
Venus and Jupiter

Poll everywhere

When poll is active respond at **PollEv.com/nikhilpatten355**

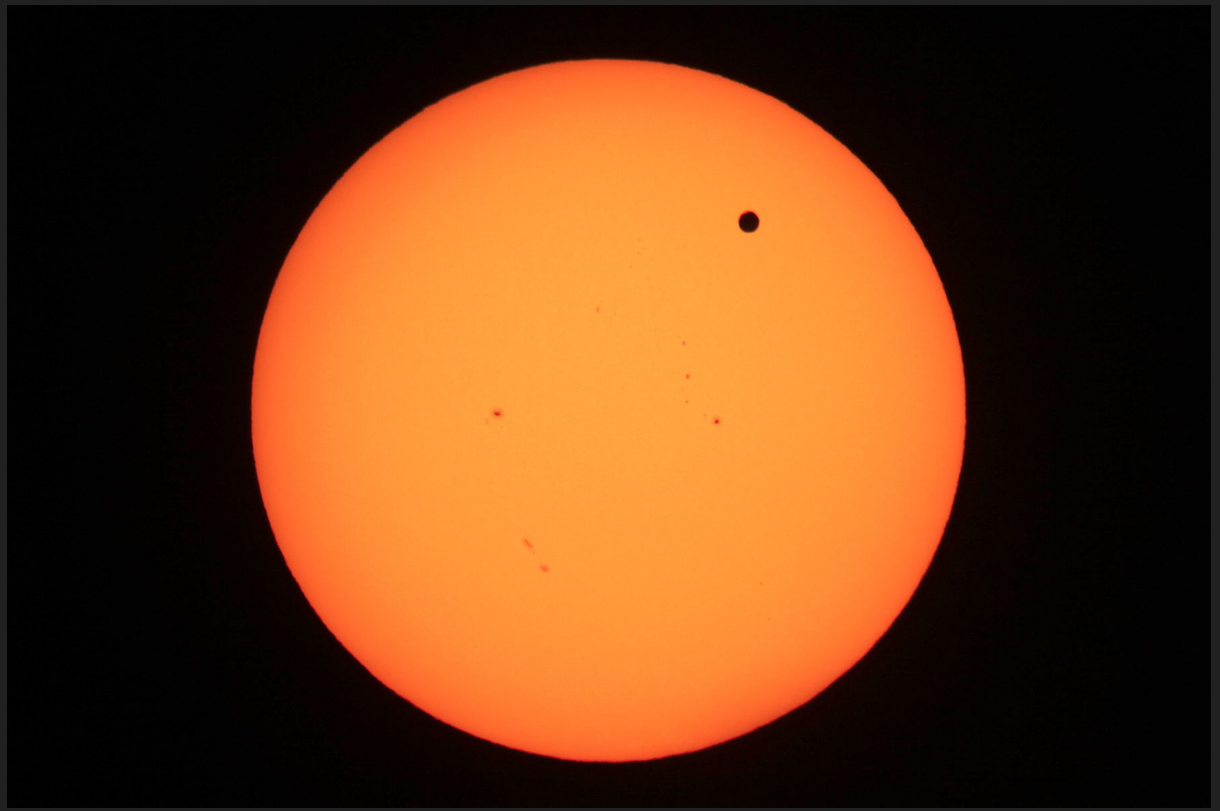
Send **nikhilpatten355** to **22333**

Poll everywhere

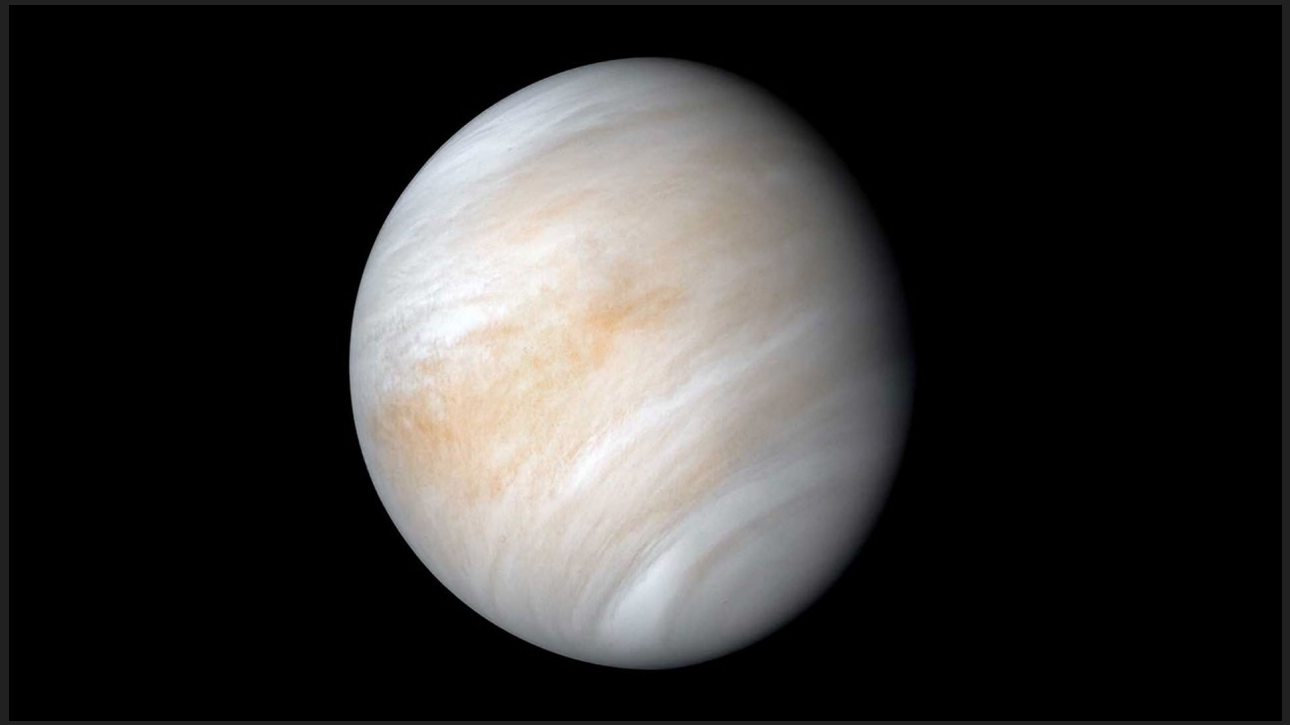
results

Venus

Venus



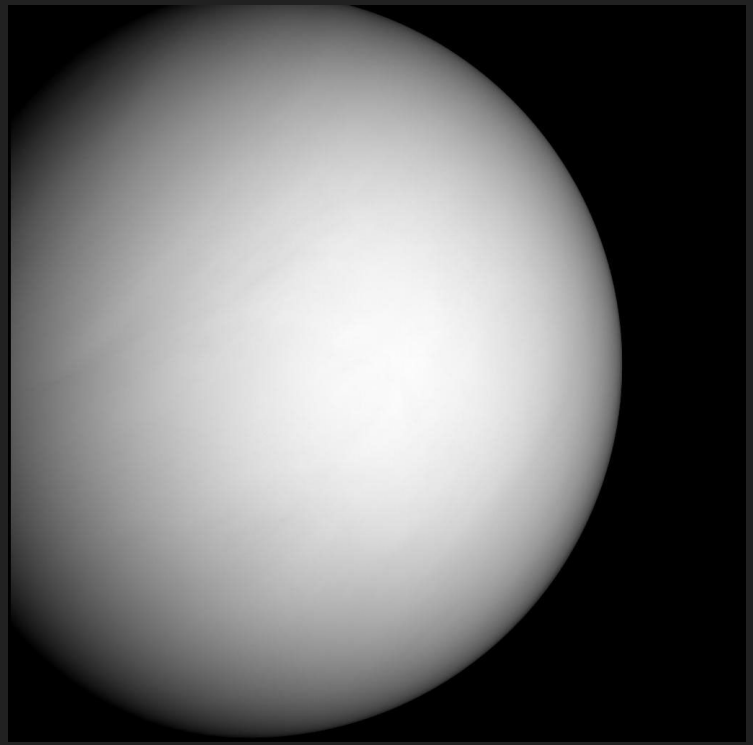
