



# **Progress Report of China on Implementation GEOSS**

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Chinese Academy of Sciences, CAS

China GEO  
18<sup>th</sup> September 2017



- **Governance of China GEO and Activities management**
- **Global Ecosystem and Environment Observation: Annual Report from China (GEOARC)**
- **Asia-Oceania Global Earth Observation System of Systems (AOGEOSS)**
- **Earth Observation Data Sharing**
- **TanSat - Global CO<sub>2</sub> Observing and Monitoring Mission**



# Governance of China GEO and Activities management

## China GEO

### ❑ Inter-Ministerial coordination group

formalizing collaboration and the coordination of EO activities through a multisector mechanism (19 ministries) and high-level Inter-Ministry Coordination dialogue for GEOSS implementation;

### ❑ GEO China Secretariat

Led by NRSCC, Jointly supported by Chinese Academy of sciences (CAS) and National Administration of Surveying, Mapping and Geoinformation of China (NASG)

### ❑ China GEOSS center

Supported by Institute of Remote Sensing and Digital Earth, CAS

### ❑ China's Plan for Implementation GEOSS (2016-2025)

The implementation plan of CHINA GEOSS in the next decade will coordinate international and domestic resources to develop integrated Earth observation infrastructure and application technology system.





## Global Ecosystem and Environment Observation: Annual Report from China (GEOARC)



- To support global change studies in the framework of Earth Observation System of Systems (GEOSS)
- Released 13 reports since 2012, on World Environment Day
- Community Activity of GEO Work Programme 2017-2019
- Reports and data can download from China GEOSS Data Sharing Net (<http://www.chinageoss.org/geoarc/>).
- 2017 the 6<sup>th</sup> annual report will be released in October.



Report on  
2012



Report on  
2013



Report on  
2014



Report on  
2015



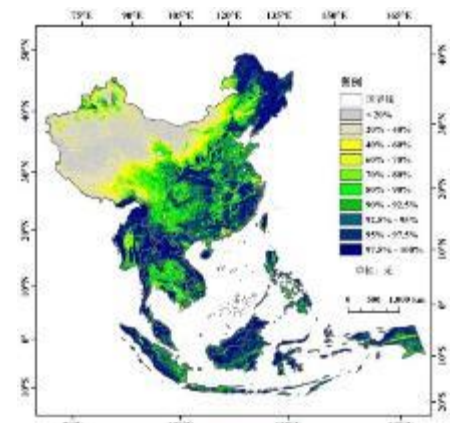
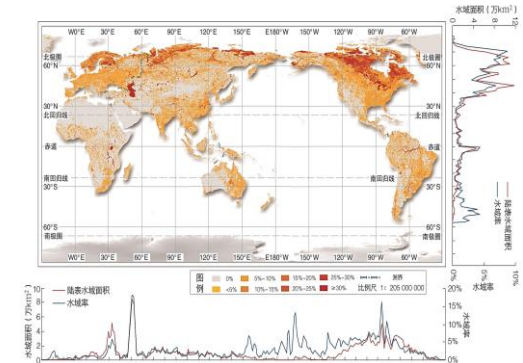
Report on  
2016



## Multi-Scale: Global, AO Region, ASEAN Region

Topic	Data and Contents
Vegetation	Changes of Vegetation Leaf Area Index Dynamics
	Growth Conditions of Global Terrestrial Vegetation.
Land Cover	Africa Land Cover
	Urban & Rural Resident Land Cover Distribution
	International Importance Large Area Wetlands
Agriculture	Supply Situation of Maize, Rice, Wheat & Soybean
Water	Large Terrestrial Surface Water Areas
	Global Land Surface Water & Lakes
Integrated	Ecosystem and Environmental Condition of AO Region
	Ecosystem and Environmental Condition of ASEAN

- Data Sharing to national and global users  
Dataset Download: over 10000 times, 60TB.  
Report Download: 9000+ times
- Contribute Globe Land 30 Data to U.N.





