PRELIMINARY REPORT

19/09/2012
KAHRAMANMARAŞ-PAZARCIK EARTHQUAKE
(SOUTHEAST TURKEY)
Ml=5.1

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

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KAHRAMANMARAŞ-PAZARCIK EARTHQUAKE (SOUTH EAST TURKEY) (Ml=5.1)

An earthquake with magnitude Ml=5.1 occurred at local time 12:17 on September, 19, 2012. Epicenteral coordinates of the earthquake was determined as 37.2838N, 37.1398E with focal depth 22.35 km. The magnitude of earthquake was identified with AFAD National Seismological Observation Network and Kandilli Observatory and Earthquake Research Institute. After this earthquake, 13 earthquake were determined with magnitude range 1.9-3.9 in first one hour. (Fig.1). Additionally 14 earhtquakes occurred with magnitude range 2.4-4.0 before this earthquake in the same day. Nearly in 24 hours 100 aftershock were determined. This earthquake was also felt in Gaziantep and the other near region . It didn't caused loss of life and damage.

Focal Mechanism Solutions performed by considering first motion direction of P wave and moment tensor solution of Ml=5.1 earthquake is emerged from strike slip faulting (Fig.2). The fault which caused earthquake is related to East Anatolian Fault System (EAFS). EAFS consists of 6 segments (Fig.3).

Instrumental period earthquakes that occurred in the last century are given as; 1901 and 1922 Kahramanmaraş-Ekinözü M=5.5 and M=5.3, 1908 Kahramanmaraş-Nurhak M=5.3 earthquakes.

September 19, 2012 Kahramanmaraş Earthquake was recorded by accelerometers at 24 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 Narlı station (43.46 gal in EW direction, 37.47 gal in NS direction and 35.58 gal in up-down direction) (Table 1, Fig. 4). Effective duration for Narlı Station was identified as 6.2 second.

Peak ground acceleration and seismic intensity values that can be created by September, 19, 2012 Kahramanmaraş earthquake in the earthquake-hit area and its vicinity are estimated and the maps showing the spatial distribution of these values are prepared (Fig.5,6).

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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 206 Seismic station and 371 accelerometer. Obtained results are shared with public, press and relevant authorized.

For your information.

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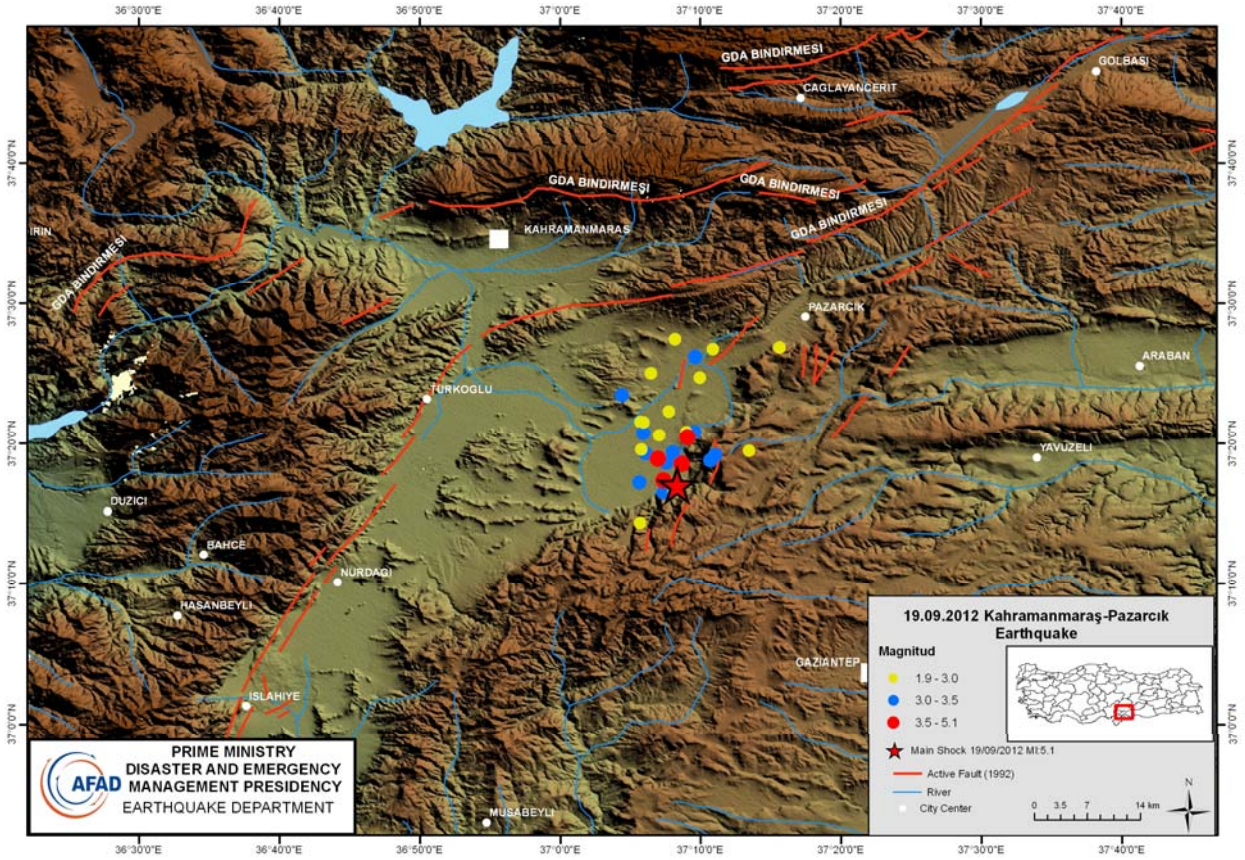

