



Simulation of snow characteristics in a mountain environment

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Snow characteristics including snow structure were monitored in winters 2006 and 2007 at three different sites representing valley, mountain forest and mountain open area in the Western Tatra Mountains, Slovakia. Winter 2006 was snow rich and long at all sites. Winter 2007 was mild with little snow in the valley, while in the mountains the snow water equivalents (SWE) values reached the above-average values. SWE, snow and soil temperatures were simulated by two energy based snow accumulation and melt models, namely the UEB and the SPONSOR. The models mostly provided comparable results which were superior to simpler index models in situations when the short snow melt events occurred. SPONSOR was used to simulate the snow layers as well. Numbers of layers at the three sites did not differ very much. Generally, the snowpack was more layered in winter 2007 and its duration was very short in the valley. The snow structure data were used to test the ability of the SPONSOR model to simulate layered snowpack in the mountain environment of central Europe.