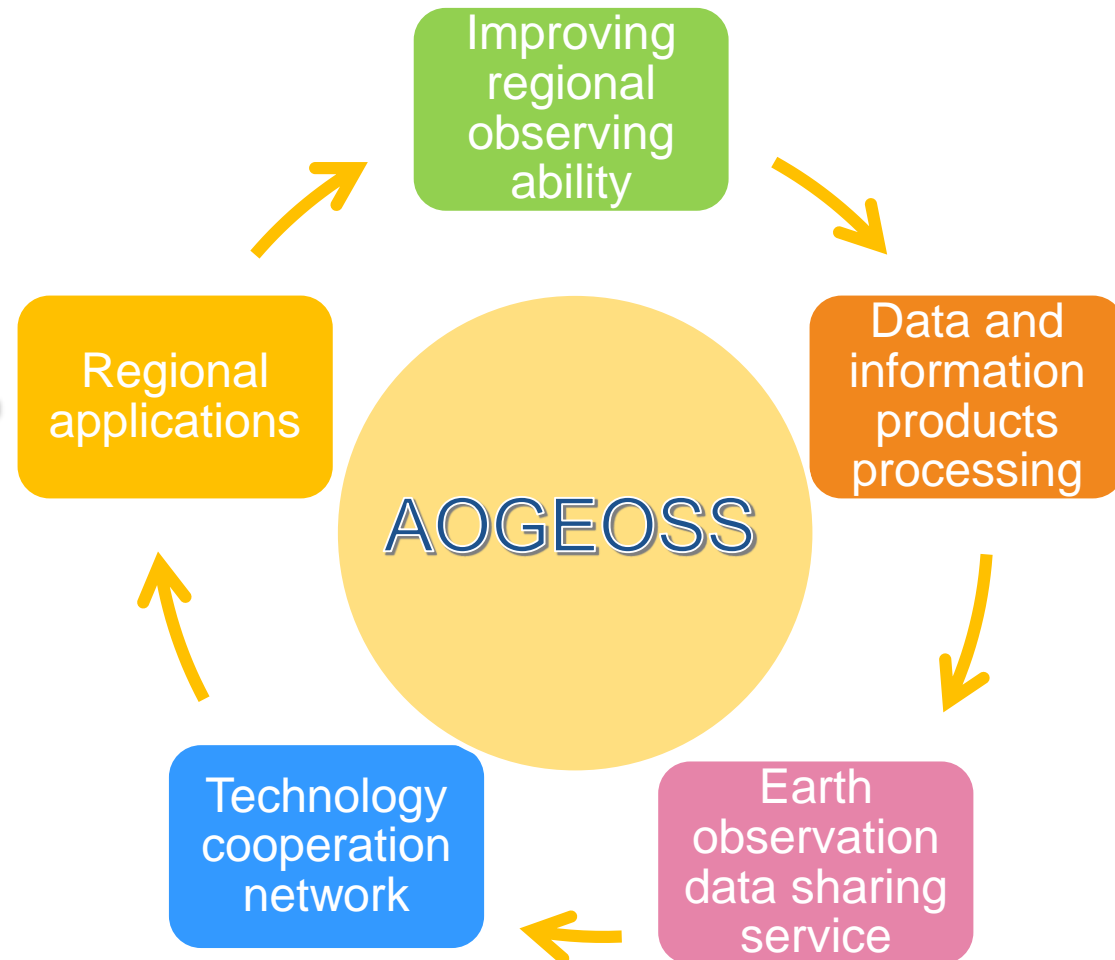


# Asia-Oceania Global Earth Observation System of Systems (AOGEOSS) GEO Initiative(GI-22 )

- ❑ Biodiversity and Ecosystem Sustainability
- ❑ Disaster Resilience
- ❑ Energy and Mineral Resources Management



- ❑ Food Security and Sustainable Agriculture
- ❑ Infrastructure and Transport Management
- ❑ Public Health Surveillance
- ❑ Sustainable Urban Development
- ❑ Water resources Management
- ❑ Climate change





