



Earth Venture Instrument-4 SALMON-2 AO Program Element Appendix Preproposal Teleconference/WebEx

Thomas Wagner, PhD
EVI-4 Program Scientist
Science Mission Directorate
NASA Headquarters

Kevin Murphy
EVI-4 Program Executive
Science Mission Directorate
NASA Headquarters

Waldo J. Rodriguez, PhD
TMC Evaluation Lead
NASA Science Office for Mission
Assessments
NASA Langley Research Center



***Goals and Ground Rules
for the
EVI-4 PEA Pre-Proposal Workshop***

Thomas Wagner

Earth Venture Instrument-4 Program Scientist

(for Kevin Murphy

Earth Venture Instrument-4 Program Executive)

**Earth Science Division,
Science Mission Directorate**



Goals of the Workshop

- Provide an overview of the EVI-4 PEA to the SALMON-2 AO and Highlight changes from EVI-3
- Address general questions
- Offer clarity to sections of either document as required



Context and *What is a PEA?*

- EVI-4 is solicited through a *Program Element Appendix (PEA)*.
- The *EVI-4 PEA* is an Appendix of the *Second Stand Alone Missions of Opportunity Notice (SALMON-2) Announcement of Opportunity (AO)*.
- All proposers must read both the *EVI-4 PEA* and the *SALMON-2 AO* carefully, and must comply with the requirements and constraints contained within the two documents.
- The *EVI-4 PEA* replaces, supersedes and clarifies some of the information in *SALMON-2 AO*, but not all of the information required to propose is contained in the PEA.



The SALMON-2 AO and the EVI-4 PEA are the **governing** documents.

- This workshop's purpose is to provide an overview of some important aspects of them and clarify changes since EVI-3.
- In the event of a discrepancy between these documents and anything that you hear or see in today's presentations, the documents take precedence, noting that the PEA takes precedence over the SALMON-2 AO.
- Also, the solicitation is final, and will not be modified as a consequence of clarification or responses to questions.



Workshop Questions

This is your opportunity to improve your understanding of the AO language and the proposal generation and evaluation processes.

Opportunities for Q&A today are as follows:

- Attendees may submit written questions via the WebEx Chat feature to **Patrice Davis** at any time, and the speaker will briefly answer some of these at the end of their presentations.
- Oral (and written) questions may be asked at the end to entire set of presentations
- All Q&A will be captured by a note taker and posted to the EVI-4 Q&As on the EVI-4 Acquisition Homepage at <http://essp.larc.nasa.gov/EVI-4/>

All workshop presentations will also be posted on the EVI-4 Acquisition Homepage



Notices Regarding EVI-4 PEA-S

1. Watch for notices on EVI-4 Solicitation Page in NSPIRES

<https://nspires.nasaprs.com/external/solicitations/summary.do?method=init&solId={50369F77-361E-C238-DB87-C3FC0F347E73}&path=open>

Notice of Typographical Errors issued August 16, 2016:

The letter designation for several of the requirements in Program Element Appendix S, Earth Venture Instrument-4 have been corrected. They were incorrectly identified as “Requirement T-“, rather than “Requirement S-“. New letters are in bold; old, incorrect letters are struckthrough. The numbering remains unchanged.

2. Also review the Q&As at <http://essp.larc.nasa.gov/EVI-4/>



EVI-4 PEA Schedule

EVI-4 PEA release	July 27, 2016
Preproposal Teleconference	August 18, 2016
NOI due date (Required)	September 1, 2016
Last date for submission of questions	November 4, 2016
Proposals due	November 18, 2016

**Additional information at the EVI-4 Acquisition Homepage: [http://
essp.larc.nasa.gov/EVI-4](http://essp.larc.nasa.gov/EVI-4)**



GENERAL DISCLAIMER

Any costs incurred by prospective investigators in preparing submissions in response to this PEA to the SALMON-2 AO are incurred completely at the submitter's own risk.



