

ANNOUNCEMENT OF FEDERAL FUNDING OPPORTUNITY

EXECUTIVE SUMMARY

Federal Agency Name(s): Oceanic and Atmospheric Research (OAR), National Oceanic and Atmospheric Administration (NOAA), Department of Commerce

Funding Opportunity Title: A Cooperative Institute to Improve Mesoscale and Stormscale High Impact Weather Forecasts, Watches, And Warnings Through The Use Of, And Enhancement Of, Weather Radar

Announcement Type: Initial

Funding Opportunity Number: NOAA-OAR-CIPO-2011-2002772

Catalog of Federal Domestic Assistance (CFDA) Number: 11.432, OAR Joint and Cooperative Institutes

Dates: Proposals must be received by OAR no later than February 11, 2011, 5:00 p.m., E.T. For applications submitted through Grants.gov, a date and time receipt indication will form the basis for determining timeliness. Proposals must be validated by Grants.gov in order to be considered timely. For those applicants not having access to the Internet, one signed original and two hard copy applications must be received by NOAA at the following address: NOAA/OAR, Attn: Dr. John Cortinas, 1315 East West Highway, Room 11326, Silver Spring, Maryland 20910. Use of U.S. mail or another delivery service must be documented with a receipt. No facsimile or electronic mail proposal submissions will be accepted. Proposals submitted after 5:00 p.m., E.T., February 11, 2011 will not be considered. (Note that late-arriving hard copy proposals provided to a delivery service on or before 5 p.m., E.T., February 11, 2011 will be accepted for review if the applicant can document that the proposal was provided to the guaranteed delivery service by the specified closing date and time and if the proposal is received by OAR no later than 5 p.m., two business days following the closing date.) October 1, 2011 should be used as the proposed start date on proposals.

Funding Opportunity Description: The NOAA Office of Oceanic and Atmospheric Research invites applications for the establishment of a cooperative institute (CI) to improve mesoscale and stormscale high impact weather forecasts, watches, and warnings through the use of, and enhancement of, weather radar. The CI will focus on the themes of: (1) weather radar research and development, (2) stormscale and mesoscale modeling research and development, (3) forecast improvements research and development, (4) impacts of climate change related to extreme weather events, and (5) social and socioeconomic impacts of high impact weather systems. The CI will be established at a research institution not only having outstanding graduate degree programs in NOAA-related sciences, but also located within a commuting distance to NOAA's facilities in Norman, Oklahoma that provides for direct interactions on a regular basis. The CI

will provide significant coordination of resources among all non-governmental partners and will promote the involvement of students and post-doctoral scientists in NOAA-funded research. If the CI is comprised of multiple member institutions, only the lead institution applying for the award and where the CI will be established must satisfy the commuting distance requirement. This announcement provides requirements for the proposed CI and includes details for the technical program, evaluation criteria, and competitive selection procedures. Applicants should review the CI Interim Handbook prior to preparing a proposal for this announcement (available at www.nrc.noaa.gov/ci).

FULL ANNOUNCEMENT TEXT

I. Funding Opportunity Description

A. Program Objective

The purpose of this announcement is to invite the submission of proposals to establish a CI to improve mesoscale and stormscale high impact weather forecasts, watches, and warnings through the use of, and enhancement of, weather radar. Details addressing the application, review, and selection process are set forth below.

CI Concept/Program

Background:

A CI is a NOAA-supported, non-Federal organization that has established an outstanding research program in one or more areas that are relevant to the NOAA mission "to understand and predict changes in the Earth's environment and conserve and manage coastal and marine resources to meet our Nation's economic, social, and environmental needs." CIs are established at research institutions with outstanding graduate degree programs in NOAA-related sciences. CIs provide significant coordination of resources among all non-government partners and promote the involvement of students and post-doctoral scientists in NOAA-funded research.

NOAA establishes a new CI competitively when it identifies a need to sponsor a long-term (5-10 years) collaborative partnership with one or more outstanding non-Federal, non-profit research institutions. For NOAA, the purpose of this long-term collaborative partnership is to promote research, education, training, and outreach aligned with NOAA's mission; to obtain research capabilities that do not exist internally; and/or to expand research capacity in NOAA-related sciences to:

* conduct collaborative, long-term research that involves NOAA scientists and those at the research institution(s) from one or more scientific disciplines of interest to NOAA;

* utilize the scientific, education, and outreach expertise at the research institution(s) that,

depending on NOAA's research needs, may or may not be located near a NOAA facility;

- * support student participation in NOAA-related research studies; and

- * strengthen or expand NOAA-related research capabilities and capacity at the research institution(s) that complements and contributes to NOAA's ability to reach its mission goals.

A CI may also partner with one or more research institutions that demonstrate outstanding performance within one or more established research programs in NOAA-related sciences, including Minority Serving Institutions that can contribute to the proposed activities of the CI. CIs conduct research under approved scientific research themes and Tasks (additional tasks can be proposed by the CI):

- * Task I activities are related to the management of the CI, as well as general education and outreach activities. This task also includes support of postdoctoral and visiting scientists conducting activities within the research themes of the CI that are approved by the CI Director, in consultation with NOAA, and are relevant to NOAA and the CI's mission goals;

- * Task II activities usually involve on-going direct collaboration with NOAA scientists. This collaboration typically is fostered by the collocation of Federal and CI employees;

and

- * Task III activities require minimal collaboration with NOAA scientists.

