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Coastal Flow in the Northern Gulf of Alaska as Observed by Dynamic Topography and Satellite-Tracked Drogued Drift Buoys

Thomas C. Royer

Institute of Marine Science, University of Alaska, Fairbanks 99701

Donald V. Hansen and David J. Pashinski

Atlantic Oceanographic and Meteorological Laboratories, NOAA, Miami, FL 33149

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ABSTRACT

Drifting buoys and dynamic topography over the continental shelf in the northern Gulf of Alaska are used to describe the coastal circulation and flow in the offshore Alaska Current. One permanent anti-cyclonic eddy is detailed along with several shorter period features. In general, the buoys progressed shoreward and to the west from a release point near the continental shelf break. There was a tendency for the drifters to terminate their trajectories near or inside Prince William Sound.

Precipitation, runoff and wind stress suggest that the buoys' drogues are affected by entrainment. It is hypothesized that drifters move shoreward until their drogues encounter the offshore-moving, ageostrophic upper layer. Their position stabilizes between the onshore and offshore flow and their subsequent movement is parallel to this interface. Though drifters might not be monitoring surface flow, it can be inferred that the surface flow is offshore here.

The behavior of drogued, drifting buoys enables them to be especially valuable in flow along frontal regions.

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Headquarters: 45 Beacon Street Boston, MA 02108-3693

DC Office: 1120 G Street, NW, Suite 800 Washington DC, 20005-3826

amsinfo@ametsoc.org Phone: 617-227-2425 Fax: 617-742-8718

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