FY 2021 Implementation of the U.S. Integrated Ocean Observing System (IOOS®)

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NOTICE OF FUNDING OPPORTUNITY

EXECUTIVE SUMMARY

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

Funding Opportunity Title: FY 2021 Implementation of the U.S. Integrated Ocean Observing System (IOOS®)

Announcement Type: Initial

Funding Opportunity Number: NOAA-NOS-IOOS-2021-2006475

Catalog of Federal Domestic Assistance (CFDA) Number: 11.012, Integrated Ocean Observing System (IOOS)

Dates: Full application proposals must be received in Grants.gov by 11:59 p.m. Eastern Standard Time on December 31, 2020.

Funding Opportunity Description: The U.S. Integrated Ocean Observing System (IOOS®) is a national and regional partnership working to produce, integrate, and communicate high quality ocean, coastal, and Great Lakes data that meets the safety, economic, and stewardship needs of the nation. NOAA is requesting proposals for coordinated regional efforts that further the IOOS in two topic areas; Implementation and Development of Regional Coastal Ocean Observing Systems (Topic Area 1), and Advancing the National Data Management and Cyberinfrastructure System Architecture (Topic Area 2).

The U.S. IOOS Office, in conjunction with the National Oceanographic Partnership Program (NOPP), is seeking to fund projects, subject to the availability of funds, which meet the following criteria in each topic area. The NOPP was established by Congress via Title II, subtitle E, of Public Law 104-201 to promote the national goals of ensuring national security, advancing economic development, protecting quality of life, and strengthening science education and communication by improving knowledge of the ocean. There are over twenty agencies participating in the NOPP. They are identified on the NOPP website: www.nopp.org.

NOAA invites applicants to submit proposals for one or both of these topic areas, described in detail below, and requests applicants submit separate applications for each topic area. For each proposal, clearly identify the topic area and present all required information such that merit reviewers can associate proposal elements (project description, partners, budgets) with the specific topic area.

NOAA anticipates making multiple awards, subject to the availability of funds for Topic Area 1 of up to $6,000,000 per proposal per year, for up to five years; for Topic Area 2 of up to $300,000 per year for up to three years.

FULL ANNOUNCEMENT TEXT

I. Funding Opportunity Description

A. Program Objective

The overarching purpose of the U.S. Integrated Ocean Observing System (IOOS®) is to provide information describing the past, present, and future state of the coastal oceans and Great Lakes to local, regional, and national users. These users include decision makers, businesses, managers, and scientists addressing issues to:
- Improve predictions of ocean and weather conditions, and their effects on coastal communities and the nation
- Improve the safety and efficiency of maritime operations
- More effectively mitigate the effects of natural and anthropogenic hazards
- Improve national and homeland security
- Reduce public health risks
- More effectively protect and restore healthy coastal ecosystems
- Enable the sustained use of ocean and coastal resources

To achieve this purpose U.S. IOOS comprises public/private sector partnerships at national, regional, and local levels and these partnerships work together to collect and integrate observations, develop numerical predictions, and synthesize information into decision support tools. Central to this effort is a common but distributed data management and cyberinfrastructure system that enables the management, curation, and dissemination of ocean information of all types and addressing all relevant ocean variables.

The U.S. IOOS is a globally linked and nationally coordinated federal and non-federal network of observations and data management, analyses and communications that systematically and efficiently delivers information on past, present, and future states of the coastal ocean. The IOOS “Enterprise” is intended to represent the full scale of partners who may be contributing to, or benefitting from, the integrated ocean observing system. This includes global to local participants in ocean observing, data management and prediction from federal, academic, non-profit, and private firms or organizations. The IOOS Enterprise represents the inclusive mission of U.S. IOOS as defined by the Integrated Coastal and Ocean Observation System (ICOOS) Act of 2009. Any entity contributing toward solutions or implementation of IOOS is welcomed as a part of the Enterprise.

The IOOS Office was established in NOAA’s National Ocean Service in 2007, and was authorized by Congress in 2009 by the ICOOS Act. The ICOOS Act mandates the establishment of a national integrated system of ocean, coastal, and Great Lakes observing

systems coordinated at the federal level to benefit society. Today, the U.S. IOOS Enterprise is a culmination of coastal observing activities coordinated at the national scale. But decades of maturation have advanced IOOS as a regional and national endeavor resulting in advancement of the coastal observing systems and success for the entire community.

IOOS integrates across five goals, which address IOOS core and emerging capabilities of observation, data management and cyberinfrastructure, modeling and analysis, user-driven products and tools, and Enterprise excellence. IOOS evaluates end user and stakeholder needs to determine the most effective way to satisfy these goals. The Enterprise will continue to infuse emerging technology into current sustained operations, resulting in a more efficient and advanced ocean, coastal, and Great Lakes observing system.

Through this funding announcement, NOAA seeks to continue the implementation and development of the regional ocean, coastal, and Great Lakes component of IOOS. IOOS regional partners are responsible for, among other things:

- Operation, management, and coordination of coastal observing systems and requisite data management systems, in the eleven IOOS regions, with an emphasis on making data and information widely available and useful to users;

- Engaging with users and stakeholders to determine local, state, and regional priorities;

- Addressing the 34 IOOS core variables (http://www.iooc.us/ocean-observations/variables/) required to detect and predict changes in the oceans, coasts, and Great Lakes (core variables include measures of physics, biogeochemistry, biology and ecosystems and represent the key properties and processes that IOOS determined should be measured on a national scale);

- Testing, evaluating, deploying, operating, and maintaining sensors and platforms to address data and information needs articulated by regional and national (Federal) stakeholders;

- Participate in a standards based lifecycle data management framework that maximizes the discoverability, accessibility, and usability of data and information products and ensures their long term preservation;

- Engaging with new, potentially unfunded, regional data providers to facilitate the integration of their data into regional or national data assembly centers and their accessibility via IOOS standards-compliant data access services;

- Engaging in outreach activities to increase stakeholder participation, and working with

educators to contribute high quality data and information into education tools and curricula;

- Support observing system communities of practice, creating opportunities for sharing knowledge, techniques, and best practices;

- Contributing to the development of the national IOOS observing, data management and cyberinfrastructure, and modeling capabilities;

- Maintain the IOOS regional infrastructure to provide opportunities for leveraging by other Federal, State, local and tribal government efforts and enhance efficient operations; and

- Implement best practices for environmental stewardship through the implementation of the best practices and procedures outlined in the programmatic environmental assessment (PEA) and its project design criteria. (see section VIII).

This announcement requests proposals for five-year awards that build upon progress made to date on the Implementation and Development of Regional Coastal Ocean Observing Systems (Topic Area 1), and proposals for three-year awards on Advancing the National Data Management and Cyberinfrastructure System Architecture (Topic Area 2).

B. Program Priorities

IOOS is a sustained, operational ocean, coastal and Great Lakes observing system, including a network of 11 regional associations that coordinate with regional stakeholders while contributing data and other outputs to the national system, which also includes federal and industry partners. IOOS regional partners shall continue to develop activities in a manner that supports regional priorities while advancing regional contributions to national missions. NOAA is particularly interested in projects that provide timely and appropriate information to public mission agencies at the national, regional, state, local, and tribal levels, and that address data integration supporting regional and national agency priorities.

Topic Area 1: Implementation and Development of Regional Coastal Ocean Observing Systems (RCOOS)

For Topic Area 1, NOAA is inviting proposals for five-year funding to continue the implementation and development of a sustained Regional Coastal Ocean Observing System.

NOAA expects successful awardees to serve as a Regional Association (RA) responsible for operating the RCOOS. For the purposes of this funding announcement, the following definitions are provided:

Regional Association – an organization that coordinates at a regional level with the goal of engaging the private and public sectors in designing, operating, and improving regional ocean, coastal, and Great Lakes observing systems in order to ensure the provision of data and information that satisfy the needs of user groups from the respective regions.

