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HRDI observations of mean meridional winds at solstice

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Abstract

High Resolution Doppler Imager (HRDI) measurements of daytime and nighttime winds at 95 km are used to deduce seasonally averaged Eulerian mean meridional winds during six solstice periods. These estimates are compared with seasonally averaged radar meridional winds and with results from dynamical and empirical wind models. HRDI mean meridional winds are directed from the summer pole toward the winter pole over much of the globe. Peak equatorward winds of about 15 m s⁻¹ are usually observed in the summer hemisphere near 30°. A local minimum in the equatorward winds is often observed poleward of this latitude, with winds approaching zero or reversing direction. A similar structure is seen in contemporaneous radar winds. This behavior differs from residual meridional wind patterns predicted by models. The discrepancies may be related to gravity wave parameterizations or a consequence of planetary wave influences.