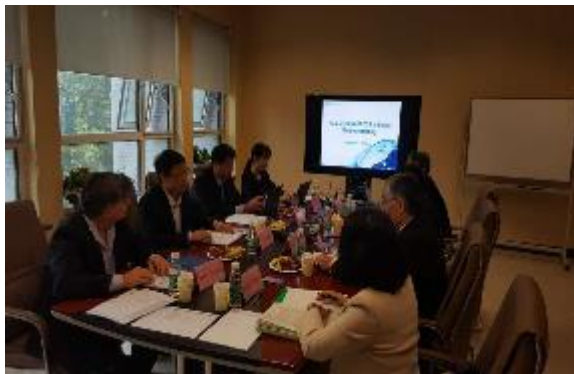
# AOGEOSS Progress

- AOGEOSS initiative was launched in the GEO-XIII on November 2016 and included in GEO work plan 2017-2019.

## Participation :

- GEO Members and countries in AO region(12):Australia, Bangladesh, China, India, Japan, Korea, Laos, Mongolia, Myanmar, Nepal, Pakistan, Vietnam.
- POs and other societies(13): UNEP-IEMP, UNESCO-HIST, WMO, UNESCAP, CEOS, ICSU/Future Earth, ICSU/IRDR, ICIMOD, POGO, ISDE, ISPRS, GRSS, APSCO.

- Meetings and Discussion on AOGEOSS objectives and task implementation(face to face and video tele-meeting) in Beijing, St.Peterburg, Tokyo and Geneva...



AOGEOSS Working Meeting

5<sup>th</sup> October 2016, Beijing(Co-leads)



AOGEOSS Side Meeting

13<sup>th</sup> November 2016, St. Petersburg



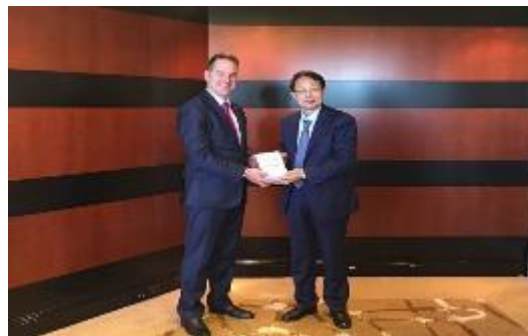
9<sup>th</sup> AP GEOSS Symposium

11<sup>th</sup> January 2017, Tokyo



# AOGEOSS Progress

- Australia-China Bilateral Meeting, April, 2017  
Data Sharing and Data Cube  
EO technologies cooperation in AO region: ARD, SpectrumEarth  
Global Ecosystems and Environment Observation: Annual Report



AUS-CHN Bilateral Meeting  
7<sup>th</sup> April 2017, Sydney  
GA/CSIRO/RADI/ SCSIO

- Enhance the cooperation with the UN-GGIM, AfriGEOSS and other international initiatives or platforms and promote influence of AOGEOSS



The Kunming Forum on United Nations  
Global Geospatial Information  
Management (UN-GGIM) from 10-12  
May 2017 in Kunming, China

2nd AfriGEOSS Symposium  
13 – 15 June 2017, Sunyani, Ghana







# AOGEOSS Progress

## 40<sup>th</sup> ExCom

2017 Jul. Geneva

- Co-lead countries' meeting
- Pre-Approval of the Coordination Board members.
- Pre-adopt the Rules of Procedure.

## 10<sup>th</sup> AP Symposium

2017 6 September.

- Coordination board tele-meeting
- Responsibility of the AOGEOSS CB: composition of CB and Adoption the Rules of Procedure.
- AOGEOSS Implementation Plan

18-20 September

- Ad-hoc Coordination Board meeting
- Coordinate TGs to avoid overlapping activities.

## Caucus meeting @14<sup>th</sup> Plenary

Oct.

- Caucus meeting
- Approve the Coordination Board members officially.
- Adopt the Rules of Procedure officially.
- Receive a Report of the status from ad-hoc CB.

