
National Aeronautics and Space Administration
NASA
Juno
Juno Mission Overview
Wil Santiago
Juno Operations Team
May 6, 2017
www.nasa.gov

Wil's Background

Name: Wilfredo 'Wil' Santiago

From: Puerto Rico

College: Embry-Riddle Aeronautical University, Daytona Beach, Florida

Degree: Bachelor of Science in Aerospace Engineering

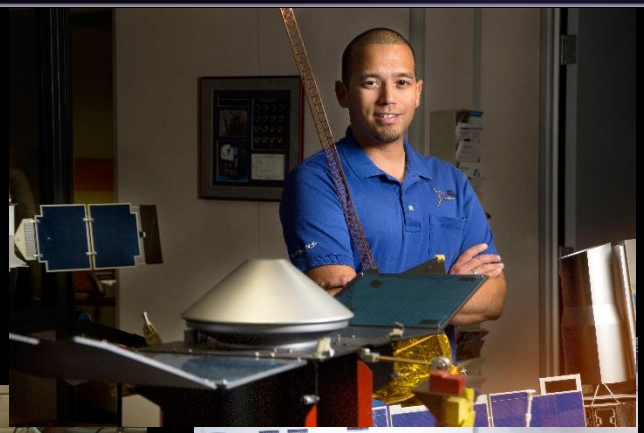
Projects:

Past: Orion Multi-Purpose Crew Vehicle, Commercial Crew (CST-100 Starliner)

Present: Juno, Mars Reconnaissance Orbiter, Mars Odyssey, Spitzer Space Telescope

