

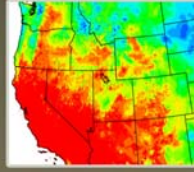
# Nevada Infrastructure for Climate Change Science, Education, and Outreach



Policy,  
Decision Making,  
Outreach



Cyberinfrastructure



Climate Modeling



Education



Ecological Change



Water Resources

## **REQUEST FOR PROPOSALS:**

### **NSF EPSCoR Climate Change Graduate Fellowships**

Nevada NSF ESCoR Office  
Nevada System of Higher Education  
755 E. Flamingo Road  
Las Vegas, NV 89119-7363



### **SUBMISSION DEADLINE**

**Review of applications will begin on January 15, 2009.**

**If all positions are not filled, additional reviews will occur on March 16, 2009  
and then again on May 15, 2009.**

## I. INTRODUCTION

The Nevada System of Higher Education (NSHE) received a Research Infrastructure Improvement (RII) Award from the National Science Foundation's Experimental Program for the Stimulation of Competitive Research (NSF EPSCoR) for Climate Change research in Nevada. This award creates a statewide interdisciplinary program focused on understanding the effects of regional climate change on ecosystems, improving communication between researchers and policy makers, and better educating the public on climate change in Nevada. The program has six areas of interest: Climate modeling; Ecological change; Water resources; Education; Cyberinfrastructure; and Policy, decision making and outreach. The project encompasses a wide range of disciplines, including (but not limited to) Biology, Civil Engineering, Climatology, Computer Science, Ecology, Education, Environmental Studies, Geography, Hydrology, Journalism, Natural Resources, and Political Science. The goal is for interdisciplinary science teams to build capacity in climate change research to measure environmental changes, develop climate models, translate climate-change science for decision makers, create computer systems to make climate data more accessible, and develop new ways to teach about climate change. For more information on Nevada's NSF EPSCoR Climate Change Program, visit <http://www.nevada.edu/epscor/>

## II. PROGRAM DESCRIPTION AND INSTRUCTIONS

### A. Program Solicitation

The NSHE seeks to award funding for Graduate Fellowships for students to conduct interdisciplinary research in Climate Change. Funding will be available through Nevada's NSF EPSCoR Climate Change RII program. These awards are available to graduate students to conduct research at all NSHE institutions. Fellowships are expected to begin in Fall 2009 and be completed within 24 months for M.S./M.A. awardees and 36 months for Ph.D. awardees. Each applicant must select two or more NSHE faculty mentors for this proposal, with one of them being the student's primary advisory. The two mentors must have expertise in at least two of the six climate change component areas supported by Nevada's current NSF EPSCoR grant: Climate modeling; Ecological change; Water resources; Education; Cyberinfrastructure; and Policy, decision making and outreach. There are faculty with expertise in different aspects of Climate Change in various institutions and departments within NSHE. Applicants may obtain suggestions for mentors by contacting lead faculty involved with the Climate Change program (see section IV.C. of this solicitation).

### Component Areas of NSF EPSCoR Climate Change Program

**Climate Modeling:** Develop the capability to model climate change at a regional and sub-regional scale and assess its effects on ecosystems and resources to evaluate the effects of different future climate scenarios and adaptation strategies. *Component Lead: Dr. Darko Koracin, 775-674-7091, darko.koracin@dri.edu*

**Ecological Change Component:** Develop data collection, modeling, and visualization infrastructure to determine and analyze effects of climate change on ecosystems and disturbance

regimes. *Component Lead: Dr. Franco Biondi, 775-784-6921, fbiondi@unr.nevada.edu*

**Water Resources Component:** Develop data collection, modeling, and visualization infrastructure to better quantify and model changes in water balance and supply under climate change. *Component Lead: Dr. Michael Young, 702-862-5489, Michael.Young@dri.edu*

**Policy, Decision Making, and Outreach Component:** Develop data collection and modeling infrastructure to assess climate change effects on human systems and responses to better understand institutional and societal aspects of climate change and to enhance policy making and outreach to communities and stakeholders. *Component Lead: Dr. William James Smith Jr., 702-895-4439, bill.smith@unlv.edu*

