

The Juno New Frontiers Jupiter polar orbiter mission

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The Juno mission, currently in Phase B, was selected in June 2005, by NASA to be the second mission in the New Frontiers Program. The overarching scientific goal of the Juno mission is to understand the origin and evolution of Jupiter. As the archetype of giant planets, Jupiter can provide the knowledge we need to understand the origin of our own solar system and the planetary systems being discovered around other stars. Juno's investigation of Jupiter focuses on four themes: Origin, Interior Structure, Atmospheric Composition and Dynamics, and the Polar Magnetosphere.

The scientific measurements include global maps of the gravity and magnetic fields, microwave radiometry of Jupiter's deep atmosphere and fields and particles measurements of Jupiter's polar magnetosphere. Juno's 32 polar orbits extensively sample Jupiter's full range of latitudes and longitudes. High sensitivity radiometric measurements yield a 3-dimensional view of Jupiter's deep atmosphere (down to >100 bars) and will be used to infer the global abundance of water, and to investigate the deep atmosphere's complex meteorology. Determining the Jovian water abundance permits discrimination between various scenarios of the formation of Jupiter. The gravity data constrain the planet's interior rotation, core size and interior structure. The magnetic field measurements investigate how the interior dynamo works and examine the depth of generation of Jupiter's powerful magnetic field. Fields and particles measurements as well as UV polar images investigate Jupiter's auroral physics to determine what drives Jupiter's remarkable northern and southern lights.

An overview of the mission and science objectives will be presented.