Current Engineering Role: Mission Operations Thermal Engineer

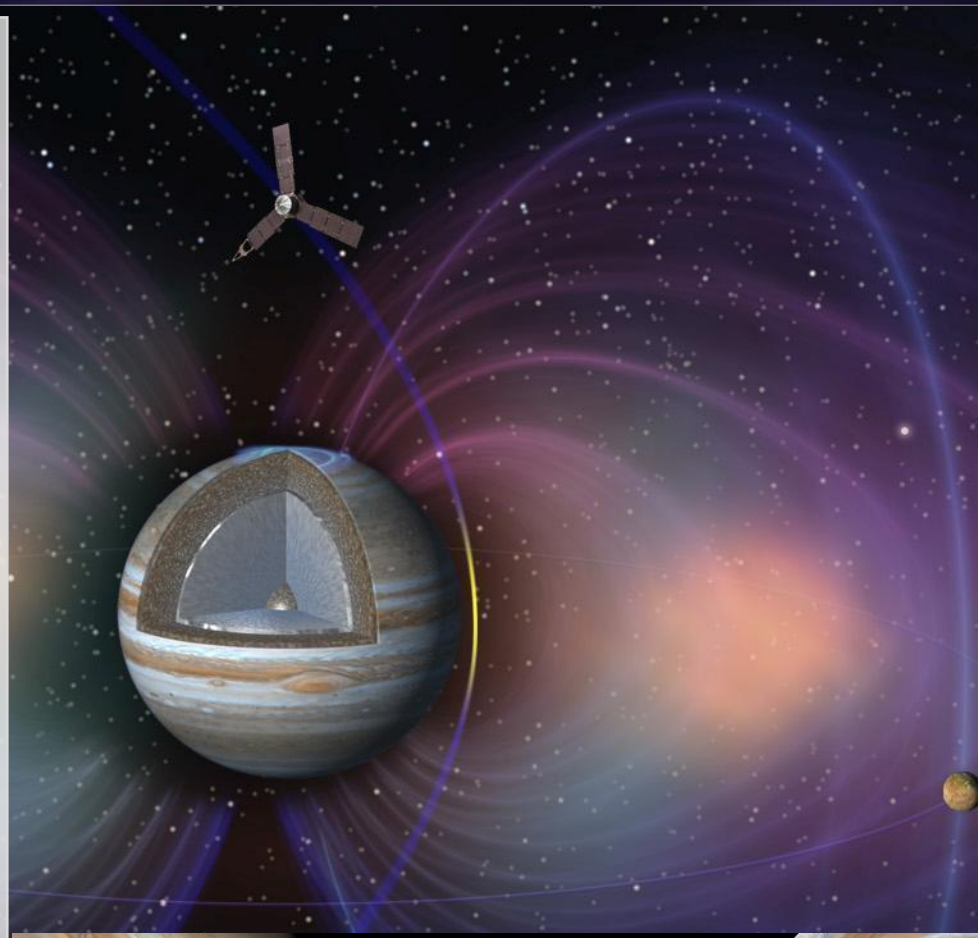
Hobbies: Photography, hiking, traveling

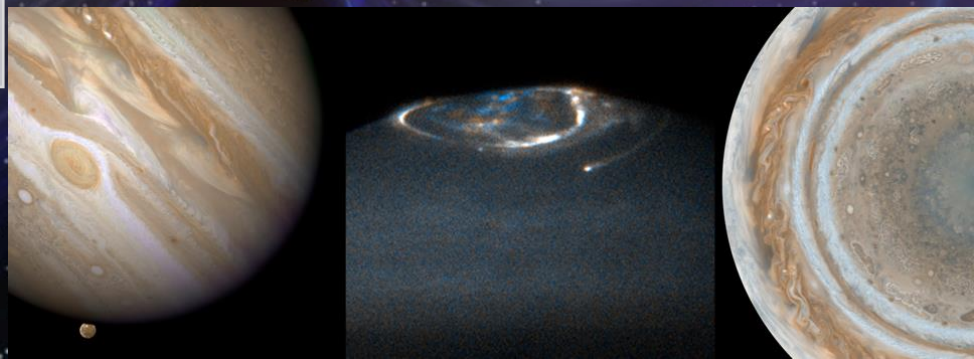


Jupiter: Into the Unknown

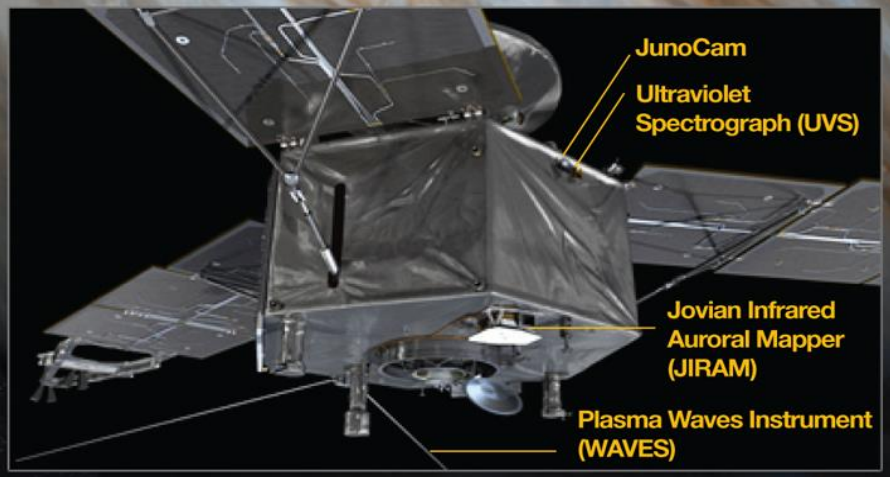
Juno Mission Highlights

- First solar-powered mission to Jupiter
- Eight science instruments and an education / public outreach camera
- Spinning, polar orbiting spacecraft
  - Launched on 8/5/11
  - 5-year cruise to Jupiter, 7/4/16
  - Expecting over 3 years of science operations
  - Passes very close to Jupiter (~5000km) once every 53 days, in a highly elliptical orbit





