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Alfredo N Wetzel* (alfredo.wetzel@wisc.edu), **Leslie M Smith** and **Samuel N Stechmann**. *Linear Analysis of Moisture Transport Due to Baroclinic Atmospheric Waves*.

In this presentation, the effects of rainfall speed and moisture gradients on the moisture transport of mid-latitude baroclinic waves are examined. These effects are investigated using an idealized quasi-geostrophic model with simplified microphysics. Specifically, a single-phase linearization about a constant velocity shear background state is considered for three fundamental moisture regimes: unsaturated, saturated with no rainfall speed, and saturated with rainfall speed. The relative simplicity of this setup allows us to obtain analytically tractable formulas and determine the dependence of the moisture transport on the moisture parameters. It is shown that the meridional moisture transport, as a function of height, has a mid-column maximum in the case of no rainfall speed and a maximum in the lower or surface troposphere for sufficiently large values of rainfall speed. These results for different rainfall speed values are then discussed in the context of meridional moisture transport in observational data. (Received September 26, 2017)