

**Office of Science**  
**Notice 99-16**

*Atmospheric Radiation Measurement (ARM) Program*

**Department of Energy**  
**Office of Science**

**Office of Science Financial Assistance Program Notice 99-16; Atmospheric Radiation Measurement (ARM) Program**

**Agency:** U.S. Department of Energy

**Action:** Notice inviting grant applications.

**SUMMARY:** The Office of Biological and Environmental Sciences (OBER) of the Office of Science (SC), U.S. Department of Energy (DOE), hereby announces its interest in receiving applications to support the experimental and theoretical study 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 applications for grants to support renewals of activities currently funded by DOE under previous Special Research Grant Program Notices issued for the ARM Program. A very limited number of new research efforts may be funded.

**DATES:** Applicants are strongly encouraged to submit a two page (maximum) brief preapplication. All preapplications, referencing Program Notice 99-16, should be received by DOE by 4:30 P.M., E.D.T., April 12, 1999. A response to the preapplications discussing the potential program relevance and generally encouraging or discouraging a formal application will be communicated to the applicant by April 19, 1999.

The deadline for receipt of formal applications is 4:30 P.M., E.D.T., June 7, 1999, in order to be accepted for merit review and to permit timely consideration for award in Fiscal Year 2000.

**ADDRESSES:** Preapplications referencing Program Notice 99-16, should be sent by E-mail to [p.crowley@science.doe.gov](mailto:p.crowley@science.doe.gov). Preapplications will also be accepted if mailed to the following address: Dr. Patrick Crowley, Office of Biological and Environmental Research, SC-74, U.S. Department of Energy, 19901 Germantown Road, Germantown, MD 20874-1290.

Formal applications, referencing Program Notice 99-16, should be sent to: U.S. Department of Energy, Office of Science, Grants and Contracts Division, SC-64, 19901 Germantown Road, Germantown, MD 20874-1290, ATTN: Program Notice 99-16. This address must be used when submitting applications by U.S. Postal Service Express Mail or any other commercial mail delivery service, or when hand-carried by the applicant.

**FOR FURTHER INFORMATION CONTACT:** Dr. Patrick Crowley, preferably by e-mail [p.crowley@science.doe.gov](mailto:p.crowley@science.doe.gov), otherwise by telephone: (301) 903-3069, or at the Office of Biological and Environmental Research, SC-74, U.S. Department of Energy, 19901 Germantown Road, Germantown, MD 20874-1290. The full text of Program Notice 99-16 is available via the Internet using the following web site address: <http://www.er.doe.gov/production/grants/grants.html>.

**SUPPLEMENTARY INFORMATION:** New efforts should address one or more of the following within the context of ARM needs and data capabilities:

- Upper tropospheric water vapor concentration and transport.
- Use of ARM data to quantitatively test cloud and radiation parameterizations used in General Circulation Models (GCMs) and Tropical Western Pacific (NWP) Models.
- The statistics of cloud fields and their interaction with atmospheric radiation.
- Research using Single Column Models focussing on applications of data to improve the models and extrapolate the improvements to GCMs.
- New efforts to develop ice water path and cloud parameter retrievals with focus on ice content.

One of the major scientific objectives of the Environmental Sciences Division 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 testbed is referred to as the Cloud and Radiation Testbed (CART). The first ARM CART site 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 will consist initially 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 island of Manus, Papua New Guinea and on Nauru respectively. Similar instrumentation is gathering data in the vicinity of Point Barrow, on the North Slope of Alaska and an island site near Atqasak will be instrumented to compliment the Point Barrow measurements.

To ensure that the program meets the broadest needs of the research community and the specific needs of the DOE Environmental Sciences Division (ESD), successful applicants will participate as ARM Science Team members along with selected scientists from other ESD programs that relate to the ARM Program. 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 (2) trips of 3 days each to Chicago, IL.

Successful applicants for renewal or enhancement of previously awarded grants, will demonstrate: (a) continued relevance of their work to the goals of the ARM Program; (b) the quality and relevance 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 General Circulation Models and/or related models and delineate the path that their results will take to make those improvements. Successful applicants will be involved in one or more of four activities: (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 should 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.

## **Program Funding**

It is anticipated that approximately \$3,000,000 will be available for multiple awards for this activity in FY 2000, contingent upon availability of appropriated funds. Multiple year funding of awards is expected, also contingent upon availability of funds. The allocation of funds will depend on the number and quality of the applications received. It is anticipated that most of the funds will support renewals of existing research. Typical ESD awards are \$200,000 per year, but range from \$50,000 to \$600,000.

Collaborative applications are encouraged. Awards are anticipated to begin on or about November 1, 1999.

Applications will be subjected to scientific merit review (peer review) and will be evaluated against the following evaluation criteria listed in descending order of importance as 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 will include program policy factors such as the relevance of the proposed research to the terms of the announcement and an 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 may be used, and submission of an application constitutes agreement that this is acceptable to the investigator(s) and the submitting institution.

Applications for renewal of ongoing efforts must include an "Accomplishments under Previous Support" section, which should not exceed ten (10) additional double-spaced pages. The technical portion of the application should not exceed twenty-five (25) doubled-spaced pages. An abstract of less than 200 words must be included with the application. Lengthy appendices are discouraged.

Information about the development, submission of applications, eligibility, limitations, evaluation, the 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.er.doe.gov/production/grants/grants.html>. On the SC grant face page, form DOE F 4650.2, in block 15, also provide the PI's phone number, fax number and E-mail address.

Technical information on the ARM Program is available from the ARM Program Office at Pacific Northwest Laboratory, P.O. Box 999, Richland, WA 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  
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for Resource Management

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