

PRELIMINARY REPORT

ŞIRNAK-SİLOPİ EARTHQUAKE M_I=5.5 (Southeast Turkey)

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REPUBLIC OF TUKEY
PRIME MINISTRY
DISASTER AND EMERGENCY MANAGEMENT
PRESIDENCY
EARTHQUAKE DEPARTMENT

ŞIRNAK-SİLOPI EARTHQUAKE (SOUTHEAST TURKEY) (MI=5.5)

An earthquake with magnitude MI=5.5 occurred at local time 08:52 on June, 14, 2012. Epicentral coordinates of the earthquake was determined as 37.1572 N - 42.4437 E with focal depth 11.68 km. The magnitude of earthquake was identified with AFAD National Seismological Observation Network and Kandilli Observatory and Earthquake Research Institute. Two minutes before from this earthquake, an earthquake occurred with magnitude MI=4.0 in the same area. After these earthquakes 14 earthquakes were determined with magnitude range 2.3 – 3.8 in first 5 hours (Fig.1).

This earthquake was also felt in Mardin, Siirt and Diyarbakır. It didn't caused loss of life but it caused slight damage to some adobe brick structure.

Focal Mechanism Solutions performed by considering first motion direction of P wave and moment tensor solution of MI=5.5 earthquake is emerged from thrust faulting with a little strike slip component (Fig.2). The tectonics of the region are controlled by North-South compressional regime as the result of collision of the Arabian Plate and the Eurasian Plate (Fig.3). The main tectonic structures of this region as given; Southeast Anatolian overlap and, Cizre fault.

Destructive earthquakes haven't been observed in this region during the instrumental periods. An earthquake that occurred in the last century is given as; 1915 M=5.3 Şırnak Beytüssebap.

June 14, 2012 Şırnak-Silopi Earthquake was recorded by accelerometers at 5 different locations within National Strong Ground Motion Observation Network operated by Earthquake Department at Disaster and Emergency Management Presidency of Turkey. Peak ground acceleration values recorded at Şırnak station which is located at nearest distance (about 40 km) to epicenter of this earthquake are 73 gal in EW direction, 43.76 gal in NS direction and 23.33 gal in up-down direction (Table 1, Fig. 4,5).



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Peak ground acceleration and seismic intensity values that can be created by June,14, 2012 Şırnak-Silopi earthquake in the earthquake-hit area and its vicinity are estimated and the maps showing the spatial distribution of these values are prepared (Fig.6,7).

Earthquake activity of this region (and all of Turkey) has been observed in Disaster and Emergency Management Presidency, Earthquake Department Data Center Ankara 7 days/24 hours with 205 Seismic station and 371 accelerometer. Obtained results are shared with public, press and relevant authorized.

For your information.



