

The background of the slide is a composite image of space. On the left, there is a large, detailed view of Saturn with its rings. Below it, the Earth and the Moon are visible. In the center and right, there are various celestial bodies, including a blue planet, a yellow planet, and a ringed planet, set against a backdrop of a glowing nebula and a starry field.

# PLANETARY SCIENCE DIVISION

Jim Green  
Director, Planetary Science

April 13, 2011

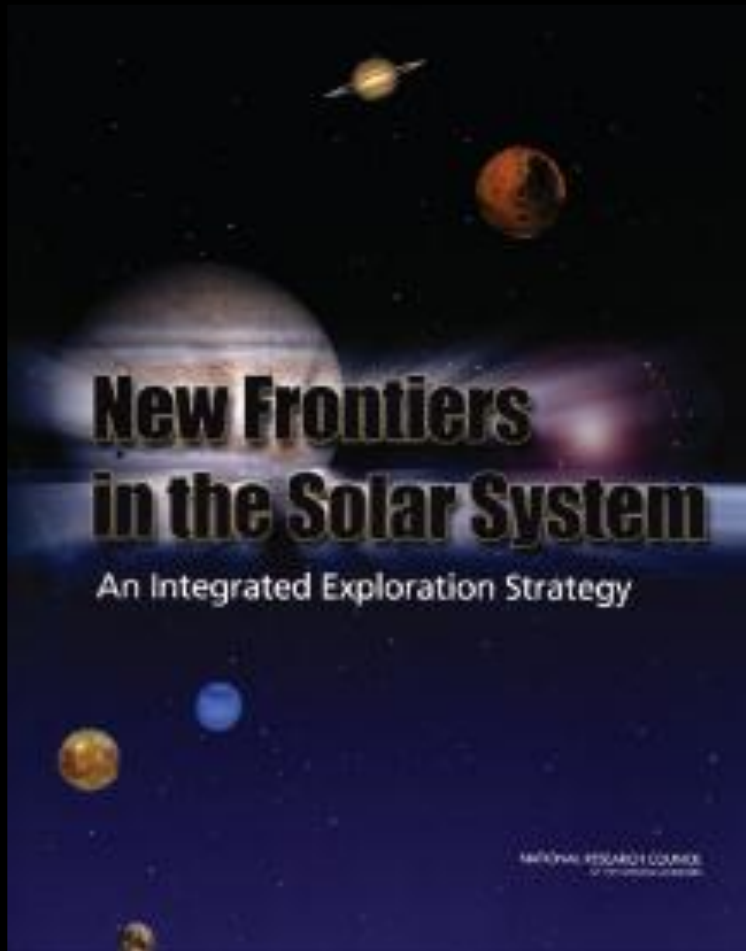
**“Flyby, Orbit, Land, Rove, and Return Samples”**

# **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**



# 2003 Planetary Science Decadal Survey Themes



- The 1<sup>st</sup> Billion Years of Solar System History
- Volatiles & Organics: The Stuff of Life
- The Origin and Evolution of Habitable Worlds
- Processes: How Planetary Systems Work

# Discovery Program

Mars evolution:  
Mars Pathfinder (1996-1997)



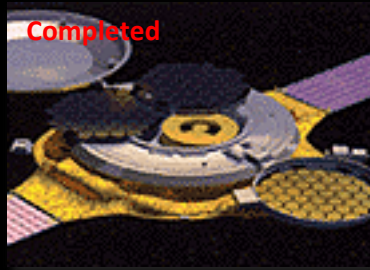
Lunar formation:  
Lunar Prospector (1998-1999)



NEO characteristics:  
NEAR (1996-1999)



Solar wind sampling:  
Genesis (2001-2004)



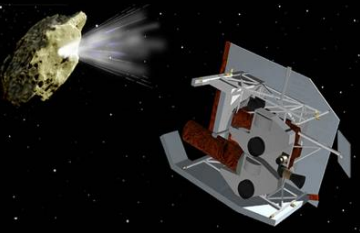
Comet diversity:  
CONTOUR



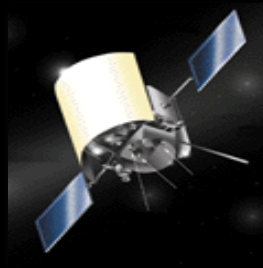
Nature of dust/coma:  
Stardust (1999-2006)



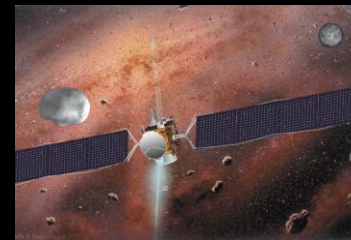
Comet internal structure:  
Deep Impact (2005-2011)



