

## Island shelf and slope geomorphology of La Palma Island (Southern sector)

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### Abstract

The geomorphology is the study of the Earth's surface landforms, and the analysis of the genetic processes that shaped them in the past and their behaviour in the present. There are different submarine environments characterized by several morphological features that could be generated by different geological processes. In this sense, the study of morphological types allows to infer the dominant geological processes in a region. The studies of submarine geomorphology have had an important development with the upgrade of multibeam bathymetric echosounders and the construction of submarine digital terrain models from these data. Geographic Information Systems are very useful techniques in these studies due to using different spatial analysis tools on bathymetry data allows to recognize different morphological elements and units. The main aim of this work is the geomorphological study of the submarine environments corresponding to the insular shelf and slope of a volcanic island, the southern sector of La Palma at the Canary archipelago (Figure.1).

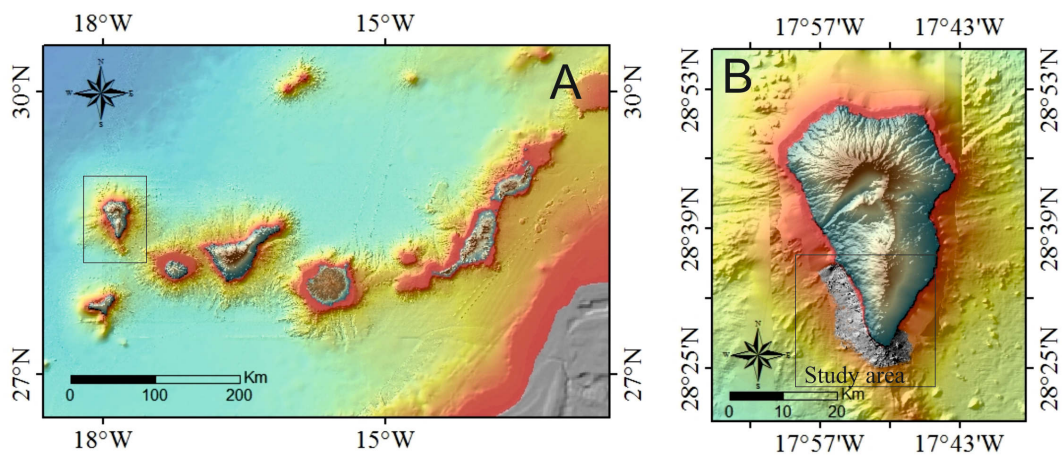


Figure 1: A) The Canary archipelago. B) Map of La Palma and the study area.

This study requires the identification of the geomorphological elements and units present in these submarine environments and their relationship with the dominant geological processes in the area and, by this way, understand the possible evolution and development of the island (Schmincke, 2004). The geomorphology of the study area is explained. To carry out this study a qualitative or handmade mapping (Figure 2) of all the geomorphological elements and units present in the study area has been done. Several morphological types are recognized, such as volcanic cones, flat-topped cones, lava flows, different types of depositional bodies, scarps, landslide scars, valleys and the insular shelf itself, among others. The study of the morphology of these elements have allowed to establish relationships with the processes that have taken place for their formation and their evolution observing, for example, that the scars are related to processes of mass movement by action of gravity, being this a erosive process, while volcanic cones are the result of magmatic activity. These types of relationships are established for all the morphological elements characterized observing that precisely the volcanic activity and the gravitational processes related to the strong gradients of the insular slope and the main morphogenetic processes of the area. In addition, there are two regions with lava flows, which could have come from eruptions that have taken place on land and have spread to the sea.

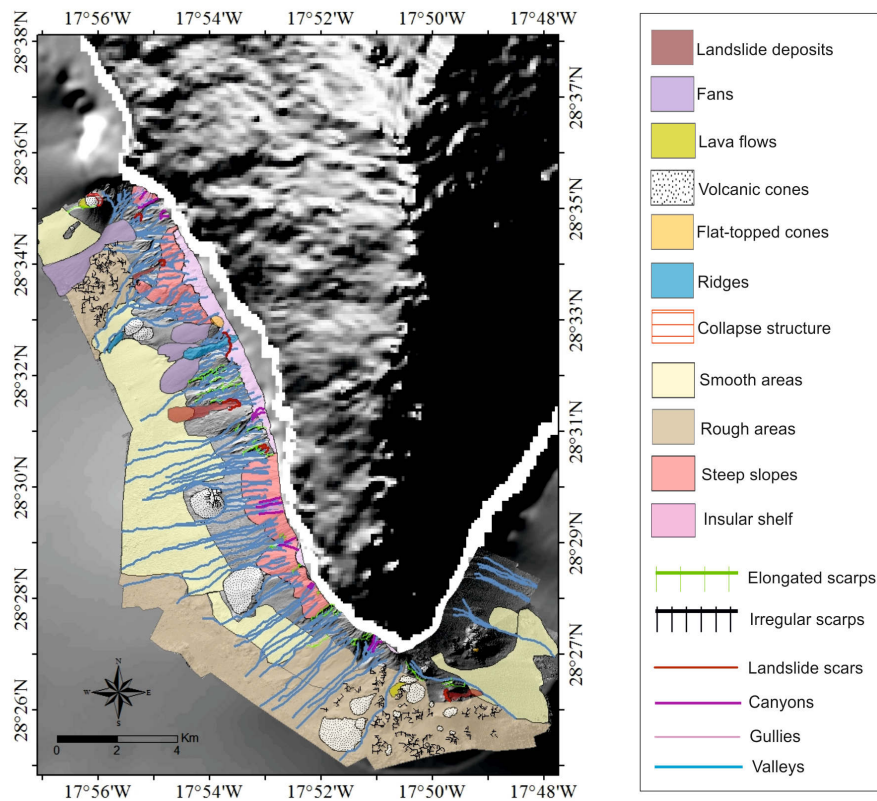


Figure 2: Qualitative or Handmade mapping.

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