Regional Coastal Ocean Observing System (RCOOS) - An end-to-end network of observations, data management and delivery, data analysis and modeling, research, education and outreach, and organizational structure and management that links the needs of users to observations of coastal marine and estuarine environments and the Great Lakes on regional scales while adhering to national standards. The RCOOS consists of the infrastructure and expertise required for each of these subsystems. It also includes oversight, evaluation, and evolution mechanisms that ensure the continued and routine flow of data and information to end users and ensures the infusion of new technologies and approaches.

Proposals should build on the efforts of the existing RAs and demonstrate how the RA will manage and operate the RCOOS. Proposals should demonstrate the approach and benefits of integration and implementation at the geographic scale of the IOOS regions described below (not sub-regional). Proposals may include activities supporting pan-regional and national objectives that further the IOOS Enterprise, such as bringing observing communities of practice together, working with stakeholders on the development and sharing of new products and services, and the evaluation of observing technologies. NOAA intends to make eleven awards for this activity, one in each geographic region, in amounts up to $6,000,000 per year for up to five years, subject to the availability of funds. Applicants should address how they integrate the following subsystem elements, which are described in further detail below: 1) Governance and Management; 2) Observing; 3) Data Management and Cyberinfrastructure (DMAC); 4) Modeling and Analysis; and 5) Engagement in the management and operation of the Regional Coastal Ocean Observing System. Applicants should strive to show how each individual element contributes to an end-to-end system delivering stakeholder-driven products and services to end uses.

Successful applicants will be required to report on progress and performance over the life of the award and are required to participate in the annual Regional IOOS meeting, the Annual National DMAC Meeting, and any other meetings related to the core subsystem elements as directed by the U.S. IOOS Office.

Proposals may request funding, to include direct and indirect costs, of $6,000,000 per year. To streamline the process of prioritizing project activities, proposals should identify priority tasks to be completed at an annual funding level of $3,000,000. The budget and budget

narrative should describe the fully requested funding amount. Applicants should organize the budget narrative in a manner that clearly connects costs to activities.

Subsystem Elements

1. Governance and Management

The First IOOS Development Plan (Ocean.US 2006) defines the geographic extent of a Regional Coastal Ocean Observing System as including the nation's Exclusive Economic Zone (EEZ), Great Lakes, and estuaries to the head of tide. 'Estuaries' includes all semi-enclosed bodies of water (bays, lagoons, fjords, tidal wetlands, etc.) connected to the ocean. NOAA, building upon prior investments coordinated by the eleven RAs, requests multi-year proposals from each of the following IOOS regions:

- Northeast Atlantic (coastal waters from the Canadian Maritime Provinces to the New York Bight);

- Mid-Atlantic (the ocean and estuaries between Cape Hatteras and Cape Cod);

- Southeast Atlantic (the ocean and estuaries from North Carolina through the west coast of Florida);

- Gulf of Mexico (the U.S. portion of the Gulf of Mexico and its estuaries);

- Caribbean (Puerto Rico, the U.S. Virgin Islands, and the island of Navassa);

- Great Lakes (Great Lakes, St. Lawrence River and interconnecting waterways);

- Southern California (the Southern California Bight);

- Central and Northern California (from Point Conception north to the California- Oregon border);

- Pacific Northwest (primarily Washington and Oregon);

- Alaska; and

- Pacific Islands (the State of Hawai‘i, the territories of Guam and American Samoa, the Commonwealth of the Northern Mariana Islands, the Republic of Palau, the Republic of the

Marshall Islands, the Federated States of Micronesia, and the U.S. Minor Outlying Islands (Howland, Baker, Johnson, Jarvis, Kingman, Midway, Palmyra, Wake).

Applicants to this funding opportunity must:

- Describe briefly, the organizational structure that will gather, manage, and distribute required observation data, supporting and integrating all aspects of coastal and ocean, or Great Lakes observing and information programs within one of the identified regions. The organization will work closely with the U.S. IOOS Office.

- Demonstrate a formal process for identifying regional needs and priorities through consultation with a diversity of regional stakeholders; that traces the end-to-end linkage from requirements to observations, data, products or services delivered to the stakeholders.

- Ensure the proposal represents the interests of the diverse data providers and user groups in the region, and they are actively participating in regional activities.

2. Observing

Observing systems may consist of multiple platforms and sensors, including but not limited to: semi-autonomous and autonomous underwater and surface systems or vehicles, high frequency radar, animal-borne sensors, satellites (remote sensing), and in situ measurements from buoys, shore stations, bottom mounted sensors, floats, and ships.

Applicants should describe plans for sustaining the operation and maintenance of existing assets and for enhancements to the observing system based on stakeholder needs. Applicants should articulate deployment costs, both initial and annual requirements for operation and maintenance, of new and existing observing assets by asset class.

Applicants should describe their strategy for balancing changes in regional priorities with the need to maintain established data sets, the primary value of which may be in their long-term records.

Applicants should describe how the observing system supports regional and national priorities as part of the RCOOS, demonstrating the connection between observing system components, with data management cyberinfrastructure, modeling activities, and the delivery of products and services to meet identified user needs. Applicants are encouraged to provide details about ongoing and planned inter-regional, intra-regional, and national collaboration on observing activities.

A number of documents have been written by the ocean observing community and proposals should discuss how their regional observing subsystem activities will be designed and implemented in a way that is consistent with these and other national frameworks. The following documents further define the variables, with temporal and spatial resolutions that the regional coastal component of IOOS needs to observe:

- The First U.S.IOOS Development Plan (https://cdn.ioos.noaa.gov/media/2017/12/ioos_devplan.pdf)
- Framework for Ocean Observations (http://www.oceanobs09.net/foo/FOO_Report.pdf)
- IOOS Summit Report (https://www.iooc.us/wp-content/uploads/2013/01/U.S.-IOOS-Summit-Report.pdf),

Applicants should be familiar with documents outlining national plans and strategies related to specific data types and observing technologies. Proposals should describe how their work contributes to these national efforts and is consistent with the guidance in the following documents:

- U.S. IOOS Enterprise Strategic Plan (2018-2022)
https://cdn.ioos.noaa.gov/media/2018/02/US-IOOS-Enterprise-Strategic-Plan_v101_secure.pdf

- The National Operational Wave Observation Plan
https://cdn.ioos.noaa.gov/media/2018/01/wave_plan_final_03122009.pdf

National Strategy for a Sustained Network of Coastal Moorings
https://cdn.ioos.noaa.gov/media/2018/01/NationalStrategyforSustainedNetworkofCoastalMoorings_FINAL.pdf

- The National Surface Current Mapping Plan
https://cdn.ioos.noaa.gov/media/2017/12/national_surface_current_planMay2015.pdf

- A Network Gaps Analysis for the National Water Level Observation Network – Updated Edition
https://tidesandcurrents.noaa.gov/publications/Technical_Memorandum_NOS_COOPS_0048_Updt.pdf

- Gap Analysis of the Great Lakes Component of the National Water Level Observation Network (NWLON)

https://tidesandcurrents.noaa.gov/publications/NOAA_Technical_Report_NOS_COOPS_074.pdf

- The U.S. Underwater Glider Workshop Report
https://cdn.ioos.noaa.gov/attachments/2018/05/2017GliderWorkshopReportDraft2.pdf

- Toward a National Animal Telemetry Network (ATN) for our Oceans, Coasts, and Great Lakes
https://cdn.ioos.noaa.gov/media/2017/12/noaa_tm_nmfs_swfsc_482.pdf

- Strategic Plan for Federal Research and Monitoring of Ocean Acidification - Prepared by Interagency Working Group on Ocean Acidification
ftp://ftp.oar.noaa.gov/OA/IWGOA%20documents/IWGOA%20Strategic%20Plan.pdf

- Quality Assurance of Real Time Ocean Data (QARTOD) manuals
https://ioos.noaa.gov/project/qartod/

- The SOST Biological Integration and Observation Task Team report
http://www.iooc.us/wp-content/uploads/biological_and_ecosystem_observations_within_united_states_waters2.pdf

- Attaining an Operational Marine Biodiversity Observation Network Synthesis Report
https://cdn.ioos.noaa.gov/media/2017/12/BON_SynthesisReport.pdf

- OceanObs'19 Living Action Plan
http://www.oceanobs19.net/living-action-plan/

3. Data Management and Cyberinfrastructure

A key premise of the U.S. IOOS is that information, regardless of its method of collection, is a public resource; therefore, one of the primary goals of the Data Management and Cyberinfrastructure (DMAC, formerly called Data Management and Communications) is to enable the public to discover, access, and understand ocean, coastal, and Great Lakes information.