Fig. 1. 19/09/2012 Kahramanmaraş earthquake and aftershocks (Ml=5.1)

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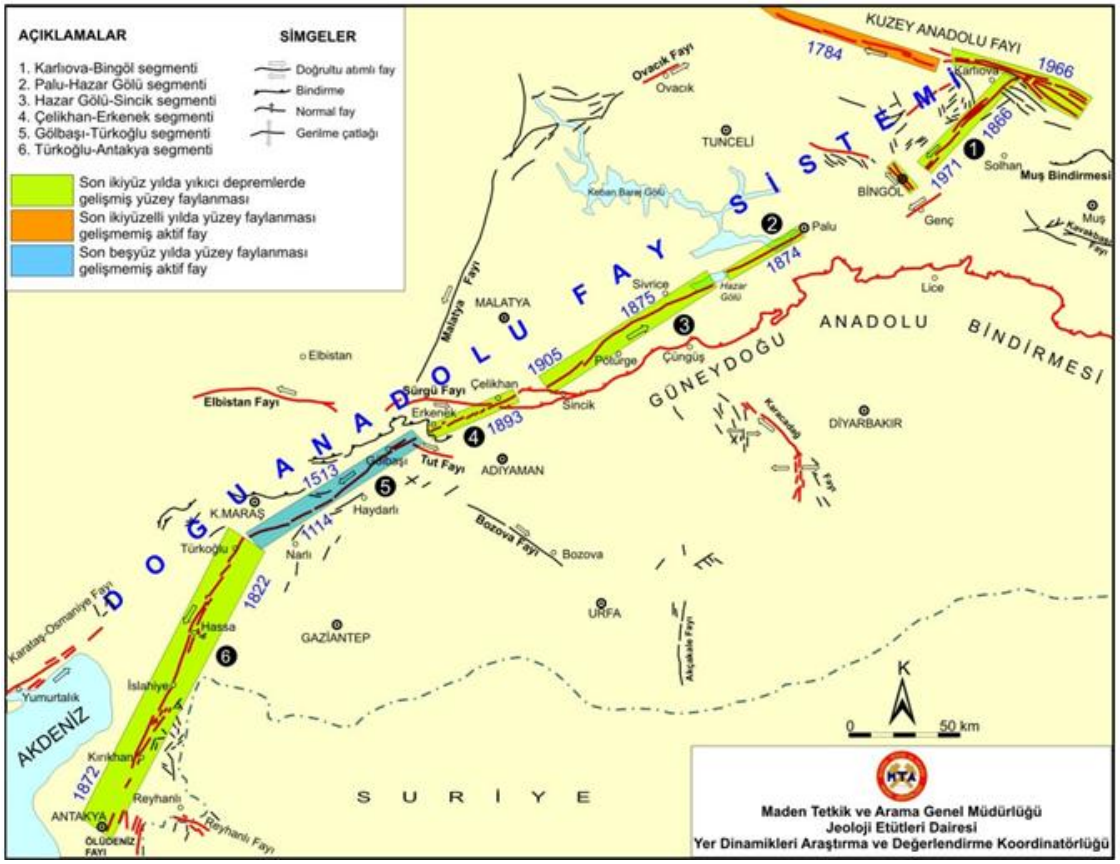

