

Program Announcement To DOE National Laboratories LAB 08-14

Atmospheric Radiation Measurement (ARM) Climate Research Facility

SUMMARY: The Office of Science (SC), U.S. Department of Energy (DOE), hereby announces its interest in receiving peer-reviewable Field Work Proposals (FWPs) for designing, assembling, and operating a mobile facility as an instrument platform for measuring atmospheric properties and processes. The DOE laboratory selected through this competitive announcement will be part of the Atmospheric Radiation Measurement (ARM) Climate Research Facility (ACRF). The ACRF supports the Department's Climate Change Research Program, the U.S. Climate Change Science Program, and the Administration's goals to understand the radiation and cloud processes associated with climate change.

BACKGROUND:

Program Objective

The ARM Program was initiated to improve understanding of the interactions between clouds and atmospheric radiative fluxes, and then to capture that knowledge in improved climate models. The focus of the ARM infrastructure is on long-term ground-based measurements of solar and thermal infrared radiative fluxes at the Earth's surface, and all of the atmospheric quantities such as clouds, water vapor, and aerosols that affect those fluxes. Designated as a national user facility the ACRF maintains fixed research sites [Southern Great Plains (SGP), the North Slope of Alaska (NSA), and the Tropical Western Pacific (TWP)], which were carefully chosen to represent a broad range of climate conditions and answer specific scientific questions. The ACRF also includes an aerial vehicles program to provide airborne measurements and a ground-based mobile facility to provide a flexible instrument platform for data collection in selected locations of opportunity and need around the world. All ACRF data are available via the ARM Archive. The ACRF assets of the Office of Biological and Environmental Research are available to other agencies to support climate change research. As such, the fixed sites and aerial measurements may host other program and agency instruments or, in turn, the mobile facility may be hosted on platforms of other programs or agencies.

The first ARM Mobile Facility (AMF) was developed to address science questions beyond those addressed by the fixed measurement sites. The AMF contains many of the same instruments and data systems as the fixed sites, but is designed to be deployed around the world for campaigns lasting 6-12 months. Recent reviews (<http://www.arm.gov/publications/programdocs/doe-er-arm-0502.pdf> and http://www.sc.doe.gov/ober/berac/ARM_Report_Final.pdf) have determined that a single mobile facility is not sufficient to meet the scientific needs or to take advantage of the variety of synergistic opportunities for scientific progress afforded by interacting with other national and international field measurement efforts. A recent workshop (

<http://www.arm.gov/publications/programdocs/doe-sc-arm-0707.pdf>) recommended that a new mobile facility be more modular, thus more easily transportable than the existing AMF. The workshop also recommended that the new mobile facility be designed for marine deployments. Modularity is a requirement for marine deployment; other requirements include that the design ensures resistance to the harsh environment of shipboard deployments and must ensure that instruments can be stabilized to ensure data quality. Thus, funds are available to design and assemble an additional mobile facility that is similar to the current design, but more modular and robust, allowing the ACRF to respond to a growing number of meritorious requests. Although the new mobile facility should be designed to meet marine deployment (<http://www.arm.gov/publications/programdocs/doe-sc-arm-0707.pdf>) requests, the proposer should recognize that use of the second ARM Mobile Facility (AMF2) will not be limited to shipboard deployments but will also be used for deployments on land.

This announcement is only for proposals to build and then operate the AMF2 when it is deployed. This announcement is not for proposals for location specific deployments of the AMF2 after it is built. Proposals must, however, include a generic description of the processes that would be used in all phases of deploying the AMF2. All requests from the science community for use of the AMF2 will be conducted through the ACRF Field Campaign request process (See http://www.arm.gov/acrf/submit_proposals.stm). Final approval of all AMF2 deployments will be made by the DOE ACRF Program Manager.