DMAC provides the hardware, software, and policy framework to ingest and manage ocean observations and other derived information. This includes, but is not limited to, a multidisciplinary (physical, chemical, biological, and geological) suite of direct and remotely sensed observations, and numerical simulation results. Management of these data types

covers all lifecycle steps from initial observation of raw data, to ingestion into the cyberinfrastructure, quality control, public dissemination, product generation, and long-term storage and archival. DMAC is the infrastructure that ensures that oceanographic products and services are delivered to end users, and it also connects the IOOS observations to federal and community models.

DMAC systems must also be capable of managing numerical simulations of the ocean yielding hindcasts, nowcasts, or forecasts of ocean conditions, and analyses and syntheses of various information streams into value added information products such as ocean or ecosystem state estimates created by assimilating observations into numerical models.

Therefore, robust DMAC systems in the form of information technology, data managers, standard processes, and governance policies, are essential in order to manage ocean, coastal, and Great Lakes information through its entire lifecycle.

DMAC efforts are subject to the procedural directives published by the NOAA Environmental Data Management Committee. The NOAA Environmental Data Management Framework (https://www.nosc.noaa.gov/EDMC/framework.php; henceforth the Framework) provides the overarching guidance for Environmental Data Management within NOAA programs and the architecture of DMAC is consistent with this Framework. In particular, the Framework principles guide IOOS DMAC, and thus the IOOS Regions; especially, the notion of a complete Data Lifecycle, which requires planning, and resources to maximize the present and future value of IOOS information. The Framework is further refined and tailored to IOOS goals in the IOOS DMAC Guidance (https://ioos.noaa.gov/data/contribute-data/), detailing the specific elements of data management capabilities that will be required of successful applicants.

Note, it is not assumed that each region must operate a completely separate and distinct infrastructure. Innovation to increase efficiencies and share infrastructure, expertise, and technology between regions is highly encouraged. Inter-regional collaboration is strongly encouraged on all aspects of DMAC planning and implementation.

Successful applicants will operate an IOOS Regional Data Assembly Center (DAC), which includes computer facilities that aggregate, manage, curate, and distribute ocean, coastal and Great Lakes information; or ensure that the region’s data is represented in at least one of the regional IOOS or national DACs. These DACs provide data assembly, quality control, discovery and access, and archival services for marine and Great Lakes data collected by state, local, tribal governments, academia and industry regardless of whether the U.S. IOOS Office contributes funds for the observing platform. These DACs will re-serve federal data

as a service if there is a stakeholder requirement.

In addition to meeting the above IOOS Regional DAC operator requirements, successful proposals should:

1. Describe how their DMAC efforts enable or inform activities within the Modeling and Analysis Subsystem;

2. Describe their commitment to allot staff and financial resources to attend the annual National DMAC Meeting, and to participate in related national DMAC activities that require regional expertise and input.

a. Proposals must identify resources that will be applied to DMAC operations and advancements. This should include staff and financial resources directed towards integrating data and information products originating through the efforts of other organizations, and description of how they will participate in the operations, maintenance, and evolution of the national DMAC.

3. Describe Integration of emerging technologies into DMAC systems where practical and appropriate. These might include:

- Cloud computing
- Artificial Intelligence (AI) / Machine Learning (ML)
- Support for distributed computing and analysis platforms (e.g. Pangeo)
- Edge computing and the Internet of Things
- Transition from legacy technologies (& applications)
- Pan-regional interoperability

4. Describe their plan to collect and publish product usage statistics: Applicants should plan to use web log metrics software to analyze traffic across public web properties (web sites and web services) and publish monthly summaries at a publicly-accessible location on grantee website.

Applicants should submit, as an appendix, a data management plan that demonstrates:

1. Their ability to serve as data stewards for local and regional partners, regardless of funding relationships. First, they shall manage data and information generated by the project partners, and second, they shall manage data that exists within their region but may be collected or funded by other organizations or other efforts;

2. Their capacity to operate a regional DAC, and their ability to manage the lifecycle for multiple observed and simulated data sets describing physical, chemical, and biological variables;

3. How their DMAC efforts comply with the 10 IOOS core capabilities (https://ioos.noaa.gov/data/contribute-data/). This includes, but is not limited to:

a. Their ability and commitment to maintain data access following the Find, Access, Interoperate, and Reuse data (FAIR) principles. [https://www.force11.org/group/fairgroup/fairprinciples]

- Maintain and publish up-to-date metadata:
  - Maintain standards-based metadata records and/or data catalog services that allows for aggregation of IOOS datasets and data access services at a national level
  - Adhere to the IOOS Metadata Profile (https://ioos.github.io/ioos-metadata/) in attributing datasets and data access services, including community-standard vocabularies, ontologies and any other requirements listed therein
- Establish, register, and maintain standards-based Data Access Services that provide data in common, community-established formats. These should include (but are not limited to):
  - Maintain and publicize an ERDDAP server to facilitate furnishing/publishing data to IOOS national data products and (as applicable) the Global Telecommunications System (WMO GTS).
- Maintain and publicize a THREDDS server for regional model outputs (or other gridded data sets), including installation of THREDDS extensions to enable full data access/interoperability

b. Planning and coordination: Their ability to participate in national DMAC efforts such as QARTOD (for example, through implementation of QARTOD tests and publication of QC flags within their regional DAC);

c. Storage and Archiving: Permanent archiving of observational data at the NOAA National Centers for Environmental Information and other data repositories, as applicable.

d. Consideration for Long-term Operations: Realistic plans for long-term, regional DAC operations, including automation, continuity of operations planning, infrastructure upkeep, collaborative open source software development, and other efficiencies aimed at making the DAC maintenance more stable, reliable, and efficient.

4. Modeling and Analysis

Models, and the ocean prediction systems based on models, are an essential part of operational oceanography which can be defined as the routine and sustained provision of oceanographic information needed for decision-making purposes. Numerical modeling provides the capability to simulate past, present, and future ocean conditions. These simulations can be combined with sustained in situ and remote observations to derive synthesized information products that combine the strengths of both information sources. Numerical simulation, when combined with data assimilation techniques, can inform the design of the observing system and provides information on the efficacy of the observing system to meet its intended purpose.

Applicants should describe how numerical modeling is integrated into a comprehensive strategy for deriving and delivering information to support regional and national stakeholders. Federal agencies provide global and regional predictions that can be factored into RCOOS plans for an integrated system. Applicants should describe how regional efforts complement, or even improve upon, federal agency modeling systems.

Applicants should consider a number of guiding documents when developing their proposal.

