May 19, 2011 SİMAV EARTHQUAKE PRELIMINARY REPORT

Kandilli Observatory and Earthquake Researh Institute, Bogazici University, Istanbul

Date-Local time: 19.05.2011 23:15:23
Coordinates: 39.152N 29.088E
Ml = 5.9, Mw = 5.7
Depth: 7.6 km
53 km NNW of Uşak, Turkey
82 km WSW of Kütahya, Turkey

http://www.koeri.boun.edu.tr/sismo/default.htm

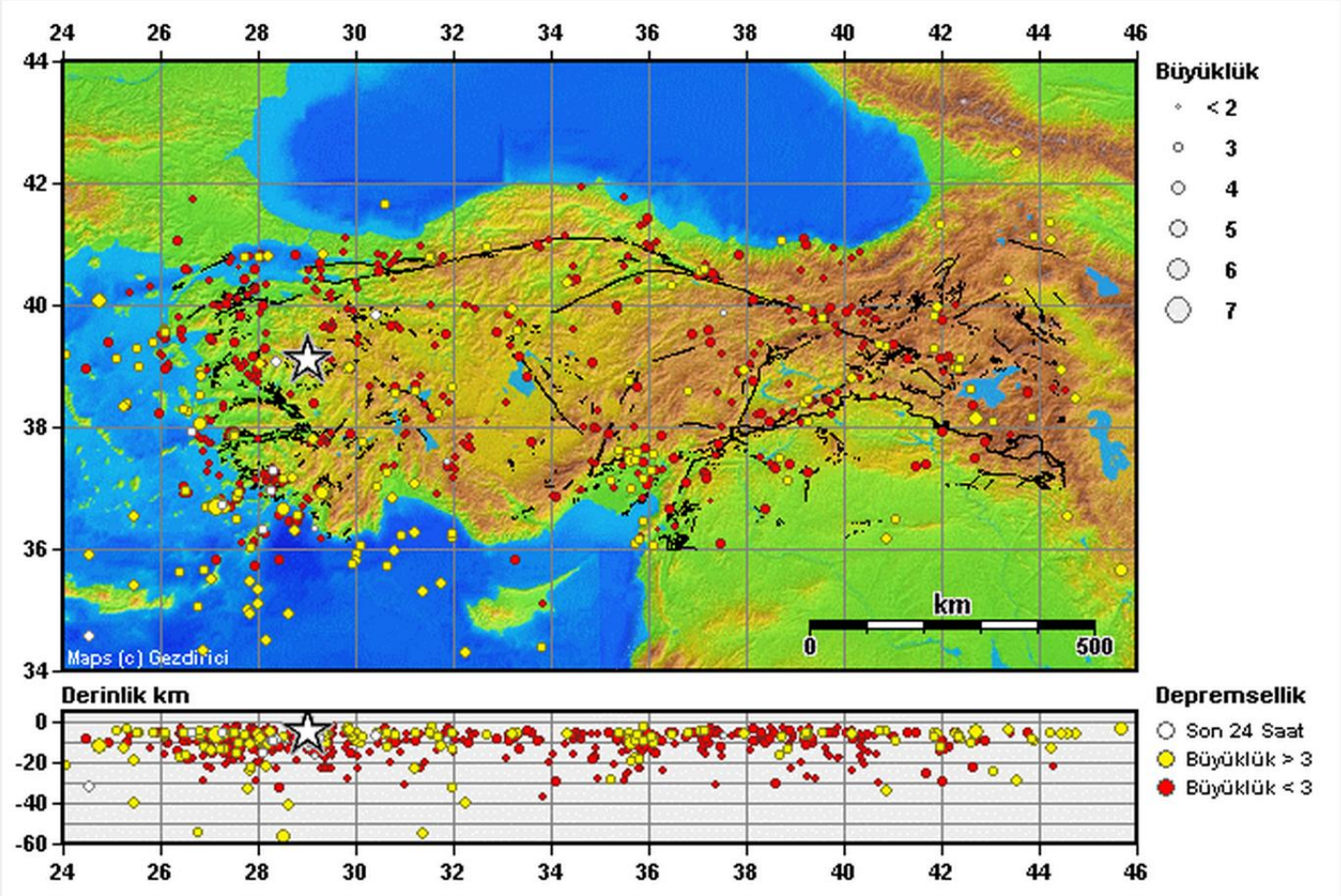
Boğaziçi Üniversitesi
Kandilli Rasathanesi ve Deprem Araştırma Enstitüsü

Türkiye'deki Son Deprem Etkinlikleri

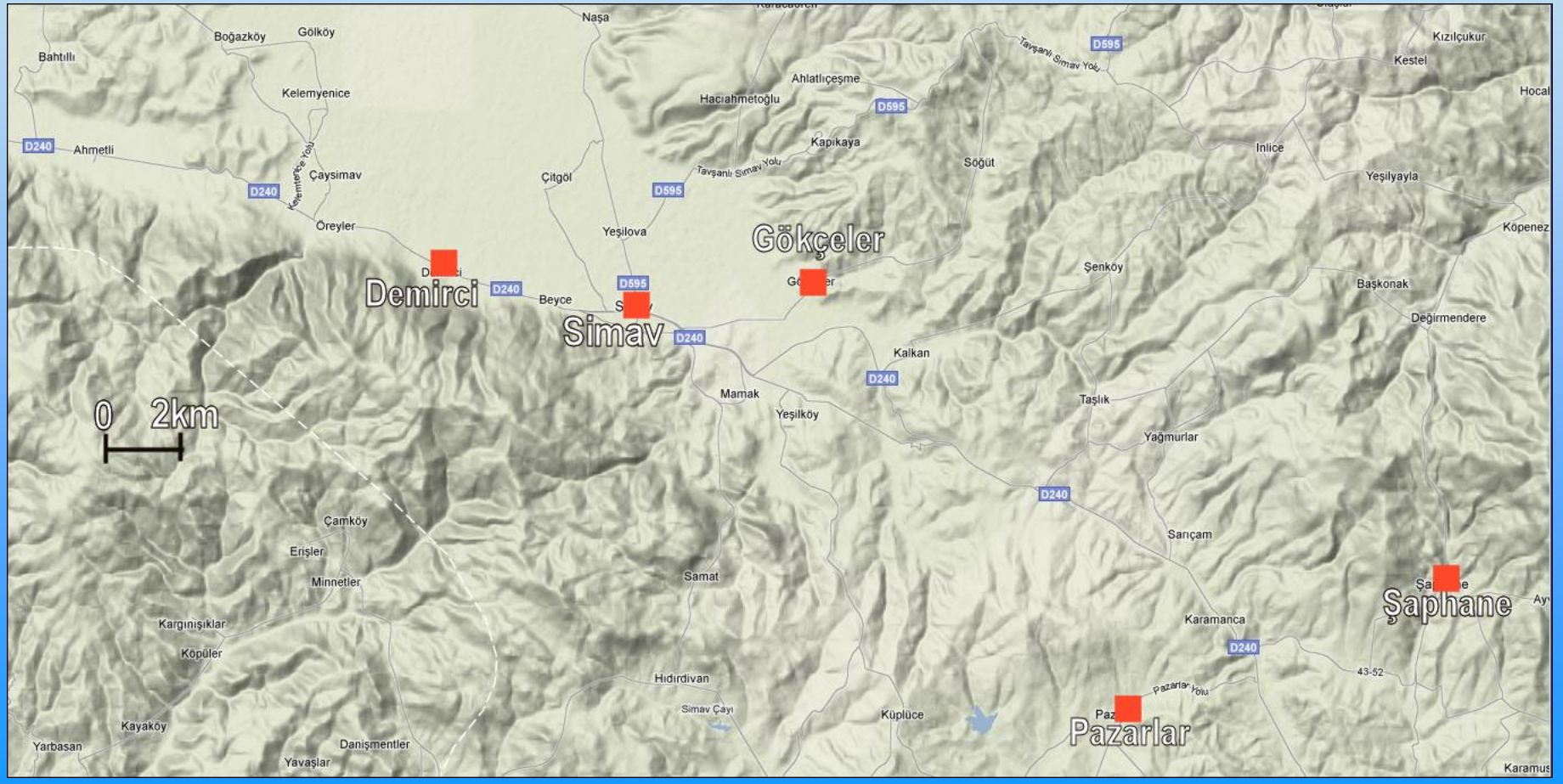
Ana Sayfa Türkiye Hakkında Linkler Ulusal Deprem İzleme Merkezi

