


Announcement of a topic for:

Seminar Research (X)
Seminar Methods (X)
Master Theses X (please mark one or more)

Topic	Characterization of the atmosphere above Antarctica by means of ground-based remote sensing
Release Date	
Official Supervisor	Prof. Dr. Andreas Macke (macke@tropos.de)
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Description:	<p>The Antarctic continent and its surrounding Southern Ocean are key components of the global climate system. In the framework of the field experiment, continuous Observations of Aerosol-Cloud-Interaction in Antarctica (COALA), novel observations of aerosol and clouds by means of ground-based remote sensing have been performed by TROPOS in Antarctica at the German Neumayer Station III (70.67°S, 8.27°W) from January to December 2023. The deployment of the OCEANET-Atmosphere remote-sensing observatory covers the full ACTRIS aerosol and cloud profiling capabilities additionally to meteorological, radiation, and air chemistry in-situ observations at the Antarctic station.</p> <p>The master thesis shall focus on microphysical properties of (shallow) mixed-phase clouds retrieved from lidar and radar synergy. Depending on the student's interest, the topic can be developed towards, e.g., characterizing the aerosol properties relevant for cloud formation or intercomparison with reanalysis datasets among other possibilities including sensor synergy</p> 
Literature:	<ul style="list-style-type: none"> Adhikari, L., et al., 2012: Seasonal variations of Antarctic clouds observed by CloudSat and CALIPSO satellites. <i>Journal of Geophysical Research: Atmospheres</i>, https://doi.org/10.1029/2011JD016719. Gorodetskaya, I. V., et al. 2020: Atmospheric River Signatures in Radiosonde Profiles and Reanalyses at the Dronning Maud Land Coast, East Antarctica. <i>Advances in Atmospheric Sciences</i>, https://doi.org/10.1007/617s00376-020-9221-8. Listowski, C., et al. 2019: Antarctic clouds, supercooled liquidwater and mixed phase, investigated with DARDAR: geographical and seasonal variations. <i>Atmospheric Chemistry and Physics</i>, 19 (10), 6771–6808, https://doi.org/10.5194/acp-19-6771-2019. Radenz, M., et al. 2024: Ground-Based Remote Sensing of Aerosol, Clouds, Dynamics, and Precipitation in Antarctica: First Results from the 1-Year COALA Campaign at Neumayer Station III in 2023. <i>BAMS</i>, https://doi.org/10.1175/BAMS-D-22-0285.1