

## **Vertical variations of pelagic microbial communities in the New Britain Trench**

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Current understanding on microbial communities in the trenches is still limited, and existing studies mainly focused on a few trenches. In this study, we investigated for the first time the diversity and structure of free-living (FL) and particle-attached (AT) bacterial communities in pelagic habitats of the New Britain Trench (NBT), and compared with microbial communities from shallower depth of the water column. Generally, Gamma- and Alpha-proteobacteria dominated both AT and FL bacterial communities in all samples. Bacterial diversity showed obvious changes from shallow water to hadal depth of NBT. Interestingly, the composition of AT bacterial communities are similar in the samples from deep ocean i.e. deeper than 1000 m; while those of FL bacterial communities showed great variations at different depth, which may be related with the different responses of AT and FL bacteria to changes of environmental factors with increasing depth. The findings are with high values in revealing the community structure and survival strategy of microbes in deep ocean of the NBT area. In addition, the differences between bacterial diversity in NBT and existing data from other trenches will also be discussed.