B. Program Priorities

The NOAA vision is "an informed society that uses a comprehensive understanding of the role of the oceans, coasts, and atmosphere in the global ecosystem to make the best social and economic decisions." NOAA cannot fulfill this vision without partners in all areas, including an atmospheric research partner with a CI. The CI will be engaged in collaborative research with NOAA researchers in Norman, Oklahoma, especially those at,

but not restricted to, the National Severe Storms Laboratory (NSSL), the National Weather Service (NWS) Forecast Office, the Storm Prediction Center, the Radar Operations Center, and the Warning Decision Training Branch. To support this collaboration, the NOAA offices in Norman, Oklahoma, will be able to house up to 45 CI employees among these entities.

The CI will collaborate with NOAA to address two of NOAA's long-term mission goals: (1) Understand Climate Variability and Change to Enhance Society's Ability to Plan and Respond; and (2) Serve Society's Needs for Weather and Water Information. These goals are also similar to two of those proposed in NOAA's Next Generation Strategic Plan as well: (1) Climate Adaptation and Mitigation and (2) Weather-Ready Nation. (Both plans are available at <http://www.ppi.noaa.gov>.)

Research with the CI will also support NOAA's 5-year Research Plan and 20-Year Research Vision (both available at <http://www.nrc.noaa.gov/plans.html>). The CI must be able to support NOAA in addressing the following research outcomes articulated in the 5 Year Plan:

- * Reduced loss of life, injury, and damage to the economy;
- * Better, quicker, and more valuable weather and water information to support improved decisions; and
- * Increased customer satisfaction with weather and water information and services.

The NOAA 20-year Research Vision specifically mentions "Severe storm and event warnings will save more lives and property" and that "the warnings themselves will see dramatic improvements. For example, tornado warning lead times will be on the order of one hour, rather than minutes. Technology like phased array radar, significant improvements in our understanding of mesoscale weather processes, and the development of models that embody this understanding will enable this accomplishment."

The proposed CI will collaborate directly with NOAA to help make this vision a reality by supporting research that considers not just the observing systems, the models, or the algorithms used to generate warnings, but a holistic and integrated approach that considers

the research and development needed to obtain new knowledge, to improve models with that knowledge, to combine models (conceptual and numerical) with improved algorithms, all leading to improved forecasts.

The proposed CI would help NOAA meet a number of critical research objectives identified in the Agency's 5-year research plan and 20-year research vision. These include many research performance objectives and associated milestones in the NOAA 5-year research plan.

NOAA 5-year Research Plan Performance Objectives:

- * Increase lead time and accuracy for weather and water warnings and forecasts.
- * Increase development, application, and transition of advanced science and technology to operations and services.
- * Improve predictability of the onset, duration, and impact of hazardous and severe weather and water events.
- * Increase coordination of weather and water information and services with integration of local, regional, and global observation systems.
- * Reduce uncertainty associated with weather and water decision tools and assessments;
- * Enhance environmental literacy and improve understanding, value, and use of weather and water information and services.
- * Increase application and accessibility of weather and water information as the foundation for creating and leveraging public (i.e., federal, state, local, tribal), private, and academic partnerships.

NOAA 5-year Research Plan Milestones:

Short term (0-2 years)

- * Provide integrated environmental information and services, particularly watches and

warnings, in industry standard formats to support partner and customer needs.

- * Develop prototype phased array applications with a focus on reducing the false alarm rate for tornado warnings.

- * Improve the forecast and warning verification system to relate more directly to user impact and to enable more rapid feedback loop for service improvement.

- * Using the testbeds, transfer up to six research results into operations per year.

- * Improved detection of severe storms using complete network of low-altitude, high temporal/spatial resolution Doppler radar data.

- * Deliver improved echo classification techniques that significantly reduce contamination of precipitation estimates using dual-polarization radar technology.

- * Demonstrate a transition zone modeling system to integrate river, estuarine, and coastal models.

Medium term (3-5 years)

- * Deploy NEXRAD systems with Dual Polarization Capability to improve the detection of storm characteristics critical to severe storm warnings.

- * Determine viability of different data assimilation approaches.

- * Evaluate community-wide rainfall-runoff distributed hydrologic models.

- * Evaluate the utility of probabilistic forecasts for hazardous weather and explore "Warn-on-Forecast" concepts.

- * Improve the Advanced Hydrologic Prediction Services through improved multi-sensor precipitation estimation algorithms including dual-polarization and digital radar mosaics.

The proposed CI is also expected to collaborate with NOAA to meet goals set in the 20-year research vision.

- * Work with partners to provide neighborhood-level weather forecasts and 10-14 day forecasts as accurate as current 7-10 day forecasts.

- * Severe thunderstorm and tornado track forecasts at the sub-county level with one hour

or more lead time.

- * Improved stream flow forecasting models that cover flow levels from droughts to floods, including interactions with groundwater, water resources applications, estuaries, and coasts.

- * New soil moisture forecasting models for agricultural applications and mudslide warnings.

The CI is expected to have capabilities in the areas of: (1) Science, Technology, and Infusion, (2) Integrated Water Forecasts, and (3) Local Forecasts and Warnings.

