



Active layer and permafrost monitoring in the vicinity of the Bulgarian Antarctic Station, Livingston Island, Antarctic

A. Trindade (1), G. Vieira (2), M. Ramos (3), and C. Pimpirev (4)

(1) Centre of Geographical Studies, University of Lisbon, Portugal (alexandretn@gmail.com), (2) Centre of Geographical Studies, University of Lisbon, Portugal (gtelesvieira@gmail.com, +351 217938690), (3) Department of Physics, University of Alcalá, Spain (miguel.ramos@uah.es), (4) Bulgarian Antarctic Institute, Bulgaria (polar@gea.uni-sofia.bg)

The Antarctic Peninsula region has been the focus of significant research on glaciology and climate change and shows a pronounced warming in the last decades. However, the response of permafrost to this trend remains insufficiently understood. The aim of this work is to monitor the thermal regime of the active layer and permafrost, and the influence of climate change in this region.

In 2006 an active layer monitoring site according to the CALM protocol was installed in the vicinity of the Bulgarian Antarctic Station (Livingston Island). The site consists on a 50x50m grid and is located at 140m a.s.l in a flat interfluve. The bedrock consists of a coarse matrix-supported diamicton at least 50 cm thick with a superficial clast-cover. Measurements of the ground and air temperatures and the monitoring of snow thickness were collected at 4-hour intervals.

In 2007 a network of permafrost monitoring boreholes began to be installed in Livingston Island (Maritime Antarctic). The first borehole in the vicinity of the Bulgarian Station was drilled in the CALM site with a depth of 5m. A second borehole is located south from the station at 147m a.s.l with a depth of 4m. Each borehole contains a chain of miniloggers measuring temperature at 4-hour intervals.

The poster presents the results from the two first years of research in the vicinity of the Bulgarian Station and a comparison with ground temperatures measured in other shallow boreholes with data since 2000, located in the vicinity of the Spanish Antarctic station is presented. This allows for assessing on spatial differences between ground temperatures and is a first step towards the development of an empirical-statistical model of permafrost distribution in the island.