EVI-4 PEA Overview

Thomas Wagner

Earth Venture Instrument-4 Program Scientist

**Earth Science Division,
Science Mission Directorate**



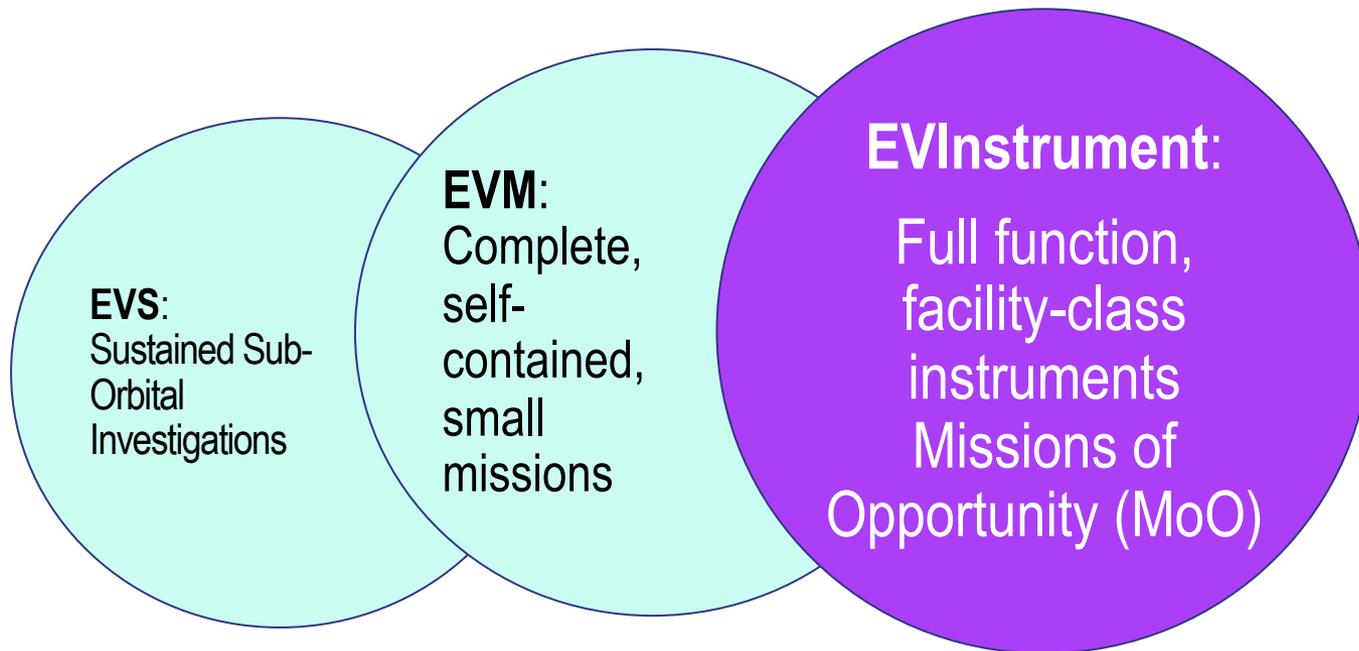
Outline

1. Overview of Earth Venture Program
2. Key info for *Earth Venture Instrument-4* (EVI-4)
PEA of the *SALMON-2 AO*.
3. Evaluation process
4. Differences between EVI-4 and EVI-3.
5. Point to documents from EVI-3 and EVI-4 for
reference in our library.



Earth Venture Program

- A sustained, successful Venture-class element is a priority from the 2007 Decadal Survey.
- Advances science/applications and promotes community involvement through frequent, regular proposal opportunities.



Allows versatile and scientifically relevant instrument development to take advantage of available space on either NASA or non-NASA satellite platforms.



Venture Class – ESD Objectives

A sustained, successful Venture-class element is a priority from the Decadal Survey

- Advances science/applications and promotes community involvement through frequent, regular proposal opportunities
- Ensures overall program scientific flexibility and responsiveness through constrained development schedules

ESD Venture-class characteristics

- Science-driven, involving sustained (> seasonal) data acquisition. Technology developments/demonstrations are not solicited.
- Frequent, regular solicitations
 - 4 year frequency for EVS-# (Suborbital) & EVM-# (Mission)
 - 18 Month frequency for EVI-# (Instruments and CubeSat investigations)
- Competitively selected, PI-led
- Cost Capped and Schedule Constrained
 - Explicit cost caps per investigation defined in each solicitation
 - <5-year development time-to-launch for space missions or delivery to platform for EVI. All science requirements must be achieved within nominal (typically 1-3 year) mission.



