Outer Planets Assessment Group
June 9-10, 2005 Boulder, Colorado
Meeting Report

The charter of OPAG as well as most of the materials presented at the meeting are posted on the OPAG website (http://www.lpi.usra.edu/opag/). The June 9-10, 2005 meeting of the Outer Planets Assessment Group was attended by over 90 people at the Boulderado Hotel, Boulder CO. The agenda comprised:

- Report from Andy Dantzler, NASA's Solar System Exploration Division Director (see below)
- Report on the Solar System Exploration Roadmap by Melissa McGrath
- Report on European Space Agency activities by Gerhard Schwehm
- Technology development strategy by Jim Robinson
- Reports on mission concepts (Neptune, deep atmospheric probes, Europa orbiters and landers, Titan orbiter and lander)

The meeting also involved meetings of splinter groups (giant planets, Europa, Titan, other satellites, small bodies) that developed material for an OPAG strategy document that is in preparation (expected completion mid-summer). There were also plenary discussions of the scope of the New Frontiers and Discovery Programs as well as the New Horizons 2 mission concept. Science presentations were made on the recently-selected Juno mission (PI Scott Bolton) as well as a review of giant planet atmospheres by Andy Ingersoll.

The following represent consensus of opinions expressed at the meeting:

1. With the disbandment of SSES there is no formal (FACA) advisory committee on solar system science to NASA. OPAG urges NASA to re-establish an advisory body similar to SSES as soon as possible.
2. Europa –
    - OPAG strongly endorses NASA's new plans for a flagship mission to Europa that will launch in the 2014 timeframe.
    - The OPAG Europa working group is close to completing a study of Europa mission concepts and is willing to assist the joint NASA-ESA task force on Europa.
    - OPAG points out that missions make many valuable scientific discoveries by observing targets beyond the primary mission focus. OPAG urges that opportunities of synergistic science be optimized when designing any mission to the outer solar system. Specifically, we urge designers to keep in mind opportunities for observing other components of the jovian system in studying mission concepts for Europa.
3. New Frontiers Program –
    - OPAG recognizes that missions in New Frontiers (NF) program can address priority outer solar system science (e.g. as addressed in the Decadal Survey)

- A flight rate of 3 NF missions per decade addresses outstanding solar system science in a timely fashion (e.g. as in SRM3 2005 Roadmap). Below Andy Dantzler mentions a current separation between AOs of 5 years.
- NF #1 (*New Horizons*) and NF#2 (*Juno*) both address important outer solar system science. But the corresponding mission concepts (Kuiper Belt Explorer and Jupiter Polar Orbiter with Probes) prioritized in the Decadal Survey recommended science beyond that planned for the baseline New Frontiers missions (e.g. in situ sampling by a probe at Jupiter and investigation of Kuiper Belt objects beyond Pluto/Charon)
- With the selection of NF #1 & #2, there remain 3 targets on the DS prioritized list: Venus in situ explorer, Comet surface sample return and Aitken Basin sample return.
- The above two statements lead OPAG to urge that the scope of the AO for NF #3 be addressed as soon as possible.
- Science of the outer solar system is best served by an expanded scope for NF#3
- OPAG recommends that a solar-system-wide group – preferably NASA's SSES or, in its absence, NRC's COMPLEX - address the scope of the NF#3 AO.

4. Given that radioisotope power systems (RPS) expand the opportunities for outer solar system exploration, OPAG recommends NASA explore ways to include the use of such power systems in the Discovery program.
5. NASA needs to develop a plan for technology developments that would enhance and enable outer solar system exploration. The prioritized technology needs for exploring the outer solar system will be listed in the OPAG document under preparation.
6. Successful exploration of the outer solar system is predicated on (a) making the most of working spacecraft through extending the productive lifetime of missions such as Cassini (including fully funding a Cassini data analysis program), and (b) supporting research programs: theory, modeling and lab work, ground- and space-based (particularly JWST) telescopes.

