



MEPAG Meeting #38

Day 1: Introduction



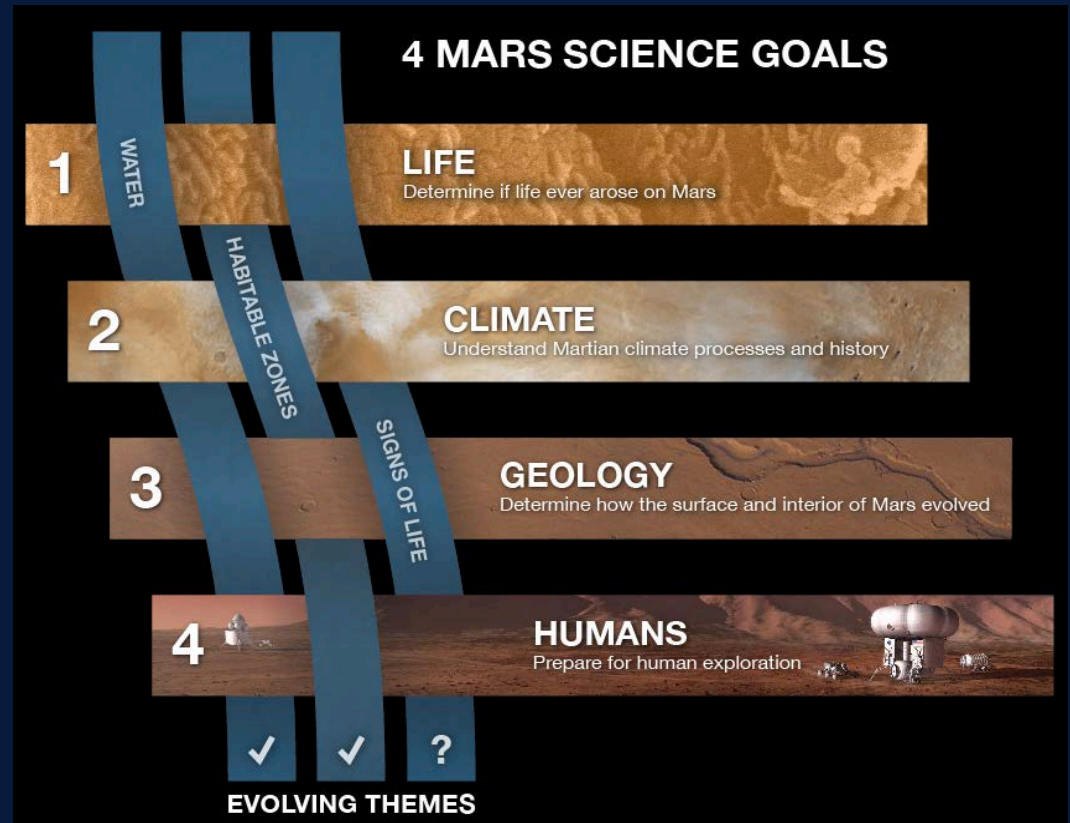
R. Aileen Yingst, MEPAG Chair

15-17 April 2020

Mars Exploration Program Analysis Group (MEPAG)

The Mars Exploration Program is an integrated program of research activities and robotic flight missions dedicated to:

- Understanding how Mars has evolved as a planet
- Discovering whether there is evidence of life, past or present
- Preparations for future exploration by humans on Mars itself



Can we determine if/when Mars was/is inhabited?



What is MEPAG?

<https://mepag.jpl.nasa.gov/about.cfm>

- The Mars Exploration Program Analysis Group (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 maintains the Goals Document, which lists the community-consensus goals, objectives, investigations and required measurements for robotic and human exploration of Mars. This document is updated regularly in response to new discoveries and directions on the basis of the widest possible community outreach.
- Membership in MEPAG is 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.



