CBERS and HJ-1A/1B Data Applications and International Cooperation

February 2010

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I. Brief Introduction to CRESDA

Development of CRESDA

China Center for Resources Satellite Data and Applications (CRESDA)

CRESDA was founded in April 1991, responsible for operation management, data processing and distribution, and applications of CBERS satellites.

Development of CRESDA

In 2005, China decided to construct the National Land Observation Satellite Ground System based on the resources satellite ground system.

For the first phase, processing 5 satellites:

HJ-1 A/B/C, CBERS-3 &4

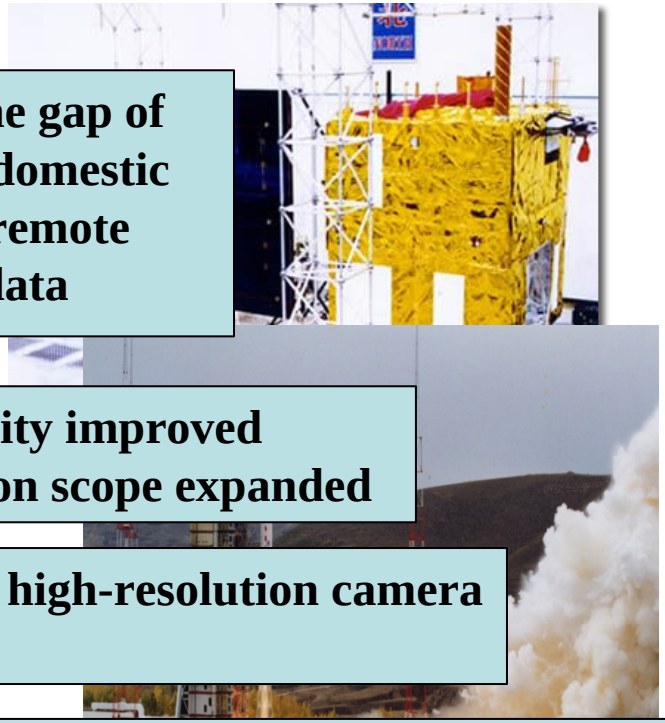
Later, processing China's follow-on land observation satellites.

Existing Satellites

Launched satellites:

CBERS-1: 1999/10~2003/08
(Now out of service)

Filling the gap of China's domestic satellite remote sensing data



CBERS-2: 2003/10~
(Operational beyond design lifetime)

Data quality improved
Application scope expanded

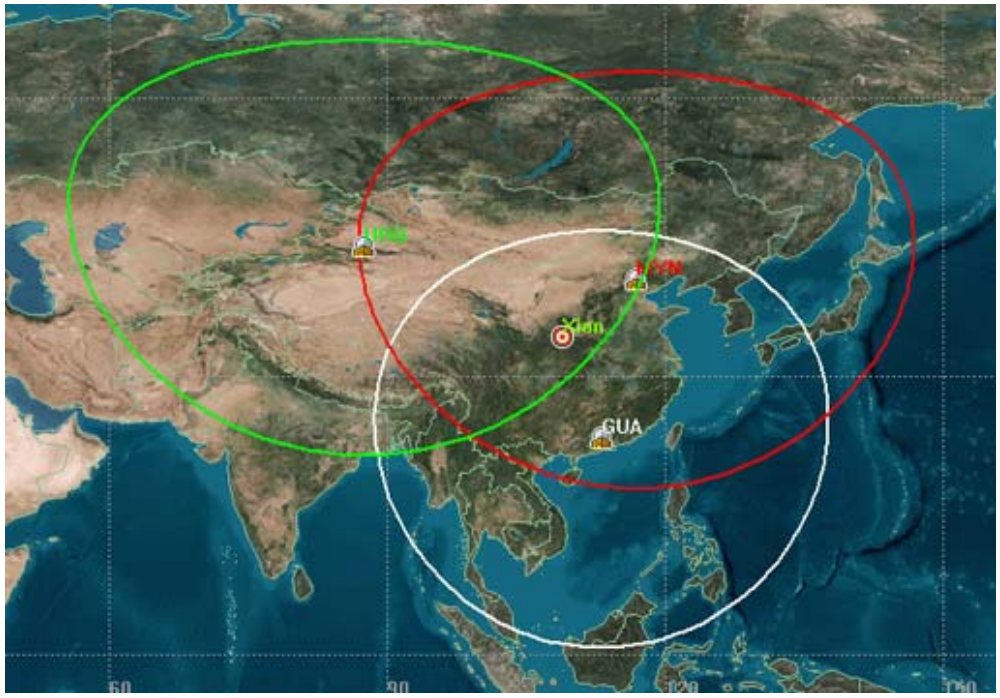
CBERS-2B: 2007/09～
(In-orbit, operational)

Adding high-resolution camera

HJ-1 A/B: 2008/09～
(In-orbit, operational)

