



One decade of scientific studies of snow management on Austria's glacier ski resorts

Andrea Fischer and Kay Helfricht

Austrian Academy of Sciences, Institute for Interdisciplinary Mountain Research, Innsbruck, Austria
(andrea.fischer@oeaw.ac.at)

After the extremely warm summer of 2003, when melt affected Austria's glaciers up to the highest elevations, a scientific study on artificial modification of mass balance was initiated. It examined the effects of glacier covers and water injection, but also various grooming methods and snow accumulations based on monitoring and modelling of snow and energy balance. The results showed that covering the glacier was the most effective and cheapest method, saving about 70% of glacier melt in places. But covers are restricted to a small portion of the area, as they require high maintenance. In recent years, snow production and snow accumulation by wind drift have gained more and more importance, not only modifying glacier mass balance, but also guaranteeing an early season start. Initially about 35 ha of the glacier area (<10% of the ski resort area and less than one per mille of the total glacier area in Austria) were covered and later the area was reduced as snow production possibilities increased. Snow depots are often used as fun parks for snow boarders. Glacier covers are not primarily used for keeping snow for early season start on ski tracks, but to maintain the surface, especially close to cable car infrastructure, at a constant elevation and slope. Despite glacier dynamics, glacier surfaces with snow management show reduced decrease of surface elevation, both on piste and along lift tracks.