Anmeldung eines Themas für ein/e

Forschungsseminar	**x**	
Methodenseminar	**x**	
Masterarbeit	**x**	(bitte eines oder mehrere ankreuzen)

Thema Datum	Profile intercomparison of CCN datasets retrieved from ground-based lidars, aerosol model reanalysis and spaceborne lidar. 16. September 2024
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Kurzbeschreibung:	Vertical profiles of microphysical and cloud-relevant aerosol properties such as cloud condensation nuclei (CCN) concentration can be estimated using polarization lidar techniques (e.g., Mamouri and Ansmann, 2016). Global CCN datasets retrieved from the spaceborne lidar CALIPSO-CALIOP (Choudhury and Tesche, 2022; 2023) and the aerosol model reanalysis CAMS (Block et al., 2024), which became available recently and are already used for comparison studies (e.g., Choudhury et al., 2024), can be intercompared with retrievals from PollyNET (Baars et al., 2016), a network of ground-based PollyXT polarization Raman lidars (Engelmann et al., 2016), at multiple, contrasting stations like Germany, Cabo Verde, Cyprus, and Tajikistan. Identifying similarities and differences between the ground-based and spaceborne-lidar-derived CCN datasets may improve the underlying retrieval methods and ultimately the understanding and quantification of aerosol-cloud-interaction.
Literatur:	-Baars, H. et al.: An overview of the first decade of PollyNET: an emerging network of automated Raman-polarization lidars for continuous aerosol profiling, Atmos. Chem. Phys., 16, 5111–5137, https://doi.org/10.5194/acp-16-5111-2016, 2016. -Block, K. et al.: Cloud condensation nuclei concentrations derived from the CAMS reanalysis, Earth Syst. Sci. Data, 16, 443–470, https://doi.org/10.5194/essd-16-443-2024, 2024. -Choudhury, G. and Tesche, M.: Estimating cloud condensation nuclei concentrations from CALIPSO lidar measurements, Atmos. Meas. Tech., 15, 639–654, https://doi.org/10.5194/amt-15-639-2022, 2022. -Choudhury, G. and Tesche, M.: A first global height-resolved cloud condensation nuclei data set derived from spaceborne lidar measurements, Earth Syst. Sci. Data, 15, 3747–3760, https://doi.org/10.5194/essd-15-3747-2023, 2023. -Choudhury, G. et al.: Pristine oceans control the uncertainty in aerosol–cloud interactions, EGUsphere [preprint], https://doi.org/10.5194/egusphere-2024-1863, 2024. -Engelmann, R. et al.: The automated multiwavelength Raman polarization and water-vapor lidar PollyXT: the neXT generation, Atmos. Meas. Tech., 9, 1767–1784, https://doi.org/10.5194/amt-9-1767-2016, 2016. -Mamouri, R.-E. and Ansmann, A.: Potential of polarization lidar to provide profiles of CCN- and INP-relevant aerosol parameters, Atmos. Chem. Phys., 16, 5905–5931, https://doi.org/10.5194/acp-16-5905-2016, 2016.