

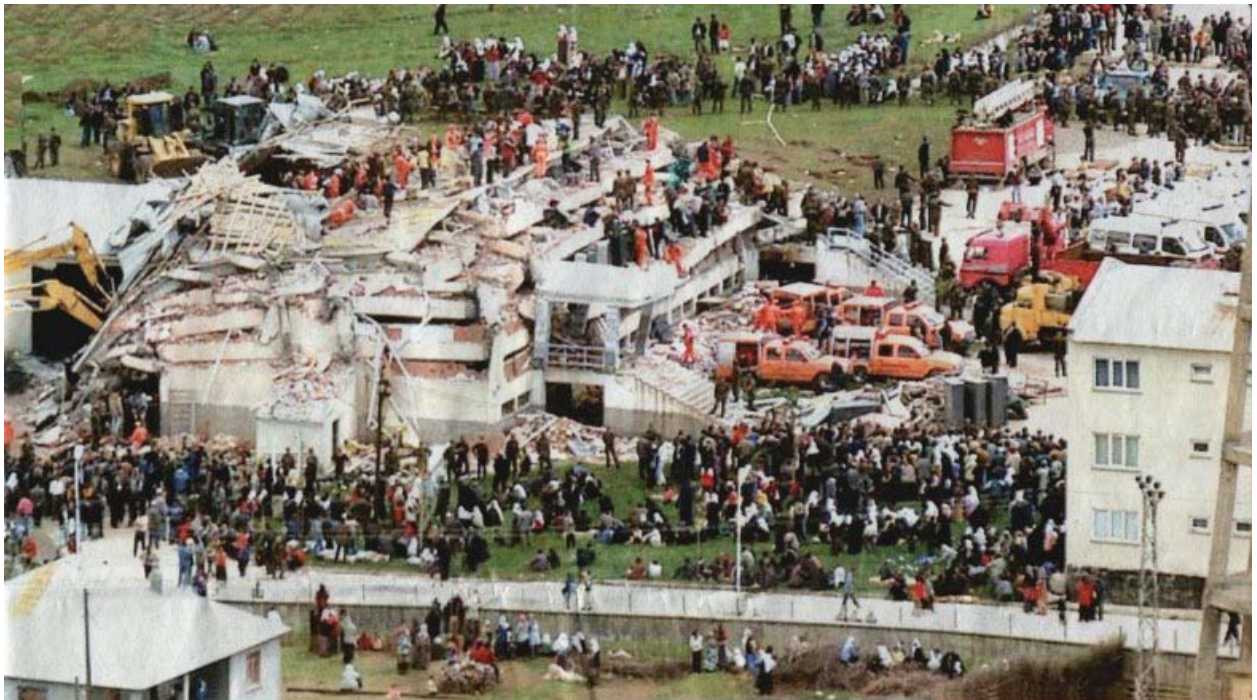
LATEST EARTHQUAKES in TURKEY

Summary Report

Prepared by
Prof. Dr. Nesrin YARDIMCI
Assist. Prof. Dr. Pınar ÖZDEMİR

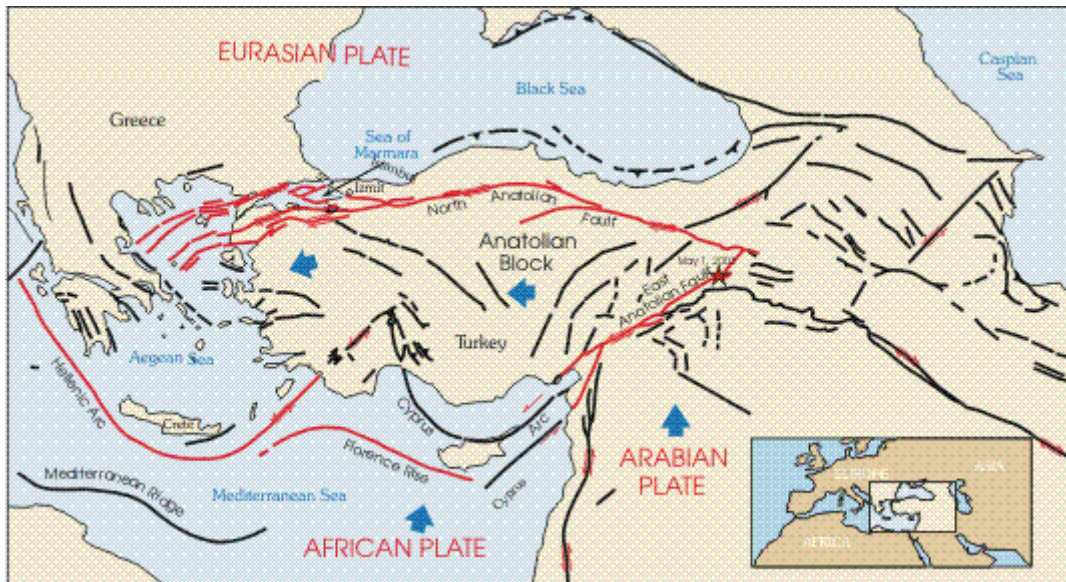
İstanbul Technical University
Civil Engineering Faculty

