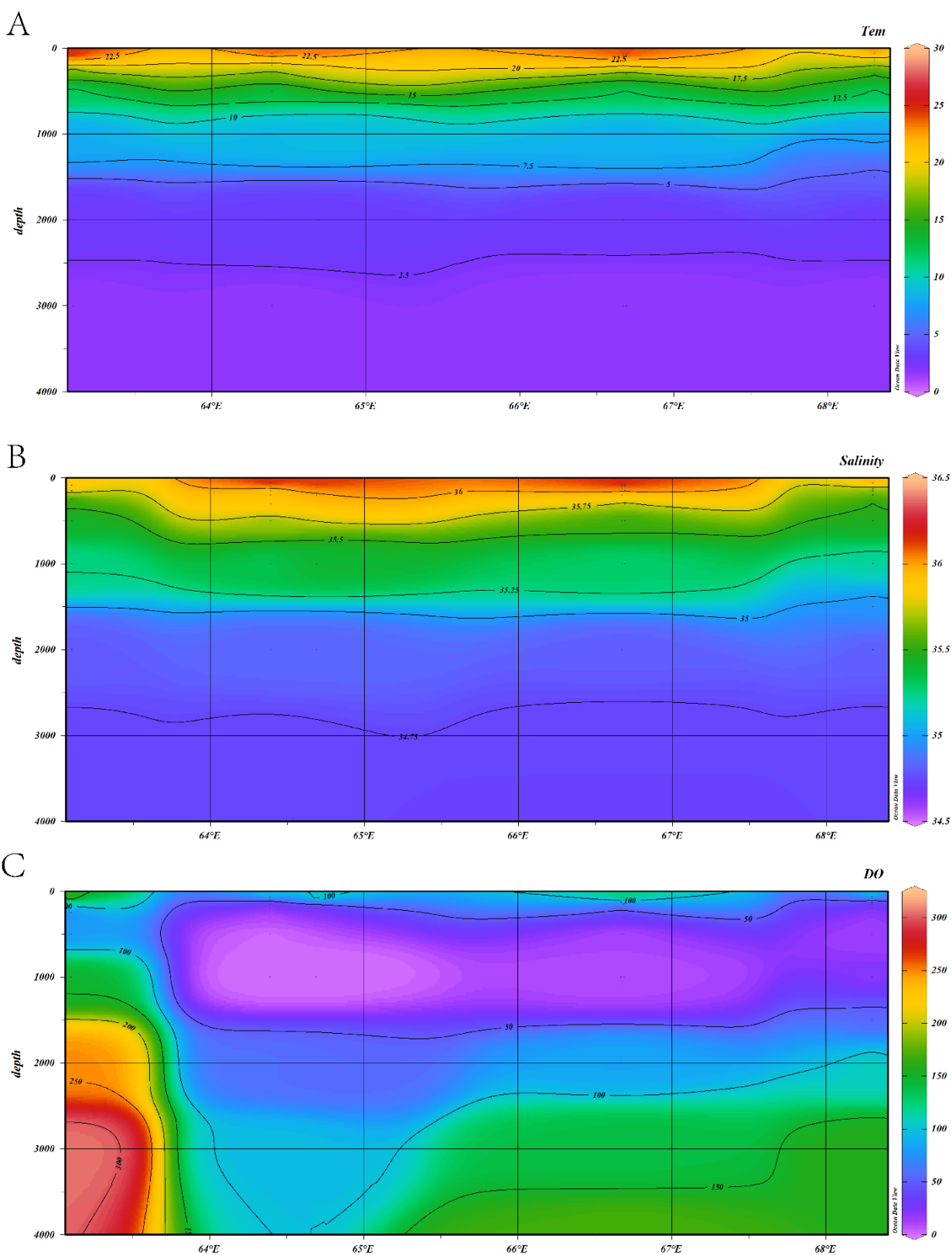
