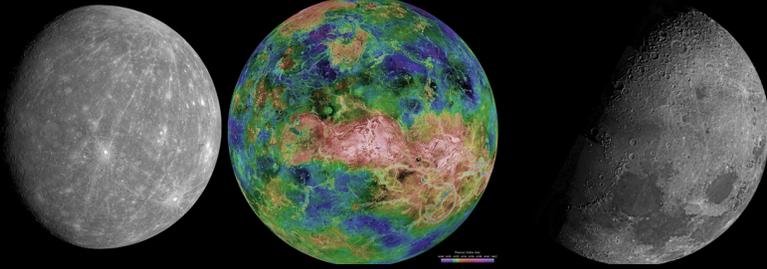


Planetary Science Decadal Survey: Inner Planets Panel

Ellen Stofan

VEXAG

9/2/2010



Panel Members

Chair:

Ellen Stofan (Proxemy Research) *Venus, Mars, Earth, Titan*

Vice Chair:

Steve Mackwell (LPI) *Venus, Moon*

Panel Members:

Barbara Cohen (MSFC) *Moon*

Marty Gilmore (Wesleyan) *Venus, Earth, Mars*

Lori Glaze (GSFC) *Venus, Mars, Earth, Io*

David Grinspoon (Denver Museum) *Venus atmospheres, Astrobiologist*

Steve Hauck (Case Western) *Mercury, Moon, Venus*

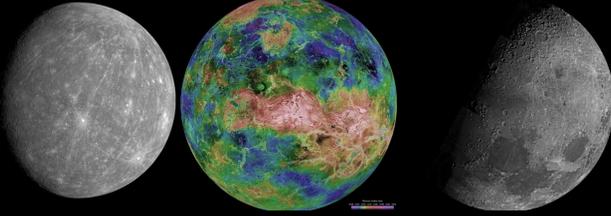
Ayanna Howard (Georgia Institute of Technology) *Technology / Engineer*

Chip Shearer (UNM) *Moon, Mars*

Douglas Stetson (Space Science and Exploration Consulting Group)
Technology / Engineer

Ed Stolper (Caltech) *Terrestrial Planets*

Allan Treiman (LPI) *Venus, Moon, Mars*



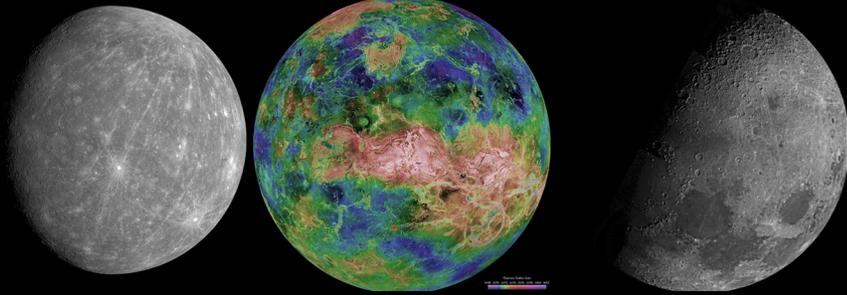
What will the Report Address?

■ Major Tasks:

- Overview of planetary science and current state of knowledge
- Inventory of the key scientific questions
- Assessment of NSF-funded infrastructure
- Recommendations on program balance:
 - Mix of mission targets
 - Mix of mission sizes
 - Research activities
- Prioritized recommendations for New Frontiers and flagship missions for the next decade
- Recommendations for NASA-funded research activities
- Recommendations for technology development

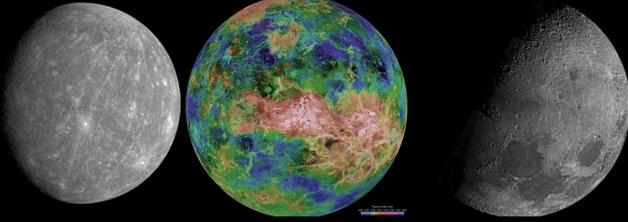
■ Scope

- Ground- and space-based planetary science
- Astrobiology



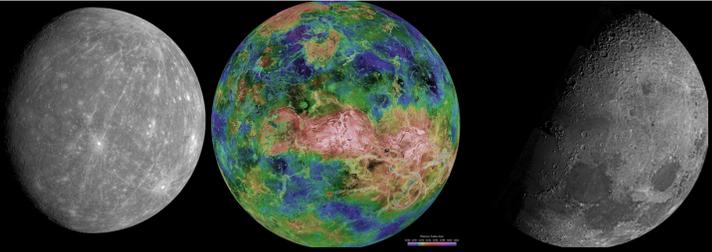
IPP Science Themes

- **Understand the origin and diversity of terrestrial planets.**
 - Bulk composition
 - Interior evolution and differentiation
 - Geological history of surfaces
- **Understand how the evolution of terrestrial planets enables and limits the origin and evolution of life.**
 - Volatile species
 - Internal planetary processes
 - External influences
- **Understand the processes that control climate on Earth-like planets.**
 - Current climate processes
 - Climate evolution
 - Primordial climates