Venus



- Clouds of Venus (Mariner 10 flyby, on its way to Mercury)

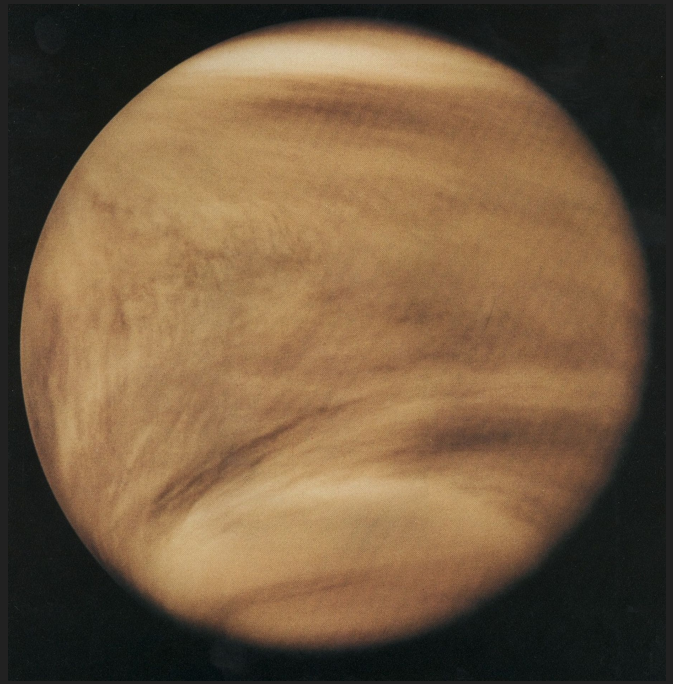
Venus

University of Wyoming
College of Engineering and Physical Sciences
Physics and Astronomy



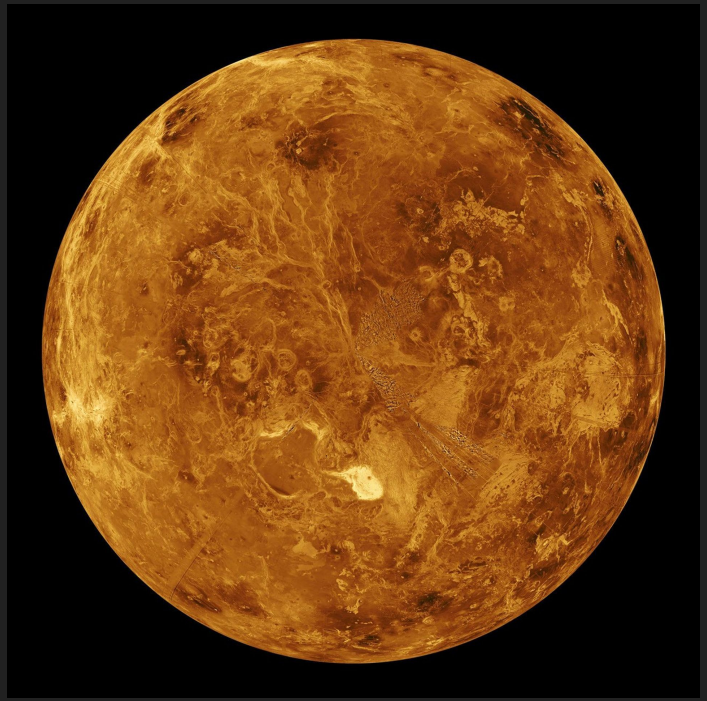
- Venus (MESSANGER flyby, on its way to Mercury)

