

Why Are We Exploring Space?

What's Up At NASA?

An overview of NASA's Plans
and some really cool stuff
happening in a solar system
near *you*

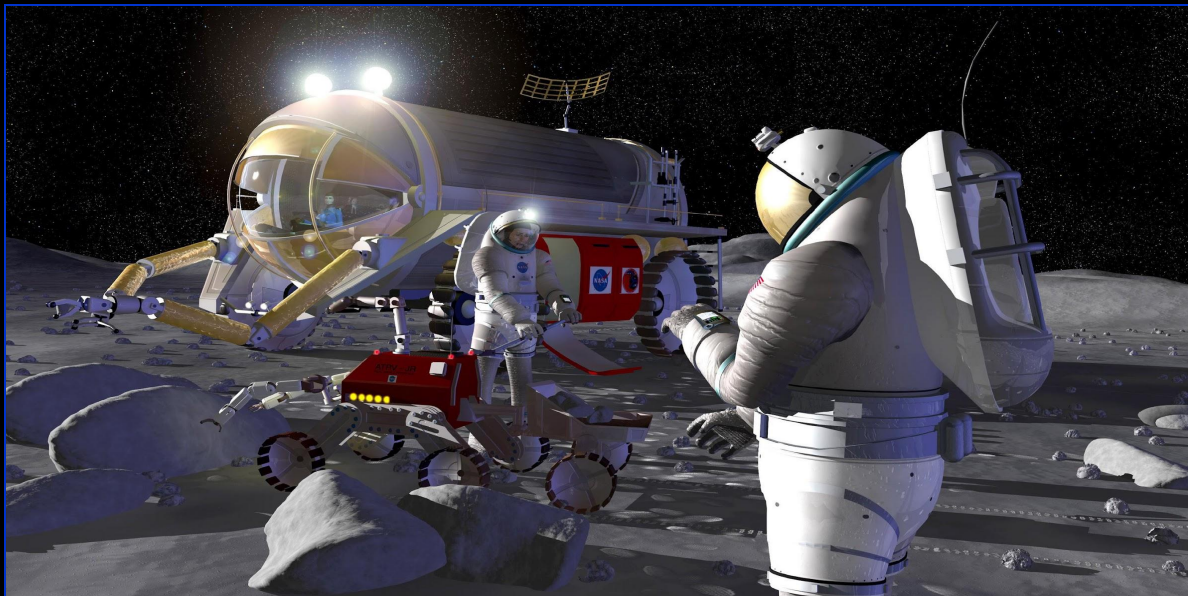


Why Do We Explore Space?

- Because it's there
- Quest for knowledge
 - Learn about what is around us - dangers, benefits
 - Reap benefits of what's around
 - Reap benefits of preparing for / undertaking exploration itself - technology and techniques
 - Survival
- Quest for understanding - learn about ourselves and our place in the universe

Picture It ...

- “... a new journey of exploration of the solar system beginning with the return of humans to the Moon by the end of the next decade and leading to subsequent landings on Mars and other destinations such as near-Earth asteroids ...”



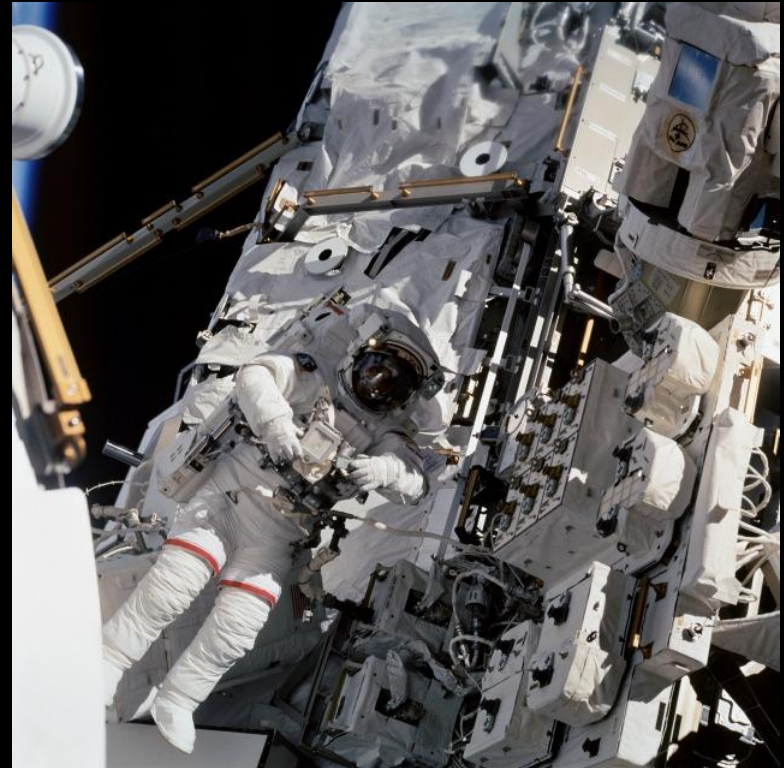
What's Our Plan for Space?

- Fly the shuttle as safely as possible until 2010
- Complete the ISS (targeting 2010) - 6-person crew by 2009
- Align science, exploration, and aeronautics to support human space flight
- Bring the new Crew Exploration Vehicle - CEV - on line (2010-2014)
- Establish a lunar program that informs future missions to Mars and other destinations

