

FY2024 Weather Program Office Data Assimilation Consortium

TABLE OF CONTENTS

I. Funding Opportunity Description.....	4
A. Program Objective.....	4
B. Program Priorities.....	5
C. Program Authority.....	6
II. Award Information.....	6
A. Funding Availability.....	6
B. Project/Award Period.....	7
C. Type of Funding Instrument.....	7
III. Eligibility Information.....	8
A. Eligible Applicants.....	8
B. Cost Sharing or Matching Requirement.....	8
C. Other Criteria that Affect Eligibility.....	9
IV. Application and Submission Information.....	9
A. Address to Request Application Package.....	9
B. Content and Form of Application.....	9
C. Unique Entity Identifier and System for Award Management (SAM).....	16
D. Submission Dates and Times.....	17
E. Intergovernmental Review.....	17
F. Funding Restrictions.....	18
G. Other Submission Requirements.....	18
V. Application Review Information.....	18
A. Evaluation Criteria.....	18
B. Review and Selection Process.....	21
C. Selection Factors.....	22
D. Anticipated Announcement and Award Dates.....	23
VI. Award Administration Information.....	23
A. Award Notices.....	23
B. Administrative and National Policy Requirements.....	23
C. Reporting.....	28
VII. Agency Contacts.....	29
VIII. Other Information.....	29

NOTICE OF FUNDING OPPORTUNITY

EXECUTIVE SUMMARY

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

Funding Opportunity Title: FY2024 Weather Program Office Data Assimilation Consortium

Announcement Type: Initial

Funding Opportunity Number: NOAA-OAR-WPO-2024-2007893

Federal Assistance Listings Number: 11.459, Weather and Air Quality Research

Dates: For this competition within this Fiscal Year 2024 funding opportunity, full applications must be received by 5:00 pm Eastern Time (ET) on October 13th, 2023. Applications received after this deadline will not be considered. Financial awards for all competitions will be a maximum of three years in length, depending on the competition, and are recommended to begin in March 2024, as described in Section II.B “Project/Award Period.”

Funding Opportunity Description: The NOAA Office of Oceanic and Atmospheric Research (OAR) Weather Program Office (WPO) Data Assimilation (DA) Consortium Competition is soliciting collaborative proposals from this notification valued at a total of approximately \$7 million over three years beginning in FY2024 primarily to (1) establish a multi-university consortium to advance DA research and education, and (2) develop a long-term strategic partnership between the consortium, NOAA, and the broader weather enterprise in advancing DA methodology to improve numerical weather predictions using the Unified Forecast System (UFS).

In alignment with the Inflation Reduction Act of 2022 (Public Law 117-169) Sec. 40004 Oceanic and Atmospheric Research and Forecasting for Weather and Climate, this opportunity will allow NOAA to accelerate advances and improvements in research, observation systems, modeling, forecasting, and assessments as it pertains to ocean and atmospheric processes related to weather, coasts, oceans, and climate. Also, in alignment with the Weather Forecasting and Innovation Act of 2017 (Public Law 115-25), this funding opportunity will allow NOAA to support new weather, water, and earth system observing and forecasting applications, including improved analysis techniques. In particular, projects are sought that are responsive to the Priorities for Weather Research (PWR) Report (https://sab.noaa.gov/wp-content/uploads/2021/12/PWR-Report_Final_12-9-21.pdf) Data Assimilation (DA) Priority Area 1: Use and Assimilation of Existing Observations, Priority Area 2: Advanced Data Assimilation Methods, Capabilities and

Workforce, and Priority Area 3: Observation Gaps and Use and Assimilation of New Observations.

NOAA, OAR, and WPO encourage applicants and awardees to write their proposals and perform their work in a manner consistent with NOAA's core values, including those on diversity, inclusion, accessibility, civil rights, and scientific integrity. Promoting diversity and inclusion improves creativity, productivity, and the vitality of the weather and water research community in which WPO engages.

FULL ANNOUNCEMENT TEXT

I. Funding Opportunity Description

A. Program Objective

The United States is experiencing approximately six times as many billion-dollar weather and climate disasters per year than it did in the 1980s (NCEI 2023: <https://www.ncei.noaa.gov/access/billions/>). The nation faces an ever greater urgent need to enhance our numerical weather prediction (NWP) capabilities to ensure accurate and timely weather, water, and climate forecasts are available to decision-makers and the public. This need falls well within NOAA's mission to understand and predict changes in climate, weather, oceans, and coasts, to share that knowledge and information with others, and to conserve and manage coastal and marine ecosystems and resources.

As discussed in the Priorities for Weather Research (PWR) Report, published in 2021 by the NOAA Science Advisory Board, data assimilation (DA) plays a critical role in addressing nearly all NOAA mission areas across scales including improving numerical weather prediction, optimizing observation network design, producing analyses and reanalyses, and improving numerical models. Studies have shown (Magnusson et al, 2019: <https://doi.org/10.1002/qj.3545>) that advancement of DA can close the weather forecast skill gap between the United States and other world-leading operational numerical weather prediction centers. Investments from NOAA, in collaboration with the broader weather enterprise, have enabled the establishment of the infrastructure for enhancing NWP capabilities, including the Unified Forecast System (UFS, <https://ufscommunity.org/about/what-is-ufs>) as the community-based model for research as well as NOAA's operational forecast system, the Earth Prediction Innovation Center (EPIC, <https://epic.noaa.gov>) to support the UFS community and codes, and the interagency-based Joint Effort for Data assimilation Integration (JEDI, <https://www.jcsda.org/jcsda-project-jedi>). Yet critical gaps exist to advance data assimilation capabilities in NWP as a result of a severe lack of data assimilation expertise in the U.S. workforce.

