

Ice on Land!



Who: Dr. Waleed Abdalati
University of Colorado

What: Studies how, why, and how fast ice sheets and glaciers are changing to understand how they will affect global ocean levels.

Where: Greenland Ice Sheet and glaciers around the world.

How: Uses satellite images - like those from the Ice Cloud and Land Elevation

Satellite (ICESat) - to study how the ice sheets and glaciers are changing. Camps out on glaciers and ice sheets to study how the ice is changing and to verify that the satellite information is correct.



Dr. Abdalati's base camp on the Greenland Ice Sheet. All the comforts of home!

Image courtesy of NASA, <http://earthobservatory.nasa.gov/Features/Greenland/>.

Ice on the Ocean!

Who: Dr. Thorsten Markus
NASA Goddard Space Flight Center

What: Studies how sea ice is changing in Earth's polar regions.

Where: Arctic and Antarctic oceans.

How: Uses satellite data to study the thickness and extent of floating sea ice. Travels aboard icebreaking research vessels to verify the satellite sea ice measurements.



Dr. Markus' research team measures how thick the floating snow and ice are to help verify satellite measurements.

Image courtesy of Thorsten Markus, NASA.

Polar bear and cubs on floating sea ice.

Image courtesy of U.S. Fish and Wildlife,
http://www.ipy.org/index.php?ipy/gallery_display/57/.



Ice in Deep, Dark Craters!



Who: Dr. Jennifer Heldmann, NASA Ames Research Center

What: Investigates water and ice on planetary bodies.

Where: Deep, dark, really, really, really cold craters at the Moon's poles.

How: Remotely studies the composition of the material that is spewed into space when the Lunar Crater Observation and Sensing Satellite impacts the Moon's surface.



The Lunar Crater Observation and Sensing Satellite impacts the Moon in the fall of 2009. The shepherding spacecraft will examine the plume of material ejected by the impactor to see if water ice is present at the Moon's poles.

Image courtesy of NASA,
<http://lcross.arc.nasa.gov/index.htm>.

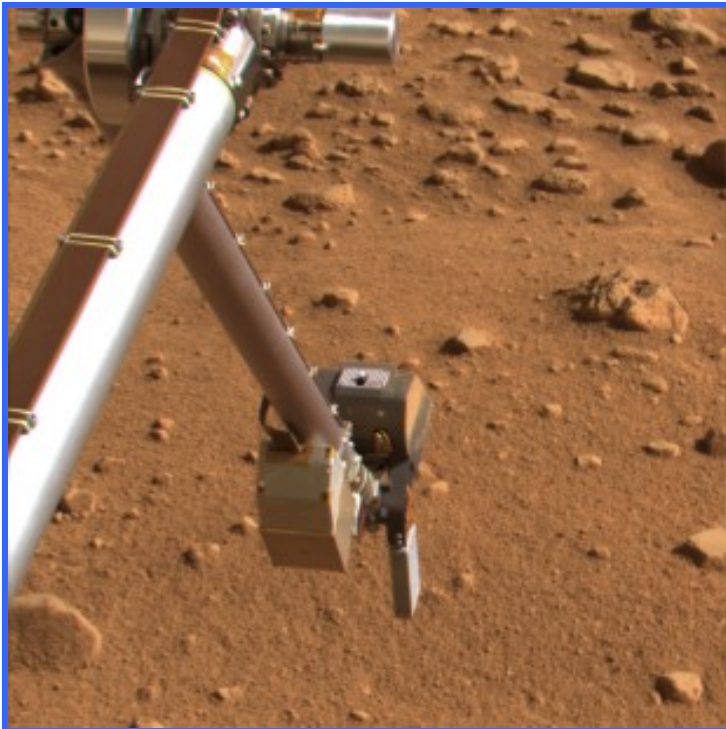
Ice on Mars!

Who: Dr. Mike Mellon
University of Colorado

What: Investigates water and ice on planets, including the ice that may be underground in soils.

Where: Mars and Earth.

How: Studies images taken from spacecraft and chemical analyses of soils provided by robotic landers.



The robotic arm of the Mars Phoenix Lander had a scoop on the end that was used to sample the soil.

Image courtesy of NASA/JPL-Caltech/University of Arizona/Texas A&M University, <http://phoenix.lpl.arizona.edu/images.php?gID=14037&cID=157>.

Icy Moons!

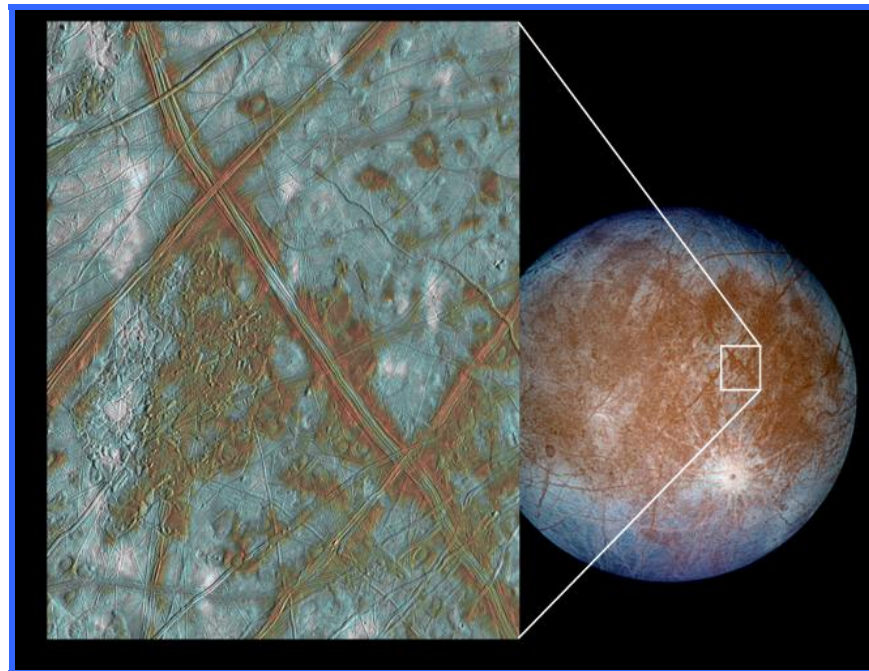


Who: Dr. Paul Schenk
Lunar and Planetary Institute

What: Investigates icy planets.

Where: Europa and Ganymede.

How: Uses images from spacecraft to explore the surfaces of icy moons around Jupiter. The images help him understand the ice composition, how it moves and changes, and what might be under the ice.



Close-up spacecraft image of thick plates of ice on the surface of Europa, one of Jupiter's moons. The red material around the cracks in the surface may be deposits of minerals from ocean water that seeps up through the cracks.
Image courtesy of NASA/JPL/University of Arizona, <http://photojournal.jpl.nasa.gov/catalog/PIA03002>.

Solar System Snow Balls!

Who: Dr. Lori Feaga
University of Maryland

What: Explores what comets are made of.

Where: Most recently, Comet Temple 1, when it was about 225 million kilometers (140 million miles) from the Sun.

How: Studies the different wavelengths of light reflected from a comet's surface. Materials of different compositions reflect light in different wavelengths.



Deep Impact hits its target on Comet Temple-1, creating a flash observed by the spacecraft.

Image courtesy of NASA/JPL-Caltech/UMD,
http://deepimpact.umd.edu/gallery/HRI_937_1.html.