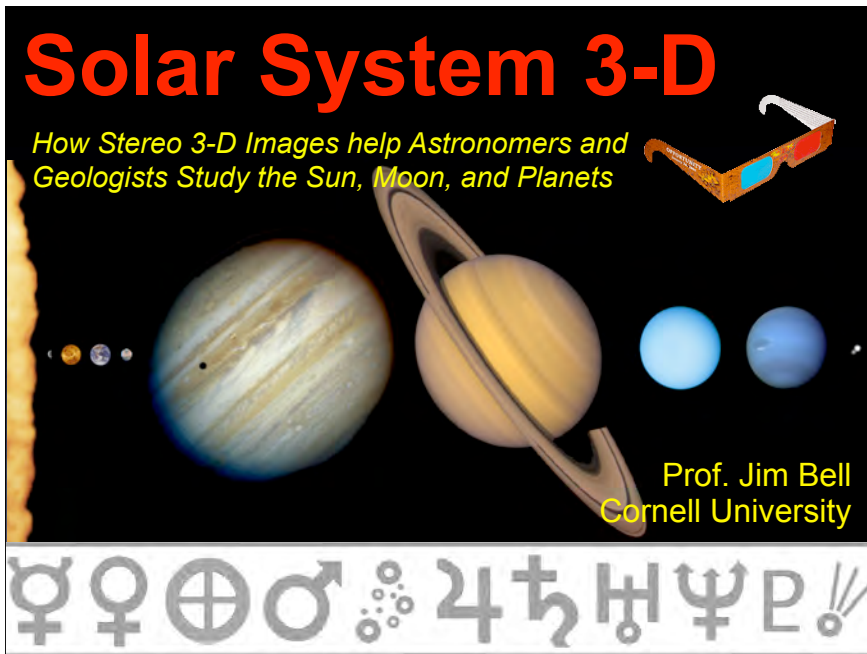


Solar System 3-D

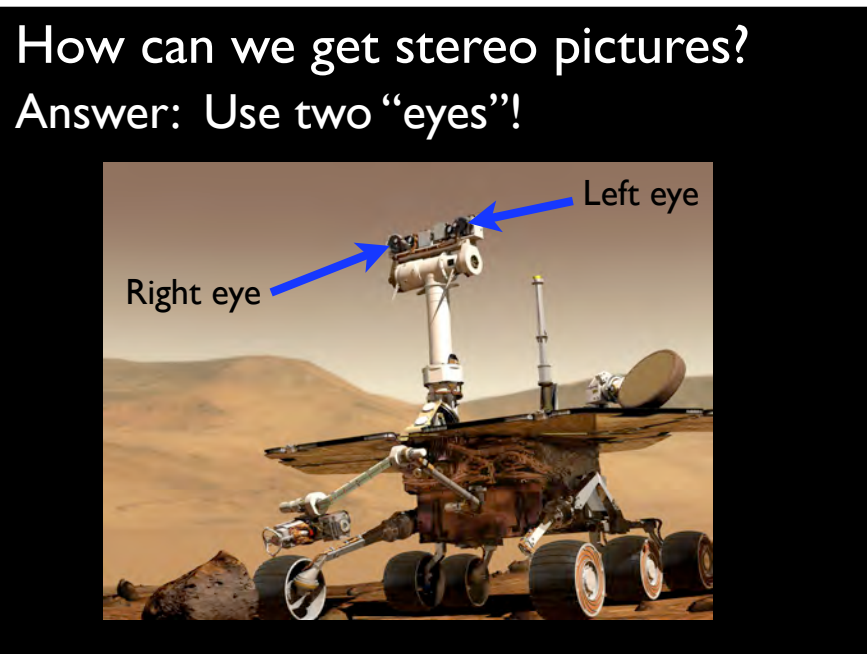
How Stereo 3-D Images help Astronomers and Geologists Study the Sun, Moon, and Planets



Prof. Jim Bell
Cornell University

♀ ♀ ⊕ ♂ ☿ ♃ ♄ ♅ ♆ ♇ ♈

How can we get stereo pictures? Answer: Use two “eyes”!



Right eye

Left eye

How can we get stereo pictures? Answer: Use two “eyes”!



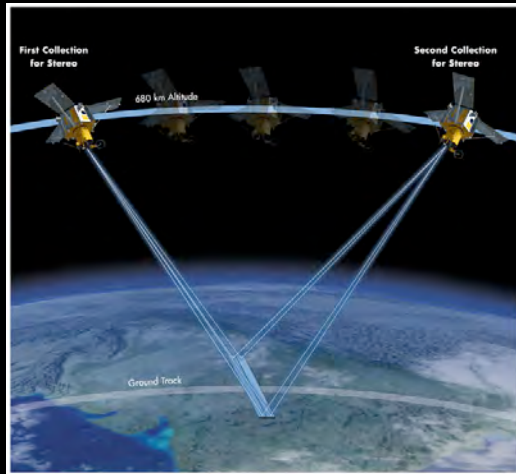
Right eye photo

How can we get stereo pictures? Answer: Use two “eyes”!



Merged color photo: Left eye in red, right eye in blue

Satellites and space probes can be used to simulate having two "eyes"

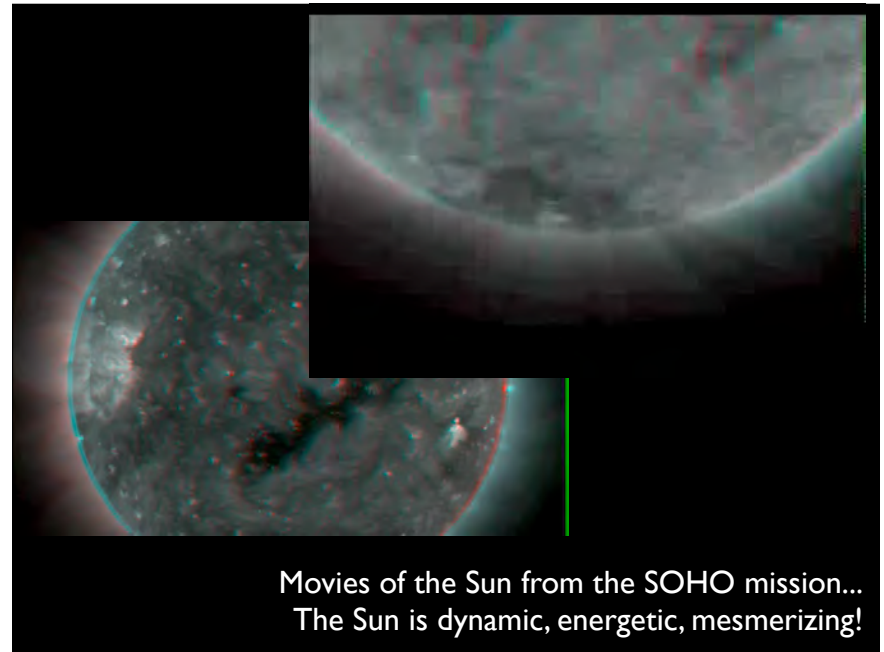
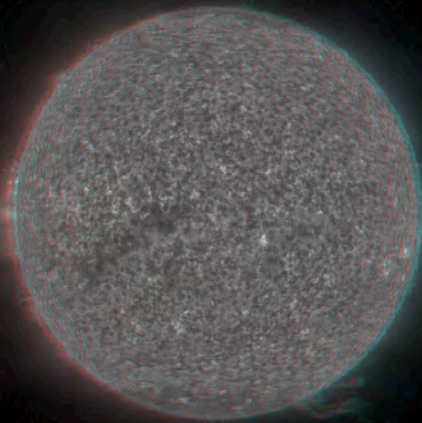


It's all about the parallax!

Solar System 3-D

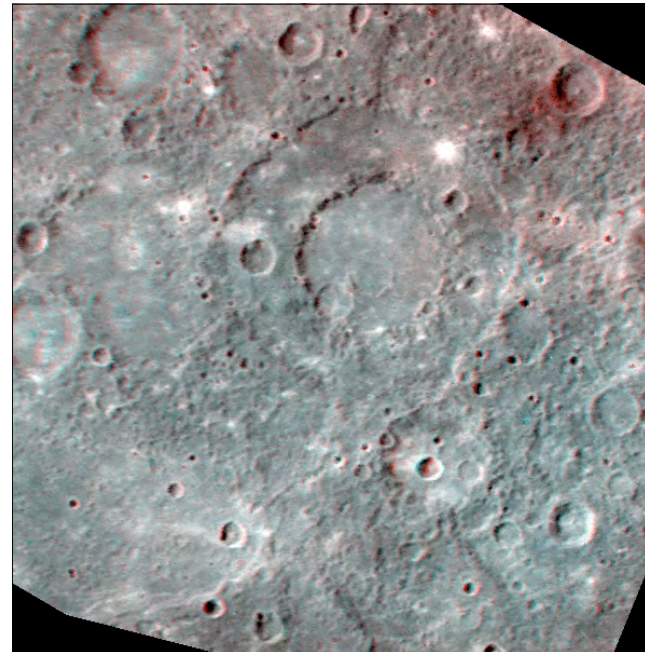


The Sun

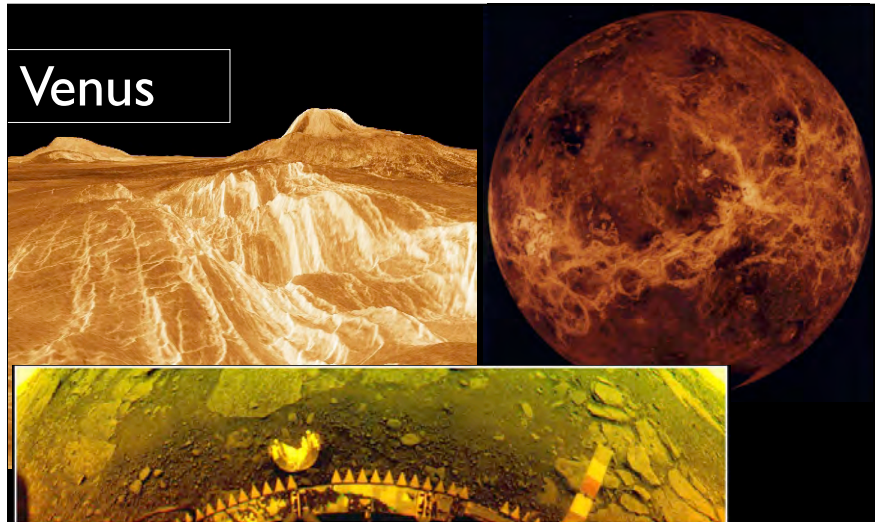
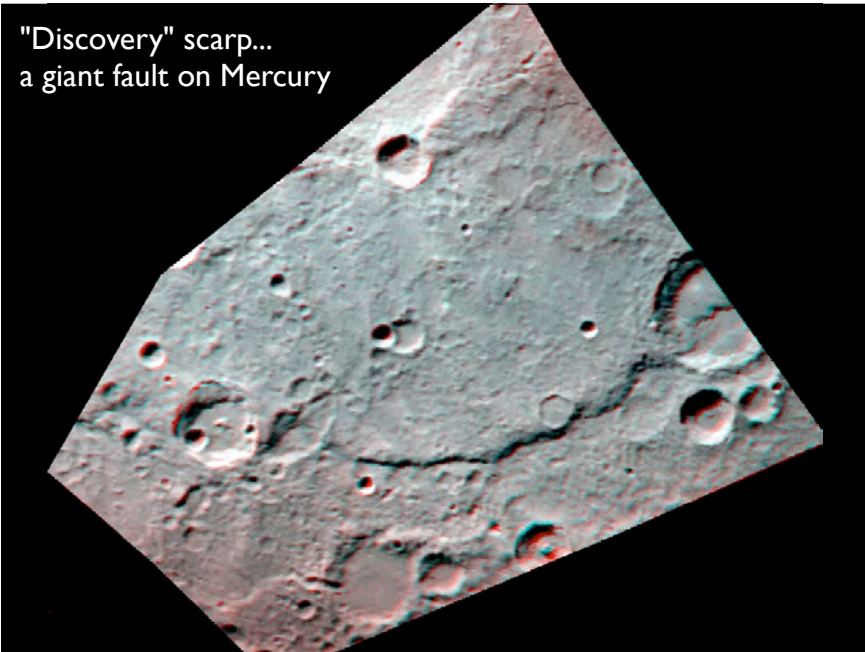


Movies of the Sun from the SOHO mission...
The Sun is dynamic, energetic, mesmerizing!