Steering Committee



R. Aileen Yingst, Chair, PSI



Jen Eigenbrode,
GSFC



Barbara Cohen,
GSFC



Jeff Johnson, Past
Chair, JHU-APL



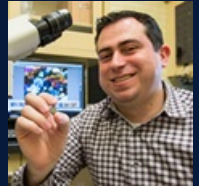
Dave Beaty,
MPO/JPL



Wendy Calvin, UNR



Michael Meyer,
NASA HQ



Justin Filiberto,
LPI



Don Banfield,
Goals
Committee
Chair, Cornell



Jacob Bleacher,
NASA HQ



Scott Hubbard,
Stanford



Rich Zurek,
MPO/JPL



Paul Niles JSC
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Goals Committee



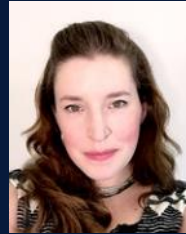
Jen Stern
NASA GSFC, Goal 1



Don Banfield, Goals Committee Chair,
Cornell



Sarah Stewart Johnson
Georgetown, Goal 1



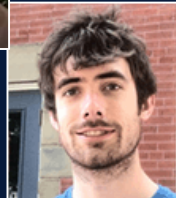
Briony Horgan,
Purdue, Goal 3



Becky Williams,
PSI, Goal 3



David Brain
Univ. Colorado, Boulder
Goal 2



Robin Wordsworth
Harvard University,
Goal 2



Michelle Rucker,
NASA JSC, Goal 4



Paul Niles, JSC

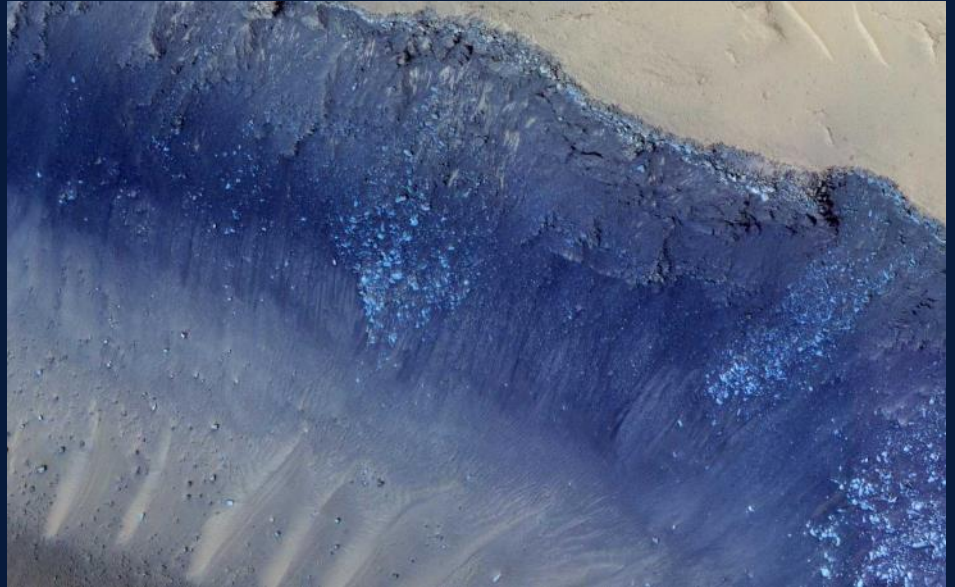


Jacob Bleacher,
NASA GSFC, Goal 4



MEPAG 38 Meeting Outline

- 1) Recent MEPAG activities
- 2) Goals of this Meeting
- 3) Day 1 Agenda
- 4) Meeting Ground Rules & Etiquette
- 5) Plans for this MEPAG meeting
 - 1) Day 1: HQ Overviews & MSR Plans
 - 2) Day 2: Decadal Survey activities
 - 3) Day 3: Missions Status & Update Findings



Landslides in Mars' Cerberus Fossae: The two largest quakes detected by NASA's InSight appear to have originated in a region of Mars called Cerberus Fossae. Credits: NASA/JPL-Caltech/Univ. of Arizona.