Applicants should indicate how ongoing and planned modeling systems address these strategic guidelines and interface with Federal modeling systems, including emerging Federal collaborations to advance earth system modeling and unified forecast system development. The documents are:

- John Wilkin et al., (2017): Advancing coastal ocean modelling, analysis, and prediction for the US Integrated Ocean Observing System, Journal of Operational Oceanography, http://dx.doi.org/10.1080/1755876X.2017.1322026

- A Strategic Vision for NOAA's Ecological Forecasting Roadmap: 2015 – 2019 http://oceanservice.noaa.gov/ecoforecasting/noaa-ecoforecasting-roadmap.pdf

The U.S. IOOS Office also leads the Coastal and Ocean Modeling Testbed (COMT, https://ioos.noaa.gov/project/comt/), which uses targeted research and development to accelerate the transition of scientific and technical advances from the coastal and ocean modeling research community to improve identified operational ocean products and services. The Terms of Reference Charter for the COMT are at (https://cdn.ioos.noaa.gov/media/2017/12/comt_terms_of_reference_091412.pdf). Applicants should be cognizant of the COMT projects and any relations or intersections between their proposed activities and the COMT projects. Addressing barriers, which limit

the access of modeling system enhancements by operational systems, is also significant.

5. Engagement

Proposals should address how the applicant will engage in outreach, stakeholder engagement, and/or education region-wide, support delivery of products to identified users, receive feedback from users regarding their needs, and evaluate the success of funded activities. Proposals should identify engagement priorities, the type of groups the applicants expect to contact during the project, and the relevance of regional IOOS products and tools to those target groups. Applicants should consider engagement with existing ocean and coastal related education (e.g., National Marine Sanctuaries, National Estuarine Research Reserves, Sea Grant, and museums and aquariums) and professional programs in the region, including but not limited to maritime professional associations.

Topic Area 2: Advancing the National Data Management and Cyberinfrastructure System Architecture

Advances in high performance computing, data science, and data modeling occur at a rapid pace. NOAA seeks recommendations for incorporating these advances into the National DMAC System Architecture while ensuring the regional data assembly centers continue to serve existing customers. For Topic Area 2, NOAA is inviting proposals for up to three years of funding to evaluate the current state of DMAC and to make recommendations to guide progress in the area of DMAC system design. Deliverables (see the Deliverables and milestones section) and recommendations should build off of the existing DMAC system architecture while also suggesting enhancements or new directions for the future.

Since the inception of IOOS, the 11 RAs have adopted core capabilities / common community standards for Data Management, with the robust Cyberinfrastructure to effectively operate regional DACs. Data Management has been a core capability for the Integrated Ocean Observing System since its inception in the mid 2000s. The basic design for a distributed system of data access services, based upon standards for data and metadata formatting, was described in Hankin et al. (2005) and has been the core of the current DMAC System Architecture since then. During this time the RAs have adopted common community standards for data management and have independently created the computing and cyberinfrastructure needed to manage and maintain regional data assembly centers. All 11 RAs have been certified through a rigorous process designed by NOAA to ensure that they meet a standard for data stewardship consistent with federal government data centers. Certification indicates the RAs are trusted repositories which increases confidence in them as credible and reliable sources of Ocean and Coastal Information in their regions.

NOAA will consider proposals that build upon previous efforts and demonstrate extensive and close coordination with the RAs, IOOS partners, and the U.S. IOOS Office to establish priorities for DMAC system capabilities. Overall, the DMAC System Architecture should enable the integration of Ocean and Coastal data streams across disciplines, institutions, time scales, and geographic regions central to the success of IOOS and other regional, national, and international ocean and coastal observing systems. DMAC also provides the essential infrastructure to bring together observations and numerical models from both operational and research modeling centers.

NOAA anticipates a total amount of up to $600,000 per year to be available to fund projects in Topic Area 2, subject to the availability of funds. NOAA expects to make two to three awards for Topic Area 2, and proposals may request funding, to include indirect and direct costs, of up to $300,000 per year for up to three years.

Proposals submitted for this activity must describe a process for gathering input from stakeholders and the development of recommendations for how the current DMAC structure might better:

- Improve the ability to ingest data from multiple disciplines including but not limited to - Physical Oceanography, Meteorology, Chemical Oceanography, Biological Oceanography, Coastal Management, Socio-economics, Genomics
- Improve interoperability between the components of the DMAC system - e.g. data services, data discovery, system architectures, interoperability across federal agencies, code reuse
- Identify opportunities for cost savings or more efficient operations across the eleven regional data centers and complementary federal data centers
- Improve data discovery among diverse user groups
- Facilitate usability of IOOS data with ‘big data’/distributed computing platforms, cloud computing services, and/or AI/ML systems and tools
- Leverage high performance computing including ocean prediction through numerical simulation.
- Address costs of overall DMAC system maintenance and operation and system-wide efficiencies in cost or scale
- Effectively make use of community data and service standards, especially suggesting novel ways to address differing standards that evolve from different scientific disciplines
- Elucidate the role of the commercial cloud
- Effectively make use of widely used best practices, tools and technologies that provide access to ocean data
- Ensure that evolution of the DMAC system must enable RAs to satisfy certification

requirements.

Applicants are encouraged to assemble project teams that span a broad cross-section of IOOS stakeholders to truly capture multiple regional and national perspectives. NOAA seeks recommendations that are creative and forward looking while also being feasible.

Deliverables and milestones:
- Gather requirements and input on DMAC system advancements, efficiencies, or new capabilities via workshops or other interactions in close coordination with the RAs, IOOS partners, and the U.S. IOOS Office. Establish priorities for DMAC system capabilities.
- Develop and lead a workshop on progress and results. First year workshop would focus on additional gathering of requirements and planning, and the second year would include presentation of draft recommendations and/or technical demonstration.
- Submit annual progress reports on project activities and proposed recommendations.
- Provide a final report to IOOS describing recommendations for how the current DMAC structure can be improved.

Hankin, S. and the DMAC Steering Committee, 2005, Data Management and Communications Plan for Research and Operational Integrated Ocean Observing Systems: I. Interoperable Data Discovery, Access, and Archive, Ocean.US, Arlington, VA 304 pp. http://www.iooc.us/wp-content/uploads/2010/12/6.pdf

C. Program Authority

Statutory authority for this project is provided under the Integrated Coastal and Ocean Observation System (ICOOS) Act of 2009, 33 U.S.C. 3601-3610. Public Law 111-11.

II. Award Information

A. Funding Availability

Total anticipated funding for all awards is subject to appropriations and the availability of funds from other NOAA programs, federal and/or non-federal entities. NOAA expects to fund eleven awards in amounts up to $6,000,000 per award per year for Topic Area 1. The eleven awards will be selected as one award for each of the eleven geographic regions that make up the regional component of the U.S. IOOS enterprise.

A total of two to three awards in amounts up to $300,000 per award per year for three years for Topic Area 2, contingent on availability of funds each year.

B. Project/Award Period

This is a multi-year funding opportunity. Proposed projects may request funding for up five years for Topic Area 1, and up to three years for Topic Area 2. Please note, should an applicant decide to propose a project less than five years, NOAA does not anticipate announcing another federal funding opportunity for Topic Area 1 activities prior to 2025. NOAA does not anticipate announcing another funding opportunity for Topic Area 2 prior to 2023. Funding in the out-years is contingent upon availability of funds from Congress and satisfactory performance, and is at the sole discretion of NOAA.

C. Type of Funding Instrument

NOAA will fund the projects as cooperative agreements. Cooperative agreements include substantial involvement of the federal government during performance of the proposed activity. The recipient can expect substantial collaboration, participation, and/or intervention in the management of the project by NOAA. The following are examples of substantial involvement that are likely to occur: NOAA may halt an activity immediately if detailed performance specifications are not met; NOAA may specify the direction or redirection of scope of work due to the interrelationships with other projects; NOAA may collaborate with the recipient by working jointly with a recipient scientist or technician in carrying out the scope of work, by training recipient personnel, or detailing federal personnel to work on the project.