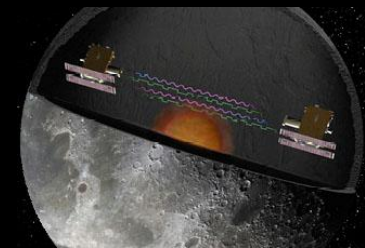
Mercury environment:  
MESSENGER (2004-2012)



Main-belt asteroids:  
Dawn (2007-2015)



Lunar Internal Structure  
GRAIL (2011-2012)



Currently Operating

# New Frontiers Program

1<sup>st</sup> NF mission  
New Horizons:

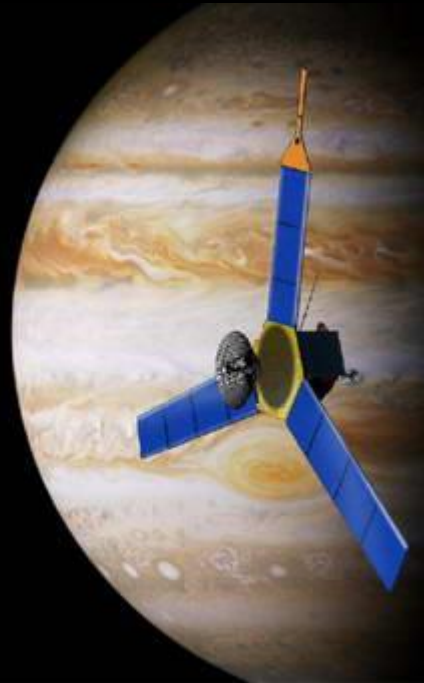
**Pluto-Kuiper Belt  
Mission**



Launched January 2006  
Arrives July 2015

2<sup>nd</sup> NF mission  
JUNO:

**Jupiter Polar Orbiter Mission**



August 2011 launch

3<sup>rd</sup> NF mission opportunity

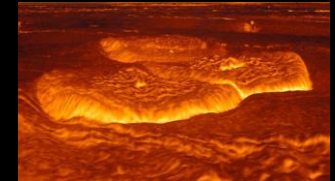
MoonRise  
South Pole-Aitken Basin  
Sample Return



