



Modelling snow ablation and runoff generation in glaciated basins using data from GCMs

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Runoff from snow and ice melt is the main water resource in many mountain regions, yet an accurate estimation of runoff generation is hindered by a general lack of meteorological data in these environments. As an alternative, an approximate data set could be derived from general circulation models (GCM).

Here we present a comparative study modelling the snow ablation and runoff on a small, glaciated catchment in the Alps with data derived from GCMs: the US GFS, and reanalysis data from the NCEP/NCAR which are both freely available. The data have been modified minimally for bias correction, especially the overestimation of precipitation, yet there is no need for calibration. Results are within a few percent of measured values or those obtained from energy balance models using data from automatic weather stations located on or near the glacier.

As the reanalysis data extend back for over fifty years, this approach might allow a better insight to the response of glaciers to climatic forcing during that period. The application of this tool to other ungauged basins is addressed, as well as its limitations, shortcomings and possible improvements.