

# Image: Seasonal flows in Mars' Valles Marineris on anniversary of orbiter's launch

August 13 2015

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Credit: NASA/JPL-Caltech/Univ. of Arizona

Among the many discoveries by NASA's Mars Reconnaissance Orbiter since the mission was launched on Aug. 12, 2005, are seasonal flows on some steep slopes. These flows have a set of characteristics consistent with shallow seeps of salty water.

This July 21, 2015, image from the orbiter's High Resolution Imaging Science Experiment (HiRISE) camera shows examples of these flows on a slope within Coprates Chasma, which is part of the grandest canyon system on Mars, Valles Marineris. The image covers an area of ground one-third of a mile (536 meters) wide.

These flows are called recurring slope lineae because they fade and disappear during cold seasons and reappear in warm seasons, repeating this pattern every Martian year. The flows seen in this image are on a north-facing slope, so they are active in northern-hemisphere spring. The flows emanate from the relatively bright bedrock and flow onto sandy fans, where they are remarkably straight, following linear channels. Valles Marineris contains more of these flows than everywhere else on Mars combined. At any season, some are active, though on different slope aspects at different seasons.

Future human explorers (and settlers?) will need water to drink, grow food, produce oxygen to breath, and make rocket fuel. Bringing all of that water from Earth would be extremely expensive, so using water on Mars is essential. Although there is plenty of water ice at high latitudes, surviving the cold winters would be difficult. An equatorial source of water would be preferable, so Valles Marineris may be the best

destination. However, the chemistry of this [water](#) must be understood before betting any lives on it.

The location of the site in this image is 12.9 degrees south latitude, 295.4 degrees east longitude. The image is an excerpt from HiRISE observation ESP\_042228\_1670. Other image products from this observation are available at [hirise.lpl.arizona.edu/ESP\\_042228\\_1670](http://hirise.lpl.arizona.edu/ESP_042228_1670) target="\_blank">[hirise.lpl.arizona.edu/ESP\\_042228\\_1670](http://hirise.lpl.arizona.edu/ESP_042228_1670) .

HiRISE is one of six instruments on the Mars Reconnaissance Orbiter. The University of Arizona, Tucson, operates HiRISE, which was built by Ball Aerospace & Technologies Corp., Boulder, Colorado. NASA's Jet Propulsion Laboratory, a division of the California Institute of Technology in Pasadena, manages the Mars Reconnaissance Orbiter Project for NASA's Science Mission Directorate, Washington. Lockheed Martin Space Systems, Denver, built the orbiter and collaborates with JPL to operate it.

**More information:** For more information about recurring slope lineae, see [www.jpl.nasa.gov/news/news.php?feature=3981](http://www.jpl.nasa.gov/news/news.php?feature=3981) and [www.uahirise.org/sim/2013-12-10/](http://www.uahirise.org/sim/2013-12-10/) .

Provided by NASA

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