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 EQUIPE
 Paléoclimatologie
 Site de : Talence

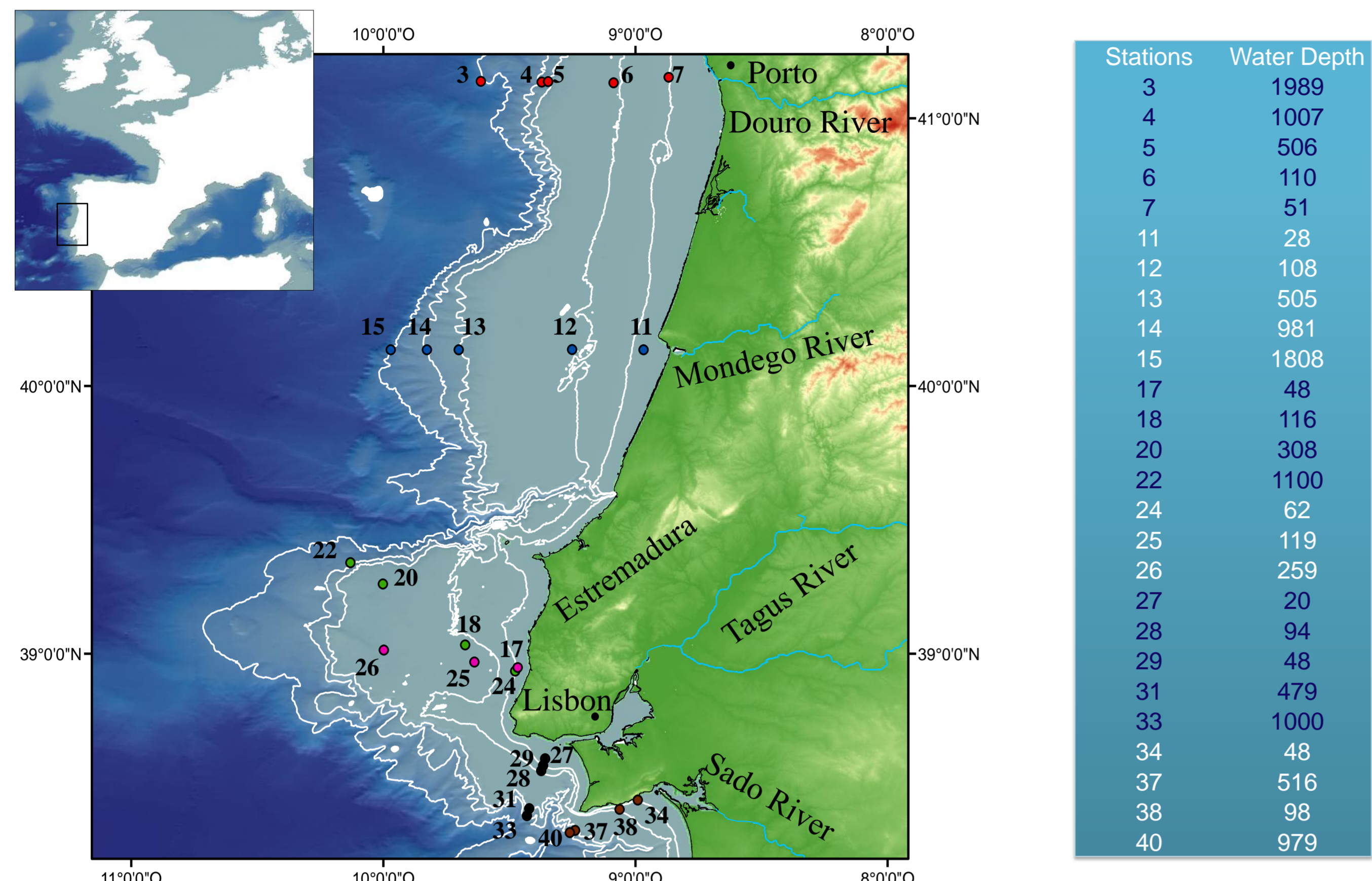


Figure 1. Study area with localization of the 26 sampling stations positioned on 6 cross-margin transects off the major rivers of the Portuguese margin.

