Planetary Science Division Overview

Jim Green
Director, Planetary Science
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NASA's Year of the Solar System Events

It's about a Mars Year (687 Earth days)

2010

- **September 16 – Lunar Reconnaissance Orbiter in science mode**
- **November 4 - EPOXI encounters Comet Hartley 2**

2011

- **February 14 - Stardust NExT encounters comet Tempel 1**
- **March 7 – Planetary Science Decadal Survey released**
- **March 17 - MESSENGER orbit insertion at Mercury**
- **May 5 - Selection of 3 Discovery-class missions for study**
- **May - Selection of the next New Frontier mission for flight, OSIRIS-Rex**
- **July 16 - Dawn orbit insertion at asteroid Vesta**
- **August 5 - Juno launched to Jupiter**
- **August 9 - Mars Opportunity Rover gets to Endeavour Crater**
- **September 10 - GRAIL launched to the Moon**
- **November 25 - Mars Science Laboratory launch to Mars**
- **December 31 - GRAIL-A orbit insertion at Moon**

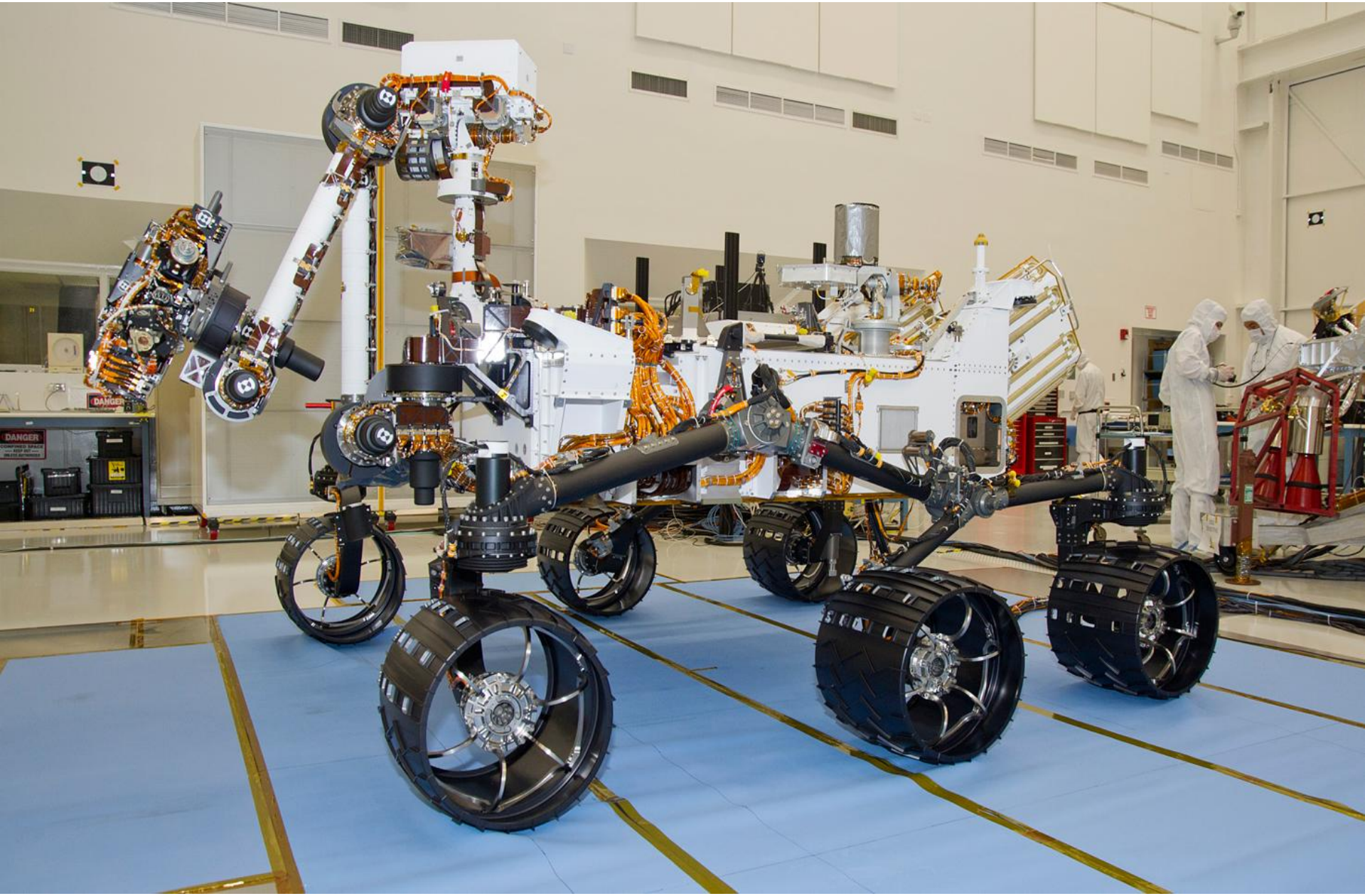
2012

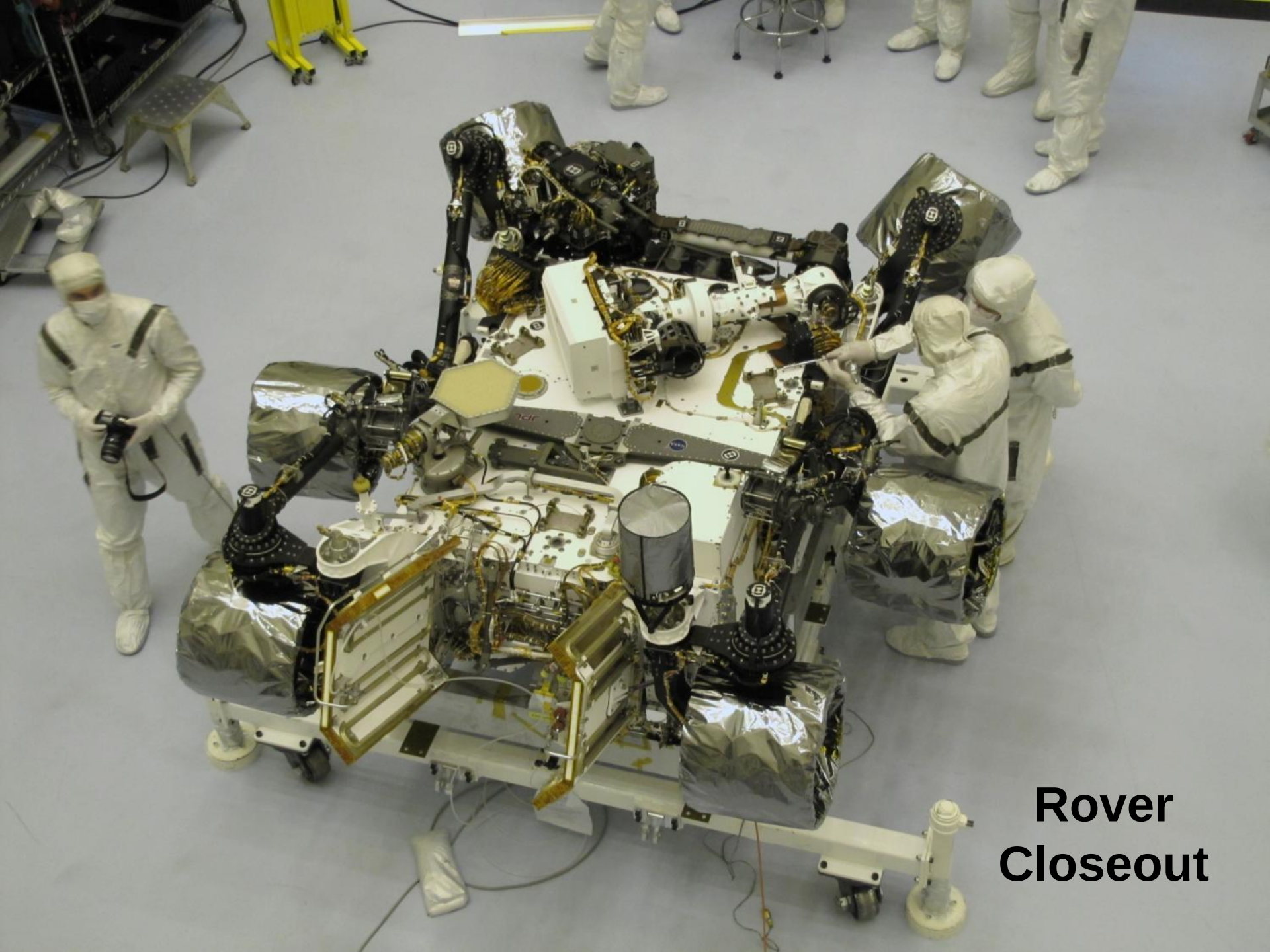
- **January 1 - GRAIL-B orbit insertion at Moon**
- **Mid-year - Dawn leaves Vesta starts on its journey to Ceres**
- **August – Curiosity Rover lands on Mars**

