

- **GC31B-1180: The Turbulent Structure of the Atmospheric Boundary Layer over Small Northern Lakes**

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Wetland and freshwater ecosystems of the Northern Europe are an important natural source of atmospheric methane. Adequate calculation of gas emission from the northern territories requires calculation of balances of heat, moisture, and gases at the surface of water bodies on the sub-grid scale in the climate models. We carried out measurements in North Karelia on the lake Verkhneye (White Sea Biological Station of Moscow State University). The purpose of the study is evaluation of turbulent transport in the system “lake water– near-surface air – surrounding forest” in the winter season. We used an array of acoustic anemometers mounted at different distances from the lake shore. Measurements were taken at two heights in the center of the lake. It was revealed that the intensity of the turbulent transfer essentially depends on the height and location of sensors, and the wind direction. Stratification in the near-to-surface air probably does not play significant role. Besides, there is no constant-flux layer. The later makes Monin and Obukhov similarity theory (which is used in most of the parameterizations for calculating turbulent flows) inapplicable in this case. The work was sponsored by RFBR 14-05-91752, 14-05-91764, 15-35-20958.