**Cyberinfrastructure Component:** Develop a Data Portal and software frameworks that will support interdisciplinary climate change research via integration of data from observational networks and modeling. *Component Lead: Dr. Sergiu Dascalu, 775-784-4613, dascalus@cse.unr.edu*

**Education Component:** Develop educational infrastructure to train students at all levels and provide public outreach on climate change issues. *Component Lead: Dr. David M. Hassenzahl, 702-895-4457, david.hassenzahl@unlv.edu*

## **B. Eligibility**

Applicants must be graduate students who are currently enrolled in a NSHE graduate program, and in good academic standing at their institution, or who have applied to a NSHE graduate degree program by the application deadline for that program. Awardees must maintain their *fulltime* student status throughout the program. The NSHE especially encourages women, underrepresented racial/ethnic minorities (Hispanic/Latino; American Indian or Alaskan Native; Black or African American, and Native Hawaiian or other Pacific Islander), people with disabilities and first-generation/low socioeconomic status students to respond to this solicitation.

## **C. Award Information**

For each 12-month period of the award, successful graduate Fellows will receive \$20,000 (Ph.D.; up to 3 years duration) or \$18,000 (M.S./M.A.; up to 2 years duration), plus tuition costs for 18 credits, and the cost for student health insurance coverage. The program will fund up to eight Fellowships in 2009, and are expected to start at the beginning of Fall semester 2009. Awards are subject to the availability of funds which originate from the State. Renewed funding is contingent upon successful progress in the previous year of the award. Awardees must submit yearly and final reports to Dr. David Hassenzahl [david.hassenzahl@unlv.edu](mailto:david.hassenzahl@unlv.edu) and Dr. Michael Collopy, [mcollopy@unr.edu](mailto:mcollopy@unr.edu); timing of report submission will be specified in the award letter.

One of the goals of this Fellowship program is to stimulate collaboration among faculty mentors and with graduate Fellows to form nationally competitive interdisciplinary teams in climate change research. The research undertaken by awardees is expected to serve as a foundation for faculty preparation of research proposals to federal and private sponsors. Consequently, faculty mentors are required to make a commitment to submit at least one such proposal by the end of

the Fellowship period. This commitment will be minimally satisfied by either a joint proposal from the faculty mentors (preferred) or individual-PI proposals from each mentor.

*Students receiving a Fellowship are required to present their project results at the annual statewide NSF EPSCoR conference.*

## **D. Proposal Preparation and Instructions**

**A complete Graduate Fellowship application consists of:**

- (1) Cover page
- (2) Transcripts
- (3) Three-page Project Proposal
- (4) Biographical Sketch
- (5) Letters of recommendation from faculty mentors

### **(1) Cover Page (Form in Appendix):**

Applicants need to get required signatures.

- Signature of Applicant
- Signature of Faculty Mentors

### **(2) Transcripts**

Please provide transcripts for undergraduate and graduate institutions attended. Official transcripts are preferred, but transcripts which have been downloaded as PDF documents from each institution will be accepted.

### **(3) Project Proposals (limited to 3 pages).**

Provide a clear, concise summary of the proposed research that the Fellow will undertake, including hypotheses or questions to be asked, methodologies, milestones, and expected outcomes. The proposal should identify how the project will address the goals and objectives of the NSF EPSCoR Climate Change program and the how the project is interdisciplinary. The proposal should also indicate the degree program and degree (Ph.D. or M.A./M.S.) the student will pursue. It is expected that the research proposal will be the product of a collaborative effort by the applicant and the faculty mentors. Project proposals must be single-spaced, single-sided, use Times New Roman 12 pt., with 1 inch margins. References/citations may be included and will not count toward the project proposal page limit.

