



Institute of Remote Sensing and Digital Earth  
Chinese Academy of Sciences

# RADI, Host Institution, Update

Report on Activities: Nov 2015 – May 2016

**RADI International Cooperation Office**

**May 6, 2016 | Paris, France**





# About RADI

The **RADI** is an independent research institute affiliated to the Chinese Academy of Sciences for remote sensing and digital Earth.

**6** research departments, **36** research units

**1200** employees and students

**303** senior scientists & technicians , **102** full professor

**37** - average age and Ph.D. **43.98%**

**3** CAS Member, **4** awardees of Thousand Talents Program

**90** graduate supervisors, including **45** doctoral supervisor

**4** International organizations

# International organizations hosted by RADI

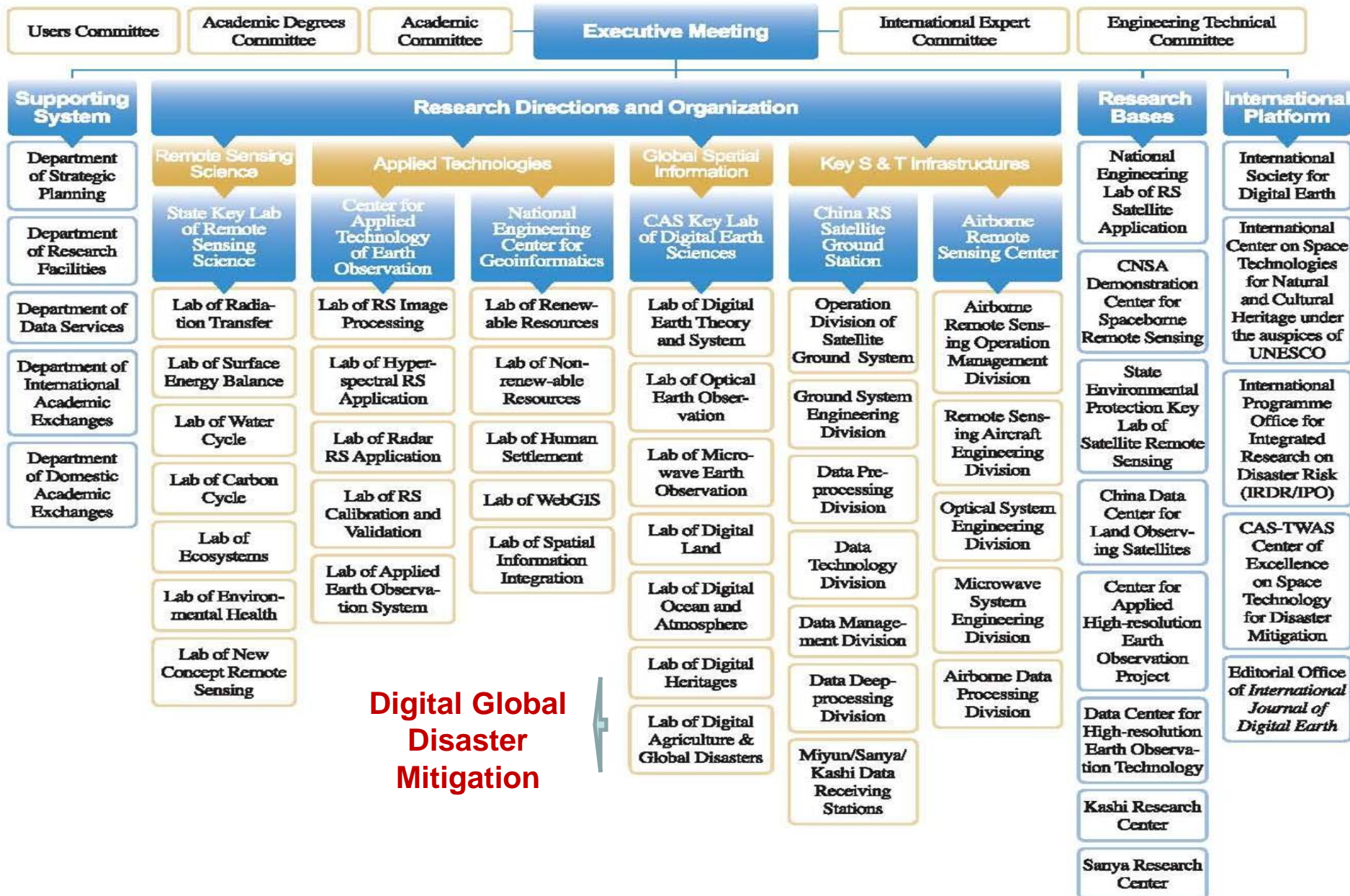


- International Center on Space Technology for Natural and Cultural Heritage under the auspice of UNESCO (HIST)
- International Program Office of Integrated Research on Disaster Risk (IRDR IPO)
