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# Geo-hydrological hazard underlined by toponymy of Italian Military Geographical Institute maps at 1:25,000 scale. Contributions to the knowledge of floodplain and hillslope dynamics

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## Abstract

Toponymy is a linguistic discipline, which has already been used as a tool for geographical studies in Italy and particularly in Liguria.

Geographical studies have already classified the toponyms in several categories: physical geography, human geography and socio-economic geography. By selecting the place names connected to physical geography, we study those suggesting the presence of landslides or floods.

We focused on the Italian Military Geographic Institute maps at 1: 25.000 scale, edited between 1936-1939 and related to a territory approximately located between Genoa and Chiavari, in Ligurian coastal area, and Tortona and Piacenza in Po valley.

On the Ligurian slopes we have examined the maps relating to the Polcevera, Bisagno and Entella streams catchments. For the Po side we dealt with maps of the Scrivia and Trebbia rivers catchments: from the Ligurian-Po watershed, these rivers flow into the Adriatic Sea. The place names have been compared with landslide and flood hazard maps of Basin Master Plans for geo-hydrological risk reduction.

The toponyms feature a linguistic layer linked to different historical periods. In particular in the study area several layers have been recognized: the ancient Ligurian pre-Roman, Latin, ancient Lombard, vulgar Gaulish-Italic of local languages and Italian terms related to the twentieth century. The first three layers and the last one match in the entire area of study. The vulgar Gaulish-Italic is structured into two Ligurian and Emilian groups: the latter is further splitted into the Oltrepo variants of Tortona and Piacenza.

The identified names were distinguished in related-landslides or floods. In addition, the toponyms have been further divided into three linguistic influence areas: Ligurian, from Ligurian Sea up to Novi Ligure and Bobbio, the language of Tortona, downstream of Novi

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Ligure and Piacenza from Bobbio to Po river.

Overall, place names linked to physical geography features represent nearly 25% of toponyms with a density of about 0.5 per km<sup>2</sup>. Almost half of these are toponyms related to landslides, floods or predisposing factors such as erosion, steepness or water. The names of places linked to landsliding prevail in Liguria, while those related to the waters or floods in the Po areas are located in plain areas or in very gentle slopes. The most common names related to landslides or erosion are "moggia", "liggia" or "crosi" and similar, which respectively mean swampy deposits, landslides and gullies. Names related to floods are "riva", "piana" "ponte" or "isola" which mean respectively edge of fluvial scarp, floodplain, bridge and isle.

The comparison with the Basin Master Plan gave satisfying results: we found a good correspondence between names and geo-hydrological hazard.

The use of toponyms allowed a geographical interpretation of the slope and floodplain dynamics. It suggests a possible use of toponyms in land planning activities.

**Keywords:** toponyms, geohydrological hazard, physical geography, Liguria