

Seismicity type of Kuwait

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The current manuscript comes to answer a controversial question: Is the local earthquake activity in Kuwait a result of tectonic circumstances or anthropogenic? Kuwait is an oil-producing country from which oil is extracted in many places and earthquakes occur simultaneously with the extraction of oil. Seismic activity inside Kuwait is monitored with high accuracy and continuously after the establishment of the Kuwait National Seismic Network (KNSN) in 1997 through an ambitious plan to study the micro-earthquake activity in Kuwait. The KNSN network recorded more than 1000 micro/minor local earthquakes. Two areas were distinguished in Kuwait in which earthquakes only occur. The recorded earthquakes in those areas are characterized by small magnitudes and shallow focal depths. In the current work, several modern geophysical techniques including waveform inversion, Double-Couple and Compensated Linear Vector Dipole signatures, stress drop values, and stress patterns have been used to distinguish between types of seismicity of different origins. The results obtained clearly show that the earthquakes that occur in Kuwait involve tectonic and anthropogenic components. This means that the local earthquakes in Kuwait occur in places that have active network faults and are triggered by the oil extraction in these places alone.

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