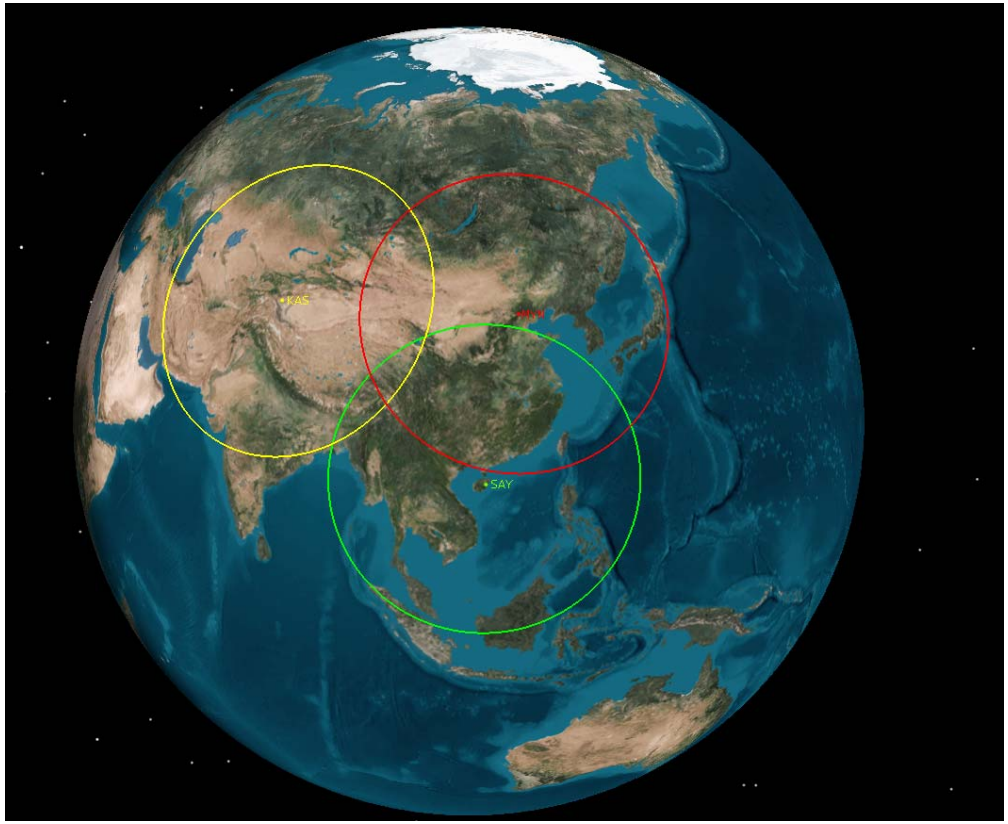
Payloads include wide-coverage CCD camera, IR camera and hyperspectral camera, with a CCD revisit period of 2 days

CBERS Ground Receiving Stations



Three ground receiving stations for CBERS satellites in Miyun (Beijing), Urumchi and Guangzhou, covering whole land area of China and its surrounding countries and regions.

HJ Ground Receiving Stations



Three ground receiving stations for HJ satellites in Miyun (Beijing), Kashi and Hainan, covering whole land area of China and its surrounding countries and regions.

National Land Observation Satellite Ground System

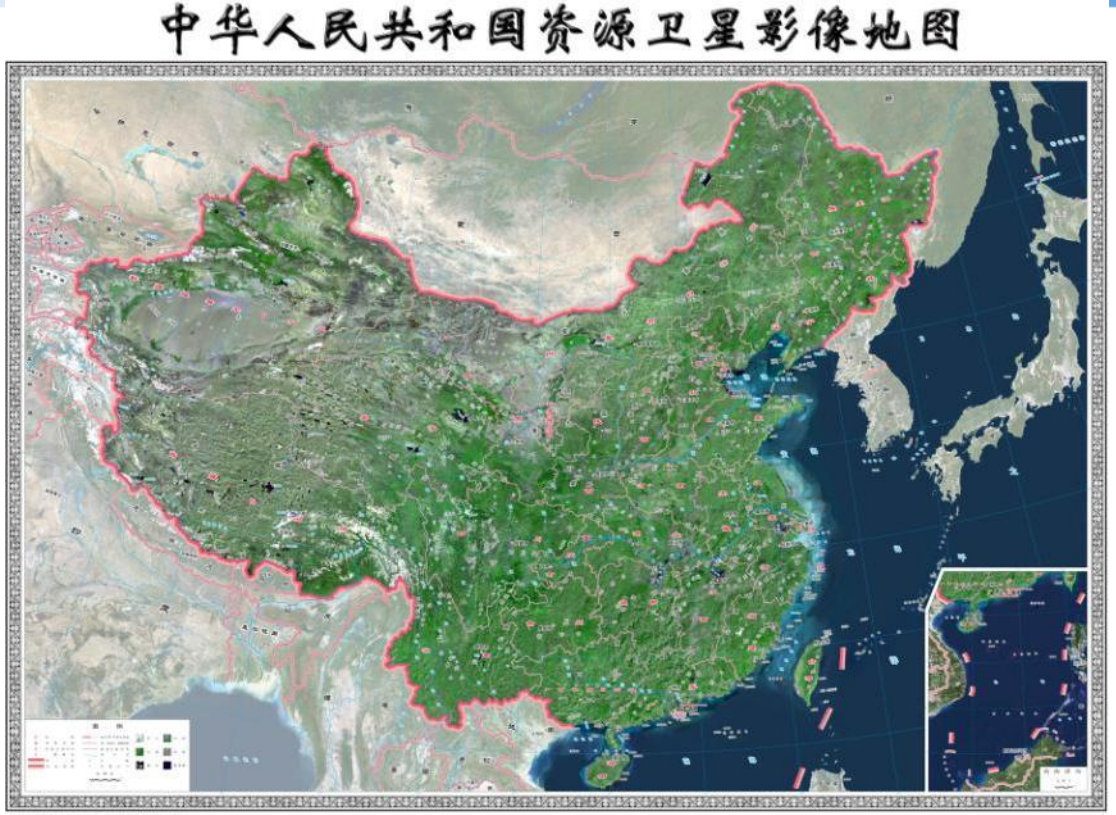
National Land Observation Satellite Ground System