Science, Technology, and Infusion

The CI will be expected to assist NOAA in conducting research and development supporting the NWS's operational weather radar network. The work includes engineering improvements to the hardware, improvements to the quality of the data, improvements to the algorithms that utilize the data, and improvements to the information provided to the NWS forecasters. Individuals with engineering and meteorology backgrounds are required to conceive and design advancements to the existing operational radars, provide scientific support during the deployment of the dual polarized radar upgrades, and to assist with the Multifunction Phased Array Radar risk reduction program. Specialists in signal processing are needed to collect and process the data leading toward improvements in radar data quality. Manipulation of the radar data requires individuals with both meteorology and computer science backgrounds. Algorithm creation and enhancement requires individuals with strong radar meteorology skills. Persons familiar with NWS forecaster operations are required to identify and subsequently fill gaps in information available to forecasters.

Severe weather warnings are usually dependent upon weather radar data and automated algorithms that direct the attention of the forecaster to areas of concern. Individuals with expert knowledge of severe weather and how features are manifested in radar based observations are needed to improve existing algorithms and create new algorithms based upon improved radar data. Persons with the appropriate mix of meteorological knowledge, technical background, and social skills needed to work within a semi-operational environment such as the Hazardous Weather Testbed are needed to test new technologies and techniques side by side with forecasters.

Mesoscale modelers familiar with the operational models being run at the National Center for Environmental Prediction, developed in collaboration with the Earth System Research Laboratory, such as the Weather Research Forecasting model, are needed to support NWS forecast model research and development. Persons familiar with parameterization schemes, data quality control, data assimilation techniques, and ensembles are needed. Modelers with experience creating ensembles by using different model systems, different physical parameterizations, or by varying initial conditions are needed. Persons with the appropriate mix of weather modeling experience, meteorological knowledge, and social skills needed to work within the Hazardous Weather Testbed are needed to test new model enhancements or techniques side by side with forecasters.

Stormscale modelers, specialists in radar data assimilation, and computer specialists will be needed to conduct research to support the Warn-on-Forecast program. Current warnings are based primarily upon direct or indirect observation or detection of hazardous events. In the future, NOAA will use high resolution observations to initialize high resolution stormscale models in real time to produce near real time model predictions of events such as tornadoes, dangerous lightning, sudden high winds, and heavy precipitation that leads to flash flooding to extend warning lead times well beyond the current national average.

Physicists, cloud scale modelers, and technical support staff are needed to assist with storm electrification research and the insertion of lightning capability into models. They are also needed to help improve techniques that determine the initiation of convection. Scientists are needed to assist with design and fabrication of instruments used to observe storm electrification and to collect data through field programs to verify model output and sensor accuracy.

Integrated Water Forecasts

CI scientists and technical support staff are needed to assist with the ongoing effort to improve precipitation estimates used for model initializations, model verification, flood and flash flood prediction and warning. The improved tracking and prediction of mesoscale features that lead to the more accurate spatial depiction of quantitative precipitation forecasts will lead to significant improvements for NWS flash flood and river flood forecasts. Experts

in radar data are needed to help improve radar data quality control techniques and radar mosaics that form the basis for automated severe weather warning algorithms and flash flood algorithms. Hydrometeorologists are needed to support research in distributed riverine modeling that makes use of high resolution radar data and to participate in the NOAA Hydrometeorological Testbed.

Local Forecasts and Warnings

Activities among the NOAA facilities in Norman, Oklahoma, focus on forecast and warning improvement in support of the NOAA operational mission. Activities include developing innovative forecast decision assistance guidance tools, creating advanced verification techniques, investing in Warn on Forecast (WoF) science (an effort aimed at extending severe weather and tornado lead times toward 1 hour) to support service improvements, testing and evaluating modeling techniques leading toward research-to-operations transitions, improving radar data quality to improve derived products used in the warning process, and conducting forecaster training. As the Nation adds greener technology, activities should include the evaluation of techniques to mitigate the amount of interference from wind turbines on radar effectiveness.

NOAA is also focused on maximizing the positive benefits of its forecast services. Efforts to better quantify and communicate forecast uncertainty and hazardous weather risks are critical to improvement of NOAA's weather forecast services, which social science research will provide.

The NOAA Hazardous Weather Testbed (HWT) efforts include the test and evaluation of experimental numerical model techniques as part of NOAA research-to-operations emphasis, NOAA satellite proving ground efforts focused on WoF, and other NOAA partner efforts involve the development, evaluation, and training on new satellite products to support forecast operations.

The CI should have the capabilities to conduct research that will lead to the development of innovative training materials related to environmental modeling and the issuance of warnings. The environmental modeling training research should include: (1) the capabilities and limitations of modeling, (2) its application to the short-range (severe

convective warning), (3) its application to the medium range (severe winter warnings), (4) improvements in visualization of model output to better support warning decision making, and (5) Federal Aviation Administration's requirements for Next Generation Air Transportation System. The latest warning-related research is integrated into Distance Learning Operations courses and Advanced Warning Operations courses. CI scientists need to facilitate the rapid integration of new research results into operational warning expertise through their continued development of the Weather Event Simulator.

