

NASA ADVISORY COUNCIL

EARTH SCIENCES ADVISORY COMMITTEE

NASA Headquarters
Washington, D.C.
October 4, 2018
3:30-4:30 pm

TELECONFERENCE MEETING REPORT

J. Marshall Shepherd, Chair

Lucia Tsaoussi, Executive Secretary

Appendix A- Attendees
Appendix B- Membership roster

Prepared by Joan M. Zimmermann
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October 4, 2018

Introduction

Dr. Lucia Tsaoussi, Executive Secretary of the Earth Science Advisory Committee (ESAC), opened the teleconference, which was devoted to the annual Government Performance and Results (GPRA) report and review. She indicated that NASA was actively working on reappointments for the ESAC and would release letters later in the month of October. Dr. Tsaoussi turned the meeting over to Dr. J. Marshall Shepherd, Chair of the ESAC, who formally opened the meeting.

Dr. Shepherd noted that the GPRA report focused on the achievements of the Earth Science Division's (ESD) Fiscal Year 2018 accomplishments, and would be graded by focus area using Red, Yellow, and Green performance metrics to indicate, roughly speaking, poor, intermediate, and excellent achievements.

Dr. Tom Herring led the discussion on the Earth Surface and Interior focus area, which includes broad categories such as hazard research, geodetic imaging, and strategic development. ESD has made very good progress in Earth surface studies, some with an emphasis on processes in subduction zone interfaces and hydrology. Studies in anthropogenic hydrologic effects looked at the effects of taking water out of the aquifer and resultant subsidence due to compaction, as well as rebound effects in bedrock. Studies on nuisance flooding were carried out on the Eastern seashore. In hazards research, there were a number of studies on volcanic hazards, Earth tides (tidal tomography), the anthropogenic effects on oil and gas production, and geodetic imaging, which was doing particularly well in preparation for the 2020 NASA-ISRO Synthetic Aperture Radar (NISAR) mission. Unmanned aerial vehicle (UAV) experiments have added p-bands (low frequency, 50 or 60 cm, good for penetrating vegetation), and have been getting better access to data. The space geodetic program is also making good progress. Multi-constellation systems have been enabling better data analysis. NASA is playing a better coordination role with internationals in this respect, an observation borne out in part by a recent National Research Council (NRC) study on geodetic infrastructure. Dr. Herring felt the focus area certainly merited a Green. Dr. Shepherd moved to accept the rating. ESAC gave a Green rating to the Earth Surface and Interior focus area.

Dr. Richard Rood led the discussion on the Climate focus area, which he described as quite impressive. More process-oriented studies are emerging, facilitating a better understanding of processes through the use of increasingly integrated data. He recommended a Green rating. Dr. Ian Joughin agreed on both the excellence of the report and with a need for an extra grammar check. Dr. Joughin seconded the Green rating. Dr. Ray Schmitt liked the report and added some clarifications on salinity points. He agreed with the Green rating. Dr. Anastasia Romanou also rated the area a Green, adding that the writing was clear, with a good breadth of topics, and good detail in system modeling topics. Dr. Mike Freilich asked Dr. Schmitt if his corrections been editorial or substantive. Dr. Schmitt indicated he had just some minor clarifications, not substantive and with no impact on a Green rating. Dr. Shepherd moved to accept the rating pending the minor edit. ESAC gave a Green rating to the Climate focus area.

Dr. Shepherd addressed the Weather focus area, and thought the program was well summarized, but that the report needed more acronyms defined for stakeholders (i.e. TRMM, Tropical Rainfall Measuring Mission). Dr. Christian Kummerow agreed that the report was in good shape, with seven individual activities spelled out. He suggested that in the context of the study of extreme events, edits should be made to make it clear that NASA is not a “responder,” *per se*, and that the section heading should read “Hurricanes of 2017.” He noted that global forecasting had undergone strong improvements, and that he really liked the applications summary; he thought the section was well written, and was quite strong in showing how data was being used to improve the models. Ms. Sara Tucker agreed in general, and was happy to see novel uses for instruments in the report. She noted that would send a URL for a website on space-based lidar to include in the report. She agreed with Dr. Kummerow on a Green rating. Dr. Shepherd moved to accept a Green rating. ESAC gave a Green rating to the Weather focus area.

Dr. Anne Nolin addressed the Water Cycle section, saying she was pleased with the quality of the report sections, definitions, objectives, and the integrated aspects of water cycle activities. She had a minor comment about some references dating back to 2017. She felt that NASA could now speak more authoritatively to snow, dust, surface and ground water issues. Dr. Ying Fan Reinfelder indicated she would send some references to Dr. Tsaoussi, and aired some concerns about the audience for the GPRA report; she thought that the report was still limited to a small number of Principal Investigators (PIs), and that NASA impacts go far beyond the scope of the community. She suggested ESD tabulate yearly the NASA-dependent research that is published during the year, to show how NASA data impacts science, especially outside the US. She noted that 1392 studies published in 2018 were based on Landsat data, 120 were based on the Gravity Recovery and Climate Experiment (GRACE) data, and 1414 based on Moderate Resolution Imaging Spectroradiometer (MODIS) data. Some of these were fantastic studies in top journals. Society needs to better appreciate the impact of NASA missions. She gave the area a Green rating. Dr. Tsaoussi noted that NASA submits a short report on GPRA to Congress, but that otherwise, the reports are prepared for the community to help them evaluate performance metrics; this restricts NASA specifically to what NASA has funded in the research element. Dr. Freilich felt that including a tabulation of studies was an excellent suggestion, and that NASA would benefit from having that information documented. Drs. Kummerow and Nolin felt that the GPRA reports were especially suited as educational material for university students, and that the section rated a Green. Dr. Shepherd moved to accept a Green rating. ESAC gave a Green rating to the Water Cycle focus area.

