



## **Bilateral US-China CODATA Workshop: Moving Forward on Data Policy and Cooperation in Earth Observations with a Focus on Disaster Data**

### *Meeting Report*

#### **Introduction**

On August 25-26, 2014, the U.S. National Research Council's Board on Research Data and Information, which also serves as the U.S. Committee on Data for Science and Technology (CODATA), held a workshop with the Chinese Academy of Sciences (CAS) to examine Earth observations (EO) data sharing and cooperation. The event was held in partnership with Secure World Foundation, a private, operating foundation that works with stakeholders worldwide to promote space sustainability and plays a key role in promoting EO cooperation.

The event brought together representatives from CAS and partner agencies in China, and a diverse group of participants from all sectors of the U.S. EO community, representing government, industry, academia, research, and civil society.

This report includes an overview of the program and captures highlights from the discussions of the workshop. The agenda for the meeting is included in Appendix A. Appendix B contains the full list of participants.

#### **Overview of the program**

The workshop involved a series of presentations and discussions among the participants. The goals were to discuss opportunities related to the sharing of EO data, showcase recent examples of success and available resources, improve understanding of Chinese and U.S. EO data policy, programs, issues, and identify possible follow-on activities for engagement, with a focus on data sharing for disaster risk management. The program also included sessions on mechanisms for cooperation, legal considerations in data sharing agreements, related economic, institutional and political issues that may hamper data sharing, and discussion of lessons-learned from a series of case studies.

#### **Discussion Highlights**

- The interactions among government, industry, and academic partners in the collection and provision of EO data lead to legal, economic, institutional, sociocultural and political issues that impact data sharing. For example, reuse limitations that arise when combining data from multiple

sources impact the extent to which it can be turned into useful applications. A number of different legal and regulatory mechanisms address these issues and could help inform expanded cooperation between international partners.

- The challenges of previous efforts to commercialize government-funded EO data have demonstrated the benefits of free and open access to such data. These data are considered a public good in the United States, with little to no restrictions to their access and use from civil government observing systems. In the current environment, there is a market for value-added data products with a myriad of applications and those are within the purview of a growing commercial sector.
- While the bilateral relationship between the US-China EO communities could be improved, there are examples of successful cooperation in data sharing and both sides engage regularly through bilateral and multilateral mechanisms. Examples of bilateral mechanisms include a protocol between the National Oceanic and Atmospheric Administration (NOAA) and the Chinese Meteorological Administration (CMA) in atmospheric science and technology. CODATA is considered one of the most active platforms for cooperation and a suitable venue for continued collaboration in data sharing between the two countries. The Group on Earth Observations (GEO) is also a key multilateral forum for both sides to engage and collaborate.
- Sharing of EO data within China has greatly increased, in large part due to China's involvement in GEO, which has contributed to new understanding and changes in data sharing policy. This shift has occurred over four periods:
  - 1st stage: Before 1990s – very limited data sharing
  - 2<sup>nd</sup> stage: 1990s – initial stage of sharing, primarily state-oriented
  - 3<sup>rd</sup> stage: 2000-2010 – stakeholder-oriented, with development of regulations on information sharing
  - 4<sup>th</sup> stage: 2010s – accelerated data sharing
- China-GEOSS has been operational since April 2014 and now has over one hundred thousand registered users within the country. Current plans aim towards a balanced ecosystem of EO data sharing that includes state actors, data providers, public and private sectors, scientists, and international society. International data sharing is currently being implemented in a case-by-case basis.
- A number of political and institutional challenges limit expanded data sharing within and outside of China. These include: complex relationships among central and local governments, and research communities, overlapping lines of authority, and lack of a unified set of distribution policies. China values and takes advantage of open data access of international data sets. For example, in 2013, Chinese users accounted for the largest group of non-U.S. users of NASA Earth science data available through the EOSDIS platform. Challenges for open access data sharing within China include the lack of a working data sharing platform, and concerns over the release of sensitive data.
- China's vulnerability to natural disasters, where these account for three to five percent of gross domestic product, has been a major force for the expansion of EO activities within the country. Climate change is exacerbating these risks, which has driven efforts to better understand the mechanisms leading to common natural disasters, such as floods and droughts. However, China lacks high-resolution EO satellite data.

