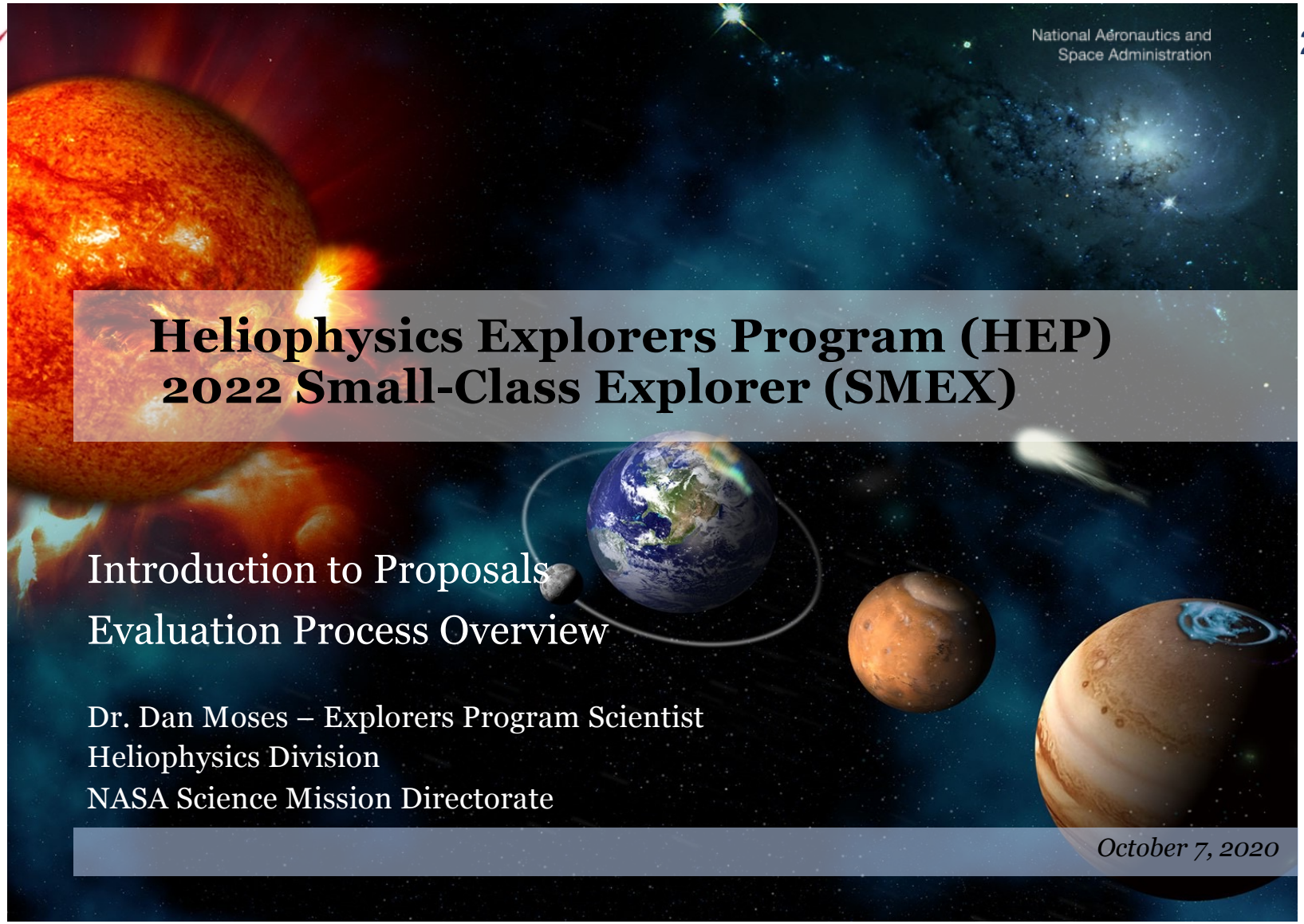


Heliophysics Explorers Program (HEP)
2022 Small-Class Explorer (SMEX)

Introduction to Proposals
Evaluation Process Overview

Dr. Dan Moses – Explorers Program Scientist
Heliophysics Division
NASA Science Mission Directorate

October 7, 2020

SMEX 2022 Step 1 Selections

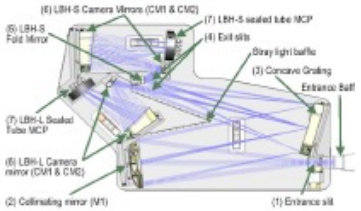
- **MAAX: Magnetospheric Auroral Asymmetry eXplorer**
  - PI: Michael Liemohn, University of Michigan
- **CINEMA: Cross-scale INvestigation of Earth's Magnetotail and Aurora**
  - Robyn Millan, Dartmouth College
- **CMEx: Chromospheric Magnetism Explorer**
  - PI: Holly Gilbert, National Center for Atmospheric Research (NCAR)
- **ECCCO: EUV CME and Coronal Connectivity Observatory**
  - PI: Katharine Reeves, Smithsonian Astrophysical Observatory (SAO)

MAAX determines how magnetosphere - ionosphere electrodynamic coupling regulates multi-scale auroral energy flow through the near-Earth space environment

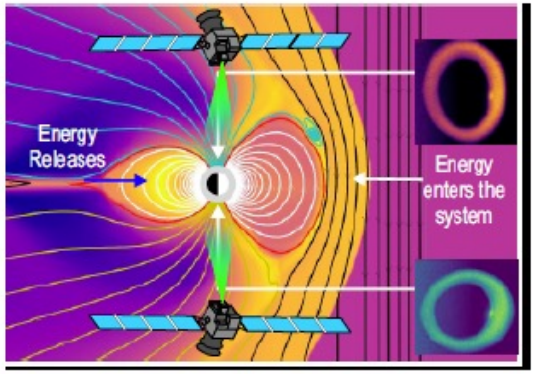
Objective 1	Objective 2	Objective 3
Understand how seasons and magnetic field geometry regulate large-scale energy flow from the solar-wind through the magnetosphere-ionosphere system	**Discover how the formation, evolution, and interhem-ispheric asymmetries of nightside mesoscale auroral features are regulated by the auroral background conductance**	**Determine how the time-dependent magnetospheric energy flow controls multi-scale auroral dynamics.**

MAAX is 2 observatories in a 20,850 km altitude, circular, polar orbit, each with a single instrument: a dual-wavelength UV imager with high spatial and temporal resolution. Launching 2028, science operations is 2 years after a 6-month orbit-raising. When poleward of 35° latitude (>60% of the time), MAAX observes the time development and spatial asymmetries in both global and meso-scale auroral features.

