



Saturn's hydrocarbon emission from ground-based and Cassini/CIRS observations

B. E. Hesman (1), D. E. Jennings (1), P. V. Sada (2), G. L. Bjoraker (1), A. A. Simon-Miller (1), R. J. Boyle (3), G. H. McCabe (4)

(1) Goddard Space Flight Center, Greenbelt, Maryland, USA, (2) Universidad de Monterrey, Garza García, México, (3) Dickinson College, Carlisle, Pennsylvania, USA, (4) Catholic University of America, Washington, DC, USA

(Brigette.Hesman@gsfc.nasa.gov / Phone: 001-301-286-0021)

Hydrocarbons in the upper atmosphere of Saturn are known, from Voyager and early Cassini results, to vary in emission intensity with latitude. Of particular interest is the marked increase in temperature and hydrocarbon line intensity near the South Pole (Greathouse et al. 2005, Orton and Yanamandra-Fisher, 2005, Flasar et al. 2005). To determine if these latitudinal variations are due to changes in abundances or temperatures we are combining Cassini's Composite Infrared Spectrometer (CIRS) observations with ground-based observations using Celeste (a cryogenic grating spectrometer) at the McMath-Pierce telescope and the NASA Infrared Telescope Facility (IRTF). CIRS provides excellent spatial resolution but the highest spectral resolution is 0.5 cm^{-1} . Celeste provides higher spectral resolution ($< 0.1 \text{ cm}^{-1}$) that allows hydrocarbon molecular features to be more fully resolved thereby improving the composition results at higher altitudes. We have performed ground-based observations of C_2H_2 and C_2H_6 on a yearly rate to monitor the southern hemisphere for changes as Saturn moves through southern summer (solstice was October 2002). We have attempted to coordinate our observations with CIRS so that direct comparisons can be made and so we can provide more latitudinal coverage during those times. Preliminary results from observations at the McMath-Pierce Telescope in 2005 and the IRTF in 2006 will be presented along with corresponding CIRS observations.

References: Flasar et al., (2005) *Science* 307, 1247; Greathouse et al., (2005) *Icarus* 177, 18; Orton and Yanamandra-Fisher, (2005) *Science* 307, 696.