



Experiences in homogenization of Austrian snow depth observations

Roland Koch, Barbara Chimani, and Wolfgang Schöner

Central Institute for Meteorology and Geodynamics (ZAMG), Climate research, Vienna, Austria (roland.koch@zamg.ac.at)

The purpose of this study is to investigate the question to what extent the homogenization of climate data records of snow depth is suitable. A set of consistent and reliable long-term time series of snow depth on a daily scale from selected meteorological sites across Austria is used. The data records were collected by the Central Institute for Meteorology and Geodynamics (ZAMG) and the Hydrographical Central Bureau of Austria (HZB). They cover a time period from the late nineteenth century until today.

Assuming that the observational data is affected by non-climatological inhomogeneities due to changes in the measurement conditions, a homogenization trial of the snow depth series was performed. The homogenization process applied consisted of the method of PRODIGE for the detection of multiple inhomogeneities and INTERP for the calculation of corrections on a daily scale, respectively. The required reference series needed for these processes have to be homogenous and high correlated. The detected breaks were evaluated and verified against the available metadata. The investigation of 100 time series showed promising results. 60 percent of all detected inhomogeneities were confirmed by metadata. The causes for the breaks mainly included relocation of the measurement site and change of the observer. However, in several cases low snow depths yielded suspicious breaks. Negligibly small corrections were found, furthermore, in inhomogeneous time series of low-elevation sites. Nevertheless, in view of the uncertainty in observed snow cover, the homogenization procedure is expected to provide valuable information for a trend analysis.