



Application of geoelectric tomography and LIDAR analysis for the assessment of gully erosion dynamics and badland evolution

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Surficial characteristics of the terrain can be easily assessed with simple remote sensing approaches. However, information of the terrain characteristics in the third dimension are often lacking or difficult to obtain. Nonetheless, this information is crucial for the assessment of geomorphological processes with quantitative methods such as erosion or landscape models. The models often require information about the soil or substrate characteristics in their three-dimensional compartment. In this study we applied geo-electric tomography together with a LIDAR analysis to derive spatial information for the assessment of gully erosion dynamics and badland evolution in a small watershed in Basilicata, Southern Italy. We analysed several transects to obtain structural and hydrological information of the substrates and soils. The surface was scanned with a LIDAR and the resulting information was used to interpolate a high resolution DEM. Combining both methods we were able to interpret the dynamics of badland and gully evolution. In this paper we will present the first results of this analysis and show how the results were used in the subsequent modelling phase.