Identification and application of acidification thresholds in coastal ecosystems

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ANNOUNCEMENT OF FEDERAL FUNDING OPPORTUNITY

EXECUTIVE SUMMARY

Federal Agency Name(s): National Ocean Service (NOS), National Oceanic and Atmospheric Administration (NOAA), Department of Commerce

Funding Opportunity Title: Identification and application of acidification thresholds in coastal ecosystems

Announcement Type: Initial

Funding Opportunity Number: NOAA-NOS-NCCOS-2018-2005323

Catalog of Federal Domestic Assistance (CFDA) Number: 11.478, Center for Sponsored Coastal Ocean Research - Coastal Ocean Program

Dates: The required letters of intent (LOI) for the Thresholds FFO should be sent by e-mail to Laurie.Golden@noaa.gov and must be received by 5:00 p.m. Eastern Time on December 8, 2017. Full applications must be received and validated by Grant.gov by 11:59 p.m. Eastern Time on February 13, 2018. Electronic or paper copies received after the deadline will not be considered, and paper copy applications will be returned to the sender. NOAA will accept paper applications subject to further details described in this Announcement that are postmarked or provided to a commercial carrier with tracking number and receipt on or before 11:59 pm Eastern Time on February 13, 2018. Private metered postmarks will not be accepted. Applicants submitting by paper are responsible for tracking their applications and should notify the Program Manager in Section VII of this Announcement that they are submitting by paper.

When developing your submission timeline, keep in mind the following information necessary to submit an application on Grants.gov: (1) a free annual registration process in the electronic System for Award Management (SAM) may take between three and five business days or as long as several weeks, as described in Section IV.G. of this Announcement, and (2) if you submit an application via Grants.gov, you will receive a series of email notifications for up to two business days before learning via validation or rejection whether NOAA has received your application.

Funding Opportunity Description: The purpose of this document is to advise the public that NOAA/NOS/National Centers for Coastal Ocean Science (NCCOS and the NOAA Ocean Acidification Program (OAP) are soliciting proposals for the Identification and Application of Acidification Thresholds in Coastal Ecosystems. Funding is contingent upon the availability of Fiscal Year 2018 Federal appropriations. It is anticipated that projects funded under this announcement will have a September 1, 2018 start date.

Total funding for this research: Applicants should submit proposals not to exceed $350,000 per year for projects generally 2-3 years in duration, with a total multi-year budget not to exceed $1,050,000. If funds become available for this program, up to approximately $1,000,000 may be available in Fiscal Year 2018 for the first year of about 1-3 projects with expected start dates of September 1, 2018. Funding for this program is contingent upon availability of funds, which may not have been appropriated at the time of this announcement.. While projects are expected to be 2-3 years in scope, funding may be spread over 4 federal fiscal years depending on how project timelines align with federal budgets.

Electronic Access: Background information about NOAA's National Centers for Coastal Ocean Science can be found at https://coastalscience.noaa.gov/. Information about NOAA's Ocean Acidification Program can be found at http://oceanacidification.noaa.gov/. Proposals should be submitted through Grants.gov, http://www.grants.gov. Sign up to receive any potential amendments to this Announcement via www.grants.gov.

FULL ANNOUNCEMENT TEXT

I. Funding Opportunity Description

A. Program Objective

1. Desired Research Outcomes and Outputs

Thresholds are often present in coastal systems. Instead of gradual changes in response to change in a driver, the system reaches a point where the ecosystem changes rapidly, perhaps to a state that cannot revert to the previous system. Ocean Acidification (OA) could combine with a variety of other coastal stressors and create tipping points that can disrupt ecosystems important to coastal communities and economies. Nutrient enrichment, hypoxia, temperature and precipitation changes, coral bleaching, altered distribution of species and habitats and phenological changes to populations can interact with acidification in coastal systems to affect individual species, communities, habitats, and food webs. Economic and social thresholds affect how management actions are viewed and implemented. Thresholds may be manifested at different levels (Mumby et al., 2011). A degradation threshold exists where change in a driver can have impacts to individual species or processes, but not cause ecosystem-wide disruption. Thresholds of ecosystem state may drive a system to a different alternate stable state, perhaps irreversibly. These are sometimes called “tipping points.” And a physiological threshold exists beyond which the components of the ecosystem are no longer able to survive, the ecosystem ceases to be viable and ecosystem services are irrevocably altered. For the purposes of this announcement, “thresholds” and “tipping points” refer to thresholds of ecosystem state (sensu Mumby et al., 2011), although individual species physiological and behavioral thresholds are important to understand because it is the cumulative environmental change exceeding these thresholds which will lead to ecosystem tipping points.

An ability to identify these tipping points or thresholds in advance could allow proactive management to avoid catastrophic ecosystem collapses and consequent economic and social upheaval (Groffman et al, 2006; Selkoe et al., 2015). This announcement is aimed towards outcomes that allow coastal managers to better anticipate and avoid, or successfully manage through ecosystem shifts associated with OA in combination with other stressors. This could take the form of modifying stormwater and nutrient management, ecohydraulics, decreasing other stresses to enhance resilience, changing watershed practices, enhanced restoration of coastal habitats or establishment of refugia for areas that will be impacted.

The research funded under this initiative will address the following Objectives:

• Develop a tipping point detection and warning capability for OA in concert with other stresses, including identification of indicator species (and their associated impairment thresholds) and parameters to monitor that might provide early warning of impending change from one ecosystem state to another.

• Identify how social and economic thresholds may be associated with ecological thresholds (Adger, 2000). For instance, at what market price will it be unsustainable to fish or operate an aquaculture business? How much decline in a coral reef can be sustained before tourism declines? What is the level of acidification where mitigation of aquaculture operations becomes unsustainable? These are likely to occur at different levels than the ecological thresholds (Liu et al., 2007). Explore how communities and decision makers react to and utilize scientific information on potential ecological and economic tipping points in order to maximize the utility and effectiveness of supported research products.

• Refine ecosystem models that integrate biophysical dynamics with social-economic dynamics to simulate possible management scenarios, and evaluate the socio-economic tradeoffs of different management actions.

• Provide better understanding of factors that interact with OA to cause a threshold effect and how actions taken by coastal industries, water quality and resource management, and coastal planning and restoration will affect thresholds, with guidance for managers on how to balance the risks associated with multiple, potentially competing thresholds.

It may be that one proposal does not include all of these objectives. For instance, a proposal may only address development of a detection and warning capability. However, that capability would need to take other stressors into account and not just consider biogeochemical acidification parameters. Social and economic thresholds, and evaluation of information needed to effect a societal response to impending thresholds, may be considered in addition to ecological thresholds.

B. Program Priorities

Thresholds are often present in aquatic systems (e.g., Carpenter, 2003; Hughes et al., 2007) and managers have become increasingly aware of the implications to natural resources (Dodds et al., 2010, Selkoe et al., 2015). While thresholds often occur in systems with non-linear dynamics, they are also possible in systems with linear dynamics (Petraitis and Hoffman, 2010). Human-induced changes can cause a system to pass a threshold into an alternate state, which may not provide the same ecosystem services as the previous state. Costs to restore a system to a previous state may be greater than avoiding a threshold that

can cause a system to shift. Therefore, it would be helpful to have an early warning system that could alert managers to the potential for system change. Alternatively, if restoration is the goal, it would be desirable to cross a threshold to an alternate state that is more favorable. In this case, it would be beneficial to know when management efforts might be able to produce such a system change. Or restoration may be taking place assuming the system is in one state, but a threshold is passed that pushes the system into an alternate state which negates or decreases the effectiveness of restoration. In all cases, it is necessary to identify ecosystem thresholds, predict them, and understand how they interact with social and economic thresholds to drive management actions (Foley et al., 2011).

An international survey of coastal managers (Lyytimaki and Hilden, 2011) showed concerns that current coastal management structures and practices are not capable of preventing the crossing of the thresholds of harmful changes, especially those related to climate change. The paper has the following recommendations for research areas and management approaches:

• Develop interdisciplinary research approaches and management structures that can take into account various kinds of thresholds with different spatial, temporal, and functional scales.

