Welcome to MEPAG Meeting #33

Jeffrey R. Johnson, MEPAG Chair

February 22-23, 2017

Monrovia, CA

Outline of Introductory Remarks

- Ground Rules for meeting
- Overview of agenda
- Brief review of MEPAG Charter and members
  - http://mepag.nasa.gov/about.cfm
- Update on MEPAG activities since last meeting (October 6, 2016)
- Planetary Science Subcommittee findings from September 2016 meeting
  - https://science.nasa.gov/science-committee/subcommittees/nac-planetary-science-subcommittee

Meeting Ground Rules

- Speakers will be kept on time according to the agenda
- Questions/comments from local audience?
  - Wait for microphone and state name/affiliation
- Questions/comments from remote audience?
  - Use chat box on Adobe Connect; moderators will track questions
  - Feedback/questions during and after meeting? → MEPAGmeetingqs@jpl.nasa.gov
- Presentations and Meeting summary notes (once cleared and waivered) will be made available on MEPAG website after Feb. 27
  - Will include any "findings" resulting from meeting discussions

Day 1

Mars Exploration Program Reports			
08:30 AM	0:30	Welcome; Agenda Preview,MEPAG Updates	J. Johnson, MEPAG Chair
09:00 AM	0:15	NASA: MEP Welcome & Status	J. Watzin
09:15 AM	0:30	NASA: MEP Science	M. Meyer
09:45 AM	0:25	MEP Mission Status	F. Li
10:10 AM	0:20	Break	
2020 Mission Development			
10:30 AM	0:45	2020 Landing Site Workshop	M. Golombek, J. Grant
11:15 AM	0:45	2020 Rover	K. Farley, J. McNamee
12:00 PM	1:00	LUNCH	
Analysis/Working Groups			
01:00 PM	0:40	Mars International Collaboration--MIC SAG	B. Jakosky, R. Zurek
01:40 PM	0:20	Public Participation in Mars Exploration: Workshop Results	A. Kaminski
02:00 PM	0:15	International Phobos/Deimos Landing Sites	T. Duxbury (*call-in*)
02:15 PM	0:15	Break	
International Activities			
02:30 PM	0:30	European Perspective/ExoMars	H. Svedhem
03:00 PM	0:30	United Arab Emirates Mission to Mars	O. Sharaf, S. Amiri
03:30 PM	0:20	Canadian Space Agency Report	V. Hipkin
03:50 PM	0:20	Discussion	All
Biosignatures			
04:10 PM	0:15	Biosignatures Conference Report	L. Hays, D. Beaty
04:25 PM	0:15	Finding Signs of Past Rock-Hosted Life workshop Report	B. Ehlmann
04:40 PM	0:20	Discussion	All
05:00 PM	0:15	Day 1 recap & discussion	J. Johnson, All
05:15 PM		Adjourn	

Day 2

NASA Mars Mission Updates			
08:30 AM	0:20	MSL Results	A. Vasavada
08:50 AM	0:20	MAVEN Results	B. Jakosky
09:10 AM	0:15	MER Results	A. Fraeman
09:25 AM	0:15	MRO Results	L. Tamppari
09:40 AM	0:15	ODY Results	J. Plaut
09:55 AM	0:15	InSight	B. Banerdt (*call-in*)
10:10 AM	0:10	Break	
HEOMD & Commercial Space			
10:25 AM	0:15	HEOMD & Mars Missions: Status	B. Bussey
10:40 AM	0:15	Mars Human Landing Site Studies (HLS2): Follow-up	R. Davis, B. Bussey
10:50 AM	0:15	Affording Mars IV report	H. Thronson
11:05 AM	0:10	Discussion	All
11:15 AM	0:30	Mars Commercial Space Activities	S. Hubbard
11:45 PM	0:30	Discussion	All
12:15 PM	1:00	LUNCH	
Conference/Team Reports			
01:15 PM	0:15	3rd Conference on Instruments for Planetary Missions	S. Feldman
01:30 PM	0:15	Polar Science Conference Report	I. Smith
01:45 PM	0:15	Mapping and Planetary Spatial Infrastructure Team (MAPSIT)	A. Patthoff
Visions of the Future; Next Decadal Survey			
02:00 PM	0:20	Vision 2050 MEPAG contribution	J. Johnson, D. Beaty
02:20 PM	0:40	MEPAG future SAGs/activities	J. Johnson, D. Beaty, R. Zurek
03:00 PM	0:10	Future MEPAG Meetings: A Proposal	S. Diniega, J. Johnson
03:10 PM	0:20	MEPAG action Items; Wrap-up	J. Johnson
03:30 PM		Adjourn	

What is MEPAG?

MEPAG is responsible for providing science input needed to plan and prioritize Mars exploration activities. MEPAG serves as a community-based, interdisciplinary forum for inquiry and analysis in support of Mars exploration objectives. To carry out its role, the MEPAG updates goals, objectives, investigations and required measurements for robotic and human exploration of Mars in response to new discoveries and directions on the basis of the widest possible community outreach.