11 May 2003



GENERAL INFORMATION

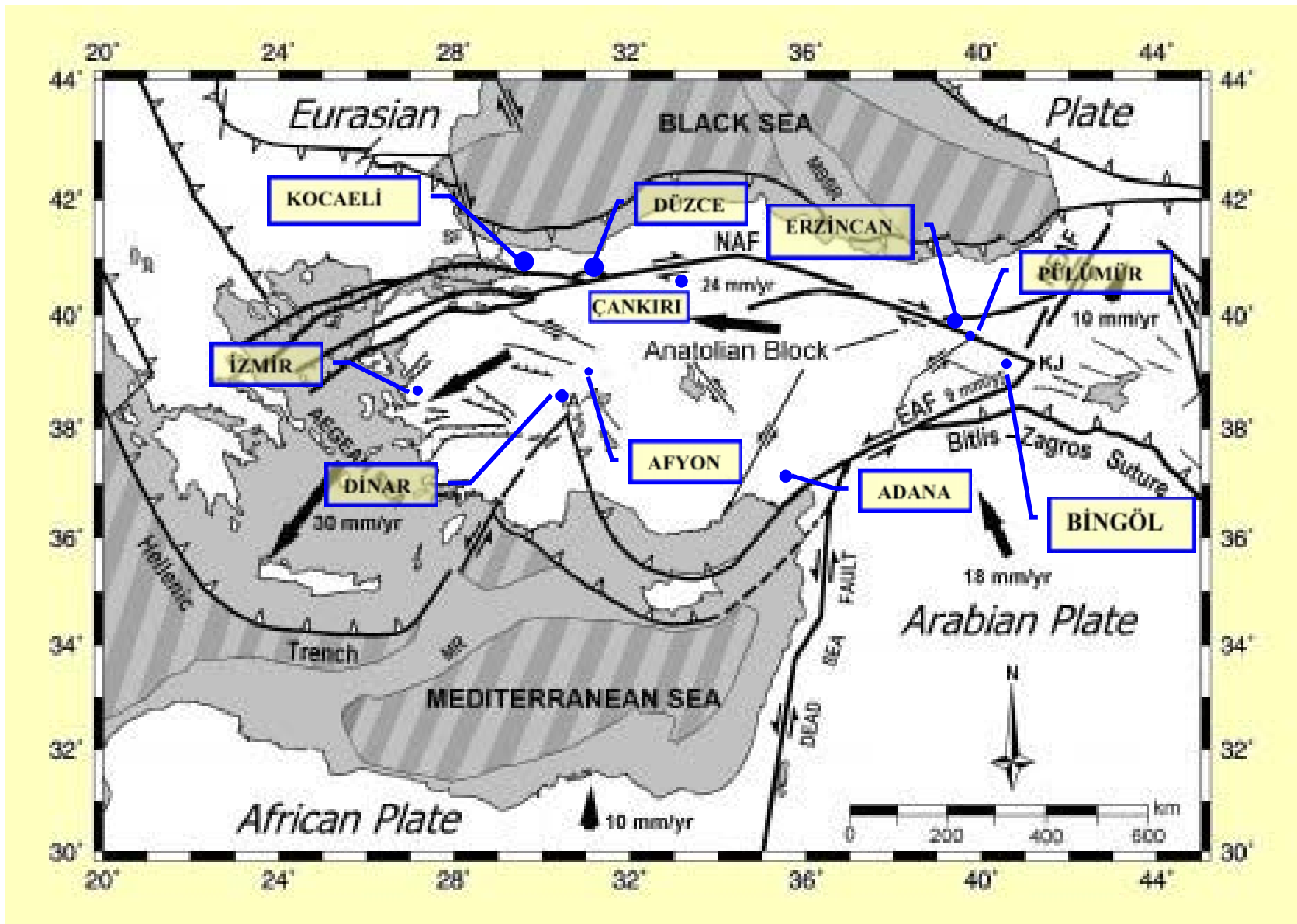
Turkey is a tectonically active region that experiences frequent destructive earthquakes. At a large scale, the tectonics of the region near the recent earthquake are controlled by the collision of the Arabian Plate and the Eurasian Plate. At a more detailed level, the tectonics become quite complicated. A large piece of continental crust almost the size of Turkey, called the Anatolian block, is being squeezed to the west. The block is bounded to the north by the North Anatolian Fault and to the south-east by the East Anatolian fault. The recent earthquake occurred near the east end of the East Anatolian fault. The faulting in the region is very complicated and extensive. This earthquake may have been the result of rupture on the northeast trending East Anatolian Fault or it may have occurred on the northwest trending Bingol Karakocan fault zone.