III. Eligibility Information

A. Eligible Applicants

Eligible funding applicants for this competition are institutions of higher education, non-profit and for-profit organizations, and state, local and tribal governments.

Federal agencies or institutions and foreign governments may not be the primary recipient of awards under this announcement, but are encouraged to partner with applicants when appropriate. If requesting funds under this award, Federal partners must identify the relevant statutory authorities that will allow for the receipt of funds. Because of the nature of this competition, the Economy Act (31 U.S.C. 1535) is not an appropriate authority.

As the implementing program for this competition, the U.S. IOOS Office expects lead grantees to use subcontracts or other appropriate mechanisms to provide funds to its non-Federal partner(s). If a partner is a NOAA office or laboratory, the U.S. IOOS Office will transfer the funds internally.

Applicants should note that before an award will be issued, they must obtain written

assurance (to include the specific legal citation) from the receiving Federal agency regarding its legal authority to take in the funds and to carry out the identified work.

B. Cost Sharing or Matching Requirement

There is no requirement for cost sharing.

C. Other Criteria that Affect Eligibility

It is 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 must be received by the Federal Program Officer prior to funding.

IV. Application and Submission Information

A. Address to Request Application Package

The full funding opportunity announcement and application materials are available online at http://www.grants.gov. If an applicant does not have Internet access, application packages can be requested from Oriana Villar, US IOOS Office; 1315 East West Highway, 2nd Floor, Silver Spring, Maryland 20910; or by phone at 240-533-9466, or by fax 301-713-3281, or via email at oriana.villar@noaa.gov.

B. Content and Form of Application

Letter of Intent: NOAA is not requesting Letters of Intent under this announcement. NOAA will not review applications that do not include all required documentation and information as listed below.

Proposals must conform to the page limits set below, may be single-spaced, must use a minimum 12-point font, and be formatted on 8.5 by 11 inch paper size, with one-inch margins. The 20-page limit does not include the Title Page, Project Summary, a table of contents, and any appendices. Appendices should be limited to materials that directly support the main body of the proposal (e.g., detailed budget information, support letters, resumes, references, lists of data sources, and maps). SF-424A forms will not count against the page limit for the Project Description.

Applicants to Topic Area 1 are requested to identify their priority tasks at an annual funded level of $3,000,000. If a NOAA or another non-NOAA Federal partner is requested to perform any work as part of the project, please be advised that the work to be performed and

resources required must be reflected separately in the project description and partner budget. The budget should clearly identify the recipient agency and funded activity.

If a NOAA partner is included in the proposal, applications for Federal assistance (SF-424 and SF-424A) must show the total amount less that which would go to the NOAA partner. Detailed budget and budget justifications within the proposal should show the total amount, including that which would go to the NOAA partner, and should include text stating that the applicant wishes for NOAA to retain those funds and transfer them to the NOAA partner. Travel funds for Federal employees for such work will not be approved and should not be included.

For a non-NOAA Federal partner, applications for Federal assistance (SF-424 and SF-424A) must show the total amount including funds requested for the non-NOAA Federal partner. Detailed budget and budget justifications within the proposal should show the total amount, including that which would go to the non-NOAA Federal partner. NOAA will not retain the funds and transfer them to the non-NOAA Federal partner. That transfer will be the responsibility of the awardee.

All funding application packages must contain the following components:

1. Title Page (one page maximum)

Include proposal title, complete contact information for the Principal Investigator and Financial Representative, duration of proposed project, and funding request. Include a statement that this project complies with the IOOS PEA, and list the page section and numbers(s). If the applicant desires the transfer of funds to a NOAA partner on the project, state the amount to NOAA on the cover.

2. Project Summary (not to exceed two-pages)

Provide a summary of the proposed project. Prepare the summary for a broad audience and include the following sections:

a. Project Name/Title

b. Primary Contact (name, address, phone, fax, email)

c. Recipient Institution

d. Other Investigators (name, affiliated institution or agency)

e. Brief Project Summary including objectives and intended benefits

f. Partners

3. Project Description and Narrative (not to exceed 20 pages)

The description of the proposed project must include the following sections:

a. Background. Provide sufficient background information for reviewers to assess how the proposal is responsive to the funding announcement objectives and program priorities.

b. Goal and Objective(s). Describe in the narrative the specific project goals and objectives. Goals and objectives should be specific for each year of the work plan presented.

Recipients will be required to submit semi-annual progress reports that align with these stated goals and objectives.

c. Connection to Users/Stakeholders and Benefits. Identify the benefits to users, customers, collaborators, and society as a whole. Indicate specific users and document the process by which user requirements are guiding the proposed work. Describe plans for delivering products or information to users.

d. Work Plan.

1. Identify specific tasks; explain the technical approach needed to accomplish the tasks;

2. Identify the roles of partners and cooperators;

3. Describe how users are involved in setting work plan priorities that direct the development of products and services;

4. The work plan must clearly address the data management requirements, and the steps taken to achieve efficient and effective data access/sharing through IOOS and archiving that is compliant with Federal regulations. As noted in the Topic Area 1 - Data Management and Cyberinfrastructure Subsystem section, successful applicants are required to submit a regional data management plan as an appendix covering (at minimum) the award

period. This plan must be consistent with the data management framework and policies described on the IOOS website at (http://www.ioos.noaa.gov/data/contribute_data.html).

5. If the project includes Federal partners, clearly identify their roles, responsibilities and contributions.

e. Milestone Schedule. Display timelines for major tasks and show milestones for important intermediate and final products, including deliverables and key project outcomes.

f. Project Budget. Provide a budget for the overall project that follows the cost categories and formats in the SF-424A form, identifies all award recipients (including sub- award recipients), their requested funding amount broken down by the cost categories found in the SF-424A form, and a brief description of their work tasks. The applicant should demonstrate the ability to manage sub-awards.

4. Appendices. Only material that is submitted as a single package will be reviewed.

a. Budget Narrative. In order to allow reviewers to 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. Provide separate budgets for each sub-award and contractor regardless of the dollar value and indicate the basis for the cost estimates. Describe products/services to be obtained and indicate the applicability or necessity of each to the project. NOAA Grants Management Division Guidance can be found at https://www.noaa.gov/sites/default/files/atoms/files/gmd_budget_narrative_guidance_-_05-24-2017_final.pdf.

1. Provide a single SF-424A, using Box 6 and Section E to detail each budget year of the proposal. Provide a narrative on the details of the costs associated with each SF-424A cost category and in accordance with the applicable cost principles.

2. Provide an SF-424A for each sub-award and sub-contract. Provide a narrative on the details of the costs associated with each SF-424A cost category and in accordance with the applicable cost principles.

3. To the extent possible, detailed information on travel, including costs, a description of anticipated travel, destinations, number of travelers, and a justification of relevance to the project. If trip details are unknown, applicants must state the basis for any proposed travel charges. Applicants must allocate travel funds for coordination meetings at the regional and national levels, including travel to the annual meeting with U.S. IOOS Office staff at NOAA

headquarters or other location as determined by the U.S. IOOS Office. Foreign travel must receive prior approval and should be included in the proposal to avoid having to request approval after the project starts. Applicants may factor in travel costs for participation in a NOAA Grants Management Division workshop for recipients.

