A Cooperative Agreement Notice for the Goddard Earth Sciences Technology and Research II (GESTAR II)

80GSFC21R0007

October, 2020

1 Funding Opportunity Description

1.1 Introduction and Purpose

The Goddard Earth Sciences Technology and Research II (GESTAR II) studies and investigations cooperative agreement (CA)will carry out observational, experimental and theoretical research in support of NASA strategic Earth Science mission objectives relating to:

- Earth system, characterization of its components and the processes that drive them, and improving our capability to observe, model and predict its evolution.
- The informational and computational sciences related to the use of data of benefit to Earth science.
- The development of the technology required to achieve these scientific challenges.
- Encouraging maturation of products and methodologies that can benefit society.

This Cooperative Agreement will allow for substantial programmatic involvement in the form of collaboration between Goddard Space Flight Center (GSFC) and the Proposer as well as joint development of research objectives. The goal is to build and foster a focused partnership that:

- Brings together GSFC and external scientists to implement the NASA strategic goals in Earth Science.
- Builds on the capabilities and strengths of participating organizations in the Earth Science Division.
- An environment conductive to exchange of scientific ideas and interdisciplinary research.
- The stimulation of high priority and frontier scientific research.
- Provides organization and staffing flexibility to adapt to evolving research program needs.
- Increases the involvement of minority and women scientists in Earth Science research.
- Establishes an environment for open and impactful scientific research, and free professional advancement of participating GESTAR II scientists, especially for scientist with less than 10 years of experience past obtaining their Ph.D. degree.
- Facilitates access to collaborative visitors and to student talent and provides opportunities for their participation in NASA programs.
- The maximum use of available facilities and high-end computing capabilities.

The Cooperative Agreement adheres to the stipulations set forth on 51 U.S.C. § 20113(e).

1.2 NASA Safety Policy

All prospective proposers to this Cooperative Agreement Notice (CAN) are advised that the highest priority in all of NASA’s programs is safety. Safety is the freedom from those conditions that can cause death, injury, occupational illness, damage to or loss of equipment or property, or

damage to the environment. NASA's safety priority is to protect the public, astronauts and pilots, the NASA workforce (including employees working under NASA award instruments), and high value equipment and property.

1.3 Funding

The total potential amount of funding NASA expects to award through this announcement is approximately $99 million incrementally funded over five years and it is anticipated that only one (1) award will be made. The Government's obligation to make an award is contingent upon the availability of appropriated funds from which payment can be made and the receipt of a proposal that NASA determines is acceptable for award under this announcement.

1.4 Description of NASA Contributions

The GESTAR II Cooperative Agreement will focus on scientific research. GESTAR II is expected to strengthen cooperative relationship between the recipient and Government scientists in the Goddard Sciences and Exploration Directorate (SED), and will provide a vehicle to increase the involvement of the external science community in the pursuit of NASA goals.

The GESTAR II Director and administrative staff may be located at NASA GSFC. NASA's contribution to the proposed cooperative relationship under this CAN, through GESTAR II, is to coordinate and integrate the work of the individual GESTAR II teams, facilitate collaboration among the members of the SED and its international partners, and develop and implement the full scope of other SED programs and activities. NASA does this, in part, by providing structure and management to support the research and other activities of individual SED teams.

2 Award Information

2.1 Scope of the Agreement

2.1.1 Objectives

A broad and vigorous Earth Science research program in NASA is vital for the advancement of knowledge. Scientists at NASA in collaboration with outside scientists play a key role in conceiving new space missions, providing mission requirements, and achieving research objectives aimed at advancing our understanding of the Earth and its life-sustaining environment.

The GESTAR II CA is expected to strengthen cooperative relationship between the recipient and Government scientist in the Goddard Sciences and Exploration Directorate (SED), and will

provide a vehicle to increase the involvement of the external science community in the pursuit of NASA goals.

The GESTAR II recipient will conduct research collaboratively with organizational elements within the Goddard SED (Code 600). Research may involve analysis of data from operating and past missions, and modeling and design of missions planned or under development. Future research activities will evolve as a function of priorities, budgets, funding opportunities, and success of proposal submissions.

The GESTAR II recipient will maintain a free scientific research environment where challenging scientific results consistent with program goals, based on measured data and proper scientific methods are allowed, respected, and not subject to censorship.

2.1.2 SED Organizations and Research Objectives

The participating components of the SED (Code 600) that will be collaborating with the GESTAR II recipient and areas of research are identified in the following sections:

2.1.2.1 Earth Sciences Division (ESD, Code 610)

The Earth Sciences Division (ESD, Code 610) plans, organizes, evaluates, and implements a broad program of research on our planet's natural systems and processes. Major focus areas include climate change, severe weather, the atmosphere, the oceans, sea ice and glaciers, and the land surface. To study Earth from the unique perspective of space, the ESD develops and operates remote-sensing satellites and instruments. The Division analyzes observational data from these spacecrafts and makes them available to the broad science community.

The ESD organizational elements participating in GESTAR II are:

610.1 - Global Modeling and Assimilation Office

612 - Mesoscale Atmospheric Processes Laboratory

613 - Climate and Radiation Laboratory

614 - Atmospheric Chemistry and Dynamics Laboratory

615 - Cryospheric Sciences Laboratory

616 - Ocean Ecology Laboratory

617 - Hydrological Sciences Laboratory

618 - Biospheric Sciences Laboratory

619 - Terrestrial Information Systems Laboratory

61A - Geodesy and Geophysics Laboratory

The research activities described below for each organization within Code 610 are provided to demonstrate the NASA resources that will be cooperating with the GESTAR II.

2.1.2.1.1 Global Modeling and Assimilation Office (Code 610.1)

The Global Modeling and Assimilation Office (GMAO) performs research, develops Earth System Models, and data assimilation systems, and produces quasi-operational products in support of NASA's missions. The "Goddard Earth Observing System" (GEOS) family of models is used for applications across a wide range of spatial scales, from kilometers to many tens of kilometers. The modular structure of the models allows inclusion of a range of physical, chemical, and biological processes, which are chosen according to the application. GMAO's data products are provided to the instrument teams from the three EOS platforms (Terra, Aqua, and Aura), as well as to the science teams of NASA's latest space-based missions and for field campaigns. Forefront modeling studies support the planning of future missions. Advanced data assimilation studies demonstrate the impacts of NASA data types in weather prediction and other fields. NASA's historical observations are used alongside other data types to produce climate-quality datasets of the Earth System.

The thematic areas in which GMAO makes unique contributions to scientific understanding, bridging the gaps between data-/compute-intensive modeling and observations are: weather and atmospheric composition analysis and prediction; seasonal-decadal analysis and prediction; reanalysis; global mesoscale modeling; observing system science.

Additional information can be found at https://gmao.gsfc.nasa.gov.

2.1.2.1.2 Mesoscale Atmospheric Processes Laboratory (Code 612)

The Mesoscale Atmospheric Processes Laboratory conducts research to understand the physics and dynamics of atmospheric processes through the use of satellite, aircraft and surface-based remote sensing observations and computer-based simulations. Development of advanced remote sensing instrumentation (active and passive) and techniques to measure meteorological parameters in the troposphere are important activities. Key areas of investigation are cloud and precipitation systems and their environments from the scale of individual clouds and thunderstorms through mesoscale convective systems and cyclonic storms, up to the scale of the impact of these systems on regional and global climate. The processes of the interaction of the atmosphere with the land and ocean surface beneath it are also of high priority. The Laboratory plays a key science leadership role in the Global Precipitation Measurement (GPM) mission.

The research themes may be broadly categorized as aerosols and clouds, precipitation and fluxes, modeling and dynamics, atmospheric profiling, visualization programs.

Additional information can be found at https://earth.gsfc.nasa.gov/meso.

2.1.2.1.3 Climate and Radiation Laboratory (Code 613)

The Climate and Radiation Laboratory investigates atmospheric radiation, both as a driver for climate change and as a tool for the remote sensing of Earth's atmosphere and surface. The Laboratory's climate research program seeks to better understand how our planet reached its present state, and how it may respond to future drivers, both natural and anthropogenic. The Laboratory also plays an important role in conceiving, leading, and supporting the scientific investigations of various NASA instruments and satellite missions by serving as principal investigators, project scientists, algorithm developers, and science team members.

The research themes may be broadly categorized as aerosol remote sensing and modeling, climate analysis, cloud remote sensing and modeling, radiative transfer, solar radiation, surface properties, water cycle and precipitation.

Additional information can be found at https://earth.gsfc.nasa.gov/climate.

