



Towards using ground surface and air temperature data for assessing the thickness of winter snow covers

A. Kellerer-Pirklbauer and R. Roubal

Institute of Geography and Regional Science, University of Graz, Graz, Austria

Snow covers in alpine environments are prone to high variability in space and time due to topographical and aeolian effects. Steep mountain slopes enable redistribution of snow by avalanches due to gravity. Possible high wind speeds redistribute wind from areas of snow erosion to areas of snow deposition. In this study ground surface temperature data from 28 measurement sites at two study areas in the high mountains of central Austria as well as air temperature data from meteorological stations at the same study areas have been used for assessing their potential for snow cover thickness estimations. The two study areas are the Hinteres Langtalkar-Kögelekar area ($46^{\circ}59'N$, $12^{\circ}46'E$) and the Dösen Valley-Säuleck area ($46^{\circ}59'N$, $13^{\circ}17'E$). Temperature was recorded every 30 to 60 minutes for the 2 year period summer 2006 to summer 2008 by miniature temperature dataloggers/MTLs (GEOPRECISION). Based on our analysis it was possible to classify at all sites periods with very high, high, moderate and little damping effect of the winter snow cover. Based on a few assumptions and compared to additional data, these classes might be converted to different thicknesses of the winter snow cover.