


PhD subject in aquatic ecology – Submitted to the Doctoral School at Savoie Mont-Blanc University

Lab: **INRAE UMR CARRTEL** –
Alpine Centre for Research on Lake Ecosystems and Food Webs
75 bis avenue de Corzent
74203 Thonon les Bains, FRANCE

Title: Tracing allochthonous subsidies along the littoral-pelagic continuum in alpine lakes : effects on biotic interactions and trophic transfer.

Supervisor: Geneviève Chiapusio, Savoie Mont-Blanc University, INRAE, CARRTEL
Co-supervisor: Serena Rasconi, Savoie Mont-Blanc University, INRAE, CARRTEL

Subject : Global climate change scenarios predict increase in the variability of weather including episodic or extreme events (such as floods and violent storms), which will cause changes in lake subsidies and expose aquatic ecosystems to nutrient pulses and transfer imbalance. Allochthonous dissolved organic matter (DOM) can also contribute to the release of a variety of dissolved metabolites, which can in turn regulate trophic and allelopathic interactions. The impact of DOM inputs on aquatic organisms and the feedback on biotic interactions and metabolic processes remains largely unknown, as well the impact on the littoral versus the pelagic community. Experimental approaches make it possible to simulate complex scenarios under realistic field conditions and disentangle ecosystem responses to local and global stressors. We will run a mesocosm experiment at the lab CARRTEL in autumn 2021 with the aim to understand the effect of predicted climate scenarios on the plankton community functioning. This PhD project aims to strengthen knowledge on how climate forcing (extreme events, altered precipitation regime and lake subsidies) affects the biotic interactions and functional processes governing the lake carbon cycle. We will set up a synergistic approach including laboratory/mesocosms and *in situ* observations to study the complexity of the community dynamics (population, community, food web) and ecosystem processes at different spatial resolution (littoral-pelagic). We will pay special attention to the organisation of the trophic networks (diversity and structure of interactions) and functional processes (production and trophic transfer), to disentangle the regulation factors governing the quantity and quality of carbon transfer within the aquatic food web. The final objective will be to elucidate how our lake ecosystems will face environmental disturbances along the littoral-pelagic continuum in terms of ecosystem functioning, stability and ability to recover.

Key words : extreme climate event; C lake metabolism; biotic and chemical interactions; experimental approach; *in situ* survey

Candidate profile: We seek a highly motivated and creative student with good background in aquatic ecology and excellent university scores. Previous experience with experimental planktology would be an advantage. The candidate will participate to the discussion and will be encouraged to develop an independent line of research targeting the project goals, taking advantage of the facilities and expertise of the supervisors.

PhD announcement: https://www.siseo.univ-smb.fr/wp-content/uploads/2021/04/PDF_2021_CARRTEL_Chiapusio.pdf

Candidature submission: Interested applicants can send an email with a CV, motivation letter, 2 supporting letters and statements of previous grades and university scores to the contacts below.

Deadline for submission: **26.05.2021.** A first round of interviews will take place between 27 May and 1st June with the supervisors. Selected candidate will be invited for the final audition at the University Savoie Mont Blanc (14 and 15 June), upon which depends the decision on the grant awarding.

Contacts: Serena Rasconi **-** serena.rasconi@inrae.fr
Geneviève Chiapusio - genevieve.chiapusio@univ-smb.fr