

Variability of phytoplankton biodiversity along an estuarine salinity gradient (Guadiana Estuary, Portugal)

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Introduction

Phytoplankton monitoring programs reveal shifts in population dynamics over a large time frame. They can be used to understand the health of the microbial environment and assess the cause of community trends out with normal seasonal variation.

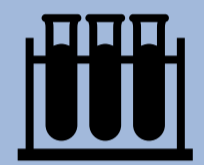
The Guadiana estuary has been monitored over the past three years from the freshwater site at Alcoutim, through the brackish water at Foz de Odeleite, to the marine water at Vila Real de Sto António.



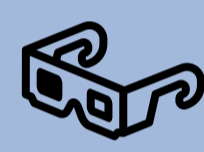
Aims



Assess trends in phytoplankton abundance and community composition over a three-year period



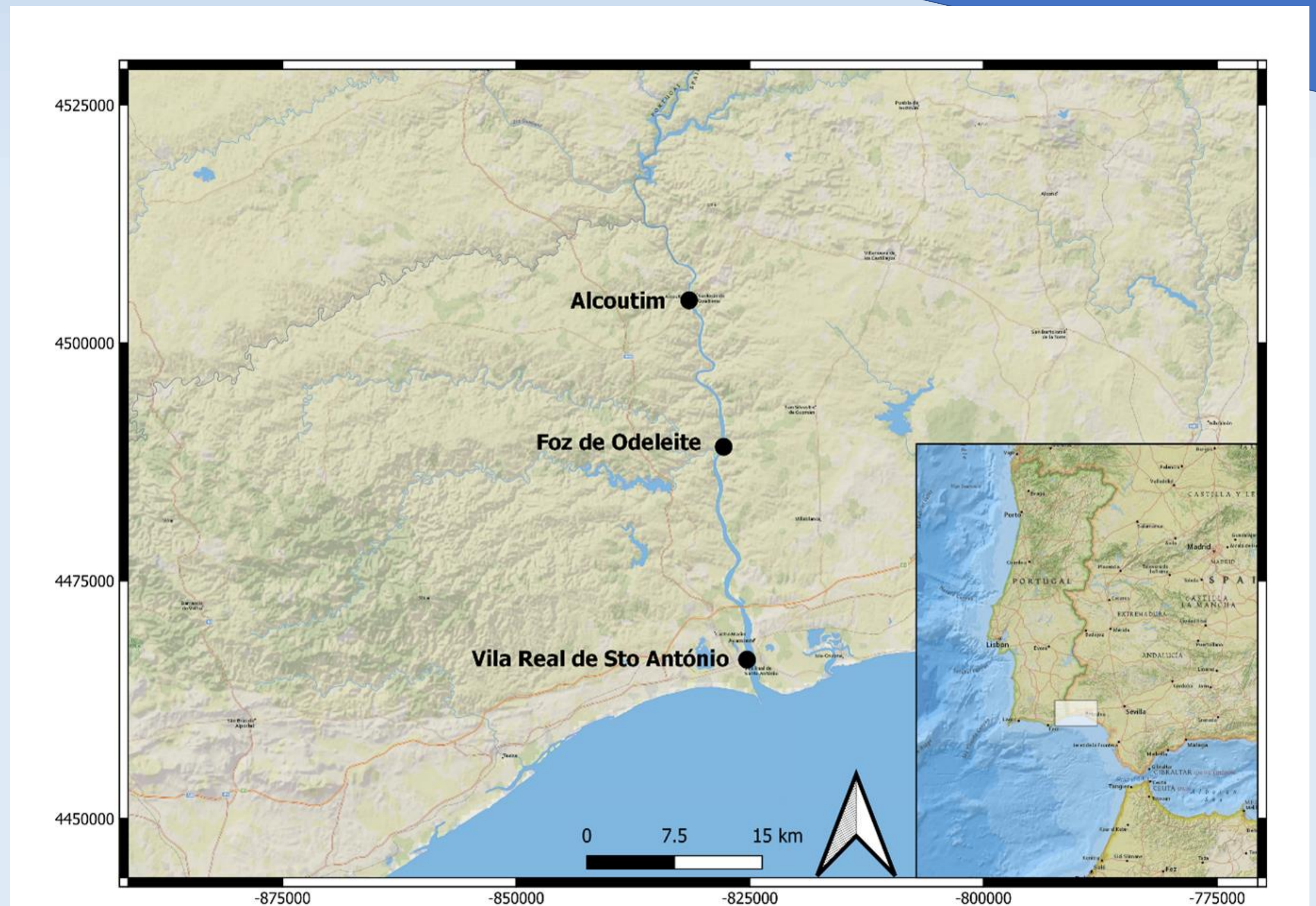
Methods



Monthly or bi-monthly sampling campaigns from July 2021 – October 2023



Assess trends in the data over this period



Freshwater (Alcoutim)

