

Monitoring of the erosional phenomena next to the active fault of Psatha (Attica, Greece) with diachronic Terrestrial LiDAR data acquisition



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The topic of coastal erosion and the derived risk have been subjects of growing interest for public authorities and researchers. The combination of erosion along with alterations, caused by active faults in coastal areas, represents an even bigger challenge because of the apparently continuous evolving geomorphology. On the plane of the active normal fault of Psatha (N. Attica) the corrugations (a) are clear and rather deep yielding an uplift of the southern block, which hosts the notch (b) and causing extensive rockfalls (c).

2011

2022



METHODOLOGY



A multiple-phase study within a period of 11 years was conducted in Psatha Bay. During the **first phase**, in **June 2011**, after establishing a series of reference points along with three Bases (d,e), high resolution close range remote sensing campaign was conducted, by using a terrestrial LiDAR (a **Leica ScanStation C10**) for

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acquiring a dense point cloud, representing the micro-topography of the revealed plane surface of the Psatha active fault. The exact same Bases wee used for a series of scanning campaigns followed during the next decade and the high-risk areas on the steep slope were located, in high detail. The research is mainly focused on the easternmost segment of the fault surface. We used a Leica P50 terrestrial LiDAR during the most recent campaign, that took place in July 2022 (f).







Point Cloud Comparison between 2011 and 2022 and changes quantification. Green pixels highlight the changes throughout the last decade, which are obvious at the field photographs of each period.

CONCLUSION → the proposed method can be used to any coastal area with steep slopes, frequent rockfalls and quite wide coastal front, for estimating any involving risks, due to either small earthquake events or severe weather phenomena and suggesting emergency plans and protection actions/measures. Establishing reference points and bases is crucial for reliable change detection

Relevant Published Literature

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