



Geomorphological dynamics of Deception Island (Maritime Antarctic): a GIS based analysis of the Cerro de la Cruz – Crater Lake area

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This study, based on field surveying from the austral summer of 2007-2008, presents the first results of the detailed geomorphological mapping of Deception Island (South Shetlands, Antarctic Peninsula). The main objective is to provide new geomorphological observations aiming to understand: i) how climate change is affecting permafrost, ii) the interactions between volcanoes and permafrost and also, iii) the present-day geomorphological dynamics in an area of high environmental sensitivity.

The detailed geomorphological mapping was made in the area between the Argentinean base of Decepción and the Spanish Base Gabriel de Castilla, corresponding to 4 km², as well as in the vicinity of the ruins of the Chilean Refuge. Mapping focused on landforms and deposits that may be indicators of permafrost dynamics, such as rockfalls, gullies, debris flows, thermokarst depressions and lag surfaces. Active layer thickness was monitored during the summer in two sites with different topographic conditions using mechanical probing. The spatial distribution of the geomorphological processes and landforms was studied using a GIS, with the objective to study the controls of several independent variables, such as altitude, aspect, slope, topographical parameters and net summer radiation.