



Ageing of organic aerosol and its impact on cloud properties

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Organic matter is one of the dominating compounds characterising the chemical composition of the atmospheric aerosol, especially in the fine mode. However, in global climate models the chemical properties of organic aerosols are usually only roughly included, even though they are important for the potential activation characteristics contributing efficiently to the cloud condensation nuclei due to their large numbers. Especially the ageing of organic aerosol, and its related increase in hygroscopicity and therefore increased CCN potential is usually neglected.

In this study we present model simulation results, in which the chemical ageing of organic aerosol is explicitly calculated and its effects on aerosol activation due to altered hygroscopicity and on cloud properties, using a two moment cloud microphysics scheme, are considered.

We analyse both the global effects of aged organic matter on clouds and their contribution for global climate impacts, but also identify special regions in which the organic fraction dominates the aerosol composition, and therefore are characterised more by the regional impact.