COSMIC and AGCM Observations of the Northern Hemisphere Stratosphere

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COSMIC satellite temperature data are used to derive the 2006/07 winter mean stratospheric Northern Hemisphere potential energy E_p from gravity waves with vertical wavelengths less than 7km in grid cells of size 10 x 5; and to study latitudinal and longitudinal variability in cells of size 20 x 5 x 7days. Large E_p at 17 – 23km is mostly associated with the sub-tropical jet and shows significant longitudinal variability. Some contribution to total E_p from local orographic sources may occur above the Canadian Rockies, Scandinavia and northern Japan, but not above the Himalayas, due to background conditions. Many of the waves are likely to have low ground-based phase speeds, as observed by filtering around the 0 – 10m/s background zonal wind. COSMIC results are compared with a T106L60 AGCM, confirming sub-tropical jet related generation, upward propagation and low phase speeds of the observed gravity waves.