Title:	Influence of cloud processing on CCN activation behaviour in the Thuringian Forest, Germany during HCCT-2010
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Abstract:	Within the framework of the "Hill Cap Cloud Thuringia 2010" (HCCT-2010) international cloud experiment, the influence of cloud processing on the activation properties of ambient aerosol particles was investigated. Particles were probed upwind 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 κ for the upwind and downwind stations. The upwind and downwind critical diameters and κ values were then compared for defined cloud events (FCE) and non-cloud events (NCE). Cloud processing was found to increase the hygroscopicity of the aerosol particles significantly, with an average increase in κ of 50%. Mass spectrometry analysis and isotopic analysis of the particles suggest that the observed increase in the hygroscopicity of the cloud-processed particles is due to an enrichment of sulfate and possibly also nitrate in the particle phase.
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