2.1.2.1.4 Atmospheric Chemistry and Dynamics Laboratory (Code 614)

The Atmospheric Chemistry and Dynamics Laboratory studies the ozone layer, tropospheric pollution, and the coupling between chemical composition and climate. One of the Laboratory's principal missions is to understand the behavior of stratospheric ozone and trace gases that influence ozone. Ozone and trace gases such as methane, nitrous oxide, and the chlorofluorocarbons profoundly influence Earth's habitability. The Laboratory also studies the processes that control the composition of Earth's troposphere, the impact of human activity on global atmospheric pollution, and the impact of climate change on future concentrations of stratospheric ozone and tropospheric gases.

The research themes include monitoring, measuring, and modeling the ozone layer, atmospheric pollution, stratospheric ozone, and trace gases (chemistry and transport); understanding important trace gas and aerosol processes and their relationships with other parts of the climate system; improving the representation of atmospheric chemistry in climate models.

Additional information can be found at https://earth.gsfc.nasa.gov/acd.

2.1.2.1.5 Cryospheric Sciences Laboratory (Code 615)

The Cryospheric Sciences Laboratory investigates Earth's ice cover and its connection to the rest of the climate system. Laboratory researchers combine comprehensive surface, aircraft, and satellite observations with sophisticated modeling to characterize the behavior of snow and ice and understand the processes at work. In addition, Laboratory scientists use their expertise in remote sensing and ice physics to explore cryospheric processes on other solar system bodies. The Laboratory collaborates with other GSFC groups such as Global Modeling and Assimilation Office, Geodesy and Geophysics, and Hydrology Labs to understand the role of the cryosphere in the global climate. Observations and models of global climate indicate that the cryosphere is highly sensitive to climate change. Consequently, advancing our understanding of the past, present and future of the cryosphere is essential to our advancing understanding of the Earth as a whole.

The research themes include monitoring, measuring, and modeling ice basics, ice sheets and glaciers, sea ice and snow; understanding important cryospheric processes and their relationships with other parts of the climate system; improving the representation of cryospheric processes in climate models.

Additional information can be found at https://earth.gsfc.nasa.gov/cryo.

2.1.2.1.6 Ocean Ecology Laboratory (Code 616)

The Ocean Ecology Laboratory conducts research on ocean ecosystems and the interactions between Earth's chemical cycles and life. The Laboratory also manages "ocean color" data from NASA satellite sensors. Sediment, dissolved chemicals, and marine microorganisms called phytoplankton affect the colors of sunlight reflected off the ocean, providing a way to monitor ocean ecosystems from orbit. The Laboratory works to ensure the accuracy of ocean-color data and make it available to users across the world. Scientists use the data to study fundamental issues such as the global distribution of phytoplankton, the storage of carbon in the ocean, and the role of the oceans in climate change. The Laboratory also participate in research cruises in collaboration with other researchers funded by NASA and assist NASA Headquarters in developing future space-based ocean color missions.

The research themes include monitoring, measuring, and modeling biological and biogeochemical ocean processes; instrument calibration and validation for ocean color remote sensing; field observation collection, maintenance, and analysis; using ocean optical observations to understand oceanic carbon cycles and their relationships with other parts of the climate system.

Additional information can be found at https://earth.gsfc.nasa.gov/ocean.

2.1.2.1.7 Hydrological Sciences Laboratory (Code 617)

The Hydrological Sciences Laboratory examines the role of water in the Earth system. Laboratory researchers strive to better understand, quantify, and analyze the hydrological cycle and to measure hydrological processes in order to improve prediction of the response of global hydrology to anthropogenic and/or natural climate change. Special emphasis is placed on land surface hydrological processes and their interactions with the atmosphere. Laboratory scientists develop remote-sensing and modeling techniques to investigate how the various components of the hydrological cycle interact over a broad range of spatial and temporal scales.

The research themes may be broadly categorized as the global water cycle; quantification, and analysis of the different components of the hydrological cycle, with particular emphasis on land surface hydrological processes and their interaction with the atmosphere; prediction of the response of global hydrology to anthropogenic and/or natural climate change; the development of hydrologic prediction systems, such as the Land Information System and the Global Land Data Assimilation System.

Additional information can be found at https://earth.gsfc.nasa.gov/hydro.

2.1.2.1.8 Biospheric Sciences Laboratory (Code 618)

The Biospheric Sciences Laboratory studies terrestrial ecosystems and their interactions with the climate system by developing and utilizing multiscale satellite remote sensing, aircraft and ground instruments to measure variables that describe the temporal and spatial dynamics of natural ecosystems. Using numerical modeling, advanced analytical techniques, and the production of integrated land data sets, members characterize and predict environmental changes due to natural and anthropogenic processes at local to global scales.

The research themes may be broadly categorized as land carbon dynamics, vegetation physiology and function, climate impacts and feedbacks, disturbance, human land use, aerosol dynamics, instrument calibration, ecologically coupled diseases.

Additional information can be found at https://earth.gsfc.nasa.gov/bio.

2.1.2.1.9 Terrestrial Information Systems Laboratory (Code 619)

The Terrestrial Information Systems Laboratory produces stable, well calibrated, and scientifically validated products from Earth observing satellites. These products fill the needs of researchers at Goddard Space Flight Center working to advance understanding of the atmosphere, hydrosphere, and biosphere on a global scale. The Laboratory partners with other federal agencies to develop and operate computing systems that provide custom products in near real-time for applied research and applications.

The research themes center on the development and improvement of near-real-time data systems that monitor natural hazards and air quality; fundamental land products that have atmospheric and instrument performance corrections; multi-decadal land products for studying global change; data product quality assurance and global product validation; precision earth location (geolocation) for polar orbiting and geostationary instruments.

Additional information can be found at https://science.gsfc.nasa.gov/earth/terrestrialinfo.

2.1.2.1.10 Geodesy and Geophysics Laboratory (Code 61A)

The laboratory performs broad research on Earth time variable and static geopotential and geomagnetic fields, Earth orientation, and surface deformation through satellite radar and laser altimetry precise positioning, pointing, ranging, timing, geolocation and calibration and validation. The laboratory is the home of the Space Geodesy Project which manages NASA's Space Geodetic Network comprised of: Very Long Baseline Interferometry (VLBI), Satellite Laser Ranging (SLR), Global Navigation Satellite System (GNSS), and the Doppler Orbitography and Radio-positioning by integrated Satellite (DORIS) system. It archives and distributes space geodesy related data sets; as well as the home to GEODYN, NASA's state-of-the-art geodetic parameter estimation and precision orbit determination system.

The research themes include Earth and planetary static and time varying gravity modeling and applications; monitoring of mass change and transport in the Earth system; tidal and sea level observation, modeling, and validation from altimetry, gravimetry, and tidal gauges; development and implementation of geodetic laser altimeter technology; contribution to the Determination of the International Terrestrial Reference Frame; high precision earth and planetary orbit determination and geodetic parameter estimation.

Additional information can be found at https://earth.gsfc.nasa.gov/geo.

2.1.2.1.11 Interdisciplinary Research

Goddard's Sciences and Exploration Directorate includes three Space Science divisions, Astrophysics (Code 660), Heliophysics (Code 670), and Solar System Exploration (Code 690). GESTAR will include and foster collaborative interdisciplinary research between the Earth Sciences and the three other science divisions in mutual areas of interest. This research would encompass discovery, exploration, monitoring, and modeling of solar and planetary phenomena that have application to Earth. Conversely, research on Earth processes and phenomena may have application to cosmological, solar, and planetary studies.

Research themes of interest include but are not limited to cosmic rays and space weather in Earth's ionosphere and magnetosphere; comparative planetary studies; solar system and extrasolar planetary atmospheres, climates, geodetic parameters, and orbits.

2.1.3 Research Activities During the Cooperative Agreement

The research to be carried out by the GESTAR II that will be funded by NASA beyond the first year of the agreement must be consistent with the Science Mission Directorate Strategic Plan and the priorities of the ESD. The specific research activities of the Goddard Science and Exploration Directorate and the ESD will evolve and depend on the strategic plan of the NASA HQ Science Mission Directorate and its implementation plan. They will depend as well on the success rate of the Goddard civil servants, in concert with the scientists of the GESTAR II, to submit winning proposals to NASA Headquarters and to other Federal Agencies. These proposals will generally be selected through a competitive peer review process. Some examples of potential areas of broader work in the future include:

a. Improved regional sub-seasonal, seasonal and longer climate forecasts.

b. Incorporating new space-based observations into the GEOS data assimilation system.

c. Observing and understanding air pollution distribution processes that impact human health and ecosystems.

d. Analyzing impacts on vegetation, soil erosion and ecosystems from wildfires and developing new instrumentation to observe and characterize these disturbances.

e. Resolving uncertainties in the Earth’s radiation budget.

f. Closing and resolving uncertainties in global and regional hydrologic cycles.

g. Improved observation and modeling of cloud microphysical processes and cloud-scale convective weather phenomena such as hailstorms.

h. Exploring the complex feedback mechanisms coupling ice sheet evolution, sea ice dynamics, and freshening of the polar oceans.

i. Quantifying the exchange and loss of ozone-depleting and greenhouse gas compounds.

j. Applying remotely sensed reflectance and color spectral data to extract changes and trends in ocean ecology.

k. Observing and understanding planetary boundary layer processes such as trace gas and water vapor fluxes and convective cloud initiation.

l. Monitoring and modeling Earth and planetary magnetic fields.

m. Improved Earth and planetary precision orbit and reference determination.