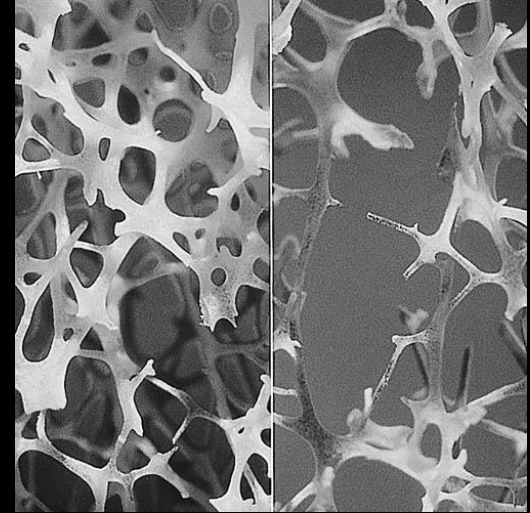


Role of the ISS

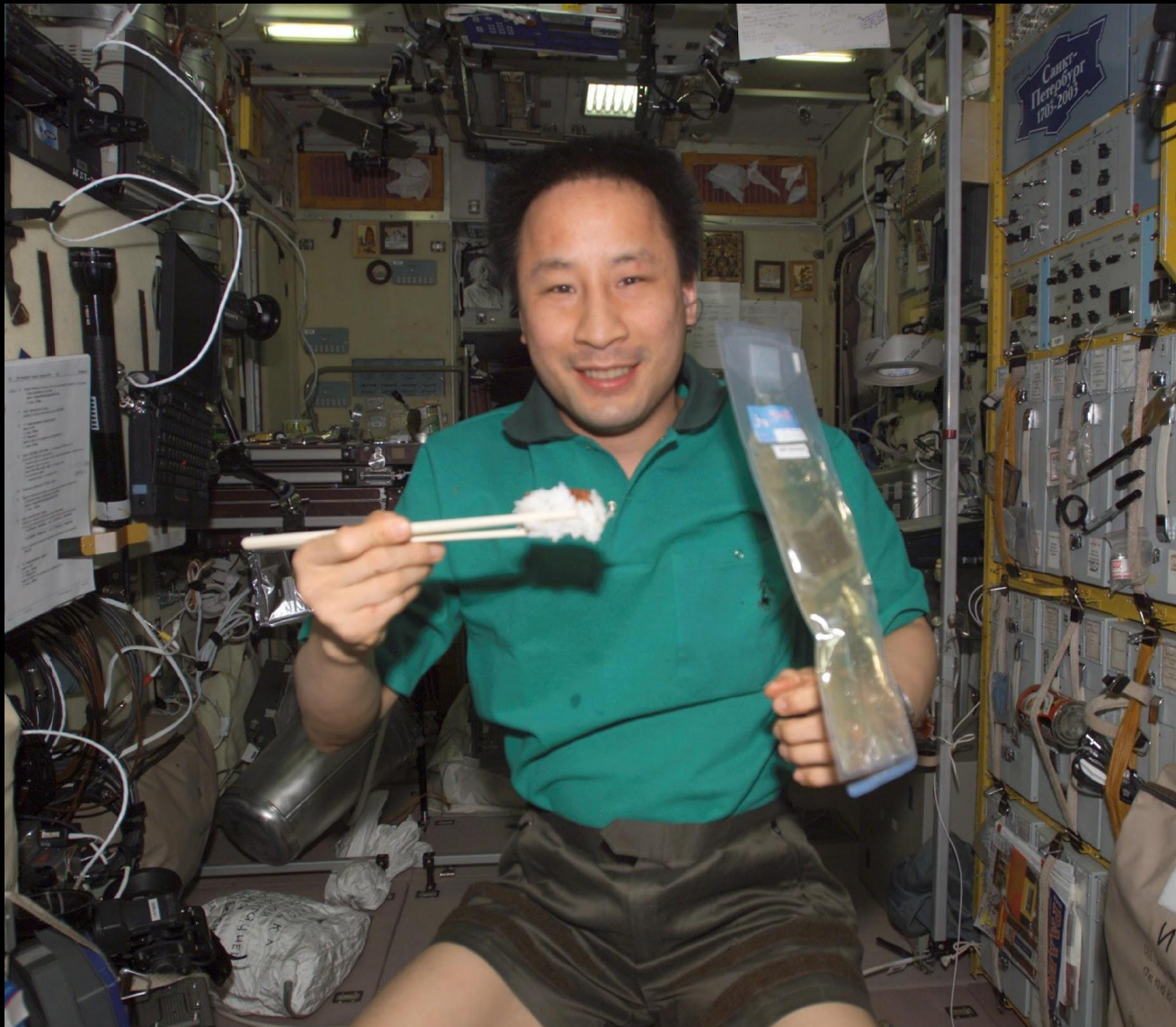
- Prepares for efforts on the Moon, Mars, and beyond
 - Understand the space environment - long duration living and working impact on astronaut health
 - Allows testing of new technologies, materials, robotics



Space Exploration Contributions

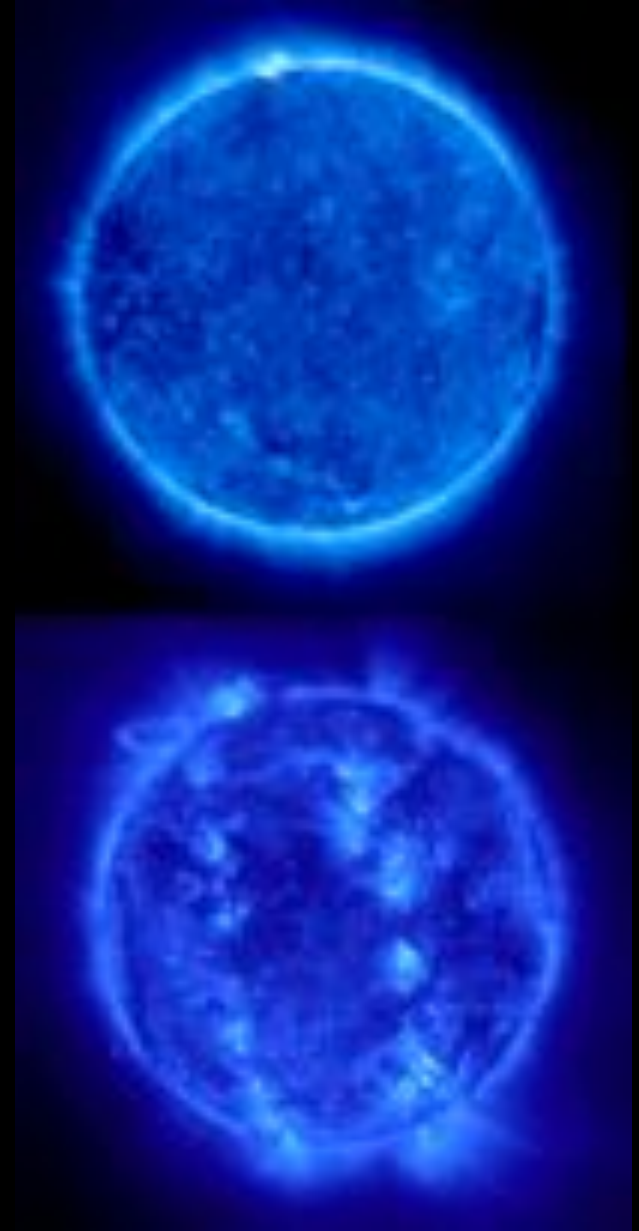


Sushi in Space!!!



