



Planetary Science Division R&A Review

James L. Green
Director, Planetary Science Division

March 26, 2008



Outline

- Budget Overview
- R&A statistics
- Recent Selections
- Expected Highlights for FY09
- Cross Discipline activities
- Process improvements

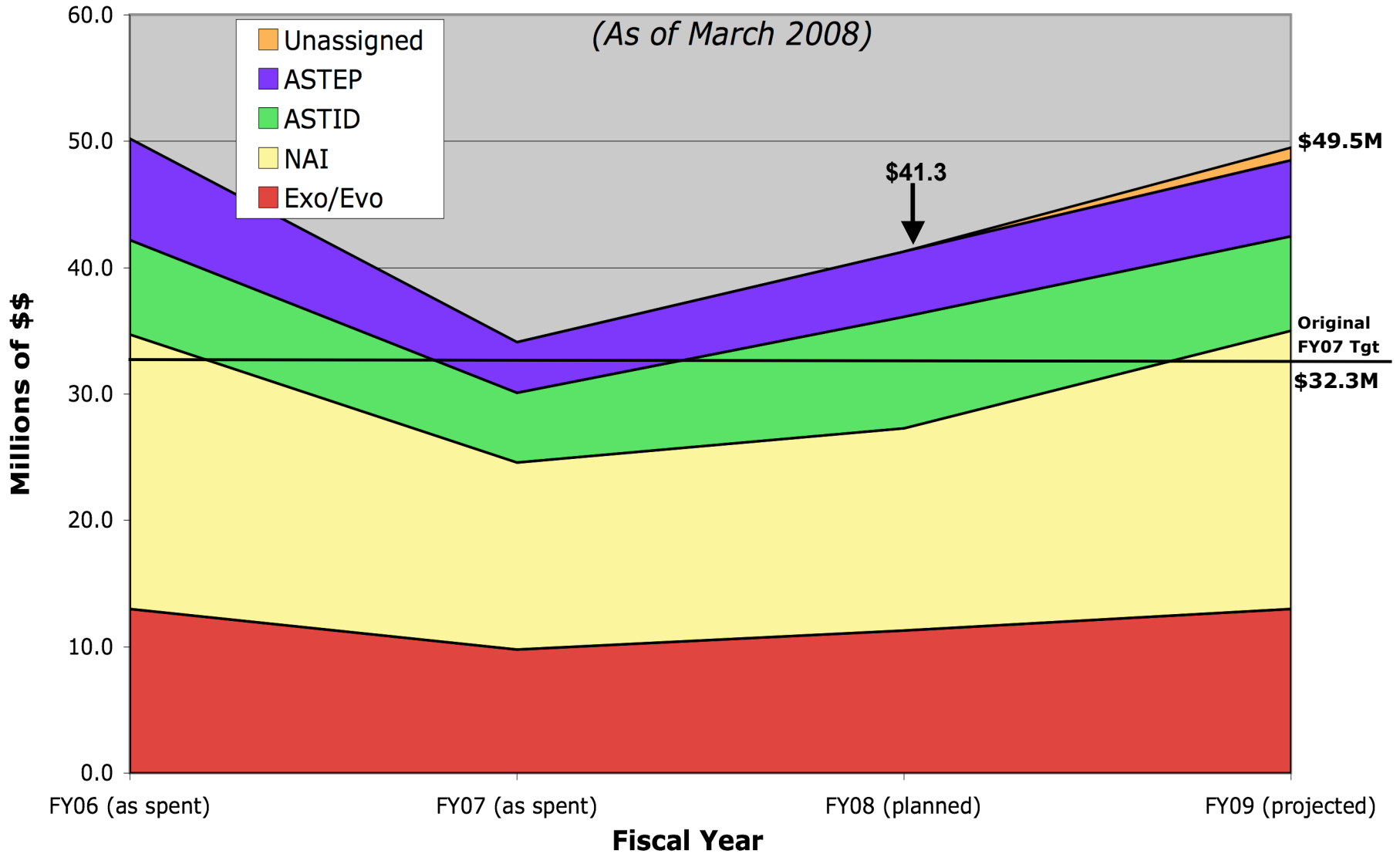


Planetary R&A Overview



	Spent	Planned	Presidents
ROSES	FY07	FY08	FY09
Mars R&A	\$14,158	\$23,333	\$24,938
Mars Fundamental Research			
Mars DAP			
Discovery Research	\$11,881	\$16,898	\$18,816
Sample Return Lab Inst &DAP			
Discovery DAP & Stardust DAP			
MESSENGER Participating Scientists Prog			
Planetary R&A	\$79,256	\$101,367	\$101,223
PG&G			
Cosmochemistry			
Planetary Astronomy			
Planetary Atmospheres			
Planetary Instruments			
Origins of Solar Systems			
Planetary Protection			
Outer Planets Research			
New Horizons & Jupiter DAP			
Cassini Data Analysis Program (OPF)			
Astrobiology	\$32,414	\$40,283	\$49,258
ASTEP			
ASTID			
NASA Astrobiology Institute			
Astrobiology: Exo and Evo			
Lunar Research	\$3,800	\$18,700	\$25,000
Lunar Sortie Science Opportunity			
LRO- Participating Scientist Program			
Lunar Science & Exploration Research			
NASA Lunar Science Institute & Nodes			
Total Planetary Research	\$141,508	\$200,581	\$219,235

Astrobiology Budget Past & Future Plans





Multi-Year Stats



PROGRAM ELEMENT		ROSES 2005				ROSES 2006				ROSES 2007				
		Proposals	Awar ds	Succ ess	<K\$> /Awr d	Propos als	Awar ds	Succ ss	<K\$> /Awr d	Propos als	Awar ds	Succ e s	<K\$> /Awr d	Days to Awrd