Venus



- Clouds of Venus in ultraviolet (Pioneer orbiter)

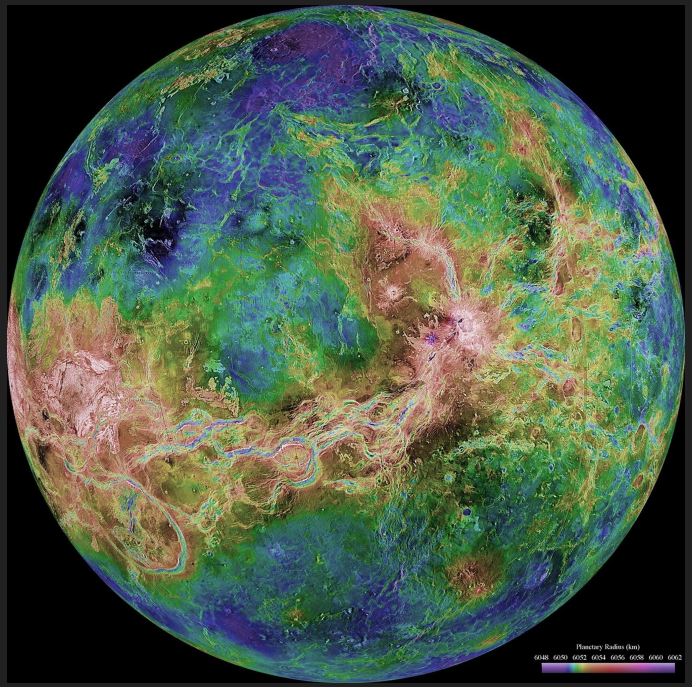
Venus



- Northern hemisphere radar map of Venus (Magellan probe)

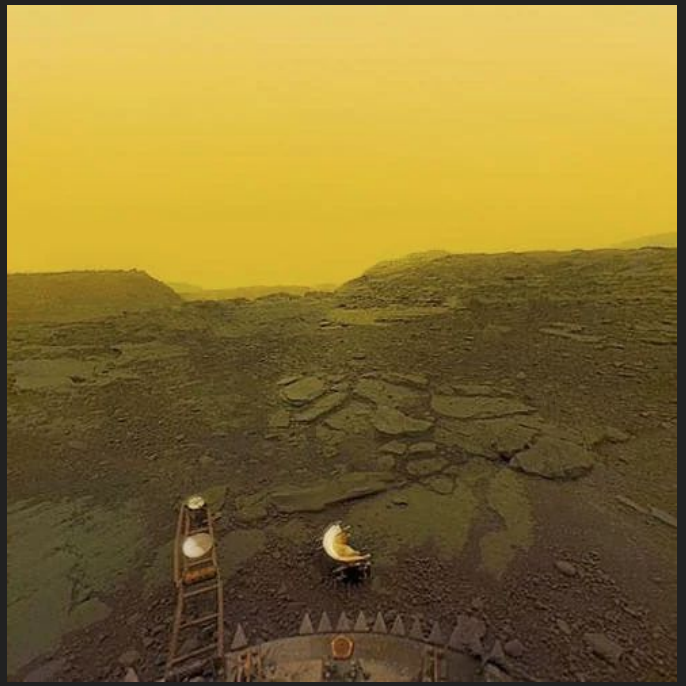
Venus

University of Wyoming
College of Engineering and Physical Sciences
Physics and Astronomy



- Radar map of Venus, colored by altitude (Magellan probe)

Venus



- The surface of Venus (Venera-13 probe)

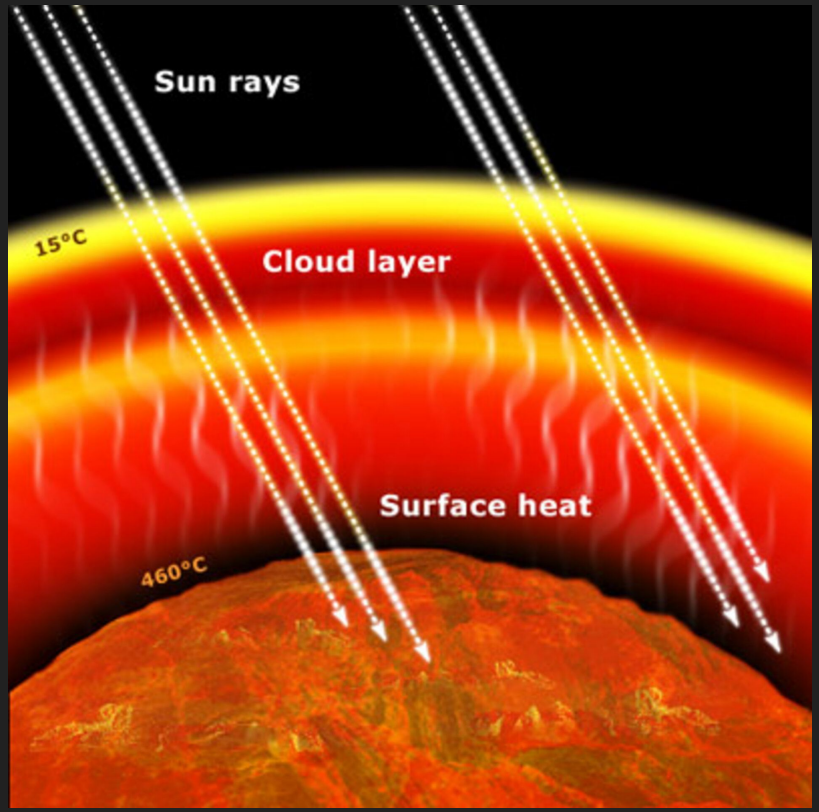
Venus- Orbit

- Named after the Roman fertility god, Venus.
- Similar to Earth
  - 0.82 times the mass of the Earth
  - Surface gravity 8.93 m s^{-2}.
- Retrograde, slow rotation
- Venusian day- 243 Earth days
- Semi-major axis 0.72 AU
- Venusian year- 224.7 Earth days
- Orbital eccentricity of 0.007

