Model resolution issues in a coupled RCM/HM system

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We investigate the influence of model resolution on the reproduction of observed river discharge when coupling
a regional climate model (RCM) and a distributed hydrology model (HM) within a driving-based coupled model
system. It applies the OpenPALM model coupler and involves the COSMO-CLM (CCLM) regional climate
model model version 5 and the distributed hydrology model WaSiM-ETH version 9. Both models apply MPI
and OpenMP based parallel codes. The coupled system is implemented for the complex terrain catchment of the
Ammer River (600 km2) located in the Ammergau Alps in Southern Germany. WaSiM model runs on a 100m grid
in UTM projection and CCLM data input that are received every full model hour are interpolated on to this grid
by the IDW method. CCLM runs on rotated coordinates and our investigated simulation runs apply 0.11 degree,
0.03 degree and 0.01 degree grids.

Our contribution addresses general issues of hydrological simulations driven with biased NWP/RCM data input.
Then it presents the coupled model system, its advantages and limitations, and the evaluation of the obtained
results in comparison with measurements from river gauges and heat flux stations (by Eddy Covariance stations)
operated within the long term TERENO preAlpine observatory. Special attention is given to the investigation of
periods with extremely high river flows.