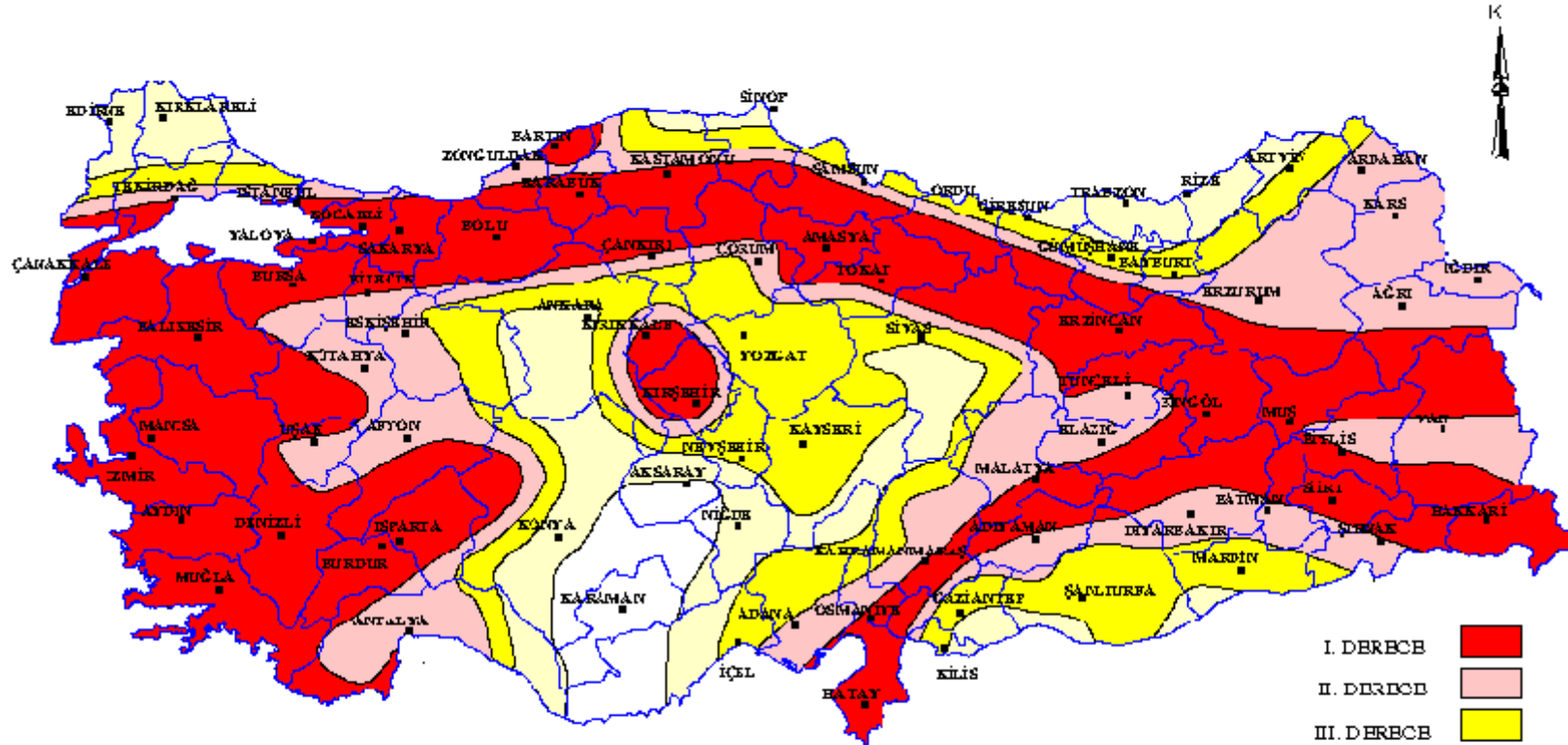


This earthquake occurred 70 km southeast of a magnitude 6.1 earthquake that killed one person and injured several in the Pulumar area on January 27, 2003. These earthquakes are a reminder of the many deadly earthquakes that Turkey has suffered in the recent past. The devastating Kocaeli (Gölcük) earthquake of 1999 (M=7.8) broke a section of the North Anatolian Fault 1,500 km to the west of the recent quake and killed 17,000 people, injured 50,000, and left 500,000 homeless. The recent earthquake (May 1, 2003) occurred within or near the source region of the M=6.4 earthquake of March 13, 1992, which killed hundreds of people and left thousands homeless in Erzincan. Another even larger earthquake struck Erzincan in 1939. This magnitude 8.0 earthquake killed an estimated 33,000 people. Erzincan is about 120 km (75 miles) to the northwest of the epicenter of today's earthquake. (<http://neic.usgs.gov>)

LATEST EARTHQUAKES in TURKEY (<http://www.koeri.boun.edu.tr>)

No	Date	Local Time	Location	Intensity	Magnitude	Causality	# Damaged Buildings
1	13.03.1992	19:08	ERZİNCAN	VIII	6.8	653	8057
2	01.10.1995	17:57	Dinar (AFYON)	VIII	6.1	90	14156
3	27.06.1998	16:55	Ceyhan (ADANA)	VIII	6.2	146	31463
4	17.08.1999	03:01	Gölcük (KOCAELİ)	X	7.8	17480	73342
5	12.11.1999	18:57	DÜZCE	IX	7.5	763	35519
6	06.06.2000	05:41	Orta (ÇANKIRI)	VII	6.1	1	1766
7	03.02.2002	09:11	Sultandağı (AFYON)	VII	6.0	43	2598
8	27.01.2003	08:26	Pülümür (TUNCELİ)	VII	6.0	1	24
9	10.04.2003	03:40	Urla (İZMİR)	VII	5.6	-	87
10	01.05.2003	03:27	BİNGÖL	VIII	6.4	168	2874





* T. C. Bayındırlık ve İskan Bakanlığı, 1996

B. Özmen, M. Murat ve H. Güler'in 1997 yılında hazırladıkları,

"Coğrafi Bilgi Sistemi ile Deprem Bölgelerinin Haritalanması" kitabından alınmıştır.

