



Evolution of Decision Support in Public Service: Application of CHEOS

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Earth Observation System and Data Center , CNSA

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Outlines



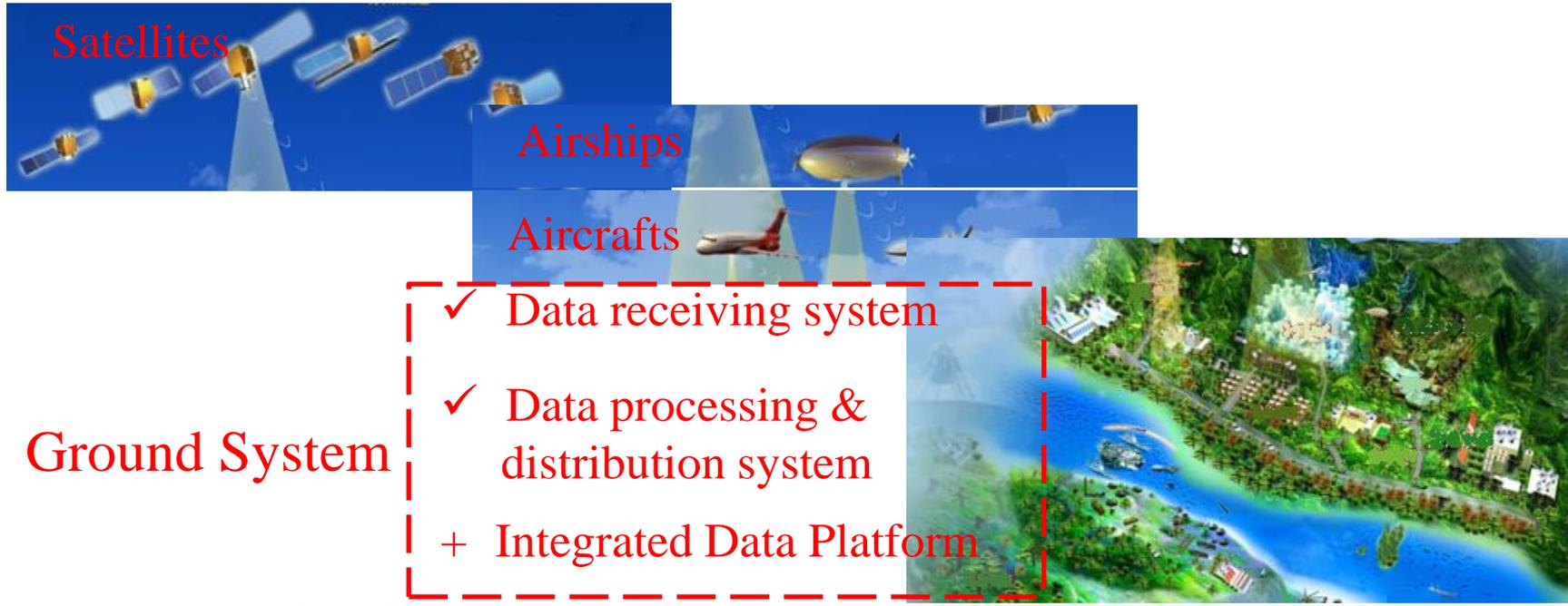
- **Background**
- Introduction to GF series
- CHEOS Data Platform
- Applications of CHEOS Data



Background



➤ What's CHEOS



China High-resolution Earth Observation System -- CHEOS



Background



➤ What's CHEOS

--One of the major national science and technology projects;

--Integrated Systems, such as Space-based system, near space system, aerial system, ground system and also application system;

--with high **temporal, spatial** and spectral resolution

--to achieve, **Observations for Decision on Information**

➤ Who's leading this project

--The Earth Observation System and Data Center(EOSDC), CNSA

--EOSDC-CNSA is also responsible for EO application services, commercial development, technology consultant and international cooperation



Outlines



- Introduction
- **Introduction to GF series**
- CHEOS Data Platform
- Applications of CHEOS Data

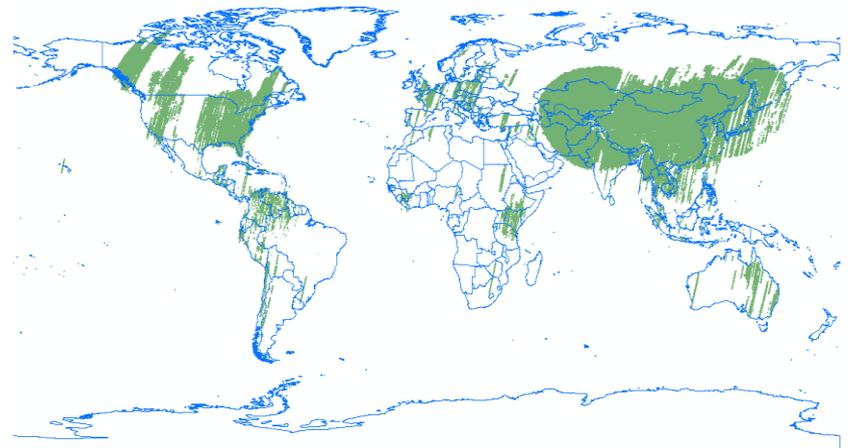


Introduction to GF series



➤ GF satellite series: GF-1

- GF-1 is configured with two 2m panchromatic/8m multispectral camera and one 16m multi-spectral medium-resolution and wide-view camera. GF-1 was launched on **26th Apr., 2013** and is working in good condition. Its data are widely used in public service, such as, environment monitoring, corps areas monitoring, disaster prevention, etc.





Introduction to GF series

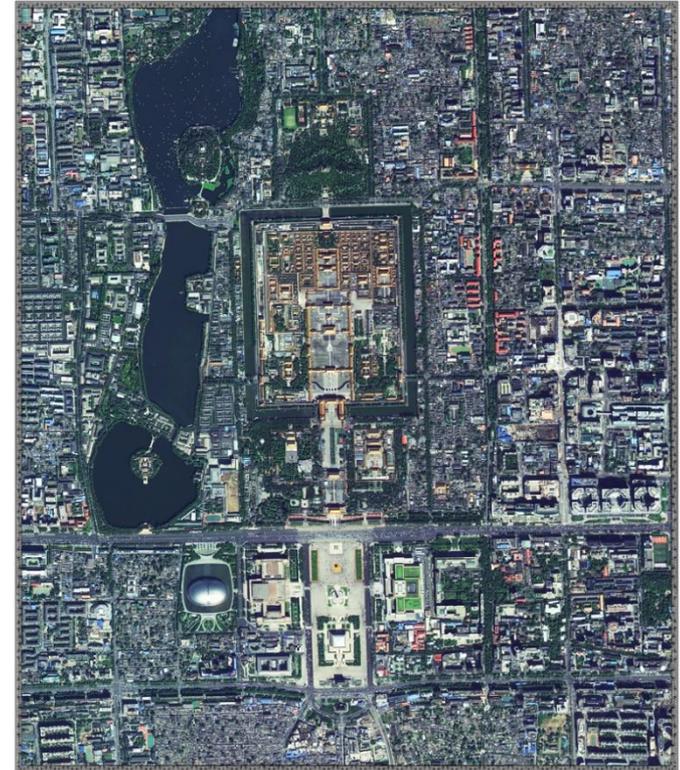


➤ GF satellite series: GF-2

- Payload on GF-2 is 0.8m pan /3.2m multispectral camera . It was launched on **19th Aug., 2014** and served for geological disasters, mineral development survey and monitoring, land use dynamic monitoring and changes survey, etc.