C.02	Cosmochemistry	74	36	49%	130	69	35	51%	127	50	22	44%	154	119
C.03	Sample Return Lab Inst & D	12	6	50%	266	18	6	33%	472	10	7	70%	366	124
C.04	PG&G	99	58	59%	67	99	48	48%	67	118	58	49%	102	201
C.05	Planetary Astronomy	37	23	62%	89	52	19	37%	79	60	34	57%	107	295
C.06	Planetary Atmospheres	84	29	35%	104	63	21	33%	108	81	28	35%	125	154
C.07	Outer Planets Research	76	29	38%	81	48	10	21%	98	117	0	0%		
C.08	LASER	New Programs in 2007 Selections Imminent								159	0			
C.09	New Horizons at Jupiter DA	Postponed to ROSES 2008								0				
C.10	Cassini DAP	New Program in 2006								73	41	56%	95	200
C.11	Discovery DAP	21	14	67%	93	41	24	59%	92	0				
C.12	Mars DAP	96	27	28%	67	100	23	23%	83	78	32	41%	88	161
C.13	Mars Fundamental Research	120	37	31%	80	126	35	28%	89	101	40	40%	93	150
C.14	Mars Instrument Developm	No Data Available as of 25 Mar 08												
C.15	Mars Technology Project	No Data Available as of 25 Mar 08												
C.16	Planetary Instruments	65	11	17%	234	99	10	10%	231					
C.17	Astrobiology: Exo and Evo	160	28	18%	133	103	15	15%	117	113	33	29%	165	
C.18	Planetary Protection	10	1	10%	130	22	4	18%	130	15				
C.19	ASTID	88	0	0%	0	0	0	0%	0					
C.20	ASTEP	38	0	0%	0	0	0	0%	0	54				
C.25	MESSENGER PSP					52	22	42%	93					
E.03	Origins of Solar Systems	91	33	36%	66	73	25	34%	62	85	24	28%	87	154
	Near Earth Objects	10	5	50%	257	14	5	36%	344	18	3	17%	281	226
	Lunar Sortie Science					77	14	18%	100					

