



Developing a consistent and homogenous data set for calculating new temperature normals for Norway 1981-2010

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Climate is not stationary. The mean annual temperature for Norway for the 1981-2010 period was in average 0.6°C warmer than the current standard normal period 1961-1990. This is a climatic signal present in all temperature regions in Norway. Due to the climate change the currently used standard temperature normal do not reflect current climate in Norway. The Norwegian Meteorological Institute has therefore produced new temperature normal values for the 1981-2010 period. These normals will supplement the consecutive standard normal that until WMO change the definition still will be retained.

To have a good basis for further work the normal period 1981-2010 is based on monthly homogenized data set. Due to large changes in the observation network the number of missing observations in the last 30-year period is higher than for the current standard normal period. Much effort has been used to fill in missing values in the monthly time series. This has been done carrying out a multiple linear regression analysis applying complete homogenous temperature series as independent variables. The three highest correlated series were finally used as predictors. The result is a data set of 187 complete monthly temperature series covering the period 1961-2010. This data set is the basis for establishing the new temperature normal values.

Gridded data sets are generated every day for Norway at the Norwegian Meteorological institute. Daily values from this data set are extracted to generate monthly values. These values are compared to the complete regression filled homogeneous series in order to validate the regression analysis for filling in missing values and to investigate the effect of the homogenization on the 1981-2010 normal.