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## Visual assessments and model estimations of soil erosion and relations to soil organic carbon

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Visual soil erosion assessment methods and erosion models are widely applied around the globe. The objective of this research is to assess the relation between soil organic carbon (SOC) concentrations (sampled) and two different soil erosion estimates (visual assessment and model). For the visual assessment, the method of the World Overview of Conservation Approaches and Technologies (WOCAT) was used, which is based on expert field observations per land cover unit. For the model assessment, the Pan-European Soil Erosion Risk Assessment (PESERA) model was used to simulate hill slope soil loss based on land cover, soil texture, meteorological data and slope profile. The research was conducted in Peristerona watershed in Cyprus (surface area: 106.4 km<sup>2</sup>, elevation: 300 to 1,540 m above sea level, average annual precipitation: 270 mm downstream and 750 mm upstream). The WOCAT questionnaires were completed by a trained specialist during site visits for 79 mapping units in 15 different land cover types. These results were compared with SOC concentrations from 29 points in the same watershed (0-25 cm depth, grid-based sampling, variety of land covers). For erosion modelling comparison, SOC concentrations from 11 paired sites of productive and abandoned terraced vineyards (0-10 cm depth, random sampling) were compared to the PESERA estimates of the same sites. A transect was drawn from the slope top to the SOC sampling point and erosion was estimated for the slope section where sampling was performed. Both the visual assessment and the modelling method showed that SOC concentrations were lower for areas with higher soil erosion. The mean SOC concentration was 1.7% (n=19) for areas ranked as "light erosion" in the WOCAT assessment and was 0.8% (n=10) for areas ranked as "moderate erosion". Similarly, the abandoned sites that showed higher PESERA estimated erosion than the productive sites (more than 10 times higher erosion rate (n=2)) had lower SOC concentrations than their productive counterpart (half the SOC concentrations). The SOC concentrations almost doubled for abandoned sites compared to the productive sites when PESERA estimated erosion went from 10 times more to 5 times more (n=6) for the abandoned sites. Results from both methods indicate that soil erosion rates and top soil SOC concentrations are related and need to be considered in erosion models.