CARTOGRAPHIC REPRESENTATION OF THE RESULTS OF THE DIFFERENT PHASES OF A SESIMIC HAZARD ASSESSMENT STUDY IN CENTRAL AMERICA

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Central America is characterised by a high seismic activity due to its tectonic setting, controlled by its location in the vicinity of a convergent plate margin. This situation generates numerous destructive earthquakes in this region during the past. In order to understand more deeply this aspect, the cooperative project RESIS II for regional and national seismic hazard assessment financed by the Norwegian government, is carried out.
Expected results will be used to revise and improve earthquake-resistant codes of the respective countries, making it possible to design and construct more safely and helping authorities in decision making for prevention of possible catastrophes. The process of a probabilistic seismic hazard assessment is sequential, so the outcome of one phase of the study is the input for the following one. Occasionally, these partial results need to be mapped in order to facilitate the interpretation, thereby saving data analysis time and favouring reaching consensus among the different researchers involved in the study. Accordingly, the symbolization gets very important, and must be accomplished by a cartographer. Moreover, special attention must be due to cartographic design of maps containing final results, because it is required to distribute the information to all interested persons (scientific community, national administrations, authorities…).

Four types of maps are composed in this project: maps of earthquake epicentres, the tectonic map, zonification maps and regional- and national-scale seismic hazard maps. To prepare each class, the pertinent decisions aimed at transferring objectively the information reflected by the represented data must be taken. These decisions are:

- The scale (regional or national level)
- The reference system (WGS-84) and the cartographic projection (UTM)
- Representation method (isolines, punctual symbols…)
- The range of values that the continuous variable may take, the limits of these intervals and the colour pattern associated to them (equal or different for each map)
- The toponymy included in the maps (hydrography, orography, capital and important cities names…).

- How to represent tectonics, relief and bathymetry (contour lines, shaded relief…), because the volcanic chain and the subduction zone present high seismicity and help understanding the distribution of seismic hazard.
- How to classify maps in function of the variable influencing hazard:
  - Catalogued earthquake depth (crustal, inslab, interface)
  - Ground-motion parameter (peak ground acceleration or spectral acceleration for different frequencies).
  - Return periods (500, 1000 and 2500 years)

A total of 37 thematic maps have been prepared in this Project that has been used for comparison with earlier hazard maps for Central America. This allowed a comparative analysis that, thanks to the graphic representations and related tables, is relatively rapid. At the same time, it facilitates the study of the distribution of this variable, which would be much more complex if instead of reading a map, only alphanumeric data was available. Further, these maps will be the basis for starting future seismic risk analyses, earthquake-triggered landslides hazard studies, a new seismic hazard assessment including faults data, etc.