

Figure 1: Map of the studied sites

Code	Taxa
AST	Asterionella+Asterionellopsis+Asteroplanus
CHA	Chaetoceros
CRY	Cryptophytes
DIT	Ditylum
EUG	Euglenophytes
GUI	Guinardia
GYM	Gymnodinium+Gyrodinium
LEP	Leptocylindrus
NIT	Nitzschia+Hantzschia
PLE	Pleurosigma+Gyrosigma
PRO	Prorocentrum
PRP	Protoperidinium+Archaeoperidinium+Peridinium
PSE	Pseudo-nitzschia
RHI	Rhizosolenia+Neocalyptrella
SCR	Scrippsiella+Enciculifera+Pentapharsodinium+Bysmatrum
SKE	Skeletonema
THL	Thalassionema+Lioloma
THP	Thalassiosira+Porosira

Table 1: Name and composition of the phytoplanktonic groups used in the paper, based on¹

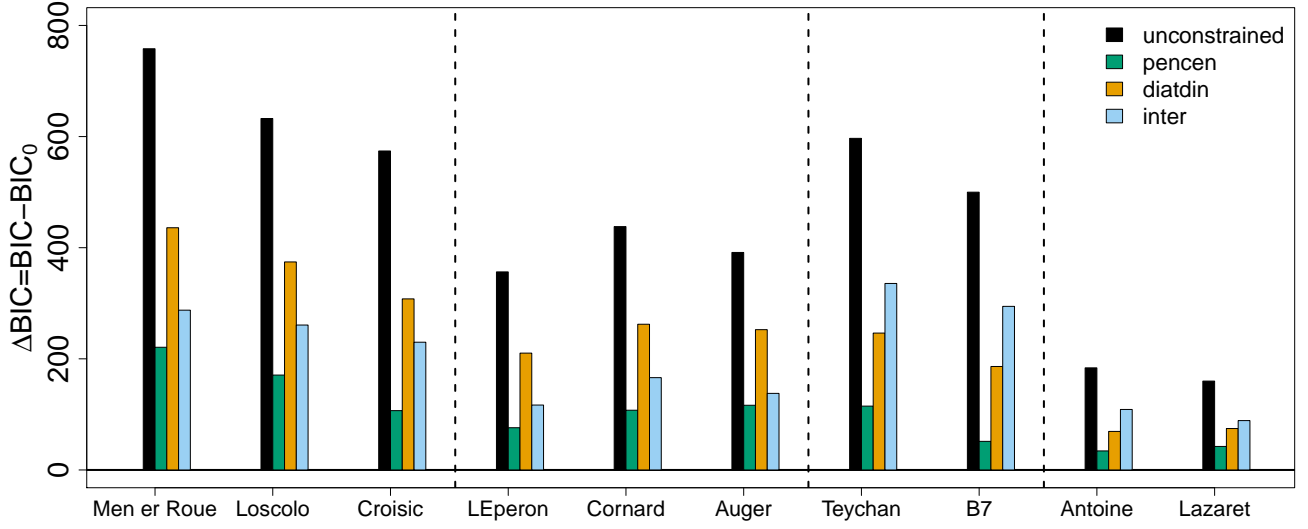


Figure 2: Comparison of BIC with different interaction matrices, compared to the null model (diagonal interaction matrix, allowing only intragroup interactions), for four different sites separated by dashed lines (Brittany, Oléron, Arcachon and Mediterranean Sea) and 10 different subsites. Different interaction matrices may allow all interactions between taxa (unconstrained), only interactions within pennate diatoms, centric diatoms, dinoflagellates, or other phytoplanktonic taxa (pecten), only interactions within diatoms, dinoflagellates or other taxa (diatdin), or only interactions between taxa belonging to these different groups. As model structures (length of the times series taken into account) are different between sites and subsites, groups of bars should not be compared.

