

National Aeronautics and
Space Administration

Headquarters

Washington, DC 20546-0001



February 29, 2008

SMD/Planetary Science Division

Reply to Attn of:

Dr. Paul Withers
Center for Space Physics
Boston University
725 Commonwealth Avenue
Boston, MA 02215

Dear Dr. Withers:

Thank you for submitting the research proposal entitled, "*Analysis of SPICAM stellar occultation data*" (NASA Proposal Number 07-MDAP07-0014) to the NASA Headquarters Mars Data Analysis Program (MDAP) in NASA Research Announcement NNH07ZDA001N, "Research Opportunities in Space and Earth Sciences -- 2007."

I am pleased to inform you that your proposal has been selected for funding in fiscal year (FY) 2008. All awards concerning this investigation will be to your institution. You and your institution will be held responsible by NASA for carrying out the investigation. These responsibilities are described in the NRA and will be established in more detail in the subsequent award.

Each solicited full proposal is reviewed by several external and panel reviewers prior to the MDAP Review Panel meeting. During the panel meeting each proposal is discussed at length and rated as to the scientific merit, relevance, and cost (realism and reasonableness) of the proposal with respect to the objectives of NASA and the MDAP program.

The MDAP Review Panel has assigned an adjectival rating of **VERY GOOD** for the Overall score of your proposal.

It is the panel's consensus evaluation of a proposal that forms the primary basis for selection or rejection. The summary evaluation of your proposed research is enclosed for your information. It is hoped that this information will be useful to you in your research.

The following describes the planned funding for your selected investigation:

FY08=\$100591

FY09=\$104023

FY10=\$107591

Please provide a revised budget, with the original signature of the PI and Institution Official, if this amount is less than 80% of that proposed. In addition, unless stated otherwise, your revised budget should be for the budget level listed above for each of those years. Note that your budgets should aim for these precise amounts, or slightly lower than these approved levels, because in no case will funding be provided at levels higher than the budget levels, even \$1.

All awards concerning this investigation will be to your institution. NASA will hold you and your institution responsible for carrying out the investigation. These responsibilities are described in the NRA and will be established in more detail in the subsequent award.

You should not construe this notification letter as a legally binding obligation. As of May 1, 2006, all new grants are issued through the NASA Shared Services Center (NSSC) at <http://www.nssc.nasa.gov/index.htm>. Your institution will be contacted shortly by this office regarding the actual grant. You may determine the status of grant processing by checking the Grant Status Query Page (<http://www.nssc.nasa.gov/grantstatus/>), telephoning the NSSC at 1 877-NSSC123, or e-mailing the NSSC Contact Center (nssc-contactcenter@nasa.gov). (Interagency transfers will still be processed by the NASA Goddard Space Flight Center Procurement Office.) You cannot incur any obligations against potential funding until the grant is in place.

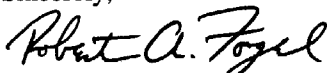
In addition, a progress report and work plan for the next year is due annually 60 days before the end of each twelve-month performance period. The NSSC will prompt you to submit this report 10 days before it is due. Your award will include a Point of Contact document which includes address information for all report recipients. Copies of this documentation will go to your Program Scientist. Continued support for this work for up to 3 years is dependent on satisfactory progress, continued relevance to the NASA program, and the availability of funds. For funding beyond the term of the award, a new proposal for full peer review will be required.

All publications of any material based on or developed under NASA sponsored projects should conclude with an appropriate acknowledgement. Please see the Guidebook for Proposers, Section F.14 on how NASA is to be acknowledged in publications.

If you have additional questions about the initiation of your grant or contract, please contact Dr. David Nava, Operations Manager for Program Implementation, on (301) 286-5483, or preferably via e-mail at David.F.Nava@nasa.gov. Also, if a revised budget is needed, please mail the original signatures revised budget plus one copy directly to Dr. Nava at NASA Goddard Space Flight Center, Code 691, Greenbelt, MD 20771.

