

## **From pico- to micro: variability of a Spring bloom in an estuarine bay at a high temporal and spatial resolution**

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Predicting the occurrence of Harmful Algal Blooms (HABs) in coastal ecosystems is crucial for their management. Here, we followed up on the results of recent long-term data series and modeling studies of Alfacs Bay (Ebro Delta, Spain), an important aquacultural and agricultural site and national park, recurrently threatened by HABs. We set out to validate the obtained model on a high spatio-temporal resolution, across a range of trophic levels. In 10 weekly cruises, we investigated the variability of the plankton community, including hetero- and autotrophic bacteria, hetero- and autotrophic nanoflagellates, and all sizes of phytoplankton as well as microzooplankton, sampling every meter of the shallow water column in each of our cruises. Data on phytoplankton pigments and nutrients, as well as meteorological and hydrographic (using CTD and deployed sensors) parameters were recorded. We will discuss the high variability of the plankton community, the surprising importance of nanoflagellates, the influence of grazing and mixotrophy, the invasion of *Mnemiopsis leydii* and the culture of *Mytilus edulis* as possible factors for bloom development and how our data relate to the model hypotheses.