

OPAG and Planets in the Kuiper Belt

(Taken from the Current OPAG Goals Document)

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Planets in the Kuiper Belt

- The three large KBOs Pluto, Charon and Triton (as a probable captured KBO) observed close up so far show a tremendous diversity of surface features and atmospheric phenomena .
- Close up reconnaissance of these three worlds have transformed our understanding of icy KBO planets in the outermost Solar System, demonstrating that even at great distances from the Sun, worlds can have active, and even ongoing, geologic and atmospheric processes. (see Jason Hofgartner's talk for a review of science results from Pluto and Charon)
- OPAG strongly supports further exploration of Kuiper Belt Planets (certainly including Pluto and Charon) and encourages mission studies and their consideration for inclusion in the next decadal survey

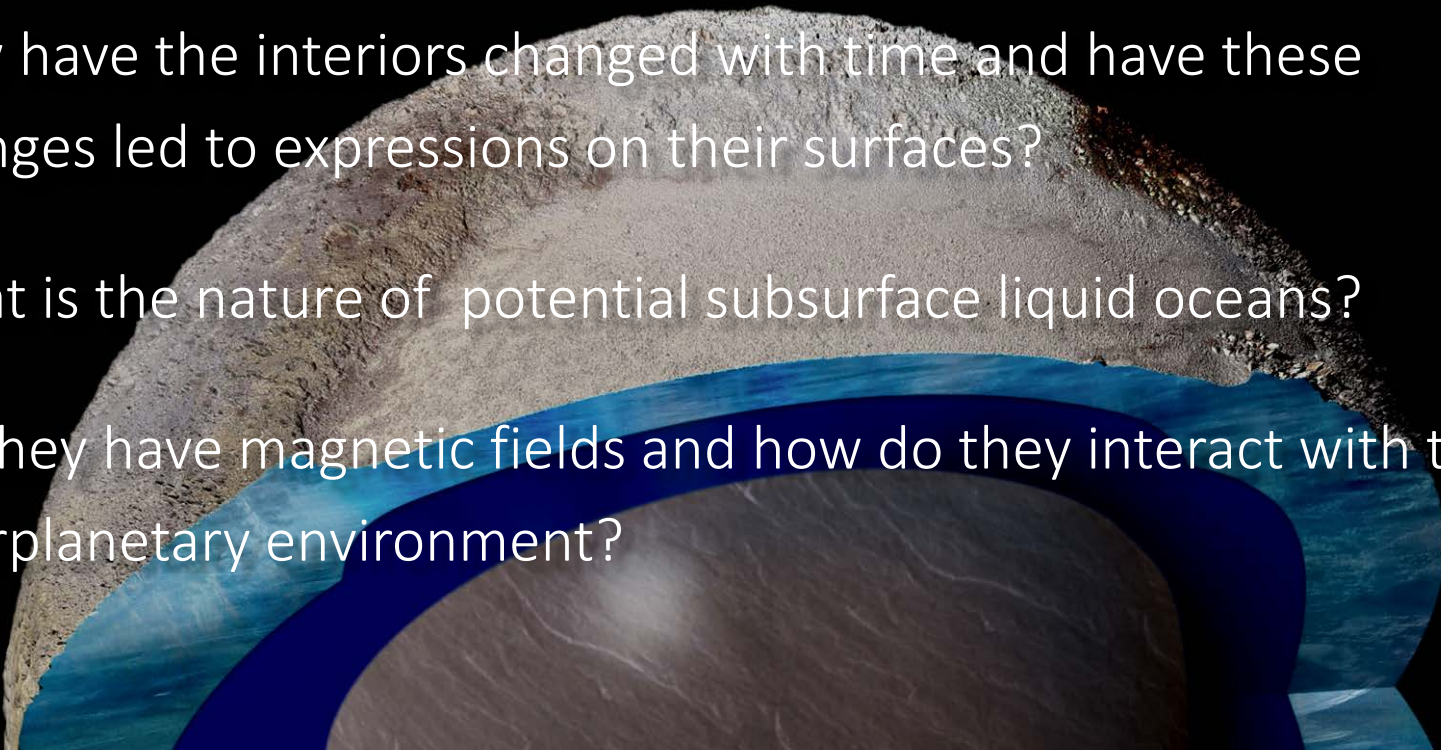


Basic Science Questions

(next three slides)

Interior Structure

- What is the nature and history of KBO planets' interior structures?
- How have the interiors changed with time and have these changes led to expressions on their surfaces?
- What is the nature of potential subsurface liquid oceans?
- Do they have magnetic fields and how do they interact with the interplanetary environment?





Surface Geology

- What are the geologic processes responsible for the unique surface features of Pluto, Charon, Triton and other KBO Planets?
- What are their global cratering records?
- To what extent has cryovolcanism renewed their surfaces?
- Are the surface geologies of Pluto, Charon and Triton typical of KBO planets in general?

Surface Composition & Atmosphere

- What do the surface chemistries of Pluto, Charon and Triton tell us about their origins and geological processes?
- How are different ice compositions distributed across their surfaces?
- What is the history of climate change on Pluto and how has it manifested itself in Pluto's surface geology?
- Do other KBO planets share similar surface compositions to Pluto, Charon and Triton, and what is the detailed nature of their possible atmospheres?



OPAG and SBAG Interests in Outer Planet Objects

- OPAG's will focus on the science interests in, advocacy for, KBO planets such as Pluto & Charon. (In addition to the other Outer Planet interest outlined in the OPAG Goals Document, such as satellites, gas & ice giants, rings, magnetospheres, etc.) OPAG certainly has no objection to SBAG perusing similar interests in KBO planets.
- OPAG fully supports opportunities to examine "targets of opportunity" that might lie in the path, or at the destination of, missions to KBO planets, of which are otherwise normally under the purview of SBAG
- OPAG hopes that SBAG will continue to lead in the advocacy of small KBOs (e.g., MU69), Centaurs, Comets, etc.
- It is in the mutual interest of OPAG and SBAG to look into mission concepts which provide opportunities to investigate both KBO planets and the smaller bodies of the outermost solar system.

OPAG and SBAG Interests in Outer Planet Objects

1. For future small bodies missions and recommends assessing the feasibility of such missions prior to serious consideration and inclusion in the Decadal Survey. Studies and the resulting white papers of the Pluto Follow-on Orbiter, and the KBO and/or Centaur tour in conjunction with an ice giants mission, will be important in informing the next decadal process. These will also complement the study of a mission to the dwarf planet Ceres, which is already in progress.

OPAG and SBAG Interests in Outer Planet Objects

2. SBAG supports collaboration with other communities in the development of mission concepts in advance of the Decadal Survey. We welcome development of synergistic mission concepts, such as a combined ice giant and KBO mission, which would draw on the interests of both the outer planets and small bodies communities. Additionally, we see the possibility for collaboration on mission concepts including Phobos and Deimos, which are of interest to both the small bodies community and the Mars community, and sample return missions to small bodies, which are of interest to both the small bodies community and the sample science community..

Discussion