OSIRIS-Rex  
Asteroid Sample Return



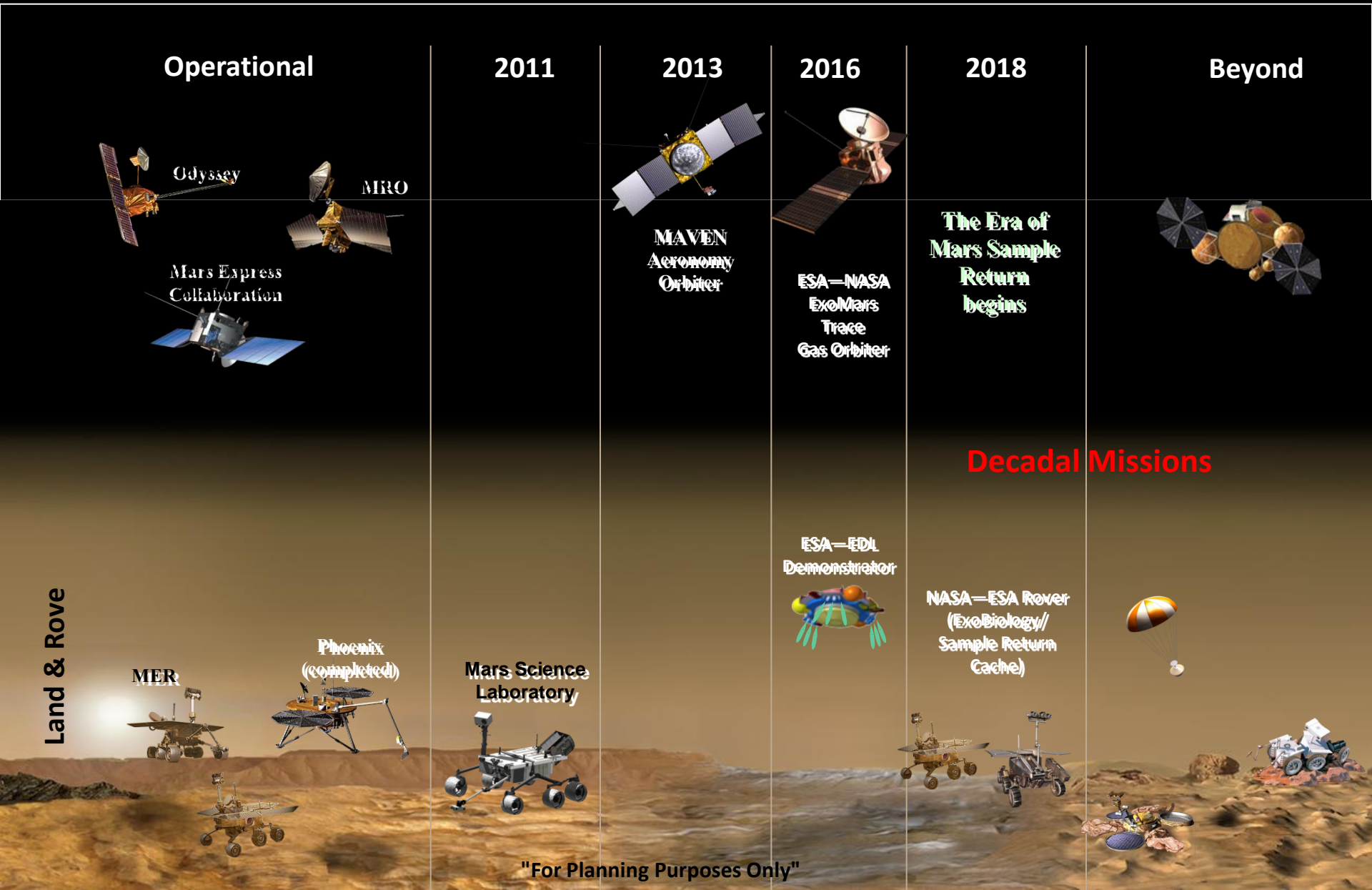
SAGE  
Venus In Situ Lander



Concept Study Reports received 1/28/2011  