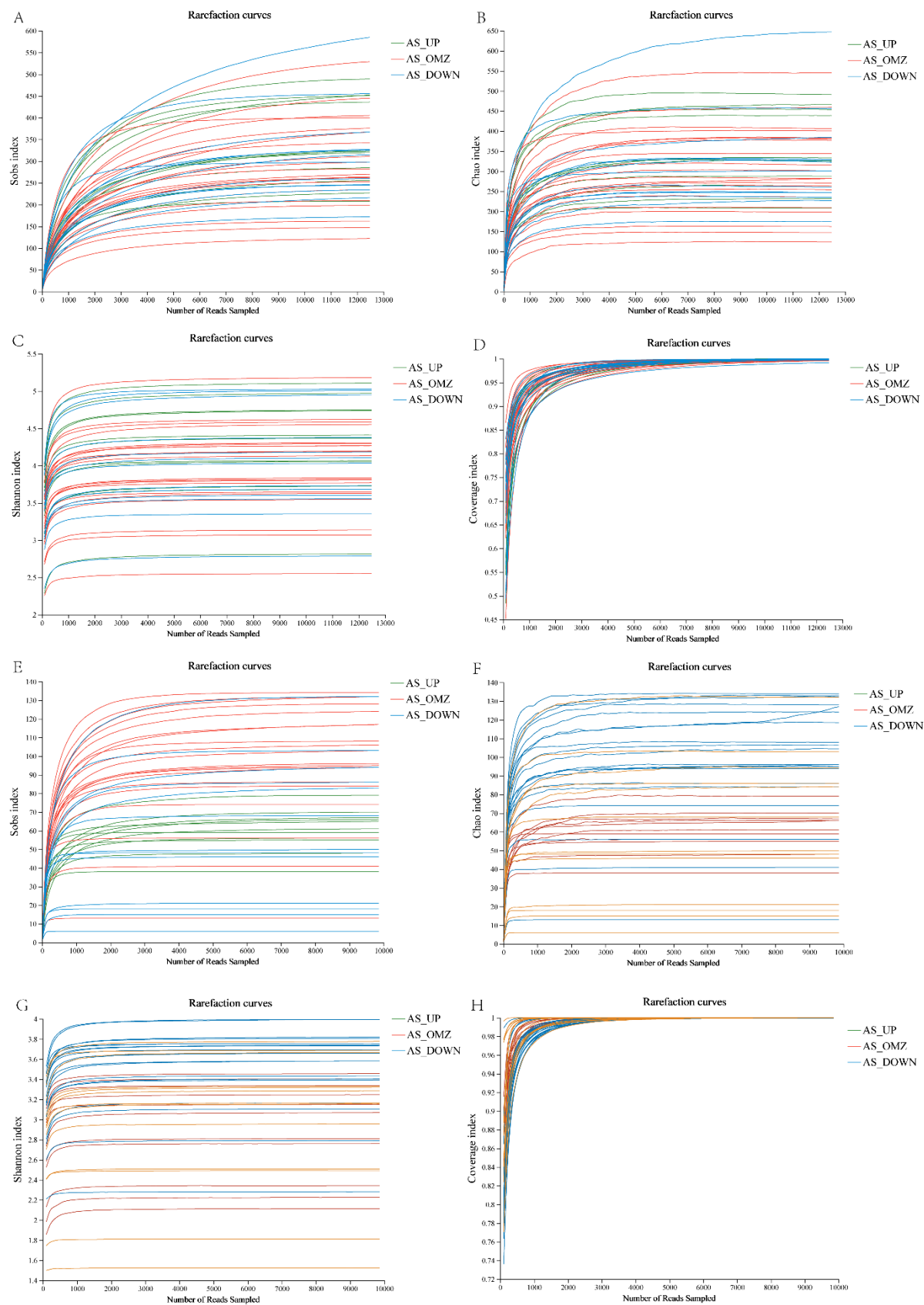


