

Leipziger Meteorologisches Kolloquium

Donnerstag, 02.02.2023, 14.00 Uhr, TROPOS, Seminarraum, Geb. 23.1 und
Online <https://eu02web.zoom.us/j/63685559967?pwd=REl2ZUNrQzNvUEFqeWk0MWFXTUFhUT09>

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Deserts, Volcanoes and the Atmosphere: lessons learned from the recent events

Desert dust outbreaks and volcanic eruptions are major sources of atmospheric aerosols with well-known impacts on weather, solar energy, air quality, aviation safety and climate. The atmospheric life cycle and impacts of these aerosols depend on complex (micro-)physical and chemical processes that occur at various scales. This makes such events unique natural experiments for seamless atmospheric modeling.

In this seminar, I discuss the recent developments in the model system ICON-ART (ICOsahedral Nonhydrostatic model with Aerosols and Reactive Trace gases) with respect to the detailed treatment of emissions, chemistry, aerosol dynamics and aerosol-radiation-cloud interactions from large eddy to global scale. As case studies, I focus on the Saharan dust outbreaks in March 2021/2022 and the Raikoke eruption in Kuril Islands in June 2019. The results show that the ability of the model to simulate cross-scale interactions determines its success or failure in reproducing certain observations like dusty-cirrus and self-lofting volcanic clouds. I conclude with the implications for seamless atmospheric modeling.