MAAX Ultraviolet Imager (MUVI) Instrument Concept



2022 HEP SMEX

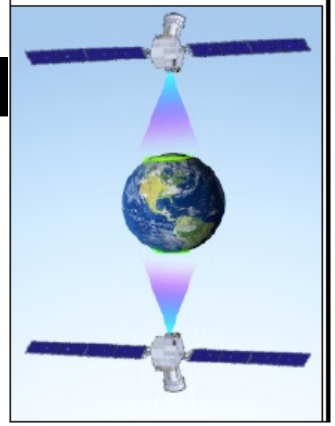


Phase 1 - 90° Spacing - Year 1

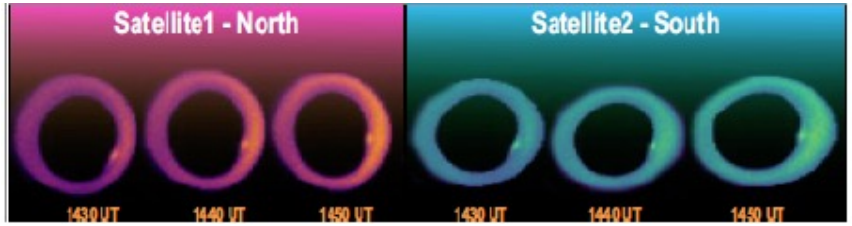
MAAX provides image of pairs where asymmetries exist: (a/c) dayside and nightside reconnection rates leading to energy storage or loss; and (b) nightside conductance in both hemispheres, quantifing the role on meso-scale structures. Furthermore, it provides near continuous observations of the full auroral oval (N-then-S, as seen in the operations plan on page 2).

Phase 2

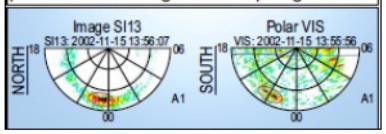
MAAX captures simultaneous images in both hemispheres, allowing direct comparison between the OCFLB (Obj 1), meso-scale structures (Obj 2), conductances (Obj 2), and allowing modeling and prediction of these features (Obj 3). Both ovals are observable for 3.75 hours at a time.



Phase 2 - 180° Spacing - Year 2



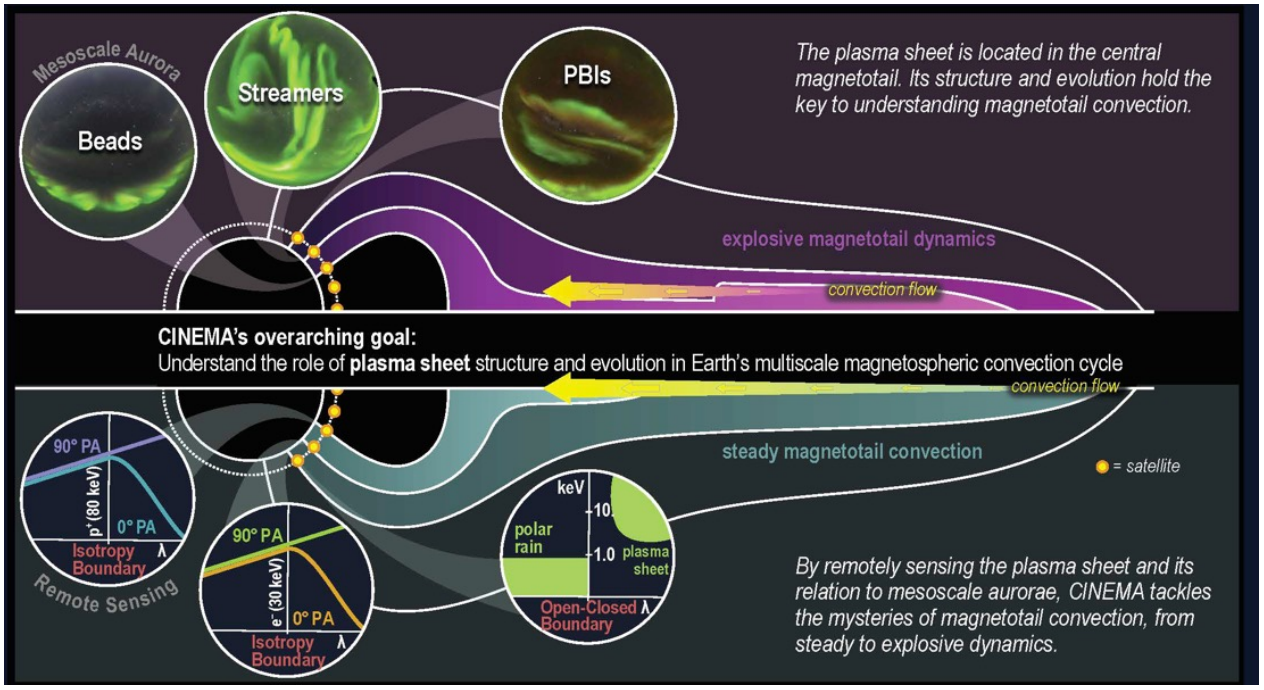
Near the end of their mission lifetimes, IMAGE and Polar occasionally viewed conjugate auroral features, as seen here. About two dozen features were observed during these conjunctions, often with only partial oval coverage at a steep angle.



CINEMA

2022 HEP SMEX

- CINEMA will determine the multiscale structure and evolution of Earth's plasma sheet with a constellation of nine 12U CubeSats flown in sun-synchronous low-earth orbit, each carrying an energetic particle detector, an auroral imager, and a boomless array of commercial magnetometers.
- Simultaneous measurements of auroral forms, field-aligned currents, and corresponding plasma sheet dynamics inferred from particle measurements would provide a powerful and unique combination of observations that would address the stated science questions.