AFET İŞLERİ GENEL MÜDÜRLÜĞÜ
DEPREM ARAŞTIRMA DAİRESİ
ANKARA - TÜRKİYE

<http://www.angora.deprem.gov.tr>

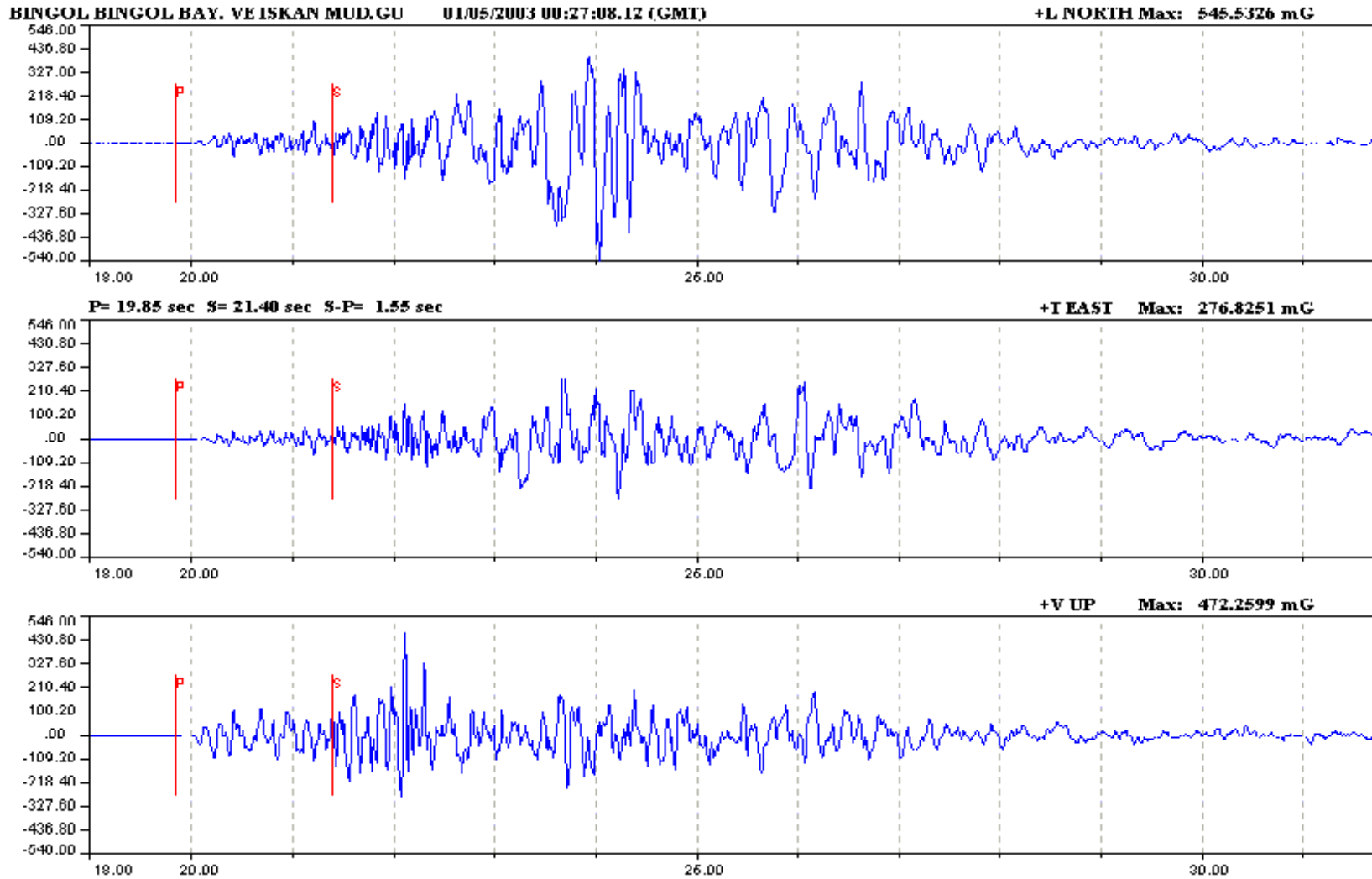
MAY 1, 2003 BİNGÖL (TURKEY) EARTHQUAKE

DATE -TIME: 2003 05 01 03:27:08 Local // DEPTH:10.0 kilometers // MAGNITUDE: Ms=6.4(KOERI)

LOCATION: 39.0107N 40.4923E (KOERI), 39.99N 40.46E(USGS)