高分二号卫星北京影像



融合方式：全色影像(0.8米)和多光谱影像(3.2米)融合
接收日期：2014年09月27日
比例尺1:4000
国防科技大学卫星工程中心
中国资源卫星应用中心制作

**Image of Beijing City (0.8m)
from GF-2**

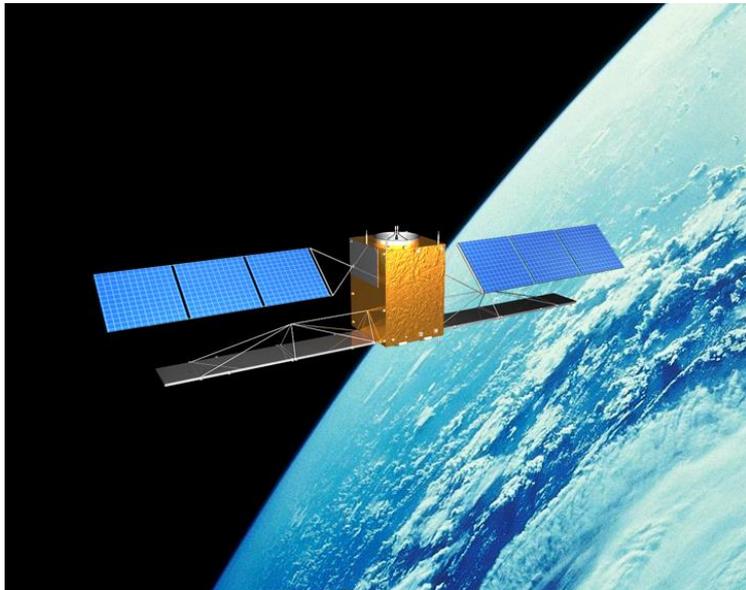


Introduction to GF series



➤ GF satellite series: GF-3

- GF-3 has imaging abilities of C band polarization Synthetic Aperture Radar (SAR) and has several working modes of 1m to 500m. The design life of this satellite is 8 years, and it was launched on **10th Aug., 2016.**



高分三号卫星首都机场影像



高分三号 成像参数 (5.8GHz极化)
成像日期: 2016年08月10日
比例尺: 1:10000
国防科技大学光电工程中心
中国空间技术发展中心 制作

First SAR image from GF-3

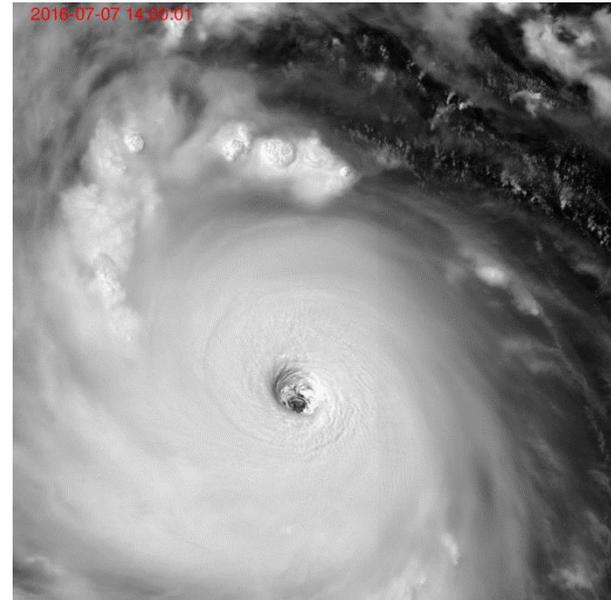


Introduction to GF series



➤ GF satellite series: GF-4

- GF-4 has 50m panchromatic/multispectral and high temporal resolution (within 1 minute) imaging abilities from geostationary orbit. The imaging area of this satellite is around of China about 7000km × 7000km with image scene of 400km × 400km. The design life of this satellite is 8 years, and was launched on **29th Dec., 2015**.



GF-4 view of Typhoon - Nepartak



Introduction to GF series



➤ Three others satellites has been planed

--GF-5, payloads for atmospheric environment observation

--GF-6, 2m pan and 8m multi-spectral camera

--GF-7, payload for map and survey

GF-5

GF-6

GF-7





Outlines



- Introduction
- Introduction to GF series
- **CHEOS Data Platform**
- Applications of CHEOS Data



