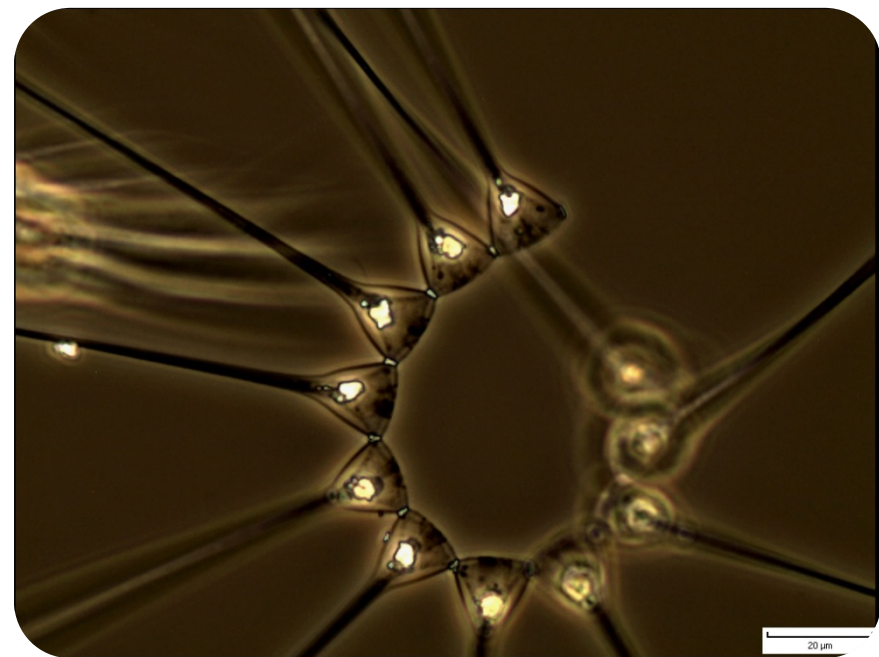# MICROPHYTOPLANKTON WINTER DIVERSITY IN THE SOUTH ADRIATIC SEA

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INTRODUCTION

Asterionellopsis glacialis

- South Adriatic Sea is influenced by the regular exchange of water with the eastern Mediterranean Sea.

- Inlow of Levantine Intermediate Water (LIW) and Ionian Surface Water (ISW) is greater during winter.

- The deep convection events occur during winter when ISW is exposed to „bura", cold and dry northerly wind.

- The cooling of the surface layer results in its mixing with deep water masses causing a nutrient transport from the deep reservoirs to the surface

- Conversely, these events additionally transport surface organic particles , including phytoplankton cells to the deep sea by a faster rate than by regular sinking mechanisms