Supplementary Material

1 Supplementary Figures

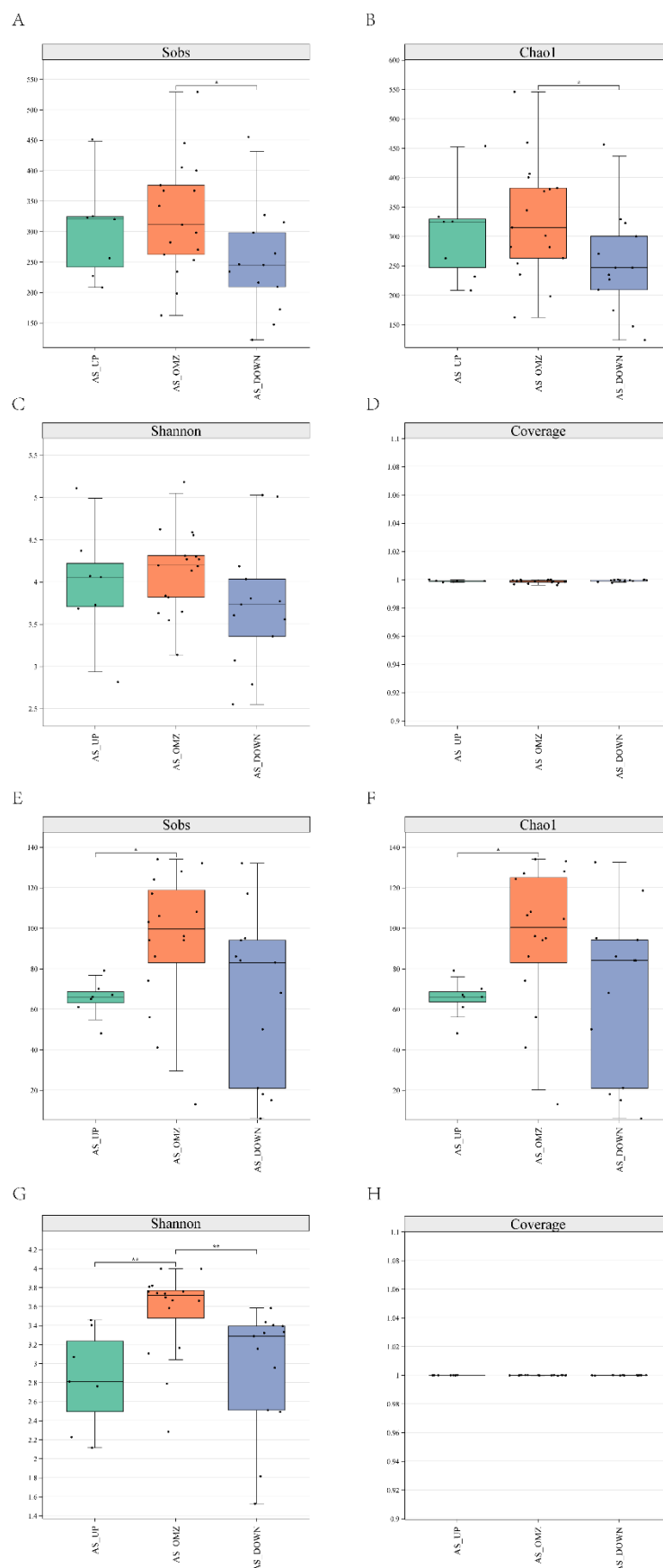


Supplementary Figure 1. The temperature, salinity and depth display map of the stations. (A) Temperature of AS, (B) Salinity of AS, (C) DO of AS



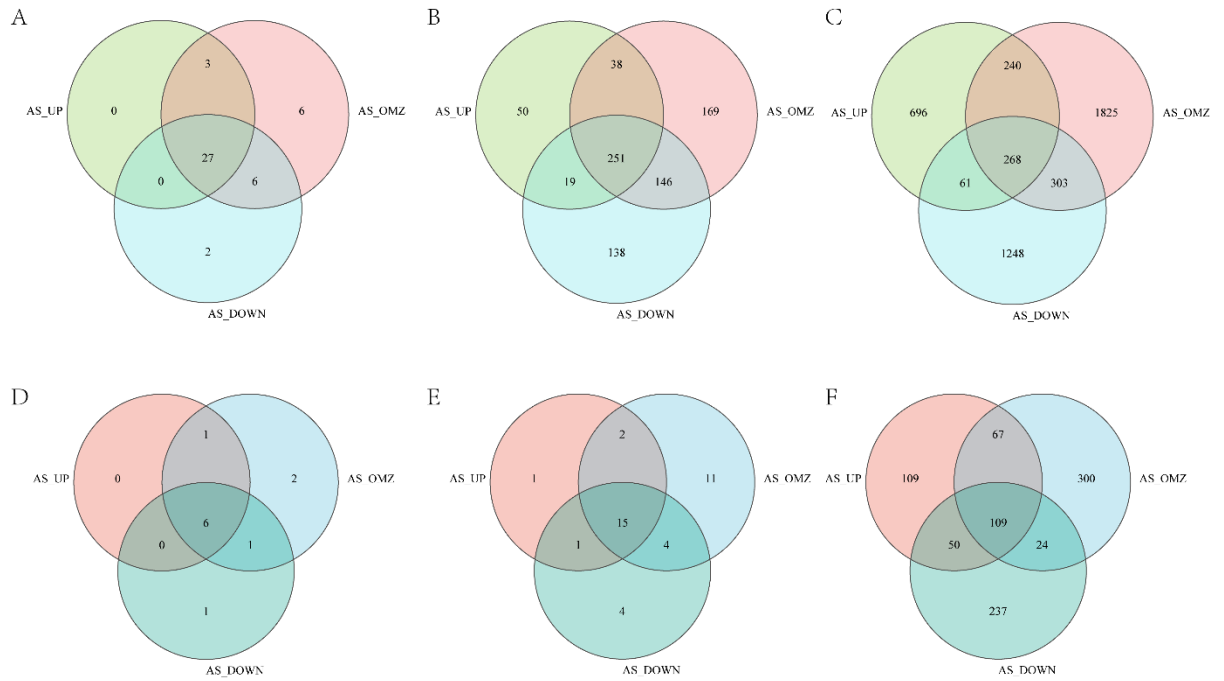
Supplementary Figure 2. Rarefaction curve for bacteria and archaea