What's Our Plan for Space?

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- Align science, exploration, and aeronautics to support human space flight ... 6 pieces
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Exploration Goal

- Study Earth from Space to advance scientific understanding and meet societal needs
- Earth Observing System
- Understand Earth's systems and its response to natural or human-induced change
- Improve prediction of climate, weather, and natural hazards



Calipso

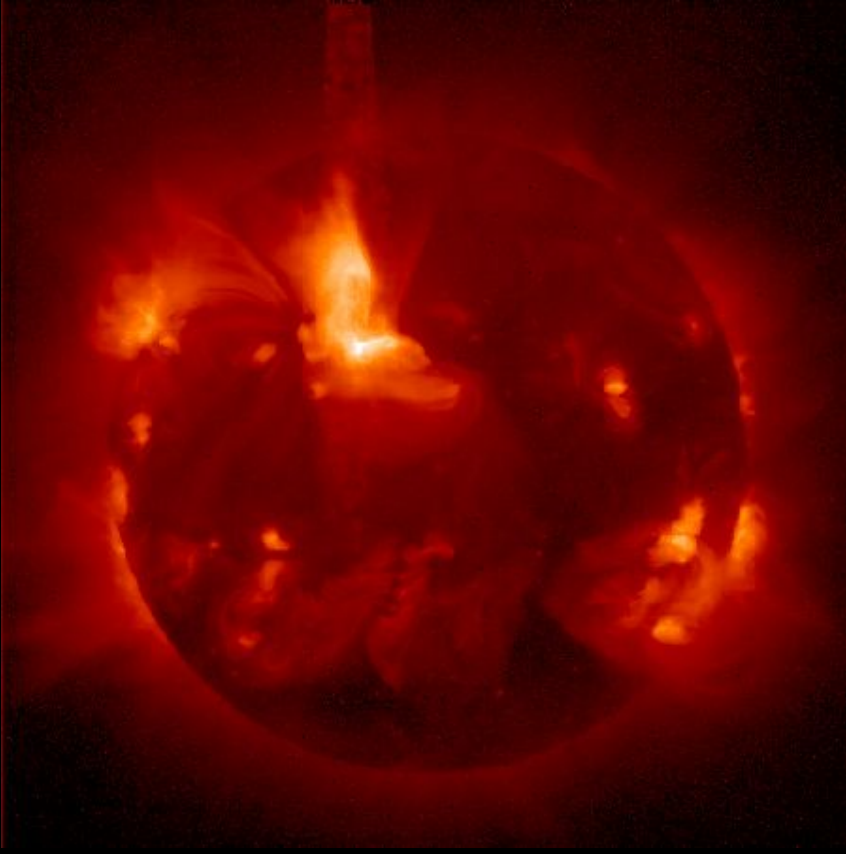


CLOUDSAT



More Exploration Goals

- Understand our Sun and its effects on Earth and the solar system
- Changes in solar activity influence Earth by disrupting telecommunications, damaging satellites and power grids, threatening astronauts
- Monitoring solar winds, magnetic field, impact on Earth's magnetic field

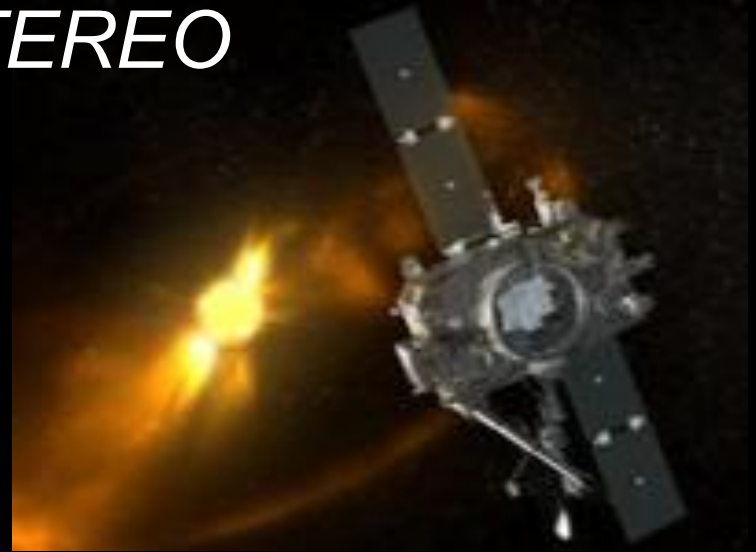


SOHO



years
1995 • 2005

STEREO



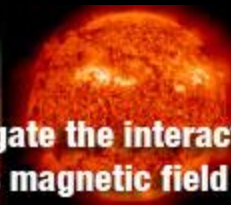
October 2006

THEMIS

▶ embarking on a revolutionary journey to study the
iridescent Northern Lights

October 2006

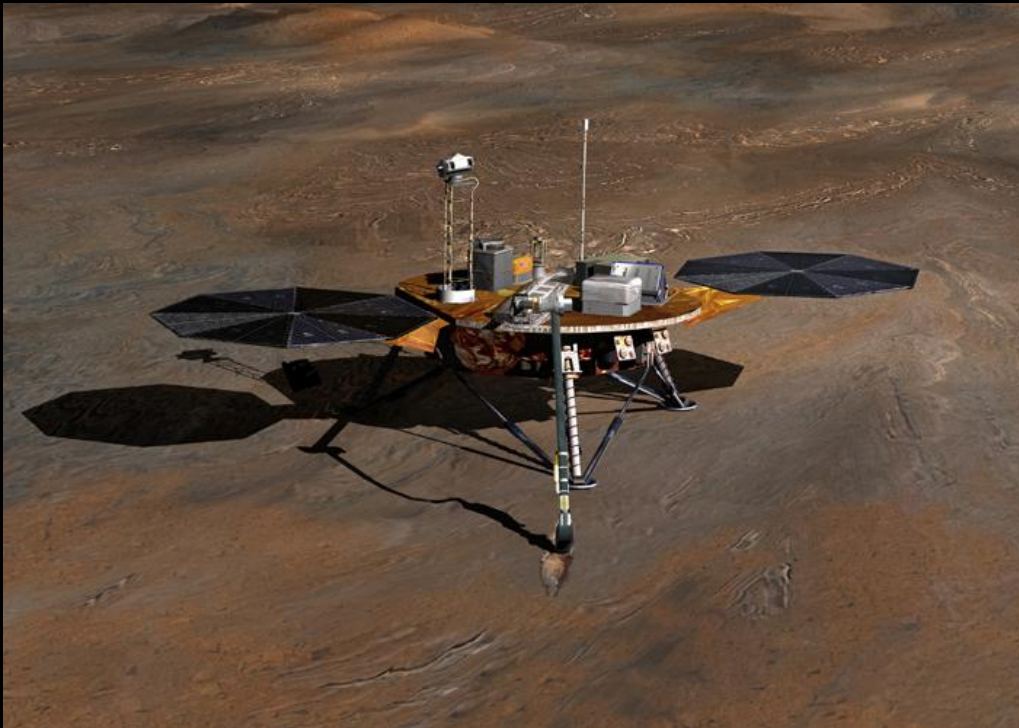
Launched Friday/Saturday!



