



Morphometric analysis to characterize uplift rates and fluvio-erosive processes and forms in an intra-Apennine catchment in Northern Tuscany, Italy

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In this study a detailed morphometric analysis was carried out in an intra-Apennine basin in Northern Tuscany characterized by fluvio-lacustrine deposits typical for several basins along the Apennine chain. These basins show both tectonic features and erosion processes related to fluvial erosion and mass movements. The aim of the study was the derivation of information about tectonic uplift rates and erosive processes that took place since the late Miocene and the quantification of these processes using a morphometric approach. Based on lithologic and pedologic information the paleosurface was reconstructed with present day DEM information. With a detailed GIS analysis of the morphology of the paleosurface we derived tectonic uplift rates and fluvial erosion rates. Moreover, we identified automatically different fluvial terrace levels and their spatial extension. Linking these terraces to the last glacial periods allows the calculation of specific erosion rates for the single periods. In a next step the results will be fed in a landscape model to simulate the dynamics of the morphogenesis in this intra-Apennine valley.