



Aerosol observations over the Bellingshausen Sea

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Few direct observations have been made of aerosol number density within the boundary layer over the ocean and sea ice at high southern latitudes. The aerosols are assumed to have a surface source (from the open ocean or the sea ice) and are important as a source of cloud nuclei for high latitude clouds.

During December 2017 a series of observations were made of aerosols within the boundary layer over the Bellingshausen Sea. These observations were made using a DMT Cloud and Aerosol Spectrometer (CAS) installed on the British Antarctic Survey's instrumented twin otter based at the Rothera Research station (67°35'8"S, 68°7'59"W). The observations were made over a variety of surface conditions (open water, sea ice and polynyas) and weather conditions.

The observations show that the number density of aerosols greater than 0.5 micron in the boundary layer varies according to the underlying surface and the weather conditions. In particular as the fetch over open water increases so does the aerosol number density and these observations make it possible in some cases to calculate the flux of aerosols from the ocean into the boundary layer.