Down Select Decision Summer 2011  
Launch ~2016

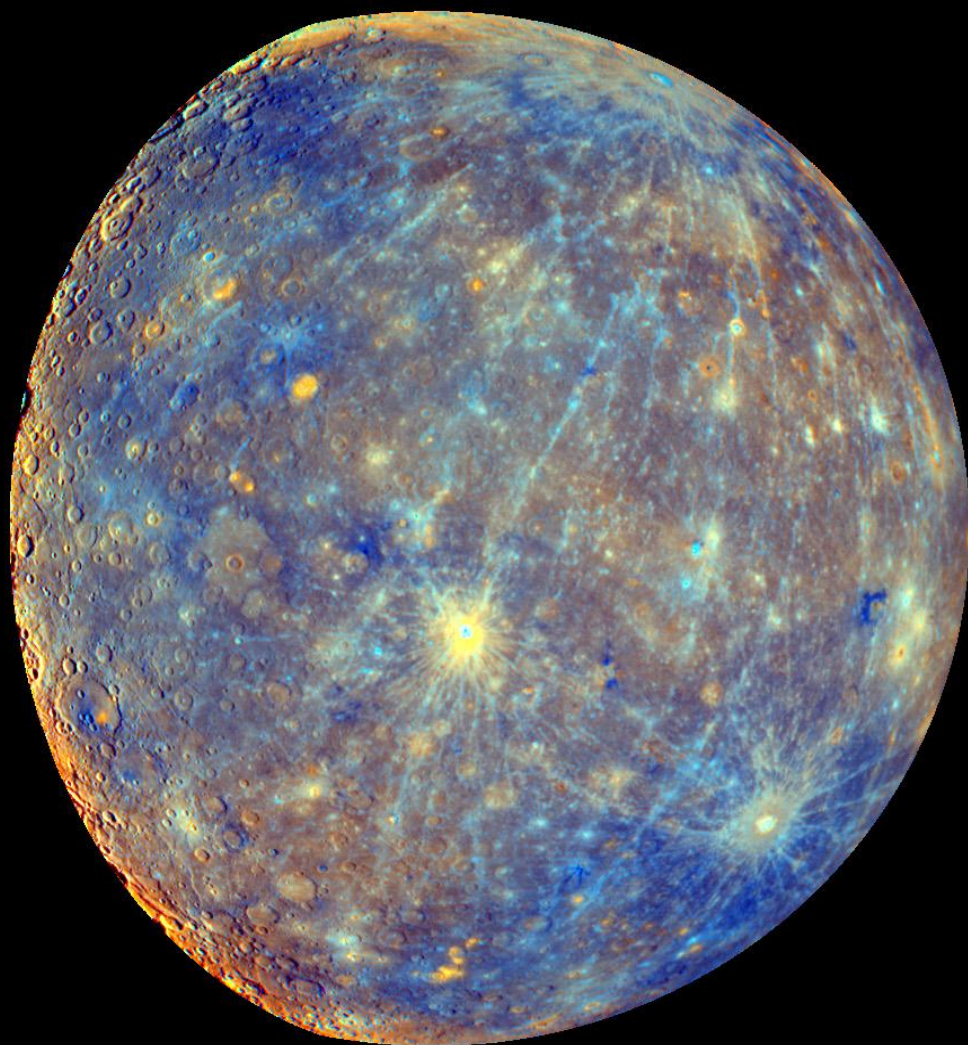
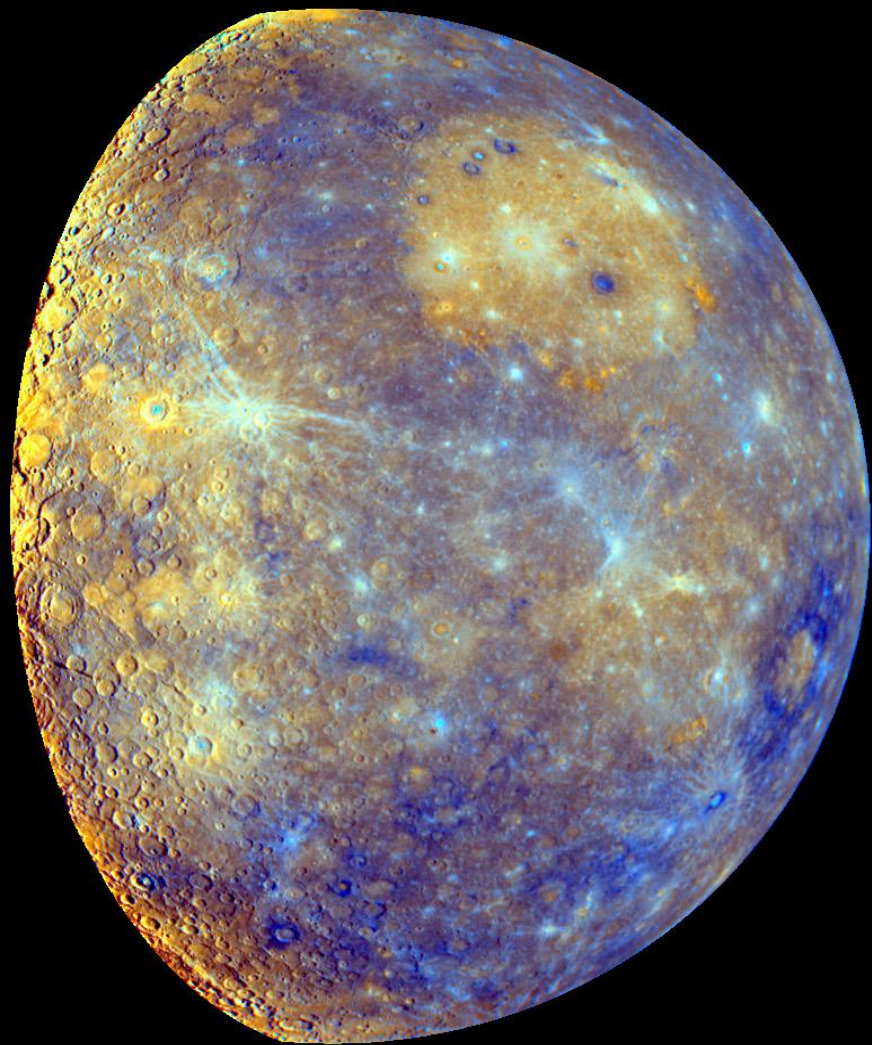


