CESAS - Committee on Earth Science and Applications from Space

The overarching purpose for the committee is to support scientific progress in Earth system science and applications, with an emphasis on research requiring global data that are best acquired from space and to assist the federal government in planning programs in these fields by providing advice on the implementation of decadal survey recommendations. The CESAS provides an independent, authoritative forum for identifying and discussing issues in Earth Sciences and Applications from Space between the research community, the federal government, and the interested public.

At each of its in-person meetings, as appropriate, the committee may prepare concise assessments of progress on the implementation of the decadal survey's recommended scientific and technical activities.

Current Membership

Everette Joseph, Co-Chair, NCAR

Steven W. Running, Co-Chair, U Montana

Nancy L. Baker, Naval Research Laboratory

Elizabeth Barnes, Colorado State Univ.*

Molly E. Brown, University of Maryland

Otis B. Brown, North Carolina State Univ.

Ivona Cetinić, USRA/NASA GSFC

William E. Dietrich, NAS, UC Berkeley

George J. Komar, NASA (retired)

Anna M. Michalak, Stanford University

R. Steven Nerem, University of Colorado

Eric J. Rignot, NAS, UC Irvine

Christopher S. Ruf, University of Michigan

David Sandwell, UC San Diego/Scripps*

Duane E. Waliser, Jet Propulsion Laboratory

Eric F. Wood, NAE, Princeton University**

Ping Yang, Texas A&M University

Staff:

Art Charo, Senior Program Officer

Gaybrielle Holbert, Program Assistant

* New appointment—06/30/2021-06/30/24

** Dr. Wood passed away on Nov. 3, 2021

CESAS Spring Meeting at SSW—Follow-Up

On 5/3/21, the Committee sent a letter to NASA ESD and NOAA NESDIS that:

- Noted the need to develop a robust climate observing system, the particular role of NASA and NOAA for its space-based components, and the Administration's interest in addressing the "climate crisis."
  - The challenge of global climate change informed the 2017 decadal survey's recommendations; however, the development of an integrated climate observing system was not mentioned explicity in the survey statement of task.
- Offered to support--via an additional meeting, workshop, or focus session at the committee's fall meeting -- agency interest in planning for the development of such a system.

Status: NASA and NOAA met (virtually) to discuss the committee's letter; no formal actions taken. NASA's announcement of plans for an Earth System Observatory and an acceleration of implementation of the decadal survey-recommended Earth System Explorers are welcome but do not fully address the committee's concern.

Fall Meeting – Key Topics

- **Progress in the implementation of the Decadal Survey**
  - NASA's Earth System Observatory (ESO) includes additional requested funding of $250 M in FY22 to support development of survey-recommended Earth System Explorers.
- **Interagency Actions Towards an Integrated Climate Observing System**:
  - Not part of the task statement for the 2018 decadal, which was sponsored by NASA, NOAA, and USGS.
  - Survey was focused on space-based observations; in-situ observations not addressed in any detail and NSF/ground- and in-situ observational needs were out of scope.
  - Committee notes that agencies are not yet organized to share resources towards the development of an optimized framework for Earth system predictability.
  - For climate, data continuity and development of climate data records are challenges requiring multiagency involvement.

Fall 2021 Meeting Agenda

- **Update from NASA's Earth Science Division**
  Karen St. Germain, Director, NASA ESD
- **Update from NOAA NESDIS**
  Irene Parker, Acting Deputy Assistant Administrator for Systems
- **Update from USGS**
  Tim Newman, Program Coordinator, National Land Imaging Program
- **Advancing NASA's Climate Strategy**
  Gavin Schmidt, Senior Climate Advisor, NASA
- **Towards an Interagency Greenhouse Gas Monitoring System**
  Ben Poulter, NASA GSFC; Lori Bruhwiler, NOAA Earth System Research Lab; Arlyn Andrews, NOAA Earth System Research Laboratory

Fall Meeting Agenda, continued

- **NASA's Open-Source Science Initiative (https://science.nasa.gov/open-science-overview)**

  Chelle Gentemann, Senior Scientist, Farallon Institute
  Steve Crawford, Senior Program Executive for Scientific Data Computing, NASA

- **Integration of observations, experimentation, and modeling across scales: Next-generation land models for coupled Earth system prediction**

  Peter Thornton, Climate Change Science Institute Deputy Director, and Head of the Earth Systems Science Section, Oak Ridge National Laboratory

Midterm Assessment of the 2018 Decadal Survey for Earth Science and Applications from Space

- Midterm Assessments are Congressionally-mandated. They typically assess progress in survey implementation, provide guidance on actions that might be taken in the remaining survey interval, examine lessons-learned and make recommendations to prepare for the next decadal survey.
  - Per recommendation in survey, NASA will ask the Earth science midterm to assess progress in the suborbital element of the Earth Science Division's Earth Ventures, a component of the Earth System Science Pathfinders. (EV-Instrument and EV-Mission are being studied at the request of NASA in a stand-alone SSB study.)
  - DEI issues expected to receive greater attention in the next decadal.
- Schedule for ESAS Midterm: Begin in Spring 2022 for delivery in Summer 2023.
- CESAS is reviewing NASA's draft task statement and is providing feedback.

Future Plans

- Continue interaction with NASA regarding the statement of task for the midterm, an early opportunity to help shape the next decadal.
- Continue discussions with NASA and NOAA (to start) regarding survey implementation and development, as well as the integrated climate observing system.
- Possible continuing interaction with the NASA and NOAA group that is looking to hold a workshop or study on a GHG monitoring system.
- Planning for the March meeting during Space Science Week.

Backup Slides

Venture-class: Lessons-Learned Study

NASA created the EV line following a recommendation from the 2007 Decadal Survey for Earth science and applications from space. SOT asks the committee to consider:

- Measures of success for Earth Venture Instruments (EV-I) and Earth Venture Missions (EV-M);
- The experiences of Principal Investigators, Project Managers, and Institutions in the proposing, implementation, and operation of EV investigations;
- EV foundational principles, including the means by which they are implemented and enforced, as well as the implications of non-conformity;
- Potential trades among cadence, cost (including cost caps), and risk in implementing future EVs;
- An assessment of the implications of the changing launch vehicle and hosted payload markets for future EVs; and
- Lessons-learned for consideration in future implementations of EV-I and EV-M program elements.

- Study Status: Draft Nearing Completion; Expected to Enter Review in December