Planetary geology is the study of planets, moons, meteorites, asteroids and comets and the processes that shaped them. It encompasses a vast array of traditional geology including geochemistry, geophysics, geomorphology, volcanology and sedimentology, whilst using innovative technology such as rovers and orbiting spacecraft to increase the high-resolution data. This helps scientists gain invaluable insights into our solar system.

Planetary geologists seek to answer some of the most profound scientific questions: how did the solar system form? How did our planets come to be? Is there life on Mars or elsewhere in the solar system? How did life first evolve on Earth? To answer these questions, researchers use geological skills such as observation, taking samples, and even conducting geological fieldwork to analyse clues found in the rocks, dust, and other matter in our solar system.

The Earth is composed of four layers:
- Inner core: 5,000-6,000°C, a mixture of solid iron and nickel metal that cannot flow and gives rise to our magnetic field.
- Mantle: 200-4,500°C, composed of solid rock that can flow and give rise to magma (liquid rock).
- Outer core: 6000°C, is composed of liquid iron and nickel metal which can flow and give rise to our magnetic field.
- The Earth's atmosphere is composed of 

Mercury is the closest planet to the sun and has a very high surface temperature, in a vacuum. Mercury has a very thin atmosphere, and the surface temperature can reach 450°C in the daytime. Mercury's surface is covered with craters, mountains, and valleys, and it is barren and rocky. The surface of Mercury is cratered, and the planet has a very thin atmosphere.

Venus is the closest planet to the sun, and it is also the hottest planet in the solar system. Venus has a thick atmosphere, and the surface temperature can reach 462°C in the daytime. Venus's surface is covered with clouds of sulfuric acid, and the atmosphere is composed of carbon dioxide.

Earth is the third planet from the sun, and it is the only planet in the solar system that is known to support life. Earth is covered with oceans and has a thick atmosphere, and the surface temperature can reach 30°C in the daytime. Earth's atmosphere is composed of nitrogen and oxygen, and it is home to a variety of life forms, including humans.

Mars is the fourth planet from the sun, and it is known as the red planet due to its reddish appearance. Mars has a thin atmosphere, and the surface temperature can reach -80°C in the daytime. Mars's surface is covered with dunes, sand dunes, and valleys, and it has a thin atmosphere, and the surface temperature can reach -80°C in the daytime. Mars's atmosphere is composed of carbon dioxide, and it is home to a variety of life forms, including humans.

Jupiter is the largest planet in our solar system, and it has a thick atmosphere, and the surface temperature can reach -140°C in the daytime. Jupiter's atmosphere is composed of hydrogen and helium, and it has a large magnetic field. Jupiter's atmosphere is composed of hydrogen and helium, and it has a large magnetic field.

Saturn is the second-largest planet in our solar system, and it has a thick atmosphere, and the surface temperature can reach -170°C in the daytime. Saturn's atmosphere is composed of hydrogen and helium, and it has a large magnetic field.

Uranus and Neptune are the two most distant planets in the Solar System. They both have dense atmospheres of hydrogen, helium, and methane gas, and they incorporate into the water interior of high pressure elements, water and methane ice surrounding a solid rock core. Uranus and Neptune's blue colours come from atmospheric methane.

Pluto is often considered a planet, but it is now classified as a dwarf planet. Pluto has a thin atmosphere, and the surface temperature can reach -230°C in the daytime. Pluto's atmosphere is composed of nitrogen, methane, and carbon monoxide. Some parts of Pluto are even frozen into organic ice. One amazing feature is South Pole where a channel has plowed the crust, creating a basin which is now filled by nitrogen ice. The surrounding mountains are made of rigid water-ice, and glaciers formed from other types of ice are now seen being formed from those mountains.