



Permafrost environments in central Iceland

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Iceland is well known for its volcanic activity and high geothermal heat fluxes influencing the ground thermal regime. Nevertheless, there is geomorphological evidence for permafrost occurrences in different mountain environments. This presentation shows new data from four sites in central Iceland with sporadic mountain permafrost, being at the fringe of permafrost existence and thus, representing excellent sites for future monitoring of the impact of climate change on permafrost aggradation or degradation. The investigated areas include two periglacial sites in the highlands of central Iceland (Nýjabærafjall and Sprengisandur), one site with several well developed palsas and one proglacial and periglacial site north of Hofsjökull. 2D resistivity imaging was utilized to detect and characterize the permafrost and ground ice. This geophysical tool yield comparatively quick and inexpensive results about the structure and layering of the subsurface without disturbance to the study site. The results of the performed surveys indicate mostly shallow permafrost occurrences consisting of low to medium-resistive permafrost showing a heterogeneous distribution pattern. The comparatively low resistivities could point to “warm” permafrost containing a certain amount of unfrozen water causing the better conductivity as compared to results of geoelectrical surveys on mountain permafrost in northern Sweden and Switzerland. An open question is to what extent periglacial morphodynamics is influenced by permafrost and/or seasonal frost? Since the investigated permafrost environments in Iceland will possibly react rapidly to potential changes of the environmental boundary conditions future research will include a combined monitoring approach for detecting the impact of climate change on permafrost degradation consisting of a geoelectrical monitoring in conjunction with a ground surface and subsurface temperature monitoring.