

A.4.6 Suborbital Program in Magnetospheric, Ionospheric, Thermospheric, and Mesospheric (MITM) Physics

1. Scope of Program

Proposers interested in submitting in response to this program element should also read Section A.4.0 of this Appendix for an overview of The Sun-Earth Connection (SEC) science theme of the NASA Office of Space Science.

The MITM program supports research in magnetospheric, ionospheric, thermospheric, and mesospheric physics using a variety of methods for providing low cost access to space. These include standard and long-duration balloons, sounding rockets, Shuttle-based carriers, Space Station, and sounding rocket-class payloads flown as secondary payloads or on other flights of opportunity. The emphasis is on the study of processes that occur naturally in space and/or the study of artificially induced perturbations that elucidate natural plasma processes. Owing to budgetary restrictions, it is extremely unlikely that plasma physics experiments made possible only through access to space can be supported. The base MITM program consists of a minimum number of balloon- and rocket-based investigations. Additional resources are used to provide further balloon and rocket payloads, Shuttle-based investigations, secondary payloads, and/or flights of opportunity investigations. Selection from among these additional investigations will be based on science merit, cost-effectiveness, and overall programmatic balance. Proposals may submit budgets for up to three years that are expected to cover a complete suborbital investigation, including payload construction, launch phase, and data analysis. An appropriate data analysis effort must be included as part of any flight program proposal.

It is necessary to minimize the operational costs to NASA for the preparation (payload integration and test) and field operations (especially the need for campaigns and/or launches from remote or non-U.S. sites) for its suborbital programs. Investigators are, therefore, strongly encouraged to propose investigations that minimize these operational factors, especially with regard to payload complexity and nontraditional launch sites. All those who intend to propose to the MITM program are strongly urged to discuss prospective investigations with operations personnel at NASA Wallops Flight Facility in order to ensure that probable operational costs are properly anticipated. Questions concerning sounding rockets should be addressed to:

Mr. Bobby Flowers
Code 830
Wallops Flight Facility
National Aeronautics and Space Administration
Wallops Island, VA 23337
Telephone: (757) 824-2202
E-mail: bobby.j.flowers@gsfc.nasa.gov

while questions concerning balloon investigations should be addressed to:

Mr. Harvey Needleman
Code 834
Wallops Flight Facility
National Aeronautics and Space Administration
Wallops Island, VA 23337
Telephone: (757) 824-1453
E-mail: harvey.c.needleman@gsfc.nasa.gov.

2. Programmatic Issues

Support for extended data analysis. Proposals for support for data analysis extending beyond the nominal three-year proposal must be submitted separately to the appropriate SEC program element in this or a future similar NRA.

Sounding Rocket Launch Sites. The two standard U.S. launch sites for sounding rockets are White Sands Missile Range (WSMR), New Mexico, and Wallops Island, Virginia. Although launches from Poker Flat Rocket Range (PFRR) in Alaska require support from mobile launch crews, they do not require separate “campaign” proposals (see further below). However, prospective proposers should be aware that PFRR is closed in alternate years; current plans call for PFRR to be open during the winters of 1998-99 and 2000-01. Campaign proposals are also not required for the use of established non-U.S. launch sites such as those at Andoya, Norway, and Kiruna, Sweden.

Prospective investigators should also be aware that NASA sounding rocket flights from WSMR require the payment by NASA of significant fees. While the current operations budget contains sufficient funds to support a small number of flights from WSMR every year, it is difficult to accommodate investigations with extended launch windows at WSMR.

Campaigns for Multiple Launches. In addition to flights from WSMR, Wallops Island, and PFRR, the MITM program has historically been able to support up to one campaign per year consisting of a series of rockets flown from a common but nonstandard launch location. Campaigns are usually planned several years in advance. Those presently scheduled are for Puerto Rico in February/March of 1998 and for PFRR during winter 1998-99.

In proposing for a campaign, the following protocol must be followed:

- A Campaign Scientist should submit a "Campaign Summary" proposal describing the overall effort and listing prospective investigations. The following

issues must also be addressed: the rationale for requesting the proposed launch site, the desired launch time, and/or other special launch conditions (moon-down, night time, etc.); any expected foreign involvement; required ground and/or airplane support ; any other information that defines the overall scope of the proposed campaign; and an overall cost budget.

- Each investigator who wishes to participate in a campaign must submit a separate investigation proposal, each of which will be independently reviewed. Clear cross-reference must be made to the Campaign proposal on the MITM *Cover Sheet* (see Appendix C.5.3).

Proposals from Multiple Institutions. Proposals to the MITM program often involve the development of payloads that require collaboration among several institutions. In such cases, the lead PI may propose a direct subcontracting arrangement between the PI institution and the Co-I institutions. To avoid the payment of multiple overhead fees, however, NASA may prefer to provide separate awards to each institution involved in such multiple institutional investigations, with an investigator from each Co-Investigator institution serving as the *Institutional PI* for the award to that institution (see special provisions Section C.1.3 in Appendix C of this NRA). The following applies to MITM proposals involving such separately funded contributions from multiple institutions.

- Only the primary proposal for the overall investigation, submitted by the single Principal Investigator (see Section C.1.3), will be reviewed. This primary proposal must include the PI's work statement (included in the page limit) and budget, followed by short task statements and budgets (not counted in the page limit) from all other collaborating Co-I institutions. The MITM proposal *Cover Sheet* of the leading proposal must show separately the dollar amounts requested by the leading institution and each Co-I institution, plus the yearly total requests for the total investigation.
- The appended task statement(s) from Co-I collaborating institution(s), not to exceed five pages, must describe that institution's contribution to the investigation, the roles of the Co-I(s) at that institution (if more than one, a single investigator to serve as the *Institutional PI* for that institution must be chosen) and a summary budget for the task following the formats as specified in Appendix C.
- Each Co-I institution must additionally submit a full formal, signed proposal incorporating the task statement noted above, all prefatory materials indicated in Appendix C, and a full institutional budget. Such Co-I proposals must be clearly cross-referenced on the Cover sheet to the lead PI proposal and must have the same title as the PI proposal.

MITM program proposals selected under this NRA will be phased into the program as rapidly as resources permit. As a rule, new investigations are awarded definition-level funding in their first year, full funding for development in their second year, leading to flight early in their third year, which concludes with data analysis. Total funding in this program has been about \$4M per year; annual funding levels have averaged \$250K per investigation and \$100K per individual investigator. Of the 21 investigations currently being funded, 10 will end in FY 1998.

Owing to the larger scope and personnel involvement in MITM proposals, the default page limit given in Section C.5.1 of Appendix C is revised to 20 pages for the *Science/Technical/Management Section* instead of 15 pages. All other page limits identified in Appendix C apply.

The schedules for submission of the Notice of Intent and proposal are given in Table 1 of the cover letter of this NRA. The World Wide Web site for submitting both the NOI and the *Cover Page/Proposal Summary* (see Appendix C.5.3) is <http://props.oss.hq.nasa.gov>; proposers without access to the Web or who experience difficulty in using this site may contact Ms. Debra Tripp (E-mail: deb.tripp@hq.nasa.gov) for assistance. Hard copies of the proposals are to be delivered to:

ROSS-98 NASA Research Announcement
Suborbital Program in MITM Physics
Jorge Scientific Corporation
Suite 700
400 Virginia Avenue, SW
Washington, DC 20024
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Further information may be obtained from the Discipline Scientist:

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