Türkiye **Son 30 Gün**

Son 24 Saat Son 7 Gün Son 30 Gün Son 1 Yıl İstasyonlar TÜRKÇE ENGLISH

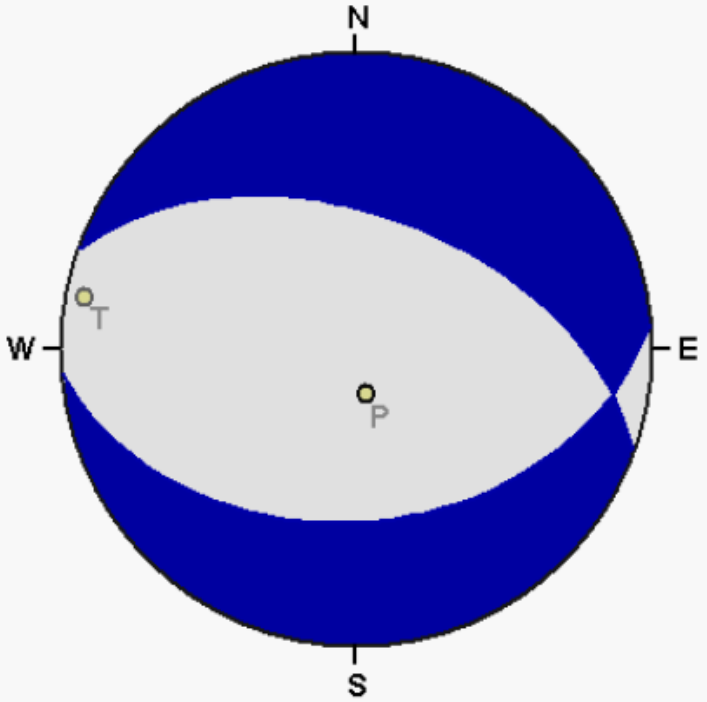


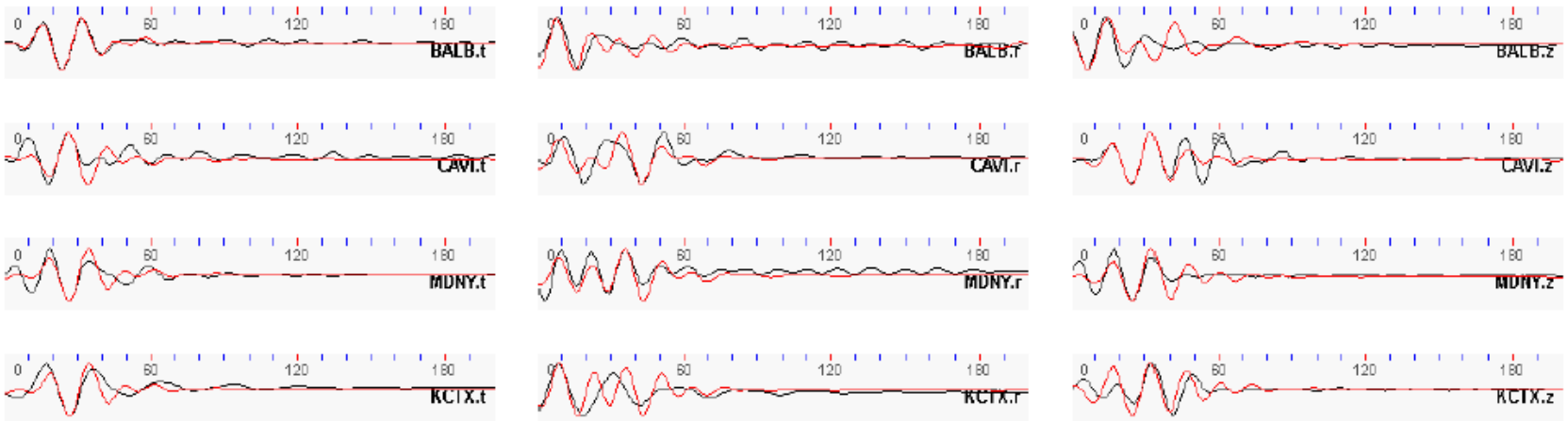
The quake was centered in the town of Simav, in Kütahya province. City of Simav has a populatıon of about 30,000. The quake was also felt across much of western Turkey from Izmir to Istanbul and even Edirne. With few exceptions damage was light. Most of the damages were in the towns of Simav, Demirci, Şaphane, Pazarlar, Hisarcık and Gökçeler. 3 people died and more that 100 people were hospitalized due to injuries, some stemming from panic related actions. Most of the town of Simav was, was for some time, without electricity and telephone communication.