• Identify cases where enough knowledge already exists to make well-grounded management decisions with regard to thresholds.

• Social and political dynamics should be recognized in efforts to provide coastal management with ecological and technical information on thresholds.

• Need to develop a transdisciplinary research approach and adaptive management practices sensitive to both new information and the changing views and values of all relevant stakeholders.

The absorption of atmospheric CO2 leads to acidification of ocean and coastal waters. This has emerged as an important issue for managing coastal systems (Strong et al., 2014). A major impact of acidification is on calcium carbonate (CaCO3) deposition. Since many commercially important shellfish and corals rely on CaCO3 for structural support and defense from predators, this can have economic consequences to aquaculture, wild shellfisheries and coral reefs. "A common threshold for CaCO3 dissolution is the saturation state of aragonite. At aragonite saturation states = 1.0, CaCO3 will dissolve. However, even at higher saturation states, growth rates and reproduction can be affected, as it takes more energy to build shell material. Moreover, different life history stages are susceptible to

impairment at different saturation state levels (Gibson et al., 2011).

Coastal acidification does not result solely from atmospheric CO2 and open ocean processes. The coastal environment exhibits large fluctuations in carbonate chemistry on diurnal and seasonal timeframes, in addition to the long-term trends (Waldbusser and Salisbury, 2014). Inputs associated with river, groundwater and stormwater sources can influence acidification parameters (Cai et al, 2011, Waldbusser and Salisbury, 2014). Nutrient enrichment can lead to excessive algal blooms and decomposition, which not only increases CO2 in coastal waters, but also decreases oxygen (Melzner et al, 2013). Low O2 has its own set of physiological thresholds for marine organisms, with dissolved oxygen (DO) levels < 2 mg O2/liter being classified as hypoxic. However, several species show both lethal and sublethal effects at higher DO levels (Vaquer-Sunyer and Duarte, 2008). Some evidence shows that the effects of low DO and low ¿Ar on bivalve shellfish may be synergistic (Clark and Gobler, 2016). How thresholds for different stressors may interact remains a key gap in understanding how acidification, in concert with other stressors, will affect coastal ecosystems (Ekstrom et al., 2015).

An emerging research interest associated with OA is the potential for mitigation efforts (Strong et al., 2014). Approaches can include nutrient load reduction (Wallace et al., 2014), limiting precipitation runoff and stormwater surges along with associated erosion (Kelly et al., 2011), restoration of seagrasses and mangroves (Jones, 2016), co-culture of macroalgae with shellfish (e.g., http://www.nmfs.noaa.gov/aquaculture/homepage_stories/paul_allen_grant.html) and/or reduction of overfishing (Hughes et al., 2007). How these efforts will work in natural environments, and how they may react to interacting thresholds is still an open question. In addition, little work has been done on social and economic thresholds that may impact the implementation of such mitigation efforts.

Specific habitats are also influenced by thresholds beyond OA and eutrophication. Temperature thresholds are common in determining coral bleaching (Kwiatkowski, L. et al. 2015), marsh systems can convert to mangroves due to sea level rise (Krauss et al., 2011), and major marine population shifts can occur that influence ecosystem dynamics (Perry et al., 2008). Understanding how all these different thresholds can interact to impact coastal habitats will be crucial to resource management in changing environments (Scavia et al., 2002).

These interacting thresholds are not merely a theoretical concern. As noted in a report from the White House Office of Science and Technology Policy (OSTP, 2014), “Ocean acidification has already changed the way shellfish farmers on the West Coast of the United

States conduct business. …Facilities like the Taylor Shellfish Farms hatchery on Hood Canal in Washington State have changed their production techniques to respond to increasing acidification in Puget Sound." Similar concerns exist in other regions of the country (e.g., see https://earthzine.org/2015/05/26/ocean-acidification-a-global-issue-affecting-a-maine-oyster-farm/). Because of these issues, the U.S. Strategic Plan for Federal Research and Monitoring of Ocean Acidification calls for research to understand how ocean acidification will interact with other stressors, as well as the development of new and enhanced models to project how combined stressors will affect marine ecosystems and the socioeconomic and cultural impacts to communities.

Thresholds do not occur only in natural systems, but also in human systems. Moreover, interactions between natural and human systems can create thresholds that are not present in analyses of only one or the other (Liu et al., 2007). In order to manage coastal systems to be resilient to these perturbations, an integration of natural, social and economic science is needed, as well as an understanding of governance structures (Berkes et al., 2000; Adger et al., 2005; Adger et al., 2009; Renaud et al., 2010).

To address these issues, a multi-pronged approach is envisioned:

• Retrospective studies, modeling and data synthesis to identify a threshold and/or tipping point detection and warning capability for OA in concert with other coastal stresses,

• Social and economic research to assess how communities and decision makers may react to thresholds, and evaluate the significance of potential thresholds related to OA in concert with other stresses,

• Scenario development to project potential changes of a suite of coastal stressors, and how coastal managers and businesses might balance the risks associated with multiple, potentially competing thresholds, and

• Engagement of local decision makers throughout the process to identify desired research outcomes, their pathway to utilization and benchmarks for success.

This opportunity will not support extensive new field or laboratory studies on impacts of OA on particular organisms. Instead, it is meant to synthesize existing information in the context of thresholds. Therefore, requests for new laboratory equipment, field operations or shiptime will not be considered.

Coordination within NOAA and across other federal and state agencies is encouraged. In

particular, partnerships with the following entities are strongly encouraged, where appropriate. This list should not be interpreted as exclusive; other appropriate groups may be involved, depending on the habitat and issues under consideration.

- NOAA NOS National Marine Sanctuaries (http://sanctuaries.noaa.gov/)

- NOAA NOS National Estuarine Research Reserves (https://oceanservice.noaa.gov/ecosystems/nerrs/)

- Integrated Ocean Observing System (IOOS) Regional Associations (http://www.ioosassociation.org/)

- NOAA Climate Program Office (CPO) (http://cpo.noaa.gov/)

- State Sea Grant Programs (http://seagrant.noaa.gov/About)

- NOAA National Marine Fisheries Service Office of Habitat Conservation (http://www.habitat.noaa.gov/)

- NOAA National Marine Fisheries Service Regional Fisheries Science Centers (http://www.st.nmfs.noaa.gov/sciencecenters/)

- NOAA Habitat Focus Areas (https://www.habitatblueprint.noaa.gov/habitat-focus-areas/)

- NOAA Sentinel Sites (http://oceanservice.noaa.gov/sentinelsites/)

- State departments of natural resources and/or environmental protection

- Commercial interests reliant on coastal resources.

The Office of National Marine Sanctuaries (ONMS) has examples of vulnerability assessments for specific sanctuaries (e.g., Hutto et al., 2015) and some suggested indicators (e.g., Duncan et al., 2013) that are designed to provide a clear and concise way to communicate the status and trends of important physical factors of the climate system and their impacts on NMS resources. However, these indicators are not evaluated in the context of how close the system may be to crossing a threshold that might trigger fundamental changes. Similarly, the National Estuarine Research Reserve system recently conducted a climate sensitivity assessment (Robinson et al., 2013) that categorized reserves based on their potential sensitivities to climate hazards/variables, ecological resiliency, projected

changes in temperature, and projected sea level rise. The regional science centers of the NOAA National Marine Fisheries Service have undertaken regional climate assessments (e.g., https://www.st.nmfs.noaa.gov/ecosystems/climate/northeast-fish-and-shellfish-climate-vulnerability/NEVA_Overview). However, there have not been thresholds identified for any of these variables for specific coastal habitats. Knowing when a system is approaching a threshold could help in prioritizing reserve management options.