CMEx

2022 HEP SMEX

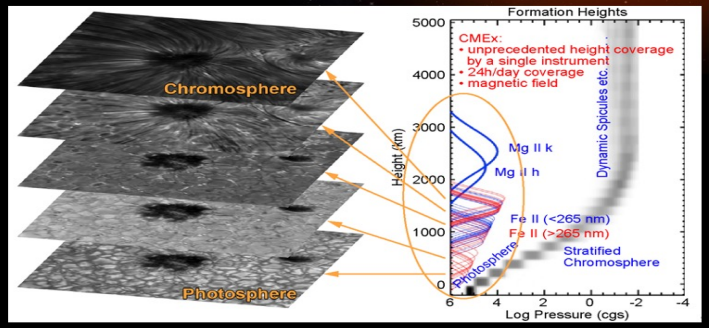
Holly Gilbert (PI)
Alfred de Wijn (Deputy PI)
Rebecca Centeno (Project Scientist)
Paul Bryans (Instrument Scientist)

NCAR/HAO, Ball Aerospace, and many other partners

Submitted to NASA Heliophysics SMEX

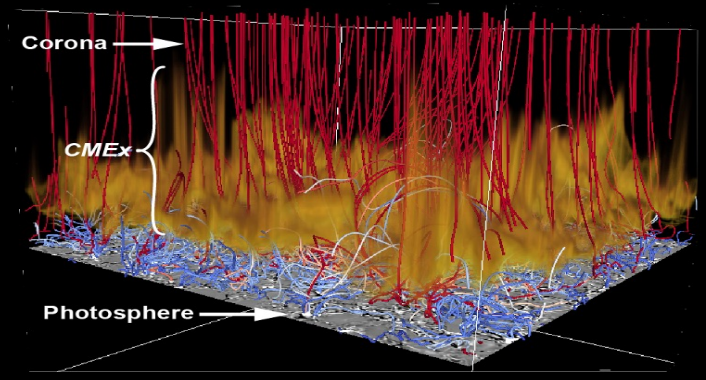
CMEx Chromospheric Magnetism Explorer

Diagnosing Magnetism from the Solar Photosphere to the Transition Region



SCIENCE GOALS

Diagnose the magnetic nature of solar eruptions
Constrain the magnetic sources of the solar wind

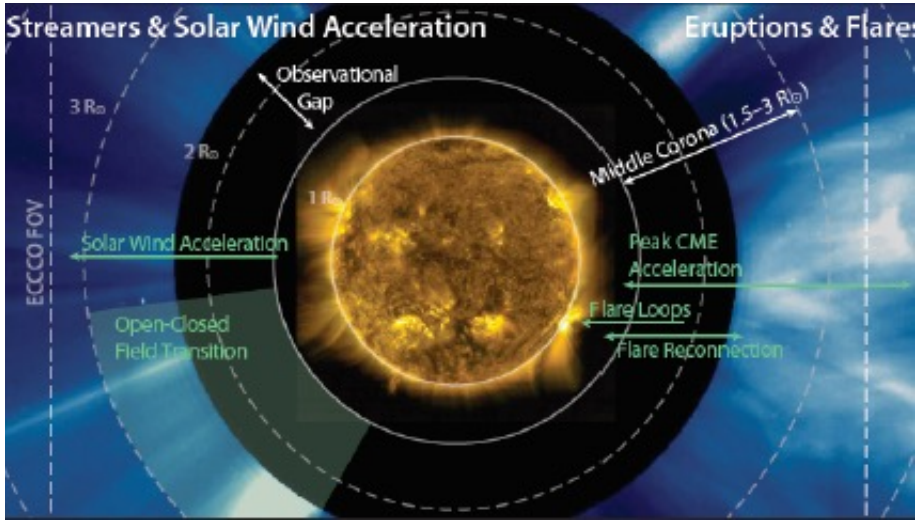


Through NUV Spectropolarimetry, CMEx:

- Discovers new magnetic field dynamics that enable quantitative, observation-based prediction of eruptions.
- Measures causes and effects of magnetic energy storage and release.
- Provides 3D information about the chromosphere's magnetic structure.

ECCCO
EUV CME and Coronal Connectvity Observatory

2022 HEP SMEX



Goal 1: Understand the sources, release, and acceleration of the solar wind close to the Sun

1A: Determine the topological relationship between the global corona and solar wind outflow

1B: Determine how the plasma properties of the middle corona govern the early evolution of the solar wind

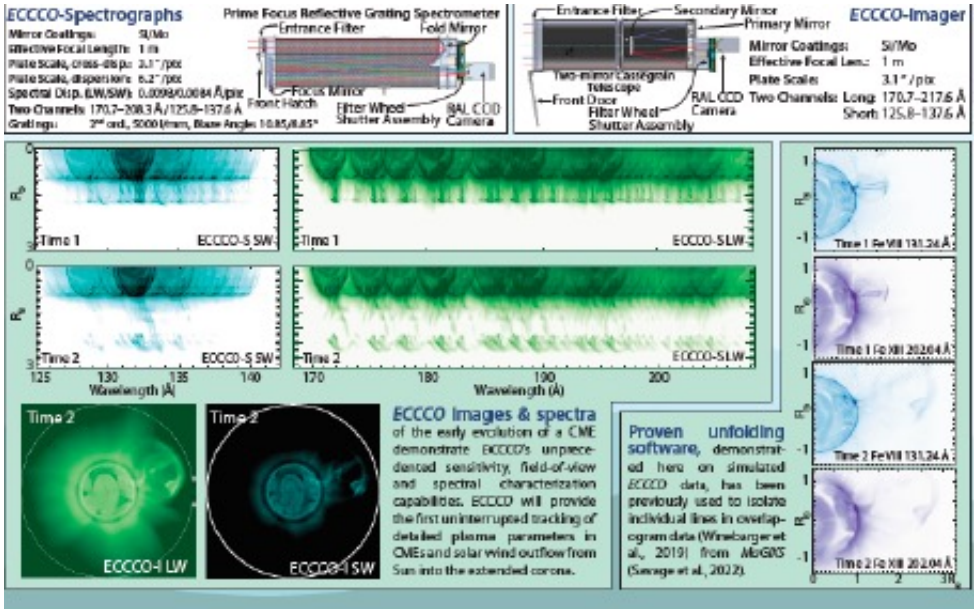
1C: Determine the effects of active region energy build-up on topological restructuring of the corona from disk to middle corona

Goal 2: Understand the symbiotic relationship between eruptive events and the large-scale coronal structure

2A: Determine how the characteristics of the global solar corona lead to and influence the evolution of eruptions

2B: Determine how and where hot plasma is released and accelerated in the middle corona during solar eruptions

2C: Characterize CME shock structures and their interaction with the global corona



