The influence of neotectonics on drainage pattern is an accomplished fact and the Digital elevation models (DEMs) are steadfast and proficient tools to quantify the active deformation. The drainage blueprint mirrors the profile and asymmetry of tectonics. In the Emilia-Romagna Apennines, plentiful questions about the late Holocene to present deformation style and uplift rates are still open. In bedrock incised channels, erosion equals denudation and is positively related to surface uplift. The consistency of the bedrock projection in the Lamone drainage represents one of the basis and inspiration for the selection of this study area. Therefore, the influence of different responses to erosion was not taken into account. This attempt investigated the behaviour of drainage network influenced by active tectonics and active deformation was recognized by geomorphic analysis using steepness, concavity, Hack SL-gradient, T factor morphometric index, drainage density and hypsometry using digital elevation models (DEMs) with different resolutions (90 m, 30 m and 5m) and digitized maps. Geomorphic indices were computed using power law of scaling relation and to prepare several maps integrated in GIS like differential Relative uplift rates, Hack SL-index, steepness, concavity, drainage basin asymmetry and drainage density map. The differential uplift rates range from 0.3 to 0.5 mm/yr, which is similar to the average rate of river incision and mountain front unroofing determined by consequent studies. Drainage basin asymmetry analysis shows that the neotectonics in the study area interact with the catchments and are connected with eastward tilting of the Lamone River.

**Key Words:** Active deformation, digital elevation model (DEM), Lamone Drainage Network, Basin Asymmetry, Geomorphic Indices