FIRST SPECTRAL IMAGING OF SATURN BY CASSINI/VIMS: PRELIMINARY SCIENCE RESULTS

We present the first spectral images of Saturn acquired by the Visual and Infrared Mapping Spectrometer (VIMS) on board the Cassini spacecraft enroute to the ringed planet. The first spectral images, scheduled for February 7/8, 2004 at 67 degrees phase and 70.5 M km distance, are planned to show details as small as 17.6 K km, sufficient to resolve the planet’s southern hemisphere separated from the ring system. The broad spectral coverage of the VIMS instrument – from 0.3 to 5.2 $\mu\text{m}$ - enables VIMS to observe a wide variety of atmospheric phenomena and processes. These include: (1) the vertical and spatial distribution and microphysical properties (size, shape, and composition) of stratospheric hazes and tropospheric clouds, (2) the distributions of condensable vapors (e.g., water and ammonia) and disequilibrium species (e.g., phosphine), diagnostic of meteorology and global circulation, (3) the distribution of species generated by auroral processes (e.g., H$_3^+$), (4) methane fluorescence near 10-$\mu\text{m}$ ar level, and (5)
lightning. Preliminary results will be presented, including images and spectra of the cloudy equatorial region, the southern temperate latitudes, and the south polar aurorae.