• **Completed**

http://solarsystem.nasa.gov

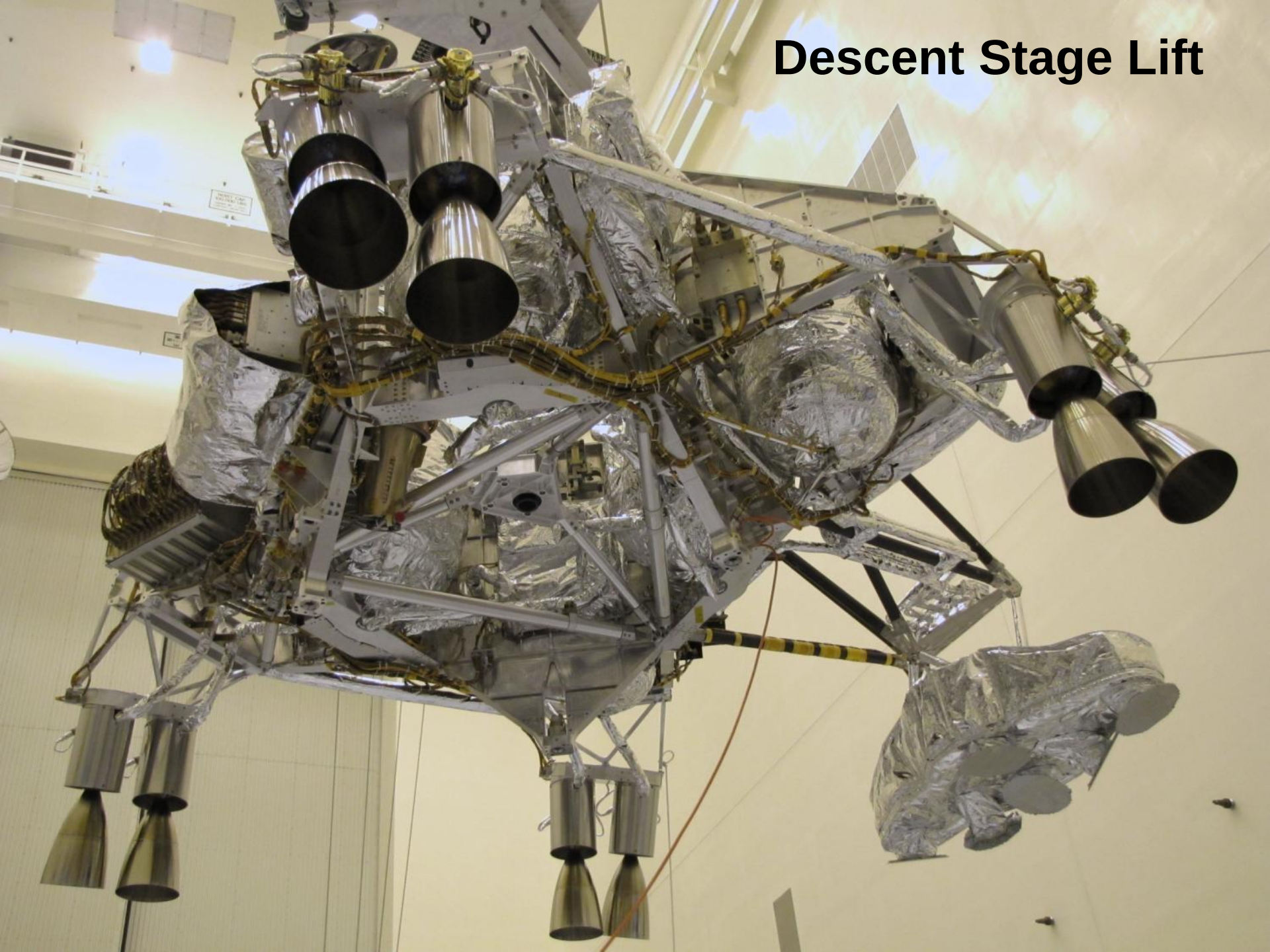
MSL “Curiosity” Rover Final Testing @ JPL





