

Spatial and temporal distribution of *Prochlorococcus* and *Synechococcus* genotypes in the Red Sea

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1



2



The Gulf of Aqaba

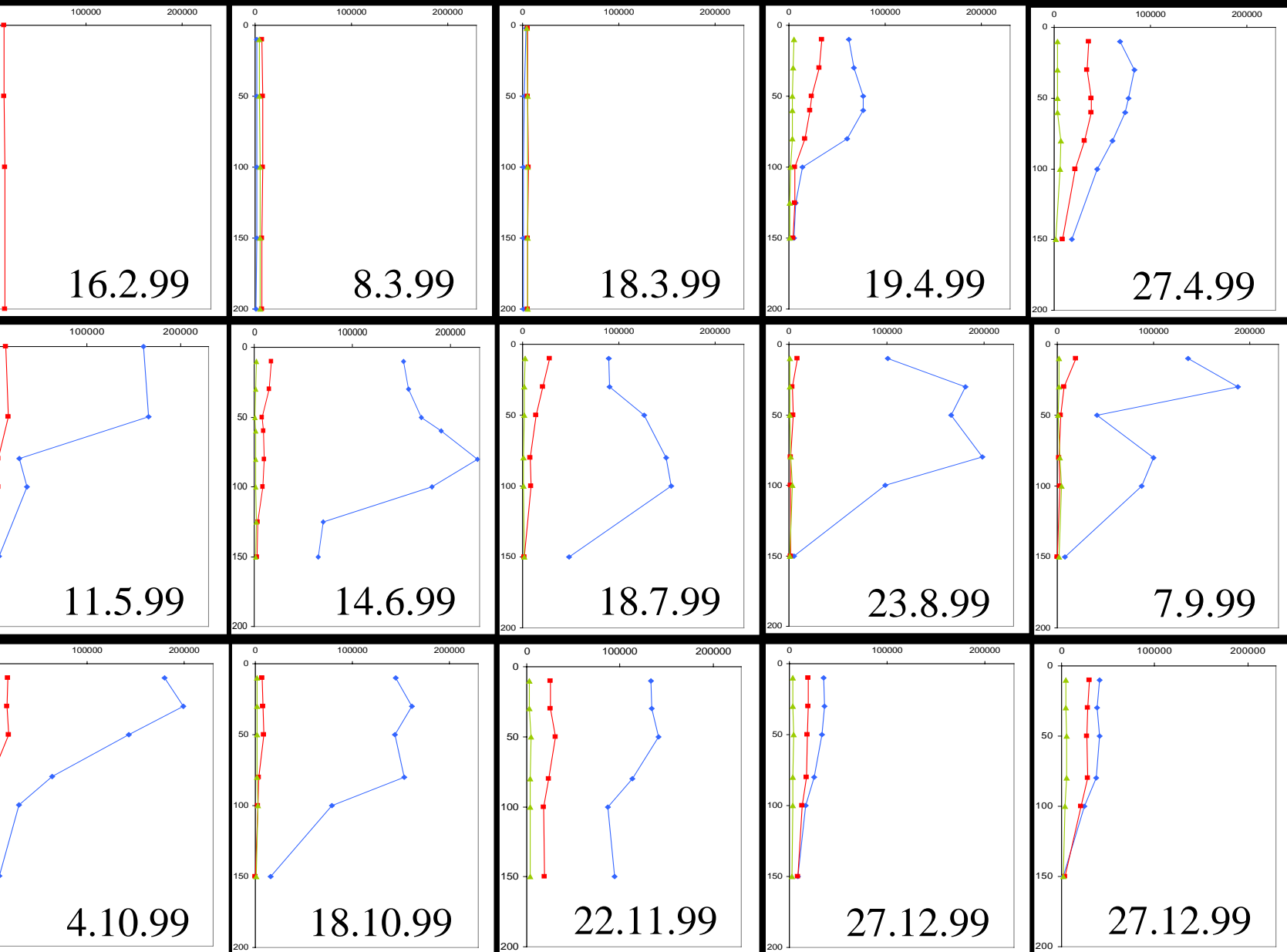


- Section of rift valley, up to 1800 m deep
- Shallow southern sill (250 m)
- No rivers
- Low biomass & chl *a* → deep light penetration
- Strong seasonal changes