- International Society for Digital Earth (ISDE)
- International Journal of Digital Earth (IJDE)
- CAS-TWAS Centre of Excellence on Space Technologies for





# Organization



**Digital Global  
Disaster  
Mitigation**



# Disaster Related Work



### Post-earthquake Remote Sensing Image in Pedernales, Ecuador



Image from Gaofen-2 on 04.19.2016 China National Space Administration

Fig.1 Post-earthquake RS Image in Pedernales

## Remote Sensing Emergency Monitoring on Ecuador Earthquake in April

### Post-earthquake Remote Sensing Image in Southwestern area of Pedernales, Ecuador

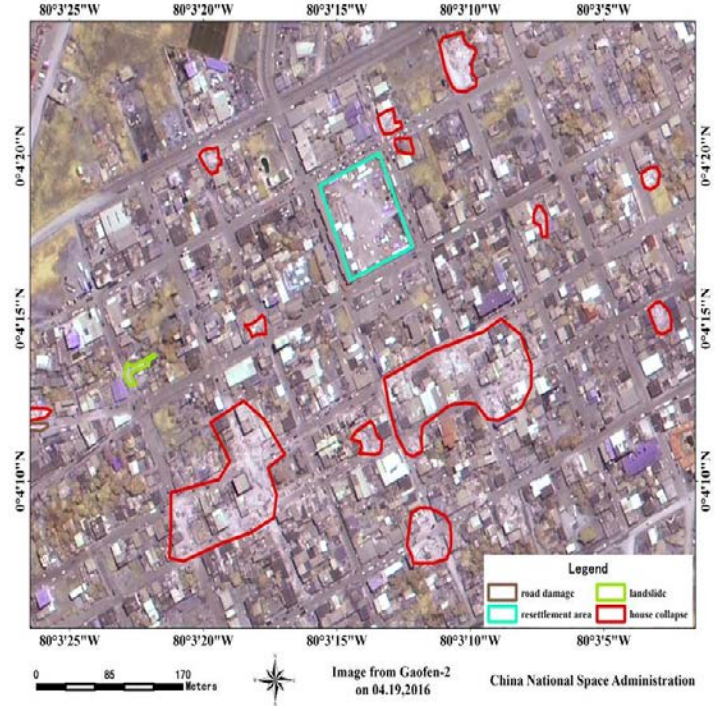


Fig.2 Post-earthquake Remote Sensing Image in southwestern area of Pedernales



# Remote Sensing Emergency Monitoring on Ecuador Earthquake



This analysis mainly focuses on the secondary disasters that happened or will potentially happen in near future, include landslide, mudslide, damaged road, collapsed bridge, etc.

Post-earthquake Remote Sensing Image over Portoviejo Upper River and Presa Poza Honda Area

