SEISMOTECTONIC AND SEISMICITY PATTERNS IN THE PERU-CHILE BORDER REGION

1 ZAMUDIO, Y. and 2 BERROCAL, J . 1 Instituto Geofísico del Perú, Lima, Perú; 2 Instituto Astronomico e Geofisico, Universidade de Sao Paulo, São Paulo, Brasil.

The study region is located between 13-26S and 60-90W, around the Peru-Chile border seismic region, in the central portion of western South America. Very large earthquakes occurred in this region with magnitudes MW close to 9.0 in 1604, 1868 and 1877 that destroyed many small and large towns in southern Peru and northern Chile.The main objective of this work is to determine the seismotectonic features in the studied region in order to define the seismogenic zones, and to estimate the seismic hazard in these zones, through the determination of recurrence relations for large earthquakes.From the Engdahl catalog, relocated hypocenters, 2195 events that occurred in the study region between 1964- 1995 with magnitudes mb 4.0 and depths700 km were selected. Six seismogenic sources were defined from the spatial distribution of those events. Temporal distribution of that seismicity was obtained by using Gutenberg-Richter frequency/magnitude single and cumulative relations, maximum likelihood and extreme values, were established recurrence relations for each seismogenic sources. The recurrence interval for the seismogenic source where the 1868 earthquake occurred is approximately 290 years, and for the source where occurred the 1877 earthquake around to 220 years.