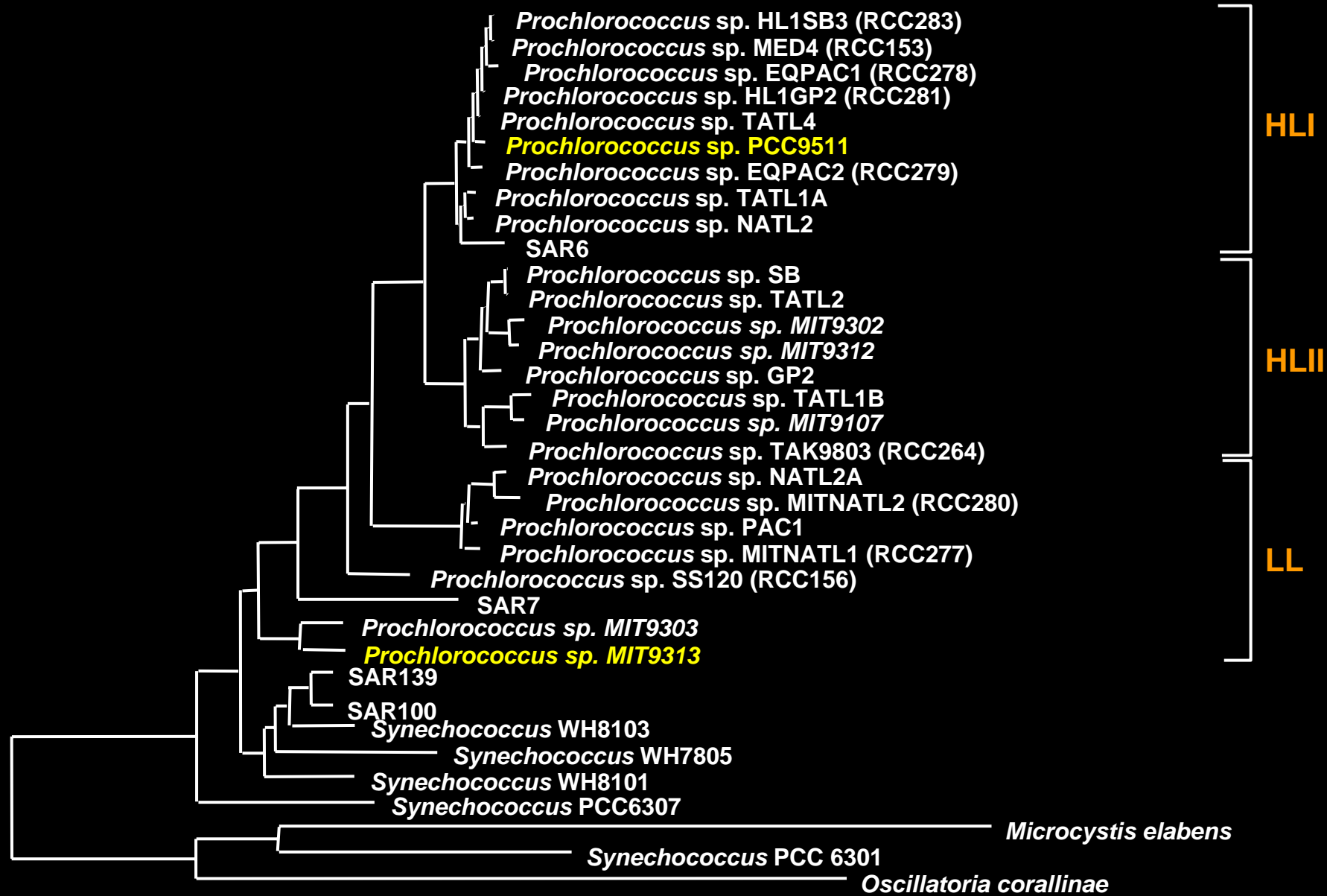




Cell counts

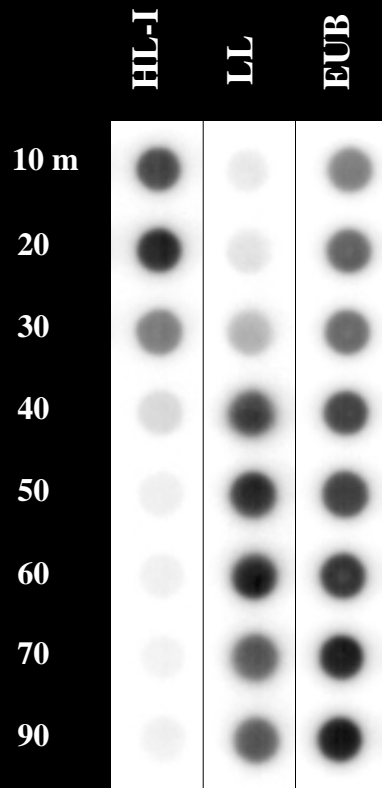


Prochlorococcus probes

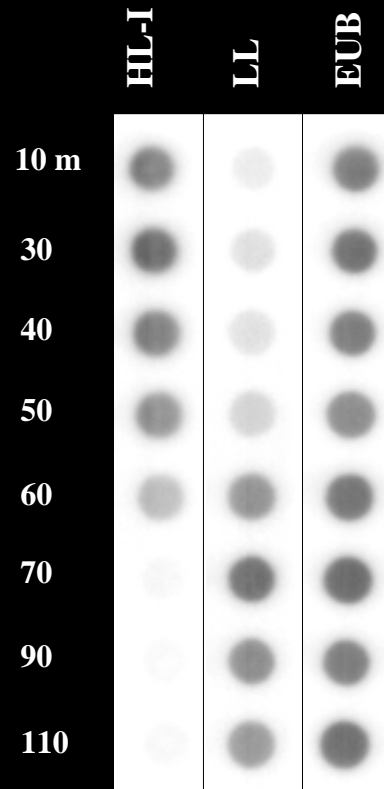


Prochlorococcus dot blots

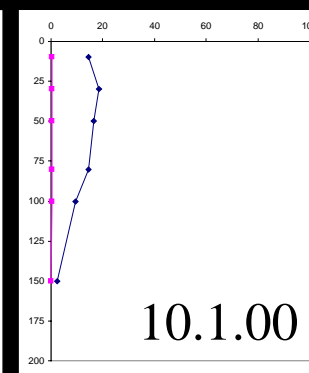
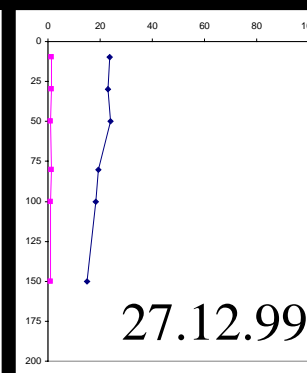
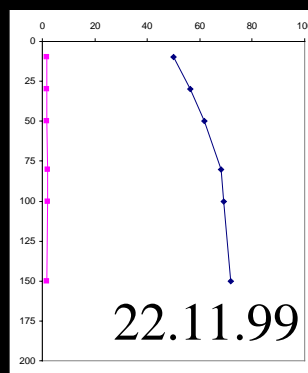
