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Establishing a systematic regional scale identification of artificial ground in Catalan territory from geological perspective

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Anthropization is the transformation that human actions exert on the environment. Artificial interventions modify the morphology of the ground and affect physical and chemical properties of natural terrain. Therefore, providing information on the distribution of artificial ground throughout the territory is necessary for land management, development and sustainability. Despite the effects of anthropization, from a geological approach, the systematic characterization of anthropic ground on a regional scale is scarcely developed in Catalonia.

In the last decade, one of the lines of work of Institut Cartogràfic i Geològic de Catalunya (the Catalan geological survey organisation) has been the development of the project Geoanthropic map of Catalonia, which incorporate information of active geological processes and artificial ground. Up to now, the activity in this project has broadly consisted of publishing several map sheets of 1:25.000 scale from different areas of Catalonia (5.000 km² from 32.108,2 km²). Recently, in the framework of this project, it is proposed to refocus with the purpose of providing information on these two themes from all over the territory. In this process, in relation to artificial interventions, an analysis has been carried out to determine which anthropic terrains and related information can be obtained for its usefulness in a systematic way in the medium term.

In this analysis, firstly, the available reference information sources have been established from which information on anthropic lands in Catalonia can be extracted. Basically, these documents are topographic maps, geothematic maps, land use map, digital elevation models and other historical cartographic documents. Much of the existing information in these sources must be redirected to a more geological approach so that it can be used to address aspects related to geotechnics, natural hazards, soil pollution and other environmental concerns.

Secondly, based on data analysis, a series of certain anthropic lands have been evaluated which can be captured on a systematic identification at regional scale. Thereby, the following anthropogenic terrains have been established: built-up areas, agricultural areas, sealed ground, urban compacity, worked grounds (e.g., related to mineral excavations and transport infrastructures), engineered embankments, infilled excavations and other more singular anthropogenic deposits. Therefore, from a geological perspective, it will be feasible to identify and map these anthropic lands and provide this information throughout the Catalan territory in the medium term.

Bearing in mind all the above, the presentation will consist of this general analysis and the considerations that have been extracted regarding this. In addition, the preliminary results of the systematically characterized artificial ground will be shown.