

Distribution of mean high frequency peak times

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Recently, we measured differences between P arrival times and times when amplitudes of high bandpass (2-4 Hz) filtered P-waves become the largest, which we call high frequency peak times, for large shallow earthquakes, and showed that the high frequency of high frequency peak times normalized by centroid time shifts around 50 per cent. This observation suggests the effectiveness of duration measurement procedure of the high frequency energy radiation of Hara (2007. *Earth Planets Space*, 59, 227 - 231).

In the present study, we investigate the distribution of mean high frequency peak time calculated for each earthquake in the dataset we have compiled through the recent studies. There is no earthquake for which mean high frequency peak time normalized by centroid time shift is in the range from 0 to 30 per cent. This suggests that it is effective to use mean high frequency peak time in duration measurement of the high frequency energy radiation to avoid significant underestimations. We investigate the dependence of mean high frequency peak times on focal mechanisms. We follow Frohlich and Apperson (1992) to classify focal mechanisms. There is a tendency that mean high frequency peak times normalized by centroid time shifts of strike slip events are larger than those of thrust events, although the number of strike slip events is much smaller than that of thrust events, and the scatter of the mean high frequency peak times for strike slip events is large.

In the presentation, we are also going to present recent performance of magnitude determination using the procedure of Hara (2007).