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The latitudinal temperature distribution in the stratosphere of Neptune as observed by VISIR/VLT infrared high-resolution imaging spectroscopy

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On September 2-4, 2006, observations of Uranus and Neptune have been obtained at thermal wavelengths using the VISIR mid-infrared imaging spectrometer on the Very Large Telescope UT-3 (MELIPAL). In particular, spectroscopic observations of Neptune were achieved in the H_2 S(1) transition at 17.0 microns, with the slit aligned along the North-South axis of the planet. The slit width was 0.75 arcsec and the spectral resolving power was 20000. The H_2 S(1) line center probes stratospheric regions in the range 4 – 0.02 mbars, while the nearby continuum is formed in the 20-2 mbar region. A preliminary analysis of the data shows a strong enrichment at high southern latitudes, confirming the stratospheric warming at the south pole observed in the VISIR thermal images (Orton et al., 2007, this conference). The H_2 S(1) line profiles will be modeled and constraints will be drawn on the stratospheric vertical temperature profile as a function of latitude.