No DATA

Selection Pending



ROSES 2007 Stats

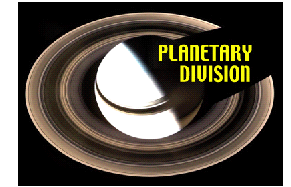


Number of Proposals in Each Category Number of Awards in Each Category

ROSES	YR	E	E/VG	VG	Rest	Total #	E	E/VG	VG	Rest	Total Awards	Ratio (Awd/Tot)	Average Grant (\$K)	#Days to Award
Exo Biology	2007	2	13	20	78	113	2	13	18	0	33	29%	164	
PATM	2007	3	20	22	36	81	2	19	7	0	28	35%	125	130
LASER	2007	3	9	26	121	159								Pending
MDAP	2007	1	3	18	56	78	1	3	18	10	32	41%	88	161
NEOO	2007	1	1	5	11	18	1	1	1	0	3	17%	281	226
PAST	2007	4	6	24	26	60	4	6	22	2	34	57%	107	295
PG&G	2007	3	3	20	92	118	3	3	19	33	58	49%	102	201
Cosmo	2007	4	8	12	26	50	4	8	9	1	22	44%	154	119
Origins	2007	0	9	17	59	85	0	9	12	3	24	28%	87	154
SRLIDAP	2007	0	1	4	5	10	0	1	4	2	7	70%	366	124
MFRP	2007	0	10	22	69	101	0	10	22	8	40	39%	93	150
Cassini DAP	2007					73	4	12	24	1	41	39%	92	200
New Horizons	2007													
Discovery DAP	2007													
Plan. Prot.	2007					15								Pending
PIDDP	2007													
Outer Planets	2007					117								Pending
ASTEP	2007					53								Pending



DSMCE Selections



Baines, Kevin	JPL	Venus	Aerial Vehicle	Polar VALOR: The Feasibility of A Nuclear-Powered Long-Duration Balloon Mission to Explore the Poles of Venus
Elphic, Richard	Los Alamos National Laboratory	Moon	Lander	Locating and Characterizing Lunar Polar Volatiles: Feasibility of a Discovery-Class Mission
Jolliff, Bradley	Washington University	Moon	Rover	Journey to the land of Eternal Darkness and Ice (JEDI): A Lunar Polar Volatile Explorer
Rivkin, Andrew	Applied Physics Lab	Asteroid	Lander	Illion: An ASRG-Enabled Trojan Asteroid Mission Concept
Hecht, Michael	JPL	Mars	Lander	A tour through Martian history: An ASRG-powered polar ice borehole.
Stofan, Ellen	Proxemy Research	Outer Planets	Lander	Titan Mare Explorer (TiME)
McEwen, Alfred	University of Arizona	Outer Planets	Orbiter	Mission Concept: Io Volcano Observer (IVO)
Sandford, Scott	NASA/AMES	Comet	Sample Return	Concept Study for a Comet Coma Rendezvous Sample Return Mission
Sunshine, Jessica	Univeristy of Maryland	Comet	Lander	Comet Hopper