Spacecraft & Payload



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

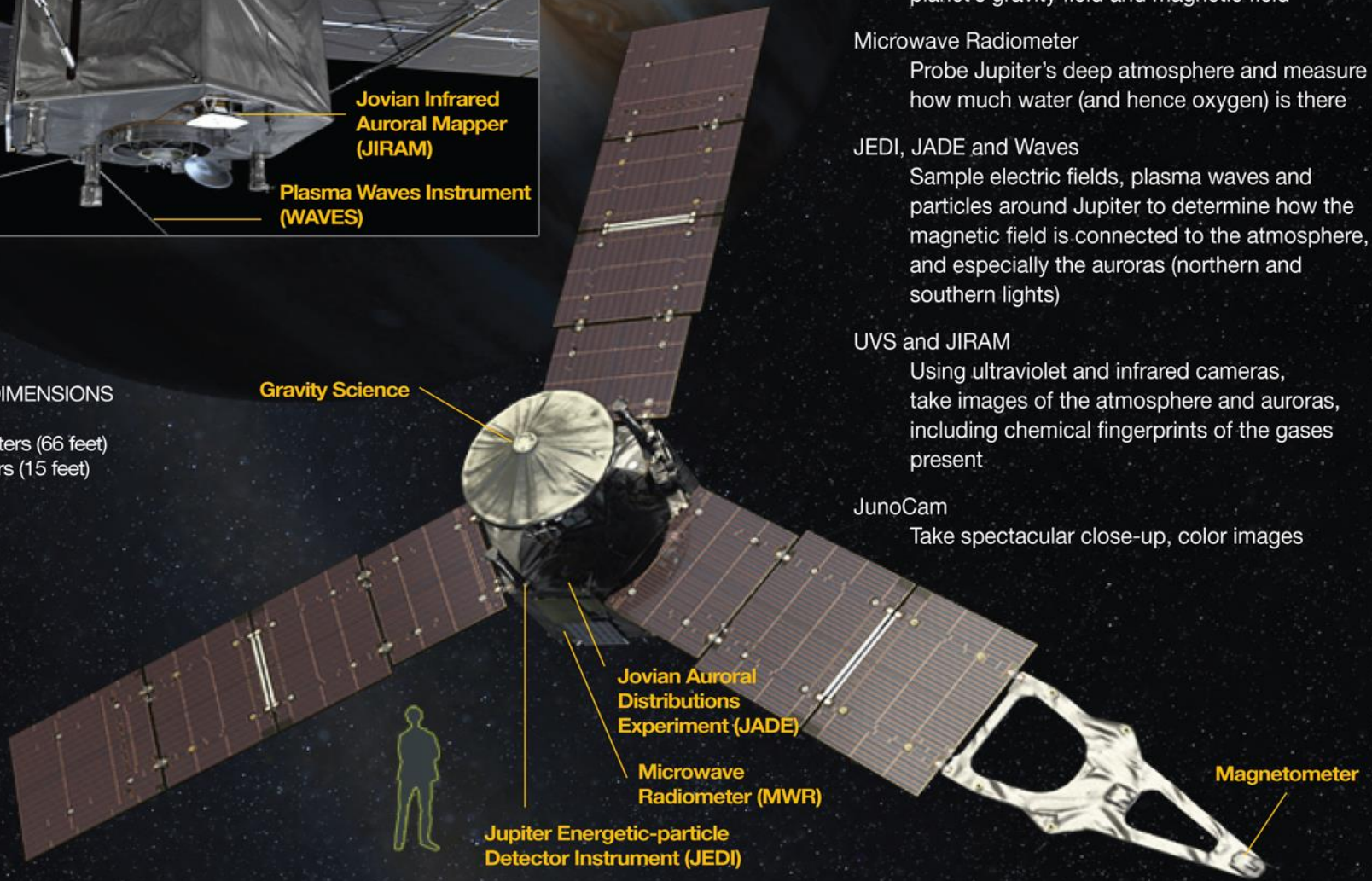
JEDI, JADE and Waves
Sample electric fields, plasma waves and particles around Jupiter to determine how the magnetic field is connected to the atmosphere, and especially the auroras (northern and southern lights)

