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APPLICATION OF THE COMPLEX ACOUSTIC SIGNALS FOR A SEA MEDIA VARIATION'S MONITORING IN THE BAYS, CREEKS AND SEA HARBORS

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ABSTRACT

A forward scattering method with three-point connection of acoustic transceivers was applied in investigations carried out by the Cape of Shultz (the Posyet Bay, Sea of Japan) in the period of October 2012 – August 2013. It allowed to obtain the integrated data on temperature and current velocity. Vice versa, the average values of propagation time were converted into sound velocity values according to a snap formula as well as the average values of reverse propagation time difference to calculate current velocity. The average values of current velocity in the whole water layer for one of the lines varied from -10 to 8 centimeters per second, according to data received on 17-19 October 2012. Near bottom layer was characterized by temporal variations with the period of 20 to 60 minutes which could have been caused by internal wave field formed by the current. All the measurements were carried out by the acoustic hardware and software complex in real-time mode. We used composite phase-shift signals based on maximum length sequence as sounding impulses. The reported experiment suggests that the forward scattering method is a promising technique for long-term monitoring method is a powerful technique for the long-term monitoring of integrated data of temperature and current velocity under difficult hydrodynamic conditions and seasonal variations in coastal areas.

Key words: ocean acoustic tomography, reciprocal sounding method, transceivers, complex signals.

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