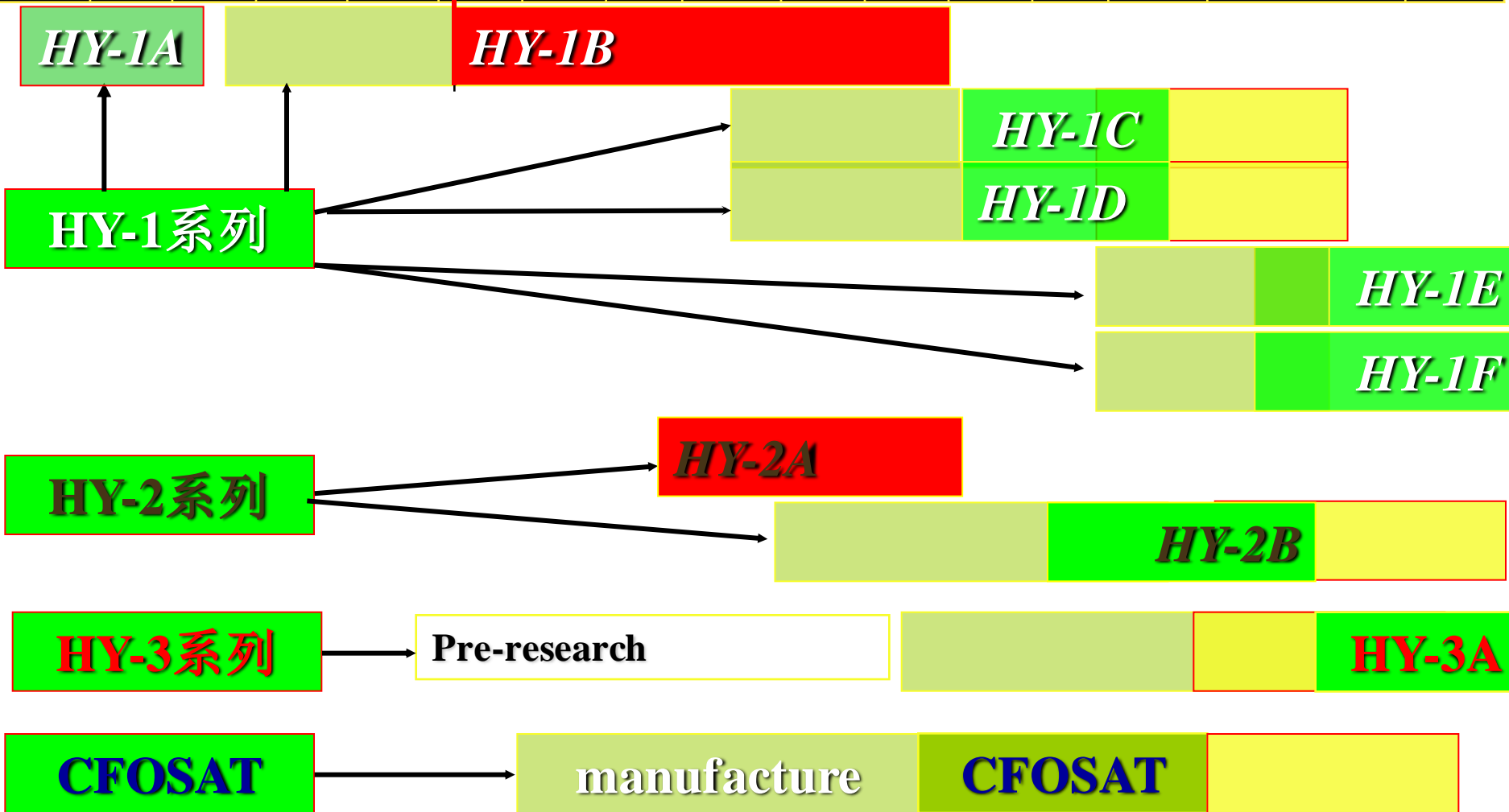
➤ **HJ-1C** launched on Nov. 19, 2012

Sensor	Band no.	Spectral ( $\mu\text{m}$ )	Res. (m)	Swath (km)
CCD Camera	1	0.43~0.52	30	700
	2	0.52~0.60	30	
	3	0.63~0.69	30	
	4	0.76~0.9	30	
Infrared Multi-spectral Camera	5	0.75-1.10	150	720
	6	1.55-1.75		
	7	3.50-3.90		
	8	10.5-12.5	300	
Hyper-spectral Imager		0.45~0.95 (110-128 bands)	100	50

