

National Aeronautics and
Space Administration



EXPLORE SCIENCE

**NASA Advisory Council (NAC) Science
Committee Advice on the NASA Science Plan**

Meenakshi Wadhwa, Ph.D.
Chair, NAC Science Committee

August 1, 2019

NASA Advisory Council – Committee Finding Science Committee Finding to NASA Associate Administrator for Science Mission Directorate

Draft NASA Science Plan

Finding: The Science Committee finds the following regarding the draft NASA Science Plan:

(a) Introduction and Future State – The Science Mission Directorate (SMD) is in an exciting era when there is transformational potential for a science strategy that enables excellence and innovation. We see inspirational language that speaks to this in each of the Focus Areas, and in the “2024 Future State” summary of the Science Update presentation, but find the introduction section to be merely descriptive by comparison. An introduction and conclusion that capture the visionary and ambitious plan for the future would provide much needed context for the document. It may also be useful to identify the SMD divisions in the introduction below the description of the key science themes.

(b) Rename “Protect and Improve” Theme – One of the three themes, “Protect and Improve Life on Earth” (highlighted in the Introduction and the SMD Mission Statement) does not inspire the same level of wonder and excitement as the other two themes; as written, it implies an applied science focus rather than the discovery science implied by the other two themes. This theme could be re-worded along the lines of the following:

- “Unlocking the mysteries of our planet”
- “Advancing the frontiers for humanity”

The first of these options conveys the excitement for exploring the many unknowns of our interconnected planet (Earth system). The second of these options conveys the message that NASA SMD pushes the forefront of knowledge for applications that benefit life and society.

(c) Interconnectivity and Partnerships – While there is discussion of collaboration with the Human Exploration and Operations Mission Directorate (HEOMD) and the Space Technology Mission Directorate (STMD) specifically in the context of the exploration initiative (in Strategy 1.2), the document does not sufficiently or broadly highlight the areas and mechanisms for interconnectivity and partnerships between SMD and the other Mission Directorates.

(d) Foster Innovation – The SC finds the use of the word “create” in Strategies 2.1 and 2.2 of the draft NASA Science Plan to neglect the work that is currently being done to seed a culture that embraces innovation and collaboration. Use of words such as “foster” or “grow” would communicate the need for progress, while acknowledging that work has already begun in these areas.

STRATEGY 2.1: Create a culture that encourages innovation and entrepreneurship across all elements of the NASA Science portfolio.

STRATEGY 2.2: Create a culture that encourages collaboration in pursuit of common goals.

(e) Diversity, Equity and Inclusion – While referencing the importance of diversity (e.g., in the Teamwork section and in Strategy 4.1), it was noted that there is not adequate emphasis on equity and inclusion in the document. Diversity alone is not sufficient to ensure the best outcomes in driving excellence and innovation.

(f) Human Health in Space – This draft NASA Science Plan document covers the activities of SMD. The Space Life and Physical Sciences Research and Applications (SLPSRA) Division, part of HEOMD, supports research on the effects of spaceflight on human health and performance and on biological and physical systems. These scientific activities are discussed in SLPSRA's strategic plan and could be referenced here to increase readers' awareness of the full scope of science at NASA.

(g) Portfolio Summaries – The draft NASA Science Plan portfolio summaries for the programs within each division should include all programs listed for each division in SMD's Science Budget Request Summary table. In the planetary science portfolio summary, the Outer Planets and Ocean Worlds Program was omitted.



Discussion and Questions

NAC Science Committee advice on the NASA Science Plan is posted here:

<https://smd-prod.s3.amazonaws.com/science-pink/s3fs-public/atoms/files/NAC%20Rec%20Findings%20to%20SMD%20May%202019.pdf>