AIM: To determine the taxonomic composition, abundance and spatial distribution of microphytoplankton in the South Adriatic basin in the winter.
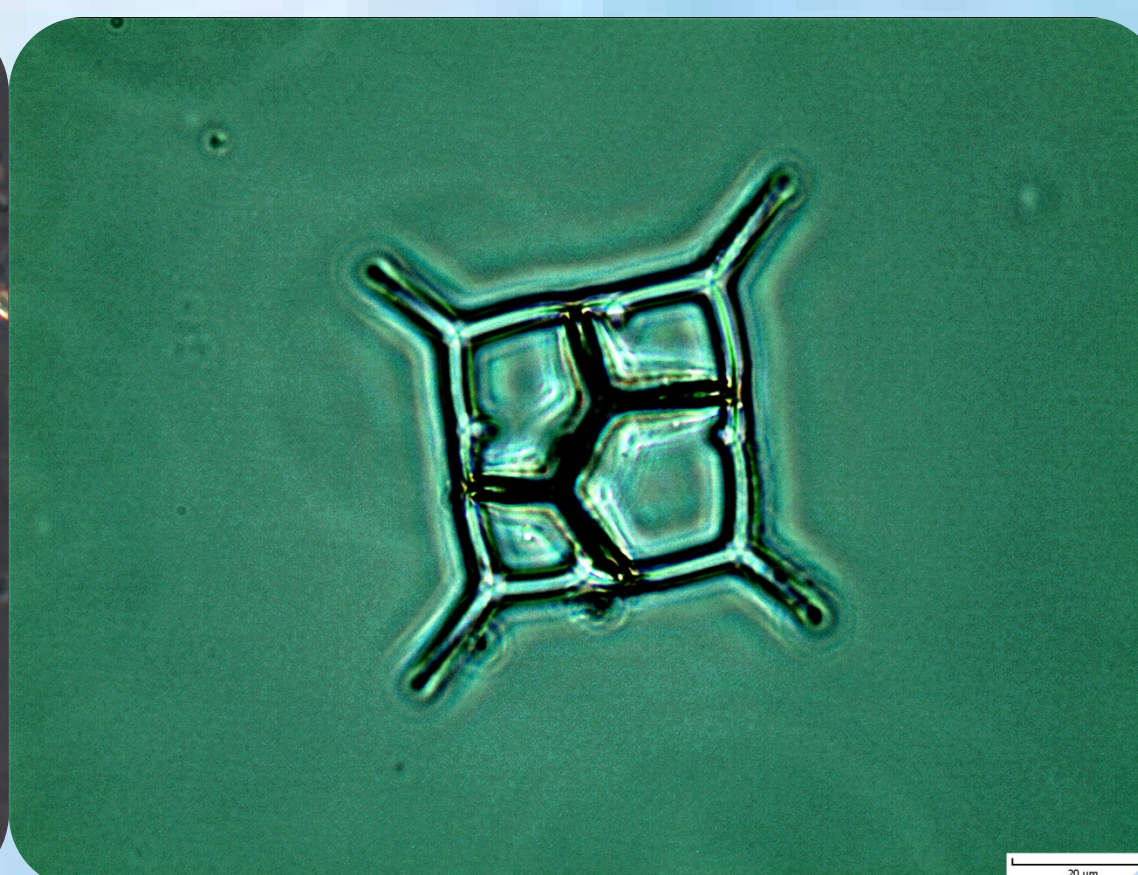
METHODS
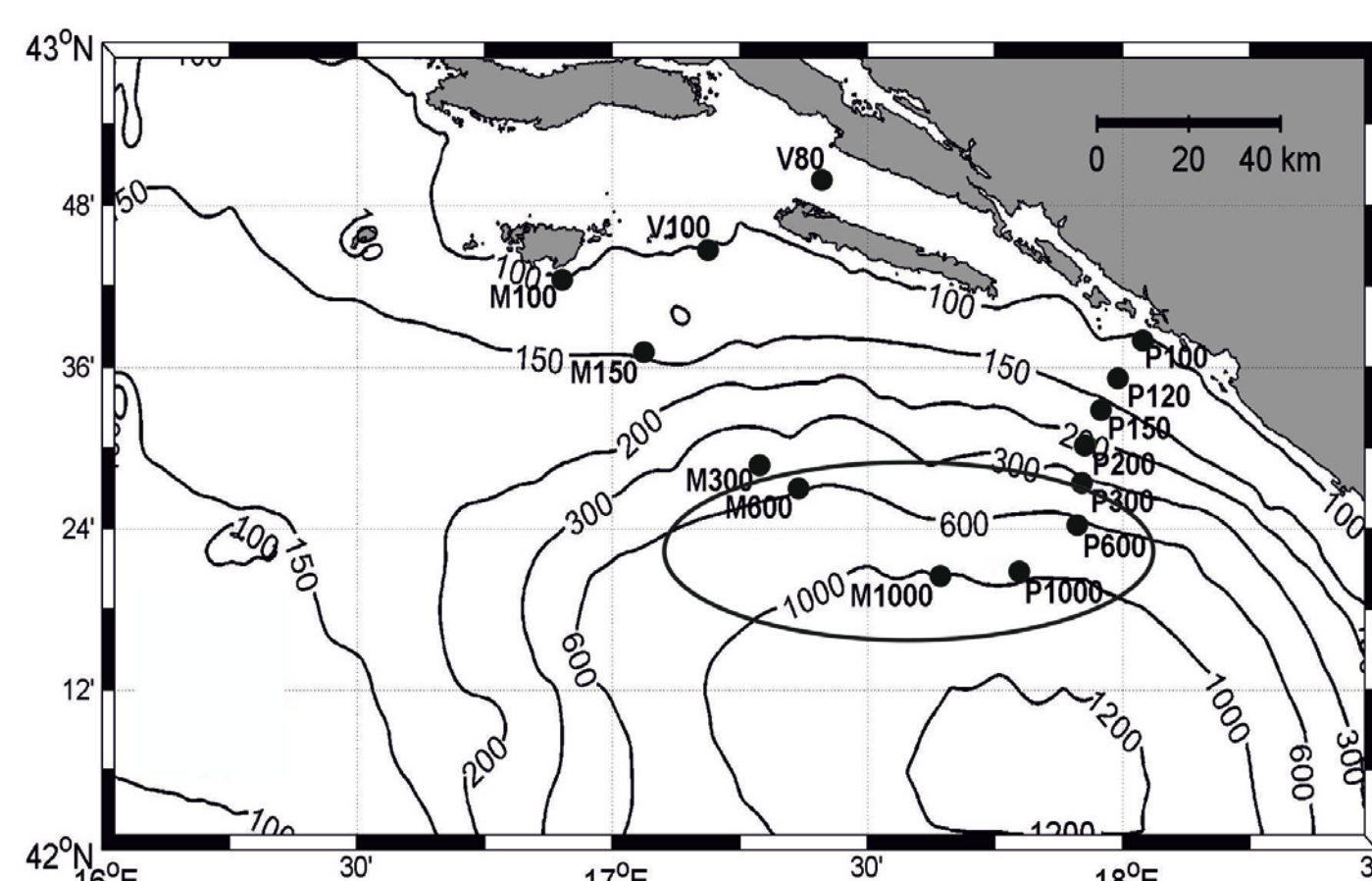
- 117 samples were collected using 5L Niskin bottles at depths determined *in situ*
- Temperature, salinity and oxygen were recorded using a Seabird OC25 probe (Sea_Bird Electronic, Bellvue, WA, USA)
- Sub-samples (200 ml) for phytoplankton analyses were preserved with hexamine-neutralised formaldehyde at a final concentration 1.4%
- Cells were identified and enumerated using the Utermöhl protocol with Zeiss Axiovert 200 inverted microscope
- Sub-samples of 100 ml were examined after >48 h of sedimentation on combined plate-counting chambers

