

NATIONAL SCIENCE FOUNDATION  
4201 WILSON BOULEVARD  
ARLINGTON, VIRGINIA 22230

**Subject: Proposals Relating to Space Weather Research**

Dear Colleague:

The Upper Atmosphere Research Section of the Division of Atmospheric Sciences of the National Science Foundation (NSF), in coordination with the Air Force Office of Scientific Research (AFOSR) and the Office of Naval Research (ONR), is accepting proposals for basic research related to space weather. "Space weather" refers to conditions on the sun and in the solar wind, magnetosphere, ionosphere, and thermosphere that can influence the performance and reliability of space-borne and ground-based technological systems, and can endanger human life or health. Adverse conditions in the space environment can cause disruption of satellite operations, communications, navigation, and electric power distribution grids, leading to broad socio-economic losses.

Proposals should benefit and advance the National Space Weather Program (NSWP), a multi-agency federal program whose goal is to mitigate the adverse effects of space weather by providing timely, accurate, and reliable space environment observations, specifications, and forecasts. Information about the NSWP can be obtained from the National Space Weather Program Strategic Plan and Implementation Plan. Both of these documents are available online through the Office of the Federal Coordinator for Meteorology at <http://www.ofcm.gov/homepage/text/pubs.htm>.

An effective National Space Weather Program requires a strong commitment to basic research in many areas of space-related science, including studies of the sun, the solar wind and interplanetary medium, the magnetosphere, the ionosphere, and the upper atmosphere. Initial emphasis will be on understanding the fundamental physical processes that affect the state of the sun, magnetosphere, ionosphere, and atmosphere, focusing on answering research questions that will improve the ability to specify and predict conditions in the space environment. Although any proposal meeting the above criteria will be considered, several basic research areas represent significant gaps in our present understanding and need to be addressed early in the Program:

- understanding and prediction of processes affecting solar activity, such as coronal mass ejections (CME's) and solar flares;
- coupling between the solar wind and the magnetosphere;
- the origin and energization of magnetospheric plasma;
- the triggering and temporal evolution of substorms and storms;
- improved global ionospheric specification and forecast and the evolution of ionospheric irregularities, including the onset of low latitude ionospheric irregularities, with particular emphasis on those processes affecting communication and navigation systems;
- improved specification of thermospheric dynamics and neutral densities, and;
- validation and enhancement of ionospheric and magnetospheric models, including data assimilation techniques, to improve operational forecasting and specification capabilities.

Special consideration will be given to research which holds the promise for improving operational space weather capabilities within five years.

Proposals should be prepared and submitted in accordance with the *Grant Proposal Guide* (NSF 98-2), which can be obtained online at <http://www.nsf.gov>. Proposals should arrive at NSF **no later than September 1, 1998**, in order to be considered for the FY 1999 review cycle and should be submitted to NSF's Aeronomy, Magnetospheric Physics, or Solar Terrestrial Research Programs, as appropriate. All proposal titles should begin with the words: "Space Weather." Funding may be requested for up to three years.

The total amount of funding for this effort is anticipated to be \$2.0 million, pending availability of funds. Between 20 and 30 awards are expected, each averaging \$50,000 to \$100,000 per year for up to three years.

Proposals will be reviewed under standard NSF procedures per the NSF Grant Proposal Guide. In addition to the regular NSF review criteria, reviewers will be asked to place equal weight on the potential of the proposal to advance the objectives of the NSWP. Award decisions will be coordinated with representatives from AFOSR and ONR.

Further information may be obtained from:

Dr. S. Basu ([sbasu@nsf.gov](mailto:sbasu@nsf.gov); 703-306-1529) Aeronomy Program,

Dr. K. Baker ([kbaker@nsf.gov](mailto:kbaker@nsf.gov); 703-306-1519) Magnetospheric Physics Program

Dr. K. Schatten ([kschatte@nsf.gov](mailto:kschatte@nsf.gov); 703-306-1530) Solar Terrestrial Research Program.

Sincerely,

Richard A. Behnke

Head

Upper Atmosphere Research Section

The Foundation provides awards for research and education in the sciences and engineering. The awardee is wholly responsible for the conduct of such research and preparation of the results for publication. The Foundation, therefore, does not assume responsibility for the research findings or their interpretation.

The Foundation welcomes proposals from all qualified scientists and engineers and strongly encourages women, minorities, and persons with disabilities to compete fully in any of the research related programs described here. In accordance with federal statutes, regulations, and NSF policies, no person on grounds of race, color, age, sex, national origin, or disability shall be excluded from participation in, be denied the benefits of, or be subject to discrimination under any program or activity receiving financial assistance from the National Science Foundation.

Facilitation Awards for Scientists and Engineers with Disabilities (FASSED) provide funding for special assistance or equipment to enable persons with disabilities (investigators and other staff, including student research assistants) to work on NSF projects. See the program announcement or contact the program coordinator at (703)306-1636.

The National Science Foundation has TDD (Telephonic Device for the Deaf) capability, which enables individuals with hearing impairment to communicate with the Foundation about NSF programs, employment, or general information. To access NSF TDD, dial (703) 306-0090; for FIRS, 1-800-877-8339.

Privacy Act and Public Burden. The information requested on proposal forms is solicited under the authority of the National Science Foundation Act of 1950, as amended. It will be used in connection with the selection of qualified proposals; project reports submitted by awardees will be used for program evaluation and reporting within the Executive Branch and to Congress. Information requested may be disclosed to qualified reviewers and staff assistants as part of the review process; to applicant institutions/grantees to provide or obtain data regarding the application review process, award decisions, or the administration of awards; to government contractors, experts, volunteers, and researchers as necessary to complete assigned work; to other government agencies needing information as part of the review process or in order to coordinate programs; and to another Federal agency, court or party in a court or Federal administrative proceeding if the government is a party. Information about Principal Investigators may be added to the Reviewer file and used to select potential candidates to serve as peer reviewers or advisory committee members. See Systems of Records, NSF 50, "Principal Investigators/Proposal File and Associated Records," 63 Federal Register 267 (January 5, 1998), and NSF-51, "Reviewer/Proposal File and Associated Records," 63 Federal Register 268 (January 5, 1998). Submission of the information is voluntary. Failure to provide full and complete information, however, may reduce the possibility of your receiving an award.

Public reporting burden for this collection of information is estimated to average 120 hours per response, including the time for reviewing instructions. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to: Reports Clearance Officer, Information Dissemination Branch, DAS, National Science Foundation, 4201 Wilson Boulevard, Arlington, VA 22230.

This program is described in the Catalog of Federal Domestic Assistance category 47.050, Geosciences.

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