

MEPAG Report to Planetary Science Advisory Committee

R Aileen Yingst, Chair

2 March 2021



Perseverance Navcams 360-Degree Panorama: This panorama, taken on Feb. 20, 2021, by the Navigation Cameras, or Navcams, aboard NASA's Perseverance Mars rover, was stitched together from six individual images after they were sent back to Earth. Credit: NASA/JPL-Caltech



MEPAG Programmatics

– Steering Committee (Chair: R. Aileen Yingst (PSI), appointed June 2019)

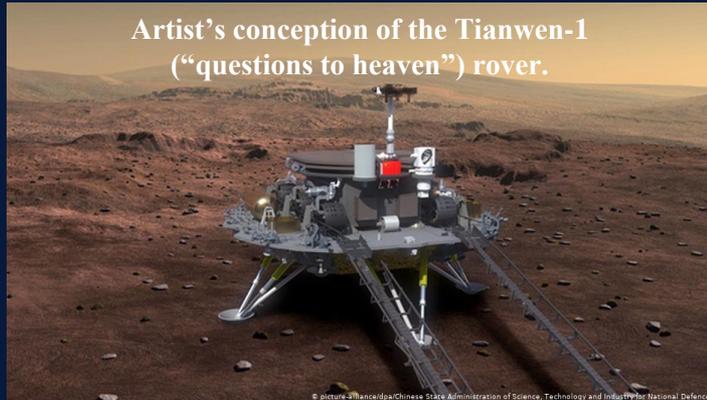
- W. Calvin (Univ. Nevada Reno)
- **J. Eigenbrode (GSFC; rotating off)**
- D. Banfield (Cornell)
- J. Filiberto (LPI; DEIA representative)
- S. Hubbard (Stanford University)
- **S.S. Johnson (Georgetown University)** ← **New member**
- **K. Lynch (LPI; DEIA representative)** ← **New member**
- J. Johnson (past Chair, JHU/APL)
- M. Meyer (NASA HQ)
- D. Beaty, R. Zurek (JPL)
- J. Bleacher/P. Niles (HEOMD, NASA HQ) Ex Officio members

– Goals Committee (D. Banfield, Chair)

- **Goal I <Life>** (J. Stern, GSFC; A. Davila, ARC)
- **Goal II <Climate>** (**R. Wordsworth, Harvard University (rotating off)**), D. Brain (Univ. Colorado)
- **Goal III <Geology>** (B. Horgan, Purdue, Becky Williams, PSI)
- **Goal IV <Human Exploration>** (J. Bleacher, NASA HQ HEOMD; M. Rucker, P. Niles JSC)

Three successful arrivals to Mars!

- UAE Hope mission (Feb. 9 MOI)
- China Tianwen-1 (Feb. 10 MOI)
- NASA Mars 2020 Perseverance (Feb. 18 EDL)



The UAE finished construction on its Hope spacecraft, bound for Mars, earlier this year. Image: © Government of Dubai Media Office.



ExoMARS Rover/Surface Platform: Launch still planned (Fall 2022)



Recent MEPAG Activities

- MSR IRB report released Nov. 10, 2020
 - IRB had 44 Findings with 44 Recommendations. The primary recommendation of the IRB is that *the MSR program proceed*.
- Mars Architecture Strategy Working Group (MASWG) submitted to NASA AA; overview presented to the Mars Panel (Nov. 17)
- **MEPAG Virtual Meeting #11 (27 January 2021)**
 - Topics: MEP/MSR reorganization, Decadal Survey Mars Panel, HEO and H2M Conference
 - Highlights:
 - Eric Ianson is MEP Director in addition to his other duties; George Tahu is Acting Deputy Director; Michael Meyer is Lead Scientist for MEP and MSR. The next MSR flight elements have been moved out of the MEP, with Jeff Gramling as Director, reporting to the Associate Administrator. M2020 and the future Mars Sample Handling Facility remain in MEP.
 - Regular meetings and communications between MEP/MSR are planned to keep all on the same page
 - Decadal Survey moving forward; several community presentations at Mars Panel open sessions



Recent MEPAG Activities

➤ MEPAG Virtual Meeting #11 (2)

- Mars Ice Mapper (MIM) international partners (CSA, JAXA, NASA, ASI) have signed a Statement of Intent (SOI); MOU in work
 - NASA Agency-directed SMD mission in support of Moon to Mars/Humans to Mars strategy
 - May include communication satellite network
 - MEPAG looking forward to hearing more at a future virtual meeting, including release of white paper detailing measurement approach and possible formation of a Mission Design Team (MEPAG finding)
 - MDT could assess ability to meet resource measurement goals and any opportunities for additional measurements to enhance mission science (e.g., ICE-SAG)
- MIM is a possible example of future dual-purpose science/precursor missions preparing for eventual human missions
 - Agency seeking to outline compelling science goals for human explorers on Mars
 - One example being looked at by a study group is extracting, analyzing and possibly returning ice cores from Mars
 - MEPAG has fielded SAGs on similar topics in the past and looks forward to helping these discussions as appropriate.

