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PhD project: **The role of turbulence and mixing in the control of the activity and community structure of marine phytoplankton**

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Summary: Turbulence and mixing influence the activity and composition of phytoplankton over a broad range of temporal and spatial scales. This control could be directly, by determining the residence time of cells at particular depths, and indirectly by influencing the availability of light and nutrients. In order to investigate the nature of this control, a large data set of simultaneous observations of microstructure turbulence and phytoplankton properties collected in open-ocean and coastal regions will be used. Data collected in the outer part of the Ría de Vigo during two cruises conducted in summer 2013, supported by SAR images, will allow to investigate the role of internal waves mixing on nutrient supply and phytoplankton composition. The specific role of turbulence in the vertical distribution of phytoplankton cells, and in particular in the formation of thin layers, will be studied by using a 27-hours high resolution sampling carried out in the Ría de Vigo in August 2013. Finally, data collected in contrasting hydrographic regimes (open ocean and coastal waters) will be combined in order to investigate the role that mixing, by influencing light and nutrient availability, play in the community composition of phytoplankton groups.