Proposals should identify the importance of the region or habitat under study, key species and/or parameters and why they are chosen for analysis with respect to thresholds, and overlaying social and economic factors. All projects must demonstrate a clear link to management issues and specify outputs and outcomes that will provide managers, businesses and the public with sound scientific information for making decisions. Proposals must describe specific plans for sharing information and research products with end-users and the community in a timely manner, for example by proposing workshops and public outreach activities throughout the life of the project. Articulation of outcome-based management goals is required in proposals. Activities in the final year of the project must include communication of research results to interested audiences and intended users.

Management Application:
These science products to support outcome-based actions by coastal managers will be the goal of this FFO:

• A threshold detection and warning capability for OA in concert with other stresses, including identification of indicator species and parameters (ecological, economic, and/or social) to monitor that might provide early warning of impending change from one ecosystem state to another.

• Ecosystem models that integrate biophysical dynamics with social-economic dynamics to simulate possible management action scenarios, identify thresholds (potentially including social and economic thresholds) and evaluate the socio-economic tradeoffs of different management actions.

• Guidance for managers on how to balance the risks associated with multiple, potentially competing thresholds based on better understanding of factors that interact with OA to cause a threshold effect, how actions taken in different spheres will affect thresholds, and how communities and decision makers react to and utilize scientific information on potential ecological and economic tipping points.

Projects must have an advisory committee whose purpose is to provide advice to the

investigator team to assist with project design to ensure stakeholder use of research products developed under this FFO. The structure, size, and activities of the committee must be described in the proposal, including a plan for how it will provide advice to the investigators. Members of the committee must be named and letters included in the proposal indicating that they have agreed to serve; these letters do not count against the page limits. The committee must include members independent of the project (not funded investigators), who will typically be potential end users. A primary responsibility of the advisory committee will be to develop a management transition plan that will outline how the scientific results will be used in a management context, and expected timelines for that use. NCCOS and OAP employees cannot be members, although the NCCOS and OAP Program Managers may attend committee meetings. Funding may be requested for activities such as participation in project investigator meetings, workshops and/or informational community events. Travel funds for the committee should be included within the budget. Although federal employees may be members, they cannot receive travel funds. The NCCOS Program Manager may consult with the project's lead PI to add committee members during the project period.

C. Program Authority

Coastal Zone Management Act, Section 1456c
"The Secretary shall conduct a program of technical assistance and management-oriented research necessary to support the development and implementation of State coastal management program[s]…and technical assistance in coastal zone management"

Federal Ocean Acidification Research and Monitoring Act 33 U.S.C. Chapter 50, Sec. 3701-3708
Directs the Secretary of Commerce to conduct research and monitoring and authorizes the Secretary to establish an ocean acidification program in the National Oceanic and Atmospheric Administration (NOAA) consistent with the strategic research plan, including: (1) providing grants for critical research projects exploring the effects of ocean acidification on ecosystems and the socioeconomic impacts of increased ocean acidification; and (2) incorporating a competitive merit-based process for awarding grants.

II. Award Information

A. Funding Availability

Applicants should submit proposals not to exceed $350,000 per year for projects generally 2-3 years in duration, with a total multi-year budget not to exceed $1,050,000. If funds become available for this program, up to approximately $1,000,000 may be available

in Fiscal Year 2018 for the first year of about 1-3 projects with expected start dates of September 1, 2018. Funding for this program is contingent upon availability of funds, which may not have been appropriated at the time of this announcement. Funding may be spread over 4 federal fiscal years depending on how project timelines align with federal budgets.

B. Project/Award Period

Full applications may cover a project/award period up to 3 years, but shorter-term project proposals are also encouraged.

Awards may be funded incrementally, generally on an annual basis, but, once awarded, those awards will not compete for funding in subsequent years. This multi-year funding is often appropriate for projects to be funded for two to five years. Once approved, full applications are not required for the continuation out years. While applicants are not required to divide Federal assistance project activities into annual increments based on appropriations law, this approach may be constructive given the possibility that funding may not be available in subsequent years.

Funding for each year's activity is contingent upon the availability of funds from Congress, satisfactory performance, and is at the sole discretion of the agency.

During the implementation phase of research projects funded under this announcement, regardless of the funding mechanism used, NCCOS and OAP Program Managers will analyze financial statements and progress reports for each continuing award, and will have dialogue with the Principal Investigators (PI) and Authorized Representatives of the recipient institutions to discuss research progress and expected time lines for the remaining award period. If NOAA experiences budget reductions in future fiscal years, the amount of funding provided in any given fiscal year will be determined on a project-specific basis by the remaining tasks to be completed, the overall pace of the research and the length of time remaining on the award and/or across the board reductions based on the overall funds available.

Regardless of the budget for any given fiscal year, Program Managers will consider the length of time remaining for each project, the amount of funds available, the tasks to be completed in the upcoming fiscal year, the pace of research, and any delayed progress relative to that originally proposed, before determining the funding amount in any given fiscal year.

C. Type of Funding Instrument

In an effort to maximize the use of limited resources, applications from non-Federal,

non-NOAA Federal and NOAA Federal applicants will be evaluated in the same competition, with different funding instruments applied depending on the type of applicant.

The funding instrument for a research application selected for funding from a non-Federal researcher is expected to be a cooperative agreement. A cooperative agreement is appropriate when substantial Federal government involvement is anticipated. This means that the recipient can expect substantial agency collaboration, participation, or intervention in project performance. Substantial involvement exists when: responsibility for the management, control, direction, or performance of the project is shared by the assisting agency and the recipient; or the assisting agency has the right to intervene (including interruption or modification) in the conduct or performance of project activities. "Substantial involvement" will be coordinated and communicated by NCCOS Program Managers, and can include collaboration and participation by NOAA researchers, as well as NCCOS Program Manager involvement in PI meetings, setting up management advisory groups, development of management transition plans, and communication of project results.

If the non-Federal applicant is at an institution that has a NOAA Cooperative Institute (CI), it is allowed to submit applications that reference the CI by attaching a cover letter to the application stating its desire to have the application associated with the CI. This letter should specify the name of the cooperative institute, the CI cooperative agreement number, and the NOAA-approved research theme and task that applies to the proposal. The application will use the Facilities & Administrative (F&A, or indirect cost) rate associated with the main CI agreement. If the application is selected for funding, NOAA will notify the university that a separate award will be issued with its own award number. However, the award will include two Special Award Conditions (SACs): (1) the existing University/NOAA Memorandum Of Agreement (MOA) would be incorporated by reference into the terms of the competitive award, and (2) any performance report(s) for the competitive project must follow the timetable of the funding program and be submitted directly to the funding program. Report(s) will be copied to the CI's administrator when due, to be attached to the main cooperative agreement progress report as an appendix. This will allow the CI to coordinate all the projects submitted through the CI, since the terms of these awards will specify that this is a CI project via the MOA.

If the non-Federal applicant is at an institution that has a NOAA approved Cooperative Ecosystem Studies Units (CESU), it is allowed to submit applications that reference the CESU. If the applicant is a member of one of these CESUs and is interested in using its CESU status, it may state its wishes in a cover letter to the application stating its desire to have the application associated with the CESU. This letter should specify the name of the CESU. Of the seventeen CESUs across the nation, NOAA is a member of ten: North and

West Alaska, California, Hawaii-Pacific Islands, South Florida-Caribbean, Gulf Coast, Piedmont-South Atlantic Coast, Chesapeake Watershed, North Atlantic Coast, Pacific Northwest, and Great Plains. If an applicant is associated with a CESU NOAA is not a member of, the application must be submitted through their institution without reference to CESU status.

The following criteria must be met for NOAA to use the established partnerships with CESUs:

The proposed funding opportunity must fit within the objectives of the National CESU Network Program outlined below:

• To provide research, technical assistance, and education to federal land management, environmental, and research agencies and their partners in biological, physical, social, cultural, and engineering disciplines needed to address natural and cultural resource management issues at multiple scales and in an ecosystem context.