CHEOS Data Platform



➤ CHEOS Data Platform

--Integrated Data Platform, serve with comprehensive information



16 different fields



26 branches in provinces





CHEOS Data Platform



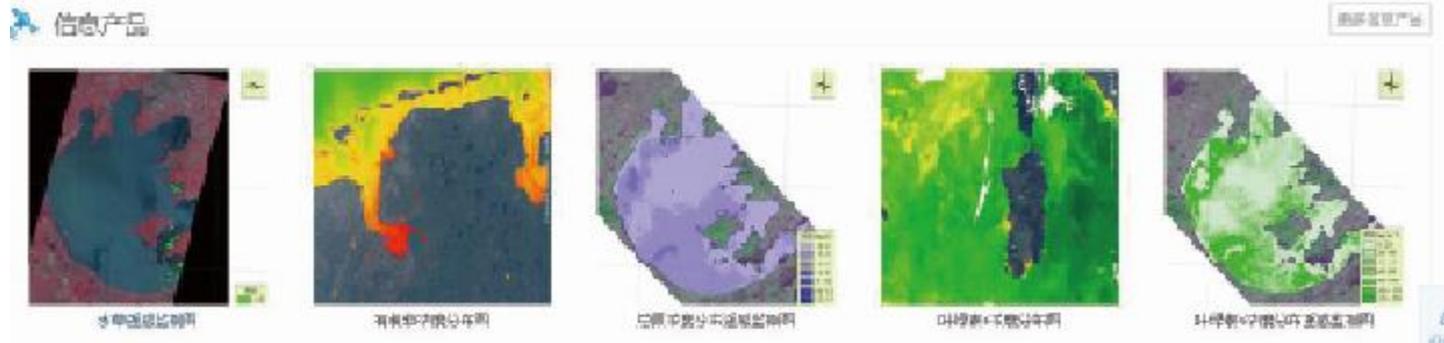
➤ CHEOS Data Platform

--Data access

--Software

--Lists of products

--Typical application





CHEOS Data Platform

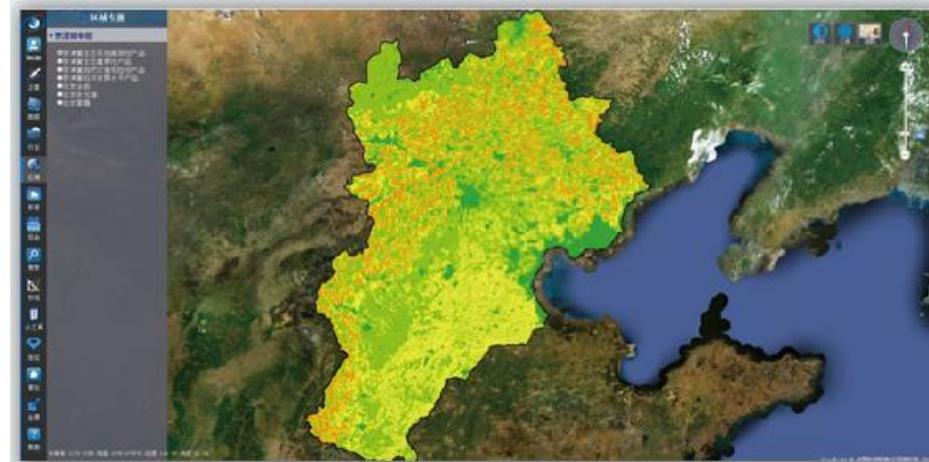


➤ CHEOS Data Platform

--Remote Sensing Based Service for the society development in China



Natural heritage sites for travelers



RS based research of B-H-T region



Outlines



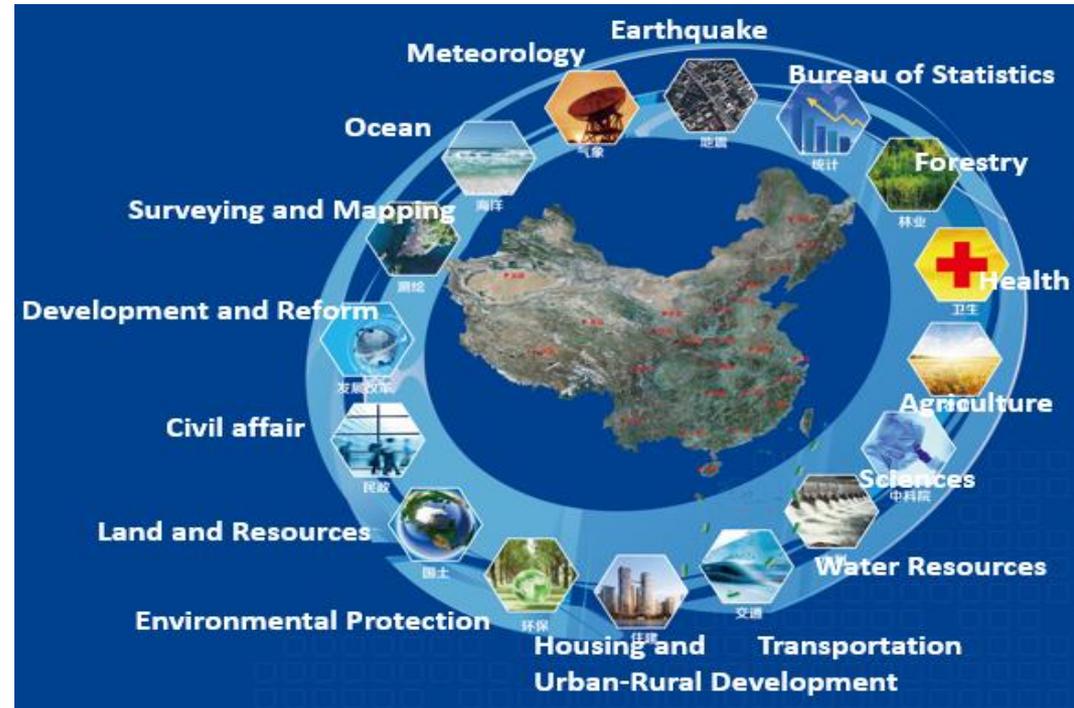
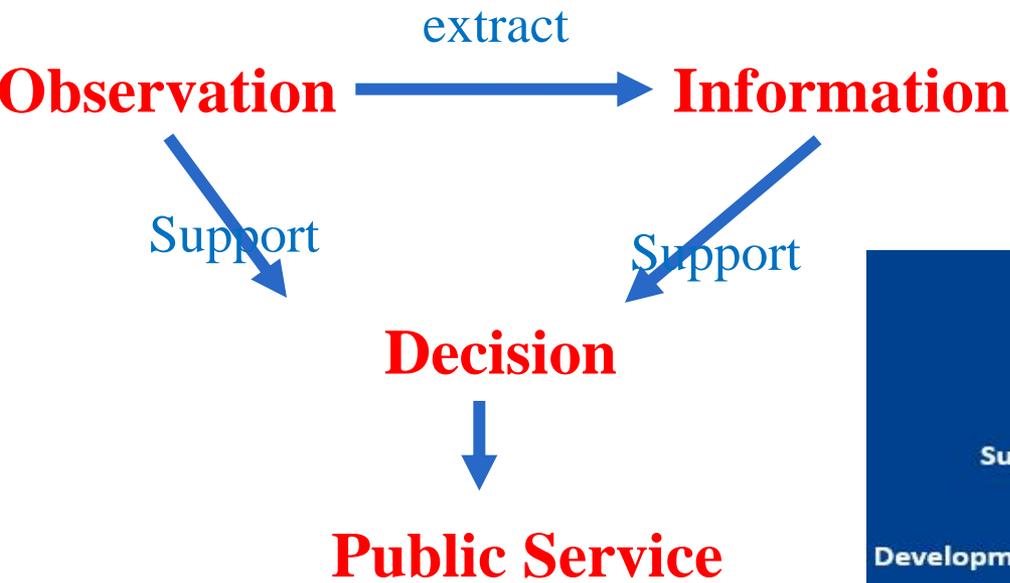
- Introduction
- Introduction to GF series
- CHEOS Data Platform
- **Applications of CHEOS Data**



