

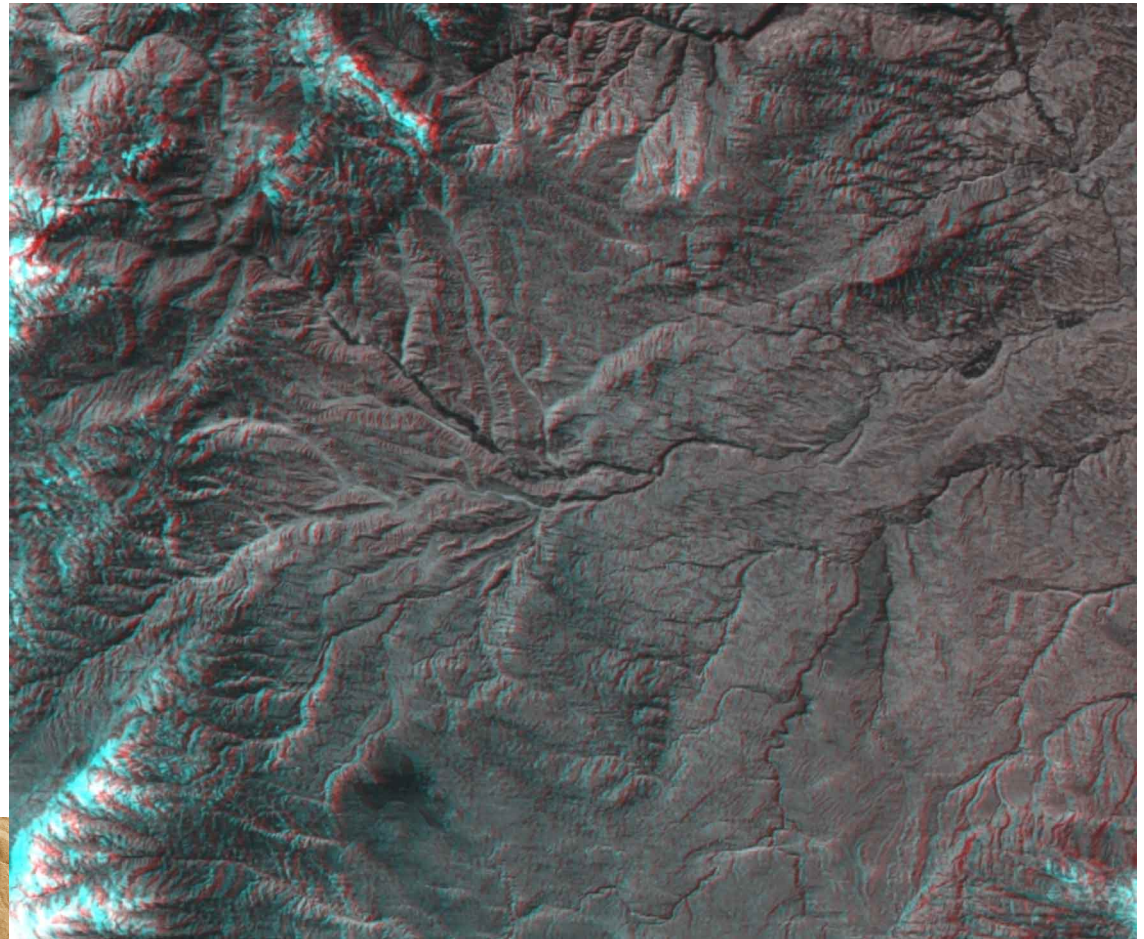
# RIVER CHANNELS

## Darya-Ye Sut, Afghanistan, Earth

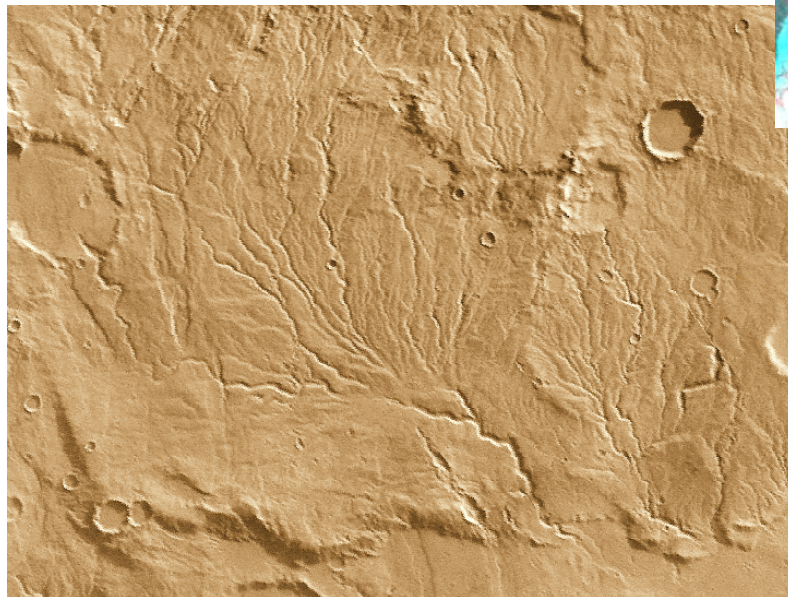
The fan-shaped river system in the center of the scene is the Darya-Ye Sut. This river lies on the northern flank of the Hindu Kush mountain range of northern Afghanistan and empties into the Amu Darya, which in turn flows to the Aral Sea. The different drainage patterns in this area are created as water erodes rocks of different hardness and slope.

The Darya-Ye Sut has developed a parallel drainage pattern with streams flowing in one or two general directions. This pattern formed in erosion-resistant, but fractured, sandstones, conglomerates, and siltstones. Parallel drainage patterns tend to develop on steep slopes or on rocks that have been fractured in one or two particular directions. This drainage pattern bears a resemblance to some channel networks on Mars, such as the Warrego Valles (below). Dendritic drainage patterns, like those to the north (right), formed on less-resistant limestones and on shallower slopes. Unlike the rocks to the south, there is no dominant fracture pattern in this area.

*3-D Tour of the Solar System* ©Lunar and Planetary Institute, 1997



*use 3-D glasses to view image*



## Warrego Valles, Mars

This area along the southern margins of the Tharsis Montes plateau has been subjected to both extensional and compressional deformation and has been eroded by valley networks. Warrego Valles and similar valley networks on Mars are important clues to martian climate history. Present-day surface conditions do not allow liquid water to be stable on the surface. No rain falls on Mars today. These drainage channels may have formed when Mars was wetter or warmer than it is now. The continuing debate centers on whether these channels formed due to rainfall erosion and recharge of aquifers, or whether they formed from drainage of groundwater reservoirs and are related to sapping channels, an important feature of the Valles Marineris.

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