

## Microbial Community in Cobalt-rich Crusts of the Rio Grande Rise

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Marine microbes regulate fluxes of organic matter and energy vital for pelagic and benthic life, and might also be involved in the formation and maintenance of cobalt-rich crusts. The aim of this study was to compare the microbial diversity between cobalt-rich crusts and associated sediments of the Rio Grande Rise, Southwestern Atlantic Ocean. Onboard the RV Alpha Crucis, 29 samples were collected. The 16S rRNA gene was sequenced using the Illumina platform, a total of 5840 OTUs were detected, and higher abundance of Bacteria (78.6%) over Archaea (21.4%). The classes Gammaproteobacteria and Nitrososphaeria, specially the families Nitrosopumilaceae and Burkholderiaceae, respectively, were more abundant in all samples. Representatives of Burkholderiaceae, Weeksellaceae and Corynebacteriaceae, mainly those resistant to heavy metals, were dominant in cobalt-rich crusts. In contrast, *Nitrosopumilus*, especially the ammonia-oxidizing chemolithoautotrophic archaea, Burkholderiaceae resistant to heavy metals, and sulfate-reduction Methylomirabilaceae, were dominant in associated sediments. Alpha-diversity indices in sediments were significant higher than in crusts. Beta-diversity showed significant influence of depth and temperature, in the crusts. Factors as water masses and location of the crusts may shape the differences in microbial community structure in the Rio Grande Rise. We also concluded that crusts are distinctive microhabitats for microbial life at deep-sea. Identifying and understanding the diversity of microorganisms is an important step for Geomicrobiology and future mining studies and monitoring sites.