



## Remote sensing of aerosols near clouds

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Aerosol measurements in the vicinity of clouds play a crucial role in understanding aerosol-cloud interactions and assessing aerosol radiative effects. Such measurements indicate that clouds are surrounded by a wide transition zone between cloudy and clear air, in which aerosol optical properties and particle size change systematically. The interpretation of satellite aerosol observations in the transition zone is challenging because of issues such as cloud contamination and cloud adjacency effects. The transition zone also complicates estimates of aerosol radiative forcing – excluding aerosols near clouds dramatically reduces the data volume and also underestimates the forcing, while including them may overestimate it.

In this presentation, we will report on the results of a statistical analysis of co-located MODIS and CALIOP aerosol observations near clouds supplemented with theoretical simulations. In addition to the 10 km resolution MODIS atmospheric aerosol product, we will also analyze high-resolution (1 km) aerosol properties provided by MODIS ocean color product. Finally, the radiative impact of near-cloud changes caused by aerosol particles and undetected cloud droplets will be discussed.