

**FINANCIAL ASSISTANCE
FUNDING OPPORTUNITY ANNOUNCEMENT**



**U.S. Department of Energy
Office of Science
Office of Biological and Environmental Research**

SciDAC: Earth System Model Development

**Funding Opportunity Number: DE-FOA-0000452
Announcement Type: Initial
CFDA Number: 81.049**

Issue Date: December 22, 2010

**Pre-Application Due Date: January 24, 2011, 4:30 p.m. Eastern Time
(Preapplications are Required)**

Application Due Date: March 21, 2011, 11:59 p.m. Eastern Time

Where to Submit:

NOTE: REQUIREMENTS FOR GRANTS.GOV

Where to Submit: Applications must be submitted through Grants.gov to be considered for award. You cannot submit an application through Grants.gov unless you are registered. Please read the registration requirements carefully and start the process immediately. Remember you have to update your CCR registration annually. If you have any questions about your registration, you should contact the Grants.gov Helpdesk at 1-800-518-4726 to verify that you are still registered in Grants.gov.

Registration Requirements: There are several one-time actions you must complete in order to submit an application through Grants.gov (e.g., obtain a Dun and Bradstreet Data Universal Numbering System (DUNS) number, register with the Central Contract Registry (CCR), register with the credential provider, and register with Grants.gov). See <http://www.grants.gov/GetStarted>. Use the Grants.gov Organization Registration Checklist at <http://www.grants.gov/assets/OrganizationRegCheck.pdf> to guide you through the process. Designating an E-Business Point of Contact (EBiz POC) and obtaining a special password called an MPIN are important steps in the CCR registration process. Applicants, who are not registered with CCR and Grants.gov, should allow at least 21 days to complete these requirements. It is suggested that the process be started as soon as possible.

IMPORTANT NOTICE TO POTENTIAL APPLICANTS: When you have completed the process, you should call the Grants.gov Helpdesk at 1-800-518-4726 to verify that you have completed the final step (i.e. Grants.gov registration).

Questions: Questions relating to the registration process, system requirements, how an application form works, or the submittal process must be directed to Grants.gov at 1-800-518-4726 or support@grants.gov. Part VII of this FOA explains how to submit other questions to the Department of Energy (DOE).

Application Receipt Notices

After an application is submitted, the Authorized Organization Representative (AOR) will receive a series of four e-mails. It is extremely important that the AOR watch for and save each of the emails. It may take up to two (2) business days from application submission to receipt of email Number 2. The titles of the four e-mails are:

Number 1 - Grants.gov Submission Receipt Number

Number 2 - Grants.gov Submission Validation Receipt for Application Number

Number 3 - Grants.gov Grantor Agency Retrieval Receipt for Application Number

Number 4 - Grants.gov Agency Tracking Number Assignment for Application Number

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PART I – FUNDING OPPORTUNITY DESCRIPTION

GENERAL INQUIRIES ABOUT THIS FUNDING OPPORTUNITY ANNOUNCEMENT (FOA) SHOULD BE DIRECTED TO:

Technical/Scientific Program Contacts:

Program Manager: Dr. Dorothy Koch
U. S. Department of Energy
Office of Biological and Environmental Research
Climate and Environmental Sciences Division
Earth System Modeling
Phone: 301-903-0105
E-Mail: dorothy.koch@science.doe.gov

Program Manager: Dr. Renu Joseph
U. S. Department of Energy
Office of Biological and Environmental Research
Climate and Environmental Sciences Division
Regional and Global Climate Modeling
Phone: 301-903-9237
E-Mail: renu.joseph@science.doe.gov

STATUTORY AUTHORITY

Public Law 95-91, US Department of Energy Organization Act
Public Law 109-58, Energy Policy Act of 2005

APPLICABLE REGULATIONS

U.S. Department of Energy Financial Assistance Rules, codified at 10 CFR Part 600
U.S. Department of Energy, Office of Science Financial Assistance Program Rule, codified at 10 CFR Part 605

SUMMARY:

The Office of Biological and Environmental Research (BER) of the Office of Science (SC), U.S. Department of Energy (DOE), hereby announces its interest in receiving applications for Earth System Modeling (ESM) projects as part of the SciDAC (Scientific Discovery through Advanced Computing) program with DOE's Office of Advanced Scientific Computing Research (ASCR). The SciDAC program fosters integration of high performance computing and computational science throughout all mission areas within SC. This opportunity addresses collaborative research to enhance climate model resolution, physical representation of processes, validation, and quantification of uncertainty. All projects should be relevant to the objectives of the Earth System Modeling program (<http://www.science.doe.gov/ober/CESD/esm.html>) within BER's Climate and Environmental Sciences Division (CESD). The relevant temporal scales of interest

to the program range from decades to centuries.

In order to advance the simulation and predictive capabilities of state-of-science climate models, new approaches are needed to increase the spatial resolution, develop and incorporate refinements to physical process representation, and enhance quantification of uncertainty and model validation. National investments in computer science and petascale computing in recent decades have enabled DOE science to be at the forefront of many areas of the physical sciences. DOE's SciDAC program (<http://www.science.doe.gov/ascr/Research/SciDAC.html>) is intended to couple these investments in computer science and leadership class computing with scientists from across the major program offices within DOE's Office of Science. This FOA is to facilitate direct collaboration between computational scientists and climate model developers to enable breakthroughs in climate model simulation and prediction.