• The proposed funding opportunity must fit the intent of the Cooperative and Joint Agreements, which means:

- The research partnership will carry out or stimulate an activity (data, products or services) for a public purpose; and

- NOAA will be significantly involved in the work.

Previous research completed by a local CI will be considered in decisions made to issue an award to a CESU.

The funding instrument for a selected application from an eligible NOAA Federal applicant will be an intra-agency transfer of funds.

The funding instrument for a selected application from a non-NOAA Federal applicant will be through an inter-agency transfer of funds, provided legal authority exists for the Federal applicant to receive funds from another agency. Non-NOAA Federal applicants that intend to be the lead institution must call Laurie Golden/240-533-0285 to discuss technical details. PLEASE NOTE: Before non-NOAA Federal applicants may be funded, they must demonstrate that they have applicable legal authority for an interagency transfer of funds. Support may be solely through NCCOS or partnered with other Federal offices and agencies.

The intra- and inter-agency transfers of funds are not Federal assistance (grants or cooperative agreements), and the policies described in this Announcement applicable to Federal assistance awards do not apply to Federal entities receiving intra- and inter-agency transfers of funds. Refer to the Agency Contact officials in Section VII. for more information.

III. Eligibility Information

A. Eligible Applicants

Eligible applicants for Federal financial assistance in this competition are institutions of higher education, other non-profits, state, local, Indian Tribal Governments, for-profit organizations, U.S. Territories and Federal agencies that possess the statutory authority to receive transfers of funds. DOC/NOAA supports cultural and gender diversity and encourages applications involving women and minority individuals and groups. In addition, DOC/NOAA is strongly committed to broadening the participation of historically black colleges and universities, Hispanic serving institutions, tribal colleges and universities, and institutions that work in underserved areas. DOC/NOAA encourages applications involving any of the above institutions to apply.

Please note that:
(1) PIs should be employees of an eligible entity listed above; and applications should be submitted through that entity. Non-Federal researchers should comply with their institutional requirements for application submission.

(2) Non-NOAA Federal applicants will be required to submit certifications or documentation showing that they have specific legal authority to accept funds for this type of research.

(3) Foreign researchers must apply as subawards or contracts through an eligible US entity.

(4) Non-Federal researchers affiliated with NOAA-University Cooperative/Joint Institutes will be funded through cooperative agreements.

(5) NCCOS researchers may apply as subawards through an eligible US entity but cannot be the lead PI on the application.

B. Cost Sharing or Matching Requirement

None

C. Other Criteria that Affect Eligibility

Letters of intent are required. A full proposal that did not submit a LOI will not be considered and will be returned to the proposer without review.

Each application must substantially comply with the sixteen elements listed under Content and Form of Application, Required Elements, (1) - (16), or it will be returned to sender without further consideration. A checklist with the required and requested application elements can be found in Section VIII

IV. Application and Submission Information

A. Address to Request Application Package

Laura Golden
1305 East West Hwy
SSMC 4 Station 8219
Silver Spring, MD 20910

B. Content and Form of Application

1. Letter of Intent (LOI)

LOIs are required. Any full proposals submitted without a prior timely LOI submission will not be considered. The purpose of the LOI process is to provide information to potential applicants on the relevance of their proposed project and the likelihood of it being competitive in advance of preparing a full application. Full applications will be encouraged only for LOIs deemed relevant; however, the final decision to submit a full proposal is made by the investigator. The LOI should provide a concise description of the proposed work and its relevance to program priorities. The LOI should be no more than two pages (front only) in length, single spaced in 12-point font with 1-inch margins and should include in order the components listed below. If all these components are not included, the LOI will not be considered.

(1) Tentative project title.

(2) Name(s) phone number(s), email address(s) and institution(s) of all Principal Investigator(s), and specification of which individual is the Lead Principal Investigator.

(3) Approximate cost of the project.

(4) Statement of the problem and its management relevance.

(5) Brief summary of work to be completed, methodology to be used, and the plan for engaging the user community.

NCCOS and OAP Program Managers will review each LOI to determine whether it is responsive to the Program's goals, as advertised in this notice. Letters or emails to encourage or discourage a full application are scheduled to be sent out two weeks after the LOI due date.

Late LOIs will not be considered and any associated full applications will not be considered.

2. Full Applications

Example Application
An example application can be found on the NCCOS website at: https://coastalscience.noaa.gov/about/funding-opportunities/application-forms/.

Required Elements

Collaborative Proposals - If more than one institution is collaborating in a project awarded funds, the lead institution will be responsible for distributing funds to the partner institutions with the exception of Federal partners. Federal partners will be funded with either intra- or inter- agency agreements initiated by NCCOS. Collaborating institutions expected to receive funds must be budgeted as subawards or contracts. Unfunded collaborators may also participate.

Each application must substantially comply with the following sixteen elements to be forwarded for merit review. The Summary, Title page, Abstract, Project Description, References, Biographical Sketch, and Budget Justification must be single spaced in 12-point font with 1-inch margins. The Collaborators List must be an Excel spread sheet. The sixteen elements are as follows:

(1) Standard Form 424. The applicant must submit the Standard Form, SF-424, “Application for Federal Assistance,” to indicate the total amount of funding proposed for the whole project period. This form is to be the cover page for the original application and is the first required form in the grants.gov application package.

(2) Summary title page. One-page maximum. The Summary title page identifies the project's

title, starting with the brief identifier: Thresholds 2018 and the PI's name and affiliation, complete address, phone and E-mail information. The requested funding amounts for each fiscal year should be included on the Summary title page.

(3) One-page abstract/project summary. The summary (abstract) should appear on a separate single page, headed with the proposal title, institution(s), investigator(s), total proposed cost, and budget period. It should be written in the third person. The summary is used to help compare proposals quickly and allows the respondents to summarize their key points in their own words. Project summaries of applications that receive funding may be posted on program-related websites.

The project summary should include an introduction of the problem, rationale, scientific objectives and/or hypotheses to be tested, and a brief summary of work to be completed.

(4) Project Description. The description of the proposed project must include narratives of the Proposed Research (elements a through d), the Application to Management (element e), and the Data Management Plan (element f).

The description of the proposed project must not be more than 15 pages for elements (a) through (e) and an additional 2 pages for the Data Management Plan (f).

The Proposed Research Narrative should be thorough and explicitly indicate its relevance to the program goals and scientific priorities by:

(a) Identifying the topic that is being addressed by the proposal, the region proposed for work, and the significance of the species and/or parameters analyzed for thresholds;

(b) Describing the proposed scientific objectives and research activities in relation to the present state of knowledge in the field and in relation to previous and current work by the proposing principal investigator(s);

(c) Discussing how the proposed project lends value to the program goals;

(d) Identifying the function of each PI. The Lead PI (s) will be responsible for communicating with the Federal Program Manager on all pertinent verbal or written information. He/She may also be a primary liaison to the Management Advisory Committee;

(e) The Applications to Management Narrative should establish the connection to relevant resource management needs by explicitly identifying the end user group(s) including

evidence of the linkage between the scientific questions and management needs. The description of the Advisory Committee and its activities should also be included in this section (see required information in Section I.B.2.)

This narrative should provide the management justification for the research through:

(i) Articulating the coordination with one or more management and/or commercial entities;

(ii) Discussing the expected significance of the project to stakeholder priorities and needs. Specific management targets, with proposed outputs and outcomes, should describe how this project will improve management capabilities. Outputs are defined as products (e.g. publications, models) or activities that lead to outcomes (changes in management knowledge or action). Definitions and examples of outputs and outcomes can be accessed at https://coastalscience.noaa.gov/about/funding-opportunities/outputs-and-outcomes/. The timeline for achieving outcomes should be included in the Milestone Chart (below).

(iii) Describing specific activities, such as workshops or development of outreach materials that will enhance information transfer from project scientists to relevant management entities, other end-users, or the public.

