

Offered Title: Water on Mars!

Well, not really ON Mars, rather, IN Mars. That's still big, not to mention exciting!

We already know that water exists as ices below Mars' surface in many places, including the polar regions. While Mars' polar caps are primarily dry ice, frozen carbon dioxide, satellite radar studies have detected significant deposits of frozen water.

Mars surface is dry, so very dry. And Mars' carbon dioxide atmosphere is super thin. At its densest, Mars' atmosphere is like being at an altitude of 90,000 feet on Earth. That's way too thin to allow venturing outside in an unpressurized suit. Oh, and it's cold, so very cold. But wait, not always. At Mars' equator on a summer day it can get to a balmy 70 degrees F. At night though, the temperature drops like a rock, sometimes reaching -100 degrees F. That's a lot of freeze-thaw cycles. Mars is a very unforgiving environment.

So, what about the water?

The European Space Agency's Mars orbiter *Mars Express* has found what appears to be liquid water deep below the surface near Mars' south pole. Using its MARSIS (Mars Advanced Radar for Subsurface and Ionosphere Sounding) instrument, Mars Express can map a cross section of Mars from its surface to thousands of feet below. At around 1500 feet down it recorded an unusual signal. This signal indicates the presence of liquid water or possibly slush. It could be an underground lake! In any event, this water is probably very salty. It has to be to stay liquid at an estimated -90 degrees F. Not a problem, Mars has lots of salts of magnesium and calcium, and no shortage of perchlorates to create briny water.

The prospect of liquid (albeit briny) water is exciting. From studies made in briny lakes under the Antarctic we know life can exist in extreme conditions. The existence of liquid or slushy water on Mars will be a definite target of a search for life.

Mars has been the object of close study for centuries and as our technologies improved, we have been able to study Mars VERY closely. Mars is currently the destination planet in our solar system, billions and billions of dollars have been spent getting to know it. We will send humans to Mars and Mars will become an outpost. When? Looks like five to ten years before human's venture to Mars. It will be even longer before they are able to drill deep enough to check out the liquid water. Of course, there's the possibility of finding liquid water closer to the surface and that might change the time line. I hope to still be around when it happens.

Oh, and I wonder when the first wedding will take place on Mars. Will there be a buffet?

What's in the Sky?

November 23; evening; east: The Moon, just past full, rises with Taurus the bull and its Hyades star cluster. Should be nice in binoculars.