

#### A.4.6 2001 Mars Odyssey Participating Scientist

##### 1. Introduction

NASA's Office of Space Science (OSS) issues this Addendum to the NASA Research Announcement (NRA 2001-OSS-01) to solicit proposals for Participating Scientist (PS) investigations on the 2001 Mars Odyssey mission. The overarching goals of the Mars Exploration Program are to understand the potential for life elsewhere in the universe, to understand the relationship to Earth's climate change processes, to understand the solid planet and how it evolved, and to develop knowledge and technology necessary for eventual human exploration, with the common thread of these objectives being the role of water. The scientific objectives of 2001 Mars Odyssey orbiter are to map the elemental and mineralogical composition of the surface and to measure the radiation environment. Principal Investigators (PI's) of selected proposals for this opportunity will become PS's and join the appropriate Science Investigation depending on the nature of their proposals. PS investigations are being sought for participation on the Thermal Emission Imaging System (THEMIS), Mars Radiation Environment Experiment (MARIE), and the Gamma Ray Spectrometer (GRS), which includes the High-Energy Neutron Detector (HEND).

Participating Scientist proposals include investigations that are instrument specific or interdisciplinary in nature and must include both science analysis and an operational component in order to be considered. The selected PS's will coordinate their activities and analyses with the present PI's and Co-Investigators (Co-I) on Odyssey. PS's selected under this NRA will have full rights of access to mission data and be expected to participate in data analysis, archiving, and publication as do Co-I's on the particular investigation to which the PS's are attached. Each selected PS will participate in mission operations. There is no distinction between PS's that propose to use the data from one instrument compared with those that propose to use data from a variety of instruments. However, each PS will be assigned to an instrument investigation even in cases of interdisciplinary investigations.

Background information about the 2001 Mars Odyssey is available at the World Wide Web site: <http://mars.jpl.nasa.gov/odyssey/>. This mission carries three scientific instruments that are described in greater detail in the Mars Odyssey Proposal Information Package (PIP) at URL <http://mars.jpl.nasa.gov/odyssey/pip/> as follows.

Thermal Emission Imaging System (THEMIS), PI - Dr. Phillip Christensen, Arizona State University, determines the mineralogy of the Martian surface using multispectral, thermal infrared images that have 9 spectral bands in 10 channels between 6.6 and 15.0 micrometers. It will also acquire visible-light images with 18 meters per pixel resolution in either monochrome or color.

Gamma Ray Spectrometer (GRS), PI - Dr. William Boynton, University of Arizona, performs full planet mapping of elemental abundance with an accuracy of 10% or better and a spatial resolution of ~ 300 km, by remote gamma ray spectroscopy, and full planet

mapping of the hydrogen (with depth of water inferred) and CO<sub>2</sub> abundance by remote neutron spectroscopy.

Mars Radiation Environment Experiment (MARIE), PI – Dr. Gautam Badhwar, NASA Johnson Space Center, measures the accumulated absorbed dose and dose rate tissue as a function of time, determines the radiation quality factor, determines the energy deposition spectrum from 0.1 keV/μm to 1500 keV/μm, and separates the contribution of protons, neutrons, and HZE particles to these quantities.

## 2. Scope of Participating Scientist

The role of a Mars Odyssey Participating Scientist as solicited through this NRA is to:

- Provide science input for mission planning and instrument operations and calibrations;
- Reduce and validate scientific data;
- Analyze, interpret, and publish results and findings in peer reviewed literature;
- Prepare raw and reduced data for archiving for future use by the scientific community; and
- Support education and public outreach efforts of the 2001 Mars Odyssey Mission.

These activities are to be undertaken in a manner consistent with the Mars Odyssey Data Policy. The following general rules apply to data rights, use, and publication of Odyssey data:

(i) The Project Science Group has adopted a policy that there is no proprietary period for any data collected by the spacecraft or instruments. However, science instrument data may require a validation period of up to six months from the time of receipt of data. After validation, the relevant archive volumes will be transferred to the Planetary Data System (PDS) which will make them available to the general scientific community.

(ii) Data deposited in the PDS will contain the appropriate calibration information and ancillary data. Later versions of archive data may be delivered to PDS as algorithms and ancillary information are updated.

(iii) During the generation/validation period, use, analysis, or release of raw and derived products should be done only with the agreement of the relevant PI or Team Leader. It is expected that all investigations will publish their results in a timely manner in the open scientific literature.

(iv) Significant subsets of data will be released prior to formal publication as a form of public outreach and education; such data release may be available as postings on the Internet (e.g., World Wide Web) and will conform to the Public Release Policy.

### 3. Programmatic Information

It is anticipated that this NRA will be the only such solicitation for proposals in support of 2001 Mars Odyssey participating scientists. Continued funding of multiyear projects is contingent upon availability of funds and annual assessment of performance and relevance of the research effort to 2001 Mars Odyssey mission and program requirements.

It is anticipated that up to ten investigations will be selected. Starting in Fiscal Year 2002, total available funding is expected to be about \$600K per year for four years.

The schedule for proposals for this opportunity are as follows:

- Notice of Intent to Propose Due Date      September 11, 2001
- Proposal Due Date                              October 18, 2001

See information listed in the Summary of Solicitation of this NRA for appropriate addresses.

Proposals should identify scientific ideas and unique theoretical and analytical capabilities that best meet the scientific objectives of the Odyssey orbiter mission as described in this Announcement. Key projected milestones, accomplishments, and deliverables during each year of the proposed investigation should be identified.

The evaluation criteria contained in Appendix C, Section C.2, of the *OSS Guidebook – 2001* (see further below) shall be used to evaluate submitted proposals, where it is understood that the scientific and technical merit of a proposal will include judgement of the following factors, in no priority order:

- A clear understanding of the 2001 Mars Odyssey mission, its instruments, and its scientific and technical capabilities, particularly those related to the proposed investigation;
- The feasibility of the proposed investigation using the Mars Odyssey instruments, and the data returned from them and a clear statement of the instrument data required for the proposed investigation; and
- The ability, capability, and commitment of the investigator to participate in planning, collection, reduction, and evaluation of the data to be submitted to the PDS, including a description of the specific data products that will be produced by the investigation should also be included.

Recommendations for funding will be based on the peer evaluation of each proposal's scientific and technical merits, its relevance to 2001 Mars Odyssey mission and program requirements, and its requested budget. In all cases, the Government's obligation to make awards is contingent upon the availability of appropriated funds from which payment can be made and the receipt of proposals in response to the NRA that NASA determines are acceptable for award.

## IMPORTANT INFORMATION

As discussed in the Summary of Solicitation of this NRA, the Office of Space Science (OSS) is now using a single, unified set of instructions for the submission of proposals. This material is contained in the document entitled *OSS Guidebook for Proposers Responding to NASA Research Announcement – 2001* (or "*OSS Guidebook – 2001*" for short) that is accessible by opening "Office of Space Science (Code S)" from the menu at <http://research.hq.nasa.gov/> , or directly at URL [http://research.hq.nasa.gov/code\\_s/research.cfm](http://research.hq.nasa.gov/code_s/research.cfm). This NRA's Summary of Solicitation also contains the schedule and instructions for the electronic submission of a Notice of Intent (NOI) to propose and a proposal's *Cover Page/Proposal Summary*, for electronic access to the required *Budget Summary* form, and the mailing address for the submission of a proposal.

Questions concerning this program element may be directed to the 2001 Mars Odyssey Program Scientist:

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