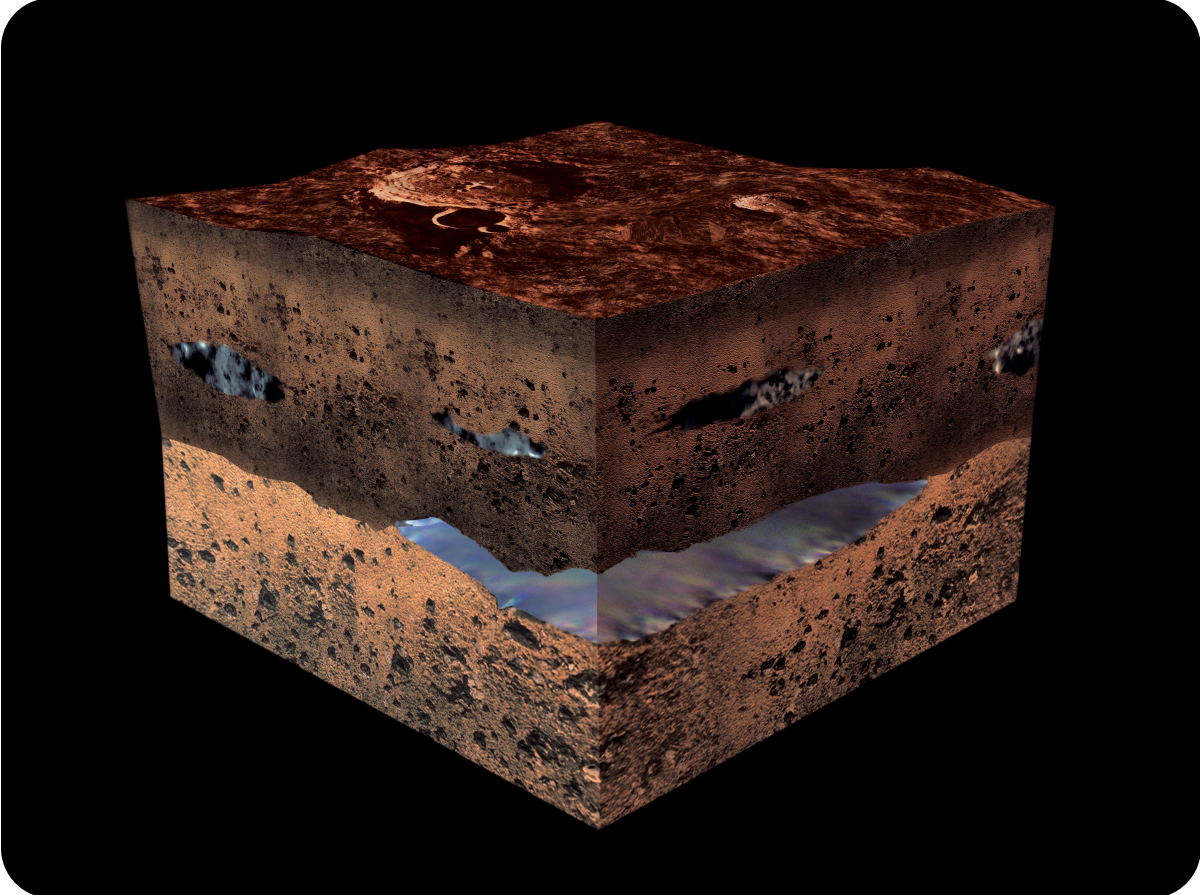


ESA’s Mars Express finds more underground water



What exciting discoveries could we make if we were to explore underground water on Mars? Copyright: Illustration by Medialab, ESA 2001.

