

Contribution submission to the conference Hamburg 2009

Sea ice and frost flowers as sources of sea salt aerosols — ●X. TIAN-KUNZE¹, L. KALESCHKE¹, R. WELLER², G. KÖNIG-LANGLO², D. WAGENBACH³, S. RAST⁴, G. SANTOS⁴, A. RICHTER⁵, and M. BEGOIN⁵
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Sea ice has been considered to be an important source of sea salt aerosols due to the strong sulfate depletion which is observed both in sea salt aerosols and frost flowers which grow on new sea ice. This brought a change in the interpretation of ice core data. Also sea salt aerosols have significant influence on the tropospheric chemistry via the release of reactive gas-phase halogens. Based on the long-term measurement data of aerosol from Neumayer station, Antarctica, backward trajectories and satellite derived ice concentration data, we investigate the physical processes and the parameters which influence the production of sea salt aerosols over sea ice. Trajectories were calculated on the surface layer based on the long-term global atmospheric reanalysis data from Japanese Meteorological Agency (JRA-25). Along each trajectory a contact time of an air parcel over a certain surface type (sea ice, potential frost flowers(PFF) and open water) is calculated. Measured sodium in aerosol at Neumayer station has similar seasonal cycle as the contact time of trajectories with PFF which is an indirect implication that PFFs are an important source of sea salt aerosols.

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