# HIS has 115 Bands

band	start	end	width	band	start	end	width
1	459	461.08	2.08	16	492.39	494.79	2.4
2	461.08	463.19	2.1	17	494.79	497.21	2.42
3	463.19	465.31	2.12	18	497.21	499.66	2.45
4	465.31	467.45	2.14	19	499.66	502.13	2.47
5	467.45	469.61	2.16	20	502.13	504.62	2.5
6	469.61	471.8	2.18	21	504.62	507.15	2.52
7	471.8	474	2.2	22	507.15	509.69	2.55
8	474	476.22	2.22	23	509.69	512.26	2.57
9	476.22	478.47	2.24	24	512.26	514.86	2.6
10	478.47	480.73	2.27	25	514.86	517.48	2.62
11	480.73	483.02	2.29	26	517.48	520.14	2.65
12	483.02	485.33	2.31	27	520.14	522.81	2.68
13	485.33	487.66	2.33	28	522.81	525.52	2.71
14	487.66	490.01	2.35	29	525.52	528.25	2.73
15	490.01	492.39	2.38	30	528.25	531.02	2.76

# HY ocean satellite missions



HY-1系列

HY-2系列

HY-3系列

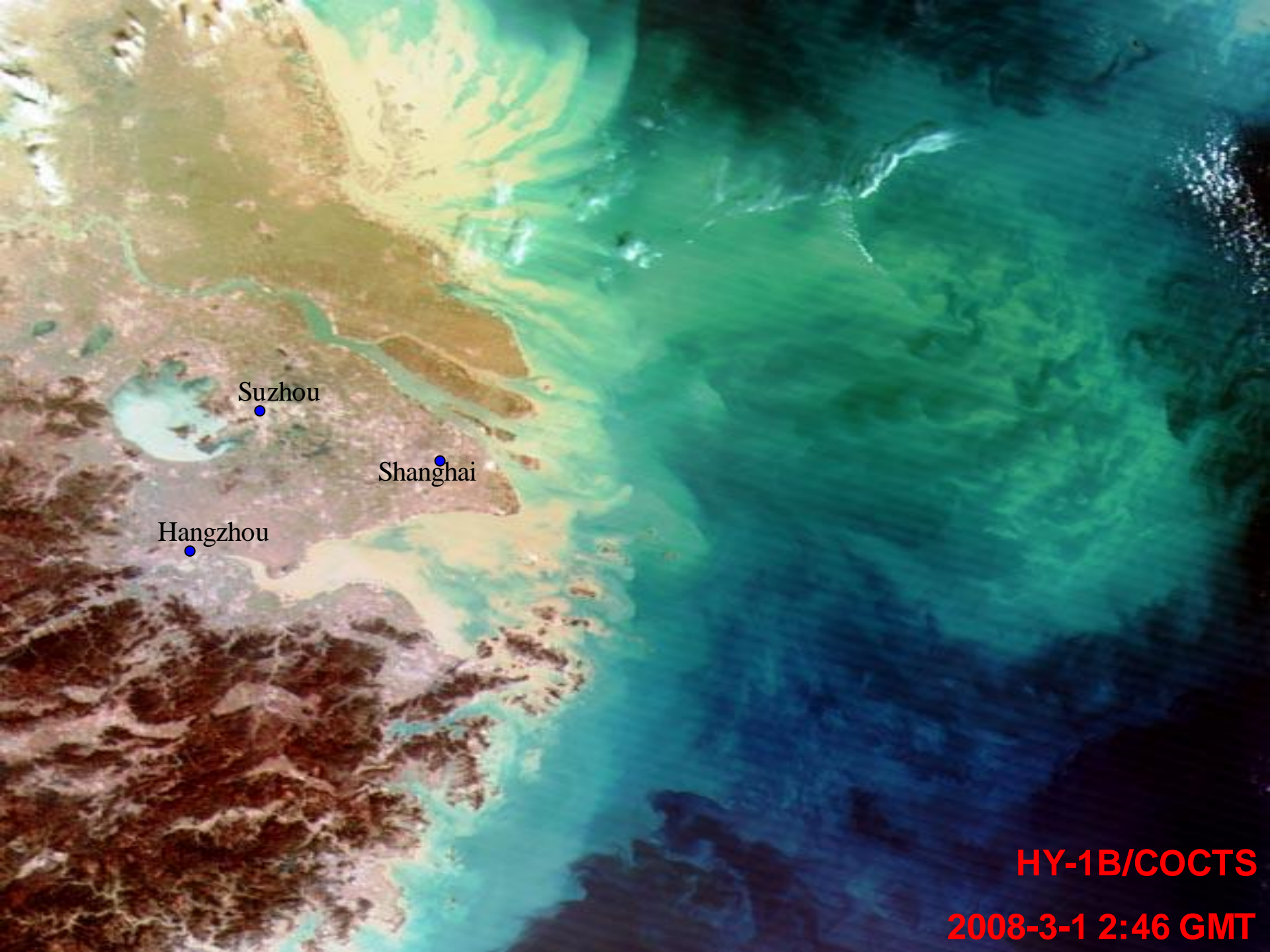
CFOSAT

Pre-research

manufacture







Suzhou

Shanghai

Hangzhou

