

Microbial diversity around Syowa Station in 2021

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Bulk DNA extracted from the soil samples collected around Syowa Station as a soil monitoring study in the 63rd Japanese Research Expedition (Fig. 1) was used to amplify the V3-V4 region of the 16S rRNA gene, and they were MiSeq-sequenced. The V3-V4 sequences were grouped into ASVs (amplicon sequence variants), and bacterial flora and their diversity against the distance and direction from the center of the Syowa Station were compared.

Important Results

Variation Partitioning analysis: Direction accounts for almost 15.7% of the variations in the bacterial community structure; while distance of sampling explained 12.7% of the variation in bacterial community structure. 74.5 % of the variation in the bacterial community structure were still unexplained (affected by other factors not included in this study).

Principal Component Analysis (PCA) Plot based on Bray-Curtis Distance indicates samples collected 100 m from the center of the Station and 1400 m or more far from the Station were plotted together in different positions each other, means soil bacterial diversity near the station and far from the Station differ (Figure 2).

Alpha diversity (summarized by direction and by distance): Indexes of alpha diversity summarized to direction of samples indicated lower diversity for samples collected from ESE, N, NE & NNW where activity of expeditioners are relatively high (Machine maintenance building, oil tanks, Power plant building, etc.), and diversity summarized to distance followed a Bell curve pattern, increasing from 100m until it peaks at 800m and dropping thereof as the distance increases until 1800m, also supported bacterial diversity seemed to poor in active areas near the center of the Station, but it also took poor values at southern edge areas where almost no human activity in the island.

Based on ASVs, phylum, class, order, and family level of bacterial dominance will be listed in the poster.

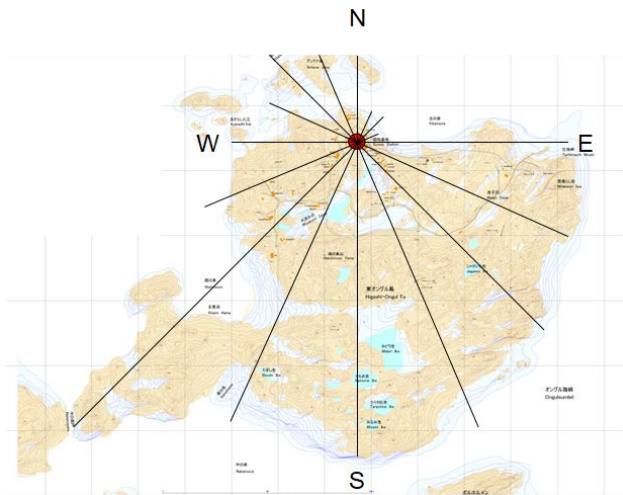


Figure 1. Map of East Ongul island and axis of soil sampling points.

