

Jupiter returns as king of the night sky

March 8 2016, by Tanya Hill, University Of Melbourne



Jupiter stands out as the brightest object in the evening sky. Credit: Hypervel/flickr, CC BY-NC-ND

Since January, there have not been any planets to see in the evening sky. Instead, all five bright planets have been visible in the early hours before sunrise. But now Jupiter, the king of the planets, is making a return to the night.

Jupiter reaches opposition on Tuesday, March 8, which means that it sits in the opposite part of the sky to the sun. As the sun sets in the west, Jupiter will rise in the east and we will see the planet all night long.

By the time Jupiter is setting in the west, the sun will be rising and flooding the sky with light.

Opposition is the best time to see Jupiter, because not only is it visible throughout the night, but opposition also brings the planet closest to us. Jupiter will be shining at its best and brightest for the year.

The kings align

Jupiter, the largest planet in the solar system, is named after the [Roman king of the gods](#). Just to the left (or west) of Jupiter is the bright star [Regulus](#), a Latin name that means "little king".

Regulus is the brightest star in the constellation of [Leo, the lion](#). You might even be able to see the lion's mane – beginning with Regulus, look for a pattern of stars that traces out an upside-down question-mark.

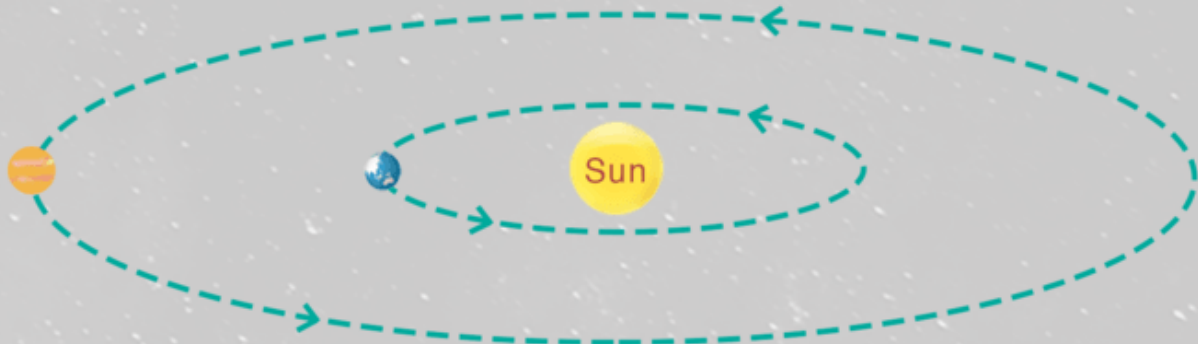
Jupiter revealed

This July, we will begin to learn more about Jupiter than ever before. NASA's [spacecraft Juno](#) has been travelling towards the planet since August 2011 and is set to arrive at its destination on July 4.

Jupiter at opposition

The gas giant at its best and brightest

When Jupiter reaches opposition on March 8, the planet will be closest to Earth than at any other time this year.



The distance between Jupiter and Earth at opposition will be 663 million km.

