1. Scope of the Program

1.1 Introduction

The primary objective of the Advancing Collaborative Connections for Earth System Science (ACCESS) program is to enhance, extend, and improve existing components of NASA's distributed and heterogeneous data and information systems infrastructure. NASA's Earth science data systems, comprised of both core and community elements, directly support agency science and applied science goals and objectives. ACCESS projects increase the interconnectedness and reuse of key information technology software, techniques, and services underpinning the advancement of Earth science research.

The ACCESS program supports the deployment of data and information capabilities that enable the freer movement of data and information within our distributed environment of providers and users. This often requires the utilization of tools and services to aid in measurable improvements of Earth science data access and data usability. Awarded projects are expected to augment NASA's heterogeneous data system components by leveraging these proven information technologies in order to rapidly deploy data system services that bridge specific gaps within the agency's Earth science information systems.

The ACCESS program seeks to deploy and reuse existing technological solutions in the support of Earth science data and information needs. The use of mature technologies and practices helps to lower the overall project risk of system deployment, while making these new capabilities readily available to research and applied science communities. Proposals, therefore, offering substantively new IT development efforts or those carrying significant risk due to the immaturity of the technical components are not recommended for submission to this ACCESS solicitation. Awarded project work plans must focus on the use of higher TRL (technology readiness level) technology components (generally TRL 7 and above). The program encourages targeted solutions to current data access and data usability issues by supplying new tools or services to our Earth science research community.

This ACCESS solicitation is not a duplicative call for activities described in other ROSES-2009 solicitations, including Earth science research and science data product generation under the MEaSUREs solicitation (Appendix A.35), integrated system solutions and solution network development through the Decision Support through Earth Science Research Results solicitation (Appendix A.30), education-related activities funded through the New Investigator Program in Earth Science (Appendix A.33), or information systems development solicited through the Advanced Information Systems Technology program (Appendix A.38). Proposers should carefully consider your planned work in relation to the the ACCESS program guidelines before submitting.

1.2 Scope of the Program

NASA's Earth Science Division actively promotes a distributed and heterogeneous data and information system architecture to support the growing demands and needs of a diverse and increasingly IT-sophisticated Earth science user community. Future missions being developed through NASA's Earth Systematic Mission Office will add significantly to the need for robust tools and services capable of being repurposed and extended to meet new requirements. While many of these Decadal Survey missions will not be in operation for some time, NASA's data systems development in this ACCESS program will continue to be future looking so that new missions once deployed are supported by robust data systems tools and services.

Pursuant to these ACCESS program goals, the following areas of interest are being solicited in this 2009 announcement. Proposers should note that data system technologies and services falling outside these areas will be deemed non-responsive to this call.

- Improving Earth science user access to web services and service registries:

  Users searching and using NASA Earth science data systems often do not have broad knowledge of services that may be available pertinent to their data of interest. Many web-based services have been created that are of direct applicability to Earth science research and applied science uses. Many of these services, however, are not easily discoverable or are exposed through very limited access points.

  The ACCESS program seeks proposals that address this information gap by providing the means for users to discover and use services being made available by NASA, other Federal agencies, academia, the private sector, and others. Proposals should detail how existing services will be discovered by users and what other available data system components will be used to bolster the persistent availability of these services in both a traditional user interactive GUI interface or those using a machine-to-machine interface.

- Improving knowledge of NASA's Earth science data quality and production legacy:

  As data systems become more distributed, while allowing users to access data from multiple sources, it becomes imperative that users have substantial information about product quality, usability, and legacy of inputs and processes to these data. NASA's data centers and associated community projects have amassed substantial amounts of information relating to the specific quality and the processing lineage of the data products offered. However, much of this information is available in separate documentation and may not automatically flow with the data delivered, nor is it included in attached metadata.

  NASA is seeking proposals that address this information deficit by helping user better interpret data product metadata, read me files, and other associated materials. Methods for adding value and exposing users to this critical data product information

are central to this solicitation. Proposers may also include methods for improving data product knowledge and use by connecting users seamlessly to available product information including science community input on best practices, known errors, and other pertinent information. Successful proposals will also describe what metrics will be established to verify the impact this enhanced data product information has on achieving science goals and supporting ongoing Earth science research.

2. Programmatic Information

2.1 Additional Proposal Requirements

All ACCESS proposals must address the following additional factors:

- The ACCESS program, while focusing on IT deployment, is centered on serving the research and applied science communities, therefore, proposal teams must include both information technology and Earth science experts.
- Proposals should be tied directly to an Earth science research issue(s) or investigations with a clear objective and work plan for technology execution and deployment.
- Proposals should clearly identify the Earth science focus area and/or the science application to be served by the technical work proposed.
- The period of award for these projects is two years. While in some instances an additional year work may be requested to be proposed, proposal work plans and deliverables described must be limited to two years.
- Work plans must include the current state of practice/application for the tool or service proposed and identify the improvements or augmentation that will result from the two year ACCESS award.
- If the proposal is leveraging or extending past work funded by the ACCESS program, the relevancy to this ACCESS solicitation should be made clear.
- Proposals submitted in response to this solicitation must provide an operations concept for continuance of the tools and services developed for the ACCESS program (see below).
- Proposers should review the Earth Science Data Rights and Related Issues document (http://nasascience.nasa.gov/earth-science/earth-science-data-centers/data-and-information-policy/) and where applicable include plans for the future state of their information system software rights.
- Proposals must address how effective the total life-cycle cost of development and maintenance is, and whether the design is appropriate to usage for the targeted users.