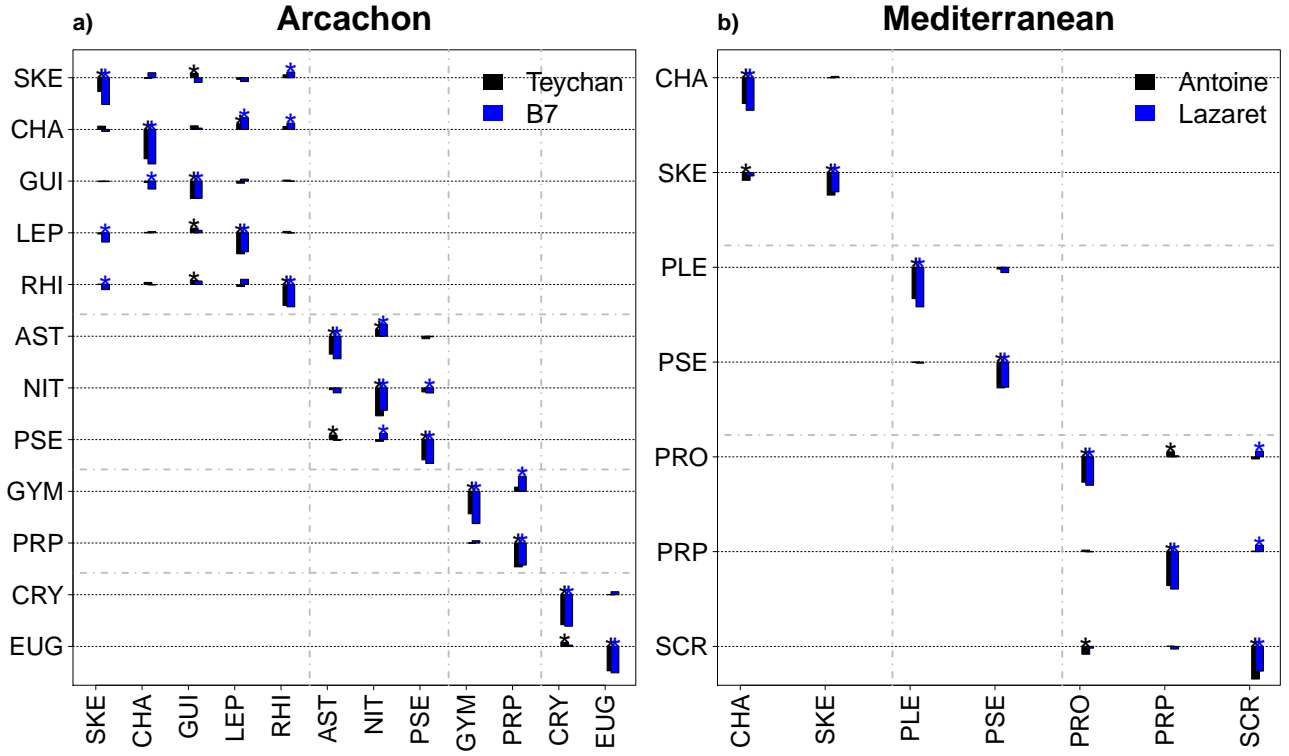


Figure 3: Interaction matrices estimated in Arcachon (a) and in the Mediterranean Sea (b). Only interactions between clades (pennate and centric diatoms, dinoflagellates, other planktonic taxa) are allowed. The figure should be read as taxon i having effect e_{ji} on taxon j . The scale for the coefficient values is given at the bottom left of panel a). 95% significance of coefficients was determined by bootstrapping and is marked by asterisks (*). The identity matrix was subtracted to the interaction matrix ($\mathbf{B}-\mathbf{I}$) in order to make effects on growth rates comparable. Composition of planktonic groups is given in Table 1.

