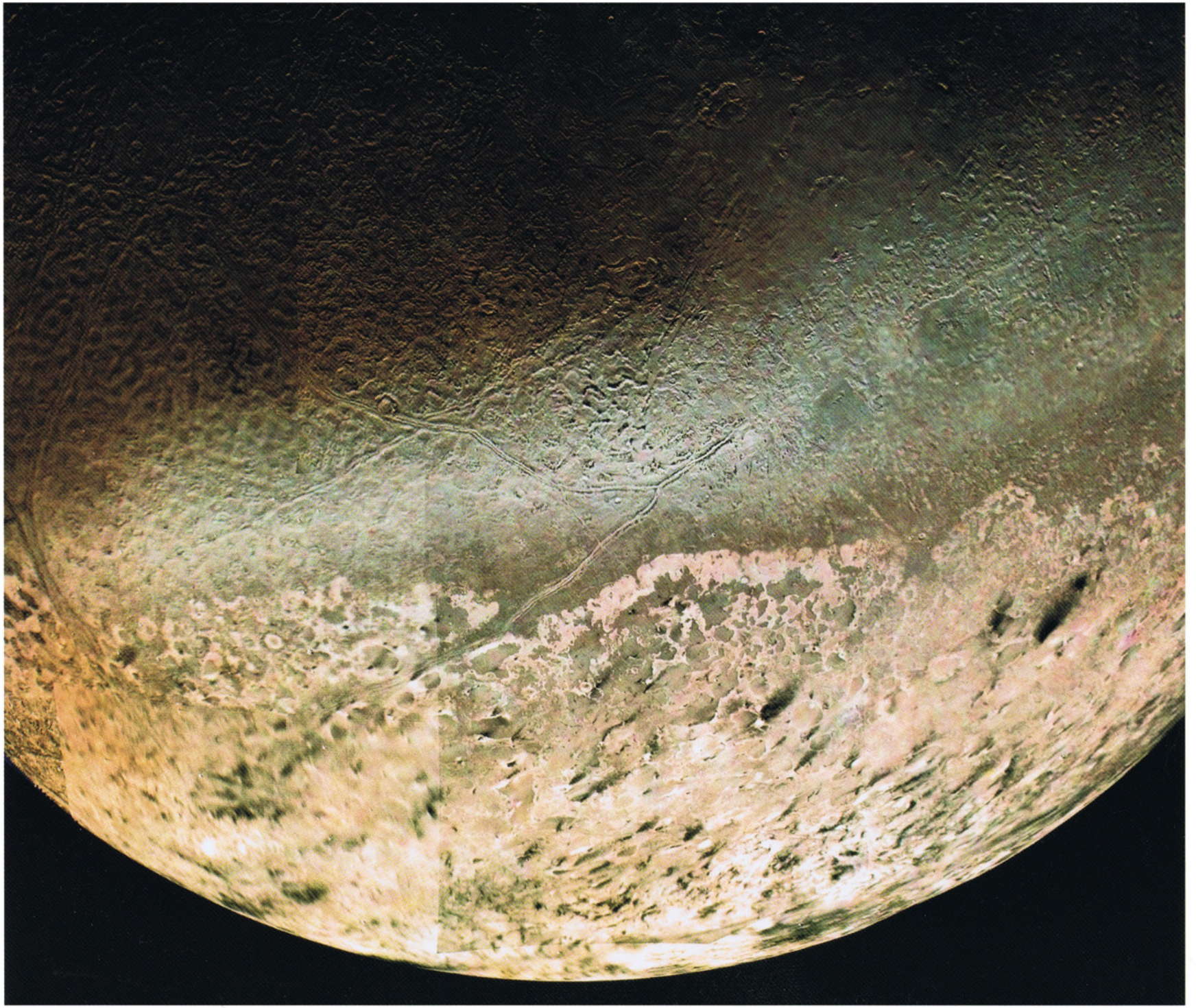

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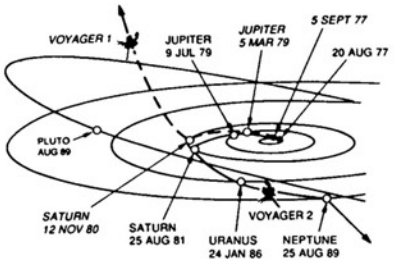
Pasadena, California