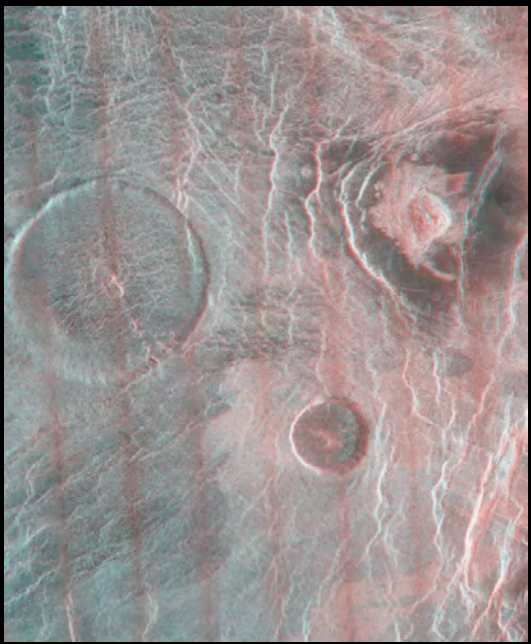
Mercury



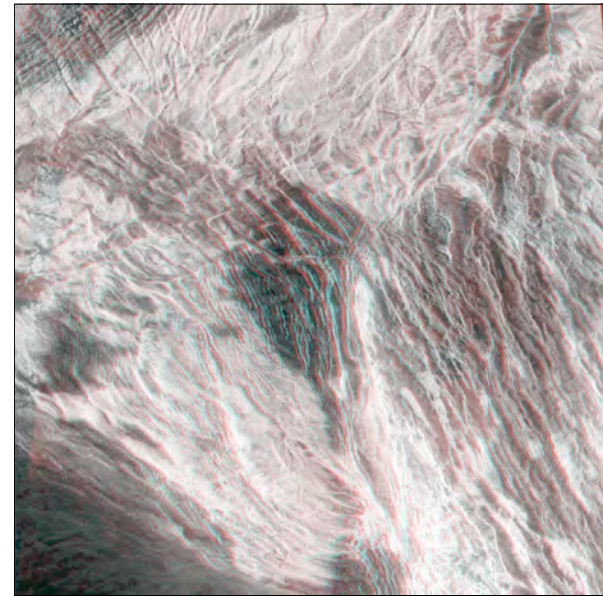
Mercury has an ancient, heavily cratered surface like the Moon...



Venus is hotter than an oven and is covered by strange volcanic, tectonic, and impact landforms!

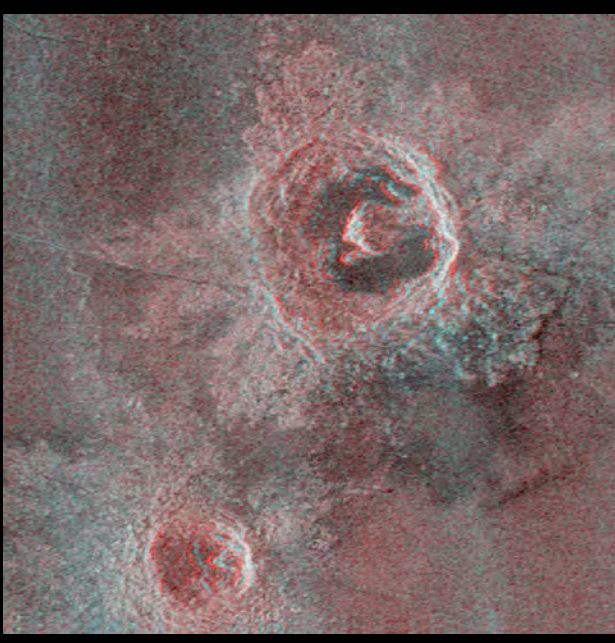


"Pancake Domes"
Volcanoes made from very thick, viscous lava



Venus has some faulted and folded mountain belts, like the Earth!

Venus has many fewer impact craters than the Moon or Mars, suggesting that its surface is younger and more dynamic

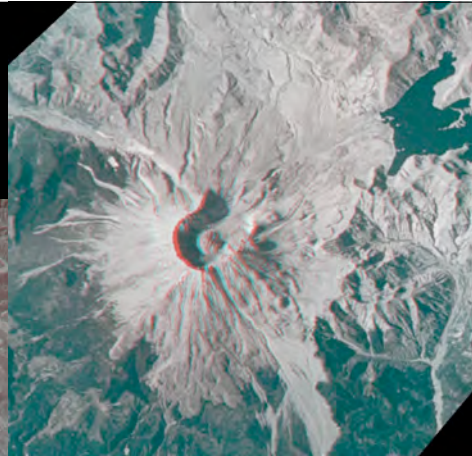


Many Venus craters have rugged walls and flat, melt-ponded floors

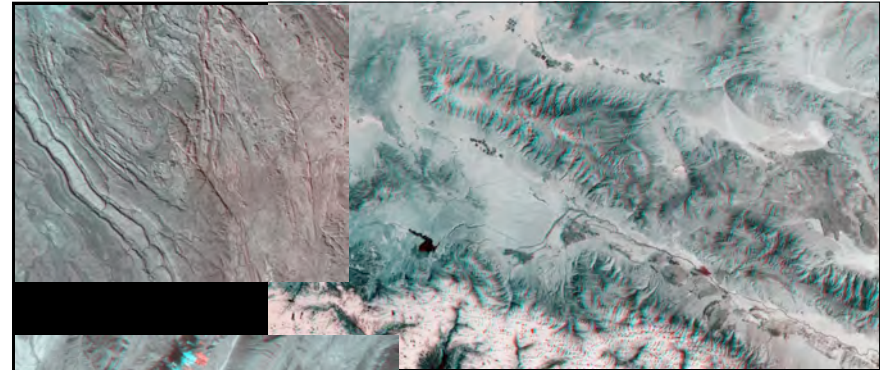
Earth and Moon



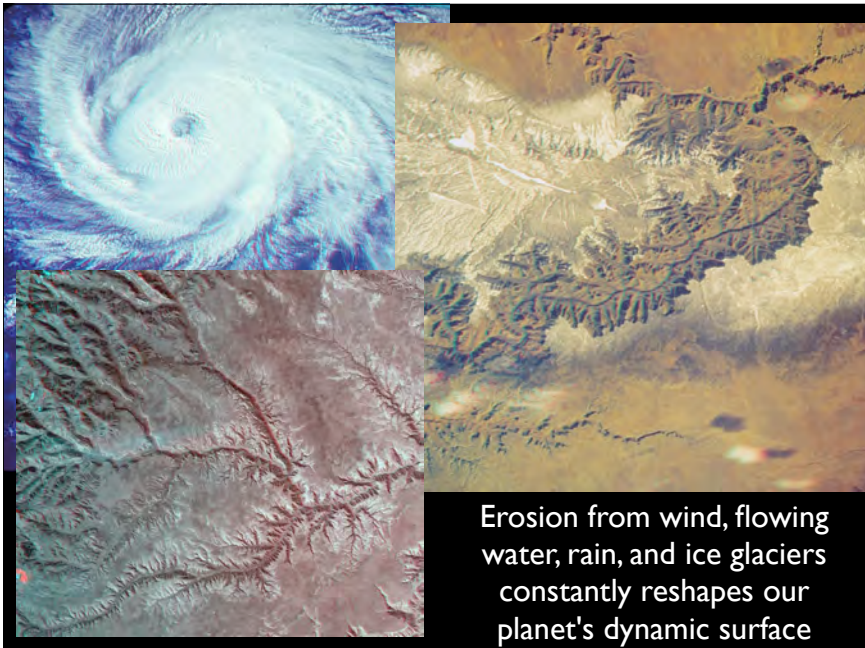
Earth's surface is geologically young and extremely active



Volcanoes like Mount St. Helens (top) and Mount Fuji (left) erupt frequently



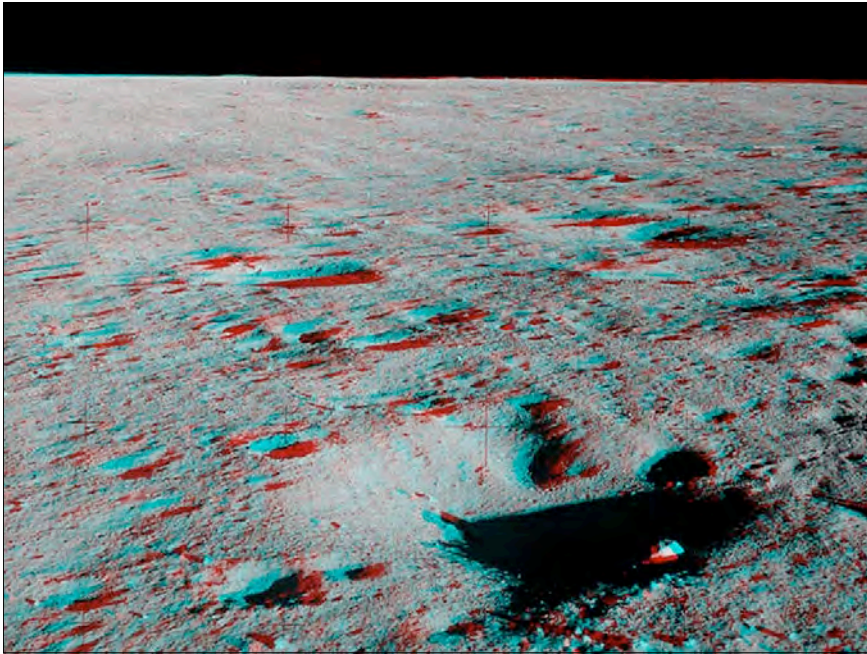
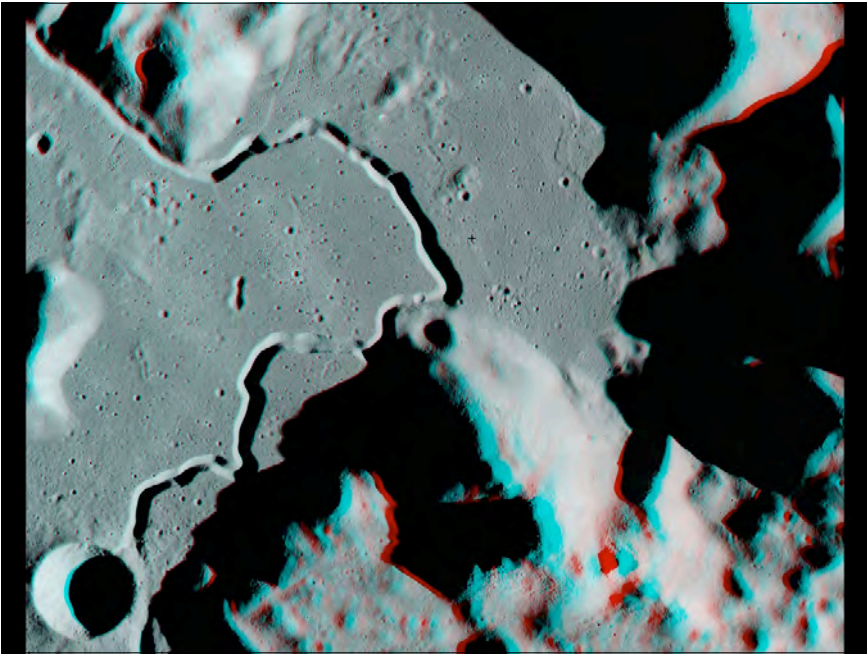
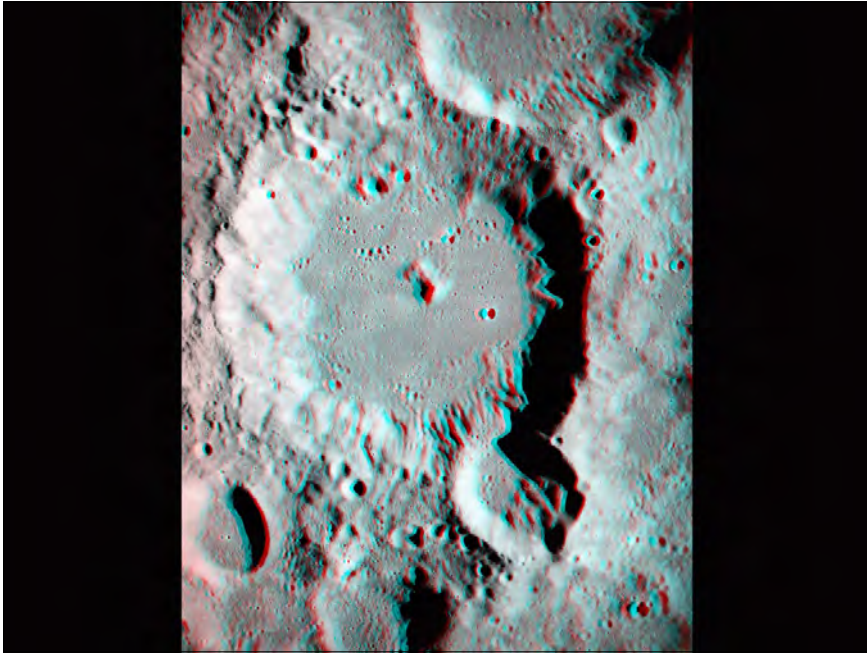
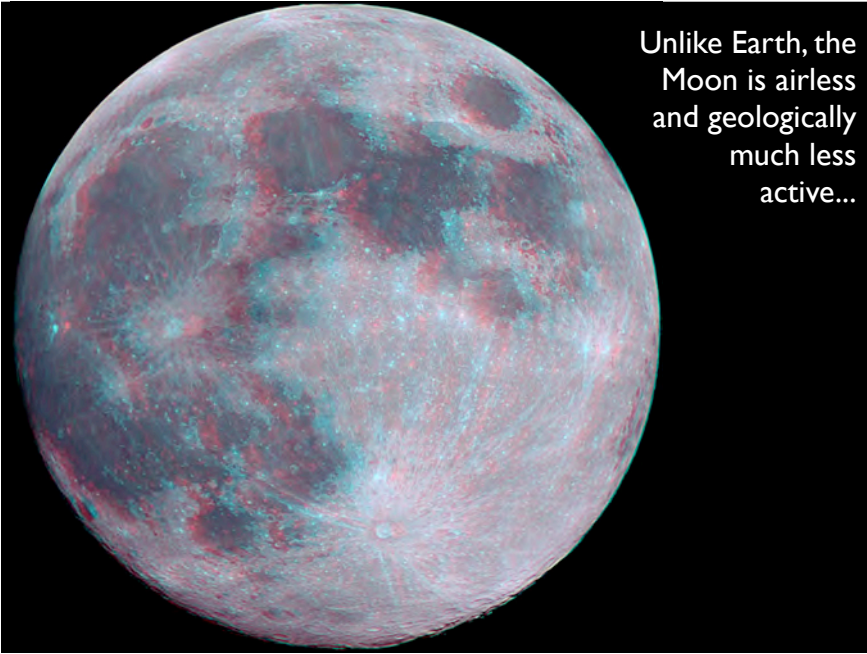
Tectonic forces from Earth's constantly-shifting plates create enormous valleys like Owens Valley, CA (top) as well as large, folded mountain belts like those in Australia (top left) and Iran (bottom left)

