



# UNIVERSITÀ DI PAVIA

## Corso di Dottorato in Scienze della Terra e dell'Ambiente

### FORM PER PROGETTI BANDO DOTTORATO

#### 1. Project title

Assessing permafrost response to climate warming in the Eastern Italian Alps

#### 2. Proposer

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#### 3. Research Unit

Surname	Name	Institution
Carturan	Luca	University of Padova
Tolotti	Monica	Fondazione Edmund Mach (Trento)
Zumiani	Matteo	Provincia autonoma di Trento – Servizio Geologico
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#### 4. Key words

(Max. 5 – at least 2)

Alpine cryosphere; permafrost; long-term monitoring; climate change; Eastern Italian Alps

#### 5. Abstract

(Max.1.500 characters with spaces)

The Alpine cryosphere (glaciers, permafrost and seasonal snow) is subject to rapid changes under climate warming. Perennially frozen ground (permafrost) is warming and thawing, and permafrost-affected landforms (rock glaciers) are currently changing their dynamics, with acceleration and destabilization phenomena. All these variations are directly or indirectly related to the changing climate, in terms of warming atmospheric temperature and changes in the hydrological regime. Obtaining reliable data on these processes, especially at various spatial scales and over long periods, is crucial to advance our understanding of climate-related permafrost variations.

The aim of the PhD project is to provide a significant contribution to the knowledge of permafrost change in response to climate warming, by the analysis of new and long-term series of field observations. In detail, the project will investigate i) the ongoing changes in the thermal regime at the ground surface and subsurface, ii) the dynamic behaviour of permafrost-related landforms, and iii) the relationships between the observed permafrost evolution and the related climatic variables. The study will be conducted at several key sites, accurately selected in the permafrost environment of the Eastern Italian Alps because of their representativeness and historical background of observations. New investigations will be carried out using state-of-the art techniques and methodologies.