[Access the image](#)

22 March 2021

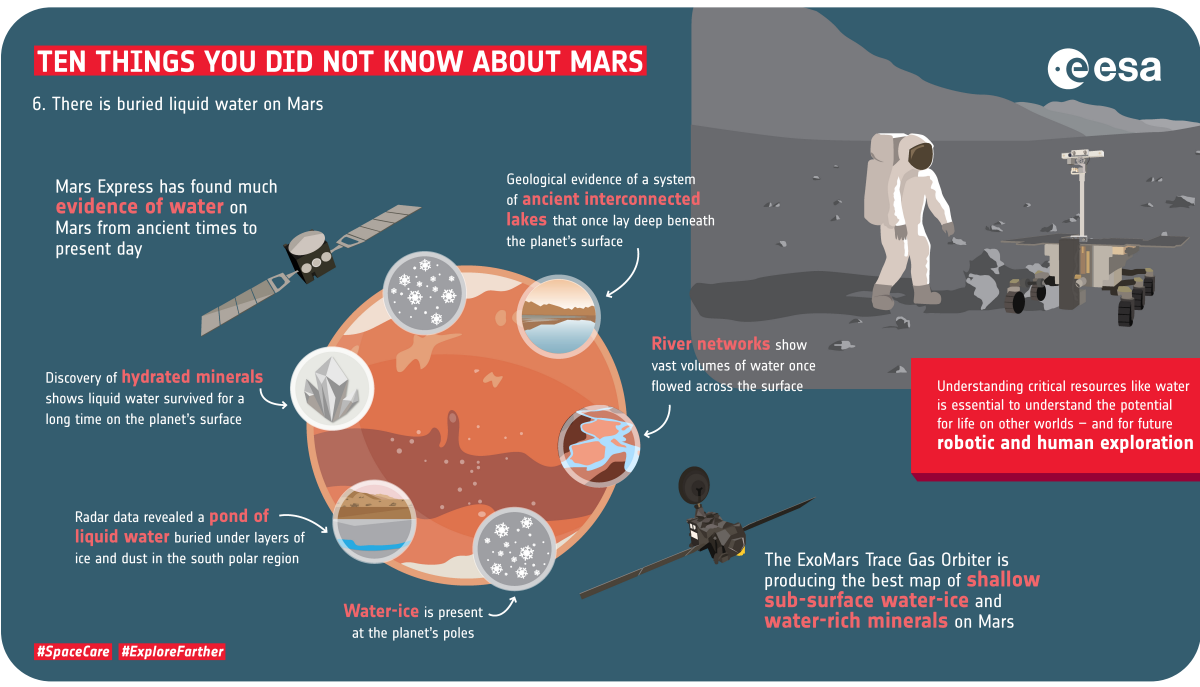
ESA's Mars Express spacecraft has been busy exploring the red planet. Mission scientists have just made an exciting announcement: they have discovered lots of liquid water!

A large lake of water, 20 x 30km, which is about the same size as the city of Rome, was [found in 2018](#) under Mars' south polar region. These new investigations have revealed three more ponds surrounding it. However, they are all buried under 1.5km of ice! Scientists think that the water in the ponds must be salty, which means that it can stay in a liquid state and not freeze solid in the cold temperatures on Mars.

Mars Express is in orbit around the red planet. To make this discovery, it used a special device called MARSIS, which is short for Mars Advanced Radar for Subsurface and Ionosphere Sounding. MARSIS is a “ground-penetrating radar”, which means that it sends radar pulses from orbit towards the surface of Mars. By timing how long it takes the pulses to be reflected back, and how strong they are, scientists can work out what it is like beneath the ground.



Far in its past, Mars was warmer and wetter with water flowing across its surface. Over time conditions changed, and it is no longer possible for liquid water to remain on the surface for long. However, the discovery of these ponds hints at the exciting possibility that there could be entire systems of ancient lakes, millions or even billions of years old, buried under the Martian surface. Could they be home to simple forms of alien life? This is possible, but it would be very difficult to explore them and find out for sure.



Fun facts about water on Mars! Copyright: ESA – S. Poletti.

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Imagine you had the challenge of designing a robot to explore these ponds. Can you think of a way to break through the ice and then study the water? What might you find?

Cool fact: The techniques used to study the radar data from Mars Express are similar to those used by scientists to investigate underground lakes on Earth, in Antarctica, Canada, and Greenland.