

AWI's Model and experimental activity related to sea ice and BC in atmosphere and snow"

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Black carbon aerosol (BC) is considered among the strongest contributors of atmospheric warming in the Arctic region. During the last years, the sea ice physics group has been producing a remarkable effort in order to investigate the presence of black carbon aerosol (BC) in the Arctic region. Such research topic will be further developed in the future by means of the measuring campaign within the international drifting experiment MOSAIC, which will be briefly presented, and by the implementation of modelling activity. Airborne surveys allow to quantify the atmospheric distribution of BC in the atmosphere and its interaction with clouds, while the presence of BC in snow and its variability due to snow metamorphism is investigated by in-situ snow sampling, both over land and sea-ice. The goal of AWI's activity, as one of the topic of the presentation, is to understand the processes regulating the cycle of BC in the Arctic, from atmospheric transport to deposition on snow. Beside the field observations, a survey of modelling activities performed in the sea ice section of AWI regarding the Arctic will be presented as second topic with a focus on the linkage of these activities to the climate dynamics section performing climate simulations with the AWI-CM (AWI climate model). Also the long-term perspectives of the snow impurity modeling via the implementation into the AWI-CM will be outlined. Based on this back-ground we started a new project (PhD theme) together with Meteo France/CNRS, CEN Grenoble with the following topic: The impact of light absorbing impurities on the radiative budget over sea ice and snow.