To address these gaps, the WPO Inflation Reduction Act (IRA) Data Assimilation (DA) Consortium Competition invites proposals to (1) establish a multi-university consortium to advance DA research and education, and (2) develop a long-term strategic partnership between the consortium, NOAA, and the broader weather enterprise in advancing DA methodologies to improve NWP capabilities using the UFS. This addresses the 3 PWR Priority Areas highlighted in the Executive Summary above and also aligns with the following PWR immediate first steps and critical actions:

- (a) Accelerate development of an Earth system modeling approach to improve forecast accuracy and lead time;
- (b) Prioritize immediate investments in fundamental research on data assimilation to deliver sustained improvements in forecast skill and to train the next generation of experts in this area to fill an existing critical workforce gap;
- (c) Support reanalysis and reforecasting vital to Earth system model evaluation and improvement, to characterize extremes, and provide training datasets for artificial intelligence (AI) product applications.

This funding opportunity is open to work at all Readiness Levels (RL) up to RL 8, but a priority is placed on lower (RL 2-5) levels. Information about NOAA's RL system, including definitions for each RL, can be found in the Information Sheet attached to this announcement.

B. Program Priorities

A successful university consortium application shall combine expertise across a range of DA disciplines and methodologies, and meet the following requirements:

- 1) Establish and provide a comprehensive program to educate and train the next generation DA workforce, spanning a balanced set of graduate students and postdoctoral trainees;
- 2) Provide opportunities for these supported students and postdoctoral scientists to obtain NOAA mentors and NOAA advisers, and gain work experience at NOAA;
- 3) Closely collaborate with NOAA Laboratories and Centers that are significantly involved in data assimilation, and ensure that the consortium graduate and postdoctoral student projects are well-aligned with the NOAA mission;
- 4) Address challenging DA issues key to improve next-generation UFS short range (i.e. Rapid Refresh Forecast System (RRFS) or Hurricane Analysis and Forecast System (HAFS)), medium range (i.e. Global Ensemble Forecast System (GEFS)), and subseasonal to seasonal models (i.e. Seasonal Forecast System (SFS)) toward improved forecast skill;
- 5) Establish, clarify and improve research to operations (R2O) and operations to research (O2R) priorities and processes, including, but not limited to, determining DA components in UFS releases, a clearly defined plan to implement innovative DA research as part of the UFS, and hosting joint training courses using UFS applications working with the Earth Prediction Innovations Center (EPIC) and Joint Center for Satellite Data Assimilation

(JCSDA) as appropriate.

6) Include at least one Minority Serving Institution (MSI, defined by the U.S. Department of Education at <https://www2.ed.gov/about/offices/list/ocr/edlite-minorityinst.html>). A minimum of 20% of the overall project budget must be used to support students and postdoctoral scientists from minority serving institutions to develop expertise in data assimilation methods and to participate in the consortium activities (See definition in Section IV.B);

7) Foster training and exchange between NOAA and underserved populations; for example by supporting visiting teaching opportunities for NOAA staff at MSI's, supporting dedicated postdoctoral research or faculty sabbaticals at MSI's and enhancing connections between NOAA's Educational Partnership Program with Minority Serving Institutions Cooperative Science Centers (<https://www.noaa.gov/office-education/epp-msi/csc>) and NOAA Laboratories or Centers;

8) Include collaborative scientist and student exchange opportunities focused on data assimilation with one or more of the UK Met Office Academic Partnership (MOAP) (<https://www.metoffice.gov.uk/research/approach/collaboration/met-office-academic-partnerships>) universities leveraging the upcoming Transatlantic Data Science Academy (<https://www.gov.uk/government/publications/earth-observation-investment/projects-in-receipt-of-funding#met-office---1173-million>);

9) Establish a mechanism for coordination and exchange of research advances amongst the relevant institutions, such as a regular cadence of workshops or meetings.

C. Program Authority

Public Law 117-169 Inflation Reduction Act of 2022 (136 STAT. 2029), Oceanic and Atmospheric Research and Forecasting for Weather and Climate; and Public Law 115-25 Weather Research and Forecasting Innovation Act of 2017, 15 U.S.C. 8512(c).

II. Award Information

A. Funding Availability

The total available funding and total per-project funding limits for each project are

identified below. These estimates are based on either actual or anticipated NOAA funding availability. For these collaborative multi-institution projects, the amounts identified below are project-total amounts and not per-institution amounts. Please confirm that the requested funding amounts in your application's budget satisfy these stated maximum limits before submitting your application.

Any proposal that exceeds either the stated per-project or per-project-per-year funding limit below will be rejected and not reviewed. For information on the maximum project time period for each competition, please see Section II.B "Project/Award Period" below.

Funds allocated for the competition may be altered depending on the number and quality of proposals submitted, and federal funding appropriations. Funding of any proposal is contingent upon the availability of these NOAA funds. "M" refers to millions of U.S. dollars. "K" refers to thousands of U.S. dollars.

Maximum project total award funding: \$7M

Approximate maximum total award funding by year: \$2.6M (Y1), \$2.4M (Y2), \$2.0M (Y3)

Expected number of funded projects: 1-2

B. Project/Award Period

The maximum time period of awards is 3 years. Any proposal that exceeds this duration will be rejected and not reviewed. The recommended project start date for all programs is March 11, 2024. Applicants are advised to use this date as the project start date in their proposal.