Venus- Atmosphere

- Very high atmospheric pressure.
  - 96 % CO_2
  - 92 atm pressure!
- Surface temperatures is 470 °C, highest in the Solar System.
- Close to Sun —> high temperature —> rocks release CO_2 and SO_2 —> raise temperatures —> release more CO_2 and SO_2 —> …
- Runaway greenhouse effect

Venus- Atmosphere

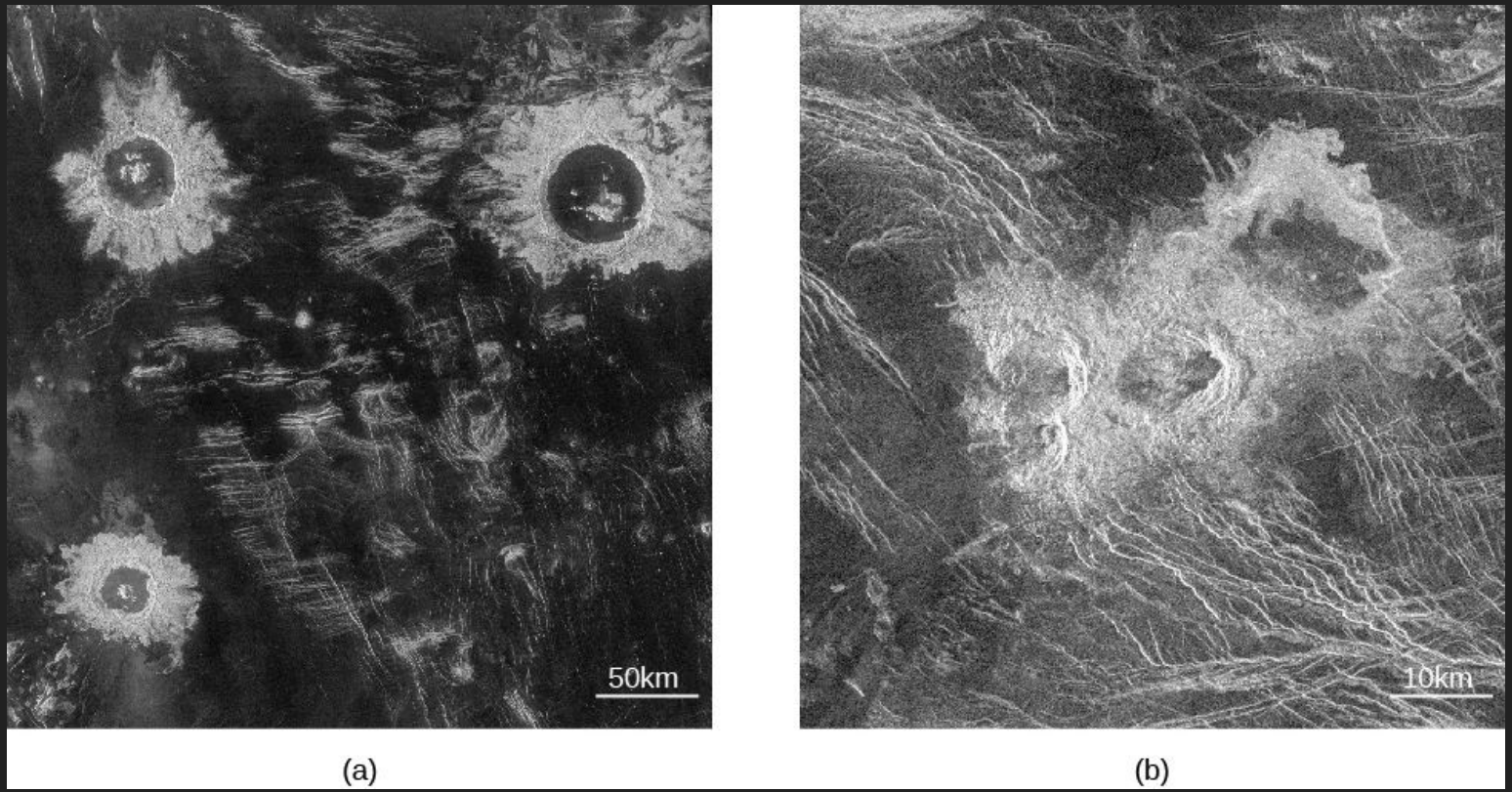


Venus- Surface

- No erosion from wind or water.
- Thick atmosphere prevents smaller craters (<1 km) from impacting.
- Larger objects pass through and impact.
- Crater number indicate the surface is 300–600 million years old.
    - Planet-scale volcanism event.