4. Itemize and describe the intended use of equipment costing $5,000 or greater that will be purchased under the award (for this item, applicants should include a brief narrative in the proposal and detailed budget information in the appendix). Complete a lease versus purchase analysis for any equipment $5,000 or greater.

b. Resumes. Provide resumes of the Principal Investigator and other key personnel critical to the success of the project. Ensure that resumes address qualifications relevant to conducting the proposed work. Limit resumes to a maximum of two pages for each key investigator.

c. Include names and locations (city, state, Congressional district) of all entities receiving funds and primary places of performance under the sub-contract/sub-award.

d. Application for Federal Assistance (SF-424); Budget Information, Non- Construction Programs (SF-424A); Assurances, Non-Construction Programs (SF-424B); Budget Information - Construction Programs (SF-424C), if applicable; Assurances - Construction Programs (SF-424D), if applicable; Certification Regarding Lobbying (CD-511); and, if applicable, Disclosure of Lobbying Activities (SF-LLL). These forms are available for download from the NOAA Grants Online application package.

5. Data Sharing Plan. A Data Management Plan of up to two pages describing how these requirements will be satisfied in the Proposal is required for Topic Area 1. See Section VI.B., Administrative and National Policy Requirements, below for additional information on what the plan should contain. Topic Area 2 does not generate environmental data for this announcement and a Data Management Plan is not required as part of the Proposal.

6. National Environmental Policy Act (NEPA)

Applicants are required to answer the questions indicated in this Notice of Funding Opportunity. Applicants should answer the NEPA questions to the best of their ability with as much detail as possible. Having a fully completed NEPA questionnaire is not one of the minimum requirements for submission and review of the proposal. Further analysis of NEPA considerations will be completed with applicants selected for funding during the negotiation process. See Section VI.B., Administrative and National Policy Requirements,

below for additional NEPA information.

Some of the questions may overlap with material provided in other parts of the application. This overlap occurs because the answers to the questionnaire are provided to NOAA staff, who do not review the other parts of the application. If appropriate, the applicant may copy the information from other parts of the application and paste it into the answers to the questionnaire. Many questions have a "yes" or "no" response. If the response is "no" the applicant does not need to elaborate on their answer. If the response is "yes" the question will have a second part asking the applicant to provide more information.

You are only required to provide information that is specifically requested in the NOFO to which you are applying. The applicable questions are inserted directly into the NOFO with reference to the OMB Approval Number (0648-0538)

https://www.nepa.noaa.gov/docs/NOAA-Grants-Questionnaire-final.pdf

Applicant NEPA questions are as follows:

Proposed Activity Information

Describe the proposed activity, including: Explain the purpose, objectives, and goals; and Explain if the proposed activity will occur in different locations and/or multiple phases.

Is the proposed activity a continuation or part of an ongoing activity? If yes, then: describe any changes to the proposed activity since it was initiated, including progress toward achieving its objectives/goals; and provide any additional information, previous environmental review documents, and/or reports from previous years.

Proposed Activity Location

Describe the proposed activity location, including, if available and appropriate, geographic coordinates (latitude, longitude in DD MM.MMM), river mile markers, etc. for all distinct phases of the proposed activity.

Provide maps and graphics of the proposed location, if available (at a scale that clearly shows site location(s) relative to the surrounding area and nearby features).

Is the location of the proposed activity in a previously undisturbed area? If yes, then explain if the proposed activity would degrade or disturb the previously undisturbed area.

Are there pre-existing or ongoing uses at the location of the proposed activity? If yes, then describe and explain the pre-existing or ongoing uses at the location of the proposed activity or, if not known, describe how pre-existing/ongoing uses will be determined.

Proposed Activity Timeframe

Specify the proposed start date and duration of the proposed activity for all distinct phases of the project.

Provide proposed activity schedules for all distinct phases of the proposed activity, including: implementation dates of major elements of the proposed activity; frequency of activities within the proposed activity schedule (e.g. once per week, 10 days per month, daily); and deployment and recovery schedules of equipment or structures that would be temporarily or permanently placed in the environment.

Project Partners, Permits, and Consultations

Is this proposed activity funded in any way by another Federal or state agency? If yes, then: identify the Federal or state agency; and include information on whether an environmental assessment or environmental impact statement was completed or is in the process of being completed for the proposed activity.

List all other interested or affected Federal, state, and local agencies, Native American tribes or Native Hawaiian organizations, non-governmental organizations, and private individuals which may potentially be interested and/or affected by the action

Are minority or low-income communities located in the area of the proposed activity? If yes, then describe how the minority or low-income communities may be impacted by the proposed activities.

Are Federal, state, or local permits, authorizations, waivers, determinations, or consultations required for the proposed activity to comply with all applicable environmental laws and regulations? If yes, then: list and provide the status of all required Federal, state, or local permits, authorizations, waivers, determinations, conditions, and consultations, as applicable; and provide copies of all required Federal, state, or local permits, authorizations, waivers, or determinations that you have secured.

Aquaculture and Mesocosums

If the proposed activity involves the use of any specialized equipment that may introduce sound into the environment, then provide a description of the noise(s), including frequency (Hz), amplitude (dB), angle (or degrees) radius the noise may travel from the source, and other relevant technical specifications. Compare the noise(s) generated by the proposed activity with ambient noise conditions, if known. Also, discuss the length of time and frequency of occurrence that the noise is expected to be introduced into the environment.

Equipment Installation, Construction and/or Maintenance

Does the proposed activity involve construction, restoration, dredging, excavation, and/or fill? If yes, then: describe the extent of the construction, restoration, dredging, excavation, and/or fill; and include a description and plan diagram of the proposed impact area.

If the proposed activity involves installing equipment or antennas on buildings or property, has the owner of the property granted written approval for the use of their property? If yes, provide copies of the approvals.

If the proposed activity involves installing equipment, describe how the equipment would get to its final location (i.e. would gasoline or diesel engine vehicles be used to transport the equipment)?

If the proposed activity involves installing equipment or antennas that would require structural support, describe the nature and extent of such support.

Data, Risk, and Mitigation

Describe sampling, collecting, or observation protocols and operational procedures.

Describe and provide specification of the equipment or structures (e.g. scientific monitoring equipment, deployment platforms, etc.) that would need to be temporarily or permanently placed in the environment.

Describe any proposed mitigation or monitoring measures and protocols

Describe the processing methods to be used to conduct the research.

Does the proposed activity utilize a new or untested scientific technology or method? If yes, then describe briefly the technological process or methodology and potential environmental

effects of the proposed activity

Does the proposed activity consist solely of software research and manipulation? If yes, please explain.

Safety

Describe potential unique or unknown risks to human health or the environment from the proposed activity?

Paperwork Reduction Act Statement: Public reporting burden for this collection of NEPA information is estimated to average 3 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other suggestions for reducing this burden to NOAA NEPA Coordinator, NOAA Office of Program Planning and Integration, SSMC 3, Room 15700, 1315 East West Highway, Silver Spring, MD 20910. The information collection does not request any proprietary or confidential information. No confidentiality is provided.

Notwithstanding any other provisions of the law, no person is required to respond to, nor shall any person be subjected to a penalty for failure to comply with, a collection of information subject to the requirements of the Paperwork Reduction Act, unless that collection of information displays a currently valid OMB Control Number. The valid OMB Control Number is 0648-0538, which expires on November 30, 2021.

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

To enable the use of a universal identifier and to enhance the quality of information available to the public as required by the Federal Funding Accountability and Transparency Act, 31 U.S.C. 6101 note, to the extent applicable, any proposal awarded in response to this announcement will be required to use the System for Award Management (SAM), which may be accessed online at https://www.sam.gov/portal/public/SAM/. Applicants are also required to use the Dun and Bradstreet Universal Numbering System, as identified in OMB guidance published at 2 CFR Parts 25, Appendix A C.2

For your convenience, sample forms and instructions on how to fill out the forms can be found online at https://ioos.noaa.gov/about/funding-opportunities/.

