Introduction to CEODE

Huadong GUO (Director of CEODE)
• An Independent non-profit research institute of CAS

• It is responsible for the provision of national service for the acquisition, processing, archiving and distribution of airborne and spaceborne remote sensing data

• Engage in research on scientific and technical development of geospatial information and Digital Earth.

• Work closely with industrial partners for development and verification of airborne and spaceborne sensors
• Supply application services with its integrated remote sensing data and relevant Earth Sciences data in various fields.

• Provide social services to broad variety of publics based on Digital Earth Prototype System (DEPS).

• Help human beings better understand of natural and man-made impact on our planet earth.
Organizational Structure

Scientific Council

Director General

Office of Administration

Satellite Remote Sensing Center
  - Miyun Ground Station
  - Kashi Ground Station
  - Sanya Ground Station
  - Ground receiving System Division

Airborne Remote Sensing Center
  - Aircraft Operation Division
  - Sensor System Operation Division
  - Airborne Science Division

Spatial Data Center
  - Remote Sensing Data Processing Division
  - The Earth Science Data Division
  - Data Management & Dissemination Division

Digital Earth Lab
  - Digital Earth System Division
  - Terrestrial System Sciences Division
  - Ocean & Atmosphere Sciences Division
  - Optical Remote Sensing Division
  - Microwave Remote Sensing Division

Digital Earth Lab

Office of Administration

Remote Sensing Data Processing Division

Data Management & Dissemination Division
The Center is one of the largest international ground stations by receiving data from 16 satellites worldwide, including Environment No.1 satellite, Landsat-5/7, SPOT-2/4/5, Radarsat-1, ERS-1/2, ENVISAT, IRS-P6, MODIS, CBERS and so on. At present, it keeps about 1.6 million remote sensing scenes and 160 TB data in total, and increases the amount in the rate of 15 TB per year.
Satellite Remote Sensing Centre

Data coverage of the three ground receiving stations

Miyun ground station

Kashi ground station

Sanya ground station
Satellite Remote Sensing Centre

- Data Reseller for: ALOS, ASTER
- Data sub-distributor relationship with: USGS, RESTEC, GISTDA, EURIMAGE
Satellite Remote Sensing Centre

CEODE receives HJ-1A, HJ-1B (optical sat.) and HJ-1C (SAR) data.

Disaster, Environment Monitoring and Forecast Small Satellite Constellation in orbit.

Two optical satellites were launched on Sept. 6, 2008.

S-band SAR satellite will be launched early next year.
• Over 150TB Satellite Data Archived
• Largest Civil EO Ground Station in China
• Strong User Basis
• More Than 100,000 Services Provided
• Data Service Among the Top in the World
The Centre operates two Cessna Citation S/II and plan to purchase two new advanced airplane. The aircrafts are used as test-beds for developing advanced sensor concepts and specification designs, satellite simulation, and algorithms validation, and for the support of scientific and operational data collection.
Many sensor systems are in use, and most of them were developed by Chinese Academy of Sciences, including multi-spectral imaging devices, imaging spectrometer, SAR system, and a suite of large-format mapping cameras.

Airborne whiskbroom imaging spectrometer (0.45µm-12.5µm)

Airborne 3-D light detection and ranging

Digital CCD camera
Airborne remote sensing data are collected for the atmospheric, land, and ocean processes aspects of the Chinese Earth Science program, as well as for academy institutes and other government agencies.
Airborne RS information acquisition system

Total 10 sensors
- High resolution linear array digital airborne camera
- High resolution phase array digital airborne camera
- Multi-mode digital camera
- Wide spectrum band imaging spectrometry
- Push-broom hyper-spectral imager
- 3D lidar
- High resolution polarimetric and interferometric SAR
- Multibands polarimetric SAR
- Polarimetric microwave radiometer/scatterometer
- Environmental atmospheric component detecting system
LDES is constituted principally for the research on the digital earth technology and remote sensing applications. A high-performance Platform provides a powerful computational tools and a wonderful visualization environment to both scientists and public.

LDES conducts high level application researches related to land-use survey, atmospheric detection, ocean surveillance, mineral exploration, archeological finding, environmental and ecological investigation, global change, etc.
Digital Earth Sciences Platform

- Hydrosphere
- Atmosphere
- Biosphere
- Human Being
- Research Areas
  - Digital Disaster Mitigation
  - Digital Health
  - Digital Energy
  - Digital Hydrology
  - Digital Atmosphere
  - Digital Ecology
  - Digital Heritage
  - Digital Environment
  - Digital Ocean
  - Digital City

- Ice and snow
- Land and Ocean
- Lithosphere

www.ceede.ac.cn
Quickbird Image of Feb. 15 2008, shows the distribution of Ice and Snow along the roads in Jiangxi Province.
RS Assessment for Ice & Snow Disaster in South China

Snow Disaster in Hunan
Jan 29, 2008

Comparison analysis of Collapsed Houses in Anhui
2008.1.3 - 2008.2.9

Airborne SAR Monitoring for Railway and highway
立项依据

航空观测技术提供了机动的陆面环境监测能力

对地观测技术在抗震救灾中的作用

Beichuan town before the Earthquake
2008年5月27日三维立体航空遥感图
地震使得北川县城几乎夷为平地，老县城将作为地震博物馆以警示后人，北川将新生在他乡，期待北川浴火重生。

A图为2008年6月10日航拍的北川县城，唐家山堰塞湖泄洪造成县城部分淹没。
International Cooperation
China Science 
Canada Natural Resources
Capacity Building
Centre for Earth Observation
CAS-NRCAN
The development of space remote sensing techniques provides the possibility for monitoring, analyzing, and simulating the environment change of the earth system from global prospective.

To better understand the mechanism of global change, CEODE is proposing to focus on four major countries of the world, namely Australia, Brazil, Canada, China. Pilot representative areas for climate change in the four countries will be selected and the comparison study for sensitive areas will be implemented.
Host

International Society for Digital Earth (ISDE)
INVITATION TO ISDE 6

Dear Colleagues,

You are cordially invited to attend the 6th International Symposium on Digital Earth (ISDE6) with the theme of Digital Earth in Action and to visit Beijing, China in September, 2009. ISDE6 will continue the tradition of gathering world-class scientists, engineers and educators engaged in the fields of digital earth, earth observation, geo-informatics and relevant applications to review the progress of Digital Earth during the last decade and discuss the achievements of Digital Earth and the recent developments.

Since the promulgation of the Beijing Declaration on Digital Earth at the First International
China 973 Project: “Study on the methodology and mechanism of observing sensitive environmental change areas and elements in China by remote sensing technology”

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Ocean University of China
Institute of Tibetan Plateau/CAS
Beijing university of Aeronautics and Astronautics

2008-2012, 5.5 million US$
• New Building to be constructed, 28000m²
• 250 Permanent Research Scientists, some contract staffs, over 200 students
Thanks

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