The BER ESM program aims to advance all aspects of climate science that leads to improved predictability of the earth climate for higher resolution and with reduced uncertainty. The first goal is to improve the accuracy and skill of climate models by implementing enhanced ESM components, such as improved parameterizations for clouds, aerosols and chemistry, carbon cycle modeling, land surface processes, and sea and land ice representation. Development of these model components are expected to be accompanied by comparison with scale-appropriate measurements. A second goal is to understand the principle causes and effects of climate change, including potential abrupt changes in climate. Further information on the ESM program priorities within CESD may be found at: <http://www.sc.doe.gov/ober/Climate%20Strategic%20Plan.pdf>.

High risk, high pay-off research ideas that explore innovative new directions to advance the understanding, simulation and prediction of climate change are encouraged. Applications should clearly describe how the proposed ideas have the potential to lead to breakthroughs in earth system modeling.

Availability of advanced computer resources at DOE facilities provides unique opportunities to enhance earth system model component development. CESD will continue to support climate models based on definitive theoretical foundations and improved computational methods that run efficiently on current petascale and future high performance supercomputers.

SUPPLEMENTARY INFORMATION

The CESD Long Term Measure 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.*

To accelerate the science in support of the Long Term Measure, applications focused on the development of model components and/or high resolution formulations for Earth System Models are solicited.

Research applications in response to this FOA may therefore focus on improving climate system

models and/or their components to make them more accurate and computationally efficient. This may include improved or new process representation of the physical and biogeochemical components, and/or numerical formulations for high resolution modeling. Examples could include development of components or development of scale-aware parameterizations for atmospheric, oceanic, terrestrial or cryospheric systems. High-resolution formulations could include unstructured and/or adaptive grids or other innovative techniques for resolving convection/eddy dynamics. Projects may include focus on ESM component coupling and exchange.

Modeling projects that focus on the development of model components relevant to extreme shifts in the climate system or abrupt climate change are also encouraged. Relevant topics include investigations of major changes in the hydrologic system such as megadroughts, changes in the meridional ocean circulation, thawing of Arctic permafrost, melting of sea ice, and destabilization of ice sheets. Proposed research applications are strongly encouraged to address the following activities: articulating the thresholds, nonlinearities and fast feedbacks in the climate system with a focus on abrupt climate change, incorporating causal mechanisms into coupled climate models and testing the enhanced models against observational records of (post Last Glacial Maximum) past abrupt climate change.

A requirement of the SciDAC program is close coordination/collaboration with computational scientists. Ideal projects will include a multidisciplinary collaborative team of climate, mathematical and/or computational scientists. The collaboration should enable the development of cutting-edge algorithms and mathematical approaches designed to maximize use of current petascale computer architectures for enhancing climate modeling or evaluation. Possible foci of these collaborative efforts could include for example, development of new climate model components designed for current computer architectures, improvement of existing codes to enhance computer performance, development of model and/or observational visualization and data management systems, development of frameworks to provide model uncertainty quantification. Applicants should demonstrate the role of their proposed research in improving the accuracy and/or computational efficiency of ESMs envisioned for use in making forecasts of long-term climatic change. The projects should have a single lead investigator with clearly defined coordination among the team's science climate, mathematical and computer scientists.

Proposed projects that would integrate across DOE/BER research programs are particularly encouraged. This could be achieved by developing model components within community models like the Community Earth System Model (CESM), or by developing modular ESM components with a clear plan for implementation in the CESM within the project term. Model development may also link to developments within other CESD programs (http://www.science.doe.gov/ober/CESD_top.html) such as the Regional and Global Climate Modeling, Atmospheric Systems Research or Terrestrial Ecosystems Science or Integrated Assessment Programs. Applications should clearly describe how their research contributes measurably to the broad areas mentioned above. It should explicitly state and indicate how the project will be relevant to the Long Term Measure. Applications should also include a clear plan for the dissemination of any developed model code, and necessary documentation, to the climate modeling community.

To ensure that the CESD Modeling Program meets both the broad needs of the climate modeling research community and the specific needs of the CESD, successful investigators will participate

in the annual Science Team meeting. Costs for participation in the Science Team annual meeting and workshops should be included in each application. Yearly estimates for Science Team travel should be based on one trip of five days to Washington, DC.

It is anticipated but not guaranteed that successful PIs will obtain computing resources at various DOE National Laboratories to achieve the proposed scientific objectives, e.g., through proposals to the National Energy Research Scientific Computing (NERSC, <http://www.nersc.gov/>) and other Leadership Computing Facilities.

DATA SHARING POLICY:

Research data obtained through public funding are a public trust. As such, these data must be publicly accessible. To be in compliance with the data policy of the U.S. Global Change Research Program of full and open access to global change research data, applications submitted in response to this FOA must include a description of the applicant's data sharing plans if the proposed research involves the acquisition of data in the course of the research that would be of use to the climate change research and assessment communities. This includes data from extensive, long-term observations and experiments and from long-term model simulations of climate that would be costly to duplicate. The description must include plans for sharing the data that are to be acquired in the course of the proposed research, particularly how the acquired data will be preserved, documented, and quality assured, and where they will be archived for access by others. Data of potentially broad use in climate change research and assessments should be archived, when possible, in data repositories for subsequent dissemination. Examples of DOE-funded data repositories may be found at <http://cdiac.ornl.gov/>, http://www-pcmdi.llnl.gov/ipcc/about_ipcc.php. The repository where the applicant intends to archive the data should be notified in advance of the intention, contingent on a successful outcome of the application review. If data are to be archived at the applicant's home institution or in some other location, the application must describe how, where, and for how long the data will be documented and archived for access by others. Applicants are allowed an initial period of exclusive use of the acquired data to quality assure it and to publish papers based on the data, but they are strongly encouraged to make the data openly available as soon as possible after this period. DOE's Office of Biological and Environmental Research defines the exclusive use period to be one year after the end of the data acquisition period for the proposed performance period of the grant application but exceptions to extend this period may be justified for unique or extenuating circumstances.