Guidelines for Websites and Social Media

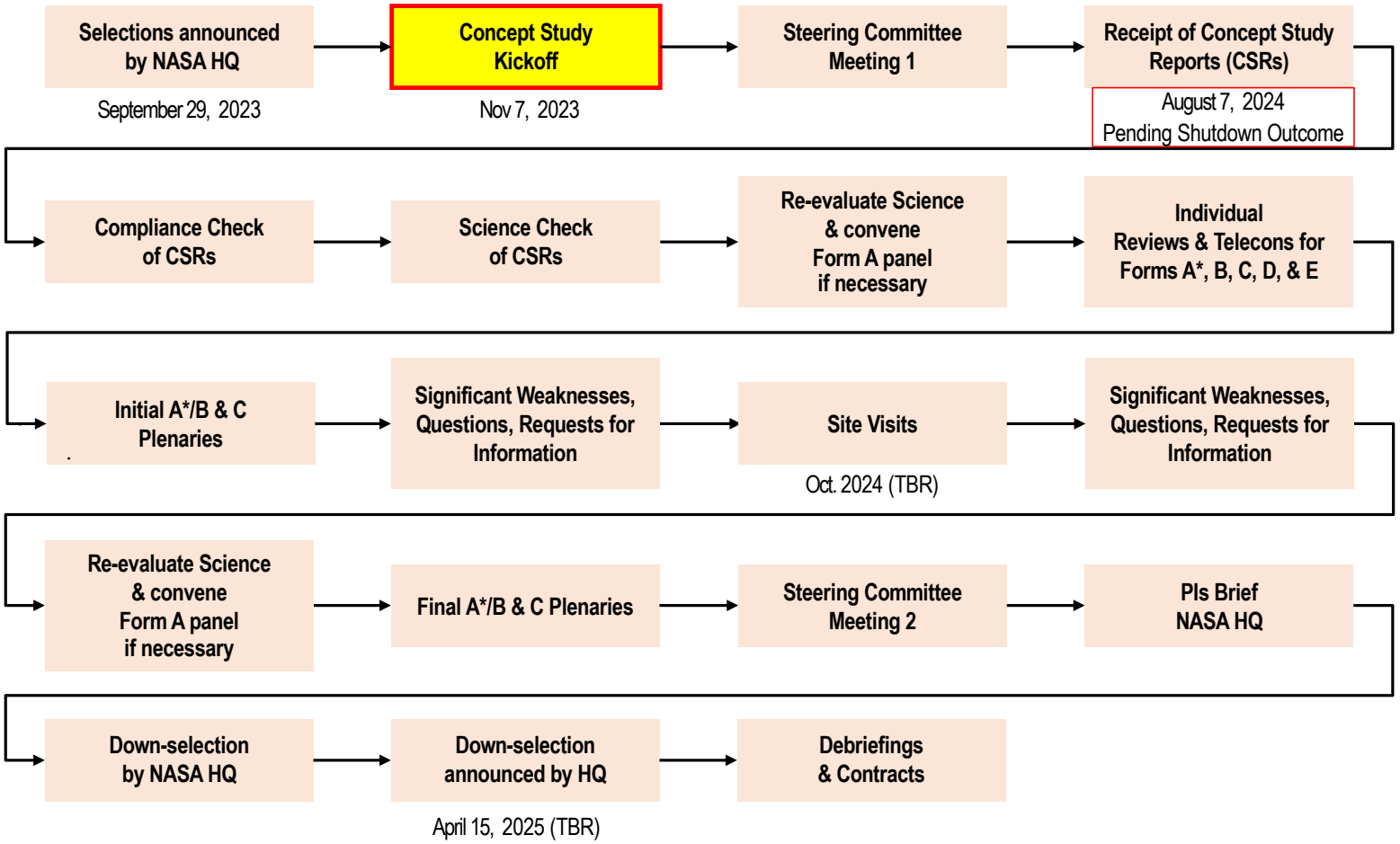
If you choose to create new websites or new social media campaigns, or web features on existing websites, about your mission concept, please follow these guidelines:

1. NASA-provided Phase-A funding should not be used to create or manage such activities without the prior approval of the appropriate SMD Division Director.
2. The NASA name and emblems should not appear on social media accounts or website banners. So, if your mission's name is Next Great Mission, NGM, then your website shouldn't be named NASA-NGM.edu nor should your official Twitter account be @NASA_NGM; NextGreatMission.edu or @NextGreatMsn are both fine, though.
3. Websites and social media campaigns cannot be lobbying efforts aimed at affecting the Step-2 down-selection.
4. All content must accurately portray the status of the mission concept with regards to overall selection process. So, don't describe your investigation as a "NASA mission" until after the down-selection. A Phase A selection is for a "Concept Study" of a particular investigation.

Consistent with the language of the Announcement of Opportunity, press releases and web articles should be coordinated with NASA HPD Communications.

