Three-dimensional visualization of stratified turbulent wakes at varying Reynolds number[1] BASEM HALAWA, SHADEE MERHI, CYNTHIA TANG, QI ZHOU, University of Calgary — We present a series of three-dimensional visualizations of numerically simulated turbulent wakes in a stably stratified fluid, with a focus on the effects of the wake Reynolds number, Re, on the wake flow. The visualization of stratified wakes is complicated by the coexistence of regions of distinct dynamics in the flow, including the large-scale 'pancake vortices', small-scale shear instabilities within layers of concentrated vertical shear, and internal waves emitted by the wake flow to the ambient fluid. We apply various techniques to separate the dynamically distinct regions within a given wake and visualize them respectively. The volume fractions occupied by each of these regions are also quantified. Through the visualizations, we observe several significant effects on the wake's evolution associated with increasing wake Reynolds number, which will be presented in the poster.

Qi Zhou
University of Calgary

Date submitted: 30 Jul 2019

Electronic form version 1.4