Fig. 1. 6 Segments on the East Anatolian Fault System

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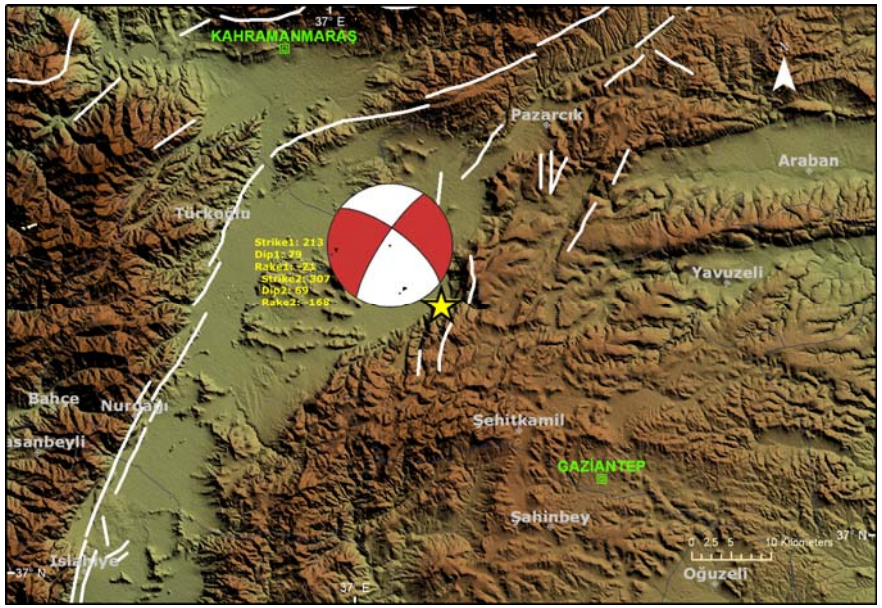
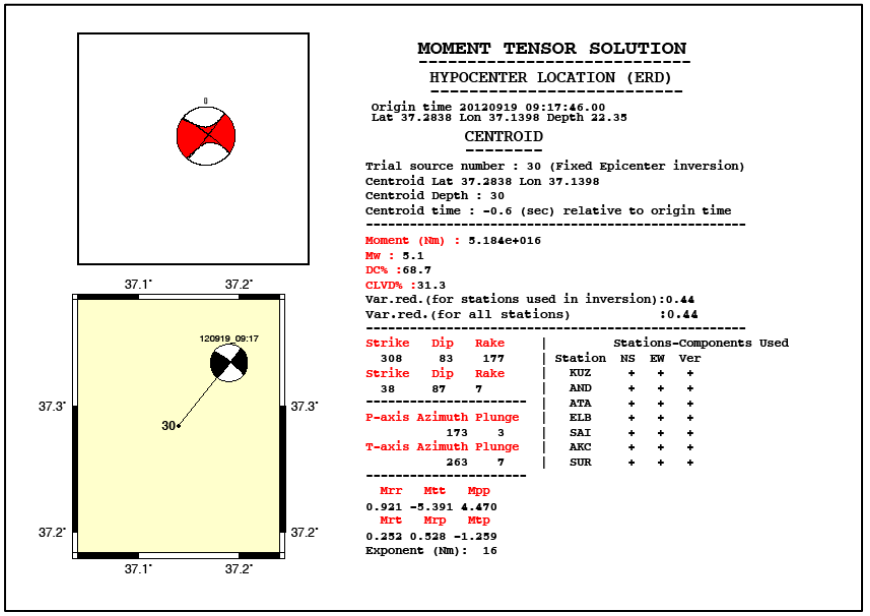