Recent MEPAG activities

- MEPAG meetings (<https://mepag.jpl.nasa.gov/meetings.cfm>)
 - **MEPAG #37 Face-to-Face Meeting (July 26, 2019; Pasadena, CA; post-9th Mars): ~200 attendees, 50+ log-ons**
 - Decadal Survey preparations, Goals document update preparations, Mars mission reports, HEO/Commercial space, Mars program architecture discussion. Findings finalized Sept. 5, 2019, <https://mepag.jpl.nasa.gov/meetings.cfm>
 - **MEPAG VM #7 (Nov., 2019): ~104 attendees**
 - Discussion of Decadal Survey white paper topics; plans for next MEPAG face-to-face meeting, overarching questions as architecture for DS
 - Findings posted at <https://mepag.jpl.nasa.gov/meetings.cfm>
 - **MEPAG VM #8 (Feb., 2020): ~65 attendees**
 - Goals revisions, discussion of Decadal Survey timeline and Administration budget proposal.
 - Findings will be posted at <https://mepag.jpl.nasa.gov/meetings.cfm>

Recent MEPAG activities

➤ Other MEPAG activities

○ Goals Document release (March, 2020)

- The Goals document has gone through regular revisions driven by new discoveries and new technologies. This last revision has taken six months and gone through several opportunities for community input. Final document posted at <https://mepag.jpl.nasa.gov/reports.cfm?expand=science>

○ White Papers

- Provided googledocs form for authors to inform others about white paper topics of interest. Facilitates co-authors, co-signatories, and/or combining of similar efforts among multiple authors under a single entry; similar to effort in support of Planetary Mission Concept Studies; also points to LPI site.
- MEPAG Steering Committee plans to **author** white papers covering the MEPAG Goals update, and papers that address findings of the community (e.g., consensus on whether there should be a list of candidate missions for New Frontiers)
- Committee plans to sponsor or endorse white papers on crucial topics (Mars as a Compelling Target; Looking for Life Strategy for Mars; Mars Sample Return; Emerging Capabilities; SAG summaries). These will also allow the community to reference them in their own white papers.

○ Presented to PAC (March, 2020)

- Discussed Goals document, the FY21 budget released by the Administration, most recent MEPAG Findings. Findings are posted at <https://science.nasa.gov/researchers/nac/science-advisory-committees/pac>.

PAC summary

- The FY21 Administration budget appears to support long-awaited next steps towards returning Mars samples to Earth. The recognition that an increased R&A budget is needed to fully exploit data already returned and yet to come is greatly appreciated.
- However, the FY21-22 budgets currently do not fully reflect community prioritization (extended missions are zeroed out while a study of a mission not openly discussed with the community is funded).
- Progress is being made toward defining architecture for Mars beyond MSR
 - The Mars Architecture Study Working Group is working now on a vision for post-2020 Mars architecture
- An aging infrastructure and reduced funding for extended mission science are both ongoing concerns for the community.
- The future of Mars exploration includes identifying opportunities for competed non-MSR flight investigations (especially small spacecraft, commercial and international partnerships)
- *MEPAG is ready to respond to calls for assistance with planning and analysis.*

- Goals of this meeting

- Generate Findings and/or Recommendations
 - Create Findings on key topics.
- Support Decadal Survey (DS) preparations
 - Provide a forum for white paper topics (Thursday, April 16)
 - Support community discussion, collaboration, strategizing
- Define future MEPAG activities



Self-portrait of InSight spacecraft.



Agenda Day 1

8:30 AM Start		MEPAG #38 Setting the Stage	11:30 AM Start	
08:30 AM	0:20	Welcome: Meeting Preview, MEPAG Updates	R.A. Yingst, MEPAG Chair	11:30 AM
08:50 AM	0:30	NASA Planetary Science Division (PSD) Report	L. Glaze	11:50 AM
09:20 AM	0:25	MEP Overview	J. Watzin / M. Meyer	12:20 PM
09:45 AM	0:10	Discussion	All	12:45 PM
09:55 AM	0:10	Break		12:55 PM
Mars Exploration Program: Going Forward				
10:05 AM	0:30	MSR Campaign: Introduction	J. Watzin	01:05 PM
10:35 AM	0:45	MSR Campaign: Retrieving the Samples	A. Nicholas	01:35 PM
11:20 AM	0:25	Sample Protection: Breaking the Chain	M. Hendry	02:20 PM
11:45 AM	0:15	Expectations for Backward PP	L. Pratt	02:45 PM
12:00 PM	0:20	Conducting Science on the Returned Samples	M. Meyer	03:00 PM
12:20 PM	0:20	Ice Mapper	J. Watzin / T. Haltigin	03:20 PM
12:40 PM	0:10	Q&A	All	03:40 PM
12:50 PM	0:10	MEPAG Related Findings	R. A. Yingst	03:50 PM
01:00 PM		End of Day 1 Virtual Meeting		04:00 PM

