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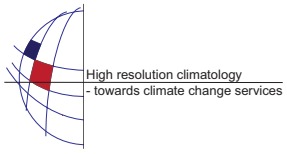

On the importance of anthropogenic and biogenic aerosols for the regional water budget in semiarid areas

W. Junkermann

KIT, IMK-IFU, Garmisch-Partenkirchen, Germany (wolfgang.junkermann@kit.edu)

Aerosols and their interactions within the climate system are among the main uncertainties in the level of understanding of regional and global climate change. This is due to the large variety of aerosol types, sizes chemical composition and three dimensional distribution and the missing knowledg on future trends under climate change. Average values from aerosol climatoligies are often not sufficient to describe aerosol effects properly. Besides the direct impact on the radiation budget of aeroosls large than $\sim$ 250 nm one of the main climate effects is the interaction with clouds by smaller size ($\sim$ 50 - 100 nm) Cloud Condensation Nuclei (CCN). Enhancement of CCN can lead to a significant reduction in precipitation and modifies the water budget at least on a regional scale. The experimental verification of model results is a challenging task for future aerosol research and is worldwide limited to a few well characterized areas. CCN are normally too small to be detected by remote sensing techniques and require other approaches like airborne measurements or extended networks of ground stations.
Within the presentation some selected locations with suitable boundary conditions will be presented that might be sufficiently well defined for such verification experiments. First results on ultrafine aerosol production, their biogenic and anthropogenic sources, subsequent production of CCN and trends in precipitation from these reference areas will be presented with a special focus on semiarid or mediterranean climate and the requirements for such experimental investigations will be discussed.