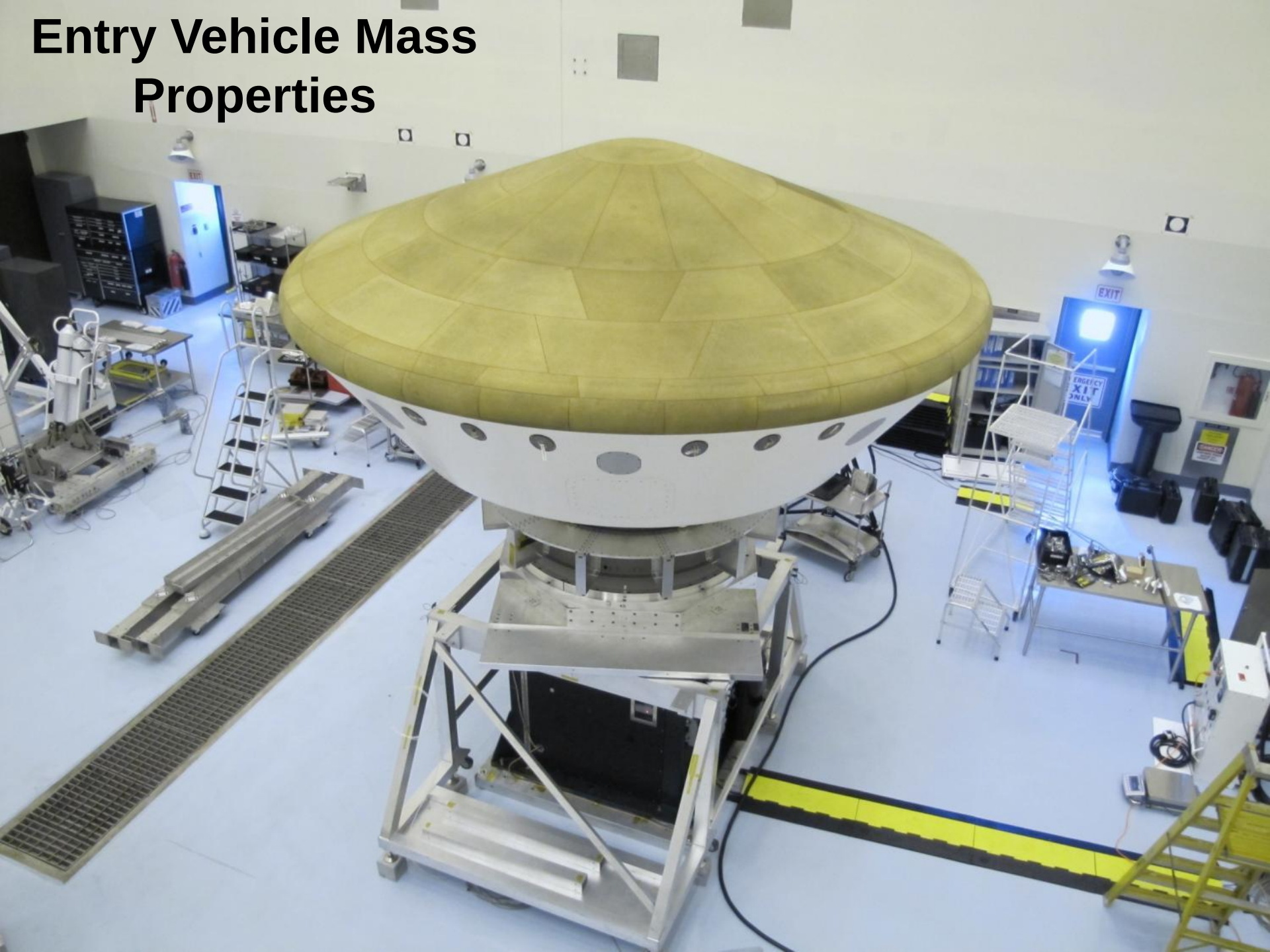
Rover Closeout

Descent Stage Lift

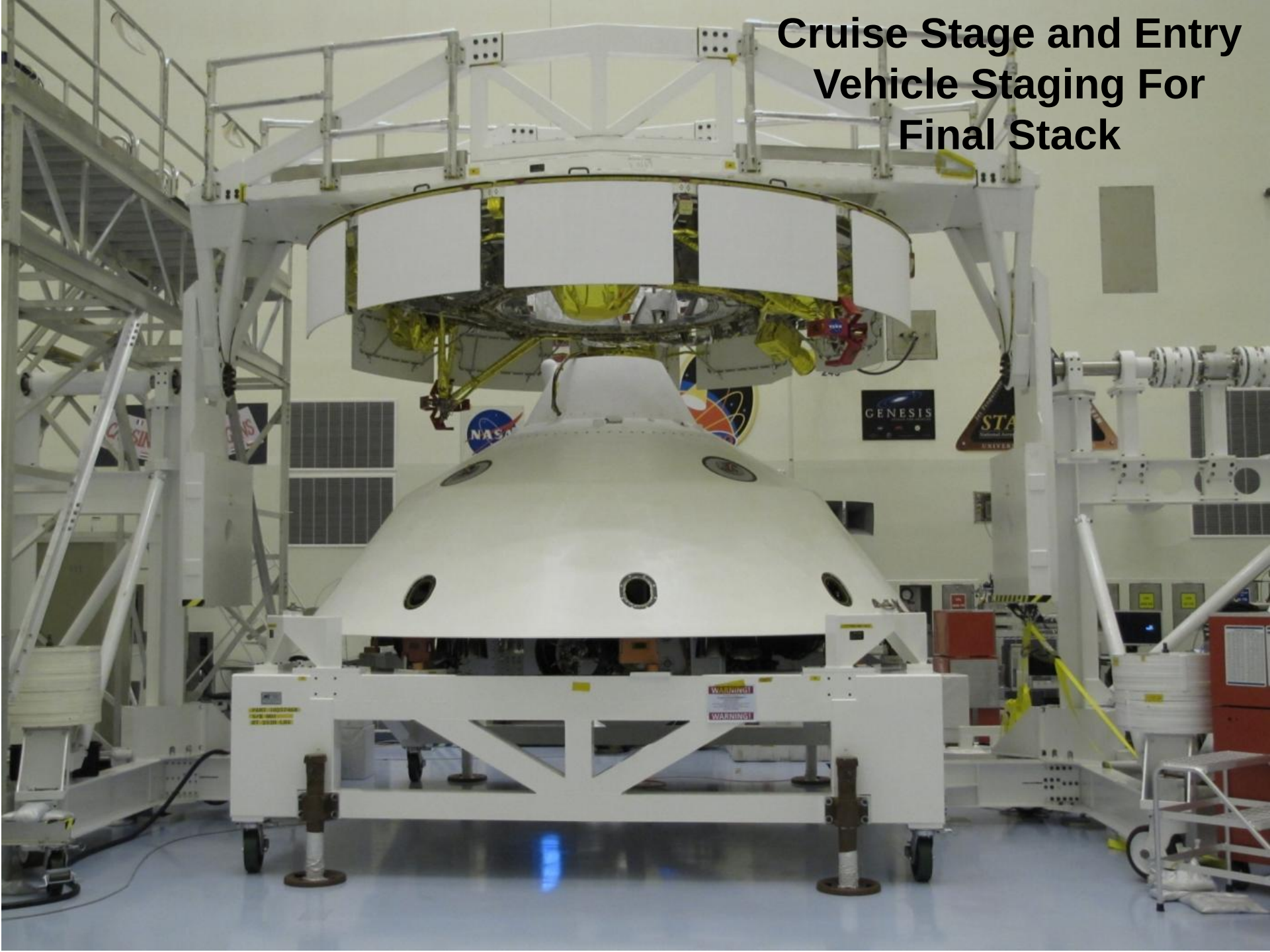


Mated Descent Stage and Rover

Entry Vehicle Mass Properties

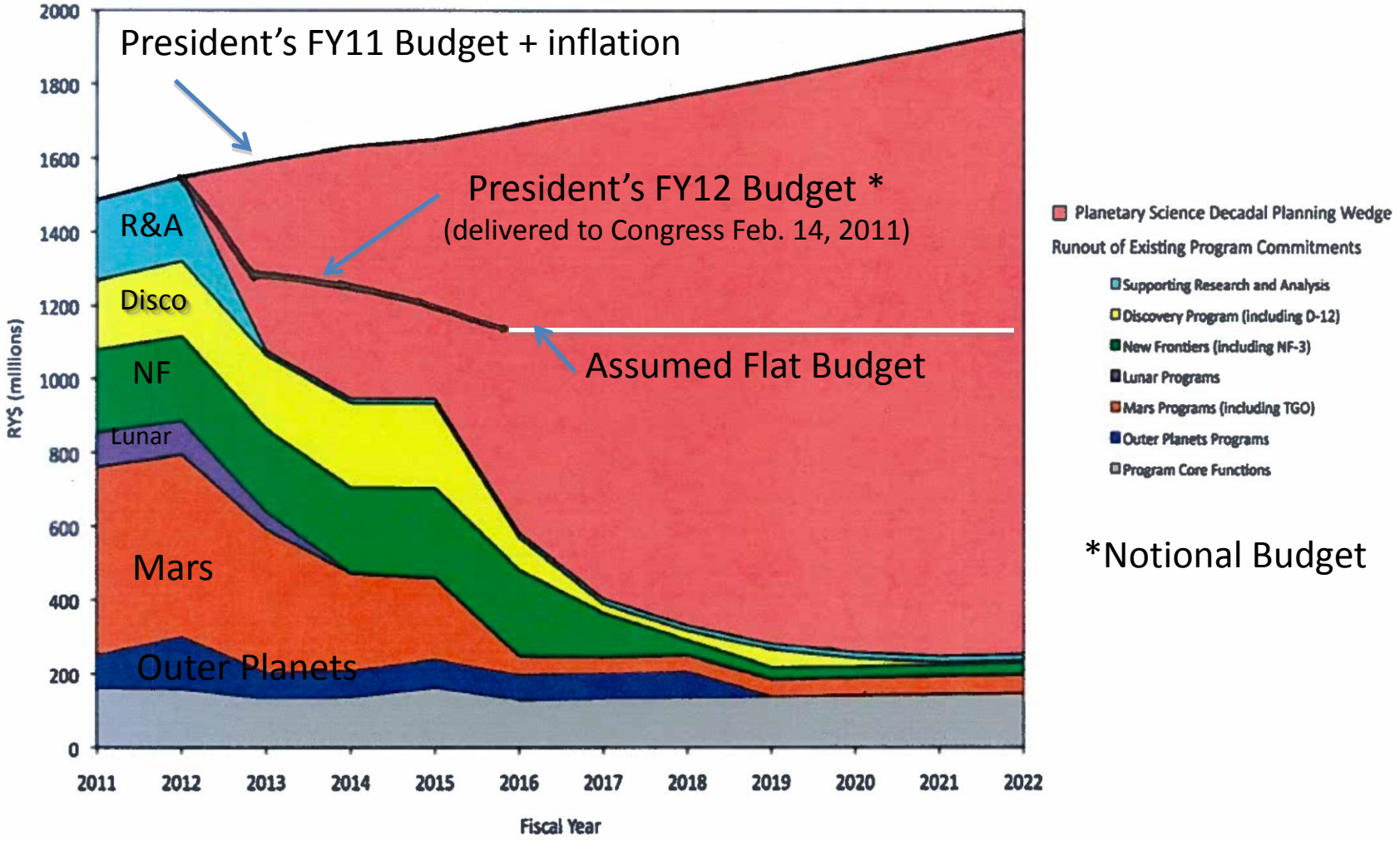


Cruise Stage and Entry Vehicle Staging For Final Stack



Planetary Science's FY12 Budget

Planetary Funding Profile
Issued Prior to the Planetary Decadal



*Notional Budget

Red area is what was available for the next decadal programs from Presidents FY11 budget

FY2012 Budget

- NASA is under a continuing Resolution until November 18th
- Current situation:
  - Presidents FY12 Planetary Budget = $1,540.7M
  - House Com. = $1,500M Delta: $40.7M (no JWST)
  - Senate Com. = $1,500.4M Delta: $40.3M (with JWST)
- PSD will execute the program once Congress passes FY12 budget (which usually comes with additional direction)

Planetary Program Architecture

Recommended by the Planetary Decadal Survey

Large Missions ("Flagship"-scale)

"Recommended Program"
(budget increase for JEO new start)

1) **Mars Astrobiology Explorer-Cacher – descoped**
2) **Jupiter Europa Orbiter (JEO) – descoped**
3) **Uranus Orbiter & Probe (UOP)**
4/5) **Enceladus Orbiter & Venus Climate Mission**

"Cost Constrained Program"
(based on FY11 Request)

1) **Mars Astrobiology Explorer-Cacher – descoped**
2) **Uranus Orbiter & Probe (UOP)**

Example

"Less favorable" budget picture than assumed
(e.g., outyears in FY12 request)

Descope or delay Flagship mission

Discovery
$500M (FY15) cap/mission (exclusive of LV) and 24 mo. cadence for selection

New Frontiers
$1B (FY15) cap per mission (exclusive of LV) with 2selections during 2013-22

Research & Analysis (5% above final FY11 amount then ~1.5%/yr)

Technology Development (6-8%)