- The research was conducted at 15 stations along two transects: (i) from Dubrovnik to the isobath of 1000m (P100 - P1000), and (ii) from the isobath of 1000m to the island of Lastovo (M100 - M1000)
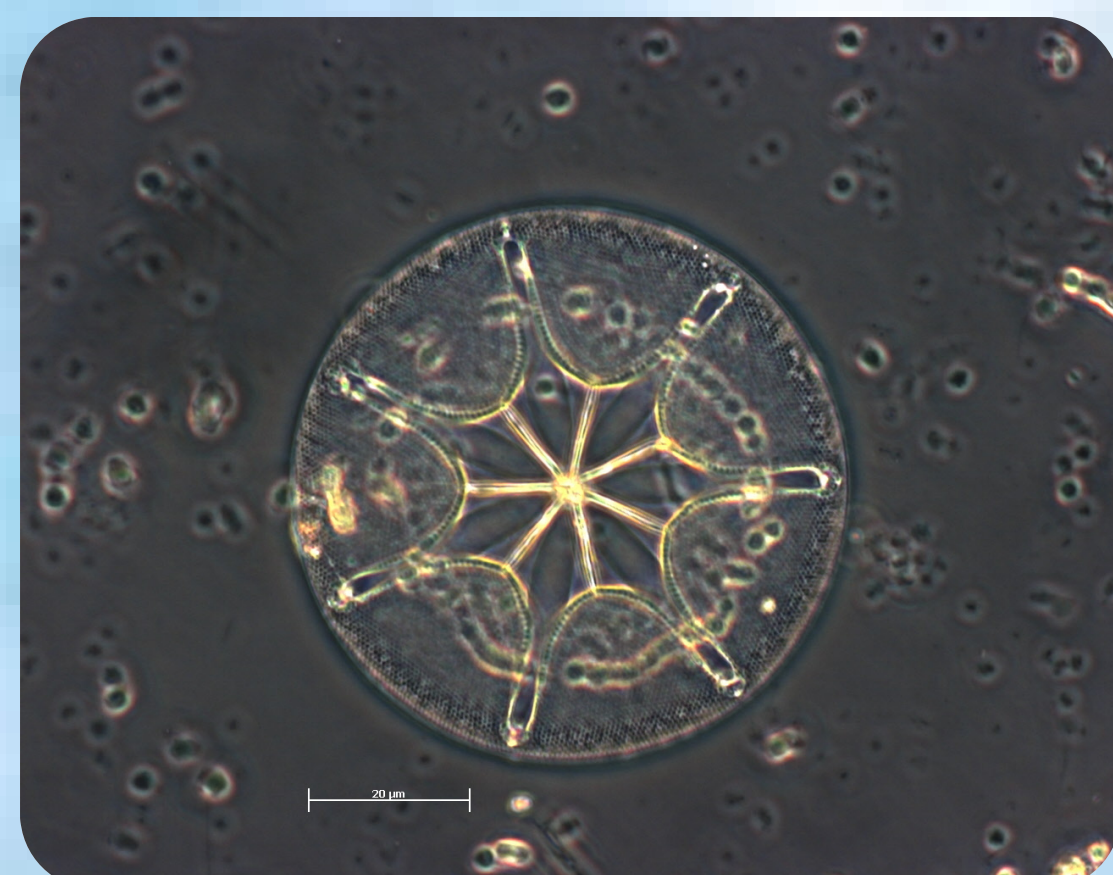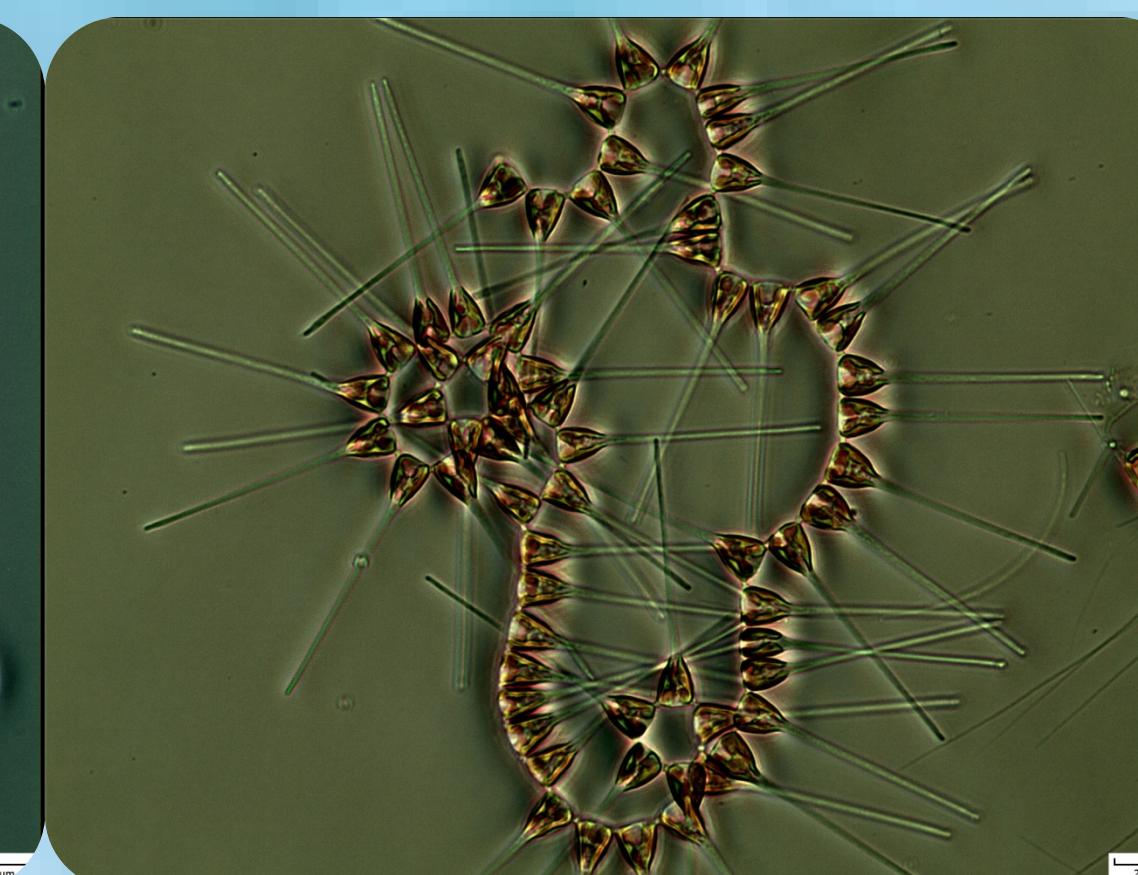
Asterolampra marylandica   *Dictyocha fibula*   *Pleurosigma sp.*   *Asterionellopsis glacialis*   *Chaetoceros affinis*
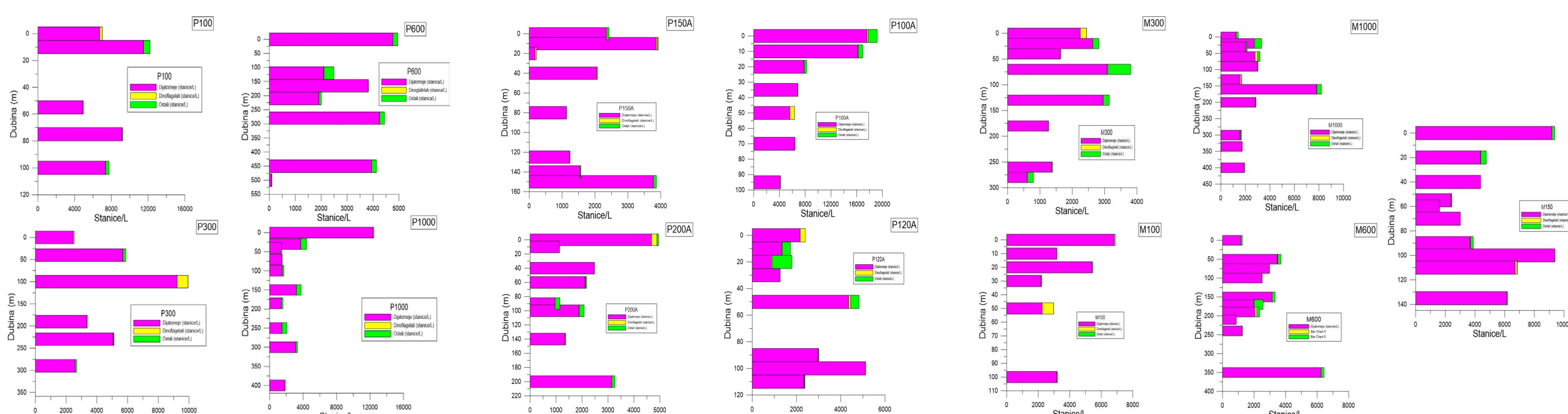
RESULTS