4 in-orbit satellites	5 ground systems
•*CBERS-2* •*CBERS-2B* •*HJ-1A* •*HJ-1B*	•*CBERS-1 data processing system* •*CBERS-1/2 data processing system* •*CBERS-2B data processing system* •*Stand-alone system for satellite data processing (CBERS、HJ-1)* •*National land observation satellite data processing system*

II. Achievements of Satellite Applications

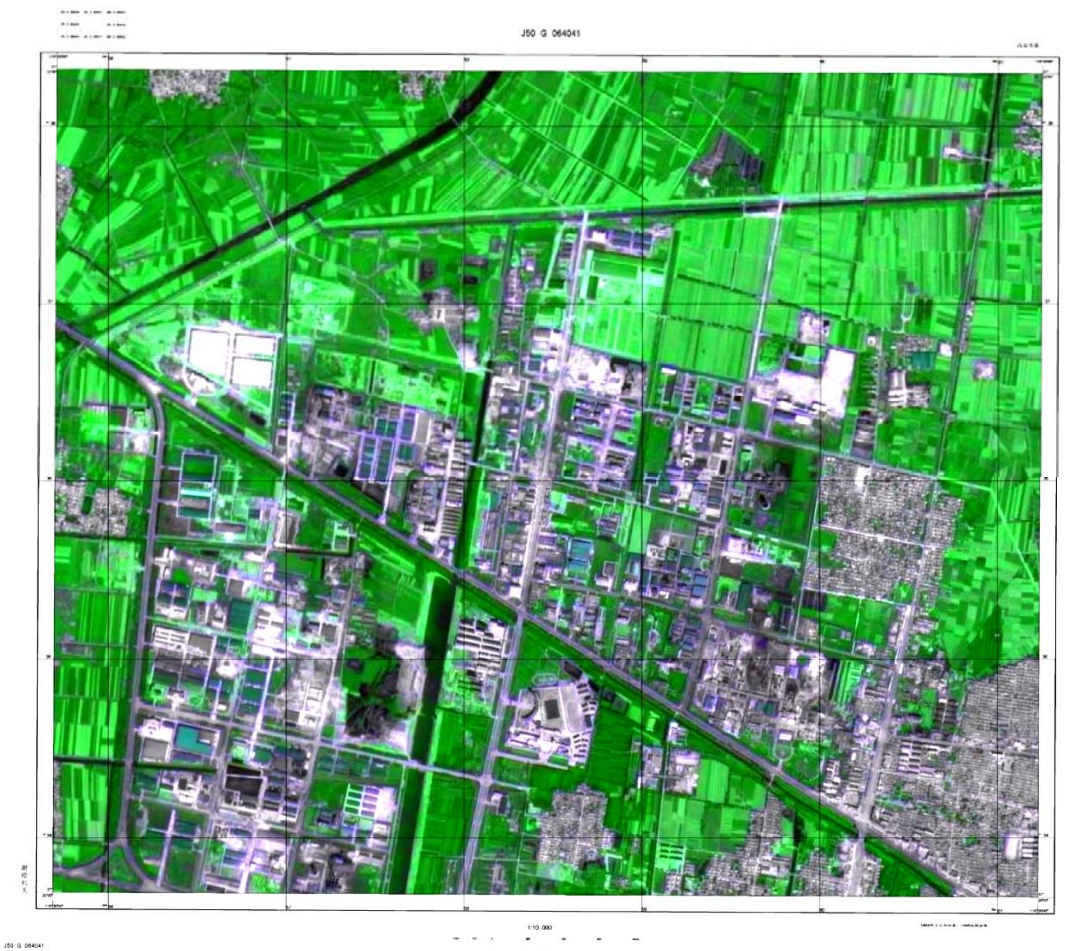
Thematic Products: China's Nationwide Mosaic Based on CBERS Data

- Nationwide mosaic
- Topographic Map Framing
- Administrative divisions image
- Image data fusion
- Stereo satellite image
- Quantitative product
- Solution



Thematic Products: 1:10,000 Topographic Map Framing

- Nationwide mosaic
- Topographic Map Framing
- Administrative divisions image
- Image data fusion
- Stereo satellite image
- Quantitative product
- Solution