2.2 Participation in Earth Science Data System Working Groups

Proposals selected by the ACCESS program are required to have representation on at least one Earth Science Data System Working Group (ESDSWG). Proposals should include a brief statement detailing which of the working groups the team will be participating in and what expertise the member(s) will bring. Proposals should budget a

quarter-time (.25) FTE for these activities (see http://esdswg.gsfc.nasa.gov/ for additional information). Proposals should also include a small travel budget for the annual ESDSWG joint meeting. Note, this is an ACCESS program requirement and thus is not subject to project waivers or negotiation.

2.3 Persistence of ACCESS Tools and Services

The ACCESS program awards are intended to help bear the costs of technological deployment of needed tools and services rather than as an ongoing funding source for the maintenance of these tools and services. It is critical that proposals address the tool or service life cycle and means for continued operation once ACCESS deployment resources end. (The argument for simplicity of tools and services goes beyond ease of usability to low maintenance costs for persistence.) NASA recognizes that the use of COTS (commercial-off-the-shelf) and GOTS (government-off-the-shelf) software, software developed through open source licensing, and other "freeware," are of equal consideration for use in ACCESS projects as appropriate to the particular tool/service. While it is not always possible to plan with certainty the life cycle of these technologies, proposers must address the likely scenario and make a case for the utility and uptake of these tools and services by the communities they are intended to serve.

2.4 Award Type and Funding

The funding vehicle for any award under this solicitation will be a Cooperative Agreement (CA). Proposers should make themselves aware of the differences between a CA and a grant. For additional information proposers can review the *NASA Grant and Cooperative Agreement Handbook* (http://ec.msfc.nasa.gov/hq/grcover.htm). Proposers are also encouraged to discuss this form of agreement with their institutions prior to submission of an ACCESS proposal.

This solicitation intends to provide approximately $3.5M per year for approximately ten to fifteen funded projects for a two-year project period of performance. All work funded under this ACCESS solicitation must be completed within two years from the CA start date. Approximately $200K - $500K per year will be provided for each ACCESS award. No awarded budget will exceed $500K per year. Proposal budgets are expected to vary commensurate with the scale and scope of the activities proposed, however, return on investment and cost reasonableness are key evaluation criteria proposers should be cognizant of when determining proposal costs. Given the two year development period, we strongly encourage narrowly focused, lower budget proposals.

2.5 Proposal Evaluation

Proposals submitted to NASA in response to this solicitation will be evaluated with respect to the criteria specified in Section C.2 of the *NASA Guidebook for Proposers*. In addition to the evaluation factors given in the *NASA Guidebook for Proposers*, the intrinsic merit of a proposal shall include the following factors:

- The extent to which the proposal addresses the additional proposal requirements given in Section 2.1; and
- The extent to which the proposed tools and services will persist as described in Section 2.3.

In addition to the evaluation factors given in the *NASA Guidebook for Proposers*, the icost realism and reasonableness of a proposal shall include the following factor:

- The effectiveness of the total life-cycle cost of development and maintenance.

3. Education and Public Outreach Opportunities

NASA policy strongly encourages participation in Education and Public Outreach (E/PO) activities by members of the science community. You may be eligible to propose a supplemental Education or Outreach effort if your research proposal is selected for award. The research award must have more than 15 months remaining at the time of submission of the supplement proposal. For additional details concerning the submission of Outreach or Education supplement proposals, please see Supplemental Outreach Awards for ROSES Investigators (Appendix E.5) and Supplemental Education Awards for ROSES Investigators (Appendix E.6).

4. Summary of Key Information

Expected total program budget for new awards	~ $3.5M
Number of new awards pending adequate proposals of merit	~10-15
Maximum duration of awards	2 years
Due date for Notice of Intent to propose (NOI)	See Tables 2 and 3 in the *Summary of Solicitation* of this NRA.
Due date for proposals	See Tables 2 and 3 in the *Summary of Solicitation* of this NRA.
Planning date for start of investigation	6 months after proposal due date.
Page limit for the central Science-Technical-Management section of proposal	15 pp; see also Chapter 2 of the *NASA Guidebook for Proposers*
Relevance to NASA	This program is relevant to the Earth science strategic goals and subgoals in NASA's *Strategic Plan*; see Table 1 and the references therein. Proposals that are relevant to this program are, by definition, relevant to NASA.
General information and overview of this solicitation	See the *Summary of Solicitation* of this NRA.

Detailed instructions for the preparation and submission of proposals	See the *NASA Guidebook for Proposers* at http://www.hq.nasa.gov/office/procurement/nraguide book/.
Submission medium	Electronic proposal submission is required; no hard copy is required. See also Section IV in the *Summary of Solicitation* of this NRA and Chapter 3 of the *NASA Guidebook for Proposers*.
Web site for submission of proposal via NSPIRES	http://nspires.nasaprs.com/ (help desk available at nspires-help@nasaprs.com or (202) 479-9376)
Web site for submission of proposal via Grants.gov	http://grants.gov (help desk available at support@grants.gov or (800) 518-4726)
Funding opportunity number for downloading an application package from Grants.gov	NNH09ZDA001N-ACCESS
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