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Monitoring soil erosion with means of sediment fences and Earth Observation in Crete, Greece

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Soil erosion is considered as a major environmental problem since it seriously threatens natural resources, agriculture and the environment. This study aims to assess the impacts of agricultural practices, land use, soil organic matter and vegetation cover on the quantity of erosion processes in three study areas located in Western Crete, Greece. Crete represents Mediterranean soils under imminent threat of desertification, characterized by loss of vegetation, water erosion, and subsequently loss of soil. Several studies have estimated average soil erosion in the island between 6 and 8 t ha-1 y-1. In the frame of SOILCARE H2020 project, six different sediment fences have been installed in three rural /pilot areas including vineyards, avocado, orange and olive tree orchards. The main aim of the field experiments will be to calibrate erosion assessment models and upscale soil loss results from farm to regional level. In addition, sophisticated classification algorithms will be applied to satellite and UAV imageries to collect new data sets of Land Use/Land Cover (LULC), topography and vegetation and match them to erosion rate. During the project, soil erosion estimates will be validated and innovative agricultural practices will be assessed for their potential to mitigate erosion. The above findings on the spatio-temporal erosion distribution will update the current erosion management plans by developing a low cost precise erosion monitoring system with means of Earth Observation.

Keywords: Soil Erosion, Sediment fences, Earth Observation, Crete

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