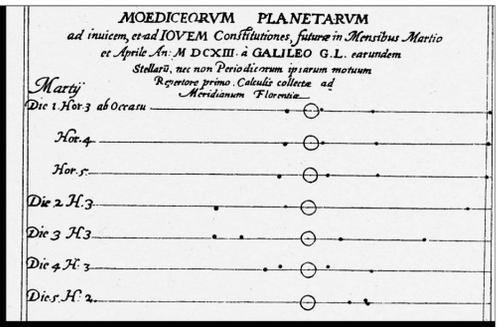


Jupiter

Jupiter has **four large moons** - Callisto, Ganymede, Europa and Io. They are called the **Galilean moons** in honour of their discoverer, 17th-century astronomer Galileo Galilei. With



his simple telescope, Galileo saw Jupiter as a disk and its moons as points of light in different positions nearby each night.

Jupiter and moons photo courtesy of Brian Colville

Europa closeup courtesy NASA/JPL/University of Arizona

Jupiter is the **largest planet** in our solar system and is more massive than all the other planets combined. It is a **gas giant** made mostly of hydrogen and helium, the two lightest elements. Jupiter has **no solid surface** like the four planets closer to the Sun do, but only an atmosphere of ever-increasing density with depth. Storms in Jupiter's frigid atmosphere (-108 C) can last for centuries, like the **Great Red Spot**. Shown as white in the infrared photo above, it is a **storm bigger than Earth** which is **coloured red** by the chemistry of Jupiter's atmosphere, though **no one knows exactly how**.

Jupiter is shown below with its correct size relative to the Sun, which is the size of the yellow circle in this scale model. Can you also spot the innermost Galilean moons, Io and Europa? Hint: Io is bigger and closer to Jupiter than Europa is.



1 Jovian day = 9.93 Earth hours
1 Jovian year = 11.9 Earth years

The length of Jupiter's day can be found by studying Jupiter's rotating magnetic field.

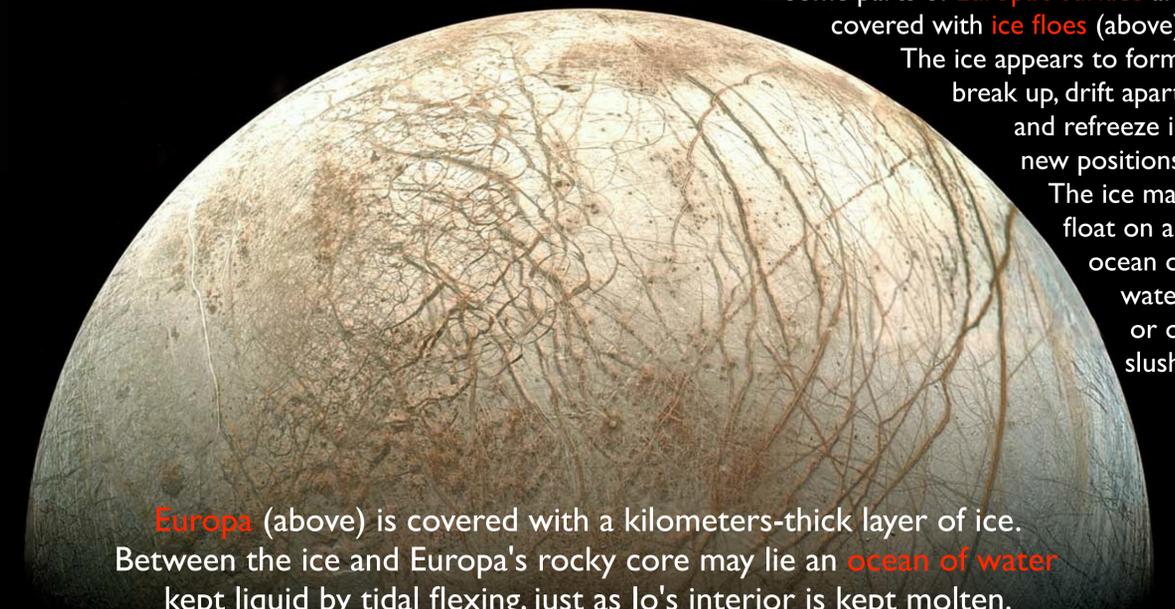
As **Io** (below) orbits Jupiter, it is alternately stretched and squeezed by the gravitational tides of Jupiter and the other Galilean moons. This tidal flexing keeps Io's interior molten, making Io the most **volcanically active** location in the solar system.



The red spot to the right is an active **sulfur volcano** on the night side of Io. The blue haze is a volcanic plume.

Jupiter and Io images courtesy NASA/JHU/APL

Some parts of **Europa's surface** are covered with **ice floes** (above). The ice appears to form, break up, drift apart, and refreeze in new positions. The ice may float on an ocean of water or of slush.



Europa (above) is covered with a kilometers-thick layer of ice. Between the ice and Europa's rocky core may lie an **ocean of water** kept liquid by tidal flexing, just as Io's interior is kept molten. Scientists hope to someday land a **spacecraft** on Europa that will **melt its way through the ice** to study the ocean below.

Image courtesy NASA/JPL/Ted Stryk