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Validation of a land-surface climate model using snow cover observations

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Better knowledge of the future impacts of climate change on snow cover and mountain river flows is of key importance in the development of strategies for successful management of water resources and natural hazards. The objective of the research presented here is to compare a new implementation of a grid-based hydrological model embedded in a model of land-surface climatology (the Joint UK Land Exchange Scheme; JULES) with historical observational data on snow cover available in Slovakia and Austria over the past 30 years. The JULES model was driven with hourly output from the Hadley Centre regional climate model, which itself was driven using results from the ERA-40 reanalysis experiment (1961-2000). The results of simulations for mountain regions in Austria and Slovakia are presented and evaluated against daily snow depth observations at 754 climate stations and daily MODIS snow cover products. The success with which the land-surface model reproduces observed snow cover data is evaluated.