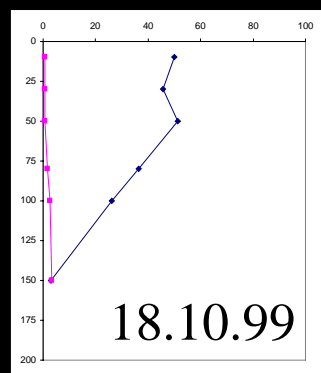
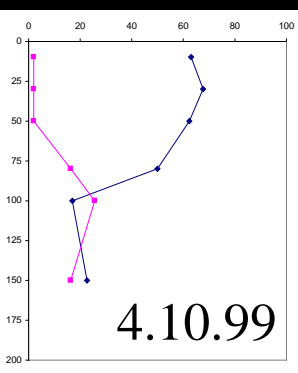
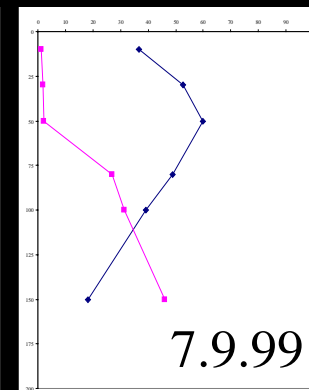
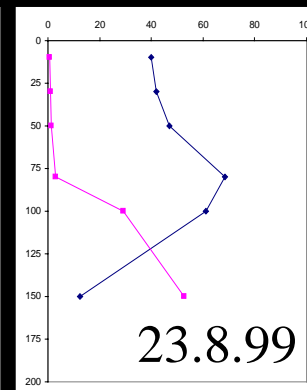
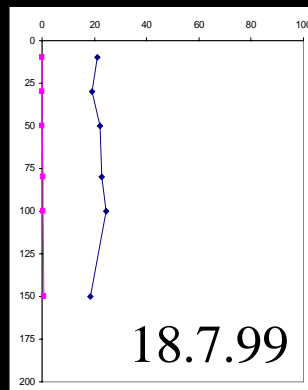
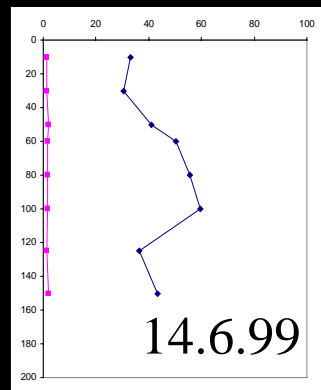
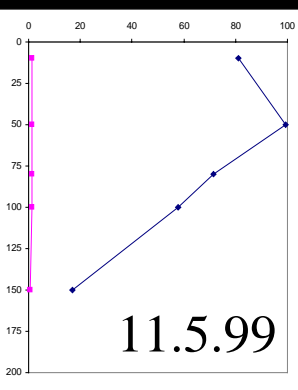