PART II – AWARD INFORMATION

A. TYPE OF AWARD INSTRUMENT.

DOE anticipates awarding grants and cooperative agreements under this Funding Opportunity Announcement (FOA).

B. ESTIMATED FUNDING.

It is anticipated that up to \$3,000,000 will be available for multiple awards to be made in Fiscal Year 2011, contingent on the availability of appropriated funds. Applications may generally request project support up to three years, with out-year support contingent on the availability of funds, progress of the research and programmatic needs. DOE is under no obligation to pay for any costs associated with preparation or submission of applications.

C. MAXIMUM AND MINIMUM AWARD SIZE.

See B. Estimated Funding section above.

D. EXPECTED NUMBER OF AWARDS.

See B. Estimated Funding section above.

E. ANTICIPATED AWARD SIZE.

See B. Estimated Funding section above.

F. PERIOD OF PERFORMANCE.

See B. Estimated Funding section above.

G. TYPE OF APPLICATION.

DOE will accept new and renewal applications under this FOA.

Renewal applications are requests for additional funding for a period subsequent to that provided by a current award. Renewal applications compete with all other applications and must be submitted by any established due date/deadline or at least six months before additional funding is required if there is no specified due date/deadline. In preparing a renewal application, applicants should assume that reviewers will not have access to previous applications. The application should be developed as fully as though the applicant were applying for the first time.

RENEWAL APPLICATION INSTRUCTIONS

Renewal applications must include the same forms and information as a new application, in addition to the following:

1. Include under the project description/narrative section, information on any research changes (size or scope) that affect the original research endeavor.
2. Include an estimate of anticipated unexpended funds that will remain at the end of the current project period.
3. Include a progress report as an appendix to the narrative section (**this will not count against the page limit**) that describes the results of work accomplished through the date of the renewal application and how such results relate to the activities proposed to be undertaken in the renewal period.

PART III - ELIGIBILITY INFORMATION

A. ELIGIBLE APPLICANTS.

All types of entities are eligible to apply, except other Federal agencies, Federally Funded Research and Development Center (FFRDC) Contractors, and nonprofit organizations described in section 501(c)(4) of the Internal Revenue Code of 1986 that engaged in lobbying activities after December 31, 1995. Synergistic collaborations with researchers in Federal Laboratories and Federally Funded Research and Development Centers (FFRDCs), including the DOE National Laboratories are permitted. Collaborations should be limited to filling critical voids in expertise and represent only a modest portion of the overall effort.

B. COST SHARING

Cost sharing is not required.

C. OTHER ELIGIBILITY REQUIREMENTS

N/A

PART IV – APPLICATION AND SUBMISSION INFORMATION

A. ADDRESS TO REQUEST APPLICATION PACKAGE.

Application forms and instructions are available at Grants.gov. To access these materials, go to <http://www.grants.gov>, select “Apply for Grants,” and then select “Download Application Package.” Enter the CFDA and/or the Funding Opportunity Announcement number located on the cover of this FOA and then follow the prompts to download the application package.

B. LETTER OF INTENT AND PRE-APPLICATION.

1. Letter of Intent.

Letters of Intent are not required.

2. Pre-Application.

PRE-APPLICATIONS ARE REQUIRED.

Potential applicants are **required** to submit a brief preapplication, referencing **DE-FOA-0000452** for receipt by DOE by **4:30 p.m.**, Eastern Time, **January 24, 2011**. Preapplications will be reviewed for conformance with the guidelines presented in the FOA and suitability in the technical areas specified. A response to the preapplications encouraging or discouraging formal applications will be communicated to the applicants by **February 7, 2011**. Applicants who have not received a response regarding the status of their preapplication by this date are responsible for contacting the program to confirm this status.

Only those preapplicants that receive notification from DOE encouraging a formal application may submit full applications. **No other formal applications will be considered.** Preapplications referencing **DE-FOA-0000452** should be sent as PDF file attachments via e-mail to: SCSciDAC.model2011@science.doe.gov with "**Preapplication DE-FOA-0000452**" as the subject. **No FAX or mail submission of preapplications will be accepted.**

Potential applicants must submit a brief preapplication that consists of two to three pages of narrative describing the research objectives, the technical approach(s), and the proposed team members and their expertise. The intent in requesting a preapplication is to save the time and effort of applicants in preparing and submitting a formal project application that may be inappropriate for the program. Preapplications will be reviewed relative to the scope and research needs as outlined in the summary paragraph and in the SUPPLEMENTARY INFORMATION. The preapplication should identify, on the cover sheet, the title of the project, the institution or organization, principal investigator name, telephone number, fax number, and e-mail address and the amount of funding requested for each year for the project for each funded institution. No biographical data need be included, nor is an institutional endorsement necessary.

