



Supplement of

Improving soil moisture and runoff simulations at 3 km over Europe using land surface data assimilation

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Figure S1: Comparison of monthly GRDC discharge data with E-RUN runoff product for the Oder, Vienne, Moselle and Danube river basins. The non-routed runoff rates (mm/day) from the E-RUN data were converted to flow volumes by first aggregating the data for each grid cell within basin and then multiplying with the drainage area.



Figure S2: Zonal averaged ensemble spread for perturbed % sand and % clay. The black color represents deterministic % sand and % clay distribution.



Figure S3: Spatially-averaged ensemble spread for perturbed precipitation for years 2000 – 2006. The black color represents deterministic precipitation.



Figure S4: Spatially averaged ensemble daily soil water content (SWC) simulated with CLM-DA (ensemble mean of 12 and 20 ensemble members) and compared with CCI-SM data for year 2006 over the PRUDENCE regions. The R² values in each panel are r-squared calculated for both CLM-DA with 12 and 20 ensemble members.



Figure S5: Comparison of spatially averaged 2000 - 2006 daily ESA CCI soil moisture data between original 0.25° (black) and interpolated 0.0275° (red) over PRUDENCE regions.