

OPAG Findings (Fall 2019)

(updated Oct. 23, 2019)

1. Recommendation to include Enceladus in the list of targets for NF-5

In May 2015, the US House Appropriations Committee directed NASA to create an Ocean World Exploration Program with the goal “to discover extant life on another world” using a mix of existing mission class programs. Consistent with this directive and due to the discoveries by the Cassini mission, NASA added an Ocean Worlds Mission Theme with Titan and/or Enceladus targets to New Frontiers 4 (NF-4) Announcement of Opportunity (NNH16ZDA011O) released in 2017. While an ocean worlds relevant mission was selected, the science goals and discoveries of the Dragonfly mission to Titan will be very different from a future mission to Enceladus.

Finding 1.

Enceladus should be included in the NF-5 target list: The subsurface ocean of Enceladus is the only confirmed modern habitable environment beyond Earth, and is accessible via the plumes with existing technology and instrumentation. A focused investigation into Enceladus’ ocean materials for biological potential is a high priority for the planetary science community. Keeping Enceladus in the NF-5 competition allows teams to propose bold but achievable steps forward for NASA in addressing the search for life in our solar system, and would leverage existing technology developments from programs such as ICEE-2, COLDTech and the ELSAH contamination control activity.

2. Ocean Worlds technology development

OPAG applauds the second round of Instrument Concepts for Europa Exploration (ICEE-2) and Scientific Exploration Subsurface Access Mechanism for Europa (SESAME). These programs are essential to enable technologies for challenging, high-priority exploration, which benefit exploration of all ocean worlds. OPAG is very supportive of technology programs that advance specific future needs of high-priority science. We encourage more selections from ICEE-2. Focused technology development for high-risk exploration is very important; PICASSO and MatISSE are not targeted and perceived high risk is a competitive disadvantage.

Finding 2.

OPAG encourages NASA to continue to invest in new instrument and technology development that supports Ocean Worlds exploration. OPAG acknowledges the importance of programmatic opportunities for these enabling technologies and encourages NASA to solicit more calls or additional selections for programs such as ICEE-2 and SESAME as part of a focused program on Ocean Worlds technology development.

3. Incomplete Deliveries of Juno Data to the PDS Archive

It was brought to the OPAG community’s attention that the Juno mission is delinquent in making deliveries to the public PDS data archive. A posted PDS errata file at <https://pds-ppi.igpp.ucla.edu/ditdos/viewFile?id=pds://PPI/JNO-J-3-FGM-CAL-V1.0/ERRATA.TXT> says: “Missing Perijove Data

The initial releases of Juno FGM data did not include data on the day (or days) surrounding [sic] perijove due to delays in developing an [sic] processing procedure

that worked for the extremely strong magnetic fields encountered near perijove....”

However, we note that there are Juno team publications that utilize the data. The OPAG Steering Committee has also received comments about critical information being missing from archived data sets for other Juno instruments. As the only currently active giant-planet mission, it is very important to the planetary science community that well documented, complete Juno data sets be made public on the agreed-upon schedule. Documentation must include all available information necessary for scientific use of the data, such as instrument response functions and details of the calibration process. If further calibration improvements are expected, that is worth noting in the errata.txt or elsewhere. Not releasing data as planned will adversely affect the overall science return from the mission as well as individual researchers who require that the data be available for proposals to NASA's New Frontiers Data Analysis Program.

Finding 3.

OPAG is concerned that the Juno mission is not making complete and on-time deliveries to the PDS Data Archive, and invites the PDS to regularly report on the status of all outer planet mission deliveries at future OPAG meetings.