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Assessing hillslope-streamchannel couple in landscape evolution: Prahova sub-Carpathian area, Romania

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The objective of the study is to analyse the relationship between morphological changes observed during the last 20 years along a 20km reach of Prahova river, and hydrodynamic behaviour during high intensity flood periods. With the help of numerical simulations. Along this sub-Carpathian reach, Prahova is a typical mountain river, partially regulated, flowing under torrential regime and having a mean thalweg slope of about 1%. It's valley has gradually been cut, therefore three terraces may clearely be identified in the subbasin areas of Comarnic and Campina. The holocenic floodplain is asymmetrical, and the main channel has a meandering aspect with multiple anabranches. Riverbed material consists in cobbles and boulders. The data obtained from topographical maps (scale 1:25000) were coupled with topo-bathymetric surveys carried out in 60 cross-sections in order to obtain the DTM of the studied area. Wider and closer-spaced cross-sections were extracted from the DTM and used to build up the geometry of a 1D hydraulic model by using the HEC-RAS software. Shear stress values and Shields parameters for the mean diameter of the bed material showed areas of potential entrainment or deposition leading to morphological changes, bank collapsing and incision observed the last few decades.