

FY 2018 Remote Sensing for Snowpack and Soil Moisture

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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: FY 2018 Remote Sensing for Snowpack and Soil Moisture

Announcement Type: Initial

Funding Opportunity Number: NOAA-OAR-OWAQ-2018-2005521

Catalog of Federal Domestic Assistance (CFDA) Number: 11.459, Weather and Air Quality Research

Dates: Complete application packages must be submitted through Grants.gov no later than 5:00 p.m. Eastern Time on April 26, 2018. Expected project start date is September 1, 2018.

Funding Opportunity Description: OAR's Office of Weather and Air Quality (OWAQ) is soliciting proposals to support research and development that has a strong potential for advancing the use of snowpack (snow water equivalent) and soil moisture remote sensing data to improve the National Water Model (NWM) and contribute directly to the mission of NOAA's National Water Center over the next 1 to 2 years.

FULL ANNOUNCEMENT TEXT

I. Funding Opportunity Description

A. Program Objective

The National Oceanic and Atmospheric Administration (NOAA) Office of Oceanic and Atmospheric Research (OAR) Office of Weather and Air Quality (OWAQ) is seeking proposals to develop and test new weather technologies for possible transition into NOAA operations.

In the United States and around the world, water security is increasingly in jeopardy. Too much water, too little water, or water of poor quality can endanger life, property, economies and ecosystems.

The societal impacts are underscored by the 126 fatalities and \$10.9 billion damage from flash floods and river floods in 2016 (<http://www.nws.noaa.gov/om/hazstats/sum16.pdf>). Data from 1980–2017 (as of October 6, 2017), shows there have been 28 flooding events with losses exceeding \$1 billion (CPI-Adjusted) each across the United States. During this same period there have been 25 drought events with losses exceeding \$1 billion (CPI-Adjusted) each across the United States (<https://www.ncdc.noaa.gov/billions/>).

In this context, NOAA is embarking on a comprehensive effort to give people, businesses, and governments better access to the water information they need for their unique circumstances, so that they may take appropriate actions to address water-related risks and manage their water resources more efficiently and effectively.

A cornerstone of this effort is the National Water Model (NWM) that was made operational in August 2016. The NWM is a collaborative effort among a number of academic and federal research partners. The basis for the NWM is the community-based Weather Research and Forecasting Model Hydrological modeling system (WRF-Hydro) framework developed by the National Center for Atmospheric Research (NCAR). The development and implementation of the NWM is the result of strong collaboration with NCAR and a partnership with the Consortium of Universities for the Advancement of Hydrologic Sciences, Inc., the National Science Foundation, and Federal Integrated Water Resources Science and Services partners. The NWM simulates the water cycle with mathematical representations of the different processes and how they fit together. This complex representation of physical processes such as snowmelt and infiltration and water movement through the soil layers varies significantly with changing elevations, soils, vegetation types and a host of other variables. Additional details on the NWM and WRF-Hydro can be found at <http://water.noaa.gov/about/nwm> and https://ral.ucar.edu/projects/wrf_hydro/overview.

Both snowpack (snow water equivalent) and soil moisture are important in the hydrologic

cycle and as inputs to the NWM, but current measurements of both are spatially and temporally sparse and not well assimilated and parameterized into the physics of the NWM. Improving the efficiency, effectiveness, and accuracy of obtaining, and applying these measurements will improve the outputs of the NWM and the benefits to society. For example, the importance of snowpack to the nation's water budget cannot be overstated. In the Western U.S., 85% of freshwater runoff originates as snowmelt. In the Eastern US, nine of the most significant floods of the 20th century were directly related to snowmelt (<https://www.weather.gov/news/162602-airborne>).

Through this announcement, OAR is seeking proposals to support research and development that has a strong potential for advancing the use of snowpack (snow water equivalent) and soil moisture remote sensing data to improve the National Water Model and contribute directly to the mission of NOAA's National Water Center over the next 1 to 2 years.

Toward that end, research and development projects that use observations, datasets, models, and other weather-related technologies that are openly available to the weather and water enterprise are strongly encouraged.

Applicants are encouraged to visit the websites of the Office of Water Prediction (<http://www.water.noaa.gov/>), the NWM (<http://www.water.noaa.gov/about/nwm>), and WRF-Hydro (https://ral.ucar.edu/projects/wrf_hydro/overview) to learn more about the NWS current capabilities and future plans.

