Office of Science
Notice DE-FG01-03ER03-22

AmeriFlux Research in Support of North American Carbon Program (NACP)

Department of Energy

Office of Science Financial Assistance Program Notice DE-FG01-03ER03-22: AmeriFlux Research in Support of North American Carbon Program (NACP)

AGENCY: U.S. Department of Energy

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 enhancement of the AmeriFlux Research Program.

DATES: The deadline for receipt of formal applications is 4:30 p.m., E.D.T., May 5, 2003, to be accepted for merit review and to permit timely consideration for award in Fiscal Year 2003.

ADDRESSES: Formal applications referencing Program Notice DE-FG01-03ER03-22 must be sent electronically by an authorized institutional business official through DOE's Industry Interactive Procurement System (IIPS) at: http://e-center.doe.gov (see also http://www.sc.doe.gov/production/grants/grants.html). IIPS provides for the posting of solicitations and receipt of applications in a paperless environment via the Internet. In order to submit applications through IIPS your business official will need to register at the IIPS website. The Office of Science will include attachments as part of this Notice that provide the appropriate forms in PDF fillable format that are to be submitted through IIPS utilizing no more than four files. Color images should be submitted in IIPS as a separate file in PDF format and identified as such. These images should be kept to a minimum due to the limitations of reproducing them. They should be numbered and referred to in the body of the technical scientific application as Color image 1, Color image 2, etc. Questions regarding the operation of IIPS may be E-mailed to the IIPS Help Desk at: HelpDesk@pr.doe.gov, or you may call the help desk at: (800) 683-0751. Further information on the use of IIPS by the Office of Science is available at: http://www.sc.doe.gov/production/grants/grants.html.

If you are unable to submit the application through IIPS, please contact the Grants and Contracts Division, Office of Science at: (301) 903-5212, in order to gain assistance for submission through IIPS or to receive special approval and instruction on how to submit printed applications.

FOR FURTHER INFORMATION CONTACT: Dr. Roger C. Dahlman, Program Manager, SC-74, OBER/Germantown Bldg, U.S. Dept of Energy, 1000 Independence Ave SW, Washington, DC 20585-1290 (301) 903-4951, E-mail: roger.dahlman@science.doe.gov, fax: (301) 903-8519. The full text of Program Notice DE-FG01-03ER03-22 is available via the Internet using the following web site address: http://www.sc.doe.gov/production/grants/grants.html. Applicants are strongly encouraged to match their research applications to the terms of scope for this announcement, and therefore preapplications are not required. Brief questions for clarification can be addressed to Dr. Dahlman, by e-mail, roger.dahlman@science.doe.gov.

SUPPLEMENTARY INFORMATION: The North American Carbon Program (NACP) is a framework for providing scientific information on sources and sinks of CO2, CH4 and CO for North America. It is a planned field program of experiments, flux measurements, data analysis, and modeling that will be implemented by various Federal Agencies. The NACP is discussed briefly as an element of Carbon Cycle Chapter of the Climate Change Research Program Strategic Plan posted on the web site, http://www.climatescience.gov/Library/stratplan2003/ccspstratplan2003-11nov2002.pdf (pp 100-111), and reviewed by the December 2002 Workshop in Washington D.C. A discussion of NACP is available from the U.S. Global Change Research Office (see reference below). The initial phase of NACP will start in the 2003-2006 time frame, and will include measurement and modeling of carbon sources and sinks of North America. The NACP is an important component of U. S. Federal Agencies' research on carbon cycle science.

Carbon dioxide flux measurement is one key approach for estimating net carbon gain or loss by terrestrial ecosystems of North America. Such measurements are currently carried out at a network of AmeriFlux sites that are partially representative of different ecosystems of North America. As described in the NACP Report (2002), AmeriFlux measurements are expected to contribute significantly to the goals of NACP, and a "high priority enabling development" calls for the "transformation of the AmeriFlux network into an integrated, near-real time network" that will support goals of the NACP. With upgraded instrumentation and advanced measurement technology, it is anticipated that atmospheric CO2 concentration can also be determined at an accuracy and precision that can augment real-time and flask sampling networks. Augmented measurement capability offers the potential of substantially increasing knowledge of terrestrial carbon budgets and atmospheric CO2 concentration for important regions of North America.

The intent of this solicitation therefore is to augment the AmeriFlux network and enhance CO2 and carbon measurement capacities in support of the NACP. This solicitation requests applications that will address the following technical requirements:

1) Creation of selected new AmeriFlux sites for obtaining micrometeorological data on the exchanges of CO2 and energy using the eddy covariance technique, where it is determined that new sites would provide essential and critical support for initial field program(s) of NACP. New AmeriFlux sites must be compatible with observation and intensive field programs of NACP, which are designed to measure and understand sources and sinks of CO2 and CH4 in North America. Expanded AmeriFlux research will also support development and testing of intensive field program methodologies, and will

participate in different approaches for estimating CO2 and fluxes and carbon sinks. An initial phase of NACP intensive research is planned for the upper Midwest region of the USA, which is approximately bounded by Minnesota/Wisconsin on the north, Missouri/Oklahoma on the south, Indiana on the east and Nebraska on the west. It is possible that NACP field programs may be restricted to only a portion of this region. This solicitation is requesting applications for new AmeriFlux research in the Midwest region.

