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A Look at Long Term Trends and Short Term Transition Zones (Fronts) in the Atmosphere using Fourier and Wavelet Analysis JOSEPH TROUT, Richard Stockton College of New Jersey — An atmospheric front can be defined as sloping zones of pronounce transition of thermal and or wind fields in the atmosphere. This study uses Fourier analysis to look at the long term trends in atmospheric data and uses Wavelet Analysis to analyze the short term transition zones. These transition zones are characterized by a strong horizontal temperature gradient and/or large horizontal wind shear. They also may have large static stability and vertical wind shear. The signature of the front is evident as a large horizontal temperature gradient and moisture gradient. The compact nature of the wavelets make them perfect candidates for analyzing the short term transition zones in the thermal and wind fields that comprise the fronts. The frequency, intensity and shape of these transition zones are analyzed.

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