



High-resolution daily gridded datasets of air temperature and wind speed for Europe based on SYNOP observations

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Within the DecReg project (Decadal Regional Predictability), a sub-project of MiKlip (“Mittelfristige Klimaprognosen”, engl: medium-range climate predictions, financed by the German Research Ministry), the German Weather Service (DWD) will provide gridded data sets of air temperature, precipitation and wind speed for Europe (the Cordex domain) on a daily basis. SYNOP observations are used as main input source. The target spatial resolution of the data is 25 km or lower (down to 5 km), the time period is 2001-2010 in the first step; an extension back to 1961 is envisaged. While the precipitation data are provided by the Global Precipitation Climatology Centre (GPCC) at the DWD, our working group deals with the gridding of the two other parameters, temperature and wind.

For temperature interpolation a modified version of a regression kriging method developed by Krähenmann et al. (2011) is used. At first, predictor fields of altitude, continentality and zonal mean temperature are used for the regression model, which is applied to monthly data. The residuals of the monthly regression and the deviations of the daily data from the monthly averages are interpolated into the area using simple kriging in a second and third step.

We will present the outcomes of the temperature calculations for the decade 2001-2010 as well as the methodology including pre-processing and quality control of the raw data. Concerning the gridding of wind speed, the interpolation strategies and, hopefully, first results will be shown.

The gridded data will be used for validation of regional decadal model hindcasts provided by the DecReg project partners, but also for regional climate monitoring.

References:

Krähenmann, S., P. Bissolli, J. Rapp, and B. Ahrens (2011). Spatial gridding of daily maximum and minimum temperatures in Europe. *Meteorology and Atmospheric Physics*, 114, 151-161. doi:10.1007/s00703-011-0160-x.