**HY-1B/COCTS**

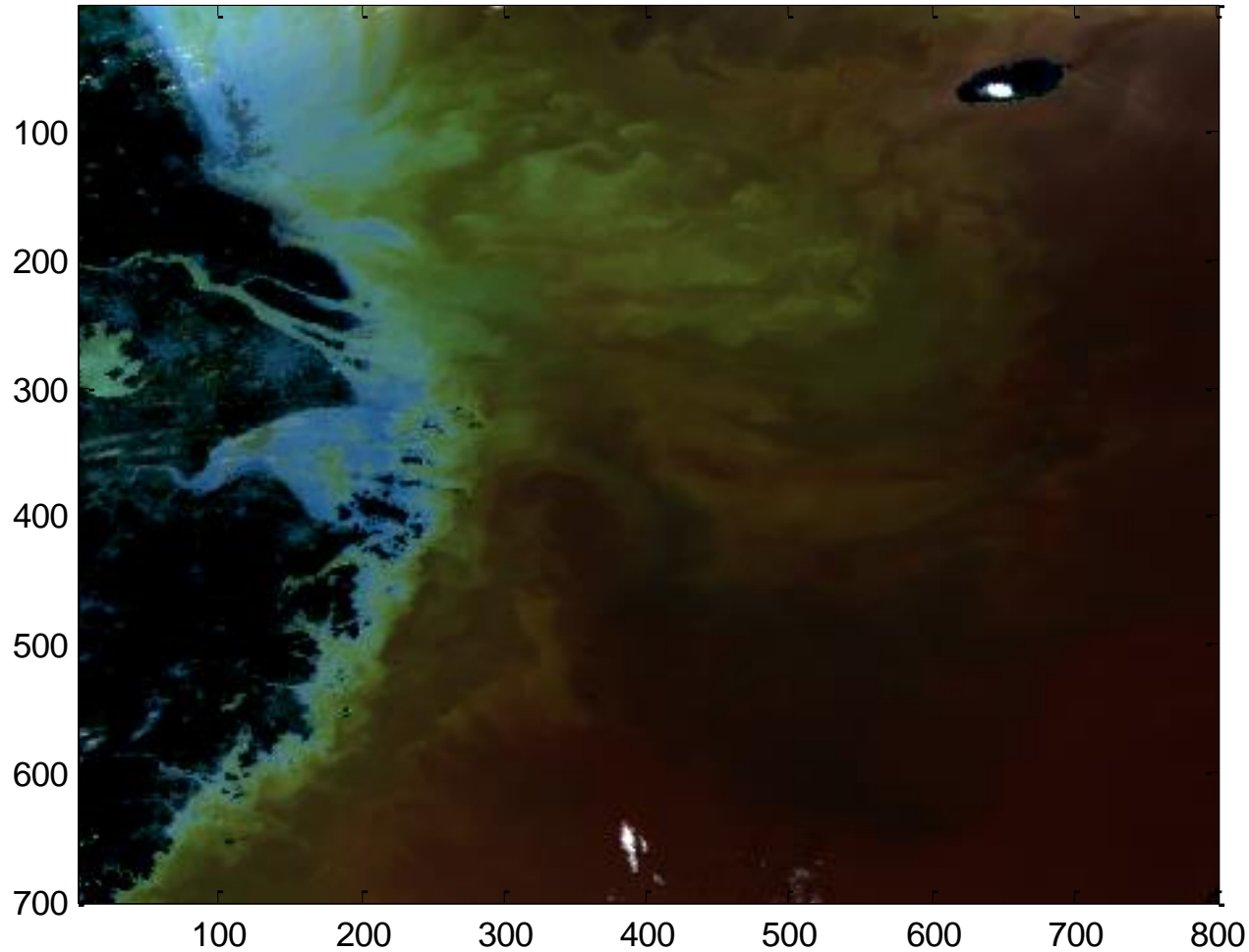
**2008-3-1 2:46 GMT**

# HY-1B

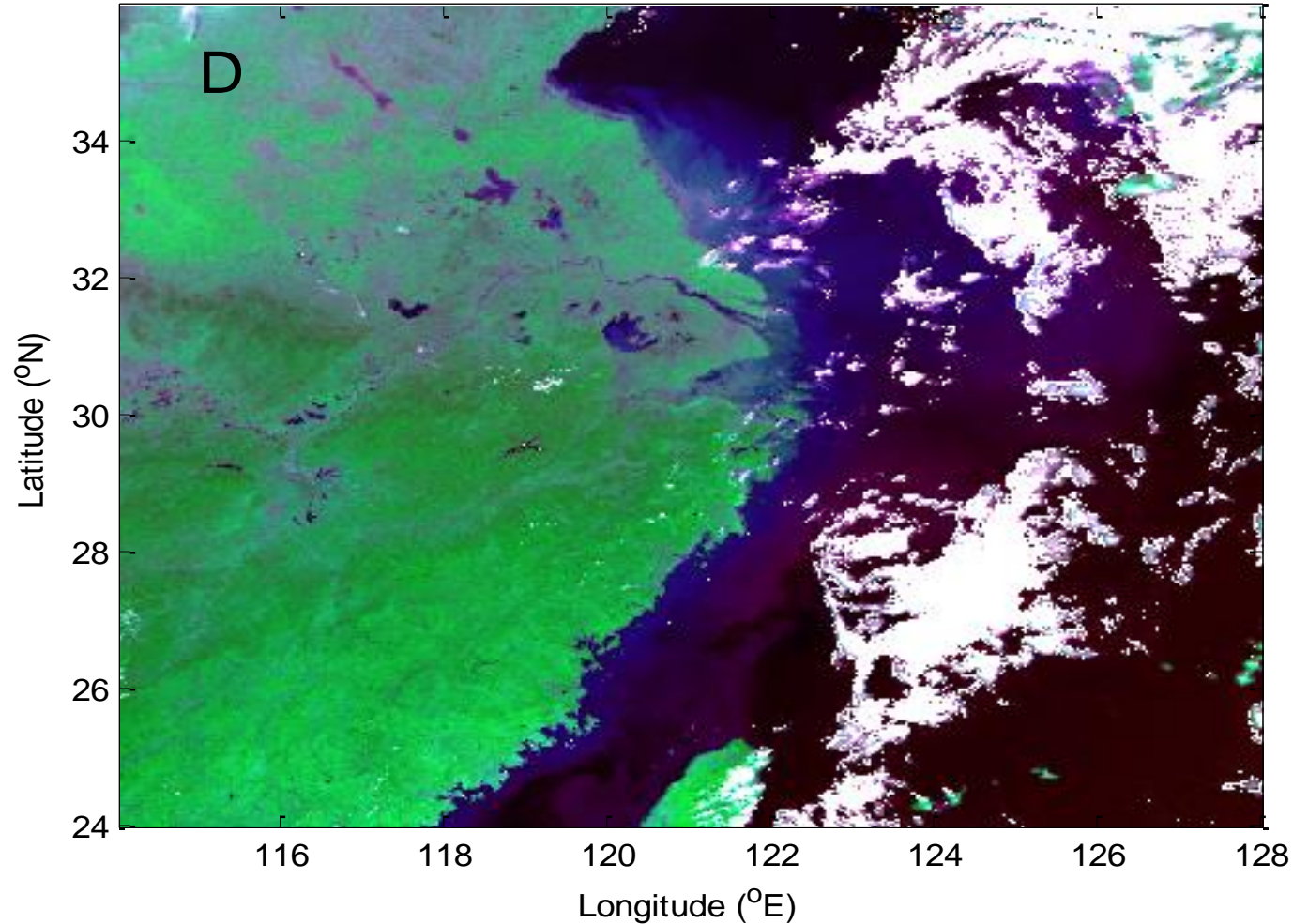
- The satellite image is beautiful
- The accuracy is still a problem because of no on-board calibration system
- The cross-calibration technique is applied for the HY-1B data processing
- There is still no on-board calibration system in HY-1C/1D satellite
- We hope to develop a new calibration technique

