

The background of the slide is a vibrant, artistic representation of space. It features a variety of celestial bodies: Saturn with its prominent rings in the upper left; Jupiter with its characteristic bands and the Great Red Spot in the lower left; and several other planets, including a blue one and a reddish one, scattered throughout. The scene is filled with glowing nebulae in shades of blue and purple, and numerous bright stars of varying sizes. A central horizontal band, which serves as the background for the title, has a golden, textured appearance.

# PLANETARY SCIENCE DIVISION

Jim Adams  
Deputy Director

March 31, 2011

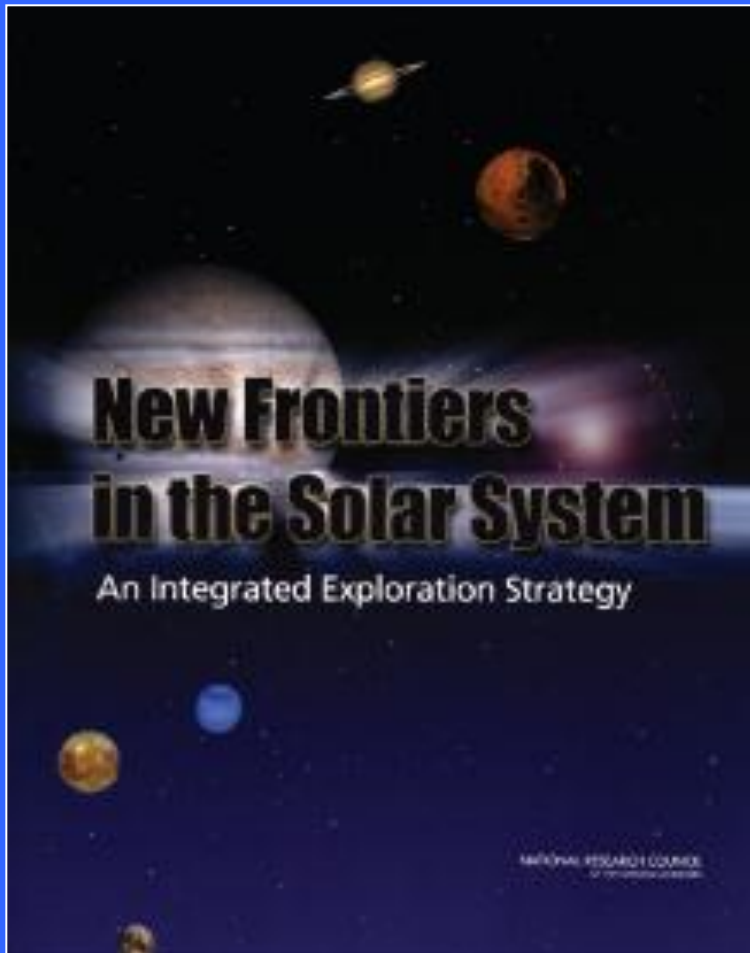
**“Flyby, Orbit, Land, Rove, and Return Samples”**

# **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**



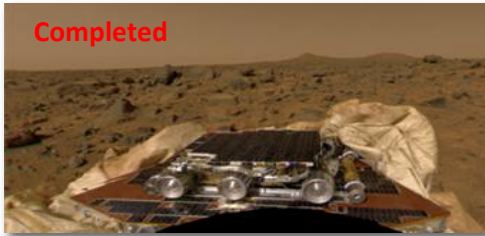
# 2003 Planetary Science Decadal Survey Themes



- 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)



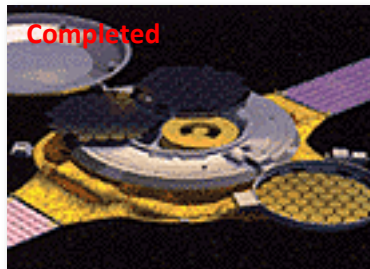
Lunar formation:  
Lunar Prospector (1998-1999)



NEO characteristics:  
NEAR (1996-1999)



Solar wind sampling:  
Genesis (2001-2004)



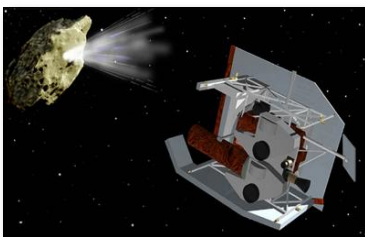
Comet diversity:  
CONTOUR



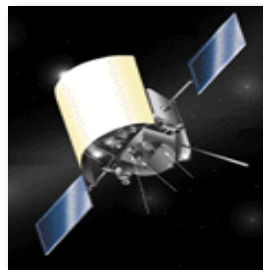
Nature of dust/coma:  
Stardust (1999-2006)