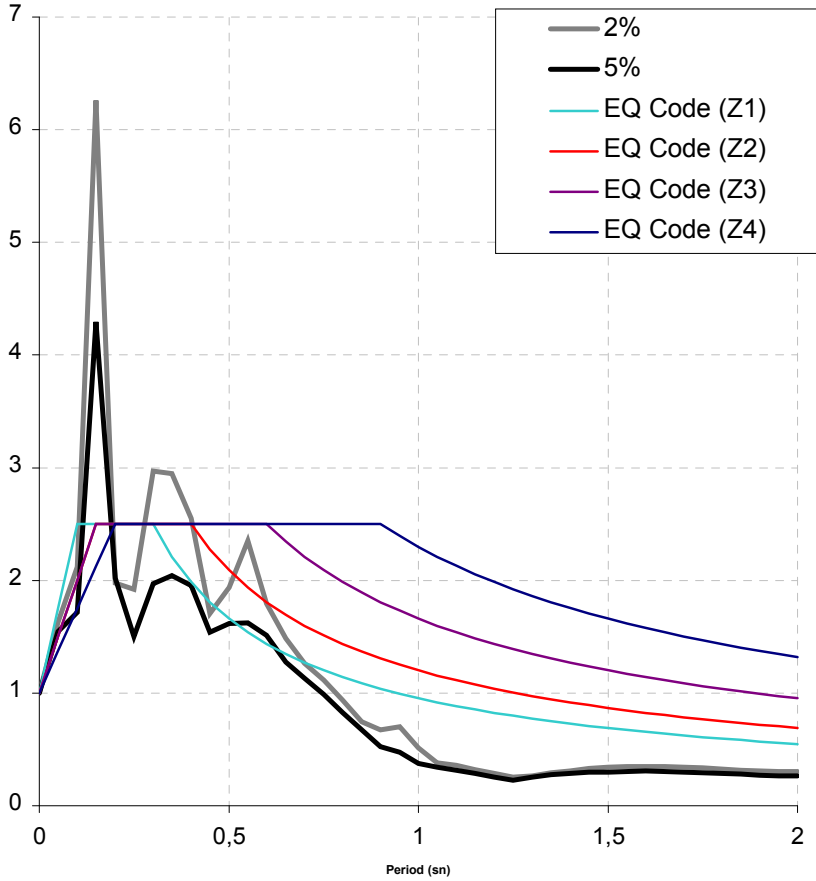
Mw=6.4 (USGS)

