

# CIVIL AND ENVIRONMENTAL ENGINEERING

## MUR DM 118 - Geophysical monitoring of landslides and melting-related natural hazards in high-mountain or permafrost regions

<b>Funded By</b>	MINISTERO DELL'UNIVERSITA' E DELLA RICERCA [P.iva/CF:97429780584] Dipartimento DIATI
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<b>Contact</b>	
<b>Context of the research activity</b>	<p>This PhD research project focuses on the geophysical monitoring of landslides, rockslides and melting-related natural hazards. Thermo- and hydro- mechanical modifications in site stability can be studied through passive seismic methods at the site and laboratory scales.</p> <p>Progetto finanziato nell'ambito del PNRR – DM 118/2023 - CUP E14D23001700006</p>
<b>Objectives</b>	<p>Continuous passive seismic monitoring of natural hazards is a promising tool in the light of early warning and climate change adaptation. Ambient seismic noise analyses (spectral analysis and interferometry), microseismicity analyses (event detection, classification and location) are leading monitoring tools to detect possible failure precursors. With the ongoing increase in both geophysical site instrumentation and processing capabilities, the project aims at exploiting machine learning and big data analyses to achieve a deeper knowledge and quantification of the monitored natural hazards and to forecast the site stability evolution as a function of the external thermo-mechanical and hydro-mechanical modifications.</p> <p>The research topic is in line with the objectives of the PNRR project RETURN (VS2 – Ground Instabilities).</p>
<b>Skills and competencies for the development of the activity</b>	<p>The candidate should have a Master Degree in environmental/civil engineering or in geosciences. Basic knowledge on applied geophysics, geoengineering/environmental engineering, climate change monitoring and adaptation, applied geology is requested. Basic data processing and coding skills (e.g. Matlab or Python) are necessary for the development of the activity.</p>