Comet internal structure:  
Deep Impact (2005-2011)



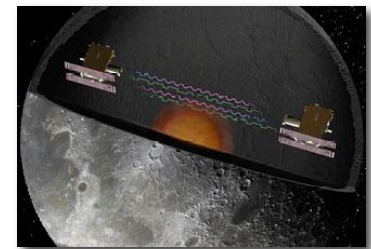
Mercury environment:  
MESSENGER (2004-2012)



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:

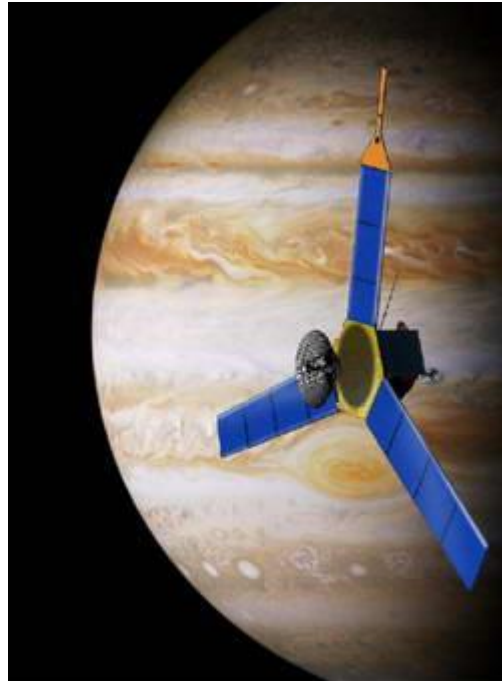
**Pluto-Kuiper Belt  
Mission**



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

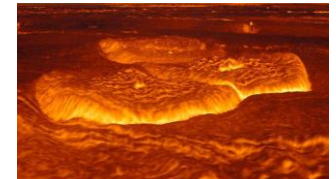
MoonRise  
South Pole-Aitken Basin  
Sample Return



