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Saturn's wind profile from Cassini ISS images and its long term variability

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Abstract

A complete view of Saturn's global circulation from Cassini images between 2004 and 2009 near the tropopause (MT filters) and in the upper troposphere (CB filters,) is presented. A comparison of previously published zonal wind sets obtained by Voyager 1 and 2, Hubble Space Telescope, and ground-based telescopes (1990-2004) with the present Cassini profiles (2004-2009) covering a full Saturn year shows that the shape of the zonal wind profile and intensity of the jets has remained almost unchanged except at the Equator where the intensity of the equatorial jet has slowed down ~ 100 m s^{-1}. Analysis of CIRS data also shows that differences between CB and MT measurements can be explained by the presence of vertical shear due to the thermal wind effect.