DATES: Full proposals submitted in response to this Announcement must be submitted using the **Office of Science Field Work Proposal Instructions** provided in the **Notice to Users** section on the ePMA home page: <http://epma.energy.gov>, and must be received no later than 8:00 p.m., Eastern Time, April 30, 2008, to be accepted for merit review and to permit timely consideration for award in Fiscal Year 2009. All proposers are requested to inform Dr. Ferrell (wanda.ferrell@science.doe.gov) of their intent to propose by March 1. For the e-mail, please identify, "Program Announcement LAB 08-14" in the subject line of the email.

Please see the "Addresses" section below for further instructions on the methods of submission for the full proposal.

ADDRESSES: A complete formal FWP in a single Portable Document Format (PDF) document that has 'formatted text and graphics' (also known as "native" PDF) must be submitted using the **Office of Science Field Work Proposal Instructions** provided in the Notice to Users section on the ePMA home page: <http://epma.energy.gov>. (This submission process includes sending the FWP via CD using Federal Express).

In addition to the submission instructions on the <http://epma.energy.gov> web site, please submit, via federal express, a single PDF file of the entire LAB proposal and FWP on a CD along with two hard copies to the address below. This will assist in expediting the review process.

Send via Fed Ex to: Wanda Ferrell/K. Leslie Runion, SC-23.3/Germantown Building, U.S. Department of Energy, 1000 Independence Ave., SW, Washington, DC 20585-1290

SUPPLEMENTARY INFORMATION: The scope of the program to be supported under this announcement is to build and then operate a second ACRF Mobile Facility whenever and wherever it is deployed to measure radiation and cloud properties, processes and their interaction with atmospheric radiative fluxes.

Program Funding

Given the available funds it will require two years to complete the construction and acquisition of instruments. The anticipated annual awards for FY 2009 and FY 2010 will be on the order of \$2.6M. The proposal should define the timeline that will be used to complete the construction of the AMF2. Thereafter, funding levels in sequential years are expected to be approximately \$2.6M, depending on the availability of funds.

Elements of the proposal

The AMF2 will be a new ACRF resource that can support scientific proposals to conduct experiments in climatically important regions of the globe. The primary criterion for ACRF support is that the proposed experiment will significantly contribute to the understanding of clouds, aerosols, radiation and the climate system. The scientific objectives of each AMF2 deployment will establish the needed remote sensing instrumentation and logistics. The AMF2 instrumentation will be consistent with instrumentation of the current AMF (See <http://www.arm.gov/sites/amf/instruments.stm>), and the data shall be submitted to the ARM archive in a Network Common Data Form (NetCDF) format with data quality flags and metadata. Operation of the AMF2 shall adhere to all ACRF policies and procedures; thus, the successful proposer will report to the ACRF Operations Manager.

All elements of the proposal will be subjected to peer review and therefore must include sufficient detail for this review.

1. Instrumentation

The instrumentation of the AMF2 must meet the same specifications as the instrumentation of the current AMF except the Surface Aerosol Observing System (See <http://www.arm.gov/sites/amf/instruments.stm>). Specifications for procurement of the AMF2 instrumentation will be defined by the proposer, but acquisition of these instrumentation will be through the ARM Technical Office unless the proposer can demonstrate comparable overhead rates for capital expenditures.

2. Data Acquisition and Data Quality

The proposal should address the methodology for acquiring, quality assuring, and submitting of data to the archive. This section need not be lengthy, since the methodologies must conform with existing systems and practices. For example, the successful proposer will be required to use existing data ingests for the instrumentation in order to ensure the AMF2 data are identical in format with the other ACRF data holdings. The successful proposer will not be responsible for

data quality, since this will be the responsibility of current ACRF personnel (mentors and the data quality office).

3. Design details and timeline of the build

This section should provide information from which the Program Manager and the reviewers can determine whether the new facility will be sufficiently robust to be deployed in a marine or other harsh environment. This should include stabilization of instruments to provide stable measurements as well as steps taken to ensure resistance to the harsh marine environment. The timeline should clearly define the milestones for designing and building the facility and an estimate of a possible deployment date.

