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Evaluation of the MESCAN near surface high resolution meteorological analysis with the land surface model surfex : preliminary results

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In the framework of the EURO4M project, a high-resolution near surface atmospheric reanalysis at 5.5 km is performed over Europe between 2007 and 2010. This work is done with MESCAN which has been built from two preexisting analysis systems (MESAN from SMHI and CANARI from Météo-France). The background comes from a 22 km atmospheric reanalysis by HIRLAM model, downscaled at 5.5km grid. High resolution observations were used by MESCAN where available. MESCAN produces the near surface variables (T2m, RH2m, and precipitation) whereas the fluxes to force land surface models are provided by the forecasting model. To validate this reanalysis with independent observations, the MESCAN outputs are used to force the surface scheme SURFEX over Europe. The MESCAN-SURFEX coupling provides a set of surface variables (latent and sensible heat fluxes, snow depth, soil temperature and soil moisture) that can be compared to observations. The MESCAN-SURFEX simulated heat fluxes are compared locally to in situ observations from some stations in Europe. Comparisons between the simulated snow depths and the in situ observations of the SYNOPS network are also performed. Simulated soil moisture time series are also assessed at a local scale using in situ observations or at a regional scale using remote sensing products. Finally a coupling between MESCAN-SURFEX and MODCOU allows for a comparison of simulated and observed discharges for 400 stations over France.