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

SPACECRAFT DIMENSIONS

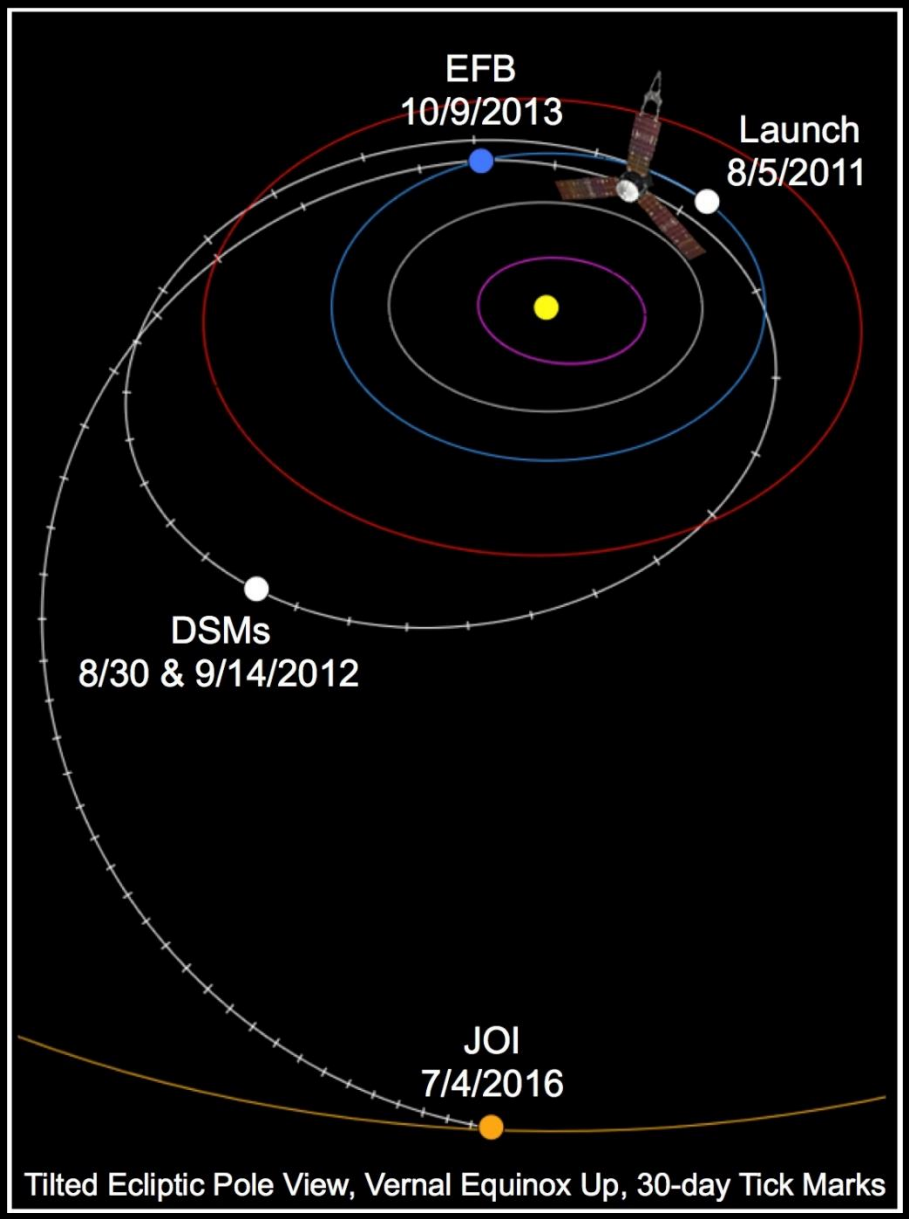
Diameter: 20 meters (66 feet)
Height: 4.5 meters (15 feet)



Juno's Flight Plan or Trajectory

- Five-year trek that loops once around the inner solar system before heading to Jupiter

