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Interpolation of Hourly Temperature Measurements in Norway

A. Bürger, L. Andresen, G. Kielland, P-O. Kjensli, J-M. Lepioufle, Ø. Lie, O.E. Tveito, and K. Ødemark
Meteorological institute, Postboks 43 Blindern, N-0313 Oslo, Norway (alexander.buerger@met.no)

Time series of meteorological observations happen to be incomplete for various reasons, and the gaps in the series need to be interpolated for use cases where a continuous series is desirable. Norwegian topography is rather complex so that observation values from the nearest neighbors are not necessarily the best to use for this purpose. A practical scheme for selecting, weighting, and adapting neighbor stations' observations for interpolation over gaps in hourly measurement series has been developed and tested for temperature observations. The selection of neighbor stations to use for the interpolation is based on a correlation analysis of several years of observation data. The technique has also been applied for the interpolation of pressure, relative humidity and dew point temperature measurements. For the temperature interpolation, the technique usually works reasonably well also in inversion conditions, and cross-validation shows that deviations are mostly less than $\pm 2.5\,\mathrm{K}$, often better.

We will present the technique, the results of cross-checks with data from the recent past, and some examples from the processing of newly measured data.