2.1.4 External Proposals by GESTAR II Scientists

GESTAR II scientists may seek funding from NASA and other Federal Agency programs as Principal Investigators. To propose and perform this funded work on-site with GSFC resources, the following policies and procedures must be observed:

- Work performed under this partnership with GSFC resources must be relevant to NASA, GSFC, and ESD strategic goals and legally permissible as determined by ESD management.

- Any requirements for on-site resources (office/lab space and equipment, employees, and IT networks, equipment, and software) must be approved in advance.

- The work has a named GSFC civil servant Co-Investigator/Institutional PI for a minimum of 0.1 FTE per program year to provide oversight of the project.

    - The funded Investigator requirement can be waived if the funding available is so small that the incremental cost associated with the additional civil servant FTEs would take the proposal out of competitive range.

    - Or the funding agency (e.g., EPA) does not fund Federal civil servants.

    - The Division Director or designee signs the waiver and there is a named GSFC civil servant collaborator.

- Laboratory and Division assessments on selected and funded proposals are paid in full each program year unless ESD management waives this requirement.

Any proposal requiring a substantial commitment from GSFC (e.g., instrument, balloon or payload development) must be coordinated with the GSFC New Business process through the SED.

2.2 Special Programs

2.2.1 Visiting Scientists

When research objectives require unique science discipline expertise or partnership with other organizations, the GESTAR II recipient may independently identify and recruit potential collaborative partners for visits up to one year, including:

- Creating joint appointments for leading researchers from other organizations;
- Recruiting scientists in specialty disciplines for specific research projects;
- Recruiting and attracting Visiting Fellows from university professors on sabbatical leave to broaden the pool of experience and creativity;
- Providing positions for scientists from other organizations to team on proposals for new initiatives.

The final selection of these potential partners will be made jointly between the recipient and GSFC.

The GESTAR II recipient shall, as appropriate and as needed, establish Visiting Scientist positions, including arrangements for salaries with home institutions and visas. The Government will coordinate logistical support through GSFC resources, such as invitational travel orders or other GSFC service contracts.

2.2.2 Post-Doctoral Researchers, Graduate Students, and Summer School Candidates

The recipient will recruit and, in conjunction with GSFC, select post-doctoral researchers and graduate student where appropriate for specific research tasks. Objectives of these positions may include:

- Providing research opportunities for high potential recent doctoral graduates to develop candidates for future research positions in NASA and university programs;
- Maintaining a graduate student program to attract high potential students to participate in GESTAR II research activities;
- Providing research opportunities for high potential post-doctoral researchers and students from under-represented groups to broaden the diversity of the hiring pool for future earth science research positions; and
- Providing science research, engineering, computer science, technician, or other scientific/technical expertise needed to directly support research activities.
- It is anticipated that the duration of these positions will be for no more than two (2) years.

The GESTAR II recipient will identify undergraduate and graduate students to participate in short-term collaborative research projects with GESTAR II and GSFC scientists over an academic semester or summer term. The final selection of these individuals will be made jointly between the recipient and GSFC.

These positions must be approved in advance by ESD, with the needs and attributes jointly developed by the recipient with ESD.

2.2.3 Short-Term Visitors

The recipient shall promote the exchange of scientific ideas and results among the GESTAR II/GSFC teams and the external scientific community through short-term (< 29 days) Government-sponsored research activities such as seminars, scientific colloquia, student research projects, and similar collaborative activities. The recipient will identify and recruit short-term visiting scientists for participation in these activities. The final selection of these individuals will be made jointly between the recipient and GSFC.

The Government will coordinate logistical support through GSFC resources, such as invitational travel orders or other GSFC service contracts.

2.3 Program Management

The proposer shall provide an efficient management structure for planning research activities with GSFC scientists; identifying, recruiting, and retaining quality research staff; and (for team proposals) for allocating and managing research work among team members. The program management should incorporate cooperative scientist employees as full members of the employer's institutional community with access to employer resources such as training, travel, awards, IT, libraries, and research support. The cyclic and competitive nature of Federal research funding requires plans and structures for bridging employees between funding streams and for enabling employees to partner with GSFC scientists to pursue long-term strategic opportunities for new instruments and missions.

2.4 Facilities

Work performed under this Cooperative Agreement will be primarily but not exclusively being performed in GSFC facilities. Office and laboratory space will be available for work performed under GESTAR II based on approved research funding.

For GESTAR II personnel working on-site, GSFC will provide office space, lab space (if needed), telephone connections, and office supplies. The Recipient must work with NASA project/program staff to ensure proper credentialing for any individuals who need access to NASA facilities and/or systems. Such individuals include U.S. citizens, lawful permanent residents ("green card" holders), and foreign nationals (those who are neither U.S. citizens nor permanent residents).

Due to increasingly restrictive NASA IT security policies, all IT hardware and software will be provided by GSFC through IT enterprise services and acquisitions contracts. This includes GESTAR II researchers working off-site but who must access NASA IT applications, networks, and non-public data systems. The GESTAR II management will assure that all Government property is managed following NASA/GSFC property management policy and procedures. They

will insure that GESTAR II researchers complete all required IT security training and uphold the Rules of Behavior for using NASA IT infrastructure.

2.5 Cancelation of the CAN

NASA reserves the right to make no award under this CAN and, in absence of program funding or any other reason, to cancel this CAN by having a notice published at Grants.gov. NASA assumes no liability for canceling the CAN or for anyone's failure to receive actual notice of cancellation. Cancellation may be followed by issuance and synopsis of a revised CAN.

2.6 Schedule

The estimated schedule for the review and selection of the proposals for this CAN is as follows:

- Proposals due January 8, 2021
- Selection and Award by March 19, 2021
- Phase-In start date is March 22, 2021
- Effective and start date of May 11, 2021

2.7 Term of the Agreement

The term of the awarded Cooperative Agreement is planned to have a five-year period of performance.

3 Eligibility Information

3.1 Eligible Applicants

Participation in this program is limited to U.S. organizations, specifically educational and not-for-profit institutions. Other NASA Centers, and other U.S. Government agencies are not eligible.

Work or research performed under a cooperative agreement resulting from this CAN must be performed within the Unites States unless required to support NASA international collaborative agreement and have prior approval by GSFC/SED. Proposals including other work or research that will be performed outside of the United States, in whole or in part, are not acceptable and will not be given further consideration for award.

3.2 Cost Sharing or Matching

If an institution of higher education, or other non-profit organization wants to receive a grant or cooperative agreement, cost sharing is not required, however, NASA can accept cost sharing if it is voluntary offered. The NASA Grant and Cooperative Agreement Manual at Section 5.7(5)(a) describes the acceptable forms of cost sharing. Any funds used for match or cost sharing must be allowable under 2 CFR 200.

4 Proposal and Submission Information

4.1 Conformance to Guidance

NASA does not have any mandatory forms or formats for preparation of responses to CANs; however, proposals shall conform to the procedural and submission guidelines covered in these instructions. Since NASA may accept proposals without discussion, proposals should initially be as complete as possible and be submitted on the proposer's most favorable terms.

In order to be considered responsive to the solicitation, a submission must, at a minimum, present a program for collaborative research to be conducted under the GESTAR II within the areas if interest delineated by the CAN; contain sufficient scientific/technical, management and cost information to permit a meaningful evaluation be signed by an official authorized to legally bind the submitting organization; not merely offer to perform standard services or to just provide computer facilities or services and not significantly duplicate a more specific, current, or pending NASA solicitation. NASA reserves the right to reject any or all proposals received in response to the CAN when such action is considered in the best interest of the Government.

4.2 Proposal Contents

4.2.1 General

Proposals for the GESTAR II must be submitted according to the instructions contained herein. Proposals shall contain as a minimum:

All Section pages shall be numbered and identified with the proposer's name, CAN number and date. Subsequent revisions, if requested, shall be similarly identified to show revision number and date. A table of contents shall be provided with figures and tables listed separately.