(According to P wave first motion)



(Moment Tensor Solution)

Fig. 3. Focal Mechanism Solutions of Kahramanmaraş earthquake

KAHRAMANMARAŞ-PAZARCIK EARTHQUAKE (SOUTH EAST TURKEY) (Ml=5.1)

STATION			Lat	Lon	Type of Accelerometer	ACCELEROMETER VALUES (gal)			Distance R_{rp}(km)	Share Wave Velocity V_{S30} (m/sn)
No	CITY	TOWN				NS	EW	UD		
1	K.MARAŞ	NARLI	37.38676	37.13803	ETNA	37.47	**43.46**	35.58	11	484
2	K.MARAŞ	PAZARCIK	37.48513	37.29775	ETNA	15.91	**19.04**	10.9	26	671
3	K.MARAŞ	TURKOGLU	37.37547	36.83836	ETNA	**10.73**	9.22	7.69	29	390
4	G.ANTEP	MERKEZ	37.058	37.35	CMG-5TD	7.35	**8.5**	4.61	31	
5	K.MARAŞ	MERKEZ	37.57532	36.91505	CMG-5TD	5.68	**7.03**	4.6	38	317
6	OSMANIYE	BAHÇE	37.19156	36.56195	CMG-5TD	3.38	3.82	3.09	52	430
7	G.ANTEP	ISLAHIYE	37.02546	36.63593	ETNA	2.68	2.64	2.74	53	421
8	K.MARAŞ	CAGLAYANCERIT	37.7472	37.28426	CMG-5TD	3.9	3.41	2.28	53	
9	KILIS	MERKEZ	36.7088	37.1123	CMG-5TD	**19.16**	15.31	4.4	64	
10	G.ANTEP	NIZIP	37.00879	37.80215	CMG-5TD	3.9	**7.02**	2.84	66	
11	ADIYAMAN	GOLBASI	37.78694	37.65275	CMG-5TD	4.07	4.93	1.36	72	469
12	ADIYAMAN	BESNI	37.682	37.8527	CMG-5TD	3.3	**4.08**	2.83	77	
13	HATAY	HASSA	36.80262	36.51119	ETNA	6.53	**9.23**	3.25	77	618
14	OSMANIYE	MERKEZ	37.08417	36.26936	ETNA	3.13	2.43	1.91	80	350
15	K.MARAŞ	GOKSUN	38.02395	36.48187	CMG-5TD	3.13	2.95	0.92	100	
16	HATAY	GUZELCE	36.58383	36.41439	ETNA	9.72	**13.44**	4.4	101	272
17	HATAY	KIRIKHAN	36.49797	36.36612	ETNA	2.44	2.38	1.59	111	539
18	HATAY	ISKENDERUN	36.58211	36.18491	ETNA	0.36	6.01	2.94	116	310
19	Ş.URFA	BOZOVA	37.36509	38.51316	CMG-5TD	4.08	3.3	3.15	122	
20	HATAY	SERINYOL	36.3726	36.21973	ETNA	3.42	4.74	2.06	131	338
21	ADANA	YUMURTALIK	36.77006	35.79005	CMG-5TD	1.81	1.78	0.51	133	
22	MALATYA	AKCADAG	38.34388	37.97378	CMG-5TD	0.89	1.19	0.45	139	
23	ADIYAMAN	KAHTA	37.79177	38.61597	CMG-5TD	0.63	1.18	0.59	141	
24	HATAY	MERKEZ	36.21423	36.15973	ETNA	1.63	1.86	0.99	148	470