(A) Sobs for bacteria, (B) Chao1 for bacteria, (C) Shannon for bacteria, (D) Coverage for bacteria, (E) Sobs for archaea, (F) Chao1 for archaea, (G) Shannon for archaea, (H) Coverage for archaea



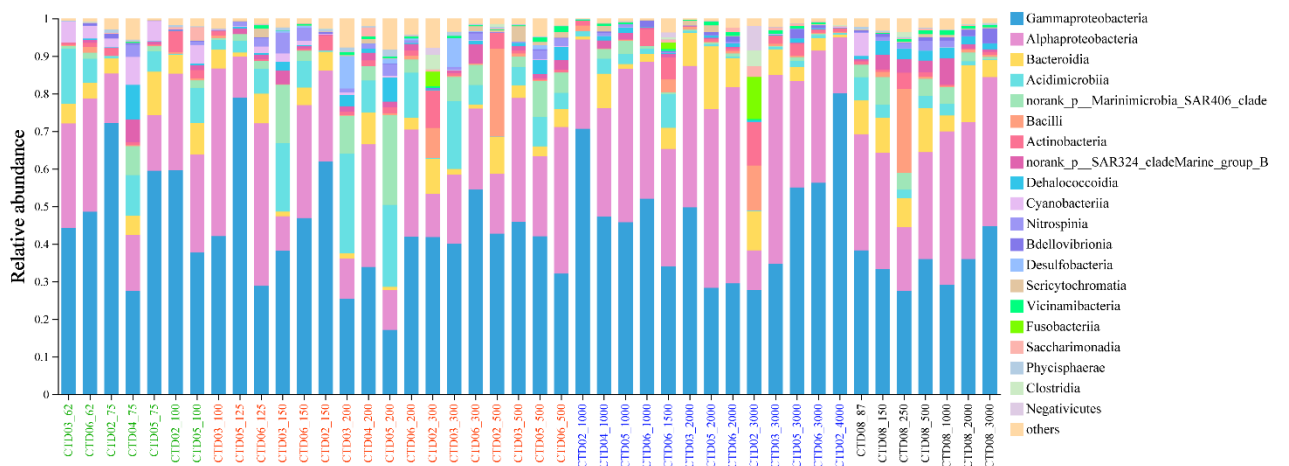
Supplementary Figure 3. Alpha diversity estimators for Bacteria and Archaea

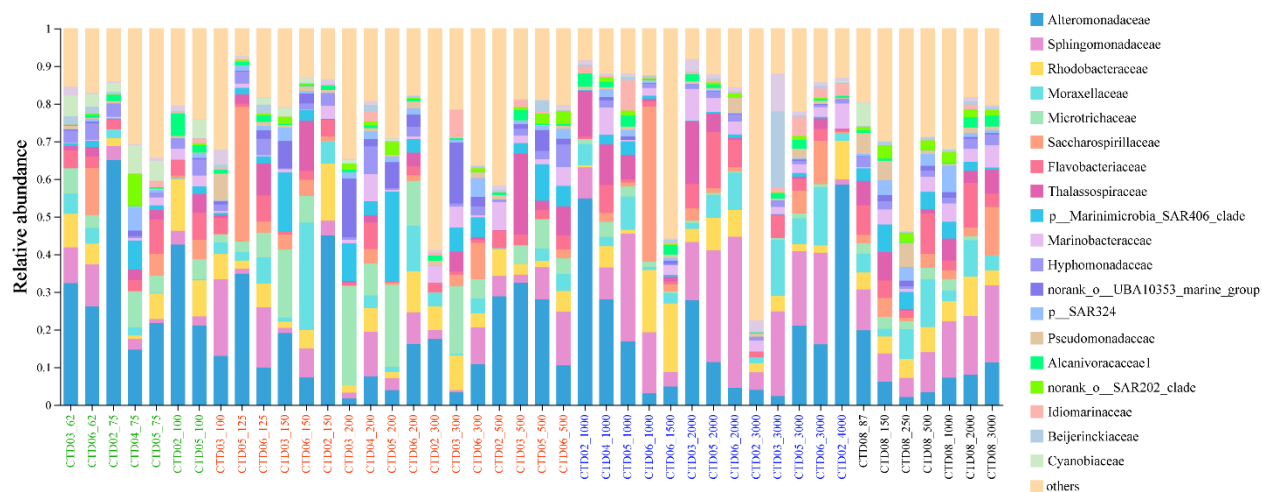
(A) Sobs for bacteria, (B) Chao1 for bacteria, (C) Shannon for bacteria, (D) Coverage for bacteria, (E) Sobs for archaea, (F) Chao1 for archaea, (G) Shannon for archaea, (H) Coverage for archaea