## Coordination Board Setup Process

Call for the nomination of the Coordination Board members

CB Composition:  
12 members from 8 countries;

Start the Ad-hoc Coordination Board Activities

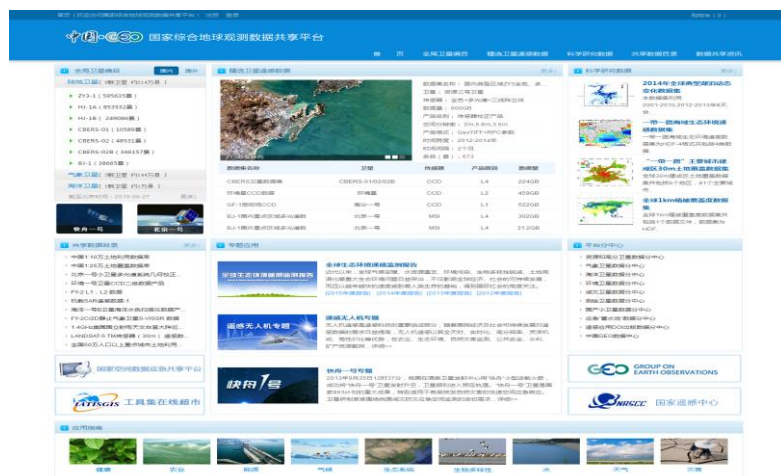
- [ activities based on Teleconference or emails ]
- TGs coordination to avoid overlapping activities.