Applications of CHEOS Data



➤ Decision Support in Public Service



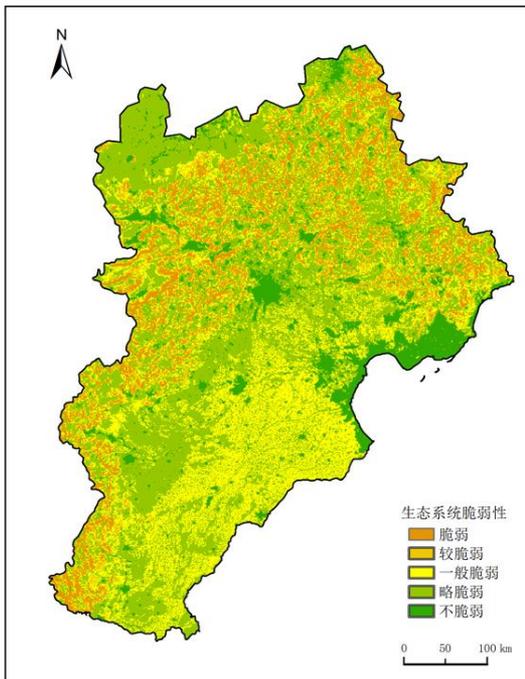


Applications of CHEOS Data

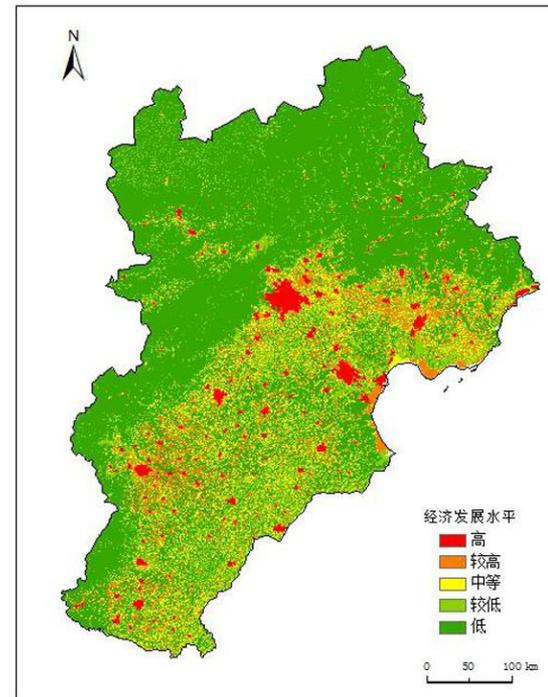


➤ National Development and Reform Commission

To Guide the harmonious regional development



Vulnerability index of Beijing-Tianjin-Hebei area's ecological system



Economic development index of Beijing-Tianjin-Hebei area



Applications of CHEOS Data



➤ Ministry of Civil Affairs

云南省鲁甸县6.5级地震震区堰塞湖卫星影像图



国家减灾委员会办公室 民政部国家减灾中心(民政部卫星减灾应用中心)

制图时间: 2014年9月11日

2014年云南鲁甸6.5级地震灾后恢复重建遥感监测图



民政部国家减灾中心(卫星减灾应用中心)

数据来源: 2015年6月29日高分1号卫星 制作日期: 2015年9月8日

Using GF-1 data to monitor landslide dams in disaster areas. After the earthquake on Aug.3, 2014, Ludian City, Yunnan Province.

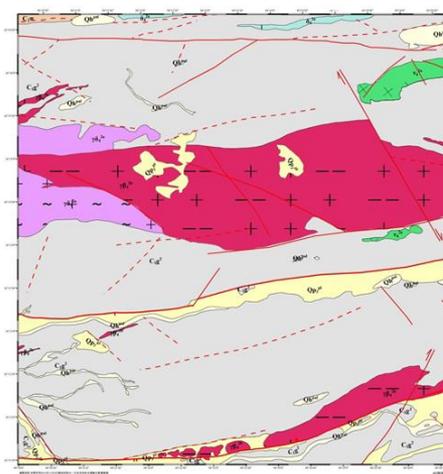
Using GF-1 2m and 8m data to monitor recovery and reconstruction progress of Ludian City, Yunnan Province.



Applications of CHEOS Data



➤ Ministry of Land and Resources



图例
地质
第四系全新统洪积层、冲、洪积层
第四系上更新统洪积层、冲、洪积层
第四系中更新统洪积层、冲、洪积层
第四系下更新统洪积层、冲、洪积层
第四系全新统洪积层、冲、洪积层
第四系全新统洪积层、冲、洪积层

