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AUTOMATED COMPLEX FOR STUDYING THE OPTICAL AND HYDROLOGICAL CHARACTERISTICS OF THE UPPER LAYER OF THE SEA DURING IN SITU MEASUREMENTS BY THE FLOW METHOD

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An automated complex has been developed for studying the spectral optical characteristics and hydrological characteristics of the upper layer of the sea by the flow method, such as temperature and salinity. Methods for collecting, processing, storing and displaying data in real time are described. The complex was tested in expeditionary conditions during cruise No. 81 of the R/V Professor Gagarinsky in the Sea of Japan in August 2022 and on cruise 52 of the R/V Akademik Boris Petrov in the Atlantic Ocean and in the plume of the Amazon River in October - December 2022. New data on the characteristics of sea water with a high spatial resolution (5-250 m) in the Sea of Japan, the Tatar Strait, the Atlantic Ocean, and in the Amazon plume have been obtained with the help of this method. Some typical features of the spatial distribution are shown. As part of the further modernization of the installation, a method for analyzing methane and the C13 carbon isotope in sea water using optical spectral methods was proposed. The complex can be recommended for conducting in situ exploratory studies of the state of natural water areas and can be used during expeditions on small and large vessels, during coastal expeditions, and in the future, as an autonomous automated complex for point studies of water characteristics in hard-to-reach reservoirs.

Keywords: sea water, spectroscopy, flow system, spark spectrometry, carbon, carbon dioxide

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