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Gravity Wave Instability Dynamics at High Reynolds Numbers SURANGA DHARMARATHNE, University of Indianapolis, Indianapolis, IN, THOMAS LUND, DAVID FRITTS, GATS Inc. Boulder, CO — Internal gravity waves play a central role in the fluid dynamics of the earth's atmosphere. Comprehensive knowledge of the dynamics of gravity waves is crucial in numerical weather prediction, large-scale interactions, and climate and general circulation models. Direct numerical simulations of the Boussinesq form of the Navier-Stokes in conjunction with a Fourier spectral method are used to investigate the instability dynamics of monochromatic gravity waves. We focus on gravity wave instability dynamics for higher Reynolds numbers (up to 30k) and a broader range of intrinsic frequencies than considered previously. The morphology of the instability structures is studied through visualizations of the vorticity magnitude and λ_2 fields. These studies highlight structural differences associated with both changes to intrinsic frequency and Reynolds number.

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