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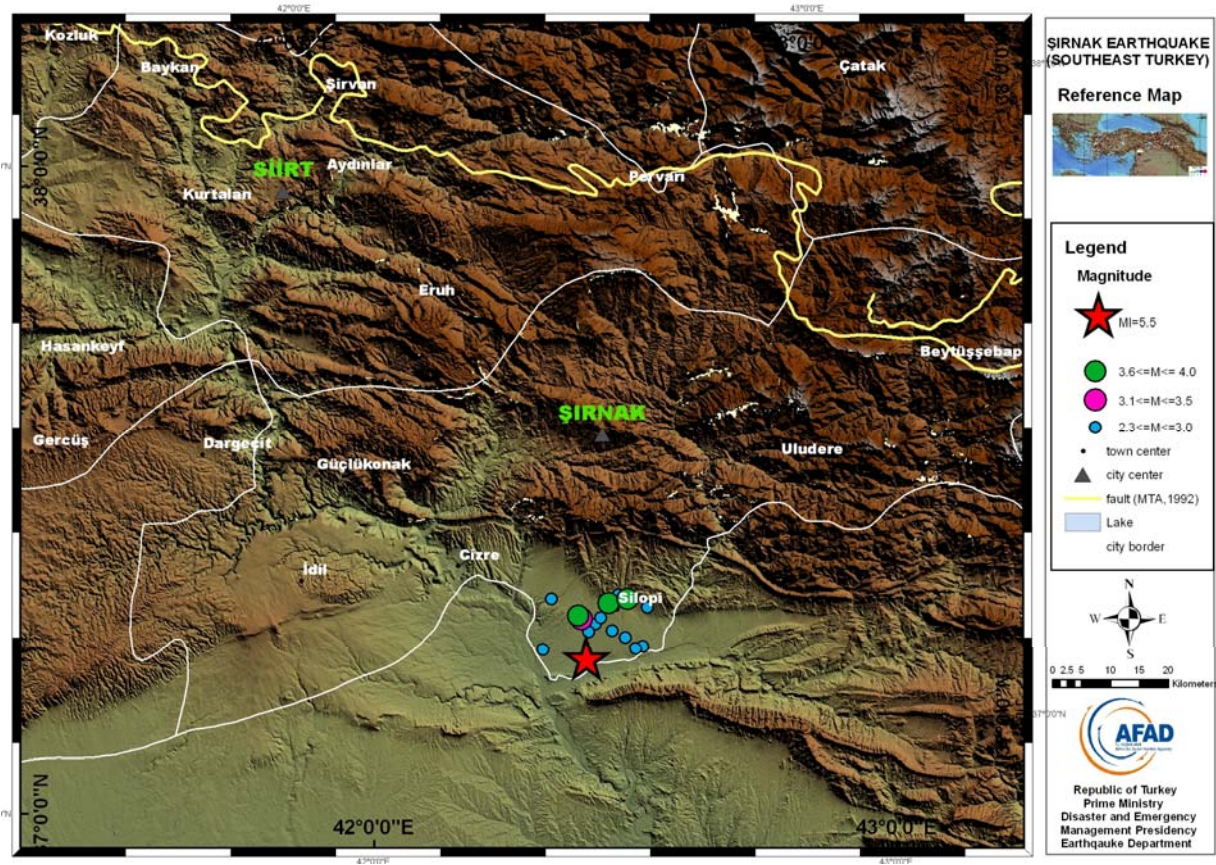
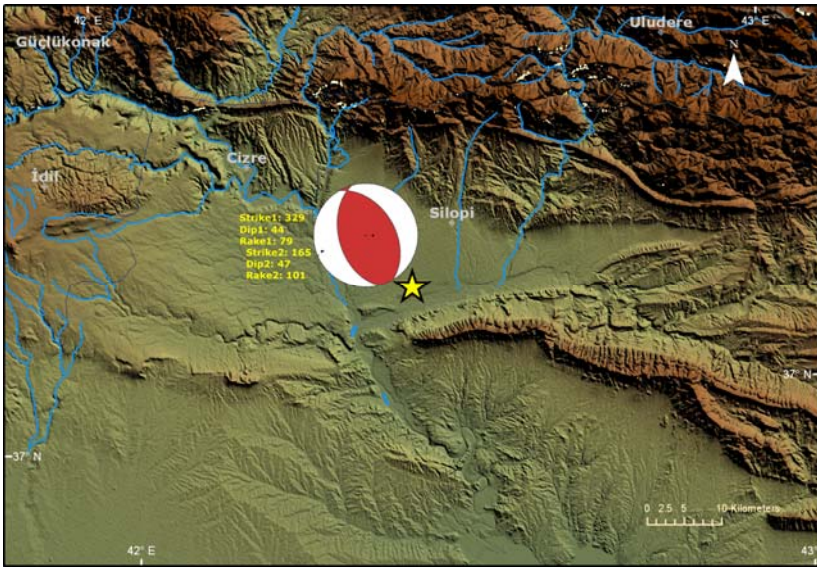