1:10,000

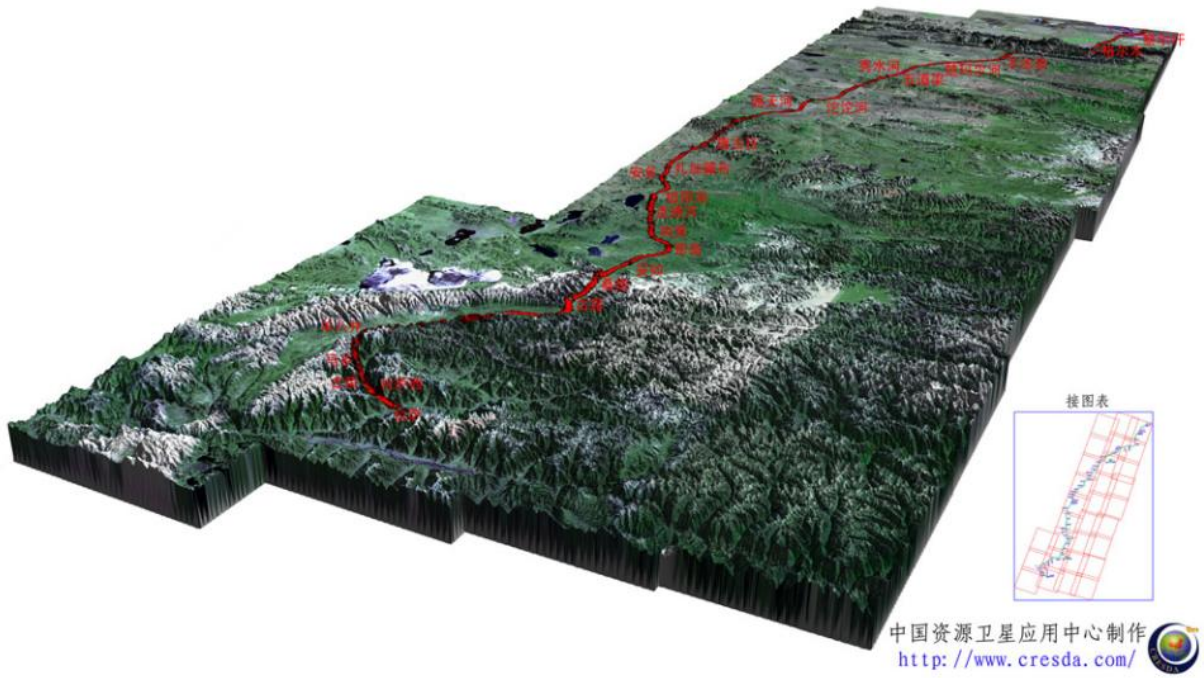
Thematic Products: Image Data Fusion Product for Nanning City in 2009

- Nationwide mosaic
- Topographic map framing
- Administrative divisions image
- Image data fusion
- Stereo satellite image
- Quantitative products
- Solution

Nanning in 2009

Thematic Products: 3D Image Map for Qinghai-Tibet Railway

- Nationwide mosaic
- Topographic map framing
- Administrative divisions image
- Image data fusion
- Stereo satellite image
- Quantitative products
- Solution



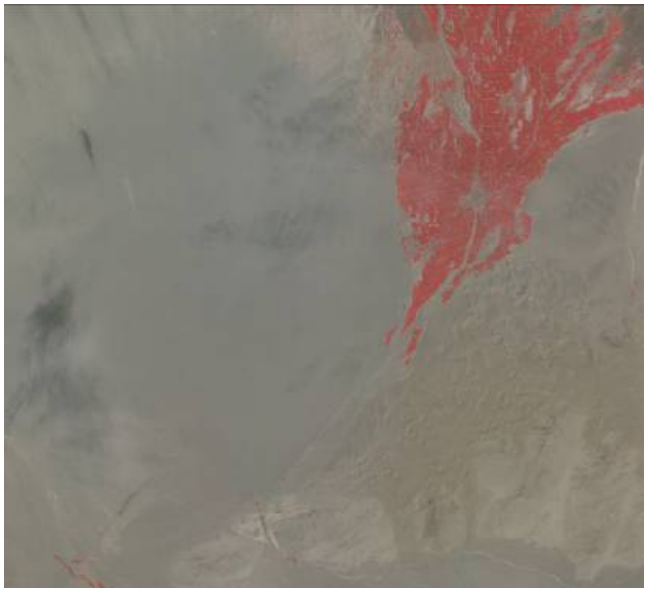
Three-dimensional image map for Qinghai-Tibet Railway, resulting from data of CBERS-2 CCD camera and 1:250000 DEM data

Thematic Products: Inverse Reflectivity

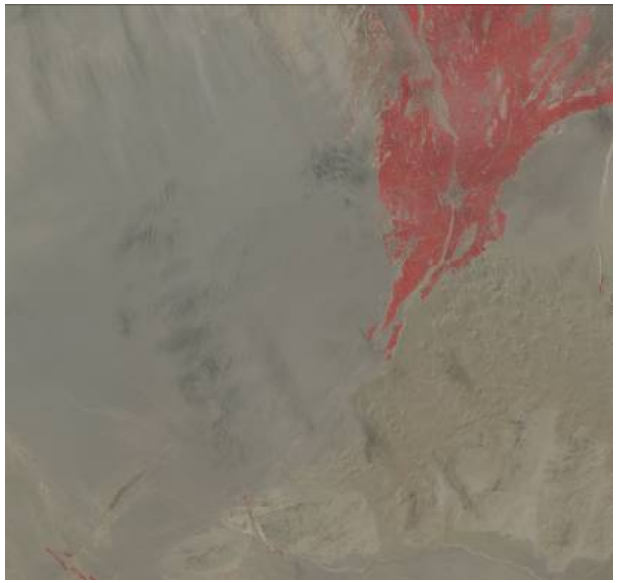
- Nationwide mosaic
- Topographic map framing
- Administrative divisions image
- Image data fusion
- Stereo satellite image
- Quantitative product
- Solution

Inverse Reflectivity

CBERS-2 image DN products are converted into ground reflectivity products after atmospheric correction, which have good consistency with the reflectivity resulting from SPOT data.