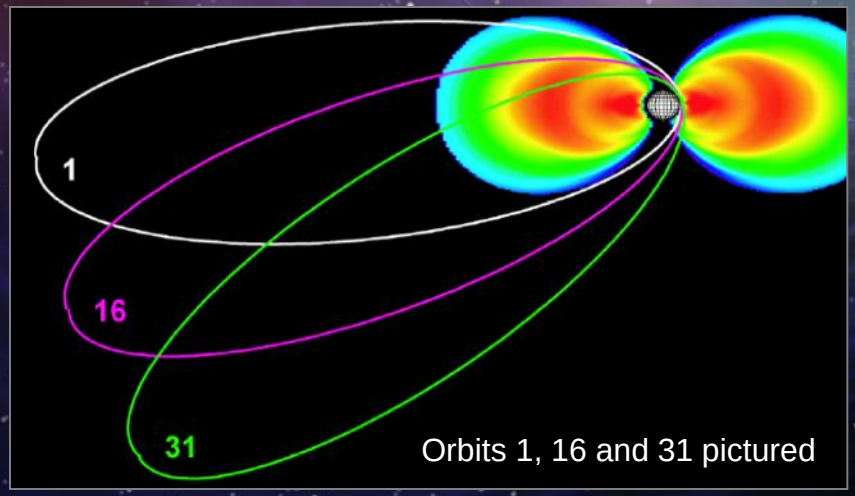
- Why does it take so long???
  - A direct path would have required a much more powerful launch vehicle
  - Using Earth's gravity for a boost makes the trip longer, but is energy efficient!



Radiation

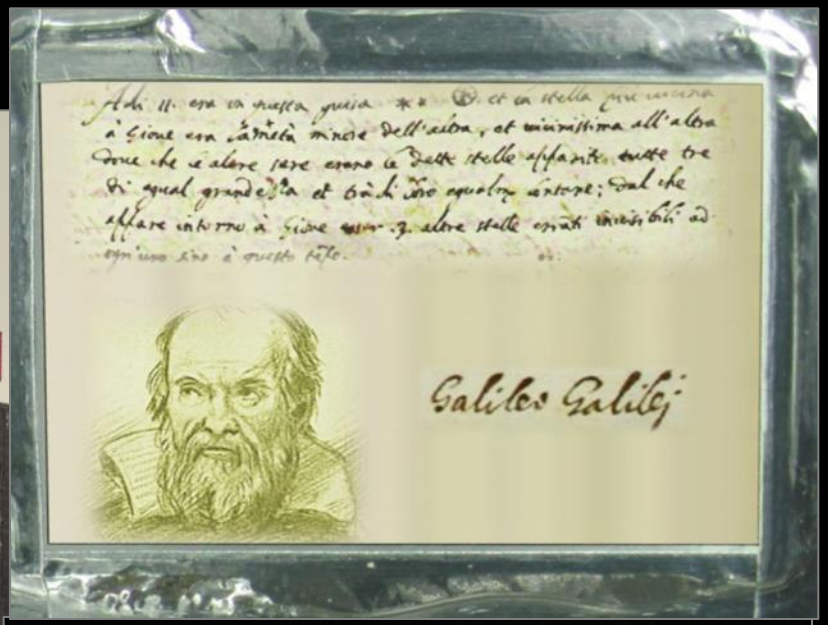
To accomplish its science objectives, Juno orbits over Jupiter's poles and passes very close to the planet.

The elliptical orbit minimizes the exposure to the radiation belts early in the mission.



