



Monitoring snow- and icemelt of two small glacierized catchments in the Austrian Alps

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Alpine discharge processes are significantly affected by glacier melt. During summer period with less precipitation discharge is determined by snow and glacier melt. In the Alps the last twenty years were characterized by negative mass balances. In 2003 the most negative mass balance ever was measured.

Two test basins, the glaciers Goldbergkees and Kleinfleißkees, are located nearby Sonnblick Observatory (3105 m a.s.l.), where extensive climatological measurements are available. The winter and annual mass balance of Goldbergkees and Kleinfleißkees have been measured since 1987 and 1999 by the ZAMG (Central Institute of Meteorology and Geodynamics). An automatic gauging station with internal GSM - modem for remote data enquiry was first installed in Sept. 2002 and is located a few meters downstream the glacier tongue of Goldbergkees glacier at about 2340 m a.s.l.. It monitors water stage at 15 min intervals at the outlet of the glacier lake. A second gauging station was first installed in the summer of 2004 at the outlet of Kleinfleißkees glacier in about 2500 m a.s.l.. It is mounted in a water diversion tunnel of a local waterpower company, whereby it is possible to measure discharges very early and very late in the melt season.

The melt period of 2003 appeared to be an outstanding event with extreme ice melt rates. Comparing the hydrographs of 2003 and 2004 day by day, many differences in melt processes and melt water translation can be seen. In case the snow cover of the

glacier is reduced, the storage for melt water becomes smaller and smaller. This effect is reflected in the hydrograph: the lowest diurnal discharge of 2003 is less than in 2004 and the diurnal peak discharge of 2003 is higher than in 2004. This is an indication that in extreme summers with high ablation rates melt water runs faster through ice tunnels and crevasses.