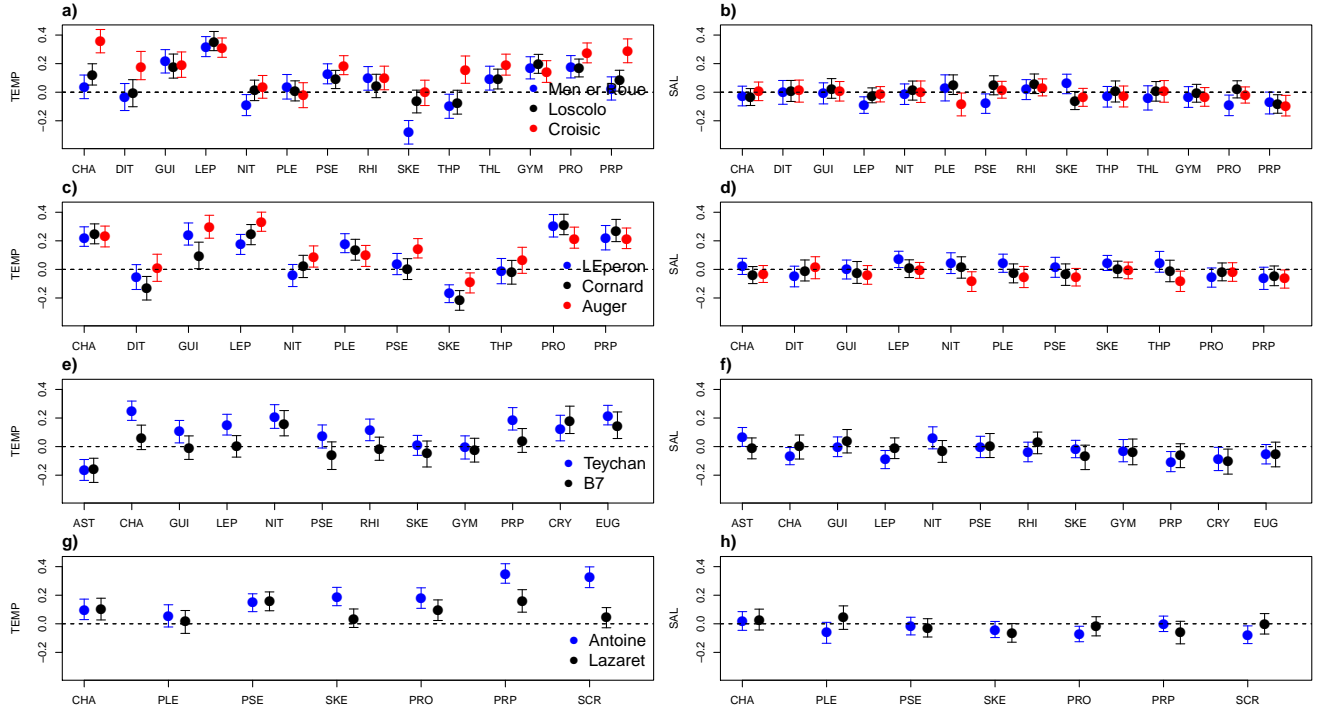


Figure 4: Effect of abiotic variables (temperature, TEMP or salinity, SAL) on phytoplankton group in Brittany (a, b), Oléron (c, d), Arcachon (e, f) and in the Mediterranean Sea (g, h). Each color corresponds to a different site. Error bar corresponds to the 95% confidence interval around the estimated coefficient. All variables were normalized before estimation.

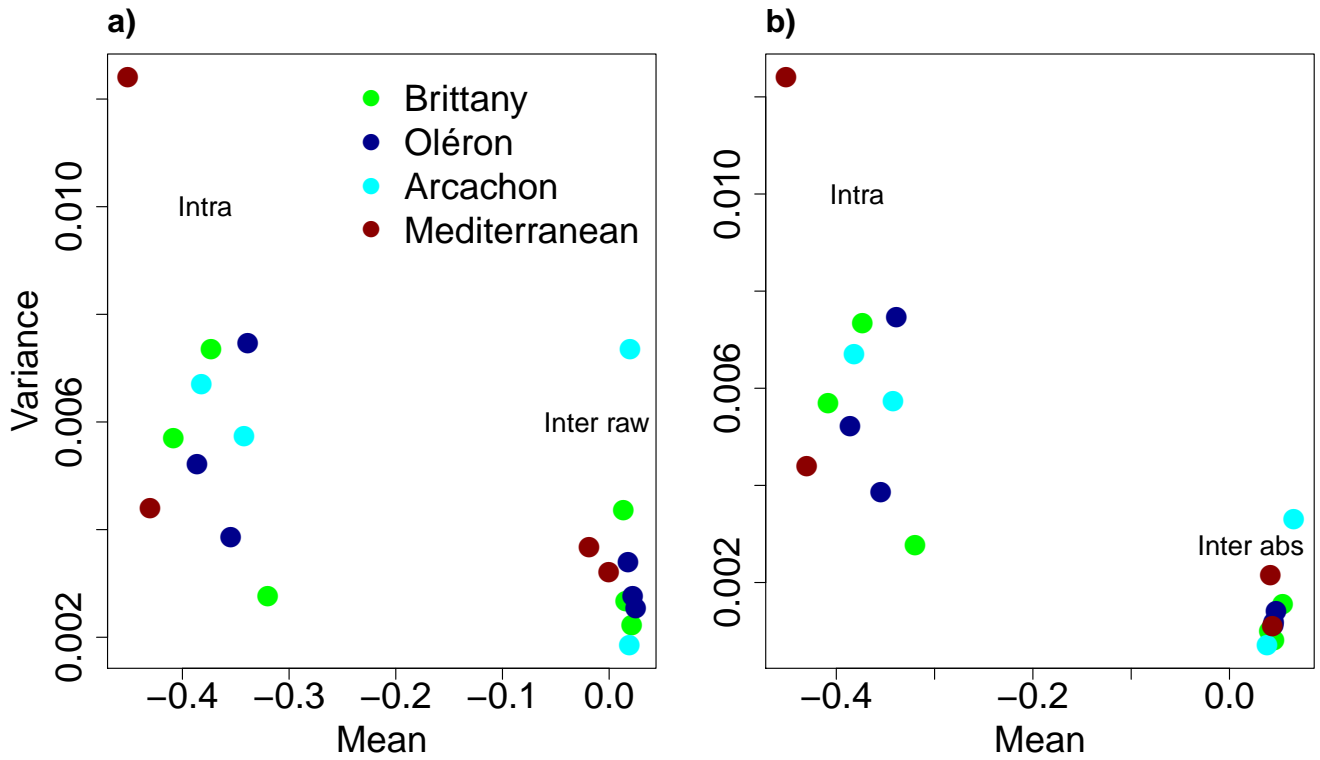


Figure 5: Variance of the coefficient in the interaction matrix (**B-I**), as a function of their mean, for 10 sites in 4 regions, with a model allowing interactions only within clads (see above). The mean-variance relation was either computed with raw values of intergroup interactions (a) or absolute values of the intergroup coefficients (b). Intragroup coefficients were not modified.

References

- [1] T. Hernández Fariñas, C. Bacher, D. Soudant, C. Belin, and L. Barillé. Assessing phytoplankton realized niches using a French national phytoplankton monitoring network. *Estuarine, coastal and shelf science*, 159:15–27, 2015.