Forecasting of drifters off Eastern Canadian Coast

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GEM (Global Environmental Multiscale) regional and global model wind forecasts have been used to force the CANSARP-Scientific (CANadian Search And Rescue Program) MATLAB model to determine the likely positions of drifters (such as people and weight dependent rafts, sailboats and individual persons floating on water). The present CANSARP model search area determination is based on characteristics of drifters, atmospheric drag forces (wind forcing), and oceanic drag forces (seasonal currents, tidal currents, barotropic and baroclinic currents). The spatial distribution of the search area error is calculated from a combination of probabilistic drift error, initial position error and search craft error. As far as the wind forcing is concerned, it acts on the drifter movement in two ways: directly through leeway (wind acting on exposed surface of drifters and causing drift), and indirectly through the resulting barotropic currents (which is empirically determined as 3.3% magnitude of wind velocity and rotated 20 degrees to the right). In this study the regional and global GEM configuration wind outputs are used to evaluate the performance of CANSARP in forecasting position of drifters over time. The outputs are validated against field experiments from 2004-2005 obtained in the Newfoundland basin. A few selected case studies are presented to show the improvement in forecasting in using high resolution regional GEM outputs over lower resolution global outputs.