



Planetary Science Division Program Status

Presentation to the Outer Planets Assessment Group

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Outline



- Activities since last OPAG
- Passage of the FY10 NASA budget
- Presidents FY11 Budget for SMD & PSD
- Upcoming Planetary Events



Since Our Last Meeting

- Selection for NF announced
 - MoonRise: SPA Basin Sample Return (Brad Joliff, PI)
 - OSIRIS-Rex: Asteroid sample return (Mike Drake, PI)
 - SAGE: Venus lander (Larry Esposito, PI)
- Discovery's bidder conference & comment period (Jan. 15)
 - We received a lot of comments that will need careful consideration
 - We have heard the communities concerns on the cost of ASRGs
- SALMON released for instruments on ESA's Trace Gas Orbiter - Mars 2016
- Planetary Tech Review has begun
- APMC for MSL and Lunar Quest Program completed
- NRC released their NEO Survey and Mitigation Report



MSL Status Report



- Actuators
 - All flight motors delivered & full complement of flight actuators delivered
 - If LPHTA's complete 2x life successfully (March), we are DONE with actuators!
- Avionics
 - All FPGAs burned and Rover Compute Elements assembled and in testing
 - Power avionics beginning acceptance tested
- SA/SPaH Robot Arm and Drill / CHIMRA EM testbed deliveries completed, and sample chain validation initiated.
- Descent Stage Propulsion rework complete, cruise stage rework beginning
- No major problems uncovered in the Western Titanium investigation.
 - >1000 suspect parts identified with 100 left to investigate but negative impacts unlikely due to applications
 - Final dispositions planned early March 2010
- Only three major open issues remain:
 - SAM Wide Range Pump
 - Radar Transmit Receive Module
 - MMRTG Beginning of Mission power shortfall



Budget Status/Impacts Presented to the PSS



- Impacts must be contained in the Planetary Division
 - The Mars Program will repay non-Mars “loan”
- Impacts to cover low- to mid-range budget needs, in order:
 - Reduce or eliminate Mars Program APA in FY10 and FY11
 - Reduce US portion of Mars-16/18/20 missions
 - Reduce Discovery future and New Frontiers mission lines (no impact to current schedules)
- Impacts increase to cover mid- to upper-range budget needs, in order:
 - Further reduce US portion of Mars-16/18/20 missions
 - Delay LADEE and ILN missions
 - Delay New Frontiers 3 phase B selection

Updated FY11 Budget Status:

- MSL project has requested funding that is within the “low to mid-range values”
 - No additional Planetary Prog. impacts (ie: No delays or impacts to R&A)
- Funding request is within the Commitment to Congress discussed in the *Rebaseline Report* (\$495M)



FY10 Budget

- Congress passed NASA's Budget Dec 16, 2009
- Funding boosts for PSD
 - \$11.27M for NASA's ILN – Anchor Nodes
 - \$2M to NEO program to support research at Arecibo
- SMD General Reduction of \$59.2M
 - Can not be assessed against those activities augmented by Congress
 - PSD portion is \$18.2M
- Detailed approach is in the approval cycle



Congressional Actions: Pu



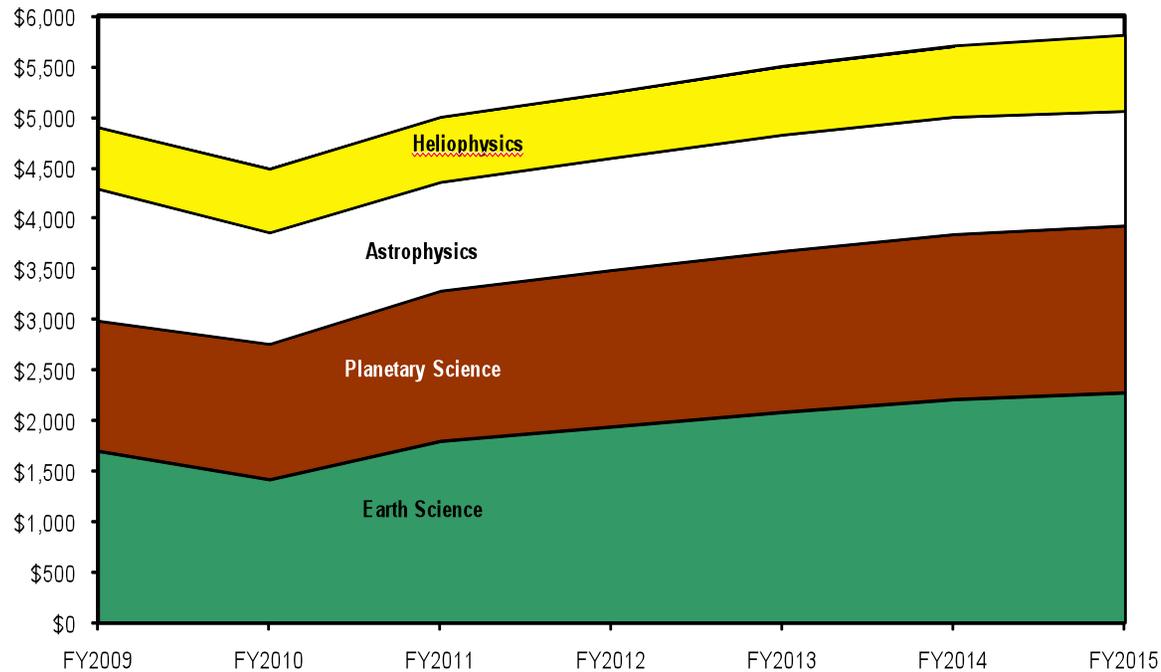
- DOE FY10 Appropriations Conferees results:
 - Adopted Senate position of zero funding
 - Stating: *"Pu-238 Production Restart Project.- ... [a] start-up plan which shall include the role and contribution of major users of Pu-238, such as the NASA, ... shall be submitted with the fiscal year 2011 budget...."*
- NASA worked with DOE to create and deliver such a plan and continued to maintain the testing of advanced RPS
 - NASA and DOE working well together
- From NASA's perspective this is back on track