- Sharing of EO data for disaster management is an opportunity for enhanced cooperation and is deemed a priority area. Both sides agreed that EO data could be better used to understand risks and vulnerabilities and make better decisions before disasters occur. A next step would be to define a roadmap for U.S.-China operational sharing of natural disaster data.
- One opportunity that could be explored is for CODATA to facilitate data sharing between China and the United States on third-party scenarios, such as natural disasters occurring in Africa.

## **Conclusion**

The workshop succeeded in strengthening relationships between the Chinese and U.S. EO community, as well as improving awareness of the opportunities and challenges for improved data sharing policy and practice. The group agreed that sharing data for disaster risk monitoring and management is a good opportunity to take advantage of the expertise and resources both sides have to offer, as well as to improve overall understanding of the conditions leading to disasters that are not yet well understood.

## Appendix A: Workshop Agenda

### *Moving Forward on Data Policy and Cooperation in Earth Observations: A Focus on Disaster Data*

#### **Bilateral US-China CODATA Workshop In collaboration with the Secure World Foundation**

National Academy of Sciences  
Room 125, National Academy of Sciences Building  
2101 Constitution Avenue NW  
Washington, DC

### **AGENDA**

#### Monday, August 25

8:00 Continental breakfast

#### ***Session One: Asking the Right Questions***

Session Chairs: Mr. Paul UHLIR, US CODATA, National Academy of Sciences (NAS), and Prof. LI Jianhui, Computer Network and Information Center (CNIC), Chinese Academy of Sciences (CAS)

8:45 Welcoming remarks by the National Academy of Sciences and the U.S. and Chinese delegation co-chairs

*Mr. Paul UHLIR, Board on Research Data & Information, US CODATA, NAS*

*Mr. Kevin POMFRET, Esq., Centre for Spatial Law and Policy*

*Prof. LI Guoqing, Remote Sensing and Digital Earth Institute (RADI)/ CAS*

9:00 Welcoming remarks by Secure World Foundation

*Dr. Michael SIMPSON, SWF*

9:10 Presentation by representative of the U.S. Department of State

*Dr. Fernando ECHAVARRIA, Department of State*

9:20 Presentation by representative of the U.S. Geological Survey

*Mr. Raymond BYRNES, USGS, Department of Interior*

9:30 Presentation by representative of the National Oceanic and Atmospheric Administration

*Mr. Charles WOOLDRIDGE, NOAA, Department of Commerce*

9:40 Key Legal Considerations in Data Sharing Arrangements

*Mr. Kevin POMFRET, Centre for Spatial Law & Policy*

10:00 Introduction to China National Earth Observation Data Sharing Program

*Prof. LI Guoqing, RADI/CAS*

10:20 General discussion

10:30 Break

***Session Two: Chinese Earth Observation (EO) Data Policy and Programs***

Session chairs: Dr. Phil Yang, George Mason University, and Prof. FENG Qiang, RADI/CAS

10:50 Evolution of Chinese Research Data Policy

*Prof. LI Jianhui, CNIC/CAS*

11:10 Improving of China Earth Observation Data Policy

*Prof. LI Guoqing, RADI/CAS*

11:30 Evolution of Chinese Space Science Mission Data Sharing Policy

*Prof. ZOU Ziming, National Space Science Center (NSSC)/ CAS*

11:50 General discussion

12:00 Lunch in meeting room

12:30 Lunch presentation on commercial Earth observations in the United States

*Mr. Michael RUGALA, DigitalGlobe Corp.*

***Session Three: Issues in Forming EO Data Policy***

Session chairs: Mr. Kevin POMFRET, Centre for Spatial Law and Policy, and Prof. LI Guoqing, RADI/CAS

13:00 Overview presentation

*Prof. LI Mengxue, University of Maryland*

13:30 Overcoming Barriers to EO Data Sharing

Short presentations on legal, economic, institutional, sociocultural and political barriers, followed by general discussion