C. CONTENT AND FORM OF APPLICATION – SF 424 (R&R).

You must complete the mandatory forms and any applicable optional forms (e.g., SF-LLL-Disclosure of Lobbying Activities) in accordance with the instructions on the forms and the additional instructions below. **Files that are attached to the forms must be in Adobe Portable Document Format (PDF) unless otherwise specified in this FOA.**

1. SF 424 (R&R).

Complete this form first to populate data in other forms. Complete all the required fields in accordance with the pop-up instructions on the form. The list of certifications and assurances referenced in Field 17 can be found on the DOE Financial Assistance Forms page at http://management.energy.gov/business_doe/business_forms.htm, under Certifications and Assurances.

2. RESEARCH AND RELATED Other Project Information.

Complete questions 1 through 6 and attach files. The files must comply with the following instructions:

Project Summary/Abstract (Field 7 on the Form)

The project summary/abstract must contain a summary of the proposed activity suitable for dissemination to publication. It should be a single page that identifies the name of the applicant, the project director/principal investigator(s), the project title, the objectives of the project, a description of the project, including methods to be employed, the potential impact of the project (i.e., benefits, outcomes), and major participants (for collaborative projects). This document must not include any proprietary or sensitive business information as the Department may make it available to the public. The project summary must not exceed one page when printed single-spaced with font not smaller than 11 point using standard 8.5” by 11” paper with one-inch margins (top, bottom, left and right). To attach a Project Summary/Abstract, click “Add Attachment.”

Project Narrative (Field 8 on the form)

The Project Narrative comprises the research plan for the project and is limited, including text and figure legends, to **15 pages maximum** (8.5x11-inch pages of single-spaced, standard 11-point type with 1-inch margins pages), exclusive of attachments such as figures or references. 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 method 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.

The application narrative should begin with a cover page that includes the project title along with the lead Principal Investigator’s name and complete contact information.

The first page of your narrative must also include the following information:

Applicant/Institution:

Street Address/City/State/Zip:

Principal Investigator (PI):

PI Postal Address:

PI Telephone Number:

PI Email:

Funding Opportunity Announcement Number: DE-FOA-0000452

**DOE/Office of Science Program Office: Climate & Environmental Sciences
Division**

DOE/Office of Science Program Manager Contact: Dorothy Koch/Renu Joseph

DOE Grant Number (if Renewal Application)

Is this a Collaboration? If yes, please list ALL Collaborating Institutions/Pis and indicate which ones will also be submitting applications. Also indicate the PI who will be the point of contact and coordinator for the combined research activity.

Note that collaborating applications must be submitted separately.

The Project Narrative comprises the research plan for the project. 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 indicate which project personnel will be responsible for which activities.

The project narrative must include:

Project Objectives

This section should provide a clear, concise statement of the specific objectives/aims of the proposed project.

Appendix 1: Biographical Sketch Appendix.

Provide a biographical sketch for the project director/principal investigator (PD/PI) and each senior/key person listed in Section A on the R&R Budget form. **Provide the biographical sketch information as an appendix to your project narrative. Do not attach a separate file.** The biographical information for each person must not exceed two pages when printed on 8.5” by 11” paper with one-inch margins (top, bottom, left, and right) with font not smaller than 11 point and must include:

Education and Training. Undergraduate, graduate and postdoctoral training, provide institution, major/area, degree and year.

Research and Professional Experience: Beginning with the current position list, in chronological order, professional/academic positions with a brief description.

Publications. Provide a list of up to 10 publications most closely related to the proposed project. For each publication, identify the names of all authors (in the same sequence in which they appear in the publication), the article title, book or journal title, volume number, page numbers, year of publication, and website address if available electronically.

Patents, copyrights and software systems developed may be provided in addition to or substituted for publications.

Synergistic Activities. List no more than five professional and scholarly activities related to the effort proposed.

Identification of Potential Conflicts of Interest or Bias in Selection of Reviewers. Provide the following information in this section:

Collaborators and Co-editors: List in alphabetical order all persons, including their current organizational affiliation, who are, or who have been, collaborators or co-authors with you on a research project, book or book article, report, abstract, or paper during the 48 months preceding the submission of this application. Also, list any individuals who are currently, or have been, co-editors with you on a special issue of a journal, compendium, or conference proceedings during the 24 months preceding the submission of this application. If there are no collaborators or co-editors to report, state "None."

Graduate and Postdoctoral Advisors and Advisees: List the names and current organizational affiliations of your graduate advisor(s) and principal postdoctoral sponsor(s) during the last five years. Also, list the names and current organizational affiliations of your graduate students and postdoctoral associates during the past five years.

Appendix 2: Current and Pending Support.

Provide a list of all current and pending support (both Federal and non-Federal) for the Project Director/Principal Investigator(s) (PD/PI) and senior/key persons, including subawardees, for ongoing projects and pending applications. For each organization providing support, show the total award amount for the entire award period (including indirect costs) and the number of person-months per year to be devoted to the project by the senior/key person. **Provide the Current and Pending Support as an appendix to your project narrative. Do not attach a separate file.** Concurrent submission of an application to other organizations for simultaneous consideration will not prejudice its review.

Appendix 3: Bibliography & References Cited.

Provide a bibliography of any references cited in the Project Narrative. Each reference must include the names of all authors (in the same sequence in which they appear in the publication), the article and journal title, book title, volume number, page numbers, and year of publication. Include only bibliographic citations. Applicants should be especially careful to follow scholarly practices in providing citations for source materials relied upon when preparing any section of the application. **Provide the Bibliography and References Cited information as an appendix to your project narrative. Do not attach a separate file.**

Appendix 4. Facilities & Other Resources.

