

# **The Gulf of Aqabah Earthquake Sequence (Nov. 1995 - Feb. 1996)**

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## **ABSTRACT**

On November 22, 1995, a sequence of earthquakes began in the central part of the gulf of Aqabah at the Aragonese fault step zone. The largest event ( $M_D = 5.9$ ) on Nov. 22 had an origin time of  $04^h 15^m 12.3^s$  UTC, a latitude of  $28.8^\circ$  N and longitude  $34.7^\circ$  E. The event was followed by more than 7157 aftershocks ( $1.5 < M_D < 5.9$ ) in the next 98 days.

The majority of seismic activity of this sequence is clustered in the area located between  $28.6^\circ$ - $29.3^\circ$  N. and  $34.6^\circ$ - $34.9^\circ$  E. The most remarkable aspect of the earthquake sequence in the gulf is the spatial distribution overlapping of 1995 swarm with earthquake sequences in 1983, 1985, 1991, and 1993 and the migration of the epicenters north and northeastward about 50 km in 98 days with focal depths less than 10 km confirming the continual recent crustal motion along the southern portion of Dead Sea transform system.

The structural picture revealed from five single focal mechanism solutions shows that main and aftershocks activities are generally characterized by strike-slip faulting. This mechanism is consistent with left-lateral strike-slip on N-NE trending faults of the Dead Sea transform system.

The results obtained from this study indicate that the seismic activity occurs in the form of mainshock-aftershock sequences. Surficial geology of the epicentral area, linear surface cracks observed in the field, and earthquake locations provide evidence for continuation of the strike-slip faulting regime from the gulf northeastward into the land beneath thick sediments, east of the gulf, suggesting that the northern portion of the gulf is subjected to more severe seismic hazard compared to the southern portion. The recent seismic activity indicates a cyclic pattern of events consisting of seismic minima which may represent episodes of accumulation of energy, and seismic maxima which represent the release of energy that can be accumulated to cause larger events in the future.

**KEYWORDS** : Gulf of Aqabah, Earthquake Sequence, Seismicity, Swarms.