The next OPAG meeting will be held in October (probably 6-7th) in the DC area.

SSES = Solar System Exploration Sub-Committee (of the Space Science Advisory Committee)
COMPLEX = COMmittee on Planetary and Lunar EXploration
NRC = National Research Council of the National Academies of Science
FACA = Federal Advisory Committee Act
JWST = James Webb Space Telescope
ESA = European Space Agency

From Andy Dantzler:
Greetings OPAG Members,

Thank you for accepting my presence in written form. Again, I apologize for not being able to be there. Thursday and Friday are filled with a Deep Impact press conference, Congressional briefing, and a key review, along with initial Juno events. There really was no way of moving these (and a even Red Eye can't put me in two places at once).

This letter will address the topics I had planned to present were I present.

Latest News

Juno. As I am sure all of you know, Scott Bolton's Juno mission was selected to proceed into Phase B. **New Frontiers 2 is officially Juno**. I want to take the unusual step of speaking about the two competing proposals prior to their respective debriefings. This was a GREAT competition! Both the Juno and Moonrise teams are to be commended for their hard work and resultant Concept Study Reports.

Europa Orbiter. NASA Administrator Mike Griffin included in his testimony to the Senate Subcommittee that oversees NASA's budget that we will include in our planning a Europa Orbiter. As part of the planning process, I have funded a team to take a quick look at the boundary conditions of a mission to Europa, that is, how much power, mass, travel time, etc. for various realistic scenarios. For planning purposes, this group is looking at launch dates in the 2012-2015 range, although the later dates are more likely in terms of funding. I believe you will be presented a status report at the OPAG meeting. In parallel with these activities, a committee of U.S. and European scientists will start looking at the requirements of such a mission and potential areas of collaboration (similar to Cassini). The team members are:

From the U.S.:
- Reta Beebe
- Bob Pappalardo
- Jerry Schubert
- Melissa McGrath
- Margaret Kivelson

And from Europe:
- Angioletta Coradini
- Michel Blanc
- Maarten Roos-Serote
- Frances Westall
- John Zarnecky

The draft terms of reference suggests a report-out time of 8 months after start.

In terms of budget, this is a topic that is harder to discuss. There is no official new start for this mission, and if there is to be one, its timing and funding are part of the President's FY2007 budget and, therefore, the details are for NASA-internal discussion only until the release of the budget later this winter. However, for planning purposes, I am considering the EGO described in the NRC Decadal Survey and the scenarios put forth in the new Solar System Roadmap, including a version with a lander/impactor.

We are a long way off from a launched mission, but that these important steps are being taken is a good sign. I will be committed to making sure the ball does not get dropped. **Kudos to the OPAG, roadmapping committee, and everyone else who has had a part in making our top priority known and justified, and to Mike Griffin for listening.**

Status of current missions with upcoming major activities

New Horizons. While the nuclear launch approval process continues to loom as the biggest hurdle, the NH team has made excellent progress. The Science Mission Directorate (SMD) Program Management Council met recently at the New Horizons "go/no-go" decision point. I am happy to say that we voted for "go!" The PMC was particularly impressed by the focus and dedication of the NH team to successively (and successfully) meet and pass the technical milestones. We are most definitely shooting for a January 2006 launch.

Deep Impact. All systems are go. The focusing issue with the High Resolution Imager can be compensated for in post processing. Impact is July 4.

Stardust. All systems go. Everything is in order as we plan for Stardust's return on January 15, 2006.

Dawn. As with all missions, the schedule and money are tight. However, Dawn is well into assembly and test, and we are still on track for a June 2006 launch.

Mars Reconnaissance Orbiter. Same note as above! Tight schedule, but all is coming together. There are some late-breaking technical issues, but this is typical. We are still on track for an August 11, 2005 launch.

Phoenix and MSL. Phoenix has been confirmed for development and is on track for a 2007 launch. MSL, with all of its instruments selected, is on track for a 2009 launch. There are a lot of rumors flying regarding a slip of MSL out to 2011. To repeat, MSL IS on track for 2009 and I consider this a FIXED milestone. That is, I will expend the necessary resources to keep it there.