*Ms. Anita EISENSTADT, Science and Technology Policy Institute*

*Dr. Mariel BOROWITZ, Georgia Tech*

*Dr. Robert CHEN, Columbia University*

*Prof. Shuming BAO, University of Michigan*

*Mr. Dan STILLMAN, PlanetiQ*

*Mr. Paul UHLIR, NAS/US CODATA*

15:30 Break

***Session Four: Data Case Studies***

Session chairs: Dr. Robert CHEN, Columbia University, and Prof. ZOU Ziming, NSSC/CAS

- 15:50 Introduction to Marine Hazards in China's Coastal Zone  
*Prof. ZHANG Tianyu, National Marine Environmental Forecasting Center*
- 16:30 Cryosphere Monitoring and Research Big Data on Cold and Arid Regions  
*Prof. ZHANG Yaonan, Cold and Arid Regions Environmental and Engineering Research Institute/ CAS*
- 16:50 Cloud-based Geospatial Data Analysis and Services  
*Dr. WANG Xuezhi, CNIC/CAS*
- 17:10 General Discussion
- 17:20 Instructions for day two of the Workshop  
*Mr. Paul UHLIR, US CODATA*
- 17:30 Reception in the West Court at the National Academy of Sciences building  
2101 Constitution Avenue NW, Washington, DC

Tuesday, August 26

- 8:30 Continental breakfast
- 9:00 Integrated Research on Disaster Risk and Disaster Data Sharing  
*Prof. FENG Qiang, RADI/CAS*
- 9:30 ***Session Five: Disaster Data Sharing***  
Session chairs: Prof. Carol SONG, Purdue University, and Prof. LI Guoqing, CAS  
Rapporteur: Dr. Robert CHEN, Columbia University
- Statement of the issues
  - Identification of the data needed
  - Characterization of the data available in the US and in China
  - Methods of cooperation and next steps
- 11:00 General discussion
- 12:00 Closing remarks. Meeting adjourns.

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## Appendix B: Participant List

### China

- Li Guoqing, Remote Sensing and Digital Earth Institute (RADI), Chinese Academy of Sciences (CAS)
- Feng Qiang, RADI, CAS
- Zhang Yaonan, Cold and Arid Regions Environmental and Engineering Research Institute, CAS
- Zou Ziming, National Space Science Center, CAS
- Li Jianhui, Computer Network and Information Center (CNIC), CAS
- Wang Xuezhi, CNIC, CAS
- Li Chang, CNIC, CAS
- Zhang Tianyu, National Marine Environmental Forecasting Center

### United States

- Shuming Bao, Director, China Data Center, University of Michigan
- Kate, Becker, International Relations Specialist, National Oceanic and Atmospheric Administration (NOAA)
- Mariel John Borowitz, Assistant Professor, Georgia Institute of Technology
- Raymond Byrnes, International Staff, United States Geological Survey (USGS)
- Thomas Cecere, International Staff, USGS
- Laura Delgado López, Project Manager, Secure World Foundation (SWF)
- Fernando Echavarría, Foreign Affairs Officer, Bureau of Oceans, Environment & Science, Department of State
- Anita Eisenstadt, Research Staff Member, Science and Technology Policy Institute, Institute for Defense Analyses
- Yana Gevorgyan, Senior International Relations Specialist, NOAA
- Alanna Krolkowski, Princeton-Harvard China and the World Fellow, Harvard University
- Mary Ann Kutny, Staff, International and Interagency Affairs Division, NOAA
- Li Mengxue, Research Assistant Professor in the Department of Geographical Sciences, University of Maryland
- Kevin Pomfret, Executive Director, Centre for Spatial Law and Policy
- Michael Rugala, Senior Director for Sales Operations, Digital Globe
- Mike Simpson, Executive Director, SWF
- Carol Song, Senior Research Scientist, Purdue University
- Dan Stillman, Senior Manager, Corporate Marketing & Communications, PlanetiQ
- Brian Weeden, Technical Advisor, SWF
- Chuck Wooldridge, Deputy Director, International and Interagency Affairs Division, NOAA
- Phil Yang, Professor, Department of Geography and GeoInformation Science, George Mason University