



# Earth Venture Instrument-1 PEA and Science Evaluation

Ken Jucks

EVI-1 Program Scientist  
Science Mission Directorate  
NASA Headquarters

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# Introduction

## Purpose of this Presentation

1. Present a short overview of the Earth Venture Instrument-1 (EVI-1) Program Element Appendix (PEA) evaluation process.
2. To answer questions.

Important Note: This PEA is to the new SALMON-2 AO which is based on SMD's Standard PI-Led Mission AO. **All proposers must read this PEA & the SALMON-2 AO carefully, and all proposals must comply with the requirements and constraints contained within the two documents.**



# 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 development/demonstration are not sufficient justifications
  - Frequent, regular solicitations
    - 4 year frequency for EVS-# (Suborbital) & EVM-# (Mission) (note PROPOSED new naming system)
    - Annual frequency for solicitations for EVI-# instruments
  - Competitively selected, PI-led
  - Cost and schedule constrained
    - Explicit total 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



# Earth Science Focus Areas

The 2010 Science Plan for NASA's Science Mission Directorate is available through the EVI-1 Library and can also be found at <http://science.nasa.gov/about-us/science-strategy/>

The NASA Earth science research program strives to advance goals in the following six Science Focus Areas and their component interdisciplinary programs:

- **Atmospheric Composition**
- **Weather**
- **Carbon Cycle & Ecosystems**
- **Water & Energy Cycle**
- **Climate Variability & Change**
- **Earth Surface & Interior**

The six focus areas and their main aims are articulated in the *2010 Science Plan*.



# EVI-1 Mission Scope & Parameters

- **Science Scope**
  - EVI-1 AO will be an open science call to address 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 with those of planned Decadal Survey missions may be proposed, assuming they meet other criteria in terms of innovation, cost, schedule, and science.
- **Evaluation Criteria**
  - Science and mission feasibility are both critical
  - intrinsic merit weighted ~ 40%, experiment implementation merit and feasibility ~30%, and TMC feasibility, including cost risk, ~ 30%.
- **Partnerships**
  - Enabling partnerships are encouraged, but the stability & reliability of the partnership will be considered as a risk element in the proposal
  - Complete investigations with the proposed instrument **shall** be proposed.



# EVI-1 PEA Overview

- **Single-Step Evaluation & Selection Process**
- **PI-managed NASA Life Cycle Cost Cap**
  - The proposed PI-Managed Mission Cost shall be no more than \$90M in FY 2014 dollars. The PI-Managed Mission Cost excludes the integration of the instrument to the selected platform, but includes proposed science activity in Phase D and all of MO/DA of Phase E.
- **Life Cycle Schedule**
  - Delivery of Instrument (end of Phase C) by September 30, 2017.
- **Access to Space**
  - NASA will arrange and specify access to space.
  - Proposals should discuss appropriate orbits for the proposed instruments/investigations.
  - Proposals may include prior research relative to potential spacecraft for integration of the proposed instruments/investigations.
- **Standard NASA Earth Science Data Policy**
- **Standard SMD Education/Public Outreach Plan (1%)**
  - Plan not required in proposal, but costs must be identified



# EVI-1 PEA Overview (continued)

- **No limit on non-NASA or non-US contributions**
  - Contribution of a portion of the investigation (part of hardware and/or investigators) on a no-exchange-of-funds basis is permitted.
  - Each proposal shall clearly outline which ongoing or planned set of 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.
  - Enabling partnerships are encouraged, but the stability & reliability of the partnership will be considered as a risk element in the proposal
- **Risk Classification**
  - Mission Category 3 (<\$250M, low priority)
  - Payload Class C
- **Applied Science**
  - Proposers to be asked to identify potential applications after selection
  - Not a selection criteria for EVI-1



# Budget Planning Guide

| Portion of the Investigation  | Within PI-Managed Costs                                 | Outside PI-Managed Costs                    |
|---|---|---|
| Phase A   | X   |   |
| Phase B   | X   |   |
| Phase C   | X   |   |
| Investigation Costs during a potential gap between completion of instrument and start of integration (planning budget up to 4 years, on a per-year basis) |   | X   |
| Science Team activity within Phase D  | X   |   |
| Key management and engineering staff during Phase D (Project manager, instrument manager, systems engineer, etc)  | X   |   |
| Integration and test to selected platform (within Phase D) (planning budget nominally 2 years)  |   | X   |
| Cal/Val planning (all phases)   | X   |   |
| Post-launch instrument commissioning activity (within Phase D)  | X   |   |
| Phase E   | X   |   |
| Phase F   | X   |   |
| Cost for access to space  |   | X   |
| Core E/PO program,  | X   |   |
| Student Collaboration (SC) (optional)   | X – any SC cost above 1% of the PI-Managed Mission Cost | X - Up to 1% of the PI-Managed Mission Cost |