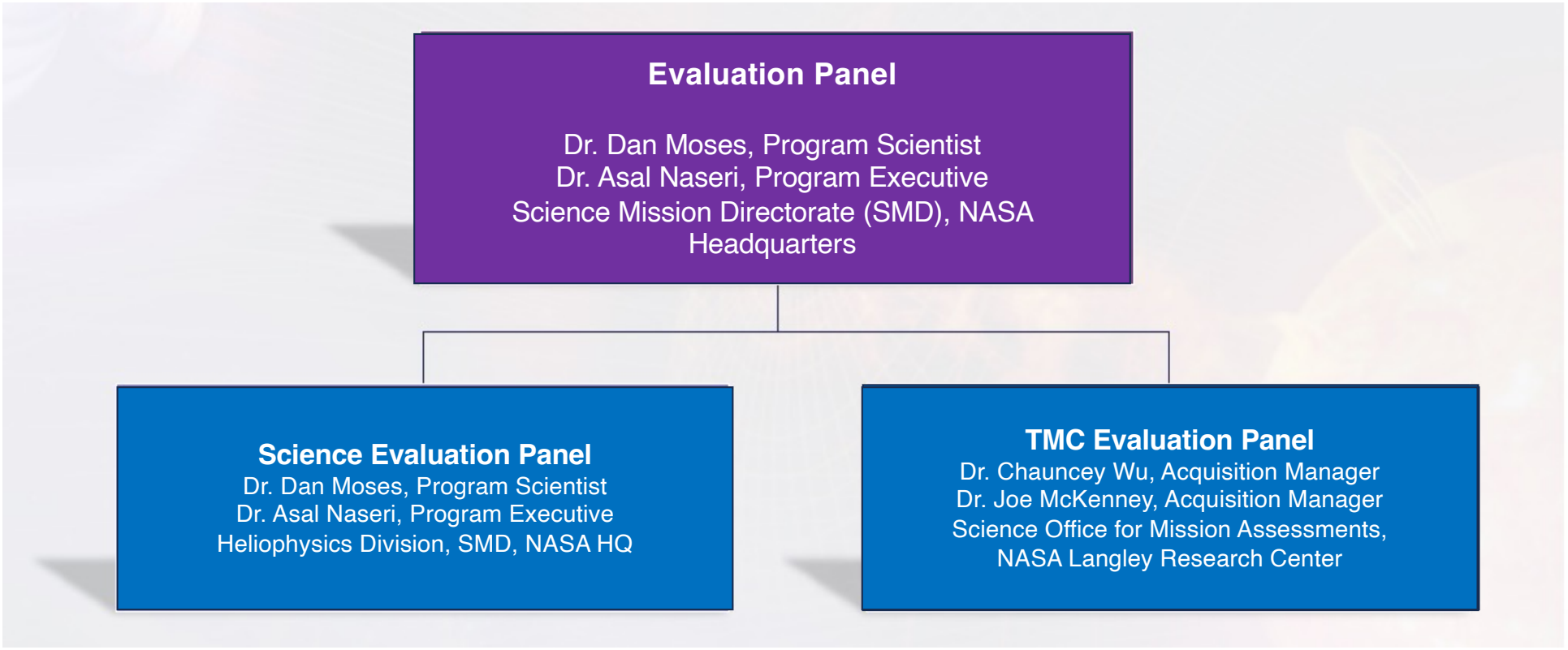
What Follows Selection?

2022 HEP SMEX



* If required due to change in Science. If not required, use Forms A from Step1

Evaluation Organization



2022 Heliophysics Explorers

2022 HEP SMEX

2022 Small Explorer Announcement of Opportunity: 2022 SMEX AO = NNH22ZDA016O

Solicits proposals for **science investigations**. These must support the goals and objectives of the Heliophysics Explorer Program, must be implemented by Principal Investigator (PI)-led investigation teams, and must be implemented through the provision of **complete spaceflight missions**.

- The emphasis of the Step 1 proposal is to convey to the peer community the science achieved by implementation of the proposal provides the most compelling advance in heliophysics that can plausibly be achieved with the assigned resources.
- The emphasis of the Step 2 proposal is a thorough demonstration of the feasibility of an investigation initially selected in the Step 1 competition being implemented within the resource constraints of the program.
  - A NASA-funded Phase A study conducts a detailed engineering and program analysis to demonstrate an investigation is feasible within the program resource constraints.
    - **Medium Risk:** "Problems have been identified but are considered within the proposal team's capabilities to correct within available resources with good management and application of effective engineering resources." (i.e., the full resource requirements = the resources available)
  - The results of the Phase A study are captured in a Concept Study Report. This report is evaluated with the above stated emphasis on feasibility.

Guidelines and Criteria for the Phase A Concept Study

2022 HEP SMEX

- **CSR Due Date: 7 August 2024** *(with day for day extension in case of Federal Government shutdown)*
- A DRAFT version of the **Guidelines and Criteria (G&C) for the Phase A Concept Study Report (CSR)** is on the main 2022 Heliophysics Small Explorers page: https://explorers.larc.nasa.gov/HPSMEX22/
- **All program constraints, guidelines, definitions, and requirements specified in the AO are applicable to the CSR, except as noted within the G&C document; examples of these exceptions include:**

- Principal Investigators (PIs) will propose Level 1 requirements in their CSRs, including the criteria for full mission success that satisfy the Baseline Science Mission, and for minimum mission success that satisfy the Threshold Science Mission. *(See AO Sections 5.1.5 and 7.4.4).*
- The PI-Managed Mission Cost (PIMMC) may not increase by more than 20% from that in the Step-1 proposal to that in the CSR, with adjustments as applicable, and in any case, may not exceed the ($150M FY22$) Cost Cap specified in the AOs. *(See AO Sections 4.3.1 and 7.4.4).*
- NASA intends to down-select a single investigation, to be implemented as Category 3 projects (per NPR 7120.5) with Class D payloads (per NPR 8705.4, Risk Classification for NASA Payloads). NPR 7120.5 and NPR 8705.4 are available in the Program Library. *(See AO Section 4.1.4).*
- The Enhancing TDO incentive will be provided at the beginning of Step 2 and is expected to be approximately $3M FY22$ for the SMEX investigations. *(See AO Section 5.2.3).*
- NID 7120.132 was recently replaced with NPR 8079.1 NASA Spacecraft Conjunction Analysis and Collision Avoidance for Space Environment Protection. The CSR G&C retains the NID referenced from the SMEX AO but notes that the new NPR 8079.1 will be imposed for down-selected missions.

Guidelines and Criteria for the Phase A Concept Study

- The format of the CSR is specified in Sections A through L.
- The CSR Structure and Page Limits are specified in Table 2 on page 16.
    - 2 pages for Fact Sheet and 6 pages for Executive Summary.
    - 34 pages for Science Investigation (highlight changes from Step 1).
    - Sections E through H: 110 for full mission
    - No page limit for Cost Proposal + Justification and Cost Proposal for optional SEO.
    - + 2 pages for each additional separate, non-identical instrument or flight element
    - + 3 pages for proposals utilizing PI-provided access to space
    - + 10 pages for Science Enhancement Options (SEOs) combined, if proposed
    - + 10 pages for Enhancing Technology Demonstration Opportunities (TDOs) combined, if proposed
    - + 5 pages for Student Collaboration (SC), if proposed
    - + 5 pages for Citizen Science (CS), if proposed
    - No page limit for Section L Appendices
- Appendices shall not be renumbered.

Career Development and Diversity

- Career Development
  - The Science Panel and TMC panel will provide comments to NASA regarding the extent to which the proposed investigation provides career development opportunities to train the next generation of engineering and management leaders.
  - While these comments will not be considered in the evaluation, they may be considered during down-selection.
- Diversity Plan was updated to include new Simplified Standard AO Template (SSAOT) language.
  - The SMEX AO did not have the new Diversity and Inclusion language, we captured the new language in G&C Section L15. Future C&Rs will point to SSAOT section.