(f) Providing a detailed Data Management Plan that describes how metadata and data collected as part of the project will be disseminated to the broader community, and plans for longer term archiving of these data. National Centers for Environmental Information (NCEI) serves as the data management focal point for the NOAA Ocean Acidification Program (http://www.nodc.noaa.gov/oceanacidification/index.html). All data resulting from NOAA OAP-funded projects must be archived and accessible through NCEI. Costs associated with use of data centers, or data archiving, should be included in the application budget. See the section on the NOAA Data Reporting requirements below (Section VI. C.).

(5) References cited. Reference information is required. Each reference should include the names of all authors in the same sequence they appear in the publications, the article title, the journal or book title, volume number, page numbers, and year of publications. While there is no established page limitation, this section should include bibliographic citations only and should not be used to provide parenthetical information outside of the Project Description.

(6) Milestone chart. Provide time lines of major tasks covering the duration of the proposed project.

(7) Biographical sketch. All PI(s) co-PI(s) must provide summaries of up to 2 pages that

include the following:

(a) A listing of professional and academic credentials and mailing address;

(b) A list of up to five publications most closely related to the proposed project and five other significant publications.

(8) Current and pending support. Describe all current and pending Federal financial/funding support for all PI(s) and co-PI(s). Continuing grants must also be included. A current and pending support form is available on the NCCOS web site for your use: https://coastalscience.noaa.gov/about/funding-opportunities/application-forms/. You should respond to this element whether or not you have any current and/or pending support, e.g., by indicating “not applicable.”

(9) A list of all known applicable permits that will be required to perform the proposed work. You should respond to this requirement element whether or not permits are required.

(10) Accomplishments from Prior Federal Support. If any PI or co-PI identified on the project has received Federal funding in the past five years addressing OA or ecosystem thresholds, information on the award(s) is required. Each PI and co-PI who has received more than one award (excluding amendments) must report on the award most closely related to the proposal. This section should not exceed two pages per award in addition to the 15 pages for the Project Description.

The following information should be provided:

a) the Federal agency, award number, amount and period of support;

b) the title of the project;

c) a summary of the results of the completed work;

d) publications resulting from the award;

e) a brief description of outputs and outcomes; and

f) as appropriate, a description of the relation of the completed work to the proposed work.

When applicable, this information will be considered by reviewers in the evaluation of overall qualifications of applicants. You should respond to this element whether or not you have accomplishments from prior Federal support; e.g. by indicating “no prior Federal research on OA or ecosystem thresholds.”

(11) Budget narrative/justification. In order to allow reviewers to fully evaluate the appropriateness of costs, all applications must include a detailed budget narrative and a justification to support all proposed budget categories for each fiscal year. Personnel costs should be broken out by named PI and number of months and percentage of time requested per year per PI. Support for each PI should be commensurate with their stated involvement each year in the milestones chart (see Required Elements (6) Milestone chart).

Any unnamed personnel (graduate students, post-doctoral researchers, technicians) should be identified by their job title, and their personnel costs explained similar to PI personnel costs above. The contribution of any personnel to the project goals should be explained. Travel costs should be broken out by number of people traveling, destination and purpose of travel, and projected costs per person. Equipment costs should describe the equipment to be purchased, and its contribution to the achievement of the project goals. Each subaward should be listed as a separate item in the budget justification. Provide separate budget justifications for each subaward and indicate the basis for the cost estimates. Describe project activities for subawards and products/services to be obtained for acquisitions, and indicate the applicability or necessity of each to the project.

For additional information concerning each of the required categories and appropriate level of disclosure please see http://www.ago.noaa.gov/grants/docs/gmd_budget_narrative_guidance_-_05-24-2017_final.pdf.

If more than one institution is collaborating in a project awarded funds, a separate budget justification is required for each subaward. Signed approval from each identified subaward institution is also required. The lead institution is responsible for sending funds to their subaward institutions. For acquisition contracts, the purpose and cost or price must be fully justified and the contract must fully comply with 2 C.F.R. 200.317-.326.

An applicant requesting funds for indirect costs in its proposal budget that has a current Federally approved rate should submit documentation of the indirect cost rate agreement as an attachment to its application submission. An applicant without a Federally approved rate should refer to Section IV.F.of this Announcement regarding options.

(12) CD 511. Certification Regarding Lobbying. Lead institutions can submit these forms through the grants.gov CD511 document placeholder without a hard signature because electronic signatures are allowed on documents from the submitting institution.

(13) Standard Form 424B. Assurances - Non-Construction Programs. Lead institutions can submit these forms through the grants.gov SF 424B document placeholder without a hard signature because electronic signatures are allowed on document from the submitting institutions.

(14) Standard Form 424A. All applicants are required to submit a SF-424A Budget Form that identifies the budget for each fiscal year of the proposal. Place each fiscal year in separate columns in Section B of page 1 on the SF424A by filling in the fiscal years 1 to 3 in Section A Budget Summary - Grant Program Function or Activity column. (Note that this revised 424A Section B format is a NOAA requirement that is not reflected in the Instructions for the SF 424A). The budget figures must correspond with the descriptions contained in the proposal.

Each subaward should provide a SF424A listing each year of funding being requested. List total subaward costs under line item 6.h. other on the SF-424A. Signed approval from the institution of each identified subaward should be provided.

(15) Provide one list that includes all (U.S. and Foreign) collaborators, advisors, and advisees for each investigator (PI(s) and co-PI(s), post-docs, and subawardees), complete with corresponding institutions. Submit only one, combined and alphabetized list per application in an excel spreadsheet using First Name, Last Name and Institution for the column headings. Collaborators are individuals who have participated in a project or publication within the last 48 months with any investigator, including co-authors on publications in the resumes. Collaborators also include those persons with which the investigators may have ongoing collaboration negotiations. Advisees and Advisors do not have a time limit. Advisees are persons with whom the individual investigator has had an association as thesis advisor or postdoctoral sponsor. Advisors include an individual’s own graduate and postgraduate advisors. Unfunded participants in the proposed study should also be listed (but not their collaborators). This information is critical for identifying potential conflicts of interests and avoiding bias in the selection of reviewers.

(16) Key Contacts form. All applicants must submit the Key Contacts form. This form can be found on the NCCOS website: https://coastalscience.noaa.gov/about/funding-opportunities/application-forms/. This form identifies the official applicant contacts.

Applications should not contain extra documents or appendices.

Application format and assembly. Applications submitted via Grants.gov APPLY should follow the format guidelines below:

Attachments must be submitted in Adobe Acrobat PDF, text document or Microsoft word or excel format to maintain format integrity. Please submit the required documents as described below. Follow the instructions found on the Grants.gov web site for application submission into the Grants.gov system. All required forms that do not have specific placeholders in the Mandatory Document box must be submitted in the Optional Form box as Other Attachments and labeled with the document name: i.e. collaborator list, budget narrative, milestone chart etc. For a collaborative application: The documents for each additional institution should be combined into one file. The lead institution should label the file with the name of the institution and upload the file into the Optional Form box as Other Attachments. Repeat this procedure for each collaborating institution.

Save your completed application package with two different names before submission to avoid having to re-create the package should you experience submission problems. If you experience submission problems that may result in your application being late, send an e-mail to support@grants.gov and call the Grants.gov help desk. Their phone number is posted on the Grants.gov web site. The Program Manager associated with this FFO will use programmatic discretion in accepting applications due to documented electronic submission problems. Please note: If more than one submission of an application is performed, the last application submitted before the due date and time will be the official version.

In addition to the sixteen required elements, applicants may provide the following:

(1) A list of potential merit reviewers on a page after the Summary Title Page.

(2) Letters from unfunded collaborators, verifying their contribution to the project, and advisory committee members, verifying their willingness to serve. These letters do not count against the page limit for the Project Description. Letters of support may also be included, but they count against the page limit for the Project Description. These elements can be uploaded in to the Optional Form box under Other Attachments in Grants.gov.

