

## **Influence of cloud processing on CCN activation behaviour in the Thuringian Forest, Germany during HCCT-2010**

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Within the framework of the international cloud experiment "Hill Cap Cloud Thuringia 2010" (HCCT-2010), the influence of cloud processing on the activation properties of ambient aerosol particles was investigated. Particles were probed up- and downwind of an orographic cap cloud on Mt. Schmücke, which is part of a large mountain ridge in Thuringia, Germany. The activation properties of the particles were investigated by means of size-segregated Cloud Condensation Nuclei (CCN) measurements at 3 to 4 different supersaturations. The observed CCN spectra together with the total particle spectra were used to calculate the hygroscopicity parameter  $\kappa$  for the up- and the downwind stations. The up- and downwind critical diameters and  $\kappa$  values were then compared for defined Cloud Events and Non Cloud Events. Cloud processing was found to significantly increase the hygroscopicity of the aerosol particles, with an average increase in  $\kappa$  of 50%. Mass spectrometry analysis and isotopic analysis of the particles show that the observed increase in hygroscopicity of the cloud-processed particles is due to an enrichment of nitrate and sulfate in the particle phase.

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