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Two-dimensional snow temperature simulation

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For studying processes within the snow cover, the change of snowtemperature is very interesting. Different temperature gradients cause different metamorphoses of the snow grains within the snow cover. Therefore a precise calculation of the temperature is a necessary basis for further research.

There are already existing models to calculate snow temperatures, but these models are just one-dimensional. Current research projects are working on the enlargement of the one-dimensional models to two dimensional ones. This has the advantage that a whole section of a slope can be simulated and thus, the information about the snow cover is not just a view on a single point but a flexible calculation of different slopes and directions. Two-dimensional calculation makes the process of modeling more difficult. Data for simulation are measured using automatic measure stations.

To calculate a one-dimensional temperature profile directly at the measurement station, data which are logged by the station can be used for simulation. One of the improvements of two-dimensional simulation is the conversion of the measured data to other expositions and slopes. This should make it possible to simulate the snow temperature on inaccessible areas of the mountains. Therefore it is essential to calculate the relative sun intensity and possible shadows caused by other mountains for each section point of the simulation area.