



Probabilistic Seismic Hazard Map for Bolivia

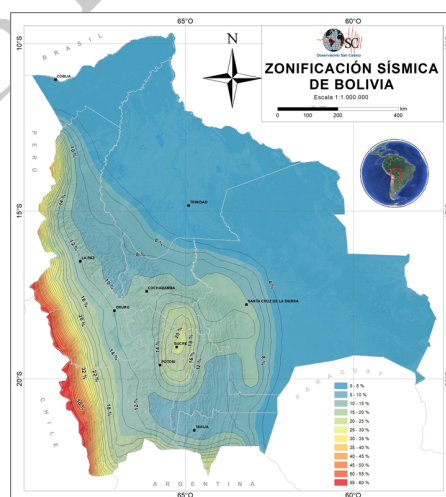
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Abstract

Observatorio San Calixto presents a probabilistic seismic hazard map for Bolivia (PSHBO) taking into account seismic zones based on epicentral location, our zones includes shallow crustal, intra and inter slab seismicity. The geomorphological context and the stress regime studied by focal mechanism were also included into the new map, eleven seismic zones are defined to be analyzed. To reach our main goal we combined different seismic catalogs from national to international sources, the homogenization and declustering was done manually to get a final harmonized catalog, the well know procedure for hazard assessment was applied. Our new magnitude conversion from ML to Mw was done by ordinary least square method (OLS) regression, we took crustal, intra and inter slab seismic events. The Gutenberg – Richter laws were applied in order to have "a" and "b" variables which were included into the attenuation laws for each zone. Two attenuation laws were applied, "Boore and Atkinson 2008" for shallow crustal seismicity, "BCHydro" for intra and inter slab seismicity. CRISIS software was the main tool to get the probability calculation for 475 years and 10% of recurrence, GIS tools were applied to get a high quality map and iso acceleration curves. The results shows that at Western Cordillera has from 22 to 50 % of g taking into account seismicity from our neighbors Chile and Peru, the Altiplano goes from 14 to 20 % of g, the Eastern Cordillera where the Bolivian Orocline is present is around 18 to 20% of g, the Sub Andes has from 4 to 8 % of g. This study improves our knowledge of seismological hazards in Bolivia, furthermore this work can be applied to the new building code for our country.



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