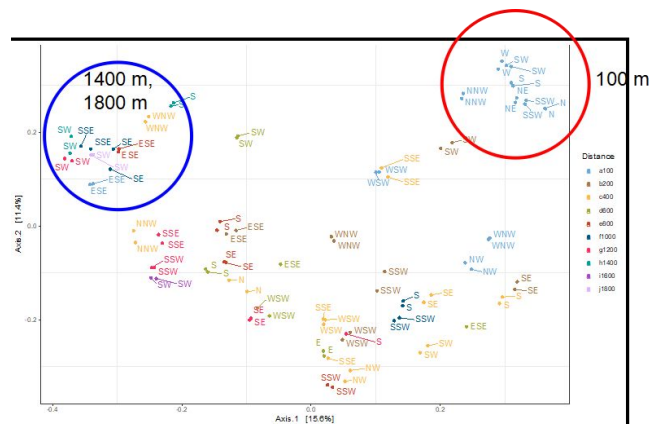


Figure 2. PCA Plot based on Bray-Curtis Distance

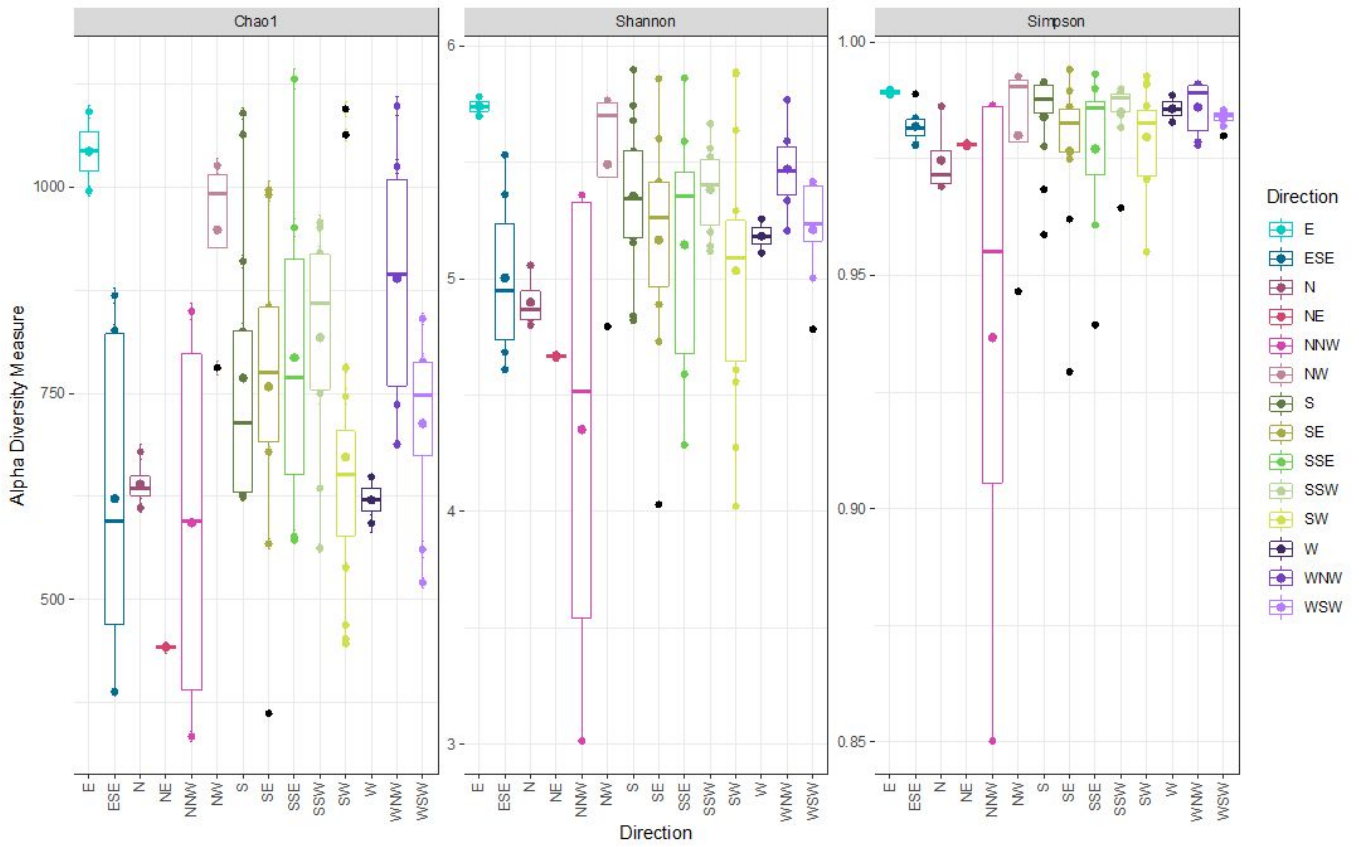


Figure 3, Alpha diversity summarized by sampling direction

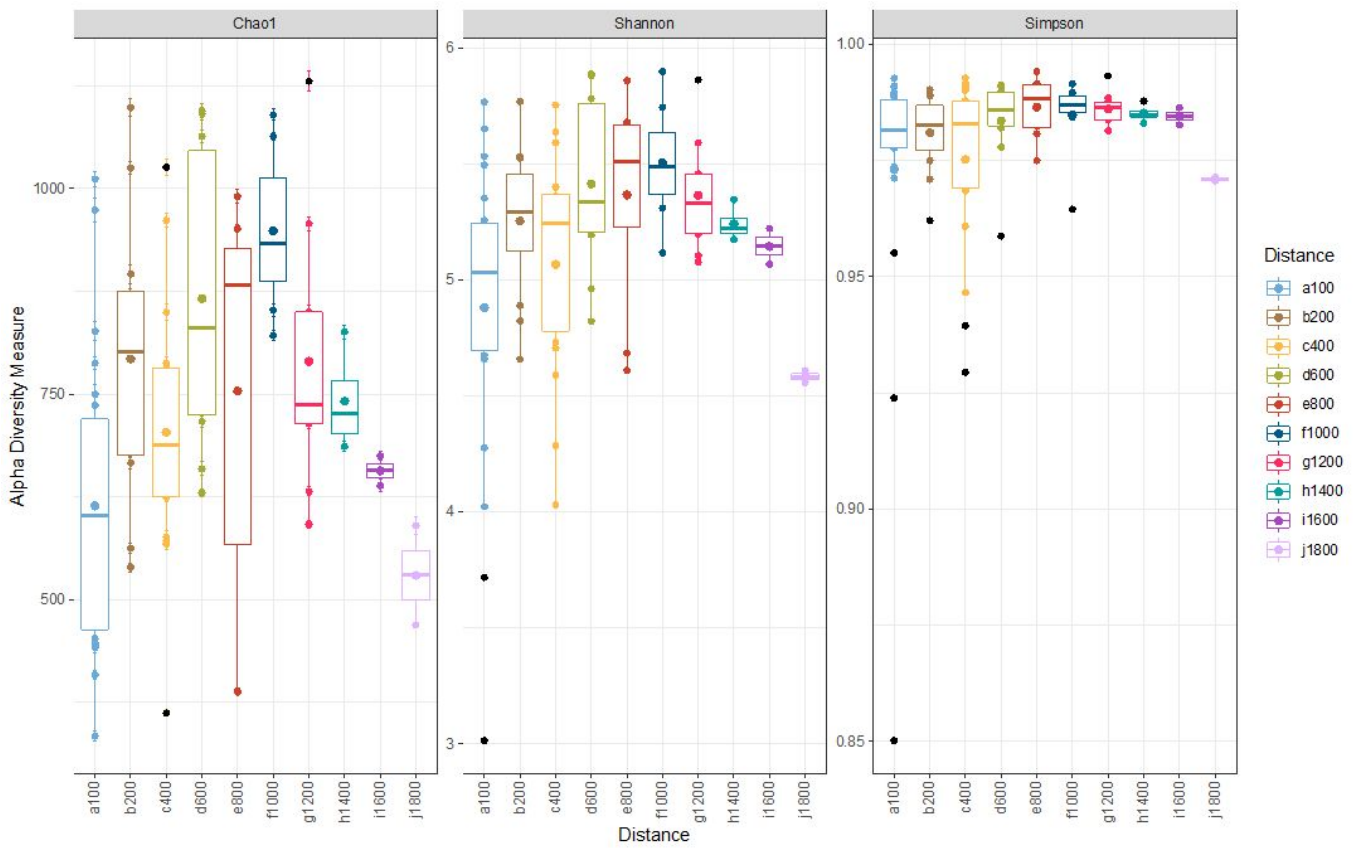


Figure 4. Alpha diversity summarized by sampling distance