# A new atmospheric correction approach for coastal turbid waters(ENLF)

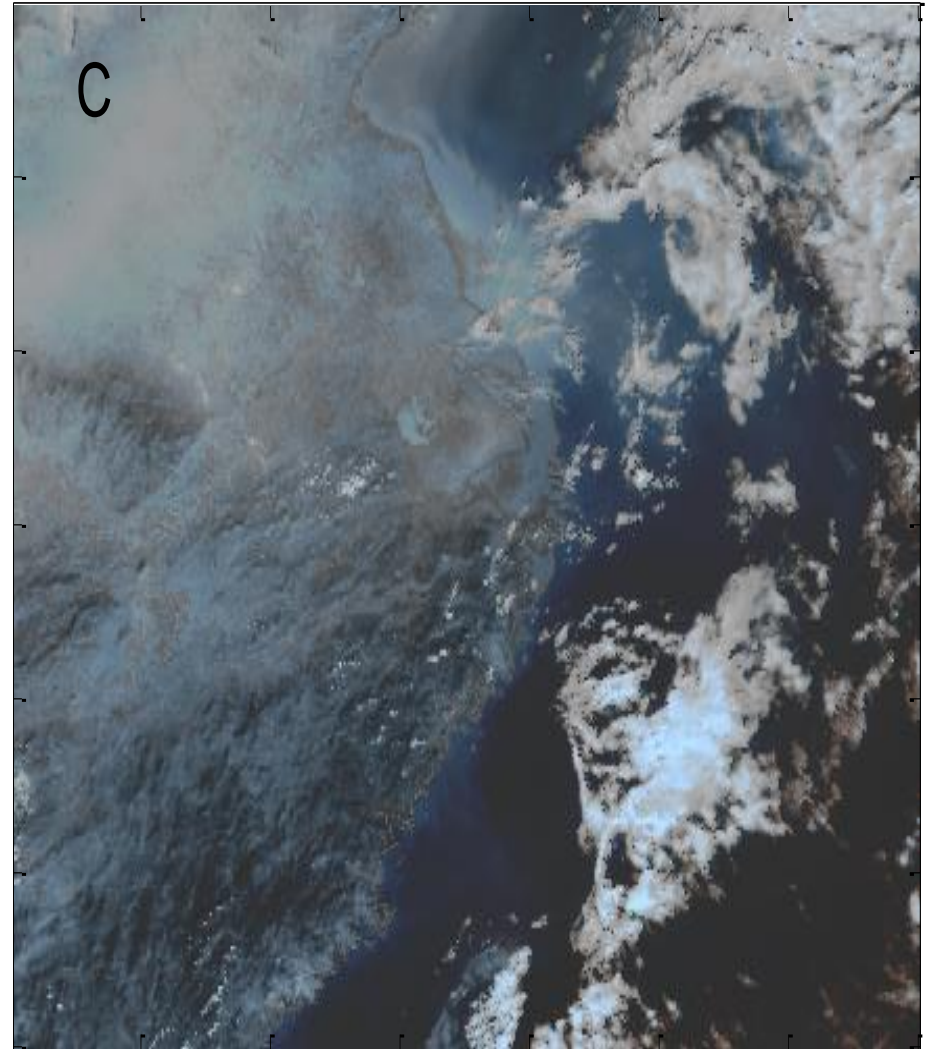
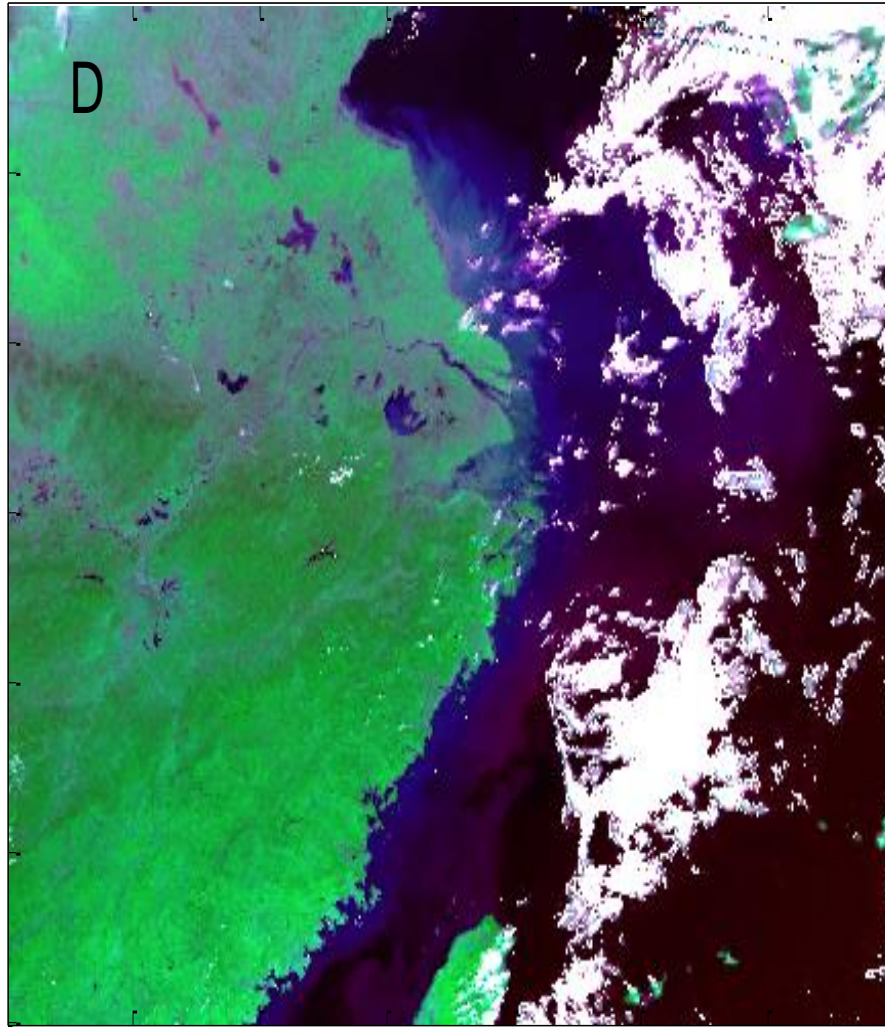
lw 2 5 6