CBERS-2 CCD



SPOT-4 HRVIR

Inverse reflectivity of CBERS-2 CCD and SPOT-4 HRVIR after atmospheric correction on August 24, 2005

Application Solutions

- Application solutions

  ·Agriculture

  ·Forestry

  ·Ecological environment

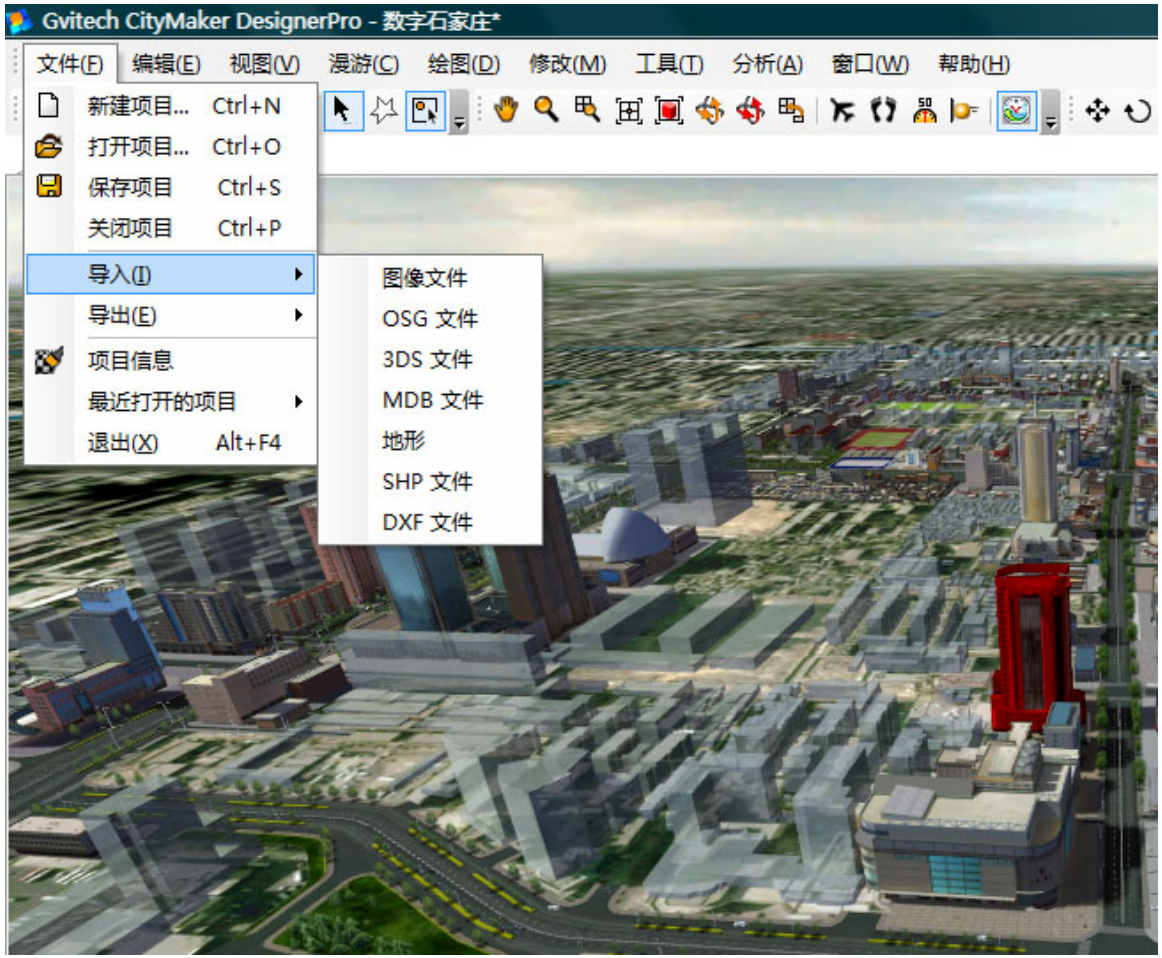
  ·Land resource survey and monitoring

  ·Urban planning

  ·Emergency and disaster response

  ·Calibration.

