



The distribution of atmospheric black carbon in marine boundary layer over the seas of the western part of the Russian Arctic in September – October 2011

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Black carbon (BC) is the most efficient atmospheric particulate species at absorbing visible light, it could have the large potential impact on Arctic climate. The data on the distribution of the BC in atmosphere over the seas of the Russian Arctic are scarce. New data are presented in this work.

The distribution of black carbon in the atmosphere in marine boundary layer in the White, Barents and Kara seas has been measured from September 12 to October 7, 2011 during the 59-th cruise of the RV "Akademik Mstislav Keldysh". The method of aethalometry was used. Backwards trajectories of air masses were calculated using NOAA HYSPLIT model (<http://www.arl.noaa.gov/ready.html>).

The highest values of BC concentrations were recorded near port of Arkhangelsk (600–830 ng/cub.m). In the background areas the BC concentrations varied from 10 to 470 ng/cub.m (120 ng/cub.m in average, standard deviation is 110 ng/cub.m, n=45 measurements). These values are at the level of background values for the Russian Arctic seas. The lowest values were recorded after rains and when air masses came from the Central Arctic. Relatively high BC concentrations in the Kara Sea were in air masses arrived from the NW Siberia and in the Barents Sea in air masses arrived from the Arkhangelsk industrial area.

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