

SEISMICITY CHARACTERISTICS IN THE PERU-CENTRAL REGION (10-15S AND 73-84W)

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A main objective of this study is to evaluate the recurrence time of earthquakes with $m_b 6.4$ than occur in the region near to Lima, the Capital of Peru. These earthquakes would originate damages and casualties in this region. The historical seismicity shows that two large destructive earthquakes occurred in 1687 (8.4 Mw) and 1746 (8.8 Mw). These earthquakes originated rupture lengths of approximately 350 km in front of Lima with intensities up to X(MM). Several investigators suggest that a seismic gap exist between the rupture zones of 1974 and 1942, the most severe earthquakes occurred in this region recently. Analysis of epicentral and hypocentral distribution was used in order to determine the existing seismogenic sources. The data was compiled from Engdahl and ISC catalogues, and includes 35 years of observations. 422 earthquakes with $m_b 4.0$ m_b and depth 150 km were selected. The work was developed considering two processes. The first one considered only one seismogenic source, allowed to evaluate space-time distributions, extreme values, maximum likelihood and Gutenberg-Richter relations. The second one considering two seismogenic sources SS1 located near to Mendaña Fracture Zone and it includes the 1746 earthquake rupture zone and SS2 includes the 1687 earthquake rupture zone. Recurrence time for magnitudes $m_b 6.4$ is in the order of 18 years, while for magnitudes $m_b 7.0$ is 108 years. These results show a hazard imminence in the area surrounding the SS2 seismogenic zone, where is localized the seismic gap.