<http://angora.deprem.gov.tr>

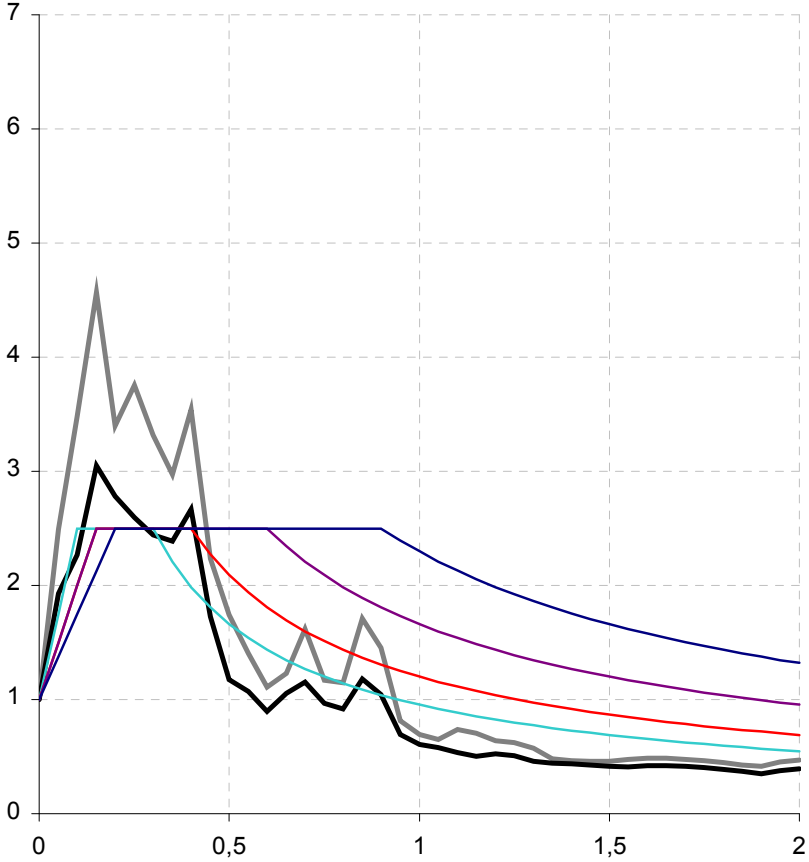


SPECTRUM
1998 Turkish Earthquake Resistant Design Code

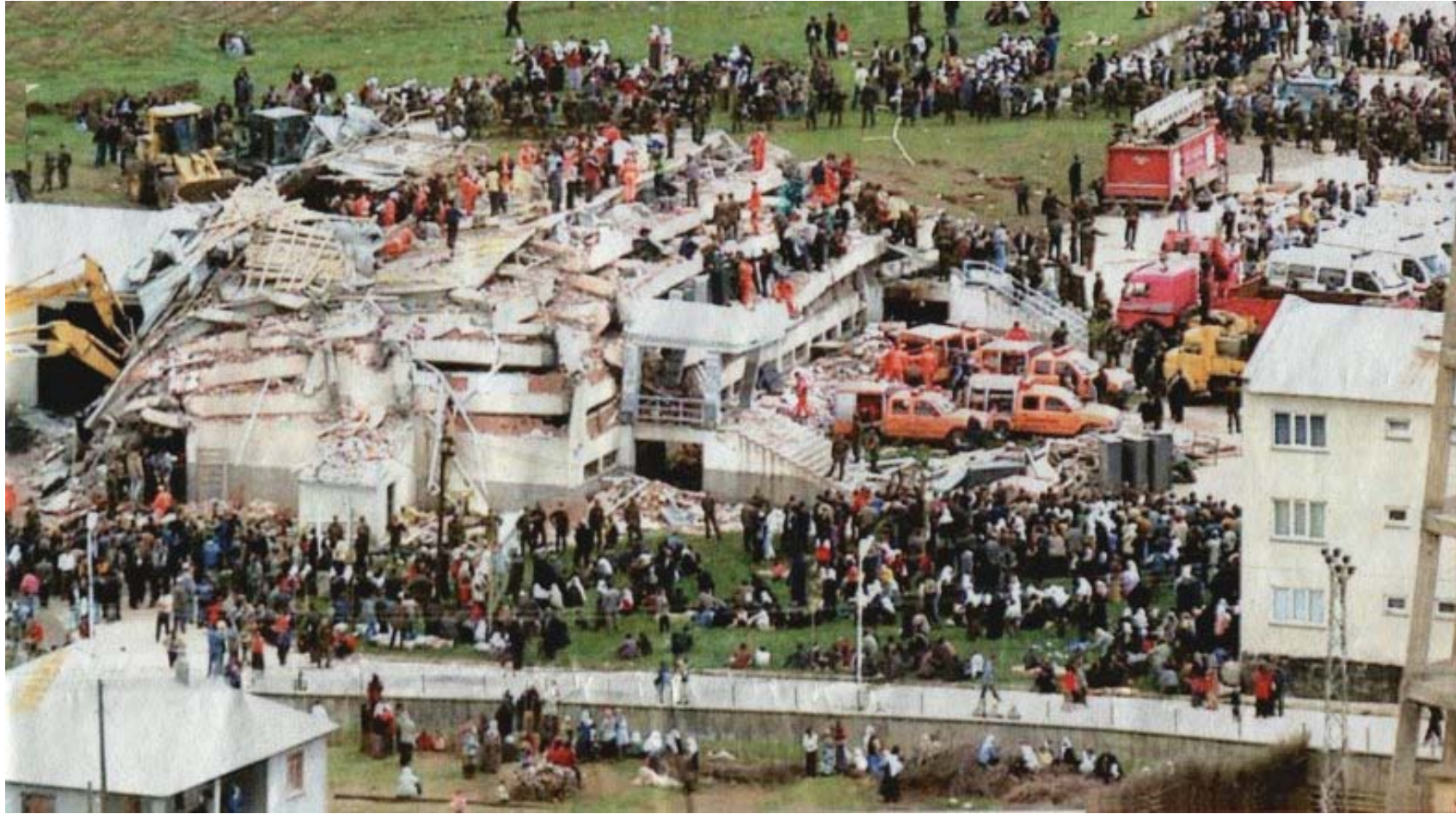
Bingöl N-S Spectral Acceleration



Bingöl E-W Spectral Acceleration



Çeltiksuyu Dormitory





Çeltiksuyu Elementary School



Kaleönü Elementary School









Kültür Street



Soft Ground





Masonry Building



Soft Storey



Main reasons of the damage

- Bad workmanship
- Concrete quality
- Inadequate connection details
- Wrong design

Prof. Dr. Nesrin YARDIMCI
Assist. Prof. Dr. Pınar ÖZDEMİR

İstanbul Technical University
Civil Engineering Faculty
34469 Maslak-İstanbul / TURKEY