

NASA PLANETARY SCIENCE DIVISION “SR&T” ACTIVITIES

A Study by the NAC Planetary Science Subcommittee

- **Supporting Research and Technology (SR&T) activities are critical in enabling the strategic goals of the Planetary Science Division (PSD) to be met.**
- **The NAC Planetary Sciences Subcommittee (PSS) has initiated a study of the SR&T and related activities to assess program relevance and effectiveness, and to suggest possible improvements in program management.**
- **The study results will lead to recommendations to the PSD Director through the NAC Science Committee in late summer 2011.**

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- Who, What, When, Where, Why?
- *“WHY?” Motivated by:*
 - PSS recommendations in 2009 to address concerns relating to individual research grants, etc.
 - The NRC Fisk report (2010) *“An Enabling Foundation for NASA's Earth and Space Science Missions”* (www.nap.edu) recommends a review of the R&A activities that contribute to PSD goals and how the activities might be improved.

Thus, the Study is driven from “grass-roots” by community concerns for specific activities and implementation (e.g., program balances; grant sizes, durations) and from the top-down by upper administration that must address the broad programmatic issues and priorities recommended, for example, by the NRC Decadal Survey.

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“WHAT?” *The Study will:*

- Map the activities through "traceability paths" from *PSD goals* to specific programs for relevance, results, and worth; **GOALS:**
 - *Inventory solar system objects and processes*
 - *Understand origin and evolution of objects*
 - *Understand habitability of Mars and other bodies*
 - *Understand origin and evolution of life on Earth and potentially elsewhere*
 - *Study small bodies as threats/resources*
- Current activities to support these goals (excluding flight programs and technology development) are
 - *ROSES programs (most)*
 - *SALMON: Participating Scientists*
 - *Planetary Data System*
 - *Astromaterials Curation (JSC)*
 - *Astrobiology Institute (ARC)*
 - *Lunar Science Institute (ARC)*
 - *Infrastructure (e.g., Planetary Cartography, USGS)*
- Derive recommendations regarding "active portfolio management" to meet PSD goals

CATEGORIES OF THE SR&T PROGRAM

Basic Research

Planetary Geology & Geophysics

Cosmochemistry

Planetary Atmospheres

Planetary Astronomy

Origins of Solar Systems

Astrobiology-Exobiology & NASA Astrobiology Institute

Research programs for post docs, graduate & undergrad students

Focused Research

Planetary Protection

Planetary Major Equipment

Mars Fundamental

Near-Earth Objects

Lunar Research & NASA Lunar Science Institute

Outer Planets

Mission Data Analysis and Participating Scientists

Planetary Mission Data Analysis

Lab Analysis of Returned Samples

Mars Data Analysis & Mars PS

MESSENGER, Dawn & Venus PS

Lunar Recon Orbiter PS

Jupiter and Cassini Data Analysis

SALMON PS

*Technology Development**

Propulsion and Power

Planetary Instruments

Mars Instrument & Technology

Astrobiology Instruments and Analogs

Lunar Sorties & Analogs

***Not included in study**

2010 ROSES OPPORTUNITIES

Cosmochemistry

Laboratory Analysis of Returned
Samples

Planetary Geology and Geophysics

Planetary Astronomy

Planetary Atmospheres

Outer Planets Research

Lunar Advanced Science & Exploration
Research

Near Earth Object Observations

Cassini Data Analysis

Planetary Mission Data Analysis

Mars Data Analysis

Mars Fundamental Research

Mars Instrument Development Project*

Mars Technology Project

**consider for completeness*

Planetary Instrument Definition and
Development*

Astrobiology: Exobiology, and Evolutionary
Biology

Planetary Protection Research

Astrobiology Science and Technology for
Instrument Development*

Astrobiology Science and Technology for
Exploring Planets

In Space Propulsion

Fellowships for Early Career Researchers
(new applicants)

Fellowships for Early Career Researchers
(current fellows)

Planetary Major Equipment

Moon and Mars Analog Missions Activities

Venus Climate Orbiter Participating
Scientist Program

OTHER PSD-FUNDED INFRASTRUCTURE

- **NASA supercomputing (an annual tax)**
- **Infra Red Telescope Facility (IRTF, Hawaii)**
- **Planetary Cartography (USGS, Flagstaff)**
- **RELAB (reflectance spectroscopy, Brown U.)**
- **Vertical Gun Lab (ARC)**
- **Planetary Aeolian Lab (ARC)**
- **Venus Chamber (GSFC)**
- *Possible future:*
 - **Mars Climate Modeling Center**

