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Long-term gridded temperature data for Norway

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For the last fifteen years MET Norway has provided gridded long-term climate data covering the period from 1901 to present. This data set is produced applying a thin-plate spline algorithm to interpolate monthly anomalies of precipitation and temperature. The resulting data set is heavily applied for monitoring and communicating climate variability. Is also serves as the basis for regional monthly climate series and statistics, and has been used in several climate change impact studies.

The dataset was developed during the early GIS-era within the climatology community, and has remained unchanged since it was first set up. The technology available at that time did not provide good possibilities for systematic evaluations of the performance of the method, and the uncertainties associated with it.

A few “soft” evaluations of the dataset have however been performed by comparing regional climate series with similar series estimated from pooling of high-quality observation series and from gridded daily data. These comparison shows that the monthly grids provide information that are consistent with the two other approaches.

Since the availability of daily observations is limited before 1957 we have to rely on the more numerous monthly data to provide gridded data before this time. We have therefore established a new set of gridded monthly temperatures for Norway covering the period 1901-present. In this work several spatial interpolation methods been tested, both on absolute values and monthly anomalies. The analyses include leave-one-out crossvalidation procedures that provide information about spatial and temporal uncertainties. The resulting datasets are also compared with the existing monthly and daily datasets provided operationally by MET.