What is MEPAG?

Community: MEPAG meetings are open to all members of the planetary exploration community, particularly those scientists, engineers, project and program personnel, theoreticians and experimentalists, instrument scientists, and modelers who are interested in Mars exploration. International participation is welcomed and solicited as appropriate, including reports of activities by the various space agencies.

What is MEPAG?

Procedure: The MEPAG maintains the Goals Document and conducts analysis activities on topics of relevance to Mars-related exploration. Analysis tasks may be requested by NASA, including its Mars Exploration Program (MEP), its Science and Human Exploration & Operations Mission Directorates (SMD, HEOMD), and its advisory committees, such as the Planetary Science Subcommittee (PSS). Tasks may also be requested through NASA by committees of the National Academy of Sciences (NAS) Space Sciences Board. MEPAG may choose to organize Science Analysis Groups (SAGs) to deal with specific issues; these SAGs report their findings to the full community. Reports are formally approved by the MEPAG chair, after review by the MEPAG Executive Committee and typically after discussion in an open MEPAG forum. Findings are reported to the requestors and posted to the community on the MEPAG website, and status reports are routinely made to MEP and PSS. The MEPAG meets annually in an open meeting and as otherwise needed, including upon request by NASA. Between meetings, activities are handled by the MEPAG Chair, supported by the MEPAG Executive Committee.

What is MEPAG?

Organization:

- Chair: appointed by the MEPAG Executive Committee in consultation with NASA Headquarters.
- MEPAG Executive Committee consists of: MEPAG Chair (lead), the previous MEPAG Chair, the MEP Lead Scientist, the Mars Program Office Chief Scientist, the Goals Committee Chair, and up to 5 additional members of the MEPAG community.
- HEOMD Chief Scientist for Exploration is an ex officio member.
- Goals Committee nominally has two members for each of the four goal areas, in addition to its Chair.
- Membership of the Executive and Goals Committees are solicited from the MEPAG community and determined by the Chair and Executive Committee.
- Logistical and organizational support to the MEPAG, including its analysis groups, is provided through the Mars Program Office, located at the Jet Propulsion Laboratory.

Mars Exploration Program Analysis Group (MEPAG)

chartered by NASA HQ to assist in planning the scientific exploration of Mars

Executive Committee

Jeff Johnson, Chair, JHU-APL

Lisa Pratt, Past Chair, IU

Phil Christensen, ASU

Vicky Hamilton, Goals Committee Chair, SwRI

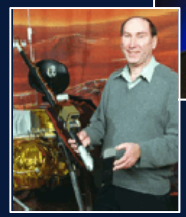
Scott Hubbard, Stanford

Gian Gabriele Ori, IRSPS

Dave Beaty, JPL

Michael Meyer, NASA HQ

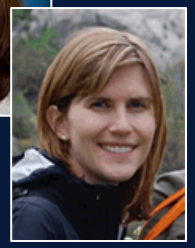
Ben Bussey, NASA HQ



Rich Zurek, JPL

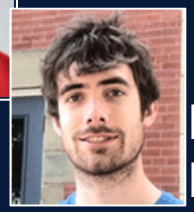
Goals Committee

Jen Eigenbrode
NASA GSFC, Goal 1



Sarah Stewart Johnson
Georgetown, Goal 1

Paul Withers,
Boston University, Goal 2



Robin Wordsworth
Harvard University, Goal 2

Steve Ruff, ASU, Goal 3

R. Aileen Yingst, PSI, Goal 3

Vicky Hamilton,
Goals Committee
Chair, SwRI

Ryan Whitley, NASA
JSC, Goal 4

Jacob Bleacher,
NASA GSFC, Goal 4

Goals Committee Incoming Chair

Vicky Hamilton
SwRI

Don Banfield
Cornell University

Thanks, Vicky!

Welcome, Don!

Mars Exploration Program Analysis Group (MEPAG)

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- Recent MEPAG Activities
  - Mars International Collaboration Science Analysis Group (MIC-SAG)
    - Chaired by Bruce Jakosky: chartered in mid-November in response to request from J. Watzin
    - See presentation at 1:00 PM today
    - https://mepag.nasa.gov/reports/MICSAG_slides_v14_FINAL.pdf
  - Affording Mars IV (Dec. 6-8, Pasadena, CA)
    - See presentation by Harley Thronson at 10:50 AM on Thursday
  - Planetary Instrumentation Meeting (IPM-3, Oct. 24-26, Pasadena, CA)
    - MEPAG presentation and participation on initial panel “Perspectives on the Future of Planetary Exploration” along with other Analysis Group (AG) Chairs
    - See presentation by Sabrina Feldman at 1:15 PM on Thursday
  - Planetary Science Vision 2050 Workshop (Feb 27-Mar 1, 2017, Wash., DC)
    - MEPAG abstract submitted; see my draft presentation at 2:00 PM on Thursday

Mars Exploration Program Analysis Group (MEPAG)

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Planetary Science Subcommittee meeting: Sept. 29-30, 2016

(findings related to Mars; will receive NASA responses at next PSS meeting this Spring)

Mars Sample Return

To maintain the momentum established by the Mars Exploration Program (MEP), the PSS stands ready to help and requests that it have regular briefings on future mission architectures for the next Mars orbiter and for progress towards Mars sample return. These briefings should include continuing and planned trade studies (including those involving domestic and international partnerships) that are relevant to enabling successful planning and execution of these missions in the 2020s.