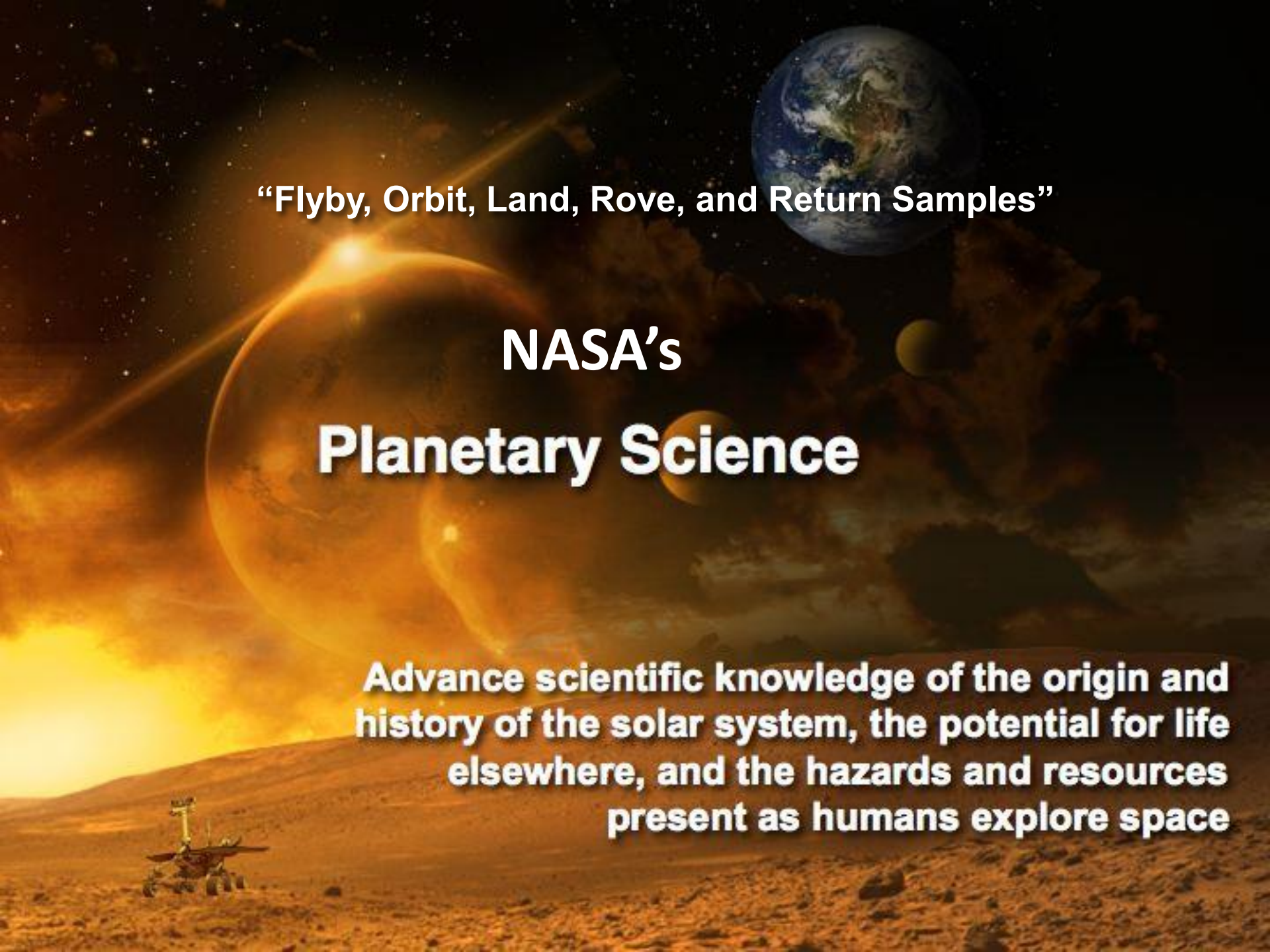
Current Commitments (ie: Operating Missions)

Future of Planetary Science

- Planetary Decadal just released lays out the next decade
  - ***Balanced Program*** (large strategic, Discovery, NF, R&A, Commitments)
- We are in the middle of a major revolution in the understanding of the origin and evolution of the solar system and if there is life beyond Earth
- Human exploration is depending on planetary science to lead the way in understanding the environment and hazards humans will face beyond low Earth orbit. – Moon, Asteroids, Mars
  - President Obama has stated that we will visit an asteroid by 2025; circle Mars in 2030; and that Mars is the ultimate destination
  - This makes planetary science a critical component to the National Space Policy
- The National Space Policy also stresses international cooperation on mutually beneficial space activities
  - ESA is putting in ~$1.2B (1B euros) for a new joint Mars Program with our support about the size of a New Frontiers program (also ~$1.4B)
- Utility: finding potentially hazardous objects that threaten the Earth
- We are constantly rewriting the textbooks
  - If any one has the “inspiration factor” it’s got to be Planetary Science!

Planetary's Return on Investment

- Science is not done until it is shared!
- We are receiving National/Worldwide attention
  - Discovery & History Channel shows, PBS, etc
- Upcoming show: NOVA "Finding Life beyond Earth"
  - 2 hour back to back special on Wed Oct. 19th
- Make a long-term commitment with our stakeholders by communicating why they should care about planetary science


"Flyby, Orbit, Land, Rove, and Return Samples"
NASA's
Planetary Science
Advance scientific knowledge of the origin and history of the solar system, the potential for life elsewhere, and the hazards and resources present as humans explore space