5007-76-111 **Nancy Soontiens***, nksoonti@uwaterloo.ca, and **Marek Stastna** and **Michael L. Waite**.
Trapped wave solutions to the Dubriel-Jacotin-Long equation.

The Dubreil-Jacotin-Long (DJL) equation is a fully nonlinear steady-state representation of the Euler equations of motion for an incompressible fluid. This study examines solutions to this equation for waves trapped over topography with a pycnocline stratification. Solutions are derived for flows with a shear background current and for different topographic profiles with and without the Boussinesq approximation. It is found that multiple states can occur for certain background currents and topographic profiles. Furthermore, an examination of the effects of making the Boussinesq approximation is carried out. Large trapped waves with amplitudes up to four times the topographic height are discovered for background speeds near the conjugate flow speed. As the background speed increases the waves become smaller until the wave amplitude is close to the topographic height. Solutions under the Boussinesq approximation experience a very sharp transition from large to small amplitude waves when compared to their non-Boussinesq counterparts. Finally, asymmetric states across the topographic crest are considered. (Received April 29, 2013)