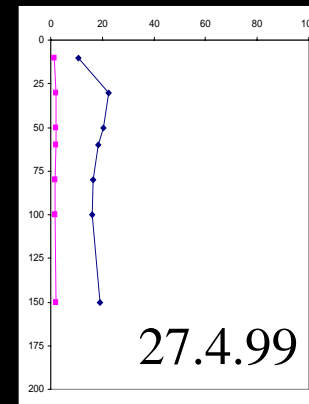
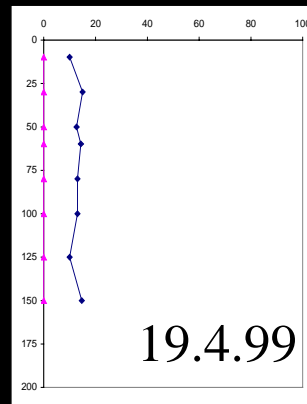
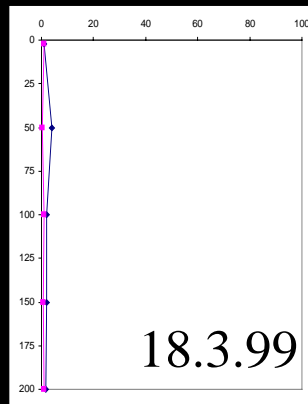
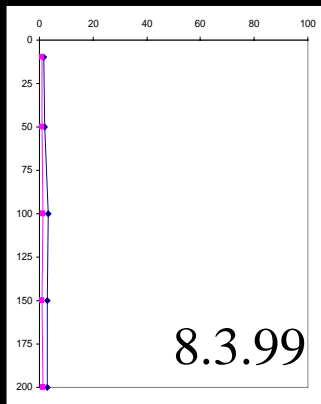
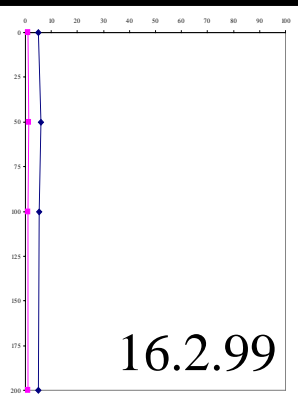
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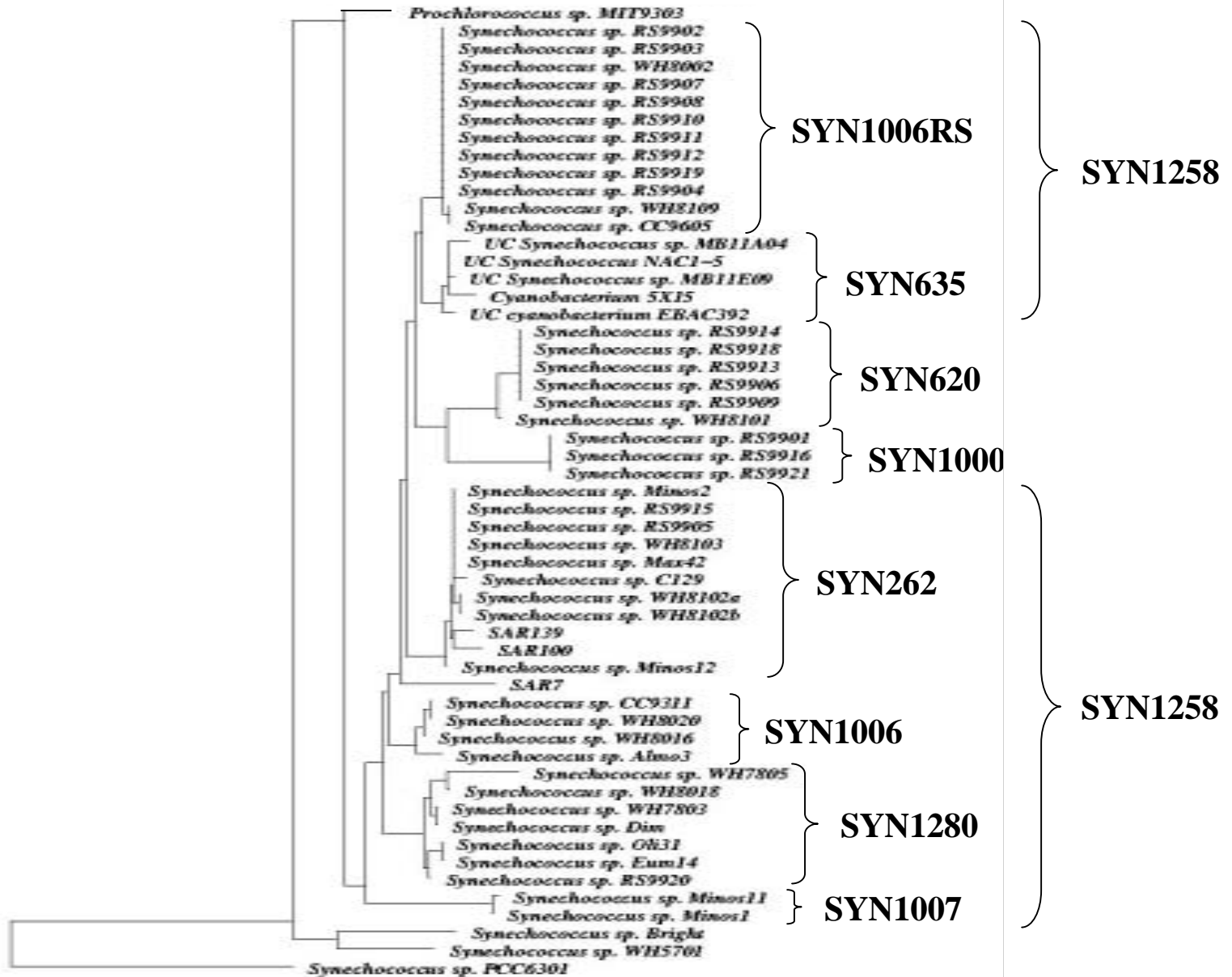
B