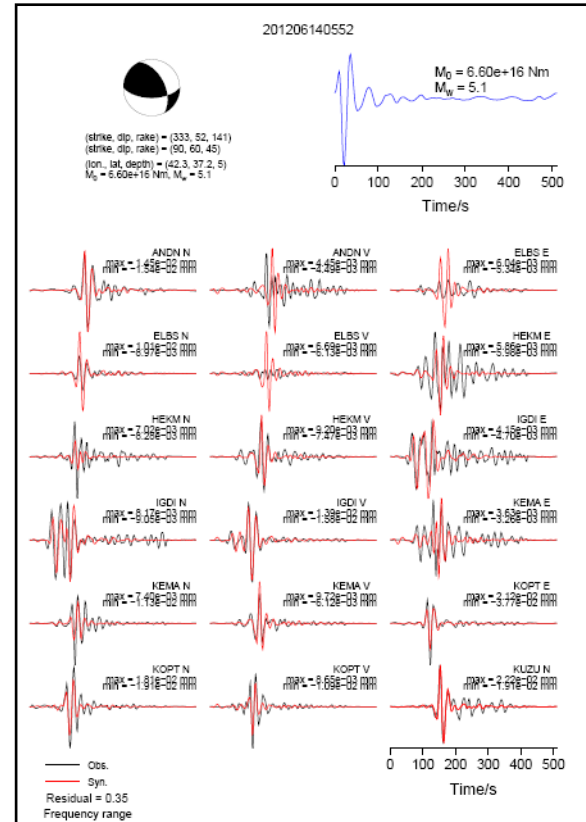
Fig. 1. 14/06/2012 Şirnak-Silopi earthquake and aftershocks (MI=5.5)



ŞIRNAK-SİLOPI EARTHQUAKE (SOUTHEAST TURKEY) (MI=5.5)



(According to P wave first motion)



(Moment Tensor Solution with SWIFT)

Fig. 2. Focal Mechanism Solutions of Şirnak-Silopi earthquake



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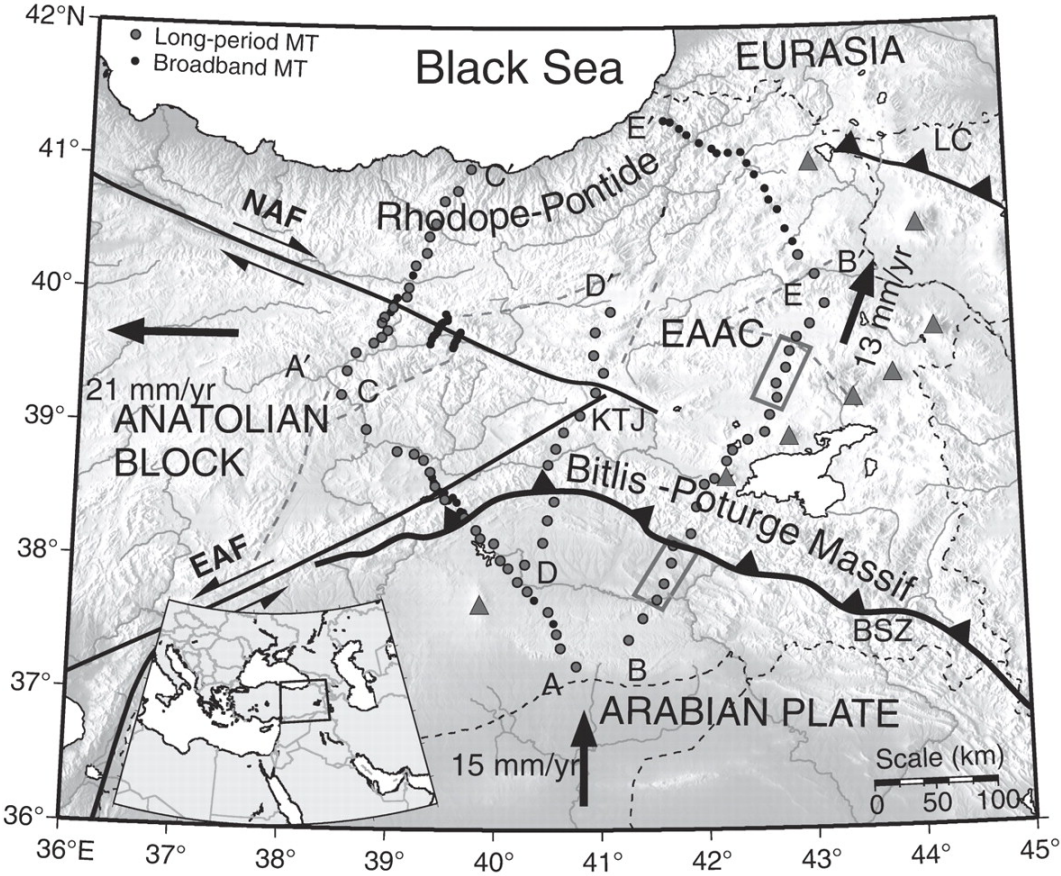


