Geophysical Research Abstracts
Vol. 13, EGU2011-896, 2011
EGU General Assembly 2011

The full-scale investigations of the action of internal waves and inhomogeneous flows on the wind waves in the White Sea

Victor Bakhanov (1), Nikolai Bogatov (1), Aleksei Ermoshkin (1), Vadim Lobanov (1), Olga Kemarskaya (1), Irina Repina (2), and Victor Titov (1)

(1) Institute of Applied Physics, RAS, Hydrophysics and Hydroacoustics, Nizhny Novgorod, Russian Federation (BAKH@HYDRO.APPL.SCI-NNOV.RU, +7 831 4365976), (2) Obukhov Instituteof Atmospheric Physics RAS, Moscow, Russia

The full-scale investigations of the action of internal waves and inhomogeneous flows on the wind waves and the near-water layer of the atmosphere were carried out in the White Sea in 2009 - 2010 yr.
Measurements were carried out from onboard of the scientific research vessel “Ekolog” (Institute of Northen Water Problems Karelian Research Centre of RAS). Depth finder Humminbird 798c was used for registering the bottom relief. Internal waves characteristics were determined by the shift of the sound-scattering layers, recorded by depth finder, and according to the data of ADCP WHS300Khz (RD Instruments). The characteristics of heterogeneous flows at the depths from 10 to 100 m were recorded by ADCP. The characteristics of surface wave in the wide frequency range were recorded: by digital radar measuring complex on the base of the ship radar Icom MR-1000, wavelength is 3.2 cm; by 3 cm scatterometer; by 8 mm scatterometer; by the two-dimensional optical spectral analyzer; by CCD rules. The parameters of the near-water layer of the atmosphere were recorded by the acoustic anemometer HS-50 (Gill Instrument) and by the ship meteorological station Furuno.
Hydrometeorological conditions during observations varied essentially. Wind speed varied from 0 to 15 m/s, speed of current from 0 to 1 m/s.
Data about the field of flow during different phases of tide are received. Internal waves and their manifestations on the sea surface are registered. The special features of the flow of the powerful tidal current (to 1 m/s) around the secluded underwater elevation and the spatial structure of surface anomalies in the field of these two-dimensional-heterogeneous flows are analyzed. Data about a change in the characteristics of reflected from the sea surface radar signal in process of development of wind waves are received. Experiments on procedure finalizing of the determination of sub-surface flow speed according to the numerical data of radar measuring complex on the base of ship radar Icom MR-1000 are carried out.
This work was supported by the grant RFBR 08-05-00195, 07-05-00565, 07-05-12011, 07-05-10106, and 08-05-10047.