# Mars Missions Portfolio Overview



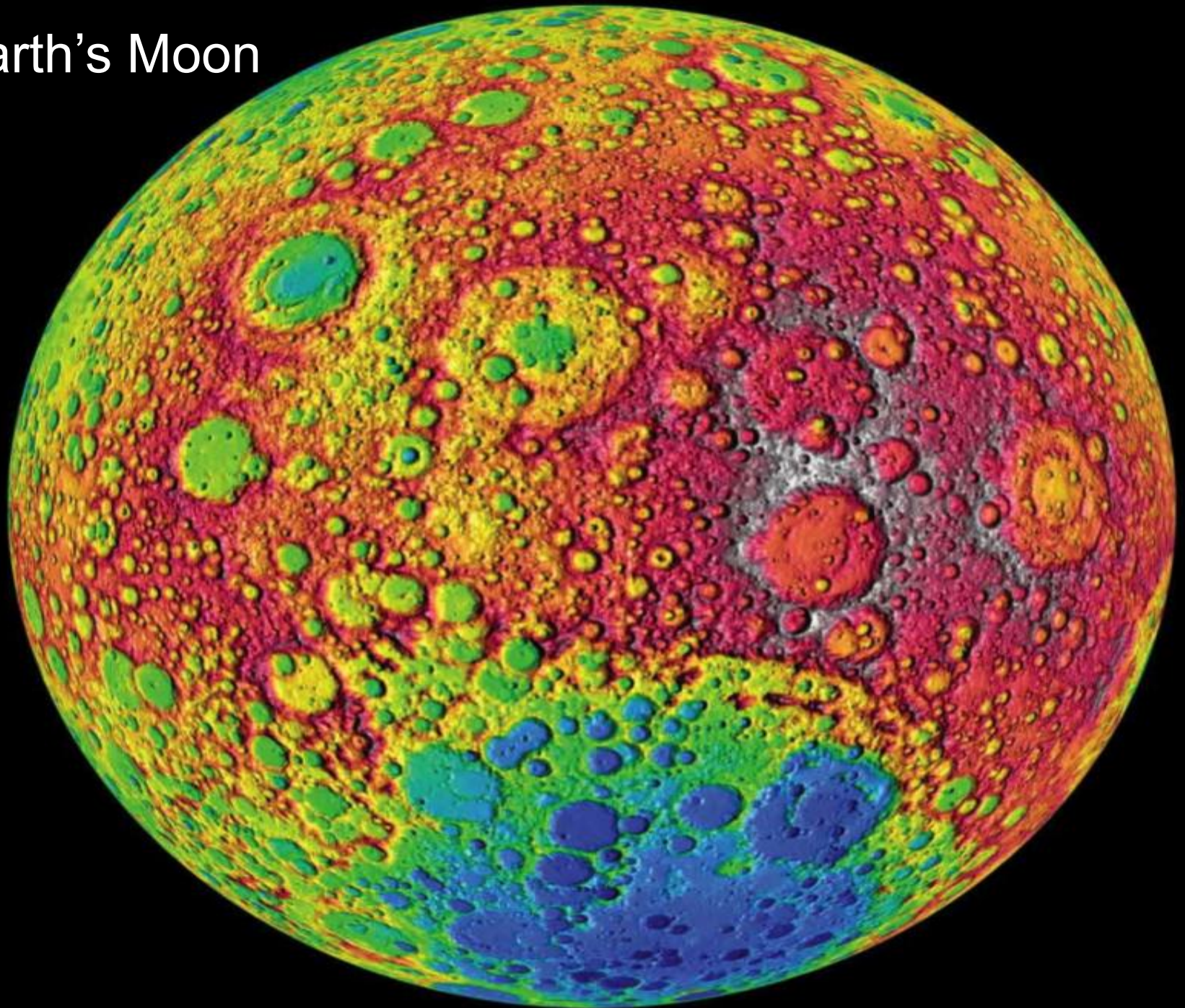
**Decadal Missions**