Section Component	Page Limitations
Proposal cover sheet	Excluded
Table of contents	Excluded

Project Summary*	Excluded
Scientific/Technical Section	25 pages
Management Section	18 pages
Cost Section	7 pages
Data Management Plan	Excluded
Key Personnel Biography (up to 10 individuals and 2 pages each)	Excluded
References	Excluded
Representations and Certifications	Excluded

** Concise abstract (100-200 words) describing the objective of the proposal effort.*

The proposal shall be submitted in Microsoft Word (Microsoft Excel for the cost charts) or editable Adobe PDF format.

Any information in excess of the page limitation will not be evaluated.

A page is defined as one side of a sheet, 8-1/2″ × 11″, with at least one-inch margins on all sides, using not smaller than 12-point type Times New Roman font. Line spacing or the amount of vertical space between lines of text shall not be less than single line (Microsoft Word's default line spacing). Character spacing shall be "Normal", not "Expanded" or "Condensed". The margins may contain headers and footers but shall not contain any quotation content to be evaluated.

All proposals submitted under this Cooperative Agreement Notice are required to submit a Data Management Plan (DMP) in accordance with the NASA Plan for Increasing Access to the Results of Scientific Research (http://www.nasa.gov/sites/default/files/files/NASA_Data_Plan.pdf). This plan must include:

- Specific data requirements and expectations;
- An example DMP or outline for the specific type of data likely to result from the funded projects; or
- A statement that a DMP is not required because of the nature of the activity (e.g., no data or proprietary or personally identifiable data are expected).

See SARA Q&A at http://science.nasa.gov/researchers/sara/faqs/dmp-faq-roses/ for more information on this plan.

4.2.2 Restrictions on Use and Disclosure of Proposal Information

Information contained in proposals is used for evaluation purposes only. Proposers should, in order to maximize protection of trade secrets or other information that is confidential or privileged, place the following notice on the title page of the proposal and specify the information subject to the notice by inserting an appropriate identification in the notice. In any event, information contained in proposals will be protected to the extent permitted by law, but NASA assumes no liability for use and disclosure of information not made subject to the notice.

Notice Restriction on Use and Disclosure of Proposal Information

The information (data) contained in [*insert page numbers or other identification*] of this proposal constitutes a trade secret and/or information that is commercial or financial and confidential or privileged. It is furnished to the Government in confidence with the understanding that it will not, without permission of the Proposer, be used or disclosed other than for evaluation purposes; provided, however, that in the event a contract (or other agreement) is awarded on the basis of this proposal the Government shall have the right to use and disclose this information (data) to the extend provided in the contract (or other agreement). This restriction does not limit the Government's right to use or disclose this information (data) if obtained from another source without restriction.

4.2.3 Scientific/Technical Approach Section of the Proposal

The Scientific/Technical Section of the proposal shall demonstrate the Proposer's capability and approach for performing the research and other activities expected as part of the GESTAR II CA. The Scientific/Technical proposal shall contain the following, at a minimum:

a. Proposals should clearly articulate the innovative research program to be pursued; relevance of the Proposer's research program to the NASA Science Mission Directorate's goals and objectives; and the specified areas in which the Team's activities will contribute to the Earth Science Division (Section 2.1.2).

b. A scientific/technical discussion identifying challenges, objectives, key scientific/technical approaches, and the expected staffing level and skill mix required to accomplish the research identified in Section 2.1.2 and the special programs listed in Section 2.2. The discussion should be detailed for the first year only, except that it should include details for specific activities that will begin in later years. The first-year discussion in the Scientific/Technical Section of the proposal should also include information for the first year's Annual Research Program Plan (ARPP). Upon award of the cooperative agreement to the successful recipient, the first-year ARPP will be included as Attachment 1 to the agreement. For the subsequent years, the discussion in the Scientific/Technical Section of

the proposal is expected to be general, to outline the Proposer's expectation of the next challenging research question and an approach for exploring their answers.

c. The proposal shall include discussion of the roles of GSFC's scientists, post-doctorates, graduate, and undergraduate students in the program and areas where collaborative research is expected. This is in support of the goal to advance scientific understanding of the Earth system through instrument technology, space-based observations, and research.

d. The proposal shall include the names and a brief biography of the key personnel (up to 10 individuals) involved in the research including their qualifications, backgrounds and experience/past accomplishments. In the case of the scientific personnel, include any relevant publications and their applicability to the Proposer's proposed research approach. These biographies should be of no more than two (2) pages long.

e. Proposers shall discuss a proposed career structure designed to attract and retain distinguished, internationally recognized Earth Science researchers, including recruitment of highly qualified personnel from other expiring agreements or innovative approaches to partnerships with other U.S. educational and not-for-profit institutions to retain access to the services of such highly qualified personnel. The Proposers shall address how the research scientists will progress their careers during the proposal period, including advances in a job title series, pay progression, and overall professional development.

4.2.4 Management Approach Section of the Proposal

The Management Approach Section of the proposal shall contain as a minimum:

a. A research effort plan focusing on programmatic, reporting, financial and administrative matters, and a discussion of the interaction of GESTAR II researchers with GSFC researchers in establishing an Annual Research Plan shall be included. If a consortium proposes on this effort, include a description of how research work will be assigned and managed among the consortium partners. Additionally, the Proposer shall describe any plans for continuity of existing research programs on-going at time of award.
b. A discussion of the internal structure of GESTAR II program management and its expected effectiveness in attracting and retaining highly qualified scientists, describing
    i. Pathways of professional advancement within GESTAR II and beyond for early career (<10 years past the Ph.D.) and mid-career (10-20 years) scientists;
    ii. The approach for incorporating GESTAR II scientists within the proposer's community and their access to Proposer's resources;
    iii. The approach supporting them in strategically-focused research efforts with GSFC scientists that have the potential for large future return on investment.

c. A discussion on how the Proposer shall manage a varying annual budget resulting from competitive proposals.
d. A discussion of how researchers from the broader science community become involved in the activities of GESTAR II. The Proposer should outline plans for attracting visitors at multiple career levels, from university professors on sabbatical to post-doctoral researchers and graduate students performing their post-doctoral and thesis/dissertation research, respectively.
e. A discussion of diversity and inclusion efforts in attracting and supporting diverse candidates for employment, visits, or research collaborations within GESTAR II. The discussion should include how the Proposer would reach out to minority serving institutions for these activities.
f. The Proposer's past performance record in the following areas will be addressed and evaluated for relevancy and quality of performance:
    i. Hiring, retaining, and supporting high quality Earth and Planetary Science researchers.
    ii. Monthly financial and quarterly research progress reporting.
g. A discussion of Proposer facilities to be used for supporting research and special programs/activities conducted in partnership with GSFC and the role of each facility to successfully complete these activities.

4.2.5 Cost Section of the Proposal

The Cost Section of the proposal must be submitted in Microsoft Excel (compatible with Excel 2016).

Proposers should identify any resources they intend to contribute in the performance of this effort. Non-monetary resources should be fully described, and financial resources should be qualified and distinguished from those resources expected to be provided by NASA.

The Cost Section of the proposal shall contain cost estimates sufficient for meaningful evaluation. For budget purposes, assume a start date of May 11, 2021. Budgets must be presented by cost elements as detailed below. If a consortium proposes on this effort, separate annual budgets are required for each partner in the consortium. Additionally, summary budgets are required which show proposed cost by consortium partner for each year of proposed research. Any assumptions used to project the costs for individual partners should be stated.

The estimated costs must be broken down for each of the first five (5) years of the Agreement, using the assumed start date May 11, 2021 to show the following:

a. Direct labor charges, labor hours, and labor costs associated with the research effort. For universities, the percentage of research time and salaries to be charged should be identified by academic year and summer effort.

b. An itemized list of permanent equipment to be acquired showing the cost of each item. Permanent equipment is any article of nonexpendable tangible personal property having a useful life of more than two (2) years, and an acquisition cost of $1,000 or more per unit.

c. A general description and total estimated cost of expendable equipment and supplies.

d. Contemplated expenditures for travel with brief description. Estimated costs should include destination, number of days, airfare, per diem and transportation.

e. Other direct costs (e.g., publications, computer costs, and insurance).

f. Cost for consulting services, if any, showing number of days, daily rate, and estimated travel/per diem costs. The need for consulting services must be fully justified.

g. A description of services or materials to be awarded by subagreement or subcontract. For awards totaling $100,000 or more, provide the following specific information:

    i. If known, the identification of the proposed subawards and an explanation of why and how the subrecipient was selected or will be selected.

    ii. Whether or not the award will be competitive and, if noncompetitive, rationale to justify the absence of competition.

    iii. The proposed acquisition price in sufficient detail to allow for meaningful evaluation.

h. Indirect costs indicating whether rates used are fixed or provisional and the time frames to which they are applicable (e.g., a fixed rate may apply until a specified date, after which the rate becomes provisional). Additionally, provide the name, address, and telephone number of the Federal Agency and official having cognizance over such matters for the organization (i.e. audit agency such as DCAA, ONR, and HHS).

