PA111

Taxonomic and functional characterization of biofilm samples from two shallow-water hydrothermal vents in Pozzuoli bay

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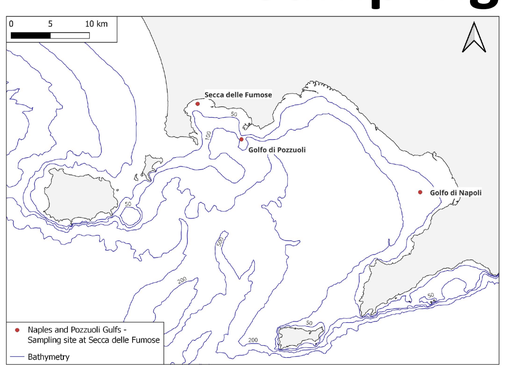
Background

Shallow-water hydrothermal vents are unique habitats found in marine environments at depths < 200 m. Local microbial communities use fluids enriched in gases and minerals to fuel their metabolism. Despite their crucial role in biogeochemical cycles, microbial diversity in these environments remains poorly studied.

Sampling site & methods



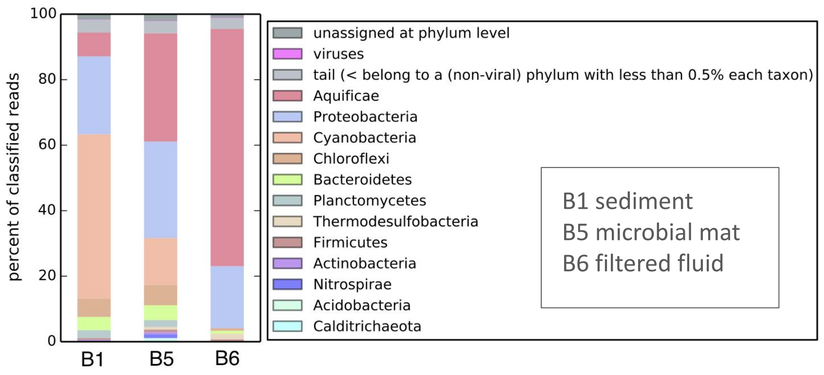
The two vents in Pozzuoli Bay are at similar depth, but differ in temperature (**73°C** and between **20-33°C**). Shotgun metagenomic sequencing on extracted DNA samples were performed and bioinformatic analyses were conducted on K-base platform and local pipeline called ‘‘Geomosaic’’.

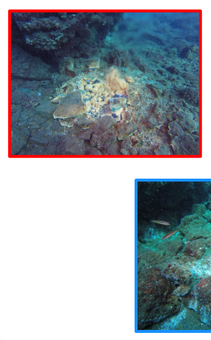
Aim: describe and compare taxonomy and functional diversity of biofilms in two close hydrothermal vents at different temperatures

Results

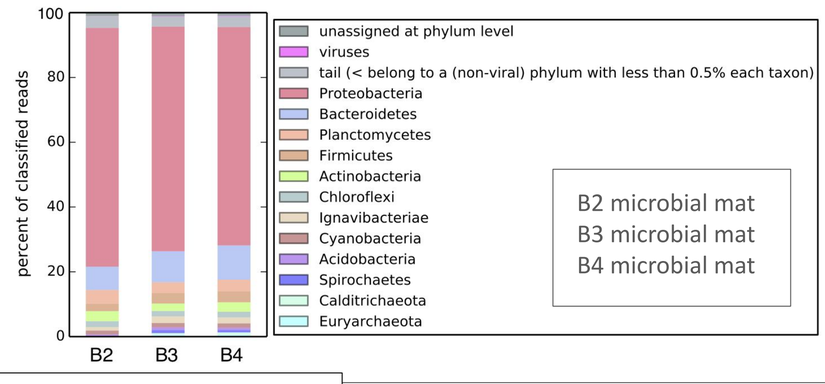
TAXONOMY

Thermophiles communities (73° C)