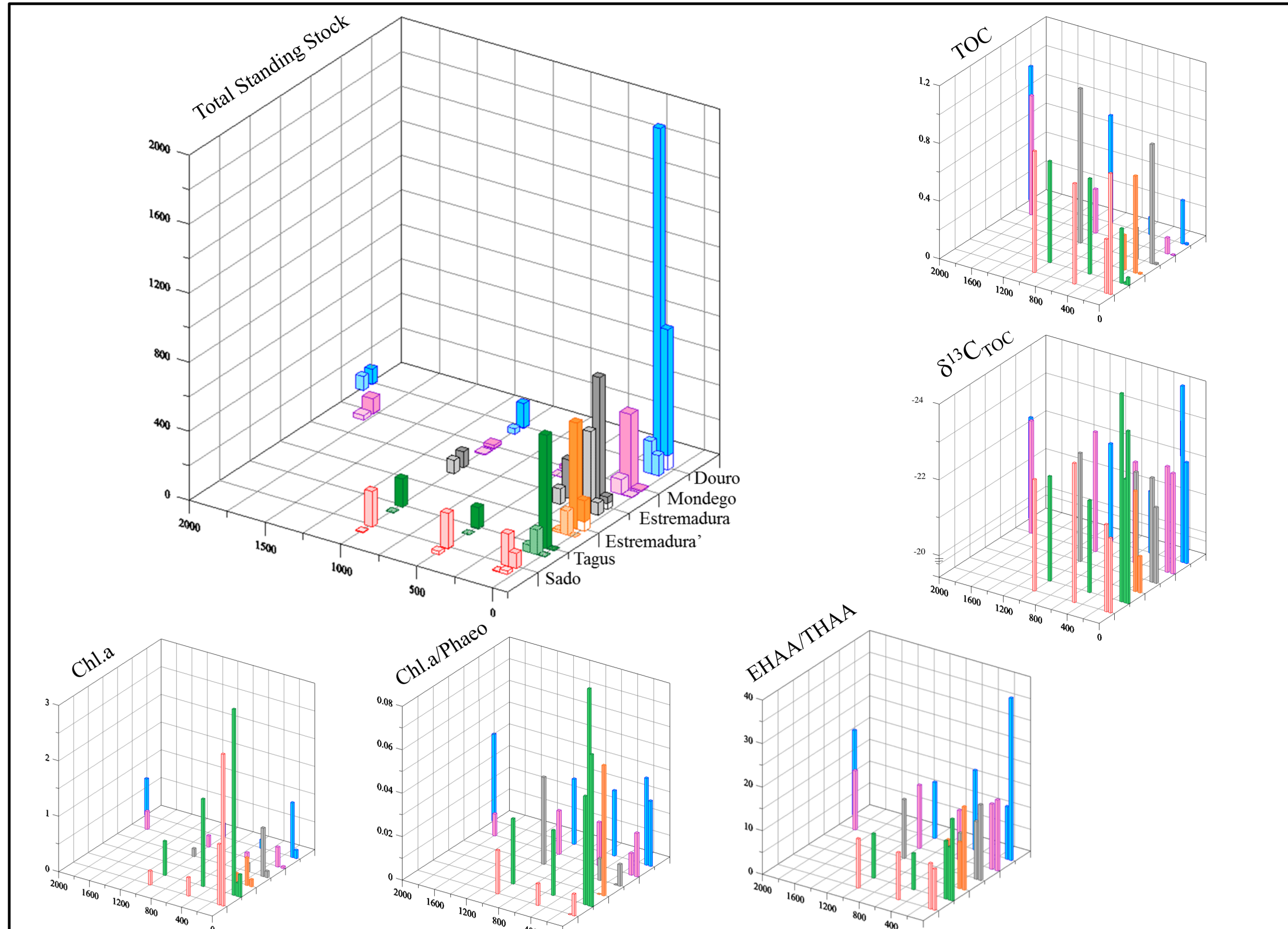


Figure 3. Total living benthic foraminiferal standing stock (calcareous are represented by bars in full colors and agglutinated species by dotted bars) and organic matter quantity (TOC, Chl-a), source ($\delta^{13}C_{TOC}$) and quality (EHAA/THAA, Chl-a/Phaeo) for each transect.