OSIRIS-Rex  
Asteroid Sample Return



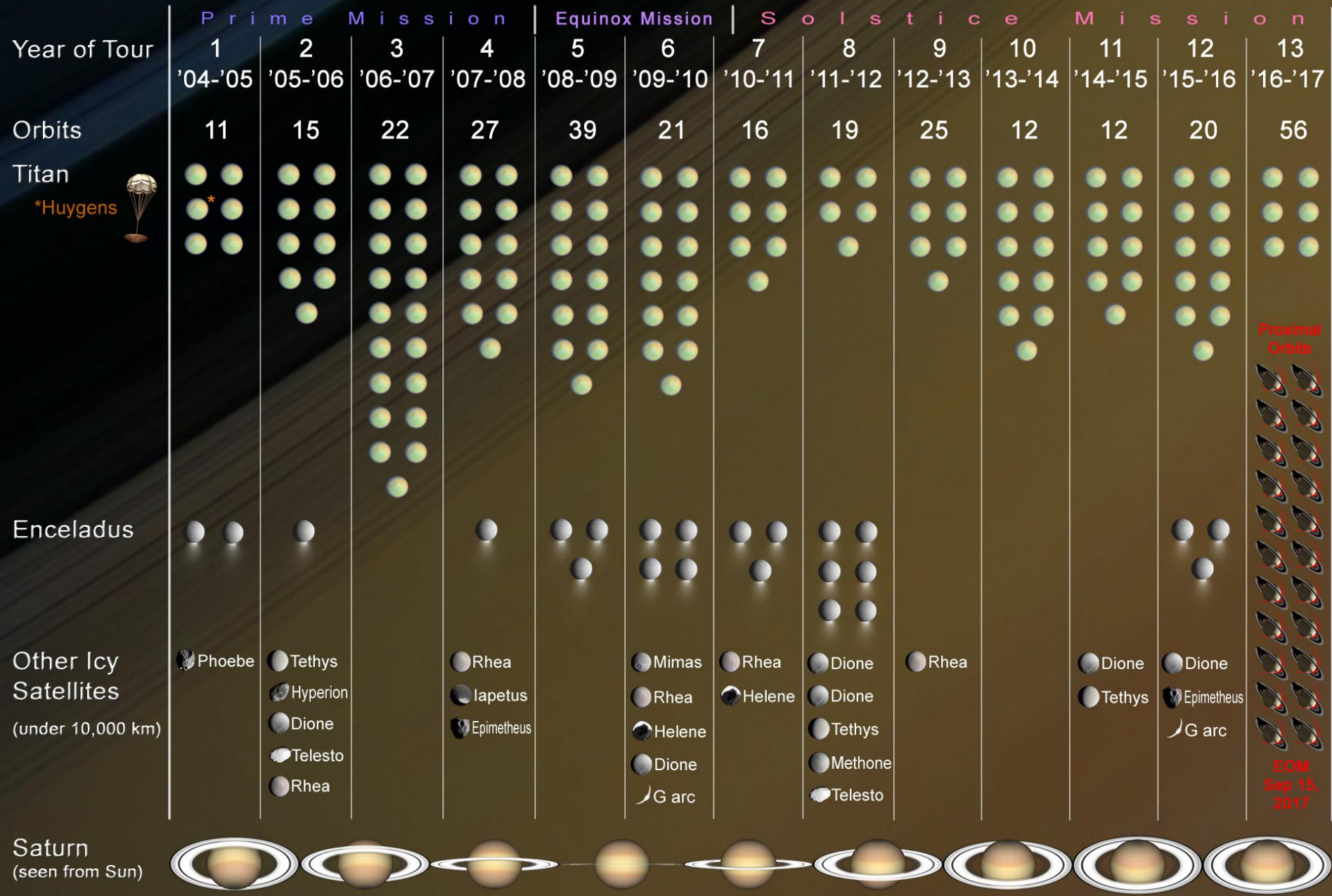
SAGE  
Venus In Situ Lander



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

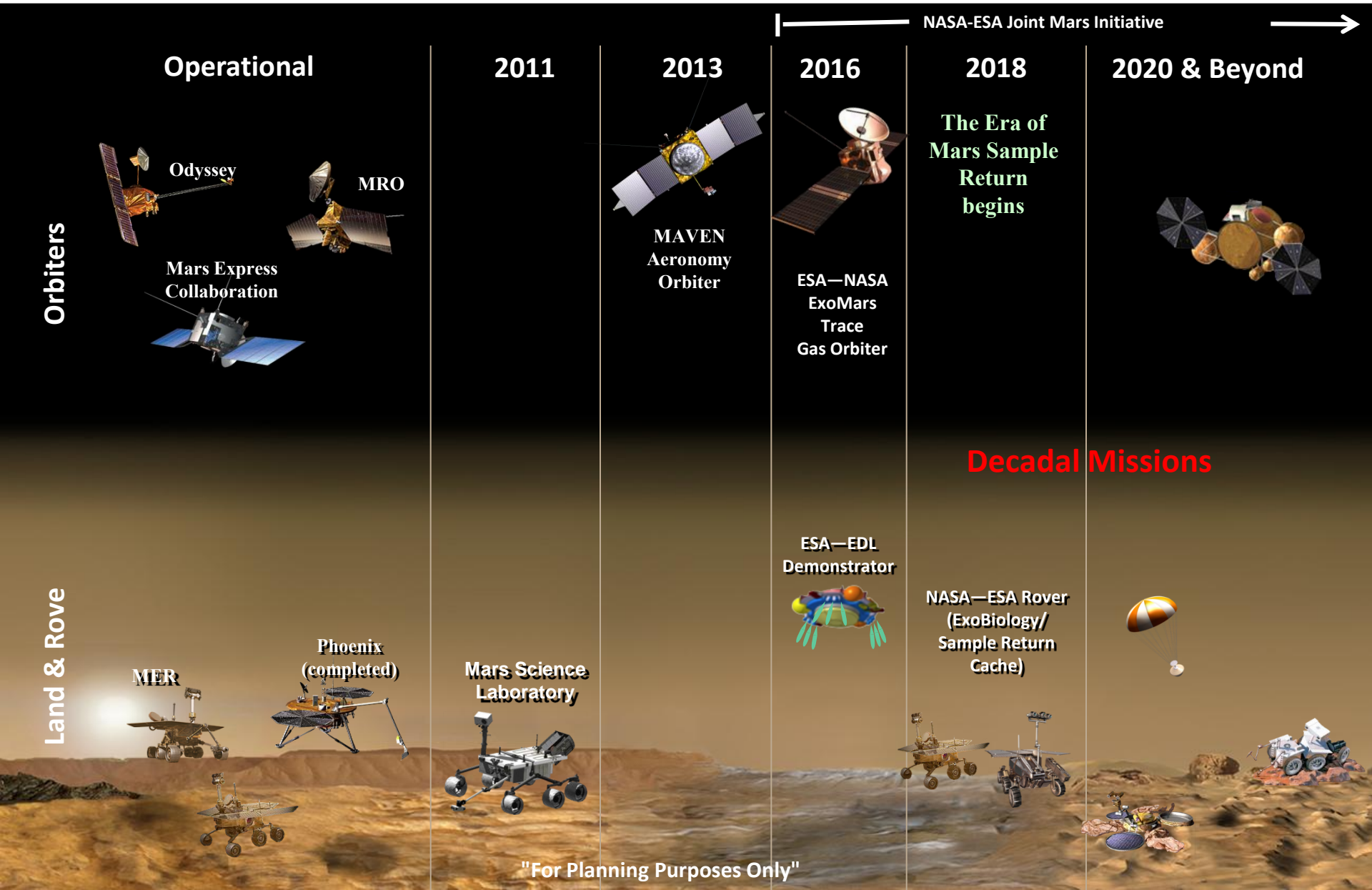
# Cassini Mission Overview

Four-Year Prime Tour, Equinox Mission, and Solstice Mission (Proposed), May 2004 - September 2017

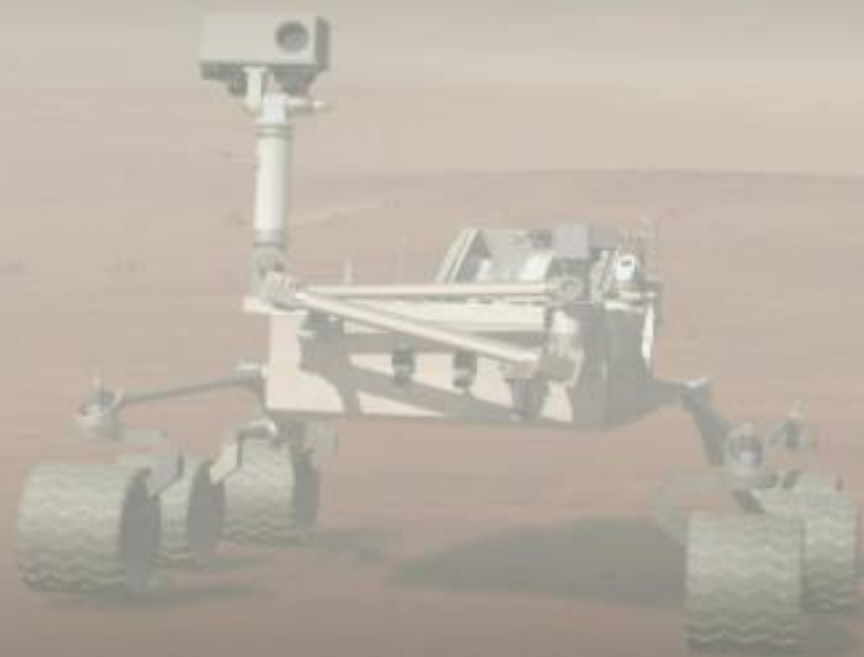


EOM  
Sep 15,  
2017

# Planned Joint NASA-ESA Mars Initiative Portfolio Overview



# Mars Science Laboratory





# Decade Science Highlights

- Titan methane cycle
- Amino acids in comets
- Water on the Moon
- Enceladus Plumes
- Venus “hot spots”
- Over 1000 extrasolar planets discovered
- Late heavy bombardment due to outer planets motion
- Arsenic Substituting Bacteria
- Venus storms
- Phosphates on Mars
- Subsurface Ice on Mars
- 1000 Kuiper belt Objects
- Methane on Mars varies with season
- Io Volcanoes

A graphic for the "Year of the Solar System" featuring a silhouette of a human head in profile, looking towards a bright sun in a starry blue sky. Various planets and moons are depicted in the foreground, including Saturn, Jupiter, Mars, and the Moon.

# YEAR OF THE SOLAR SYSTEM

## **2010**

- **Sept 16 – LRO Returns to PSD**
- **Nov 4 - EPOXI at Comet Hartley 2**
- **Nov 19 - Launch of O/OREOS**
- **Dec 7- Venus Climate Orbiter (JAXA) arrives at Venus**

## **2011**

- **Feb 14 - Stardust NExT at comet Tempel 1**
- **Mar 7 – Planetary Science Decadal Survey**
- **Mar 17 – MESSENGER at Mercury**

## **2011**

- **July - Dawn orbit insertion at asteroid Vesta**
- **Aug 5 - Juno launch to Jupiter**
- **Sept 8 - GRAIL launch to the Moon**
- **Nov 25 - MSL launch to Mars**

## **2012**

- **Mid 2012 -- Mars Opportunity Rover gets to Endeavour Crater**
- **Mid-year -- Dawn leaves Vesta for Ceres**
- **Aug - MSL lands on Mars**

*You are here...*



*...but the possibilities are infinite!*