▲.investigate the interaction between
the Sun's magnetic field and its corona.

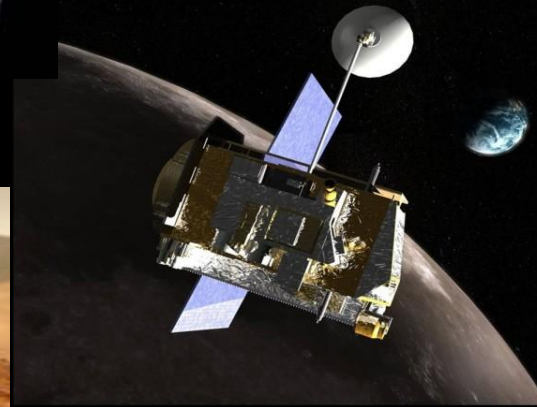
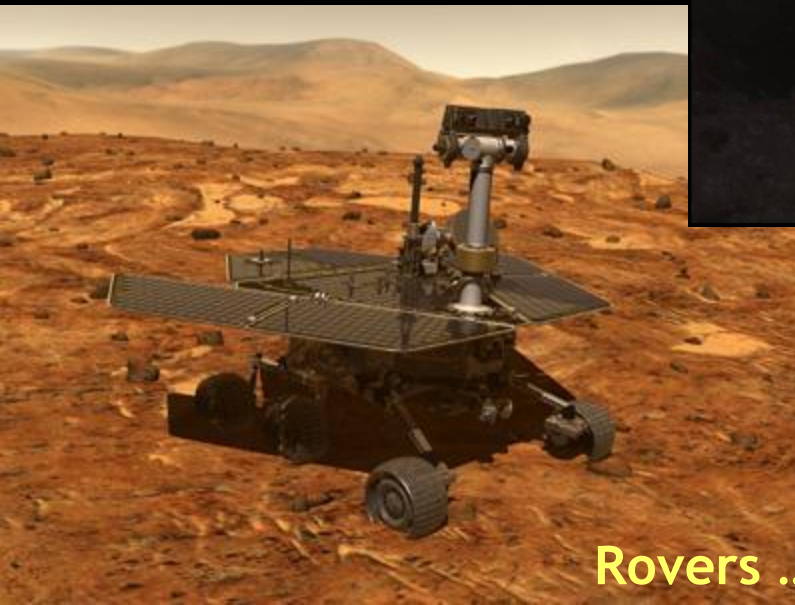
Even More Exploration Goals

- Advance our understanding of the origin and history of the solar system, the potential to life elsewhere, and the hazards and resources present as we explore.



Mars Phoenix Lander
Launch: August 2007

Mars Express (and MRO and Global Surveyor and Mars Odyssey) ... Still Going!

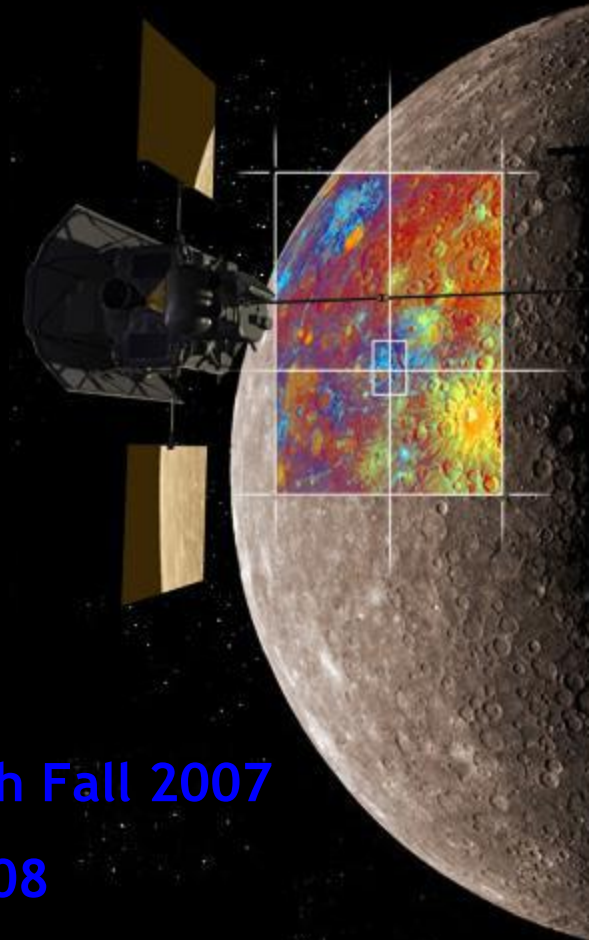


Chandrayaan: Launch Fall 2007

LRO Launch: Fall 2008

Rovers ... Still Going!