EVI-4 PEA: Key Info (1)

Science Scope is broad

- EVI-4 solicitation will be an open call to address science from any of the Earth Science Focus Areas
- Venture class is not intended to be a mechanism for accelerating the implementation of Decadal Survey missions; however,
- Missions whose objectives overlap those of Decadal Survey missions may be proposed, assuming they meet other criteria in terms of science, innovation, schedule, and cost.

Solicits Instrument and CubeSat Investigations that should be *complete investigations*, including science.

Partnerships are encouraged, however the stability & reliability of the partnership will be considered as a risk element in the proposal



Earth Science Focus Areas

The *2014 Science Mission Directorate Science Plan* is available through the EVI-4 Library and can also be found at <http://science.nasa.gov/about-us/science-strategy/>.

The NASA Earth science research program strives to advance earth system science and has goals in the following six *Science Focus Areas* and *Applied Sciences* as well as interdisciplinary programs:

- Atmospheric Composition
- Weather
- Carbon Cycle & Ecosystems
- Water & Energy Cycle
- Climate Variability & Change
- Earth Surface & Interior
- Further the use of earth system science research to inform decisions and provide benefits to society

The focus areas and their main aims are articulated in the *2014 Science Plan*.



EVI-4 PEA: Key Info (1)

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Solicits Instrument and CubeSat Investigations that should be *complete investigations*, including science.

Partnerships are encouraged, however the stability & reliability of the partnership will be considered as a risk element in the proposal



EVI-4 PEA: Key Info (2)

- PI-managed investigations with NASA Life Cycle Cost Caps as follows:
 - The proposed PI-Managed Mission Cost shall be no more than \$102M for Class C instrument or \$33M for Class D instrument or CubeSat based investigations in FY 2020 dollars.
 - The PI-Managed Mission Cost **excludes the integration of the instrument to the selected platform** or the integration of the CubeSat(s) to the selected launch vehicle but includes proposed science activity in Phase D and all of Phases E and F.
- Life Cycle Schedule
 - Delivery of Class C Instrument (end of Phase C) by August 31, 2022.
 - Delivery of Class D Instrument (end of Phase C) by August 31, 2021.
 - Delivery of CubeSat(s) (into Phase D) by August 31, 2021.
- Access to Space
 - NASA will arrange and specify access to space.
 - Proposals should discuss appropriate orbits and accommodation requirements for the proposed investigations.
 - Proposals may include information on any research the proposing team has done relative to potential hosting platforms. This is not a requirement for any proposal.
- Single-Step Evaluation & Selection Process



EVI-4 PEA: Key info (3) Budgets

Reminder: What is included in the PI-Managed Mission Cost?

- Cost of the Instrument (Phases A-C) and/or CubeSat(s) (Phases A-C and part of Phase D)
- Science Team support, Algorithm Development, Calibration & Validation
- **During Phase D, only support for key management and engineering staff (Project Manager, Instrument Manager, Systems Engineer, etc.) for a 2 years; 1 year for CubeSats.**
- Postlaunch instrument commissioning activity (within Phase D)
- Phase E & F – e.g., Operation & Ground processing, Data Analysis & proposed data product generation
- Any Student Collaboration cost above 1% of the PI-Managed Mission Cost

What is not part of PI-Managed Mission Cost, yet required in proposal?

- Investigation Costs during a potential gap between completion of instrument or CubeSat(s) and start of integration (planning budget up to 4 years, on a per-year basis for Instruments and planning budget up to 2 years, on a per-year basis for CubeSat(s))
- Integration and test to selected platform (within Phase D) (planning budget nominally 2 years for Instruments and 1 year for CubeSats)



EVI-4 PEA: Key info (4)

Risk Class, Data, Non-US cont, Edu&Comm

- Risk Classifications are Mission Category 3 (<\$250M, low priority), Payload Class C or Class D (see cost limits)
- Standard NASA Earth Science Data Policy for Mission data, no period of exclusive use
- Complementary Data - Each proposal shall clearly outline which additional ongoing or planned observations, if any, are required for the proposed investigation to achieve its baseline mission science investigation. The proposal shall describe how the high-level science requirements will be impacted if such observations do not exist when the proposed investigation is in operation.
- No limit on non-NASA or non-US contributions
 - Contributions to the investigation (part of hardware and/or investigators) on a no-exchange-of-funds basis is permitted with no cost limitations.
 - Enabling partnerships are encouraged, however the stability & reliability of the partnership will be considered as a risk element in the proposal
- Education and Communications Programs are not required. A communication program may be required, pending further NASA guidance for communication policy, and those costs will be outside the PI-Managed Mission Cost cap.



