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## Monitoring European averaged temperature based on the E-OBS gridded dataset

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The gridded daily maps of surface temperature from the E-OBS dataset provide a record of European climate variability since 1950. A European averaged temperature (daily maximum, daily averaged and daily minimum) with monthly resolution is constructed based on this dataset with near-real time updates for monitoring. The E-OBS dataset is based on validated station data provided

by the European National Meteorological and Hydrological Services.

A quantitative analysis of the uncertainty sources to the European averaged temperature indicates that the uncertainties due to urbanization, the interpolation used to construct E-OBS and the lack of homogenization of the input records to E-OBS dominate the total uncertainty estimate. In the aggregation of the interpolation uncertainty from the daily to the monthly level and to a European averaged value, the effective spatial degrees of freedom are estimated to account for spatial and temporal coherency.

The European averaged temperature shows that the years 2006-2010 are all in the top-10 of warmest years and a clear upward trend in annual

averaged temperatures over the last few decades is visible. The most recent year in the top-10 of coldest years is 1987. It also shows that warming in Europe is accelerating compared to both the Global and Northern Hemisphere land masses over the period 1980-2010.