

Seasonal Atmospheric Evolution of Saturn Observed by Cassini Spacecraft; New Results from ISS Imager and VIMS Mapping Spectrometer

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We report new analyses of Saturn using data returned by two instruments on the Cassini spacecraft, namely, the Imaging Science Subsystem (ISS) camera, and the Visible and Mapping Spectrometer (VIMS). We report detailed analysis of datasets acquired during the course of the Cassini mission at Saturn between 2004 and 2017, focusing on the temporal evolution of atmospheric dynamics and cloud morphology. Topics we present include the temporal evolution of the north polar region and the hexagon, propagation of mid-latitude “ribbon” wave, and global zonal wind speed. We will also present the aftermath of the 2010-2011 storm as it continued to evolve until the end of the mission.

We will also focus on the data captured during Cassini's Grand Finale Mission from late April 2017 until its final plunge into Saturn on September 15, 2017. ISS and VIMS repeatedly observed Saturn's atmosphere in multiple wavelengths at unprecedented spatial resolution during these orbits, revealing unexpected cloud formations and wind patterns. The north polar vortex region was particularly well observed over both longitude and latitude, allowing the winds to be measured at unprecedented scales and revealing several large-particle clouds (> 10 micron radius vs < 2 micron typical of upper tropospheric clouds) comprised of spectroscopically-identifiable ammonia ice.

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