Brackish (Foz de Odeleite)

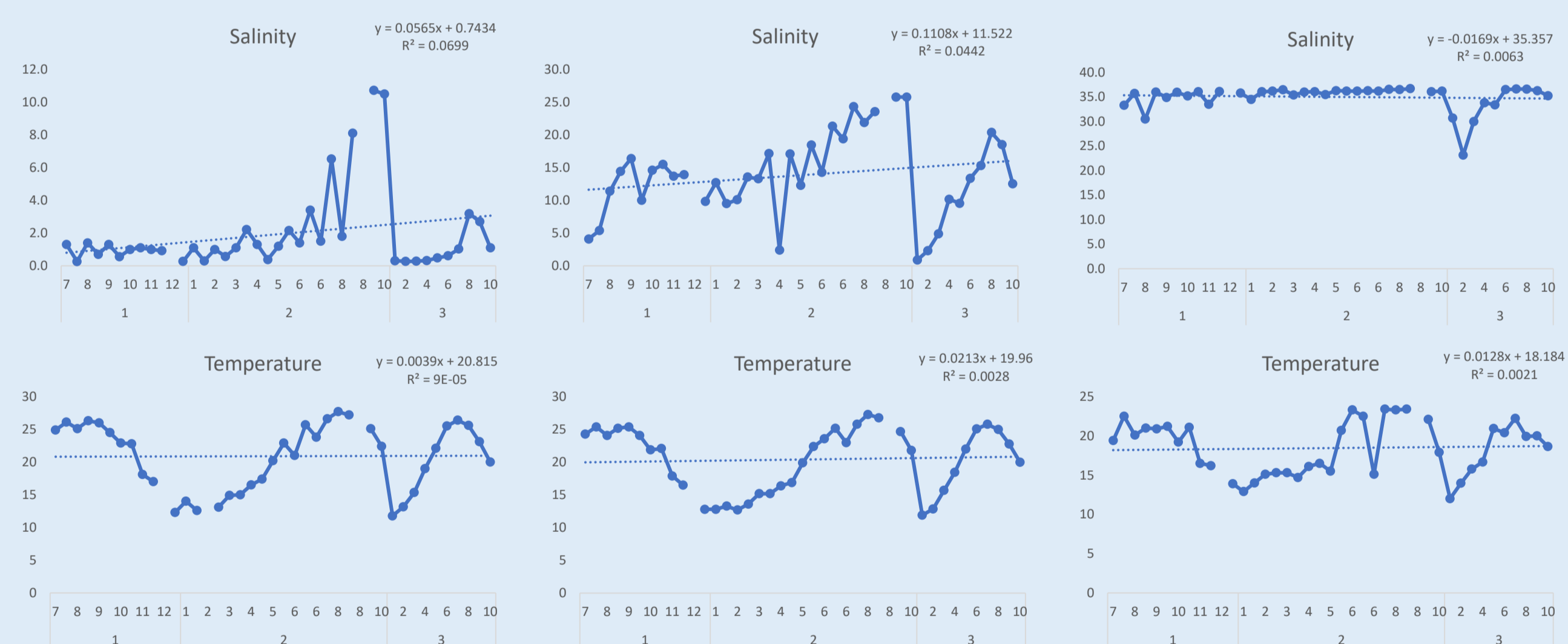
Saltwater (Vila Real)

