

**Maidier Justel Díez**  
University of Vigo  
Nationality: Spanish

Orientation: Ocean Observation and Global Change  
Specialization Area: Ocean Observation  
Research Area: 1.1 Biological Oceanography



**PhD project: Role of phytoplankton-bacteria interactions in the response of microbial plankton to allochthonous nutrient inputs**

**Supervisors: Dr. Emilio Fernández Suárez (Universidade de Vigo)  
Dra. Eva Teira González (Universidade de Vigo)**

**Summary:** Phytoplankton-bacteria interactions play a key role in the regulation of microbial communities, that is, bacterial activity could have an impact on primary productivity in coastal and oceanic waters. Both negative (e.g., competition or parasitism) and positive (e.g., mutualism or commensalism) interactions between these organisms can eventually determine how coastal microbial communities respond to nutrient inputs. In addition, the magnitude and nature of such interactions can change both seasonally or locally due to changing light, temperature, nutrient availability or depending on the microbial community composition.

The Ría de Vigo has the ideal characteristics to carry out this type of studies because of its high production and intermittent flow of subsurface water rich in inorganic nutrients into the Ría. In addition, river discharges generate significant contributions of allochthonous matter with an average DIN: DIP ratio of 45 and significant inputs of organic C. Another largely unexplored input of biolimiting nutrients is related to biodeposits from seabird colonies.

Our hypothesis is that nutrient enrichment from river inputs, seabirds (deposition of guano) and anthropogenic activities, causes changes in growth rates and community structure of planktonic communities. Those alterations will modify the phytoplankton-bacteria interactions, altering the physiology and metabolism of both organisms. This alteration probably affects ecosystem productivity and the magnitude of the response of primary producers to anthropogenic nutrient inputs.