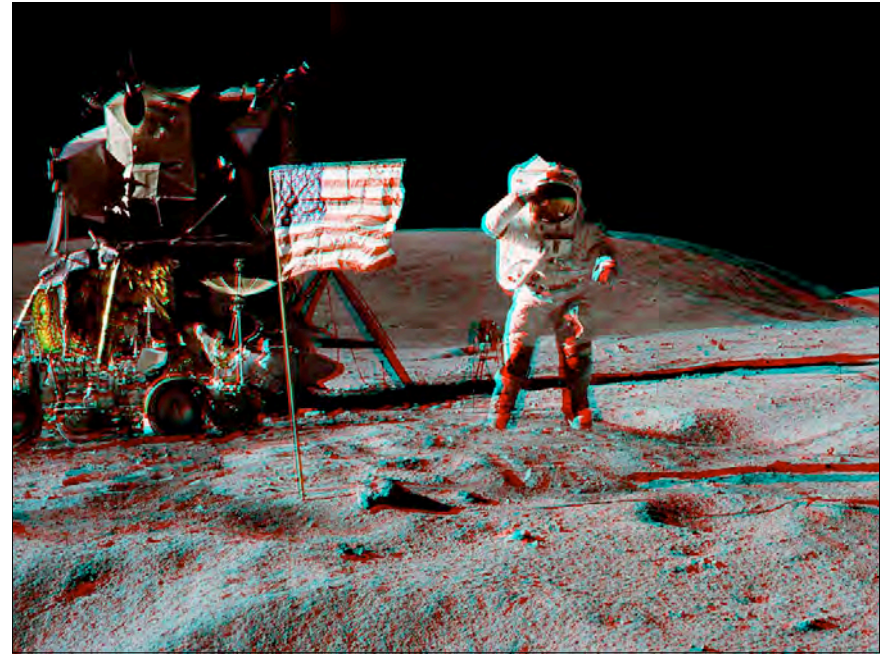
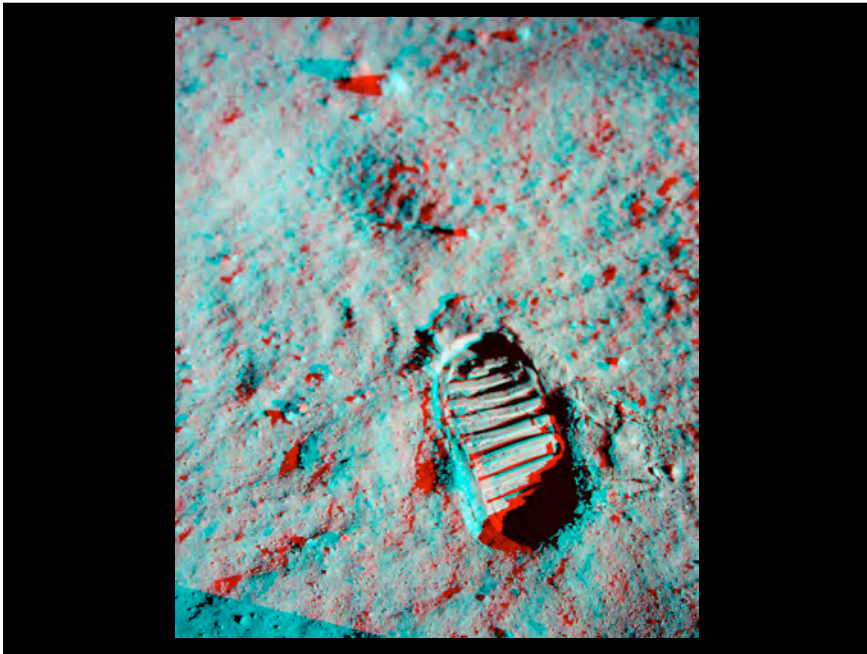
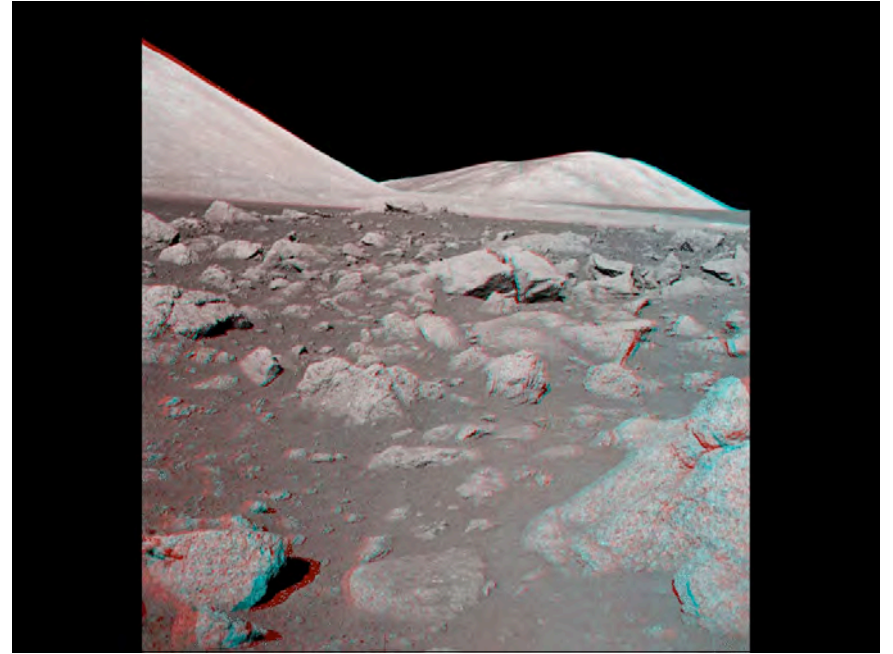
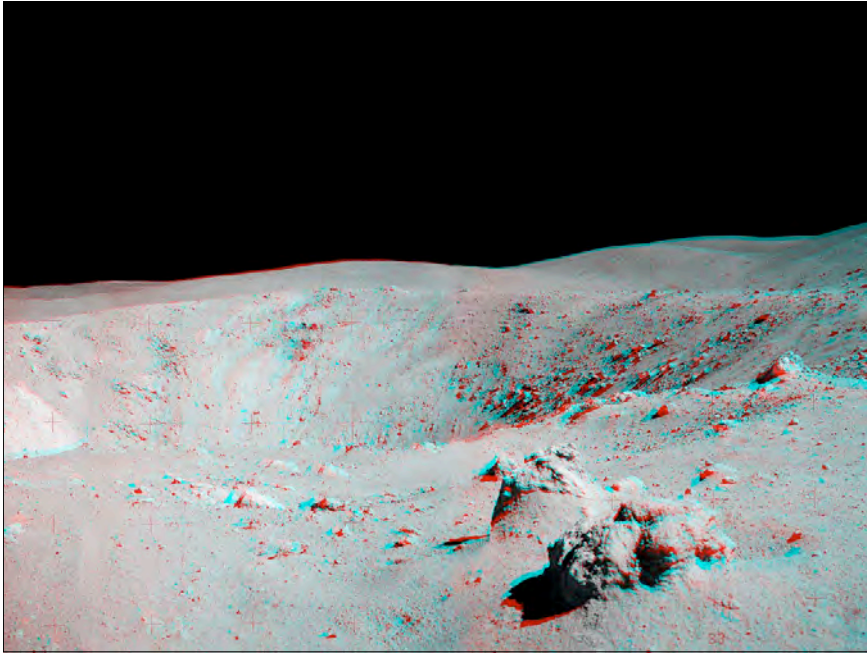


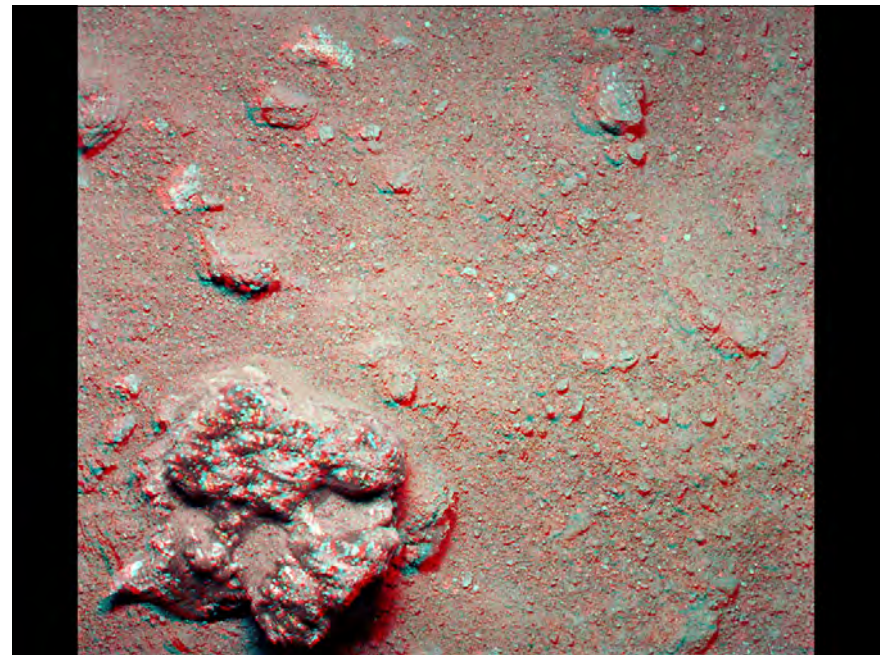
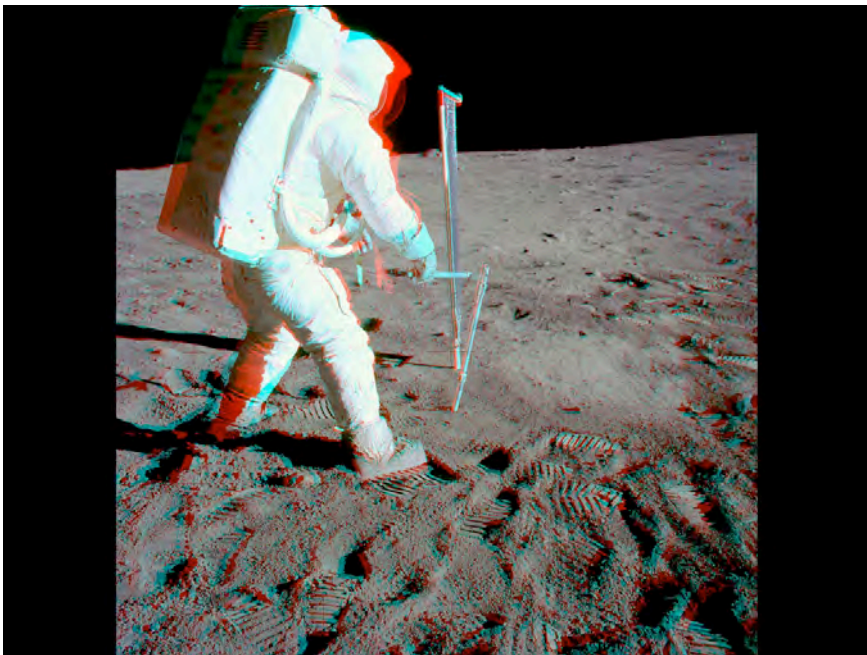
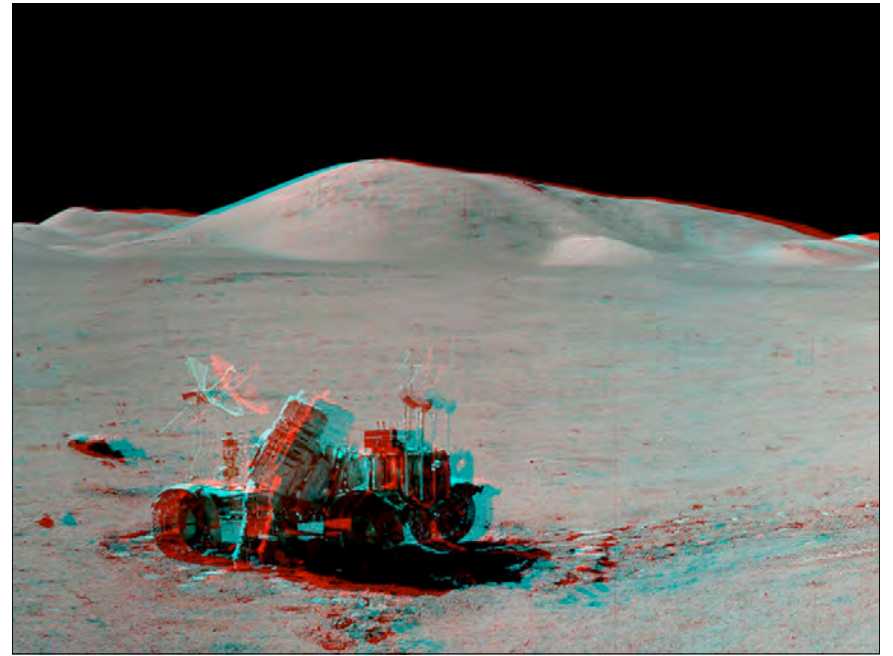
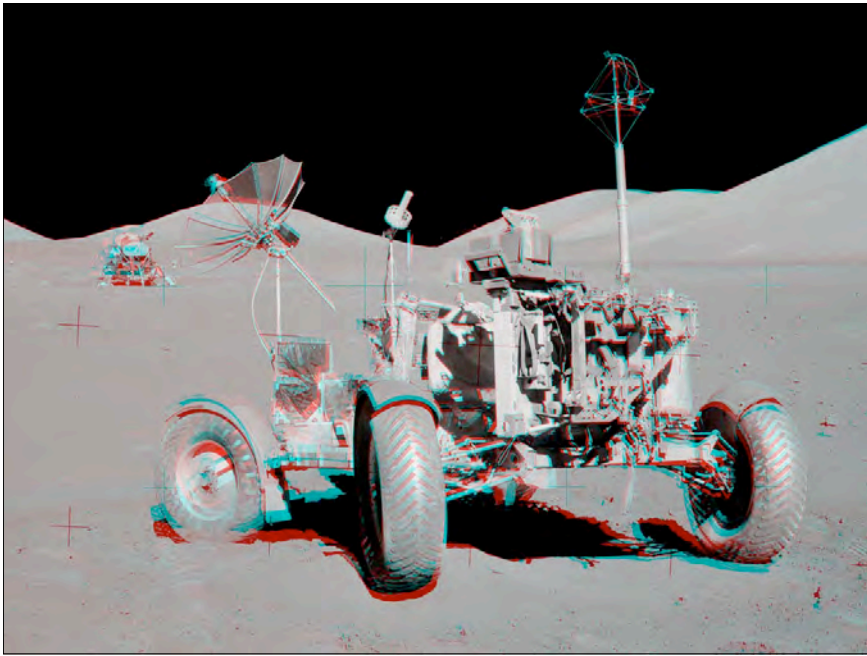
Erosion from wind, flowing water, rain, and ice glaciers constantly reshapes our planet's dynamic surface

