Office of Science
Notice 01-23

Atmospheric Radiation Measurement Program

Department of Energy
Office of Science

Office of Science Financial Assistance Program Notice 01-23; Atmospheric Radiation Measurement Program

AGENCY: U. S. Department of Energy (DOE)

ACTION: Notice inviting grant applications.

SUMMARY: The Office of Biological and Environmental Research (OBER) of the Office of Science (SC), U.S. Department of Energy (DOE), hereby announces its interest in receiving applications for experimental and theoretical studies of radiation and clouds in conjunction with the Atmospheric Radiation Measurement (ARM) Program as part of the U.S. Global Change Research Program (USGCRP). This notice requests new applications and renewal applications of grants currently funded by DOE under previous ARM Program notices that are relevant to the terms of reference for this announcement and responsive to the particular needs defined below.

DATES: Applicants are encouraged (but not required) to submit a brief preapplication for programmatic review. The deadline for submission of preapplications is April 16, 2001. Early submission of preapplications is encouraged to allow time for meaningful responses.

Formal applications submitted in response to this notice must be received by 4:30 p.m., E.D.T., May 15, 2001, to be accepted for merit review and to permit timely consideration for award in Fiscal Year 2002.

ADDRESSES: Preapplications referencing Program Notice 01-23 may be sent to the program contact, Dr. Wanda Ferrell, via electronic mail at: wanda.ferrell@science.doe.gov or by U. S. Postal Service Mail at: Office of Biological and Environmental Research, Dr. Wanda Ferrell, Environmental Sciences Division, SC-74, U.S. Department of Energy, 19901 Germantown Road, Germantown, MD 20874-1290. Electronic mail is recommended to speed up response to preapplications.

Formal applications referencing Program Notice 01-23 should be forwarded to: U.S. Department of Energy, Office of Science, Grants and Contract Division, SC-64, 19901 Germantown Road, Germantown, MD 20874-1290, ATTN: Program Notice 01-23. This address also must be used when submitting applications by U.S. Postal Service Express Mail, any commercial mail delivery service, or when hand-carried by the applicant. An original and seven copies of the application must be submitted; however, applicants are requested not to submit multiple application copies using more than one delivery or mail service.

FOR FURTHER INFORMATION CONTACT: Dr. Wanda Ferrell, Office of Biological and Environmental Research, Environmental Sciences Division, SC-74, U.S. Department of Energy, 19901 Germantown Road, Germantown, MD 20874-1290, telephone (301) 903-0043, fax (301) 903-8519, Internet e-mail address: wanda.ferrell@science.doe.gov. The full text of Program Notice 01-23 is available via the World Wide Web using the following web site address: http://www.science.doe.gov/production/grants/grants.html.

SUPPLEMENTARY INFORMATION:

Background: Atmospheric Radiation Measurement (ARM) Program.

One of the major scientific objectives of the Environmental Sciences Division (ESD) is to improve the performance of predictive models of the Earth's climate and to thereby make predictions of the response of the climate system to increasing concentrations of greenhouse gases. The purpose of the ARM Program is to improve the treatment of radiation and clouds in the models used to predict future climate, particularly the General Circulation Models (GCMs). This program is one element of a major effort to improve the quality of current models and to support the development of sets of climate models capable of making regional prediction of climate and climate change. The major component of the ARM Program is an experimental testbed to gather data for the study of models of the terrestrial radiation field, properties of clouds, the full life cycle of clouds, and the incorporation of these process-level models into climate models. This facility is referred to as the Cloud and Radiation Testbed (CART). The first ARM CART site, Southern Great Plains (SGP), began operation in calendar year 1992, with instruments spread over an area of approximately 60,000 sq. km., centered on Lamont, Oklahoma. The Tropical Western Pacific (TWP) site consists of island-based suites of instrumentation focused on cloud and radiative properties in the tropical ocean environment. The first and second of the TWP Atmospheric Radiation and Clouds Stations (ARCS) are operating on the islands of Manus, Papua, New Guinea and the Republic of Nauru respectively.

Similar instrumentation is gathering data in the vicinity of Point Barrow, on the North Slope of Alaska (NSA) and an inland site near Atqasak. Program information is available on the DOE/OBER WWW site using the URL: http://www.sc.doe.gov/production/OBER/GC/arm.html.

To ensure that the program meets the broadest needs of the research community and the specific needs of the DOE ESD, successful applicants are expected to participate as ARM Science Team members in the appropriate working group(s) relevant to their efforts. Costs for participation in ARM Science Team meetings and subcommittee meetings should be based on two trips of 1 week each to Washington, DC, and two trips of 3 days each to Chicago, Illinois.

Request for Grant Applications

This notice requests applications for grants, both new and renewals that address the broad ARM goal of improving cloud and radiation parameterizations in climate models.

Successful applicants for renewal of previously awarded grants, shall demonstrate: (a) continued relevance of their work to the goals of the ARM Program; (b) the contribution of work conducted under previous support to the goals of the ARM Program, including a listing of publications and presentations; and (c) relevant contribution to the development of the ARM Program, particularly the design and development of CART facilities, as a result of previous funding. Renewal applications should include a special section covering items (b) and (c) entitled "Accomplishments Under Previous Support."

Successful applicants for new grants will demonstrate the role of their research in the improvement of GCMs and/or related models and delineate the path that their results will take to make those improvements. Applications are requested in one or more of the following four areas: (a) the development of models and parameterization of radiative transfer or cloud processes, including aerosol effects, or the testing of these models in GCMs or process-level models; (b) experimental studies at CART facilities to test elements of models and their performance; (c) experimental studies to obtain key laboratory data; or (d) the analysis of existing data, including field data and satellite data, to support model development or testing.