SMD FY11 Budget By Theme



	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	Change FY10-15	
Science	<u>\$4,903.1</u>	<u>\$4,493.3</u>	<u>\$5,005.7</u>	<u>\$5,248.7</u>	<u>\$5,509.7</u>	<u>\$5,709.9</u>	<u>\$5,814.1</u>	<u>\$1,320.8</u>	<u>29%</u>
Earth Science	\$1,702.3	\$1,420.7	\$1,801.7	\$1,944.5	\$2,089.5	\$2,216.6	\$2,282.2	\$861.5	61%
Planetary Science	\$1,288.1	\$1,341.3	\$1,485.8	\$1,547.3	\$1,591.3	\$1,630.2	\$1,649.5	\$308.2	23%
Astrophysics	\$1,304.9	\$1,103.9	\$1,076.3	\$1,109.3	\$1,149.1	\$1,158.7	\$1,131.6	\$27.7	3%
Heliophysics	\$607.8	\$627.4	\$641.9	\$647.6	\$679.8	\$704.4	\$750.8	\$123.4	20%





FY11 SMD Budget Features



- In these economic times the President's budget is strong statement in support of NASA's Space & Earth Science
- SMD Budget increased (F11-10) ~\$512M
 - ESD has new climate initiative ~\$380M
 - PSD funding change ~\$145M
- In the past New Initiatives would be at the expense of the other divisions keeping the total SMD budget constant



Planetary Science Program Content



	FY09	FY10	FY11	FY12	FY13	FY14	FY15
FY11 President's Budget	1,288.1	1,341.3	1,485.8	1,547.3	1,591.3	1,630.2	1,649.5
Planetary Science Research	166.2	160.7	180.4	190.8	195.2	214.2	240.9
Lunar Quest	69.1	103.6	136.6	136.4	131.7	109.7	110.5
Discovery	234.8	209.2	202.0	216.8	235.9	263.0	312.9
New Frontiers	279.0	264.1	223.8	229.5	237.9	247.7	258.5
Mars Exploration	361.7	416.1	532.8	514.8	549.9	569.6	485.8
Outer Planets	104.8	98.6	103.5	157.9	152.0	144.0	155.8
Technology	72.4	89.0	106.6	101.2	88.8	82.1	85.2



PSD Budget Highlights



- Approved Cassini's Extended Extended mission
- Increases by \$16M/yr NEO identification and characterization
- Restarts Pu-238 production with DOE
- Continues to operate 11 planetary missions
- Fully funds upcoming missions: Juno, GRAIL, MSL, LADEE, and MAVEN
- Develops ASRG for 2014/2015 launch readiness date
- Continues funding Europa Jupiter System Mission in Pre-Phase A
 - Our plans are to keep OPF going while we are awaiting the results of the new Planetary Decadal.
 - For PSD – OPF has and continues to be our highest priority



Upcoming PSD Mission Milestones



2010

- May – Launch of O/OREOS
- June 13 - Hayabusa (JAXA) asteroid sample return
- July 10 – Rosetta (ESA) closest approach for Lutetia
- Sept – LRO transitions to Planetary Science Division
- Nov 4 - EPOXI encounters comet Hartley 2
- Late '10 Venus Climate Orbiter (JAXA) arrives at Venus
- Late '10- Early '11(?) – Opportunity gets to Endeavour

2011

- Feb 14 - Stardust NExT encounters comet Tempel-1
- Mar 18 - MESSENGER orbit insertion at Mercury
- July - Dawn orbit insertion at asteroid Vesta
- Aug - Juno launch to Jupiter
- Sept - GRAIL launch to the Moon
- Oct - MSL launch to Mars

2012

- Mid-year – Dawn leaves Vesta starts on its journey to Ceres
- Aug - MSL lands on Mars
- Oct - LADEE launch to the Moon



NASA's Planetary Science

Advance scientific knowledge of the origin and history of the solar system, the potential for life elsewhere, and the hazards and resources present as humans explore space

“Flyby, Orbit, Land, Rove, and Return Samples”