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Known by the ancients, named after the King of the Gods, and more than twice as massive as the rest of the planets, gas and dust in the Solar System combined, Jupiter needs little introduction.

But despite being such a monster of the sky, there is still a great deal we do not know about Jupiter. Why is it red? How is its magnetic field generated? What lies beneath the clouds?

Four hundred years after Galileo first gazed upon Jupiter's stormy surface NASA's *Juno* spacecraft has begun its mission to answer some of these questions.

Juno and its entourage of scientific instruments will analyse the chemical composition of Jupiter's colourful atmosphere, as well as probing its magnetic and gravitational fields to discover what lies at its core. Juno also promises to unearth clues to Jupiter's birth and the very origins of the Solar System during its thirty-seven orbits of the planet before deliberately descending through the clouds in February 2018 and succumbing to the planet's crushing atmosphere.

One of the spacecraft's instruments in particular has excited amateur astronomers. Not listed as a scientific instrument but as an outreach tool, JunoCam is sending back the most detailed images ever captured of Jupiter's broiling surface, and the public is in control of the shutter.

As Juno grazes Jupiter's atmosphere, JunoCam will capture cloud-top features in unprecedented detail. A single pixel can cover as little as three kilometres during closest approach, smaller than a terrestrial thunderstorm. In comparison, the iconic imagery of Jupiter from the Hubble Space Telescope cannot typically resolve details smaller than a hundred kilometres — the size of an average hurricane on Earth.

Unfortunately, JunoCam will only last as long as its circuits can stand the bombardment of Jupiter's intense radiation, and there is no guarantee as to how long it will hold out. With only a few hours each orbit to capture the highest resolution images, target locations will be scheduled by public vote, commencing in early November 2016.

Handing over the controls of JunoCam to an interested public provides a whole new level of personal interaction with space missions. Anyone can join the online discussion about what locations they are keen to see captured, as well as uploading their own images to direct researchers towards features of interest. All of the raw mission data will be made publicly available after transmission, to be processed by the keen amateur community.



Figure 1. This artist's illustration depicts NASA's Juno spacecraft at Jupiter, with its solar arrays and main antenna pointed towards the distant Sun and Earth. Credit: NASA/JPL-Caltech