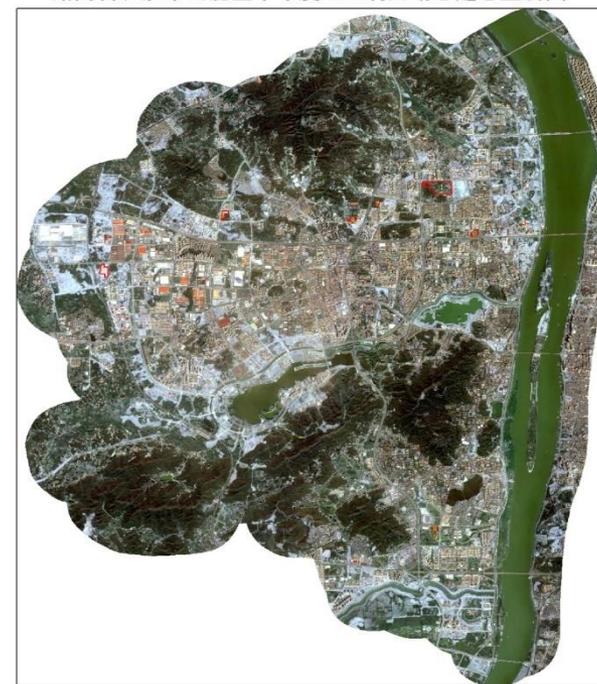
示范区地质灾害遥感解译图（三维）



数据源：GF-1数据

Analyze geological structure

湖南省长沙市岳麓区半年度土地利用动态遥感监测图



采用2014年10月高分一号数据制作

湖南省国土资源规划院

Land use dynamic monitoring

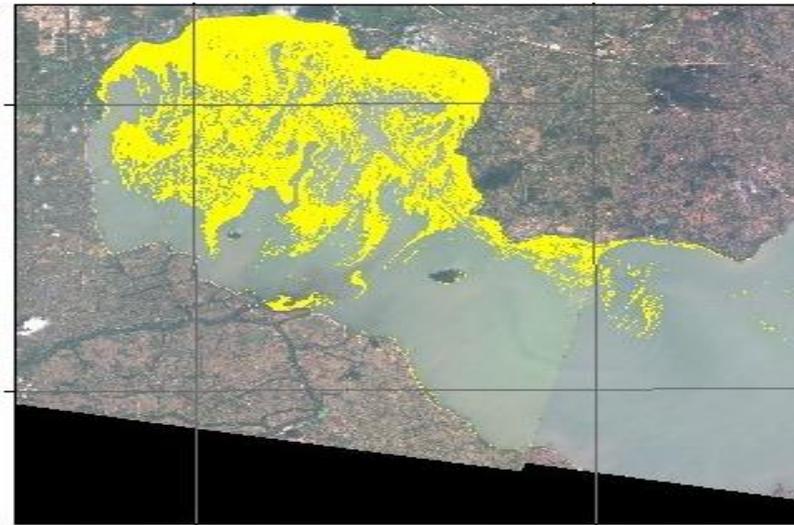
Geological disasters remote sensing



Applications of CHEOS Data



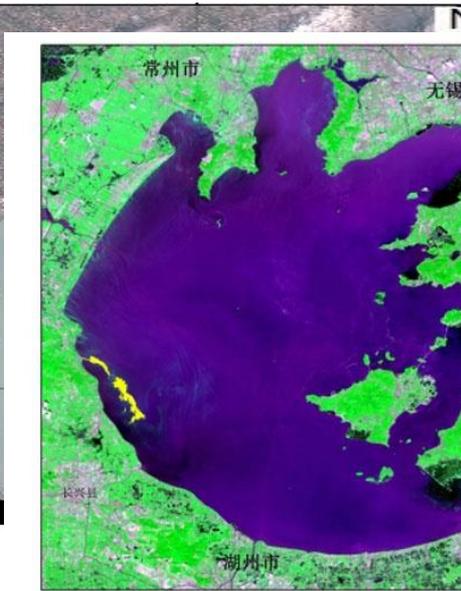
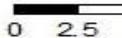
Ministry of Environmental Protection



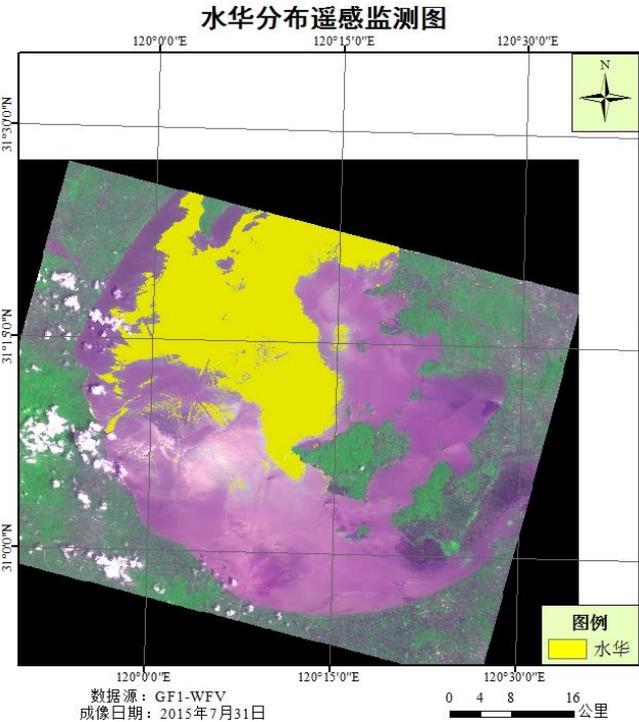
117° 20' 0"E 117° 30' 0"E

数据源: GF-1 PMS

数据获取时间: 2013年6月18日



数据源: GF-WFV2
成像日期: 2015年8月2日



**Distribution of bloom
in Chaohu Lake**

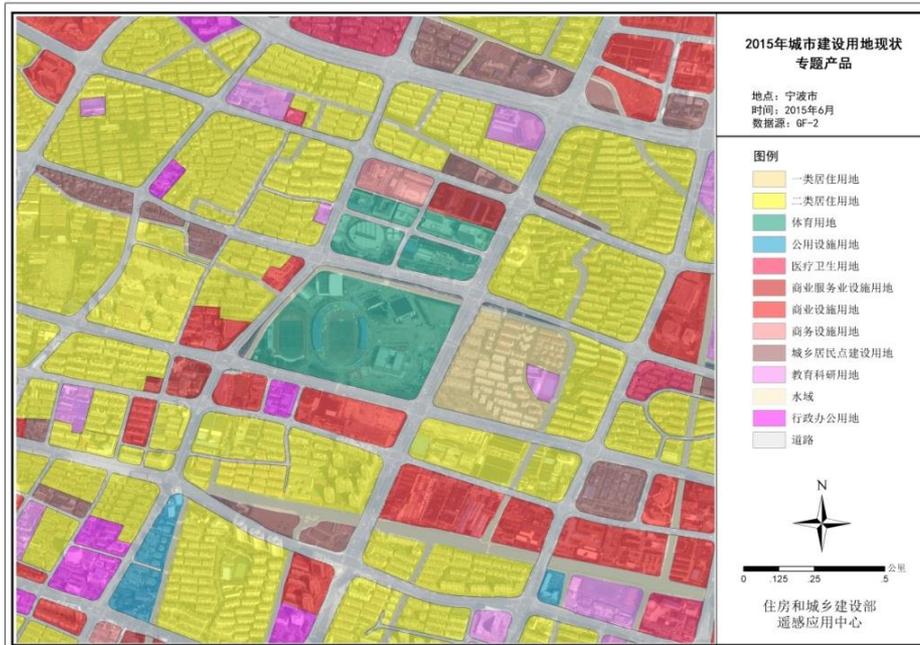
**Distribution of water bloom
in Taihu Lake.**



