

# Outer Planets Program Status

Curt Niebur
Outer Planets Program Scientist, NASA Headquarters
OPAG Meeting
February 1, 2016



#### **Topics**



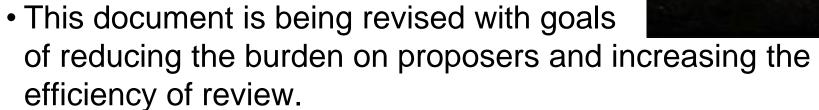
- SMD revision of Standard AO
- Ice Giant Mission Studies
- Europa Mission Report
- New Frontiers
- Ocean Worlds



# NASA's Standard AO: Revision process underway



- NASA SMD solicits proposals for flight mission investigations via AOs.
- SMD develops each individual AO solicitation by customizing an SMD framework document, known as the Standard AO.



- Community comments were due in January.
- Revised version expected for release in Spring 2016



 Details at https://prod.nais.nasa.gov/cgibin/eps/synopsis.cgi?acqid=168345



#### **Mission Studies**



- PSD has begin mission studies in preparation for the next Decadal Survey
- First study will be for Ice Giants
- Considering a variety of mission classes
- SDT membership was finalized last week
- More information available in later presentation



## **Europa Mission Status**



- Excellent progress overall; thrust since the last OPAG meeting has been in area of instrument accommodation (culminating in IARs currently underway).
  - SRR is scheduled for this summer.
- Final FY16 appropriation is incredibly supportive of Europa exploration.
  - Allotted \$175M for a Europa mission that includes a lander.
  - Allotted \$25M for technology development for icy world missions.
- NASA is studying several enhancements to the Multiple Flyby mission, including deployable plume probes, surface landers, and gravity science.
- PSD remains fully committed to the Multiple Flyby mission. Drivers for any decisions on enhancements include:
  - Protect the science our highly refined multiple flyby concept and its competitively selected payload are planned to accomplish;
  - Protect the accommodation of current science payload;
  - Ensure any enhancements are more than an engineering exercise, they must accomplish high value science.



### **New Frontiers Program**



- PSD issued the Homesteader NRA to mature technologies such that they can be included as part of a selectable, low risk mission concept proposal submitted in response to the NF AO.
- Eight out of 84 proposals selected for near-term tech dev.

| PI                 | Institution | Proposal Title   |
|--------------------|-------------|--|
| Steve Squyres      | Cornell     | Sample Acquisition and Containment for Comet Surface Sample Return |
| Ryan Park          | JPL         | Advanced Pointing Imaging Camera (APIC)                            |
| Farzin Amzajerdian | LaRC        | Navigation Doppler Lidar Sensor                                    |
| Stojan Madzunkov   | JPL         | Atmospheric Constituent Explorer System (ACES)                     |
| Chris Webster      | JPL         | TLS Risk Reduction for SP and VISE NF Missions                     |
| Elena Adams        | APL         | Planetary Object Geophysical Observer (POGO)                       |
| Scott Singer       | Spectrolab  | Active Tracking MEMS Micro-concentrator for LILT Missions          |
| Lori Glaze         | GSFC        | Venus Entry Probe Prototype  |



# **New Frontiers Data Analysis Program**



- The New Frontiers program finally has data to analyze!
- First ever New Frontiers Data Analysis Program is part of ROSES 2016.
  - Currently looking for a part-time civil servant detailee to serve as the Discipline Scientist for NFDAP.
- Focused on New Horizons this year, it will be expanded to cover other NF missions as data are archived in the PDS.
- New Horizons archiving schedule:
  - April 2016: P1 delivery of data downlinked through 7/31/15
  - Oct. 2016: P2 delivery of data downlinked through 1/31/16
- Recall that data must be in the PDS prior to proposal due date in order to be eligible for use in proposals
  - I welcome input as to when proposals should be due.



#### **New Frontiers 4 AO - Parameters**



- The 4<sup>th</sup> New Frontiers AO (NF4) is scheduled for release in January 2017.
- A community announcement with key parameters was issued in January 2016.
- Some key elements from that announcement:
  - PI-Managed Mission Cost (PMMC) cap of \$850M (FY15\$) for phases A-D,
  - Foreign contributions may not exceed one-third of the PMMC, and the value of foreign contributions to the science payload may not exceed one-third of the total payload cost,
  - MMRTGs and RHUs are available and paid for under the PMMC,
  - Some technologies will be incentivized, and
  - Launch readiness date of 2024 (2025 if nuclear).
- NASA has not approved the issuance of the New Frontiers AO and this notification does not obligate NASA to issue the AO and solicit proposals.



#### **New Frontiers 4 AO – Mission Themes**



- Investigations proposed to the NF4 AO are limited to the following unprioritized mission themes
  - Comet Surface Sample Return,
  - Lunar South Pole-Aitken Basin Sample Return,
  - Ocean Worlds (Titan and/or Enceladus),
  - Saturn Probe,
  - Trojan Tour and Rendezvous, and
  - Venus In Situ Explorer.
- Ocean Worlds theme is focused on the search for signs of extant life and/or characterizing the potential habitability of Titan and/or Enceladus.
  - Note the updated usage of "and/or" to address confusion.
- The draft AO will fully elucidate information on the mission themes, including science objectives.



#### **New Frontiers 4 AO - Schedule**



- As mentioned, SMD is currently revising the Standard AO.
   Once that is done work will begin on the NF4 AO.
- July 2016: Draft AO targeted for release
  - Comments for NASA's consideration will be welcome on that draft as the final AO is prepared in Fall 2016.
- January 2017: Final AO targeted for release with proposals due 90 days later
- November 2017: Selection for competitive Phase A studies
- October 2018: Concept study reports due
- May 2019: Announcement of flight selection
- All dates are targets, not guarantees.



#### **Ocean Worlds**



- House Appropriations Committee called out Ocean Worlds:
  - "Many of NASA's most exciting discoveries in recent years have been made during the robotic exploration of the outer planets. The Cassini mission has discovered vast oceans of liquid hydrocarbons on Saturn's moon Titan and a submerged salt water sea on Saturn's moon Enceladus. The Committee directs NASA to create an Ocean World Exploration Program whose primary goal is to discover extant life on another world using a mix of Discovery, New Frontiers and flagship class missions consistent with the recommendations of current and future Planetary Decadal surveys."
- Spurred by this, in October NASA sponsored an Ocean Worlds Exploration forum at National Geographic.
- Planning activities are underway at HQ to consider strategic and practical aspects of such a program.



# **Questions?**