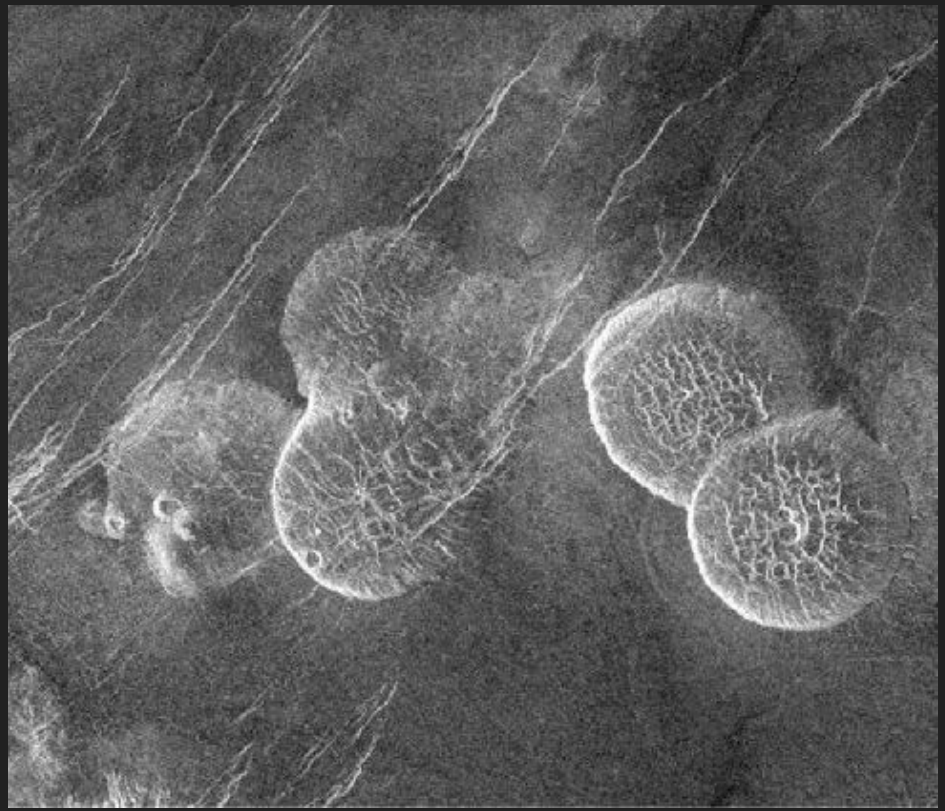
Venus- Surface

University of Wyoming
College of Engineering and Physical Sciences
Physics and Astronomy



Venus- Surface

University of Wyoming
College of Engineering and Physical Sciences
Physics and Astronomy

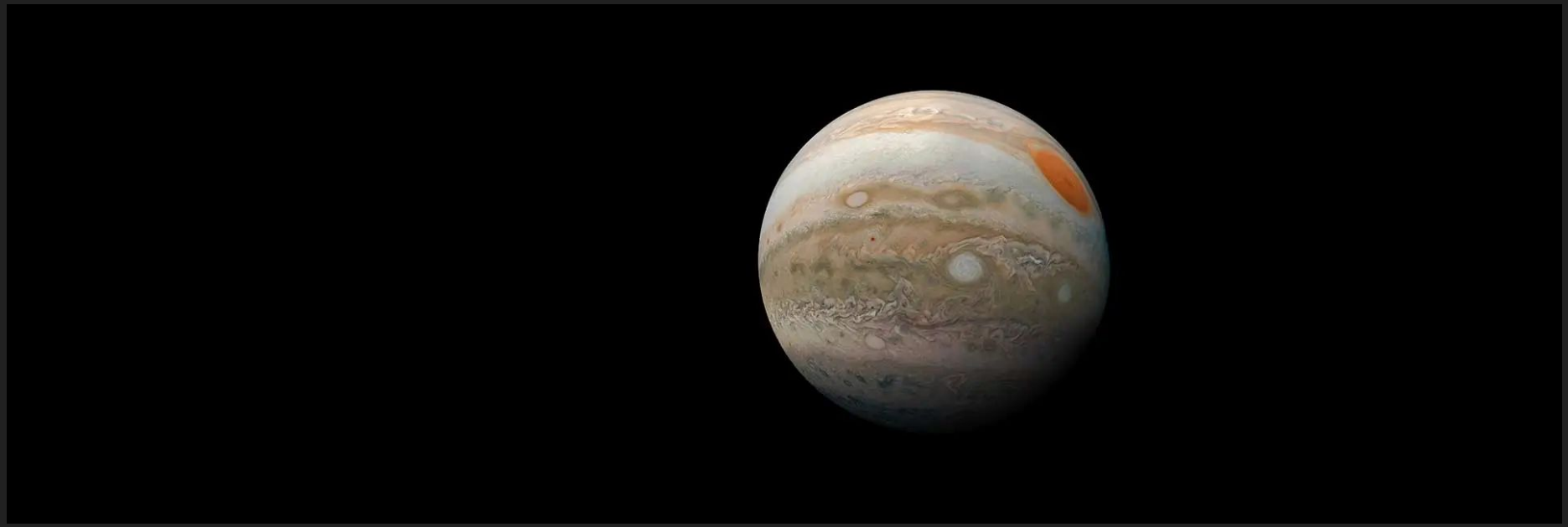


Jupiter

Jupiter flyby (Voyager 1)

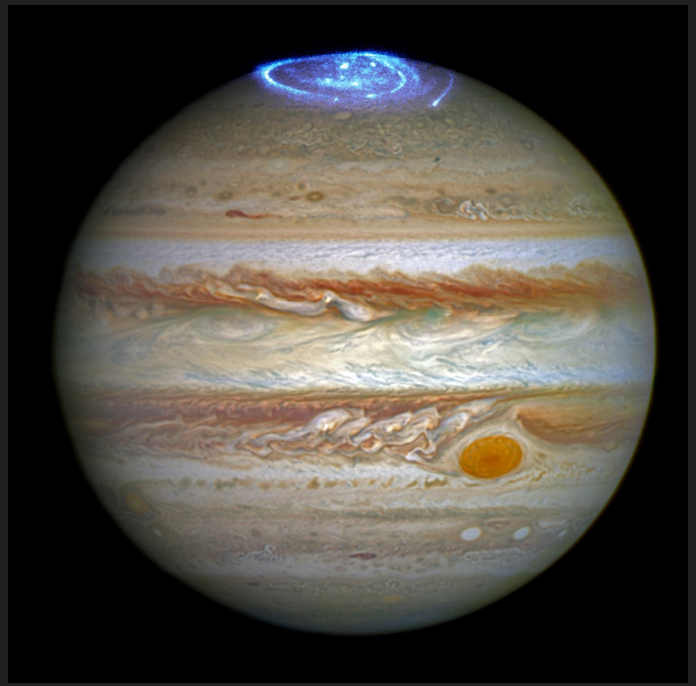
Jupiter

University of Wyoming
College of Engineering and Physical Sciences
Physics and Astronomy



