

A STUDY OF RECEPTION FEATURES OF HYDROACOUSTIC SIGNALS IN CONDITIONS OF NEAR BOTTOM AND UNDER BOTTOM LINE INSTALLATION OF RECEIVER IN THE JAPAN SEA SHELF ZONE

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ABSTRACT

Acoustic equipment is used in tomography for temperature fields monitoring in marine environment. To effectively install sonar signals receivers in sea areas with heavy current and fishery we suggest placing them on the bottom or even bottom embedding thus allowing them to form acoustic field ray structure between corresponding points and to single out, identify and measure pulses propagation time in separate layers of diagnosed waveguide. By data obtained we can compute sound propagation velocity in appropriate layers and water temperature. The method allows to analyze pulse characteristics using pseudorandom signals of M-sequence type and cross correlation processing of transmitted and received signals. The identity of pulse characteristics experimentally obtained with the help of hydrophones placed near the bottom (40 cm above) and into the bottom (40 cm below) enable us to solve the problems of acoustic thermometry and underwater sound communication. The reported method and required equipment were developed in the V.I. Il'ichev Pacific Oceanological Institute, Far Eastern Branch of the Russian Academy of Sciences (POI FEB RAS). The full-scale experiment and numerical modeling results suggest their perspective application in monitoring of dynamics and structure of water environment in shelf zones.

Key words: shallow water acoustic monitoring, pulse signals, experimental studies, propagation time.

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