Table 1. Acceleration values of Kahramanmaraş earthquake

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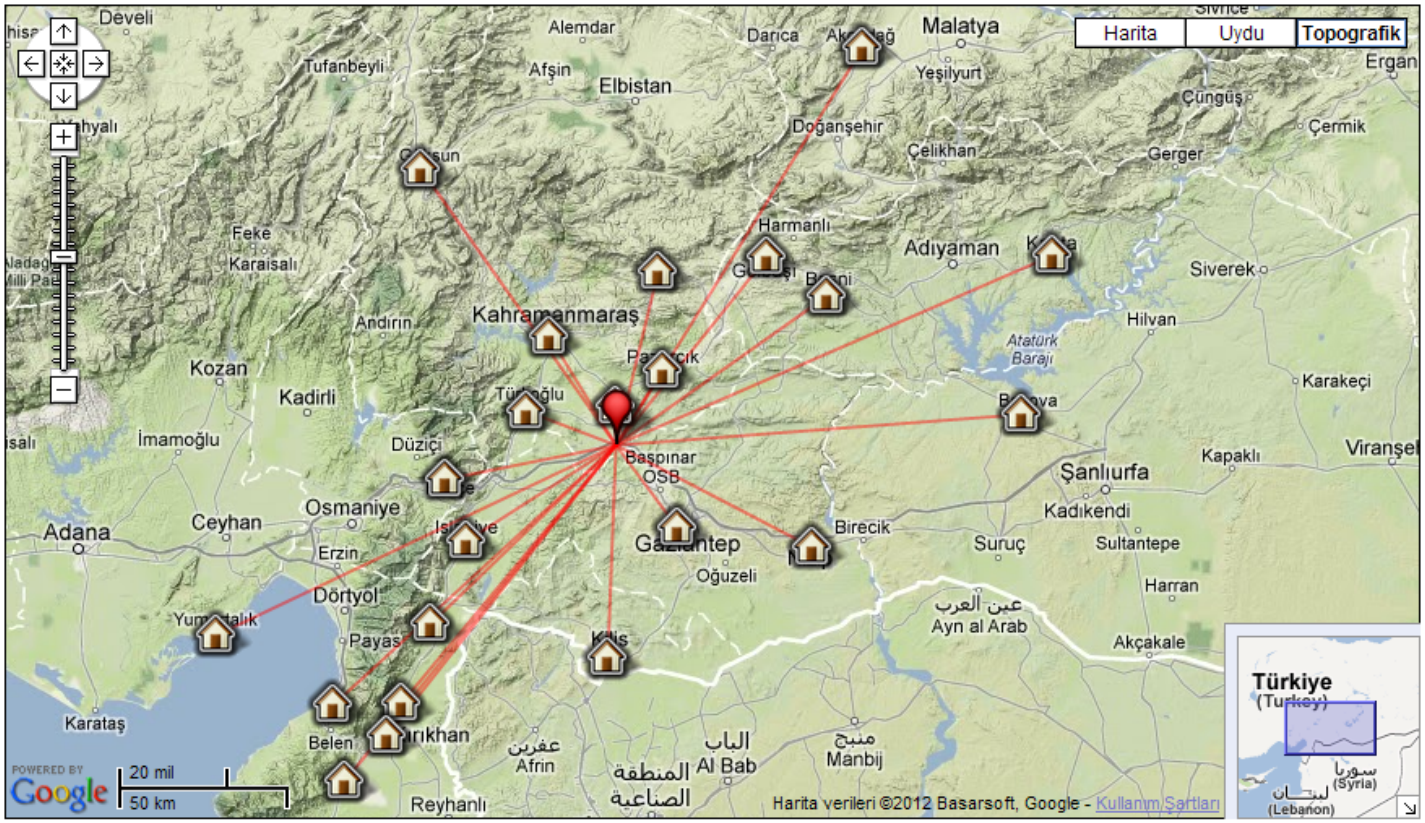