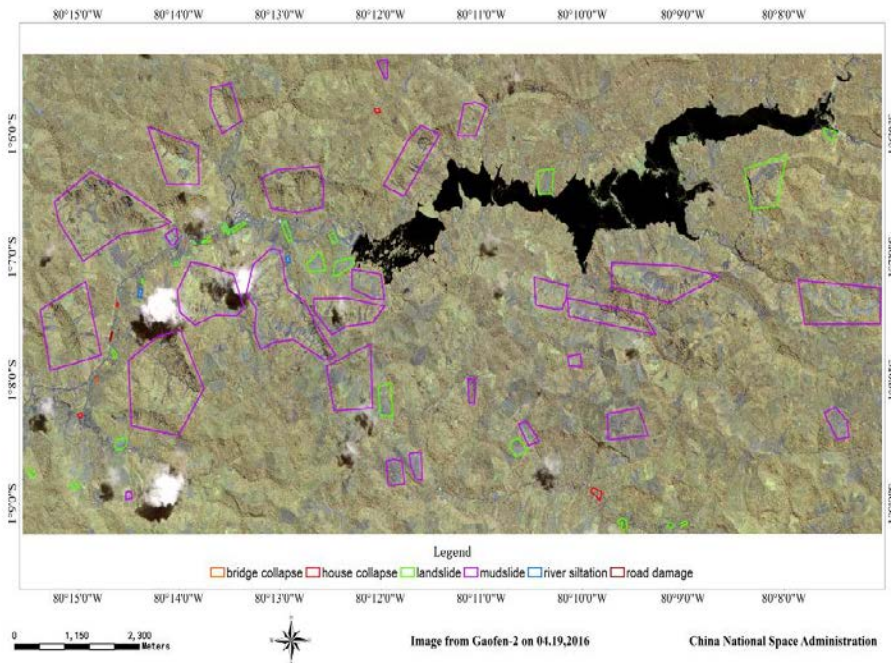


Fig.1 Secondary Disaster Map over Portveijo Upper River and Presa Poza Honda area

Post-earthquake Remote Sensing Image over Local Area of Portoviejo Upper River

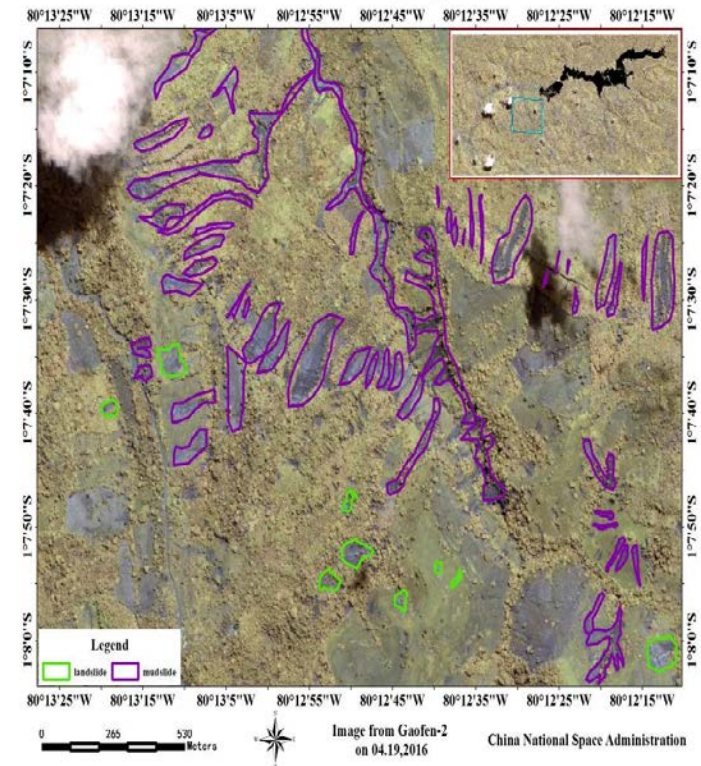


Fig.2 Local Secondary Disaster Map over Portveijo Upper River and Presa Poza Honda area

# CAS-TWAS Centre of Excellence on Space Technology for Disaster Mitigation (SDIM)



SDIM is committed to the studies of some key technologies of disaster reduction by using remote sensing, and focus on cooperation and capacity building for the developing countries.