Applications containing known subawards must provide - SF424A, Budget Justification, Current and Pending Support, and Key Contacts from each subaward. Signed approval from the institution of each subaward and contractor should be provided. We also request submission of the indirect rate agreement for subawards, if applicable. Applicants should

provide Key Contacts for acquisition contracts and may provide additional information similar to that requested in this section for an acquisition contract if it may help NOAA assure compliance of the contract with 2 C.F.R. 200.317-.326. Permits, accomplishments, Biographical sketches and the collaborators lists should be supplied to the lead institution in order for them to be combined within the lead application information.

It will be the applicant's responsibility to obtain all necessary Federal, state and local government permits and approvals where necessary for the proposed work to be conducted.

Applicants are expected to design their proposals so that they minimize the potential adverse impact on the environment. If applicable, documentation of requests or approvals of environmental permits should be received by the Program Manager prior to funding. Applications will be reviewed to ensure that they have sufficient environmental documentation to allow program staff to determine whether the proposal is categorically excluded from further National Environmental Policy Act (NEPA) analysis, or whether an Environmental Assessment is necessary in conformance with requirements of the NEPA. For those applications needing an Environmental Assessment, affected applicants will be informed after the peer review stage, and will be requested to assist in the preparation of a draft of the assessment (prior to award). Failure to apply for and/or obtain Federal, state, and local permits, approvals, letters of agreement, or failure to provide environmental analysis where necessary (e.g. NEPA environmental assessment) may delay the award of funds if a project is otherwise selected for funding.

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

To enable the use of a universal identifier and to build 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 applicant 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 (DUNS) and will be subject to reporting requirements, as identified in OMB guidance published at 2 CFR Part 25, which may be accessed online at: http://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title02/2cfr25_main_02.tpl. See Section IV.G. of this Announcement for more information.

D. Submission Dates and Times

The required LOIs for must sent by e-mail to Laurie.Golden@noaa.gov and must be received by 5:00 p.m. Eastern Time on December 8, 2017. Applicants will receive an email verification of receipt.

The deadline for receipt of full applications is 11:59 p.m., Eastern Time on February 13, 2018. Full applications should be submitted electronically to Grants.gov (http://www.grants.gov) and must be received and validated by Grants.gov by the deadline. Applications received after the deadline or applications that did not have a prior Letter of Intent will be rejected and returned to the sender without further consideration. Investigators submitting applications via grants.gov are advised to submit well in advance of the deadline.

If use of grants.gov is not feasible, an applicant is concerned about possible problems associated with the grants.gov system, or grants.gov is unable to accept an application electronically in a timely fashion, an applicant may submit a paper copy of their application. Paper applications must include all application elements described in this Announcement, including an SF-424 form with original ink or valid electronic signature and date from an Authorized Organization Representative, and must be stamped with an official U.S. Postal Service postmark or provided to a commercial carrier with tracking number and receipt before 11:59 p.m., Eastern Time on February 13, 2018. Private metered postmarks will not be accepted. Applicants submitting by paper are responsible for tracking their applications and should notify the Program Manager (refer to Section VII) that they are submitting by paper.

Late-arriving paper applications will be accepted for review only if the applicant can document that:

(a) The application was provided to a delivery service with delivery to the National Oceanic & Atmospheric Administration, 1305 East-West Highway, SSMC4, Mail Station 8219, Silver Spring, Maryland 20910;

(b) The application was received by 11:59 p.m., Eastern Time no later than two business days following the closing date. The applicant is responsible for notifying the Program Manager (refer to Section VII) of its submission. If an applicant is not notified of receipt of its application by NOAA, the applicant is responsible for contacting the Program Manager and providing documentation that demonstrates the application was provided to the delivery service ahead of the deadline.

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.

E. Intergovernmental Review

Applications under this program are not subject to Executive Order 12372, "Intergovernmental Review of Federal Programs." It has been determined that this notice is not significant for purposes of Executive Order 12866. Pursuant to 5 U.S.C. 553(a) (2), an opportunity for public notice and comment is not required for this notice relating to grants, benefits and contracts. Because this notice is exempt from the notice and comment provisions of the Administrative Procedure Act, a Regulatory Flexibility Analysis is not required, and none has been prepared. It has been determined that this notice does not contain policies with Federalism implications as that term is defined in Executive Order 13132.

F. Funding Restrictions

Indirect Costs: If an applicant has not previously established an indirect cost rate with a Federal agency it may choose to use the de minimis indirect cost rate of 10% of Modified Total Direct Cost as allowable under 2 C.F.R. §200.414 or negotiate a rate with the Department of Commerce. The negotiation and approval of such a new 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.

NCCOS will not fund start up or operational costs for private business ventures and neither fees nor profits will be considered as allowable costs. If indirect costs are applied incorrectly, an approved indirect cost agreement or budget revision will be required before an application can be recommended for funding.

G. Other Submission Requirements

Applications previously submitted to NCCOS FFOs and not recommended for funding must be revised to address any reviewer or panel concerns before resubmission. Resubmitted applications that have not been revised to address identified concerns may be returned without review.

Applications submitted in response to this announcement are strongly encouraged to be submitted through the Grants.gov web site. The full funding announcement for this program is available via the Grants.gov web site: http://www.grants.gov. You will be able to access,

download and submit electronic grant applications for NOAA Programs in this announcement at http://www.grants.gov. NOAA strongly recommends that you do not wait until the application deadline date to begin the application process through Grants.gov.

Applicants must register with Grants.gov before any application materials can be submitted. To use Grants.gov, applicant must have a Dun and Bradstreet Data Universal Number System (DUNS) number and be registered in the System for Award Management (SAM), and periodic renewals are required. Applicants can receive a DUNS number at no cost by calling the dedicated toll-free DUNS Number request line at 1-866-705-5711 or online at http://fedgov.dnb.com/webform. Allow a minimum of five days to complete the SAM registration. (Note: Your organization's Employer Identification Number (EIN) will be needed on the application form). An organization's one-time registration process may take up to three weeks to complete. In addition, it may take two days until the applicant is notified as to whether NOAA received the application, so allow sufficient time to ensure applications are submitted before the closing date.

After electronic submission of the application through Grants.gov, the person submitting the application will receive within the next 24 to 48 hours two email messages from Grants.gov updating them on the progress of their application. The first email will confirm receipt of the application by the Grants.gov system, and the second will indicate that the application has either been successfully validated by the system before transmission to the grantor agency or has been rejected because of errors. Only validated applications are sent to NOAA for review. After the application has been validated, this same person will receive a third email when the application has been downloaded by the Federal agency.

In addition to Grants.gov, this announcement will also be available by contacting the program official identified in Section VII. The closing dates for electronic and paper applications are the same. Please refer to important information in Submission Dates and Times (Section IV.D.) to help ensure your application is received on time.

Facsimile transmissions and electronic mail submission of applications will not be accepted.

V. Application Review Information

A. Evaluation Criteria

1. Importance and/or relevance and applicability of proposed project to the program goals: This ascertains whether there is intrinsic value in the proposed work and/or relevance to NOAA, Federal, regional, state, or local activities. Does the research address the priorities stated in this FFO? Are the expected research products clearly identified, including how will

they be used to achieve management outcomes? Are there appropriate partnerships in place? (30 percent)

2. Technical/scientific merit: This assesses whether the approach is technically sound and/or innovative, if the methods are appropriate, whether there are clear project goals and objectives. This applies to both natural and social science aspects of the proposed work. Does the proposal include an acceptable Data Management Plan that includes details on the types of environmental data and information expected and how and when the data will be shared? (25 percent)

3. Overall qualifications of applicants: This ascertains whether the applicant possesses the necessary education, experience, training, facilities, and administrative resources to accomplish the project. This includes the capability of the investigator and collaborators to complete the proposed work as evidenced by past research accomplishments, previous cooperative work, timely communication, and the sharing of findings, data, and other research products (as described in the Accomplishments from Prior Federal Support). It may also include experience and capacity for communicating with management and community partners. (15 percent)

4. Project costs: The Budget is evaluated to determine if it is realistic and commensurate with the project needs and time-frame. (10 percent)

5. Outreach and education: 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. The applicant must include plans for communicating and disseminating the results of research in ways that are appropriate to inform the relevant entities that will use the results of the proposed work, including specific products, outcomes, and timing of the proposed work that will be used in achieving this goal. This will include plans for the formation of an advisory committee (20 percent)

B. Review and Selection Process

Once an application has been received by NOAA, an initial administrative review is conducted to determine compliance with requirements and completeness of the application. Ineligible, incomplete, and/or non-responsive applications may be eliminated from further review. NOAA, in its sole discretion, may continue the review process for applications with non-substantive issues that can easily be rectified or cured. All applications that pass this initial review will be evaluated and scored individually by independent peer mail review and/or by independent peer panel review.