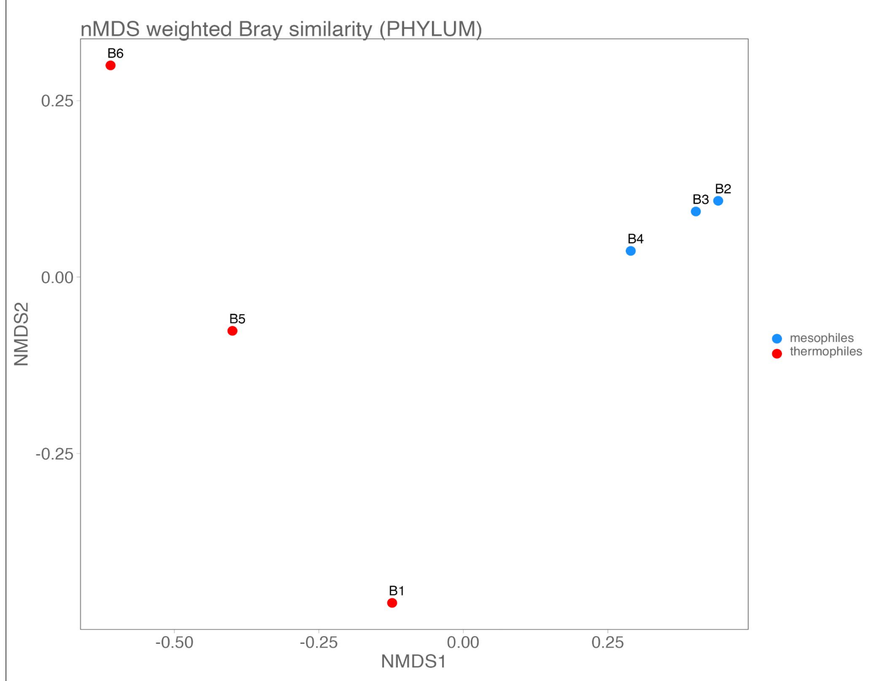




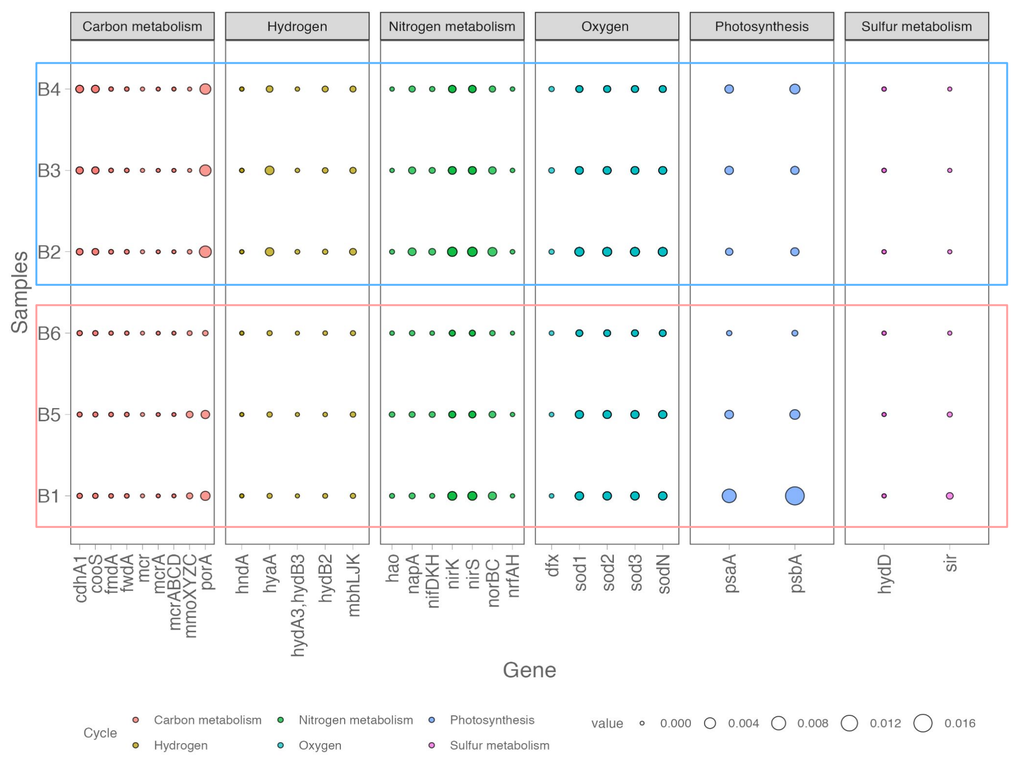
Mesophiles communities (20-33° C)



Beta diversity



FUNCTIONAL ANNOTATION



Conclusions

- The taxonomic annotation highlighted how the microbial communities show significant differences between samples.
- Beta diversity analysis shows mesophiles and thermophiles differ each other, with former having higher within-similarity.
- This result is confirmed by functional annotations on genes associated with biogeochemical cycles, showing the mesophilic community is similar and the thermophilic community does differ.
- An integration with the data of the geochemical characteristics of the sites will elucidate the close relationship between the microbial communities and the geothermal processes.

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https://github.com/giovannellilab/GeoMosaic

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