Joint Research Program

Education

Training Workshop

Conference and Seminar



# Joint Research Program in Asia

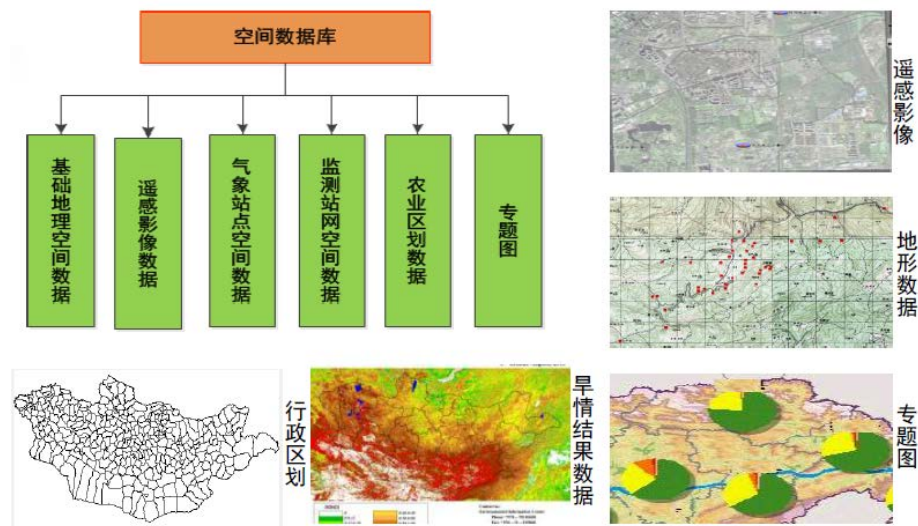


Projects	PI	Partner
Mongolia <b>Drought Monitoring</b> Method and System Construction	Bingfang Wu	Mongolia
The <b>drought monitoring and assessment</b> in Asia based on Multi-satellite data	Jiahua Zhang	Pakistan
Research on <b>flood monitoring</b> for mitigating flood loss in frequently flood areas	Chunxiang Cao	Thailand
Research on <b>Tropical Storm</b> Disaster Mitigation in South Asia by Earth Observation Technology	Qiang Feng	Pakistan/Bangladesh
Construction of Space Technology Based Asian <b>Disaster Mitigation Data Bank</b> System & Its Sharing Platform	Wanchang Zhang	Thailand
Study on <b>Seismic Anomalous Features</b> of the Qinghai Tibet Plateau based on the Multi-parameters of Infrared Remote Sensing	Xian Lu	India
Cooperation prospect of satellite data products for <b>disaster mitigation</b> in ASEAN	Liming Wang	Thailand
Sensitivity analysis of Mongolian stepper <b>fires</b> using the earth observation technology	Bin Li	Mongolia
Responses of <b>Coastal Flood</b> Risk to Climate Change in the Asia-Pacific Region: A Comparative Analysis of Shanghai and Jakarta	Xiaoping Du	Indonesia
Techniques cooperation research <b>for subsidence monitoring</b> with high-resolution space-borne SAR in Jakarta	Jinghui Fan	Indonesia
<b>Hazards monitoring</b> and evaluation on Angkor site by Radar Remote Sensing	Fulong Chen	Cambodia



The Project aims to develop the suitable method and model for monitoring the Mongolia drought to identify vulnerable and high risky areas to agricultural drought disasters and to improve the ability of Mongolia drought prevention and mitigation in Mongolia.

Station ID	Year	Month	Day	Precipitation
4750191	2000	5	1	3.6000000
4750191	2000	5	2	4.2000000
4750191	2000	5	3	4.4000000
4750191	2000	5	4	4.2000000
4750191	2000	5	5	4.4000000
4750191	2000	5	6	4.4000000
4750191	2000	5	7	4.4000000
4750191	2000	5	8	4.4000000
4750191	2000	5	9	4.4000000
4750191	2000	5	10	4.4000000
4750191	2000	5	11	4.4000000
4750191	2000	5	12	4.4000000
4750191	2000	6	1	4.4000000
4750191	2000	6	2	4.4000000
4750191	2000	6	3	4.4000000
4750191	2000	6	4	4.4000000
4750191	2000	6	5	4.4000000
4750191	2000	6	6	4.4000000
4750191	2000	6	7	4.4000000
4750191	2000	6	8	4.4000000
4750191	2000	6	9	4.4000000
4750191	2000	6	10	4.4000000
4750191	2000	6	11	4.4000000
4750191	2000	6	12	4.4000000
4750191	2000	7	1	4.4000000
4750191	2000	7	2	4.4000000
4750191	2000	7	3	4.4000000
4750191	2000	7	4	4.4000000
4750191	2000	7	5	4.4000000
4750191	2000	7	6	4.4000000
4750191	2000	7	7	4.4000000
4750191	2000	7	8	4.4000000
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4750191	2000	7	12	4.4000000
4750191	2000	8	1	4.4000000
4750191	2000	8	2	4.4000000
4750191	2000	8	3	4.4000000
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4750191	2000	8	7	4.4000000
4750191	2000	8	8	4.4000000
4750191	2000	8	9	4.4000000
4750191	2000	8	10	4.4000000
4750191	2000	8	11	4.4000000
4750191	2000	8	12	4.4000000