This information is used to assess the capability of the organizational resources, including subawardee resources, available to perform the effort proposed. Identify the facilities to be used (Laboratory, Animal, Computer, Office, Clinical and Other). If appropriate, indicate their capacities, pertinent capabilities, relative proximity, and extent of availability to the project. Describe only those resources that are directly applicable to the proposed work. Describe other resources available to the project (e.g., machine shop, electronic shop) and the extent to which they would be available to the project. **Provide the Facility and Other Resource information as an appendix to your project narrative. Do not attach a separate file.**

Appendix 5: Equipment.

List major items of equipment already available for this project and, if appropriate identify location and pertinent capabilities. **Provide the Equipment information as an appendix to your project narrative. Do not attach a separate file.**

Appendix 6: Other Attachments.

If you need to elaborate on your responses to questions 1-5 on the “Other Project Information” document, **provide the information as an appendix to your project narrative. Do not attach a separate file.**

Do not attach any of the requested appendices described above as files for fields 9, 10, 11 and 12; instead follow the above instructions to include the information as appendices to the project narrative file.

3. RESEARCH AND RELATED BUDGET.

Complete the Research and Related Budget form in accordance with the instructions on the form (Activate Help Mode to see instructions) and the following instructions. You must complete a separate budget for each year of support requested. The form will generate a cumulative budget for the total project period. You must complete all the mandatory information on the form before the NEXT PERIOD button is activated. You may request funds under any of the categories listed as long as the item and amount are necessary to perform the proposed work, meet all the criteria for allowability under the applicable Federal cost principles, and are not prohibited by the funding restrictions in this FOA (See PART IV, G).

Budget Justification (Field K on the form).

Provide the required supporting information for the following costs (See R&R Budget instructions): equipment; domestic and foreign travel; participant/trainees; material and supplies; publication; consultant services; ADP/computer services; subaward/consortium/contractual; equipment or facility rental/user fees; alterations and renovations; and indirect cost type. Provide any other information you wish to submit to justify your budget request. **Attach a single budget justification file for the entire project period in Field K.** The file automatically carries over to each budget year.

4. R&R SUBAWARD BUDGET ATTACHMENT(S) FORM.

Budgets for Subrecipients, other than DOE FFRDC Contractors. Please note that NIFA requires budgets for all subrecipients. You must provide a separate cumulative R&R budget for each subrecipient that is expected to perform work estimated to be more than \$100,000 or 50 percent of the total work effort (whichever is less). If you are selected for award, you must submit a multi-year budget for each of these subrecipients (See Section IV.D for submission of Subrecipients' multi-year budgets). Download the R&R Budget Attachment from the R&R SUBAWARD BUDGET ATTACHMENT(S) FORM and e-mail it to each subrecipient that is required to submit a separate budget. After the subrecipient has emailed its completed budget back to you, attach it to one of the blocks provided on the form. Use up to ten letters of the subrecipient's name (plus.xfd) as the file name (e.g., ucla.xfd or energyres.xfd).

5. PROJECT/PERFORMANCE SITE LOCATION(s).

Indicate the primary site where the work will be performed. If a portion of the project will be performed at any other site(s), identify the site location(s) in the blocks provided.

Note that the Project/Performance Site Congressional District is entered in the format of the two-digit state code followed by a dash and a three-digit Congressional district code, for example VA-001. Hover over this field for additional instructions.

Use the Next Site button to expand the form to add additional Project/Performance Site Locations.

6. SF-LLL DISCLOSURE OF LOBBYING ACTIVITIES.

If applicable, complete SF- LLL. Applicability: If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the grant/cooperative agreement, you must complete and submit Standard Form - LLL, "Disclosure Form to Report Lobbying."

Summary of Required Forms/Files

Your application must include the following documents:

Name of Document	Format	Attach to
SF 424 (R&R)	Form	N/A
RESEARCH AND RELATED Other Project Information	Form	N/A
Project Summary/Abstract	PDF	Field 7
Project Narrative, including required appendices	PDF	Field 8
RESEARCH & RELATED BUDGET	Form	N/A
Budget Justification	PDF	Field K
PROJECT/PERFORMANCE SITE LOCATION(S)	Form	N/A
SF-LLL Disclosure of Lobbying Activities, if applicable	Form	N/A

D. SUBMISSIONS FROM SUCCESSFUL APPLICANTS.

If selected for award, DOE reserves the right to request additional or clarifying information for any reason deemed necessary, including, but not limited to:

- Indirect cost information
- Other budget information
- Name and phone number of the Designated Responsible Employee for complying with national policies prohibiting discrimination (See 10 CFR 1040.5)
- Representation of Limited Rights Data and Restricted Software, if applicable
- Commitment Letter from Third Parties Contributing to Cost Sharing, if applicable

E. SUBMISSION DATES AND TIMES.

1. Letter of Intent Due Date.

Letters of Intent are not required.

2. Pre-application Due Date.

PRE-APPLICATIONS ARE REQUIRED.

Potential applicants are required to submit a brief preapplication, referencing **DE-FOA-0000452** for receipt by DOE by **4:30 p.m.**, Eastern Time, **January 24, 2011**.

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encouraging or discouraging formal applications will be communicated to the applicants by **February 7, 2011**. Applicants who have not received a response regarding the status of their preapplication by this date are responsible for contacting the program to confirm this status.