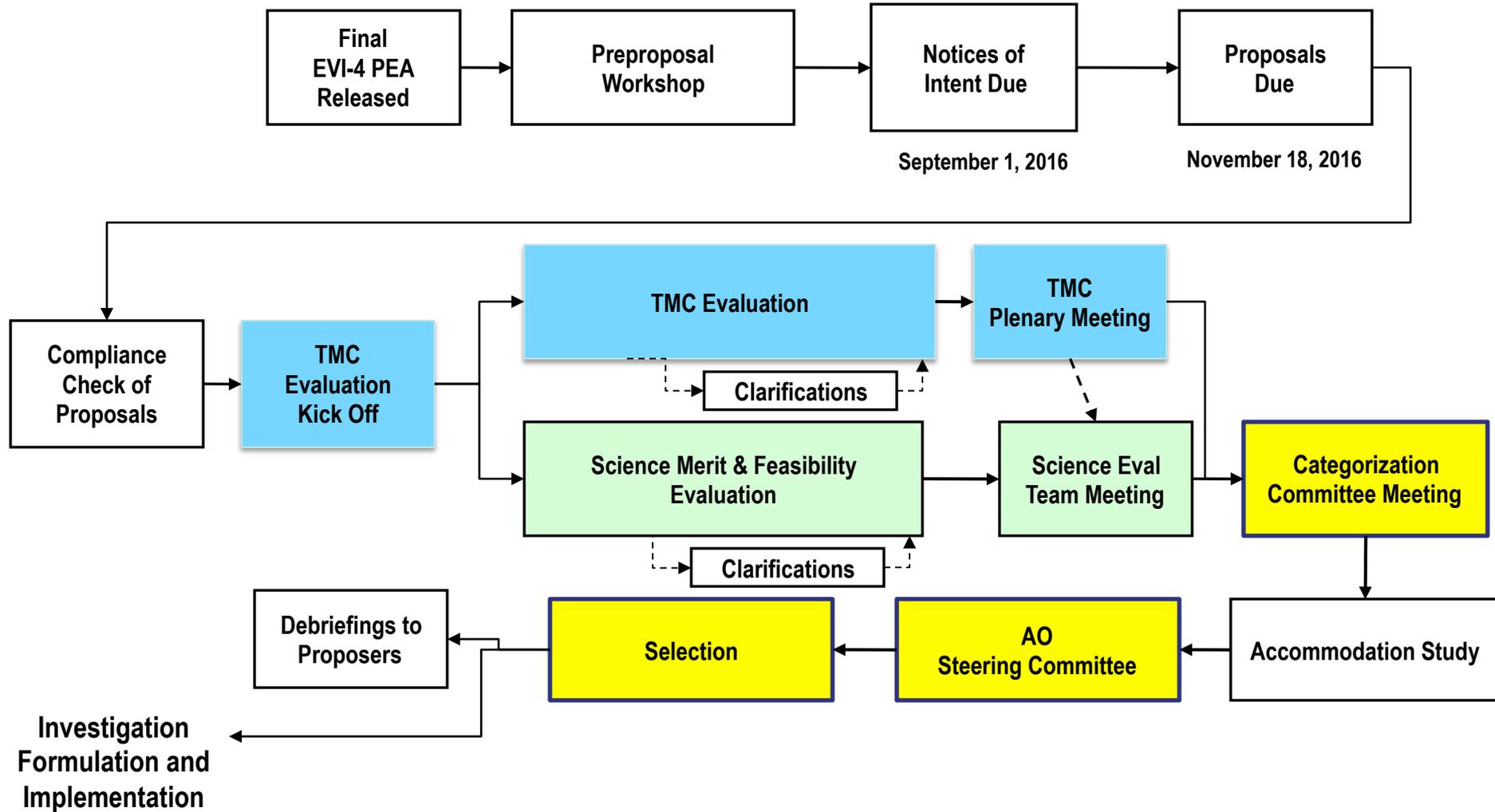
EVI-4 PEA Schedule

EVI-4 PEA release	July 27, 2016
Preproposal Teleconference	August 18, 2016
NOI due date	September 1, 2016
*Required and must include all PI, Co-Is and collaborators to facilitate planning for review process. Late changes are OK, but let me know @ Thomas.wagner@nasa.gov	
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Proposal Evaluation Process