Graph: Interface of DroughtWatch



twas (2013-2015)



- **11** research projects are launched cooperating with **13** developing countries
- **4** key application systems are developed and transferred
- **4** training workshops and **1** strategy report
- **25** students and scholars study at SDIM

twas THE WORLD ACADEMY OF SCIENCES  
for the advancement of science in developing countries

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5 June 2015

**TWAS, CAS join in Nepal recovery**

Bai Chunli, president of TWAS and the Chinese Academy of Sciences, has provided

PRESS ROOM  
For queries in English:  
Edward Lempinen  
Public Information Officer  
ICTP Enrico Fermi Building, Room 107

CAS, the CAS-TWAS Centre of Excellence on Space Science for Disaster Mitigation (SDIM) and the CAS-TWAS Center of Excellence on Water and Environment (CEWE) have provided assistance to ICIMOD and Nepal.

UN World Conference on  
Disaster Risk Reduction  
2015 Sendai Japan

*Earth observations in support of national  
strategies for disaster-risk management*

A Synergy Framework for the integration of Earth Observation  
technologies into Disaster Risk Reduction

Final Issue, dated 25 February 2015

White paper in WCDRR



# SatSee-Live (Virtual Ground Station)

No ground station infrastructure needed (e.g., antenna).

Users get full path satellite data (Jpeg) in near real time through internet.

## Benefits:

- To demonstrate remote sensing imaging process to the public
- To help users quickly access remote sensing image (full resolution, in near real-time)
- To distribute satellite data to a larger user community
- To lower the cost by providing bulk data  
(users pay by service months/service years and get all covering images)

*Specially useful for daily monitoring and detection of disaster emergency (fire spot, flood, etc.)*