Recent MEPAG Activities

➤ MEPAG Virtual Meeting #11 (3)

- Significant community discussion regarding potential change in MRO orbit
 - Desire from Mars 2020 to move orbit to a later local time to increase the daily operational period for M2020's surface activities. Such a move would have a significant impact on MRO's primary science.
 - MEPAG originally heard of this potential move in 2019, but the idea was tabled until landing, as M2020 was asked to put together a more detailed rationale.
 - The discussion and decision on whether to direct MRO to a later orbit time will be made in the near future (tentative: March 19; there may be meetings with PSD/SMD after that). MEPAG will not have a meeting prior to this.
 - MEPAG did not hear from M2020 (nor from MRO in detail), and thus the community was not in a position to consider the appropriateness of the trade. However, MEPAG is on the record as noting that while MSR is the highest science priority, it is not the only one; we continue to uphold in our Findings the high value of extended missions to Mars exploration and its community of researchers. Ongoing science missions still have value that should be respected within the context of overall program needs and desires.

Mars Exploration Program Analysis Group (MEPAG)



MEPAG VM11 Findings

Mars Sample Return

- MEPAG commends the great effort between the Mars Exploration Program (MEP) and the Mars Sample Return (MSR) program to communicate smoothly and effectively. MEPAG will continue to assess how well the organization, balancing of duties, and lines of communication are working, as the challenges of coordinating a complex, international program arise.
- MEPAG is excited to see the significant progress on the highly complex MSR program. Although concerns of the Independent Review Board (IRB) regarding the schedule and funding profile are valid, the community is encouraged to see MSR move forward.

Mars Exploration Program

- MEPAG encourages NASA to address the important MASWG report requested by the mid-term Decadal review. MEPAG believes that it defines the non-MSR aspects of the MEP and as a standalone report, it should be assessed on its own rather than waiting for the Decadal Survey report. MEPAG is ready to stand up committees that would investigate further the recommendations of this report.
- MEPAG is encouraged by the news that the FY21 budget is sufficient to cover Mars priorities, and is appreciative of headquarters hearing the community's recommendations to focus funding back into extended missions (as per the NASEM report). MEPAG looks forward to seeing the details of the approved operating plan.

NASA Humans to Mars

- MEPAG is excited about the first stages of discussions regarding humans to Mars but is concerned regarding the lack of input the Mars community has had in the initial formation of science objectives for human exploration of Mars. Science community input into HEOMD architectures at the earliest stages will be crucial for coordination and better understanding of knowledge needed for a successful human mission to Mars. MEPAG intends to continue to publicize and support efforts that seek to broaden community input and open discussion, especially early in the process before any major architectural decisions are made.



Backup slides

Mars Exploration Program Analysis Group (MEPAG)



R. Aileen Yingst
PSI
MEPAG Chair



Jeff Johnson,
JHU/APL
Past Chair



Wendy Calvin
UNR



Scott
Hubbard
Stanford U.



Sarah Stewart
Johnson
Georgetown



Don Banfield
Goals
Committee
Cornell U. Chair



Jen Eigenbrode
GSFC



Justin Filiberto
LPI
DEIA Rep



Kennda Lynch
LPI
DEIA Rep

Michael Meyer
NASA HQ



Rich Zurek
MPO/JPL



**NEW
MEMBER!**



Dave Beaty
MSR/JPL

Steering Committee

Jake Bleacher
NASA HQ



Paul Niles
JSC





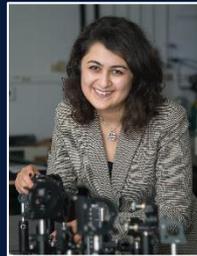
Mars Program Office associates (Jet Propulsion Laboratory)



Brandi Carrier



Barbara Saltzberg



Sona Hosseini