4.2.6 Representations and Certifications

The Authorized Organizational Representative's (AOR) signature on the Proposal Cover Page automatically certifies that the proposing organization has read and is in compliance with the Certifications, Assurances, and Representations listed in Enclosure A.

4.3 Proposal Submission Requirements and Deadline

The Proposer shall submit its proposal via NASA's secure Large File Transfer (LFT). Electronic submissions shall not contain hidden formulas, tables, be locked, be protected or contain links to data not included in the electronic copy. All electronic submissions should be searchable and should not contain scanned documents. It is the Proposer's responsibility to ensure documents are free from virus and malware, as documents determined by NASA to contain a virus or malware will not be opened or evaluated. Significant partners for the Cost Section may submit their required proposal information separately using the instructions in this provision.

Proposers interested in submitting a proposal in response to this CAN shall request an LFT invitation email from Joel Rivera, Contract Specialist, at the following email address: Joel.Rivera@nasa.gov. Proposers must courtesy copy (cc) Michelle R. Padfield, Procurement Manager, at Michelle.R.Padfield@nasa.gov to ensure requests are accommodated timely. All proposers must submit their request for an LFT invitation to the aforementioned emails, no later than 10 calendar days prior to the proposal due date. The Government anticipates responding with an invitation to use LFT no later than 5 calendar days prior to the proposal due date.

Upon receipt of the invitation email, a Proposer's representative must click the link in the email to access the LFT website and register for an account. Email invitations with LFT links expire in 168 hours. The Proposer's representative will create his/her own password. The LFT website contains an LFT Quick Start Guide and an LFT User Guide with additional instructions. It is the Proposer's responsibility to follow instructions provided in the LFT Quick Start Guide and the LFT User Guide. After logging into LFT, the Proposer should click the Send File tab to enter the recipient's email address of Joel.Rivera@nasa.gov and a courtesy copy (cc) to Michelle.R.Padfield@nasa.gov, compose a message to the recipient, and attach files. In the "Subject" block of the "Send File" tab state "GESTAR II Proposal - Insert Company Name". Note: LFT sessions expire after 15 minutes of inactivity. Proposers are advised that notifications alerting users the session is about to expire will not be provided by the LFT system, and any changes to the email form on the Send File tab will not be saved if the session times out. If a proposer wishes to send a file over 2GB, an Accellion applet will need to be downloaded. Files can be sent up to 100 GB in total size.

Immediately after all files have been transferred and the proposal has been submitted in its entirety, the Proposer shall email the Contracting Officer with a listing of all documents that were submitted via LFT. If any problems are experienced with the LFT system (e.g. login, file transfer, etc.), please contact both LFT delivery recipients listed in the paragraph above via e-mail ASAP.

Each proposer is responsible for ensuring its proposal reaches the Government office designated in the solicitation by the time and date specified in the solicitation. To ensure timely delivery,

proposers are therefore encouraged to submit their proposals by 5:00 p.m. one working day prior to the due date specified in this RFP.

4.3.1 Communications Regarding This Solicitation

Any questions or comments regarding this Solicitation shall cite the solicitation number and be directed to the following Government representative:

Name: Joel Rivera
Email: Joel.Rivera@nasa.gov

The Government will answer relevant and appropriate questions regarding this solicitation, and post responses to those questions via the same website hosting this CAN. All proposer questions are strongly encouraged to be submitted by no later than 15 days after the CAN is released.

4.3.2 Type of Award

The Government contemplates award of one **Cooperative Agreement** resulting from this Solicitation.

4.4 Withdrawal of Proposals

Proposals may be withdrawn by the proposer at any time. Proposers are requested to notify NASA if the proposal is funded by another organization or other changed circumstances which dictate termination of evaluation. A proposal funded by another organization must be withdrawn by a proposer.

4.5 The NASA Grant and Cooperative Agreement Manual

The NASA Grant and Cooperative Agreement Manual can be accessed at:

https://prod.nais.nasa.gov/pub/pub_library/srba/documents/Grant_and_CooperativeAgreementManual.pdf

All applicants must provide the Dun and Bradstreet (D&B) Data Universal Numbering System (DUNS) number for their organization in the Cover Page of their proposal. The DUNS number is a unique nine-character identification number provided by the commercial company Dun & Bradstreet (D&B). Applicants may call D&B at 1-866-705-5711 to register and obtain DUNS number, or access the D&B website at https://www.dnb.com/us/. The process to request a DUNS number by telephone takes about 10 minutes, and is free of charge. The process to obtain a DUNS number through the website takes about fourteen (14) days, and is also free of charge.

Organizations will use the same DUNS number with every proposal submitted for a Federal grant and cooperative agreement. Note that DUNS number is site-specific.

NASA also requires the applicant's organization to be registered in the System for Award Management (SAM) database and obtain Commercial and Government Entity (CAGE) code prior to submitting a proposal. The purpose of this requirement is to help centralize information about grant recipients and provide a central location for grant recipients to change organizational information. Information for registering in SAM and online documents can be found at https://www.sam.gov. Before registering applicants and recipients should review the System for Award Management, which is also located at https://www.sam.gov. The process for obtaining a CAGE code is incorporated into the SAM registration.

5 Proposal Evaluation

5.1 Evaluation Process and Criteria

A selection decision will be made following a review of the proposal. The final decision is made by a designated NASA Source Selection Official. The GSFC Deputy Center Director is the selection official for this Cooperative Agreement.

Proposals will be evaluated for its Scientific/Technical Approach, Management Approach, and Cost. The Scientific/Technical Approach is slightly more important than Management Approach which is more important than Cost. Scientific/Technical Approach and Management Approach combined are more important than Cost.

The proposals will be evaluated based on the following criteria:

5.1.1 Scientific/Technical Approach:

a. The innovative research program to be pursued under the Cooperative Agreement; the relevance of the Proposer's research program to the NASA Science Mission Directorate's goals and objectives; and the specified areas in which the Team's activities will contribute to the Earth Science Division (Section 2.1.2) will be evaluated for reasonableness and effectiveness.

b. The scientific/technical discussion identifying challenges, objectives, key scientific/technical approaches, and the expected staffing level and skill mix required to accomplish the research identified in Section 2.1.2 and the special programs listed in Section 2.2 will be evaluated for effectiveness and efficiency. The information proposed for the first year's Annual Research Program Plan (ARPP) will be evaluated for completeness. The outline the Proposer's expectation

of the next challenging research question and an approach for exploring their answers will be evaluated for reasonableness.

c. The roles to be performed by GSFC scientists, post-doctorates, graduate and undergraduate students, and areas where collaborative research is expected will be evaluated for reasonableness and effectiveness. The approach to advance scientific understanding of the Earth system through instrument technology, space-based observations and research will be evaluated for their ability to contribute to the areas of interest to ESD.

d. The biographies of key personnel will be evaluated for their applicability to the research approach proposed. This will be accomplished by conducting an assessment of their qualifications, backgrounds and experience/past accomplishments. In the case of the scientific personnel, the evaluation will also assess the quality and breadth of relevant publications and their applicability to the Proposer's proposed research approach.

e. The proposed plans for career structure designed to attract and retain distinguished, internationally recognized Earth Science researchers, including recruitment of highly qualified personnel from other expiring agreements or innovative approaches to partnership with other U.S. educational and not-for-profit institutions to retain access to the services of such highly-qualified personnel will be evaluated for effectiveness. The evaluation will consider the thoroughness and effectiveness of the approach in addressing how the research scientists will progress in their careers during the proposal period including advances in a job title series, pay progression and overall professional development.

5.1.2 Management Approach:

a. The proposed research effort, focusing on programmatic, reporting, financial and administrative matters, and the discussion of the interaction of GESTAR II researchers with GSFC researchers in establishing the Annual Research Plan will be evaluated for efficiency and effectiveness. If a consortium proposes on this effort, the adequacy of the Proposer's approach for allocating and managing work among the partners will be assessed. Additionally, the proposed plans for continuity of existing research programs on-going at time of award will be evaluated for its efficacy in achieving NASA's goals.

b. The internal structure of the GESTAR II program management and its expected effectiveness in attracting and retaining highly qualified scientists will be evaluated for adequacy. The discussion of this structure (identified below) will be evaluated for reasonableness and effectiveness:

i. Pathways of professional advancement within GESTAR II and beyond for early career (<10 years past the Ph.D.) and mid-career (10-20 years) scientists;
ii. The approach for incorporating GESTAR II scientists within the Proposer's community and their access to Proposer's resources;
iii. The approach for supporting GESTAR II scientists in strategically focused research efforts with GSFC scientists that have the potential for future return on investment.

c. The proposed approach to manage a varying annual budget resulting from competitive proposals will be evaluated for its reasonableness.

d. The merit of the approach for researchers from the broader science community to become involved in the activities of GESTAR II, in particular, the plans for attracting university professors to spend sabbatical years at Goddard, and for attracting high potential graduate students to carry out their post-doctoral and thesis/dissertation research will be assessed for effectiveness.

e. The Proposer's diversity and inclusion efforts in attracting and supporting diverse candidates for employment, visits, or research collaborations within GESTAR-II and the discussion of how the Proposer would reach out to minority serving institutions will be evaluated for its broadness and clarity.

f. The Proposer's past performance record in the following areas will be addressed and evaluated for relevancy and quality of performance:

    i. Hiring and retaining distinguished, high quality Earth Science researchers, and;

    ii. Submission of monthly financial reporting and quarterly progress reports at the research project level

g. The evaluation will assess the relevancy and appropriateness of the facilities to be used for supporting the research and special programs/activities conducted in partnership with GSFC and the role of each facility to successfully complete these activities. This include facilities located at GSFC as well as any other facilities the Proposer may propose.

