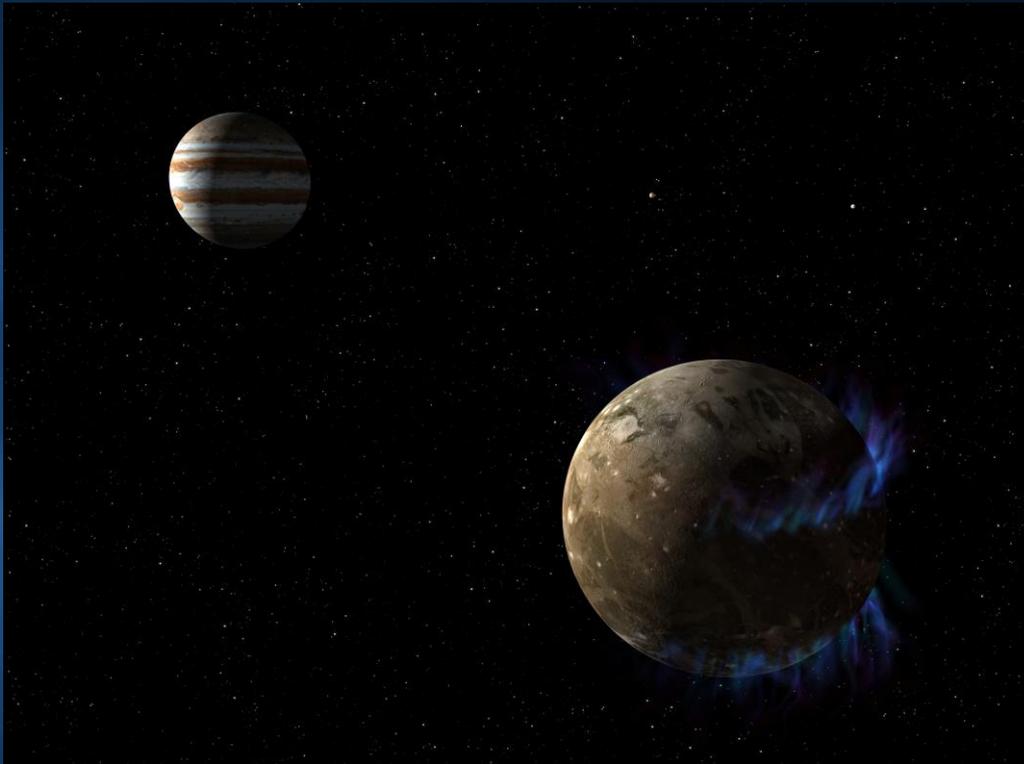


# Old Data, New Tricks: Fresh Results from NASA's Galileo Spacecraft 20 Years On

Between 1996 and 2000, Galileo made six targeted flybys of Jupiter's moon Ganymede, with multiple instruments collecting data on the moon's magnetosphere. These included the spacecraft's Plasma Subsystem, or PLS, which measured the density, temperature and direction of the plasma — excited, electrically charged gas — flowing through the environment around Galileo. New results, recently published in the journal *Geophysical Research Letters*, reveal interesting details about the magnetosphere's unique structure.



*Future study of the PLS data from that encounter may yet provide new insights related to subsurface oceans previously determined to exist within Ganymede, using data from both Galileo and the Hubble Space Telescope.*

Flying past Ganymede, Galileo was continually pummeled by high-energy particles — a battering the moon is also familiar with. Plasma particles accelerated by the Jovian magnetosphere, continually rain down on Ganymede's poles, where the magnetic field channels them toward the surface. The new analysis of Galileo PLS data showed plasma being blasted off the moon's icy surface due to the incoming plasma rain.

When analyzing the data, the scientists noticed that during its first Ganymede flyby, Galileo fortuitously crossed right over Ganymede's auroral regions, as evidenced by the ions it observed raining down onto the surface of the moon's polar cap. By comparing the location where the falling ions were observed with data from Hubble, the scientists were able to pin down the precise location of the auroral zone, which will help them solve mysteries, such as what do the auroras on Ganymede tell us about the Jovian system.