

Recent large destructive earthquakes occurred in Arequipa-Southern Peru

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Several large destructive earthquakes have shaken the city of Arequipa since its foundation in 1540, especially by the huge magnitude events (M_W close to 9.0) occurred in the Peru-Chile border region in 1604, 1868 and 1877. However, other destructive earthquakes with closer hypocentres than those historical events, and magnitude M_W larger than 7.0, have also provoked serious damage in Arequipa and smaller towns close to it.

We shall present in this paper some details of three of these large magnitude earthquakes that occurred during the XX century. These events have been recorded by many station of the international seismographic network. This permitted to define the focal mechanism of the earthquakes occurred on January 15, 1958 and on January 13, 1960. The mechanism solutions for those events were associated with strike slip faults parallel to the coastline, and with a left-lateral movement for the first earthquake and a right-lateral displacement for the second one. The isoseismal maps corresponding to those earthquakes agree with the focal mechanism solutions mentioned above. Those earthquake reached magnitude M_W 7.3 and 7.5 and maximum MM intensity I_0 of IX and X respectively. We will also present the data analysis results of the earthquake occurred almost in the same active fault than the previous ones, on 16 of February 1979, with magnitude M_W 6.8 and I_0 of VII MM. This earthquake's isoseismal map has the same shape than the other two, suggesting having the same mechanism than the older events.