Seasonality of SAR Clades in a Temperate, Estuarine Environment

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MOTIVATION

- There are currently few temporal studies of a dynamic marine coastal environment
- American Southeast is understudied, especially in microbial ecology
- SAR clades are under-characterized in coastal environments

METHODS

- 16s rDNA extracted and amplified from water samples taken biweekly from Skidaway River Estuary, GA
- Samples sequenced using Illumina sequencing, analyzed via Qiime2
- Graphics generated in R using Phyloseq and Ampvis2 packages.
- Correlation network analysis performed using SparCC in the SpiecEasi package

KEY FINDINGS

- **SAR clades, especially SAR11, dominate across seasons**
- **More SAR ASVs present at hotter temperatures**
- **Interactions between ASVs, including SAR ASVs, decrease in summer months**

References and Acknowledgements

Rutgers Data labs REU

National Science Foundation Grant No. OCE-1831625

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Genome Research 2003 Nov; 13(11):2498-504

A. SAR clades were among the most abundant members of the prokaryotic community

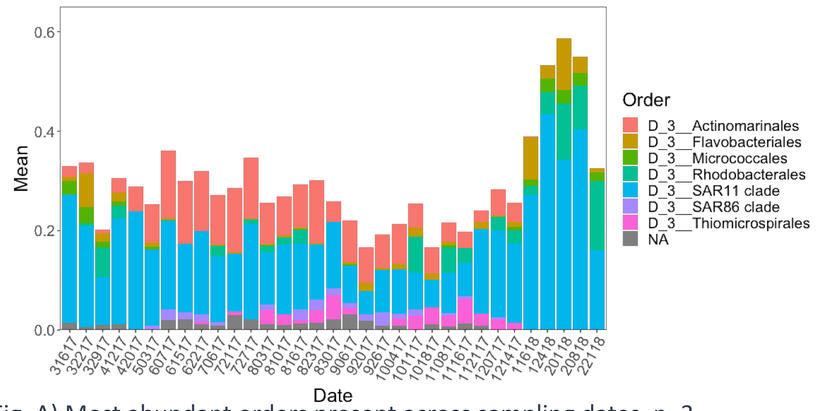


Fig. A) Most abundant orders present across sampling dates, n=3

B. More SAR clades appear as temperature increases

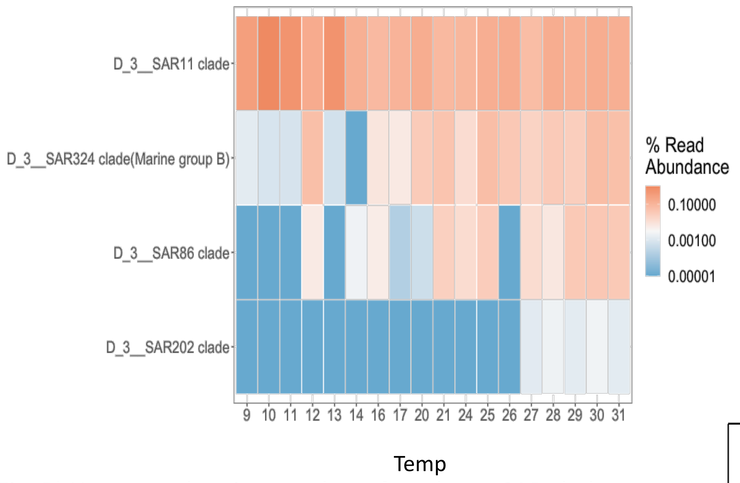


Fig. B) Heatmap showing number of reads per SAR clade across temperature gradient. Blue indicates lower relative abundance Of reads, red indicates higher relative abundance

