

**1. SBAG urges NASA to include Ceres as an “Ocean World” when considering missions to that category of Solar System bodies, including the upcoming New Frontiers round if applicable.** The wealth of data returned from the Dawn mission and ongoing astronomical studies demonstrate that Ceres is an Ocean World. Ceres is the most accessible Ocean World, and missions to Ceres can achieve many objectives of interest to the astrobiology community. Ceres is regarded in NASA’s “Roadmap to Ocean Worlds” to be a stepping stone to more distant objects of interest. If Ocean Worlds are to be considered valid targets for the upcoming New Frontiers round, we urge NASA to include Ceres. Recent NASA-funded mission studies show that mature concepts for Ceres missions exist.

**2. SBAG encourages NASA to develop a process that would permit US scientists to participate in missions led by non-US space exploration agencies (e.g., ESA, JAXA, CSA, etc.), including during the early stages of these missions.** In developing such a process, the procedure could be modeled after the existing Astrophysics APEX Program. Once a protocol is established that enables the lead agency to approach NASA, such involvement would allow US scientists to be actively involved in and funded to participate in international missions, thereby increasing the scientific return from such non-US led missions. These activities would also provide the additional benefits of increasing US coordination and participation on international missions, and would leverage additional mission opportunities that are not actively under consideration by NASA.

**3. SBAG is concerned that the current global pandemic is producing unprecedented obstacles to community participation in the Planetary Decadal Survey, and that these obstacles may be particularly onerous for under-represented portions of our community.** The community appreciates the extension on the due dates for the white papers, but SBAG strongly encourages NASA to continue to work with the National Academies of Sciences, Engineering and Medicine to pursue strategies to ensure diverse community participation including, but not limited to, developing alternative avenues to provide input, giving additional attention to the diversity of the panels, and/or encouraging more input at later stages of the process.

**4. The SBAG community reaffirms its awareness of the unique observational capabilities supplied by planetary radar and urges NASA to apply continued effort toward achieving at least one operational planetary radar facility at all times and particularly at scheduled high-priority observation events.** As part of the Planetary Defense Coordination Office's near-Earth object (NEO) surveillance strategy, planetary radars play a decisive role in both identifying and excluding Earth impact threats, often in a much more timely manner than would otherwise be possible. Hence, planetary radars must be available at all times to fulfill their planetary defense mission. Between planned and unplanned maintenance, natural disasters, and the recent COVID-19 pandemic, there have been multiple instances in which no planetary radar assets were available to conduct observations for planetary defense and planetary science objectives. In addition to producing an ongoing compromised planetary defense posture, future radar outages coincident with the Double Asteroid Redirection Test (DART) NEO deflection demonstration in October 2022 or during reconnaissance of the *Janus* mission target, binary asteroid (175706) 1996 FG<sub>3</sub>, in April/May 2022 could prevent enhanced returns from these missions. Actions to ensure greater planetary radar resilience include, but are not limited to, maintaining a robust stockpile of critical

parts and equipment, developing adequate contingency plans, and commissioning a third radar facility such as that planned for Canberra, Australia.

**5. As discussed at the most recent meeting of the PAC, the SBAG and LEAG communities have grave concerns about aspects of the most recent Discovery selection process.** The Discovery selection statement appeared to rule out both small body and lunar missions as selectable due to considerations of programmatic balance. These considerations should have been known to NASA prior to the release of the Discovery 2019 Announcement of Opportunity. In addition, a FAQ document, which was promised to the planetary science community at public meetings several months ago, has not yet been released.

There is concern among both communities that significant time, effort, and resources were wasted to produce high-quality Discovery mission concepts (some of which received Category 1 designations) that never would have been selected regardless of scientific merit based on the programmatic balance rationale given in the Discovery selection statement.

SBAG requests that in the future, if programmatic balance is to be a criterion by which missions are selected, NASA clarify prior to the program call which destinations would be acceptable for consideration within the Discovery program. However, SBAG's view is that future Discovery program calls should be open to all destinations, and that each destination be considered on its own individual merit. This is especially important with respect to small body destinations given the extreme diversity of these objects (i.e., near-Earth asteroids, main belt asteroids, dwarf planets, Trojan asteroids, Centaurs, comets, Trans Neptunian Objects, etc.) that span the entire breadth of the Solar System.

From the LEAG perspective, the Discovery selection statement made it clear that NASA's other investments in lunar missions played a role in the non-selection of a lunar mission. As expressed to the PAC, the ability to submit future innovative lunar mission concepts to the next Discovery mission opportunity should not be precluded by the activities of other NASA programs, whose goals are not necessarily guided by the Planetary Science Decadal Survey, and whose capabilities have not yet been demonstrated. LEAG's strongly held viewpoint is that future Discovery program calls should clearly state that all destinations will receive full consideration (explicitly including the Moon).

SBAG and LEAG jointly support compelling science be the prime driver for future Discovery mission opportunities and selections.

Furthermore, SBAG and LEAG jointly request that the FAQ document outlining the process and details behind the Discovery mission selection be provided to the planetary science community at the earliest opportunity.