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Evaporation over a heterogeneous land surface: The EVA-GRIPS project

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The project EVA-GRIPS (evaporation over grid and pixel scale) is part of the current Climate Research Programme (DEKLIM) of the German Federal Ministry of Research and Education. EVA-GRIPS aims at testing and implementing concepts for the description of area-averaged turbulent fluxes into land surface schemes. The spatial scale considered in EVA-GRIPS corresponds to the grid scale of a regional atmospheric NWP or climate model and to the pixel scale of satellite images. Through a combination of near-surface and boundary layer observations, the analysis of satellite data and numerical simulations area averaged surface fluxes will be estimated independently and compared and will finally result in validated parameterization schemes.

The activities focus on an area of roughly 20 x 20 km2 around the Meteorological Observatory in Lindenberg close to the city of Berlin. The continuous measurement program of the observartory as a CEOP reference site formed the basis for a major field experiment in May and June 2003. Energy and water vapour fluxes at different scales were determined from a combination of ground-based in-situ and remote sensing instruments as well as airborne probes.

Focus of the modelling activities lies on the objective calibration of three land-surface schemes for all different vegetation types and for the composite of water and energy fluxes representing the whole experimental area. The simulation of the turbulent fluxes using effective parameters, the tile and the mosaic approach is compared to the observations and to results from a routine weather forecast model.

An overview of the EVA-GRIPS project will be given and results from the field experiment and modelling activities will be presented.