As part of NOAA's policy of transitioning research to operations (http://www.corporateservices.noaa.gov/ames/administrative_orders/chapter_216/216-105B.html), NOAA uses Readiness Levels (RLs) to identify transition stages and monitor the progress of transition projects, a similar scale to the Technical Readiness Levels (TRLs) used by NASA and other federal agencies.

RL 1: Basic research, experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundations of phenomena and observable facts, without any particular application or use in view. Basic research can be oriented or directed towards some broad fields of general interest, with the explicit goal of a range of future applications (OECD, 2015).

RL 2: Applied research, original investigation undertaken in order to acquire new knowledge. It is, however, directed primarily towards a specific, practical aim or objective. Applied research is undertaken either to determine possible uses for the findings of basic research, or to determine new methods or ways of achieving specific and predetermined objectives.

RL 3: Proof-of-concept for system, process, product, service, or tool; this can be considered an early phase of experimental development; feasibility studies may be included.

RL 4: Successful evaluation of system, subsystem, process, product, service, or tool in a laboratory or other experimental environment; this can be considered an intermediate phase

of development.

RL 5: Successful evaluation of system, subsystem process, product, service, or tool in relevant environment through testing and prototyping; this can be considered the final stage of development before demonstration begins.

RL 6: Demonstration of a prototype system, subsystem, process, product, service, or tool in relevant or test environment (potential demonstrated).

RL 7: Prototype system, process, product, service or tool demonstrated in an operational or other relevant environment (functionality demonstrated in near-real world environment; subsystem components fully integrated into system).

RL 8: Finalized system, process, product, service or tool tested, and shown to operate or function as expected within user's environment; user training and documentation completed; operator or user approval given.

RL 9: System, process, product, service or tool deployed and used routinely.

In order to successfully transition new technology to NOAA operations shortly after the completion of selected projects, this opportunity will focus on projects associated with RLs 5-8.

As such, proposals under the announcement should be at a stage in which the research and development is ready for evaluation, testing and prototyping in a relevant environment (RL 5).

Proposals for basic research, applied research, or early proof of concepts of new technology will not be supported under this announcement.

In order for NOAA to successfully transition the new technologies developed as a result of this funding opportunity into NOAA operations, applicants must identify a NOAA/NWS operational office (receiving party) that will be responsible for implementing the research into operations. Proposals that involve testing in a NOAA testbed (<http://www.testbeds.noaa.gov>), must include a plan to evaluate the capability in one of the NOAA testbeds, which must be coordinated with the appropriate NOAA testbed manager after the award is made. Applicants are highly encouraged to collaborate with the NOAA/NWS scientists throughout the project.

B. Program Priorities

NOAA's OAR through this NOFO is soliciting research to operations proposals in the following three priority areas focusing on snowpack (snow water equivalent) and soil moisture remote sensing data that can be used to expand and improve the National Water Model and contribute directly to the mission of NOAA's National Water Center over the next 1 to 2 years:

Priority 1: Sensor Technology: Advancements leading to improved remote sensing observing capabilities of snowpack (snow water equivalent) and soil moisture that can be used to

improve the initial conditions and/or validation of the NWM and WRF-Hydro. New satellite sensors are out of scope of this initiative. Example focus areas could include advancements to airborne snow survey technologies.

Priority 2: Hydrologic Data Algorithms and Fusion: Advancements leading to improved data algorithms and fusion techniques to create new hydrological data sets of snowpack (snow water equivalent) and soil moisture that may be used for inputs, blended output products, or validation of the NWM and WRF-Hydro. Example focus areas could include data from airborne snow surveys and from NOAA's current and future operational satellites such as GOES-16, GOES-S, and JPSS.

Priority 3: Hydrologic Data Assimilation and Physics Parameterization: Advancements leading to improved hydrologic data assimilation and physics parameterization of snowpack (snow water equivalent) and soil moisture into the NWM and WRF-Hydro. Example focus areas could include advancements to assimilate remotely sensed snowpack estimates using NOAA-20 (JPSS-1) satellite data.

C. Program Authority

Authority is provided by the following: 15 U.S.C. 313; 49 U.S.C. 44720 (b); 33 U.S.C. 883d; 15 U.S.C. 2904; 15 U.S.C. 2934.

II. Award Information

A. Funding Availability

In FY 2018, approximately \$3,000,000 will be available to fund approximately 10-15 new projects. The maximum anticipated funding per proposal per year is approximately \$400,000. Funding of any proposals is contingent upon availability of these funds. In no event will NOAA or the Department of Commerce be responsible for proposal preparation costs.

