



Possible evidence of spontaneous imbalance as a source of atmospheric gravity waves

L. Wang (1), D. C. Fritts (1), and F. J. Schmidlin (2)

(1) NorthWest Research Associates, Inc., CoRA div.; (2) NASA/GSFC/Wallops Flight Facility

We analyzed gravity wave (GW) information from high vertical resolution radiosonde soundings flown over a site in the Midwest US (36.6 N, 97.5 E) in February 2006. Exceptionally large GW amplitudes are found in the soundings. GW wind perturbation hodographs show that GWs propagated upward in the lower stratosphere and downward in the mid-troposphere, implying that the sources of the waves were located in the upper troposphere. We derived GW parameters for those large amplitude events using the Stokes parameters method and the wavelet analysis, thus allowing us to trace those waves back to their possible sources. The ray-tracing together with the hodographic analysis indicate that those waves likely originated from jet streaks in the upper troposphere via the spontaneous imbalance mechanism.