EVI-4 PEA: Evaluation

Evaluation criteria from 7.2 of SALMON-2 AO

- Intrinsic Science Merit of the Proposed Investigation ~ 40%
- Experiment Science Implementation Merit and Feasibility of the Investigation ~30%
- Technical, Management, and Cost (TMC) Feasibility of the Investigation Implementation, including Cost Risk ~ 30%.

Places where PEA supersedes and adds requirements to SALMON-2 AO

Evaluation of *Science Merit* includes the following addition to Factor A-2:

- Factor A-2, programmatic value of the proposed investigation, also includes the extent to which the proposed science investigation addresses unique science areas that are not being addressed by other missions (both NASA and non-NASA missions) expected to be in operation five to ten years from the start of the proposed investigation.

Evaluation of *Experiment Science Implementation Merit and Feasibility* includes the following additions to Factors B-2 and B-3:

- Factor B-2, probability of technical success, also includes the maturity of the design or the demonstration of a clear path to achieve the necessary maturity.
- Factor B-3, merit of the data and/or sample analysis plan, also includes the quality of the plans for calibration and data archiving, including development of a data pipeline.



EVI-4 PEA: Clarifications

Clarifications reminder from 7.1 of SALMON-2 AO

- Proposers should be aware that during the evaluation and selection process, NASA may request clarification of specific points in a proposal, generally focused on potential major weaknesses.
 - Responses are limited in scope, and proposers cannot add to or rewrite the proposal
 - Responses are generally limited to directing NASA's attention to pertinent parts of the proposal without providing further elaboration.
 - Responses are expected within two business days. The rapid turnaround is intended to maintain review cadence as well limit the amount of work PIs put in.
- Requests for clarifications for EVI-4 may cover any part of the proposal or component of the evaluation, including science



Programmatic Assessment

NASA will take the following steps before making a recommendation for selection (Section 7 of SALMON-2 AO):

- Hold Categorization Committee meeting to rank proposals from Category 1 (recommended for selection) to Category 4 (not recommended for selection).
- Of those ranked at Category 1 or 2; NASA will:
 - Conduct an internal assessment on the likelihood that NASA will be able identify and arrange an appropriate platform for the proposed investigation.
 - Assess the extent to which the proposed science investigation addresses unique science areas that are not being addressed by (or significantly enhance) other missions (both NASA and non-NASA missions) expected to be in operation 5 to 10 years from the start of the proposed investigation.
 - Assess the proposed funding profile relative to NASA's planned budgets to determine whether NASA can commit to the funding needs of the investigation.



Differences between EVI-4 and EVI-3

The following slides highlight the most significant changes in EVI-4 from EVI-3. There are not many, and we endeavored to change as little as possible.

A complete table of changes is at:

http://essp.larc.nasa.gov/EVI-4/pdf_files/EVI4TableOfUpdatesFromEVI3Final.pdf



4.4.1 Cost Requirements and Constraints

The PI-Managed Mission Cost Caps are:

- \$102M in (FY) 2020 dollars for Class C instrument based investigations
- \$33M in (FY) 2020 dollars for Class D instrument based investigations or for CubeSat based investigations.

NASA expects to select some combination of Class C and Class D investigations based on funding availability at the time of selection, assuming all such investigations are deemed selectable.

4.4.3 Schedule Requirements and Constraints

Requirement S-17. For Class C instrument investigations, proposals shall include a development schedule that delivers an instrument for integration onto the selected platform no later than August 31, 2022. For Class D instrument or CubeSat investigations, proposals shall include a development schedule that delivers an instrument for integration onto the selected platform and/or a CubeSat(s) that can be integrated to a launch vehicle no later than August 31, 2021.



