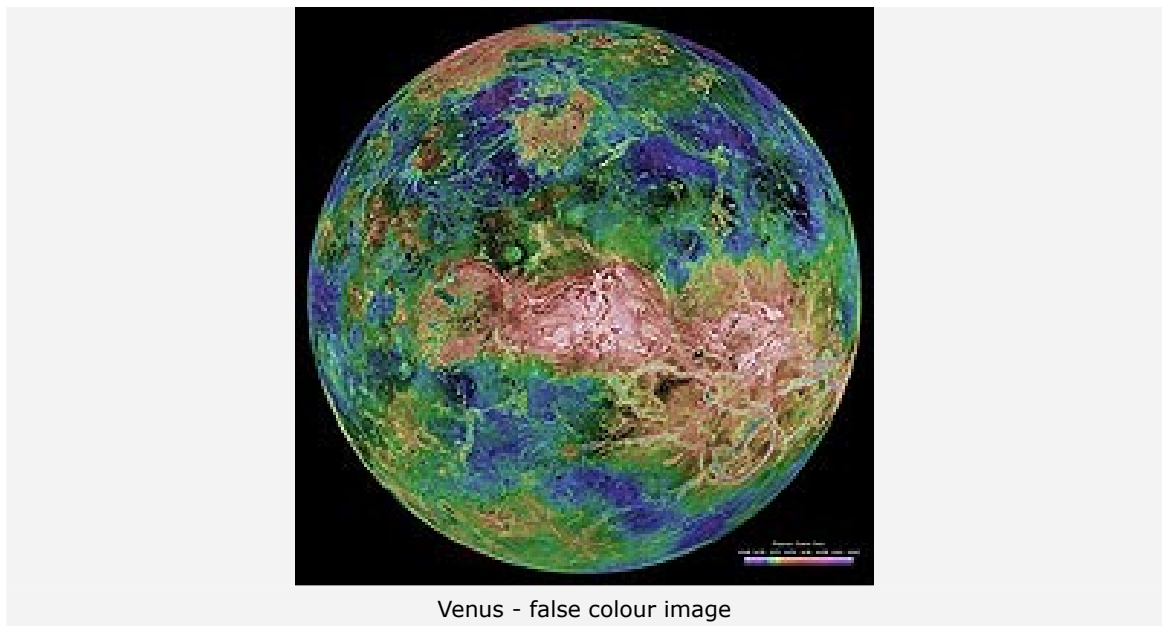


News-Archiv

Venus - our planetary neighbour

19 October 2005

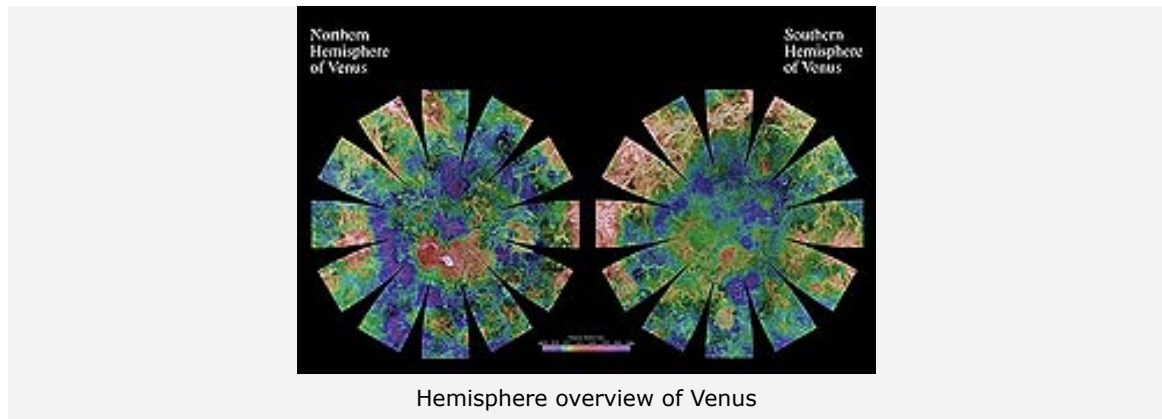


Named after the Roman goddess of love, Aphrodite, Venus is the second planet as measured from the Sun and Earth's nearest neighbour. As Venus is closer to the Sun than the Earth, it always appears in approximately the same direction from Earth as the Sun, so on Earth it can usually only be seen a few hours before sunrise or a few hours after sunset.

When at its brightest though, Venus can be seen during the daytime, making it the only heavenly body that can be seen both day and night besides the Moon. It is sometimes referred to as the 'Morning Star' or the 'Evening Star', and when it is visible in dark skies it is by far the brightest star-like object in the sky. When orbital conditions are right, Venus can get closer to Earth than any other planet - little more than 100 times the Moon's average distance.

Venus has a slow retrograde rotation, meaning it rotates from east to west, instead of west to east as most of the other major planets do. This retrograde rotation is thought to have developed as a consequence of tidal forces, friction and the solar heating of Venus's thick atmosphere. If the Sun could be seen from Venus's surface, it would appear to rise in the west and set in the east in a cycle of 116.75 Earth days and a Venusian year would last 1.92 Venusian 'days'.

In addition to this unusual retrograde rotation, the periods of Venus's rotation and of its orbit are synchronised in such a way that it always presents the same face toward Earth when the two planets are at their closest approach. This may simply be a coincidence, but there is some speculation that this may be the result of tidal locking, with tidal forces affecting Venus's rotation whenever the planets get close enough together.



