A Study of the Mainshocks and Their Largest Aftershocks in Taiwan

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Abstract

Several correlations between mainshocks and their aftershocks are studied from 85 pairs of mainshock-aftershock in the Taiwan region. Results show that the magnitude difference (ΔM_s) between a mainshock and its largest aftershock slightly increases with the mainshock magnitude (M_s) and varies from 0.1 to 2.2, with two values of 0.3 and 0.9 having the largest numbers of events. The mean value of ΔM_s is 0.83±0.46. There is not a clear correlation between the differences of occurrence times and epicenters between the mainshock and the largest aftershock. For the whole data set, 36.5% and 77.7% of the largest aftershocks were located near their individual mainshocks within a distance of 10 km and 40 km, respectively. In addition, 37.7% of the largest aftershocks occurred within one day after the mainshock. The difference in occurrence time somewhat increases as the difference of epicenters increases.

Key word: Taiwan's earthquakes, mainshock, largest aftershock