PI First name	PI Last name	Title	Institution	Team
Brent	Archinal	Lunar Precision Geodesy: Registration and Enabling the Use of Lunar Reconnaissance Orbiter Datasets for Scientific and Operational Purposes	U. S. Geological Survey	LROC
Joshua	Bandfield	Characterization of lunar thermophysical and spectral properties with the Diviner radiometer	Arizona State University	Diviner
Olivier	Barnouin-Jha	Measuring the surface roughness of the Moon and the topographic shape of impact craters.	Johns Hopkins University Applied Physics Lab	LOLA
James	Bell	Mineralogic and Morphologic Analyses of the Moon During LRO Operations	Cornell University	LROC
Ross	Beyer	Lunar stratigraphy and topography investigations with LRO	NASA Ames Research Center	LROC
Lynn	Carter	Radar polarimetric studies of the lunar poles and lunar pyroclastic deposits	Smithsonian Institution	Mini-RF
Thomas	Duxbury	Lunar Local and Global Cartography and Calibration	Jet Propulsion Laboratory	LOLA
Richard	Elphic	Synthesis of LRO and Other Data to Characterize the Physical Properties of Lunar Cold Traps	Los Alamos National Laboratory	Diviner
Rebecca	Ghent	Thermophysical properties of fine-grained ejecta haloes from LRO Diviner radiometer observations	University of Toronto	Diviner
Lisa	Gaddis	Geologic Analyses of Historic and LRO Data of Lunar Volcanic	U.S. Geological Survey	LROC
William	Garry	Analysis of the Morphology and Emplacement of Volcanic Features on the Moon with the Lunar Reconnaissance Orbiter	Center for Earth and Planetary Studies	LROC
Jeffrey	Gillis-Davis	Assessment of Lunar Resources: Using Targeted Observations of Mini-RF in Conjunction with Data from LROC, LEND, DLRE, LOLA, and LAMP.	University of Hawaii, Manoa	Mini-RF
Timothy	Glotch	Compositional Variability of the Lunar Surface from the Diviner Lunar Radiance Experiment and the Lunar Reconnaissance Orbiter Camera	SUNY	Diviner
Bernard	Hawke	An Investigation of Lunar Dark Mantle Deposits Using LROC Data	University of Hawaii	LROC
Amanda	Hendrix	Investigation into Lunar Surface Composition and Weathering Effects	JPL/CalTech	LAMP
Laszlo	Keszthelyi	Flow on the Moon: A Stepping Stone to Mars and Beyond	United States Geological Survey	LROC
Rongxing (Ron)	Li	Integration of Lunar Reconnaissance Orbiter Camera (LROC) and Lunar Orbiter Laser Altimeter (LOLA) Data for Near Real-time Precision Lunar Topographic Mapping and Landing Sites Assessment	The Ohio State University	LROC
Paul	Lucey	LRO Mission Participation: Mineral Mapping With Diviner and LOLA	University of Hawaii	LOLA
Timothy	McClanahan	Enhancement of Lunar Exploration Neutron Detector (LEND) Mission Operations and Science Return	NASA Goddard Space Flight Center	LEND
Jürgen	Oberst	Studies in Lunar Geodesy and Cartography	German Aerospace Center (DLR)	LROC
Timothy	Stubbs	Mapping Lunar Surface Electric Fields and Characterizing the Exospheric Dust Environment	NASA Goddard Space Flight Center	CRaTER
Thomas	Watters	Tectonism on the Moon: Global Characterization and Analysis of Lunar Faults	Smithsonian Institution	LROC
Michael	Wyatt	Mapping Silicate Variations on the Moon with the Diviner Lunar Radiometer Experiment (DLRE) and Cross-Comparisons with other Compositional Approaches	Brown University	Diviner
Cary	Zeitlin	Comparison of Lunar and Martian Radiation Environments	Lawrence Berkeley National Laboratory	CRaTER



Lunar R&A Programs



- Lunar Advanced Science & Exploration Research (LASER)
 - Co-funded with ESMD
 - 160 proposals received in September
 - Evaluation completed in late February
 - Expect to select within the next week (~40 proposals rated highly)



Planned Highlights R&A for FY09



- Creation of a Community Modeling Center for Mars atmospheric modeling (after the CCMC in Helio)
 - Leveraging the “standard” Mars GCM
 - Framework for open access to community models
 - Supporting modeling of future EDL (ie: ExoMars)
 - Mars Scout 13 data inter-comparisons
 - Planning a community workshop for fall
- NASA Lunar Science Institute Activities:
 - NLSI: 4-5 nodes plus 1 or 2 nodes ESMD funded
 - Announce a couple of international nodes