4. Deployment Strategies

This section should generically address the processes that would be used in all phases of a deployment of the AMF2. This includes providing estimates for the deployment associated with each proposal to use the facility, working with the lead PI to ensure that the requirements for the deployment experiment will be met, developing the contracts and agreements with the host locality, transport of the facility, the provision of on-site technical support, and set up and "tear down" of the facility. This section should also provide information on how the team will interface with the rest of the ACRF infrastructure.

5. Design and Build Team

This section should provide the qualifications of each member of the team and should clearly define the roles of each member of the team.

6. Operations Team

This section should provide the qualifications of each member of the team and should clearly define the roles of each member of the team.

7. Budget for building the AMF2

8. Budget for Operations

This should provide information on the management costs for a deployment. If the proposer intends to use a specific support team of technicians for all deployments, this section should also provide the charge out rates of the team. The costs for any other support that will be used for all deployments should be included in this section.

9. All proposals submitted in response to this Announcement must explicitly state how the proposed project will support accomplishment of the BER Climate Change Research Division's (CCRD) Long Term Measure which is to "Deliver improved scientific data and models about the potential response of the Earth's climate and terrestrial biosphere to increased greenhouse gas levels for policy makers to determine safe levels of greenhouse gases in the atmosphere."

Submission Information

The following is a list of essential items that a proposal must contain:

- 1. Field Work Proposal (FWP) Format** - Complete and signed by appropriate officials.
- 2. Proposal Cover Page**
- 3. Table of Contents**
- 4. Budget Page(s) (Form DOE F 4620.1)** - Complete a separate Budget Page for the build and the operations stages of the project. It is not necessary to submit a summary budget for the entire multi-year period.
- 5. Other Project Information**

a. A one-page abstract (on a page by itself). The abstract should include: name of the laboratory; name of the principal investigator and the principal investigator's email address and phone number; name of the co-principal investigator (if any) and the co-principal investigator's email address and phone number; a summary of the project narrative, including the technical qualifications of the principal investigator.

b. Project Narrative: A detailed description of the proposed management of the AMF2 is required. The major part of the narrative should be devoted to a description and justification of the proposal elements: **Instrumentation, data acquisition and data quality, design details and build timeline, deployment strategies, and roles of the build and operations teams.**

The page limit is as follows: no more than 25 pages for the description of building the AMF2 and no more than 25 pages for the description of the operations of the AMF2.

c. Biographical Sketches: Detailed information about the background and experience of the principal investigator and co-principal investigator (if any). Biographical sketches are limited to two pages for the principal investigator, and two pages for the co-principal investigator (if any).

d. Long Term Measure

e. Facilities and Resources: Include information on the experience of the proposer's organization, its facilities, and resources that would be relevant to successful operation of the project.

f. Statement of all current and pending support for the principal investigator and co-principal investigator (if any), including the time devoted to each project by the principal investigator and co-principal investigator (if any).

The instructions and format described below should be followed. You must reference Program Announcement LAB 08-14 on all submissions and inquiries about this program.

OFFICE OF SCIENCE
GUIDE FOR PREPARATION OF SCIENTIFIC/TECHNICAL PROPOSALS
TO BE SUBMITTED BY NATIONAL LABORATORIES

Proposals from National Laboratories submitted to the Office of Science (SC) as a result of this program announcement will follow the Department of Energy Field Work Proposal process with additional information requested to allow for scientific/technical merit review. The following guidelines for content and format are intended to facilitate an understanding of the requirements necessary for SC to conduct a merit review of a proposal. Please follow the guidelines carefully, as deviations could be cause for declination of a proposal without merit review.