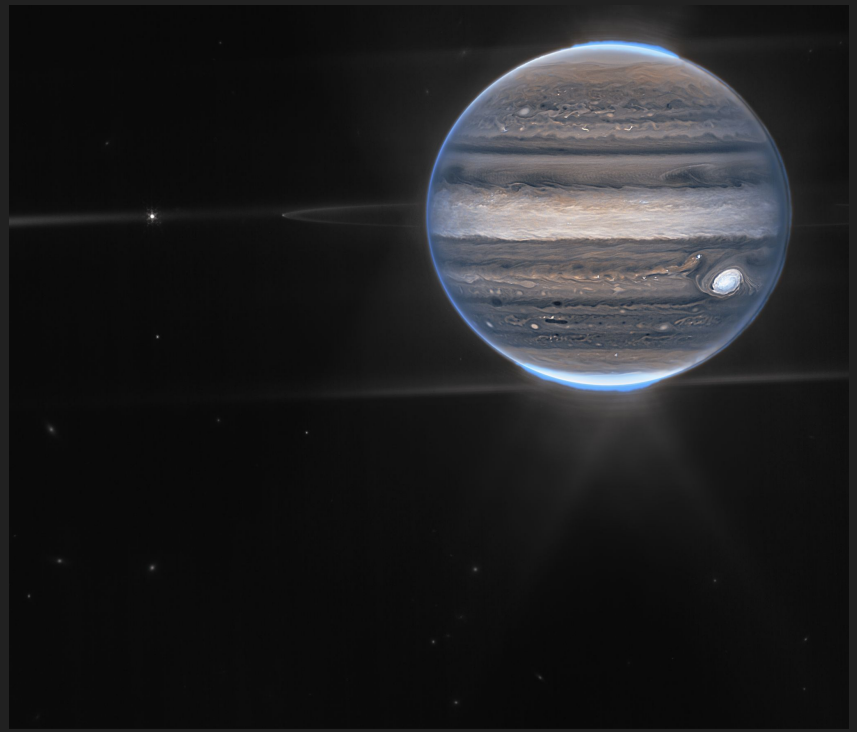
- Southern hemisphere of Jupiter (Juno)

Jupiter



- Aurora on Jupiter’s north pole, Vis, UV (HST).

Jupiter



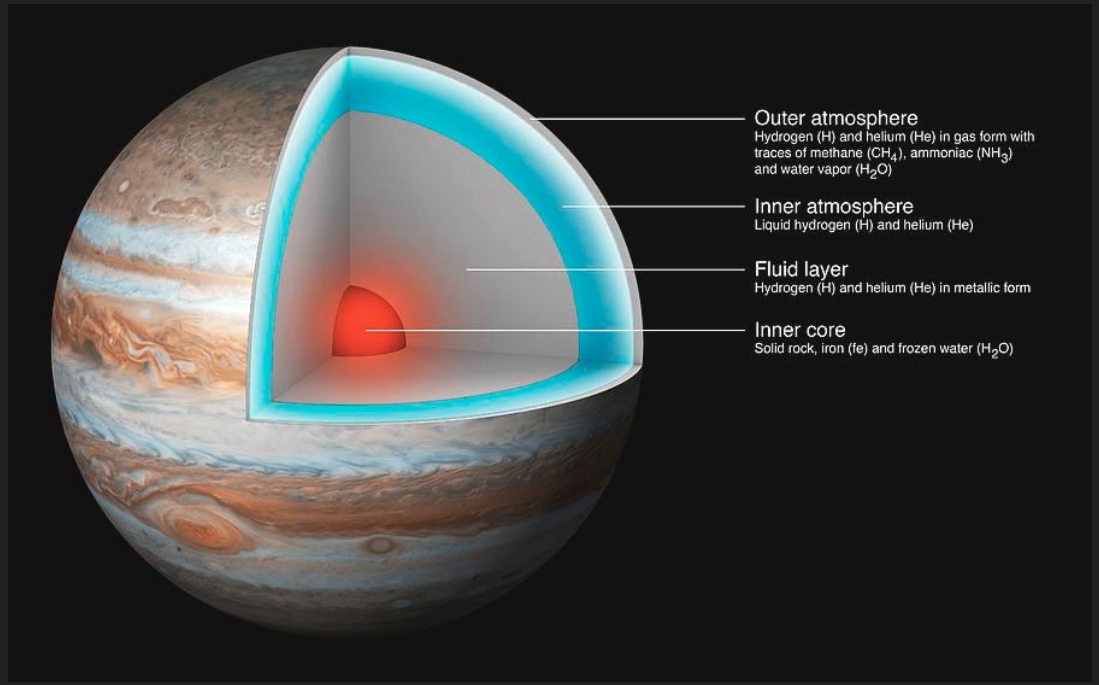
- Jupiter and its rings/moons Near IR (JWST)

Jupiter- Orbit

- Named after the Roman god, Jupiter.
- 318 times the mass of the Earth
- Surface gravity 24.8 m s^{-2}.
- Jupiter day- 9.9 hours
- Semi-major axis- 5.2 AU
- Jovian year- 11.9 Earth years
- Orbital eccentricity of 0.048

