



## **Studies of Freak Waves in southern Part of Okhotsk Sea**

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Harbors, oil and gas platforms, and some other coastal structures are one of the most valuable facilities in coastal zones onshore and offshore requiring special operative and statistical information in high-precision on different wave regimes. Okhotsk Sea is a very important coastal area for navigation and mining operations in far East. Within last two years, continuous measurements of sea level changes in the Gulf of Aniva are carried out by Special Research Bureau of Automation of Marine Researches of the Russian Academy of Sciences. The results of these measurements can be used for the interpretation of sea dynamics and wave regimes.

Freak waves are one of the special research themes. There are some studies on freak waves in oceans, along the capes and also in some other seas. However, Okhotsk sea has not been analyzed yet in case of the risk of freak waves which threaten the safety of navigation and mining operations along the sea shelf.

The measurements were performed within two years, between 2008 and 2010, which reveals many records of freak waves of which their heights exceed twice the height of normal waves. These records help us to understand the mechanism of freak waves in this region such as the dispersion enhancement of transient wave groups, geometrical focusing in basins of variable depth,

and wave-current interaction. A numerical model study will be performed to understand the physical mechanisms of the freak wave phenomenon and to select areas in Okhotsk sea having the highest or lowest values of the probability of freak waves depending on hydrological and meteorological conditions in the study zone.

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