

## **Statistical modelling of diurnal temperature courses by using topographic information and weather type classification schemes**

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Meteorological variables such as air temperature measured at ground based weather stations are to some degree determined by the characteristics of the surrounding area of the measurement sites. The importance of those topoclimatic factors itself varies in time due to the influence of the general synoptic circulation situation. The varying and overlapping effects in space and in time make it difficult to statistically model diurnal temperature courses near the earth's surface.

We present a modelling scheme that combines topographical information from GIS and remote sensing data with an approach based on a synoptic weather typing scheme. The diurnal structure of temperature time series is learned from conventional weather station data and validated by field measurements, data from other automated weather stations and remote sensing data. The learning algorithm itself uses gaussian mixtures and a generalized linear model.

This work is carried out within the subproject "Scale-consistent Two-way Coupling of Land-Surface and Atmospheric Models" of the SFB / Transregio 32 "Patterns in Soil-Vegetation-Atmosphere Systems: Monitoring, Modelling, and Data Assimilation" of the German Research Association (DFG, Deutsche Forschungsgemeinschaft).