Only those preapplicants that receive notification from DOE encouraging a formal application may submit full applications. **No other formal applications will be considered.** Preapplications referencing **DE-FOA-0000452** should be sent as PDF file attachments via e-mail to: SCSciDAC.model2011@science.doe.gov with **"Preapplication DE-FOA-0000452"** as the subject. **No FAX or mail submission of preapplications will be accepted.**

Potential applicants must submit a brief preapplication that consists of two to three pages of narrative describing the research objectives, the technical approach(s), and the proposed team members and their expertise. The intent in requesting a preapplication is to save the time and effort of applicants in preparing and submitting a formal project application that may be inappropriate for the program. Preapplications will be reviewed relative to the scope and research needs as outlined in the summary paragraph and in the SUPPLEMENTARY INFORMATION. The preapplication should identify, on the cover sheet, the title of the project, the institution or organization, principal investigator name, telephone number, fax number, and e-mail address and the amount of funding requested for each year for the project for each funded institution. No biographical data need be included, nor is an institutional endorsement necessary.

3. Application Due Date.

Formal applications submitted in response to this FOA must be received by **March 21, 2011**, 11:59 p.m. Eastern time, to permit timely consideration of awards in **Fiscal Year 2011**. **You are encouraged to transmit your application well before the deadline. APPLICATIONS RECEIVED AFTER THE DEADLINE WILL NOT BE REVIEWED OR CONSIDERED FOR AWARD.**

F. INTERGOVERNMENTAL REVIEW

This program is not subject to Executive Order 12372, Intergovernmental Review of Federal Programs.

G. FUNDING RESTRICTIONS.

Cost Principles. Costs must be allowable in accordance with the applicable Federal cost principles referenced in 10 CFR part 600.

Pre-award Costs. Recipients may charge to an award resulting from this FOA pre-award costs that were incurred within the ninety (90) calendar day period immediately preceding the effective date of the award, if the costs are allowable in accordance with the applicable Federal cost principles referenced in 10 CFR part 600. Recipients must obtain the prior

approval of the contracting officer for any pre-award costs that are for periods greater than this 90 day calendar period. Pre-award costs are incurred at the applicant's risk. DOE is under no obligation to reimburse such costs if for any reason the applicant does not receive an award or if the award is made for a lesser amount than the applicant expected.

H. OTHER SUBMISSION AND REGISTRATION REQUIREMENTS.

1. Where to Submit.

APPLICATIONS MUST BE SUBMITTED THROUGH GRANTS.GOV TO BE CONSIDERED FOR AWARD.

Submit electronic applications through the "Apply for Grants" function at www.Grants.gov. If you have problems completing the registration process or submitting your application, call Grants.gov at 1-800-518-4726 or send an email to support@grants.gov.

2. Registration Process.

You must COMPLETE the one-time registration process (all steps) before you can submit your first application through Grants.gov (See www.grants.gov/GetStarted). We recommend that you start this process at least three weeks before the application due date. It may take 21 days or more to complete the entire process. Use the Grants.gov Organizational Registration Checklists at <http://www.grants.gov/assets/OrganizationRegCheck.pdf> to guide you through the process. IMPORTANT: During the CCR registration process, you will be asked to designate an E-Business Point of Contact (EBIZ POC). The EBIZ POC must obtain a special password called "Marketing Partner Identification Number" (MPIN). When you have completed the process, you should call the Grants.gov Helpdesk at 1-800-518-4726 to verify that you have completed the final step (i.e., Grants.gov registration).

You cannot submit an application through Grants.gov unless you are registered. Please read the registration requirements carefully and start the process immediately. Remember you have to update your CCR registration annually.

3. Application Receipt Notices

After an application is submitted, the Authorized Organization Representative (AOR) will receive a series of four e-mails. It is extremely important that the AOR watch for and save each of the emails. It may take up to two (2) business days from application submission to receipt of email Number 2. The titles of the four e-mails are:

Number 1 - Grants.gov Submission Receipt Number

Number 2 - Grants.gov Submission Validation Receipt for Application Number

Number 3 - Grants.gov Grantor Agency Retrieval Receipt for Application Number

Number 4 - Grants.gov Agency Tracking Number Assignment for Application Number

PART V - APPLICATION REVIEW INFORMATION

A. CRITERIA

1. Initial Review Criteria.

Prior to a comprehensive merit evaluation, DOE will perform an initial review in accordance with 10 CFR 605.10(b) to determine that (1) the applicant is eligible for the award; (2) the information required by the FOA has been submitted; (3) all mandatory requirements are satisfied; and (4) the proposed project is responsive to the objectives of the funding opportunity announcement. Applications that fail to pass the initial review will not be forwarded for merit review and will be eliminated from further consideration.

2. Merit Review Criteria

Applications will be subjected to scientific 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, and;
5. High Risk/High Reward Potential

The evaluation process will include program policy factors such as the relevance of the proposed research to the terms of the FOA and the agencies' programmatic needs. Note that external peer reviewers are selected with regard to both their scientific expertise and the absence of conflict-of-interest issues. Both Federal and 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.

B. REVIEW AND SELECTION PROCESS.

1. Merit Review.

Applications that pass the initial review will be subjected to a formal merit review and will be evaluated based on the criteria codified at 10 CFR Part 605.10(d) in accordance with the guidance provided in the “Office of Science Merit Review System for Financial Assistance.” This Merit Review System is available at: <http://www.sc.doe.gov/grants/merit.asp>.

2. Selection.

Selection Official Consideration: The Selection Official will consider the merit review recommendation, program policy factors, and the amount of funds available.