MSL: Fall 2009

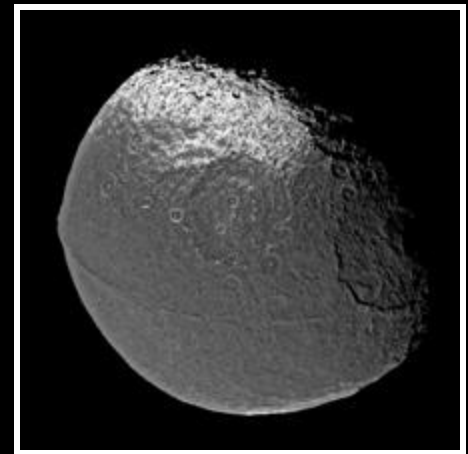
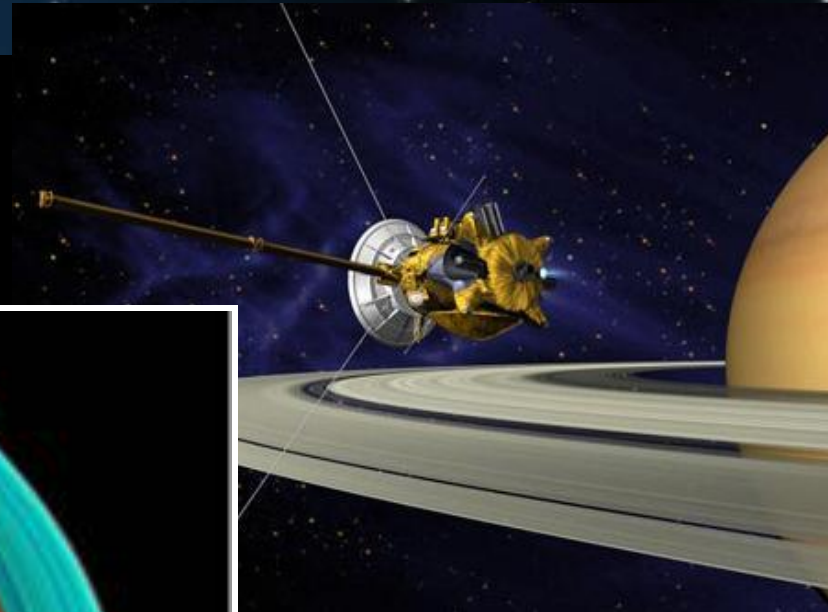
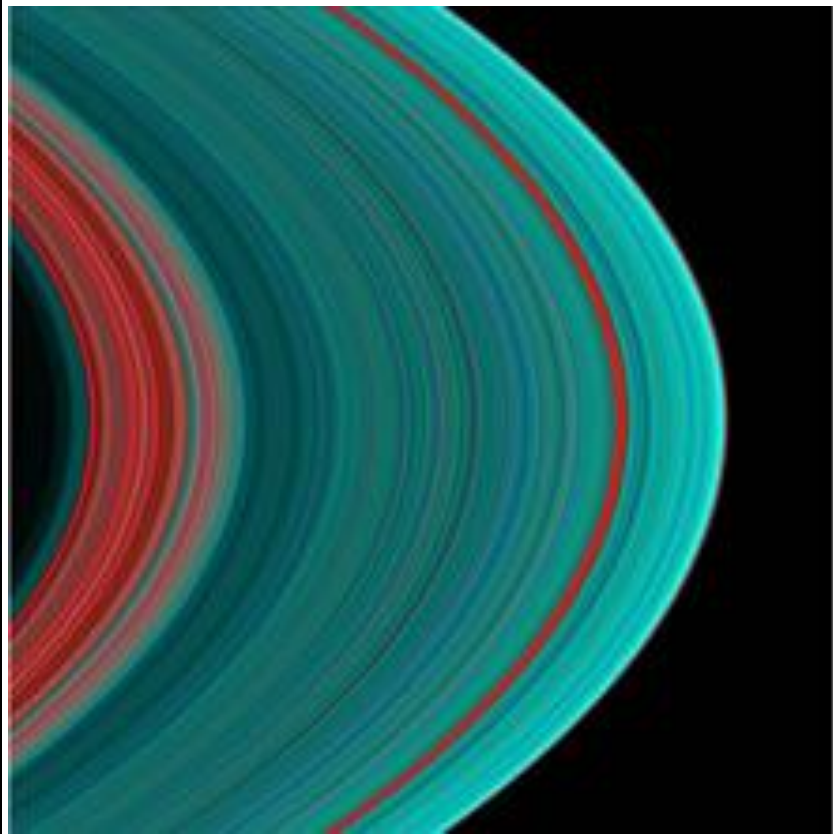
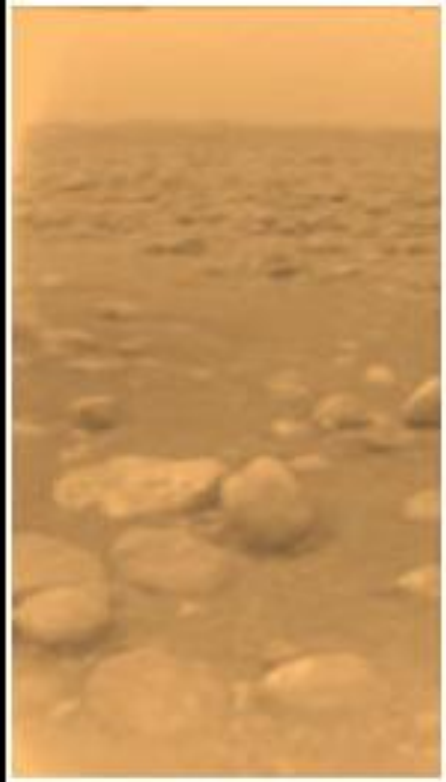


MESSENGER:

Arrival March 2011

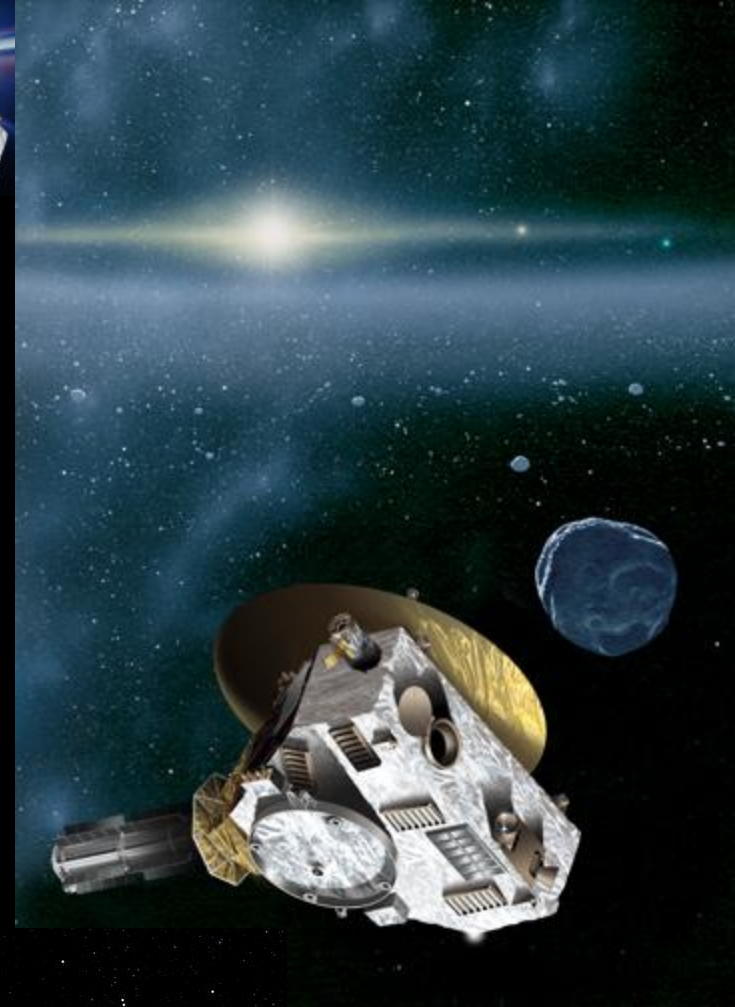
Cassini-Huygens

MISSION TO SATURN & TITAN

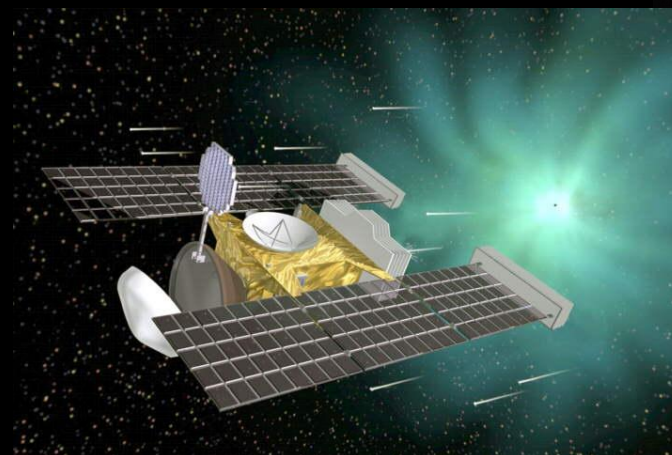
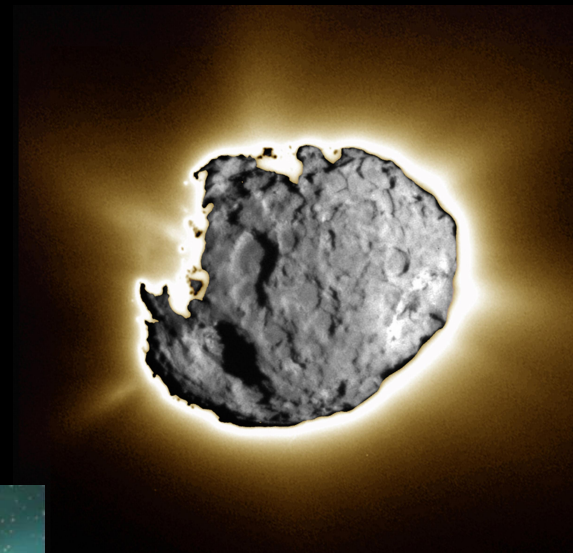


NEW HORIZONS

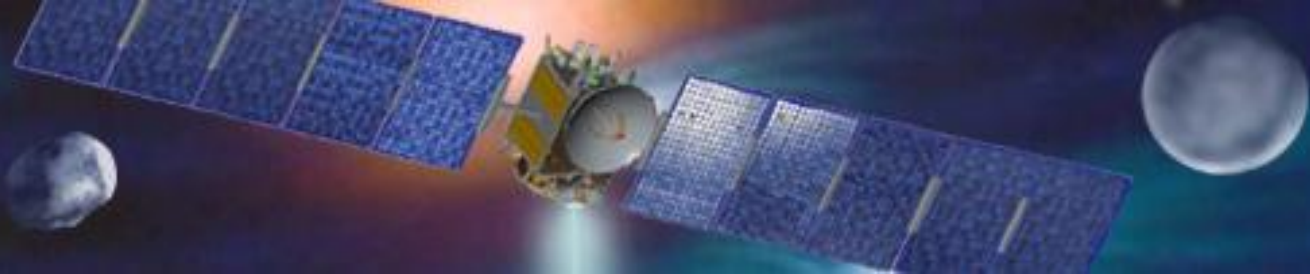
NASA's Pluto-Kuiper Belt Mission



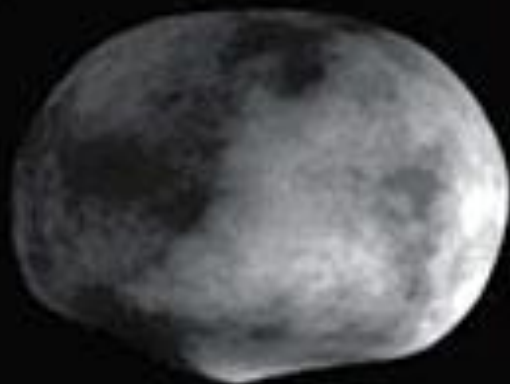
http://pluto.jhuapl.edu/common/content/artistConcepts/large/KBO_Large.jp



DAWN



form early in the solar system ...



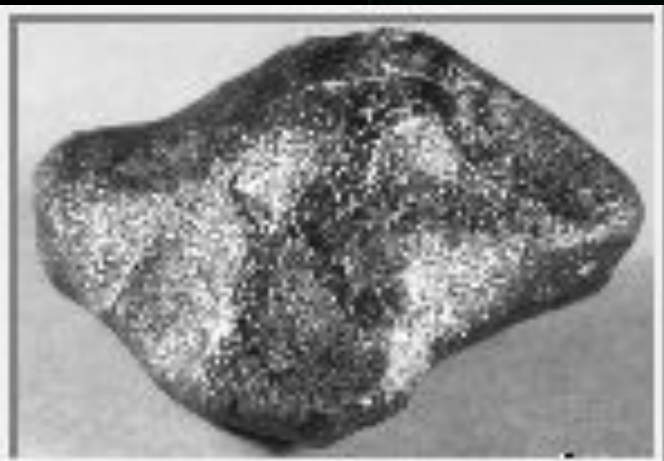
VESTA

EROS



New Dwarf Planet!