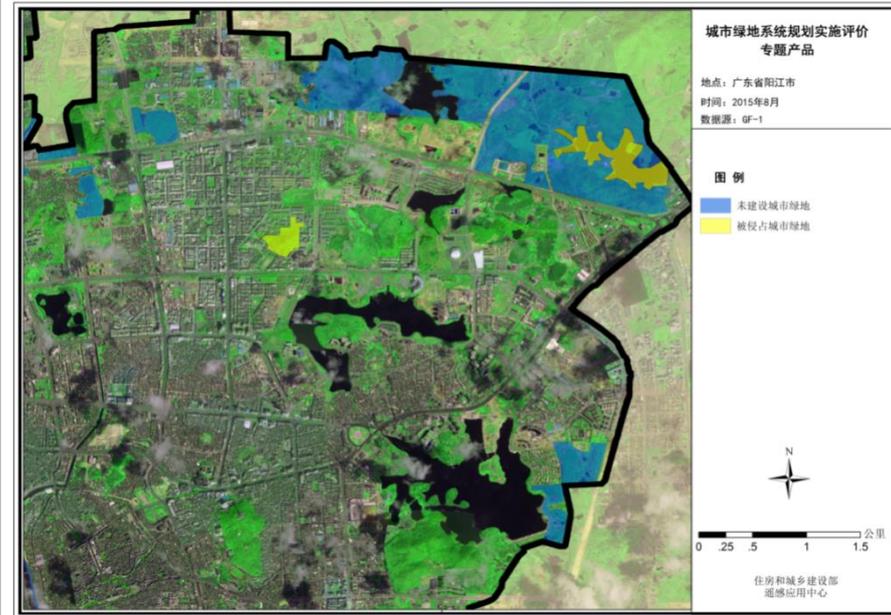
Applications of CHEOS Data



➤ Ministry of Housing and Urban-Rural Development



Functional classification of community blocks



Urban greenfield map. For landscape, urban planning.



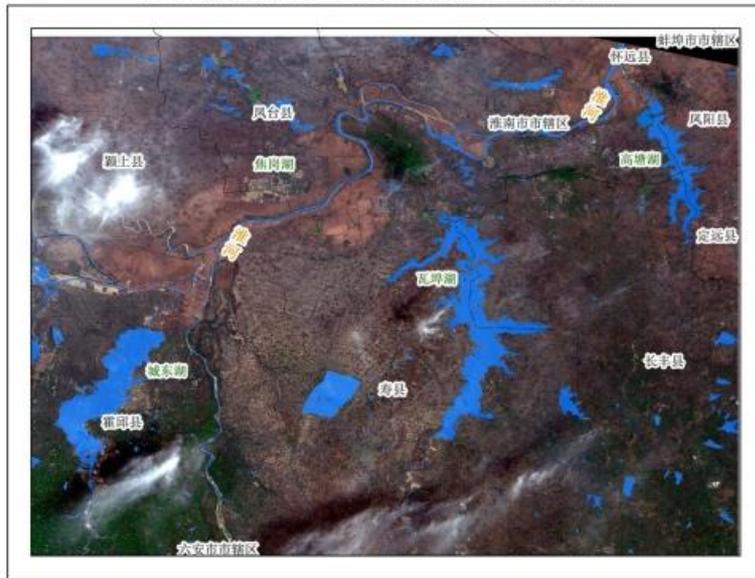
Applications of CHEOS Data



➤ Ministry of Water Resources

➤ Water flood

淮河中游部分地区2015年6月19日地表水体遥感监测专题图



数据类型: GP-1
获取时间: 2015-06-19

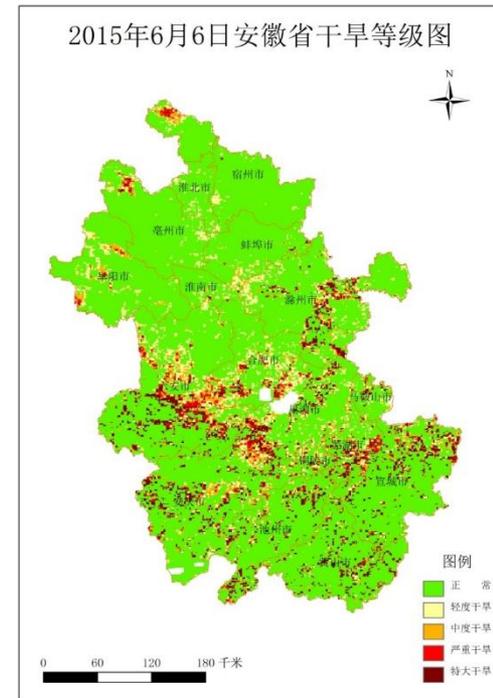
图例
水体 蓝色
城市 黄色

中国水利水电科学研究院
二〇一五年六月三十日

Monitor land surface water in middle reaches of Huaihe River.

➤ Arid drought index

2015年6月6日安徽省干旱等级图



图例
正常 (Green)
轻度干旱 (Yellow)
中度干旱 (Orange)
严重干旱 (Red)
特大干旱 (Dark Red)

0 60 120 180 千米

Drought situation of Anhui Province from June, 2015.



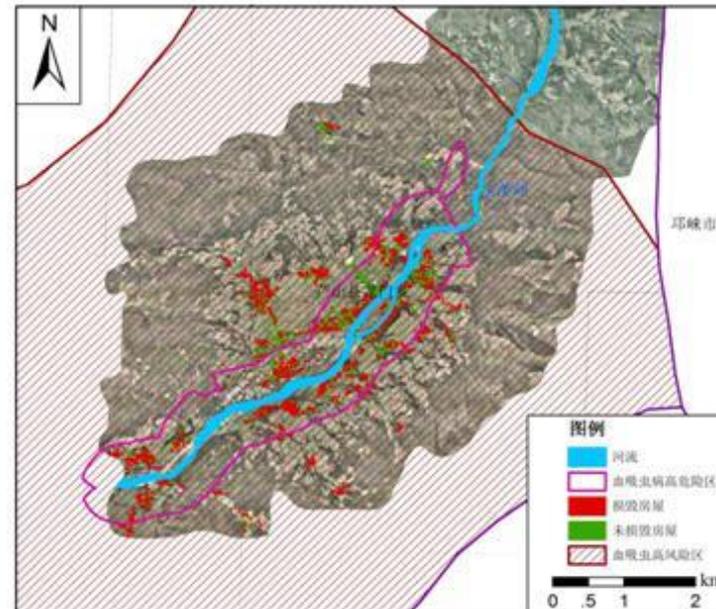
Applications of CHEOS Data



- **National Health and Family Planning Commission**
- **Risk assessment of regional infectious diseases after earthquake**

Evaluate the risk of schistosomiasis in Longmen region, Ya'an City, Sichuan province after Ya'an earthquake in 2013.

