



FORM PER PROGETTI BANDO DOTTORATO

1. Project title

Climate change: Mechanisms, rates and volumes of sediment transfer in deglaciating Alpine basins.

2. Proposer

Surname	SAVI
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3. Research Unit

Surname	Name	Institution
ZUCCA	FRANCESCO	Università di Pavia
SEPPI	ROBERTO	Università di Pavia
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NOTARNICOLA	CLAUDIA	EURAC Research – Bolzano

4. Key words

(Max. 5 – at least 2)

Connectivity, Snow melt, UAV survey, Sediment budget, Extreme events

5. Abstract

Climate change has a strong impact on high mountain regions, where it affects the rates of glacier melt and permafrost thaw. Due to its effects, deglaciating regions see and increase in loose material, and register the activation of new sediment sources, generally in proglacial areas, that may increase the volume of material that can be entrained into the fluvial system. With the increasing frequency of extreme precipitation events, the augmented volume of loose material inside the channel network may provide the source for unexpected and unprecedented debris-flows and torrential-flood events. To assess the vulnerability of mountain regions to these events, it is necessary to know and understand the mechanisms that govern the release and transport of sediment into mountain streams, estimate the volumes of material into play, and calculate the rates of sediment transfer. This PhD focuses on understanding and quantifying these elements, posing a particular accent to the role that snow cover, snow melt, and precipitation may have in activating different sediment sources. The final goal will be to evaluate the response of a deglaciating basins to different climatic scenarios, in the effort of quantifying the volumes, and understand the pathways, of sediment that may be transported downstream.

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