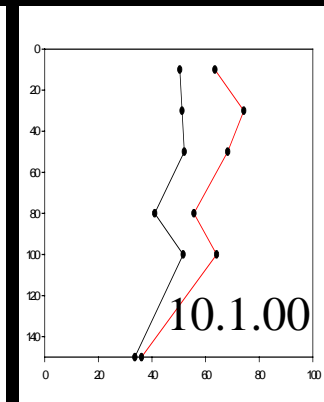
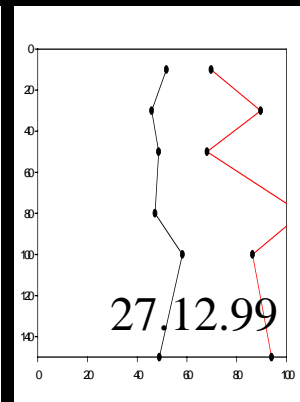
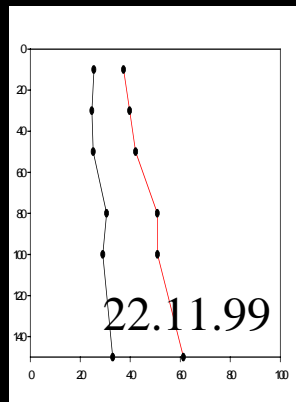
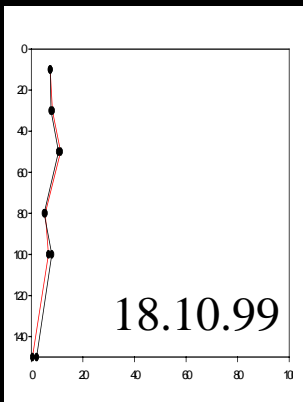
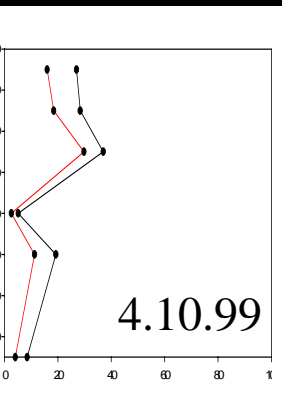
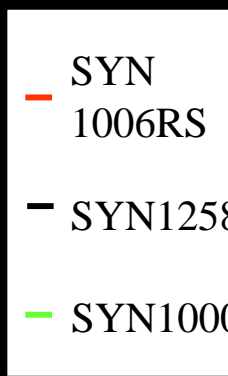
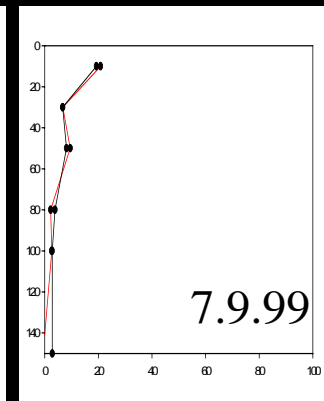
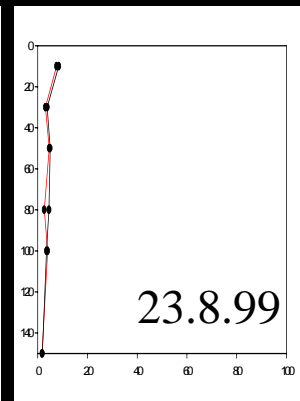
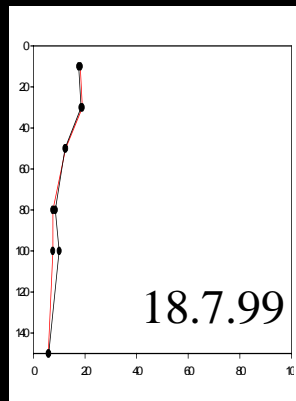
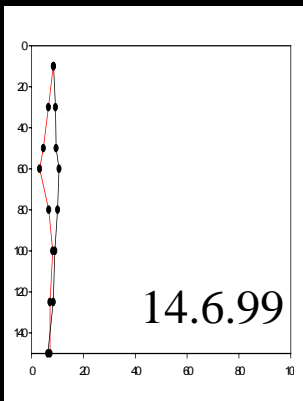
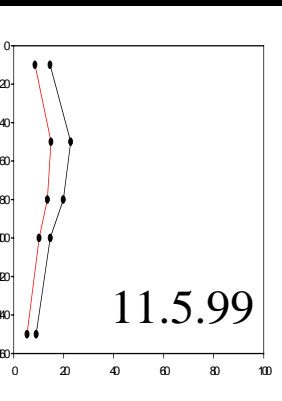
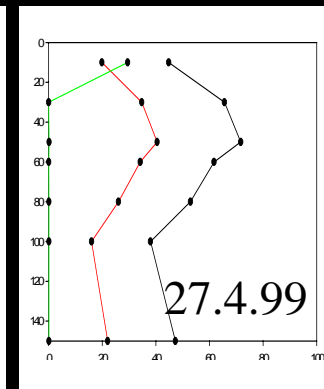
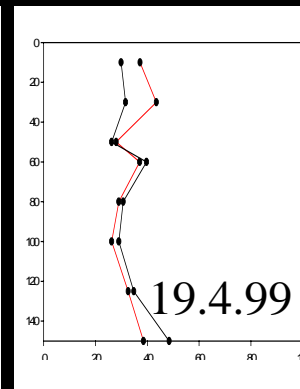
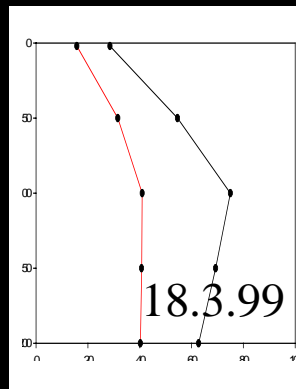
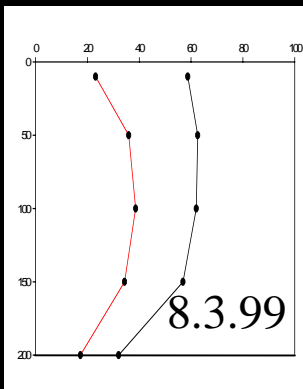
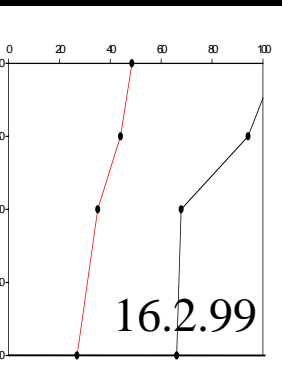
Prochlorococcus