Maximum Award Length: 3 years

Start Date: March 11, 2024

The formal award is subject to the availability of funds. It is possible that NOAA may delay the start of some awards due to circumstances that would prevent the formal award by the start date defined by the Principal Investigator (PI) in the proposal package. In these instances, the PI will be informed of any schedule revisions. In the event of a lapse in government funding availability, assume that there is no change to the regularly scheduled start date unless a revised schedule has been announced.

C. Type of Funding Instrument

The funding instrument for these awards will be through a cooperative agreement. It is anticipated that NOAA employees will be substantially involved in the research and implementation of the project. Funding for contractual arrangements for services and products for delivery to NOAA is not available under this announcement.

Neither intra-agency fund transfers within NOAA nor Inter-Agency Agreement (IAA) fund transfers to non-NOAA federal agencies are permitted under the funding opportunity in this notice.

Because these will be collaborative projects involving investigators from multiple, separate institutions requesting federal assistance, separate awards will be issued to each institution that submits an approved proposal for those projects.

III. Eligibility Information

A. Eligible Applicants

Applicants are responsible for ensuring that they are eligible for the competition for which they are applying. If any applicants requesting funding are ineligible, the application(s) will be rejected without review.

Eligible applicants are:

- U.S. institutions of higher education including institutions in U.S. Territories;
- U.S. non-profit organizations (excluding Federally Funded Research and Development Centers, FFRDCs).

No more than 10% of the proposed project budget will be authorized for U.S. non-profit organizations.

The following institutions may participate as unfunded collaborators, but may not apply for funding:

- U.S. Federal institutions and U.S. Federal institution contractors;
- Foreign (based outside of the U.S.) institutions;
- Federally Funded Research and Development Centers (FFRDCs);
- NOAA-affiliated Cooperative Institutes (CIs);
- Commercial organizations.

B. Cost Sharing or Matching Requirement

No cost sharing is required under this announcement.

C. Other Criteria that Affect Eligibility

Proposals in response to this notice should be for multi-institution, collaborative projects. More information is provided in Section IV.B.

IV. Application and Submission Information

A. Address to Request Application Package

Application packages for full proposals are available at:
<https://www.grants.gov/web/grants/applicants/apply-for-grants.html>.

B. Content and Form of Application

Failure to adhere to these instructions will result in full proposals being rejected without review.

MULTI-INSTITUTION PROPOSALS. Proposals in response to this notice should be for multi-institution, collaborative projects. Each proposing institution must submit their own application with their own PI. All applications for the same joint project must have the same title and identify the same PIs and co- PIs on the applications' title page. The designated Lead PI and their associated institution will then be responsible for additional documents as described in this section.

Each institution wishing to receive funds directly from NOAA is responsible for submitting to Grants.gov separate proposal packages with identical project titles, title pages, project narratives, and project start dates. If any non-federal institution proposed to receive funding directly from NOAA as part of a multi-institution collaborative project fails to submit a full proposal, then all partner proposals may be rejected without review. Federal institutions may not submit a proposal.

All external proposal package components must be identical among all separate proposal submissions to Grants.gov for a multi-institution collaborative project, with two exceptions:

- 1) each institution's separate budget information tables and budget justification (which will apply only to their own institution's portion of the collaborative project and not the budgets for any other funded institution); and

- 2) any other institution-specific documents. Each identical title page must list all funded and unfunded PIs and their institutional affiliation(s), even if from a separate funded institution, for a given joint project.

SUBAWARDS. Subaward agreements are not permitted as part of this funding opportunity.

REQUIREMENTS FOR FEDERAL COLLABORATORS. Any federal employee listed on the title page of a proposal (if eligible) must have provided explicit pre-approval to the PI to be identified as a contributor to the proposed project. Proposals including a federal collaborator should include a signed letter of support from the collaborating institution. Only one letter is required from each institution on each proposal.

If institutional indirect (overhead) charges are included in the budget, the applicant must either (a) have an approved negotiated Indirect Cost Rate Agreement and must include it as a part of the application package, or (b) may choose to negotiate a rate with the Department of Commerce or use the de minimis indirect cost rate of 10% of Modified Total Direct Cost (MTDC; as allowable under 2 C.F.R. §200.414) (see the "BUDGET" section below).

MINORITY SERVING INSTITUTIONS. At least one collaborating institution in the proposed consortium must be formally designated as a Minority-Serving Institution (MSI, as defined by the U.S. Department of Education at <https://www2.ed.gov/about/offices/list/ocr/edlite-minorityinst.html>). This includes Alaska Native or Native Hawaiian Serving Institutions (ANNHSI), Asian American and Native American Pacific Islander Serving Institutions (AANAPISI), Hispanic Serving Institutions (HSI), Historically Black Colleges and Universities (HBCU), Native American Serving Nontribal Institutions (NASNI), and Tribal Colleges and Universities (TCU).

FULL PROPOSAL

FORMAT. All pages should be single-spaced and set in 12-point font with one-inch margins on 8 ½ x 11 inch paper. The proposal should be submitted as a PDF file. It must be dated and display page numbers.

The final proposal must include the following items that are described below:

PROJECT NARRATIVE (14 pages plus Data and Software Management Plans and Other Attachments)

- Title Page
- Abstract page

- Problem/Opportunity Statement
- Products/Outputs/End Users
- Impacts/Benefits/Outcomes
- Methods and Activities
- Schedule
- Outreach and Education
- Diversity and Inclusion
- Data Management Plan
- Other Attachments

BUDGET STANDARD FORMS

- Standard Form 424 - Application for Federal Assistance
- Standard Form 424A - Budget Information - Non-Construction Programs
- Standard Form 424B - Assurances - Non-Construction Program
- Form CD-511 - Certifications Regarding Lobbying
- Standard Form LLL - Disclosure of Lobbying Activities

PROJECT NARRATIVE: (14 pages plus Other Attachments)

The project narrative shall not exceed 14 pages, including the sections below. The page limit includes the title page, abstract, and figures, but not the Data and Software Management Plans or Other Attachments (Curricula Vitae (CVs), reference list, and Letters of Support). For project narratives that exceed 14 pages, only the first 14 pages will be reviewed.