B. Project/Award Period

The period of award is up to two years. Funding for the second year will be contingent upon a favorable performance review near the end of the prior year and the availability of funds. All funded Principal Investigators (PIs) will be required to submit written semiannual progress reports during the project to describe the progress made toward the goals and deliverables established in the original proposal and agreed-upon timeline. A final report must also be submitted at the conclusion of the project.

A project reaches its completion in one of two ways:

- (1) A two-year project may end after approximately one year, if the operational office and OWAQ Director decide, as described above, that insufficient progress has been made to justify continuation of the project into year two.
- (2) A project ends more conventionally with the submissions by the PI(s) of a final report and all research results and tested prototypes available for transition at the conclusion of the original agreed-upon project duration. Based upon this report, and reports from the operational office's staff and from project points of contact at the operational office, the National Weather Service will subsequently make a decision on whether or not operational implementation of the project deliverables will occur. Decisions on implementation are at the sole discretion of the National Weather Service.

C. Type of Funding Instrument

The funding instrument for awards will be a cooperative agreement since it is expected that NOAA will be substantially involved in the implementation of the project. For selected projects involving investigators from multiple institutions, a separate grant or cooperative agreement will be issued to each institution that submits a proposal.

Proposals from NOAA federal employee scientists selected for funding shall be awarded by an intra-agency fund transfer. Proposals from a non-NOAA federal agency selected for funding will be funded through an inter-agency transfer. PLEASE NOTE: Before non-NOAA federal applicants may be funded, they must demonstrate that they have legal authority to receive funds from another federal agency in excess of their appropriation. The only exception to this is governmental research facilities for awards issued under the authority of 49 USC 44720(b). Because this announcement is not proposing to procure goods or services from applicants, the Economy Act (31 USC 1535) is not an appropriate legal basis.

III. Eligibility Information

A. Eligible Applicants

Eligible applicants are institutions of higher education; other nonprofits; commercial organizations; state, local and Indian tribal governments; and Federal agencies.

B. Cost Sharing or Matching Requirement

No cost sharing is required under this program

C. Other Criteria that Affect Eligibility

Applicants are required to partner with NOAA organizations and employees for

proposed projects, either as co-PIs on the proposal or through clearly-defined work components for NOAA organizations as described in the proposal. Federal employees (NOAA or otherwise) may serve as PIs or co-PIs, but NOAA will not fund their federal salary costs. Travel costs or other reasonable costs for federal employee PIs or co-PIs may be funded. In these cases, funds will be transferred to the federal employee's organization through either an inter-agency fund transfer (if statutory authority allows) or an intra-agency fund transfer from NOAA.

IV. Application and Submission Information

A. Address to Request Application Package

Application packages for full proposals for all applicants are available at: <http://www.grants.gov/web/grants/applicants/apply-for-grants.html>. The instructions for application packages from principal investigators are described below in section IV.B.2.

B. Content and Form of Application

The guidelines for preparation of full proposals provided below are mandatory (except where otherwise noted). Failure to adhere to these requirements will result in proposals being returned without review.

1. Full Proposals

A complete and full proposal will be a proposal that contains all of the following information. "Failure to include all mandatory information will result in rejection of the proposal."

- (a) The application must include a title page that identifies each PI and institutional representative by full name, title, organization, telephone number, mailing address, and e-mail address; and the total requested Federal funds for each period for each institution. If there are several institutions submitting separate applications for the same project, the names of all institutions along with their lead PI information and requested total funding must appear there for each period.
- (b) A one-page abstract must be included and must contain a brief summary of the proposed work to be completed. The abstract must appear on a separate page, headed with the proposal title and the name(s) of the PI(s) and their home institution(s).
- (c) All proposals must provide a Statement of Work that includes:
 - (1) The proposed duration of the project, up to two years;
 - (2) A description of the project, with prior research results (including references) to demonstrate sufficient maturity and potential for a successful transition to operations at operational offices;

