



Study of the 1998 Faial earthquake impact in Ribeirinha village dwellings: analysis of the rebuilding plan

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On July 9th, 1998, at 5:19 am a 5.9 magnitude earthquake occurred undersea, about 10 km NE of Horta, Faial Island (Azores). This event was followed by numerous felt aftershocks, the majority of them located along the main shock fault. The buildings damages in Faial Island were significant, causing a death toll of 9 and hundreds of injured people. Several infrastructures and religious monuments were also destroyed.

Ribeirinha located in the NE part of Faial Island, was the nearest village to the epicentral region. The observed high level of destruction, where around 80% of dwellings were severely damaged, resulted mainly from the high earthquake vulnerability of masonry buildings that existed at that time at Faial Island. Furthermore the location of Ribeirinha village in Pedro Miguel Graben, an important active tectonic structure in what concerns seismic hazard, also contributed to the high damage levels.

In order to analyse and evaluate the Faial Island reconstruction plan, this study focuses the Ribeirinha dwellings spatial distribution in respect to seismic hazard, before the earthquake and after the reconstruction plan implementation. To accomplish these aims all the dwellings were mapped by systematic field surveys and aerial photo interpretation. All the gathered data was integrated into a GIS database.

The rebuilding process was analysed considering the exposure of the new Ribeirinha village to geological risks, assuming the occurrence of a similar event to the July 1998 earthquake.

Dwellings are one of the most vulnerable elements in what concerns seismic activity, once the number of casualties is highly correlated with the number of the collapsed dwellings. This case study represents a good example in what concerns the integration

of hazard evaluation for land-use planning and risk mitigation purposes.