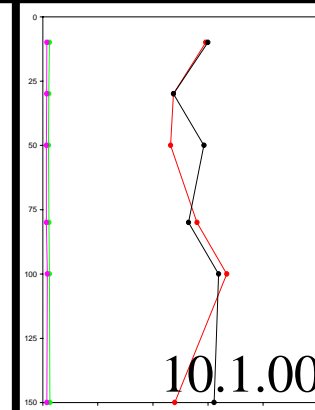
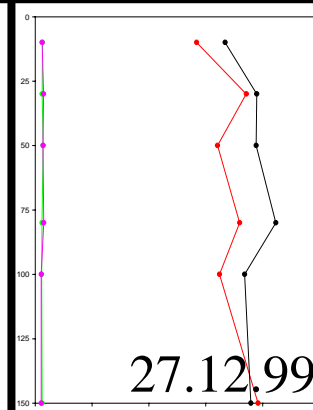
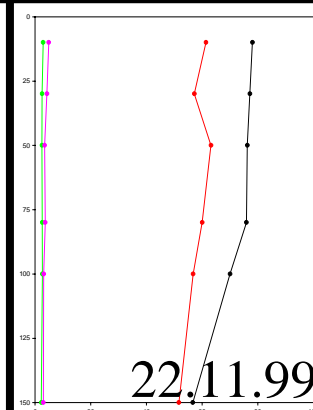
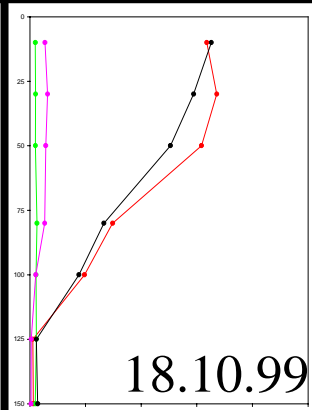
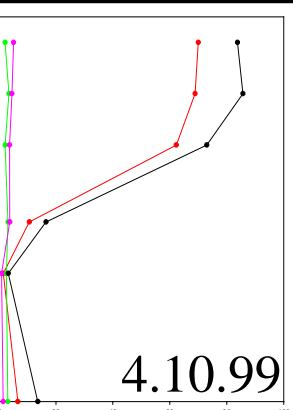
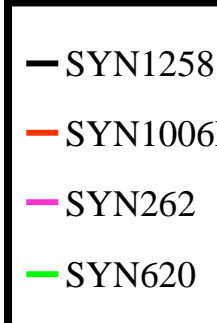
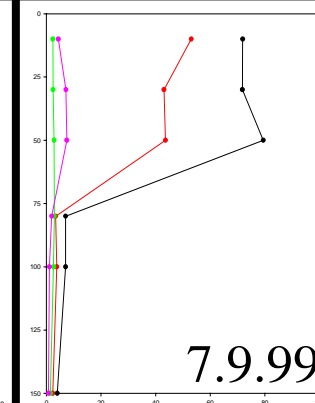
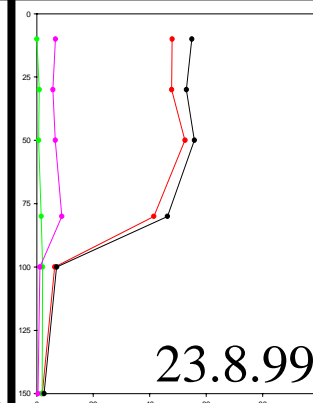