Investigation Evaluation Criteria Step 2

- **Scientific Merit (~20%)**
  - Compelling nature and scientific priority of the proposed investigation's science goals & objectives
  - Programmatic value of the proposed investigation
  - Likelihood of scientific success
  - Scientific value of the Threshold Science Mission
- **Scientific Implementation Merit and Feasibility (~40%)**
  - Merit of the instruments and mission design for addressing the science goals and objectives
  - Probability of technical success
  - Merit of the data analysis, data availability, data archiving plan, and/or sample analysis plan
  - Science resiliency
  - Probability of science team success
- **Technical, Management, and Cost (TMC) Feasibility (~40%)**
  - Adequacy and robustness of the instrument implementation plan
  - Adequacy and robustness of the mission design and plan for mission operations
  - Adequacy and robustness of the flight systems
  - Adequacy and robustness of the management approach and schedule, including the capability of the management team
  - Adequacy and robustness of the cost plan, including cost feasibility and cost risk

Science Panel Composition and Organization

- The HEP Program Scientist (PS) leads the Science Panel
- Science Panel evaluators are typically, but not exclusively, recruited from the academic, governmental, and industrial research communities.
- The approach to evaluator identification will be reviewed by an SMD Steering Committee convened by the Deputy Associate Administrator for Research (DAAR)
- The Science Panel evaluates **Scientific Merit of the Proposed Investigation** (7.2.2), if applicable, and **Scientific Implementation Merit and Feasibility of the Proposed Investigation** (7.2.3).
- The science evaluation will be conducted via a single Science Panel, and sub-panels may be employed, depending on the number and variety of proposed investigations.
  - Any sub-panel will be led by a NASA Civil Servant (CS) and may be co-chaired by a member from the scientific community.
  - Sub-panels may have an Executive Secretary.
- Each proposal will be reviewed by assigned panel members.
  - The Lead Reviewer for each proposal will lead the discussion. At least two secondary (supporting) reviewers will be assigned to each proposal.
  - At the request of the Lead Reviewer, a Supporting Reviewer will take notes on the discussion.
- The TMC Panel may provide comments and questions to the Science Panel, and vice versa.
- The Science Panels will request Scientific Merit (if applicable) and/or Scientific Implementation Merit and Feasibility (Form B) clarifications from proposers on Potential Major Weaknesses (PMWs) identified during the evaluation process.

TMC Panel Composition and Organization

- The Acquisition Managers, Civil Servants in the NASA Science Office for Mission Assessments (SOMA) at NASA Langley Research Center (LaRC), lead the TMC Panel.
  - NASA SOMA works directly for NASA Headquarters and is firewalled from the rest of NASA LaRC.
- TMC Panel evaluators are a mix of the best non-conflicted contractors, consultants, and CSs who are experts in their respective fields.
  - Evaluators read their assigned proposals.
  - Evaluators provide findings on their assigned proposals.
  - Evaluators provide ratings of proposals that reflect findings.
- Additionally, specialist evaluators may be called upon in cases where technical expertise that is not represented on the panel is needed.
  - Specialist Evaluators evaluate only those parts of a proposal that are specific to their particular expertise.
  - Specialist Evaluators provide only findings; they do not provide ratings.

Conflicts of Interest (COI) Prevention Requirements

- Cornell Technical Services (CTS) will cross-check all contracted Science and TMC Panels members against the lists of personnel and organizations identified in each proposal submitted to determine whether any organizational COI exists.
- Additionally, all contracted evaluators must divulge any other financial, professional, or potential personal conflicts of interest, and whether they work for a profit-making company that directly competes with any profit-making proposing organization.
- All CS and Intergovernmental Personnel Act (IPA) Assignee evaluators will self-certify their COI status by reviewing a combined listing of individuals and organizations associated with the SMEX proposals.
- The Science evaluators must notify the HEP PS, Dr. Dan Moses, in case of a potential conflict that arises during the evaluation. The TMC evaluators must notify the NASA SOMA Acquisition Manager, Dr. Chauncey Wu, in case there is a potential conflict that arises during the evaluation.
- All known conflict of interest issues are documented, and a COI Mitigation Plan is developed to minimize the likelihood that an issue will arise in the evaluation process. Any potential COI issue is discussed with the HEP PS and the SMD DAAR and documented in the COI Mitigation Plan. All determinations regarding possible COIs that arise will be logged as an appendix to the COI Mitigation Plan.
- If any previously unknown potential conflict of interest arises during the evaluation, the conflicted member(s) will be notified to stop evaluating proposals immediately, and the Panel Chair will be notified immediately. If a COI is confirmed, the conflicted member(s) will be immediately removed from the evaluation process, and steps will be taken expeditiously, to remove, mitigate, or accept any actual or potential bias imposed by the conflicted member(s). The steps will be documented in the COI Mitigation Plan.
- Members of the Science and TMC Panels are prohibited from contacting anyone outside their panel for scientific/technical input, or consultation, without the prior approval of the HEP PS.

Proprietary Data Protection

- All proposal and evaluation materials are considered proprietary.
- Viewing of proposal materials will be only on a need-to-know basis.
- Each non-CS or non-IPA evaluator will sign a Non-Disclosure Agreement (NDA) that must be on file at NRESS prior to any proposals being distributed to that evaluator.
  - CS and IPA evaluators are under statutory obligations.
- The proposal materials that each evaluator has access to is documented.
- Evaluators are not permitted to discuss proposals with anyone outside their Science or TMC Panel.
- All proprietary information that must be exchanged between evaluators will be exchanged via the secure NASA Solicitation and Proposal Integrated Review and Evaluation System (NSPIRES), via the secure Remote Evaluation System (RES), via the secure NASA Large File Transfer (LFT) system, via secure Webex, via NASA Google docs or via encrypted email, parcel post, fax, or regular mail.
- Teleconferences among Panel evaluators will be conducted via controlled teleconference lines.
- Evaluators' electronic and paper evaluation materials will be deleted/destroyed when the evaluation process is complete. Archival copies will be maintained in the NASA SOMA vault.

Finding Definitions

2022 HEP SMEX

Science

Major Strength: An aspect of the proposal response that is judged to be of superior merit and can substantially contribute to the ability of the project to meet its scientific objectives.

Minor Strength: An aspect of the proposal that is judged to contribute to the ability of the project to meet its scientific objectives.