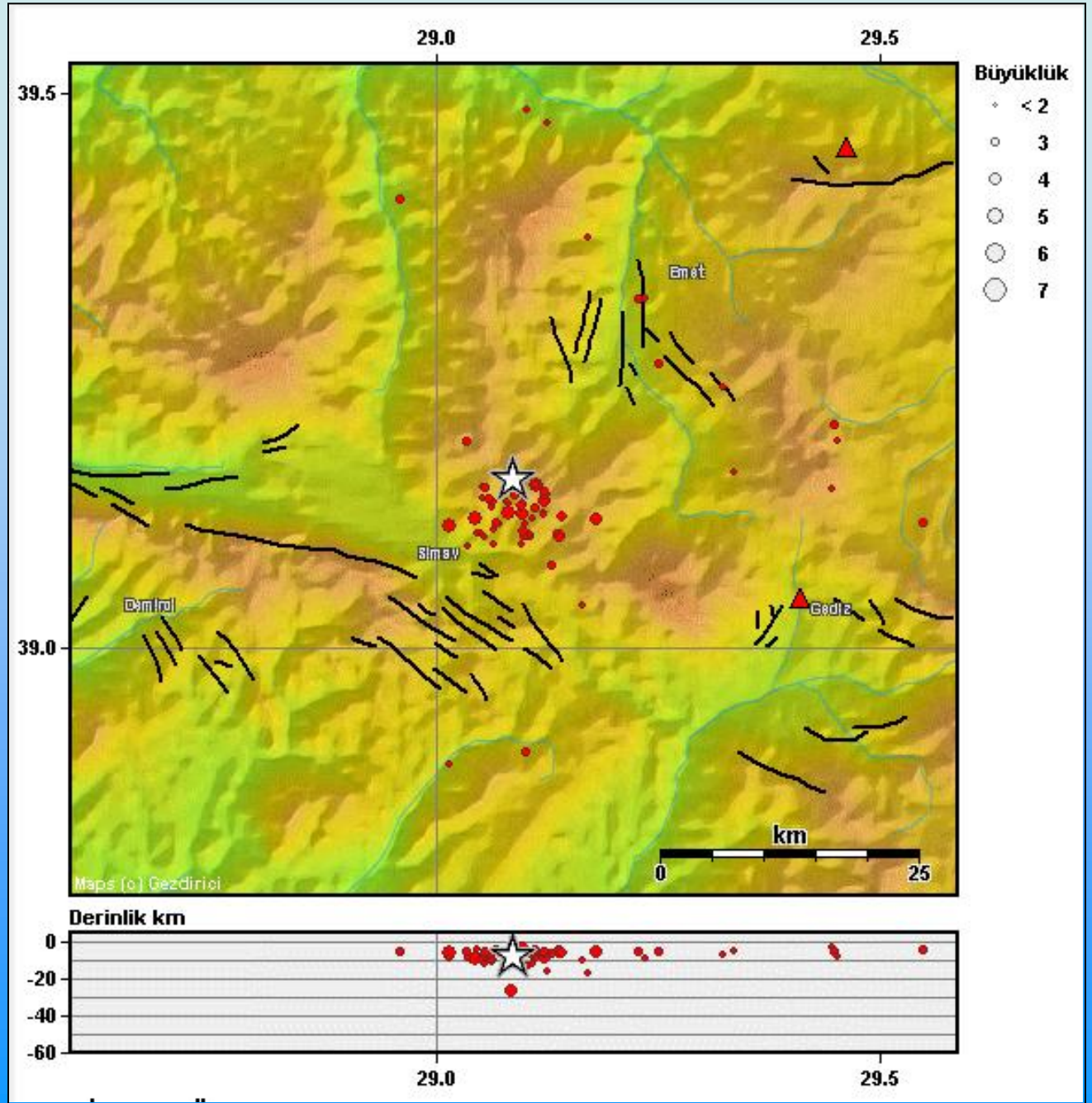
Except heavy damage in few buildings and one mosque, the damage in Simav was mostly light to medium. However, the non-structural damage, mostly to shop contents, household devices and equipment were reported to be substantial. As precautionary measure the state hospital was closed and the patients were transferred to other hospitals.
A special report on structural damage is under preparation.

SOURCE PARAMETERS (MT INVERSION) 19.05.2011 20:15:22		
Moment Magnitude	5.7	
Seismic Moment	3.8127E+24	
Event Depth	8.00	
Event Lat	39.139	
Event Lon	29.10183	
Varians Reduction	20.40	
Nodal Plains -->	NP1	NP2
Strike	290.44	89.08
Dip	51.67	41.18
Slip	-73.62	-109.63
Filter Parameters	0.035	0.08
Sampling Interval	1	
Number of used stations= 34		