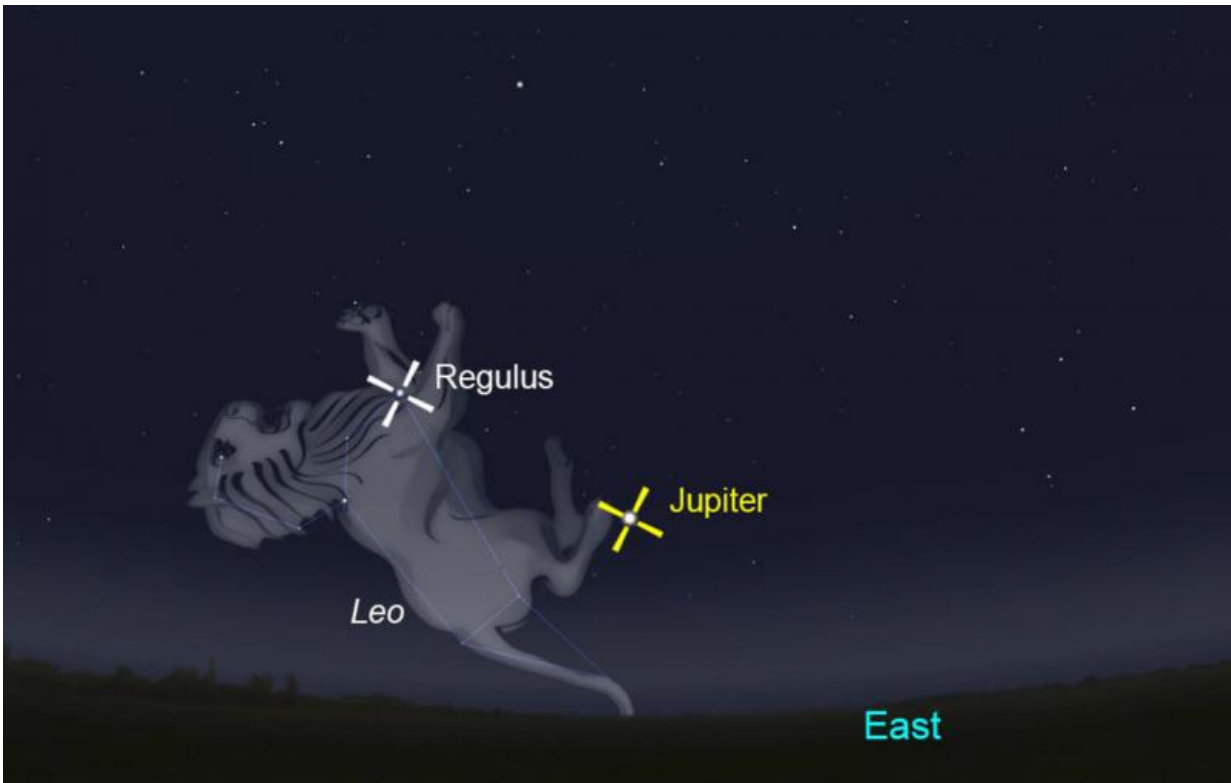
(Note: Diagram not to scale)

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Juno will be the second [spacecraft](#) to enter orbit around Jupiter. The first was the [Galileo spacecraft](#) which was in orbit for eight years from 1995.

Juno is different because it will follow a [polar orbit](#), enabling the spacecraft to map the entire planet during its one year mission. Each orbit, which lasts for 11 days, will take Juno as far out as the moon [Callisto](#) (which orbits almost 2 million kilometres from Jupiter) and then bring it plunging back in until its just 5,000 km above Jupiter's cloud layers.

Juno's mission is to better understand Jupiter's internal structure and gain insights into how giant [planets](#) are formed. It will search for water in Jupiter's atmosphere, probe to depths of 500km below the visible cloud tops, and will also measure changes in Jupiter's gravitational field.

