

STUDY OF KINEMATIC PARAMETERS OF EARTHQUAKES IN THE ZAGROS REGION

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Keywords: Kinematics parameters, Source time function, Waveform modeling, Zagros

The Zagros region is a seismic block in the Alpine Himalayan belt. The Zagros zone has experienced more than twenty destructive earthquakes resulting in many casualties during the twentieth century. Seismicity is considered as earthquakes distribution in magnitude, space and time.

In this study, the source time function of 30 events of the Zagros earthquakes has been evaluated. The magnitudes of these events are greater than 5 (Mw > 5.0). The source time function of these events calculated by waveform modelling reported by Ni and Barazangi (1986), Baker et al. (1993), Talebian et al. (2004), Roustaei & Nissen (2010), Copley et al. (2015) and Utkucu (2017).

We measured the pulse length τ_p and total duration τ_t , directly from the source time function. When viewed over the entire depth between 4<h<23, the total duration (τ_t) is related to M_o by log $\tau_t = (0.2156 \pm 0.001) \log M_0 3.3855 (\pm 0.0238)$.



Figure 1. Map of the earthquake situations studied in this study.

Region	Total duration (τ_t)	Reference
Zagros	C=0.215 d=-3.385±0.238	This study
Caspian Sea and Surrounding Area	$C = 0.264 \pm 0.0001 \text{ d} = -8.911 \pm 0.194$	Mostafazadeh (2004)
Mexico	$C = 0.363 \pm 0.014 \text{ d} = -8.619 \pm 0.337$	Singh et al. (2000)
Mexico and Kanto	$C = 0.365 \pm 0.011 \text{ d} = -8.706 \pm 0.262$	Singh et al. (2000)
Mexico, Kanto, California, and Deep	$C = 0.363 \pm 0.008 \text{ d} = -8.580 \pm 0.190$	Singh et al. (2000)

Table 1. Result of regression (log $\tau_t = c \log M_O + d$) for different tectonic regions (Mostafazadeh, 2004).



Figure 2. Source duration (τ_t) versus seismic moment (M_0) .

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