Fig. 3. Tectonic structures of East Anatolian (taken from <http://geology.gsapubs.org/content/36/8/619/F1.large.jpg>)



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| STATION | | | Lat | Lon | Altitude (m) | Type of Accelerometer | ACCELEROMETER VALUES (gal) | | | Distance R_{ep} (km) | Share Wave V_{s30} (m/sn) |
|---------|---------|-----------|----------|----------|--------------|-----------------------|----------------------------|-------|-------|------------------------|-----------------------------|
| No | CITY | TOWN | | | | | NS | EW | UD | | |
| 1 | ŞIRNAK | MERKEZ | 37.52122 | 42.45237 | 1341 | CMG-5TD | 43.76 | 72.99 | 23.33 | 40 | |
| 2 | MARDİN | MİDYAT | 37.41714 | 41.35743 | 933 | CMG-5TD | 2.62 | 2.29 | 2.28 | 100 | |
| 3 | HAKKARİ | YUKSEKOVA | 37.57832 | 44.28626 | 1884 | CMG-5TD | 2.77 | 2.64 | 1.01 | 169 | |
| 4 | BATMAN | MERKEZ | 37.87300 | 41.15112 | 597 | CMG-5TD | 3.54 | 3.19 | 1.83 | 139 | 450 |
| 5 | HAKKARİ | MERKEZ | 37.57435 | 43.78772 | 1732 | CMG-5TD | 2.9 | 3.71 | 2.52 | 127 | |

Table 1. Acceleration Values of Şırnak-Silopi earthquake



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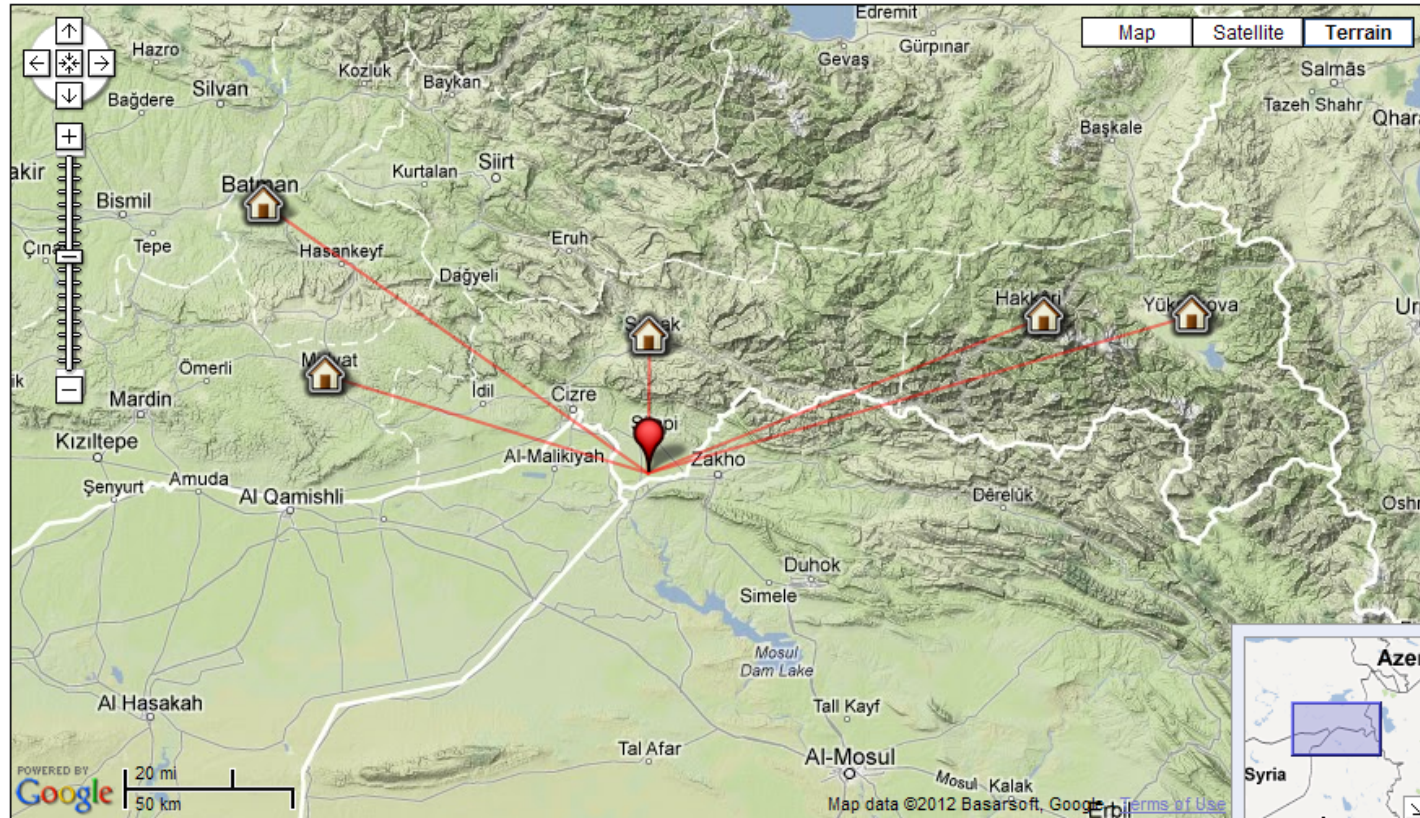


