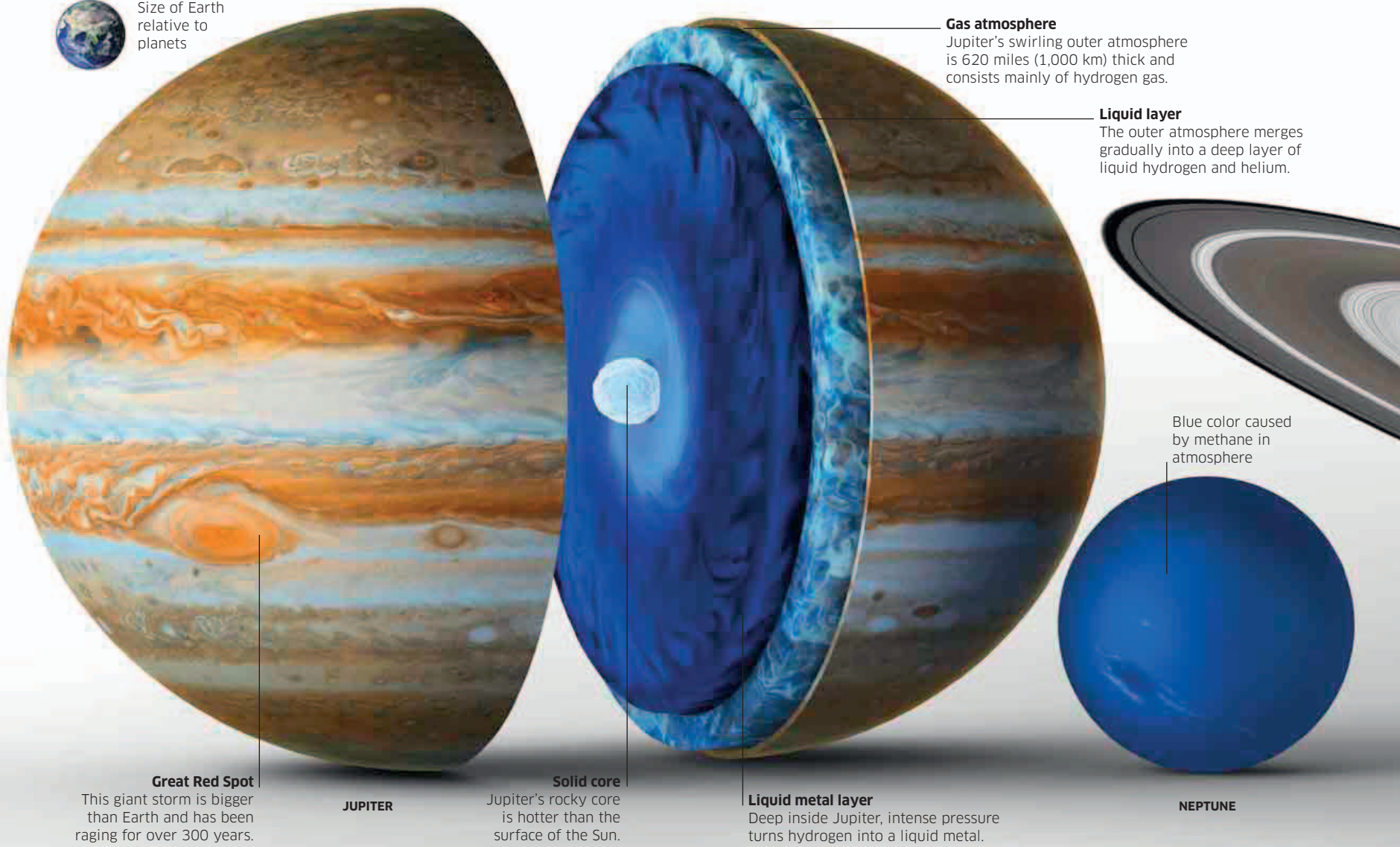




Size of Earth relative to planets



King of the planets

Mighty Jupiter is the fifth planet from the Sun and the largest in the Solar System—so big, in fact, that it's 2.5 times more massive than all the other planets put together. Its strong gravitational pull greatly affects the orbits of other bodies in the Solar System.

Jupiter's fast rate of spin has stretched its surface clouds into bands, with spots (storms) and ripples where neighboring bands swirl together.

Several craft have visited Jupiter, including *Galileo*, which orbited from 1995 to 2003.