5.1.3 Cost

Proposed costs will be evaluated for completeness, including consideration of realism, reasonableness, and the relationship to the available funds. The cost realism evaluation will assess potential performance risk for unrealistic or unsupported low-cost elements and/or total cost. Cost sharing is not part of the evaluation criteria. Neither the existence of proposed voluntary cost sharing nor the amount of such cost sharing, if used, will be used as evaluation criteria for the purposes of selection for award. As a cooperative effort, proposals may include commitment of resources (financial and/or non-monetary) to contribute their unique capabilities to enhance the success of this effort.

5.2 Evaluation and Selection Process

As a matter of both policy and practice, proposals submitted to NASA are reviewed by panels composed of the Proposer's professional peers, who have been screened for conflicts of interest. Findings and Adjectival Ratings will be used for assessing the Scientific/Technical Approach, and Management Approach based on the following adjectival scale:

Adjectival Rating	Definition
Excellent	A comprehensive and thorough proposal of exceptional merit with one or more significant strengths. No deficiency or significant weakness exists.
Very Good	A proposal having no deficiency and which demonstrates overall competence. One or more significant strengths have been found, and strengths outbalance any weaknesses that exist.
Good	A proposal having no deficiency and which shows a reasonably sound response. There may be strengths or weaknesses, or both. As a whole, weaknesses not offset by strengths do not significantly detract from the proposer's response.
Fair	A proposal having no deficiency and which has one or more weaknesses. Weaknesses outbalance any strengths.
Poor	A proposal that has one or more deficiencies or significant weaknesses that demonstrate a lack of overall competence or would require a major proposal revision to correct.

NASA will evaluate the proposals by assessing strengths and weaknesses as defined below:

- Weakness – a flaw in the proposal that increases the risk of unsuccessful performance.
- Significant Weakness – a proposal flaw that appreciably increases the risk of unsuccessful performance.

- Deficiency – a material failure of a proposal to meet a Government requirement or a combination of significant weaknesses in a proposal that increases the risk of unsuccessful performance to an unacceptable level.

- Strength – a proposal area that enhances the potential for successful performance or contributes toward exceeding the requirements in a manner that provides additional value to the government (this could be associated with a process, scientific/technical approach, materials, facilities, etc.).

- Significant Strength – a proposal area that greatly enhances the potential for successful performance or contributes significantly toward exceeding the requirements in a manner that provides additional value to the government.

At the conclusion of the review process, a selection recommendation is developed by the Review Team, and submitted to the Selecting Official together with the evaluation report. In addition to the findings of the evaluation report important considerations in the selection process will be the availability of funds and programmatic balance in the context of the objectives of the CAN and/or the existing program as a whole. The Selection Official will select the highest ranked proposal as judged against the evaluation criteria, the objectives of the Cooperative Agreement programmatic considerations, and the available financial resources.

Following selection, each proposer will be notified of the disposition of their proposal and, if desired, provided the opportunity to be debriefed. The proposer that is selected will be notified in writing by the responsible NASA Procurement Office. It is important to note that, until an award is made, there is no guarantee that the recommended financial resources will be available.

5.3 Risk Analysis

NASA Grant Officers will conduct a pre-award review of risk associated with the proposer as required by 2 CFR 200.205. For all proposals selected for award, the Grant Officer will review the submitting organization's information available through multiple government-wide repositories such as the System for Award Management (SAM.gov), Federal Awardee Performance and Integrity Information System (FAPIIS), the Contractor Performance and Assessment Reporting System (CPARS), the Federal Audit Clearinghouse (FAC), USAspending.gov, and Grant Solutions Recipient Insight.

5.4 Risk Review

For any Federal award under a notice of funding opportunity, that will be greater than the simplified acquisition threshold on any Federal award under a notice of funding opportunity may

include, over the period of performance (see §200.88 Simplified Acquisition Threshold), NASA will inform applicants that:

i. Prior to making an award with a total amount of Federal share greater than the simplified acquisition threshold, NASA will review and consider any information about the applicant that is in the designated integrity and performance system accessible through beta.SAM.gov (currently FAPIIS) (see 41 U.S.C. 2313);

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

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

6 Award Administration Information

6.1 Notice of Award

As soon as possible after the selection is concluded, the Government will inform each proposer of the selection or declination of his/her proposal by electronic mail and offers a debriefing. For the selected proposer, the proposer's business office will be contacted by NASA Grants Officer, who is the only official authorized to obligate the Government regarding execution of the Cooperative Agreement. Any costs incurred by the proposer in anticipation of any award will not be reimbursed.

6.2 Administrative and National Policy Requirements

This solicitation does not invoke any special administrative or National policy requirements, nor do the awards that will be made involve any special terms and conditions that differ from NASA's general terms and conditions as given in the Grants and Cooperative Agreements Manual other than the implementation of some local policies at Goddard Space Flight Center (GSFC) for on-site performance.

6.3 Award Reporting Requirements

A quarterly scientific/technical status and business status report will be required along with an annual report and an annual budget.

Due to the estimated value of the GESTAR II CA, proposers are hereby informed about post award reporting requirements reflected in 2 CFR 200 Appendix XII – Award Terms and Condition for Recipient Integrity and Performance Matters.

6.4 Award and Intellectual Property Information

Awards resulting from a proposal will be governed by the following:

2 C.F.R. 200 *Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards (Uniform Guidance)* at http://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title02/2cfr200_main_02.tpl

2 C.F.R. 1800 NASA supplement to 2 C.F.R. 200 (open word file)
https://prod.nais.nasa.gov/pub/pub_library/srba/index.html

Federal Research Terms and Conditions (RTC)
Located at http://www.nsf.gov/awards/managing/rtc.jsp. In addition to the RTC and NASA-specific guidance, three companion resources can also be found on the website: Appendix A— Prior Approval Matrix, Appendix B—Subaward Requirements Matrix, and Appendix C—National Policy Requirements Matrix.

Grants and Cooperative Agreement Manual
https://prod.nais.nasa.gov/pub/pub_library/srba/documents/Grant_and_CooperativeAgreementManual.pdf

Intellectual Property Resulting from Awards

Data Rights: NASA wishes to disseminate data and material produced under this award as broadly as possible with minimal restrictions. While recipients are not restricted in their own use and distribution of data first produced in performance of an award, NASA's goal is to reduce restrictions on dissemination and use of data to the greatest extent possible, consistent with the terms and conditions of the award. Data rights differ based on whether data is first produced under an award or instead was developed at private expense outside the award.

"Limited Rights Data": The U.S. Government will not normally require delivery of confidential or trade secret-type technical data developed solely at private expense prior to issuance of an award, except as necessary to monitor technical progress and evaluate the potential of proposed technologies to reach specific technical and cost metrics.

Government rights in Technical Data Produced under Awards: The U.S. Government normally retains unlimited rights in technical data produced under awards, including the right to distribute to the public. However, invention disclosures may be protected from public disclosure for a reasonable time in order to allow for filing a patent application.

Invention Rights: Recipients that are Small Businesses or nonprofit organizations may elect to retain title to their inventions pursuant to the Bayh-Dole Act (35 U.S.C. § 202). Large business recipients are subject to section 20135 of the National Aeronautics and Space Act (51 U.S.C. § 20135) relating to property rights in inventions. Title to inventions made under an award by a large business recipient initially vests with NASA. However, these recipients may request a waiver to obtain title to inventions made under the award. Such a request may be made in advance of the award or within 30 days thereafter. Even if a waiver request is not made, or denied, a large business recipient may request a waiver on individual inventions made during the course of the award.

In the case of contract awards, intellectual property provisions (patent and data rights) are subject to the Federal Acquisition Regulations (FAR) and the NASA FAR Supplement (NFS).