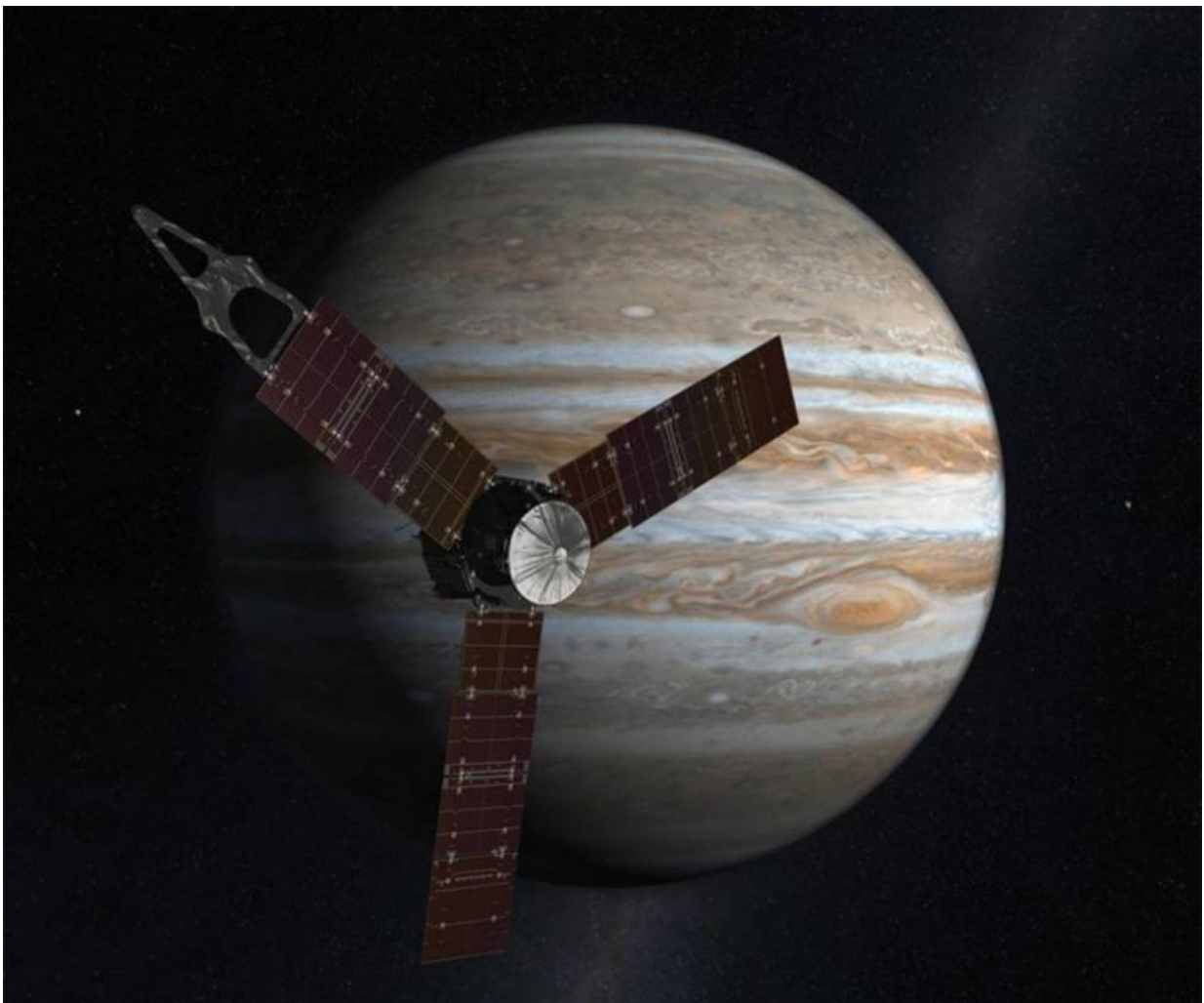


In the evening sky after sunset, Jupiter, king of the planets, can be seen near Regulus, the 'little king' star. Credit: Museum Victoria/Stellarium

Unlike other NASA missions, which often get extended beyond their original timeframe, this won't be possible for Juno. The spacecraft has to contend with Jupiter's hazardous radiation belts (similar but much more energetic than the [Van Allen belts](#) that surround Earth).

Juno will probe Jupiter's intense magnetic field which is about [twenty times that of Earth](#) and generates a [magnetosphere](#) that extends 150 times wider than Jupiter itself.

The tail of Jupiter's magnetosphere is pushed all the way to Saturn's [orbit](#) by the solar wind. It's the largest structure in the solar system and a highly dangerous one.



Juno will soon shed light on Jupiter's hidden secrets. Credit: NASA/JPL-Caltech

By flying Juno so close to Jupiter, the spacecraft should weave through a gap that exists between the radiation belt and Jupiter's atmosphere. But eventually radiation damage will render Juno uncontrollable and by early 2018, the spacecraft will be sent into Jupiter's atmosphere to burn up like a meteor.

Jupiter has many secrets that are currently hidden below its cloudy surface. And while this would not have been known about in ancient times, nevertheless, it nicely parallels the mythical stories of the god Jupiter.

It is said that Jupiter would hide his mischievous ways under a veil of clouds. The one person who could peer through those clouds and see Jupiter's true nature was his wife, the goddess Juno. Here's hoping that the spacecraft Juno, will be just as successful.

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