Figure 1. Abundances of specific microphytoplankton groups at all sampling stations. Diatoms- pink; Dinoflagellates- yellow; Others- green.
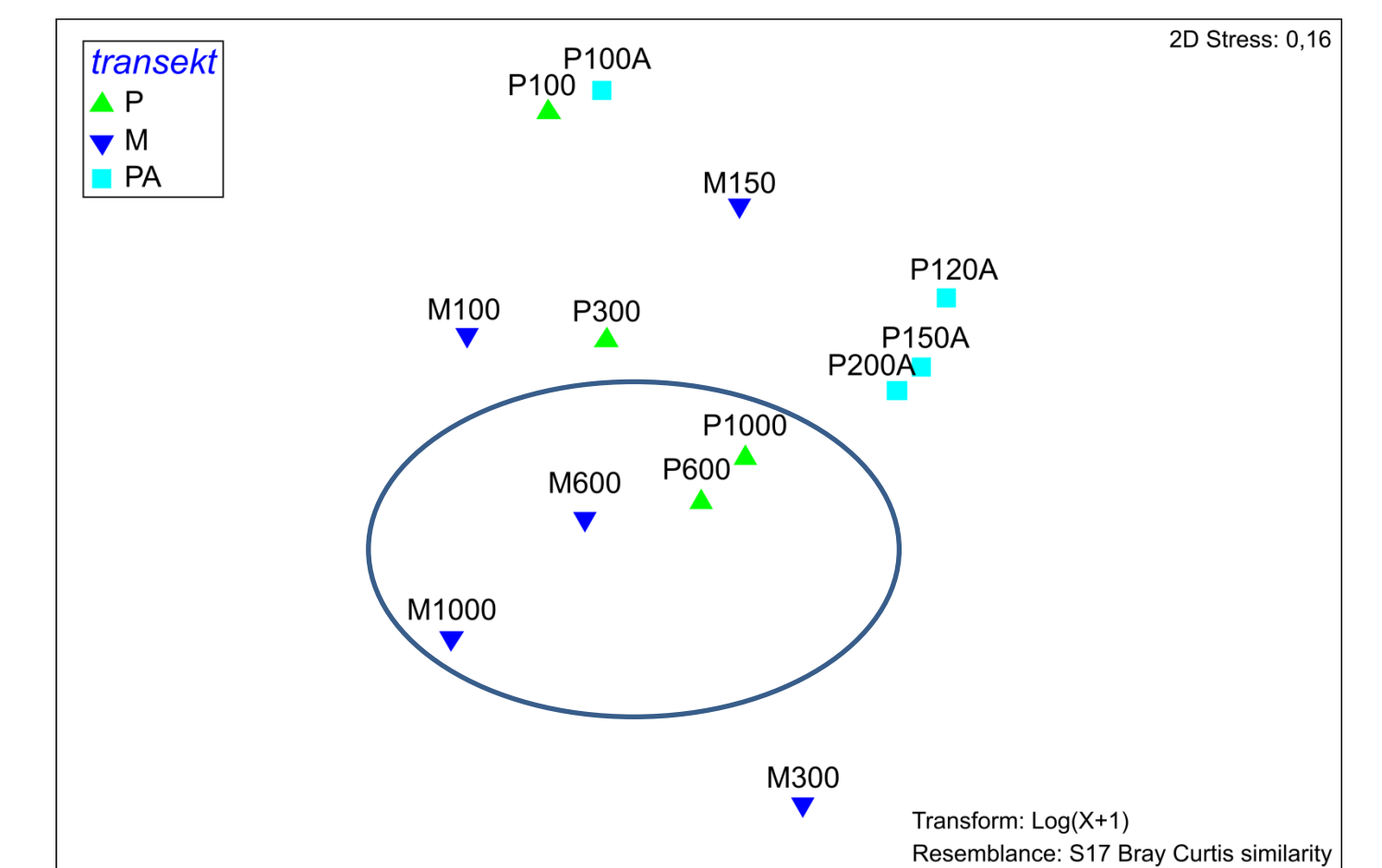