In the case of grants and cooperative agreements, intellectual property provisions are subject to the terms and conditions in 2 CFR 200, 2 CFR 1800, and 14 CFR 1274.

6.5 Funding Restrictions

All proposed funds must be allowable, allocable and reasonable. Funds may only be used for the project. All activities charged under indirect cost must be allowed under 2 CFR 200 cost principles.

Cooperative Agreements shall not provide for the payment of fee or profit to the recipient.

Unless otherwise directed in 2 CFR 200, for changes to the negotiated indirect cost rate that occur throughout the project period, you must apply the rate negotiated for that year, whether higher or lower than at the time the budget and application was awarded.

Proposals must not include bilateral participation, collaboration, or coordination with China or any Chinese-owned company or entity, whether funded or performed under a no-exchange-of-funds arrangement.

Pre-award costs will not be reimbursed.

6.6 Access to Research

Awards issued under this Cooperative Agreement Notice must comply with the provision set forth in the NASA Plan for Increasing Access to the Results of Scientific Research (http://www.nasa.gov/sites/default/files/files/NASA_Data_Plan.pdf) including the responsibility for:

a. Submitting as approved peer-reviewed manuscripts and metadata to a designated repository.

b. Reporting publications with the annual and final progress reports.

6.7 Environmental Statement

Awards of proposals related to this CAN must comply with the National Environmental Policy Act (NEPA); thus, proposers are encouraged to plan and budget for any anticipated environmental impacts. While most research awards will not trigger action-specific NEPA review, some activities (including international actions) will.

The majority of cooperative agreement related activities are categorically excluded as research and development (R&D) projects that do not pose any adverse environmental impact. A blanket NASA Grants Record of Environmental Consideration (REC) provides NEPA coverage for these anticipated activities. Section VIII includes a questionnaire to determine whether a specific proposal falls within the Grants REC and must be completed as part of the CAN process. Activities outside of the bounding conditions of the Grants REC will require additional NEPA analysis. Examples of actions that will likely require NEPA analysis include but are not limited to: suborbital-class flights not conducted by a NASA Program Office (see Section V); activities involving ground-breaking construction/fieldwork; and certain payload activities such as the use of dropsondes.

Questions concerning environmental compliance may be addressed to Tina Norwood, NASA NEPA Manager, at tina.norwood-1@nasa.gov or (202) 358-7324.

7 Points of Contact for Further Information

Address further questions regarding this CAN to:

GESTAR II/CAN
NASA/Goddard Space Flight Center
Attn: Joel Rivera/Code 210.5
Email: Joel.Rivera@nasa.gov

8 Ancillary

NASA fosters and encourages the submission of proposals relevant to agency mission requirements by solicitations that describe areas of interest to NASA. Proposals received in response to this CAN will be used only for evaluation purposes.

NASA has included a draft of the expected Cooperative Agreement terms and conditions with three (3) proposed attachments. NASA's Goddard Space Flight Center is conducting all aspects of this CAN through selection. After a recipient is selected, the current plan is for the selection package to be sent to the NASA Shared Services Center (NSSC) for award. NASA policy requires that all grant and cooperative agreement actions be processed, awarded, managed, and administered by the NSSC so the final determination of required terms and conditions will be determined by the NSSC. GSFC will provide the NSSC any unique terms and conditions necessary to comply with on-site performance.

NASA does not allow a proposal, the contents of which are not available without restrictions from another source, or any unique ideas submitted in response to the CAN to be used as the basis of a solicitation, or in negotiation with other organizations, not is a pre-award synopsis published for individual proposals.

A solicited proposal that results in a NASA award becomes part of the record of that transaction and may be available to the public on specific request; however, information or materials that NASA and the awardees mutually agree to be of a confidential or privileged nature will be held in confidence to the extent permitted by law, including the Freedom of Information Act.

If a recipient intends to assert limited rights data or propose restricted computer software (as defined in FAR 27.404), then such data and software shall be clearly identified in the proposal.

ENCLOSURE A

Certifications, Assurances, and Representations

Certification of Compliance on Proposal Cover Page

By submitting the proposal identified in the Cover Sheet/Proposal Summary in response to this CAN, the Authorizing Official of the proposing organization as identified below:

- Certifies that the statements made in this proposal are true and complete to the best of his/her knowledge;
- Agrees to accept the obligation to comply with NASA award terms and conditions if an award is made as a result of this proposal; and
- Confirms compliance with all applicable provisions, rules, and stipulations set forth in the Certifications, Assurances, and Representations contained in this NRA or CAN. Willful provision of false information in this proposal and/or its supporting documents, or in reports required under an ensuing award, is a criminal offense (U.S.C., Title 18, Section 1001).

Assurance of Compliance with the National Aeronautics and Space Administration Regulations Pursuant to Nondiscrimination in Federally Assisted Programs

The Organization, corporation, firm, or other organization on whose behalf this assurance is made, hereinafter called "Applicant".

- Hereby acknowledges and agrees that it must comply (and require any subgrantees, recipients, successors, transferees, and assignees to comply) with applicable provisions of national laws and policies prohibiting discrimination, including but not limited to:
    - Title VI of the Civil Rights Act of 1964, as amended, which prohibits recipients of federal financial assistance from discriminating on the basis of race, color, or national origin (42 U.S.C. 2000d et seq.), as implemented by NASA Title VI regulations, 14 C.F.R. §1250.
    - As clarified by Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin

discrimination includes discrimination on the basis of limited English proficiency (LEP). To ensure compliance with Title VI, the Applicant must take reasonable steps to ensure that LEP persons have meaningful access to its programs in accordance with NASA Title VI LEP Guidance to Grant Recipients (68 Fed. Reg. 70039). Meaningful access may entail providing language assistance services, including oral and written translation, where necessary. The Applicant is encouraged to consider the need for language services for LEP persons served or encountered both in developing budgets and in conducting programs and activities. Assistance and information regarding LEP obligations may be found at http://www.lep.gov.

- Title IX of the Education Amendments of 1972, as amended, which prohibits discrimination on the basis of sex in education programs or activities (20 U.S.C. 1681 et seq.) as implemented by NASA Title IX regulations, 14 C.F.R. §1253. If the Applicant is an educational institution:

  - The Applicant is required to designate at least one employee to serve as its Title IX coordinator (14 C.F.R. §1253.135(a)).

  - The Applicant is required to notify all of its program beneficiaries of the name, office, address, and telephone number of the employee(s) designated to serve as the Title IX coordinators. (14 C.F.R. §1253.135(a)).

  - The Applicant is required to publish internal grievance procedures to promptly and equitably resolve complaints alleging illegal discrimination in its programs or activities (14 C.F.R. §1253.135(b)).

  - The Applicant is required to take specific steps to regularly and consistently notify program beneficiaries that the Applicant does not discriminate in the operation of its programs and activities (14 C.F.R. §1253.140).

- Section 504 of the Rehabilitation Act of 1973, as amended, which prohibits the Applicant from discriminating on the basis of disability (29 U.S.C. 794) as implemented by NASA Section 504 regulations, 14 C.F.R. §1251.

  - The Applicant is required to designate at least one employee to serve as its Section 504 coordinator (14 C.F.R. §1251.106(a)).

  - The Applicant is required to notify all of its program beneficiaries of the name, office, address, and telephone number of the employee(s) designated to serve as the Section 504 coordinators. (14 C.F.R. §1251.106(a)).

- The Applicant is required to publish internal grievance procedures to promptly and equitably resolve complaints alleging illegal discrimination in its programs or activities (14 C.F.R. §1251.106(b)).

- The Applicant is required to take specific steps to regularly and consistently notify program beneficiaries that the Applicant does not discriminate in the operation of its programs and activities (14 C.F.R. §1251.107).

- The Age Discrimination Act of 1975, as amended, which prohibits the Applicant from discriminating on the basis of age (42 U.S.C. 6101 et seq.) as implemented by NASA Age Discrimination Act regulations, 14 C.F.R. §1252.

The Applicant also acknowledges and agrees that it must cooperate with any compliance review or complaint investigation conducted by NASA and comply (and require any subgrantees, recipients, successors, transferees, and assignees to comply) with applicable provisions governing NASA access to records, accounts, documents, information, facilities, and staff. The Applicant must keep such records and submit to the responsible NASA official or designee timely, complete, and accurate compliance reports at such times, and in such form and containing such information, as the responsible NASA official or his designee may determine to be necessary to ascertain whether the Applicant has complied or is complying with relevant obligations and must immediately take any measure determined necessary to effectuate this agreement. The Applicant must comply with all other reporting, data collection, and evaluation requirements, as prescribed by law or detailed in program guidance.

The United States shall have the right to seek judicial enforcement of these obligations. This assurance is binding on the Applicant, its successors, transferees, and assignees, and the person or persons whose signatures appear below are authorized to sign on behalf of the Applicant.