D. Submission Dates and Times

Applications must be received by 11:59 PM Eastern Standard Time on December 31,

2020. Applications received after this deadline will not be considered for funding. When applications are submitted through http://grants.gov, a date and time receipt indication is included and will be the basis of determining timeliness.

E. Intergovernmental Review

Funding applications to NOAA are subject to Executive Order 12372, "Intergovernmental Review of Federal Programs." It is the State agency's responsibility to contact their State's Single Point of Contact (SPCO) to find out about and comply with the State's process under EO 12372. To assist the applicant, the names and addresses of the SPOCs are listed on the White House's web site https://www.whitehouse.gov/wpcontent/uploads/2017/11/SPOC-Feb.-2018.pdf

F. Funding Restrictions

None.

G. Other Submission Requirements

FULL APPLICATION:

Applicants using www.Grants.gov must locate the downloadable application package for this solicitation by the Funding Opportunity Number or the CFDA number (11.012). Applicants will be able to download a copy of the application package, complete it off line, and then upload and submit the application through Grants.gov.

Grants.gov will provide information about submitting a proposal through the site as well as the hours of operation. After electronic submission of the application, the person submitting the application will receive within 24 to 48 hours two email messages from Grants.gov updating him or her on the progress of the application. The first email will confirm receipt of the application by Grants.gov, and the second will indicate that the application has been either successfully validated by the system prior to transmission to the grantor agency, or rejected due to errors. After the application has been validated, this same person will receive another email when the application has been downloaded by the Federal agency.

To use grants.gov, applicants must have a Dun and Bradstreet Data Universal Numbering System (DUNS) number and be registered in the System for Award Management (SAM). [Note: Your organization's Employer Identification Number (EIN) will be needed on the application form.] Applicants are strongly encouraged not to wait until the application deadline data to begin the application process through grants.gov.

Please refer to important information in "Submission Dates and Times" above to help ensure your application is received on time. Please be advised that potential funding applicants must register with Grants.gov before any application materials can be submitted. An organization's one-time registration process may take up to three weeks to complete, so please allow sufficient time to ensure applications are submitted before the closing date. Grants.gov contains directions for submitting an application, the application package (forms), and is also where the completed application is submitted.

Full application packages must be submitted through https://www.grants.gov/applicants/apply-for-grants.html. No email or hard copies will be accepted.

V. Application Review Information

A. Evaluation Criteria

A. Evaluation Criteria Topic Area 1

1. Importance and/or relevance and applicability of proposed project to the program goals (35 points): This ascertains whether there is intrinsic value in the proposed work and/or relevance to NOAA, Federal, regional, state, or local activities. This criterion evaluates the proposed work’s relevance and ability to successfully operate, manage, and coordinate the regional component of the IOOS. This includes:

- Does the proposal demonstrate linkages to the ocean observing national frameworks and policy priorities cited in this Notice of Funding Opportunity?

- Does the proposal clearly demonstrate progress in and plans for collaborations to build the regional and/or national components of IOOS?

- Does the proposal clearly demonstrate means to sustain and grow each of the five subsystems (1) Governance and Management Subsystem; 2) Observing Subsystem; 3) Data Management and Cyberinfrastructure (DMAC) Subsystem; 4) Modeling and Analysis Subsystem; and 5) Engagement in the management and operation of the Regional Coastal Ocean Observing System)?

2. Technical and scientific merit (35 points): This assesses whether the approach is technically sound and/or innovative, if the methods are appropriate, and whether there are clear project goals and objectives. The emphasis is on proposals that provide an end-to-end capability from observation to modeling that meet user needs. Reviewers will evaluate how

effectively the proposed project builds upon prior investments in regional ocean, coastal, and Great Lakes observing technologies and systems. This includes:

- Does the proposal demonstrate the ability to meet IOOS DMAC requirements successfully?

- Does the proposal clearly demonstrate how applicable observing systems will be operated and maintained and how data from these systems will be published via regional and national Data Assembly Centers?

- Does the Data Management Plan align with the Data Management Guidance provided by NOAA in the Announcement?

- Does the proposal demonstrate a plan for integrating regional state, local, tribal and NGO data from sources not funded by the Regional Association?

- Does the proposal demonstrate the ability to operate the regional data assembly center efficiently and effectively, especially in times of emergency? Do the proposed approaches incorporate current guidance, scientific, and/or technical advancements in the development and implementation of the U.S. Integrated Ocean Observing System?

3. Overall qualifications of the funding applicants (10 points): This criterion ascertains whether the funding applicant possesses the necessary education, experience, training, facilities, and administrative resources to accomplish the project. This includes:

- Does the proposal identify an organizational framework appropriate to manage and operate a regional observing system across the region and are the investigators qualified?

- Does the organization structure show a balanced diversity of members, representing government, private industry, non-profit organizations, tribes, and academia?

4. Project costs (15 points): This criterion evaluates the budget to determine if it is realistic and commensurate with the project needs and timeframe. This includes:

- Are the cost, schedule, and deliverables clear, reasonable, and logically presented? Does the budget shows the costs are necessary for successful completion of the project and that charges are reasonable and realistic?

5. Outreach and education (5 points): This criterion assesses whether the project provides a

focused and effective education and outreach strategy regarding partner agency missions, including NOAA's mission to understand and protect the Nation's natural resources.

- Does the proposal demonstrate that the target user community has been fully engaged in development of the desired project outcomes? Does the proposal demonstrate that information generated by the project will reach its target audience and have a positive impact on the development of regional and national observing system infrastructure?

B. Evaluation Criteria Topic Area 2

1. Importance/relevance and applicability of proposal to the program objectives and priorities (35 points): This ascertains whether there is intrinsic value in the proposed work and/or relevance to NOAA, Federal, regional, State, and/or local activities, including importance and relevance to the priorities of the U.S. IOOS regional associations.

2. Technical/Scientific Merit (35 points): This assesses whether the approach is technically sound and/or innovative, whether the methods are appropriate, and whether there are clear project goals and objectives. The proposed work should have focused objectives and a complete and technically sound strategy for project design, methodologies, analysis, and outcomes in support of the objectives.

3. Overall Qualifications of Applicants (10 points): This criterion assesses whether the applicant team possesses the necessary education, experience, training, facilities, and administrative resources to accomplish the project.

4. Project Costs (10 points): This criterion evaluates the budget to determine if it is realistic and commensurate with the project needs and time frame.

Questions relevant to this criterion include:

- Are the cost, schedule, and deliverables clear, reasonable, and logically presented

- Does the budget show the costs are necessary for successful completion of the project and that charges are reasonable and realistic?

5. Outreach and Broader Impacts (10 points): NOAA assesses whether this project provides a focused and effective contribution towards NOAA's mission to protect the Nation's natural resources.

Questions relevant to this criterion include:

- Does the proposal demonstrate that the RA DMAC community and target user community has been fully engaged in development of the desired project outcomes? Does the proposal demonstrate that information generated by the project will reach its target audience and have a positive impact on the development of regional and national observing system infrastructure?

B. Review and Selection Process

Screening, review, and selection procedures will take place in three steps: 1) an initial screening by U.S. IOOS Office staff; 2) a merit review; and 3) final selection by the Selecting Official (the Director of the U.S. IOOS Office). The merit review step will involve at least three reviewers per application. The Selecting Official will make the final decision regarding which applications will be funded based on the numerical ranking of the applications, the evaluations by the merit reviewers, and the selection factors set in Section V.C., below.

1. Initial Screening. The initial screening will ensure that applicat ation packages have all required forms and application elements and meet all of the eligibility criteria. Applications that pass this initial screening will be submitted for merit review.