1. Evaluation Criteria

Proposals will be subjected to formal merit review (peer review) and will be evaluated against the following criteria which are listed in descending order of importance:

- 1. Appropriateness of the design and building plans:** Does the proposed design meet the criteria for marine deployments and modularity?
- 2. Operational Strategies:** Does the proposal adequately address the operational issues for a deployment? Are these strategies appropriate for meeting the scientific objectives of a proposed experiment?
- 3. Management Issues:** Is the management structure appropriate for the development and operation of the AMF2?
- 4. Competency of Proposal Personnel and Adequacy of Proposed Resources.**
- 5. Occupational Safety:** Provision of safeguards that ensure the safety of personnel associated with AMF2 activities.
- 6. Reasonableness and Appropriateness of the proposed budgets** for building and operating the AMF2.

The evaluation process will include program policy factors such as the relevance of the proposed research to the terms of the announcement and the Department's programmatic needs. 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 a proposal constitutes agreement that this is acceptable to the investigator(s) and the submitting institution.

2. Summary of Proposal Contents

- Field Work Proposal (FWP) Format (Reference DOE Order 412.1A) (DOE ONLY)
- Proposal Cover Page

- Table of Contents
- Budget (DOE Form 4620.1) and Budget Explanation
- Abstract (one page)
- Narrative (main technical portion of the proposal, including background/introduction, proposed research and methods, timetable of activities, and responsibilities of key project personnel; page limit: no more than 25 pages for the description of building the AMF2; no more than 25 pages for the description of the operations of the AMF2.)
- Biographical Sketch(es)
- Long Term Measure
- Description of Facilities and Resources
- Statement of all Current and Pending Support
- Appendix (optional)

2.1 Number of Copies to Submit

A complete formal FWP in a single Portable Document Format (PDF) document that has 'formatted text and graphics' (also known as 'native' PDF) must be submitted using the **Office of Science Field Work Proposal Instructions** provided in the Notice to Users section on the ePMA home page: <http://epma.energy.gov>. (This submission process includes sending the FWP via CD using Federal Express).

In addition to the submission instructions on the <http://epma.energy.gov> web site, please submit, via federal express, a single PDF file of the entire LAB proposal and FWP on a CD along with two hard copies to the address below. This will assist in expediting the review process.

Send via Fed Ex to: Wanda Ferrell/K. Leslie Runion, SC-23.3/Germantown Building, U.S. Department of Energy, 1000 Independence Ave., SW, Washington, DC 20585-1290

3. Detailed Contents of the Proposal

Adherence to type size and line spacing requirements is necessary for several reasons. No researcher should have the advantage, or by using small type, of providing more text in their proposals. Small type may also make it difficult for reviewers to read the proposal. Proposals must have 1-inch margins at the top, bottom, and on each side. Type sizes must be 11 point. Line spacing is at the discretion of the researcher but there must be no more than 6 lines per vertical inch of text. Pages should be standard 8 1/2" x 11" (or metric A4, i.e., 210 mm x 297 mm).

3.1 Field Work Proposal Format (Reference DOE Order 412.1A)

The Field Work Proposal (FWP) is to be prepared and submitted consistent with policies of the investigator's laboratory and the local DOE Operations Office. Additional information is also requested to allow for scientific/technical merit review. Laboratories may submit proposals directly to the SC Program office listed above. A copy should also be provided to the appropriate DOE operations office.

3.2 Proposal Cover Page

The following proposal cover page information may be placed on plain paper. No form is required.

Title of proposed project
SC Program announcement title
Name of laboratory
Name of principal investigator (PI)
Position title of PI
Mailing address of PI
Telephone of PI
Fax number of PI
Electronic mail address of PI
Name of official signing for laboratory*
Title of official
Fax number of official
Telephone of official
Electronic mail address of official
Requested funding for each year; total request

Use of human subjects in proposed project:

If activities involving human subjects are not planned at any time during the proposed project period, state "No"; otherwise state "Yes", provide the IRB Approval date and Assurance of Compliance Number and include all necessary information with the proposal should human subjects be involved.

Use of vertebrate animals in proposed project:

If activities involving vertebrate animals are not planned at any time during this project, state "No"; otherwise state "Yes" and provide the IACUC Approval date and Animal Welfare Assurance number from NIH and include all necessary information with the proposal.