Background: The PSS commends the MEP for continuing successful management and support of its active orbital and landed assets. The PSS is also pleased by the ongoing development of an integrated Mars 2020 mission architecture that would enable emplacement of cached samples on Mars for eventual return to Earth (as per Decadal Survey recommendations). However, the PSS is concerned that there are currently no definitive plans to provide continuity of operational capabilities at Mars in returning samples after the Mars 2020 mission.

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(findings related to Mars)

Special Regions on Mars

The Planetary Protection concept of "special regions" on Mars requires a comprehensive science discussion to ascertain the significance of this issue. This potentially has serious consequences for landing site selection, lander and rover operations, and sample return. The PSS recommends that a workshop of experts be co-organized, with the Planetary Protection Subcommittee, to better define naturally occurring special regions and also assess the potential of "induced special regions" through landers or rovers creating a local environment that would be heated and contain aqueous fluids that have sufficiently high water activity and that could persist long enough to plausibly harbor life, and whether this should prevent further exploration of that site or the return of samples from the vicinity. Such a workshop could also include Ocean Worlds in order that the planned Europa and other potential missions can be designed with due diligence to planetary protection.

Background: "Induced special regions" might potentially occur through a failed landing or orbit insertion attempt or end-of-life scenario leading to high-velocity impact or the interaction of heat from rovers with RTG power interacting with the surface to induce local melting and high humidity at or just below the surface of Mars, as well as on/within the rover structure. Such conditions could theoretically promote activity of microbes brought from Earth or indigenous to Mars. Understanding the plausibility of this process is critical for developing protocols that would ensure prevention of both forward and backward planetary contamination.

Planetary Science Subcommittee meeting: Sept. 29-30, 2016
(findings related to Mars)

Extended Missions

The PSS appreciates the report on NASA extended missions, prepared by the Committee on NASA Science Mission Extensions of the Space Studies Board of the National Academies of Science, and supports the general finding that extended missions are a good value for NASA. The PSS especially supports the report's recommendations on a flexible, three-year review cadence and on the need for additional time for the panel to review the proposals, conduct the review, and prepare a final panel summary of findings. For the latter, the recommended six to eight weeks between distribution of proposals and the review panel meeting is deemed appropriate and endorsed by the PSS.

→ http://sites.nationalacademies.org/SSB/CurrentProjects/SSB_169078

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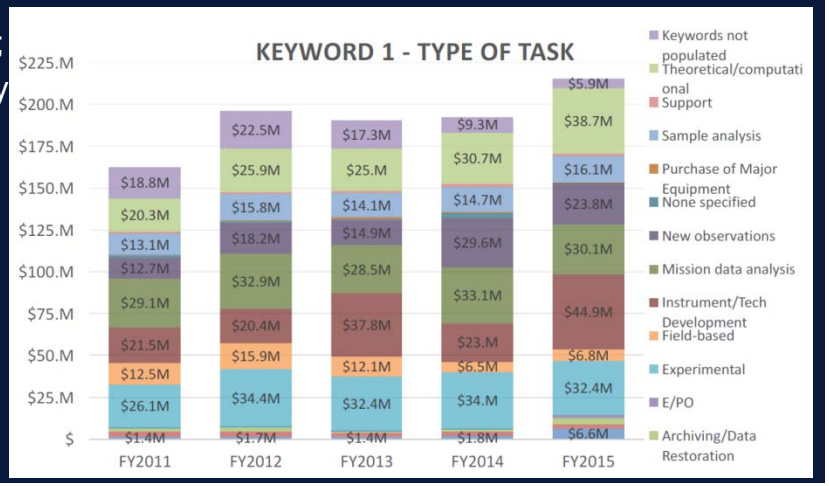
(findings related to Mars)

R&A Program Data

The PSS asks the Planetary Science Division to release on an annual basis, at the first meeting of the PSS after the completion of selections for a ROSES call, statistics on:

1) funding levels (total funds allocated, number of grants funded, and number of grants fully funded at their requested levels) by program, including both total funding and number of awards in each program;
2) overall selection rates across all ROSES programs;
3) selection rates by adjectival rating across all ROSES programs;
4) funding levels by keyword for both methodologies and planetary body studied;
5) timeliness of funding release by NSSC after last program officer action; and
6) all data should be provided to the subcommittee in advance of the meeting in both graphical and tabular form.

In each case, data for previous year(s), where available, should be made available to the committee for comparison.



J. Rall, https://smd-prod.s3.amazonaws.com/science-blue/s3fs-public/atoms/files/PSD-PSS_Sept_2016.pdf