

# MERCURY

Obtaining the first close-up views of Mercury was the primary objective of the Mariner 10 spacecraft, launched on November 3, 1973, from Kennedy Space Center in Florida. After a journey of nearly five months, including a flyby of Venus, the spacecraft passed within 703 kilometers (437 miles) of the solar system's innermost planet on March 29, 1974.

Until Mariner 10, little was known about Mercury. Even the best telescopic views from Earth showed Mercury as an indistinct object lacking any surface detail. The planet is so close to the Sun that it is usually lost in solar glare. When the planet is visible on Earth's horizon just after sunset or before dawn, it is obscured by the haze and dust in our atmosphere. Only radar telescopes gave any hint of Mercury's surface conditions prior to the voyage of Mariner 10.

The photographs Mariner 10 radioed back to Earth revealed an ancient, heavily cratered surface, closely resembling our own Moon. The pictures also showed huge cliffs crisscrossing the planet. These apparently were created when Mercury's interior cooled and shrank, buckling the planet's crust. The cliffs are as high as 3 kilometers (2 miles) and as long as 500 kilometers (310 miles).

Instruments on Mariner 10 discovered that Mercury has a weak magnetic field and a trace of atmosphere - a trillionth the density of Earth's atmosphere and composed chiefly of argon, neon and helium. When the planet's orbit takes it

closest to the Sun, surface temperatures range from 467 degrees Celsius (872 degrees Fahrenheit) on Mercury's sunlit side to -183 degrees Celsius (-298 degrees Fahrenheit) on the dark side. This range in surface temperature - 650 degrees Celsius (1,170 degrees Fahrenheit) - is the largest for a single body in the solar system. Mercury literally bakes and freezes at the same time.

Days and nights are long on Mercury. The combination of a slow rotation relative to the stars (59 Earth days) and a rapid revolution around the Sun (88 Earth days) means that one Mercury solar day takes 176 Earth days or two Mercury years - the time it takes the innermost planet to complete two orbits around the Sun!

Mercury appears to have a crust of light silicate rock like that of Earth. Scientists believe Mercury has a heavy iron rich core making up slightly less than half of its volume. That would make Mercury's core larger, proportionally, than the Moon's core or those of any of the planets.

After the initial Mercury encounter, Mariner 10 made two additional flybys - on September 21, 1974, and March 16, 1975 - before control gas used to orient the spacecraft was exhausted and the mission was concluded. Each flyby took place at the same local Mercury time when the identical half of the planet was illuminated; as a result, we still have not seen one-half of the planet's surface.

- \* Mercury is the Roman gods' messenger.
- \* Mercury is the innermost of the planets.
- \* Mercury resembles the Earth's moon.

- \* This planet has no moon.
- \* Mercury's day equals 3 Earth months.
- \* Mercury's gravity is about one-third of the Earth's gravity.
- \* Mercury's diameter is 3,025 miles.
- \* Mercury travels around the Sun every 88 Earth days.
- \* Mercury consists of virtually no atmosphere.
- \* Mercury has a weak magnetic field and a trace of atmosphere (one-trillionth the density of the Earth and composed chiefly of argon, neon and helium).
- \* Mercury's orbit is more elliptical than any other planet except Pluto.
- \* Mercury's temperature is 950° F, sunlit side; 210° F, dark side.
- \* Mercury has a crust of light silicate rock.
- \* Mercury's iron core is about the size of the Earth's moon.
- \* In March 1974, Mariner 10 gave us the first close-up photographs of Mercury's surface.

Source: NASA