# What is included in the PI managed Cost?

- Cost of the Instrument (Phases A-C)
- Science Team support
- Algorithm Development
- Calibration & validation
- Operation & Ground processing
- Data Analysis & proposed data product generation
- Key Engineering & Management Team during Phase D (nominal 2 yr period)
- Minimum Science & Management Team support for Potential gap between delivery of the Instrument & start of I&T with the Spacecraft (4 yr max)

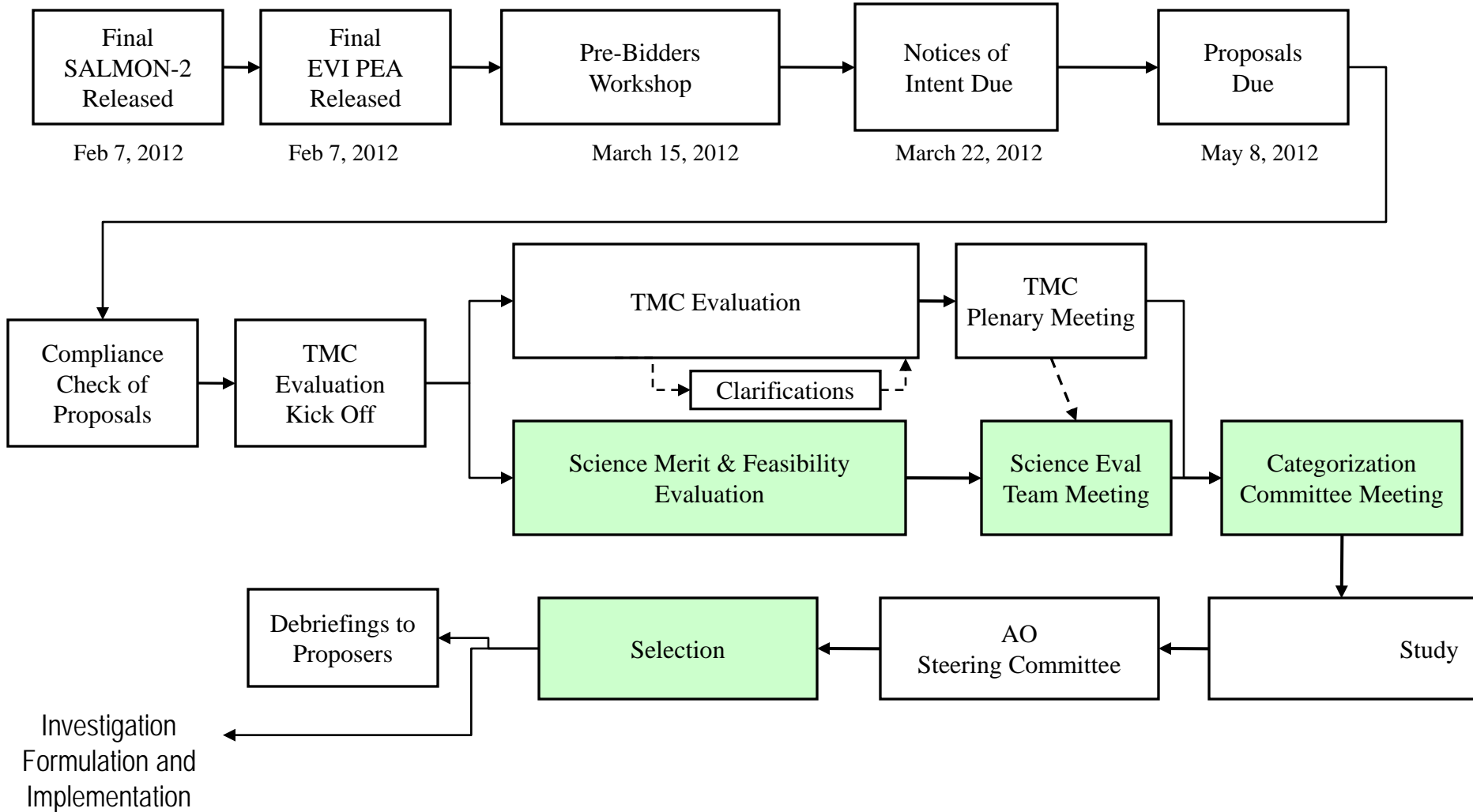


# EVI-1 AO Schedule

- SALMON-2 draft AO Release Date August 24, 2011
- SALMOM-2 comments were due Sept. 16, 2011
- EVI-1 Draft PEA Sept. 29, 2011
- EVI-1 PEA comments were due Oct. 28, 2011
- EVI-1/SALMON-2 final release Feb. 7, 2012
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- NOI due date March 22, 2012
- Proposal due date May 8, 2012



# Proposal Evaluation Flow





# Compliance

- All proposals will be initially screened to determine their compliance to requirements and constraints of this AO.
- Proposals that do not comply may be declared noncompliant and returned to the proposer without further review. A submission compliance checklist is provided in Appendix F.