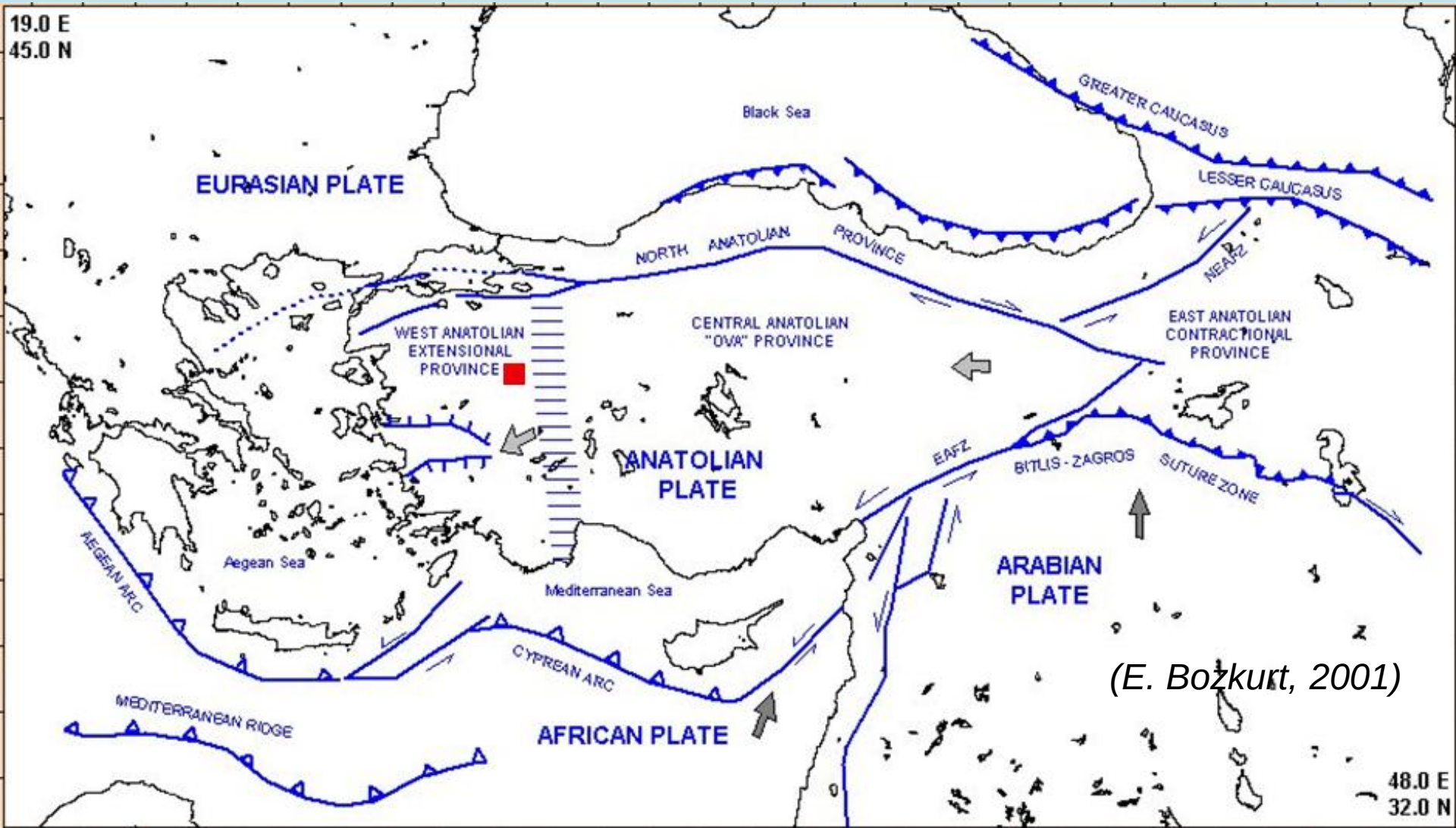




AFTERSHOCK DISTRIBUTION AS OF MAY 20 (Largest aftershock Ml 4.6)

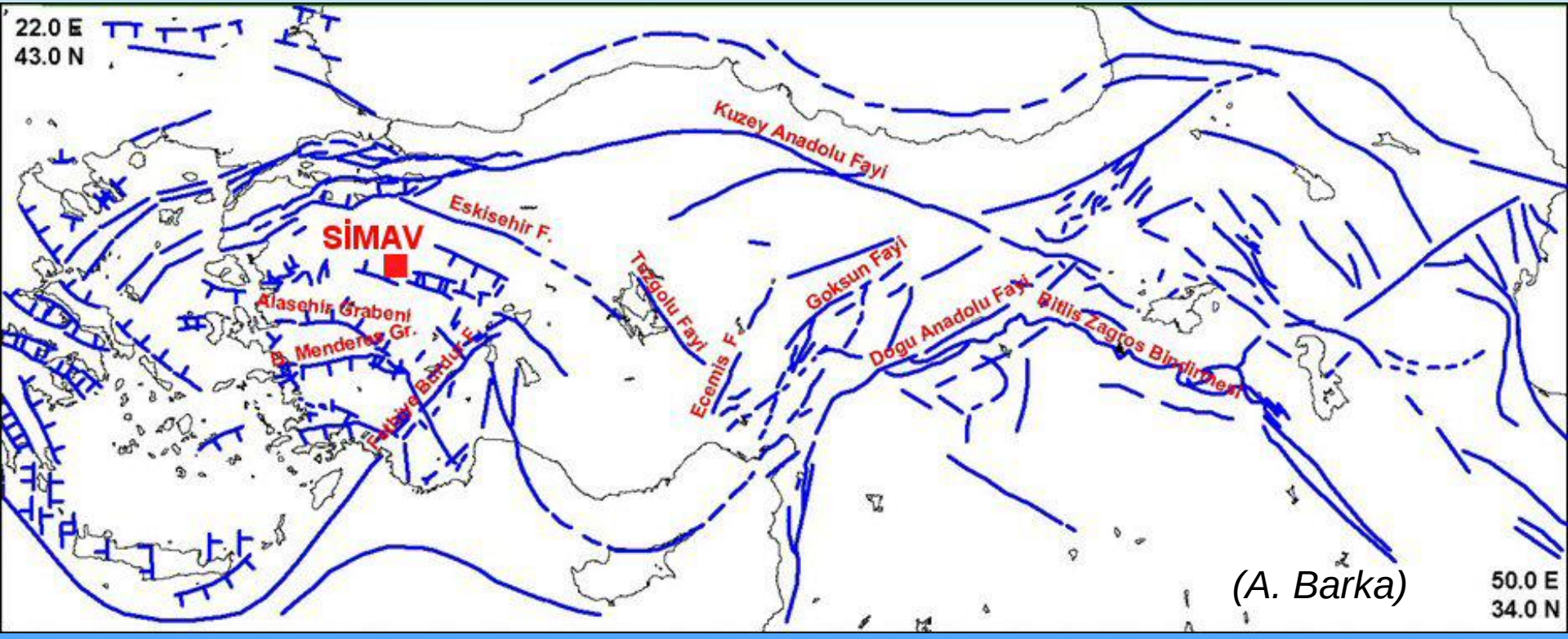


The neotectonics of Turkey is governed by the relative motion of three major plates, namely the African, Eurasian, and Arabian. The Arabian plate is moving to the north, pushing the Anatolian block in the westward motion. Simav earthquake took place in the West Anatolian Extensional Province.

