

THE AUGMENTATION OF HORIZONTAL FIELDS OF SOUND SPEED IN THE SEA OF JAPAN USING SATELLITE DATA

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The accessing of maximal precise values of horizontal and vertical sound speed within marine basins for accurate positioning of unmanned underwater vehicles inside the water column is one of the major tasks for a couple of related fields of marine sciences – underwater acoustics, satellite, and common oceanology. Meanwhile, resolving this task is possible mainly by the indirect way, using the water temperature and salinity data acquired by remote sensing methods and by *in situ* measurements with the consequent modeling and data augmentation. This work presents the algorithm of augmentation of horizontal fields of sound speed with the spatial resolution of about 1 km based on satellite observations in the infrared and visible range together with the data of hydrodynamic modeling in the north-western part of the sea of Japan with the inclusion of the Peter the Great Bay and frontal area of separation of currents system nearby of the Yamato rise. According to the calculation results, impact assessment of temperature and salinity on sound speed has been made for their real values observed within the mentioned region area. Finally, this experiment allows assessing the possible decreasing of an underwater vehicle positioning error due to the co-utilization of mentioned data types. This augmentation method of sound speed is applicable for the wintertime, during the absence of seasonal thermocline.

Keywords: The sea of Japan, satellite data, sound speed fields, sound speed correction, radiometer NOAA AVHRR/3, hydrodynamic model NEMO.

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