- (3) A proposed work plan for the project, including hardware and software needs, the testing and evaluation approach, metric(s) for success, project deliverables, a timeline with key milestones, real-time operational data needed as input, and identification of a path to transition the end result to NOAA/NWS operations. Proposals that involve testing of the capability in a NOAA testbed must include a plan to evaluate the capability in one of the NOAA testbeds;
- (4) A timeline for delivering scientific and technical documentation and training materials over the course of the project that will enable evaluation and potential operational maintenance of the proposed techniques. If the proposal is funded, researchers are expected to coordinate with the operational office Director to formalize this timeline;
- (5) A description of appropriate travel associated with project testing and evaluation, project meetings, and/or presentation of results at scientific conferences;
- (6) Estimates of operational office staff requirements in terms of on-site (or off-site) facilitator efforts, and estimated computational, communication, and/or display requirements at the researcher's home institution and/or at the operational office via remote access and data transfer;
- (7) The current RL of the project, as well as the projected end-state RL;
- (8) Identification of a proposed receiving office in the NOAA/NWS of the end product;
- (9) If the proposed project is a continuation of a previously funded OWAQ project, provide the project details with title, PI and Co-PI information, NOAA grant award number, number of readiness levels advanced at the time of preparation of the proposal, and if there has been a NOAA approved transition plan.

The above Statement of Work items in 2.(c).1-9 must be fully contained within no more than TEN PAGES (excluding references) using a 12-point font and one-inch margins.

- (d) An abbreviated Curriculum Vitae for PI(s) with a reference list of all publications and experience with research to operations projects within at least the last three years must be included.
- (e) Each investigator must submit a list of current and pending financial assistance support that includes project title, supporting agency, investigator months, total dollar value and duration. Requested amounts should be listed for pending support.
- (f) The proposal package includes the information described above as well as the required forms: (1) Application for Federal Assistance (SF-424), (2) Budget Information – Non-Construction Programs (SF-424A), (3) Certifications (CD-511), (4) Assurances – Non-Construction Program (SF-424B), and (5) Disclosure of Lobbying Activities (Standard Form LLL).
- (g) All applicants must submit a detailed itemized Budget Table broken out by year and a Budget Justification that includes the PIs scientific and technical support staff salaries and fringe benefits, facility requirements, computing and communications, supplies and travel. For multiple applications associated with the same project, the Lead PI should additionally

include a budget table that displays the total budget for all partners. All partners, including the Lead PI and any co-PIs, should include a separate budget for their portion of the project. Applicants must use the Standard Form SF 424A Budget Information – Non-Construction Programs that is contained in the standard NOAA Grants and Cooperative Agreement Package. The budget table and narrative should reference the GMD Budget Narrative Guidance at <http://www.ago.noaa.gov/grants/training.html>.

If indirect charges are included in the budget, applicants must have an approved negotiated Indirect Cost Rate Agreement. If applicants have not previously established an indirect cost rate with a Federal agency they may choose to negotiate a rate with the Department of Commerce or use the de minimis indirect cost rate of 10% of MTDC (as allowable under 2 C.F.R. §200.414). The negotiation and approval of a rate is subject to the procedures required by NOAA and the Department of Commerce Standard Terms and Conditions Section B.06. The NOAA contact for indirect or facilities and administrative costs is:

Lamar Revis, Grants Officer
NOAA Grants Management Division
1325 East West Highway
9th Floor
Silver Spring, Maryland 20910
Lamar.Revis@noaa.gov

The information on the SF-424A should only include the amount of funding that will be provided to the institution submitting the proposal, not co-PI's at other institutions who must submit a separate budget for their portion of the joint project's funding.

- (h) Proposals submitted in response to this Announcement must include a Data Management Plan (up to 2 pages). See Section VI.B., Administrative and National Policy Requirements, below for additional information as part of the Proposal.
- (i) Proposals must show proven business processes for identifying, monitoring, evaluating, testing, and reporting success with one or more of the priority areas identified in the competitive announcement.

C. Unique Entity Identifier and System for Award Management (SAM)

To enable the use of a universal identifier and to enhance the quality of information available to the public as required by the Federal Funding Accountability and Transparency Act, 31 U.S.C. 6101 note, to the extent applicable, any proposal awarded in response to this announcement will be required to use the System for Award Management (SAM), which may be accessed online at <https://www.sam.gov/portal/public/SAM/>. Applicants are also

required to use the Dun and Bradstreet Universal Numbering System, as identified in OMB guidance published at 2 CFR Parts 25, which may be accessed at <https://www.ecfr.gov/cgi-bin/text-idx?SID=9a281daf4d7ebe5f86e3c087c9e2592f&mc=true&tpl=/ecfrbrowse/Title02/2chapter1.tpl>.