3. Discussions and Award.

Government Discussions with Applicant: The Government may enter into discussions with a selected applicant for any reason deemed necessary, including but not limited to: (1) the budget is not appropriate or reasonable for the requirement; (2) only a portion of the application is selected for award; (3) the Government needs additional information to determine that the recipient is capable of complying with the requirements in 10 CFR part 600 and 605; and/or (4) special terms and conditions are required. Failure to resolve satisfactorily the issues identified by the Government will preclude award to the applicant.

C. ANTICIPATED NOTICE OF SELECTION AND AWARD DATES.

DOE is striving to make **awards within six months**. The time interval begins on the date applications are due or the date the application is received, if there is no specified due date/deadline. Awards will be made in Fiscal Year 2011.

PART VI - AWARD ADMINISTRATION INFORMATION

A. AWARD NOTICES.

1. Notice of Selection.

Selected Applicants Notification: DOE will notify applicants selected for award. This notice of selection is not an authorization to begin performance. (See Part IV.G with respect to the allowability of pre-award costs.)

Non-selected Applicants Notification: Organizations whose applications have not been selected will be advised as promptly as possible. This notice will explain why the application was not selected.

2. Notice of Award.

An Assistance Agreement issued by the contracting officer is the authorizing award document. It normally includes, either as an attachment or by reference: 1. Special Terms and Conditions; 2. Applicable program regulations, if any; 3. Application as approved by DOE/NNSA; 4. DOE assistance regulations at 10 CFR Part 600; 5. National Policy Assurances to Be Incorporated As Award Terms; 6. Budget Summary; and 7. Federal Assistance Reporting Checklist, which identifies the reporting requirements.

For grants made to universities, non-profits and other entities subject to OMB Circular A-110 the Award also includes the Research Terms and Conditions located at <http://www.nsf.gov/bfa/dias/policy/rtc/index.jsp>.

B. ADMINISTRATIVE AND NATIONAL POLICY REQUIREMENTS.

1. Administrative Requirements.

The administrative requirements for DOE grants are contained in 10 CFR 600 and 10 CFR Part 605 (See: <http://ecfr.gpoaccess.gov>). Grants made to universities, non-profits and other entities subject to Title 2 CFR are subject to the Research Terms and Conditions located on the National Science Foundation web site at <http://www.nsf.gov/bfa/dias/policy/rtc/index.jsp>.

DUNS and CCR Requirements

Additional administrative requirements for DOE grants are contained in 2 CFR, Part 25 (See: <http://ecfr.gpoaccess.gov>). Prime awardees must keep their data at CCR current. Subawardees at all tiers must obtain DUNS numbers and provide the DUNS to the prime awardee before the subaward can be issued.

Subaward and Executive Reporting

Additional administrative requirements necessary for DOE grants to comply with the Federal Funding and Transparency Act of 2006 (FFATA) are contained in 2 CFR, Part 170. (See: <http://ecfr.gpoaccess.gov>). Prime awardees must register with the new FSRS database and report the required data on their first tier subawardees. Prime awardees must report the executive compensation for their own executives as part of their registration profile in the CCR.

2. Special Terms and Conditions and National Policy Requirements.

Special Terms and Conditions and National Policy Requirements.

The DOE Special Terms and Conditions for Use in Most Grants and Cooperative Agreements are located at http://management.energy.gov/business_doe/business_forms.htm. The National Policy Assurances to Be Incorporated As Award Terms are located at <http://www.nsf.gov/bfa/dias/policy/rte/appc.pdf>.

Intellectual Property Provisions.

The standard DOE financial assistance intellectual property provisions applicable to the various types of recipients are located at http://www.gc.energy.gov/financial_assistance_awards.htm.

Statement of Substantial Involvement

Either a grant or cooperative agreement may be awarded under this FOA. If the award is a cooperative agreement, the DOE Contract Specialist and DOE Project Officer will negotiate a Statement of Substantial Involvement prior to award.

C. REPORTING.

Reporting requirements are identified on the Federal Assistance Reporting Checklist, DOE F 4600.2, attached to the award agreement.

Grantees are to submit initial project information and annual summary reports to NIFA's electronic, Web-based inventory system that facilitates both grantee submissions of project outcomes and public access to information on Federally-funded projects. The details of these reporting requirements are included in the award terms and conditions.

For informational purposes, the "Federal Financial Report," Form SF-425, consolidates into a single report the former Financial Status Report (SF-269 and SF-269A) and the Federal Cash Transactions Report (SF-272 and SF-272A). The [NIFA Agency-specific Terms and Conditions](#) include the requirement that Form SF-425 is due on a **quarterly basis no later than 30 days following the end of each reporting period. A final "Federal Financial Report," Form SF-425, is due 90 days after the expiration date of this award.**

PART VII - QUESTIONS/AGENCY CONTACTS

A. QUESTIONS

Questions regarding the content of the FOA must be submitted through the FedConnect portal. You must register with FedConnect to respond as an interested party to submit questions, and to view responses to questions. It is recommended that you register as soon after release of the FOA as possible to have the benefit of all responses. More information is available at https://www.fedconnect.net/FedConnect/PublicPages/FedConnect_Ready_Set_Go.pdf. DOE/NNSA will try to respond to a question within 3 business days, unless a similar question and answer have already been posted on the website. **Applications submitted through FedConnect will not be accepted.**

Questions relating to the registration process, system requirements, how an application form works, or the submittal process must be directed to Grants.gov at 1-800-518-4726 or support@grants.gov. DOE cannot answer these questions.