Application Solutions



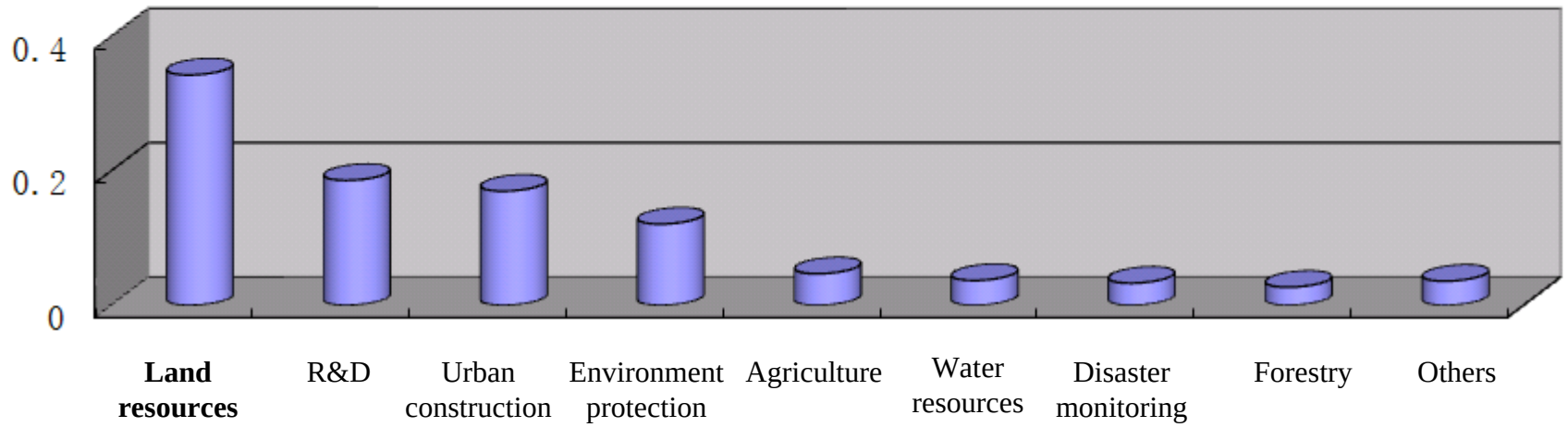
Shijiazhaung Three-Dimensional Urban Planning Simulation System

An efficient and integrated urban 3D simulation platform can provide information inquiry, statistics and analysis in a visualization environment, and display the latest construction situation and future planning blueprint of Shijiazhuang from multiple angles and in multiple ways.

Data Distribution

- 200% annual growth rate of user number since 2005
- Over 98% average annual growth rate of data distribution amount
- Over 90% of the domestic market for mid-resolution products of the same kind of satellites.

Data Distribution in Different Sectors

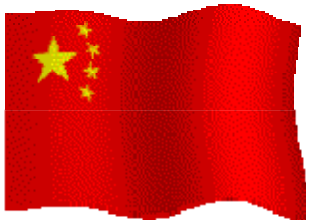


III. International Cooperation

Cooperation & Exchanges

CRESDA has developed extensive international cooperation and exchanges with such countries as Brazil, France, Norway, Canada, Australia, the US, Singapore, Mongolia, Thailand, Sweden, South Africa and Egypt.

CRESDA also acts as the duty office of the International Charter "Space and Major Disasters".