An identical project narrative is required in each collaborating institution's application, but they must all clearly describe the work contributions of each funded PI.

The Project Narrative must contain the following elements:

TITLE PAGE (one page): Provide the following information: each PI and the respective institutional representative by full name, title, organization, telephone number, email address; the mailing address for the institution's PI; the total requested funds for each annual period for the project as a whole, and for each individual institution requesting funds, including indirect costs; and the competition to which it is being submitted.

The names of all collaborating institutions along with their PI information and total requested funding for each annual period for each institution must appear on the title page of each of the separate applications. If the requested information does not fit onto a single title page with reasonable effort, then a second title page that does not count against the proposal page limit may be added.

ABSTRACT (one page): The abstract must appear on a separate page, headed with the

proposal title and the names of all PIs, co-PIs, and collaborators, and their affiliation(s). The abstract text must contain a brief, plain-language summary of the proposed work including:

- primary project products/outputs and potential end-users;
- intended impacts, benefits, and overall outcome(s);
- the relevance to the competition's priorities; and
- the total funds requested by the proposal.

PROBLEM/OPPORTUNITY STATEMENT: Identify the problem and/or the opportunity, and its relevance to one or more of the competition's science priorities identified in Section I.B. If appropriate, concisely cite results from prior relevant research and/or previously funded NOAA projects that contributed to the proposed research concept.

PROJECT PRODUCTS/OUTPUTS: Identify the primary planned products/outputs (e.g., instruments, sensors or observing platforms; tools, widgets, and technologies; model codes, software, or algorithms and associated documentation; published data sets or databases; reports, research-guided recommendations, or other formal summary documents; methodologies; visual displays or other graphical prototypes; inventions, patent applications, and/or licenses; audio or video products; outreach, education, and training events; websites; publications, conference papers, and presentations). If appropriate, provide the current/starting and target/project-completion readiness level (RL) with an explanation of how each level was determined. More information about NOAA Readiness Levels can be found at <https://orta.research.noaa.gov/support/readiness-levels/>

Any project outputs or products other than those required for standard progress reporting are not considered project deliverables but should still be described as key planned outputs. More information can be found under Funding Restrictions (Section IV.F).

PROJECT IMPACT/BENEFITS/OUTCOMES: Identify the planned impacts/benefits/outcomes (e.g. improvements in detection, accuracy, reliability, coverage, latency, lead time, skill, processing speed, efficiency, cost, knowledge, workforce development). Identify which specific weather enterprise group or organization is expected to be the ultimate recipient(s) and beneficiary(ies) and/or end users of these project outcomes (e.g., local weather or river forecast offices, a national operational forecast center, community code repository, a state mesonet, a commercial organization, etc.). Provide any metrics or success indicators as appropriate.

SCHEDULE: Provide a table or chart with a schedule for completing key milestones and products.

METHODS AND ACTIVITIES: Concisely describe the key activities and methods that will be conducted to successfully complete the project. This may include information on model frameworks, simulations, HPC availability, data collection, analysis, and necessary travel (associated with data collection, project meetings, testbed planning meetings, testbed experiments, and the presentation of results at scientific conferences as appropriate). Applicants are encouraged to consider contingencies in the event of scenarios that restrict travel, such as those resulting from the COVID-19 pandemic.

If applicable, the methods section should also include information on:

- Institutional Review Board (IRB): Applicants submitting proposals that involve the use of human test subjects should state so clearly in their Methods, and also include appropriate milestones in the schedule for completion of the Institutional Review Board (IRB). If the recipient seeks agency assistance conducting or sponsoring any collection of information, the recipient must obtain Office of Management and Budget (OMB) clearance;
- High-performance computing (HPC): The availability of HPC the project has access to in order to ensure success.

OUTREACH AND EDUCATION: Describe how the project team plans to share project progress and results with the scientific community and/or general public, including but not limited to, publications, presentations, website, hosting workshops, developing training materials, code repository, or other engagement activities. Also describe any activities that promote the education and field experience of undergraduate, graduate, and post-doctoral students, and/or are opportunities developed to share with students and K–12 educators, as well as any educational scholarship or internship opportunities presented by this project.

DIVERSITY, EQUITY, INCLUSION, ACCESSIBILITY (DEIA): In accordance with Executive Order 13985, which mandates a comprehensive federal approach to advance equity for all and support for underserved communities, WPO recognizes that it has a particular and unique opportunity to support NOAA's commitment to diversity and inclusion by taking an intentional step that encourages program applicants to consider diversity and inclusion as part of their scientific projects. This action has the potential to make an impact on not only the diversity and inclusion in science at NOAA, but also beyond the agency. In this section, describe how well the proposed activity broadens the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.) including, but not limited to, how the project advances the organization or institution's commitment to diversity and advances full participation of women, persons with disabilities, underrepresented minorities in science, technology, engineering, and mathematics (STEM) and other underrepresented populations in STEM. Underserved or underrepresented

populations are defined as populations sharing a particular characteristic, as well as geographic communities, that have been systematically denied a full opportunity to participate in aspects of economic, social, and civic life. If funded activities aligned with diversity and inclusion are being proposed, please include the description of those within the project narrative and budget justification. Proposals should include and will be evaluated on (among other criteria; see Section V.A), specifics on ongoing or planned project activities that encourage diversity, accessibility, and an inclusive research environment, including, but not limited to:

- utilization of educational and research partnerships with institutions serving minority and underrepresented populations (such as Minority Serving Institutions, NOAA's Educational Partnership Program with Minority Serving Institutions Cooperative Science Centers, and institutions that work in underserved communities);
- utilization of active collaborative programs seeking diversity in science, technology, engineering, and mathematics (STEM);
- involvement with existing education and outreach programs (such as the NOAA Educational Partnership Program with Minority Serving Institutions);
- the provision of accommodations and modifications to ensure equal access to employment and participation in activities for people with disabilities, the reduction or elimination of physical and attitudinal barriers to equitable opportunities, a commitment to ensuring that individuals with disabilities can independently access every outward-facing and internal activity or electronic space, and the pursuit of best practices such as universal design;
- project team or individual training, such as for awareness and prevention of sexual assault and sexual harassment (SASH); and
- any other initiatives that build the capacity of and materially foster a diverse and inclusive research team and environment.

DATA AND SOFTWARE MANAGEMENT PLANS. Proposals submitted in response to this announcement must include a Data Management Plan with details on how the data collected in the project will be made publicly available. In addition, a separate Software Management Plan is required for software developed as part of the proposed project. For research relevant to integrating DA algorithms with UFS, the proposal must commit to software development approaches in accordance with UFS and EPIC best practices. See Section VI.B., Administrative and National Policy Requirements, below for additional information on what the plans should contain. Also refer to your institution's data storing and sharing policies and regulations. The Data and Software Management Plans do not count towards the 14-page proposal limit.

OTHER ATTACHMENTS: Additional attachments described below do not count towards

the 14-page count defined above.

- Curriculum Vitae (CV): (Required) A CV of 3 pages or less for all PIs requesting funding. The CV should include a reference list of all publications and conference presentations relevant to the proposed work within at least the last three years. CVs are not required for unfunded collaborator partners.
- Letters of Support: In addition to any letters supporting by federal collaborators, optional Letters of Support from key stakeholders or potential end-users may be included.

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA). This announcement does not require any NEPA questions to be answered as part of the application. A NEPA evaluation will be completed after project selection. The applicant(s) may be required to answer additional NEPA-related questions if NOAA needs additional information beyond what is described in the proposal package.

CURRENT AND PENDING SUPPORT. Each investigator requesting funding support must submit a list that includes project title, supporting agency, funding start and end months, investigator months, total dollar value and duration. Amounts requested as part of the current proposal must be included as pending support.

BUDGET. In addition to the title page budget table and SF-424A Budget Information Form, each individual proposal must include a Budget section that includes a full Budget Table and Budget Justification. The information in the Budget Table, Budget Justification, and the SF-424A Budget Information form must be consistent. Unlike the title page, neither the Budget Table in this section nor the SF-424A should include budget information for PIs or co-Is at other institutions who may be contributing to a joint project. The Budget Narrative must include:

- a detailed itemized budget table organized by year; and
- a budget justification that demonstrates the cost is appropriate.

The budget summary should include the PI's scientific and technical support staff salaries and fringe benefits, facility requirements, computing and communications, supplies, and travel. Only include the funding requested by the institution submitting the proposal. The information in this table must exactly match the SF-424A.

Each collaborating institution should provide its own budget table, justification, and SF-424A in its application. The joint project's Lead PI should additionally include a separate summary budget table in their application that shows a breakout of the budget for all partners on the joint project in addition to the detailed budget for their own institution. Total funding requested by other institutions (including any federal institutions) must be included in the

budget summary table on the title page.

All funded investigators must assure and verify, if requested, that they will not be allocated for greater than 100% of their annual employment time should their proposal be selected for funding. NOAA will verify this requirement if the proposal is recommended for funding.

If indirect charges are included in the budget, the applicant must have an approved negotiated Indirect Cost Rate Agreement and must include it as a part of the application package. Federal or contractor salaries, materials, equipment, and travel expenses are not appropriate to classify as indirect costs. 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 Modified Total Direct Cost (MTDC; as allowable under 2 C.F.R. §200.414). The negotiation and approval of a rate is subject to the procedures required by NOAA and the Department of Commerce Standard Terms and Conditions Section B.06.

The NOAA contact for indirect or facilities and administrative costs is:

Raishan Adams, Grants Office
NOAA Grants Management Division 1325 East West Highway
9th Floor
Silver Spring, Maryland 20910
raishan.adams@noaa.gov

STANDARD FORMS. The full proposal package includes the information described above as well as the required federal forms:

Standard Form 424 - Application for Federal Assistance
Standard Form 424A - Budget Information - Non-Construction Programs
Standard Form 424B - Assurances - Non-Construction Program
Form CD-511 - Certifications Regarding Lobbying
Standard Form LLL - Disclosure of Lobbying Activities

Applicants must use the Standard Form SF-424A Budget Information-Non Construction Programs that is contained in the standard NOAA Grants and Cooperative Agreement Package. Pay careful attention to show the yearly budget breakout on page 1A of the SF 424A for multi-year proposals.

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

The new Unique Entity Identifier (UEI) has replaced the DUNS number and is now the

primary means of identifying entities registered for federal awards government-wide in the System for Award Management (SAM), which may be accessed online at <https://www.sam.gov>. The UEI is important for enhancing the quality of information available to the public as required by the Federal Funding Accountability and Transparency Act (31 U.S.C. 6101 note). If your entity is already registered in SAM, it has been assigned a UEI and is viewable in SAM. While the UEI is assigned by and viewable within SAM, applicants can also find it listed under their organization profile in Grants.gov.