If you have questions concerning the evaluation of your proposal or the MDAP program, please contact me at (202) 358-2289 or via e-mail at Robert.A.Fogel@nasa.gov.

Sincerely,



Dr. Robert A. Fogel
Mars Program Scientist
Mars Data Analysis Program
Science Mission Directorate

Enclosure

cc: Office of Sponsored Programs

Mars Data Analysis Program (MDAP 2007)
CONSENSUS FORM
SUBMITTED IN RESPONSE TO
NNH07ZSS001N

Proposal Number: 07-MDAP07-0014

PI Name and Institution: Withers, Paul / Center for Space Physics

Proposal Title: "Analysis of SPICAM stellar occultation data"

*All proposals and reviews are proprietary and should be handled by the reviewer in a confidential manner.
Comments on this page may be transmitted anonymously to the proposer.*

SUMMARY OF RESEARCH OBJECTIVES:

The proposed work will use SPICAM density, pressure, and temperature profiles to study the dynamics and thermal structure of the martian atmosphere between 50 km and 150 km through a series of 4 tasks: 1) SPICAM data, aerobraking accelerometer data, and theoretical predictions from the Michigan MTGCM model will be compared to test this widely-used model; 2) TES, SPICAM, and MRO accelerometer data will be combined to form composite T(p) profiles from the surface to 200 km; 3) SPICAM data will be used to study thermal tides in the middle atmosphere transition region; 4) SPICAM data will be used to study the effects of a dust storm on the mesopause and on thermal tides in the upper atmosphere.

SUMMARY OF EVALUATION:

The use of SPICAM data to study the thermal structure of the atmosphere in the 50-100 km region fills a void due to the small number of observations that are sensitive to this range. By combining the SPICAM profiles with TES and accelerometer data, the thermal structure and dynamical behavior from 0-150 km can be studied statistically for the first time (previously, only 5 entry profiles sampled this entire regime). The reliance on publically available MTGCM fields will potentially limit the direct comparison of data to model predictions for the

same atmospheric state. The goals of the proposal are highly relevant to the MDAP program and NASA's strategic goals. The requested support is commensurate with the proposed effort.

Intrinsic Merit Strengths

Major:

The proposed work examines a region of the Martian atmosphere (50-100 km) in detail that has previously received minimal attention due to general paucity of measurement techniques with sensitivity to that region. The SPICAM data provide an extensive coverage of the targeted region.

The use of TES and accelerometer data offers the opportunity to correlate the dynamical properties sampled by the SPICAM data in the context of atmospheric state both above and below the SPICAM range of sensitivity. In addition, the resulting composite temperature profiles (~5-150 or 200 km) represent a significant increase in the total number of such wide-ranging profiles. At present, only 5 entry profiles from landed missions are available.

Despite the inherent complexity of working with such disparate datasets (in time and space), the proposers have created a credible plan to characterize the thermal tides, vertical structure, and zonal wave signatures contained in both the SPICAM data and the composite temperature profiles.

Minor:

Intrinsic Merit Weaknesses

Major:

Although the lack of a team-member providing model guidance and/or generation is mentioned as a positive aspect for the proposal ("streamlined management"), the reliance on publically-available MTGCM model output restricts the ability of the proposers to match the conditions of the SPICAM data with those of a model. Furthermore, the available models may not contain all the

capabilities of the "latest" MTGCM version. No discussion of these issues was contained in the proposal.

Minor:

No details are given for the "averaging" algorithm that will be applied to SPICAM and TES data during the construction of the composite temperature profiles.

Relevance to NASA Objectives (Strengths)

Major: The proposed work is clearly relevant to the scope of MDAP and several NASA strategic goals.

Minor:

Relevance to NASA Objectives (Weaknesses)

Major:

Minor:

Cost Realism and Reasonableness (Strengths)

Major: The proposed levels of effort by the PI, Co-I, and student are appropriate and reasonable.

Minor:

Cost Realism and Reasonableness (Weaknesses)

Major:

Minor: The need for the student to travel to France once per year is not well justified, particularly given the presence of Bertaux in Boston and the small role played by Montmessin.