

OPAG Meeting Report
May 1-2 2007

The Outer Planets Assessment Group is a NASA-supported forum for scientists and engineers to discuss exploration of the outer solar system and to enhance communication between community and NASA.

The meeting of OPAG held at the Harborside Hyatt, Boston was attended by 70 people. We heard presentations as follows:

- Solar System Division Overview – Jim Green (NASA HQ)
- Aerocapture Tibor Kremic, Michelle Munk (Glenn RC)
- RPS Program Alan Harmon (DOE/NASA HQ)
- New Frontiers Program Status Jim Green (NASA HQ)
- NRC Committee on the Assessment
of Solar System Exploration Sushil Atreya (U Michigan)
- Billion \$\$ Box Studies Kim Reh (JPL)
- Lab Studies to Support Missions Dale Cruikshank (Ames RC)
- Flagships Intro Curt Niebur (NASA HQ)
- Europa Study Clark, Pappalardo, Greeley
- Jupiter System Observer Study Kwok, Senske, Prockter
- Titan Study Leary, Lorenz, Waite
- Enceladus Study Razzaghi, Simon-Miller, Spencer
- ESA's Cosmic Vision Michel Blanc

These presentations are available at the OPAG website:
<http://www.lpi.usra.edu/opag/reports.html>

We also heard science presentations from Kevin Baines (JPL) on new data of atmospheric dynamics at Saturn (from Cassini) and at Jupiter (from New Horizons), and from John Clarke (Boston University) on the Hubble Auroral Campaign at Jupiter and Saturn.

At the conclusion of the meeting OPAG made the following findings:

1. The four flagship mission studies are well underway, with each team maintaining close interactions between scientists and engineers. These studies will result in a level of maturity for each concept that will enable rational decisions to be made for the next step in the formulation of outer solar system exploration. Furthermore, these and similar SDT studies provide essential input for future decadal surveys, and should be started as early as possible.

2. OPAG strongly supports laboratory studies to enable better understanding of current mission data and to prepare for future missions. We note the technical difficulty of performing some of the experiments, particularly rheological studies and those required to determine optical constants and the chemistry and physics of planetary ices.

As a result, OPAG suggests a small task group from the science community, in collaboration with NASA, evaluate how well the R&A programs currently fund laboratory studies. This group needs to look at how other disciplines handle lab studies, and identify areas of improvement for the outer planets. OPAG feels that it is essential that NASA enable consistent and continuing funding for laboratories to conduct these measurements.

3. OPAG was briefed on the results from the **JPL \$1B box studies* of Titan and Enceladus** and found them to be revealing and informative about the challenges of these targets and what can be realistically achieved at Saturn within the New Frontiers category. These \$1B box studies also provided a useful context for starting the flagship mission studies as well as future New Frontiers studies.

* the purpose of these studies was to evaluate whether the major scientific objectives at these bodies could be achieved by a mission fitting within a ~\$1B cost cap.

4. Although progress in RPS development is evident, OPAG is concerned that overall **technology development for future missions** is progressing too slowly. In particular, important investments in technologies applicable to not just outer planets missions are not being made, such as aerocapture flight qualification, balloon technology development, high efficiency RPS development and qualification, and low temperature materials and systems. OPAG suggests PSD review its current technology investments with the intent of realigning them to meet the needs of missions identified in strategic documents. This will allow PSD to maximize the benefit of its current technology development program

5. OPAG notes the strong need for robust, competitive **instrument development programs** and supports the institution of a program that advances instruments from the breadboard stage to a level that can be proposed to a flight opportunity. We also advocate the development of components and subsystems that can work in the harsh environments of the outer planets.

6. OPAG remains concerned about the need for clarity in quantifying the availability of Pu-238 for the next several decades of potential outer planets missions. **OPAG requests that NASA and the DOE clarify their plans for Pu-238 availability to the science community.**

7. OPAG continues to encourage **international collaborations** and U.S. participation (e.g. via missions of opportunity) on non-NASA missions. OPAG welcomes collaboration with European and Japanese colleagues in developing strategies and priorities for exploration of the outer solar system.

Next Meeting

- Dates set for November 8-9th 2007 in Maryland.
- The 4 SDTs will present the results of their completed studies.

The OPAG Steering Group is posted on the OPAG website and is rotated on ~3 year basis – see <http://www.lpi.usra.edu/opag/>