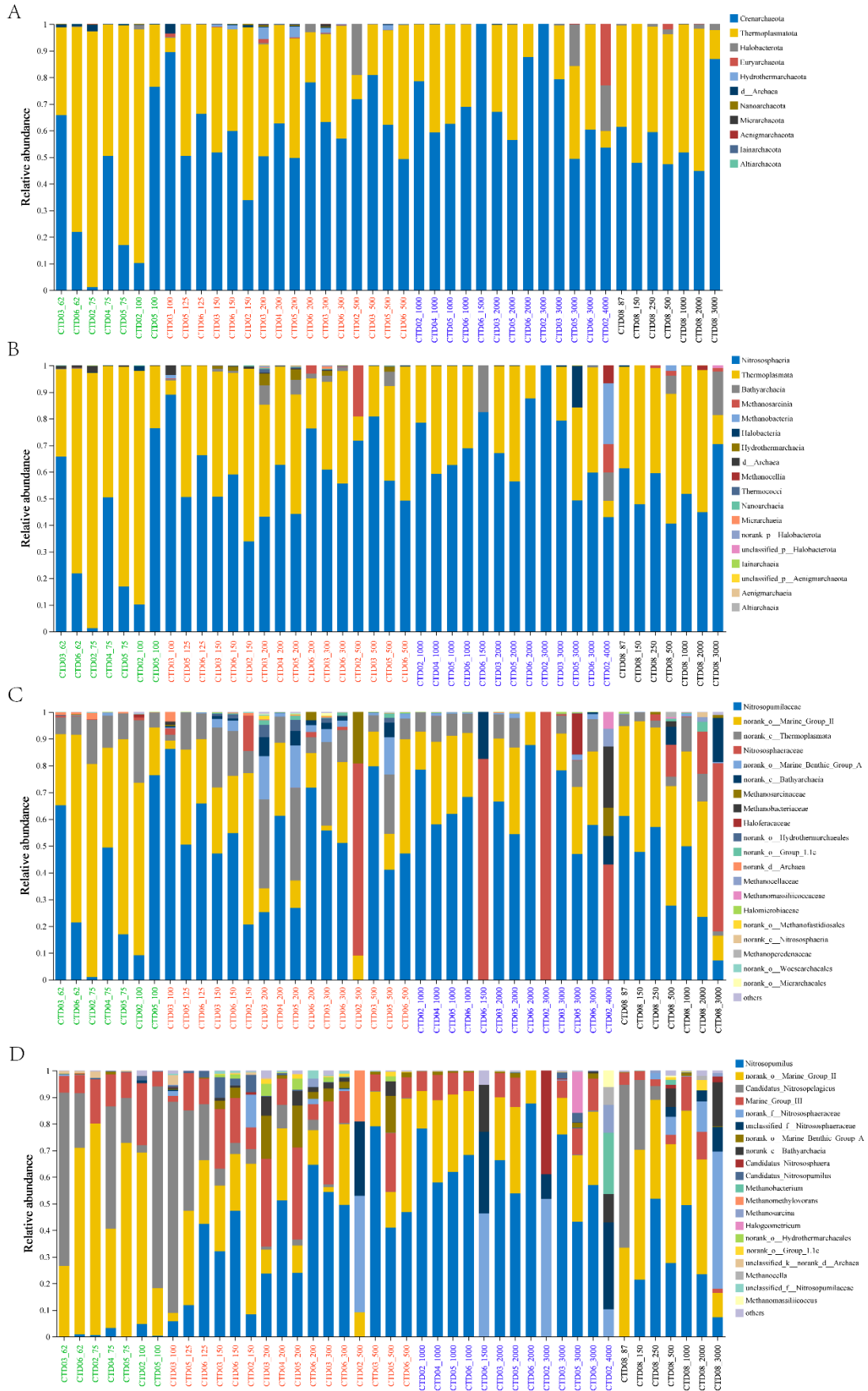
Supplementary Figure 4. Taxonomic distribution indicating dominant bacterial communities

(A) venn of bacterial at phylum level, (B) venn of bacterial at family level, (C) venn of bacterial at ASV level, (D) venn of archaeal at phylum level, (E) venn of archaeal at family level, (F) venn of archaeal at ASV level