Solar System Division Budget

These are interesting times! The Science Mission Directorate's budget is undergoing a "rebalancing." The details of this effort are part of the President's FY07 budget and cannot be discussed publicly. However, I will state the obvious: Over the past several years, certain programs have received ample—perhaps to the point of excessive—funding while other programs have been short-changed. The rebalancing is an effort to correct this. None of this rebalancing will result in money going outside of the SMD. Some Science Programs will be kept from growing as quickly as the previous budget allowed, while other Science Programs will regain lost budget, and new Programs will be created.

As always, more details as I am allowed to provide them.

R&A

I know this is a sore topic. The delays in funding and responses to proposals are unacceptable. This is a topic that comes up at every public meeting. As I am sure you are aware, Mark Sykes has initiated a task to collect all the information he can on delinquent funding and proposal responses. I welcome this effort and will work with Mark to be sure all less-than-acceptable areas of this process are fixed. I will "compare lists" with Mark to make sure nobody has fallen between the cracks as my staff work to clear the backlog.

As far as the general budget, the Outer Planets R&A line is the only line that actually increases over the years, per the FY06 budget. The increase is $5M per year. This may not seem like much, but keep in mind that most other lines were flatlined, even to the exclusion of accounting for inflation.

Discovery 11 and Discovery 12

NASA top Management has formed a panel of internal and external non-advocates to review and assess the process by which the Discovery 11 selection (and implicitly, the non-selection) was made. The panel plans to be wrapping up its work within a few days, with recommendations to the Senate within two weeks or so. The panel does take to heart that a significant delay in the release of the Discovery 12 AO will jeopardize potential proposals. However, the Discovery 12 AO will not be released until the panel reports on its findings regarding Discovery 11.

New Frontiers 3

Looking at the budget I have in place, it appears that it is likely that the next New Frontiers AO will be released in FY2008. That is five years after the previous release date. Five years is longer than my goal of 3 to 4 years, but it is a much better scenario than I had anticipated as of several months ago. I will keep you posted. Much depends on New Horizons and Juno.

Staffing and Management at NASA HQ

Finally, the "Acting" part of my title has been dropped. Of course, nothing changes (!) EXCEPT that I can now hire a Deputy to relieve some of the burden. HELP WANTED! I will be advertising the Deputy position shortly. I am looking for someone who is management-savvy and can connect with the science community, that is, most preferably, a planetary scientist.

The position of Associate Director for Science has yet to be advertised. On both of these, I will keep you posted.

We are finally within days of bringing on two full time new staff members who will immediately delve into reducing the R&A backlog. You should see the difference is backlog and response times shortly.

There is indeed a light at the end of the short-staffing tunnel.

New Horizons 2 NASA Study

The Senate is in receipt of the report. However, the Senate will require a few days to review it before commenting on it. Therefore, the report cannot be released to the public and cannot be discussed publicly yet. I know this is a disappointment. I have asked Ken Anderson, the Study Chair, to not make the trip to the OPAG. Hopefully, we can all discuss this topic in the very near future.

I did receive a question on this subject that I can at least partially answer. "Was money earmarked for this study? -- When I look at the appropriations bill, no money is earmarked for New Horizons 2."

The Conference Language very specifically earmarks $4 million for the New Horizons 2 study. The final Bill does not mention the amount, just that the task must be done. According to the NASA Office of Legislative Affairs, this scenario is not uncommon. In any event, the SMD was directed that the Conference Language "*has the force of law*." Of course, it can also easily be noted that SMD was given just a few months to conduct the study, so it is clear that the Study Committee spent less than the ceiling amount of $4M. Any remainder will go back into the New Frontiers 2 budget from whence it came.

Concluding remark

Thanks for your hard work in promoting world-class science!

Andy Dantzler
Director, Solar System Division
NASA