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### Tidal influence on the Phytoplankton community of Tagus estuary

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Estuaries are highly variable systems and the most productive ecosystems in the world. Phytoplankton is a major contributor to the high productivity, rapidly responding to changes in the environment. Understanding such responses is key to assess water quality and to predict how these communities will evolve under climate change scenarios. Thus, the objective of our work was to analyse the effect of tidal cycles on the phytoplankton community in the Tagus estuary. Chlorophyll *a* was quantified as a proxy of phytoplankton biomass and the relative abundance of phytoplankton groups was evaluated through HPLC-CHEMTAX. Water temperature, pH, salinity, dissolved nutrients, suspended matter and light extinction coefficient were also measured. Sampling was performed weekly during one year at two sampling stations in the mid (Barreiro) and lower (Alcântara) areas of the estuary. To this point, chlorophyll concentrations ranged from 0.41 to 8.56 µg/L, with higher concentrations in Barreiro. Tides influenced both chlorophyll *a* concentration and community composition, presenting higher relative abundance of diatoms during high tides. The highest nutrient concentrations were observed at Alcântara, especially during low tides, due to the proximity of a water treatment station outlet. Tagus estuary is dominated by diatoms, with around 90% relative abundance during blooms, being chlorophytes the second most important group. Analysing the preliminary data, it is possible to observe that the most important driving forces explaining phytoplankton biomass were salinity and pH, strongly related to tidal cycles, and air temperature, solar radiation and light extinction coefficient, linked with the seasonal cycle.