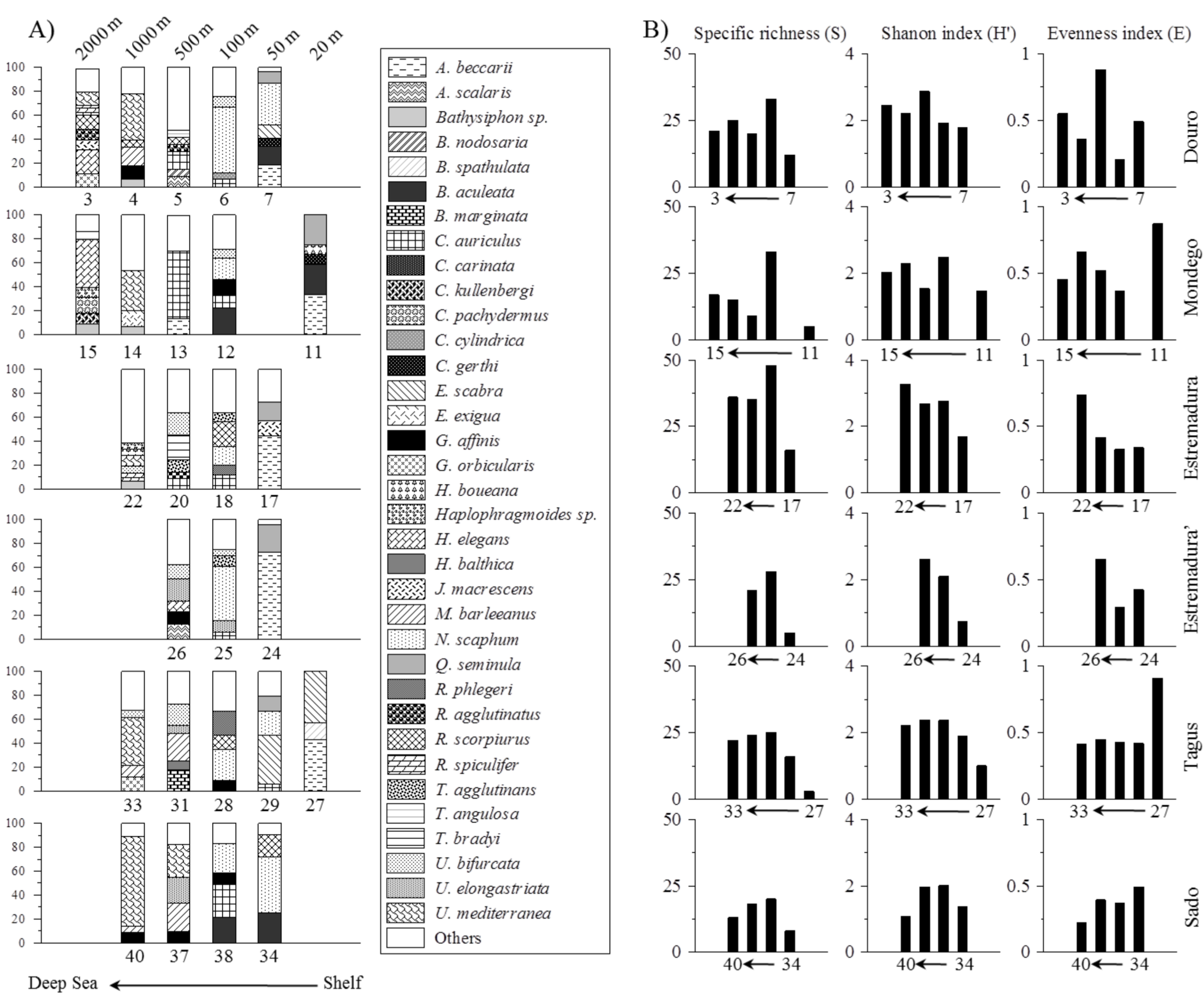


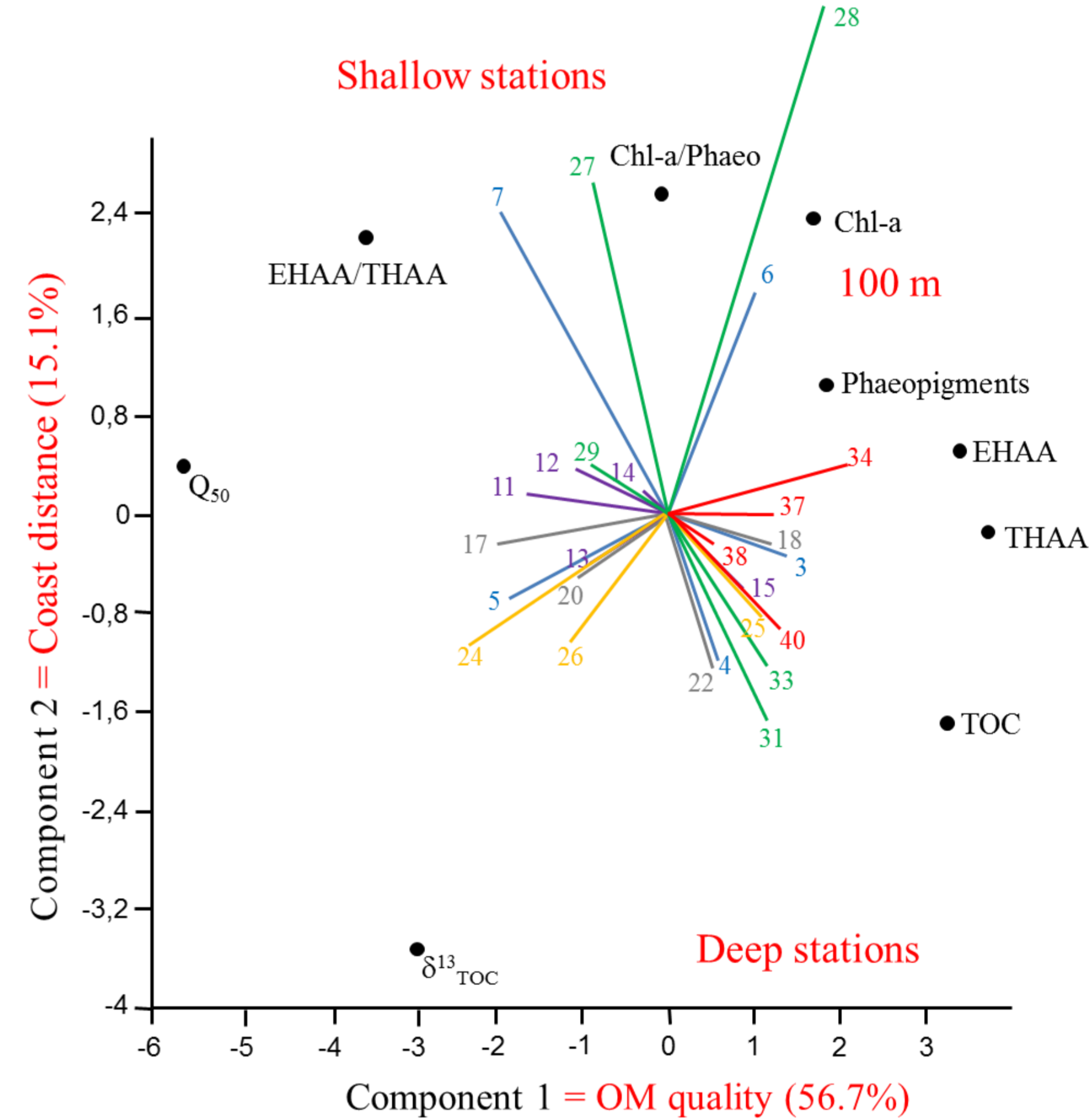
Figure 2. A) Percentages of the major benthic foraminiferal species (>7%) and B) biodiversity indices for each sampling station. Note that stations located at 100m water depth show systematically higher diversity indices and also higher total standing stock as can be seen on figure 3.

Figure 4. PCA analysis performed with environmental parameters (grain size (Q_{50}), Amino acids, pigments, TOC and $\delta^{13}C_{TOC}$) from surface sediments.

This figure shows that:
 • Organic indices are anti-correlated with grain size. Deep stations and 100 m depth stations are the richest in organic compounds.

• $\delta^{13}C_{TOC}$ is anti-correlated with phytodetritic compounds suggesting a continental origin of phytodetritus.

• Organic matter quality and continental phytodetritus is closely linked with stations where benthic foraminifera density and diversity are high.



Colors represent the different transects of the stations.

