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Thermohaline structure and dynamic parameters of mesoscale eddies of South Kuril region

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The South Kuril region belongs to the Northwestern part of the Pacific Ocean and is characterized by a complex system of interactions between two large currents: the Kuroshio, which carries warmer waters from the southwest, and the Oyashio, which carries colder waters from the northeast. As a result of the currents' interaction, the frontal zones arise; they are characterized by active vortex formation. The cyclonic and anticyclonic eddies may occur due to the separation of meanders from the Kuroshio current or can be formed in the process of collision of eddies already existing in this system. Dynamic parameters and thermohaline structure of eddies affect the fishing of saury and squid in the area of the southern Kuril Islands.

In this work, dynamic parameters and thermohaline structure of certain eddies based on data from daily reanalysis GLORYS12V1 are analyzed. The GLORYS12V1 product is the CMEMS global ocean eddy-resolving reanalysis. It covers the altimetry from 1993 to 2019, has a horizontal resolution of 1/12° and 50 vertical levels. It is based on the current real-time global forecasting CMEMS system. The model component is the NEMO driven at the surface by ECMWF ERA-Interim. Observations are assimilated using a reduced-order Kalman filter. Along track altimeter data (Sea Level Anomaly), Satellite Sea Surface Temperature, Sea Ice Concentration and In situ Temperature and Salinity vertical Profiles are jointly assimilated. In this work, the data «GLOBAL_REANALYSIS_PHY_001_030» available at https://resources.marine.copernicus.eu/product-detail/GLOBAL_MULTIYEAR_PHY_001_030 is used.

This work aims to study the dynamic parameters and thermohaline structure of several eddies formed in the South Kuril region. We detect and monitor the eddies and investigate hydrological conditions in them favorable for fishing.