



## **What are the determinants of the diurnal cycle of cloud properties?**

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This study aims at untangling the influence of aerosols and meteorological factors on the diurnal cycle of cloud parameters based on a regional analysis of polar orbiting, geostationary satellite and reanalysis data.

Aerosols affect the life time of clouds by changing their microphysical properties and dynamics dependent on the meteorological regime. In these systems, cloud properties change over time periods of hours and are highly variable spatially. Contributing to uncertainties of the Earth's radiation budget, the investigation of the aerosol-cloud-meteorology system from a regional perspective and on a daily basis is an important aspect of climate system research.

In order to clarify to what extent cloud properties and their diurnal cycles are a result of cloud feedbacks to aerosols or meteorological conditions, multivariate statistics, in particular artificial neural networks, are used. Daily aerosol property data (MODIS) and meteorological parameters (ERA-Interim reanalysis) are used as input parameters and are related through a model to the observed output, i.e. diurnal cycles of cloud parameters (SEVIRI). Once the network is trained, the relevance of influencing factors for the diurnal cycle of cloud parameters is determined by sensitivity analysis.