Geophysical Research Abstracts
Vol. 20, EGU2018-18699-1, 2018
EGU General Assembly 2018

Natural Hazards Monitoring by integrating Geodetic and Space Techniques in the Eastern Mediterranean region: Trends and Opportunities

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The Eastern Mediterranean region has been historically dominated by earthquakes due to its particular geodynamic regime; the Cyprean Arc along with the sinistral Levantine Arc has been shown to generate a series of shallow- to intermediate-depth earthquakes, especially in the subsea environment, increasing the possibility for the generation of tsunamis. Besides, the seismological interest, numerous active landslides and slope instabilities in areas of steep topography, take place, specifically in the area of Cyprus, that affect the built environment by posing an imminent threat for entire settlements, critical infrastructure and cultural – natural heritage landmarks. To date, research infrastructure for monitoring and better understanding natural hazards in the region is limited to conventional equipment (e.g. seismographs, inclinometers etc.) and, hence, no thorough and systematic research has been carried out to determine ground deformation processes with high accuracy and dense spatial resolution, in a most timely manner. This paper performs an overview of integrated space- and ground-based geodetic strategic infrastructures that can be used to enable state-of-the-art monitoring, study and potentially mitigate the impact of natural hazards in the Eastern Mediterranean region.