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Impacts of the January 2014 extreme rainfall event on transportation network in the Alps Maritimes (France)

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Road networks in mountain areas are highly inter-dependent systems, and hillslope processes such as landslides are main drivers of infrastructure detriment and transportation disruptions. Besides the structural damages, economic losses are also related to road and surrounding slope maintenance, as well as due to the disruption of transportation of goods, inaccessibility of tourist resorts, etc.
16-17th January 2014, an intense rainfall event was recorded in the Alpes Maritimes from the southern part of France. According to meteorological data, it was the highest since the 70's. This rainfall triggered numerous landslides (rockfalls, earth flows and debris flows), mostly on January 17th. There were no casualties registered due to hillslope processes, but several houses were damaged, some populations living in the Var valley along the RM 2205 road were isolated, and several roads were partially and totally blocked. 1.5 km upstream the village of Saint-Sauveur-sur-Tinée, 150 m3 of rock detached from the slope and blocked the road, after which temporary traffic interruptions due to road works lasted around one week. In the Menton area, where hillslopes are highly urbanized, the volume of rocks involved in slope failures was so large that materials removed to reestablish the traffic had to be placed in transitory storage sites. The average landslide volume was estimated at around 100 m3. Most of the landslides occurred in slopes cut during road and houses constructions. Several trucks were needed to clean up materials, giving place to traffic jams, etc. (some single events reached around 400 m3).
The aim of this study is to document the impact on transportation networks caused by this rainfall event. Damages and consequences for the traffic were documented during a field visit, obtained from secondary information, as well as by the aid of a drone in the case of inaccessible areas.