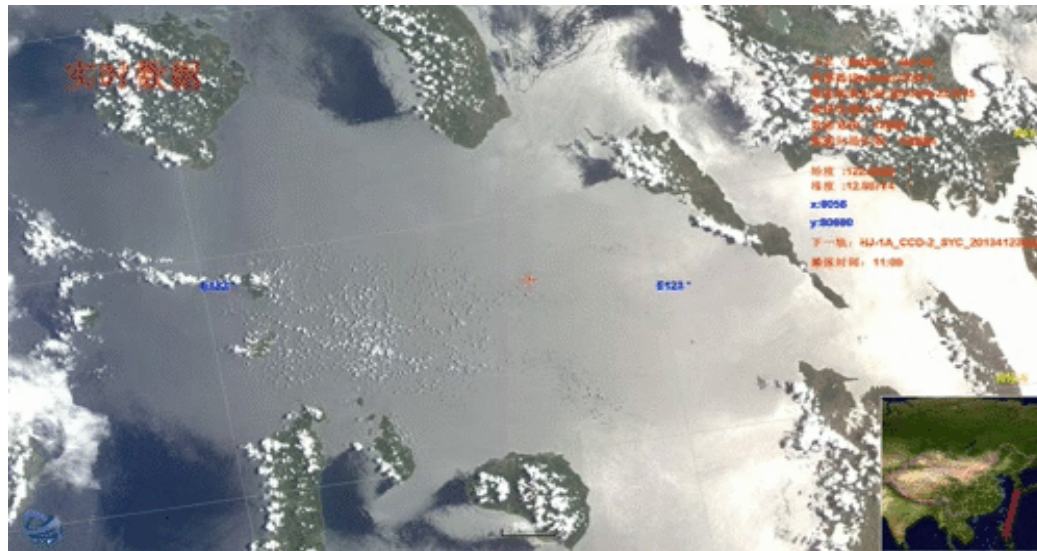


Image provided and displayed in client monitor

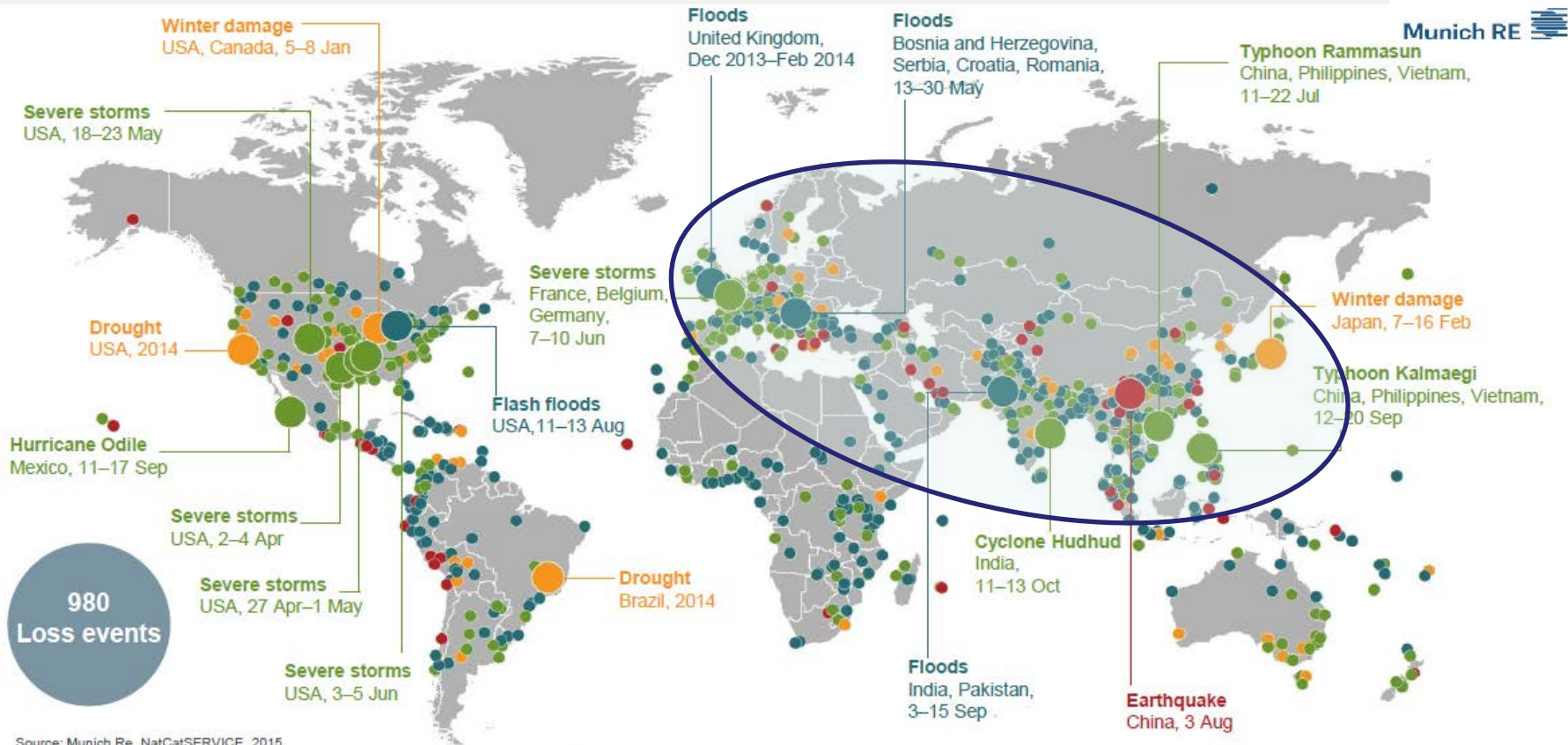
# Future Opportunities for **Disaster Mitigation** under the background of Chinese One Belt and One Road Initiatives



# Severe Natural Hazards in 2014



## High occurrences of hazards along the Belt and Road countries



○ Loss events

○ Selection of catastrophes  
Overall losses ≥ US\$ 1,500m

● Geophysical events  
(Earthquake, tsunami, volcanic activity)

● Meteorological events  
(Tropical storm, extratropical storm, convective storm, local storm)

● Hydrological events  
(Flood, mass movement)

● Climatological events  
(Extreme temperature, drought, wildfire)