C. Some SAR11 ASVs are present across seasons, while others only appear in warmer seasons

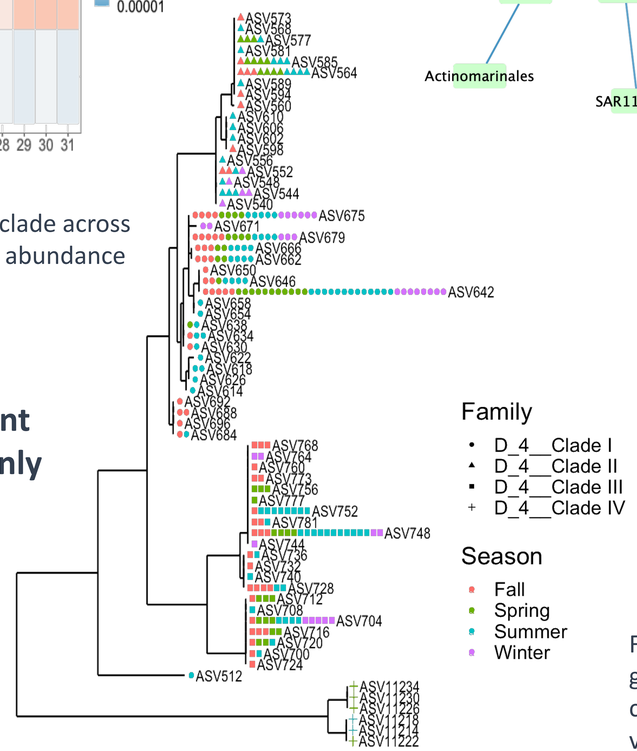
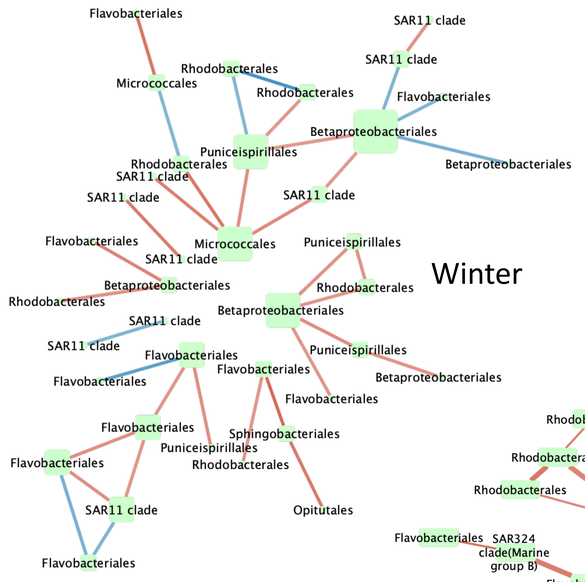
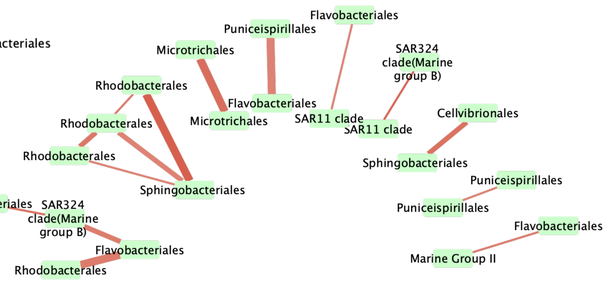
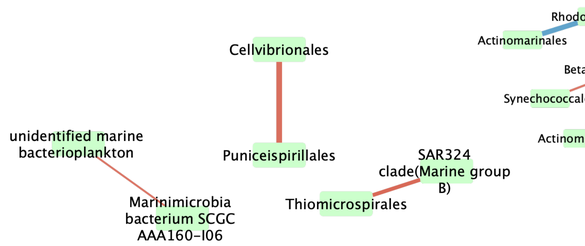


Fig. C) Phylogenetic tree showing relatedness of SAR11 ASVs and the number of reads that ASV had per season

D. Putative correlations between ASVs, including SAR clade ASVs, decrease from winter to summer







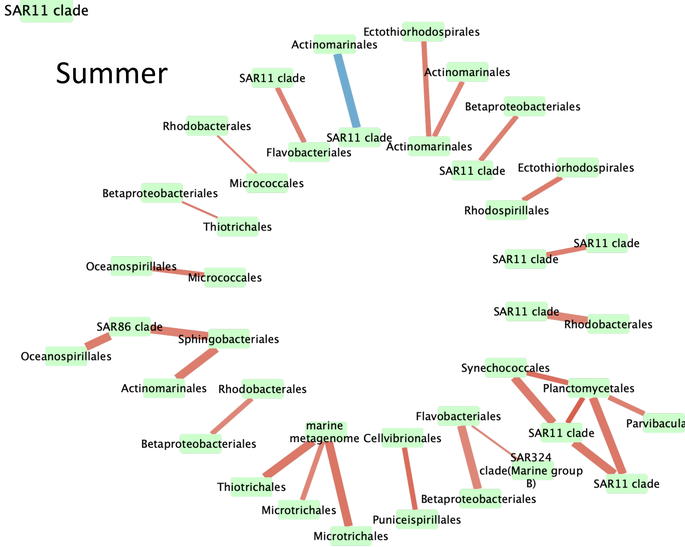


Fig. D) Co-occurrence networks of amplicon sequence variants generated by SparCC and visualized in Cytoscape. Red shows positive correlation and blue negative. Thicker lines indicate lower p value. p value < 0.05, Cor > 0.6 or <-0.6