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# Man-made activities and morphological changes of Ligurian floodplains (Italy) since modern history to nowadays: an approach through old maps comparison

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## Abstract

The Tyrrhenian slope of Liguria extends along the coast, from West to East, for nearly 300 km between Ventimiglia to Marinella di Sarzana: this stretch of territory presents more than a hundred catchments mainly characterized by small-size floodplains, usually less than 1 km<sup>2</sup>.

Ligurian catchments, except for the Roja and the Magra rivers, have common features: by the area they can be distinguished in small basins (less than 15 km<sup>2</sup>), medium (15-150 km<sup>2</sup>) and large (150-500 km<sup>2</sup>). The slopes of the catchment areas are very steep, while the flat alluvial plains are typically narrow and elongated: the largest one are referred to the Entella stream (approximately 4 km long) and the Centa stream (about 7 km in length). On these floodplains are located almost Ligurian urban areas, which represent the expansion of the historical settlements and road connections. Through a comparative mapping it was rebuilt the morphological evolution of Ligurian floodplains in historical times, witnessing the land-use and riverbed changes in the modern era until today, by using: 1) Historical maps of the eighteenth century by Matteo Vinzoni ("Pianta delle due riviere della serenissima Repubblica di Genova divise nei commissariati di sanità" e "Il Dominio della Serenissima Repubblica di Genova in terraferma"); 2) historical topographic maps of the first half of the nineteenth century ("Stati Sardi di Terraferma), in different topographic scales: a) 1:50.000, b) 1:20.000 and c) 1:9.450; 3) historical topographic maps of the second half of the nineteenth century until the first half of the twentieth century ("Tavolette dell'Istituto Geografico Militare Italiano, Firenze, 1878-1940, 1:25.000); 4) regional maps for the second half of the twentieth century, 1: 10.000 and 1: 25.000, while the current status was assessed with Google Earth Pro platforms; 5) important information was taken by the Map of the historical evolution of urban fabric, 1: 50.000 produced by Liguria Region and obtained by the overlap of urbanized areas in different periods (1855, 1936, 1964 and 1986).

The secular human activities have therefore modified the natural landscape through land use changes, either for catchment or for the floodplain. The main channel, and even the minor hydrographic network, have showed major transformations over time. The anthropic action has deeply modified the morphology of Ligurian floodplains, except for the two largest: Albenga (Centa stream) and Chiavari-Lavagna (Entella stream), which still have a portion of soil for agricultural purposes. In many cases it has detected a river-bed covering, especially

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in the medium-terminal portion, for the purpose of building needs and the road link. Other very widespread changes finally concern: a) deviations and displacements of the riverbed, b) the progradation of the coastline due to fills and embankments.

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