2013年雅安地震灾后龙门乡传染病风险评估



投影: Albers双纬线等面积投影
地理坐标: CGCS2000

制图单位: 中国疾病预防控制中心
制图时间: 2013年07月26日

CHEOS

国家国防科技工业局重大专项工程中心



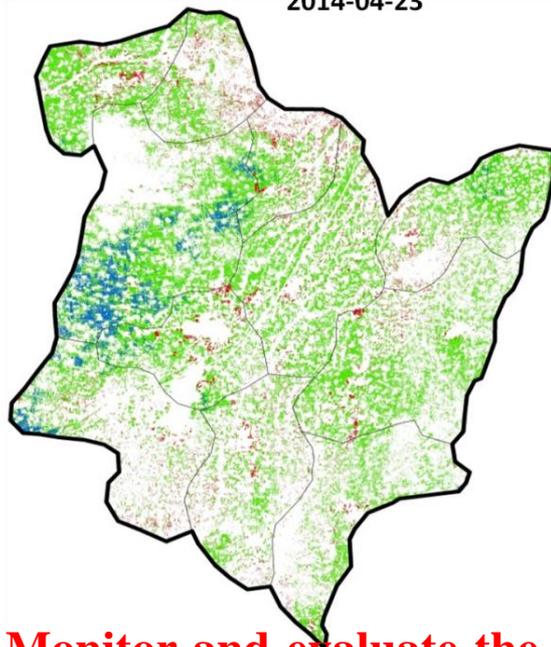
Applications of CHEOS Data



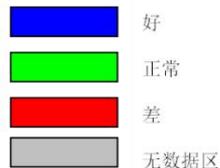
➤ Ministry of Agriculture

Estimate the output of 5 major crops

2014-04-23



图例



Monitor and evaluate the growth of Winter Wheat in Hengshui region of Hebei province



Winter wheat stripe rust monitoring 24

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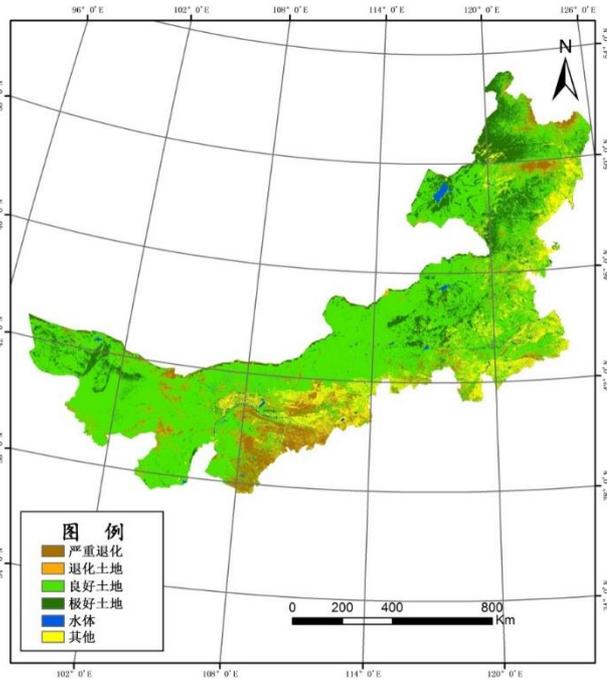
国家国防科技工业局重大专项工程中心



