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Investigation of the process chain leading to the development of convection during COP IOP 4b

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The COPS IOP 4b took place from June 20th to June 21st 2007. It was characterized by widespread convection in the COPS domain. The development was steered by a strong low pressure system southwest of the British Isles. On its eastern side warm and moist subtropical air was directed to central Europe. First convection was triggered over the Vosges Mountains around noon on the 20th of June long before the front approached the COPS region. After a calm early afternoon, severe convection was triggered in wide regions of the COPS region in the evening and moved eastwards to Bavaria during the night to the 21st of June. In contrast to other IOPs, the situation was not captured correctly by most of the involved prediction models, no matter whether they were operated with or without sophisticated data assimilation.

Aim of this presentation is to unravel the mechanisms responsible for the triggering of convection and to understand the processes preparing the atmosphere for the development of severe convection during the afternoon and night.

For this purpose, many different data sets will be investigated ranging from the high resolution Vienna Enhanced Resolution Analysis (VERA), high resolution radar and satellite images and composites to soundings and data as well as retrieved products from the instruments at the COPS supersites.

First impression is that the complicated low-level wind field is the major driver for the preparation of the atmosphere and therefore for the development of convection during the day. The inaccuracies in representing the low level wind field are also expected to be the major reason for the failure of the models to correctly predict the situation.