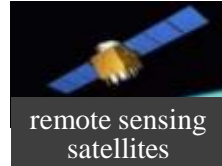
oceanic based observation



# Earth Observation for Disaster Mitigation



Communications satellites



remote sensing satellites



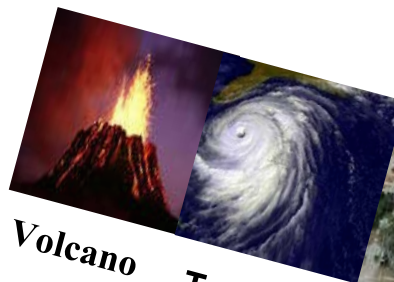
navigation satellite



ground based observation



Earth Observation Systems



Volcano



Typhoon



Flood



Earthquake



Drought



Tsunami



Wildfire



Dust storm



Snow storm

Spatial Big Data Share Platform





International Symposium on Earth Observation  
for One Belt and One Road

一带一路空间认知国际会议

# Earth Observation for Digital “Belt and Road”

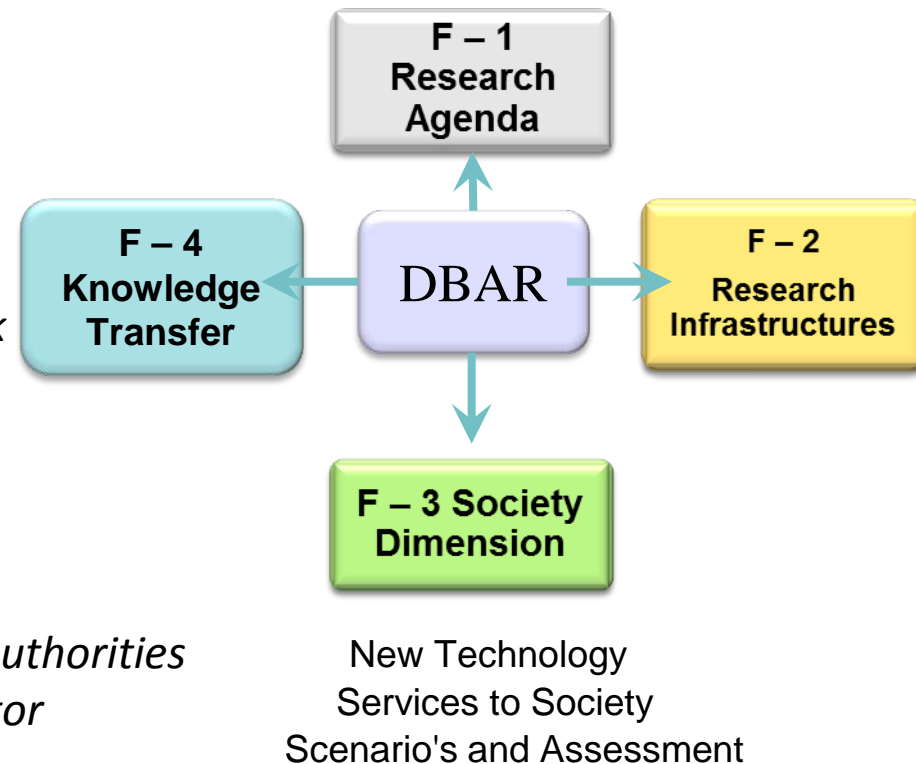
Guo Huadong

May, 2016 Beijing, China

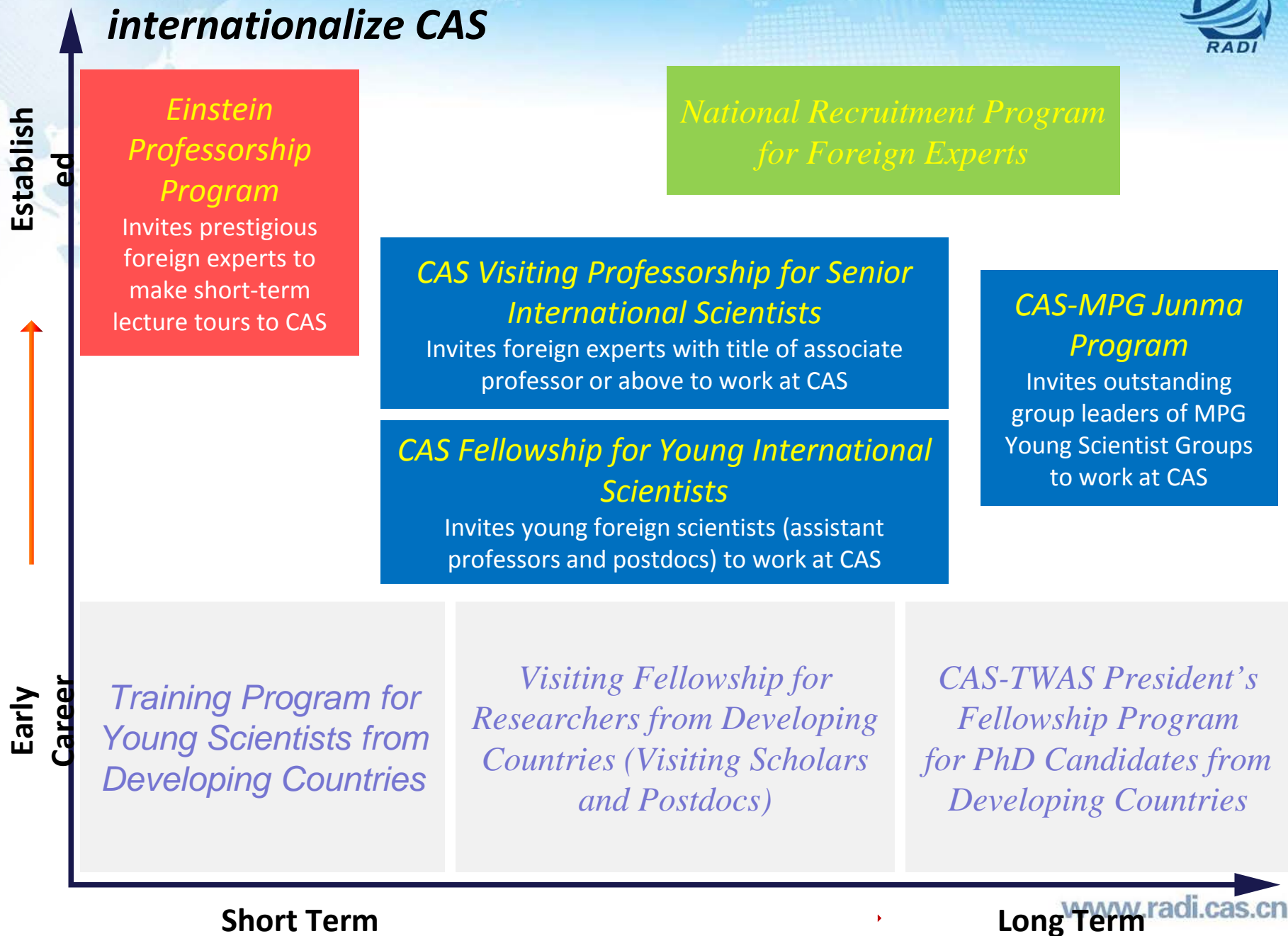
# Steps Towards Digital Silk Road Initiative



- Vision
- Mission
- Objective and Grand Challenges
- Motivation
- DBAR Research Agenda
- DBAR Research Infrastructure
  - *Conceptual Design*
  - *The Envisioned Hierarchical Station Network*
  - *Harmonized Data Products*
  - *Modeling and analysis infrastructures*
- DBAR Impact on Society Benefits
- DBAR Knowledge Transfer
  - *Int'l Forums, Decision Makers and national authorities*
  - *To Science Communities and the Private Sector*
  - *To the General Public*
- Implementation



# A Package of the International Talent Programs---to internationalize CAS







# RADI-NASA Join hands in Glacier Change and Associated Hazards using Earth Observations



## Three Workshops:

- CAS-NASA Workshops in Nepal, USA and China.

## Two Main Themes: Glacier change and associated Hazards

- Pool the advantages of the two sides in EO and glacier and snow cover studies;
- Develop decision support tools for the sustainable development of the region;
- Promote the establishment of a mechanism underlying the long-term Sino-US cooperation on global change over HMA.

## 4. Summary of Key Information

Expected program budget for first year of new awards	~ \$3.5M per year
Number of new awards pending adequate proposals of merit	~12
Maximum duration of awards	3 years





## Updates on the Governance Aspects

- New Leadership of RADI
- We will be working closely with IRDR IPO to make better preparation for the review
- Very much enjoyed working with Bill and his staff
- RADI will continuously make our due contribution and dedication to IRDR as promised

# Thanks!



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