



DRAFT AGENDA

EARTH DATA SCIENCE IN THE ERA OF BIG DATA AND COMPUTE

The complexity, diversity, and volume of Earth science data have increased significantly over recent decades. Discovery, access, and interaction with big data collected from numerous sources are increasingly used to explore natural, human and social systems at unprecedented scales while providing us with tremendous opportunities to gain dynamic insight into complex phenomena through big compute (e.g. cloud and high-performance computing) approaches. Though such data have started playing important roles in many Earth science and engineering domains and promise to enable a wide range of decision-making practices with significant societal impacts, Earth data science remains to be established for advancing Earth science and engineering and education in the era of big data and compute.

OVERARCHING OBJECTIVE

This meeting aims to identify key challenges and opportunities of Earth data science in the era of Big Data and Compute.

Wednesday, April 29, 2015

Keck Center, Room 208

[Register for In Person or WebEx Connection via SurveyGizmo](#)

8:00 AM – 4:45 PM OPEN SESSION

8:00-9:00 Breakfast (all welcome)

9:00 Welcome and introductions Corale Brierley, Chair
Board on Earth Sciences and Resources

9:15 **Keynote Speakers**
Timothy Killeen, Incoming President, University of Illinois
 Andrew Turner, Chief Technology Officer, Esri R&D DC

Questions and Discussion

10:45 Break



Panel Format: Each panelists will speak for ~10 minutes followed by a moderated panel discussion and question period.

11:00 Panel 1: Science and Engineering Drivers for Earth Data Science

Characteristics of cutting-edge Earth science and resource problems that drive the need for big data and compute: CyberGIS, CZO, IPCC climate models, surface processes, hydrological models, lidar, next generation SAR, quantifying uncertainty in large-scale analysis and modeling, agent-based models for coupled human-environmental systems, citizen science

Lee Allison, Arizona State Geological Survey
Patrick Reed, Cornell University
Chaitanya Baru, National Science Foundation (invited)

MODERATOR: Gene Whitney, BESR Member

12:30 PM -1:30 Lunch (served in the room, open to all)

1:30 Panel 2: Earth Data Science: Foundations and Principles

How do we collect, access, manage, process, analyze, visualize, interpret and curate Earth big data? What are the novel approaches to the science of Earth big data and needs for future development of data cyberinfrastructure?

E. Lynn Usery, USGS
Carole Palmer, University of Washington
Timothy Ahern, IRIS
Scott Hills, Chevron

MODERATOR: Meghan Miller, BESR Member

3:00 Break

3:15 Panel 3: Frontiers and Future Directions of Earth Data Science

What frontiers are yet to be explored and are future directions identified for advancing earth data science and engineering, and earth sciences and their applications, more generally? What challenges still exist and where are the greatest opportunities for future research, technology, education, and transformative gains?

Shaowen Wang, University of Illinois
Sean Dessureault, Mine Intelligence Research Group
Craig Dobson, NASA Earth Surface and Interior

MODERATOR: Mary Poulton, BESR Member

4:45 Adjourn OPEN SESSION