

## **Proposition de stage**

### **Parcours Master 2 « Microbiologie, Environnement, Santé »**

#### **1. Laboratoire / Entreprise d'accueil :**

Intitulé : LIA MORFUN

Adresse : Département d'Océanographie Université de Concepcion-Chili

Responsable du Laboratoire / Entreprise : Camila Fernandez

Responsable de l'encadrement : Camila Fernandez

Téléphone : +56412661240

E-mail : fernandez@obs-banyuls.fr

Co-encadrant éventuel : Dr Veronica Molina (Universidad de Playa Ancha, Chile)

#### **2. Titre, description du sujet, approches utilisées, références (1 page maximum) :**

Climate change and anthropogenic pressure are increasingly affecting the trophic status of coastal areas and therefore their capacity for carbon (C) sequestration. It is known that increasing sea surface temperatures and stratification as well as anomalies in nutrient proportions (Bronk, 2007) can lead to abnormal aggregations of marine snow, already seen in some Patagonian fjords.

However, their effects on ecosystem function and health are still uncertain (Misic et al 2011) as organic matter aggregations can act as vehicles of carbon and nutrients, microbial diversity (Del Negro et al 2005) and pollutants.

The student will work on the frame of a Fondecyt grant focusing on studying the biogeochemical conditions that control the formation and evolution of abnormal organic matter aggregations in areas sensitive to climate change.

The specific objectives will be to estimate the variability of nitrogen and phosphorous (as organic and inorganic dissolved nutrients) and to determine the occurrence (in frequency and magnitude) of P deficiency in two sensitive coastal areas: the Puyuhuapi fjord and off the coastal upwelling area of central Chile. We will tackle this objective by analyzing historical data and generating the first coupled inorganic and organic N and P database in southern Chile.

Another specific aim will be to explore the microbial diversity associated to organic matter formation caused by abnormal nutrient conditions and identify dominant groups (including fungi, cyanobacteria, archaea ad bacteria). We will generate sequence libraries of active phytoplankton, bacterioplankton and marine fungi and we will compare them with the surrounding environment.

Research will be funded by FONDECYT project 1150891.

## References:

- Misic, C., Schiaparelli, S. & Harriague, A. C. Organic matter recycling during a mucilage event and its influence on the surrounding environment (Ligurian Sea, NW Mediterranean). *Continental Shelf Research* **31**, 631-643, doi:<http://dx.doi.org/10.1016/j.csr.2010.12.016> (2011).
- Del Negro, P. *et al.* Mucilage microcosms. *Science of The Total Environment* **353**, 258-269, doi:<http://dx.doi.org/10.1016/j.scitotenv.2005.09.018> (2005).
- Bronk, D. A., See, J. H., Bradley, P. & Killberg, L. DON as a source of bioavailable nitrogen for phytoplankton. *Biogeosciences* **4**, 283-296 (2007).