

Zischg, A.; Geist, T.; Juen, I.; Keiler, M.; Fuchs, S.; Wastl, M. & J. Stötter (2004): Recent and potential future effects of climate change in the Stelvio National Park – ten years of investigations on permafrost degradation and related processes. Geophysical Research Abstracts 6, 2004.

Abstract

The permafrost distribution in the Madritsch skiing area/Ortles Alps/Italy was investigated in winter 2003/2004 and compared to measurements carried out in the 1990s. This comparison shows the ecological effects of global warming in high Alpine areas on the indicator permafrost. The resulting changes in the high Alpine environment lead to an increased activity of geomorphological processes. Combining these effects with the approximated damage potential the economic impact of global warming relating to permafrost can be assessed. It shows a high and direct exposure of skiing area infrastructure to debris flows and slope instabilities. Due to the comparatively low vulnerability and little value of this infrastructure the direct economic effects of the melting permafrost are yet limited. Further indirect effects, however, are to be expected through losses of income caused by a breakdown of infrastructure during peak tourist seasons and damages to settlements in the alpine zone if the degradation of permafrost continues at the same rate as during the last decade. Against this background, monitoring these environmental changes is vital for a better understanding and for the adoption of preventive measures to avoid economic losses and undesired effects.