

Statistical evaluation of anthropogenic influence on seismicity in the Mexicali Valley.

Glowacka E., Sarytchikhina O., Nava F.A., Díaz de Cossío G., and Farfán F.
Centro de Investigación Científica y Estudios Superiores de Ensenada, Ensenada Baja California,
México
glowacka@cicese.mx

In an area of active tectonics like Mexicali Valley, situated in the southern part of San Andreas system, the presence of human-induced seismicity is not always obvious. In this work we analyze 30 years of regional seismicity in comparison with fluid extraction and injection volumes in the Cerro Prieto Geothermal Field. . Using spectral analysis of seismicity and data cross-correlation, we find that strong seismicity increases occur about one year after the extraction increases and that local seismicity is correlated with injection with 3-7 months delay. Since the delay can be explained by the process of seismicity diffusion, we can conclude that, at least partially, the seismicity in the Mexicali valley is of anthropogenic origin.