

Cloud properties shaped by wind pollinated plants

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In this talk I will give an introduction to the biology of pollen and explore the potential of subpollen particles to act as cloud condensation nuclei and ice nucleating particles. Pollen are a subset of bioaerosols such as viruses, bacteria, algae, spores, plant debris, and are an ubiquitous contribution to the atmospheric aerosol. Pollen are essential to the reproduction of plants and are spread in the atmosphere during the flowering season of plants extending from January to October. Anemophilous plants produce pollen in extremely large quantities and rely on dispersal by wind for pollination. The ability of pollen grains to induce cloud droplet formation has been known since years. However, due to their large sizes (10-100 μm) causing fast deposition their effect on clouds was assumed to be negligible. Only in recent years evidence was found that not the entire pollen grain is needed for cloud droplet activation, but macromolecules that can be washed off the pollen grains' surfaces are sufficient. We explore in-depth subpollen particles of different pollen species and characterize them physically and chemically. We conclude that subpollen particles could be vectors for dispersal of ice nucleation active macromolecules.