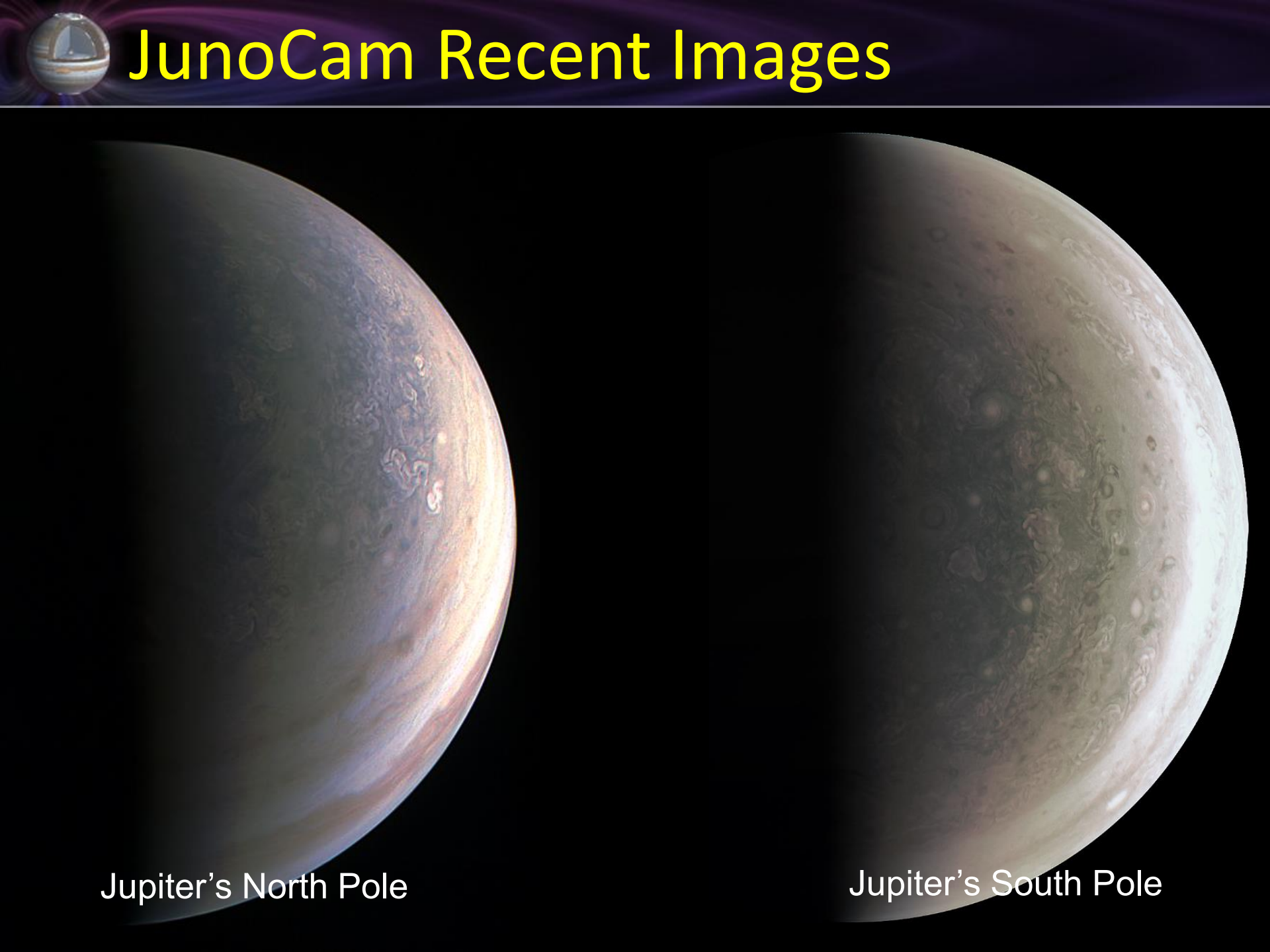
Orbits 1, 16 and 31 pictured

Juno's Special Passengers



Galileo, Juno and Jupiter

JunoCam Recent Images



Jupiter's North Pole

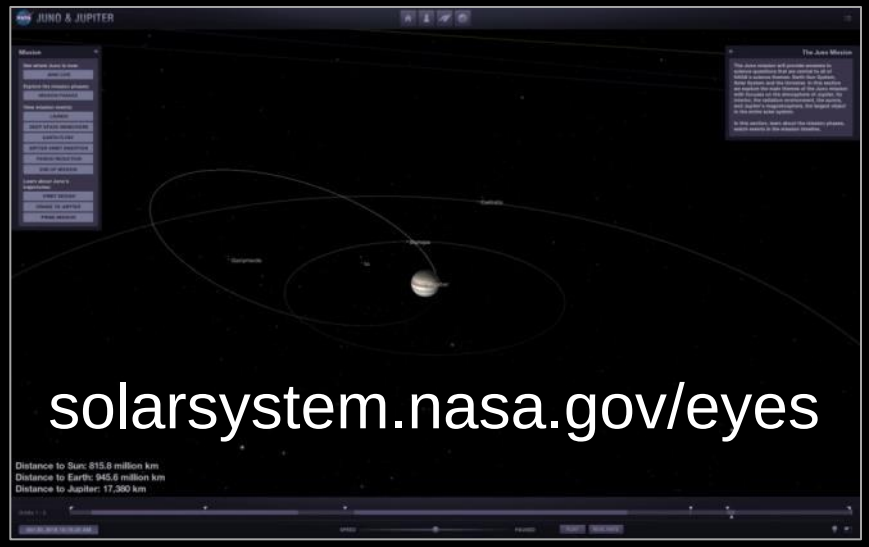
Jupiter's South Pole

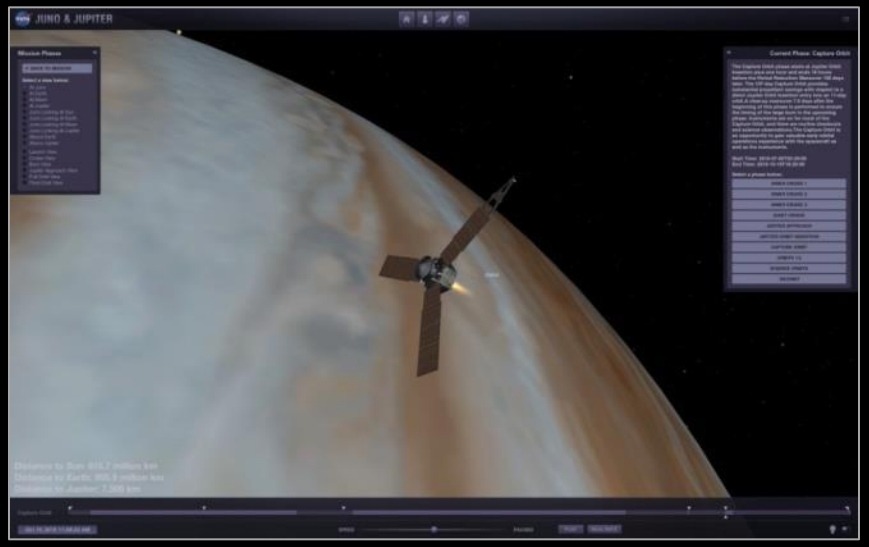
JunoCam Recent Images

Juno Orbit Insertion

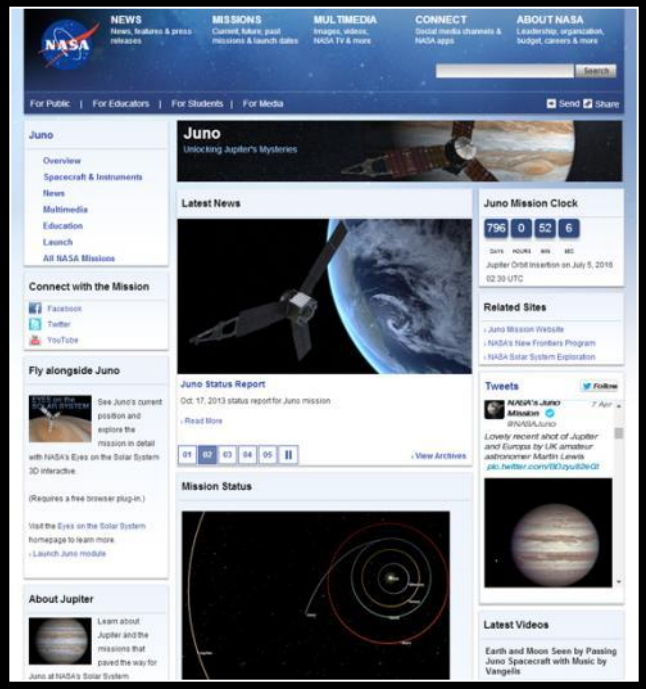
Fly along with Juno

Juno is part of NASA's 3D interactive, ***Eyes on the Solar System***…





For more information…



Juno mission website:
missionjuno.swri.edu

JunoCam website:
https://www.missionjuno.swri.edu/junocam
(You can actively participate in the mission! Upload your images of Jupiter and help us decide what points of interest JunoCam will photograph.)