Both Federal and non-Federal experts may be used in this process. The peer mail reviewers will be several individuals with expertise in the subjects addressed by particular applications. Each mail reviewer will see only certain individual applications within his or her area of expertise, and score them individually on a scale of one to five, where scores represent respectively: Excellent (5), Very Good (4), Good (3), Fair (2), Poor (1). Reviewers will consider the relative weighting of the evaluation criteria in providing an overall proposal score.

The peer panel will comprise several individuals, with each individual having expertise in a separate area, so that the panel, as a whole, covers a range of relevant scientific expertise. The panel will have access to all mail reviews of proposals and will use the mail reviews in discussion and evaluation of the entire slate of proposals. The peer panel shall rate the proposals using the evaluation criteria and scoring instructions provided above and used by the mail reviewers. The individual peer panelists' scores shall be combined, using one or more methods, to obtain a numerical ranking of the proposals. If a full review (mail and panel) is conducted, only the panel scores shall be used to rank each proposal. If more than one non-Federal reviewer is used, no consensus advice will be given by the independent peer mail review or the review panel.

The Program Manager will neither vote or score applications as part of the independent peer review panel nor participate in discussion of the merits of the applications other than to ask questions. Those applications receiving an average panel score of ``Fair'' or ``Poor'' will not be given further consideration, and applicants will be notified of non-selection.

For the applications scored by the reviewers as either "Excellent," "Very Good," or "Good", the Program Manager will (a) create a ranking of the applications to be recommended for funding using the average panel scores; (b) recommend the total duration of funding for each application; and (c) recommend the amount of funds available for each application subject to the availability of fiscal year funds. Recommendations for funding are forwarded from the Program Manager to the supervisor for development of the final recommendation to the Selecting Officials, the Director of NCCOS or designee and the Director of the Ocean Acidification Program, for the final funding recommendation decision. Recommendations will be made in rank order from the peer-review process unless the proposal is justified to be selected out of rank order based on the selection factors listed below in Section V.C.

NOAA reserves the right to negotiate the budget with the applicants that have been selected to receive awards, which may include requesting that the applicant removes certain costs, combine budgets into a single application, or change the lead or sub institution. Additionally, NOAA may request that the applicant modify objectives or work plans and

provide supplemental information required by the agency prior to award. NOAA may select some, all, or none of the applications, or part(s) of any particular application, and may request that applicants combine projects. In addition, applications rated by the panel as either "Excellent," "Very Good," or "Good" that are not funded in the current fiscal period, may be considered for funding in another fiscal period without having to repeat the competitive review process.

The Selecting Official will make recommendations to the NOAA Grants Management Division, and the final approval of selected applications and issuance of awards will be by the NOAA Grants Officer. The award decisions of the NOAA Grants Officer are final.

When a decision has been made (whether an award or declination), verbatim anonymous copies of reviews and summaries of review panel deliberations, if any, will be made available to the applicant. Declined applications will be held in NCCOS for three years in accordance with current retention policies, and then destroyed.

The NOAA Grants Officer will review financial and grants administration aspects of a proposed award, including conducting an assessment of the risk posed by the applicant in accordance with 2 C.F.R. 200.205.

"i. A Federal awarding agency, prior to making a Federal award with a total amount of Federal share greater than the simplified acquisition threshold, is required to review and consider any information about the applicant that is in the designated integrity and performance system accessible through SAM (currently FAPIIS) (see 41 U.S.C. 2313).

"ii. That an applicant, at its option, may review information in the designated integrity and performance systems accessible through SAM and comment on any information about itself that a Federal awarding agency previously entered and is currently in the designated integrity and performance system accessible through SAM;

"iii. That the Federal awarding agency will consider any comments by the applicant, in addition to the other information in the designated integrity and performance system, in making a judgment about the applicant's integrity, business ethics, and record of performance under Federal awards when completing the review of risk posed by applicants as described in §200.205 Federal awarding agency review of risk posed by applicants."

In addition to reviewing repositories of government-wide eligibility, qualifications or financial integrity information, the risk assessment conducted by NOAA may consider items such as the financial stability of an applicant, quality of the applicant’s management systems,

an applicant's history of performance, previous audit reports and audit findings concerning the applicant and the applicant's ability to effectively implement statutory, regulatory, or other requirements imposed on non-Federal entities. Applicants should be in compliance with the terms of any existing NOAA grants or cooperative agreements and otherwise eligible to receive Federal awards, or make arrangements satisfactory to the Grants Officer, to be considered for funding under this competition. All reports due should be received and any concerns raised by the agency should be timely addressed in order to receive a new award. Upon review of these factors, if appropriate, specific award conditions that respond to the degree of risk may be applied by the NOAA Grants Officer pursuant to 2 C.F.R. 200.207. In addition, NOAA reserves the right to reject an application in its entirety where information is uncovered that raises a significant risk with respect to the responsibility or suitability of an applicant. The final approval of selected applications and issuance of awards will be by the NOAA Grants Officer. The award decision of the Grants Officer is final and there is no right of appeal.

In accordance with Federal appropriations law expected to be in effect at the time of award, NOAA will provide a successful corporate applicant a form to be completed by its authorized representatives certifying whether the corporation has Federally-assessed unpaid or delinquent tax liability or recent felony criminal convictions under any Federal law.

C. Selection Factors

Proposals may 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. Refer to section I.B.

5. Applicant's prior award performance.

6. Partnerships and/or participation of targeted groups.

7. Adequacy of information necessary for NOAA to make a NEPA determination and draft necessary documentation before recommendations for funding are made to the grants officer.

Awards may also be modified for selected projects depending on budget availability or according to the selection factors listed above.

D. Anticipated Announcement and Award Dates

Subject to the availability of funds, review of the applications will begin in February 2018. Applicants may be notified of award or declination by September, 2018, and applicants should use a start date of September 1, 2018.

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 electronically through NOAA's Grants Online system to the appropriate business office of the recipient organization. The award cover page, i.e., CD-450, Financial Assistance Award, is available at http://go.usa.gov/SNMR. The Internet Explorer browser should be used with Grants Online.

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.

Uniform Administrative Requirements, Cost Principles and Audit Requirements for Federal Awards

The Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards (Uniform Guidance) at 2 C.F.R. Part 200, adopted by the Department of Commerce through 2 C.F.R. 1327.101, applies to awards in this program. Refer to http://go.usa.gov/SBYh and http://go.usa.gov/SBg4.

Department of Commerce Financial Assistance Standard 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. A current version of this document is available at https://go.usa.gov/xRW4R. In addition, award documents provided by the NOAA Grants Management Division in the Grants Online award package may contain special award conditions unique to a project, including conditions that may limit the use of funds for activities that have outstanding environmental compliance requirements and/or stating other compliance requirements for the award as applicable.

Certifications Regarding Tax Liability and Felony Criminal Convictions

When applicable under appropriations law, NOAA will provide certain applicants a form to be completed by the applicant's authorized representative making a certification regarding federally-assessed unpaid or delinquent tax liability or recent felony criminal convictions under any federal law.

Limitation of Liability

Applicants are hereby given notice that funds have not yet been appropriated for this program. In no event will NOAA or the Department of Commerce be responsible for application 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/NAO216_6.pdf, 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.