B. AGENCY CONTACTS

Program Manager: Dr. Dorothy Koch
U. S. Department of Energy
Office of Biological and Environmental Research
Climate and Environmental Sciences Division
Earth System Modeling
Phone: 301-903-0105
E-Mail: dorothy.koch@science.doe.gov

Program Manager: Dr. Renu Joseph
U. S. Department of Energy
Office of Biological and Environmental Research
Climate and Environmental Sciences Division
Regional and Global Climate Modeling
Phone: 301-903-9237
E-Mail: renu.joseph@science.doe.gov

PART VIII - OTHER INFORMATION

A. MODIFICATIONS.

Notices of any modifications to this FOA will be posted on Grants.gov and the FedConnect portal. You can receive an email when a modification or an announcement message is posted by registering with FedConnect as an interested party for this FOA. It is recommended that you register as soon after release of the FOA as possible to ensure you receive timely notice of any modifications or other announcements. More information is available at <http://www.fedconnect.net>.

B. GOVERNMENT RIGHT TO REJECT OR NEGOTIATE.

DOE reserves the right, without qualification, to reject any or all applications received in response to this FOA and to select any application, in whole or in part, as a basis for negotiation and/or award.

C. COMMITMENT OF PUBLIC FUNDS.

The Contracting Officer is the only individual who can make awards or commit the Government to the expenditure of public funds. A commitment by other than the Contracting Officer, either explicit or implied, is invalid.

D. PROPRIETARY APPLICATION INFORMATION.

Patentable ideas, trade secrets, proprietary or confidential commercial or financial information, disclosure of which may harm the applicant, should be included in an application only when such information is necessary to convey an understanding of the proposed project. The use and disclosure of such data may be restricted, provided the applicant includes the following legend on the first page of the project narrative and specifies the pages of the application which are to be restricted:

“The data contained in pages _____ of this application have been submitted in confidence and contain trade secrets or proprietary information, and such data shall be used or disclosed only for evaluation purposes, provided that if this applicant receives an award as a result of or in connection with the submission of this application, DOE shall have the right to use or disclose the data herein to the extent provided in the award. This restriction does not limit the government’s right to use or disclose data obtained without restriction from any source, including the applicant.”

To protect such data, each line or paragraph on the pages containing such data must be specifically identified and marked with a legend similar to the following:

“The following contains proprietary information that (name of applicant) requests not be released to persons outside the Government, except for purposes of review and evaluation.”

E. EVALUATION AND ADMINISTRATION BY NON-FEDERAL PERSONNEL.

In conducting the merit review evaluation, the Government may seek the advice of qualified non-Federal personnel as reviewers. The Government may also use non-Federal personnel to conduct routine, nondiscretionary administrative activities. The applicant, by submitting its application, consents to the use of non-Federal reviewers/administrators. Non-Federal reviewers must sign conflict of interest and non-disclosure agreements prior to reviewing an application. Non-Federal personnel conducting administrative activities must sign a non-disclosure agreement.

F. INTELLECTUAL PROPERTY DEVELOPED UNDER THIS PROGRAM.

Patent Rights. The government will have certain statutory rights in an invention that is conceived or first actually reduced to practice under a DOE award. 42 U.S.C. 5908 provides that title to such inventions vests in the United States, except where 35 U.S.C. 202 provides otherwise for nonprofit organizations or small business firms. However, the Secretary of Energy may waive all or any part of the rights of the United States subject to certain conditions. (See “Notice of Right to Request Patent Waiver” in paragraph G below.)

Rights in Technical Data. Normally, the government has unlimited rights in technical data created under a DOE agreement. Delivery or third party licensing of proprietary software or data developed solely at private expense will not normally be required except as specifically negotiated in a particular agreement to satisfy DOE’s own needs or to insure the commercialization of technology developed under a DOE agreement.

G. NOTICE OF RIGHT TO REQUEST PATENT WAIVER.

Applicants may request a waiver of all or any part of the rights of the United States in inventions conceived or first actually reduced to practice in performance of an agreement as a result of this FOA, in advance of or within 30 days after the effective date of the award. Even if such advance waiver is not requested or the request is denied, the recipient will have a continuing right under the award to request a waiver of the rights of the United States in identified inventions, i.e., individual inventions conceived or first actually reduced to practice in performance of the award. Any patent waiver that may be granted is subject to certain terms and conditions in 10 CFR 784, <http://www.gc.doe.gov/documents/patwaivclau.pdf>.

Domestic small businesses and domestic nonprofit organizations will receive the patent rights clause at 37 CFR 401.14, i.e., the implementation of the Bayh-Dole Act. This clause permits domestic small business and domestic nonprofit organizations to retain title to subject inventions. Therefore, small businesses and nonprofit organizations do not need to request a waiver.

H. NOTICE REGARDING ELIGIBLE/INELIGIBLE ACTIVITIES

Eligible activities under this program include those which describe and promote the understanding of science and technology but not those which encourage or support political activities such as the collection and dissemination of information related to potential, planned or pending legislation.

I. AVAILABILITY OF FUNDS.

Funds are not presently available for this award. The Government's obligation under this award is contingent upon the availability of appropriated funds from which payment for award purposes can be made. No legal liability on the part of the Government for any payment may arise until funds are made available to the Contracting Officer for this award and until the awardee receives notice of such availability, to be confirmed in writing by the Contracting Officer.