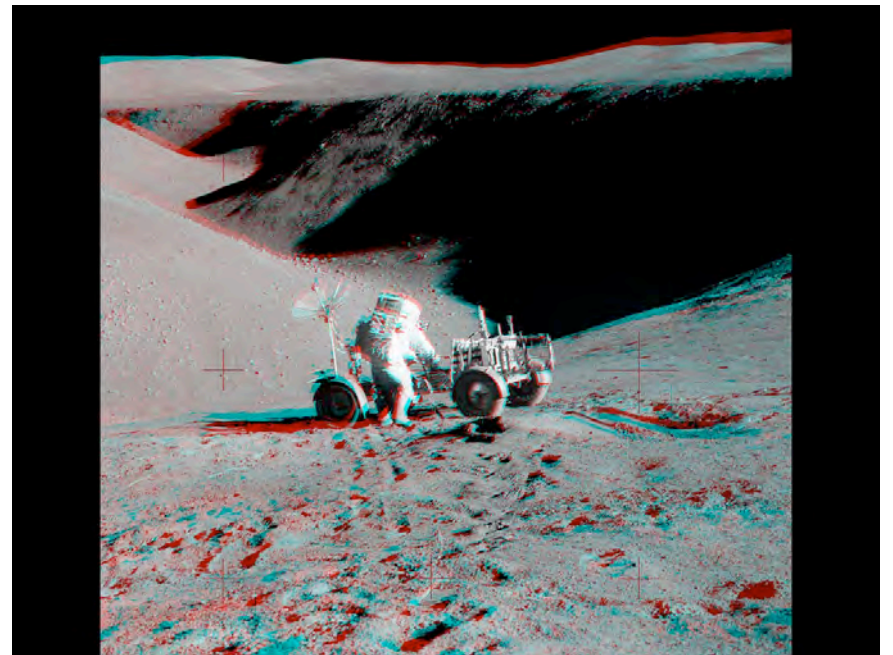
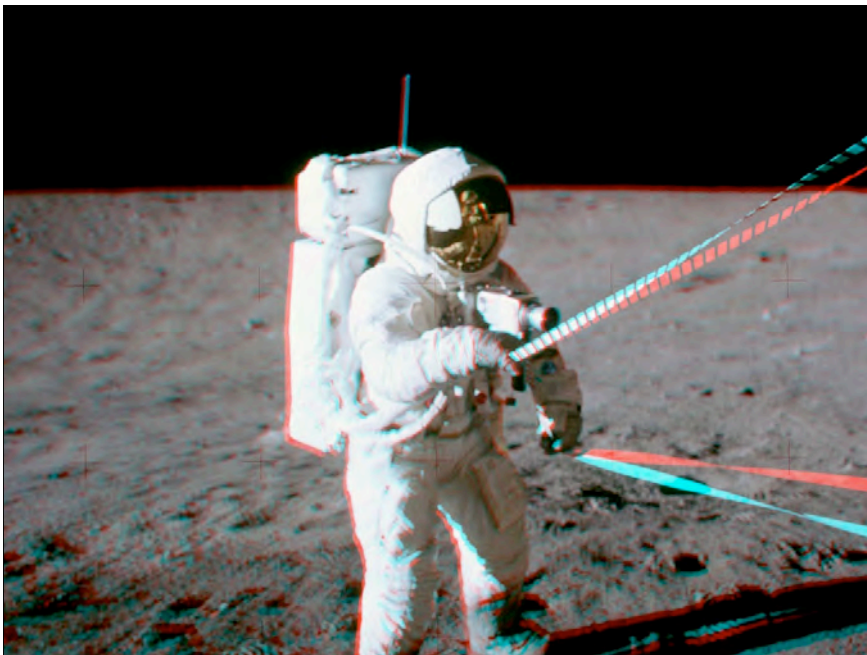
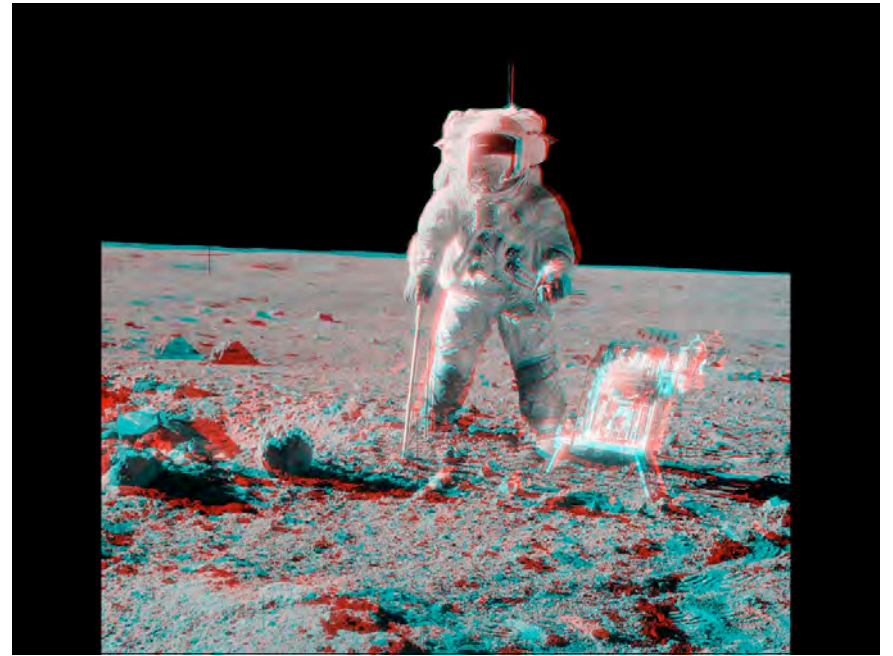
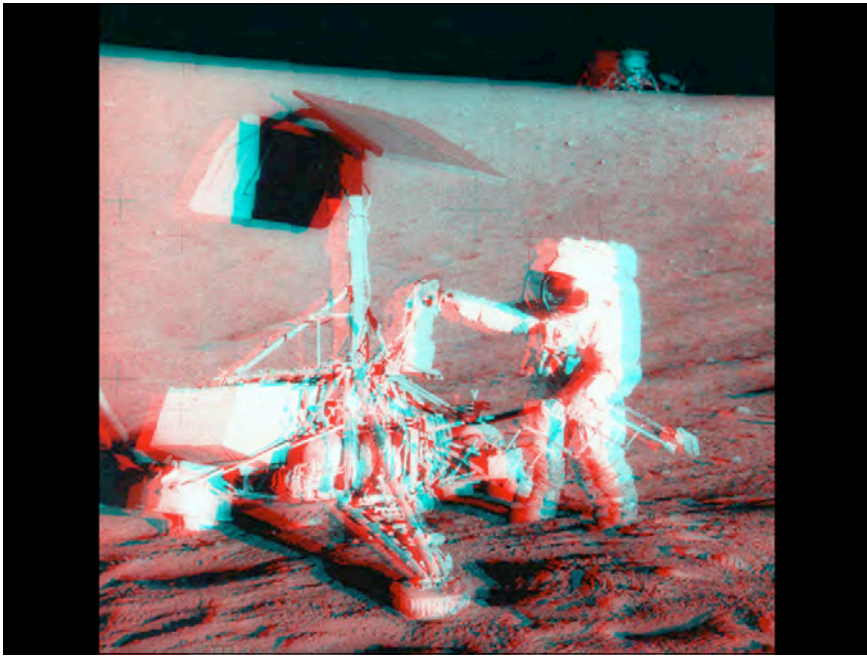