The efforts proposed must have as a focus the conduct of research using the CART facilities either in operation or being developed for ARM. Successful applicants will participate in the continuing development of the detailed experimental approaches for CART and guide the evolving development and acquisition of the experimental equipment.

Specific areas of interest to the ARM Program include, but are not limited to:

- Determination of the concentration and advection of cloud water and ice on the regional scale
- Statistics of cloud fields and their interaction with atmospheric radiation
- Realistic retrievals of the 3D structure of clouds on scales of 10 to 100 km
- Retrieval of ice water path and ice cloud microphysics using remote sensing measurements from the ground or ground and satellite
- Calculation of heating rate profiles in realistic cloud fields
- Climatological properties of aerosols over the SGP site using ARM data
- Combining ground-based and satellite remote sensing data to provide improved characterization of the atmospheric column above and surrounding the CART sites, particularly at the remote sites in the TWP and NSA
- Comparative studies using data from multiple CART sites
- Use of ARM data to test quantitatively cloud and radiation parameterizations used in both GCMs and numerical weather prediction (NWP) models
- Development of new cloud and radiation parameterizations

Additional information about ARM program needs and directions may be found in the Vision 2000 Reports from the Aerosol, Cloud Properties, Cloud Parameterization and Modeling, and Instantaneous Radiative Flux Working Groups. These reports are available on the ARM web site at: http://www.arm.gov. Investigators are encouraged to consult these reports. Not all the recommendations in these reports, however, are addressable by this current grant process.

Program Funding

It is anticipated that approximately $3,000,000 will be available for awards in Fiscal Year 2002, contingent upon the availability of appropriated funds. Multiple year funding of awards is expected, with out-year funding also contingent upon the availability of appropriated funds, progress of the research, and programmatic needs. The allocation of funds within the research areas will depend upon the number and quality of applications received.

Collaboration

Applicants are strongly encouraged to collaborate with researchers in other institutions, such as: universities, industry, non-profit organizations, federal laboratories and Federally Funded Research and Development Centers (FFRDCs), including the DOE National Laboratories, where appropriate, and to include cost sharing wherever feasible. Additional information on collaboration is available in the Application Guide for the Office of Science Financial Assistance Program that is

available via the World Wide Web at:
http://www.sc.doe.gov/production/grants/Colab.html.

Preapplications

Potential applicants are strongly encouraged to submit a brief preapplication that consists of two to three pages of narrative describing the research project objectives and methods of accomplishment. These will be reviewed relative to the scope and research needs of the ARM Program. Principal Investigator (PI) address, telephone number, fax number and e-mail address are required parts of the preapplication. A response to each preapplication discussing the potential program relevance of a formal application generally will be communicated within 15 days of receipt. Use of e-mail for this communication will decrease the possibility of delay in responses to the preapplication. The deadline for the submission of preapplications is April 16, 2001. But applicants should allow sufficient time so that the formal application deadline is met. SC's preapplication policy can be found on SC's Grants and Contracts Web Site at: http://www.sc.doe.gov/production/grants/preapp.html.

Merit Review

Applications will be subjected to formal merit review (peer review) and will be evaluated against the following evaluation criteria which are listed in descending order of importance codified at 10 CFR 605.10(d):

1. Scientific and/or Technical Merit of the Project;
2. Appropriateness of the Proposed Method or Approach;
3. Competency of Applicant's personnel and Adequacy of Proposed Resources;
4. Reasonableness and Appropriateness of the Proposed Budget.

The evaluation process will include program policy factors such as the relevance of the proposed research to the terms of the announcement and the agency's programmatic needs. Note, external peer reviewers are selected with regard to both their scientific expertise and the absence of conflict-of-interest issues. Non-federal reviewers will often be used, and submission of an application constitutes agreement that this is acceptable to the investigator(s) and the submitting institution.

Submission Information

Information about development and submission of applications, eligibility, limitations, evaluation, selection process, and other policies and procedures may be found in 10 CFR Part 605 and in the Application Guide for the Office of Science Financial Assistance Program. Electronic access to the Guide and required forms is made available via the World Wide Web at:

http://www.sc.doe.gov/production/grants/grants.html. DOE is under no obligation to pay for any costs associated with the preparation or submission of applications if an award is not made.

The technical portion of the application should not exceed twenty-five (25) double-spaced pages and should include detailed budgets for each year of support requested. Awards are expected to begin on or about November 1, 2001. On the grant face page, form DOE F 4650.2, in block 15, also provide the PI's phone number, fax number and e-mail address. Attachments include curriculum vitae, a listing of all current and pending federal support, and letters of intent when collaborations are part of the proposed research. Curriculum vitae should be submitted in a form similar to that of NIH or NSF (two to three pages), see for example: http://www.nsf.gov/bfa/cpo/gpg/fkit.htm#forms-9.

In addition to the original and seven copies of the application that must be submitted, the applicants are asked to submit an electronic copy of the abstract in ASCII format to: wanda.ferrell@science.doe.gov. The abstract should include the following information: PI and co-PIs, their institutions, and a brief summary of research.

For researchers who do not have access to the World Wide Web, please contact Karen Carlson, Environmental Sciences Division, SC-74, U.S. Department of Energy, 19901 Germantown Road, Germantown, MD 20874-1290, phone: (301) 903-3338, fax: (301) 903-8519, e-mail: karen.carlson@science.doe.gov; for hard copies of background material mentioned in this solicitation.

Technical information on ARM is available on the WWW at the URL: http://www.arm.gov and the ARM Program Office at the Pacific Northwest National Laboratory, P.O. Box 999, Richland, Washington 99352, telephone (509) 375-6964.

The Catalog of Federal Domestic Assistance Number for this program is 81.049, and the solicitation control number is ERFAP 10 CFR Part 605.

John Rodney Clark
Associate Director of Science
for Resource Management

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