Earthquake recurrence parameters along Chile: zone and zone-less approach

*Natalia Zamora[1], Patricio Catalán[1,2], Alan Poulos[1,3]

1. National Research Center for Integrated Disaster Management (CIGIDEN), 2. Technical University Santa Maria (USM), 3. Pontifical Catholic University of Chile (PUC)

Chile is one of the most tectonically active countries in the world, where earthquakes of magnitude Mw>8.0 occur, on average, every 10 years. Estimating the probability of earthquake occurrence in time and space represents one of the most relevant steps for assessing probabilistic seismic hazard and other associated hazards. The aim of this study is to use different statistical techniques to assess earthquake recurrence parameters in Chile for apparent low frequency crustal events and higher frequency interplate and intraslab seismicity. In this work we study the relevance and effect of using different methods to fit the earthquake data assuming seismo-tectonic segmentation models or instead the zone-less approach based on a spatially smoothed seismicity. Based on a seismic catalog that spans over 100 years, we propose earthquake recurrence rates that can be used to assess seismic and tsunami hazard along Chile.

Keywords: Earthquake rates, Seismotectonic models, Spatially smoothed seismicity , Chile