# Mercury

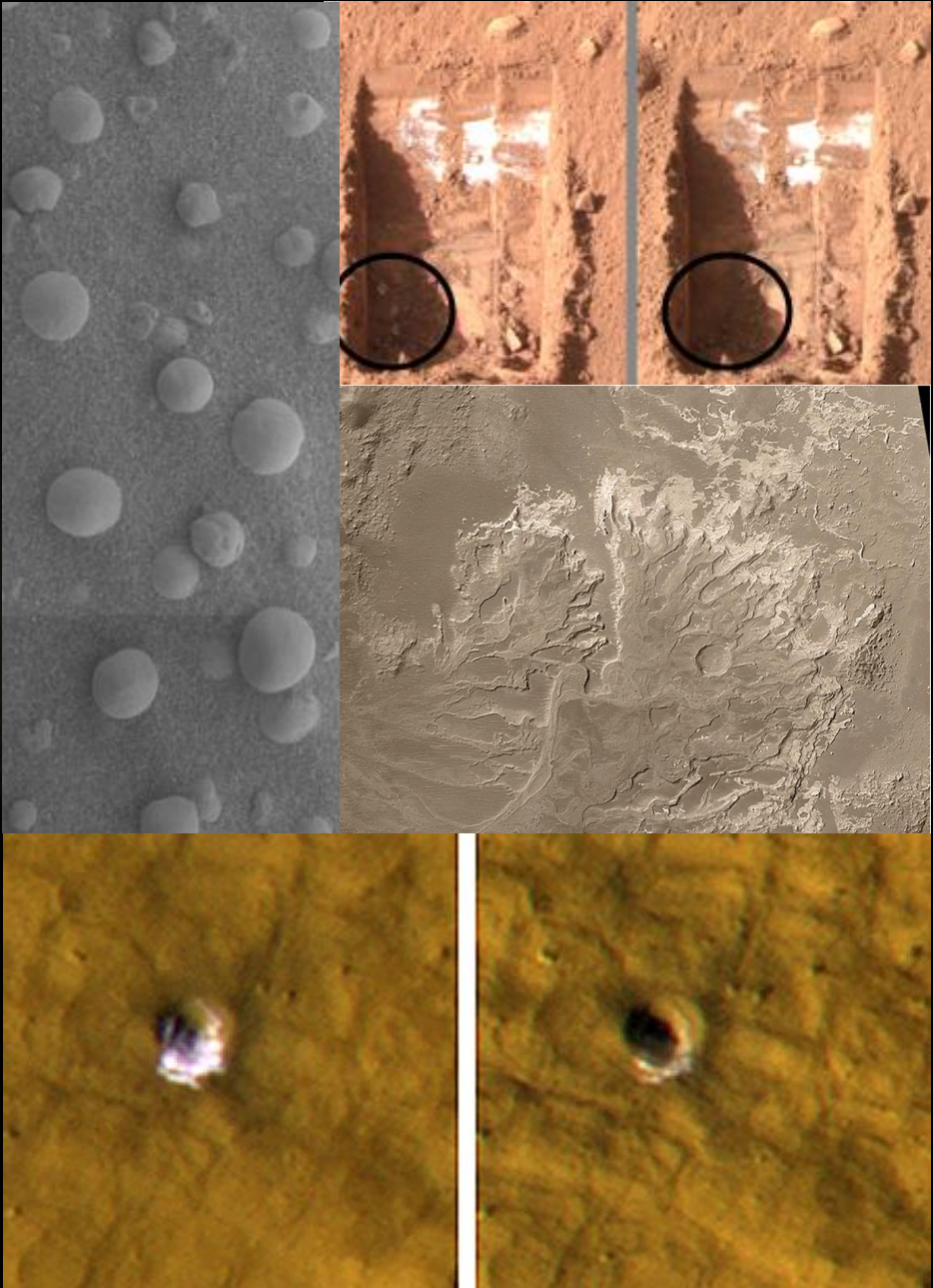
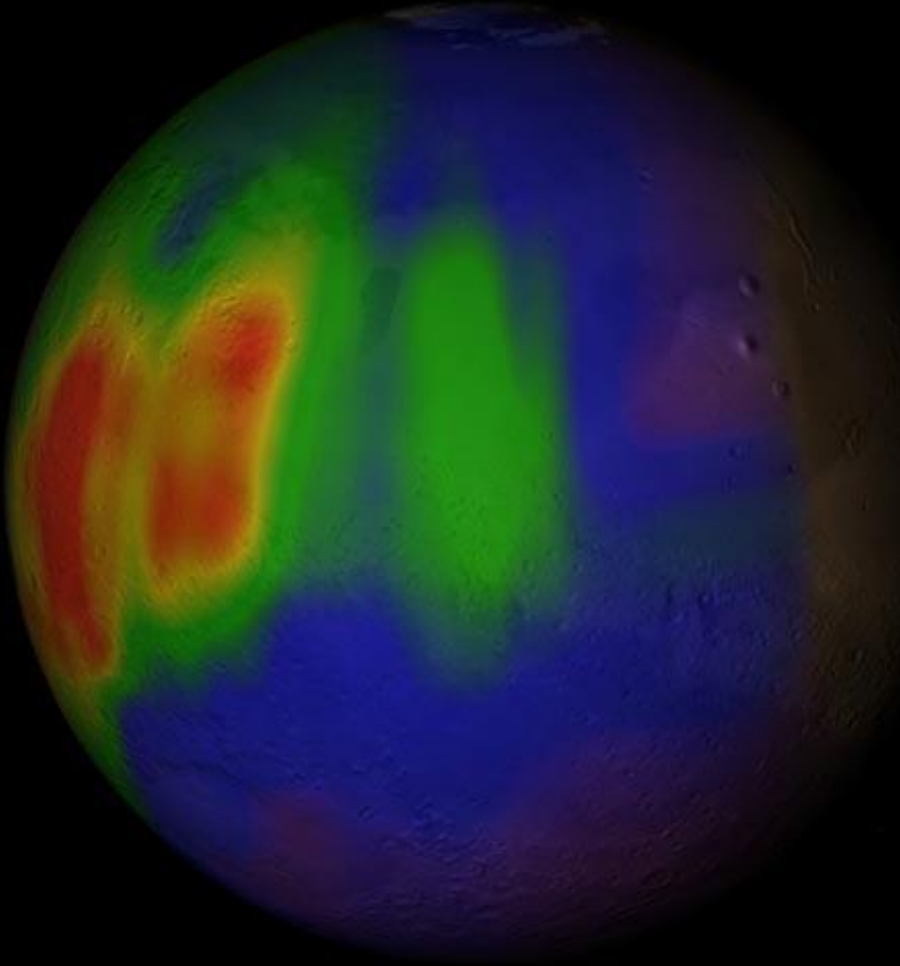




