



Experiments with Kain-Fritsch Convective Parameterization Scheme: a Case Study and Model Sensitivity Analysis

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A convective weather situation over the Baltic States on 16 July 2003 where the NWP model had problems predicting the convective precipitation event is used to investigate the features of the convective scheme. HIRLAM version 5.1.4, Kain-Fritsch convective parameterization scheme was used to test model sensitivity to different parameters which can have crucial impact on predictability of such local phenomenon. A couple of sensitivity studies such as deep convection triggering, effect of downdrafts on precipitation, various fall-out rates and cloud effect on radiation are carried out.

The role of the different triggers in this case is investigated and it is shown that the temperature perturbations due to variations in the vertical wind were of major importance for deep convection to be triggered. While other results shows importance of the downdrafts to assist more water to be present in the convective layers. One also should be aware of nonlinear feedbacks that can substantially alter the results of entire model simulation.