Signature of PI, date of signature

Signature of official, date of signature*

*The signature certifies that personnel and facilities are available as stated in the proposal, if the project is funded.

3.3 Table of Contents

Provide the initial page number for each of the sections of the proposal. Number pages consecutively at the bottom of each page throughout the proposal. Start each major section at the top of a new page. Do not use unnumbered pages and do not use suffices, such as 5a, 5b.

3.4 Budget and Budget Explanation

A detailed budget is required for each fiscal year. It is preferred that DOE's budget page, Form 4620.1 be used for providing budget information*. Modifications of categories are permissible to comply with institutional practices, for example with regard to overhead costs.

A written justification of each budget item is to follow the budget pages. For personnel this should take the form of a one-sentence statement of the role of the person in the project. Provide a detailed justification of the need for each item of permanent equipment. Explain each of the other direct costs in sufficient detail for reviewers to be able to judge the appropriateness of the amount requested.

Further instructions regarding the budget are given in section 4 of this guide.

* Form 4620.1 is available at web site: <http://www.science.doe.gov/grants/budgetform.pdf>

3.5 Abstract

Provide an abstract of less than 400 words. Give the project objectives (in broad scientific terms), the approach to be used, and what the research is intended to accomplish. State the hypotheses to be tested (if any). At the top of the abstract give the project title, names of all the investigators and their institutions, and contact information for the principal investigator, including e-mail address.

3.6 Narrative (main technical portion of the proposal, including background/introduction, proposed research and methods, timetable of activities, and responsibilities of key project personnel).

The narrative comprises the research plan for the project. It should contain enough background material in the Introduction, including review of the relevant literature, to demonstrate sufficient knowledge of the state of the science. The major part of the narrative should be devoted to a description and justification of the proposed project, including details of the methods to be used. It should also include a timeline for the major activities of the proposed project, and should indicate which project personnel will be responsible for which activities.

If any portion of the project is to be done in collaboration with another institution (or institutions), provide information on the institution(s) and what part of the project it will carry out. Further information on any such arrangements is to be given in the sections "Budget and Budget Explanation", "Biographical Sketches", and "Description of Facilities and Resources".

All proposals submitted in response to this Announcement must explicitly state how the proposed project will support accomplishment of the BER Climate Change Research Division's (CCRD) Long Term Measure which is to "Deliver improved scientific data and models about the potential response of the Earth's climate and terrestrial biosphere to increased greenhouse gas levels for policy makers to determine safe levels of greenhouse gases in the atmosphere."

3.7 Biographical Sketches

This information is required for senior personnel at the institution submitting the proposal and at all subcontracting institutions (if any). The biographical sketch is limited to a maximum of **two pages** for each investigator.

To assist in the identification of potential conflicts of interest or bias in the selection of reviewers, the following information **must be provided in each biographical sketch**.

Collaborators and Co-editors: A list of all persons in alphabetical order (including their current organizational affiliations) who are currently, or who have been, collaborators or co-authors with the investigator on a research project, book or book article, report, abstract, or paper during the 48 months preceding the submission of the proposal. Also include those individuals who are currently or have been co-editors of a special issue of a journal, compendium, or conference proceedings during the 24 months preceding the submission of the proposal. If there are no collaborators or co-editors to report, this should be so indicated.

Graduate and Postdoctoral Advisors and Advisees: A list of the names of the individual's own graduate advisor(s) and principal postdoctoral sponsor(s), and their current organizational affiliations. A list of the names of the individual's graduate students and postdoctoral associates during the past five years, and their current organizational affiliations.

3.8 Description of Facilities and Resources

Facilities to be used for the conduct of the proposed research should be briefly described. Indicate the pertinent capabilities of the institution, including support facilities (such as machine shops), that will be used during the project. List the most important equipment items already available for the project and their pertinent capabilities. Include this information for each subcontracting institution (if any).