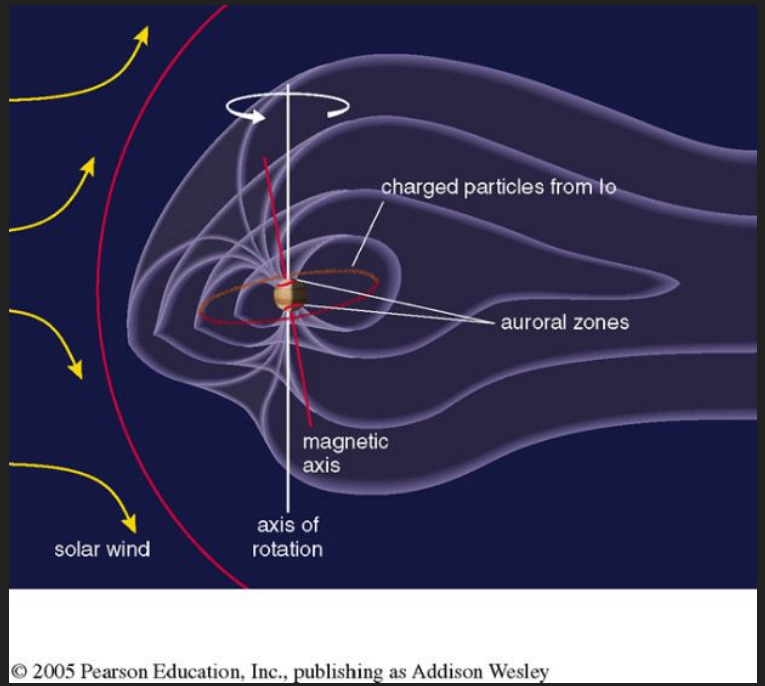
Jupiter- Composition

University of Wyoming
College of Engineering and Physical Sciences
Physics and Astronomy



- Primarily composed of hydrogen and helium, some methane and ammonia ice.

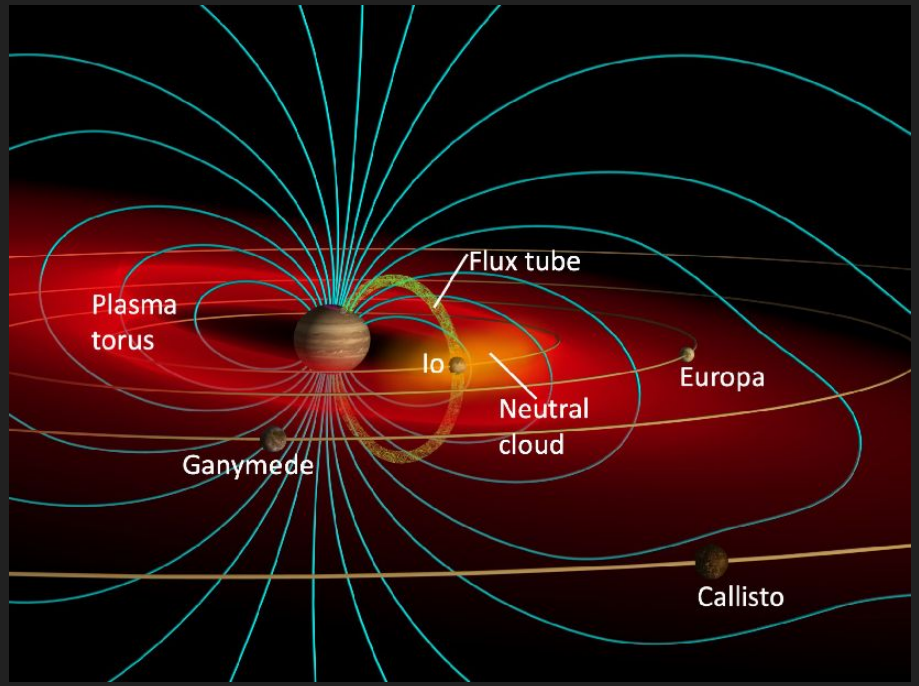
Jupiter- Magnetic field



- Jupiter's magnetic field

Jupiter- Magnetic field

University of Wyoming
College of Engineering and Physical Sciences
Physics and Astronomy

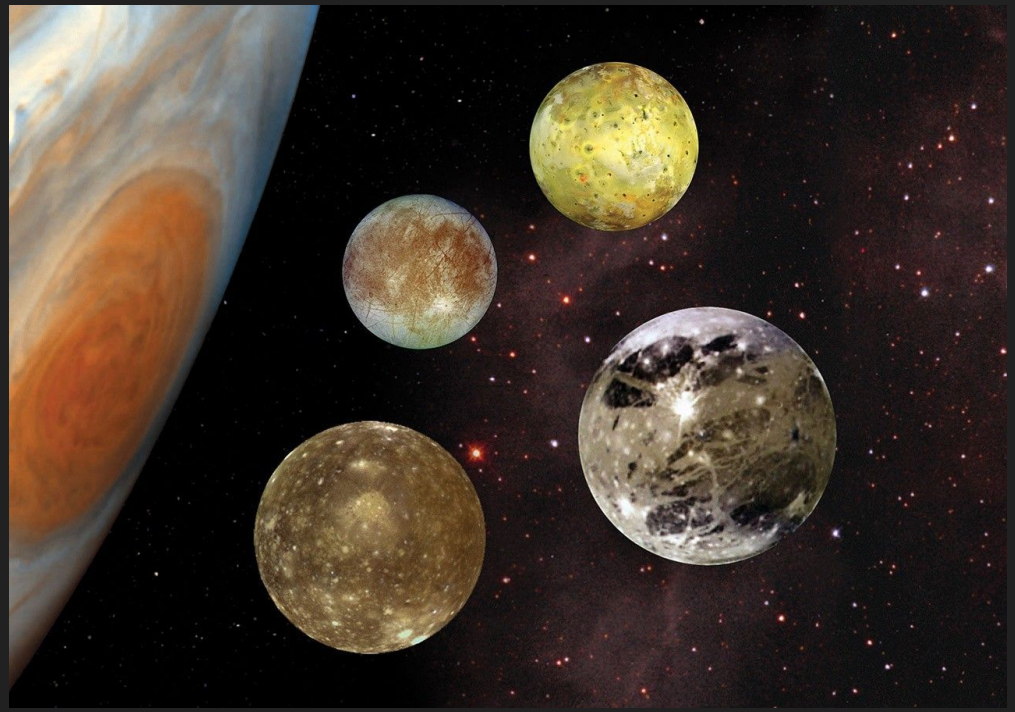


- Ion torus around Jupiter.