Canada


Pakistan

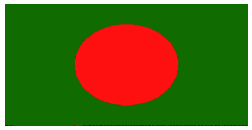

India


Indonesia

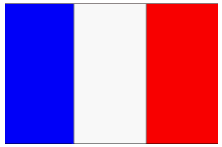

Brazil


Mongolia


Singapore


Bangladesh


Malaysia

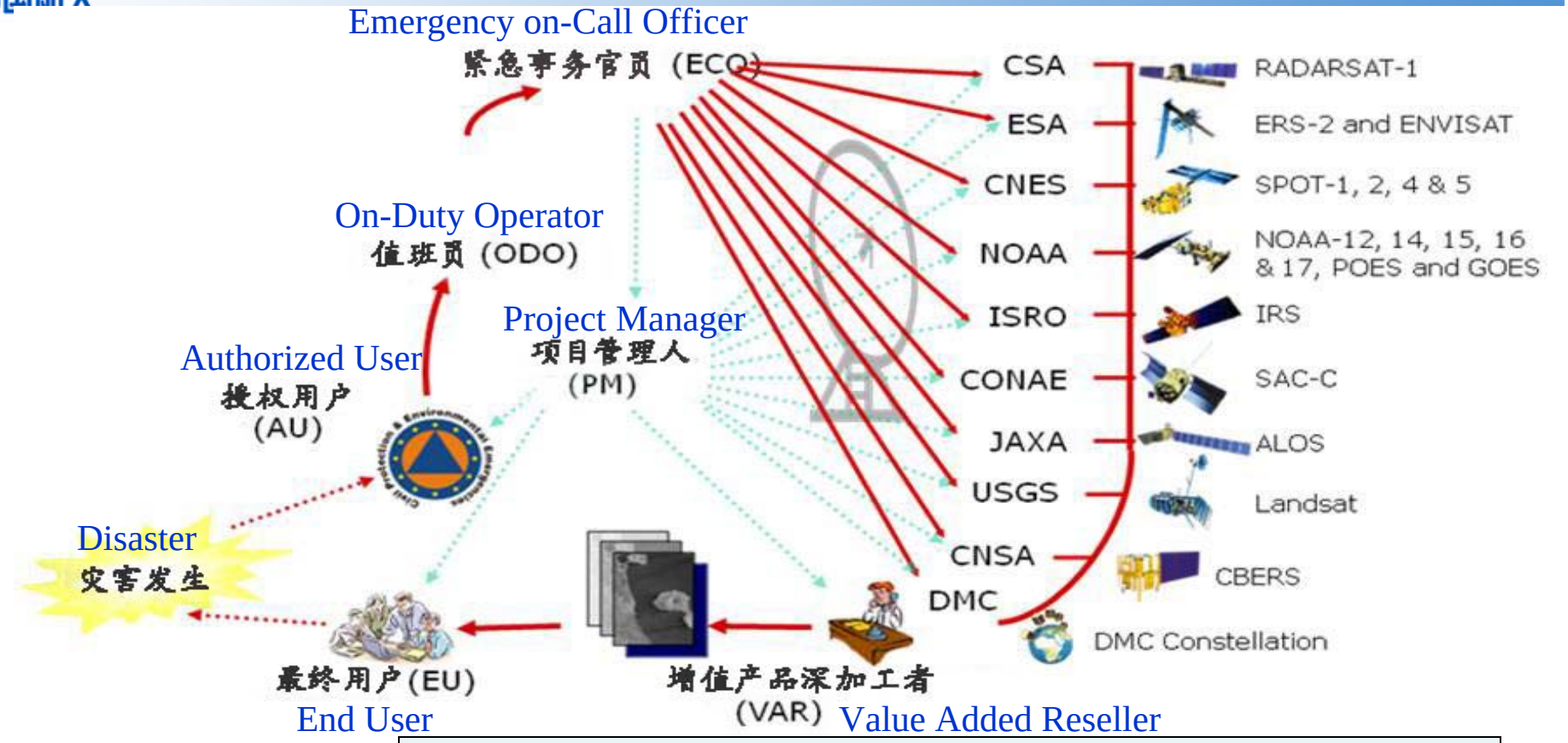

France


Norway


The US


Vietnam

International Charter “Space and Major Disasters”（Charter）



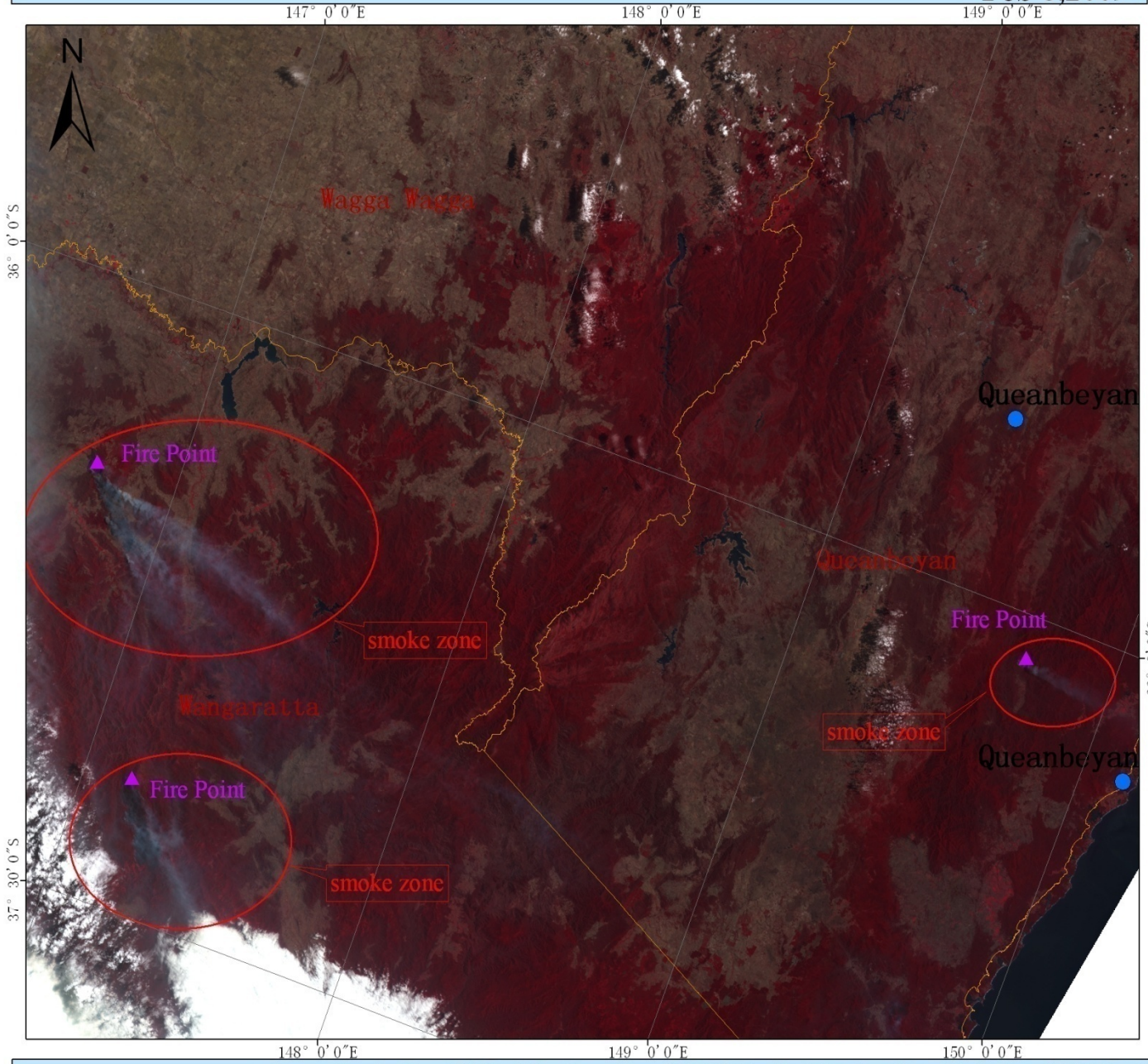
In may 2007, China National Space Administration (CNSA) joined the Charter. As the Chinese satellite data provider, CRESDA provides CBERS satellite data for Charter for monitoring the natural disasters both at home and abroad. At the same time, CRESDA also acts as an ECO to arrange satellite data resources for the disaster affected area.

