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Tailoring satellite retrievals towards assessment of clouds and aerosol-cloud interactions

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Abstract

Clouds play a key role in understanding and quantifying global climate change. This is especially due to their role in climate forcing (via aerosol-cloud interactions) and in climate feedbacks. Satellite observations are essential to assess relevant processes on an observational basis, and to constrain climate models. However, standard satellite retrievals often to not match the scientific needs. The talk will present the need, and propose and discuss approaches, to derive the cloud particle number concentrations. This will assess firstly the liquid droplet concentration, but also new approaches for the ice crystal concentration. Further, ideas to retrieve cloud-base height are proposed. Finally, some comparisons of clouds in climate models with data, applying satellite simulators, will be shown with a focus on the Arctic.