

**PREPARING FOR THE NEXT PLANETARY SCIENCE DECADAL SURVEY: MARS EXPLORATION PROGRAM ANALYSIS GROUP (MEPAG).** MEPAG Executive Committee<sup>1</sup>, <sup>1</sup><https://mepag.jpl.nasa.gov/about.cfm>; MEPAG Chair: Jeffrey R. Johnson, Johns Hopkins University Applied Physics Laboratory; General contact: [MEPAGmeetingqs@jpl.nasa.gov](mailto:MEPAGmeetingqs@jpl.nasa.gov).

**Introduction:** The planetary science community is currently looking towards development of the next Decadal Survey, which will identify the top planetary science objectives for 2023-2032. In preparation for the last Decadal Survey [1], the community was asked for white papers detailing specific areas of scientific, programmatic, or strategic interest. Additionally, a limited number of mission concepts were studied in greater detail, with some including an independent cost analysis. These inputs were considered by the Decadal Survey committee when compiling their scientific objectives and mission priorities. From a MEPAG perspective, the return of samples to be prepared by NASA's Mars 2020 rover continues to be a priority. However, there is also a strong pool of concepts for (1) competed missions (including possible New Frontiers candidates), (2) small satellite missions enabled by strategic mission launch capabilities, and/or (3) follow-on flagship capabilities that build on the extraordinary discoveries of past and ongoing missions, as well as new technological developments. Therefore, in anticipation of what may be requested in 2020 (the expected kickoff of the next Decadal Survey Committee), MEPAG seeks to enable opportunities for identifying concepts in all mission classes that could make significant progress on compelling Mars science questions during 2023-2032, and supporting key scientific mission concepts with enough detail to enable their serious consideration by the next Planetary Decadal Survey.

**MEPAG Plans:** The first event related to this aim will be a forum during the upcoming face-to-face MEPAG meeting (April 3-5, 2018) [2], where we aim to help the community discuss and identify mission objectives and concepts that address high-priority Mars science questions, with an emphasis on the science that can be achieved over the next two decades. The ideas identified within this community "brainstorming session" would help identify and prioritize potential MEPAG or Mars Program Office (MPO) workshops, studies, or other steps (e.g., topical white papers) towards generating the depth and breadth of information needed for consideration by the next Decadal Survey committee.

**MEPAG Background and Terms of Reference:** 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. The MEPAG Executive Committee is led by the MEPAG Chair (J.R. Johnson, Johns Hopkins University Applied Physics Laboratory), and consists of the previous MEPAG Chair (L. Pratt, Indiana Univ.), the NASA MEP Lead Scientist (M. Meyer), the MPO Chief Scientist (R. Zurek, JPL), the MEPAG Goals Committee Chair (D. Banfield, Cornell Univ.), the NASA HEOMD Chief Scientist (B. Bussell), and up to 5 additional members of the MEPAG community [3]. (The MEPAG Executive Committee is in the process of adding a few At-Large members.)

To carry out its role, 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. This information is recorded within the MEPAG Goals Document [4], which is compiled and periodically updated by the MEPAG Goals Committee that consists of representatives [3] covering the four overarching goals for the exploration of Mars and its moons:

- I. *Determine if Mars ever supported Life*
- II. *Understand the processes and history of Climate on Mars*
- III. *Understand the origin and evolution of Mars as a Geological System*
- IV. *Prepare for Human Exploration*

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. 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. A listing of past SAGs (including

their membership and final reports) can be found on the MEPAG website [5]. Depending on the SAG topic and timescale, a call for volunteers for upcoming SAGs may be issued at a MEPAG meeting or via the MEPAG email list (see below).

**How you can be involved:** There are many upcoming opportunities for keeping abreast of MEPAG activities and contributing to community discussions.

- A meet-and-greet with MEPAG leadership will be held at this LPSC. This is an opportunity to speak with MEPAG Executive and Goals Committee members, as well as Mars Program Office staff. Information about the general MEPAG structure and plans information will also be available. This informal event is not meant to serve as a MEPAG meeting or town hall, but instead is an opportunity to directly ask questions about the Mars Exploration Program and communicate concerns.
- The next MEPAG meeting will be held April 3-5, 2018, in the Washington DC area [2]. 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. Remote attendance at these meetings is also possible (and some MEPAG meetings are purely virtual) – the meeting is webcast and comments/questions can be submitted electronically.
- Virtual MEPAG meetings are provided via 2- to 4-hour telecons up to 3 times per year. These serve as focused opportunities for presentation and discussion on specific topics. Limited presentations are given, with time allotted for questions to be raised and addressed concerning the topics presented.
- Sign up for the MEPAG email list by sending an email to: [mepag-signup@jpl.nasa.gov](mailto:mepag-signup@jpl.nasa.gov). A monthly Mars Science newsletter is sent to this list (as well as posted to the MEPAG website [6]), along with announcements about MEPAG activities.
- Community comments are always welcome – they can be sent directly to a member of the MEPAG Committees, or can be sent to the Mars Program Office at [MEPAGmeetingOs@jpl.nasa.gov](mailto:MEPAGmeetingOs@jpl.nasa.gov).

<https://mepag.jpl.nasa.gov/meetings.cfm>. [3] MEPAG “About Us” webpage: <https://mepag.jpl.nasa.gov/about.cfm>. [4] MEPAG (2015) *Mars Scientific Goals, Objectives, Investigations, and Priorities: 2015*, 74 p., <http://mepag.nasa.gov/reports.cfm>. [5] Past MEPAG studies: <https://mepag.jpl.nasa.gov/reports.cfm?expand=topical>. [6] Mars Science Newsletter: <https://mepag.jpl.nasa.gov/newsletters.cfm>.

**References:** [1] 2013-2022 Decadal Survey. [2] MEPAG Meeting webpage: