Boğaziçi University

KANDILLI OBSERVATORY
and
EARTHQUAKE RESEARCH INSTITUTE

VAN EARTHQUAKE (Mw= 7.2)

EVALUATION REPORT
as of 27October 2011

EARTHQUAKE

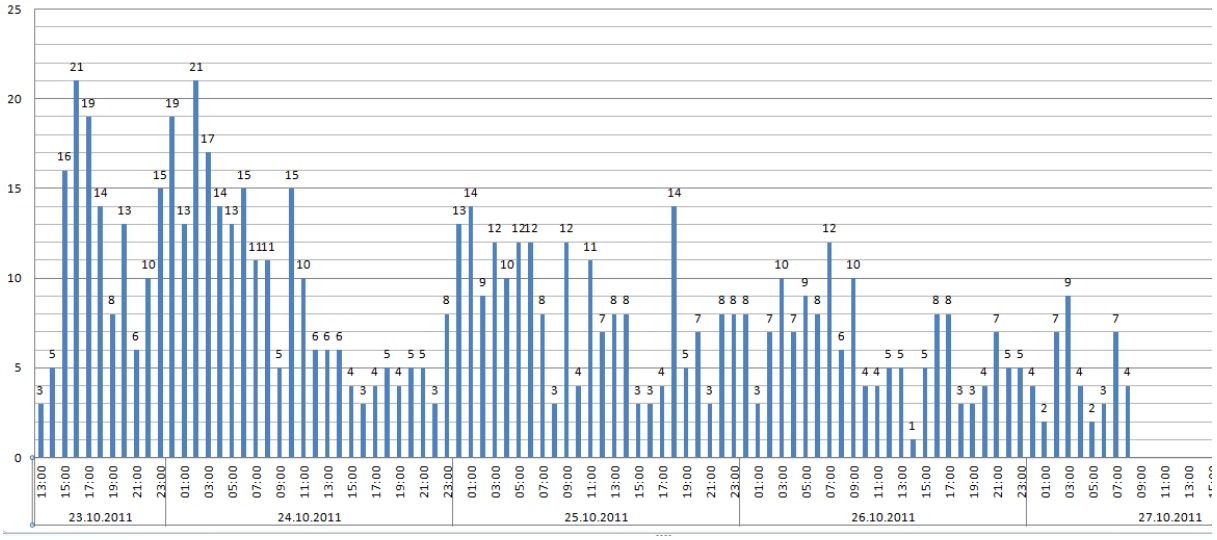
The Van earthquake that occurred on 23 October 2011 at 13:41 local time has been modeled based on far field waveform recordings. Results indicate that the earthquake rupture started at 38.75 E 43.36 N, as initially reported by KOERI, and propagated in Northeast and Southwest directions. The faulting mechanism is reverse with a fault surface area of 60 km x 20 km, as confirmed by the aftershock sequence. The average displacement on the fault surface at a depth of 10-15 km is 2 m. No surface rupture has been observed. The Rupture duration is approximately 50 seconds. The strike angle and dip angle of the fault are approximately 250° and 35°, respectively.

AFTERSHOCKS

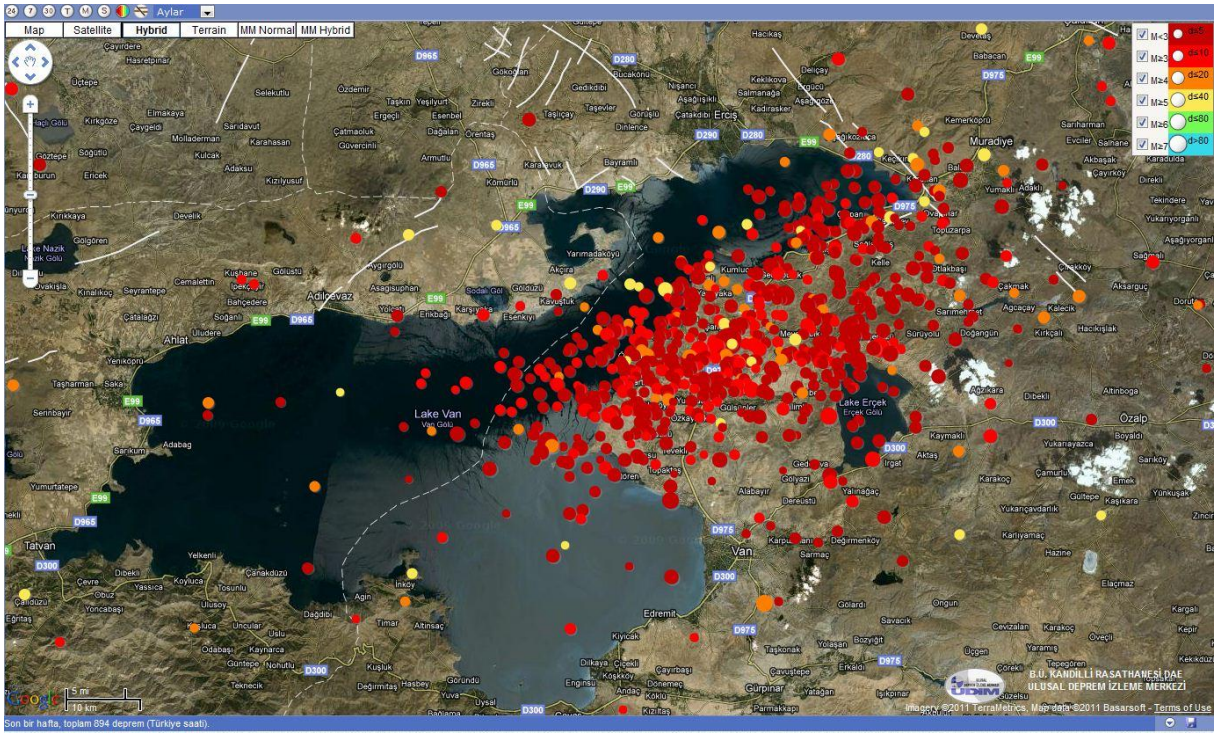
The number of aftershocks has reached 640 as of 12:00 local time on 26 October. The largest aftershock had a magnitude of 5.7 (Ml), and the number of aftershocks above M≥4.0 is 76. The number and magnitude of the aftershocks are expected to decrease with time. The number of earthquakes and their magnitudes as of 27 October, 09:00 local time, are given in the table below:

Magnitude (M)	Number of earthquakes
M≥ 5.0	6
M≥ 4.0	68
M< 4.0	659
Total:	733

However, it is important to note that after an earthquakes with such a large magnitude, the aftershock activity is expected to continue for some time.



The figure above shows the hourly distribution of number of aftershock occurrances.



Distribution of aftershock sequences as of 27 October 2011 09:00 local time.

KOERI is continuously monitoring the aftershock activity and updated evaluations will be disseminated to the public through our web sites: www.koeri.boun.edu.tr, and www.kandilli.info

FIELD INVESTIGATIONS

Following the preliminary field investigation conducted by KOERI on 24 October, the deployment of 10 additional seismic instrumentation began on 25 October. This deployment will enable KOERI scientists better locate the aftershocks and to determine the fault geometry more accurately.

STRUCTURAL DAMAGE

It is clear that the total collapse level damage has been experienced by buildings that lack adequate earthquake performance. Buildings with some earthquake performance seem to have experienced only non-strucural damage consisting mostly seperation of infill walls from the structural frame. This type of damage is also a manifestation of long duration and rather low amplitude (believed to be less than 0.2g) ground motion in Van and Erciş.