D. Submission Dates and Times

Full application packages must be received no later than 5:00 pm ET on April 26, 2018. Any applications received after that time based on the relevant Grants.gov receipt date-time stamp will not be accepted.

E. Intergovernmental Review

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

F. Funding Restrictions

None.

G. Other Submission Requirements

Full application (proposal) packages from non-federal government applicants must be submitted electronically through the <http://grants.gov> website by the due date. Federal government applicants must e-mail their complete applications to oar.owaq.competition@noaa.gov by the due date.

If the applicant is a university that has a NOAA Joint or Cooperative Institute (CI), the institution is encouraged to submit a proposal on behalf of the CI. The proposal must specify the name of the CI, its award number, and the NOAA-approved research theme applicable to the work to be performed in the proposal's project narrative. The proposal will use the facilities and administrative rate (F&A or Indirect cost rate) associated with main CI award. If the proposal is selected for funding, NOAA will notify the university that a separate competitive award will be issued with its own award number. However, the competitive award will include a Specific Award Condition (SAC) that evidences the link between it and the CI award. The SAC would provide (1) that the university has submitted the proposal on behalf of the CI; (2) that the existing University/NOAA MOA will be incorporated by reference into the terms of the competitive award, and (3) that any progress report(s) for the competitive award must follow the timetable of and be submitted by the CI directly to the funding program. Copies of these progress reports will be attached to the CI's performance report as an appendix.

If there are collaborators from NOAA and/or other federal agencies, the proposal must accompany letters of commitment from all federal collaborators. Such letters of commitment should clearly identify any additional funding that would be required for NOAA or the agency to support the collaboration and substantial involvement of the federal agency, such as costs associated with hosting the PI in a federal office space or providing federal computer access. This funding SHOULD NOT be included in the applicant's budget since the funding will be provided directly to the federal agency and not the applicant, if the proposal is selected. Such funding cannot include salary support or associated salary costs of federal employees.

Applicants should submit applications electronically through <http://www.Grants.gov>. Applicants should note that it can take between 3-5 business days or as long as 3 weeks to register with Grants.Gov if all steps are not completed in a timely manner, and registration is required only once. Users of Grants.gov will be able to download a copy of the application package, complete it off line, and then upload and submit the application via the Grants.gov site. If an applicant has problems downloading the application forms from Grants.gov, contact Grants.gov Customer Support at 1-800-518-4726 or support@Grants.gov. To use Grants.gov, applicants must have a DUNS number and current registration in the Notice of Funding Opportunity Page 18 of 24 System for Award Management (SAM) system. Applicants should allow a minimum of five days to complete the SAM registration; registration is required only once, but must be renewed periodically. In all, there are approximately five steps needed to set up your organization's Grants.gov account (see <https://www.grants.gov/web/grants/applicants/apply-for-grants.html>).

If an applicant cannot use <https://www.grants.gov/>, paper applications will be accepted. Paper applications must be submitted with completed, signed, original forms in hard copy and an electronic copy of the entire application on CD, including scanned signed forms. If the applicant has completed the entire application in Grants.gov but is unable to submit it via Grants.gov, then this application package should be provided via CD along with printed and signed versions of forms SF-424, SF-424B, and CD-511. The authorized representative MUST sign and date these forms over the printed signature that will appear in the signature box. Paper applications should be printed on one side only, on 8.5" x 11" paper, and should not be bound in any manner. Paper applications must be postmarked or provided to a delivery service and documented with a receipt and sent to

Dr. Mark Vincent, R/WA;
Office of Weather and Air Quality/OAR/NOAA;
R.No. 10320, SSMC-3;

1315 East West Highway;
Silver Spring; MD 20910;
e-mail:Mark.Vincent@noaa.gov

V. Application Review Information

A. Evaluation Criteria

All qualified applications are reviewed in two stages. The following evaluation criteria are listed with assigned scores summing to 100 and the review stage. Applicants are required to adhere to all the noted submission requirements and address the criterion described in this section.

1. Importance/relevance and applicability of proposal to the program priorities (stage=2, score=30 points)

This criterion ascertains whether there is intrinsic value in the proposed work and relevance to NOAA's program priorities listed in section I.B. The reviewers will consider the following questions in their assessment of this criterion:

How does the proposed activity have relevance to NOAA's program priorities listed in section I.B?

Is the proposed work feasible to transition to NWS operations? Could the proposed work be implemented in NOAA's operational environment within 2-3 years after completion of the project?