Jupiter profile

Diameter 88,846 miles (142,984 km)

Average surface temperature -186°F (-121°C)

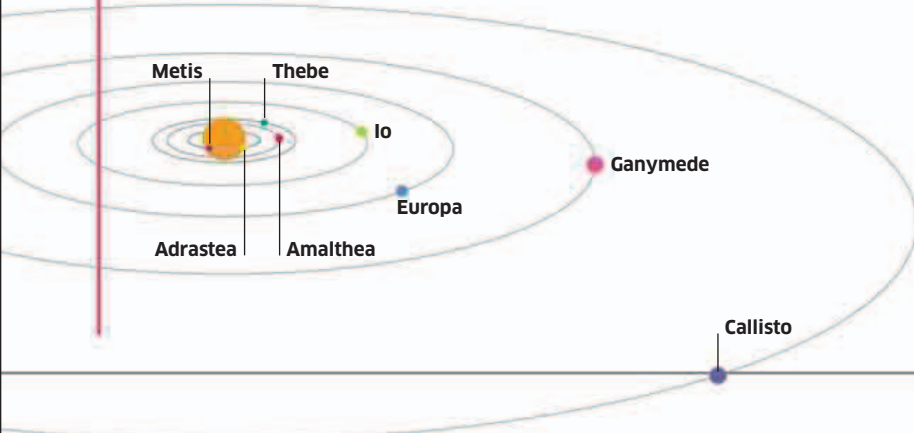
One spin on axis 9.9 hours

One orbit of Sun 11.9 Earth years

Number of moons 67

The Jupiter system

Like a king surrounded by his courtiers, Jupiter is circled by a great number of moons. The inner moons, including the four largest, are shown below. Ganymede, the largest, is bigger than the planet Mercury. Most of Jupiter's other moons are probably asteroids captured by the planet's gravity.



Blue planet

Neptune, the eighth and furthest of the planets from the Sun, was discovered in 1846. Astronomers had noticed Uranus wasn't following its expected path—there seemed to be an unseen body, perhaps an undiscovered planet, pulling on it. Two mathematicians—John Couch Adams in England and Urbain Le Verrier in France—calculated where in the sky the undiscovered planet must be. Within days, Neptune was spotted from an observatory in Germany.

Neptune is slightly smaller than Uranus and looks bluer because its atmosphere contains more methane. It has a deep, fluid mantle that is hot and dense and contains water, ammonia, and methane. Neptune also has a barely visible system of rings. Its biggest moon, Triton, resembles Pluto and was likely captured by Neptune's gravity in an encounter billions of years ago.

Neptune profile

Diameter 30,775 miles (49,528 km)

Average surface temperature -330°F (-201°C)