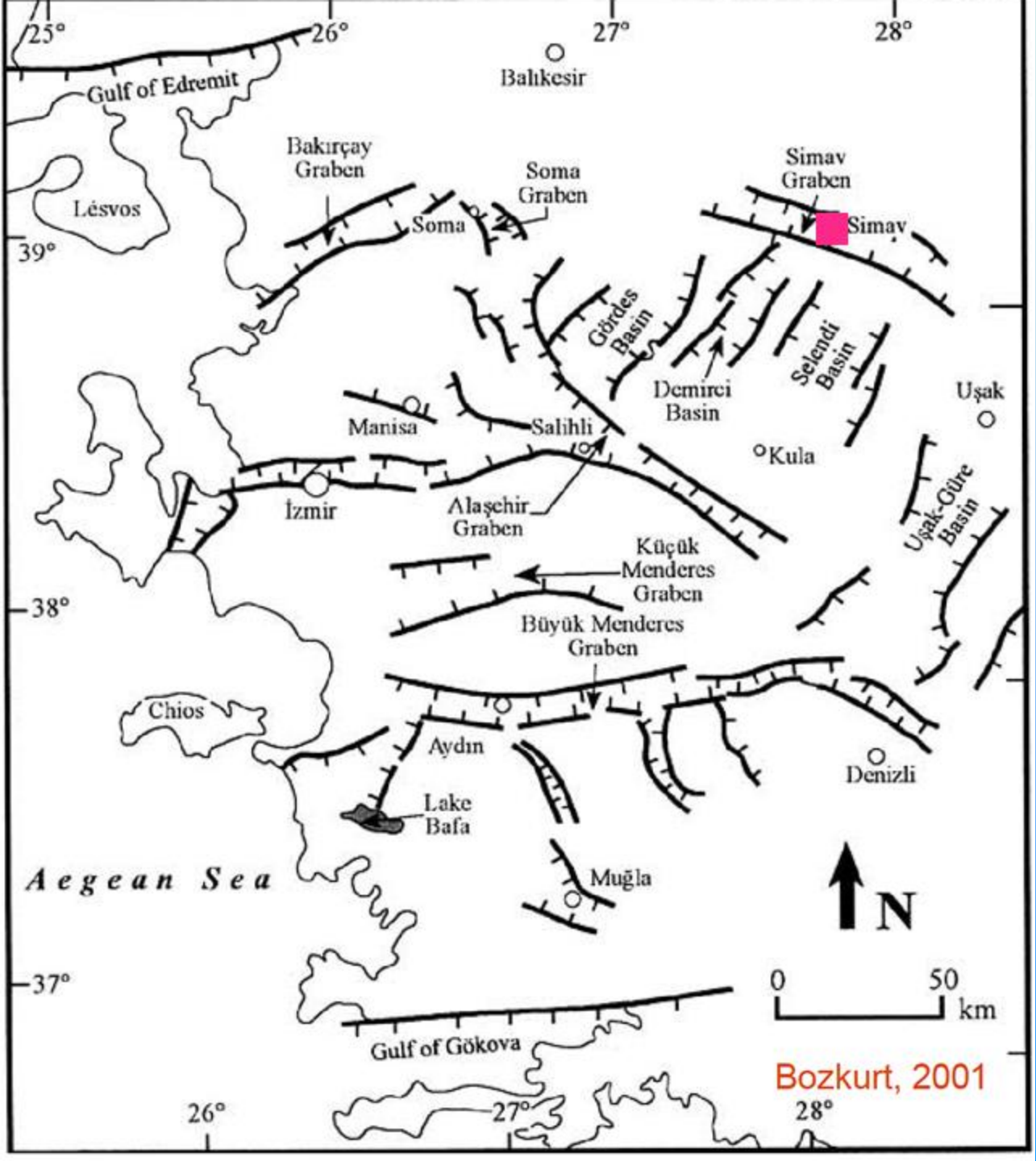


(E. Bozkurt, 2001)

ACTIVE TECTONIC ENTITIES AND THE LOCATION OF THE SIMAV EARTHQUAKE



(A. Barka)

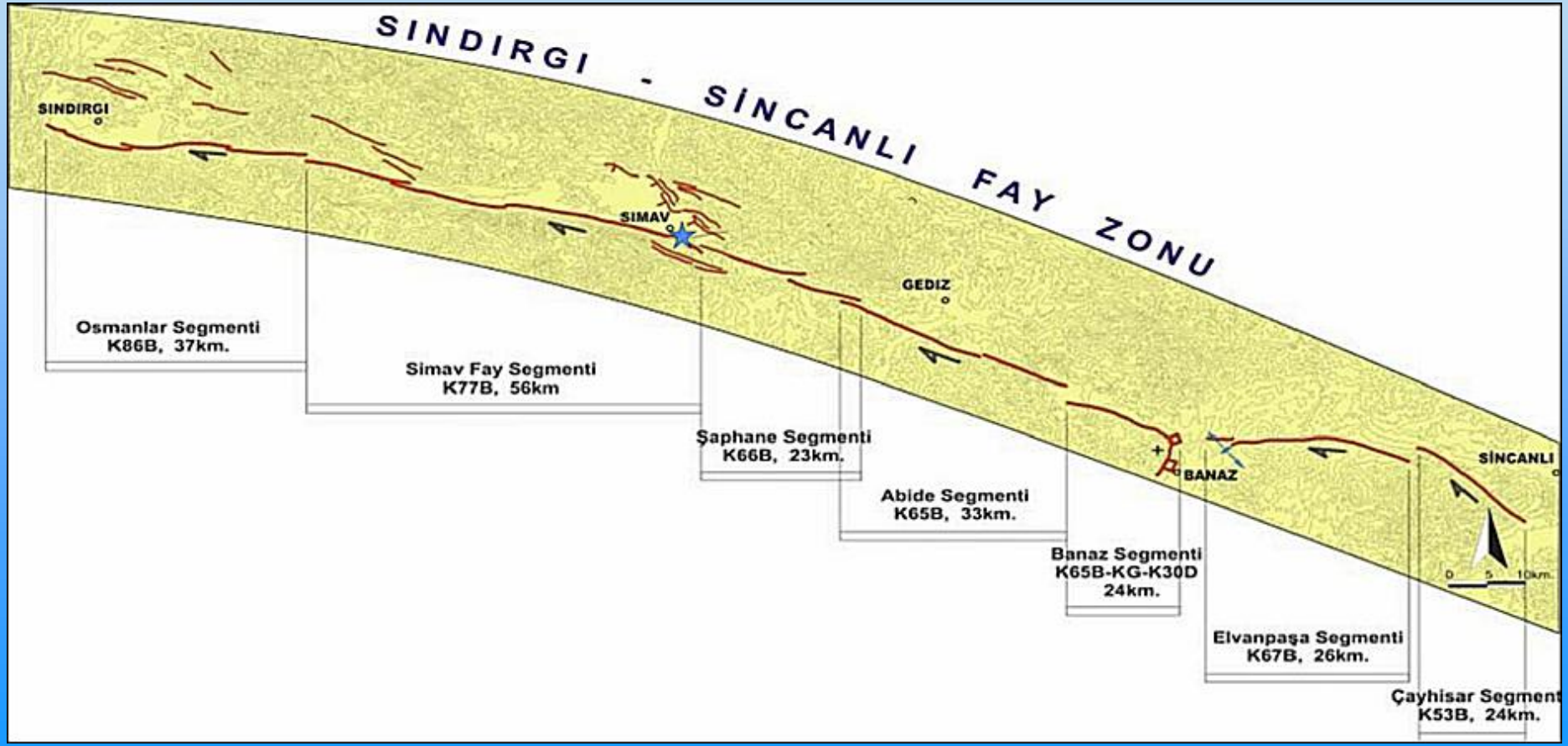


Western Turkey, is situated where diffuse extension is occurring in a wide area along a number of sub-parallel normal faults bounding graben complexes.

