

Analyzing actual volumes of erosion rills from UAV data and close range photogrammetry

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The project No. QK1720289 of Ministry of Agriculture of the Czech Republic is searching for a predictive tool to focus on proper areas in soil erosion monitoring. Part of the assessment is operative monitoring of selected agricultural areas in the Czech Republic. Based on the local rainfall information and radar data we repetitively monitor potentially eroded areas searching for evidences of water erosion pathways.

At selected fields detailed monitoring survey by DJI Phantom 4, DJI Phantom 4 pro and handheld close range photogrammetry was provided to assess the capability of different data and data resolution on accuracy of volumetric assessments. Total volumes of erosion rills were in detail computed for closely monitored rills by detailed volumetric comparison of assessed DEMs. Getting high resolution data (DTM GSD less than 10 mm) is hard to get for entire parcels of dozens of hectares. Therefore, total volumes of rills for entire fields were estimated by analogy of rill profiles between low and high resolution data of different UAV campaign elevations. The scale dependencies, and the benefits and limits of the analyses will be presented.

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