### **(4) Biographical Sketch or CV (limited to 2 pages per person)**

Provide an NSF-style Biographical sketch for the graduate student applicant and the faculty mentors. Please follow the format and content instructions at:

[http://www.nsf.gov/pubs/2003/nsf032/032\\_2.htm#IIC2f](http://www.nsf.gov/pubs/2003/nsf032/032_2.htm#IIC2f)

## **(5) Letters of Recommendation**

As part of the application, students are required to identify at least two faculty mentors representing different disciplines in the NSF EPSCoR Climate Change program. Mentors must submit electronic recommendation letters describing their role in the project and their commitment to jointly mentor the applicant throughout the Fellowship period. The reference letters should provide details explaining the nature of the relationship to the applicant, comments on the applicant's academic potential and prior research experiences, and any other information to enable reviewers to evaluate the application according to the NSF Merit Review criteria of Intellectual Merit, Broader Impacts and Transformative research (see appendix: NSF Merit Review criteria definitions). Reference letters must explicitly include a commitment by the mentors to submit competitive-funding proposals related to the applicant's project, to NSF or other funding agencies, by the end of the Fellowship period. Mentors letters must be received by the EPSCoR office no later than the application deadline and in the format specified below.

## **F. Projects Involving Human Subjects or Vertebrate Animals:**

Prior approval by the human subjects (IRB) and/or the animal subjects (IACUC) review boards is not required for proposal submission. However, projects chosen to receive an award under this program who anticipate the use of human or animal subjects in their research must receive approval of their research protocols by the appropriate review board prior to the beginning of research and release of funds.

1. Human Subjects: If this proposed project involves the collection of information from human beings through interaction or observation, include an attachment (not included in the two page limit) that provides sufficient information to enable reviewers to evaluate potential risks to subjects. Include information concerning the subject population, type(s) of information to be gathered, and measures to be taken to protect privacy and reduce risks.
2. Vertebrate Subjects: If this proposed project involves living vertebrate animals in any way, include an attachment (not included in the two page limit) that provides sufficient information to enable reviewers to evaluate the choice of species, number of animals to be used, and any exposure of animals to discomfort, pain, or injury.

## **III. PROPOSAL REVIEW PROCESS AND EVALUATION CRITERIA**

Proposal review and selection will be coordinated by Nevada's NSF EPSCoR Office. Proposals will be evaluated using the three NSF Merit Review Criteria– INTELLECTUAL MERIT, BROADER IMPACTS as well as how this proposal is, or has the potential to be, TRANSFORMATIVE. Proposals will also be judged based on how well they address the goals, objectives and targeted component research areas of the NSF EPSCoR Climate Change Program, and the degree to which the proposed research plan is interdisciplinary. In addition, proposals leading to new faculty collaborations and/or involving faculty from the Community or State Colleges are encouraged. (See appendix for definitions.)

#### IV. PROPOSAL SUBMISSION, AWARD NOTIFICIATON, AND TIMELINE

##### **Submission Instructions:**

All required documentation should be scanned into the complete proposal and converted into one pdf file for submission. (Exception: The letters of recommendation may be sent directly by the mentor to Ms. Ward, if the mentor so chooses). The subject line of each submission should include the last name of the applicant and the word *fellowship*. **Applicants must submit their complete proposal via e-mail to Alice Ward at <[alice\\_ward@nshe.nevada.edu](mailto:alice_ward@nshe.nevada.edu)>**. Review of applications will begin on January 15, 2009. If all positions are not filled, additional reviews will occur on March 16, 2009 and then again on May 15, 2009. Digital signatures on the cover sheet are encouraged. If providing a digital signature is not an option, you may download the cover page, affix signatures, and scan the page into the pdf application document. Notification of awards will occur as soon as possible after a statewide review has been conducted.

Upon receipt of each proposal/submission, applicants will be sent a project information document that must be completed and returned within three days. If an applicant does not receive the project information document, he/she should contact Ms. Ward to verify receipt of proposal by the NSHE Sponsored Programs Office.

*Proposals received without any of the above required information will be returned.*

##### **B. Obligation to the Government**

Applicants for the award will be considered without regard to race, creed, color, sex, age, national origin and/or physical impairment.

All publications and presentations that result from this project must cite NSF-EPSCoR support from the R II Award **EPS-0814372**.