One spin on axis 16.1 hours

One orbit of Sun 163.7 Earth years

Number of moons 13



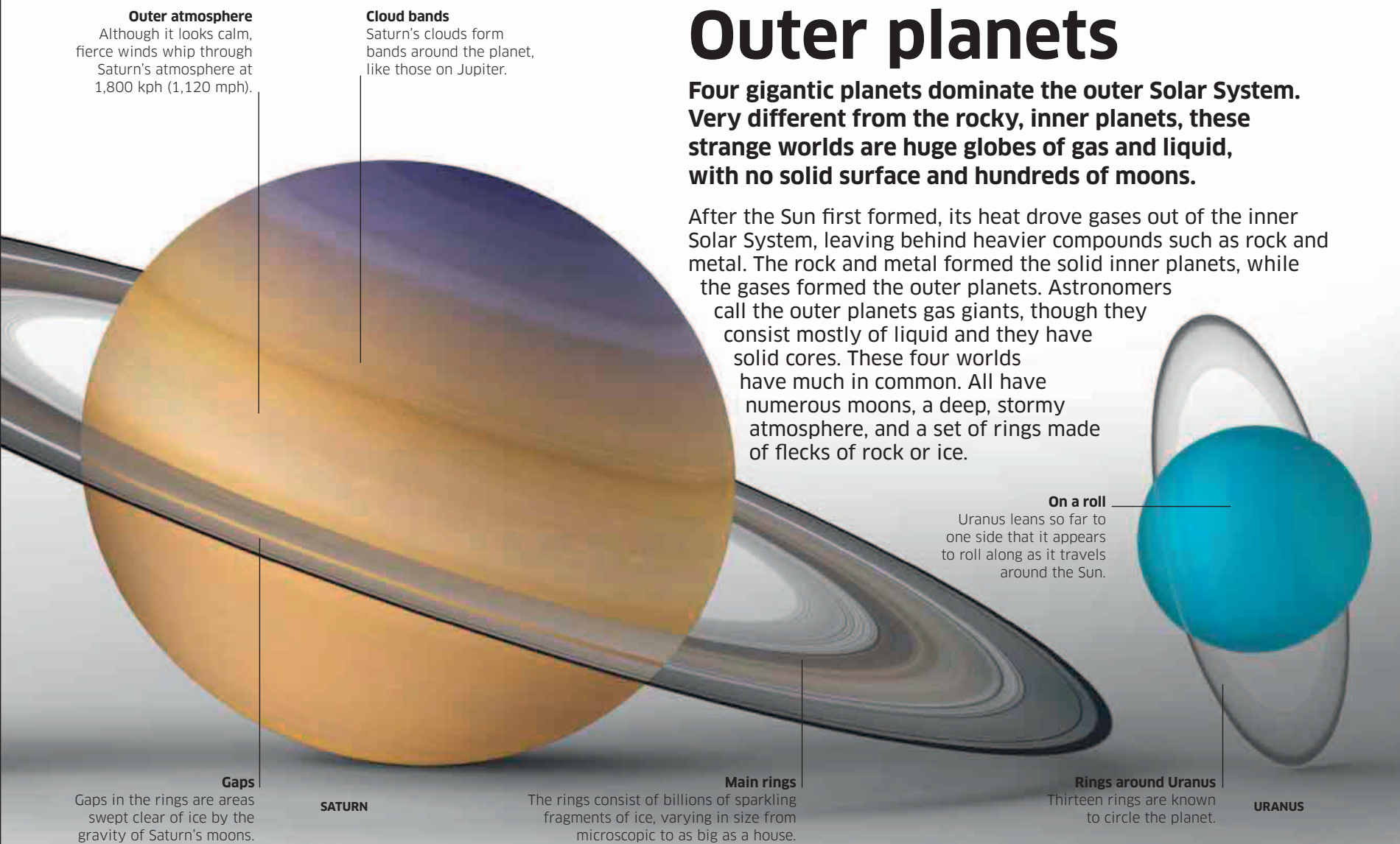
Fastest known winds

When *Voyager 2* flew past Neptune in 1989, it photographed white clouds blown into streaks by winds of up to 1,300 mph (2,100 kph)—the fastest sustained winds in the Solar System. This violent weather is thought to be powered by heat from inside Neptune since the planet is too far from the Sun to absorb much of its warmth.

Outer planets

Four gigantic planets dominate the outer Solar System. Very different from the rocky, inner planets, these strange worlds are huge globes of gas and liquid, with no solid surface and hundreds of moons.

After the Sun first formed, its heat drove gases out of the inner Solar System, leaving behind heavier compounds such as rock and metal. The rock and metal formed the solid inner planets, while the gases formed the outer planets. Astronomers call the outer planets gas giants, though they consist mostly of liquid and they have solid cores. These four worlds have much in common. All have numerous moons, a deep, stormy atmosphere, and a set of rings made of flecks of rock or ice.



Lord of the rings

The second-largest planet and the sixth farthest from the Sun, Saturn shines like a bright yellow star. Even a small telescope will reveal its most famous feature: a magnificent ring system. Despite Saturn's size, it is only half as dense as Jupiter. Its clouds form less obvious bands than Jupiter's, but fierce storms blow up every 30 years or so, creating giant white spots.

Saturn's largest moon, Titan, has a dense atmosphere and a rocky surface with seas of liquid methane. The *Cassini* spacecraft has been orbiting Saturn since 2004. It released a probe, *Huygens*, that landed on Titan in 2005.

Saturn profile

Diameter 74,898 miles (120,536 km)
Average surface temperature -292°F (-180°C)
One spin on axis 10.7 hours
One orbit of Sun.... 29.5 Earth years
Number of moons 62

Ring system

Saturn's main rings are 220,000 miles (360,000 km) wide, yet they are only 30 ft (10 m) thick. A scale model of the rings made with a sheet of paper would be 2 miles (3 km) wide. Beyond the main rings are hazy outer rings, photographed by *Cassini* while the Sun was behind Saturn (below).



Topsy-turvy world

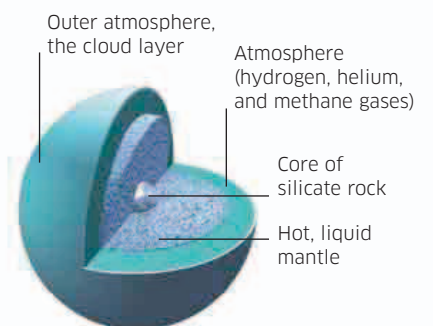
Uranus, the seventh planet from the Sun, was unknown to ancient astronomers, even though it is just visible with the naked eye in perfectly clear and dark skies. It was discovered by musician William Herschel from his back garden in Bath, England, in 1781.

Uranus is similar to Neptune but has a paler blue, almost featureless face. It is the coldest of all the planets and generates very little heat from within. It orbits on its side—perhaps because it was knocked over by a collision with another planet early in its history. Its extreme tilt gives it very long seasons.

Uranus has a faint set of rings, which were discovered in 1977. The planet's moons are all named after characters in works by William Shakespeare or the English poet Alexander Pope.

Uranus profile

Diameter 36,763 miles (51,118 km)
Average surface temperature -315°F (-193°C)
One spin on axis 17.2 hours
One orbit of Sun... 84 Earth years
Number of moons 27



Ice giant

Uranus's pale blue color is due to the methane in its atmosphere. Water and ammonia have also been detected in the clouds. The planet contains less hydrogen and helium than Jupiter and Saturn but has more rock and water.