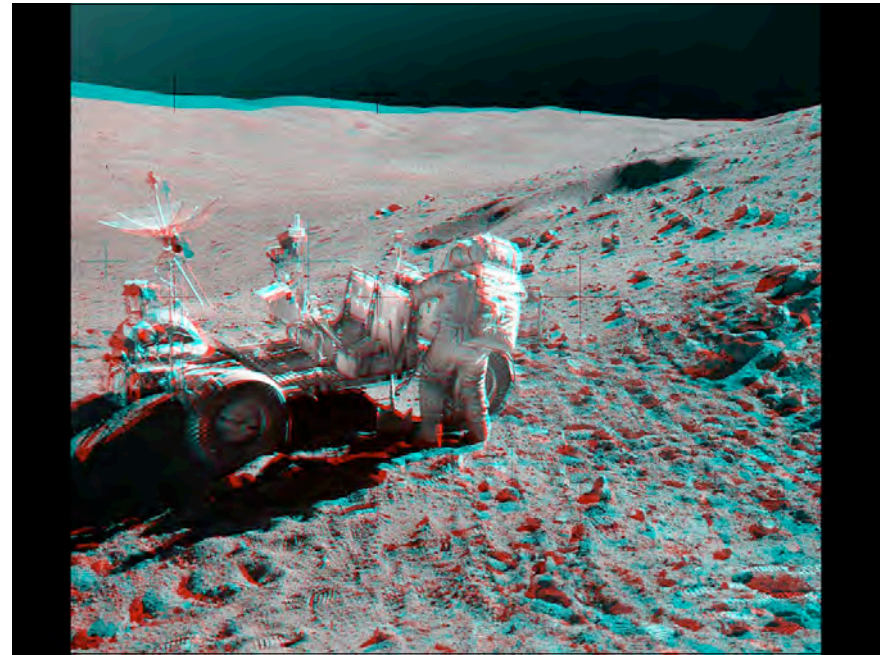
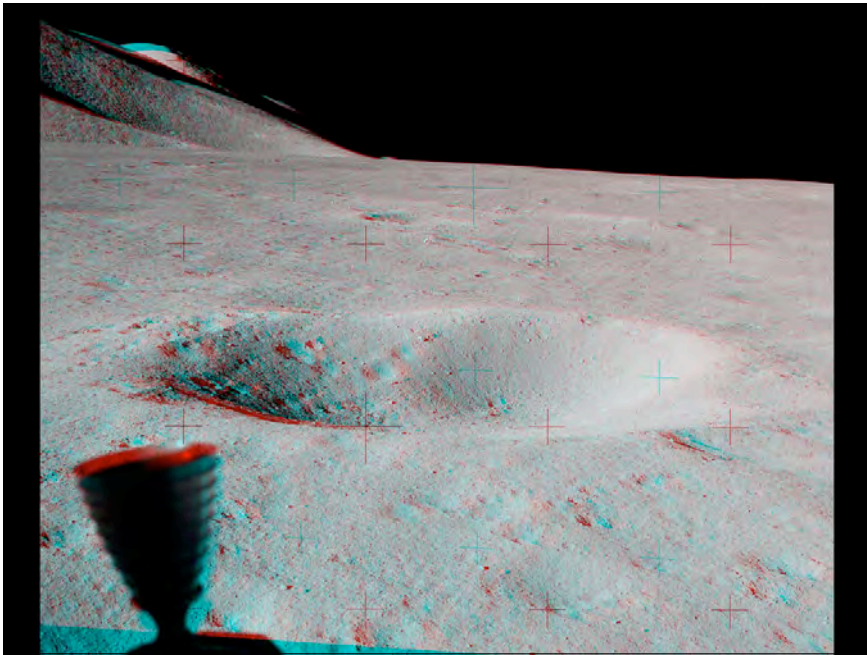
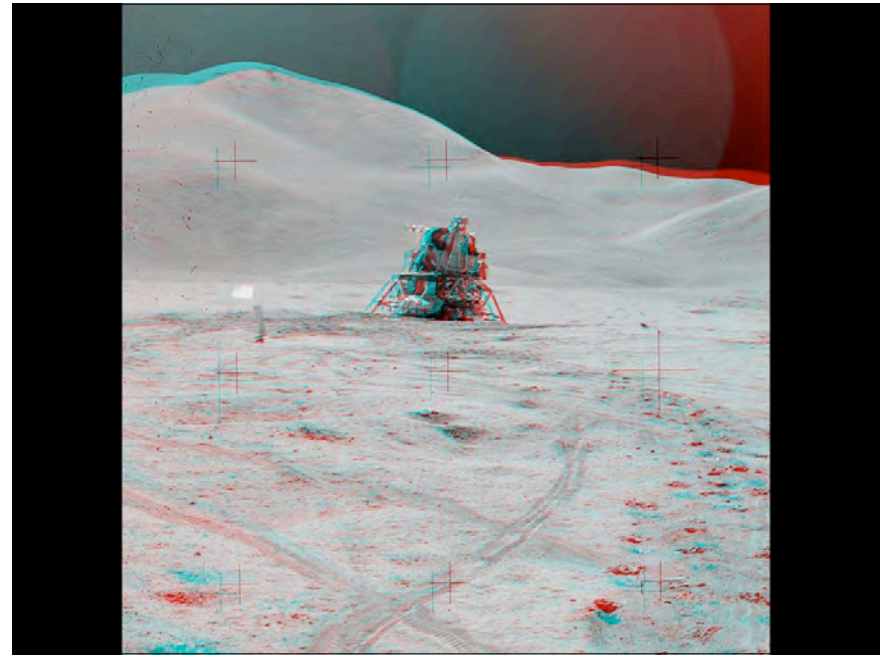
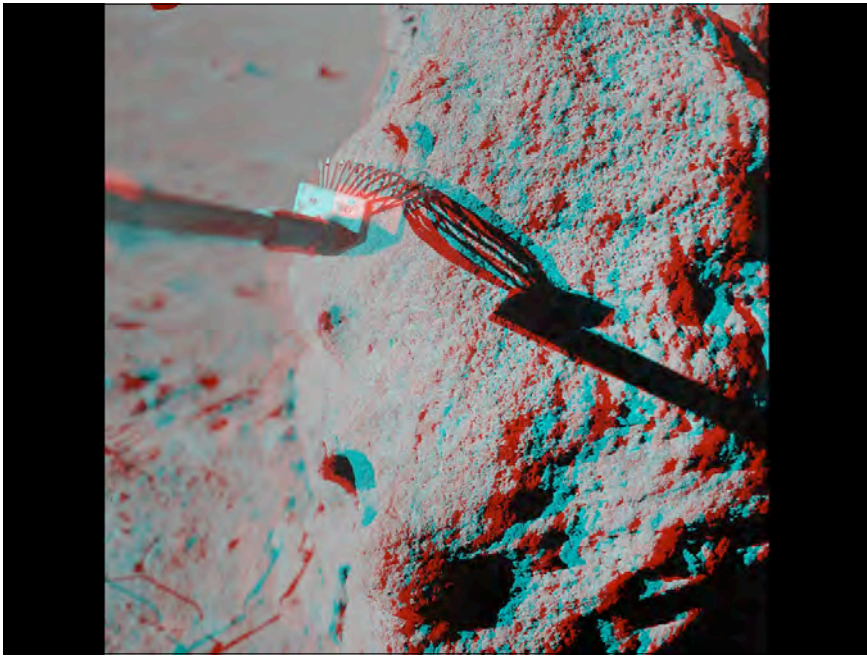
The Moon in 3-D

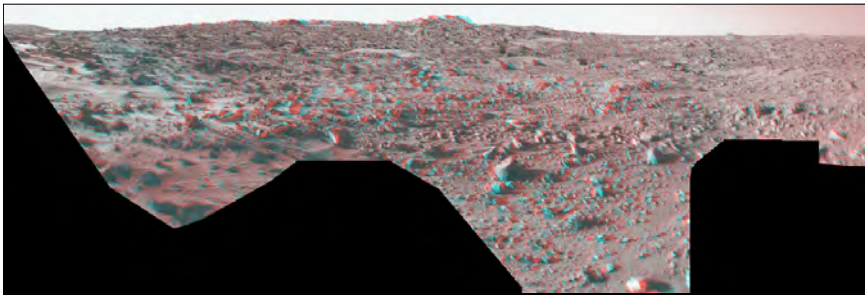






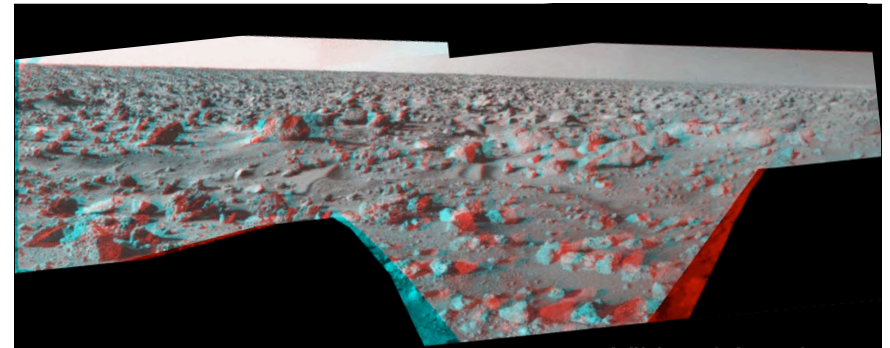






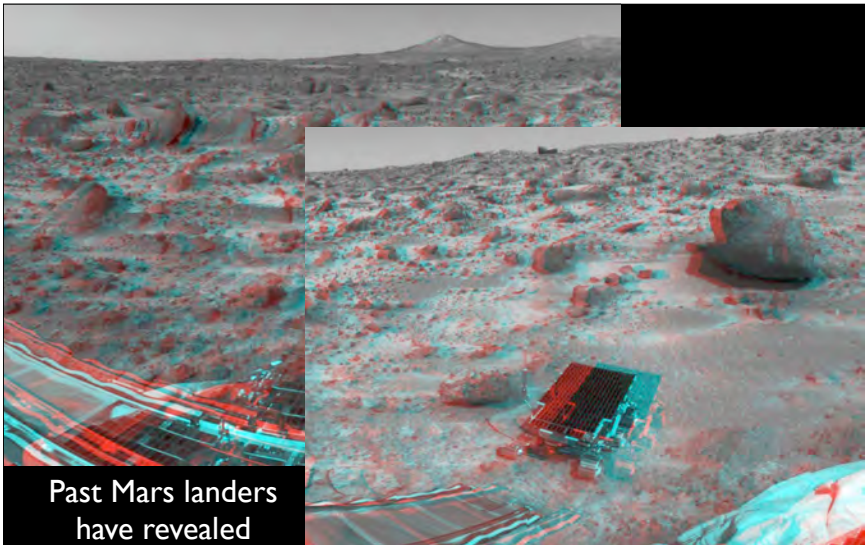
Viking 1 Lander
(1976)

Past Mars landers
have revealed
dramatic, almost
Earthlike landscapes!



Viking 2 Lander
(1976)