Meeting Ground Rules

- Speakers will be kept on time according to the agenda
- Questions/comments?
 - *Use chat box on Adobe Connect either during or after talks; moderators will track questions*
 - Feedback/questions after meeting? → MEPAGmeetingQs@jpl.nasa.gov
 - Should we experience a severe disruption during the meeting, attendees should check the MEPAG website for an update.
- Presentations and Meeting summary notes (once cleared and waived) will be made available on MEPAG website ~April 30
 - We will develop a draft of Findings during the course of the meeting. These will be briefed to the Mars Exploration Program and, through the Planetary Science Advisory Committee (PAC), to the NASA Advisory Council (NAC)
 - Please do not take pictures of slides

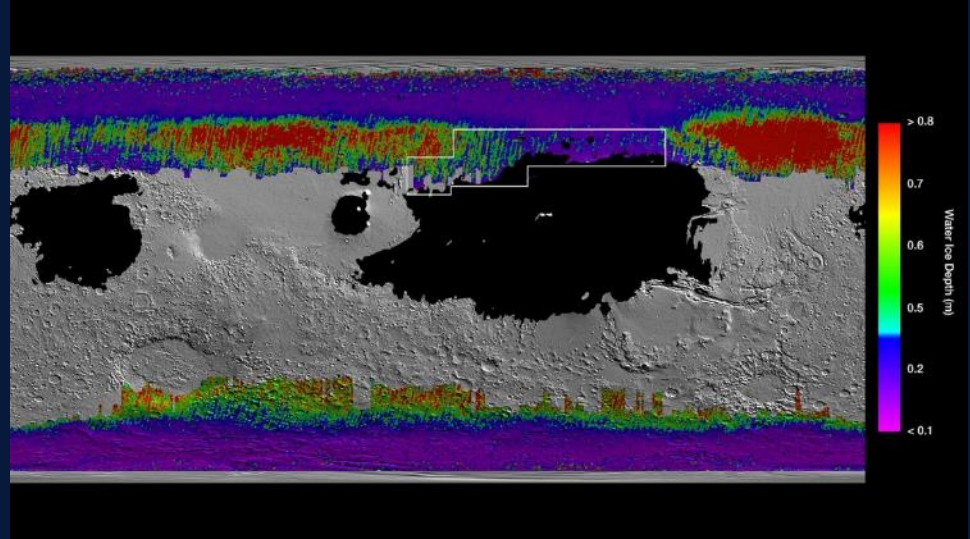
Meeting Etiquette

- Please adhere to our profession's code of conduct. All participants are expected to behave according to professional standards and in accordance with their employer's policies on appropriate workplace behavior.
- We ask that you:
 - Avoid using flashing GIFs
 - Mute your microphone when you are not speaking
 - Respect the speakers and your fellow attendees and their needs

If you need to report an issue, please send a private chat to the meeting hosts.

MEPAG Key Issues for this meeting

- Update Findings
- Support Decadal Survey activities
 - Provide a forum for white paper topics (presentation, discussion, collaboration, strategizing)



Subsurface water ice on Mars as revealed by Odyssey. Cool colors are closer to the surface than warm colors; black zones indicate areas where a spacecraft would sink into fine dust; the outlined box represents the ideal region for landing and resource extraction. Image credit: NASA/JPL-Caltech/ASU

Summary of MEPAG 37 Findings

- Progress on Mars Sample Return (MSR) is encouraging...
- ...as is progress (through MASWG) on defining a structure for crucial Mars science in parallel with and post-MSR.
- MEPAG continues to see possibilities in small spacecraft missions, secondary payloads, and partnerships with international or commercial sector entities.
- To support both orbital and landed science, MEPAG recommends a systematic approach to relay satellites.
- MEPAG celebrates the many new international Mars missions!

On Day 3 we will revisit these based on presentations at this meeting.