To apply through Grants.gov, users will be able to download a copy of the application package, complete it offline, and then upload and submit the application via the Grants.gov site. If an applicant has problems downloading the application forms from Grants.gov, contact Customer Support at 1-800-518-4726 or support@grants.gov. Additional information about SAM registration and submitting through Grants.gov can be found in the Information Sheet attached to this announcement in Grants.gov.

D. Submission Dates and Times

Full application packages for all competitions must be submitted via Grants.gov no later than 5:00 p.m. ET on October 13th, 2023. Applications received after that time or via other means (including email) will be rejected without review. The date and time receipt indication from Grants.gov will be the basis of determining acceptance for review processing by NOAA.

Applicants are strongly encouraged not to wait until the application deadline date to begin the application process through Grants.gov. Please also consider the amount of time required by your institutional representative to process and submit your application. Plan your time accordingly to avoid being disqualified for a late submission.

In the event of a lapse in government funding availability or other extenuating circumstances that may preclude NOAA from executing the competitions in a timely manner, assume that there is no change to the regularly scheduled deadlines in this section unless a revised deadline has been announced and published on Grants.gov.

E. Intergovernmental Review

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

F. Funding Restrictions

i. Multiple Proposals. Applicants may submit more than one proposal to this competition. However, duplicate work with different federally funded projects is not permitted. If NOAA determines that identical or predominantly identical proposals have been submitted, the one that is submitted first to Grants.gov will be accepted by NOAA for consideration, and all others will be rejected without review. NOAA funding decisions for any given submitted proposal must not be contingent upon funding decisions of any other separate submitted proposal unless it is clearly identifiable as part of a collaborative project.

ii. Federal Costs. NOAA will not fund costs for federal institutions.

iii. Deliverables. NOAA cannot fund nor accept any award deliverables that would be more appropriately funded through a procurement mechanism. However, NOAA may possibly pursue such follow-on contract mechanisms with the recipient after the award ends if the project is successful and follow-on contractual work is warranted. Any proposed transitions to NOAA cannot be completed using funds awarded through this NOFO; as a result, please include planned transitions to NOAA as follow-on work and not as a deliverable for this award.

iv. Multi-Year Projects. Funding beyond the first year will be dependent upon satisfactory performance and the continued availability of funds. NOAA is not responsible for proposal preparation costs.

G. Other Submission Requirements

Full proposals should be submitted online at grants.gov. Submission information can be found in Section IV.D of this NOFO.

V. Application Review Information

A. Evaluation Criteria

1. Relevance of Proposed Project to Program Goals (Relevance, Impact and Stakeholder Support) (25 points)

Reviewers will consider the following questions:

Relevance and alignment with competition priority(ies)

- i. How clearly defined is the problem and/or opportunity?
- ii. How aligned is the proposal with the competition's priorities?

Potential impacts/benefits/outcomes

- iii. How relevant to the competition's desired outcomes are the project outputs/products?
- iv. How impactful or beneficial would this project's outcomes be, if successful?

2. Technical or Scientific Merit and Project Design (25 points)

This criterion assesses if the proposal is well-designed, technically sound and/or innovative. Reviewers will consider the following questions:

Technical /Scientific Merit

- i. How rigorous are the proposed methods and solutions?
- ii. How much does the proposed project improve technology, knowledge, or methods and advance the field of study?

Project Design

- iii. How well defined are the proposed project milestones, outputs, and timeline?
- iv. How achievable are the proposed methods and solutions, given the project milestones and timeline?

3. Qualifications of Applicants and Collaborative Environment (15 points)

This criterion assesses whether the research team possesses the necessary experience, education, training, facilities, collaboration environment, and administrative resources to accomplish the proposed project. Reviewers will consider the following questions:

Research Team Qualifications

- i. How will the research team's experience, education, training, facilities, and/or resources help accomplish the project?
- ii. How effectively has the research team demonstrated the ability or potential to conduct successful research and development?
- iii. How effectively has the research team demonstrated the ability or potential to publish peer reviewed articles and/or otherwise present or disseminate their research findings in professional and/or outreach settings?

Collaborative Environment

- iv. How effective are the proposed collaboration efforts and partnerships, and are they sufficient to accomplish the proposed project goals?

4. Project Costs (10 points)

This criterion evaluates the budget (considering both financial and time costs) to determine if it is realistic, efficient, and aligns with project needs and proposed timeline. Reviewers will consider the following questions:

- i. How reasonable, realistic, allocable, and necessary are the requested costs, and do they align with project outputs/products, outcomes/benefits, and time period?
- ii. How reasonable are the proposed staffing resources, and are they sufficient to successfully complete the proposed work?
- iii. How impactful are the potential benefits relative to the cost?
- iv. Will the project be accomplished in a cost-efficient way?

Outreach and Education (15 points)

Education, outreach, and collaboration to support the next generation of data assimilation scientists is a crucial component of the DA consortium funding opportunity. This criterion assesses whether the project provides a focused and effective education and outreach strategy. This section will be scored out of 15 points. Reviewers will consider the following questions:

- i. How well does the proposed project engage in knowledge sharing activities with the scientific community and/or the weather enterprise? Examples include peer-reviewed publications, presenting at a national conference, hosting or attending a workshop, etc.
- ii. How well does the proposal describe the management of data in the Data Management Plan? This includes data storage during the project, plans for sharing and public availability of data at the conclusion of project (with specific mention of locations), and the format of data, metadata, and documentation that will be provided with publicly available data.
- iii. How well does the proposed project engage in knowledge sharing activities with relevant stakeholders and/or the general public? This might include: hosting workshops, developing training materials, developing a website, engaging with K–12 educators and students, etc.
- iv. How well does the project proposal incorporate student involvement and

- engagement? This might include training, mentoring, scholarship, internship and/or development opportunities for students throughout their educational career.
- v. How well does the project proposal design and implement a workforce development methodology and talent pipeline for NOAA?