Venus has an atmosphere consisting mainly of carbon dioxide and a small amount of nitrogen, with a pressure at the surface about 90 times that of Earth (a pressure equivalent to a depth of 1 kilometre under Earth's oceans).

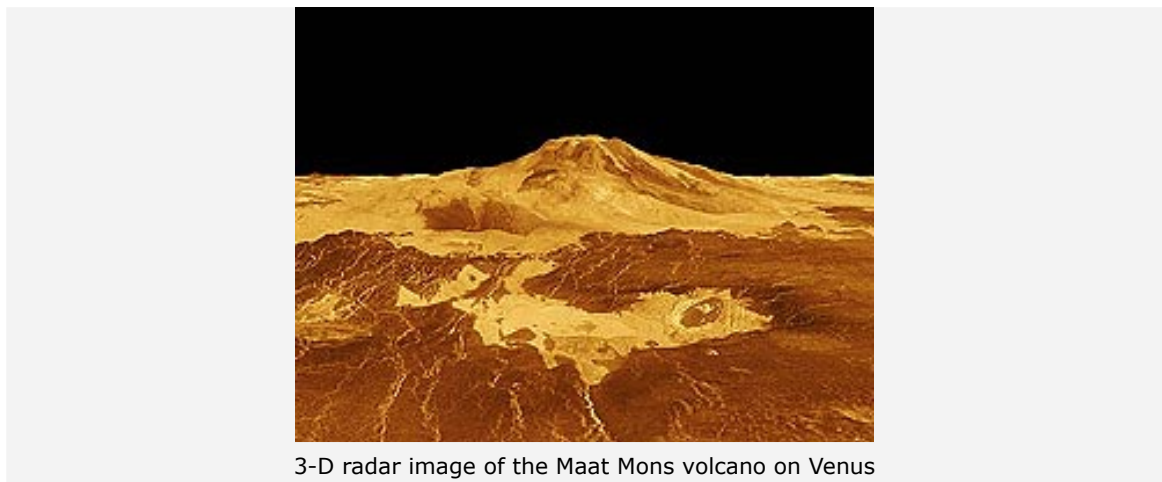
Its atmosphere is also roughly 90 times more massive than ours. This carbon dioxide-rich atmosphere results in a strong greenhouse effect that raises the surface temperature more than 400°C above what it would be otherwise, causing temperatures at the surface to reach extremes as great as 500°C in low elevation regions near the planet's equator. This makes Venus's surface hotter than Mercury's, even though Venus is nearly twice as distant from the Sun.

Owing to the thermal inertia and convection of its dense atmosphere, the temperature does not vary significantly between the night and day sides of Venus despite its extremely slow rotation - at its equator, Venus' surface rotates at a mere 6.5 kilometres per hour. Upper atmosphere winds circling the planet help distribute the heat to other areas on the surface.

The solar irradiance is so much lower at the surface of Venus because the planet's thick cloud cover reflects the majority of the sunlight back into space. This prevents most of the sunlight from heating the surface. Thus, despite being closer to the Sun than Earth, the surface of Venus is not as well heated and even less well lit by the Sun. In the absence of any greenhouse effect, the temperature at the surface of Venus would be quite similar to Earth.

Venus has two major continent-like highlands on its surface, rising over vast plains. The northern highland is named Ishtar Terra and has Venus's highest mountains, named the Maxwell Montes (roughly as tall as Mount Everest) which surround the plateau Lakshmi Planum. Ishtar Terra is about the size of Australia.

In the southern hemisphere is the larger Aphrodite Terra, about the size of South America. Between these highlands are a number of broad depressions, including Atalanta Planitia, Guinevere Planitia, and Lavinia Planitia. With the exception of Maxwell Montes, all surface features on Venus are named after real or mythological females.



Nearly 90% of Venus's surface appears to consist of recently (in the geological sense) solidified basaltic lava, with very few meteorite craters. The oldest features present on Venus seem to be only around 800 million years old, with most of the terrain being considerably younger (though still not less than

several hundred million years for the most part). This suggests that Venus underwent a major resurfacing event in the not too distant geological past.

The interior of Venus is probably similar to that of Earth: an iron core about 3000 km in radius, with a molten rocky mantle making up the majority of the planet. It is theorised that Venus does not have mobile plate tectonics as Earth does, but instead undergoes massive volcanic upwellings at regular intervals that inundate its surface with fresh lava. Other recent findings suggest that Venus is still volcanically active in isolated geological hotspots. The Venus Express mission may answer some of these questions.

It is thought that Venus originally had as much water as Earth, but that water vapour in the upper atmosphere was split into hydrogen and oxygen due to solar wind. Therefore, the hydrogen escaped into space because of its low molecular mass; the ratio of hydrogen to deuterium (a heavier isotope of hydrogen which doesn't escape as quickly) in Venus's atmosphere seems to support this theory. Molecular oxygen is thought to have combined with atoms in the crust (large amounts of oxygen, however, remain in the atmosphere in the form of carbon dioxide). Because of dryness, Venus's rocks are much harder than Earth's, which leads to steeper mountains, cliffs and other features.

Venus was once thought to possess a moon, named Neith after the chief goddess of Sais, Egypt (whose veil no mortal raised), first observed by Giovanni Domenico Cassini in 1672. German astronomers called the moon Kleinchen ('tiny'), and sporadic sightings by astronomers continued until 1892. These sightings have since been discredited, and are thought to have been either spurious internal reflections, mostly faint stars that happened to be in the right place at the right time, or maybe even asteroids passing by the planet. Venus is now known to be moonless.

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