Geophysical Research Abstracts
Vol. 17, EGU2015-7710, 2015
EGU General Assembly 2015

Interannual to decadal variability of circulation in the northern Japan/East Sea, 1958-2006

Dmitry Stepanov (1), Victoriia Stepanova (1), and Anatoly Gusev (2)

(1) V.I.Il'ichev Pacific Oceanological Institute, Geophysical hydrodynamics, Russia, Russian Federation (step-nov@poi.dvo.ru), (2) Institute of Numerical Mathematics of the RAS, Russia, Russian Federation (anatoly.v.gusev@gmail.com)

We use a numerical ocean model INMOM (Institute of Numerical Mathematics Ocean Model) and atmospheric forcing data extracted from the CORE (Coordinated Ocean Reference Experiments) dataset and reconstruct a circulation in the Japan/East Sea (JES) from 1958 to 2006 and its interannual and decadal variability in the intermediate and abyssal layers in the northern JES. It is founded that the circulation is cyclonic over the course of a climatological year. The circulation increases in spring and decreases in autumn. We analyzes the relative vorticity (RV) averaged over the Japan Basin (JB) and show that the variability is characterized by the interannual oscillations (2.3, 3.7 and 4.7 years) and decadal variability (9.5 and 14.3 years). The spectrum structure of the average RV variability does not change with depth; however, the energy of the decadal oscillations decreases in contrast to that of the interannual oscillations. We analyze monthly anomalies of the wind stress curl and sensible heat flux and reveal that interannual variability (3-4 years) of the circulation over the JB result from 4-year variability of the wind stress curl. In contrast, the decadal variability (period of 9.5 years) of the circulation over the JB is generated by both the wind stress curl and the decadal variability in deep convection.