



SFM techniques implemented in analyzing landslide-generated natural dam lakes

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Natural dam lakes are a rare phenomenon, that occurs under very specific conditions, such as excessive rainfall, earthquakes, or underlying bedrock structure collapse, that trigger a landslide, which blocks a river course. Considering the extended human presence near water courses, as a rule for settlement development, the chances of such phenomena occurring in the vicinity of cities or villages are considerably high. They most frequently take place in areas characterized by weak bedrock resistance, in sedimentary regions, composed mainly of clay, or sandstone.

The current case study addresses the event that took place on the 7th April 2018, on the right hand slope of the Râmnic river valley, when a large landslide blocked the course of the river, the landslide body acting like a dam. The dam generated by the landslide created a temporary lake, upstream, threatening to flood part of Luncile village, located in Chiojdeni commune, Vrancea County, Romania. After a week of water accumulating behind the dam, the local authorities managed to cut a spillway through which the temporary lake could drain, and eliminate the risk posed by the rising flood waters.

A drone was used to record images of the affected area in the visible spectre, and compiled in AgiSoft Photoscan Professional, in order to generate derived spatial layers, such as the ortophoto imagery, by applying Structure From Motion (SFM) techniques. By means of remote sensing, several morphometric parameters could be calculated, in order to assess the extent of this event.