Major Weakness: A deficiency or set of deficiencies taken together that are judged to substantially weaken the project's ability to meet its scientific objectives.

Minor Weakness: A deficiency or set of deficiencies taken together that are judged to weaken the project's ability to meet its scientific objectives.

Note: Factors for which the proposal's discussion is considered as expected for a mission concept at this stage of maturity will be documented as "As Expected" on Forms A and B.

TMC

Major Strength: A facet of the implementation response that is judged to be well above expectations and can substantially contribute to the ability of the project to meet its technical requirements on schedule and within cost.

Minor Strength: A strength that is worthy of note and can be brought to the attention of Proposers during debriefings but *is not a discriminator in the assessment of risk.*

Major Weakness: A deficiency or set of deficiencies taken together that are judged to substantially weaken the project's ability to meet its technical objectives on schedule and within cost.

Minor Weakness: A weakness that is sufficiently worrisome to note and can be brought to the attention of Proposers during debriefings but *is not a discriminator in the assessment of risk*.

Note: Findings that are considered "as expected" are not documented in the Form C.

Form A and B Grade Definitions

5) Excellent: 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.

4) Very Good: A fully competent proposal of very high merit that fully responds to the objectives of the AO, whose strengths fully outbalance any weaknesses.

3) Good: A competent proposal that represents a credible response to the AO, having neither significant strengths nor weaknesses and/or whose strengths and weaknesses essentially balance.

2) Fair: A proposal that provides a nominal response to the AO, but whose weaknesses outweigh any perceived strengths.

1) Poor: 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).

TMC Evaluation Product: Risk Ratings

Based on the narrative findings, each proposal will be assigned one of five risk ratings (including half-grades), defined as follows:

- **Low Risk:** There are no problems evident in the proposal that cannot be normally solved within the time and cost proposed. Problems are not of sufficient magnitude to doubt the Proposer's capability to accomplish the investigation well within available resources.

- **Medium Risk:** Problems have been identified but are considered within the proposal team's capabilities to correct within available resources with good management and application of effective engineering resources. Mission design may be complex and resources tight.

- **High Risk:** One or more problems are of sufficient magnitude and complexity as to be deemed unsolvable within the available resources.

Note: All Findings are considered in the risk rating.

Note: Half-grades (i.e., Low-Medium and Medium-High) are allowed.

Cost Threat Matrix

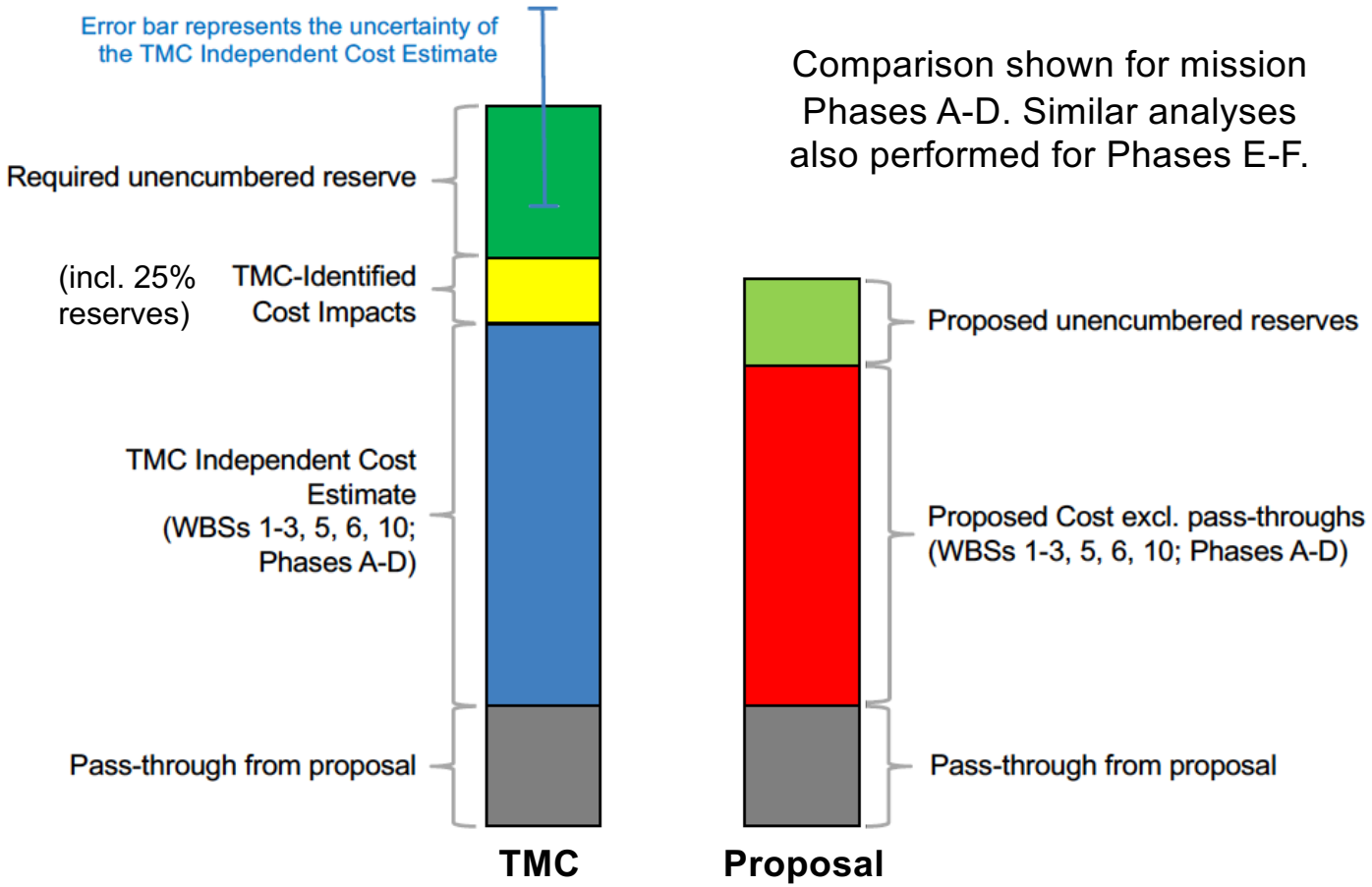
2022 HEP SMEX

- The *likelihood* and *cost impact*, if any, of each weakness is stated as "This finding represents a cost threat assessed to have an Unlikely/Possible/Likely/Very Likely/Almost Certain likelihood of a Minimal/Limited/Moderate/Significant/Very Significant cost impact being realized during development and/or operations, which results in a reduction from the proposed unencumbered reserves."
  - The *likelihood* is the probability range that the *cost impact* will materialize.
  - The *cost impact* is the best estimate of the range of costs to mitigate the threat.
- The cost threat matrix below defines the adjectives used to describe the *likelihood* and *cost impact.*
- The minimum cost threat threshold is $1M.

