

National Polar Sciences PhD, Organizing University: Ca' Foscari University of Venice

Place of PhD work: University of Padua

**Mountain uplift and sediments flux paced by glaciation. A source-to-sink approach to evaluate the impact of the glacial erosion on the landscape evolution and deep seated processes.**

*(Proposer: Prof. Valerio Olivetti)*

Application deadline 4 September 2023

This interdisciplinary research focuses on the relationship between sediment production and variations in climate and/or tectonic conditions. Sediment production is a process resulting from the interaction between climate and geodynamic processes. Increase and decrease in sedimentary flux is directly controlled by variations in climate conditions, which are influenced by changes in precipitation, degree of weathering, glaciation, as well as variations in tectonic settings, such as surface uplift, subsidence, and faulting.

One well-known and widely debated case study is the worldwide increase in sediment flux during the Quaternary as a consequence of intensified glacial erosion. The uncertainty arises from the difficulty in quantifying glacial erosion, determining the locations of focused erosion, and reconstructing the timing of glacial landscape shaping.

The PhD student will be dedicated to establishing the provenance of glacial sediment derived from various cored marine records from Antarctica and the Arctic. These sediments potentially cover several climate transitions of the past geological record throughout the Cenozoic. The approach will be multidisciplinary, combining isotopic dating techniques such as U-Pb dating of zircon and apatite, along with thermochronological techniques like the fission-track method, and geochemical analysis of detrital minerals.

As part of this project, the doctoral candidate will collaborate with both national and foreign institutions, participate in sampling and data analysis activities, contribute to the writing of scientific articles, and present research findings at conferences and seminars. Specifically, the doctoral candidate will deepen their knowledge of dating and geochemical data analysis techniques.

The project will be carried out at the Department of Geosciences of the University of Padua, where the PhD student will receive specialized training and have access to laboratories for fission track dating, geochemical analysis using ICP-MS, SEM analysis, and petrographic analysis.

All details regarding application requirements and procedures can be found on the website of the Università Ca' Foscari Venezia, at the following web address, in either English or Italian:

<https://www.unive.it/web/it/2191/bando-din-scienze-polari> and <https://www.unive.it/pag/48612/>

For further details or question regarding the application procedure, please contact Dr. Valerio Olivetti ([valerio.olivetti@unipd.it](mailto:valerio.olivetti@unipd.it)).