



Sensitivity analysis of a model of lithospheric flexure: A case study of the flexure effect of Tenerife island on Gran Canaria island in the last 4 ma.

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Elastic plate model has been used to study the lithospheric flexure caused by the added material emitted for the volcanic activity of Tenerife island in the last 4 million years. We focus the study on the effect of flexure at the neighboring Gran Canaria island. With this objective we have used observations of volcanic deposits that mark the transition of pillow-lavas to lavas pahoehoe and therefore the sea level 4 million years ago. The transition extends along the north coast of Gran Canaria island, east to west, from 80 km to 120 km of distance to load. The current spatial disposition of the above mentioned transition gives place to a slope plane whose lowest point corresponds to the nearest zone of Tenerife island. To test the model sensitivity have been compared flexure maps with different loads varying its shape, size and density, and different elastic thickness of the plate, according to values proposed by diverse articles on the structure of the Canary Island region. The effects of these variations are significant under the load while in the study area, where the island of Gran Canaria is located, the conclusions are: a) flexure curves generated for loads with different shapes are practically coincident; b) flexure curves generated for loads with different size and density have nearly equal slopes but in absolute value they can vary between 10 and 20 meters with increasing distance of load and elastic thickness; c) flexure curves generated with different elastic thickness differ in absolute value and in shape, distance of the turning points and the maximums to load increases with increasing elastic thickness. This sensitivity analysis allows us to confirm the validity of the flexure elastic model for the study area.