Has the PI correctly assessed the Readiness Level of the project? If so, is the current readiness level of the proposed project between RL 5 and RL 8?

Does the proposal identify a NOAA/NWS operational office (receiving party) to receive the end result?

If the proposal involves testing the capability in one of the NOAA testbeds, does it have a test plan to test in one of the NOAA testbeds?

Does this activity identify gaps in current NOAA operations (including need for consideration of production suite) and try to address those gaps?

If this project is a continuation of a previously funded OWAQ project, has it advanced at least one RL (provided in IV.B.2.c (9)) and does it have a NOAA approved transition plan?

2. Technical merit (stage=1, score=45 points)

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. The reviewers will consider the following questions in their assessment of this criterion:

(1) Is the conceptual framework, design methodology, and proposed analysis adequately developed, well-integrated, and appropriate for the goal of the project?

- (2) Does the study address an important priority problem?
- (3) How will scientific knowledge be advanced?
- (4) Will this activity improve concepts or methods that drive the field of study?
- (5) Does the project employ novel concepts, approaches or methods?
- (6) Does the applicant acknowledge potential problem areas and consider alternatives?
- (7) Does the proposal identify a path to transition the end result to NOAA/NWS operation?
- (8) Does the proposal include metrics that measure and evaluate the success or failure of the project?
- (9) Does the proposal include appropriate milestones and deliverables for this project?
- (10) Is the scope of the proposal appropriate for a short-duration grant?

3. Overall qualifications of applicants (Stage=1, score=15 points)

This ascertains whether the applicant possesses the necessary education, experience, training, facilities, and administrative resources to accomplish the project. The reviewers will consider the following questions in their assessment of this criterion:

- (1) Does the environment in which the work will be done contribute to the probability of success?
- (2) Do the proposed activities take advantage of unique features of the intended environment or employ useful collaborative arrangements?
- (3) Does the applicant have prior experience in transitioning research to operations?

4. Project costs (stage=1, score=10 points)

The project's budget is evaluated to determine if it is realistic and commensurate with the project needs and time-frame. The reviewers will consider the following questions in their assessment of this criterion:

- (1) Are the requested costs realistic, reasonable, allowable, allocable, necessary and commensurate with the project needs and time period?
- (2) Has the applicant proposed cost-efficient ways of accomplishing the project?

B. Review and Selection Process

Once a full application has been received, an administrative review will first be conducted to determine compliance with requirements and completeness of the application. All compliant and full proposals will then receive an objective review in two parallel stages. In stage 1, independent peer mail reviews consisting of both Federal and /or non-Federal experts will evaluate applications. Each application is reviewed independently by a team of at least three subject matter experts in the field using the following three evaluation criteria specified in section V.A: Technical merit, Overall qualifications of applications, and Project

costs. The three independent reviewers' scores will be averaged to obtain stage-1 average score for each application. Application must receive a stage-1 average score of 42 or higher (out of 70) to be considered for final scoring.

In stage-2 review process, a panel of at least three Federal and/or non-Federal subject matter experts will evaluate each application for the evaluation criterion, Importance/relevance and applicability of proposal to the program goals. Each panel reviewer will provide a relevance score ranging between 0-30 for each application. All stage-2 panel reviewers' scores for each application will be averaged to obtain stage-2 average score for each application.

To determine the final score for each application, stage-1 average score will be added to the stage-2 average score. These final scores for each application will be used to determine the rank order of the proposals for the competition. Based on the project's final rank order, the OWAQ Director, will make a fund or do-not-fund recommendation to the NOAA Grants Officer.

Any application considered for funding may be required to address the issues raised in the evaluation of the application by the reviewers, program officer, selecting official, and/or grants officer before the award is issued. Successful and unsuccessful applicants will be notified of the selection recommendations upon completion of the review and selection process. All applicants will receive their average review scores for their application.

C. Selection Factors

The OWAQ Director shall recommend awards in the rank order unless the applications are 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 (see section I. B.).
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 NEPA determination and draft necessary documentation before recommendations for funding are made to the Grants Officer.

D. Anticipated Announcement and Award Dates

Final funding award decisions are expected in May 2018 with an expected start date of September 1, 2018.

VI. Award Administration Information

A. Award Notices

A. Award Notices

Applicants will receive notification from OWAQ that their application has either been recommended or not recommended for funding to the NOAA Grants Management Division after completion of the review process. Notices of recommendation for funding are not an authorization to initiate the project. Official notification of funding, signed by a NOAA Grants Officer, is the authorizing document that allows the project to begin.

