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Trench Aleutian anticyclonic eddies: generation and evolution

Sofia Khudyakova and Tatyana Belonenko

Saint-Petersburg State University, Institute of Earth Sciences, Department of Oceanology, Russian Federation
(khydyakova.s@gmail.com)

Aleutian eddies are mesoscale anticyclonic eddies formed within the Alaskan Stream over the Aleutian trench in the area of 50-52 ° N, 170-175 ° E. It is found that canyons along the shelf fault appear to be more prone to eddy activity than regions without canyons. Aleutian eddies propagate southwestward after the separation from the Alaskan Stream and pass through the Western Subarctic Gyre, carrying the transformed waters of the Gulf of Alaska to the western part of the Pacific Subarctic. Fishermen and oceanographers are well aware of the role of some anticyclonic eddies near the trenches in the formation of places favorable for fishing. They are formed by the mixing of the waters of the Alaskan Stream and the waters of the Subarctic Current. The appearance of Aleutian eddies is accompanied by a deepening of isopycnic surfaces and an increase in temperature and concentration of dissolved oxygen in the layer of 150– 400 m.

Based on the GLORYS12V1 data, the thermohaline structure of individual eddies and their dynamic properties are analyzed. The GLORYS12V1 product is a global reanalysis covering altimetry data since 1993. It is based on the existing real-time CMEMS (Copernicus Marine Environment Monitoring Service) global forecasting system. The component of this model is the NEMO platform controlled on the surface by ECMWF ERA-Interim. The observations are then assimilated using a reduced-order Kalman filter. The work uses daily data for 2019 "GLOBAL_REANALYSIS_PHY_001_030" displayed on a standard regular grid in 1/12° increments (approximately 8 km) and on 50 standard levels.