



Historical snow cover and winter temperature evolution in Austria

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Based on results of the project SNOWPAT and further work at ZAMG we present an analysis of snow cover changes (daily total snow depth and new snow amount) at 15 selected and regionally representative long-term Austrian snow stations in the altitudinal range 198 m a.s.l. to 2140 m a.s.l. over the period 1950 to 2017. In addition, high altitude winter time series are analyzed to support the interpretation. Generally, snow as well as winter temperature data show a strong interannual and multi-decadal variability, which is accompanied by differently strong but significant negative long-term trends at 12 of 15 stations. Temperature data show increasing high altitude winter temperatures, but only on rather long time-scales. On shorter timescales (up to 30 years) decadal variability dominates. The long-term snow cover reduction is found in all altitudes and most regions of Austria. This study shows that long and consistent snow and winter mountain temperature time-series are needed (at least around 50 years) to detect long-term climatic trends of snow conditions, which is due to the high temporal variability. On a shorter timescale most stations show very strong negative anomalies in the last 3 winters (2014/15 to 2016/17).