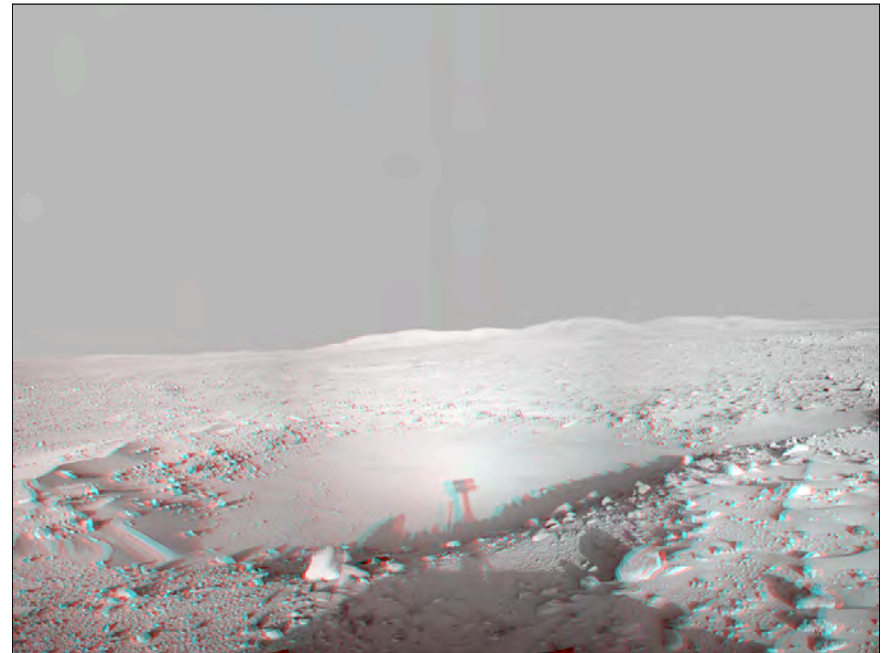
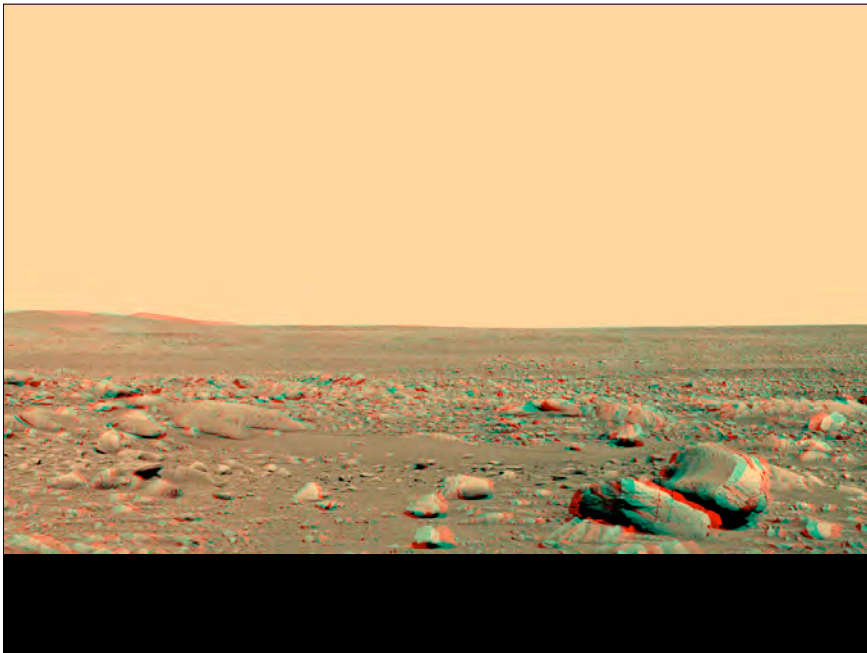
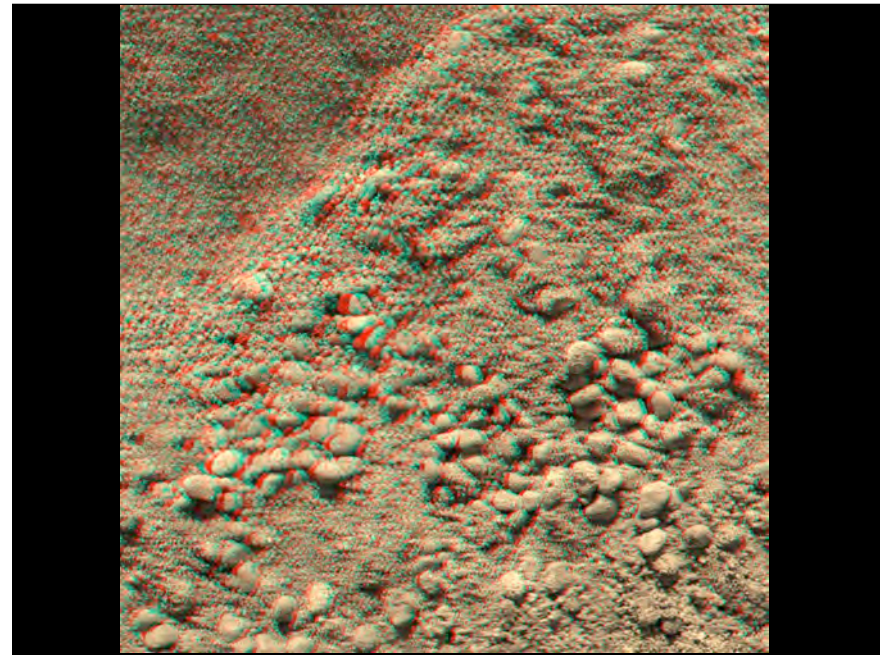
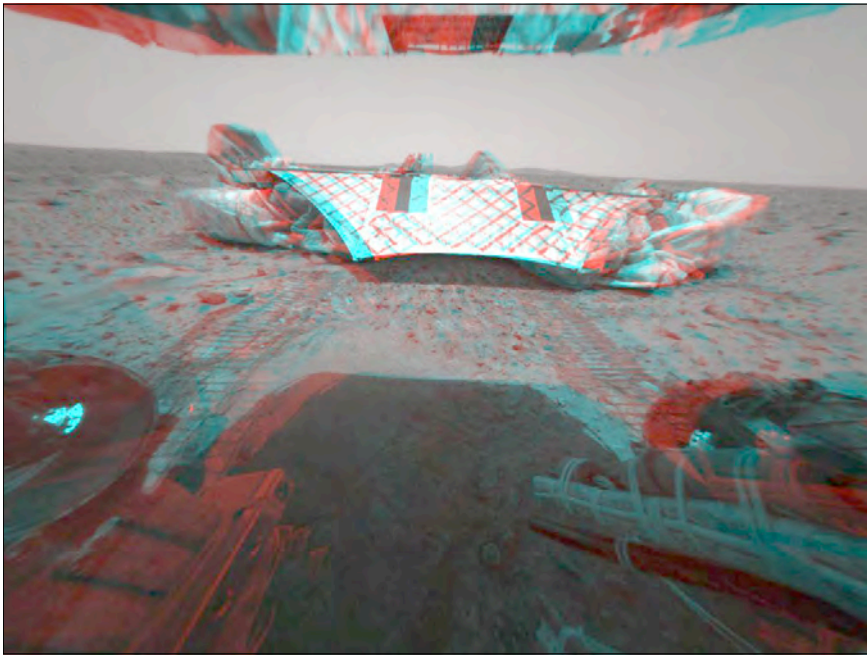
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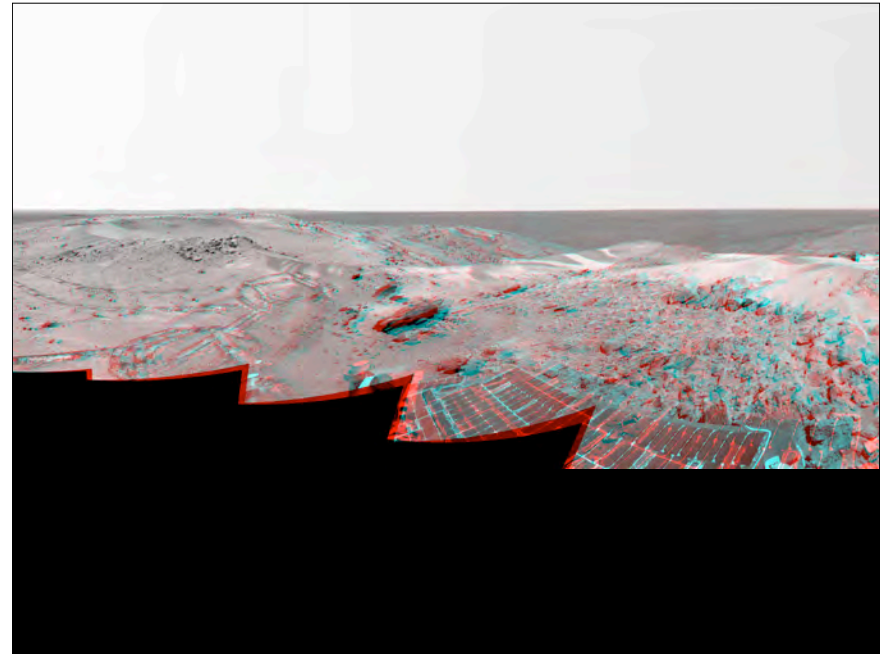
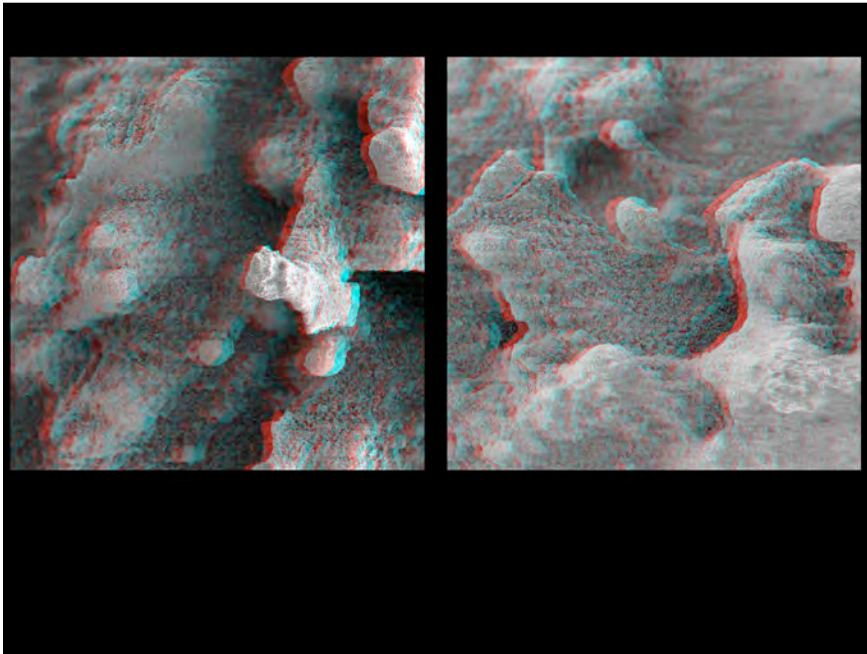
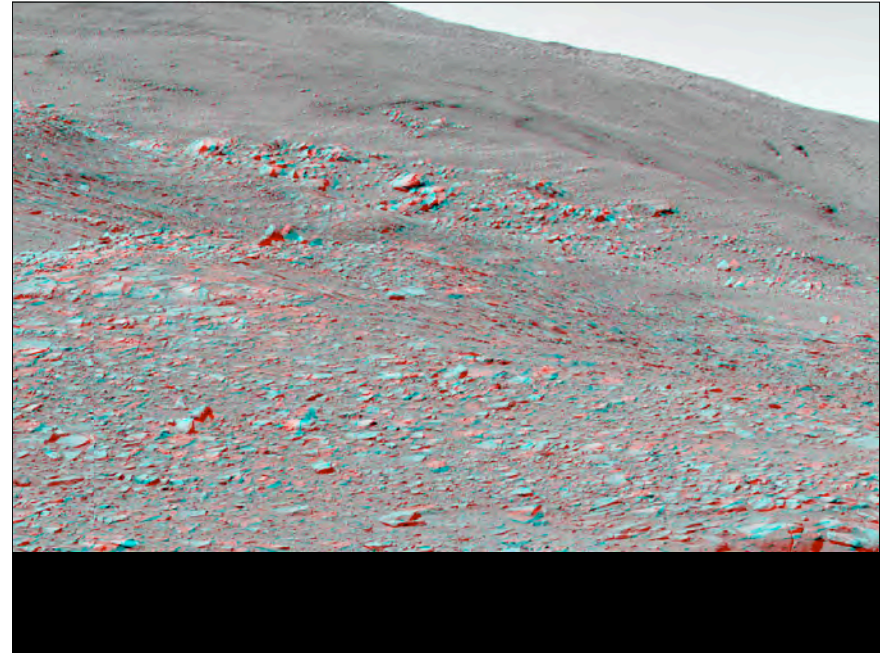
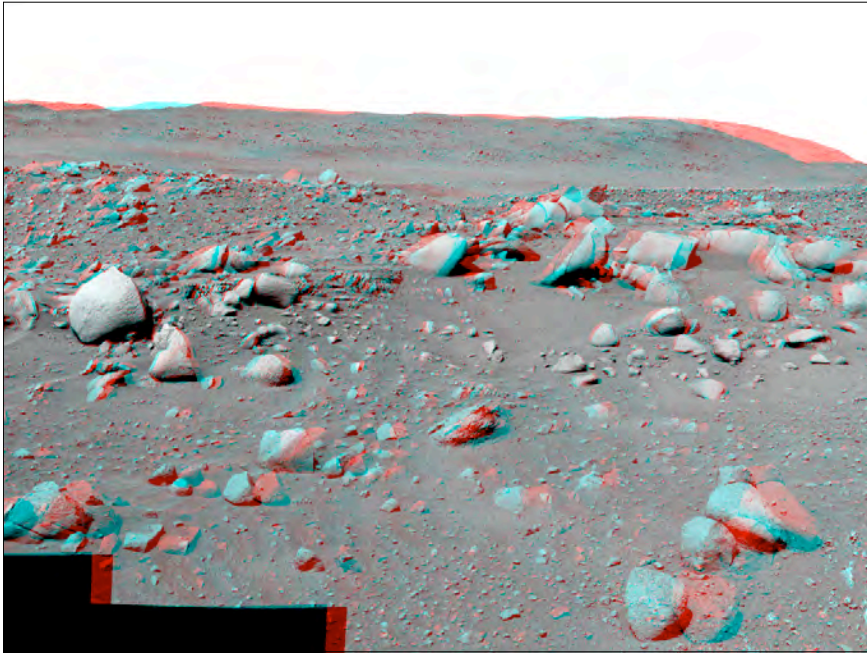


