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Spatio-temporal assessment of aqueous habitat dynamics at the Danube river floodplain based on historical topographic maps and remote sensing data

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The basic requirements of sustainable restoration along rivers is the detection and evaluation of the historical changes in the landscape shaping processes. Identification of historical changes and habitat dynamics are essential criteria for understanding the geomorphological response of the fluvial system to flood discharges.

Danube had three main types of channel adjustment in Szigetköz at the border of Hungary and Slovakia; the anabranching river section with medium flow velocity properties, the anastomosing river section with less intensive runoff conditions, and the meandering river section, with slow flow velocity properties.

Our aim was to define, which section is the most responsive for near-natural and anthropogenic changes and which is the most stubborn against them, or see if they react in the same way. The parameters of the analysis were fluvial forms, their erosion, types of vegetation and nodes of bars and islands. The analysis was based on georeferenced topographic maps and remote sensing data of eight different dates from the last 200 years.

The active channel (AC = main channel + side arms + backwaters + gravel/sand bars) and the habitat composition (HC = % of individual habitat types of AC) were defined for the whole time scale for extracting the most dynamic nodes of the active zone. After we were tracing down the areas of habitat succession and regeneration, by the comparison of adjacent time periods, we concluded that the three different channel types react differently for near-natural changes (e.g. the rejuvenation of the anabranching area was twice intensive than the anastomosing river section before channelization), but react with the same processes (e.g. terrestrialisation) for anthropogenic effects. Our poster will represent these preliminary results besides used datasets and methods.