SESSION: Ecosystems, Biodiversity and Biodiscovery

MARS Themes:

Understanding scales of biodiversity from molecular to ecosystem

Title:

Biogeographical survey of soil microbial communities across Antarctica

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Abstract:

Antarctica and its unique biodiversity are increasingly at risk from the effects of global climate change and other human influences. A significant recent element now underpinning strategies for Antarctic conservation has been the development of a system of Antarctic Conservation Biogeographic Regions (ACBRs). However, to date no studies analysing patterns in Antarctic bacterial diversity at a continental scale have been conducted using Illumina sequencing data. Our study aims to generate a comprehensive phylogenetic dataset (based on Illumina sequence datasets) of Antarctic bacteria with wide geographical coverage on the continent and sub-Antarctic islands, in order to investigate whether bacterial diversity and distribution is reflected in the current ACBRs. Based on available data, we found that soil bacterial diversity and community composition did not conform well with the present ACBR classification. Although 19% of variability was explained by this classification, the main factor driving soil microbial clustering was the division between the maritime and continental Antarctic regions at the base of the Antarctic Peninsula. Strong divergence in soil microbial community composition was also apparent between the Antarctic/sub-Antarctic islands and Antarctic mainland. Overall, our data indicate that the current bioregional subdivision of the Antarctic continent is too simplistic from a microbial perspective.

Format:

10-min oral

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Antarctica; Microbial biodiversity, Biogeography, Antarctic Conservation Biogeographic Regions