4D POINT CLOUD ANALYSIS OF THE SEPTEMBER 2020 MEDICANE IMPACT ON MYRTOS BEACH IN CEPHALONIA, GREECE

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The coastal area of Myrtos, is a very popular Natura protected area at the Northern part of Cephalonia Island, in W. Greece, which suffered severe damages during the Medicane named after "Ianos", which affected the Greek territory in September 2020. Most of the prone area, which hosts the road that leads to the waterfront and the beach area itself were extensively covered by debris that came from upstream, interrupting aggressively the connection with the inland road network. The use of Unmanned Aerial Systems proves to be an ideal way of mapping quite small areas, with limited access to road networks. The generation of ultra-high resolution spatial products seems to be optimal for mass movements that often cover areas ranging from less than one square kilometer up to few square kilometers. The aim of multi-temporal image data collection and analysis, before and after the catastrophic event, was to create a series of terrain models along with ortho-photo-mosaics, based on Structure-from-Motion photogrammetric techniques, generating time series of point clouds, and finally leading to the quantification of the surface topographic changes. The comparison of the photogrammetric products showed that significant surface alterations have taken place due to the 2020 Medicane. The comparison between the diachronic point clouds showed elevation changes, mainly at the central part of the area of interest, where the elevation values of the point clouds were found rather altered, either positively (deposition) or negatively (erosion), delineating the areas that suffered surface changes.

***Key words**: mudflow; photogrammetry; landslide; coastal management; Unmanned Aerial Systems*