

Anmeldung eines Themas für eine Bachelorarbeit

Thema	Properties and radiative effects of multi-layer Arctic clouds based on shipborne and satellite observations
Datum	7.Jan.2022
Betreuer/In - Erstgutachter/In (mit Kontaktdaten)	Prof. Dr. Andreas Macke, TROPOS E-Mail: deneke@tropos.de Telefon: 0341-2717-7060
Kontaktperson	Carola Barrientos Velasco, TROPOS E-mail: barrientos@tropos.de Phone: +49 341 2717-7366
Zweitgutachter/In	Dr. Hartwig Deneke, TROPOS E-Mail: deneke@tropos.de Telefon: 0341-2717-7168
Kurzbeschreibung:	<p>Multilayer clouds are frequently observed in the Arctic throughout the entire year. Despite their frequent occurrence, their radiative effects at the surface and top-of-atmosphere (TOA) are still poorly known. Therefore, this work aims at improving our understanding of multilayer clouds and their radiative effects. The work consists of intercomparing and analysing existing collocated shipborne and satellite products for multilayer cloud situation. The following research questions shall be investigated:</p> <ul style="list-style-type: none">• What are typical macro- and micro-physical properties of multilayer clouds? How similar are shipborne and passive satellite observations?• How important are the cloud boundaries of multilayer clouds for their radiative effect?• What role do surface conditions and solar zenith angle play for the radiative effect of multilayer clouds? <p>Datasets are available for the research cruise PS106 and can be extended to cover the MOSAiC expedition.</p>
Literatur:	Luo, Y., Xu, K.-M., Morrison, H., McFarquhar, G. M., Wang, Z., and Zhang, G. (2008), Multi-layer Arctic mixed-phase clouds simulated by a cloud-resolving model: Comparison with ARM observations and sensitivity experiments, <i>J. Geophys. Res.</i> , 113, D12208, doi: 10.1029/2007JD009563 .