Committee on Earth Science and Applications from Space

Update from Michael King,

Committee Co-Chair

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
Albany University

R. Steven Nerem
University of Colorado

Eric J. Rignot
UC Irvine

Christopher S. Ruf
University of Michigan

David L. Skole
Michigan State University

Steven C. Wofsy
Harvard University

March 2017 Meeting

- CESAS met during the Space Studies Board's Space Science Week, March 28th & 29th
- Presentation & Discussion with Mike Freilich, Director, Earth Science Division, NASA; Conrad Lautenbacher (Vice Admiral, USN ret) – Chief Executive Officer, GeoOptics; Jim Yoe, JCSDA, NOAA-NWS; Dan St. Jean, Deputy Director of the Space Platforms Requirements WG, NOAA-NESDIS; Karen St. Germain, Director Office of Systems Architecture and Advanced Planning, NOAA NESDIS; and Jonny Dyer Chief Engineer, Terra Bella
- Particular focus on public-private partnerships for Earth observation data used in weather prediction and the Academy study called out in the "Weather Research and Forecasting Innovation Act of 2017"
- Study touches on areas of expertise associated with SSB and the Board on Atmospheric Sciences and Climate

INDEPENDENT STUDY ON FUTURE OF NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION SATELLITE SYSTEMS AND DATA

(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

(vi) develop recommendations on a portfolio of environmental observations that balances essential, quality-improving, and new data, private and non-private sources, and space-based and Earth-based sources

Key Outcomes

- Committee members noted flaws in the way NOAA is conducting its data buy; e.g., NOAA does not plan to consider the detailed engineering design of the GNSS-RO instrument that produced the data when it evaluates its quality. Summary from C. Ruf:
  - Proper data utilization requires a close collaboration between data users and data providers, which should begin well before the point when flight data are actually available and should, ideally, include the involvement of the data users in the design, development and pre-flight calibration of an instrument. At an absolute minimum, the data users should have access to the detailed engineering design and test results for instruments that measure the data they are buying.
  - In the examples discussed (CYGNSS, TROPICS, TBD), there is no involvement by NOAA in the development process prior to mission CDR. Collaborations between NASA and NOAA would be more likely to result in data of operational use to NOAA later in the mission life if NOAA had some involvement in the early design phases of the mission (prior to CDR).
- CESAS members are reviewing the study elements called out in the Weather Modernization Act. Comments such as those above will inform staff discussions with the agencies as the terms of reference for the Academy study are developed