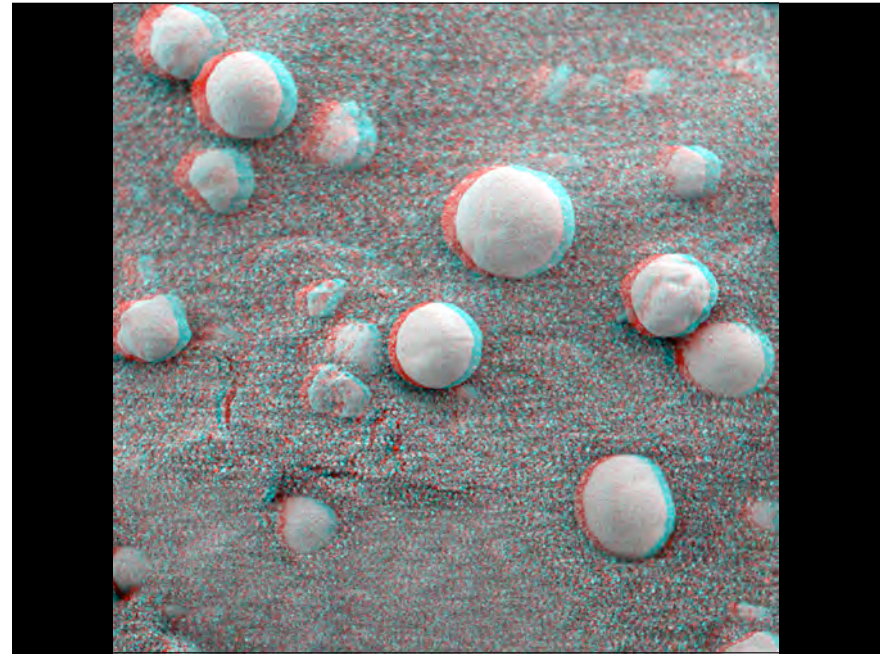
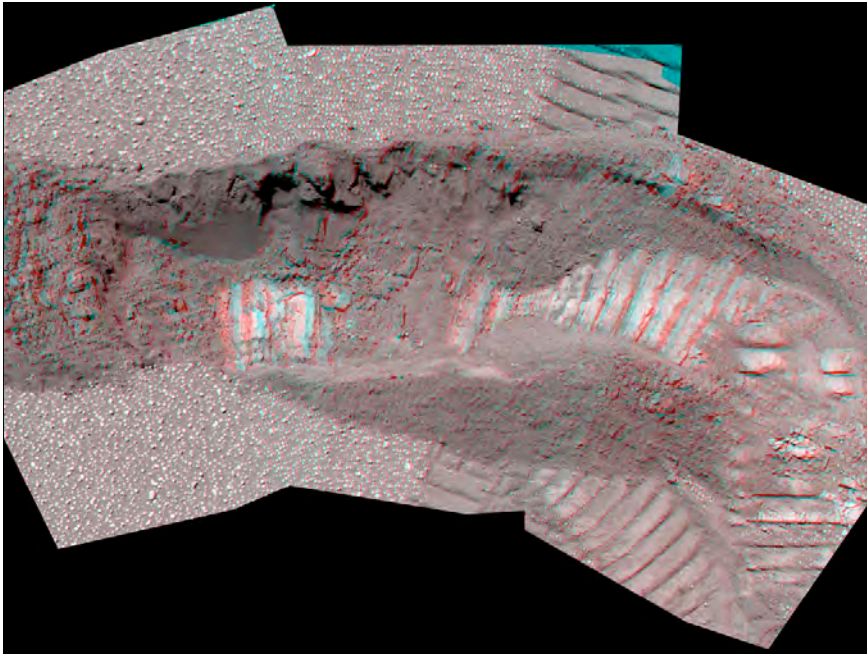
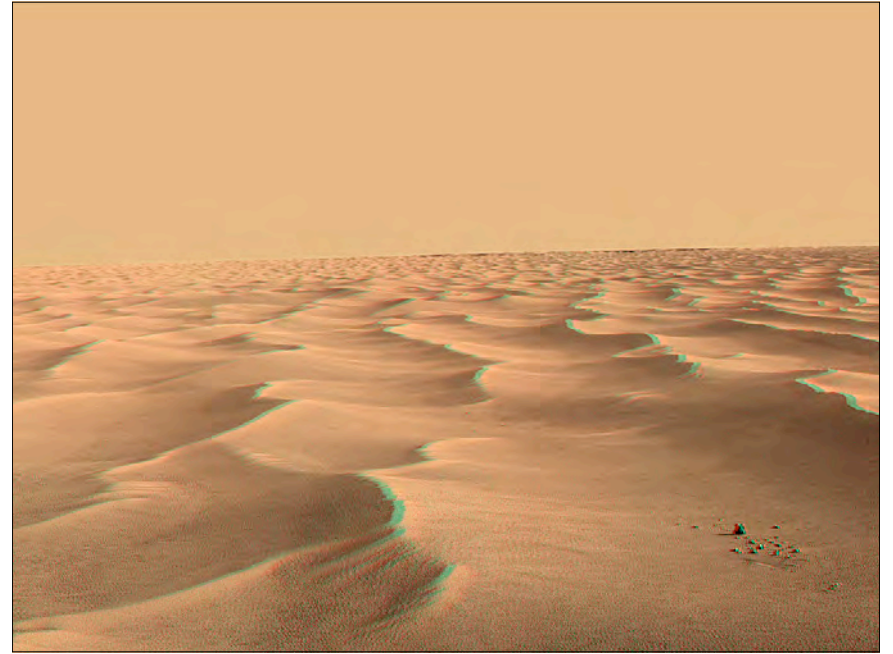
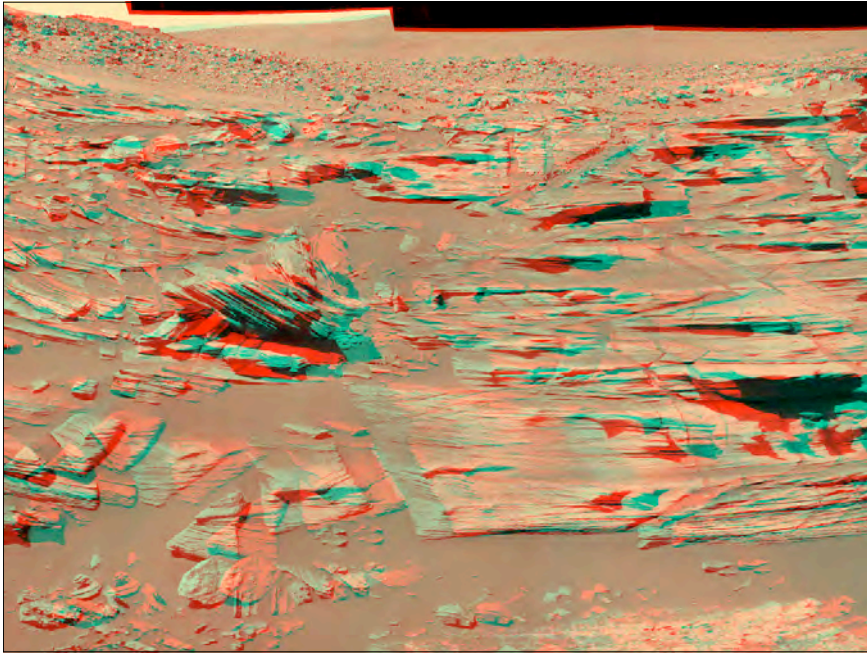
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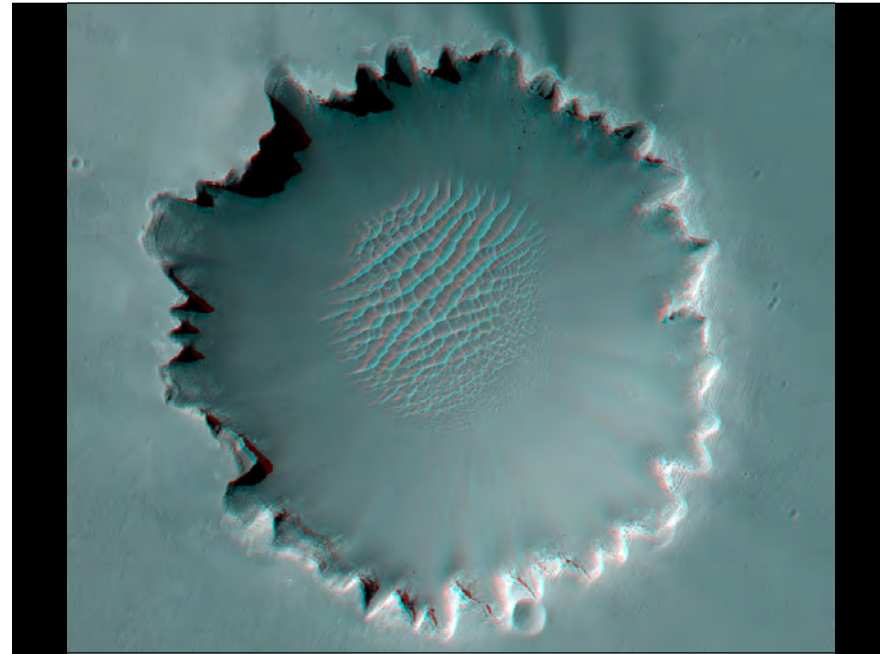
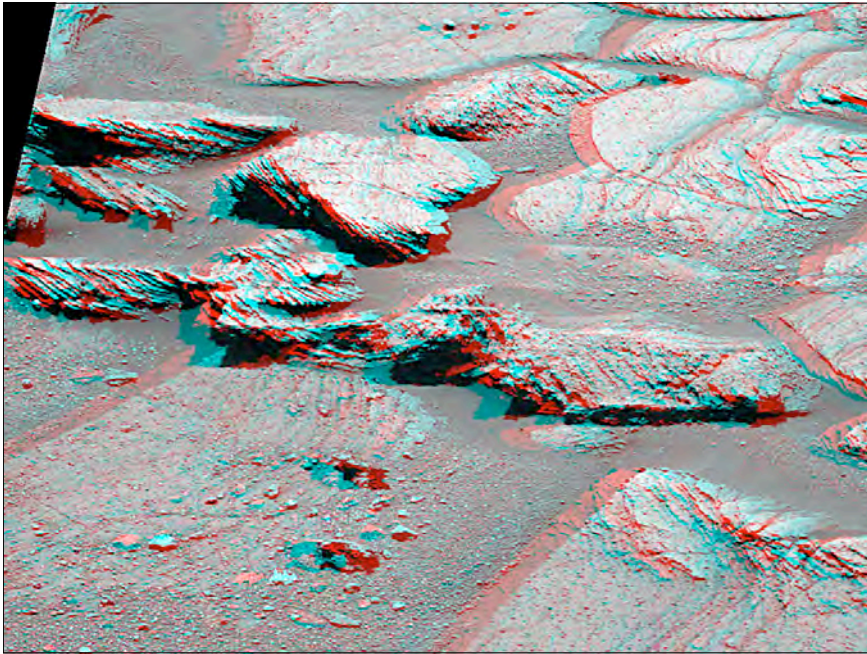
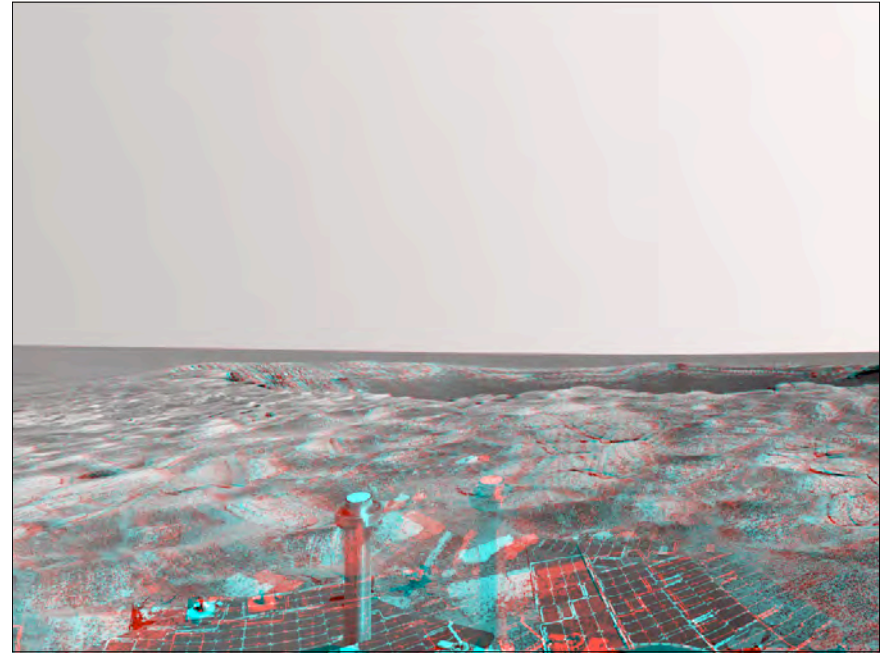
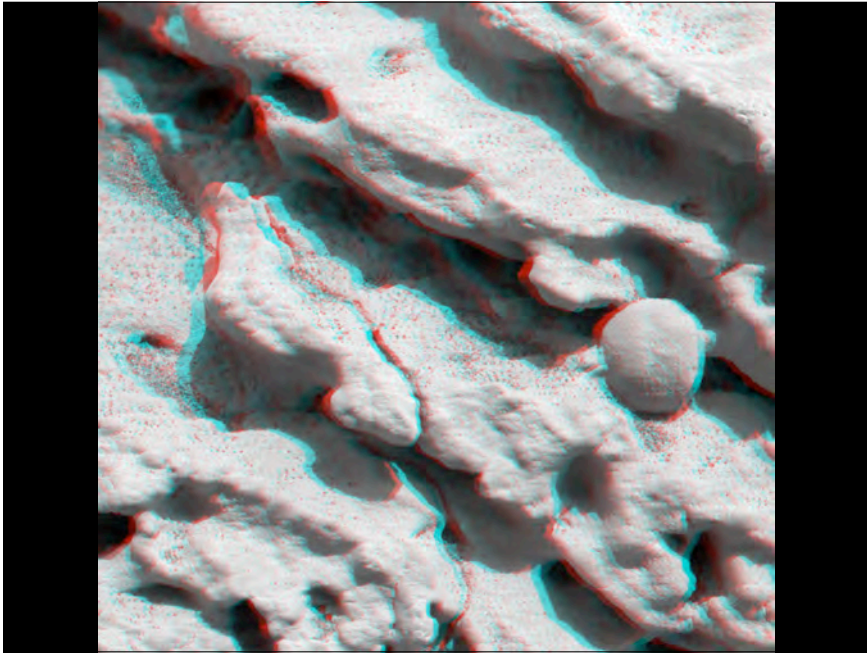
Mars Pathfinder
Lander (1997)

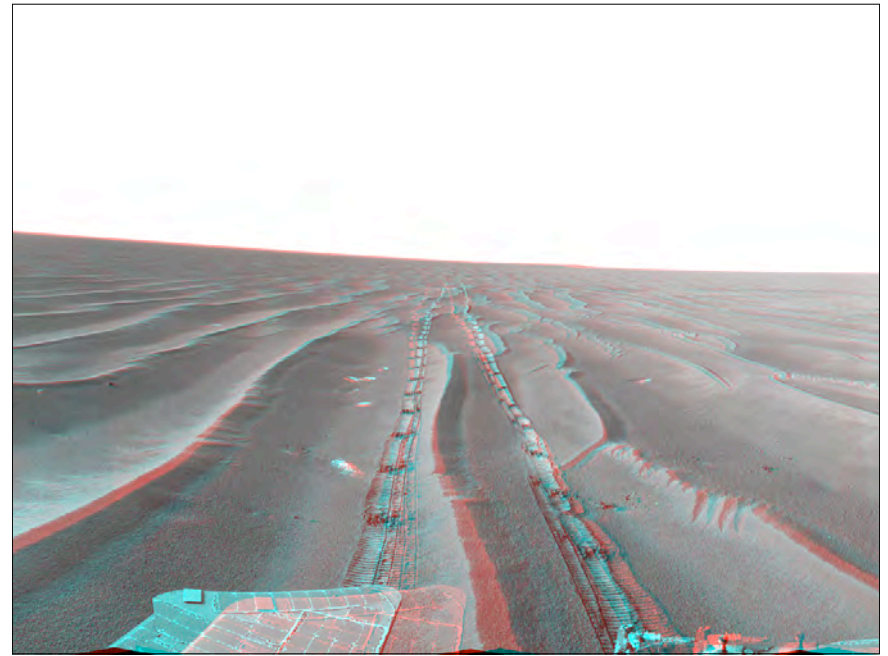
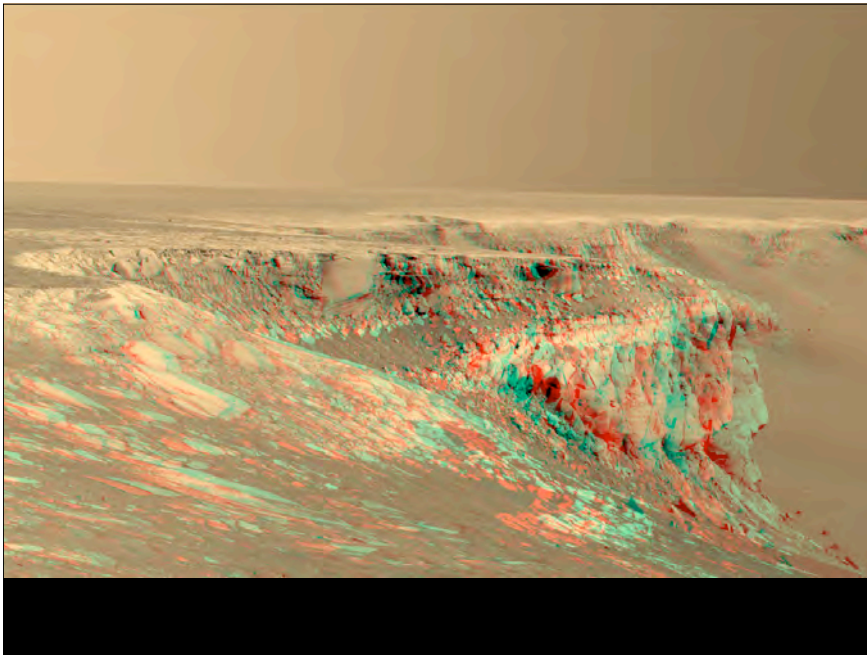