CERES



Launch: 20 June 2007

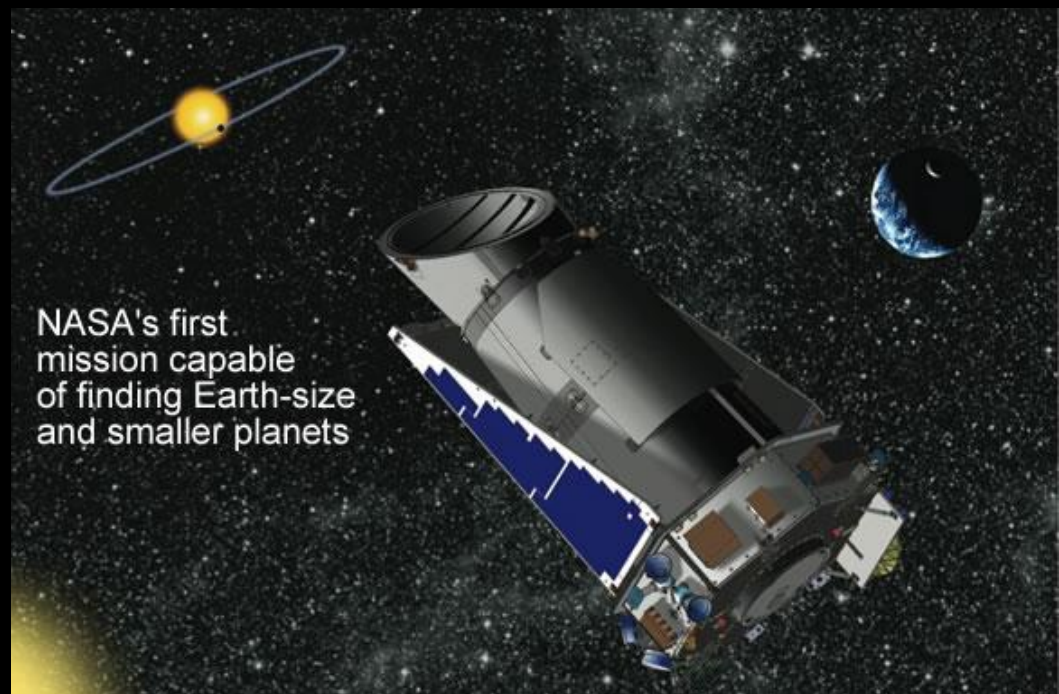
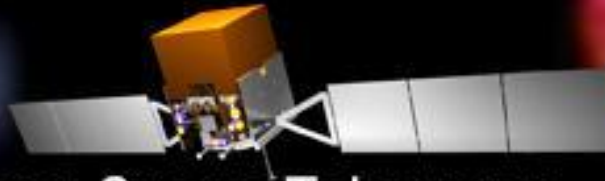
Yet More Exploration Goals

- Discover the origin, structure, evolution, and destiny of our universe and search for Earth-like planets
- What happened during the Big Bang? How were stars and galaxies created? What happens at the edge of a black hole?



GLAST

The Gamma-ray Large Area Space Telescope

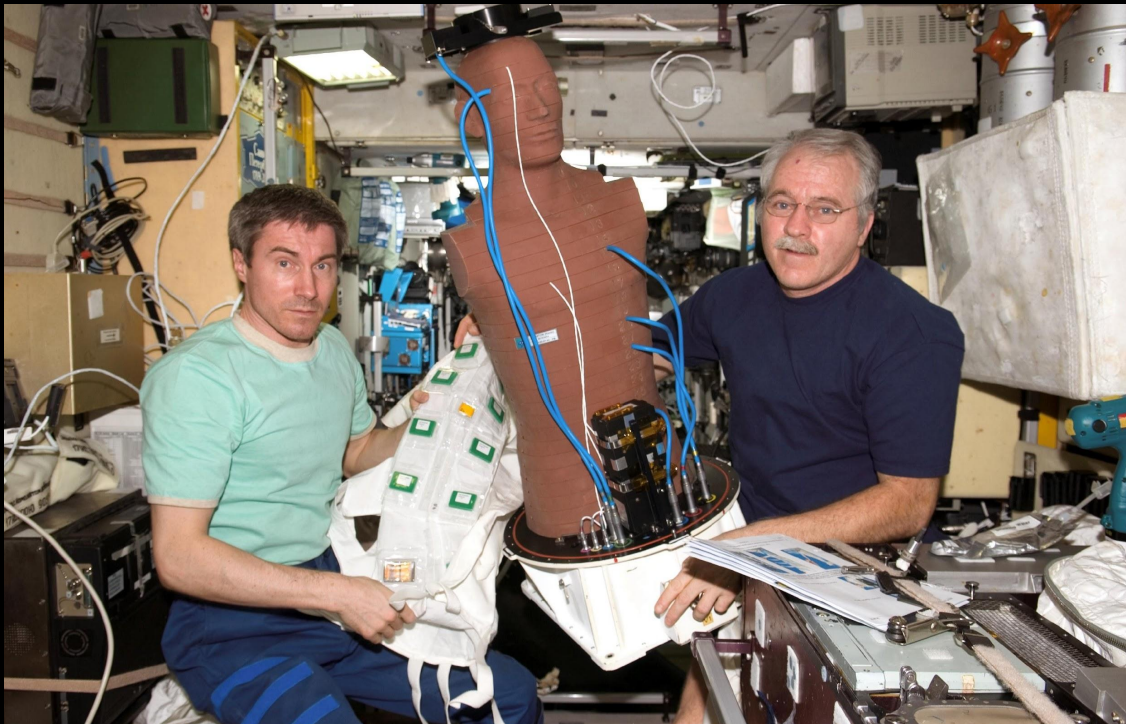


And Another Exploration Goal

- Advance knowledge in fundamental aeronautics and develop technology for safer aircraft and higher capacity airspace systems (aka: fly stuff safely)