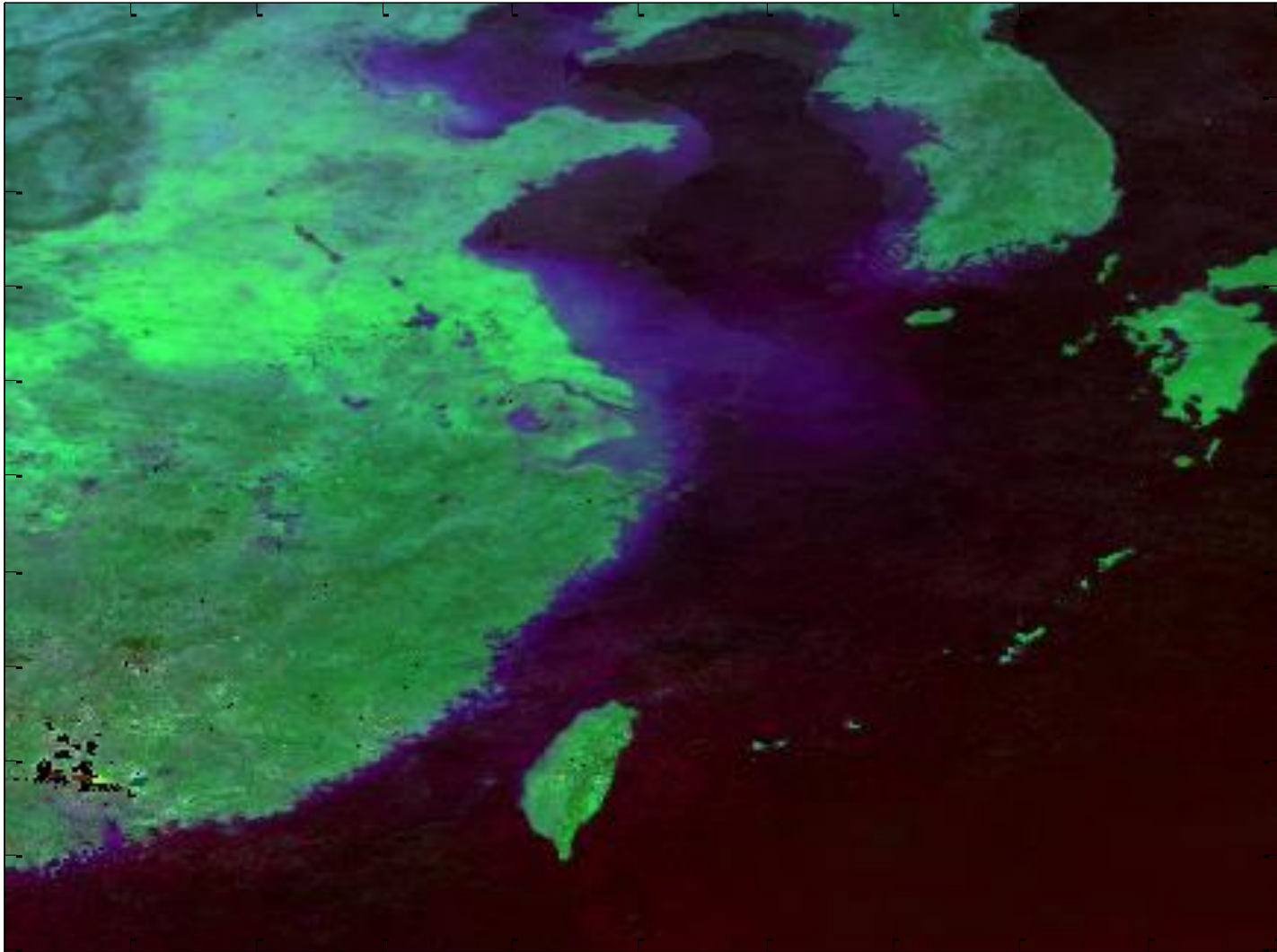
# A new atmospheric correction approach for land and ocean



