



AIR-ICE INTERACTION OBSERVATIONS IN LAPTEV SEA DURING NABOS-2004

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There are many methods reliable enough to determine the components of the energy balance for an old ice cover. However, over the areas of young thin ice and especially over open water areas in polynyas and leads, the conditions of heat exchange change: all the components of heat balance increase rapidly, and the turbulent heat flux changes its sign. Till now there are no reliable parameterizations of these processes. It is even more difficult to parameterize cases of non-uniform ice fields. In NABOS project, according to the program of researches, the group IAPh RAS carried out the following tasks: - Research of energy exchange of an atmosphere and surface (open water, ice) by measurements of turbulent heat and momentum fluxes in subsurface layer of atmosphere. - The determination of coefficient for parametric methods of calculating turbulent fluxes. During expedition the group carried out the following kinds of observations and researches: Direct measurements of temperature, horizontal and vertical component of wind speed and humidity fluctuations above surfaces of a various type (open water, ice of various structure and age, polynya). The data are used for determinations of heat and momentum fluxes, as well as roughness parameter of a surface. The measurements were carried out both during a course of a vessel, and at ice stations; measurement of spatial distribution of surface temperature in IR-range. In direct method the heat and momentum fluxes are determined from direct measurements of fluctuations in horizontal and vertical wind speed component and in the temperature. The fluxes are calculated from their covariations. Measurements of the atmospheric turbulence characteristics directly from ice, in the absence of the ship effect and vibration, allow to receive more accurate results, especially at small values of turbulent fluxes. The measurements from a board were carried out on all route of the icebreaker. Based on the measurement data the fluxes of both sensible heat and momentum and surface roughness parameter were calculated. During measurements, basically, weak -

stable, weak - unstable and neutral stratifications were observed. The strong - unstable stratification was present at the sites of open water under sensors. The greatest value disorder of atmosphere stability parameter is possible at small speeds of wind At large speeds the neutral stratifications were observed, basically. The work was supported by RFBR (grant 8470; 02-05-64385)