The CI is also expected to promote undergraduate, graduate student, and postdoctoral involvement in research projects as a means of supporting ongoing research within NOAA and for training the next generation of scientists and NOAA employees. To strengthen the collaborations between NOAA and the CI, many of these students and postdocs should be located close enough to allow them to work directly with NOAA scientists in Norman, Oklahoma on a regular basis. The CI should provide substantial support for graduate and undergraduate students and post-doctoral scientists that will provide a "hands-on" opportunity for the development of a wide range of expertise. NOAA can capitalize on this expertise, as CI employees and students will work with NOAA scientists to conduct research that complements NOAA's mission needs. In order to sustain strong interactions between NOAA scientists and the CI, NOAA will provide office space in the National Weather Center for CI personnel who are working with NOAA scientists and NWS personnel. Other CI employees should be within a commuting distance of NOAA facilities in Norman, Oklahoma that allows for frequent direct interactions with NOAA scientists. An on-site CI administrator at the National Weather Center facility is required.

The CI should demonstrate that it has the capabilities and capacity to conduct research under five research themes:

1) Weather Radar Research and Development

Research conducted under this theme is associated with accelerating the transfer of knowledge between the meteorological and engineering communities (in academia, and government and private laboratories) to improve the design, usability, and supportability of current and future weather radars.

Continual enhancements are needed to NOAA's current radars for improving the quality, format, accuracy, resolution, and update rate of the base data, and to keep pace with evolving hardware and software technologies. This work introduces, examines, and analyzes present and future technologies, including gap filling radars and phased-array technology, with the goal of meeting the unfulfilled radar needs through risk reduction efforts. This theme also includes a fertile research area for development and improvement of radar algorithms used for forecasting and warning. Topics include, but are not limited to, radar data quality research, improving precipitation estimation in complex terrain, creating 3D radar mosaics utilizing both Federal government owned and non-government owned radars to address both NOAA and FAA mission requirements, using dual polarized radar to classify hydrometeors and using that information to improve understanding of cloud microphysics and how it is represented in numerical models, mitigating radar ambiguities, improving ground clutter filters, researching unconventional types of radars such as imaging radars, supporting research using the National Weather Radar Testbed in Norman, improving weather radars, and developing and deploying mobile radar for the purposes of improving our understanding of severe weather.

2) Stormscale and Mesoscale Modeling Research and Development

Research conducted under this theme is associated with understanding cloud and mesoscale dynamics, microphysics and the precipitation process and their relationships to large and small scale forcing, and to develop procedures for assimilation of meteorological data into simulation and prediction models of these processes. The work done here represents a fundamental building block for eventual applied techniques. Topics include, but are not limited to, examining mesoscale convective systems, field experiments, cloud microphysics, polarimetric radar, Doppler radar data quality control and analysis, and convective initiation studies, and improved model output visualization techniques to better support the warning decision-making process.

3) Forecast Improvements Research and Development

Research conducted under this theme is associated with accelerating the transfer of research knowledge and skills between the academic and NOAA operational mesoscale and stormscale meteorological communities to both improve the design and utilization of weather observing systems and improve weather prediction and warning.

Topics include, but are not limited to, polarizing the NWS Doppler radars, supporting and utilizing the Hazardous Weather Testbed, assimilation of radar observations into stormscale models, exploiting ensemble modeling techniques, investigating probabilistic warnings and forecasts, improving flash flood forecasts, researching warn-on-forecast (vs. warn-on-detection) concepts to extend warning lead times, improving techniques to define convective initiation and decay, communicating weather uncertainties to operational forecasters, performing research associated with the Weather Research Forecast model, developing methods to mitigate the interference from turbines on radar, and assisting in the creation of training courses and material for the NWS and its partners.

A growing area of research and development will be in support of NOAA's responsibility toward meeting the FAA's requirements for weather information. The notion of a 4-dimensional Data Cube (<https://wiki.ucar.edu/display/NNEWD/NNEW+-+The+4-D+Wx+Data+Cube>) containing real time information about the atmosphere in time and space (x, y, z, and time) is the cornerstone of the FAA need. The NOAA organizations in Norman, along with experts from the CI, will be expected to address these needs over the next decade.

4) Impacts of Climate Change Related to Extreme Weather Events

Research conducted under this theme is associated with extending and applying the understanding of mesoscale processes to the problem of climate maintenance and change in the context of extreme events. This theme also includes investigation of the influence of the large-scale climatic environment on the mesoscale and stormscale systems. Topics include, but are not limited to, extreme weather studies involving the sensitivities of models to convective parameterization, collaboration and participation in field programs, explaining severe weather seasonal variability associated moisture, improving regional climate modeling associated with cumulus convection, and cloud variability.

V) Societal and Socioeconomic Impacts of High Impact Weather Systems

Research conducted under this theme is associated with estimating the societal and

socioeconomic impacts and values of stormscale and mesoscale high-impact weather systems and regional-scale climate variations of extreme events to facilitate the mitigation (enhancement) of the adverse (beneficial) impacts.

A continuing component of this work is performed in collaboration with social scientists. Topics include, but are not limited to, improving communication of science to the public through outreach efforts and assessments of the value of tornado watches and reducing warning false alarms. Other components involve working with NWS offices to improve the format and call-to-action statements within NWS forecasts for high impact events to help optimize societal response to NOAA warnings. Efforts to improve communication forecast uncertainty and associated rare event risks to society will be pursued to enhance NOAA service delivery.