Results

Freshwater

Brackish Water

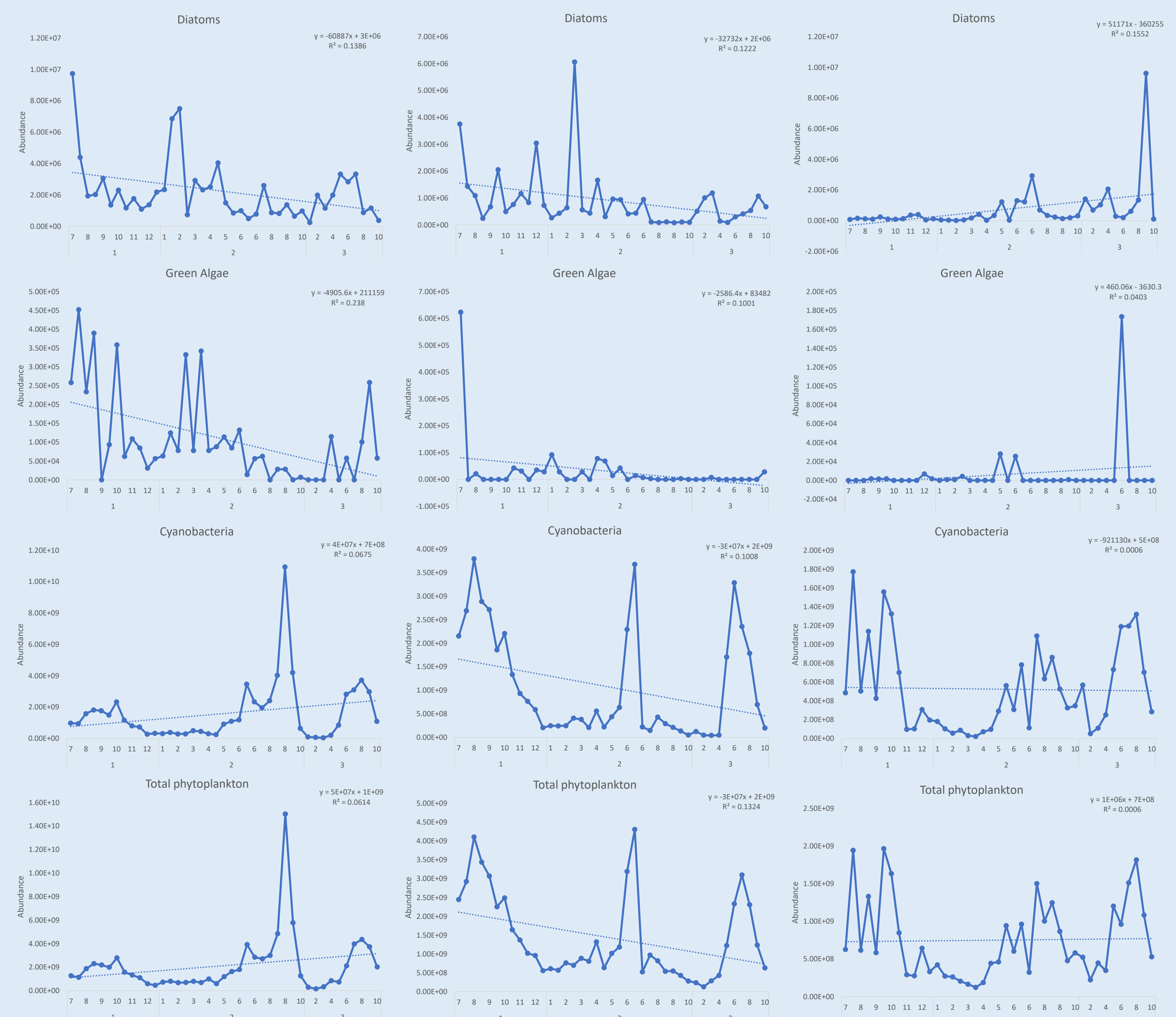
Saltwater



Freshwater

Brackish Water

Saltwater



Conclusion

Over the past three years, the temperature has fluctuated seasonally, but with very little overall change.

Salinity appears to have increased in the freshwater and brackish water zones.

Diatom and green algae abundances have declined in freshwater and brackish water zones. Diatoms then increased in the saltwater zone, with green algae displaying an anomalous peak.

Cyanobacteria abundance has increased in freshwater and marine water zones but decreased in brackish water.

The total phytoplankton abundance very closely mirrors that of cyanobacteria, the dominant phytoplankton group in the Guadiana estuary.

This work will continue through 2024 to gain a better understanding of the trends in phytoplankton abundances in the Guadiana.

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