



Analysis of climatic changes in snow cover characteristics in Germany by derived indicators

U. Böhm, T. Reich, G. Schneider, and A. Fiedler

Deutscher Wetterdienst, Department Hydrometeorology, Office Berlin, Germany (uwe.boehm@dwd.de)

The climatic changes in snow cover characteristics in Germany were analysed using a set of derived indicators providing measures for both length of snow cover and snow depth. The core of this set was elaborated within the KLIWA project (Klimaveraenderung und Wasserwirtschaft – climate change and water management) to describe the long-term behaviour of snow cover in southern Germany (i.e. the federal states of Baden-Wuerttemberg and Bavaria) for the period winter 1951/52 to winter 1995/96. To obtain a description of the length of snow cover, we used the unchanged KLIWA indicator set (snow cover duration, snow cover time, duration of longest snow cover period, date of maximum snow depth, persistence of snow cover, and preservation of longest snow cover period). In contrast to the KLIWA project, our analyses of mean and maximum snow cover thickness focussed on snow depth instead of water equivalent due to the larger availability of observations. Furthermore, we exemplarily investigated threshold-exceeding snow depths, as defined within the framework of the German Strategy for Adaptation to Climate Change (Deutsche Anpassungsstrategie an den Klimawandel, DAS) and which might have implications, e.g. for the tourism sector. We analysed the period from winter 1951/52 to winter 2000/2001 both for Germany as a whole as well as for its natural sub-regions. The majority of the investigated indicators show significant trends towards a reduction of snow cover length and thickness over the entire period and especially during the last part of the 20th century in most of the sub-regions.

It is intended to extend the analysis period and additionally assess the rate of actually observed snow cover changes between 2000/2001 and 2010/11 as part of studies already underway. As one of the next steps, there are plans to assess such changes in selected IPCC scenario simulations for the near future until 2100.