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# The evolution of active Lavina di Roncovetro landslides by multi-temporal high-resolution topographic data

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High-resolution topographic data has been collected over the Lavina di Roncovetro active landslide (Reggio Emilia, Italy) for about 3 years by using various methods and technologies. Tha Lavina di Roncovetro landslide can be considered as a fluid-viscous mudflow, which can reach a down flow maximum rate of 10 m/day. The landslide started between the middle and the end of the XIX century and since then it has had a rapid evolution mainly characterized by the rapid retrogression of the crown to the extent that now reaches the top of Mount Staffola.
In the frame of EU Wireless Sensor Network for Ground Instability Monitoring - Wi-GIM project (LIFE12ENV/IT/001033) the Lavina di Roncovetro landslide has been periodically tracked using technologies that span from the LiDAR, both terrestrial and aerial, to the Structure from Motion (SfM) photogrammetry method based on Unmanned Aerial Vehicle (UAV) and aerial survey. These data are used to create six high-resolution Digital Terrain Models (DEMs), which imaged the landslide surface on March 2014, October 2014, June 2015, July 2015, January 2016 and December 2016.
Multi-temporal high-resolution topographic data have been used for qualitative and quantitative morphometric analysis and topographic change detection of the landslide with the aim to estimate and map the volume of removed and/or accumulated material, the average rates of vertical and horizontal displacement and the deformation structures affecting the landslide over the investigated period.