			Cost Impact (CI) % of PI-Managed Mission Cost to complete Phases B/C/D or % of Phase E not including unencumbered cost reserves or contributions					
	Likelihood of Occurrence	**Weakness**	**Very Minimal** 0.5% < CI ≤ 2.5% ($0M < CI ≤ $0M) 1% < CI ≤ 2.5% ($0M < CI ≤ $0M)	**Minimal** 2.5% < CI ≤ 5% ($0M < CI ≤ $0M) 2.5% < CI ≤ 5% ($0M < CI ≤ $0M)	**Limited** 5% < CI ≤ 10% ($0M < CI ≤ $0M) 5% < CI ≤ 10% ($0M < CI ≤ $0M)	**Moderate** 10% < CI ≤ 15% ($0M < CI ≤ $0M) 10% < CI ≤ 15% ($0M < CI ≤ $0M)	**Significant** 15% < CI ≤ 20% ($0M < CI ≤ $0M) 15% < CI ≤ 20% ($0M < CI ≤ $0M)	**Very Significant** CI > 20% (CI > $0M) CI > 20% (CI > $0M)
Likelihood (L, %)	Almost Certain (L > 80%)							
	Very Likely (60% < L ≤ 80%)							
	Likely (40% < L ≤ 60%)							
	Possible (20% < L ≤ 40%)							
	Unlikely (L ≤ 20%)							

Note: For each proposal the percentages in the above table will be converted to dollars by the cost estimator.

TMC Evaluation Product: Cost Validation



Comparison shown for mission Phases A-D. Similar analyses also performed for Phases E-F.

Down-Selection Process (HPSMEX AO § 7.4.5)

- Selection Official: Associate Administrator for the Science Mission Directorate or designee.
- The Selection Official may consult with senior members of SMD and the Agency concerning the selections.
- The results of the proposal evaluations based on the criteria and the categorizations will be considered in the down-selection process. Additional down-selection factors are described in AO § 7.4.5: In the 2022 SMEX down-selections, the programmatic factors important for down-selection include available funding, maintaining a programmatic and scientific balance across SMD, and planning and policy considerations.
- Science balance and technological innovation were specific programmatic factors in the Step 1 selection.

Backup Slides

Science Panel Procedures

- Each Science Panel member will review Proposals as directed by the Chair.
  - If special science expertise is required, the Science Panels may utilize non-panel/mail-in reviewers to assist with one or more proposals.
  - Non-panel/mail-in reviewers will evaluate only those parts of proposals pertinent to their scientific specialties.
- Each proposal may be discussed by the evaluators in teleconferences.
  - Findings in the form of Strengths and Weaknesses will provide the basis for initial panel discussions.
  - Each Evaluator will provide an individual evaluation prior to teleconferences.
  - The proposal and the evaluations by the individual evaluators, including non-panel evaluators, will be discussed during teleconferences.
  - Following the teleconferences, the Lead Evaluator captures/synthesizes individual evaluations, including discussion, and will generate the Draft Evaluation including draft findings.
  - The draft findings will include PMWs to be sent to the proposers for clarification.
  - No overall merit grade is assigned prior to receiving the responses to the PMW clarification requests.
- A Science Panel Meeting will be held upon completion of individual reviewer evaluations for all proposals.
  - The Science Panel will compile all of the findings for each proposal.
  - For each proposal, the Chair or designated Lead Reviewer will lead the discussion, summarize the proposed investigation, and document the results.
  - The PMWs clarifications provided by the PIs will be considered and the Science Panel will compose a panel summary review for each proposal.
  - Evaluations of all proposals are reviewed during the Science Panel Meeting to ensure that standards have been applied uniformly and in an appropriate and fair manner.
  - After the discussion, each member of the Panel or sub-panel assigns a merit rating for Scientific Merit (Form A) and for Scientific Implementation Merit and Feasibility (Form B) to each proposal. Non-panel reviewers do not assign ratings.

Form A and B Grade Definitions

- **Excellent:** 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.
- **Very Good:** A fully competent proposal of very high merit that fully responds to the objectives of the AO, whose strengths fully outbalance any weaknesses.
- **Good:** A competent proposal that represents a credible response to the AO, having neither significant strengths nor weaknesses and/or whose strengths and weaknesses essentially balance.
- **Fair:** A proposal that provides a nominal response to the AO but whose weaknesses outweigh any perceived strengths.
- **Poor:** 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).

Note: Only Major Findings are considered in the adjectival rating.

Typical Science Panel Products (Forms A & B)

For each proposal, this process results in Form A and Form B, each of which includes

- Proposal title, PI name, and submitting organization;
- Proposal summary;
- Based on findings, adjectival median ratings for Scientific Merit of the Proposed Investigation (Form A) and for Scientific Implementation Merit and Feasibility of the Proposed Investigation (Form B), ranging from “Excellent” to “Poor”; half-grades (e.g. Very Good/Good) are permitted during polling, resulting in nine polling bins*;
  - If the median rating falls between two grades (e.g. Very Good and Very Good/Good), the median rating will be rounded in favor of the higher grade (e.g. rounded to Very Good)*;
- Polling distribution for each median rating*;
- Summary rationale for the median rating;
- Narrative findings, identified as major or minor strengths or weaknesses;
- Comments to PI, comments to NASA*, and comments to the TMC Panel*. (optional)

*Note: not provided to proposers

TMC Panel Product (Form C)

For each proposal, the TMC Evaluation will result in a Form C for that contains:

- Proposal title, PI name, and submitting organization;
- Based on the findings, an adjectival median risk rating for the TMC Feasibility of the Proposed Mission Implementation of “Low Risk”, “Medium Risk” or “High Risk”;
- Polling distribution for each median risk rating*;
- Summary rationale for the median risk rating;
- Narrative findings, identified as major or minor strengths or weaknesses;
- Comments to the Proposers, comments to the Selection Official*, and comments to the Science Panel*.

**Note: not provided to proposers*