The NACP envisions a number of intensive field studies possibly at other geographical locations in the South East, North East, and Western United States, and ultimately decisions on location and phasing of future intensives will guide the selection of new AmeriFlux sites. Strong consideration in the selection of new sites will be based on potential contributions to NACP priorities, particularly those that fill geographical or biogeographical gaps within the region of the first intensive field program, and with critical biomes and/or climatic zones that currently lack coverage. Pending availability of funds, applications for creating new sites at other geographical locations of the U.S. may be supported in Fiscal Year 2004 or later.

New-site applications must, of course, be based on representative vegetation, and demonstrate that sites possess appropriate physical attributes amenable to producing high-quality net ecosystem exchange (NEE) of CO2 data. Diversity of regional ecosystem types, and the inclusion of types that theoretically represent terrestrial carbon sinks are important considerations for new site selection. New-site selections that involve agricultural ecosystems will be coordinated with the U.S. Department of Agriculture (USDA) because a companion Agriflux intramural program has been proposed by USDA as another component of NACP. Applicants are strongly encouraged to review the current extant and properties of AmeriFlux sites, and propose new sites responsive to these criteria. Information about current research strategy of the AmeriFlux network can be obtained from the web site, http://public.ornl.gov/ameriflux/Participants/Sites/Map/index.cfm.

2) Upgrading micrometeorological and biological measurements at existing AmeriFlux sites within the upper Midwest region that are currently co-located with planned field program(s) of NACP, as noted in item (1) above. Upgrades that will be considered include: Instrumentation for better quantifying CO2 fluxes; Precise measurements of atmospheric CO2; Enhanced measurement capacity to deliver the full suite of core measurements recommended in the AmeriFlux science plan, http://public.ornl.gov/ameriflux/About/scif.cfm; Improved availability, calibration, quality control and documentation of site data; Redundancy of equipment to minimize data gaps; and Systematic corresponding biological measurements for independent estimation of net ecosystem productivity (NEP). Priority will be given to requests that improve cohesion of network measurements. With improved precision and accuracy of atmospheric CO2 concentration measurements, emphasis will be placed on sites that will augment initial phases of NACP intensive field programs and observing networks. In addition, since the overall value of the AmeriFlux network and its contribution to NACP depend on data sharing and data inter-comparison, only those existing AmeriFlux sites that have made NEE, biological and NEP data available to the science community

through the AmeriFlux network data system (Carbon Dioxide Information Analysis Center) will be eligible for upgrade awards.

For both items (1) and (2) applicants are strongly encouraged to review NACP goals and major elements (NACP, 2002), and explain and justify how proposed research will likely contribute to the overall NACP research strategy, and specifically how the research will improve measurements of carbon flux measurements and estimates of carbon budgets and sinks. Importantly, the proposed research must demonstrate a capability to produce high-quality measurements and provide seasonal and annual estimates of net ecosystem exchange of CO2. Additionally, best efforts of the proposed research are expected to produce core AmeriFlux measurements (e.g., NEE, carbon budgets and fluxes of ecosystem components, including uncertainty estimates) in quantities and format that would be compatible with related NACP land-based carbon inventories and with atmospheric CO2 concentration and profiling data. For item (1) upgraded capacity might include investments in instrumentation, reference gases, more systematic measurement protocols, for example.

3) Support of selected Science Team AmeriFlux activities that would contribute most effectively to science goals of NACP. This could include, for example, participation in priority field programs that require synthesis and integration using measurements and modeling of AmeriFlux results as part of intensive campaigns and NACP biological inventories. For reference, applicants may wish to review current AmeriFlux activities (http://public.ornl.gov/ameriflux/Participants/Sites/Map/index.cfm). Applications addressing this technical requirement must identify how proposed augmentation of current research and analysis would contribute to the NACP.

NACP Reference: The North American Carbon Program (NACP), A Report of the NACP Committee of the U.S. Carbon Cycle Science Steering Group, Steven C. Wofsy and Robert C. Harriss, Co-chairs, 2002. Available from the USGCRP Office, 1717 Pennsylvania Avenue NW, Suite 250, Washington, DC 20006.

Program Funding

It is anticipated that approximately $2.0 million will be available for grant awards in Fiscal Year 2003, contingent upon availability of appropriated funds. Previous awards for the creation and operation of a new site have ranged from $100,000 up to $300,000 per year, with most not exceeding $200,000. Each site application must provide a "facility" budget and an "operational" budget. Applications to create a new AmeriFlux site may be eligible for a multi- year award, where the first-year budget would include costs of site development and instrumentation, and successive-year budgets would include nominal operational costs. Applications to upgrade measurement capacity at an existing AmeriFlux site would be limited to a one-year award because most of the investment is expected to be for equipment. Sustaining operational budgets would be reflected in existing grants or renewal applications. Multi-year applications may not exceed 3 years in duration. Most awards are expected to meet these criteria; however, applicants with exceptional budgeting circumstances should discuss them with the Program Manager for

this solicitation. Funding of multiple year grant awards is contingent upon availability of appropriated funds.

Merit Review

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 process will include program policy factors such as the relevance of the proposed research to the terms of the announcement and agency's programmatic needs. Note that 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.

Submission Information

Information about the 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 research project description must be 15 pages or less, exclusive of attachments and must contain an abstract or summary of the proposed research. 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. 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.

The applicants are asked to submit an electronic copy of the abstract in ASCII format to karen.carlson@science.doe.gov. The abstract should include the following information: PI and co-PI's, their institutions, brief summary of research, including identification of principal subcontractor/collaborators even if no funds are requested for their support.

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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