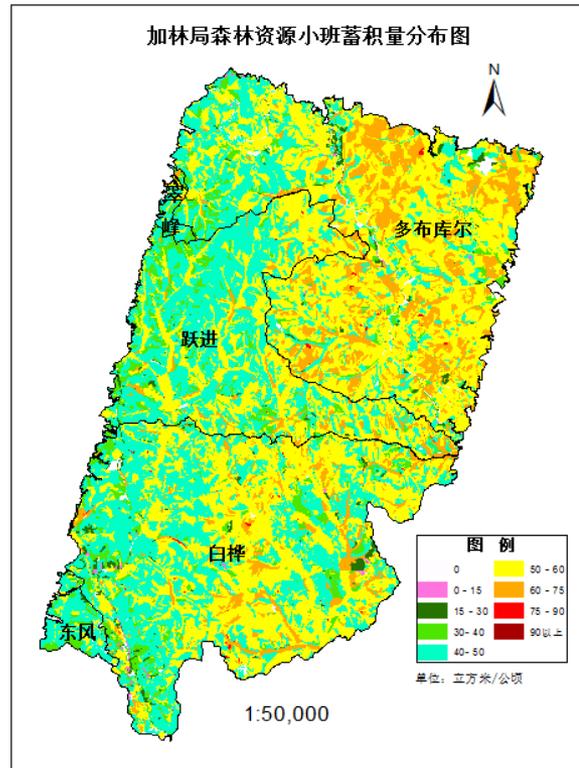
Applications of CHEOS Data



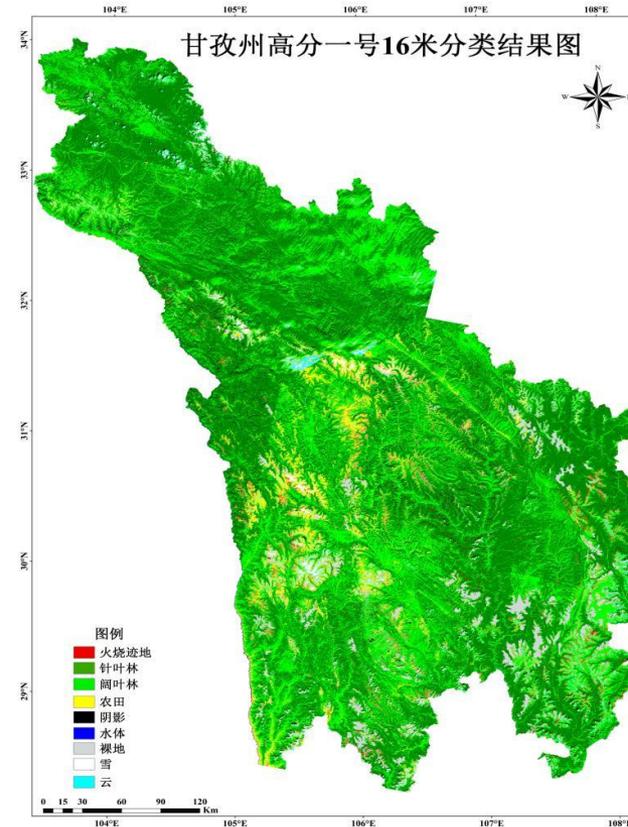
➤ Forestry Administration



Evaluation of desertification Level



Forest volume distribution



Land cover changes after forest fire

CHEOS

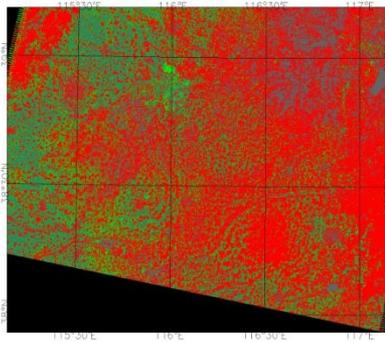
国家国防科技工业局重大专项工程中心



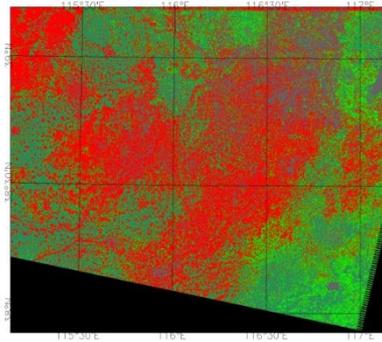
Applications of CHEOS Data



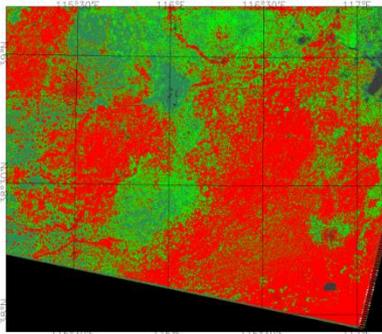
➤ China Meteorological Administration



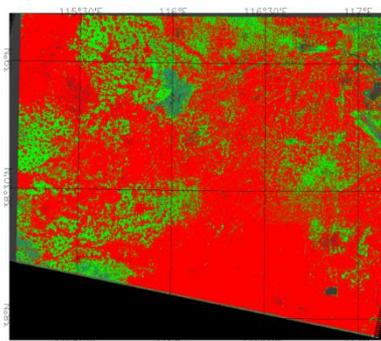
May 6, 2005



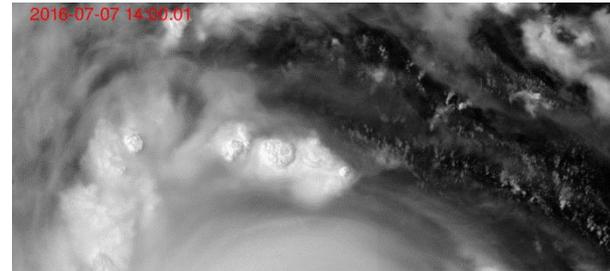
May 12, 2007



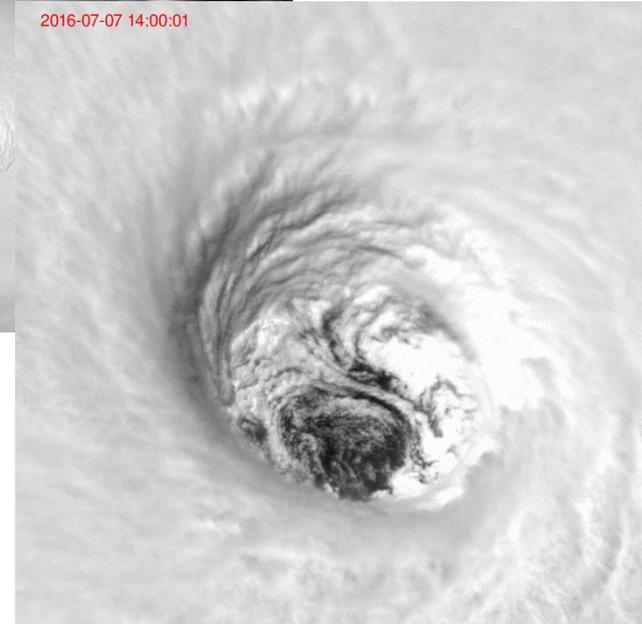
May 28, 2007



June 8, 2011



To predict the typhoon track



GF-4 view of Typhoon - Nepartak

Monitor drought situation of North China

CHEOS

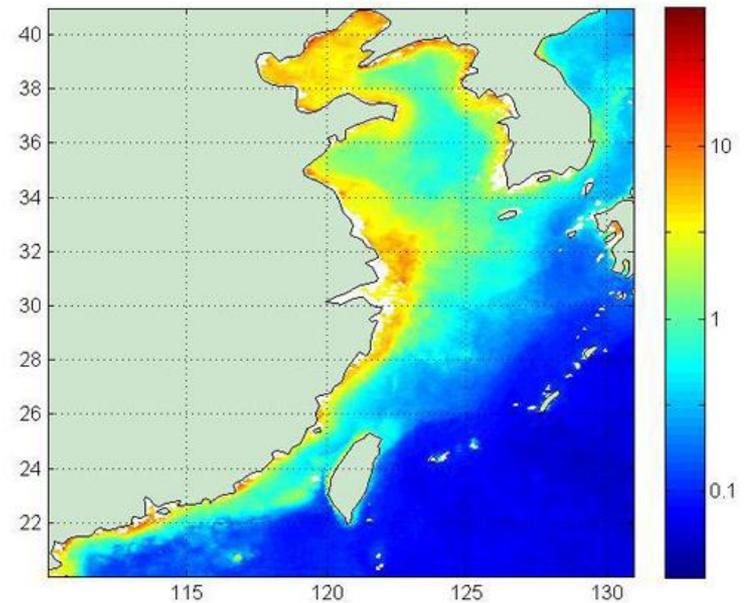
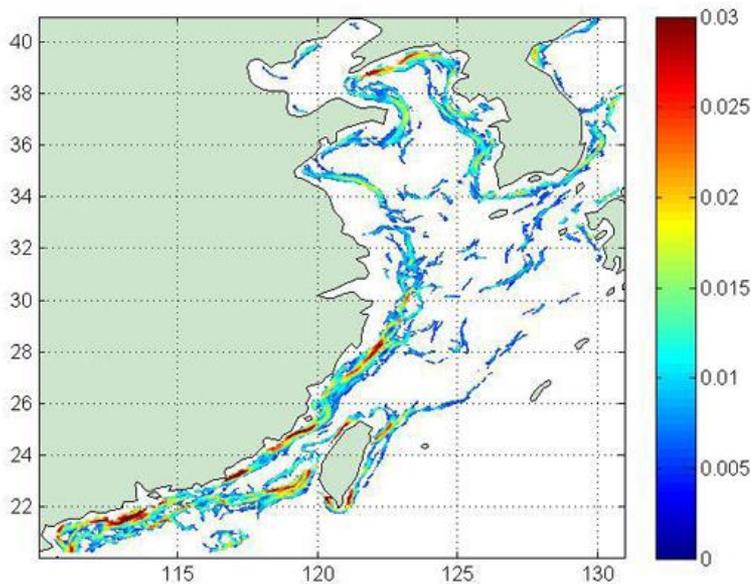
国家国防科技工业局重大专项工程中心



Applications of CHEOS Data



➤ State Oceanic Administration of China



**Fishing condition and current
gradient information in west
Pacific Ocean.**

**Distribution of chlorophyll in west
Pacific Ocean**



Thanks
for your time and attention!

CHEOS

国家国防科技工业局重大专项工程中心