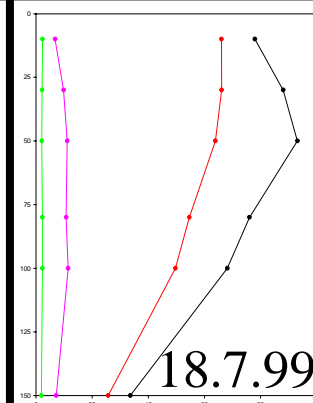
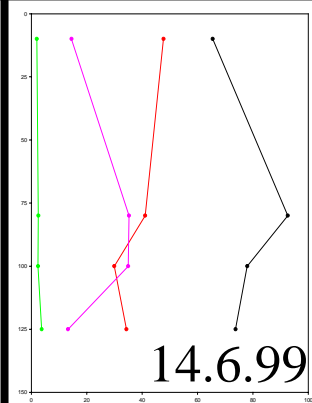
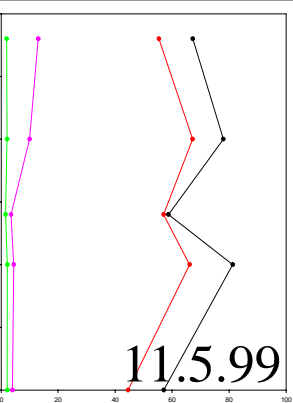
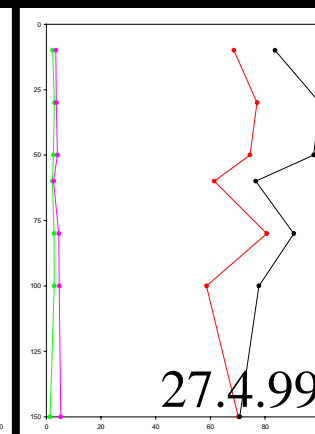
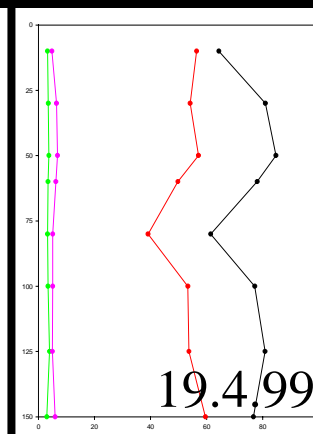
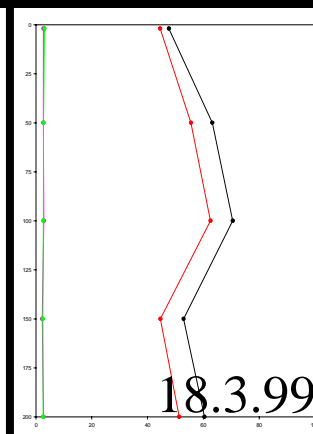
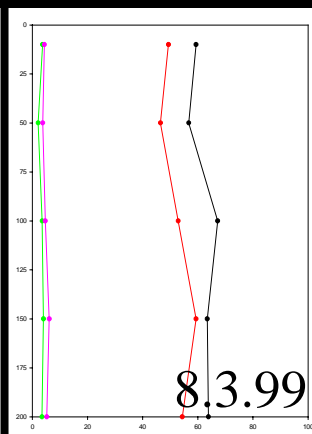
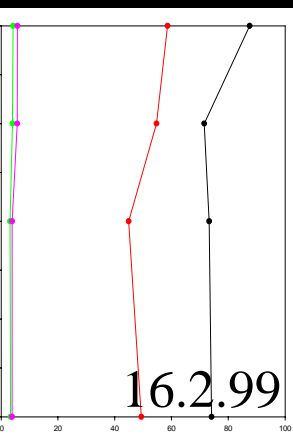
Synechococcus PROBES



