

The Geomorphological Effects of Old Routes

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The communication network in rural areas in the historical Czech Lands predominantly consisted of unpaved routes prior to the eighteenth century. Certain parts of the network were transformed gradually into the current roads and are now being used by motor traffic. The majority of the old routes form, however, an abandoned network the remnants of which (abandoned during the Middle Ages or even earlier) are currently being discovered.

Certain segments of used unpaved routes were, over the course of time, transformed into holloways (sunken lanes) and consequently also abandoned. The degree of incision of the holloway into the soil was determined by local geological conditions. Routes, which were abandoned due to more difficult transport in holloways, have distinct linear forms and can often be found as a grouping of parallel holloways. This indicates that these routes were frequently used or localized on low-resistant ground.

Analyses of the precise digital elevation models, derived from LIDAR data, can reveal the distinct pattern of an old route network quite often interacting with other geomorphological phenomena (e.g., landslides, streams) or old human constructions (e.g., fortified settlements).

We will present several cases where old paths interacted with landslides. These facts can consequently be used for dating the purposes of both the landslides and the old path sections. General erosion impacts, the degree of incision of the old transportation lines, can also be quantified through analyses of digital elevation models taking into consideration the former and new, incised, surface. We will demonstrate the methodology used for these analyses and the preliminary results.