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“WHEN, WHERE?” The study will be done in:

Phase I (summer 2010) *Define study scope; derive official "Terms of Reference" as a FACA activity; identify working group; develop plan of action*

Phase II (fall 2010) *Collect data via: (1) online poll on specific questions about SR&T programs; (2) Community definition of research activities supporting PSD goals through a web form, "Town Halls" (e.g., DPS, AGU), planetary assessment groups, and directly from individuals; input from NASA PSD Program Officers (13 Oct. 2010); grant statistics from RAPTOR and other data bases*

Phase III (winter 2010-11) *Derive traceability matrixes extending from PSD goals to specific activities; assess issues raised by the Community and Program Officers; evaluate results*

Phase IV (spring 2011) *Iterate emerging Study results with the community, PSD, and NAC Science Committee*

Phase V (summer 2011) *Formulate PSS recommendations; present to NAC Science Committee; review with PSD Directors*

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“WHO?” Will do the study:

Ron Greeley (Chair PSS)* <i>Study Working Group Chair</i>	<i>Ariz. State Univ.</i>	Bill McKinnon (OPAG Chr)	<i>Wash. Univ.</i>
Jim Bell*	<i>Cornell</i>	Louise Prockter	<i>APL</i>
Julie Castillo	<i>JPL</i>	Anna Louise Reysenbach	<i>Portland State U.</i>
Tom Cravens*	<i>Univ. Kansas</i>	Chip Shearer (LEAG Chr)	<i>Univ. N. Mex.</i>
Dave DesMarais (MEPAG Chr)	<i>NASA-Ames</i>	James Slavin	<i>NASA-Goddard</i>
John Grant*	<i>NASM</i>	Paul Steffes	<i>Georgia Tech</i>
Will Grundy	<i>Lowell Obs.</i>	Dawn Sumner*	<i>Univ. Calif. Davis</i>
Greg Herzog	<i>Rutgers</i>	Jessica Sunshine	<i>Univ. Maryland</i>
Jeff Johnson	<i>USGS Flagstaff</i>	Mark Sykes (SBAG Chr)*	<i>Plan. Sci. Inst.</i>
Sanjay Limaye (VExAG Chr)*	<i>Univ. Wisc.</i>	Mini Wadhwa (CAPTEM Chr)*	<i>Ariz. State Univ.</i>

***Working Group members**

Plus ex officio and executive secretary members provided from PSD

Plus possible community members

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“WHAT YOU CAN DO” as an integral part of the Study:

- Go to http://www.surveymonkey.com/s/nasa_planetary_research and participate in the community survey on SR&T programs (providing input on desired grant sizes, duration, proposal success rates, the review process, and restructuring programs). This poll will close at 5 pm Eastern, October 11.
- Go to http://www.psi.edu/nasa_pss and identify all research activities needed to support PSD strategic goals. Responses will be visible until the end of the collection period (~spring 2011).
- Participate in Town Hall meetings at the DPS, AGU, and in “Analysis Groups.”
- Discuss the issues with members of the Study and articulate your thoughts on the problems and possible solutions identified on the above websites; copy via e-mail to greeley@asu.edu for input to the study.

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Study by the Planetary Science Subcommittee, NAC Science Committee

- **The Study is rather broad and can significantly impact the Planetary Science Community. The successes and failures of the Planetary Science Division are functions of how well we address the goals of the Division.**
- **Resources are, and always will be, limited. We need to ensure that the resources are applied efficiently to relevant activities to meet PSD goals and according to priorities set by the Community and NASA.**
- **At this time, the study is to determine the metrics used for program evaluation, apply the metrics to existing programs, identify strengths and weaknesses, and make recommendations for improvement. The Study does not prioritize activities, recommend premature termination of activities, or duplicate the efforts of the Planetary Science Technology Review Panel.**
- **A follow-on activity (i.e., Phase VI) could be to recommend specific priorities derived from the 2011 NRC Decadal Survey results and relevant NASA "Roadmaps**

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- **All information from the community, Program Officers, and relevant parties will be read, reviewed and discussed by the PSS SR&T Study Working Group**
- **As a FACA activity, the Working Group sessions will be open and transparent**
- **Emerging recommendations will be iterated with the community, PSD, and NAC Science Committee**
- **Final recommendations on how the “enabling activities” can be improved will be made to PSD Director Jim Green through the NAC Science Committee**
- **Responses by PSD to the recommendations will be held at subsequent PSS meeting (open to all)**