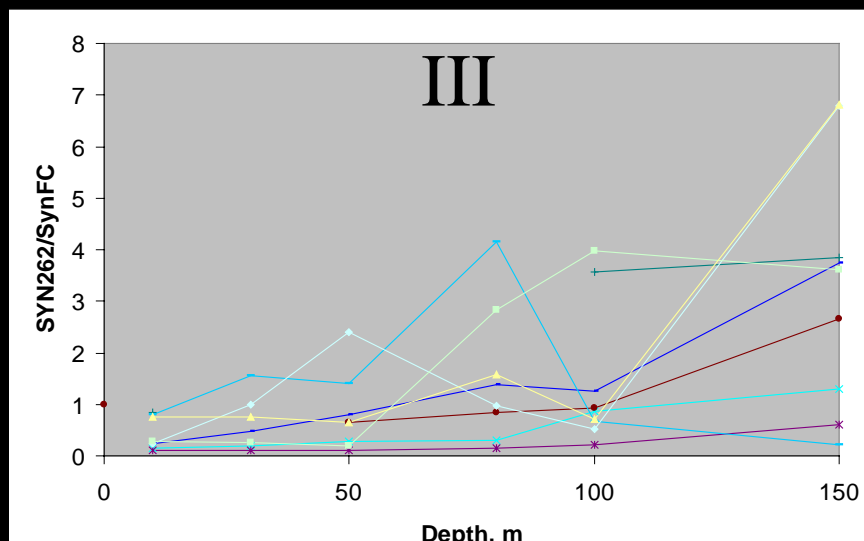
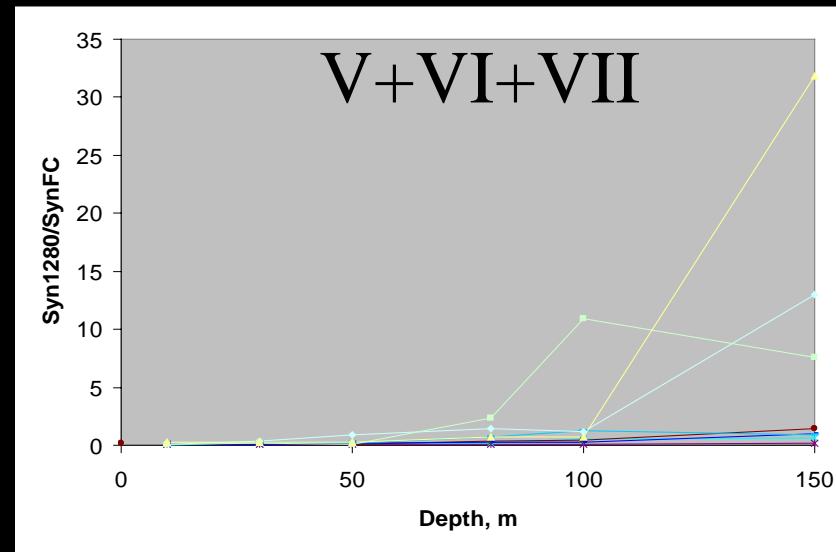
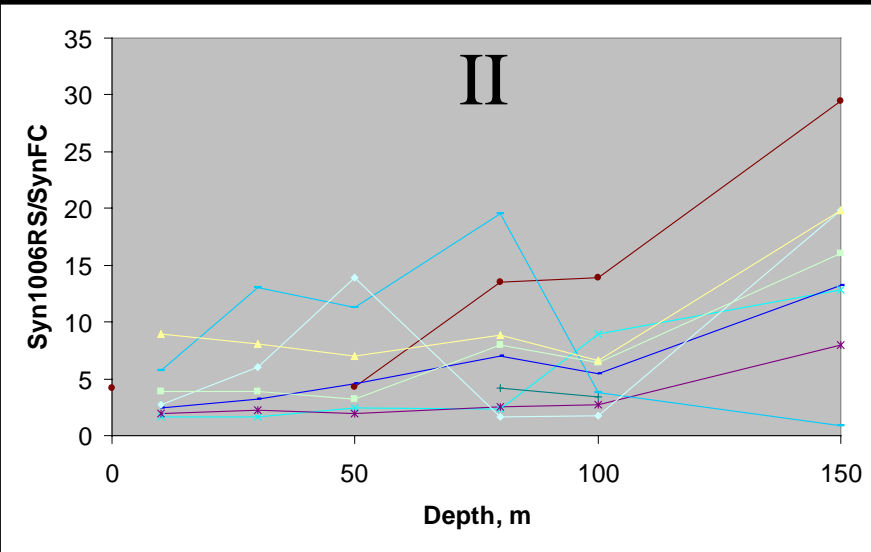
Synechococcus (107F)



Synechococcus (1/2F)



Synechococcus clusters as a proportion of total *Synechococcus*



- 19-Apr
- 27-Apr
- 11-May
- 14-Jun
- 18-Jul
- 23-Aug
- 7-Sep
- 4-Oct
- 18-Oct

Conclusions

- Phytoplankton dynamics appear to be markedly influenced by the degree of deep winter mixing, and thus their initial seeding environment.
- *Prochlorococcus* dynamics in the Red Sea show domination by HLII genotypes and LL genotypes adapted to a specific low-light niche with strong seasonal variation, possibly reflecting water currents in the Gulf.
- *Synechococcus* dynamics appear to be more complicated, yet show year-round domination by a single, previously unknown genotype.
- Readily culturable *Synechococcus* strains are not necessarily the dominant ones in the water column.

Acknowledgements

Roscoff:

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Flow cytometry

Fred Partensky -

Flow cytometry

Synechococcus isolate

Daniel Vaultot -

Synechococcus isolate

Warwick:

Nyree West -

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Eilat:

Asaph Rivlin -

STD data

Tanya Rivlin -

Nutrient analysis

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Sue Ellen

Members of Post lab