- 7.2.2 Intrinsic Science, Exploration, or Technology Merit of the Proposed Investigation (SALMON-2)
  - Factor A-1. Compelling nature and priority of the proposed investigation's science, exploration, or technology goals and objectives.
  - Factor A-2. Programmatic value of the proposed investigation.
  - **Addition for EVI PEA 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 5 to 10 years from the start of the proposed investigation.
  - Factor A-3. Likelihood of science, exploration, or technology success.
  - Factor A-4. Science, exploration, or technology value of the Threshold Investigation.
- Factors A-1 through A-3 are evaluated for the Baseline Investigation assuming it is implemented as proposed and achieves technical success. Factor A-4 is similarly evaluated for the Threshold Investigation.



# EVI Evaluation Criteria

## Technical Implementation Merit

- 7.2.3 Experiment Science, Exploration, or Technology Implementation Merit and Feasibility of the Investigation
- Factor B-1. Merit of the instruments and investigation design for addressing the science, exploration, or technology goals and objectives.
- Factor B-2. Probability of technical success.
- **Additional EVI PEA 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.
- **Additional EVI PEA 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.
- Factor B-4. Science, exploration, or technology resiliency.
- Factor B-5. Probability of investigation team success.



# EVI-1 Selection Factors

- Scientific Merit (as described on previous 2 slides)
- TMC Evaluation (described in following slides)
- Results of NASA accommodation study (led by NASA HQ) of “top-rated” proposals.
  - Data to include: information within CII study, accommodation comments provided by TMC panel, formal discussions by NASA HQ with potential platform providers, NASA Space Policy guidance.
  - NASA HQ may solicit assistance from ESSPO and SOMA
- As stated in Section 7.3 of the SALMON-2 AO, the Selection Official may take into account a wide range of programmatic factors in deciding whether or not to select any proposals and in selecting among top-rated proposals, including, but not limited to, planning and policy considerations, available funding, programmatic merit and risk of any proposed partnerships, and maintaining a programmatic balance across the mission directorate(s). For this EVI selection, these factors also include the likelihood that the proposed instrument can be accommodated on a NASA-selected platform in the near future.



# The adjectival summary scores

| Summary Evaluation | Basis for Summary Evaluation   |
|--------------------|--|
| <u>Excellent</u>   | A comprehensive, thorough, and compelling proposal of exceptional merit that fully responds to the objectives of the AO as documented by numerous and/or significant strengths and having no major weaknesses. |
| <u>Very Good</u>   | A fully competent proposal of very high merit that fully responds to the objectives of the AO, whose strengths fully outbalance any weaknesses.  |
| <u>Good</u>        | A competent proposal that represents a credible response to the AO, having neither significant strengths nor weakness and/or whose strengths and weaknesses essentially balance.                               |
| <u>Fair</u>        | A proposal that provides a nominal response to the AO, but whose weaknesses outweigh any perceived strengths.  |
| <u>Poor</u>        | A seriously flawed proposal having one or more major weaknesses (e.g., an inadequate or flawed plan of research or lack of focus on the objectives of the AO).   |





# Categorization

- Category I. Well conceived and scientifically and technically sound investigations pertinent to the goals of the program and the AO's objectives and offered by a competent investigator from an institution capable of supplying the necessary support to ensure that any essential flight hardware or other support can be delivered on time and data that can be properly reduced, analyzed, interpreted, and published in a reasonable time. **Investigations in Category I are recommended for acceptance and normally will be displaced only by other Category I investigations.**
- Category II. Well-conceived and scientifically or technically sound investigations which are recommended for acceptance, but at a lower priority than Category I.
- Category III. Scientifically or technically sound investigations which require further development. Category III investigations may be funded for development and may be reconsidered at a later time for the same or other opportunities.
- Category IV. Proposed investigations which are recommended for rejection for the particular opportunity under consideration, whatever the reason.



# Questions

All questions pertaining to the EVI-1 PEA

**MUST**

be addressed to:

Kenneth W. Jucks  
Earth Venture Instrument-1 Program Scientist  
Earth Science Division  
Science Mission Directorate  
NASA Headquarters  
Washington, DC 20546  
kenneth.w.jucks@nasa.gov  
(subject line to read " EVI-1 PEA")  
202-358-0476