Official setup of  
Coordination Board

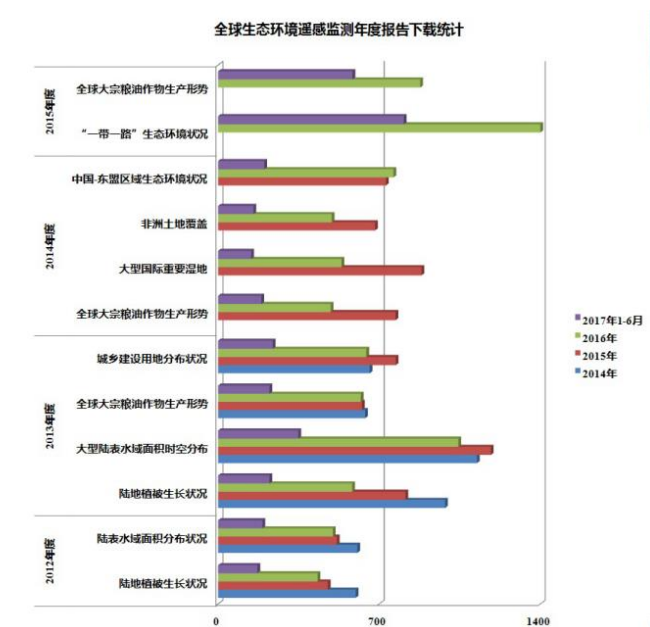
AOGEOSS Forum



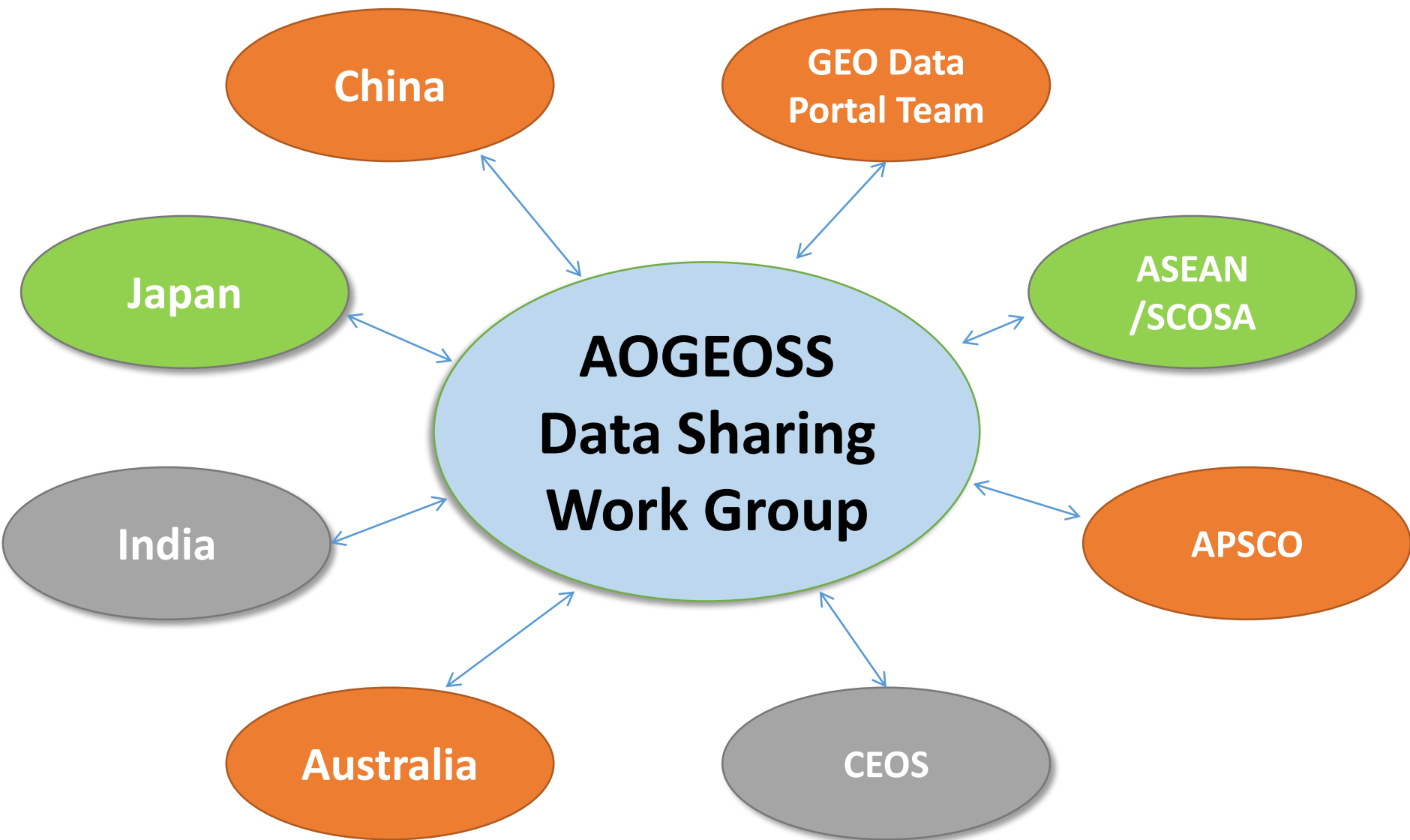
# EO Data Sharing



ChinaGEOSS can provide >3 millions free data  
 APSCO Data Portal can provide high resolution images freely  
 Portal Website-Main Entrance



Satellite	Earliest temporal	Resolution
GF2	2014.08.19	0.8m/3.2m
ZY3	2012.01.09	3.5m/2.1m/5.8m
GF1*	2013.04.26	2m/8m/16m
ZY02C	2011.12.22	2.36m/5m/10m
HJ1A*	2013.05.02	30m/100m
HJ1B*	2013.05.02	30m/150m



**Data Sharing of AOGEOSS is to integrate shared data for local users**



connected



under confirm



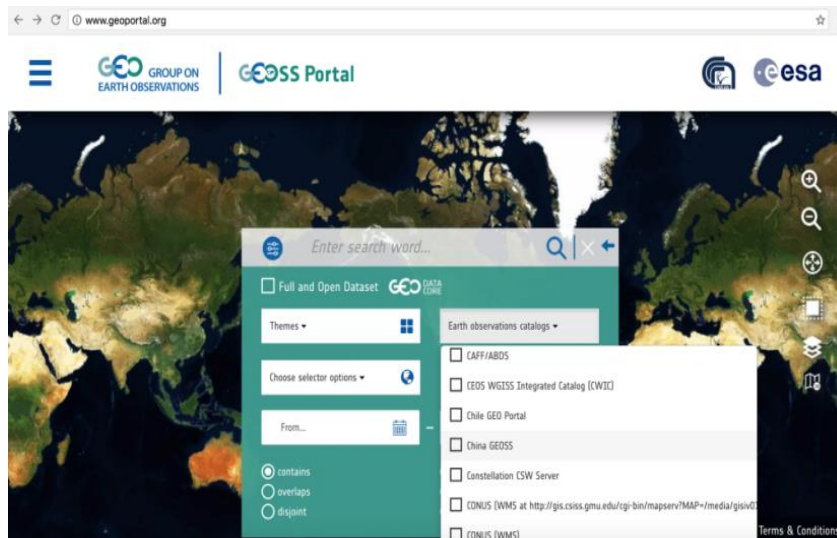
will to link



# Contribution to GEO Data Infrastructure

AOGEOSS is encouraging member countries to contribute to GEO Data Portal.

