

Rapid Earthquake Casualty Estimates for Developing Countries

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We estimate the number of fatalities and injured within less than one hour after earthquakes worldwide for events with $M \geq 6$. From January 2008 to March 2009, we issued 114 loss estimates by email.

Reviewed earthquake parameters (epicenter, depth, magnitude) are distributed by four agencies: The NEIC of the USGS, the EMSC and the Russian Academy of Sciences within 18 min for 100% of the events, within 27 min for 45%, and within 80 min for 96%, respectively. The first tsunami assessments by the Tsunami Warning Center reached us 17 min after large earthquakes in the Pacific.

Automatically calculated earthquake parameters reached us from the Geoforschungs-Zentrum with a delay of 7 min for 68% of events of interest. Based on automatic source parameter solutions, the Joint Research Laboratory in Ispra, Italy, issues automatic alerts, listing sociological aspects of the affected region with a 20-minute delay.

WAPMERR distributes reviewed loss estimates within 28 min, 9 min after receiving the reviewed earthquake parameters from the USGS. Our theoretically calculated estimates were correct within a factor of about two in 97% of the reports. After the Wenchuan earthquake (M8.0), our revised estimate of fatalities was 20,000 to 90,000, distributed after 100 min.