

LUNAR EXPLORATION IN THE CONTEXT OF THE DECADAL SOLAR SYSTEM EXPLORATION SURVEY. C. M. Pieters¹, M. Bullock², R. Greeley³, B. Jolliff⁴, A. Sprague⁵, and E. Stofan⁶, ¹Dept. Geological Sciences, Brown Univ. Providence, RI 02912, ²SWRI, Boulder, CO, ³Arizona State Univ., Tempe, AZ., ⁴Washington Univ., St. Louis, MO, ⁵Univ. Arizona, Tucson, AZ, ⁶Proxemy Res., VA, (pieters@mare.geo.brown.edu).



Introduction: Over the last year a broad and detailed assessment of the current status of science activities as well as research strategies for solar system exploration (SSE) was undertaken by a sub-committee of the NAS/NRC Space Studies Board. This study was requested by NASA to identify science priorities for the next decade of exploration. The report has been completed and is in the review process. This Decadal SSE Survey report is specifically given to Dr. Ed Weiler, Associate Administrator for Space Science. It will be publicly released during the summer 2002 in time to feed into NASA's strategic planning

The study consisted of individual panels charged with making recommendations for particular aspects of solar system exploration and a Steering Committee, chaired by Mike Belton, who prepared an overview of compelling solar system science and identified cross-cutting issues. The panels prepared detailed reports that were submitted to the Steering Committee. The Steering Committee, which also contained a representative from each of the panels, prioritized the diverse panel recommendations into an integrated strategy, including prioritized recommendations.

Inner Planets Panel. The Inner Planets Panel, consisting of the above authors, had responsibility for assessing the current state of knowledge about the inner planets and identifying the highest-level of scientific questions that can be realistically addressed over the next decade. In this context, we were also charged with providing the most promising avenues for flight investigations. A key aspect of this endeavor was diverse input from the community throughout the study.

Although the Inner Planets Panel explored science issues pertaining to the diversity of planetary bodies inside the orbit of Jupiter, specific exploration recommendations were limited to those for Mercury, Venus, and the Moon (Mars and asteroids were treated by separate panels). The request from Ed Weiler to the NAS/NRC asked that mission recommendations only be prioritized for missions that are too large to be undertaken within the Discovery program. For objectives

that could likely be met within Discovery, the Survey was asked to just list priority science goals. Although no hard guidelines exist for the number of missions likely to fly over the next decade, it is prudent to recognize the current political and economic climate.

Thus, for the Inner Planets Panel, our tasks were: 1) Interact with the scientific and engineering community to obtain as much information as possible about what has been achieved, what is desired, and what is possible for the next decade. 2) Document and describe fundamental and exciting science issues associated with the inner solar system. These provide the foundation for both intermediate-class as well as Discovery missions. 3) Identify realistic intermediate-class missions to address science issues that are compelling both for understanding the Inner Planets but also the solar system as a whole. It is clear only a handful of such missions drawn from all panels will be seriously considered over the next decade. 4) Provide ample documentation that can be successfully used to support a series of quality Discovery-class missions. After extensive discussion, our panel was able to reach consensus on all major recommendations.

Outreach Activities. The science community was constantly probed for input throughout the period of SSE Survey deliberations. Although some of you may have tired of the repeated inquiries, the Inner Planets Panel was *most* appreciative of the extensive input received and we thank you heartily. Briefly, several means of gathering information proved to be highly productive: a) 3-hour community forums (in WDC, Chicago) with both formal and informal presentations, b) A large number of thoughtful "white papers" prepared by individuals or groups and submitted directly to the panel, c) A few more formal well integrated "Community" panel documents organized through the DPS, d) Solicited overview science presentations by leaders in the field (geophysics, atmospheres, sample analysis, particle and fields, geology, evolution), e) Solicited presentations on aspects of technology relevant to inner solar system exploration missions. We realize preparation of material for this activity takes considerable effort and each component was exceedingly important.

Recommendations. The specific recommendations of the Decadal Solar System Survey remain sequestered until the report is publicly released. By the time of The Moon Beyond 2002 meeting in Taos, NM the report should be widely available. To access the report

go to the following website and click on What's New.
<http://www.nationalacademies.org/ssb/ssefrontpage.html>

It is anticipated we will have a lively discussion in Taos about the contents of the report. In order to make lunar-specific recommendations a reality, it is important that the Lunar Science community focus enthusiasm and support.