- ✓ experts from AO region participated last two GEO data provider workshops.
- ✓ on behalf of AOGEOSS, ChinaGEOSS has contributed 120k images to GEO Portal at 2016, and will contribute 1 million images in 2017



Data Resources in Data Portal



International service Portal (Testing)





# International Emergency Response



Also during the 2017 earthquake in Mexico, 146 scene images from 8 satellites (126.37 GB in total) were collected.

During the New Zealand earthquake in 2016, seven satellites with 219 view images (120GB in total) were organized to provide timely service for New Zealand, Australia and other countries.



## Office of Hon Gerry Brownlee

MP for Ilam

Leader of the House

Minister of Defence

Minister of Civil Defence

Minister Responsible for the Earthquake Commission  
Minister supporting Greater Christchurch Regeneration

1 FEB 2017

Professor Li Guoqing

Co-Chair

Linked Open Data for Global Disaster Risk Research (LODGD) of CODATA

Head of Satellite Data Technology Division

Institute of Remote Sensing and Digital Earth, C

No.9 Dengzhuang South Road

Haidian District

Beijing, 100094

CHINA

Dear Professor Li

**Re: Kaikoura 7.8 Magnitude Earthquake, 14**

On behalf of the New Zealand Government I would like to thank you for your prompt and free access to the TripleSat satellite imagery immediately following the devastating Kaikoura earthquake.

The Chinese satellite imagery, downloaded from the GEOSS portal, was then placed on the internet Kaikoura GIS Viewer for use by all response agencies and the New Zealand. The Kaikoura GIS Viewer was also accessed by other interested parties.

In the immediate aftermath of natural disasters, accurate information on the extent of damage is critically important for emergency response. The New Zealand Government is very grateful for the resources you and your organisation provided in our time of need.

Yours sincerely

Hon Gerry Brownlee  
Minister of Civil Defence

A new mode of international disaster emergency cooperation is gradually established within the framework of the GEO, which will become the important supplement for other international disaster cooperation mechanisms.



**CODATA**

International Council for Science - Committee on Data for Science and Technology

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Tweets by @CODATANews

### CODATA TG, China-GEOSS, Tonkin+Taylor and the Recent NZ Earthquake

Date: Nov 29, 2016

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**GEO** GROUP ON EARTH OBSERVATIONS

**GEOSS**

## Some of the main Data Providers contributing to the Disaster SBA Brokered by the GCI



Humanitarian Data Exchange



Regional Centre for Mapping of Resources for Development



UNOSAT



United Nations Institute for Training and Research



UNEP



NASA



Humanitarian OpenStreetMap Team

IRIS

中国·GEO

**DATA**

Council for Science - Committee on Data for Science and Technology

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Tweets by @CODATANews

### New Zealand Government thanks IRDR and CODATA Groups for their help following 2016 Kaikoura

The earthquake in Kaikoura in November 2016, and the IRDR, CODATA and China GEOSS for their timely and free satellite data that helped with damage and loss estimation following the disaster.



Efficient in the use of satellite data and the Kaikoura GIS Viewer for use by all response agencies and the New Zealand. The Kaikoura GIS Viewer was also accessed by other interested parties.

Since, Gerry Brownlee, wrote in February to Professor Li Guoqing, "In the immediate aftermath of natural disasters, accurate information on the nature and extent of damage is critically important for emergency response. The New Zealand Government is very grateful for the resources you and your organisation provided in our time of need."