# A new atmospheric correction approach is applied



A monthly average of the reflectance



# A monthly average of aerosols

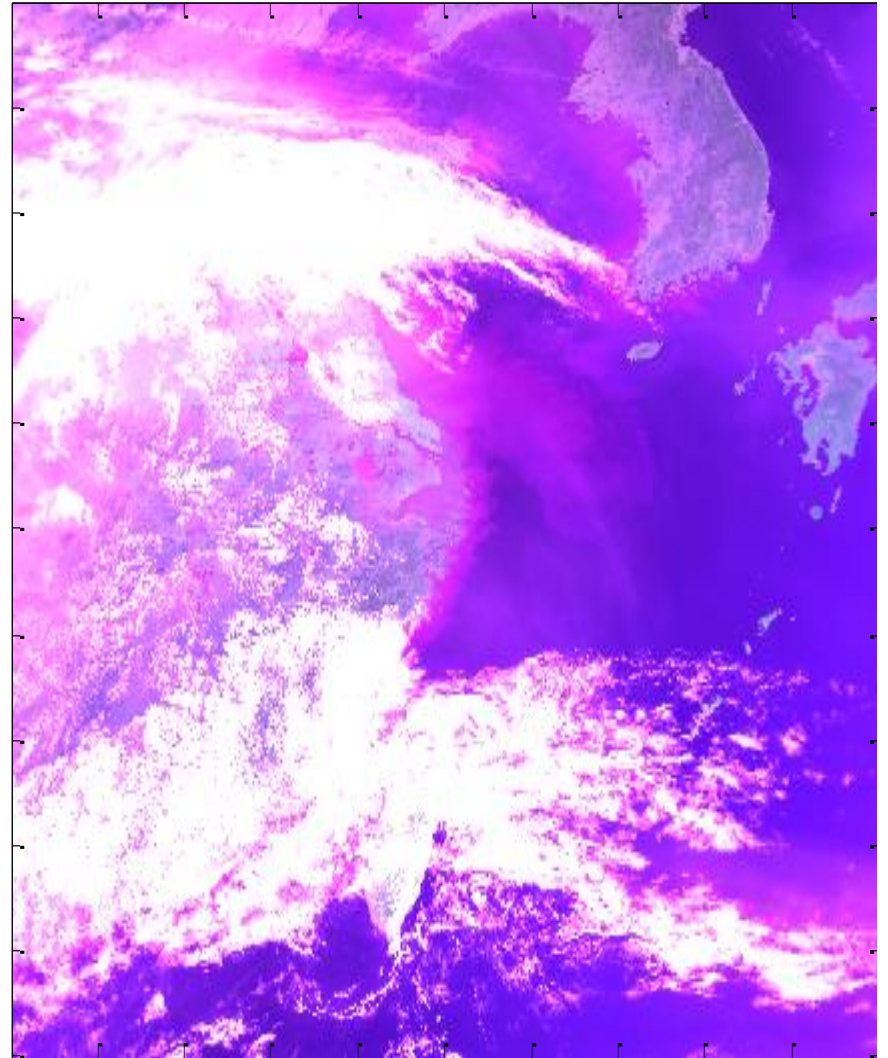


Simulate a standard satellite image at the top of the atmosphere

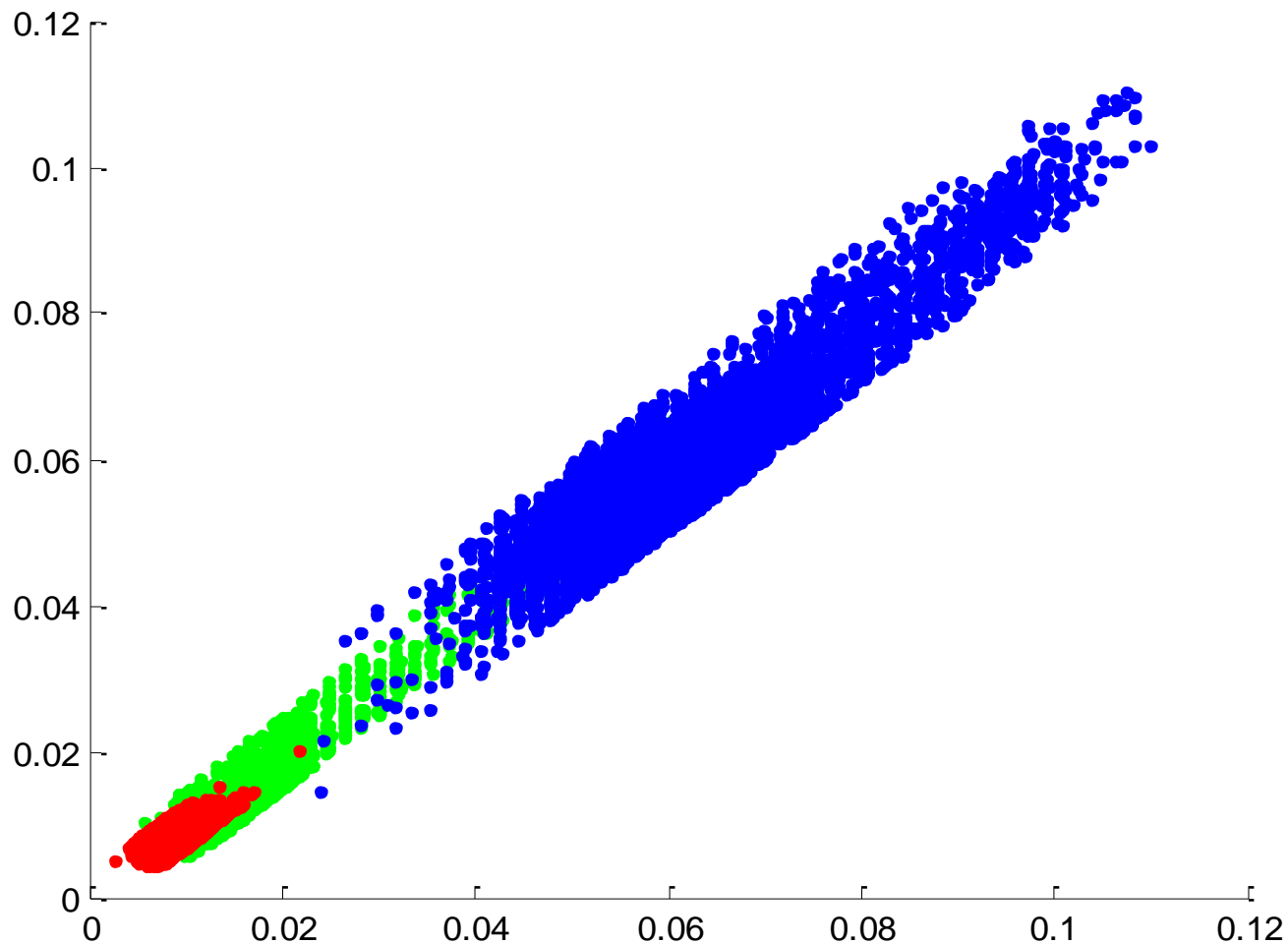


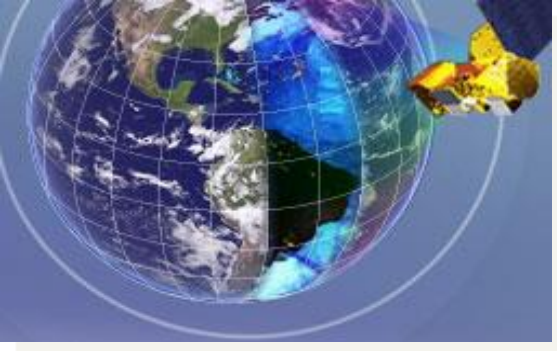


# Comparison between the simulated image and satellite image



# A new calibration technique based on simulated satellite images





谢 谢!

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卫星海洋环境动力学国家重点实验室  
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