3.9 Statement of all Current and Pending Support

Other support is defined as all financial resources, whether Federal, non-Federal, commercial, or institutional, available in direct support of an individual's research endeavors. Information on active and pending other support is required for all senior personnel, including investigators at collaborating institutions to be funded by a subcontract. For each item of other support, give the organization or agency, inclusive dates of the project or proposed project, annual funding, and level of effort (months per year or percentage of the year) devoted to the project.

3.10 Appendix (optional)

Information not easily accessible to a reviewer may be included in an appendix. Reviewers are not required to consider information in an appendix, and reviewers may not have time to read extensive appendix materials with the same care they would use with the proposal proper. The appendix may contain the following items: up to five publications, manuscripts accepted for publication, abstracts, patents, or other printed materials directly relevant to this project, but not generally available to the scientific community; and letters from investigators at other institutions stating their agreement to participate in the project (do not include letters of endorsement of the project).

4. Detailed Instructions for the Budget

(DOE Form 4620.1 "Budget Page" may be used).

4.1 Salaries and Wages

List the names of the principal investigator and other key personnel and the estimated number of person-months for which DOE funding is requested. Proposers should list the number of postdoctoral associates and other professional positions included in the proposal and indicate the number of full-time-equivalent (FTE) person-months and rate of pay (hourly, monthly or annually). For graduate and undergraduate students and all other personnel categories such as secretarial, clerical, technical, etc., show the total number of people needed in each job title and total salaries needed. Salaries requested must be consistent with the institution's regular practices. The budget explanation should define concisely the role of each position in the overall project.

4.2 Equipment

DOE defines equipment as "an item of tangible personal property that has a useful life of more than two years and an acquisition cost of \$25,000 or more." Special purpose equipment means equipment which is used only for research, scientific or other technical activities. Items of needed equipment should be individually listed by description and estimated cost, including tax, and adequately justified. Allowable items ordinarily will be limited to scientific equipment that is not already available for the conduct of the work. General purpose office equipment normally will not be considered eligible for support.

4.3 Domestic Travel

The type and extent of travel and its relation to the research should be specified. Funds may be requested for attendance at meetings and conferences, other travel associated with the work and subsistence. In order to qualify for support, attendance at meetings or conferences must enhance the investigator's capability to perform the research, plan extensions of it, or disseminate its results. Consultant's travel costs also may be requested.

4.4 Foreign Travel

Foreign travel is any travel outside Canada and the United States and its territories and possessions. Foreign travel may be approved only if it is directly related to project objectives.

4.5 Other Direct Costs

The budget should itemize other anticipated direct costs not included under the headings above, including materials and supplies, publication costs, computer services, and consultant services (which are discussed below). Other examples are: aircraft rental, space rental at research establishments away from the institution, minor building alterations, service charges, and fabrication of equipment or systems not available off-the-shelf. Reference books and periodicals may be charged to the project only if they are specifically related to the research.

a. Materials and Supplies

The budget should indicate in general terms the type of required expendable materials and supplies with their estimated costs. The breakdown should be more detailed when the cost is substantial.

b. Publication Costs/Page Charges

The budget may request funds for the costs of preparing and publishing the results of research, including costs of reports, reprints page charges, or other journal costs (except costs for prior or early publication), and necessary illustrations.

c. Consultant Services

Anticipated consultant services should be justified and information furnished on each individual's expertise, primary organizational affiliation, daily compensation rate and number of days expected service. Consultant's travel costs should be listed separately under travel in the budget.

d. Computer Services

The cost of computer services, including computer-based retrieval of scientific and technical information, may be requested. A justification based on the established computer service rates should be included.

e. Subcontracts

Subcontracts should be listed so that they can be properly evaluated. There should be an anticipated cost and an explanation of that cost for each subcontract. The total amount of each subcontract should also appear as a budget item.

4.6 Indirect Costs

Explain the basis for each overhead and indirect cost. Include the current rates.