Created in response to Feb 2018 PAC finding

Strong interest (28 nominations) in Steering Committee participation from the community

SC in place July 2020

Chair: Steven A. Hauck, II (CWRU)
Vice-Chair: Carolyn Ernst (APL)
Exosphere Discipline Member: Ronald J. Vervack, Jr. (APL)
Geochemistry Discipline Member: Kathleen Vander Kaaden (Jacobs/JSC)
Geology Discipline Member: Christian Klimczak (Georgia)
Geophysics Discipline Member: Catherine Johnson (UBC & PSI)
Magnetosphere Discipline Member: Gina DiBraccio (GSFC)
Early Career Member: Ariel Deutsch (Ames)
Early Career Member: Gangaki Poh (GSFC)
International Liaison: Suzanne Imber (Leicester)
NASA Liaison: Shoshana Weider (NASA HQ)
Near-term priorities

- Support for Decadal Survey White Papers

- Building the MExAG community
  - Communications Working Group

- Preparing for the first MExAG annual meeting and development of the first Goals Document
  - Operations Working Group
Decadal Survey White Papers

- Mercury-focused white papers: 6
- Additional papers that discuss Mercury: 37
- One title listed in the *Izenberg et al* white paper:
  - Planetary and Astrobiology Blank Papers: Science White Papers Cancelled or Downscaled Due to Direct Impact of COVID-19 and National-scale Civil Action

- A holistic, rather than a reductive keyword-based, approach to considering the content of all Decadal Survey inputs, including white papers, is essential when developing a scientific and exploration strategy for the next decade.
  - The white papers are an example of the interconnected nature of planetary science that cannot be reduced to keywords that match committee assignments.
Building and sustaining the MExAG community

- As a new group, MExAG is focused on nurturing an equitable, diverse, inclusive, accessible and sustainable approach to serving the needs of the community and NASA.

- Among the MExAG SC’s first actions were:
  - Become an engaged participant in EDIWG
  - Creating a Steering Committee Code of Conduct WG
  - Begin drafting an SC code of conduct, including accountability mechanisms.
  - An additional goal is for the SC code to serve as a starting point for expectations for all MExAG interactions and meetings.
Upcoming Mercury Events

▪ EPSC: 21 September–09 October 2020
  ▪ Mercury Science and Exploration Session: 36 presentations.

▪ AGU: 07–11 December 2020
  ▪ Mercury: From MESSENGER to BepiColombo session

▪ Mercury 2021: 08–11 June 2021
  ▪ Rescheduled from June 2020
  ▪ 93 registrants for the meeting already

▪ 1st MExAG Annual Meeting: To be scheduled
Planetary Mission Concept Study

• Final report submitted 08 August 2020
• Addresses science goals encompassing geochemistry, geophysics, the Mercury space environment, and surface geology
• One full Mercury year (~88 Earth days) of surface operations with an ambitious, high-heritage, landed science payload
• Cost estimate demonstrates that a Mercury Lander mission is feasible and compelling as a New Frontiers-class mission in the coming decade
MExAG welcomes NASA’s concern about the impacts of COVID-19 through the expected creation of the ROSES SMD Post-COVID Recovery program element.

However, MExAG also notes that the unexpectedly low funding rates in SSW from ROSES 2019, in combination with the ongoing pandemic and racial injustice, are a serious challenge to a robust science and exploration program, particularly for smaller communities such as that which studies Mercury.
ADDENDA
Mercury Specific Decadal Survey White Papers

On the Case For Landed Mercury Science (*Byrne et al*)
Science Opportunities offered by Mercury's Ice-Bearing Polar Deposits (*Deutsch et al*)
Fundamental and Interdisciplinary Questions Drive the Scientific Exploration of Mercury (*Hauck et al*)
Mercury's Low Reflectance Material - Evidence for Graphite Flotation in a Magma Ocean? (*Klima et al*)
Recommended laboratory and field studies ahead of future Mercury exploration (*Vander Kaaden et al*)
Mercury sample return to revolutionize our understanding of the solar system (*Vander Kaaden et al*)
Decadal Survey White Papers that Discuss Mercury – 1

