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# Earth Venture Instrument-1 PEA and Science Evaluation

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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 collect comments and answer questions.

Important Note: This PEA is to the draft 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.**

**This will be abbreviated, a full presentation will be given at the workshop after final PEA is released. Refer to EV-2 presentations for reference for now. ([http://essp.larc.nasa.gov/EV-2/ev2\\_Workshop.html](http://essp.larc.nasa.gov/EV-2/ev2_Workshop.html))**



# Earth Science Focus Areas

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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.
- **Life Cycle Schedule**
  - Delivery of Instrument (end of Phase C) not to exceed 5 years from selection
- **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

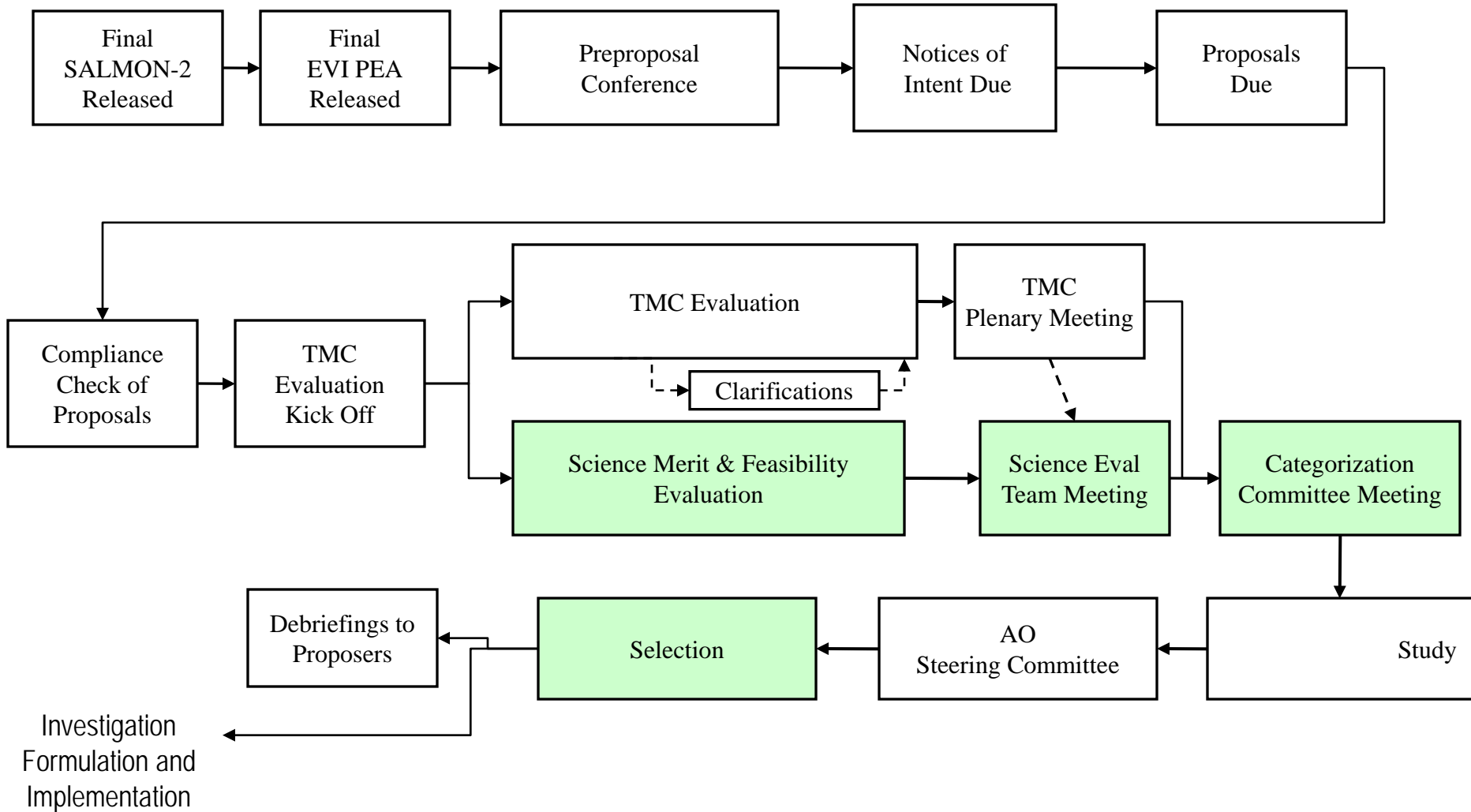


# EVI-1 AO Schedule

- 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 are due Oct. 28, 2011
- EVI-1/SALMON-2 final release 2-4 months later
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- NOI/proposal due date TBD



# Proposal Evaluation Flow







# EVI Evaluation Criteria – Science Merit

- 7.2.2 Intrinsic Science, Exploration, or Technology Merit of the Proposed Investigation (Draft SAMON-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 Draft 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.



# Questions

All questions pertaining to the EVI-1 PEA

**MUST**

be addressed to:

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NASA Headquarters  
Washington, DC 20546  
kenneth.w.jucks@nasa.gov  
(subject line to read " EVI-1 PEA")  
202-358-0476



# Backup slides for Reference

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# 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
    - 3-4 year frequency for EV-odd & EV-even
    - Annual frequency for solicitations for EV-I 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 – all science requirements must be achieved within nominal (typically 1-3 year) mission



# Compliance

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- 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.



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## **Proposal Evaluation, Selection, and Implementation** **(Section 7)**

- 7.1 Overview of the Proposal Evaluation and Selection Process
- 7.2 Evaluation Criteria
  - 7.2.1 Overview of Evaluation Criteria
  - 7.2.2 Scientific Merit of the Investigation (4)
  - 7.2.3 Scientific Implementation Merit and Feasibility of the Investigation (5)
  - 7.2.4 TMC Feasibility of the Mission Implementation, Including Cost Risk (5)





## 7.2.2 Scientific Merit of the Investigation

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- Factor A-1. Compelling nature and scientific priority of the proposed investigation's science goals and objectives.
- Factor A-2. Programmatic value of the proposed investigation.
- Factor A-3. Likelihood of scientific success.
- Factor A-4. Scientific value of the Threshold Science Mission.



## 7.2.3 *Scientific Implementation Merit and Feasibility of the Investigation*

- Factor B-1. Merit of the instruments and mission design for addressing the science goals and objectives.
- Factor B-2. Probability of technical success.
- Factor B-3. Merit of the data analysis, data availability, and data archiving plan.
- Factor B-4. Science resiliency. This factor includes both developmental and operational resiliency.
- Factor B-5. Probability of science team success.



# 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.