C. Program Authority

15 U.S.C. 1540, 15 U.S.C. 313, 15 U.S.C. 2901 et seq., 118 STAT. 71 (January 23, 2004)

II. Award Information

A. Funding Availability

All funding is contingent upon the availability of Federal appropriations. NOAA anticipates that up to approximately \$15M will be available annually for this CI. Of that amount, approximately \$300,000-\$400,000 will be available per year for Task I. The final amount of funding available for Task I will be determined during the negotiation phase of the award based on availability of funding. The actual amount of annual funding that the CI receives may be more or less than the anticipated amount and will depend on the actual projects that are approved by NOAA after the main CI award begins, the availability of funding, the quality of the research, the satisfactory progress in achieving the stated goals described in project proposals, and continued relevance to program objectives.

B. Project/Award Period

The award period will be 5 years and may be renewed for up to an additional 5 years based on the outcome of a peer review in the fourth year, as described in the NOAA CI Interim Handbook.

C. Type of Funding Instrument

The funding instrument for this award will be a cooperative agreement since several NOAA organizations will be substantially involved in working with the CI. Examples of substantial involvement may include, but are not limited to, proposals for collaboration between NOAA scientists and a CI scientist and/or assistance by NOAA personnel in developing curricula. If the CI is comprised of multiple member institutions, NOAA will issue only one award to the lead institution that applied for the award and where the CI will be established, in accordance with the commuting distance requirement.

III. Eligibility Information

A. Eligible Applicants

Eligibility is limited to non-Federal public and private non-profit universities, colleges and research institutions that offer accredited graduate level degree-granting programs in NOAA-related sciences and that are within a commuting distance that provides for direct contact on a regular basis with scientists at the NOAA facilities in Norman, OK. If the proposed CI is comprised of multiple member institutions, only the lead institution applying for the award (and where the CI will be established) must satisfy the commuting distance requirement.

B. Cost Sharing or Matching Requirement

To stress the collaborative nature and investment of a CI by both NOAA and the research institution, cost sharing is required. There is no minimum cost sharing requirement; however, the amount of cost sharing will be considered when determining the level of the CI's commitment under NOAA's standard evaluation criteria for overall qualifications of applicants. Acceptable cost-sharing proposals include, but are not limited to, offering a reduced indirect cost rate against activities in one or more Tasks, waiver of any indirect costs assessed by the awardee on subawards, waiver of indirect costs assessed against base funds and/or Task I activities, waiver or reduction of any costs associated with the use of facilities at the CI, and full or partial salary funding for the CI director, administrative staff, graduate students, visiting scientists, or postdoctoral scientists.

C. Other Criteria that Affect Eligibility

Not applicable.

IV. Application and Submission Information

A. Address to Request Application Package

The standard application package is available at <http://www.grants.gov>. For applicants without Internet access, an application package may be secured by contacting Dr. John

Cortinas, 1315 East West Highway, Room 11326, Silver Spring, Maryland 20910; telephone (301) 734-1090.

B. Content and Form of Application

Proposals must adhere to the provisions under "Proposals" and the requirements under "Required Elements" in this section.

1. Proposals

a. Proposals must include elements requested on the Grants.gov portal. If a hard copy application is submitted, NOAA requests that the original and two unbound copies of the proposal be included.

b. Proposals, electronic or paper, should be no more than 75 pages (numbered) in length, excluding budget, investigators vitae, and all appendices. Federally mandated forms are not included within the page count. Facsimile transmissions and electronic mail submission of full proposals will not be accepted.

2. Required Elements

a. Title page. The title page should clearly indicate the proposed name of the CI, principal investigators, total amount of Federal funds being requested, and award period. Applications submitted by a CI consortium should include the name of each institution and associated principal investigator.

b. Abstract. An abstract must be included and should contain a brief description of the CI, research themes, and proposed activities. The abstract should appear on a separate page, headed with the proposal title, institution's investigators, total proposed cost, and budget period.

c. Results from prior research. The results of related projects supported by NOAA and other agencies should be described, including their relation to the currently proposed work. Reference to each prior research award should include the title, agency, award number, Principal Investigators, period of award, and total award. The section should be a brief summary and should not exceed two pages.

d. Project Description. The information provided in this section will be used to evaluate the proposal according to NOAA's standard evaluation criteria described in Section V of this document. The project description includes the following sections:

The Goals Section should clearly describe the mission and vision of the CI, and what the CI expects to accomplish during the award.

The Research Theme Section includes information that will help NOAA determine the quality of the CI's capabilities and the expertise at the CI needed to conduct outstanding research in each of the research themes described in Section I.B. This Section also includes project descriptions of research projects that could be conducted by the CI under each theme (or combination of themes), if sufficient funding during the five year award is provided. The selection of this proposal does not preclude the CI from proposing additional research projects after the award has been made as long as they fit under one of the research themes, nor does it obligate NOAA to fund the projects proposed in this application. Following the selection of the award, the CI will be required to provide a complete proposal and budget for each research project funded under the CI award after consulting with the OAR CI Program Director and the NOAA program(s) that provide funding for the project.

