Poster €/Oral ✓ Presentation

**Bacterioplankton and Mycoplankton interactions - responses to ocean acidification in the Southern Ocean**

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Ocean acidification, the decrease in seawater pH, negatively impacts several marine organisms such as molluscs, fish, and corals by affecting their physiology and function. Microbial communities (bacteria, archaea, and fungi) form the basis of ocean ecosystems by cycling key nutrients throughout the entire trophic structure, especially within iron-limited regions such as the Southern Ocean. It is hypothesised that microbial communities may be resistant to external perturbations such as decreasing pH, although the direct effects of these changes on community associations or interactions remains largely under investigated. In this study, we performed a mesocosm experiment on Southern Ocean seawater, where bacterioplankton and mycoplankton communities were subjected to future predicted pH decreases (0.4 and 0.8 units). Amplicon sequencing of the 16S rRNA gene and ITS 1 region as well as molecular ecological network analysis was used to determine the effect of ocean acidification on microbial community structure and interactions. Network analyses reveal the loss of putative keystone taxa and a decrease in community interactions as a response to lower pH levels. Bacterioplankton shift from generalist to specialist community members, suggesting a specialised stress response to unfavourable conditions. Furthermore, a large number of inter-domain associations were detected, suggesting communication between diverse microbial assemblages within the Southern Ocean. Taken together, our findings suggest that bacterioplankton communities may not be as resistant to climate perturbations as previously proposed.

References

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