A number of major normal faulting events occurred along these faults, for example the 1899 Büyük Menderes, 1928 Torbalı, 1955 Balat, 1969 Alasehir, 1969 Simav, 1970 Gediz and 1995 Dinar earthquakes.

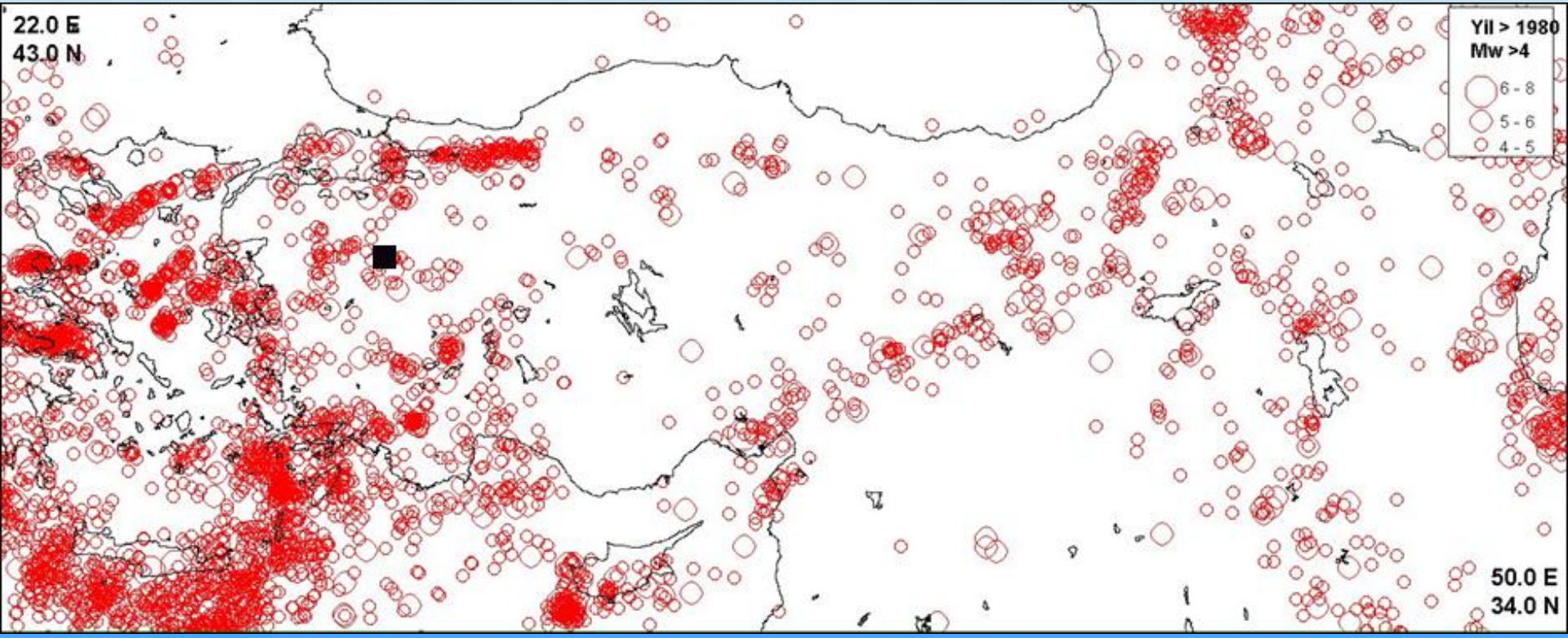
Simav earthquake is associated with the Simav Graben.

Simav Fault is considered a segment of the The Sındırgı-Sincanlı Fault Zone, evaluated to be a structural boundary between Aegean extensional and NW Anatolia transition tectonic regimes (Doğan and Emre, 2006).
Simav basin is the largest graben formed in the system. This depression was produced by right-stepping bend between Simav and Şaphane faults.
Prior to the Simav Earthquake, Ml=4.8 17.2.2009 earthquake took place at almost the same location. 1928 M6.2 Emet, 1944 M6.2 Şaphane, 1970 M7.2 Gediz and M5.9 Çavdarhisar earthquake are the important events of the past century.



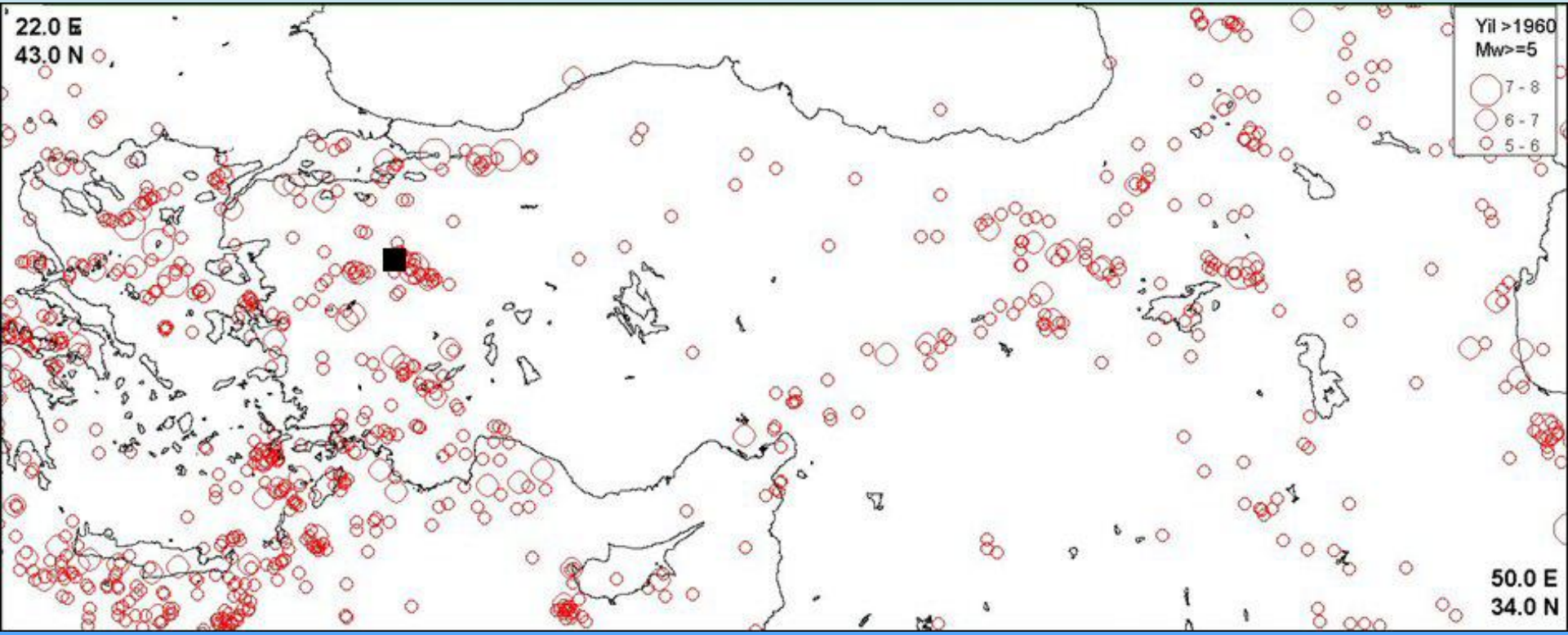
Epicentral map of post 1980 earthquakes with Mw >= 4

