

# Committee on Earth Science and Applications from Space

Update to the Space Studies  
Board

Michael King, CESAS Co-Chair

May 2, 2018

# Committee Roster

## CO-CHAIRS

**Michael D. King\***  
University of Colorado

**Joyce E. Penner\***  
University of Michigan

## MEMBERS

**Steven A. Ackerman\***  
University of Wisconsin

**Otis Brown**  
NC State University

**Molly E. Brown**  
University of Maryland

**Stacey W. Boland\***  
Jet Propulsion Laboratory

**Efi Foufoula-Georgiou\***  
UC Irvine

**Chelle L. Gentemann\***  
Earth and Space Research

**Everette Joseph**  
SUNY Albany

**R. Steven Nerem**  
University of Colorado

**Eric Rignot**  
UC Irvine

**Christopher S. Ruf**  
University of Michigan

**David L. Skole\***  
Michigan State University

**Steven C. Wofsy\***  
Harvard University

\* Rotating off on June 30; nominees for co-chairs identified and are available to serve, if approved

# Meeting during Space Science Week

## March 27-29, 2018

- Presentations and updates from
  - NASA (Mike Freilich, Director, Earth Science Division)
  - NOAA (Karen St. Germain, Director, Office of Systems Architecture and Advanced Planning)
  - USGS National Land Imaging Program (Tim Newman and Pete Doucette)
- Briefings on
  - NASA's PACE mission
    - President Trump had proposed cancelation, but Congress continues to support and fund
  - Opportunities for balloons, airships, and UAVs in Earth science research
  - ESAs Earth Science and Copernicus programs
  - NASA's Earth Science Technology Office (ESTO) program
- Briefing by the decadal survey co-chairs on the recently released report, "Thriving on Our Changing Planet: A Decadal Strategy for Earth Observation from Space"
- In closed session
  - Review of a draft of the popularization of the decadal survey (many criticisms)
  - Briefing from "Open Code" study co-chair and CESAS member Chelle Gentemann
  - We also discussed potential candidates to replace departing members
  - Discussion of NASA ESD plans for the Earth System Explorer selections
    - Consensus that HQ should maintain the recommended 3 opportunities (from the 7 overlapping science targets) in coming decade
    - The ESE solicitation should encourage the community to propose innovative solutions that optimize the science and applications return for the investment

# Ad-Hoc Studies Under Discussion

- Novel Techniques and Applications for Data Analytics on Earth Observation Data: A Proposed Workshop (joint with NRC Board on Mathematical Sciences and Analytics)
  - Strawman SOT circulated to potential sponsors; to date, most interest at USGS
  - Draws on briefings to CESAS at previous meeting
  - Workshop could help define more focused follow-on consensus study that would make recommendations

# Weather Research and Forecasting Innovation Act of 2017

## Independent Study On Future Of NOAA Satellite Systems And Data

[NOAA] shall seek to enter into the agreement [by September 30, 2018] with the NAS [for a] study on matters concerning future satellite data needs. Study shall:

- (i) develop recommendations on how to make the data portfolio of the Administration more robust and cost-effective;
- (ii) assess the costs and benefits of moving toward a constellation of many small satellites, standardizing satellite bus design, relying more on the purchasing of data, or acquiring data from other sources or methods;
- (iii) identify the environmental observations that are essential to the performance of weather models, based on an assessment of Federal, academic, and private sector weather research, and the cost of obtaining the environmental data;
- (iv) identify environmental observations that improve the quality of operational and research weather models in effect on the day before the date of enactment of this Act;
- (v) identify and prioritize new environmental observations that could contribute to existing and future weather models; and
- (vi) develop recommendations on a portfolio of environmental observations that balances essential, quality-improving, and new data, private and nonprivate sources, and space-based and Earth-based sources

# Weather Research and Forecasting Innovation Act of 2017

(continued)

- Likely to be folded into a “weather decadal” that is being requested of BASC by NOAA National Weather Service
- Timeline: Act calls for study request by September 30, 2018 and Academy report within following 2 years

# Preliminary Thinking for Fall Meeting

- NASA's response to NAS committee on open code report, which should be out this Summer
  - With report just out, useful to hear from everyone on the committee and NASA about how to best move forward based on any recommendations the report makes
- NASA cloud computing progress (progress on moving data to cloud, initial reactions and lessons learned)
  - Useful to hear from NOAA on same topic
- Discussion of how DAACs are going to evolve as data moves onto cloud, how will their roles change?
- Another discussion on Decadal Survey, now with more time for NASA to digest its recommendations