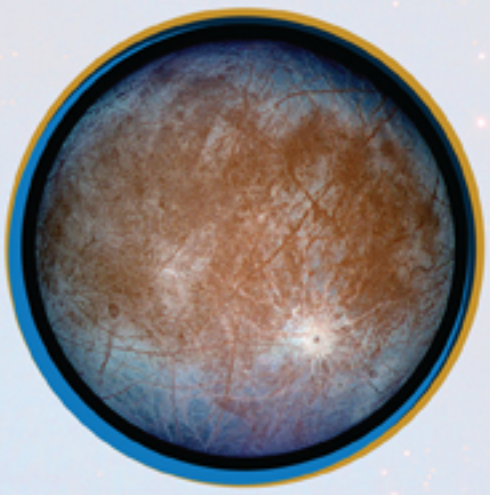
Giant Worlds: Jupiter & Saturn

Jupiter: King of the Planets

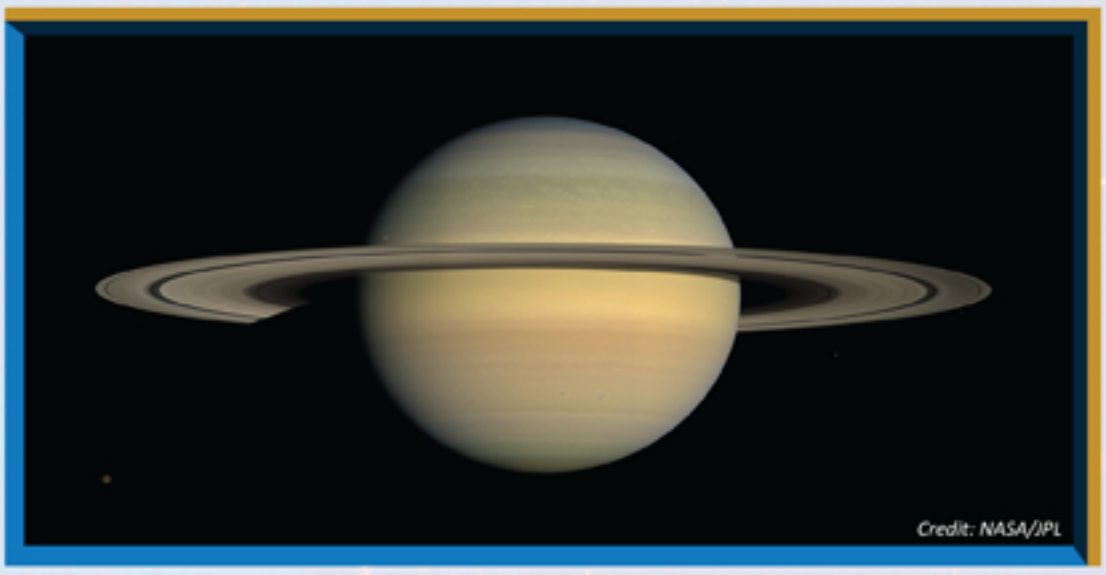
Everything about Jupiter is BIG. Jupiter's mass is more than 300 times that of Earth, and more than three times that of the second largest planet, Saturn. If all the planets except Jupiter were rolled into one gigantic superplanet, Jupiter would still be king.

Jupiter has more than 60 moons. Three of these are larger than Earth's moon, and one is larger than the planet Mercury (Ganymede). One of Jupiter's storms, the Great Red Spot, is so big it could easily swallow Earth. Jupiter's magnetic field is the largest planetary structure in the Solar System, extending beyond the orbit of Saturn.



This photo of Jupiter (above) was taken by the Cassini spacecraft on its way to Saturn. Jupiter's moon, Europa (left), is also shown. Its surface is mostly water ice. There is evidence that beneath this icy crust may be an ocean of liquid water. Where there is water, there could be life. Credit: NASA/JPL

Saturn: Lord of the Rings



All the giant worlds have rings, but none are as magnificent as Saturn's. If you placed Saturn on top of Earth, the edge of its faint, outermost E ring would reach beyond the orbit of the Moon. Saturn's rings are not solid. Instead, they are made of countless ice and rock fragments, ranging in size from dust particles to house-sized boulders. The ring layer is amazingly thin - only about 50 meters thick.

Saturn and Jupiter are in a close race for most moons in the Solar System, with new ones turning up all the time. Saturn's largest moon, Titan, is bigger than the planet Mercury and it's the only moon in the Solar System with a thick atmosphere. Titan is also the only moon besides Earth's where a spacecraft has landed. Some of Saturn's moons orbit within the main rings, clearing out gaps and sculpting "ringlets" through gravitational interactions. These satellites are called "shepherd moons."

This spectacular photo of Saturn (above) and several of its moons was taken by the Cassini spacecraft. The spacecraft launched in 1997 and arrived at Saturn in 2004. To the right is a close up view of Saturn's moon Enceladus. It shows an icy surface that may cover an ocean of liquid water. The evidence? Water geysers erupting from the moon's south polar region. This places Enceladus among the most likely places in the Solar System, other than Earth, to host alien microbial life. Credit: NASA/JPL/Space Science Institute