Simav Earthquake is indicated with a black square

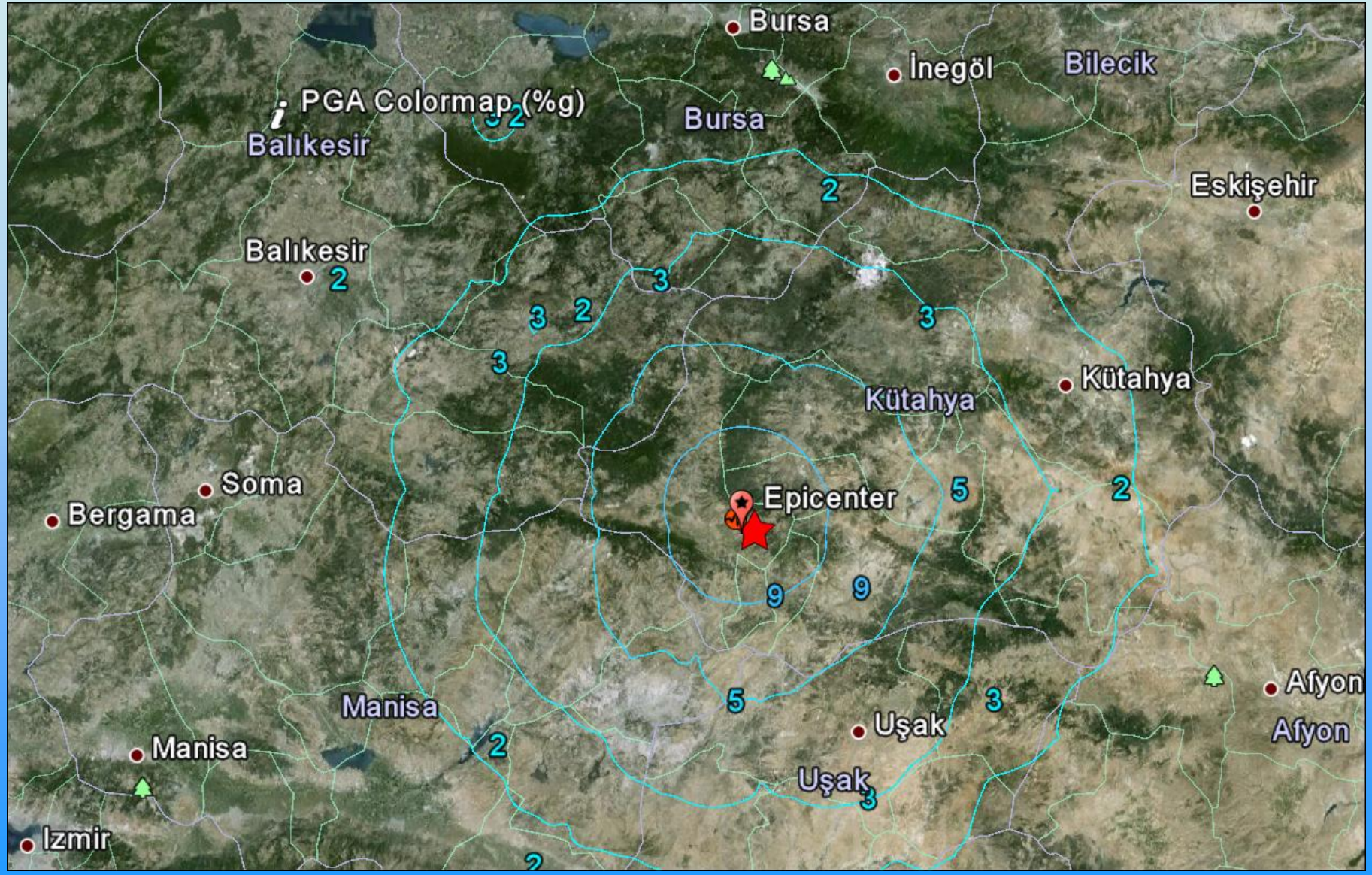


Epicentral map of post 1960 earthquakes with Mw >= 5

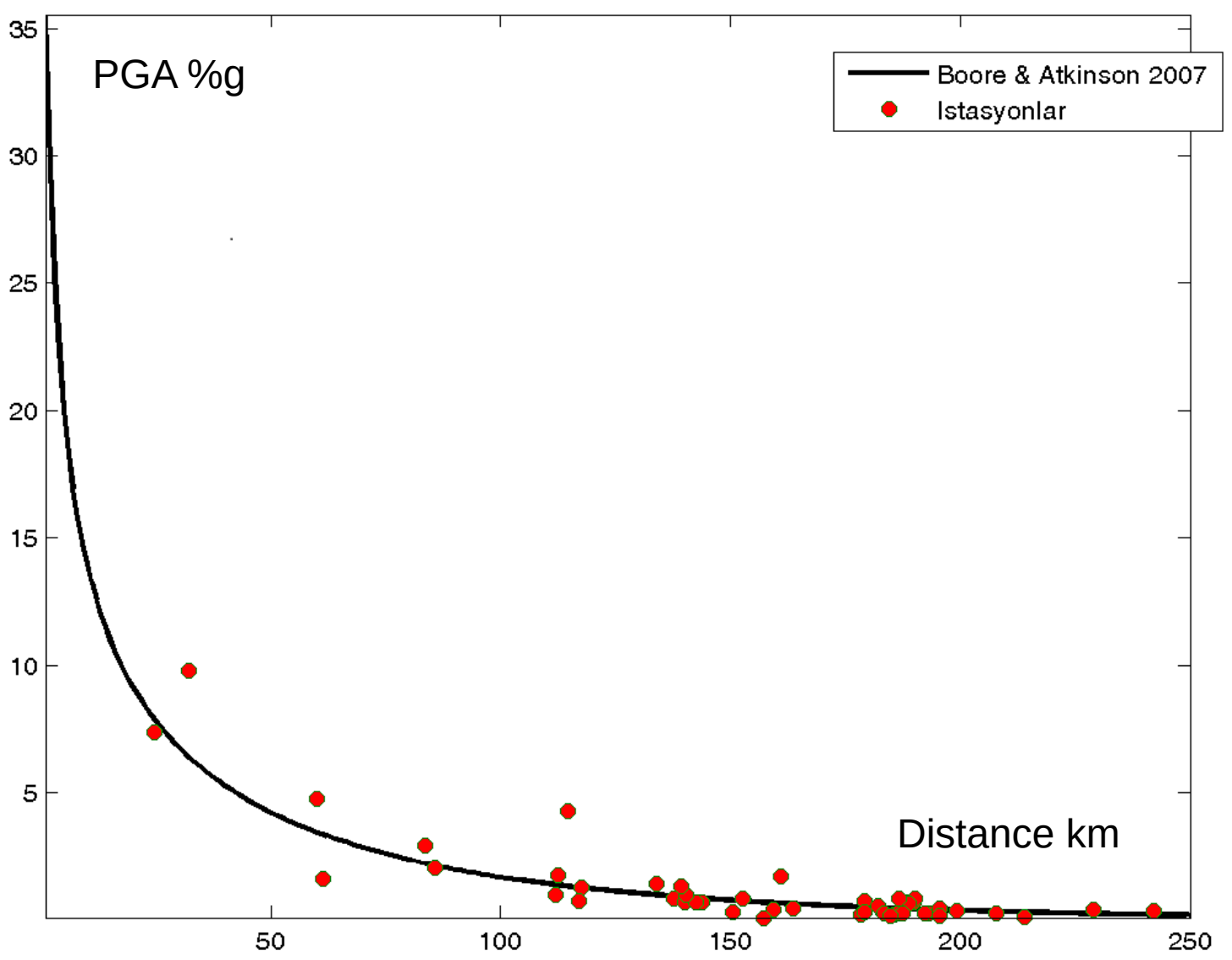
Simav Earthquake is indicated with a black square



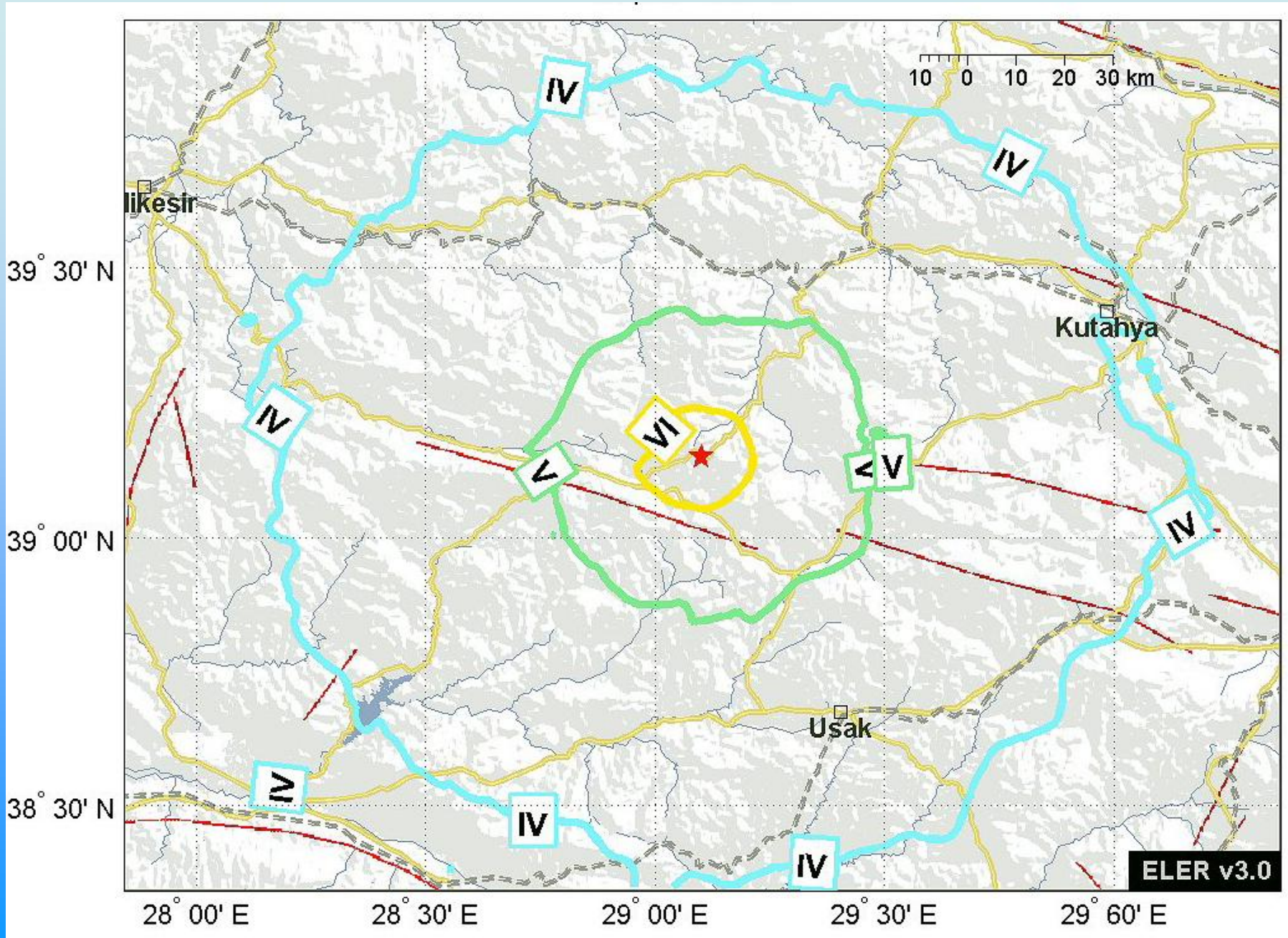
PGA (%g) Contour Map. Data is obtained from Disaster and Emergency Management Presidency of Turkey. The PGA at Simav is expected to be about 0.2g.



Comparison of PGA obtained from Disaster and Emergency Management Presidency of Turkey with Boore and Atkinson (2007) GMPE



SHAKE MAP (EMS'98 INTENSITIES)



ESTIMATED DISTRIBUTION OF DAMAGED (D2 and above) BUILDINGS

(Right hand scale shows the estimated number of damaged buildings in each cell, Analyis is based on the ELER software developed within EU FP7 NERIES Project)