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Clouds and Haze on Saturn

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Quantitative measurements of Saturn's haze spanning almost one full Kronian year are providing insights into the nature of seasonal and non-seasonal variation in Saturn's upper troposphere. In the late 1970's (late summer in the southern hemisphere) Measurements from the ground (methane-band imagery) and from the Pioneer and Voyager spacecraft (polarization and UV reflectivity) showed thinner and/or deeper haze in the southern hemisphere. Cassini observations from 2003 to 2007, also in southern summer but earlier in the seasonal cycle show the opposite asymmetry. If the seasonal cycle of haze is to close the hemispheric asymmetry must reverse rapidly. Recent images by the Cassini Imaging Science Subsystem (ISS) suggest that this is happening. The rapidity of the change and other non-seasonal variations in the haze and cloud structure challenge our understanding of the atmospheric dynamics and chemistry.