



Alterations in braided rivers' morphology: a typology for Curvature Subcarpathians (Romania)

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The morphology of braided rivers was altered by human pressures in the last century in Europe. Rivers from Curvature Subcarpathians have the highest sediment charges in Romania, therefore it seems relevant to evaluate the status of their braided sectors. Therefore, the aim of this work is to carry out an inventory of river morphology alterations suffered by braided rivers in Curvature Subcarpathians and to establish a typology based on indicators for channel adjustments and artificiality. For channel adjustments, we calculated the length of the braided sectors, the width of the active-channels and the length of banks covered by a riparian forest for 1900-2011 interval, in GIS. For artificiality, we counted dams, weirs, bridges, as well as artificial banks length for 2011 time horizon. The results indicate a diminishing braiding activity: all the rivers narrowed their braided active-channel (30-70% of the mean width); the majority suffered fluvial metamorphosis, transforming partially into single channels (0-75% of the braided sector length in 1900); artificial banks vary from 0 to 40% of the initial braided sector. We distinguished three main types of braided rivers based on morphological alterations. Type 1 includes rivers with human interventions and important braiding retraction, both upstream and downstream; a sub-type characterises by riparian forest lining the downstream metamorphosed reach; most rivers are in the south-western part of the studied region; the most demonstrative examples are Prahova and Ialomița rivers. Type 2 corresponds to rivers with important retraction upstream, without important values of artificiality; most demonstrative is Râmna River. Type 3 regroups rivers with a low level of channel adjustments and artificiality; actually, they had and still have the highest braiding activity in the studied region; they are located in the north-eastern part; typical examples are Putna and Șușița rivers. As a discussion, the variations of active-channel width are compared to examples from previous studies on channel adjustments in Europe, indicating comparable values of retraction for type 1 and lower values for type 3 braided rivers from Curvature Subcarpathians. This work was supported by the strategic grant POSDRU/159/1.5/S/133391, Project "Doctoral and Post-doctoral programs of excellence for highly qualified human resources training for research in the field of Life sciences, Environment and Earth Science" cofinanced by the European Social Found within the Sectorial Operational Program Human Resources Development 2007 – 2013.