

## **TECTONIC SEISMOLOGY MODEL OF IRAQ**

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### **ABSTRACT**

*Iraq is one of the countries that are exposed to seismic activity due to its location. Zagros-Taurus belt is located in the collision area between the Arabian plate and Iranian-Turkish plates. Tectonic seismology is defined as the study of earthquakes produced by tectonic processes, or the application of seismic principles to the solution of tectonic problems. There are various causes for earthquakes but in our study we have dealt with the faults as one of the key factors for the study of earthquakes. In order to determine tectonic activity and tectonic model of Iraq, two different seismic indices, including epicenter location and their depths are applied. In this area epicenter index calculated 2000 locations selected for last 40 years from 1972 to 2015. The result of the study showed that the focus depths were the high active faults located below or within the sedimentary cover.*

*To understand the tectonic model of Iraq, the distribution of earthquake epicenters or earthquakes focus depths during the last forty years was examined. One of the main objectives of this study is to answer some questions about the possible locations or where or when these earthquakes could be happen in future and why? So, the aim of this study is to propose a map of the main active faults in Iraq based upon analysis of tectonic seismology.*

*The new seismic map of Iraq during the last years shows that the epicenter sites of the earthquakes were expanding or moving westward toward the Mesopotamia. This expansion reflects the new seismic activity along new thrust and strike slip faults. It also reflects the relay site of faults and areas where there is a re-activity. The earthquakes taken place in the area is due to deformation of the rocks due to pressures generated by the Arabian Plate movement along the north and northeast. The trend of fault planes associated with earthquakes is parallel or perpendicular to the trends of structures of Zagros-Taurus belt.*

*According to this study, this area shows seven seismic fields. These fields are depending on trends of active seismic faults, among other factor. The region that becomes the most likelihood of earthquakes is an area of the intersection between the transversal strike-slip faults and the major longitudinal thrust faults. Therefore, 50 potential sites of earthquakes in Iraq land have been identified. The earthquake sites that have been identified in the new map are matching on the ancient tremor's sites.*

**Keywords:** Iraq, tectonic, seismology, earthquake.