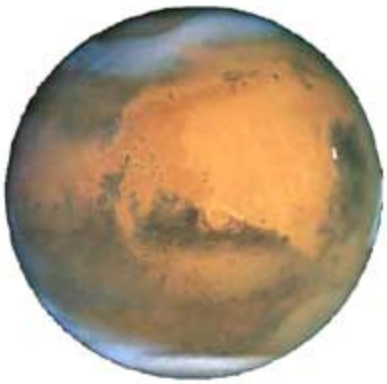
The Planet Mars Fact Sheet



Mars is the fourth planet from the Sun and is commonly known as the Red Planet, because the soil, rocks, and sky give the planet a red tint. This very distinctive red coloring has been observed by scientists all throughout history. Given the fact that Mars looks red in the night sky, it's easy to see why it was given its name by the Romans to honor their god of war.

Is there Life on Mars?!

Mars was once considered the best candidate for life outside of Earth. Astronomers saw straight lines crisscrossing it's surface and thought they could be irrigation canals constructed on the planet's surface by intelligent life. Enough people believed in the possibility of invading Martians that it caused a near panic when Orson Welles broadcasted a radio drama based on the science fiction classic War of the Worlds by H.G. Wells, in 1938.

Mars also appears to have a seasonal coloring change, which of course lead people to find yet another similarity to Earth and think of life on Mars. We finally had our first pictures of Mars in 1965 when the Marniner 4 gave us 22 pictures of it's surface. Very disappointingly, all that was revealed was that the surface contains many craters and the canals that had brought so much hope turned out to be naturally occurring channels with no evidence of artificial canals or flowing water.

Viking Landers 1 and 2, touched down on the surface of Mars in 1976 and discovered very unique chemical activity in the planet's soil. Although there was no clear evidence of living microorganisms, after further study they found that Mars is "self-sterilizing". This means that the combination of solar ultraviolet radiation that saturates the surface, the extreme dryness of the soil and the oxidizing nature of the soil chemistry prevent the formation of living organisms in the Martian soil. Although there is still no evidence of life on Mars, the question *if*

there was life there at some time in the distant past remains unknown. Large yet weak magnetic fields were discovered to exist in various parts of Mars. This unexpected finding made by Mars Global Surveyor was interpreted to be remnants of an earlier global field that has since disappeared. This may have important implications for the past history of Mars' atmosphere and the possibility of ancient Martian life.

Why We *Haven't* Found Life...

Mars was much more like Earth early in its history. As with Earth almost all of Mars' carbon dioxide was used up to form carbonate rocks. But because it lacks the Earth's plate tectonics, Mars is unable to recycle any of this carbon dioxide back into its atmosphere and so cannot sustain a significant warming greenhouse effect. Because of this the surface of Mars is much colder than Earth would be at that distance from the Sun.

Like Mercury and the Moon, Mars appears to lack active plate tectonics; there is no evidence of recent horizontal motion of the surface such as the folded mountains so common on Earth. With no lateral plate motion, hot-spots under the crust stay in a fixed position relative to the surface. This, along with the lower surface gravity, may account for the Tharis bulge and its enormous volcanoes. There is no evidence of current volcanic activity.

During the three or four months that Mars is closest to Earth it's easily visible with the unaided eye. Mars can be a difficult but rewarding target for an amateur telescope. It's apparent size and brightness varies greatly according to its relative position to the Earth. There are several Web sites that show the current position of Mars (and the other planets) in the sky.

Water on Mars?

Martian air contains only about 1/1,000 as much water as our air, but even this small amount can produce clouds that ride high in the atmosphere or swirl around the slopes of towering volcanoes. There is evidence that in the past a denser Martian atmosphere may have allowed water to flow on the planet.

Physical features closely resembling shorelines, gorges, riverbeds and islands suggest that great rivers once marked the planet. Evidence supporting this theory was strengthened by some very nice images of layered terrain taken and the mineralology results from MER Opportunity. Most of this evidence points to wet periods that occurred only briefly and a very long time ago. The erosion channels are

estimated to be nearly 4 billion years. Regardless of the evidence there are now images from Mars Express released in early 2005 showing what appears to be a frozen sea that was liquid very recently (maybe 5 million years ago).

What Makes Mars...Mars!

• **Olympus Mons** - located on Mars is the largest mountain in the Solar System rising 24 km (78,000 ft.) above the surrounding plain, which is nearly three times bigger than Mt. Everest.

• **Tharsis** - a huge bulge on the planet's surface that is about 4000 km across and 10 km high.

• **Valles Marineris** - a grouping of canyons that are 4000 km long and from 2 to 7 km deep.

• **Hellas Planitia** - an impact crater in the southern hemisphere over 6 km deep and 2000 km in diameter.

Some Mars Quick Facts for your Homeschoolers...

• South Polar Cap Early telescopic observations revealed that Mars has permanent ice caps at both poles; they're visible even with a small telescope. We now know that they're composed of water ice and solid carbon dioxide ("dry ice").

• The average recorded temperature on Mars is -63° C (-81° F) with a maximum of 20° C (68° F) and a minimum of -140° C (-220° F).

• Though Mars is much smaller than Earth, its surface area is about the same as the land surface area of Earth.

• Mars' has two moons which are named Phobos and Deimos both discovered in 1877.