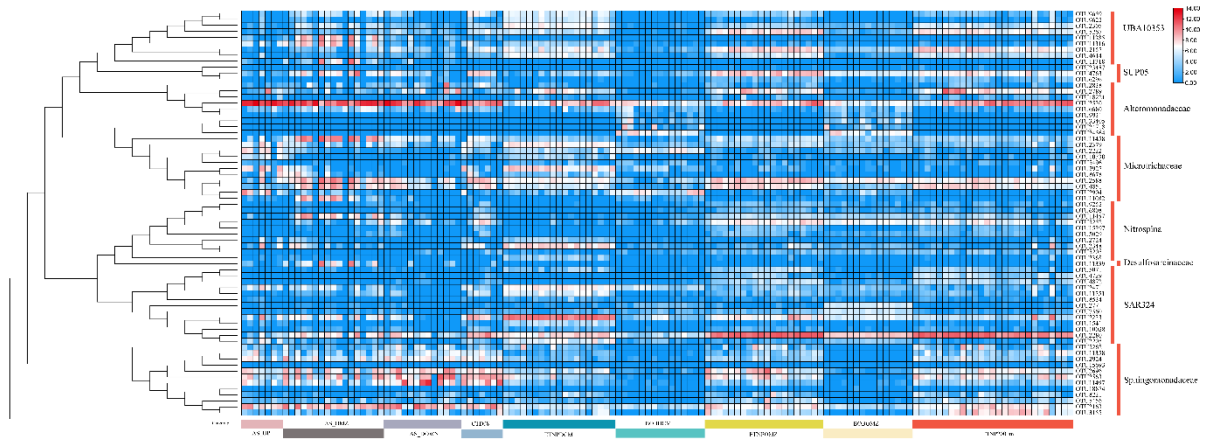


Supplementary Figure 6. Microbial community composition of AS at family level

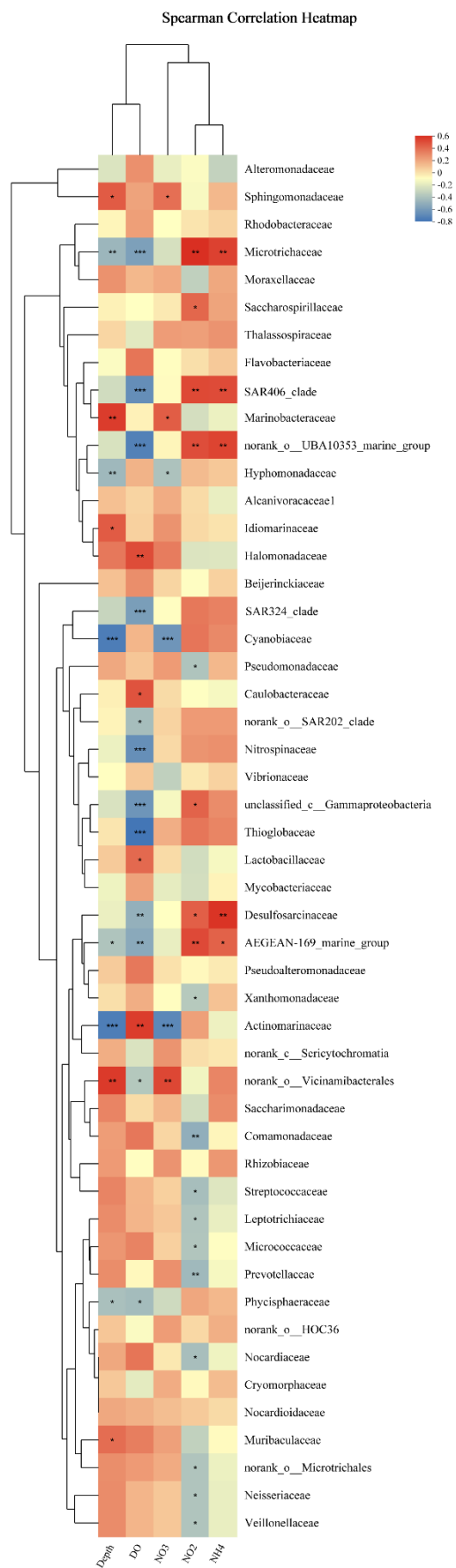


Supplementary Figure 7. Taxonomic distribution indicating dominant archaeal communities