Figure 2. nMDS of microphytoplankton species composition showing the difference between deep and shallow stations

CONCLUSIONS

i. The microphytoplankton community was strongly dominated by diatoms found up to 500 m of depth

ii. Increase in the microphytoplankton in the deep sea and their preservation indicate that these organisms are transported in the deeper layers of the water column by a faster rate than by regular sinking mechanisms which is most likely due to the deep convection

iii. The results show small differences between all studied stations regards the composition of microphytoplankton community

iv. Dominant species show preferences towards different environmental variables which is reflected in their distribution
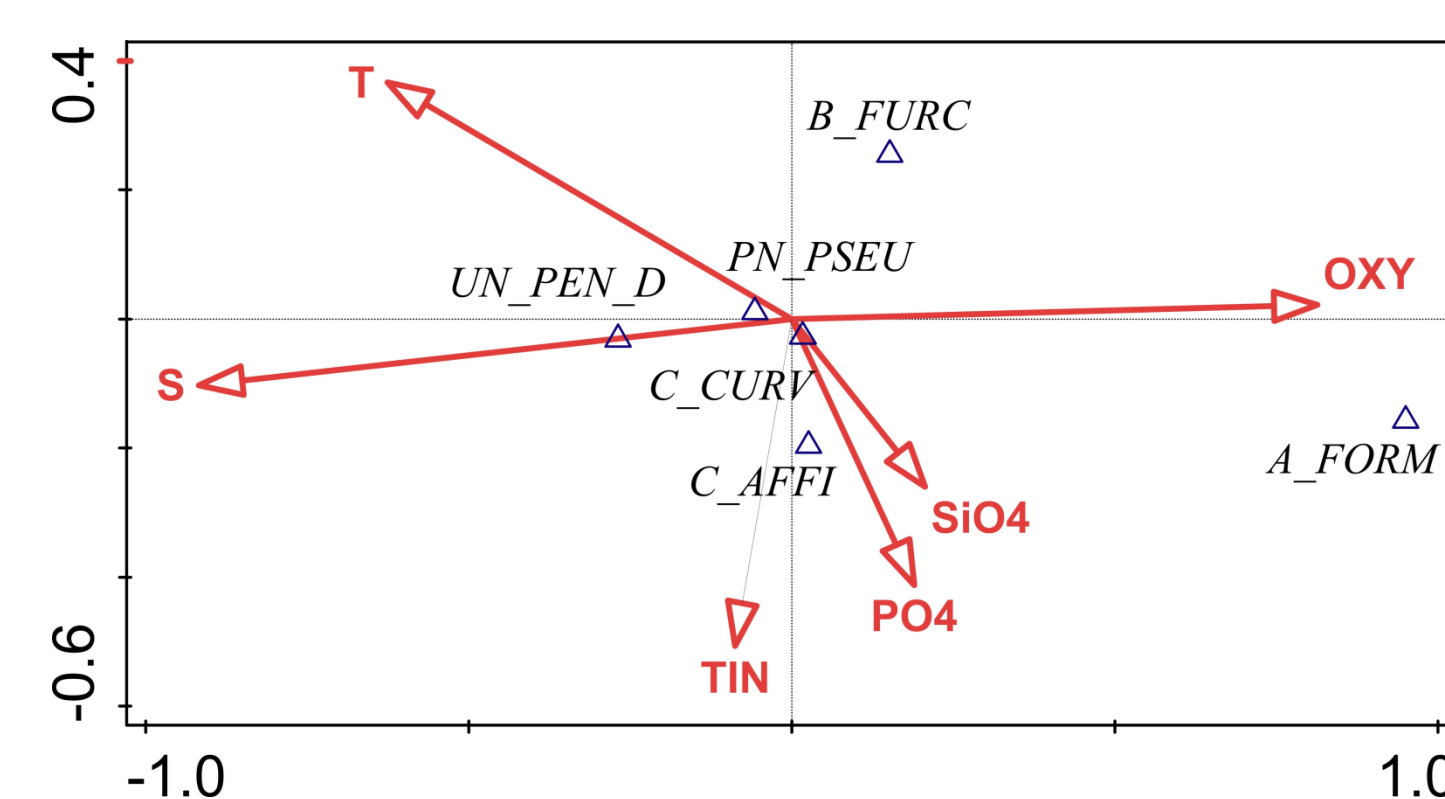

Figure 3. CCA of dominant microphytoplankton species plotted against environmental variables

Figure 4. PCA of the sampling stations based on the environmental variables with overlayed abundances of dominant microphytoplankton species

5. Hrvatski botanički simpozij
5th Croatian Botanical Symposium
Primošten, Hrvatska, 22. - 25.9.2016.