Successful applicants will receive notification that the application has been approved for funding by the NOAA Grants Management Division with the issuance of an award signed by a NOAA Grants Officer. This is the authorizing document that allows the project to begin.

After selection of the proposal for funding, OWAQ will identify a NOAA/NWS person whose office or operational entity who will be responsible for receiving the final product of the project. The PIs of the selected proposals, in coordination with the NOAA/NWS operational office identified by the OWAQ, must develop a high level research to operations transition plan within six months of commencement of the project. The transition plan must at least identify key milestones, and final deliverables to advance to the next readiness level. To enable the use of a universal identifier and to enhance the quality of information available to the public as required by the Federal Funding Accountability and Transparency Act of 2006, to the extent applicable, any proposal awarded in response to this announcement will be required to use the Central Contractor Registration and Dun and Bradstreet Universal Numbering System and be subject to reporting requirements, as identified in OMB guidance published at 2 CFR Parts 25, 170 (2018),

<https://www.ecfr.gov/cgi-bin/text-idx?SID=9a281daf4d7ebe5f86e3c087c9e2592f&mc=true&tpl=/ecfrbrowse/Title02/2chapter1.tpl>

B. Administrative and National Policy Requirements

DEPARTMENT OF COMMERCE PRE-AWARD NOTIFICATION REQUIREMENTS. The Department of Commerce Pre-Award Notification Requirements for Grants and Cooperative Agreements contained in the Federal Register notice of

December 30, 2014 (79 FR 78390) are applicable to this solicitation and may be accessed online at <http://www.gpo.gov/fdsys/pkg/FR-2014-12-30/pdf/2014-30297.pdf>.

LIMITATION OF LIABILITY. Funding for programs listed in this notice is contingent upon the availability of appropriations. Applicants are hereby given notice that funds may not have been appropriated yet for the programs listed in this notice. In no event will NOAA or the Department of Commerce be responsible for proposal preparation costs. Publication of this announcement does not oblige NOAA to award any specific project or to obligate any available funds.

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA). NOAA must analyze the potential environmental impacts, as required by the National Environmental Policy Act (NEPA), for applicant projects or proposals which are seeking NOAA federal funding opportunities. Detailed information on NOAA compliance with NEPA can be found at the following NOAA NEPA website: <http://www.nepa.noaa.gov/>, including our NOAA Administrative Order 216-6 for NEPA, <http://www.nepa.noaa.gov/>, and the Council on Environmental Quality implementation regulations, http://energy.gov/sites/prod/files/NEPA-40CFR1500_1508.pdf. Consequently, as part of an applicant's package, and under their description of their program activities, applicants are 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). In addition to providing specific information that will serve as the basis for any required impact analyses, applicants may also be requested to assist NOAA in drafting an environmental assessment, if NOAA determines an assessment is required. Applicants will also be required to cooperate with NOAA in identifying feasible measures to reduce or avoid any identified adverse environmental impacts of their proposal. Failure to do so shall be grounds for not selecting an application. In some cases if additional information is required after an application is selected, funds can be withheld by the Grants Officer under a special award condition requiring the recipient to submit additional environmental compliance information sufficient to enable NOAA to make an assessment on any impacts that a project may have on the environment.

UNPAID OR DELINQUENT TAX LIABILITY. In accordance with Section 523 of Division B and Sections 744 and 745 of Division E of the Consolidated and Further Continuing Appropriations Act, 2015 (Pub. L. 113-235) or a future public law, an authorized representative of the selected applicant(s) will be required to provide certain pre-award representations regarding federal felony and federal criminal tax convictions, unpaid federal

tax assessments, and delinquent federal tax returns. The form must be completed and submitted with grant applications for: (a) all for-profit and non-profit organization applicants (Part I, and if required, Part II); and (b) all non-Federal entity applicants anticipating receipt of \$5 million or more in the current Federal Fiscal Year appropriated funding (Part II only). The form can be found at <http://www.ago.noaa.gov/grants/forms.html>.

UNIFORM ADMINISTRATIVE REQUIREMENTS, COST PRINCIPLES, AND AUDIT REQUIREMENTS. Through 2 C.F.R. § 1327.101, the Department of Commerce adopted Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards at 2 C.F.R. Part 200, which apply to awards in this program. Refer to <http://go.usa.gov/SBYh> and <http://go.usa.gov/SBg4>.