(A) phylum level (B) class level (C) family level (D) genus level

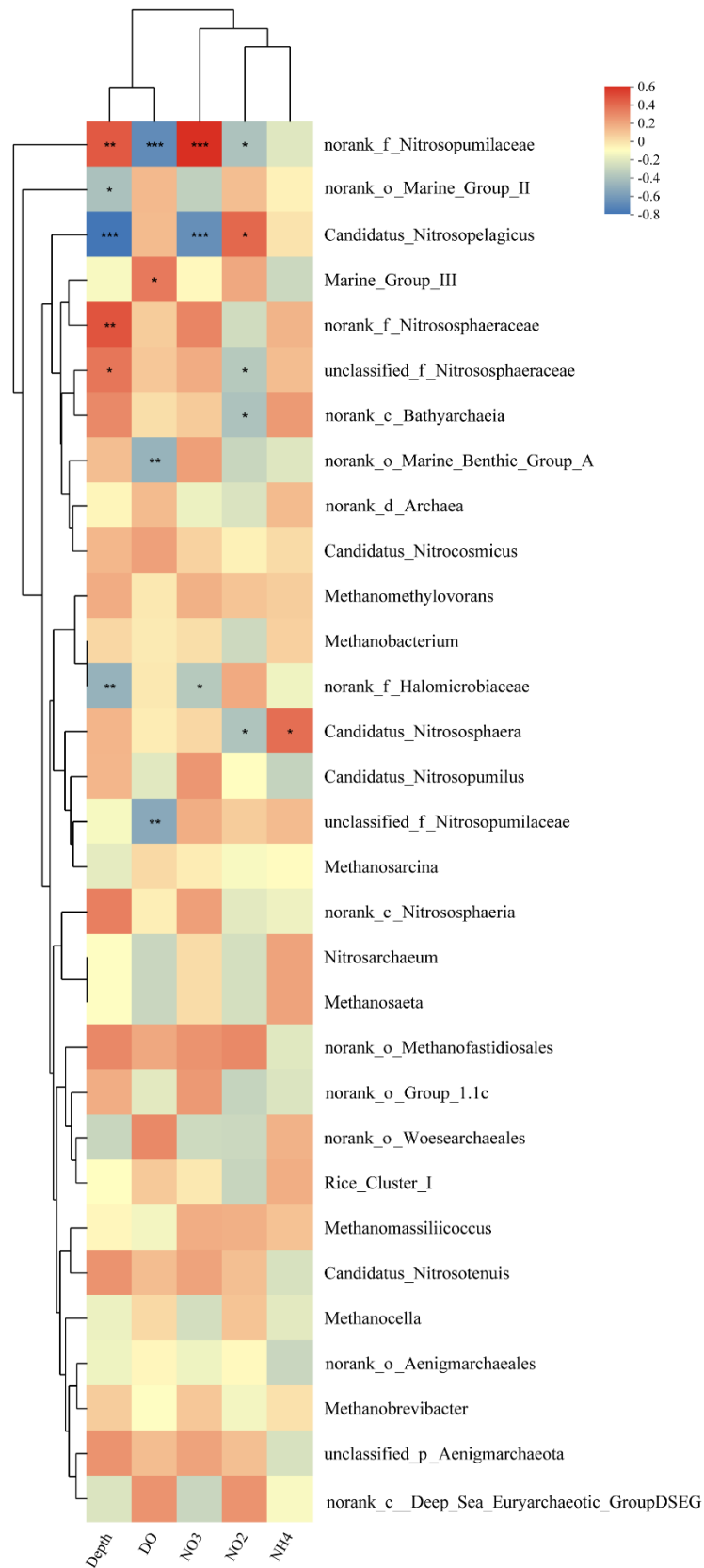


Supplementary Figure 8 Relative abundance (log transformation) and taxonomic classification of major OTUs for key taxa in different sea areas.

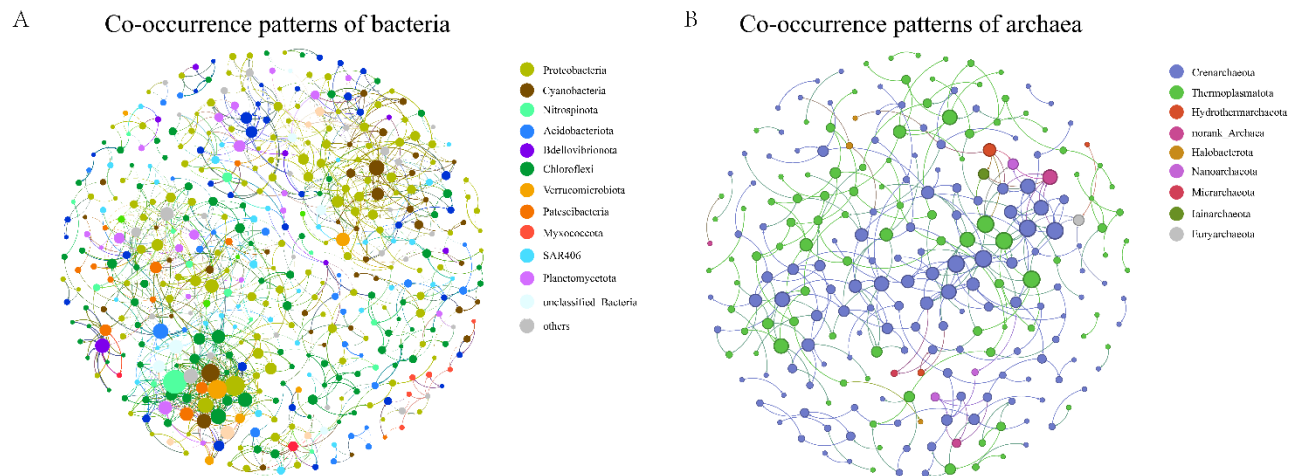


Supplementary Figure 9. Spearman's correlations analysis between the environmental parameters for bacterial at the family level