Fig.4. Distribution of the accelerometers that recorded Şırnak-Silopi earthquake



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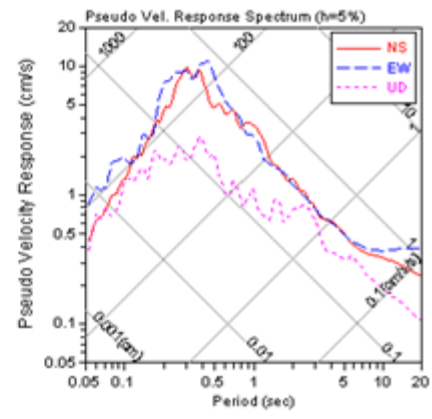
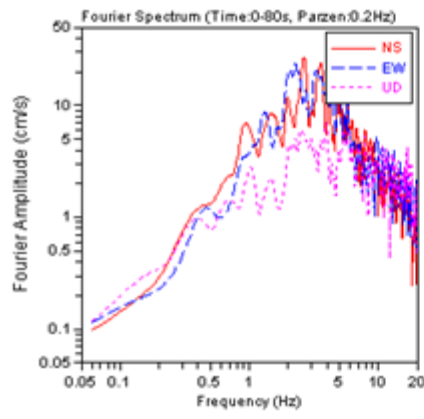
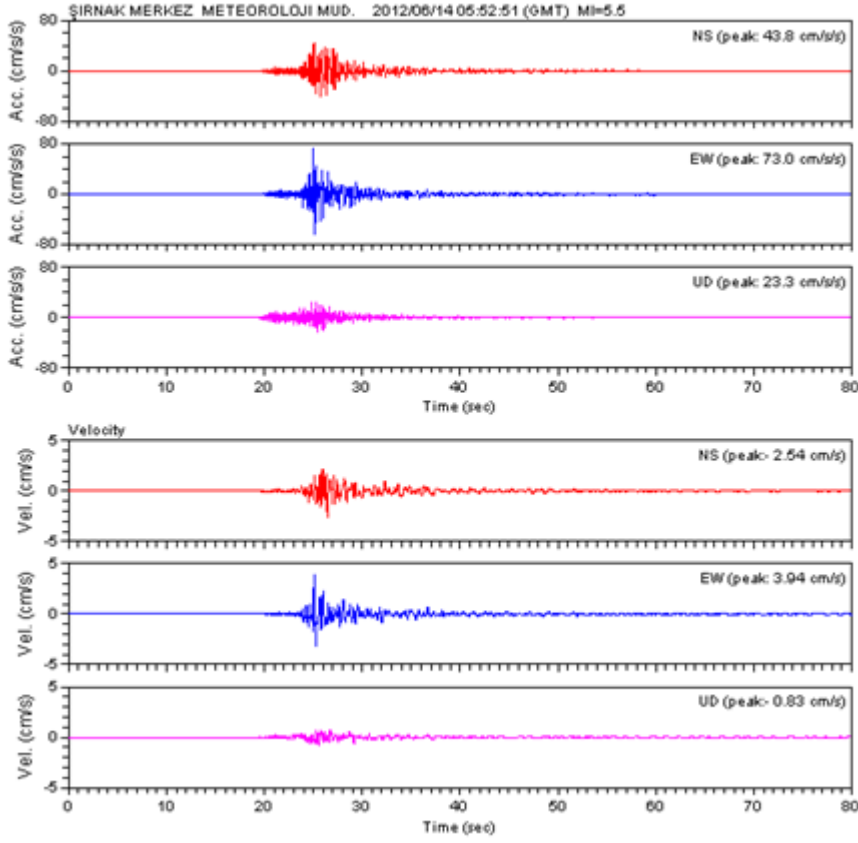


