

Determination of the atmosphere and ocean physical parameters by variational assimilation of satellite measurements in IR-region.

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For the successful study of the state and development of climatic system it is necessary to have enough quite computation-informative technologies. Such technologies must include the observation for the state of the climatic system on the large area-times scale. It is possible only by using satellite systems. In this connection it is necessary to improve the methods of processing and interpretation of the satellite information. In this paper the method of simultaneous determination of vertical profiles of temperature and humidity in atmosphere over the sea surface, sea surface temperature and near surface velocity of wind by spectra-angle satellite measurements in IR-region of spectrum is proposed. The method assumes to account of the basis physical factors determining the transformation IR-radiation in the "ocean-atmosphere" system. For decreasing dimension of inverse problem, vertical profile temperature and humidity were parameterized as Fourier row of empirical orthogonal function. Emissivity of sea surface at given long wave and angle was parameterized as function of near surface velocity of wind. It gives the possibility to set us a problem to determinate the near surface velocity of wind. The inverse problem is solved by method of varitional assimilation of observation data. Results of numerical experiments are represented. At first the functionals measured by satellite were modeling with accidental error of radiation temperature 0.1K, than the inverse problem was solved. It was showed that method allowed to restore the profiles of temperature and specific humidity of atmosphere, and also the sea surface temperature and near surface velocity of wind with accuracy accordingly 1.5K; 0.33g/kg; 0.56K; 0.5m/sec. The method can be used on the modern satellite system.

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