

Verification of a satellite observation data on the sea surface temperature

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Abstract

One of the most meaningful parts composing the problems of monitoring and analysis of the natural environment is the process of obtaining and using of the observation data. Currently there is a huge amount of different types of the observing of the condition of the oceans and seas. Satellite data has have reached the leading position among them taking into account the amount of the provided geophysical information. Technological progress and water remote sensing allows us to obtain information about the main characteristics of the water environment (such as temperature, salinity, flow, level, etc.) with high precision, frequency, time, spatial resolution and a huge coverage area. Unfortunately, this information usually presented on sets of irregular points at asynchronous time moments. That is why processing of the observation data is a very significant process, moreover the quality of interpolation often determines the solution accuracy of the problems in oceanography and other Earth sciences.

This work is devoted to the satellite observation data processing in problems of the Earth water system monitoring, analyzing and forecasting. The satellite observation data on the sea surface temperature of the World Ocean and separate seas are considered. The analysis of the data helped to identify some systematic errors in the data. Therefore methods of additional verification of observations are discussed which are based on statistical methods, allowing not only to consider specific data field, but also to establish common features, typical for the entire set of realizations of temperature field. Numerical experiments are carried out on data verification based on the three sigma rule. The results of numerical calculations for verification of satellite data on the sea surface temperature are presented.

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1. V. I. Agoshkov, S.A. Lebedev, E. I. Parmuzin, Numerical solution of the variational assimilation problem using on-line SST data. *Izvestiya, Atmospheric and Oceanic Physics*, 2009. Vol. 38, No. 1. Pp. 1-20.
2. Zalesny V.B., Gusev A.V., Chernobay S.Yu., Aps R., Tamsalu R., Kujala P., Rytönen J. The Baltic Sea circulation modelling and assessment of marine pollution, *Russ. J. Numer. Analysis and Math. Modelling*, 2014, V 29, No. 2, pp. 129–138.
3. N. B. Zakharova, V. I. Agoshkov, E. I. Parmuzin A new interpolation method for observation data obtained from ARGO buoys system. *Russian Journal of Numerical Analysis and Mathematical Modelling*. 2013. Volume 28, Issue 1, Pp. 67–84.
4. Agoshkov V.I., Parmuzin E.I., Zakharova N.B., Zalesny V.B., Shutyaev V.P., Gusev A.V. Variational assimilation of observation data in the mathematical model of the Baltic Sea dynamics // *Russ. J. Numer. Anal. Math. Modelling*, 2015, V. 30, No. 4, PP. 203–212.