Fig.5. Wave Forms of Acceleration, Velocity, Fourier Spectrum and Response Spectrum of the Şirnak-Silopi Earthquake for Şirnak Station



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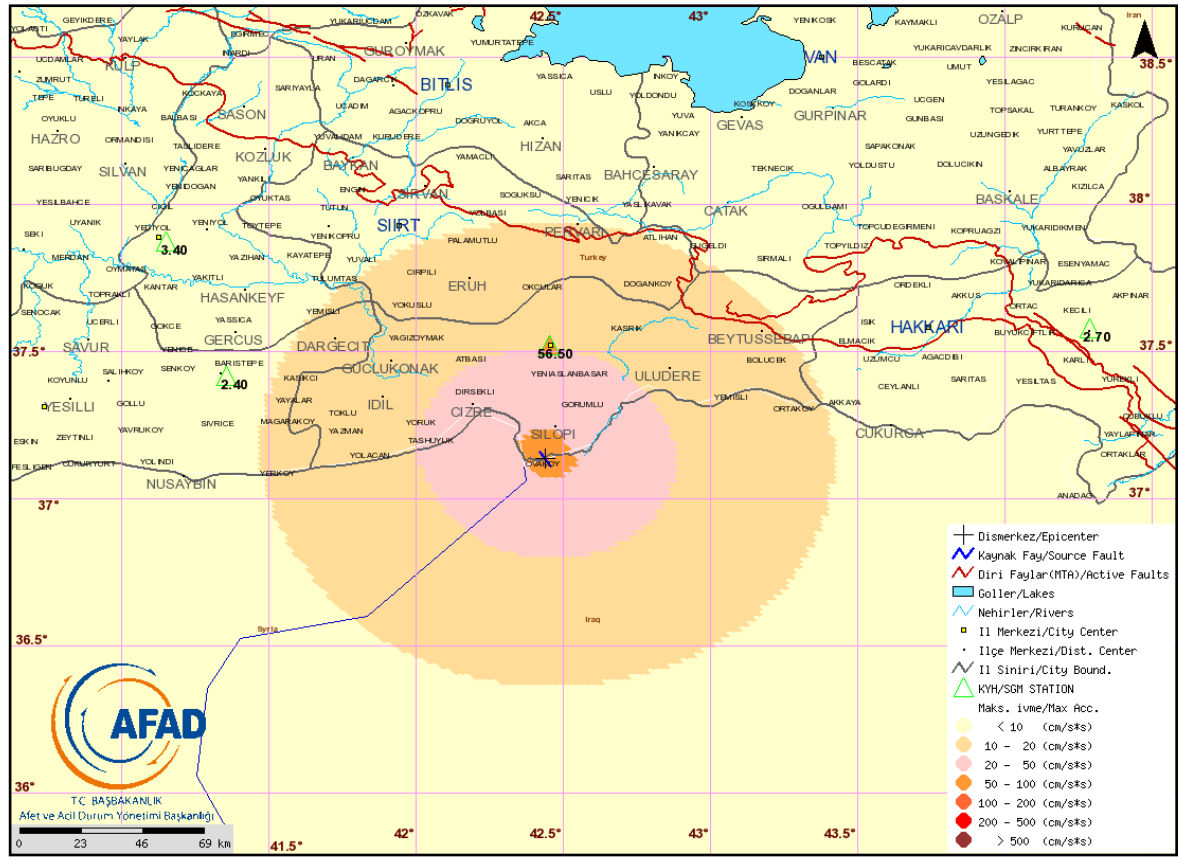
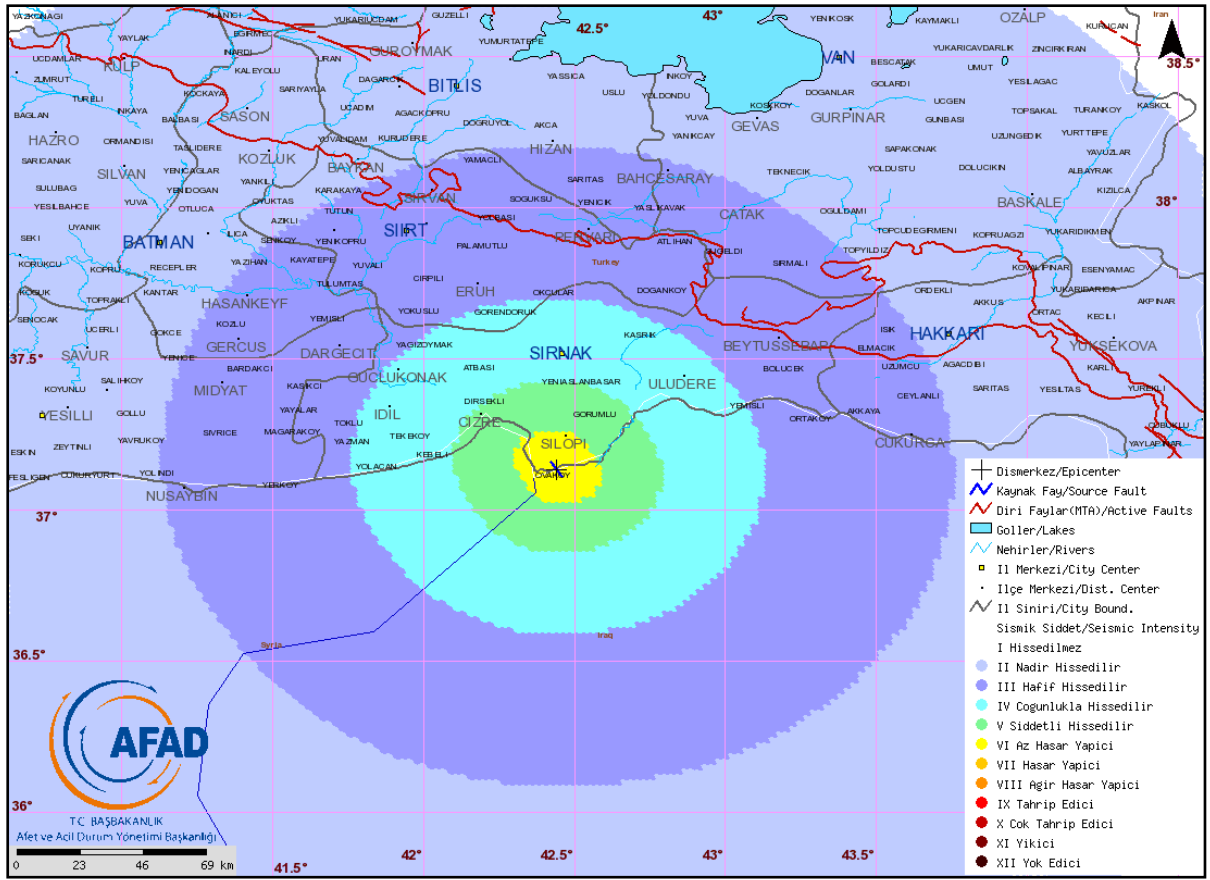


Fig.6. Peak Ground Acceleration Distribution of Şırnak-Silopi Earthquake (MI=5.5) (according to Çeken et.al.2008)

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**Fig.7. Seismic Intensity Map of Şırnak-Silopi Earthquake (MI=5.5)
(Arioğlu E., Arioğlu B. M., Girgin C. (2001))**



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- <http://geology.gsapubs.org/content/36/8/619/F1.large.jpg>

