



# NASA ASTROBIOLOGY INSTITUTE ANNUAL REPORT YEAR [July 2002 - June 2003]



## Focus Groups: Mars

<b>Focus Group:</b>	<i>Mars</i>
<b>Project Title:</b>	<i>Mars Focus Group</i>
<b>Chair:</b>	<i>Jack Farmer</i> [ <a href="#">view project member list</a> ]

## Project Progress

### Background:

The Mars Focus Group (MFG) was established to provide a forum within the NAI to identify important scientific goals, objectives and investigations for the astrobiological exploration of Mars and to help define mission priorities, measurement requirements and new technology developments needed to support Mars Astrobiology. Since its inception three+ years ago, membership of the NAI Mars Focus Group has grown to >100 participants, with representatives from a broad array of scientific disciplines within Astrobiology. To enrich our discussions, scientists outside of the NAI have also been encouraged to attend our meetings to help the group identify crucial programmatic recommendations for the astrobiological exploration of Mars. The Mars Focus Group has been helping meet a critical need within NASA and the broader Mars science community by providing regular scientific input and recommendations to Mars program planners to ensure proper implementation of astrobiologically-relevant Mars missions. Results of previous site reviews and discussion summaries have been archived on an NAI Mars Focus Group node of Arizona State University's Astrobiology Program website (<http://astrobiology.asu.edu>). The NAI Mars Focus Group has also supported site selection related web archiving activities by the Center for Mars Exploration (CMEX), based at NASA Ames. NAI MFG annual activity reports for previous years are on file at NAI Central, NASA Ames.

### Past Activities:

In 2001 the Mars Focus Group responded to the programmatic crisis that ensued with losses of the Mars Climate Orbiter and Mars Polar Lander missions by preparing a white paper recommendation that defined program priorities for Astrobiology for the present decade of Mars exploration. This white paper was presented to a NASA Mars Architecture Team headed by Charles Elachi (now Director of JPL) and subsequently published and distributed to a broad spectrum of the Mars planning community.

In 2002, Mars Focus Group activities focused primarily on identifying high priority astrobiological targets on Mars for orbital remote sensing observations

by MGS and Odyssey and for in situ exploration by landed missions (e.g. MER). Reviews of key landing sites were conducted by videoconference, with follow-up discussions to define landing site options and recommendations for the 2003 Mars Exploration Rover (MER) mission. To ensure that astrobiologically-significant sites were considered during the landing site selection process for MER, specific site recommendations were presented by NAI Mars Focus Group members at a series of four community-lead workshops and also conveyed to NASA's MER Landing Site Selection Steering Committee. Two of the Focus Group's top candidate sites, Meridiani Planum (the so-called "hematite site") and Gusev Crater were ultimately selected as the primary landing site choices for the twin MER rovers. (These rovers will land on Mars early in 2004 and operate for 90 days).

During the Summer and Fall of 2002, the NAI Mars Focus Group participated in joint videoconference presentations and discussions with the Mars Exploration Payload Assessment Group (MEPAG), the primary community-based forum for providing scientific recommendations NASA for planning future Mars missions. Discussions focused on a variety of topics, including a programmatic overview, the 2009 Mars Smart Lander mission and payload, the role of Mars sample return(s), and planning for post-'09 Mars Program science investigations (i.e., "science investigation pathways"). Recommendations from these joint discussions were presented in draft form to the MEPAG in September 2002 with many of those recommendations carried forward into subsequent planning activities for the Mars Science Laboratory (2009) lander mission and investigation options for the decade of Mars exploration that will follow 2009.

In February of 2003, the Mars Focus Group met briefly during the NAI General meeting to review recent progress with the MER mission and to begin to outline potential future directions for the group. The initial three year charter for the group ended in December. However, given the programmatic importance to the NAI and the past effectiveness of the MFG in representing the broader Astrobiology community, the NAI recently renewed the group's charter indefinitely, making it a standing committee. The goal is provide continuity of important mission-related activities with rotating leadership.

The MFG will continue to look to the membership for recommendations about future directions/opportunities for the group to follow in the next few years. However, a few priorities have emerged the past year which include: 1) seeking ways to encourage MFG member participation in the MEPAG (Mars Exploration Payload Assessment Group), the principal community-based group for providing science input to NASA's Mars Program and 2) expand NAI member participation in Mars mission planning activities, including instrument development for future Astrobiology missions (especially in the area of extant life detection), 3) encourage involvement of NAI scientists as participating science team members in upcoming Mars missions.

In years past, several NAI astrobiologists were active members of MEPAG. But the fact is, Astrobiology has historically been under-represented in MEPAG meetings. And given the prominence of life-oriented themes in NASA's mission and vision statements, it is also worth noting that participation

of astrobiologists on other NASA Mars Program advisory groups (e.g. SSES, SScAC, etc.) has also been quite limited. To facilitate participation by Mars Focus Group members in future NASA mission strategic planning activities, the NAI should consider: 1) providing travel funding to ensure attendance at future MEPAG meetings and 2) seeking to expand participation of astrobiologists on standing NASA committees. With regard to meeting crucial needs in the area of astrobiology instrumentation, the NAI MFG will work cooperatively with a new Astrobiology Instrumentation Focus Group to increase the involvement of biologists in technology development programs and to promote Astrobiology instrumentation developments for the next decade of Mars exploration. The Mars Focus Group will also work to encourage basic research activities in critical areas of Mars astrobiology that can directly contribute to future missions.

### Focus Group Description & Activities

#### Highlights

- Landing sites selected for the twin MER rovers hold great interest for Astrobiology.

#### Roadmap Objectives

- **Objective No. 2.1: Mars exploration**