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Applicability of the Semi Analytical CloUd Retrieval Algorithm (SACURA) over the Arctic

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Abstract

In the context of Arctic Amplification the role of clouds is in particular unclear and the research community needs a trustworthy data basis to tackle the quantification of cloud feedbacks and impacts. Here, retrievals from passive satellite remote sensing can give the spatial and temporal coverage needed. The Semi-Analytical CloUd Retrieval Algorithm (SACURA) was developed at the Institute of Environmental Physics of Bremen (IUP) and is a promising candidate to create long-term cloud parameter data sets. It is based on asymptotic equations of the radiative transfer theory [Kokhanovsky et al., 2003] and capable to retrieve Cloud Optical Thickness (COT), Cloud Spherical Albedo (CA) as well as Cloud Top and Cloud Bottom Height (CTH, CBH) from Top Of Atmosphere Reflectances (RTOA) measured around the oxygen-A band (758-772nm). Globally, the algorithm has already been successful applied and validated (see e.g. Lelli, 2013) but for the special case of Arctic conditions, which are very unique and come with many difficulties, the reliability of retrievals remains unknown. Therefore, a closer look and the comparison of Arctic SACURA retrievals to independent measurements is necessary to find the algorithm's strengths and weaknesses and to judge under which conditions its retrievals are valid. In this talk, SACURA will be presented together with preliminary results of its performance within the Arctic.