STUDY OF KINEMATIC PARAMETERS OF EARTHQUAKES IN THE ZAGROS REGION

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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 $\tau_p$ and total duration $\tau_t$, directly from the source time function. When viewed over the entire depth between $4<h<23$, the total duration ($\tau_t$) is related to $M_o$ by $\log \tau_t = (0.2156 \pm 0.001) \log M_o + 3.3855 (\pm 0.238)$.

Figure 1. Map of the earthquake situations studied in this study.
Table 1. Result of regression (log $\tau_t = c \log M_0 + d$) for different tectonic regions (Mostafazadeh, 2004).

<table>
<thead>
<tr>
<th>Region</th>
<th>Total duration ($\tau_t$)</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zagros</td>
<td>$C = 0.215 \pm 0.238$ d = $-3.385 \pm 0.238$</td>
<td>This study</td>
</tr>
<tr>
<td>Caspian Sea and Surrounding Area</td>
<td>$C = 0.264 \pm 0.001$ d = $-8.911 \pm 0.194$</td>
<td>Mostafazadeh (2004)</td>
</tr>
<tr>
<td>Mexico</td>
<td>$C = 0.363 \pm 0.014$ d = $-8.619 \pm 0.337$</td>
<td>Singh et al. (2000)</td>
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<tr>
<td>Mexico and Kanto</td>
<td>$C = 0.365 \pm 0.011$ d = $-8.706 \pm 0.262$</td>
<td>Singh et al. (2000)</td>
</tr>
<tr>
<td>Mexico, Kanto, California, and Deep</td>
<td>$C = 0.363 \pm 0.015$ d = $-8.580 \pm 0.190$</td>
<td>Singh et al. (2000)</td>
</tr>
</tbody>
</table>

Figure 2. Source duration ($\tau_t$) versus seismic moment ($M_0$).

REFERENCES


