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FUNGAL DIVERSITY OF MICROBIAL COMMUNITIES IN POLYGON SOILS OF AN ANTARCTIC INLAND ECOSYSTEM

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Inland terrestrial sites are poorly described and understood concerning their ecosystems biodiversity in comparison with Antarctic coastal regions. As initial colonisers microorganisms are essential for pedogenesis and the subsequent establishment of macroorganisms. The different groups of microbiota are, therefore, integral for ecosystem development. Here we report studies of the microbial fungal communities found in polygon soils of Coal Nunatak (southern Alexander Island, 72°03´S 68°31´W, Antarctic Peninsula). These soils mirror the initial stages of colonisation processes after Pleistocene maxima when glaciers retreated.

Two transects (length 70m, 140m) across periglacially influenced ground were chosen for sampling. We analysed soils obtained across polygons (perimeter and center) at three depths (0-1cm, 1-2cm, 2-5cm). Fungal diversity was quantified using molecular biological approaches (temperature gradient gel electrophoresis – TGGE, clone libraries). Investigations on cyanobacteria have been already done and on green algae are in progress. The diversity between the cyanobacterial and fungal communities across the transects will be compared. The community of cyanobacteria reflect a higher heterogeneity in diversity than the community of the fungi.

Correlations between microbial diversity, a range of soil physical and chemical parameters and with micro- and mesoclimatic data is the primary aim of this investigation. Understanding the mechanisms underlying biological responses to changing climate will also be contributed by the obtained data.