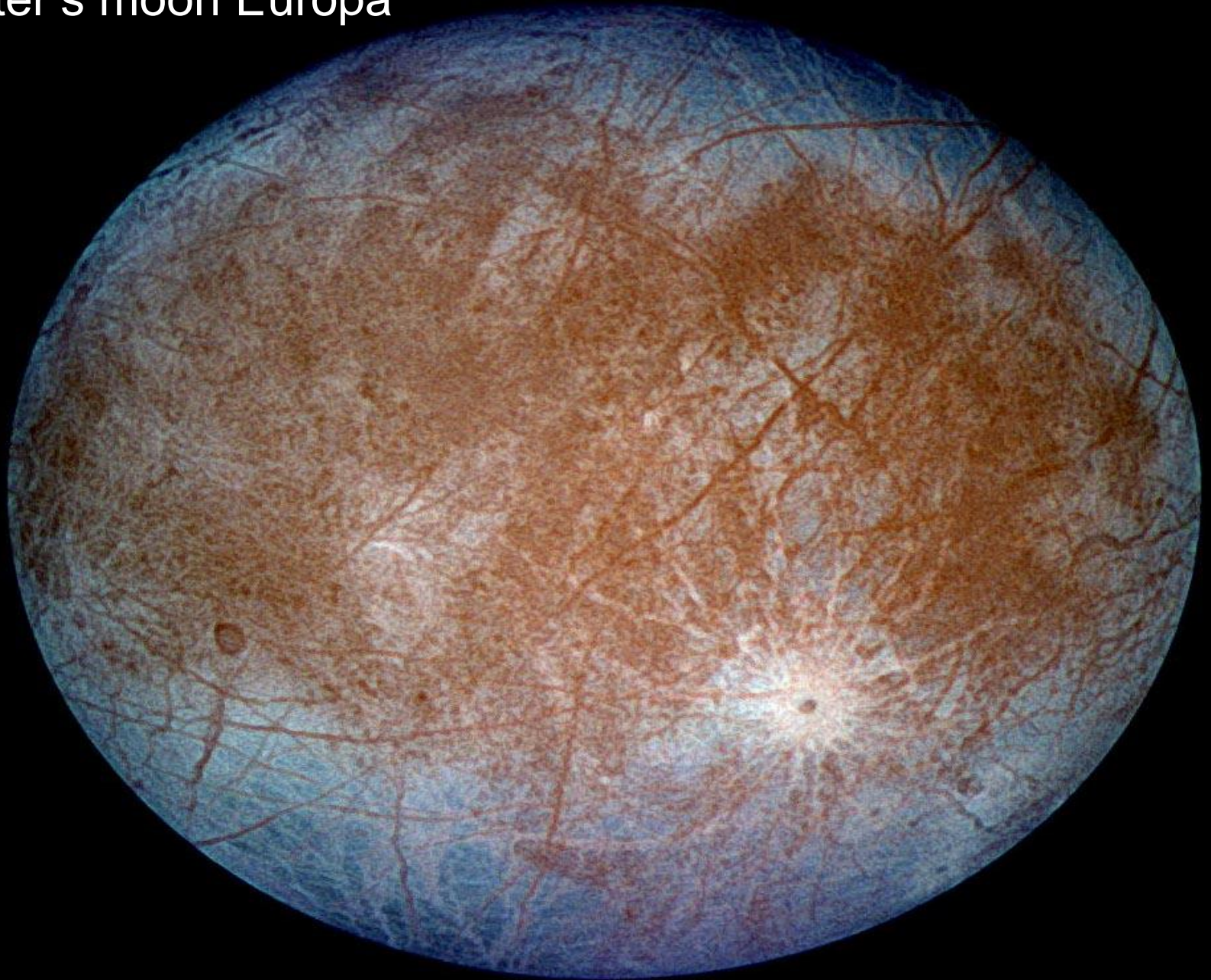
# Earth's Moon



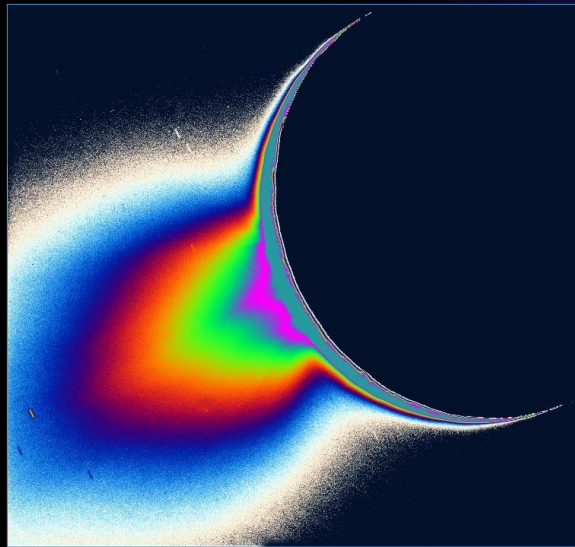
Mars



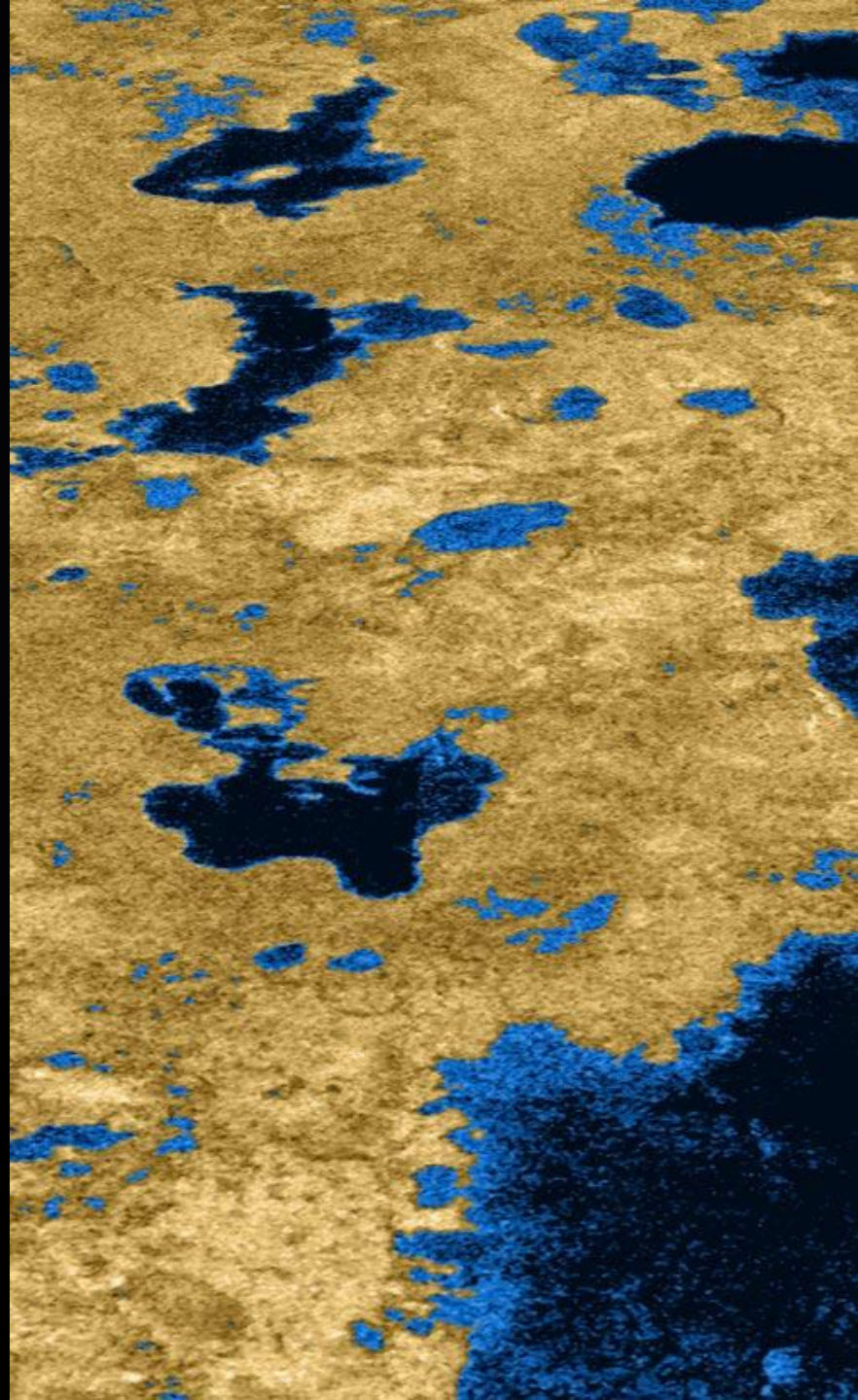
Jupiter's moon Europa



# Saturn's moon Enceladus



# Saturn's moon Titan



Earth



# Year of the Solar System Planetary Science Mission Events



## 2010

- \* September 16 – Lunar Reconnaissance Orbiter in PSD
- \* November 4 - EPOXI encounters Comet Hartley 2
- November 19 - Launch of O/OREOS

\* Completed

## 2011

- \* February 14 - Stardust NExT encounters comet Tempel 1
- \* March 7 – Planetary Science Decadal Survey released
- \* March 17 - MESSENGER orbit insertion at Mercury (8:45 pm Eastern)

July - Dawn orbit insertion at asteroid Vesta

August 5 - Juno launch to Jupiter

September 8 - GRAIL launch to the Moon

November 25 - MSL launch to Mars

## 2012

Mid 2012 -- Mars Opportunity Rover gets to Endeavour Crater

Mid-year -- Dawn leaves Vesta starts on its journey to Ceres

August - MSL lands on Mars







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<http://solarsystem.nasa.gov/2013decadal>