The Education Section includes information on NOAA-related education programs offered at the CI's institution(s), including a complete list of terminal degrees in these programs. This Section should also describe how the CI will integrate students and post-docs into the research projects at the CI, as well conduct outreach and education activities in support of the research themes.

The Business Plan should be well-developed and include details regarding fiscal and human resource management, as well as strategic planning and accountability. It must describe the organizational structure of the CI, how it will operate, the responsibilities of the participants from multiple institutions, and how the CI will use the Executive Council and Council of Fellows described in the CI Interim Handbook. The Business Plan must describe how the CI chooses projects, reviews its progress, as well as how the CI will support enhanced communication and collaborations with NOAA.

The Performance Measures Section must include proposed measures to be used by the

CI to gauge, quantify, and/or evaluate progress on projects and the overall performance of the CI. After the award is made, NOAA will work with the CI to finalize a set of performance measures that are acceptable to the CI and NOAA.

Immediately after the CI award has been established, the CI must consult with the OAR and CI Program Managers and produce an annual research plan that provides specific information about the research projects described in the Research Themes Section that will be accomplished during the first year. The plan will be developed after consultations with the OAR CI Program Director and the NOAA programs that will provide project funding to the CI. This plan must state the goals and objectives of each project, along with a description of the research that the CI expects to accomplish and a detailed budget for these projects. CI funding for the projects described in this plan will be released upon NOAA's approval of the annual research plan. Funding for subsequent years of the award will require additional annual research plans.

e. Budget. Applicants must submit a Standard Form 424 "Application for Federal Assistance," including a detailed budget using the Standard Form 424A, "Budget Information--Non-Construction Programs," and a Standard Form 424B, "Assurances -- Non-Construction Programs." These and other forms, including Commerce Department Form CD-511 "Certification Regarding Lobbying," and, if applicable, Standard Form SF-LLL "Disclosure of Lobbying Activities," are provided in the Grants.gov application package. Additionally, the CD-512 "Certifications Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transactions and Lobbying" is required to be submitted with the application package. To do this, download the form from <http://www.cop.noaa.gov/opportunities/grants/pdf/cd512fll.pdf>. Fill out, sign, scan, and attach the form to the application package.

The proposal must include total and annual budgets corresponding to the descriptions provided in the project description not to exceed \$15M annually. NOAA uses the proposed annual budgets to establish a funding limit used by NOAA during the entire award. After award selection, annual funding will be provided only after approval by the NOAA Grants Officer of an annual research plan or any other proposal submitted to NOAA that includes a detailed budget. While this level of funding is not guaranteed, this amount will allow for the possibility of funding for projects that were not originally planned for the CI. Annual and total budgets should be stratified by Task and Institution, particularly if the CI has proposed a reduced indirect cost rate for certain tasks. A budget justification should include

information described in the budget guidelines provided in the Grants.gov application package.

f. Vitae. Abbreviated 1-2 page curriculum vitae are sought with each proposal. Reference lists should be limited to all publications in the last 3 years with up to five other relevant papers.

g. Current and pending support. For each principal investigator, submit a list which includes project title, supporting agency with grant number, investigator months, dollar value, and duration. Requested values should be listed for pending support.

C. Submission Dates and Times

The deadline for receipt of proposals at the NOAA/OAR office is 5:00 p.m., E.T., February 11, 2011. Proposals received after the deadline will not be considered. NOAA uses information from Grants.gov to determine whether an application has been submitted before the deadline. If a hard copy proposal is submitted, the original and two unbound copies of the proposal should be included. Paper submissions should be sent to: Dr. John Cortinas, 1315 East West Highway, Room 11326, Silver Spring, Maryland 20910; telephone (301) 734-1090. Hard copy applications will be date/time stamped as they are physically received in the NOAA/OAR office. (Note that late-arriving hard copy proposals provided to a delivery service on or before 5 p.m., E.T., February 11, 2011 will be accepted for review if the applicant can document that the proposal was provided to the guaranteed delivery service by the specified closing date and time and if the proposal is received by OAR no later than 5 p.m., two business days following the closing date.) No email or facsimile proposal submissions will be accepted.

D. Intergovernmental Review

Applications under this program are not subject to Executive Order 12372, "Intergovernmental Review of Federal Programs."

E. Funding Restrictions

No special restrictions apply.

F. Other Submission Requirements

To use Grants.gov, applicants must have a Dun and Bradstreet Data Universal

Numbering System (DUNS) number and be registered in the Central Contractor Registry (CCR). Allow a minimum of five days to complete the CCR registration. [Note: your organization's Employer Identification Number (EIN) will be needed on the application form.] Applicants are strongly encouraged not to wait until the application deadline date to begin the application process through Grants.gov.

All applications must be received by <http://www.grants.gov> by the due date established herein. Proof of timely submission is automatically recorded by Grants.gov. An electronic time stamp is generated within the system when the application is successfully received by Grants.gov. The applicant will receive an acknowledgment of receipt and a tracking number from Grants.gov with the successful transmission of their application. Applicants should print this receipt and save it as proof of timely submission. When NOAA successfully retrieves the application from Grants.gov, Grants.gov will provide an electronic acknowledgment of receipt to the e-mail address of the Authorized Organization Representative (AOR). Proof of timely submission shall be the date and time that Grants.gov receives your application. Applications received by Grants.gov after the established due date for the program will be considered late and will not be considered for funding by NOAA. Please note: Validation or rejection of your application by Grants.gov may take up to two business days after your submission. Please consider the Grants.gov validation/rejection process in developing your application submission time line.