2. Merit Review. Eligible applications will be evaluated in accordance with the criteria and weights described in this solicitation by at least three independent peer reviewers through an independent mail review and/or an independent peer panel. Each reviewer will independently evaluate their assigned projects and provide an individual score. Both Federal and non- Federal experts may be used in this process. No consensus advice will be given by the independent peer reviewers through mail reviews or on the review panels. If a panel is convened, the panel will be comprised of subject matter experts and may convene in person or by teleconference, video conference or electronic means. The merit review's ratings are used to produce a rank order of the proposals. Proposals submitted under Topic Area 1 will be grouped and ranked separately from proposals submitted under Topic Area 2.

3. Final Selection. The U.S. IOOS Office staff will create a ranking of the proposals to be recommended for funding using the average merit review or panel review scores, if a panel review is conducted. The reviewer comments, composite project scores, rank order, and a summary of the concerns (if any) identified through the mail and/or panel review process along with information pertaining to selection factors (see below) will be presented to the Selecting Official.

Based on the numerical ranking, merit review written evaluations, and the additional selection factors described below, the Selecting Official will develop a list of projects recommended for funding. For a proposal to be selected for funding, the applicant may be asked to modify objectives, work plans, and budgets, and to provide supplemental information required by the agency prior to the award. When a decision has been made (whether an award or declination), anonymous copies of merit review comments or summaries of panel deliberations, can be made available to the applicant upon request.

C. Selection Factors

The competition manager will present selection recommendations to the selecting official in rank order as determined by the merit review ratings. The selection official shall award in rank order unless the proposal is justified to be selected out of rank order based upon one or more of the following factors:

1. Availability of funding

2. Balance/distribution of funds:

a. By number and type of partners

b. By project type

c. By operational focus

d. By type of institutions

e. By geographic region

f. By industry type

3. Leveraging of other projects funded or considered for funding by NOAA/Federal agencies

4. Project priorities and policy factors

5. Applicant's prior award performance

6. Partnerships with/participation of targeted groups

7. Adequacy of information necessary for NOAA staff to make a determination about the environmental impacts of the project on the environment and draft necessary documentation before recommendations for funding are made to the Grants Officer.

The Selecting Official makes final recommendations for awards to the Grants Officer who is authorized to obligate the funds.

D. Anticipated Announcement and Award Dates

The start date on proposals can be the first day of any month between June 1, 2021 and September 1, 2021.

VI. Award Administration Information

A. Award Notices

Successful applicants will receive notification that the application has been recommended for funding by an official of the U.S. IOOS Office. This notification is not an authorization to begin performance of the project. Official notification of funding, signed by a NOAA Grants Officer, is the authorizing document that allows the project to begin.

Notifications will be issued to the applicant's Authorized Representative and the Principal Investigator of the project.

Costs incurred prior to receiving notice from an authorized federal grants or procurement officer are solely at one's own risk of these costs not being included under the award.

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) will also delay the award of funds if a project is otherwise selected for funding.

B. Administrative and National Policy Requirements

The Department of Commerce Pre-Award Notification Requirements for Grants and

Cooperative Agreements

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

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

DOC Terms and Conditions.

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

Limitation of Liability.

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

Unpaid or Delinquent Tax Liability.

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. If a form is provided, an award may not be issued until it is returned and accepted by NOAA.

Data Sharing Plan

1. Environmental data and information collected or created under NOAA grants or cooperative agreements must be made discoverable by and accessible to the general public, in a timely fashion (typically within two years), free of charge or at no more than the cost of reproduction, unless an exemption is granted by the NOAA Program. Data should be available in at least one machine-readable format, preferably a widely-used or open-standard format, and should also be accompanied by machine-readable documentation (metadata), preferably based on widely used or international standards.

2. Proposals submitted in response to this Announcement must include a Data Management Plan of up to two pages describing how these requirements will be satisfied. The Data Management Plan should be aligned with the Data Management Guidance provided by NOAA in the Announcement. The contents of the Data Management Plan (or absence thereof), and past performance regarding such plans, will be considered as part of proposal review. A typical plan should include descriptions of the types of environmental data and information expected to be created during the course of the project; the tentative date by which data will be shared; the standards to be used for data/metadata format and content; methods for providing data access; approximate total volume of data to be collected; and prior experience in making such data accessible. The costs of data preparation, accessibility, or archiving may be included in the proposal budget unless otherwise stated in the Guidance. Accepted submission of data to the NOAA National Centers for Environmental Information (NCEI) is one way to satisfy data sharing requirements; however, NCEI is not obligated to accept all submissions and may charge a fee, particularly for large or unusual datasets.

3. NOAA may, at its own discretion, make publicly visible the Data Management Plan from funded proposals, or use information from the Data Management Plan to produce a formal metadata record and include that metadata in a Catalog to indicate the pending availability of new data.

4. Proposal submitters are hereby advised that the final pre-publication manuscripts of scholarly articles produced entirely or primarily with NOAA funding will be required to be submitted to NOAA Institutional Repository after acceptance, and no later than upon publication. Such manuscripts shall be made publicly available by NOAA one year after publication by the journal.

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.

Review of Risk

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

Indirect Cost Rate

If an applicant has not previously established an indirect cost rate with a Federal agency they may choose to negotiate a rate with the Department of Commerce or use the de minimis indirect cost rate of 10% of MTDC (as allowable under 2 C.F.R. §200.414). The negotiation

and approval of a rate is subject to the procedures required by NOAA and the Department of Commerce Standard Terms and Conditions. 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, MD 20910, or lamar.revis@noaa.gov.

Minority Serving Institutions

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

Freedom of Information Act (FOIA)

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

C. Reporting

Awardees will be required to submit financial and performance (technical) progress reports electronically through the NOAA Grants On-Line System. Instructions for submitting financial and progress reports will be provided by the NOAA Grants Management Division.

The Federal Funding Accountability and Transparency Act, 31 U.S.C. 6101 note, includes a requirement for awardees of applicable Federal grants to report information about first-tier subawards and executive compensation under Federal assistance awards. All awardees of applicable grants and cooperative agreements are required to report to the Federal Sub-award Reporting System (FSRS) available at https://www.fsrs.gov/ on all sub-awards over $25,000. Refer to 2 CFR Parts 170.

VII. Agency Contacts

For questions regarding this announcement, contact: Oriana Villar, US IOOS Office; 1315 East West Highway, 2nd Floor,, Silver Spring, Maryland 20910; or by phone at 240-533-9466, or by fax 301-713-3281, or via email at oriana.villar@noaa.gov.

VIII. Other Information

Official notification of an award is provided by the Grants Management Division, not the U.S. IOOS Program. If one incurs any costs prior to receiving an award agreement from an authorized NOAA grant official, one would do so solely at one's own risk of these costs not being included under the award.

Successful applicants will be requested to ensure that all progress reports: a) clearly state the resulting impact of their project and products in the coastal management community and on forecasting environmental events; and b) indicate whether financial reports have been submitted to NOAA's Grants Management Division and are up-to-date. Applicants in their final progress report will be asked to certify that "Final financial reports have been submitted to NOAA's Grants Management Division and a final funding draw-down has been made through the Automated Standard Application for Payments (ASAP)." See https://cdn.ioos.noaa.gov/attachments/2018/11/Cooperative-Agreement-Progress-Report-Guidance-November-2018.pdf for general guidance on the content of these progress reports.

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

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Programmatic Environmental Assessment and Project Design Criteria

The U.S. IOOS Office completed a PEA (https://cdn.ioos.noaa.gov/media/2017/12/IOOS_PEA-with-Appendices_FINAL_June-2016.pdf) identifying the typical activities that a Regional Coastal Ocean Observing System would engage in with discussion of their potential environmental effects. Successful applicants will be required to review the PEA along with its approved PDC. Awards will include a Special Award Condition requiring all successful applicants to follow the PDC and to contact the U.S. IOOS Office when work is being proposed that is outside the scope of the PEA and inconsistent with the PDC.