Near Infrared Spectral Mapping of Jupiter and the Galilean Satellites - First Results

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After a six year flight, with successful flybys and observations of Venus, Earth (twice), the asteroids Gaspra and Ida (with her moon Dactyl), as well as the Shoemaker-Levy 9 events, Galileo will soon begin a two-year program of remote sensing at our final destination - Jupiter. The spacecraft scan-platform instrument complement includes a near infrared mapping spectrometer (NIMS) which will (1) spectrally map the Galilean satellites to identify their small-face composition and its spatial variation, and (2) spectroscopically investigate the Jovian atmosphere, to determine the vertical and horizontal abundances of minor species (e.g. H_2O, PH_3, and GeH_4) and characterize the clouds and hazes through their angular scattering properties at differing wavelengths. NIMS spectra are obtained for as many as 408 wavelengths, spanning the range 0.7 - 5.2 microns, at a spectral resolution of 0.025 microns. During our first orbital measurements, commencing in late June 1996, NIMS will perform spectral mapping of Europa's northern polar region and selected features on Ganymede, monitor Io for volcanic outbursts, and perform detailed observations of the Great Red Spot and Galileo probe entry site latitudes. Early results, which may include Io, Europa, and Jupiter measurements, will be presented for the first time.