And the Final Exploration Goal

- Understand the effects of space environment on human performance and test new technologies and countermeasures for long-term human space exploration



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Orion

- Already building a new space craft - Due 2010-2014
- Good for 6 passengers to ISS by 2014 and for 4 passengers for lunar missions by 2020



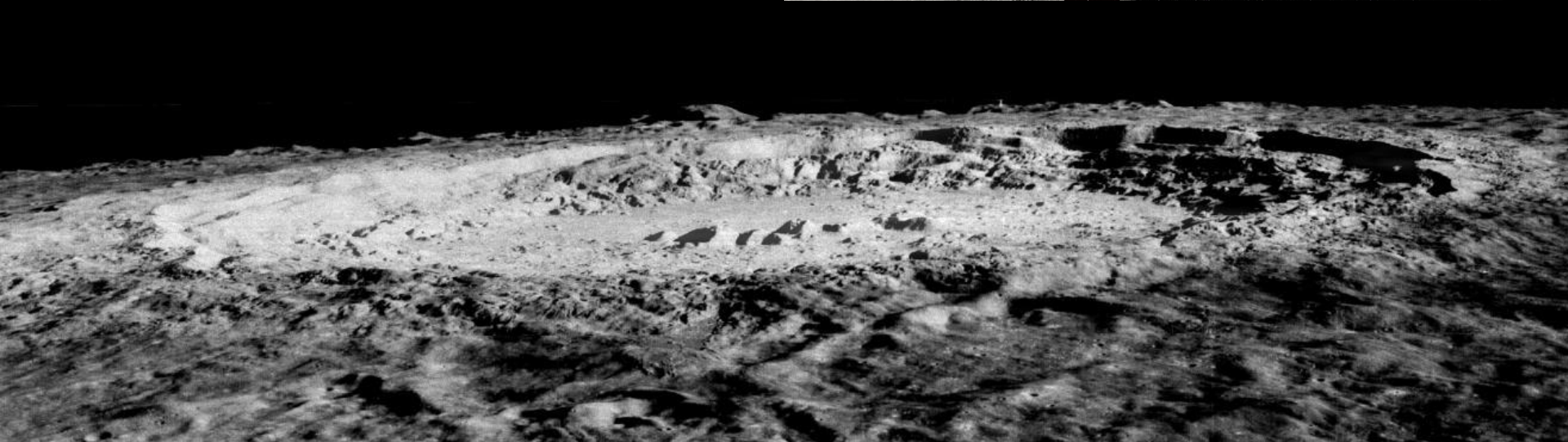
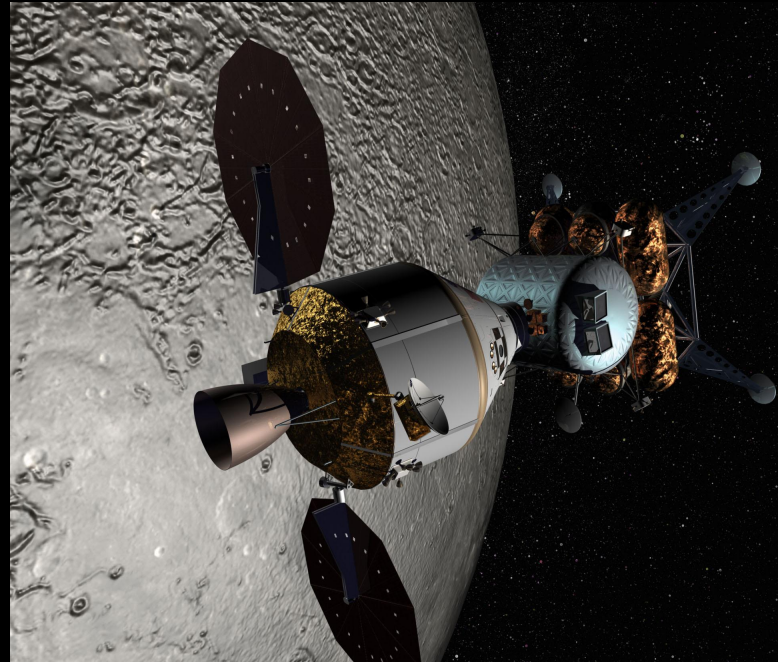
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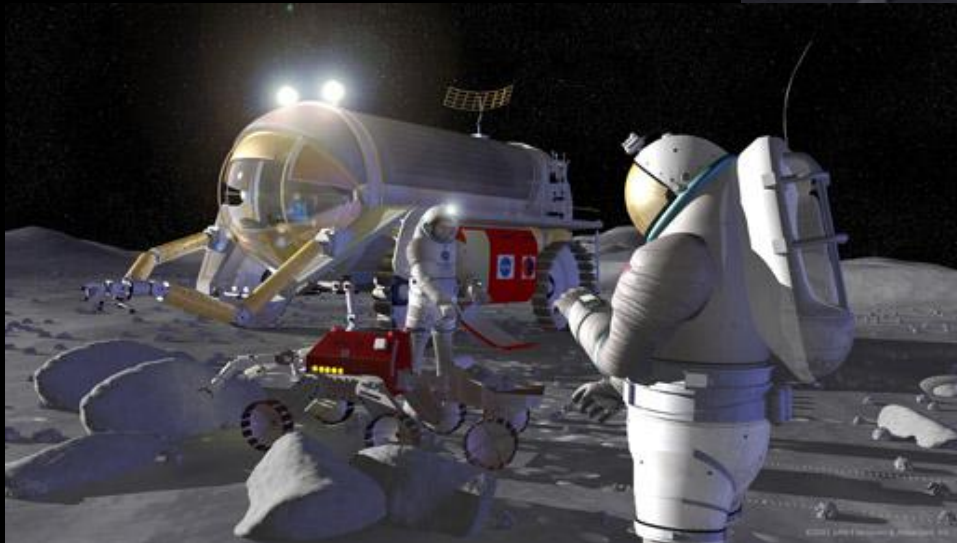


Return to the Moon!

- 2008 - LRO - identifies resources
- 2012 - Develop and test technologies for resource utilization, communications, power
- 2014 - CEV, Ares launch vehicle



- 2018 – Humans for week-long stays
- Next: 45-day stays at outposts



Mars 2030

