

STRUCTURE AND DYNAMICS OF EDDIES IN THE SOUTHERN OKHOTSK SEA

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Eddies influence significantly on migrations and distribution of commercial fish species that is proved by long-term observations in the Far-Eastern Seas of Russia. That's why monitoring of the eddies movement and development is necessary to promote successful fisheries.

A plenty of eddies, cold intrusions and mushroom dipoles are observed in the southern Okhotsk Sea by means of satellite infrared images. They mostly are anticyclonically oriented and have the spatial size 60-80 miles. Structure and movements of these eddies is considered for the area southward from 52°N on the results of IR images and altimetry data analysis compared with shipborne data obtained in 2007.

A part of eddies were observed all the year round or during several months, but others existed no more than 1 month. The stable eddies formed a chain on the distance 80-120 miles from Kuril Islands that included 6-9 eddies. They had helical structure with a cold center and were connected with Oyashio or coastal upwelling zones by cold streamers. These eddies could be revealed in the fields of geostrophic currents drawn using both shipborne and altimetry data. Vertical distribution of temperature and salinity within the anticyclonic eddies was distinguished by deeper bedding and lower salinity of the cold subsurface layer, whereas within the cyclonic eddies this layer was uplifted. On the other hand, the short-living eddies were poorly revealed from the shipborne data. Mainly they were formed between opposite directed currents due to the velocity shift.

Large-scale circulation of the Okhotsk Sea waters is the main reason of the eddies movement. Most of them had cyclonically-curved tracks.

Cold-water intrusions were formed at Kuril Islands in the zones of northwestward currents between coupled eddies with opposite rotation. They had cold cores well visible on oceanographic sections. In the same way, warm mushroom intrusions were formed in the zone of northeastward current in the northern part of the investigated area.