Proprietary or Privileged Information

Patentable ideas, trade secrets, privileged or confidential commercial or financial information, disclosure of which may harm the proposer, should be included in proposals only when such information is necessary to convey an understanding of the proposed project. Such information should be clearly marked in the proposal or included as a separate statement accompanying the proposal and should be appropriately labeled with a legend such as, “The following is [proprietary or confidential] information that [name of proposing organization] requests not be released to persons outside the Government, except for purposes of review and evaluation.” While NOAA will make every effort to prevent unauthorized access to such material, it is not responsible or in any way liable for the release of such material.

Release of Grantee Proposal Information

A proposal that results in an award will be available to the public on request, except for privileged information or material that is personal, proprietary or otherwise exempt from disclosure under law. Appropriate labeling in the proposal aids identification of what may be specifically exempt. Such information will be withheld from public disclosure to the extent permitted by law, including the Freedom of Information Act, referenced further in the next paragraph. Without assuming any liability for inadvertent disclosure, NOAA will seek to limit disclosure of such information to its employees and to outside reviewers when

necessary for merit review of the proposal or as otherwise authorized by law. Portions of proposals resulting in grants that contain descriptions of inventions in which either the Government or the grantee owns a right, title, or interest (including a nonexclusive license) will not normally be made available to the public until a reasonable time has been allowed for filing patent applications. NOAA will notify the grantee of receipt of requests for copies of funded proposals so the grantee may advise NOAA of such inventions described, or other confidential, commercial or proprietary information contained in the proposal.

Freedom of Information Act (FOIA)

Department of Commerce regulations implementing the Freedom of Information Act (FOIA), 5 U.S.C. § 552, 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.

Scientific Integrity

NCCOS adheres to the principles of scientific integrity. This policy can be found at; http://nrc.noaa.gov/scientificintegrity.html.

C. Reporting

All performance (i.e. technical progress) reports shall be submitted electronically through NOAA's Grants Online system unless the recipient does not have electronic access. In that case, performance (technical) reports are to be submitted to the NOAA Program Manager. All financial reports shall be submitted in the same manner.

The Federal Funding Accountability and Transparency Act, 31 USC 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 Subaward Reporting System (FSRS) available at www.FSRS.gov on all subawards over $25,000 See 2 C.F.R. 25, 170.

Data Reporting Requirement

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.

Data Management Guidance to Proposal Writers

1. Responsible NOAA Official for questions regarding this guidance and for verifying

accessibility of data produced by funding recipients: Laura Golden, Grant Coordinator, NOAA Center for Sponsored Coastal Ocean Research, laurie.golden@noaa.gov, 240-533-0285. Responsible NOAA Data Manager for questions regarding data management and implementing this guidance: Jessica Morgan, Responsible NOAA Data Manager, NOAA National Centers for Coastal Ocean Science, 240-533-0300.

2. Data Accessibility: The NCCOS Program requires that public access to grant-produced data be enabled as follows; Data Management Plans (see Section IV.B.2.) submitted with Proposals should reflect one or more of the option(s) provided by NCCOS.

Option A: For the majority of oceanographic and ecological data, except those listed below, funding recipients are expected to submit data to the NOAA National Centers for Environmental Information (NCEI) for long-term preservation, which will provide public access, archiving, discovery metadata meeting NOAA standards and formats, and a Digital Object Identifier (DOI). NCCOS has held preliminary consultation with NCEI regarding these pending data. National Centers for Environmental Information (NCEI) serves as the data management focal point for the NOAA Ocean Acidification Program (http://www.nodc.noaa.gov/oceanacidification/index.html). All appropriate data resulting from NOAA OAP-funded projects must be archived and accessible through NCEI.

Option B: For any other data not appropriate for submission to NOAA NCEI, funding recipients are expected to submit data to an appropriate data facility (i.e., NIH GenBank for genomics data) that preserves data, properly manages archived data to assure their quality, mints DOIs, and makes archived data and related information available to users in a timely and efficient manner. Funding recipients should submit discovery metadata meeting NOAA standards and formats documenting these non-NOAA data archives to the Responsible NOAA Data Manager listed above.

Option C: For limited-release data that are limited by law, regulation, policy, security requirements, commercial or international agreements, or valid technical considerations, funding recipients may request permission not to make data publicly accessible from the Responsible NOAA Official listed above.

3. Technical recommendations: The NOAA Program is not offering specific technical guidance. Proposals are to describe their proposed approach. Use of open-standard formats and methods is encouraged. Definitions of data management terms are included here:

Environmental data are recorded and derived observations and measurements of the physical, chemical, biological, geological, and geophysical properties and conditions of the

oceans, atmosphere, space environment, sun, and solid earth, as well as correlative data such as socio-economic data, related documentation, and metadata. Digital audio or video recordings of environmental phenomena (such as animal sounds or undersea video) are included in this definition. Numerical model outputs are included in this definition, particularly if they are used to support the conclusion of a peer-reviewed publication. Data collected in a laboratory or other controlled environment, such as measurements of animals and chemical processes, are included in this definition.

Sharing data means making data publicly visible and accessible in a timely (see below) manner at no cost (or no more than the cost of reproduction), in a format which is machine-readable and based on open standards, along with metadata necessary to find and properly use the data. Data are to be made available in a form that would permit further analysis or reuse: data must be encoded in a machine-readable format, preferably using existing open-standard formats; data must be sufficiently documented, preferably using open metadata standards, to enable users to independently read and understand the data. Data should undergo quality control (QC) and a description of the QC process and results should be referenced in the metadata.

Machine-readable means the data are stored on a computer in a digital format whose structure is well described and which can be read without the aid of a human. An open-standard format is one which does not require proprietary software to be read. Metadata is documentation that is machine-readable and structured according to an open-standard format and which describes the data so that users can search for, access, read, understand, and use the data. International Organization for Standardization (ISO) EXtensible Markup Language (XML) is an acceptable metadata format.

Timely means no later than publication of a peer-reviewed article based on the data, or two years after the data are collected and verified, or two years after the original end date of the grant (not including any extensions or follow-on funding), whichever is soonest, unless a delay has been authorized by the NOAA funding program.

NCCOS and OAP resources for data archiving at NOAA NCEI have already been identified; proposals should not include such costs. Proposals are permitted to include the costs of additional project-level data management, including: coordinating, organizing, documenting, formatting, or otherwise preparing datasets for submission to NOAA or non-NOAA data facilities; establishing and maintaining data access tools and services and related metadata; managing non-digital data that are not required to be made publicly accessible, including laboratory notebooks, preliminary analyses, drafts of scientific papers, plans for future research, peer review reports, communications with colleagues, or physical objects,

such as laboratory specimens.

VII. Agency Contacts

Technical Information: Elizabeth Turner, Program Manager for NCCOS, 603-862-4680, Internet: elizabeth.turner@noaa.gov.

Grants Administration Information: Laura Golden, NCCOS Grants Administrator, 240-533-0285, Internet: Laurie.Golden@noaa.gov

VIII. Other Information

Additional background information on this program and announcement are available on the NCCOS website at https://coastalscience.noaa.gov/. If any Frequently Asked Questions arise, they will be posted at this site.

Check List for Required and Requested Documents:

(1) SF-424

(2) Title Page

(3) Abstract

(4) Project Description

(5) References

(6) Milestone Chart

(7) Bio Sketch (For each PI and co-PI)

(8) Current and Pending Support (For each PI and co-PI)

(9) Permits (if none, say so)

(10) Accomplishments (if none, say so)

(11) Budget Narrative and Justification (One for the lead institution and each

subaward/subcontract).

(12) CD-511

(13) SF-424B

(14) SF-424A (One for the lead institution and each subaward/subcontract)

(15) Alphabetized Collaborator List (ONE excel spreadsheet for all)

(16) Key Contact form

Indirect Rate Agreement (requested).

If Applicable: Signed Approval from subaward/subcontractor institutes, SF-LLL

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