NOAA suggests that applicants submit their applications during the operating hours of the Grants.gov, so that if there are questions concerning transmission, operators will be available to walk you through the process. Submitting your application during the Contact Center hours will also ensure that you have sufficient time for the application to complete its transmission prior to the application deadline. Applicants using dial-up connections should be aware that transmission of applications will take a longer time than when using high speed broadband before Grants.gov receives it. Grants.gov will provide either an error or a successfully received transmission message. Grants.gov reports that some applicants abort the transmission because they think that nothing is occurring during the transmission process. Please be patient and give the system time to process the application. Uploading and transmitting many files, particularly electronic forms with associated XML schemas, will require more time to be processed. Important: All applicants, both electronic and paper, should be aware that adequate time must be factored into applicant schedules for delivery of the application. Electronic applicants are advised that volume on Grants.gov is currently

extremely heavy, and if Grants.gov is unable to accept applications electronically in a timely fashion, applicants are encouraged to exercise their option to submit applications in paper format. Paper applicants should allow adequate time to ensure a paper application will be received on time, taking into account that guaranteed overnight carriers are not always able to fulfill their guarantees.

All applicants are strongly encouraged to submit proposals through the Grants.gov portal. For applicants without Internet access, hard copy proposals will be accepted. The hard copies must be submitted by postal mail, commercial delivery service, or hand-delivery. Proposals must be submitted to: NOAA/OAR, 1315 East West Highway, Room 11326, Silver Spring, Maryland 20910, Attn: Dr. John Cortinas.

V. Application Review Information

A. Evaluation Criteria

Proposals will be evaluated using the standard NOAA evaluation criteria. Various questions under each criterion are provided to ensure that the applicant includes information that NOAA will consider important during the evaluation, in addition to any other information provided by the applicant.

1. Importance and/or relevance and applicability of proposed project to the program goals (25 percent): This criterion ascertains whether there is intrinsic value in the proposed work and/or relevance to NOAA, Federal, regional, state, or local activities.

* Does the proposal include research goals and projects that address the critical issues identified in NOAA's 5-year Research Plan, NOAA's Strategic Plan, and the priorities described in the program priorities (see Section I.B.)?

* Is there a demonstrated commitment (in terms of resources and facilities) to enhance existing NOAA and CI resources to foster a long-term collaborative research environment/culture?

* Is there a strong education program with established graduate degree programs in NOAA-related sciences that also encourages student participation in NOAA-related research studies?

2. Technical/scientific merit (30 percent): This criterion assesses whether the approach is technically sound and/or innovative, if the methods are appropriate, and whether there are

clear project goals and objectives.

- * Does the project description include a summary of clearly stated goals to be achieved during the five year period that reflect NOAA's strategic plan and goals?

- * Does the CI involve partnerships with other universities or research institutions, including Minority Serving Institutions and universities that can contribute to the proposed activities of the CI?

3. Overall qualifications of applicants (30 percent): This criterion ascertains whether the applicant possesses the necessary education, experience, training, facilities, and administrative resources to accomplish the project.

- * If the institution(s) and/or Principal Investigators have received current or recent NOAA funding, is there a demonstrated record of outstanding performance working with NOAA and/or NOAA scientists on research projects?

- * Is there nationally and/or internationally recognized expertise within the appropriate disciplines needed to conduct the collaborative/interdisciplinary research described in the proposal?

- * Is there a well-developed business plan that includes fiscal and human resource management, as well as strategic planning and accountability?

- * Are there any unique capabilities in a mission-critical area of research for NOAA?

- * Has the applicant shown a substantial investment to the NOAA partnership, as demonstrated by the amount of the cost sharing contribution?

4. Project costs (5 percent): The budget is evaluated to determine if it is realistic and commensurate with the project needs and time-frame.

5. Outreach and education (10 percent): NOAA assesses whether this project provides a focused and effective education and outreach strategy regarding NOAA's mission to protect the Nation's natural resources.

B. Review and Selection Process

An initial administrative review/screening is conducted to determine compliance with

requirements/completeness. All proposals will be evaluated and individually ranked in accordance with the assigned weights of the above-listed evaluation criteria by an independent peer review panel. At least three experts, who may be Federal or non-Federal, will be used in this process. If non-Federal experts participate in the review process, each expert will submit an individual merit review and there will be no consensus opinion. The merit reviewers' ratings are used to produce a rank order of the proposals. The Selecting Official selects proposals after considering the peer reviews and selection factors listed below. In making the final selections, the Selecting Official will award in rank order unless the proposal is justified to be selected out of rank order based upon one or more of the selection factors. The Selecting Official makes the final award recommendation to the Grants Officer authorized to obligate funds.

C. Selection Factors

The merit review ratings shall provide a rank order to the Selecting Official for final funding recommendations. The Selecting Official shall award in the rank order unless the proposal is justified to be selected out of rank order based upon one or more of the following factors:

1. Availability of funding.
2. Balance/distribution of funds: a. Geographically. b. By type of institutions. c. By type of partners.
 - d. By research areas. e. By project types.
3. Whether this project duplicates other projects funded or considered for funding by NOAA or other Federal agencies.
4. Program priorities and policy factors.
5. Applicant's prior award performance.
6. Partnerships and/or participation of targeted groups.
7. Adequacy of information necessary for NOAA staff to make a National Environmental Policy Act (NEPA) determination and draft necessary documentation before recommendations for funding are made to the Grants Officer.

