

## **The geomicrobiological controls on cobalt, nickel and chromium in lateritic soils of Santa Elena Peninsula**

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Costa Rica is one of the most biologically diverse sites in the world. In the north-west of the country is the Santa Elena Peninsula (SEP), an area with unique biological, ecological and geological characteristics. The majority of the peninsula is covered by an ophiolite composed mainly by serpentinitized peridotites (lherzolites, harzburgites and dunites), and gabbros[1]. The ophiolite is tightly related to the soils and the ecosystems in its landscape. However among the vast biodiversity present, only few groups of microorganisms have been studied within this context, but the biogeochemical cycling of trace elements is still widely unexplored [2,3].

This research aims at improving our understanding of the distribution and behaviour of cobalt in natural systems. The results presented focus on trace element biogeochemical cycling in Co-rich sediments undergoing redox cycling. Microbial communities of the lateritic soils of SEP were characterised using 16S rRNA gene profiling, and their possible roles in the mobilisation of Co, Ni and Cr within those soils are explored. Results of microcosm experiments will be presented, and discussed in terms of the natural geochemistry of the soils, their geographical distribution, their seasonal context and their microbial community composition.

[1] Schwarzenbach, Gill, Gazel, & Madrigal (2016), *Lithos*. 252, 92–108.

[2] Reeves, Baker & Romero (2007), *J. Geochemical Explor.* 93, 153–159.

[3] Sánchez-Murillo, Gazel, Schwarzenbach, Crespo-Medina, Schrenk, Boll & Gill (2014), *Geochem. Geophys. Geosyst.* 15, 1783–1800.