Current Cross Discipline Programs



- Origins - Shared with ASD
- Astrobiology - ~\$1-2M ESD contribution



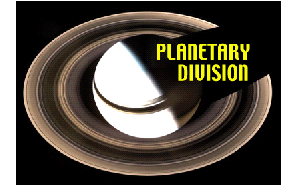
New Cross Discipline Programs



- ROSES 2007- LWS Focused Science Topics
 - Effect of Solar Extremes in the solar system
 - With Heliophysics
 - Selections nearly completed
- Discussions started
 - Venus, Mars, Earth comparative climatology
 - ROSES 2008 (TBD) with ESD
- New concept to be discussed
 - NEO hazards
 - Current program of identification science, & characterization
 - Expand with modeling mitigation strategies
 - ROSES 2008 (TBD) with ESD



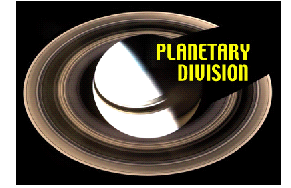
Potential New Approaches



- Problems to be addressed:
 - Getting funding out as early as possible
 - Getting funding committed to minimize or nearly eliminate unobligated carryover
- “New” PSD Policy being considered
 - After Selection Document is signed
 - Fund Civil Servant PIs first (done in ~1 week)
 - Need some NRESS process changes
 - Funding 2-4 years in a row to “qualified” PIs
 - Have a solid track record - several R&A wins
 - Provided all previous progress reports on time



Young Researcher Opportunities



- Fund the new NESSF at 35-45% level
 - Open to graduate students (2 -3 years support)
- Promote Early Career Fellows program
 - Plans are to name a Lunar and Mars fellow in honor of Gordon McKay
 - Already naming a Larry Haskins fellow for Geochemistry
- NASA Postdoctoral Program (NPP)
 - Continue to fund 1 or 2 at PSD at HQ
 - SMD slots allocated to Centers only
 - Promote applications to program in Planetary
- Do a better job of advertising at meetings and in the PEN



PSD R&A Process Improvements



- Twice monthly tag-up
 - Work tactical problems
- Twice yearly 2 day retreats
 - Major strategic changes
- Example upcoming retreat topics:
 - Complete R&A Program Reviews
 - Discuss R&A consolidation of calls (how, what, why)
 - Distribution of expected additional FY09 R&A funding
 - Review what's working what's not and why
 - Standardize peer review panel instructions



Backup



Early Career Fellowship

- Created in 2005 to facilitate the integration of new planetary science researchers into the field by helping them become established in stable employment that allows them to focus on their research rather than an annual job hunt
- Talking with decision makers at various institutions revealed one key factor in employment decisions was funding. Potential employers wanted:
 - evidence new hires had the skills to pull in funds to support themselves over the long term
 - new hires to bring funds with them to the institution
- The Early Career Fellowship seeks to provide both of these to make early career scientists more attractive during the hiring process
 - By virtue of the selection process Fellows already have R&A funding
 - Fellows are eligible for \$100K of “startup funds” that can be used once they achieve stable, “long term” employment (We are already seeing that this is a tremendous negotiating tactic for Fellows)
- The Proposal Writing Workshops were created to help address these factors across a wider swath of the community



ECF: How it Works

- Fellows are sponsored by participating R&A programs
 - There is no independent “pot of money” attached to the ECF program
- Candidates submit standard R&A proposals to participating programs, indicating their interest in ECF
- If the proposal is selected for funding by the sponsoring R&A program, the candidate may be selected as a Fellow
- Fellows have the opportunity to apply for \$100K of startup funds once they achieve stable, “long term” employment (i.e., break the cycle of finding a new postdoc position every 2-3 years)



ECF Selection Statistics



- ROSES 2005
 - 87 applicants, 12 selected as Fellows
 - Over half the Fellows used it as part of negotiations to improve their current position (i.e., make it stable) or get a new one
 - 1 Fellow stated it saved his career
- ROSES 2006
 - 93 applicants, 9 selected as Fellows late fall 2007
 - 4 have already begun negotiations for new positions
- ROSES 2007
 - Selections not made yet