Dr. Lucy Hutyra led the discussion of the Carbon Cycle focus area, commenting that the report section looked great, and that the organization worked well. The Earth Composition section effectively used headings and subheadings, and the organization by biome worked well. She felt the meeting section at the end seemed oddly curtailed (only two, is this too few?), and that it could either be more complete or eliminated entirely. She agreed that doing this report in two phases was effective. A NASA program manager noted that the intent of meeting section was to report on science team meetings for missions (e.g., Plankton, Aerosol, Cloud, ocean Ecosystem; PACE, and ECOSystem Spaceborne Thermal Radiometer Experiment on Space Station; ECOSTRESS). She added that ESD could take the suggestion under advisement, but wanted to inform the committee on the relevance of these missions to the Decadal Survey. Dr. Hutyra suggested adjusting headings to convey that the list is not complete. Dr. Nancy Glenn noted that

in the field campaign section, it was not clear what was part of the Earth Venture program, and what was not. Dr. Hutyra said she would send along a few minor edits. Dr. Colleen Mouw commented that she thought the ocean highlights were great, but felt that there was a lot more emphasis on land than on ocean. Stressing that she was not objecting, she still felt the focus area merited a Green. Dr. Romanou said she was satisfied with the incorporated edits, and that the section did well in describing combined progress on both land and in the ocean (like the expanded field campaign part), and gave the area a Green rating. Dr. Shepherd said he had two minor comments on pp. 43-44, and pointed out minor typos, then moved that ESAC accept a Green. ESAC gave a Green rating to the Carbon Cycle focus area.

Dr. Greg Carmichael addressed Atmospheric Composition, noting that the section was very well done, and that it painted a powerful picture in describing the advances being made in atmospheric composition. Science is moving forward in this area, and it is important to society. He felt the attention-getting headlines to be very impactful. Dr. Andrew Dessler added that he was impressed at how many of the report items had been in the news. Dr. Daven Henze felt the report showed an impressive body of work, and thought that one point to be brought out more was that several field campaigns were starting to bear data that support evolving theories. Regarding the meeting section, he felt that some mission team meetings were not included, and was wondering why. His comment was more of a question and not a suggestion, and did not affect a Green rating. Dr. Tsaoussi said that the writing had been left to the Program Managers working on the sections, and was not indicative of program performance. She said that the meetings could be added for consistency. NASA program managers said some papers were not listed because they had not yet been accepted. Dr. Carmichael said he did not feel strongly that it needed to be included at present, but could be included in next year's report. Dr. Shepherd moved to accept a Green rating. ESAC gave a Green rating to the Atmospheric Composition focus area.

Dr. Tsaoussi thanked everyone and took an action to gather comments and integrate more edits. Dr. Freilich said the reports were interesting, educational, well-written, and served as excellent communicators. He offered kudos and said he was impressed with the insightful and constructive comments from ESAC.

Dr. Tsaoussi noted that she was seeking to hold a face-to-face ESAC meeting early in 2019, and closed the meeting at 4:39pm.

APPENDIX A ATTENDEES

Earth Science Advisory Committee Members

J. Marshall Shepherd, ESAC Chair, University of Georgia

Roland Burgmann, University of California, Berkeley

Andrew Dessler, Texas A&M

Nancy Glenn, Boise State University

Daven Henze, Colorado University at Boulder

Thomas Herring, Massachusetts Institute of Technology

Lucy Hutyra, Boston University

Ian Joughin, University of Washington

Christian Kummerow, Colorado State University

Colleen Mouw, University of Rhode Island

Anne Nolin, Oregon State University

Ying Fan Reinfelder, Rutgers University

Anastasia Romanou, Columbia University

Richard Rood, University of Michigan

Ray Schmitt, Woods Hole Oceanographic Institute

Sara Tucker, Ball Aerospace

Lucia Tsaoussi, Executive Secretary, NASA Headquarters

NASA Attendees

David Considine, NASA HQ

Michael Freilich, NASA HQ

Jack Kaye, NASA HQ

Tsengdar Lee, NASA HQ

Gerald?

Greg Carmichael, NASA HQ

Andrew McAllister, NASA HQ

Non-NASA Attendees

Joan Zimmermann, Zantech IT

APPENDIX B ESAC MEMBERSHIP

J. Marshall Shepherd, ESAC Chair
University of Georgia

Roland Burgmann
University of California, Berkeley

Ginny Catania
University of Texas at Austin

Greg Carmichael
University of Iowa

Andrew Dessler
Texas A&M

Nancy Glenn
Boise State University

Kass Green
Kass Green and Associates

Daven Henze
University of Colorado

Thomas Herring
Massachusetts Institute of Technology

Lucy Hutyra
Boston University

Ian Joughin
University of Washington

Jasmeet Judge
University of Florida

Christian Kummerow
Colorado State University

Colleen Mouw
University of Rhode Island

Anne Nolin
Oregon State University

Anastasia Romanou
Columbia University

Richard Rood
University of Michigan

Raymond Schmitt
Woods Hole Oceanographic Institute

Sara Tucker
Ball Aerospace