



## Global winds on Titan during Huygens descent

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The direction and magnitude of the stratospheric wind in the equatorial region on Titan were measured during the descent of Huygens Probe 14 January 2005 UT and the day following 15 January UT. Measurements were made using the Goddard Space Flight Center Heterodyne Instrument for Planetary Wind And Composition, HIPWAC, at the National Astronomical Observatory of Japan Subaru Telescope on Mauna Kea, Hawaii. HIPWAC spectral resolving power of  $>1,000,000$  and the 0.36 arcsec diffraction limited FOV on Titan with the 8.2 m Subaru telescope enabled measurement of true emission line profiles of ethane near 12 microns from the East, West and center positions on Titan's 8.8 arcsec disk. Differences in the line frequencies (Doppler shifts) determined the direction and magnitude of the wind. The horizontal wind field is directly determined by fitting the East and West data simultaneously using beam integrated radiative transfer analyses. Comparison with results from other techniques as well as with results from our previous measurements on the NASA Infrared Telescope Facility and also on Subaru in 2003 will be discussed. The earlier measurements probed altitudes from 130 to 340 km, with peak contributions near 240 km (0.5 mbar), and retrieved prograde winds as high as  $\sim 190$  m/s. The degree our results complement data from the Huygens Doppler Wind Experiment and Cassini observations will be addressed.

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