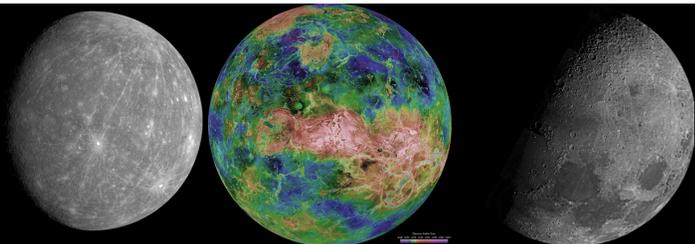
Evaluation of Candidate Missions 2009-2011

- Compared to previous decadal surveys, this one placed much greater emphasis on evaluation of the technical maturity and probable costs of candidate missions.
- The Panels and the Steering Committee include members who are expert in engineering, project management, and cost estimation.
- Resources are available to do moderate-fidelity (and conservative!) cost estimates for a **limited number** of high-priority candidate missions.
- The objective is to produce a realistic (i.e., not heavily over-subscribed) set of candidate missions for NASA to carry out in the coming decade.



Initial Mission Studies

- We have two existing NF concepts that have not yet been selected: SPA and VISE.
- Concepts sent for study (NO PRIORITIES):
 - Mercury Lander
 - Venus Mobile Explorer
 - Venus Lander with tessera option
 - Lunar Seismic mission
 - Lunar Volatiles Mission
 - Venus Climate Mission



Schedule

2008

4th Quarter Informal request received, NRC approves initiation,
Formal request received, Proposal to NASA.

2009

1st Quarter Funding received, Chair identified,
Chair and vice chair appointed

2nd Quarter Steering Group appointed, Panels Appointed

3rd Quarter Meetings of the Steering Group and Panels begin

4th Quarter Panels' period of peak activity

2010

1st-2nd Quarter Final Panel meetings, Panel reports finalized

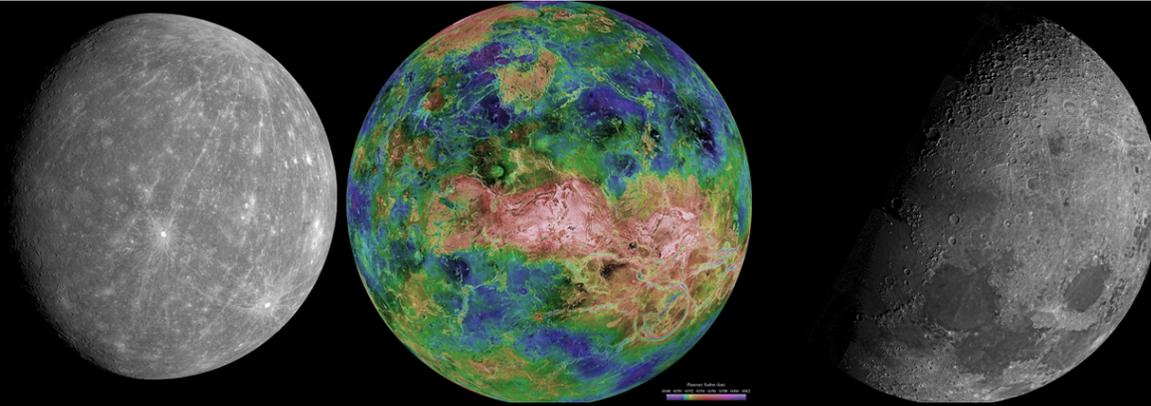
2nd-3rd Quarter Prioritization and drafting of survey report

4th Quarter Draft survey report to reviewers (end September?), Report
revised

2011

1st Quarter Report approved, NASA briefed
and report released (prepublication-format)

3rd Quarter Printed report released



- Decadal survey process aimed at articulating a program for the coming decade that represents as fully as possible the consensus view of the planetary science community. White papers were important step in this process.
- In contrast to past decadal surveys, strong emphasis on cost realism.
- **Science (and realism) will drive priorities. Mission concepts must address significant science related to our themes.**