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Grand Canyon, Meet Grander Canyon

This image, captured by the crew of ISS Expedition 39 in the spring of 2014, shows a section of the Grand Canyon north of the main tourist center (north and south are inverted here). The Space Station's 250-mile-high vantage point makes it easy to see the canyon's intricate system of drainage channels, which kind of resemble twigs and branches radiating from a tree.

Water from the Colorado River and its numerous tributaries carved this 277-mile-long megaditch over the past 5 to 6 million years through the slow and steady process of erosion. The Grand Canyon is 18 miles across at its widest spot, and as much as a mile deep.

Canyon walls are like geologic time machines. The oldest deposits viewable at the base of the Grand Canyon are nearly 2 billion years old. Yes, that's BILLION. With a B.

Images of the Martian surface show drainage patterns similar to those seen in this image, strongly suggesting that water once flowed there as well. And Mars also has a huge canyon, ten times longer than the Grand Canyon, much wider and a whole lot deeper, called Valles Marineris.

The geologic origins of the two canyons are very different, however. Scientists believe that Valles Marineris is actually a huge rift - a crack that opened up as the surface of Mars cooled above its warmer, still expanding interior. Imagine putting a coat of paint onto a partially inflated balloon, letting it dry, and then blowing a few more puffs of air into it; the balloon gets bigger but the paint can't stretch to accommodate the expansion, and CRACK - instant rift canyon.



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