Under penalty of perjury, the undersigned officials certify that they have read and understand their obligations as herein described, that the information submitted in conjunction with this document is accurate and complete, and that the recipient is in compliance with the nondiscrimination requirements set out above.

Certification Regarding Lobbying

No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a member of Congress, an officer or employee of Congress, or an employee of a member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a member of Congress, an officer or employee of Congress, or an employee of a member of Congress in connection with the awarding of any Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form LLL, "Disclosure Firm to Report Lobbying", in accordance with its instructions.

The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, Title 31, U.S.C. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000, and not more than $100,000 for each failure.

Certification Regarding Debarment, Suspension, and Other Responsibility Matters

Pursuant to Executive Order 12549, "Debarment and Suspension", and implemented at 2 C.F.R. §180 and §1880:

(1) The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:

(a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

(b) Have not within a three-year period preceding this proposal been convicted of or had a civil judgement rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(c) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State, or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and

(d) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State, or local) terminated for cause or default.

(2) Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

Certification of Tax Compliance

For awards exceeding $5 million, the proposer certifies it has filed the Federal tax returns required during the three years preceding this certification, has not been convicted of a criminal offense under the Internal Revenue Code of 1986, and has not, more than 90 days prior this certification, been notified of any unpaid Federal tax assessment for which the liability remains unsatisfied, unless the assessment is the subject of an installment agreement or offer in compromise that has been approved by the Internal Revenue Service (IRS) and is not in default, or the assessment is the subject of a non-frivolous administrative or judicial proceeding.

Representation Regarding Corporate Felony Convictions

If a corporation, the prospective recipient represents that it has not been convicted, or had an officer or agent acting on behalf of the corporation convicted, of a felony criminal violation under a Federal law within the preceding 24 months.

Representation Regarding Unpaid Corporate Tax Liabilities

If a corporation, the prospective recipient represents that it has no unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability; unless an agency has considered suspension or debarment of the corporation and made a determination that this further action is not necessary to protect the interests of the Government.

Representation Regarding Restrictions on Reporting Waste, Fraud, and Abuse

The prospective recipient represents that it does not and will not require employees or its recipients – who seek to report fraud, waste, or abuse – to sign internal confidentiality agreements or statements prohibiting or otherwise restricting such employees or recipients from lawfully reporting such waste, fraud, or abuse to a designated investigative or law enforcement representative of a federal department or agency authorized to receive such information.

Prohibition on Contracting for Certain Telecommunications and Video Surveillance Services or Equipment

(a) *Definitions.* As used in this clause—

Backhaul means intermediate links between the core network, or backbone network, and the small subnetworks at the edge of the network (*e.g.*, connecting cell phones/towers to the core telephone network). Backhaul can be wireless (*e.g.*, microwave) or wired (*e.g.*, fiber optic, coaxial cable, Ethernet).

Covered foreign country means The People's Republic of China.

Covered telecommunications equipment or services means—

(1) Telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities);

(2) For the purpose of public safety, security of Government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities);

(3) Telecommunications or video surveillance services provided by such entities or using such equipment; or

(4) Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

Critical technology means—

(1) Defense articles or defense services included on the United States Munitions List set forth in the International Traffic in Arms Regulations under subchapter M of chapter I of title 22, Code of Federal Regulations;

(2) Items included on the Commerce Control List set forth in Supplement No. 1 to part 774 of the Export Administration Regulations under subchapter C of chapter VII of title 15, Code of Federal Regulations, and controlled—

(i) Pursuant to multilateral regimes, including for reasons relating to national security, chemical and biological weapons proliferation, nuclear nonproliferation, or missile technology; or

(ii) For reasons relating to regional stability or surreptitious listening;

(3) Specially designed and prepared nuclear equipment, parts and components, materials, software, and technology covered by part 810 of title 10, Code of Federal Regulations (relating to assistance to foreign atomic energy activities);

(4) Nuclear facilities, equipment, and material covered by part 110 of title 10, Code of Federal Regulations (relating to export and import of nuclear equipment and material);

(5) Select agents and toxins covered by part 331 of title 7, Code of Federal Regulations, part 121 of title 9 of such Code, or part 73 of title 42 of such Code; or

(6) Emerging and foundational technologies controlled pursuant to section 1758 of the Export Control Reform Act of 2018 (50 U.S.C. 4817).

Interconnection arrangements means arrangements governing the physical connection of two or more networks to allow the use of another's network to hand off traffic where it is ultimately

delivered (*e.g.,* connection of a customer of telephone provider A to a customer of telephone company B) or sharing data and other information resources.

Reasonable inquiry means an inquiry designed to uncover any information in the entity's possession about the identity of the producer or provider of covered telecommunications equipment or services used by the entity that excludes the need to include an internal or third-party audit.

Roaming means cellular communications services (*e.g.,* voice, video, data) received from a visited network when unable to connect to the facilities of the home network either because signal coverage is too weak or because traffic is too high.

Substantial or essential component means any component necessary for the proper function or performance of a piece of equipment, system, or service.

(b) *Prohibition.* (1) Section 889(a)(1)(A) of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Pub. L. 115-232) prohibits the head of an executive agency on or after August 13, 2019, from procuring or obtaining, or extending or renewing a contract to procure or obtain, any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. The Recipient is prohibited from providing to the Government any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system, unless an exception at paragraph (c) of this clause applies or the covered telecommunication equipment or services are covered by a waiver described in FAR 4.2104.

(2) Section 889(a)(1)(B) of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Pub. L. 115-232) prohibits the head of an executive agency on or after August 13, 2020, from entering into a contract, or extending or renewing a contract, with an entity that uses any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system, unless an exception at paragraph (c) of this clause applies or the covered telecommunication equipment or services are covered by a waiver described in FAR 4.2104. This prohibition applies to the use of covered telecommunications equipment or services, regardless of whether that use is in performance of work under a Federal contract.

(c) *Exceptions.* This clause does not prohibit recipients from providing—

(1) A service that connects to the facilities of a third-party, such as backhaul, roaming, or interconnection arrangements; or

(2) Telecommunications equipment that cannot route or redirect user data traffic or permit visibility into any user data or packets that such equipment transmits or otherwise handles.

(d) *Reporting requirement.* (1) In the event the Recipient identifies covered telecommunications equipment or services used as a substantial or essential component of any system, or as critical technology as part of any system, during contract performance, or the Recipient is notified of such by a subrecipient at any tier or by any other source, the Recipient shall report the information in paragraph (d)(2) of this clause to the Contracting Officer, unless elsewhere in this contract are established procedures for reporting the information; in the case of the Department of Defense, the Recipient shall report to the website at *https://dibnet.dod.mil.* For indefinite delivery contracts, the Recipient shall report to the Contracting Officer for the indefinite

delivery contract and the Contracting Officer(s) for any affected order or, in the case of the Department of Defense, identify both the indefinite delivery contract and any affected orders in the report provided at *https://dibnet.dod.mil*.

(2) The Recipient shall report the following information pursuant to paragraph (d)(1) of this clause:

(i) Within one business day from the date of such identification or notification: The contract number; the order number(s), if applicable; supplier name; supplier unique entity identifier (if known); supplier Commercial and Government Entity (CAGE) code (if known); brand; model number (original equipment manufacturer number, manufacturer part number, or wholesaler number); item description; and any readily available information about mitigation actions undertaken or recommended.

(ii) Within 10 business days of submitting the information in paragraph (d)(2)(i) of this clause: Any further available information about mitigation actions undertaken or recommended. In addition, the Recipient shall describe the efforts it undertook to prevent use or submission of covered telecommunications equipment or services, and any additional efforts that will be incorporated to prevent future use or submission of covered telecommunications equipment or services.

(e) *Subcontracts.* The Recipient shall insert the substance of this clause, including this paragraph (e) and excluding paragraph (b)(2), in all subcontracts and other contractual instruments, including subcontracts for the acquisition of commercial items.

(End of Term and Condition)

Covered Telecommunications Equipment or Services-Representation

(a) *Definitions.* As used in this provision, "covered telecommunications equipment or services" has the meaning provided in the clause 52.204-25, Prohibition on Contracting for Certain Telecommunications and Video Surveillance Services or Equipment.

(b) *Procedures.* The Proposer shall review the list of excluded parties in the System for Award Management (SAM) (https://www.sam.gov) for entities excluded from receiving federal awards for "covered telecommunications equipment or services".

(c) *Representation.* The Proposer represents that it □ does, □ does not provide covered telecommunications equipment or services as a part of its offered products or services to the Government in the performance of any contract, subcontract, or other contractual instrument.

(End of provision)

Note: Procurement personnel may obtain updates at time of award if needed. Procurement personnel will also obtain any outdated certifications needed on an annual basis (e.g., at time of annual funding).