

Description:

All the planets in the Solar System have seasons, but on each planet seasons are different from those we know here on Earth.

The weather during each season is determined by a combination of factors:

1. How close the planet is to the Sun
2. The tilt of the planet's axis
3. Whether the planet's orbit is nearly round (so that the planet is always about the same distance from the Sun) or elongated (so that sometimes the planet is closer to the Sun, sometimes further away)
4. How thick is the planet's atmosphere

Mercury, Venus and Jupiter all spin nearly straight, so technically they lack seasons. The tilt of Mars, Saturn and Neptune is very similar to the tilt of the Earth's axis, so those planets have 4 different easy to tell apart seasons. Uranus is the most peculiar planets – it rolls on the side!

Let's look at each planet in more detail:

Mercury has the smallest tilt in the Solar System of 1/30 degree, but due to its very elliptical orbit the distance from the Sun varies significantly throughout the year. So it does have what we could call "winter" and "summer". Mercury has no atmosphere to preserve the heat during the night and the day-to-night variations of temperature on this planet are the most extreme in the Solar System: from +427 C during the day to -173 C at night.

Venus has a tilt of 3 degrees, it spins nearly straight, but the direction of the spin is the opposite from all the other planets (apart from Uranus). We could say that Venus spins upside down and the angle of the tilt is 180-3=177 degrees.

The weather on Venus is always the same – no seasonal variations, no even day-to night changes. Venus has a thick atmosphere made of carbon dioxide that prevents the planet from cooling down at night.

The temperature on Venus is 460 C.

The axis of **Mars** is tilted a bit more than the Earth's, at an angle of 25 degrees.

Mars have more elongated orbit and is further away from the Sun. That means that Mars has seasons, but they last different time in different hemispheres!

For example, in the Northern Hemisphere Spring lasts 7 month, Summer – 6 months, Autumn – 6 months and Winter – 4 months. Mars is much further away from the Sun than Earth, so the planet is much colder, except maybe on the poles in summer day, where the temperature can go up to +20 C. But even there it will drop to -90 when the night comes. The average temperature is about -55 C.

Jupiter's axis is tilted at an angle of 3 degrees (just like Venus), so the seasons are almost impossible to tell apart. Technically each season lasts 3 years. Being so far away from the Sun, the planet does not get much heat from the star, most of the heat comes from within the planet itself! The average temperature on Jupiter is -145 C.

Saturn's tilt is slightly bigger than the Earth's, about 27 degrees. Each season lasts for about 7 years. Planet's average temperature is -178 C.

The orbit of **Uranus** is nearly circular, but it is tilted at an angle of 98 degrees to the orbital plane. It rolls on the side! So each hemisphere is not just tilted but pointed towards or away from the Sun. For quarter of the orbit one pole is fully exposed to the Sun, while another pole is in the total darkness. Each season on Uranus lasts for 21 years.

Neptune is tilted at an angle of 28.5 degrees, similar to the Earth, experiencing the four seasons, each lasting about 40 years. But because it is so far away from the Sun, the difference between winter temperature and summer temperature are insignificant. An average temperature on Neptune is -214 C.