D. Anticipated Announcement and Award Dates

October 1, 2011 should be used as the proposed start date on proposals. The announcement of the award is expected by the end of May 2011.

VI. Award Administration Information

A. Award Notices

The notice of award is signed by the NOAA Grants Officer and is the authorizing document. It is provided by electronic notification or postal mail to the appropriate business office of the recipient organization. The OAR will notify unsuccessful applicants in writing either electronically or by postal mail. Those proposals that are not ultimately selected for funding will be destroyed.

B. Administrative and National Policy Requirements

1. The Department of Commerce Pre-Award Notification Requirements for Grants and Cooperative Agreements contained in the Federal Register notice of February 11, 2008 (73 Fed. Reg. 7696), are applicable to this solicitation.

2. **Limitation of Liability.** Funding for this program is contingent upon congressional appropriations. In no event will NOAA or the Department of Commerce be responsible for application preparation costs if these programs fail to receive funding or are cancelled because of other agency priorities. Publication of this announcement does not oblige NOAA to award any specific project or to obligate any available funds.

3. **National Environmental Policy Act (NEPA).** NOAA must analyze the potential

environmental impacts, as required by NEPA, for each project seeking NOAA funding. Detailed information on NOAA compliance with NEPA can be found at the following NOAA NEPA website: www.nepa.noaa.gov, including our NOAA Administrative Order 216-6 for NEPA, http://www.nepa.noaa.gov/NAO216_6.pdf, and the Council on Environmental Quality implementation regulations, http://ceq.hss.doe.gov/nepa/regs/ceq/toc_ceq.htm. After the award has been made, the recipient is required to provide detailed information on the activities to be conducted, locations, sites, species and habitat to be affected, possible construction activities, and any environmental concerns that may exist (e.g., the use and disposal of hazardous or toxic chemicals, introduction of non-indigenous species, impacts to endangered and threatened species, aquaculture projects, and impacts to coral reef systems) for each project proposed under this award. In addition to providing specific information that will serve as the basis for any required impact analyses, the recipient may also be requested to assist NOAA in drafting an environmental assessment, if NOAA determines such assessment is required. The recipient will also be required to cooperate with NOAA in identifying feasible measures to

reduce or avoid any identified adverse environmental impacts of its proposal. The failure to cooperate with NOAA shall be grounds for not funding a particular project. In cases where additional information is required after a project is selected, funds can be withheld by the NOAA Grants Officer under a special award condition requiring the recipient to submit additional environmental compliance information sufficient to enable NOAA to assess any impacts that a project may have on the environment.

4. Universal Identifier. Applicants should be aware that, they are required to provide a Dun and Bradstreet Data Universal Numbering System (DUNS) number during the application process. See the October 30, 2002 Federal Register, Vol. 67, No. 210, pp. 66177-66178 for additional information. Organizations can receive a DUNS number at no cost by calling the dedicated toll-free DUNS Number request line at 1-866-705-5711 or via the internet (<http://www.dunandbradstreet.com>).

C. Reporting

Financial reports are to be submitted to the NOAA Grants Officer and Performance (technical) reports are to be submitted to the NOAA Program Officer annually. Near the end of each award year, NOAA will provide the CI with guidance on what information should be submitted as part of the annual performance report. This information will be used by NOAA to assess the quality of the research and provide NOAA with general information about the quality of activities at the CI, including how many students are participating, scientific output, and number of employees associated with the CI receiving NOAA support. Reports should be submitted electronically through NOAA's Grants Online system or on paper if no computer access is available.

VII. Agency Contacts

Dr. John Cortinas, 1315 East-West Highway, Room 11326, Silver Spring, Maryland 20910; telephone (301)734-1090; email: John.Cortinas@noaa.gov.

VIII. Other Information

A. Freedom of Information Act

U.S. Department of Commerce regulations implementing the Freedom of Information Act (FOIA) are found at 15 C.F.R. Part 4, "Public Information." These regulations set forth rules for the Department regarding making requested materials, information, and records publicly available under the FOIA. Applications submitted in response to this Federal Funding Opportunity may be subject to requests for release under the Act. In the event that

an application contains information or data that the applicant deems to be confidential commercial information which is exempt from disclosure under FOIA, that information should be identified, bracketed, and marked as "Privileged, Confidential, Commercial or Financial Information." Based on these markings, the confidentiality of the contents of those pages will be protected to the extent permitted by law.

B. Permits and Approvals

It is the applicant's responsibility to ensure that all necessary Federal, state and local government permits and approvals for the proposed work to be conducted are obtained and effective before any research begins. Permits for proposed projects can be held by any formally and substantially involved collaborator, including a NOAA collaborator, provided the collaborator is receiving or providing resources associated with this announcement and related awards. Failure to apply for and/or obtain Federal, state, and local permits, approvals, letters of agreement, or failure to provide environmental analysis, when necessary, will eliminate any further consideration of a proposed project for funding.