Spearman Correlation Heatmap

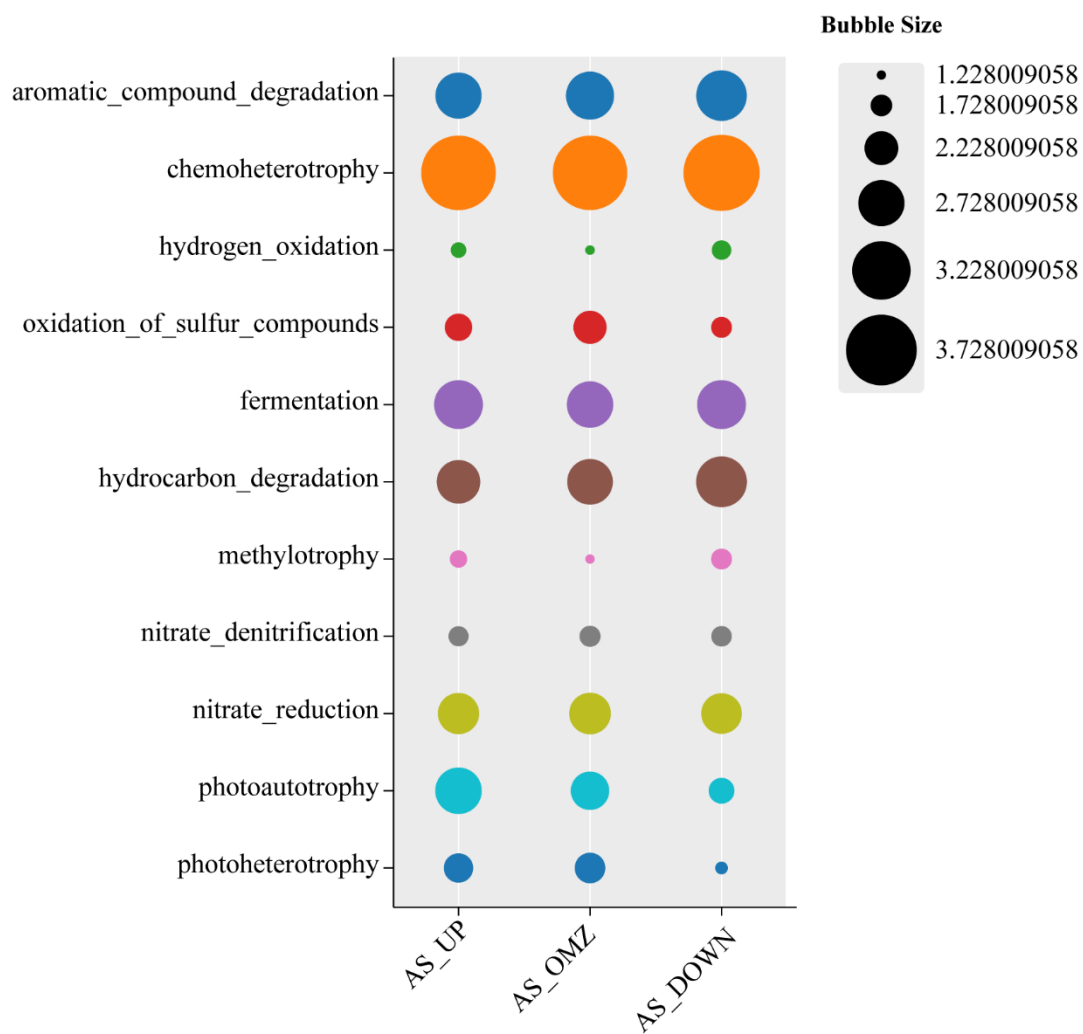


Supplementary Figure 10. Spearman's correlations analysis between the environmental parameters for archaeal at the genus level



Supplementary Figure 11. Co-occurrence patterns of microbial populations based on Spearman's correlation analysis

(A) bacterial, (B) archaeal



Supplementary Figure 12. Predictive analysis of bacterial metabolism