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Abstract

We have produced temperature maps of Jupiter's tropospheric temperature at four pressure levels, 100, 200, 300, and 400 mbar, for five epochs in 1996 and 1997: June-July, 1996, September, 1996, April, 1997, September, 1997, and November, 1997. The temperature maps were produced from ground-based mid-infrared imaging observations. All five periods have good longitudinal coverage, with three having 90% or greater coverage. The zonal mean structure is constant during the span of the data sets, showing warm North and South Equatorial Belts, a cool equator, and a warm southern hemisphere. All dates show longitudinal structure with little consistency between dates. The premerger white ovals can be seen along with the Great Red Spot(GRS). The GRS and the white ovals are the only distinct features identifiable across the time span of the data sets. Very little power is seen longitudinal power spectra above wavenumber 10 but there are many peaks below 10. In November 1997, the spectrum is dominated by a wavenumber 3 peak with almost no other wavenumbers present for latitudes within 30° of the equator. The general temperature structure at 100 and 400 mbar is similar, however, longitudinal spectra show much less similarity between the two levels. This suggests that the longitudinal structure is not constant with height. This work was performed at the Jet Propulsion Laboratory, California Institute of Technology, under contract with NASA, and supported in part by the NASA Planetary Astronomy Program and the Galileo Project.