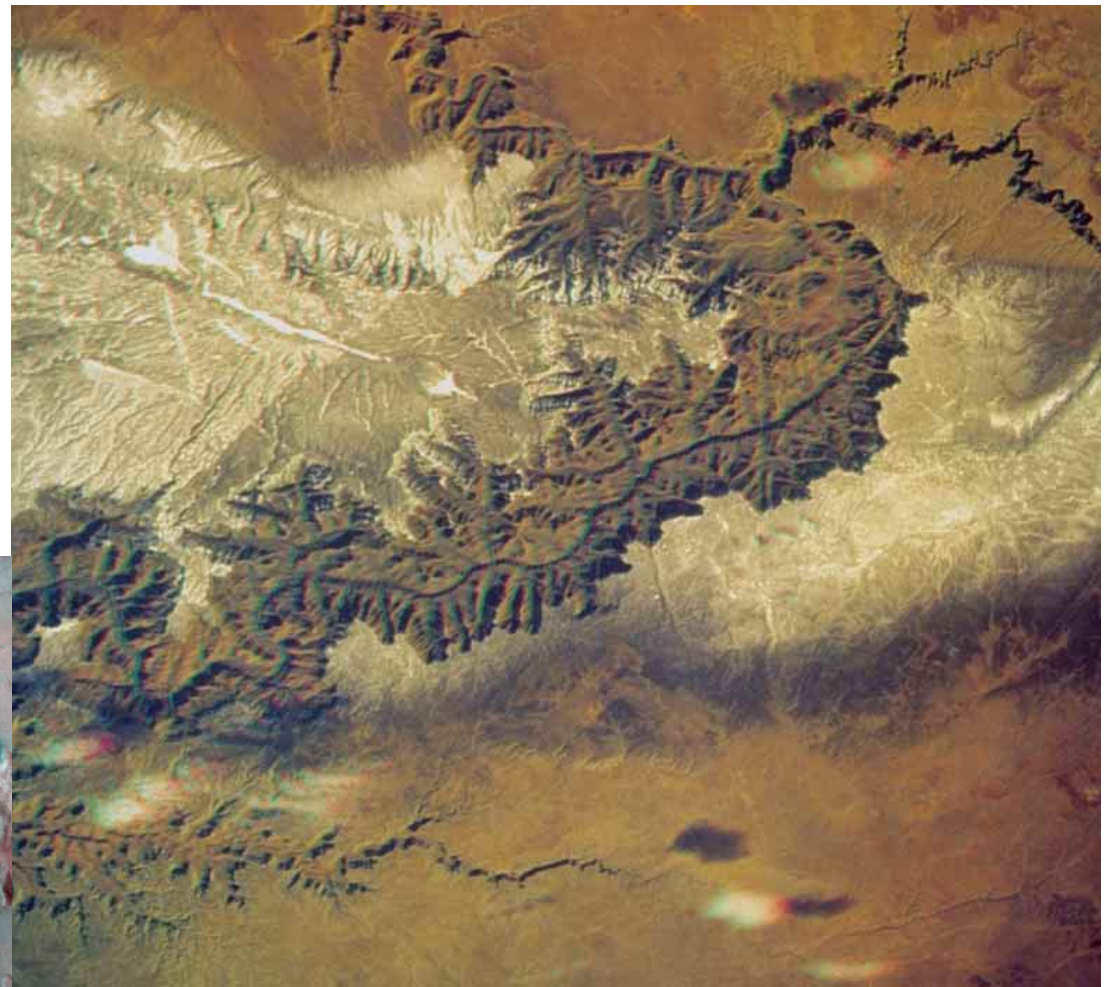
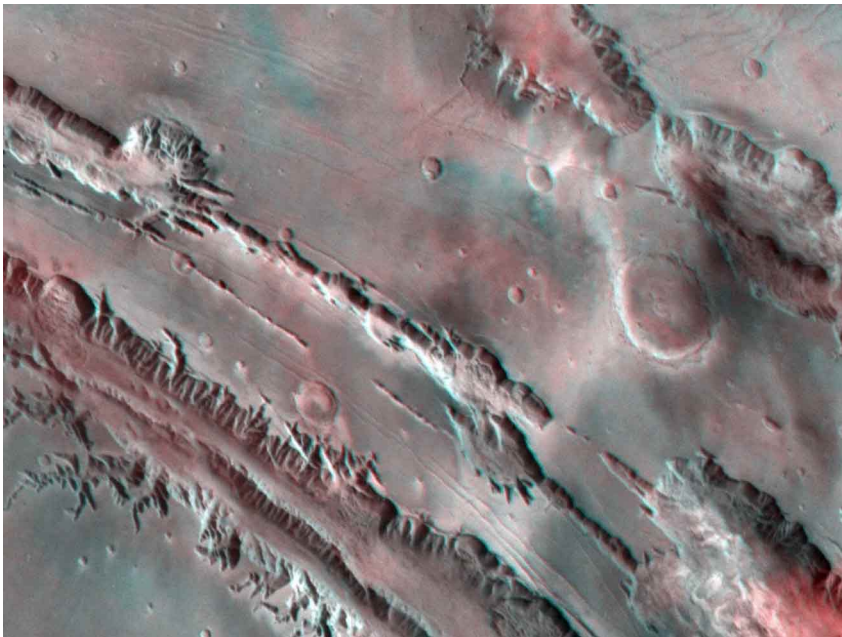


CANYONS

Grand Canyon, Arizona, USA, Earth

For over 5 million years the Colorado River has been carving the Grand Canyon through the Kaibab Plateau of northern Arizona. At its widest, the canyon spans 29 kilometers and is 1.8 kilometers deep. Although one of the most impressive canyons on Earth, the Grand Canyon is dwarfed by the Valles Marineris canyon system on Mars. The stair-like morphology of the canyon walls is due to differential erosion of sedimentary and volcanic layers of rock (some more than 100 meters thick) of varying resistances. These form layers with alternately steep and shallow slopes. The deep inner gorge is carved through very resistant ancient metamorphic rock.

*3-D Tour of the Solar System @Lunar and Planetary Institute, 1997
use 3-D glasses to view image*



Valles Marineris, Mars

use 3-D glasses to view image

The canyons of the Valles Marineris form a long series of parallel troughs up to 10 kilometers deep. Together, they are long enough to span the United States. This scene features an overview of the western third of the Valles Marineris from Tithonium and Ius Chasma to western Candor Chasma. The canyons formed within the volcanic plains of the Tharsis Montes plateau. Fault scarps within the canyons indicate that tensional stresses fractured the crust in a radial pattern centered on the Tharsis plateau. The canyons were subsequently enlarged by several mechanisms, including landslides. Flowing groundwater probably produced the numerous side canyons, some of which are large enough to swallow the Grand Canyon.

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