DOC TERMS AND CONDITIONS. Successful applicants who accept a NOAA award under this solicitation will be bound by Department of Commerce Financial Assistance Standard Terms and Conditions. This document will be provided in the award package in NOAA's Grants Online system at <http://www.ago.noaa.gov> and at <http://go.usa.gov/hKbj>.

REVIEW OF RISK. After applications are proposed for funding by the Selecting Official, the Grants Office will perform administrative reviews, including an assessment of risk posed by the applicant under 2 C.F.R. 200.205. These may include assessments of the financial stability of an applicant and the quality of the applicant's management systems, history of performance, and the applicant's ability to effectively implement statutory, regulatory, or other requirements imposed on non-Federal entities. Special conditions that address any risks determined to exist may be applied. Applicants may submit comments to the Federal Awardee Performance and Integrity Information System (FAPIIS) about any information included in the system about their organization for consideration by the awarding agency.

DATA SHARING PLAN. 1. Environmental data and information collected or created under NOAA grants or cooperative agreements must be made discoverable by and accessible to the general public, in a timely fashion (typically within two years), free of charge or at no more than the cost of reproduction, unless an exemption is granted by the NOAA Program. Data should be available in at least one machine-readable format, preferably a widely-used or open-standard format, and should also be accompanied by machine-readable documentation (metadata), preferably based on widely used or international standards. 2. Proposals submitted in response to this Announcement must include a Data Management Plan of up to two pages describing how these requirements will be satisfied. The Data Management Plan should be aligned with the Data Management Guidance provided by NOAA in the Announcement. The contents of the Data Management Plan (or absence thereof), and past performance regarding such plans, will be considered as part of proposal review. A typical

plan should include descriptions of the types of environmental data and information expected to be created during the course of the project; the tentative date by which data will be shared; the standards to be used for data/metadata format and content; methods for providing data access; approximate total volume of data to be collected; and prior experience in making such data accessible. The costs of data preparation, accessibility, or archiving may be included in the proposal budget unless otherwise stated in the Guidance. Accepted submission of data to the NOAA National Centers for Environmental Information (NCEI) is one way to satisfy data sharing requirements; however, NCEI is not obligated to accept all submissions and may charge a fee, particularly for large or unusual datasets. 3. NOAA may, at its own discretion, make publicly visible the Data Management Plan from funded proposals, or use information from the Data Management Plan to produce a formal metadata record and include that metadata in a Catalog to indicate the pending availability of new data. 4. Proposal submitters are hereby advised that the final pre-publication manuscripts of scholarly articles produced entirely or primarily with NOAA funding will be required to be submitted to NOAA Institutional Repository after acceptance, and no later than upon publication. Such manuscripts shall be made publicly available by NOAA one year after publication by the journal.

MINORITY SERVING INSTITUTIONS - The Department of Commerce/National Oceanic and Atmospheric Administration (DOC/NOAA) is strongly committed to increasing the participation of Minority Serving Institutions (MSIs), i.e., Historically Black Colleges and Universities, Hispanic-serving institutions, Tribal colleges and universities, Alaskan Native and Native Hawaiian institutions, and institutions that work in underserved communities.

FREEDOM OF INFORMATION ACT (FOIA) - In the event that an application contains information or data that you do not want disclosed prior to award for purposes other than the evaluation of the application, mark each page containing such information or data with the words "Privileged, Confidential, Commercial, or Financial Information - Limited Use" at the top of the page to assist NOAA in making disclosure determinations. DOC regulations implementing the Freedom of Information Act (FOIA), 5 U.S.C 552, are found at 15 C.F.R. Part 4, which sets forth rules for DOC to make requested materials, information, and records publicly available under FOIA. The contents of funded applications may be subject to requests for release under the FOIA. Based on the information provided by the applicant, the confidentiality of the content of funded applications will be maintained to the maximum extent permitted by law.

C. Reporting

The Federal Funding Accountability and Transparency Act, 31 U.S.C. 6101 note,

includes a requirement for awardees of applicable Federal grants to report information about first-tier subawards and executive compensation under Federal assistance awards. All awardees of applicable grants and cooperative agreements are required to report to the Federal Sub-award Reporting System (FSRS) available at <https://www.fsrs.gov/> on all sub-awards over \$25,000. Refer to 2 CFR Parts 170.

VII. Agency Contacts

For questions about this announcement contact Dr. Mark Vincent at Mark.Vincent@noaa.gov.

VIII. Other Information