Jupiter- Moons

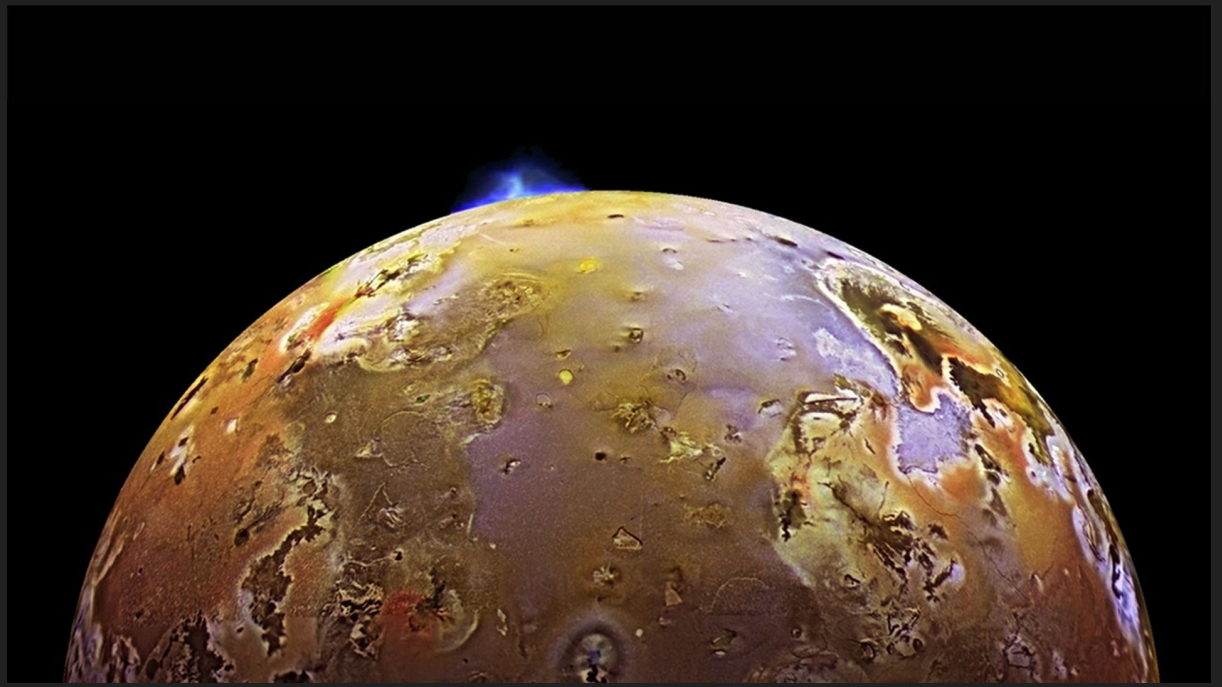
- 97 moons
- Ring system
- 4 large moons- Galilean moons

Jupiter- Galilean moons



- Jupiter “family portrait” (Galileo probe)

Jupiter- Io



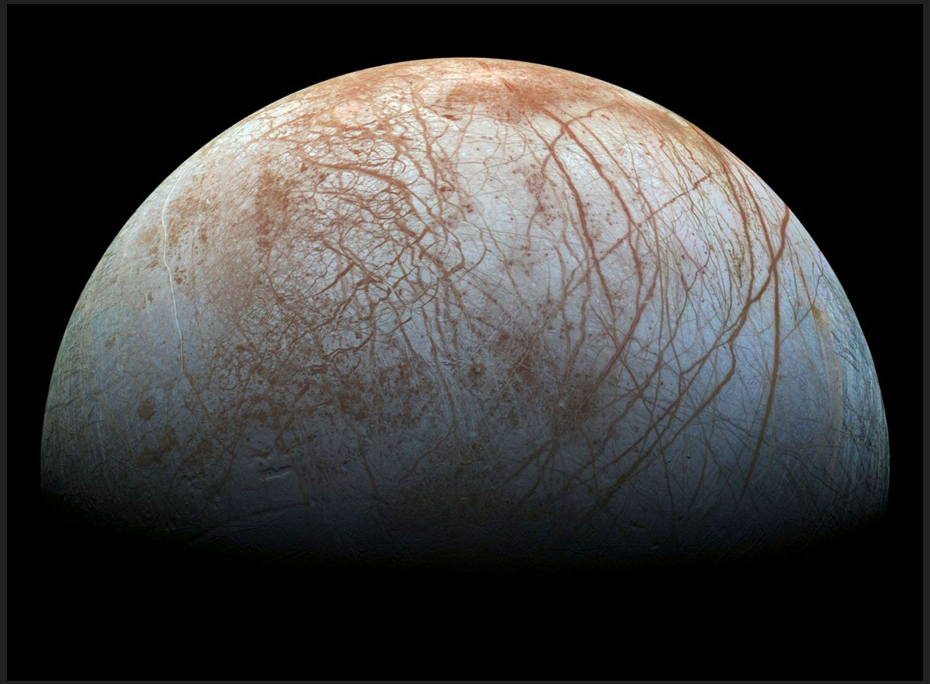
- Eruption on Io (Galileo probe), tidal heating.

Jupiter- Io

- Lava flow on Io.

Jupiter- Europa

University of Wyoming
College of Engineering and Physical Sciences
Physics and Astronomy



- Europa

Announcements

- Exam next Friday (3 October), practice exam released.

Next time

- Saturn, Uranus, Neptune, Pluto