Lunar Volatiles Orbiters — Paul G. Lucey
Science Case for Microwave Wavelength Measurements — Matthew Siegler
Mars as a “natural laboratory” for studying surface activity on a range of planetary bodies — Serina Diniega
Looking Back is Looking Forward: The Need for Retrospective Solar System Observations in Advance of Exoplanet Retrievals — Chester “Sonny” Harman
STRATOSPHERIC BALLOON PLATFORMS FOR PLANETARY SCIENCE — Tibor Kremic
Exploring Solar System Organic Chemistry Evolution through the Surfaces of Ceres and Large Asteroids — Marc Neveu
Venus Petrology: The Need for New Data — Alison R. Santos
The Science Case for Io Exploration — James Tuttle Keane
Energy Storage Technologies for Planetary Science and Astrobiology Missions — Ratnakumar Bugga
THE EVOLUTION OF SMALL BODY POPULATIONS: FROM PLANET MIGRATION TO THERMAL DRIFT FORCES — William F. Bottke
Planetary Science Priorities for the Moon in the Decade 2023-2032: Lunar Science is Planetary Science — Erica R. Jawin
EXPLORING THE BOMBARDMENT HISTORY OF THE MOON — William F. Bottke
New Approaches to Lunar Ice Detection and Mapping: The Scientific Importance of the Moon’s Polar Ice Deposits — Paul O. Hayne
The Importance of Planetary Volcanism and Key Investigations for the Next Decade: Advancing our Understanding of Planetary Interiors, Surfaces, Atmospheres, and Habitability — Laura Kerber
Exogeoscience and its role in Characterizing Exoplanet Habitability and the Detectability of Life — Cayman T. Unterborn
Strength In Diversity: Small Bodies as the Most Important Objects in Planetary Sciences — Laura M. Woodney
Venus: a Natural Volcanological Laboratory — Patrick J. McGovern
Origin and Evolution of the Moon’s Procellarum KREEP Terrane — Brad Jolliff
Science on the fly! The importance of Venus flyby observations — Candace Gray

18 Aug 2020
Decadal Survey White Papers that Discuss Mercury – 2

GEOCHRONOLOGY AS A FRAMEWORK FOR INNER SOLAR SYSTEM HISTORY AND EVOLUTION – Barbara Cohen
Non-Robotic Science Autonomy Development – Bethany Theiling
Lunar Volatiles and Solar System Science – Parvathy Prem
Science and technology requirements to explore caves in our Solar System – Timothy Titus
In-Situ Crystallographic Investigations of Solar System Objects in the next Decade – D. Blake
SPACE WEATHERING ACROSS THE SOLAR SYSTEM: LESSONS FROM THE MOON AND OUTSTANDING QUESTIONS – Michelle Thompson
Assessing the Recent Impact Flux in the Inner Solar System: 1 Ga to Present – Becky Ghent
The Importance of Continuing Solar System-wide Impact Cratering Studies – Stuart Robbins
On the Past, Present, and Future Role of Biology in NASA’s Exploration of our Solar System – Kevin Hand
Solar-System-Wide Significance of Mars Polar Science – Isaac Smith
The value of CHONS isotopic measurements of major compounds as probes of planetary origin, evolution, and habitability – Kelly Miller
Solar System Interiors, Atmospheres, and Surfaces Investigations via Radio Links: Goals for the Next Decade — SW Asmar
The Importance of Ground-Based Radar Observations for Planetary Exploration — Edgard G. Rivera-Valentín
Science Case for a Lander or Rover Mission to a Lunar Magnetic Anomaly and Swirl — David T. Blewett
Solar Array Technologies for Planetary Science and Astrobiology Missions — Joel A. Schwartz
High Priority Returned Lunar Samples — Sarah N. Valencia
Making Planets on Earth: How Experimental Petrology Is Essential to Planetary Exploration — Kayla Iacovino