##### **C. Contacts:**

###### **Nevada NSF EPSCoR Program Office Homepage:**

<http://www.nevada.edu/epscor/programs-nsf.html>

###### **Ms. Alice Ward, Research Administrator**

Phone: 702-862-5593

Email: [alice\\_ward@nshe.nevada.edu](mailto:alice_ward@nshe.nevada.edu)

###### **NSF ESPCoR Climate Change Program:**

###### **Nevada NSF EPSCoR Project Director and Lead PI**

Dr. Gayle Dana

775-674-7538

[Gayle.Dana@dri.edu](mailto:Gayle.Dana@dri.edu)

###### **Co-Principal Investigator, Desert Research Institute**

Dr. Nicholas Lancaster

775-673-7304

[Nicholas.Lancaster@dri.edu](mailto:Nicholas.Lancaster@dri.edu)

Co-Principal Investigator, University of Nevada, Las Vegas

Dr. Thomas Piechota            702-895-4412            thomas.piechota@unlv.edu

Co-Principal Investigator, University of Nevada, Reno

Dr. Scott Mensing            775-784-6346            smensing@unr.edu

Climate Modeling Component Lead

Dr. Darko Koracin            775-674-7091            darko.koracin@dri.edu

Water Resources Component Lead

Dr. Michael Young            702-862-5489            Michael.Young@dri.edu

Ecological Change Component Lead

Dr. Franco Biondi            775-784-6921            fbiondi@unr.nevada.edu

Cyberinfrastructure Component Lead

Dr. Sergiu Dascalu            775-784-4613            dascalus@cse.unr.edu

Policy, Decision-making and Outreach Component Lead

Dr. William James Smith Jr. 702-895-4439            bill.smith@unlv.edu

Education Component Lead

Dr. David M. Hassenzahl    702-895-4457            david.hassenzahl@unlv.edu

## **APPENDIX**

**Cover Page**  
**Nevada System of Higher Education**  
**NSF EPSCoR Program – Graduate Student Fellowship**

**Name of Project:** \_\_\_\_\_

This project involves human or vertebrate animal subjects: YES\_\_ NO\_\_

**Student Information:**

_____ Student name	_____ Student signature	_____ Date
_____ Student's educational Institution	_____ Student's Declared Major	
_____ Student's Street Address	_____ City	_____ State
		_____ Zip Code
Student Phone: _____	E-mail: _____	

**Mentor (Primary) Information:**

_____ Mentor name	_____ Mentor signature	_____ Date
_____ Mentor's Institution	_____ Mentor's Department	
Mentor Phone: _____	E-mail: _____	

**Mentor (Secondary) Information:**

_____ Mentor name	_____ Mentor signature	_____ Date
_____ Mentor's Institution	_____ Mentor's Department	
Mentor Phone: _____	E-mail: _____	

*By the faculty mentor signing above, he/she certifies the accuracy of the information in this proposal, and certifies that he/she is a faculty member of the NSHE during the period covered in the attached proposal.*

## **NSF Merit Review Criteria Definitions:**

### **Intellectual Merit**

The intellectual merit criterion includes demonstrated intellectual ability and other accepted requisites for scholarly scientific study, such as the ability (1) to plan and conduct research; (2) to work as a member of a team as well as independently; and (3) to interpret and communicate research findings. Reviewers will consider: the strength of the academic record; the proposed plan of research; the description of previous research experience; references; and the appropriateness of the choice of mentors relative to the proposed plan for research.

### **Broader Impacts**

The broader impacts criterion includes contributions that (1) effectively integrate research and education at all levels, infuse learning with the excitement of discovery, and assure that the findings and methods of research are communicated in a broad context and to a large audience; (2) encourage diversity, broaden opportunities, and enable the participation of all citizens, women and men, underrepresented minorities, and persons with disabilities-in science and research; (3) enhance scientific and technical understanding; and (4) benefit society. Applicants may provide characteristics of their background, including personal, professional, and educational experiences, to indicate their potential to fulfill the broader impacts criterion.

### **Transformative Research**

Per NSF, the term "transformative research" is being used to describe a range of endeavors which promise extraordinary outcomes, such as: revolutionizing entire disciplines; creating entirely new fields; or disrupting accepted theories and perspectives — in other words, those endeavors which have the potential to change the way we address challenges in science, engineering, and innovation. Supporting more transformative research is of critical importance in the fast-paced, science and technology-intensive world of the 21st Century.