**Asteroids
& Comets**

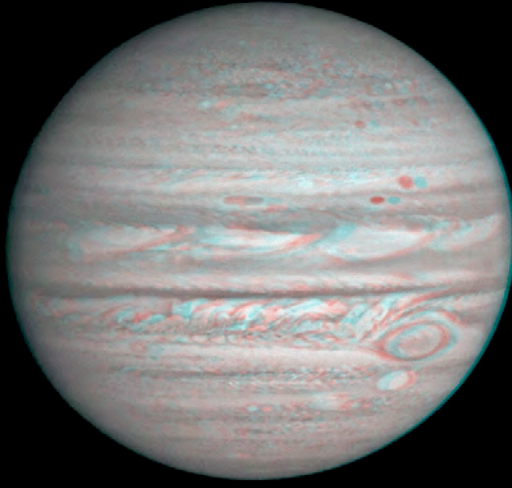
Small, irregularly-shaped bodies like rocky asteroids Ida (top) and Toutatis (top right), and the icy comet Wild-2 (bottom right)



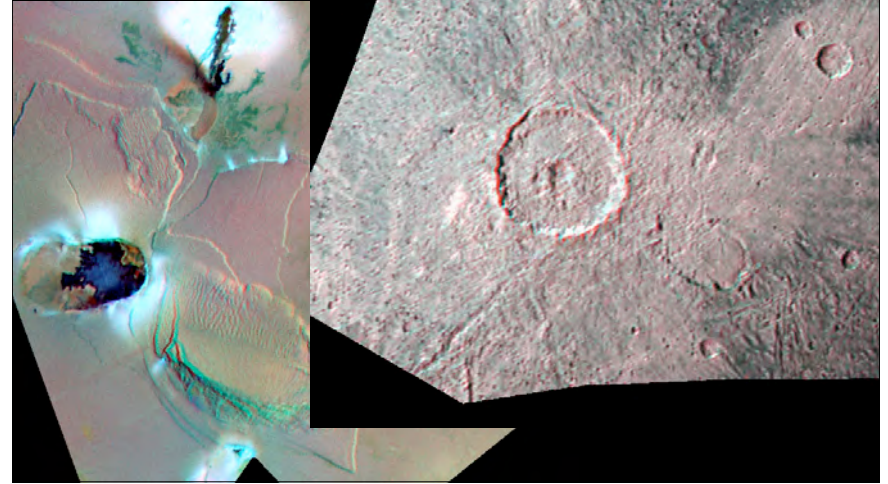
Jupiter & Saturn



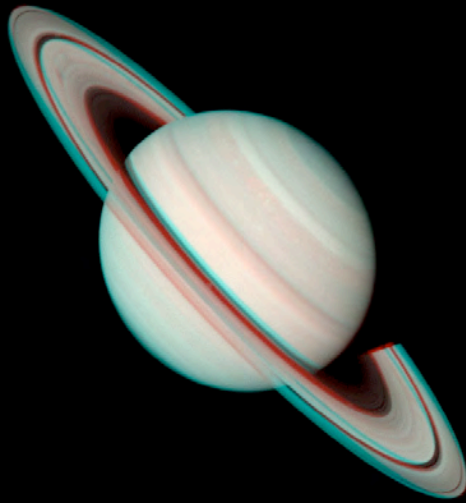
It would take 1000 Earths to fill Jupiter, a giant ball of hydrogen and helium gas that is just too small to have become a star...



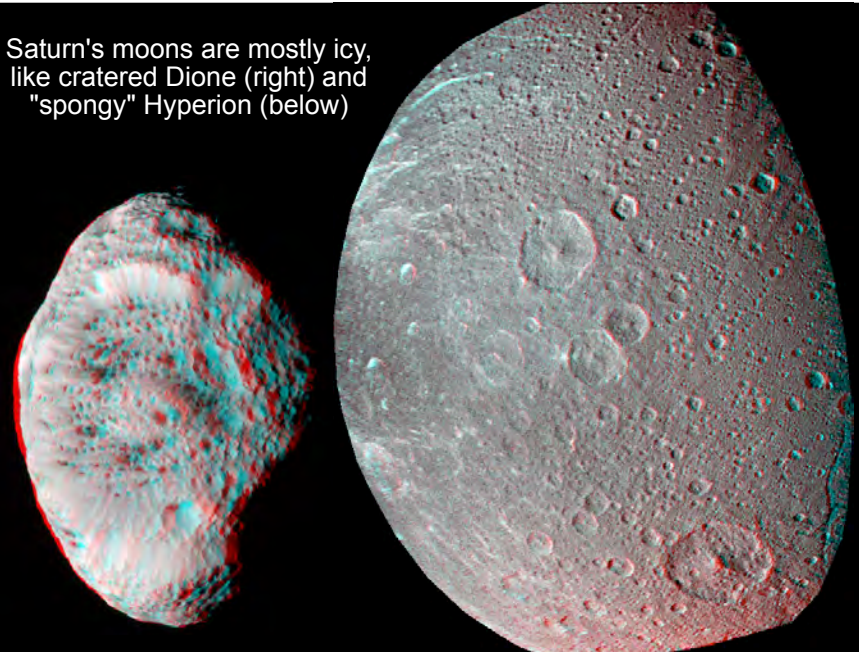
Jupiter's moons include the volcanically-active Io (below) and icy moons like Ganymede (right), Europa, and Callisto

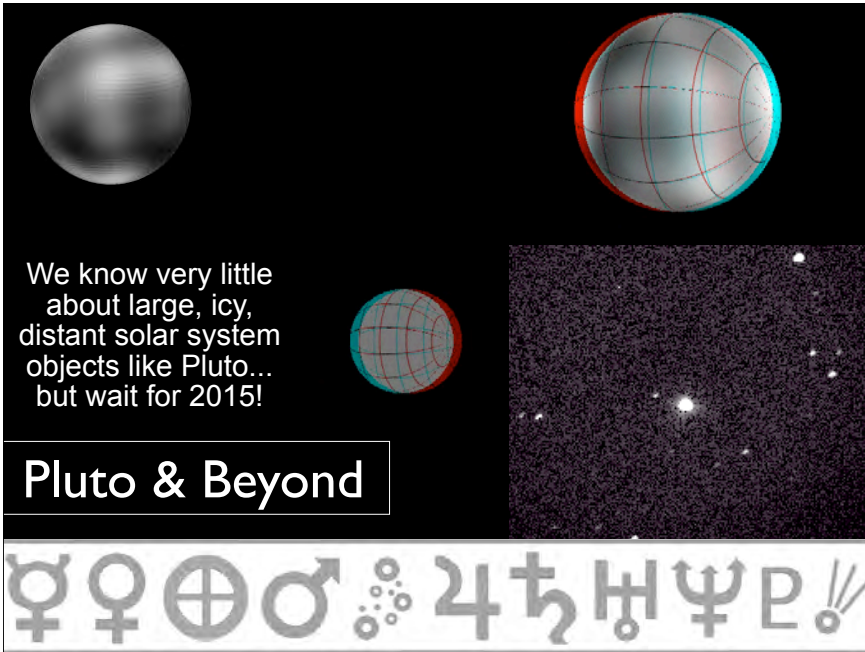
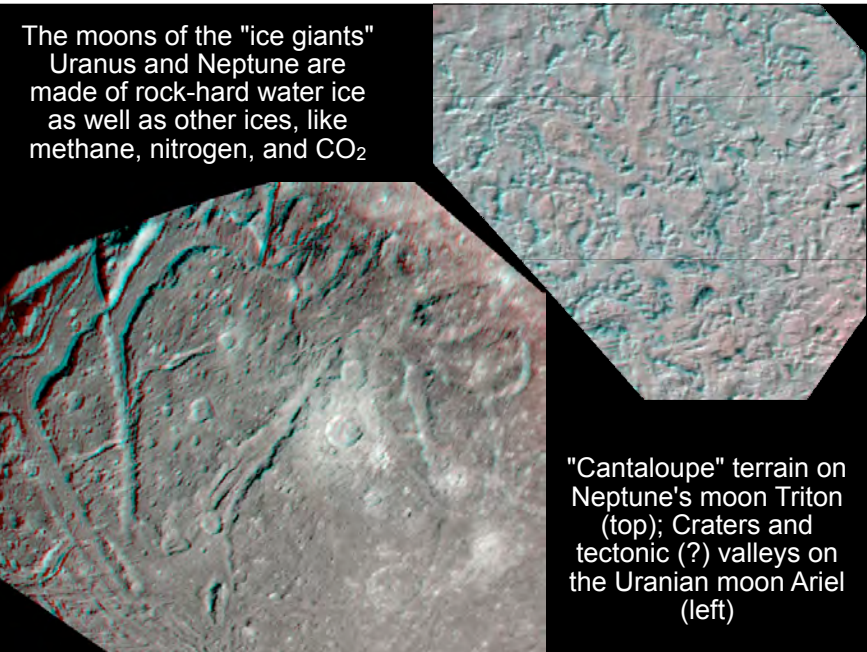
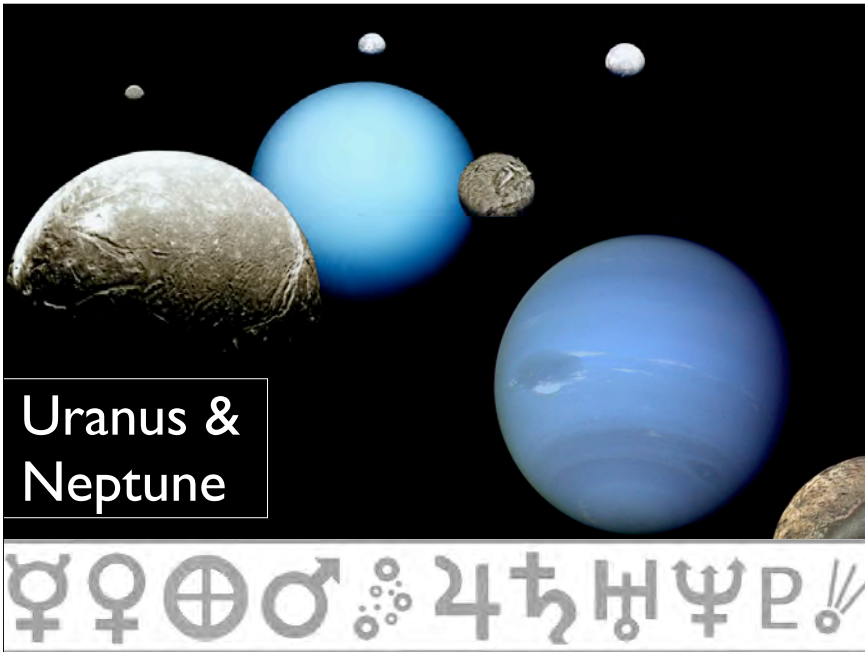


Saturn is smaller and similar in composition, but surrounded by a spectacular set of bright, icy rings



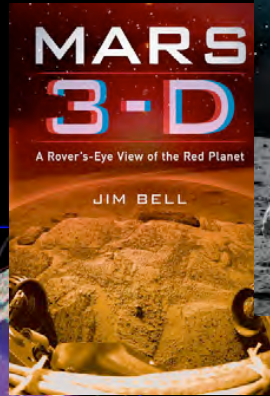
Saturn's moons are mostly icy, like cratered Dione (right) and "spongy" Hyperion (below)





Resources...

For exploring in 3-D on your own!



<http://moon3dbook.com>

<http://mars3dbook.com>



http://www.lpi.usra.edu/resources/stereo_atlas/START.HTM