

PLUTO

Pluto is a small, icy world that orbits the sun far beyond the orbit of Neptune, the outermost planet in the solar system.

Pluto has been studied primarily through the use of telescopes and spacecraft missions. One of the first spacecraft to study Pluto was NASA's New Horizons mission, which was launched in 2006 and flew past Pluto in 2015. New Horizons was equipped with a suite of scientific instruments, including cameras, spectrometers, and radio science equipment, that allowed it to study the surface, atmosphere, and environment of Pluto in great detail. Before the New Horizons mission, Pluto was studied mainly through the use of telescopes on Earth and in space. These telescopes were used to observe the light reflected off Pluto's surface and to measure the characteristics of its atmosphere. They also allowed scientists to map the surface of Pluto and to search for any moons or other objects that might be orbiting the dwarf planet. In addition to these techniques, scientists have also used computer modeling and simulations to study Pluto and to understand its geology and evolution. These models have helped scientists to learn more about the composition and structure of Pluto, as well as its history and possible future.

Pluto was classified as a planet when it was discovered in 1930. However, in 2006, the International Astronomical Union (IAU) redefined the definition of a planet and as a result, Pluto was reclassified as a "dwarf planet." The IAU defined a planet as a celestial body that orbits the Sun, is round or nearly round due to its own gravity, and has "cleared the neighborhood" around its orbit, meaning that it is the largest gravitational force in its orbit and has swept up or gravitationally ejected any other objects of similar size. Under this definition, Pluto does not qualify as a planet because it shares its orbit with other objects in the Kuiper Belt, a region of the solar system beyond Neptune that is populated by small, icy bodies. Despite this change in classification, many people still consider Pluto to be a planet and there is ongoing debate among astronomers and the general public about its classification.

Pluto is about two-thirds the size of Earth's Moon, and is thought to be made of rock and water ice. Pluto has five known moons: Charon, Styx, Nix, Kerberos, and Hydra. Charon is the largest of Pluto's moons and is about half the size of Pluto itself. Styx, Nix, Kerberos, and Hydra are much smaller and were discovered in the 21st century. They are thought to be made of water ice and rock, and may have formed from debris created when a large object collided with Pluto in the distant past. All of Pluto's moons are named after figures from Greek and Roman mythology. Pluto and Charon are two celestial bodies that orbit each other in the outer reaches of the solar system. Charon is the largest of Pluto's moons and is about half the size of Pluto itself. The two bodies are often referred to as a "double dwarf planet" or a "binary planet."

Pluto and Charon are thought to be made of rock and water ice, and they are both covered in a layer of frozen gases, including methane and nitrogen. They are also both thought to have a layer of water ice beneath their surfaces.

Pluto and Charon are connected by a gravitational bond called a "tidal lock," which means that they always present the same face to each other as they orbit. This is similar to the way that Earth's Moon always presents the same side to us. The side of Pluto that faces Charon is always dark, while the side that faces away from Charon is always in sunlight. This creates a very extreme climate on Pluto, with temperatures on the sunny side reaching up to minus 250 degrees Fahrenheit (minus 157 degrees Celsius), while the dark side is much colder.

Despite their similarities, Pluto and Charon are also quite different. Pluto is much smaller and less massive than Charon, and it has a more tilted orbit around the sun. Charon also has a much flatter surface and is thought to be geologically inactive, while Pluto has a more varied surface and is thought to be geologically active.

Pluto has a thin atmosphere that is made up mostly of nitrogen, with smaller amounts of methane and carbon monoxide. The atmosphere is thought to be formed by the sublimation of these gases from the surface of Pluto, as the sun's warmth causes the frozen gases to evaporate into the air.

Pluto's atmosphere is very dynamic, with winds and clouds that can change rapidly. It also experiences changes in temperature and pressure as Pluto moves closer to and farther from the sun during its orbit. When Pluto is farther from the sun, its atmosphere becomes colder and more condensed, while when it is closer to the sun, the atmosphere becomes warmer and more expanded.

The surface of Pluto is also thought to be active, with mountains, valleys, and other features that suggest the presence of geological processes. Scientists believe that Pluto's surface may be shaped by the sublimation and solidification of its frozen gases, as well as by the impact of meteorites and other small celestial bodies.