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INTRODUCTION TO THE SPECIAL ISSUE "HISTORIC AND PREHISTORIC LANDSLIDES IN THE NORTHERN ITALIAN ALPS: IMPLICATIONS FOR NEW HAZARD MAPS IN MOUNTAINOUS AREAS".

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People living and working in mountainous areas are familiar with landslides. These events are sadly known to pose a serious threat to people and infrastructures, being also a relevant process in landscape evolution. In the Alps, where narrow valleys are increasingly inhabited, landslides occur every year, and some of them are responsible for a tragic number of casualties, and huge economic losses. In the last decades, a growing interest in such phenomena has developed, these phenomena being increasingly studied in all of their aspects.

Notwithstanding the uniformity of a goal to understand past failures as keys for assessing future events, the study of landslides has been dominated by an engineering geology approach, aimed at immediate risk reduction. In many cases, less attention has been paid to geomorphology, sedimentology, and dating. The landforms, sedimentology and internal structures of a landslide deposit provide direct information on the processes occurring during emplacement. Back calculations and modelling of former rock-slope failures, when combined with the above, allow insight into movement processes

Photo of the participants to the Summer School taken in the Vajont Valley, during fieldwork (photo: Silvana Martin, 4th July 2019).

and emplacement sequences. Reconstructing release and emplacement of mass movements provide fundamental data on the reasons for past and consequently possible future failure and extent of impacted areas. To evaluate which type of trigger (seismic, climatological, combined, man-made, ...) or driving factor played a role in slope failure is a major challenge, but there is a growing amount of data on this topic. Landslides have been studied also as phenomena occurring on a certain area or time frame, moving the focus from the single event to a wider approach. Clustering of some major rock slope failures in space and time have been recognized, pointing to triggers acting on vast areas.

This volume collects contributions inspired by the Summer School on “Historic and prehistoric landslides in the NE Italian Alps - Implications for new hazard maps in mountainous areas”. This advanced course was organized by the University of Padova (Department of Geosciences: Prof. Silvana Martin and Dr. Sandro Rossato; Department of Civil, Architectural and Environmental Engineering: Prof. Fabio Gabrieli) and ETH Zürich (Prof. Susan Ivy-Ochs). It was devoted to both early-career and experienced researchers dealing with landslide studies in the view of land management, risk reduction, and mapping. The Summer School was held in 2019 at the University of Padova, with teaching experts coming from many different countries. During the course, students and researchers, mainly, but not exclusively, European, had the opportunity to present and discuss their own work. More than half of the course consisted of fieldwork in the Veneto and Trentino/South Tyrol regions. The course dealt with every aspect of landslide study: deposit investigation, failure and emplacement reconstruction, risk evaluation and monitoring in presently active sites.

This volume reflects the multidisciplinary nature of the Summer School that inspired it. Wolter (2020) and Viganò and Scafidi (2020) focused respectively on predisposing and triggering factors, highlighting the importance of accurate structural and geophysical data in the landslide and, more in general, geologic studies. The investigations of three different events are also included: the Pragser Wildsee rock avalanche (Ostermann et al., 2020), the Mount Salta rock-block slide-rock fall (Ghirotti et al., 2020), and the Buchwiese rock avalanche (Reitner et al., 2020). In the end, two review papers are presented, inspired by the Summer School fieldwork in the Veneto Region (Rossato et al., 2020) and the Trentino/South Tyrol area (Martin et al., 2020).

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SUMMER SCHOOL
Historic and Prehistoric landslides in the northern Italian alps: implications for new hazard maps in mountainous areas

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