Monitoring Fire Based on Remote Sensing Data in Australia

Feb 8,2009

Wangaratta Queanbeyan Forest Fire

The most severe forest fire happened at Victoria and New South Wales in the south of Australia on Feburary 7, 2009. The body count reached 130 till Feb 9 . There are three smoke zones on top of the fire points, interpretated by China Center for Resources Satellite Data and Application based on HJ-1B CCD image at 0:24 (UTC) on Feburary 8.



Legend

- City
- Boundary
- Fire point

0 5 10 20 30 40 Kilometers

At least 750 houses were lost, 350,000 hectares of forest blackened and whole towns obliterated. The popular mountain resorts of Kinglake and Marysville, 100 kilometres north-east of Melbourne, have barely any buildings left standing.

Remote Sensing Data: HJ1B CCD Sence Date: Feb 8,2009 Pixel Spacing: 30 m Projection: UTM Earth Model: WGS-84

Made by China Center for Resource Satellite Data and Application, Feb 10, 2009 www.cresda.com Tel: 086-010-58937060

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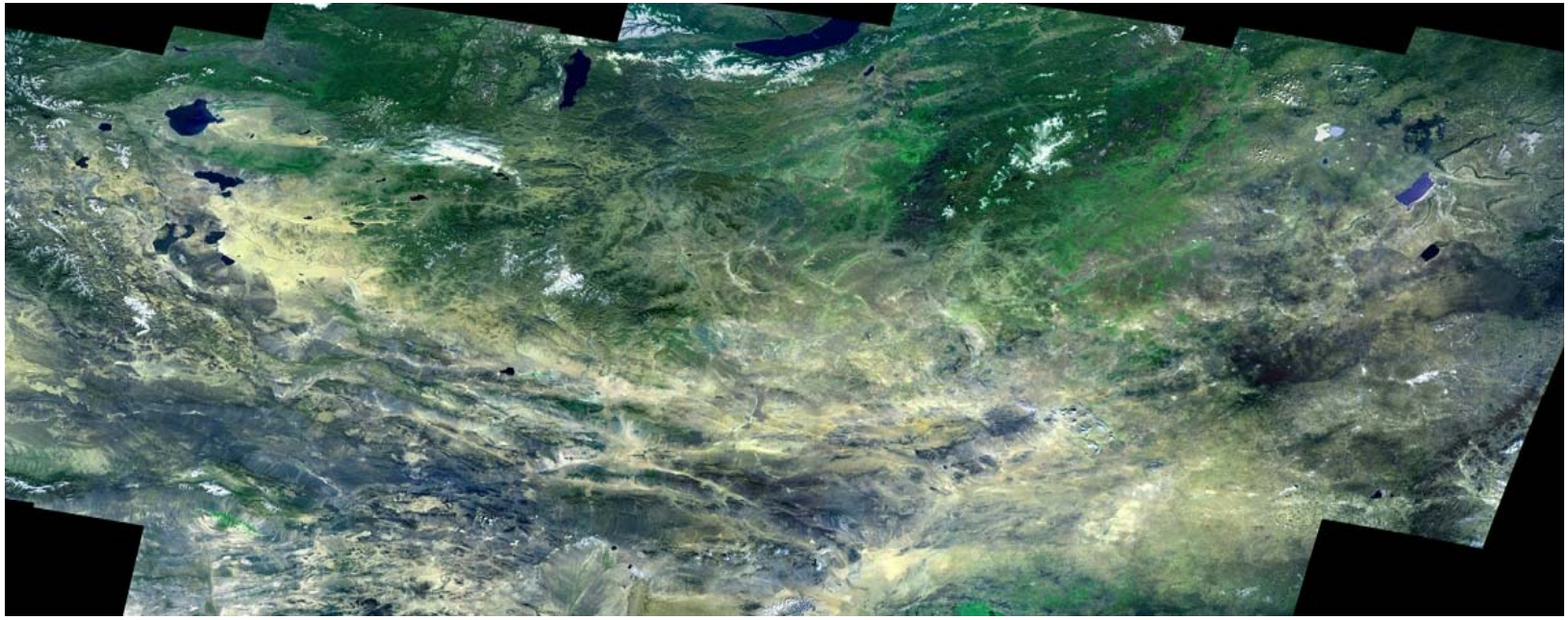
Constructing Stations in South Africa and Thailand

- In October 2008, a receiving station for CBERS was put into operation in South Africa.

- In 2009, CRESDA completed the work concerning construction of a ground station for HJ-1A satellite in Thailand.

Nationwide Mosaic Image for Mongolia Based on CCD Data of HJ Satellites

In Nov. 2009, a nationwide mosaic image for Mongolia had been completed based on CCD data of HJ satellites.



IV. Future Development

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China's Land observation satellites

In-orbit

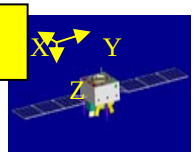
2003

CBERS-2

2007

CBERS-2B

2008



HJ-1A/1B

To be launched

HJ-1C

ZY-3

CBERS-3

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Under consideration

High-resolution satellites

CBERS-5/6

Gravity field measurement satellite

Seismo-electromagnetic satellite

National Data Centers

- National Land Observation Satellite Data Center
- National High-Resolution Earth Observation Civil Data Center
- National e-Government CBERS Data Sub-center

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Thank you!