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Traian Iliescu* (iliescu@vt.edu), Department of Mathematics, Virginia Tech, 456 McBryde Hall, Blacksburg, VA 24061. *Numerical Simulation of Oceanic Gravity Currents.*

This talk presents some of the main mathematical and computational challenges encountered in the numerical simulation of ocean flows. These challenges and some possible solutions will be presented in the context of oceanic gravity currents.

Oceanic gravity currents are cold (dense) water masses which are released into the large-scale ocean circulation from high-latitude and marginal seas. The entrainment of ambient waters into oceanic gravity currents is recognized as being a prominent oceanic process with significant impact on the ocean general circulation and climate.

The numerical simulation of oceanic gravity currents at realistic parameters represents a grand challenge. Recent developments in this area, including new mathematical models and computational methodologies for stratified flows will be presented. (Received February 03, 2009)