The Heritage Appendix requirements have changed to have a page limit and clarify that investigation cost information cannot be placed there, as follows:

4.7 Exceptions to General SALMON-2 Requirements

The proposal's Heritage Appendix will be limited to 30 pages. This supersedes the proposal's Heritage Appendix (proposal Appendix J.9) page limit as stated on the "Proposal Structure and Page Limits" table in page B-2 of the SALMON-2 AO. Also, note that **cost information in the heritage appendix is limited to a comparison of the cost of the heritage items to the proposed items' cost.** Cost information for the proposed investigation is only permitted in Section H.



CubeSat form factors have been limited to 6U, as follows:

4.5.3 CubeSat Investigations

Requirement S-20. All CubeSat investigations proposing compliance with the requirements in the NASA Launch Services Program *Program Level Dispenser and CubeSat Requirements Document* shall propose CubeSat form factors (size) no larger than 6U, with qualifying form factors of 1U, 1.5U, 2U, 3U and 6U. Concepts that do not comply with these standards should clearly describe how their designs are packaged and deployed. CubeSat form factors larger than 6U will not be considered.



Text regarding the NASA DAACs and data archiving has been revised to clarify the role of the DAACs in two sections, as follows:

4.2 Type of Mission of Opportunity

The investigation PI is responsible for...archiving all the proposed investigation data at a NASA-chosen Distributed Active Archive Center (DAAC) for public distribution to the scientific community, and reporting the results of the science investigation in the scientific literature.

4.5.7 NASA Earth Science Data Policy

4.5.7.1 Data Analysis

This section underwent a number of minor changes to improve clarity regarding DAAC selection, etc.



Appropriate activities for support during a potential gap in time between instrument delivery and launch have been defined and clarified, as follows:

4.4.1.1 Instrument Investigation Cost Requirements and Constraints

- The PI-Managed Mission Cost also includes the cost of the science team and of key management, instrument, and engineering staff during Phase D...a two-year duration should be assumed for budgeting purposes.
- NASA also requires proposals to include plans and planning budgets that estimate the minimum costs for the project if there is a gap between the delivery of the completed instrument (end of Phase C) and the start of integration of the instrument to the designated spacecraft (start of Phase D). Instrument and essential ground processing/algorithm/science development activities must not be planned during this gap as the instrument must be completed for delivery; only instrument maintenance activities such as storage and periodic monitoring must be planned. These "gap planning" budgets should be on a per-year basis up to a maximum of four years. The costs for both of these planning budgets are outside of the PI-Managed Mission Cost.



EVI-4 PEA: Export Control

5.1 Proposal Content Requirements

The key data associated with the electronic submission of proposals (see Section 6.2 of the SALMON-2 AO) includes questions indicating whether or not a proposal contains export-controlled information (see Sections 5.9.4 and 5.10.2 of the SALMON-2 AO). All proposers must answer these questions YES or NO when completing the electronic submission; these questions shall not be left unanswered.

All proposals must identify any export-controlled material in the proposal as instructed in Sections 5.9.4 and 5.10.2 of the SALMON-2 AO. To the extent possible, ITAR sensitive material should be organized into separate clearly marked sections.

Requirement S-29. All proposals must identify any export-controlled material in the proposal as instructed in Sections 5.9.4 and 5.10.2 of the SALMON-2 AO.



Links and Reference materials

EVI-4 PEA

The EVI-4 PEA will be accessed from the NSPIRES Website at <http://nspires.nasaprs.com/> and the EVI-4 Acquisition Homepage at <http://essp.larc.nasa.gov/EVI-4/>

Other reference documents

Available on the EVI-4 Library at http://essp.larc.nasa.gov/EVI-4/EVI-4_library.html

Review Process, Selection Criteria and other information

For detailed information on these matters refer to presentations from the EVI-2 Preproposal Workshop available at http://essp.larc.nasa.gov/EVI-2/evi-2_prepropwebex.html



Questions

Questions and Comments

All questions pertaining to the EVI-4 PEA MUST be addressed to:

Thomas Wagner, PhD
Earth Venture Instrument-4 Program Scientist

Preferably by email at:

thomas.wagner@nasa.gov
Subject line to read "EVI-4 PEA"

Or by mail at:

Science Mission Directorate
NASA Headquarters; Mail Suite 3V73;
300 E Street SW
Washington, DC 20546-0001