

3 FULLY FUNDED PHD POSITIONS ON CLIMATE-GEOSPHERE-BIOSPHERE INTERACTIONS

We invite applications from candidates interested in interdisciplinary and innovative research at the interface of the Earth and Life Sciences. The positions are embedded within a Swiss NSF-funded Sinergia collaborative research project with partners in Switzerland, Germany and Sweden entitled: '*Deep biosphere-geosphere interactions at the top of the world (DIGESTED): An interdisciplinary approach to interpret a Myr climate record from Lake Nam Co (Tibetan Plateau)*'.

- The grant supports three PhD positions for up to 4 years based at the universities of Bern and Lausanne and at the EAWAG federal aquatic research center (in addition to a senior scientist, two postdoctoral researchers and technical staff).
- DIGESTED forms an essential component of the International Scientific Drilling Program (ICDP)-funded NamCore drilling project (<https://www.icdp-online.org/projects/by-continent/asia/nam-core-china>) that aims to retrieve up to 400-m-long sediment cores from Lake Nam Co at ~4'700 m above sea level.
- We offer a large multinational and multidisciplinary research network and training environment, ideally suited to prepare the candidates for future careers in academic and private research sectors.

From a scientific perspective DIGESTED aims to explore and interpret biological and mineral signatures and their respective evolution in the sediments of Nam Co, Tibet. Specifically, the project aims to:

- Elucidate how ongoing microbial activity and diagenesis alter ancient sediment deposits.
- Correlate sedimentary structures as well as solid and fluid geochemistry with the diversity and activity of microbial communities within the sediment column.
- Discriminate between the influence of environmental conditions and diagenetic overprinting by microbial and tectonic activity on mineral- and isotope-based reconstructions
- Generate more robust interpretations of the past climate and environmental conditions of the Tibetan Plateau.

This interdisciplinary approach will shed light into mineralization processes impacted by terrigenous fluid emanation and will broaden our understanding of the genetic diversity and activity of the deep biosphere driving the cycling of carbon and other elements in the deep subsurface.

The **deadline for applications is May 31st 2023** and the desired **start date of the 3 PhD positions is October 1st 2023**. However, the project can accommodate some flexibility regarding the start date in case of other obligations of the candidates.



PhD position in noble-gas-geochemistry-based environmental reconstructions

Noble gases are powerful isotope-geochemical tools to analyse water renewal and (deep) water exchange in groundwater and lakes, to reconstruct past environmental condition from porewaters in lacustrine sediments and to identify the origin of (non-atmospheric) terrestrial fluids. Transient tracer investigations targeting deep water exchange in the recent Lake Nam Co and the porewater evolution will be conducted to reconstruct the abiotic environmental conditions that constrain the diagenetic processes in the (deep) sediments and the (long-term) microbiological evolution.

The respective PhD thesis will be carried out and supervised by the research group of Environmental Isotopes at the Department of Water resources and Drinking Water of the Swiss Federal Institute of Aquatic Science and Technology (Eawag, www.eawag.ch/en/department/wut/main-focus/environmental-isotopes), a world-wide leading group for the application of transient tracers and noble gases in environmental systems. Physicists and engineers and environmental scientists interested in physics are invited to apply for this position. Field work in high altitude (Tibetan Plateau; 4700 m asl) and participation to international workshops and conferences is to be expected. We particularly welcome women to hand in their application.

For further information on this position please contact Rolf Kipfer (Rolf.Kipfer@eawag.ch). Please provide the following application materials in one single pdf by email addressed to Rolf.Kipfer@eawag.ch until May 31st 2023:

- Motivation letter
- CV
- Degree certificates



PhD position in geobiology/biomineralization

This PhD project will be hosted by the Sedimentary Geochemistry research group at the University of Bern (https://www.geo.unibe.ch/research/sedimentary_geochemistry/research/index_eng.html) and targets the identification of biological signatures in minerals through characterization – *from a structural and (isotope-)geochemical compositional perspective* – of diagenetic mineral phases and their associated sedimentary environments. This information will be contextualized against information generated by DIGESTED team members on the environmental parameters at the time of sediment deposition as well as the in situ microbial and chemical composition at the time of core retrieval. Together these data will inform on the factors influencing paleoclimate proxies and will be integrated within the broader scope of the NamCore international collaboration. Field work in high altitude (Tibetan Plateau; 4700 m asl) and participation to international workshops and conferences is to be expected.

Candidates interested in this position should hold a MSc degree in geosciences or related fields at the time of employment. For further information on this position please contact Hendrik Vogel (hendrik.vogel@geo.unibe.ch). Please provide the following application materials in one single pdf by email addressed to hendrik.vogel@geo.unibe.ch until May 31st 2023:

- Motivation letter
- CV
- Degree certificates



PhD position in microbiology of extreme environments

This PhD position will be hosted at the University of Lausanne with strong collaborations with the EAWAG. The candidate will investigate intriguing microbial processes such as extreme isotope fractionation, microbial activity in response to fluid intrusions, and energy-limited metabolisms like methanogenesis. Both traditional and novel approaches will be used comparing microbial cultivation in batch cultures to flowing systems like microfluidic devices. In addition, comparison of cultures and sediment will be performed using molecular microbiology and geochemical analyses. Field work in high altitude (Tibetan Plateau; 4700 m asl) and participation to international workshops and conferences is to be expected.

Candidates interested in this position should hold a MSc degree in microbiology, chemistry or related fields. Applications should be made via the unil website

https://career5.successfactors.eu/career?company=universitdP&career_ns=job_listing_summary&navBarLevel=JOB_SEARCH&s.crb=PscOVQ6GYtc2oETUbXzVmM3Lak%3d

For further information on this position please contact Jasmine Berg (jasmine.berg@unil.ch).



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