Tonkin + Taylor supported geo-spatial information for the Earthquake Commission (EQC) in New Zealand on the damage caused by the earthquake. This information was made available through a web-based viewer to all government agencies, response and recovery agencies, engineers and researchers to access the damage information, thereby informing first response and mitigation measures. The Kaikoura GIS Viewer was also accessed internationally by interested parties.

The satellite imagery, accessed through ChinaGEOSS and the new launched AOGEOSS facilities, was placed on the internet based Project Orbit portal. This information includes imagery taken from helicopters, aircraft and satellites and field database. The earthquake, which occurred after midnight on 14 November 2016, caused major damage and disruption to the main transport network in the Upper South Island, and the information was used for recovery planning purposes. Furthermore, the Orbit data was used to identify more than 10,000 landslides after the earthquakes, and was vital to formulating engineering solutions for reconstruction efforts in Kaikoura.

This story is reproduced from the CODATA website <http://www.codata.org/news/154/62/New-Zealand-Government-thanks-IRDR-and-CODATA-groups-for-their-help-following-2016-Kaikoura-earthquake>

## News

### New Zealand Government thanks ChinaGEOSS, CODATA and IRDR for their help following 2016 Kaikoura Earthquake.

New Zealand was hit by a 7.8 magnitude earthquake in Kaikoura in November 2016, and the government has expressed thanks to ChinaGEOSS, CODATA and IRDR for their timely and free provision of satellite data that helped with damage and loss estimation following the disaster.

Damage and loss estimation is often difficult in the hours and days after a natural disaster as data and information are not available. During the Kaikoura earthquake, IRDR's Disaster Loss DATA project and the CODATA Task Group United Open Data for Global Disaster Risk Research (LODGD) worked together with environmental and engineering consultancy Tonkin + Taylor in New Zealand to provide TripleSat, Jilin-1A and FY satellite images of the affected Humuli District.

As both the technical manager of ChinaGEOSS Portal and a member of CODATA LODGD Task Group, Professor Li Guoqing organized the above emergency response data sharing activity under the leadership of China GEO Office.

The New Zealand Minister of Civil Defence, Gerry Brownlee, wrote in February to Professor Li Guoqing, saying: "In the immediate aftermath of natural disasters, accurate information on the nature and extent of damage is critically important for the efficient use of scarce resources. The New Zealand Government is very appreciative of the assistance that you and your organisation provided in our time of need."

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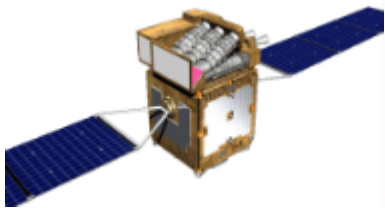
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# TanSat - Global CO<sub>2</sub> Observing and Monitoring Mission

## TanSat

- To support the research of climate change and greenhouse gas emission
- Measurement Goals:
  - XCO<sub>2</sub>, 1~4 ppmv, Monthly, 500 x 500 km<sup>2</sup>
  - CO<sub>2</sub> Flux, Relative flux error 20%, Monthly, 500 x 500 km<sup>2</sup>
- Invited by NASA to be a member of “A-Train Constellation” combined by satellites as Gcom-W1 Aqua, CACIPSO, CloudSat, and Aura
  - Launched in Dec. 2016
  - The policy on data management and sharing will be released soon.



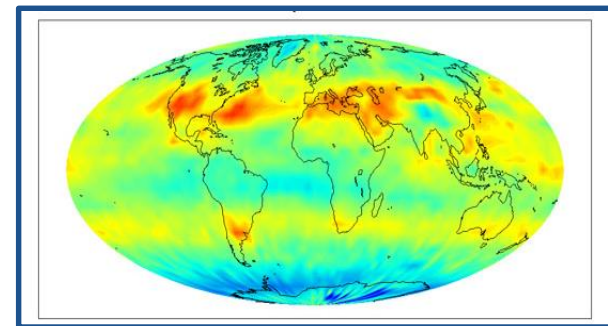
Carbon Dioxide Sensor



Carbon Dioxide Sensor



Distribution map of global CO<sub>2</sub> concentration







**Thanks for your attention !**