CESAS - Committee on Earth Science and Applications from Space

Co-Chairs: Everette Joseph and Steven Running

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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.

Image credit: NASA (NO₂ 2015-2019 and March 2020. Data from OMI on Aura)

These slides are a personal assessment of issues discussed during recent CESAS committee meeting, and should not be cited or quoted as the views expressed do not necessarily reflect those of CESAS, the SSB, or the National Academies

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Meetings

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- -- Usually meet twice a year: Fall, Spring (as part of SSW) -- Last meeting – March 31-April 1, 2020
 - Virtual (COVID-19)
 - Updates from NASA
 - **DS** implementation •
 - Earth Science Data Systems •
 - Venture-class Lessons Learned
 - Updates from NOAA NESDIS
- -- Next meeting: November 30-December 1, 2020
 - Discussion with the new NASA Earth Science Division Director, Dr. Karen St. Germain
 - Decadal survey implementation
 - Venture-class Lessons Learned Study
 - Future Use of NASA Airborne Platforms to Advance Earth Science Priorities (see backup slides)



Figure from Randy Friedl



Venture-class: Lessons Learned SOT

Earth Venture is a program element within NASA's Earth System Science Pathfinder Program. NASA created this 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.



SSB/CESAS Collaboration with BASC— Focus Session at Dec. 2019 Meeting



- One-day focus session as part of preparation for a NASA Earth Science Division (ESD) requested study that is described in the next slide
- Emphasis on current and potential roles for Uninhabited Aircraft Systems (UASs) in carrying out ESD's research and/or applications programs
- Brief look at balloons and airships
- Impact of instruments being developed for Cubesats





Figures Randy Friedl



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Future Use of NASA Airborne Platforms to Advance Earth Science Priorities

- The National Academies...will appoint an ad hoc committee to conduct a study to inform NASA's future investments in suborbital airborne facilities, with a particular focus on the role of "large" airborne facilities, such as the current NASA DC-8, whose lifetime is limited and for which a potential replacement in the 2025 time frame may be required. In addition, there is interest in how newly available platforms (currently flying, or on track toward availability for scientific use with all necessary development funding in place), especially those associated with Uninhabited Airborne Systems (UASs) and advanced balloon technology, may serve as the airborne component for integrated scientific studies.
- The committee will organize a community workshop at which participants will be asked to present specific examples of how airborne platforms could make unique and/or optimal contributions to integrated (satellite/airborne/surface/modeling) approaches to answering the science questions posed in the 2017 ESAS Decadal Survey, with a special emphasis on large platforms (e.g., those that can carry multiple instruments and investigators for their on-board operation). Drawing upon discussions at the workshop, the committee will author a short consensus report on key themes that emerged in the workshop presentations.
- Study led by Board on Atmospheric Sciences and Climate; SSB is a collaborating Board with a small part of Art Charo's time designated to this study.



Possible Workshop? Après EOS

Evaluate the transition from Terra/Aqua to JPSS and potential to introduce gaps in data records. What records that are currently produced are going to be dropped? What new ones produced? Are dropped records still valuable; for example, land / subsurface ocean / mixed layer depth)? What are NOAA's plans for NPP/JPSS for reprocessing? Is sharing of NOAA's code base possible to reduce replication



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of effort?

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