Fig.4. Distribution of the accelerometers that recorded Kahramanmaraş earthquake

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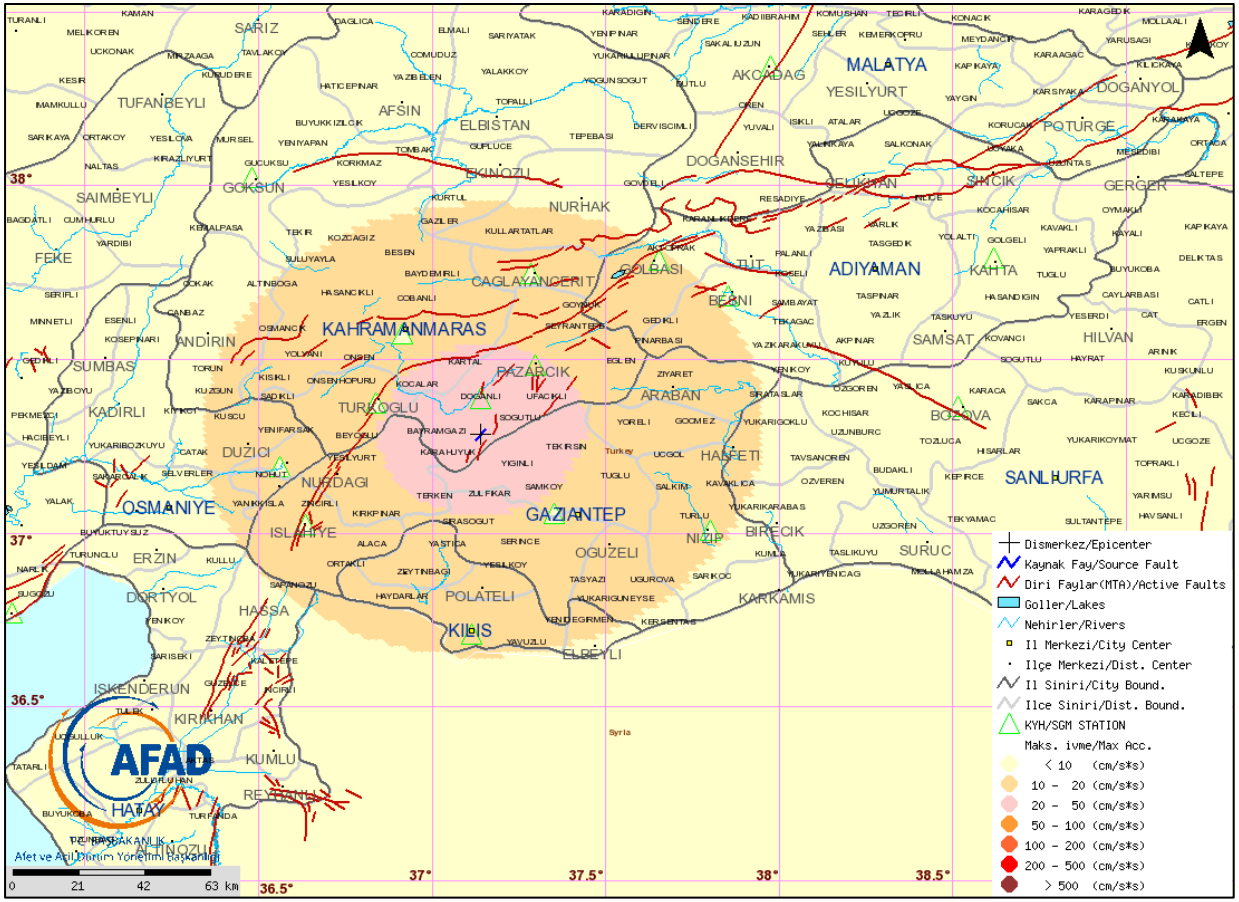

Fig.5. Peak Ground Accelaration Distribution of Kahramanmaraş Earthqauke (Ml=5.1)

