



JUNO



JUNO Enters Jupiter's Orbit

Juno, an unmanned NASA spacecraft, entered Jupiter's orbit on a \$1.1 billion mission to circle the biggest planet in the solar system and shed new light on the origin of our planetary neighbourhood

THE MISSION

The solar-powered Juno spacecraft is on the final leg of a five-year, 2.8 billion-kilometer voyage to the biggest planet in the solar system

Juno promises to send back the best close-ups as it circles the planet for a year

THE DESTINATION

Jupiter is a gas giant made up mostly of hydrogen and helium unlike rocky Earth and its neighbour Mars. The fifth planet from the sun likely formed first and it could hold clues to how the solar system developed

THE OBJECTIVE

Steve Levin, Juno project scientist from NASA's Jet

Propulsion Laboratory, said water figures are the most important ones that Juno is going to bring back. "The amount of water inside Jupiter is crucial to understanding how the solar system formed because it is crucial to understanding how Jupiter formed," said Levin

THE CHALLENGE

Getting close, and surviving, is no easy feat. The spacecraft is entirely robotic and controllers on Earth can do nothing

THE FINALE

Once Juno wraps up its work, it will deliberately dive into Jupiter's atmosphere and burn up. The fiery finale – expected in 2018 – ensures that the spacecraft doesn't accidentally crash into Jupiter's moons, particularly the icy moon Europa, a prime target for future missions.

JUPITER : Vital Stats

10 hrs to rotate
12 yrs to go around Sun
-145°C avg temp

MASS 317.8 Earths

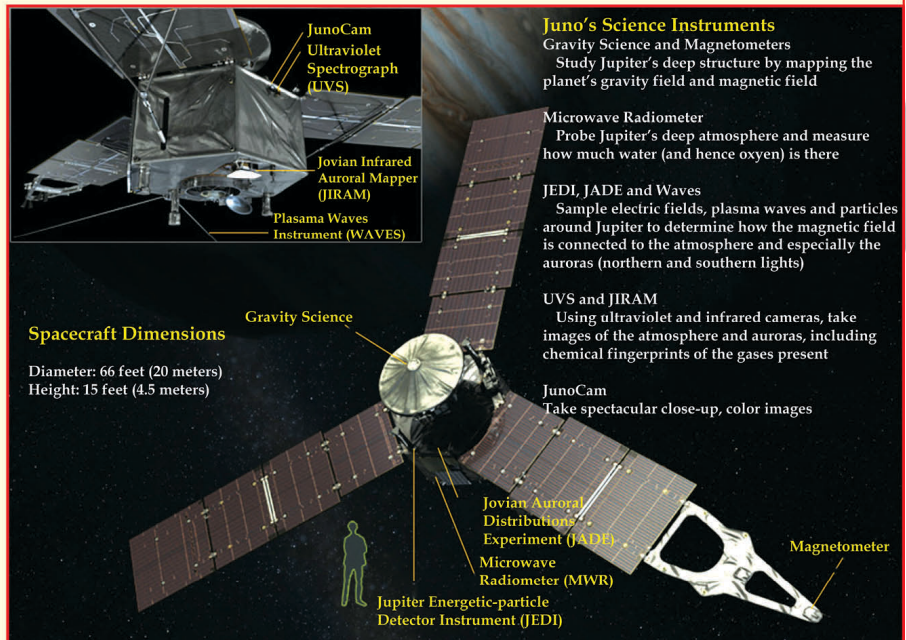
VOLUME 1,321 Earths

DIAMETER 11 Earths

MOONS 4 large and 60 smaller ones

SATELLITES 64

- Made of hydrogen and helium. Could have a solid core
- Great Red Spot a storm raging for centuries more than twice Earth's diameter
- Magnetic field 20,000 times powerful than Earth's



Juno's Science Instruments

Gravity Science and Magnetometers
 Study Jupiter's deep structure by mapping the planet's gravity field and magnetic field

Microwave Radiometer
 Probe Jupiter's deep atmosphere and measure how much water (and hence oxygen) is there

JEDI, JADE and WAVES
 Sample electric fields, plasma waves and particles around Jupiter to determine how the magnetic field is connected to the atmosphere and especially the auroras (northern and southern lights)

UVS and JIRAM
 Using ultraviolet and infrared cameras, take images of the atmosphere and auroras, including chemical fingerprints of the gases present

JunoCam
 Take spectacular close-up, color images

Why all the FUSS About Jupiter

- Oldest planet
- With mass 300 times of Earth it has enormously strong gravity
- This helps it hold all material it ever contained
- A time capsule of our early solar system
- Understanding Jupiter will help us know our solar system's evolution

How closely have we got to see the planet?

In 1996, Galileo mission dropped a probe

And then?

It survived for an hour, transmitted data on chemistry and weather of the upper 150km, and vaporized

So, What's Different?

- Unlike Galileo, Juno's isn't a suicide mission

- Instead of entering atmosphere, it'll fall past planet's face **37 times**
- It'll get as close as **5,000 km**
- Falls timed to expose it to every little bit of Jupiter
- High-res digital camera JunoCam will take images
- Instruments will understand composition of upper 500 km of the planet's atmosphere
- Juno will figure out presence of water in atmosphere