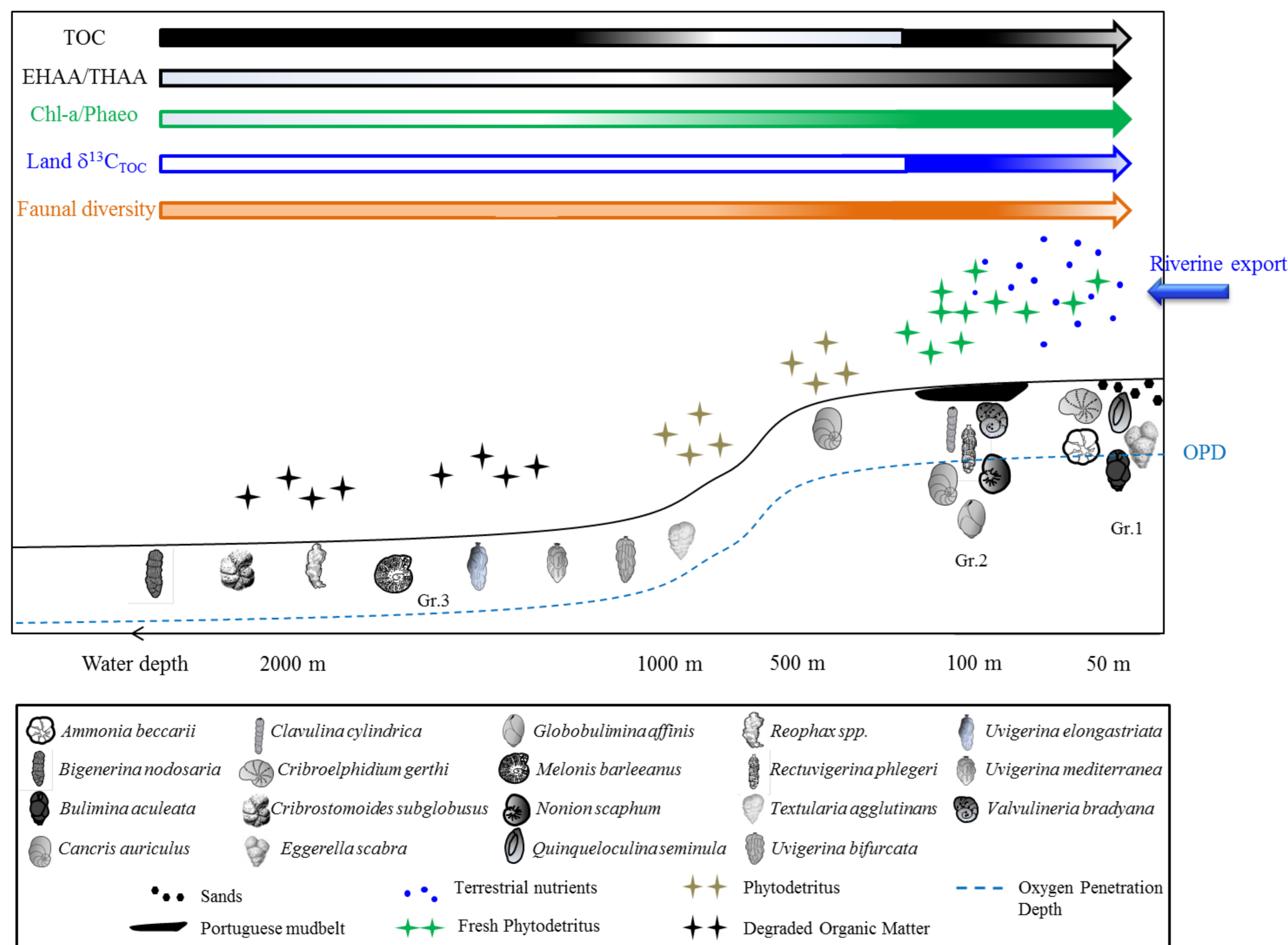


Figure 5. Synthetic diagram showing the relation between the distribution of live foraminifera across the margin and the major environmental parameters. 3 groups (Gr. 1, Gr. 2 and Gr. 3) of benthic foraminifera have been established based on their affinity to various type of organic matter quality.

SYNTHESIS

This work shows the major control parameters of the living benthic foraminiferal distribution in a river influenced continental margin during a late winter period.

Iberian rivers (Douro, Tagus and to a lesser extent Mondego and Sado) export estuarine phytodetritus and land nutrients which enhanced nutritive source for benthic fauna. The organic matter quality decreases with increasing water depth and triggers the development of specialized taxa (Gr. 1) observed only in the near vicinity of river mouths. High competitors are well developed in this context within the Portuguese mud belt (Gr. 2) around 100m water depth. This area also show higher diversity. In such rich environments, benthic foraminifera are found living above and under the oxygen penetration depth (OPD). Finally, the deep environments are associated with adapted taxa (among which many agglutinated species) of high quantity and low quality of organic matter (Gr. 3).