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Biogeochemistry differences along lineal transect from glacier to Elephant Point coast in Antarctic environment

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The main aim of this work is studying the biogeochemistry changes occurred in the soil since glacier front until Elephant Point coast, at Shetland Islands, in Antarctic. For that, it picked up 20 samples from 10 different points. Sampling has followed a lineal transect since coast to glacier, going across 5 marine terraces, the morrenic area and going through col to reach glacier front. The terrace samples 2, 3, 4 and 5 show bryophyte vegetation forms covering a wide part of the surface however vegetation is almost nonexistent in the rest of the sampling points.

The particle size, pH (pHw and pHKCl), electrical conductivity, total organic carbon (TOC), total nitrogen (TN), total Fe (TFe), Fe and Al associated with organic matter (soluble in sodium pyrophosphate, Cp), amorphous oxyhydroxides-Fe (extracted with ammonium oxalate, FeO), crystalline oxyhydroxides-Fe (extracted with sodium dithionite, FeD), bioavailable plant nutrients (soluble in Mehlich 3 extractant) and clay mineralogy were analyzed.

Results obtained show the importance of the alive organism in the weathering of minerals and the contribution of these to form a more evolved soil. There are also important differences at the different zones of the lineal transect due to predominant geomorphologic forces performing in each type of area. On the third hand, current global climate change is causing glacier backward movement; this allows increasing vegetal cover and growing superior vegetation forms. In this way edaphic processes will increase and with them a leaching of nutrients which able to participate positively on closest seas, rivers and lakes.