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Impact of Asian dust on dryland ecosystems

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Mineral dust aerosol affects the surface radiative balance and photosynthetic active radiation (PAR), and consequently influence the biogeochemical and water cycles in terrestrial ecosystems. In addition, dust particles can be harmful to the vegetation through deposition. In this study, we examine the impact of dust aerosol on the functioning of dryland ecosystems in Central and East Asia by considering the regional specifics of the dust properties, vegetation cover, and spectral surface albedo.

Modeling assessments with the coupled dust modeling system WRF-DuMo were performed in conjunction with satellite multi-sensor data, including aerosol products from the CALIPSO space lidar, and aerosol and land products from MODIS (Moderate Resolution Imaging Spectroradiometer). In addition using data from CERES (Clouds and Earth Radiant Energy System) and MODIS, a statistical correlation analysis was performed to constrain the impact of dust on the regional scale. The results of the study will be presented with the focus on implications for dryland ecosystems.