Diversity, Equity, Inclusion and Accessibility (10 points).

This criterion assesses the project's compliance with NOAA's policy on diversity, equity, inclusion, and accessibility (DEIA), as defined in Section IV.B.2.i, and its potential broader impact on DEIA. Collaboration with a Minority Serving Institution is a requirement. Reviewers will consider the following questions:

- i. How strong is the potential of the project outputs and outcomes to directly benefit one or more traditionally underserved and/or vulnerable populations?
- ii. How strong is the potential of this project to include, recruit, or retain traditionally underrepresented populations in the research and advancement of technology and broaden the participation of one or more traditionally underserved and/or vulnerable populations? The definition of underserved populations can be found in Section IV.B.
- iii. How well does the proposal describe how the applicants will further advance DEIA in the context of their project?
- iv. How well does the research team prioritize and advocate for DEIA throughout the proposed project? This could include how DEIA principles are interwoven into their work culture, their research group, their community, their institution, or in the preparation of the proposal.
- v. How well does the proposal provide accommodations and modifications to foster an inclusive and safe environment and ensure equal access to employment and participation in activities for people with disabilities.

B. Review and Selection Process

Once a full application package has been received, an administrative review will first be conducted to determine compliance with all submission requirements, completeness of the application, and general responsiveness to the NOAA priorities in Section I.B. If all requirements are satisfied and the application is responsive to at least one of the NOAA priorities, the application will move to the next stage of review. If not, the application will be rejected, and the PIs will be notified.

Independent peer reviews consisting of at least three subject matter experts per proposal who may be Federal and non-Federal Government employees will evaluate all compliant

applications (proposals) using the evaluation criteria specified above in Section V.A. All proposals will then be competed and ranked against each other, according to the average of the reviewer scores. These final scores for each application will be used to determine the rank order of the proposals. Final selections will be based on the rank order and Selection Factors described below in Section V.C.

Any application considered for funding may be required to address the issues raised in the evaluation of the application by the reviewers, program officer, selecting official, and/or a grants officer before a selection recommendation decision is made.

The WPO Director is the designated Selection Official for this announcement and will make the final selection recommendations to the NOAA Grants Officer.

C. Selection Factors

The merit review ratings shall provide a rank order to the selecting official for final funding recommendations. The selecting official shall recommend awards in the rank order of the review unless the applications are justified to be selected out of rank order based upon one or more of the following factors:

- Availability of funding.
- Balance/distribution of funds:
 - Geographically
 - By type of institutions
 - By type of partners
 - By research/program areas/themes
 - By project types
- Whether this project duplicates other projects funded or considered for funding by NOAA or other federal agencies.
- Program priorities and policy factors.
- Applicant's prior award performance.
- Partnerships and/or participation of targeted groups.
- Adequacy of information necessary for NOAA staff to make a NEPA determination and draft necessary documentation before recommendations for funding are made to the Grants Officer.

Project selections will be highly dependent upon annual federal budget allotments.

D. Anticipated Announcement and Award Dates

Applications should use the recommended date defined in Section II.B as the start date for their proposed project. Review of applications will occur during the 2–3 months following the full application due date. WPO anticipates that funding recommendation decisions on applications will be made in February 2024. Such decisions are contingent upon the final allocation of funds to OAR by NOAA and actions by the NOAA Grants Officer.

NOAA's Grants Management Division will normally make formal award offers approximately one month before the planned start date. Significant Congressional funding delays after the fiscal year begins, or delays in NOAA's processing of awards, may result in delays in the dates of both award recommendation decisions and the awards themselves and could result in award offers not being distributed until after the proposed project start dates.

VI. Award Administration Information

A. Award Notices

Applicants will receive notification from WPO that their application has either been recommended or not recommended for funding to the NOAA Grants Management Division immediately after completion of the review process. All applicants will receive their average scores for their application and overarching reviewer comments. Notices of recommendation for funding are not an authorization to initiate the project. Official notification of funding of the award, signed by a NOAA Grants Officer, will come typically two to three months later if approved and is the only official document that authorizes the project to begin.

B. Administrative and National Policy Requirements

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.

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

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA). If recommended for funding, applicants whose proposed projects may have an environmental impact will be asked to furnish sufficient information to assist NOAA in assessing the potential environmental consequences of supporting the project. NOAA must analyze the potential environmental impacts, as required by the National Environmental Policy Act (NEPA), for each project which seeks NOAA funding. Detailed information on NEPA can be found at the following NOAA NEPA website: <http://www.nepa.noaa.gov/>, including our NOAA Administrative order 216-6A for NEPA, http://www.corporateservices.noaa.gov/ames/administrative_orders/chapter_216/216-6A.html and the Council on Environmental Quality implementation regulations.

If needed by NOAA for NEPA assessment, applicants will be asked 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. The 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.

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, i.e., Historically Black Colleges and Universities, Hispanic-serving institutions, Tribal colleges and universities, Alaskan Native and Native Hawaiian institutions, and institutions that work with and in underserved communities. Proposals to this competition must include collaboration with at least one Minority Serving Institution. For specific information and definitions, see Section IV.B.1 of this notice.