Triton
P-34764
August 25, 1989

Triton, Neptune's largest moon, is about two-thirds the size of Earth's moon and orbits Neptune at about the same distance that the Moon orbits the Earth. However, Triton is an oddity among large moons in that its orbit is highly tilted (157°) to the plane of Neptune's equator, meaning that it also orbits in the opposite direction of Neptune's rotation (it is in a retrograde orbit). These facts have led to speculation that Triton may have been formed independently of Neptune and later was captured by Neptune's gravity. Triton's surface is extremely cold – nearly -400°F – and bright. An amazing assortment of terrains covers Triton's surface, and a form of ice volcanism may be active even today. Triton also has a thin atmosphere comprised primarily of nitrogen with some methane. Hazes of more complex organic matter are suspended in the thin atmosphere, and nitrogen ice is transported as a vapor from the sunlit polar cap to the dark polar cap.

Nearly two dozen individual images were combined to produce this comprehensive view of the Neptune-facing hemisphere of Triton. Fine detail is provided by eighteen high-resolution, clear-filter images, with color information added from lower-resolution frames. (Contrast and color have been enhanced to show details more clearly.) The large south polar cap at the bottom of the image is highly reflective and slightly pink in color; it may consist of a slowly evaporating layer of nitrogen ice deposited during the previous winter. Dark plumes from suspected volcanic vents can be seen in this area. From the ragged edge of the polar cap northward, the satellite's face is somewhat darker and redder in color. This coloring may be produced by the action of ultraviolet light and magnetospheric radiation upon methane in the atmosphere and on the surface. Running across this darker region, approximately parallel to the edge of the polar cap, is a band of brighter material that is almost bluish in color. The underlying topography in this bright band is similar to that in the somewhat darker, redder regions northward of it.

VOYAGER MISSION HIGHLIGHTS

In 1977, two unmanned Voyager spacecraft, designed and built by the Jet Propulsion Laboratory, were launched on reconnaissance missions to the outer planets. In 1979, Voyagers 1 and 2 sent back spectacular images of the Jovian system and made startling discoveries. Giant volcanoes spew molten sulfur hundreds of kilometers above the surface of Io, one of Jupiter's four largest moons, while Europa, Ganymede, and Callisto each have diverse surfaces. Three tiny moons were found near a thin ring of dust particles encircling the planet, and cloud-top lightning bolts and polar auroras light up the Jovian night skies.

The Voyagers traveled on to Saturn encounters in 1980 and 1981, respectively. The rings were more complex than scientists could have imagined. Although Saturn's colors are more muted than Jupiter's, storms are still visible in the cloud tops. A thick atmosphere of nitrogen and methane surrounds Titan, Saturn's largest moon, and photochemical hazes hide its surface. After its close swing past Titan, Saturn's gravity forced Voyager 1 up and out of the ecliptic plane, and the spacecraft is now on its way out of our solar system.

Mission planners took advantage of the opportunity to send Voyager 2 on to Uranus. Arriving at Uranus in 1986, Voyager 2 found a cold planet with a remarkably featureless atmosphere. The spacecraft discovered ten small moons and two new rings at Uranus. Miranda, one of the five larger moons, has one of the most complex surfaces yet seen in the solar system. Voyager 2's final planetary encounter took place on August 25, 1989, when the spacecraft sailed within 3000 miles of the cloud tops of Neptune's north pole. Five hours later, Voyager 2 swept past Triton, a cold, bright moon where volcanoes may spew ice particles into the thin nitrogen atmosphere. The spacecraft discovered six new moons and a number of rings at Neptune. Now Voyager 2 is also heading out of the solar system, diving below the ecliptic plane.

Data from both Voyagers may be received well into the next century as they search for interstellar space. The Voyager Project is managed for NASA by the Jet Propulsion Laboratory.

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