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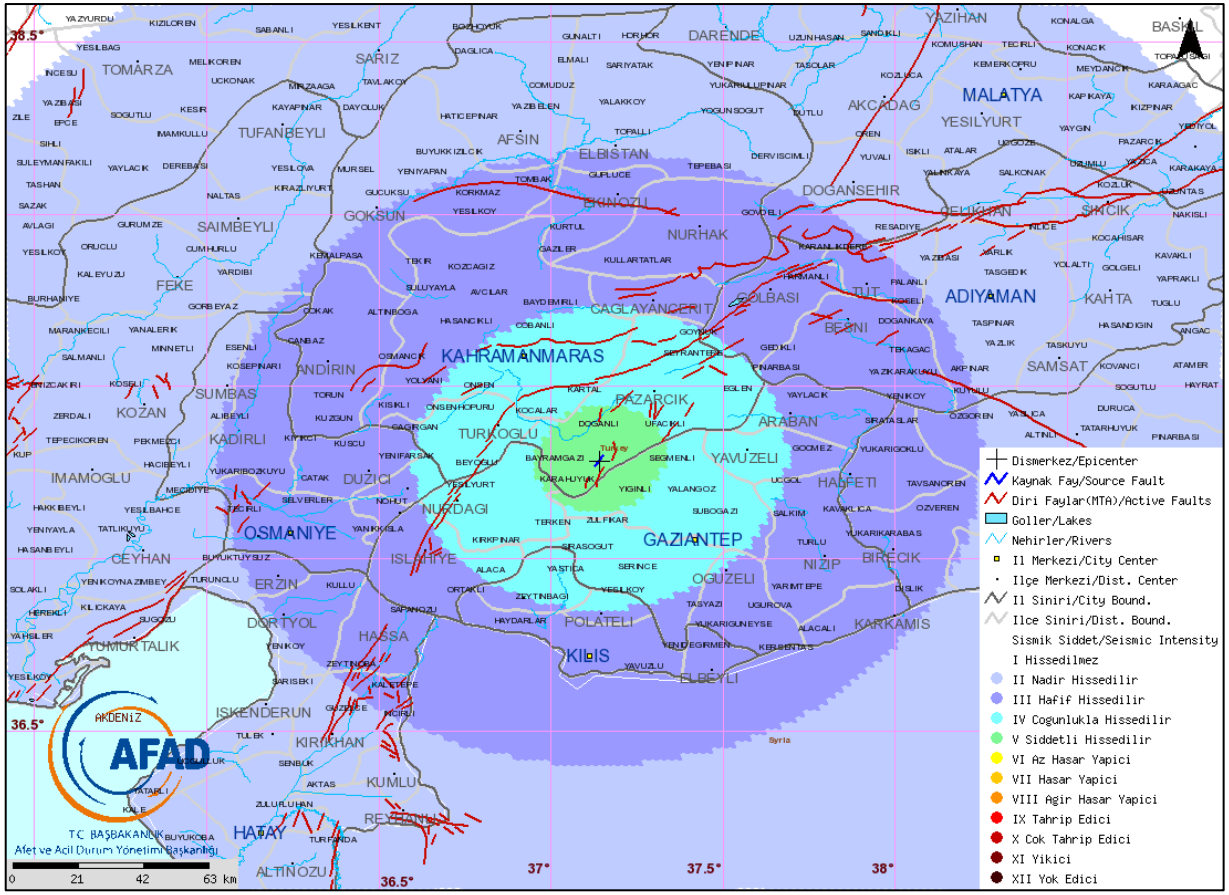

Fig.6. Seismic Intensity Map of Kahramanmaraş Earthquake (Ml=5.1)

REFERENCES

- Arıoğlu E., Arıoğlu B. M., Girgin C. (2001). Doğu Marmara Depreminin Yer İvme Değerleri Açısından Değerlendirilmesi, *Beton Prefabrikasyon*, 57-58, 5-15.
- Maden Tetkik ve Arama Genel Müdürlüğü, Kültür Sitesi, Ankara, 14-17 Ekim. Şaroğlu F., Emre Ö. ve Kuşçu İ. (1992). Türkiye Diri Fay Haritası, 1:1,000,000 ölçekli, Maden Tetkik ve Arama Genel Müdürlüğü, Ankara.
- Maden Tetkik ve Arama Genel Müdürlüğü, Jeoloji Etütleri Dairesi, Yer Dinamikleri Araştırma ve Değerlendirme Koordinatörlüğü
- TC. Başbakanlık AFAD Deprem Dairesi Başkanlığı (DDA). http://www.deprem.gov.tr/
- Çeken U., Beyhan G. ve Gülkan P. (2008). Kuzeybatı Anadolu Depremleri için Kuvvetli Yer Hareketi Azalım İlişkisi, 18. Uluslararası Jeofizik Kongre ve Sergisi, Vol:3B14, ss:1-4, Maden Tetkik ve Arama Genel Müdürlüğü, Kültür Sitesi, Ankara, 14-17 Ekim.