DATA MANAGEMENT AND SHARING PLAN. As stated in NOAA's directive on data sharing (<https://nosc.noaa.gov/EDMC/PD.DSP.php>), environmental data, including socio-economic data, 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 must 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. It is recommended that data are stored in a widely-used online data archiving platform or repository.

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 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 data and information expected to be created during the course of the project;
- procedures for storing collected data during the project;
- the tentative location of shared data; 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. Other data archiving platforms are available to PIs for data publishing and sharing, including (but not limited to) Converge/DesignSafe-CI and Harvard Dataverse. The sharing of data collection instruments is also highly recommended, if appropriate and if the chosen data platforms allow the submission of methodological instrument(s) in addition to the data.

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.

Applicants 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 the 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.

SOFTWARE MANAGEMENT AND SHARING PLAN. As stated in NOAA Science Advisory Board Open Data/Open Science Subcommittee Report, this DA Consortium NOFO will take the following two open science guidelines:

- In general, software developed by NOAA and NOAA supported projects should be open source with a permissive license that encourages engagement and reuse.
- In general, research by NOAA and NOAA supported projects should be accessible and reproducible.

The definitions of open source software and reproducible research are given by the National Academy of Science study on Open Source Software (NASEM 2018) for broadening the engagement with the open science community. NOAA will engage with the DA Consortium to establish best software practices to reproduce the results.

For research relevant to integrating DA algorithms with UFS, a competitive proposal must commit to software development approaches in accordance with UFS and EPIC best practices described in the following documents.

- UFS Weather Model Code Development: <https://github.com/ufs-community/ufs->

weather-model/wiki/Making-code-changes-in-the-UFS-weather-model-and-its-subcomponents

-UFS Short-Range Weather (SRW) App Contributor's Guide: <https://ufs-srweather-app.readthedocs.io/en/develop/>

-UFS Hurricane Analysis and Forecast System (HAFS) Code Repository Governance: <https://github.com/hafs-community/HAFS/wiki/HAFS-Code-Repository-Governance>

Selected projects may be expected to participate in an annual workshop for the duration of the project, and share results with other researchers via webinars.

The Software Management Plan should also describe how the project will make newly developed software freely available and publicly accessible.

FREEDOM OF INFORMATION ACT (FOIA). If 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 FOIA. Based on information provided by the applicant, the confidentiality of the content of funded applications will be maintained to the maximum extent permitted by law.

PAPERWORK REDUCTION ACT (PRA) – This notification involves collection of information requirements subject to the Paperwork Reduction Act (PRA). Use of Standard Forms 424, 424A, 424B, and SF-LLL and CD-346 has been approved by the Office of Management and Budget (OMB) under control numbers 0348-0043, 0348-0044, 0348-0040, and 0348-0046 and 0605-0001. Notwithstanding any other provision of law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with, a collection of information subject to the requirements of PRA unless that collection of information displays a currently valid OMB control number.

SEXUAL HARASSMENT, OTHER FORMS of HARASSMENT, or SEXUAL ASSAULT. WPO will not tolerate sexual harassment, other forms of harassment or sexual assault within the agency, at awardee organizations, or anywhere WPO-funded science and education are conducted. As a primary funding agency of fundamental and applied science research in the

U.S., WPO is committed to promoting safe, productive research and education environments for current and future scientists and engineers. WPO considers the PI and any co-PI(s) identified on a WPO award to be in positions of trust. The PI and all award personnel must comport themselves in a responsible and accountable manner during the performance of award activities whether at the grantee organization, online, or conducted outside the organization, such as at field sites, or facilities, or during conferences and workshops.

Organizations that receive WPO funds are responsible for fully investigating complaints and for compliance with federal non-discrimination laws, regulations and executive orders. WPO expects all research organizations to establish and maintain clear and unambiguous standards of behavior to ensure harassment-free workplaces wherever science is conducted. A community effort is essential to eliminate sexual and other forms of harassment in science and to build a scientific workspace where people can learn, grow and thrive. For more information on NOAA's workplace and conduct expectations of financial award recipients, see <https://www.noaa.gov/organization/acquisition-grants/noaa-workplace-harassment-training-for-contractors-and-financial>.

C. Reporting

Award recipients will be required to submit project performance (technical) and financial reports via NOAA's Grants Online system. Performance reports must follow a content template and guidance provided by WPO. PIs of collaborative projects should provide an identical report from each of the separate collaborating institutions clearly identifying the work performed by each institution. All reports will be submitted on a semi-annual schedule and must be submitted no later than 30 days following the end of each 6-month period from the start date of the award. The comprehensive final report is due 120 days after the award expiration. Copies of all submitted reports will become the property of the U.S. Government.

As part of WPO's commitment to sharing research results and other accomplishments, it is anticipated that final project reports and interim summaries will be shared publicly. Grantees must mark personally/organizationally identifying information, confidential/ proprietary technology, processes, and/or financial information in these reports. Performance reporting guidance will be provided for funded projects.

While not required, project teams are encouraged to increase project and program visibility by publicly sharing progress and results throughout the course of the project. For example, a locally hosted website could be developed to display examples of product output. These visibility endeavors should be included in NOAA progress reports.

All dissemination of results, including publications and written or oral presentations, supported by this funding opportunity should acknowledge WPO and the specific program supporting the project.

The Federal Funding Accountability and Transparency Act, 31 U.S.C. 6101, 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 <https://www.fsrs.gov/> on all subawards over \$25,000. Refer to 2 CFR Parts 170.

VII. Agency Contacts

For general questions about this announcement, please contact the Federal Program Manager: Maoyi Huang (maoyi.huang@noaa.gov; 202-853-6776)

VIII. Other Information

For additional information about this funding opportunity, please see the attached Information Sheet.