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**Orientation:** Ocean Observation and Global Change  
**Specialization Area:** Ocean Observation  
**Research Line:** 1.4 Biological Oceanography

**PhD project:** Scaling and latitudinal variability of plankton metabolism in the epipelagic ocean.

**Supervisors:** Dr Pablo Serret Ituarte.

**FOTO DOCTORANDO/A**



**FOTO RELACIONADA CON EL  
PROYECTO**



**Summary: Introduction:** Net plankton community metabolism in the euphotic ocean across temporal (annual cycle in the Ría de Vigo) and spatial (Atlantic Meridional Transect) scales. Biogeochemical cycles and carbon pump. **Objectives of the thesis. Material and Methods:** high resolution sampling, dark and light 24 h bottle incubation methods (both carbon and oxygen based), incubations at different light %. **Results and Discussion:** High quality data of metabolism was obtained. Distribution of hydrography, inorganic nutrients, total and size fractionated chlorophyll-a concentration, and plankton metabolic rates (photosynthesis and respiration). Exploration and description of the relationships between our measured variables (volumetric and integrated values, according depth, season and biome). Degree of heterotrophy and trophic functioning in autotrophic and oligotrophic ecosystems. Seasonal (summer, spring, winter in the Ría de Vigo) and latitudinal (N and S Atlantic Gyres) system dependency based on both plankton primary production and respiration. Effect of a Trichodesmium bloom in the metabolic state of the N Gyre. Testing of general hypothesis (i.e. connection between the degree of heterotrophy and phytoplankton size structure). Exploration of the predictive power (Net plankton metabolism) of our empirical models through a time-space substitution of data. **Conclusions.**