Relating earthquake clustering to faults and lineaments

CHE NOORLIZA LAT
Geology Department
University of Malaya
50603 Kuala Lumpur

A study was done in the Garfield Hills, Nevada, an area with moderate seismicity characterized by short-lived, randomly distributed clusters. This area experienced a magnitude 5.0 earthquake on September 19, 1989. The earthquake, along with its aftershocks, represented an opportunity to study the phenomena of clustering and correlate that to the geological structures, namely the mapped faults and lineaments obtained from satellite imagery data. The area lies between WNW-trending faults to the north and the NNE-trending faults to the west.

The data used was from the University of Nevada-Reno Seismological Laboratory for the years 1852 to 1989 with the signals from mine blasting removed. In addition field records were taken using a portable seismograph system. The events were re-picked and relocated using several methods to achieved a more accurate data set. The focal depths were concentrated between 3 to 16 km. The seismicity did correlate with some mapped faults and lineaments. The NE-NW trends of the fault planes from earthquake focal mechanism solutions were consistent with the fault trends in this area.

Warta Geologi (Newsletter of the Geological Society of Malaysia), Vol. 25, No. 3, May-June 1999