

Thursday, October 11

Poster Session 4

10:30–12:00

## Poster 227

### **CHLOROPHYLL-A ESTIMATION FROM SENTINEL-2 IMAGERY IN EBRO DELTA BAYS: APPLICATION TO AQUACULTURE MANAGEMENT**

Shellfish farming in Ebro Delta (NE-Spain), mainly mussel aquaculture (*Mytilus galloprovincialis*), has a major socioeconomic impact. Phytoplankton is the main source of food as well as one of the most important hazards for shellfish farming and consumers when harmful algal blooms (HABs) occur. In the long term, the spatiotemporal dynamics of phytoplankton in Ebro Delta bays are driven mainly by the nutrient input coming from the evacuation of freshwater used for the irrigation of the rice paddies, opened or closed depending on the rice growth stage. The aim of this study was to obtain a time series of chlorophyll-a (Chl-a) maps of Ebro bays from Sentinel2 MSI data, as indicators of phytoplankton abundance, to understand and analyze the spatial distribution of phytoplankton under the influence of closed or opened irrigation channels. By adjusting several algorithms with ground Chl-a data of  $R^2 > 0.5$ ,  $NRMSE < 30\%$  was achieved for images covering different seasons of the year and varying states of the irrigation channels. This allowed a preliminary analysis of the suitability of the current location of the farms according to the phytoplankton trends and a preliminary assessment of the Chl-a depletion within the mussel farms. The applied methodology needs to be improved but these initial results showed the potential of using Sentinel2 as a tool not only for mapping the phytoplankton biomass distribution but also for encouraging better future practices in the management of the aquaculture in Ebro Delta bays, a key sector for the integral management of the coastal zone.

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