



## PhD position in biogeochemistry:

### Applicability of bacterial membrane lipids as environmental proxies in lacustrine settings

The “Biogeochemistry” group of the METIS laboratory (Sorbonne Université, Paris) and the EDYTEM laboratory (Université Savoie Mont Blanc, Chambéry) are looking for a motivated PhD candidate. A summary of the project is provided below.

A better understanding of past climate variations and their interactions with geosphere and biosphere is essential to apprehend future climatic changes. Most of the available paleoenvironmental proxies were developed and used in oceanic environments. Nevertheless, it is essential to have reliable proxies which can be applied to continental archives, both terrestrial and aquatic. Some specific organic compounds – 3-hydroxy fatty acids (3-OH FAs), produced by Gram-negative bacteria – could be used as such temperature and pH proxies based on recent studies in soils. Nevertheless, these molecules and their source microorganisms have not been studied in detail in lakes yet. It is now essential to obtain accurate information on the adaptation of 3-OH FA source microorganisms to temperature/pH changes in lakes to potentially developing robust and universal (paleo)environmental proxies.

The main objectives of this work will be to investigate the applicability of 3-OH FAs as new temperature and pH proxies in lakes and to concomitantly compare these new proxies to the existing ones (e.g. GDGTs). To this aim, the source(s) of microbial lipids in lakes will first be assessed. We then envision to develop calibrations between temperature/pH and distribution of microbial lipids in surface lacustrine sediments previously collected worldwide. Last, these calibrations will be applied to long-term paleoenvironmental reconstructions from two alpine lacustrine cores covering the last 14,000 years.

This work will be part of a larger project “ALPINE” funded by the French National Research Agency (ANR) for 2023-2027.

#### Profile and required skills:

The candidate will have a MSc degree in geosciences, analytical chemistry or environmental chemistry. Skills in organic geochemistry would be a plus. The candidate should be motivated by laboratory experiments and field campaigns. He/she should have good skills in English.

#### Application:

For more information about this position, please contact **Dr. Arnaud Huguet** ([arnaud.huguet@sorbonne-universite.fr](mailto:arnaud.huguet@sorbonne-universite.fr)) or **Dr. Pierre Sabatier** ([pierre.sabatier@univ-smb.fr](mailto:pierre.sabatier@univ-smb.fr)).

Applications should include a **detailed CV and a cover letter** and should be made before the **4<sup>th</sup> of September 2022**.