

Preliminary report on the 11 August 2012, Mw6.2 and Mw 6.1; Ahar Twin earthquakes in East Azerbaijan Province of NW Iran

By Mehdi ZARE* and Mohammad P.M. Shahvar
IIEES, Tehran, Iran

Two earthquakes jolted in 11 August 2012 NW Iran, Ahar region (60km NE Tabriz), first one in 16:53 local time (Mw6.2; 23km west of Ahar) and the second one in 17:04 local time (Mw6.1; 30km west of Ahar) [Iran local time; GMT+4:30; which is GMT+3:30, and there is +1:00 for summer time]. These earthquakes caused 306 killed, 3037 injured and 30000 homeless people (based on the declaration of the Iranian health minister, 13 August 2012). These events caused panic in the cities of the epicentral region (specially in the cities of Ahar, Varzaghan, Kalibar, Haris, and in Tabriz the greatest city in NW Iran, having a population of about 1,5 million). After the mainshocks the people settled in outside of the buildings and slept in the 2 nights after the events. Most of the damages are reported from the villages of Gourdeh, and Dino (of Ahar city). This earthquake felt in the cities of Tabriz, Marand, Shabastar, Mamaghan and Bostanabad in East Azarbayjan Province, Ardabil and Meshkinshahr in Ardebil Province, Urumieh, Khoy and Salmas in West Azarbayjan Province, and Astara, Rasht and Somehsara in Gilan Province. There are 110 aftershock with a $M > 3.0$ recorded in IIEES broadband seismic network in the 1st 40 hours after the twin events. IIEES dispatched two technical groups in the 1st days after the event to install the local seismographic network and in order to have early technical reconnaissance visits in the epicentral region. The 2 other follow up teams are planned to be convoyed to the region in the 1st week after the twin mainshocks.

The seismicity of the region is presented in Figures-1, and the focal mechanisms are given in Figure-2 (based on CSEM) indicating strike-slip movement in these shocks (the causative fault is assessed to be the South Ahar fault, having a east-west trend, and a 60km length). The Shakemap of the first mainshock is assessed in IIEES and presented herein (Figure-3) and based on this assessment and the early reports, an Intensity of VIII is estimated to be observed in the macroseismic epicenter (Figure-3). The PGA is assessed to be about 0.5g based on the Shakemap (Figure-4). Figure 5 to 7 represent the early images transmitted by Iranian News agencies in the first hours after the earthquake.

EMSC manual location

Mw 6.4 2012/08/11 - 12:23:18 GMT

Lat 38.41 Lon 46.81 Depth 10.0

Seismicity ISC+EMSC: From 1960 to 11/08/2012 12:00 UTC

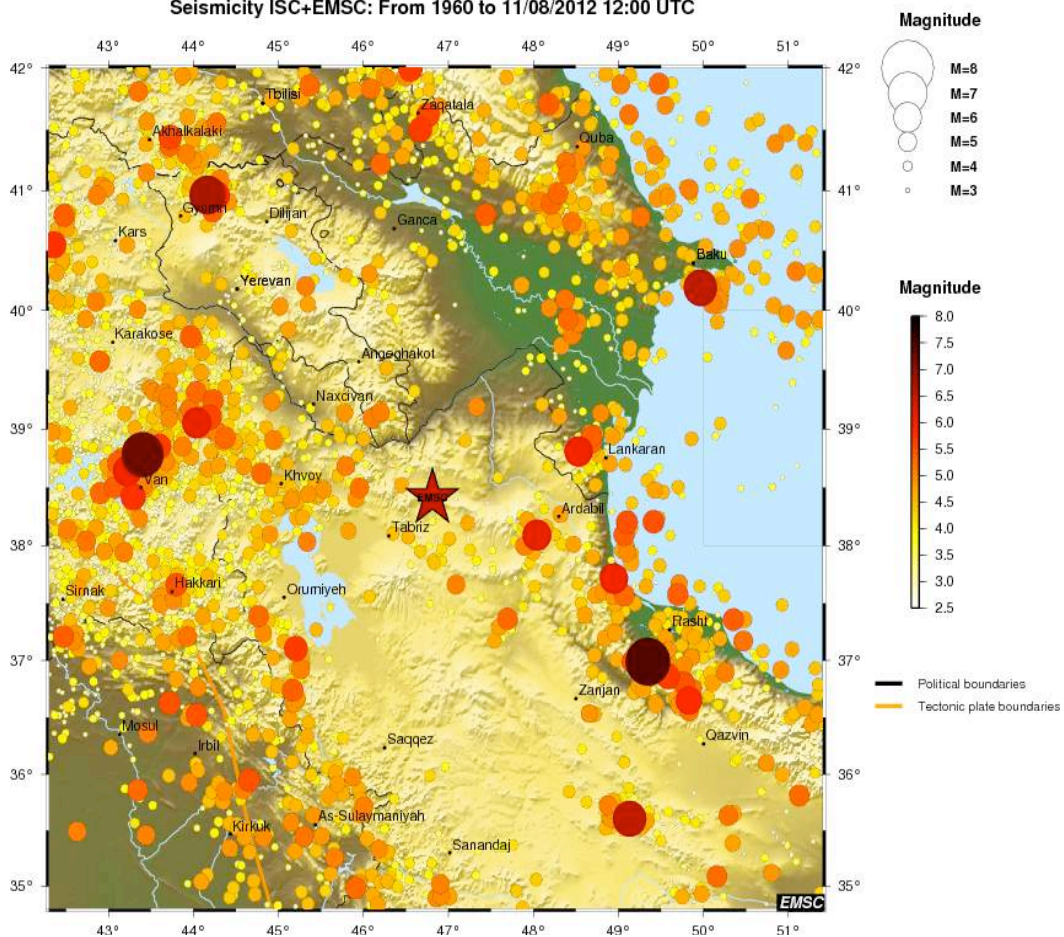


Fig.1

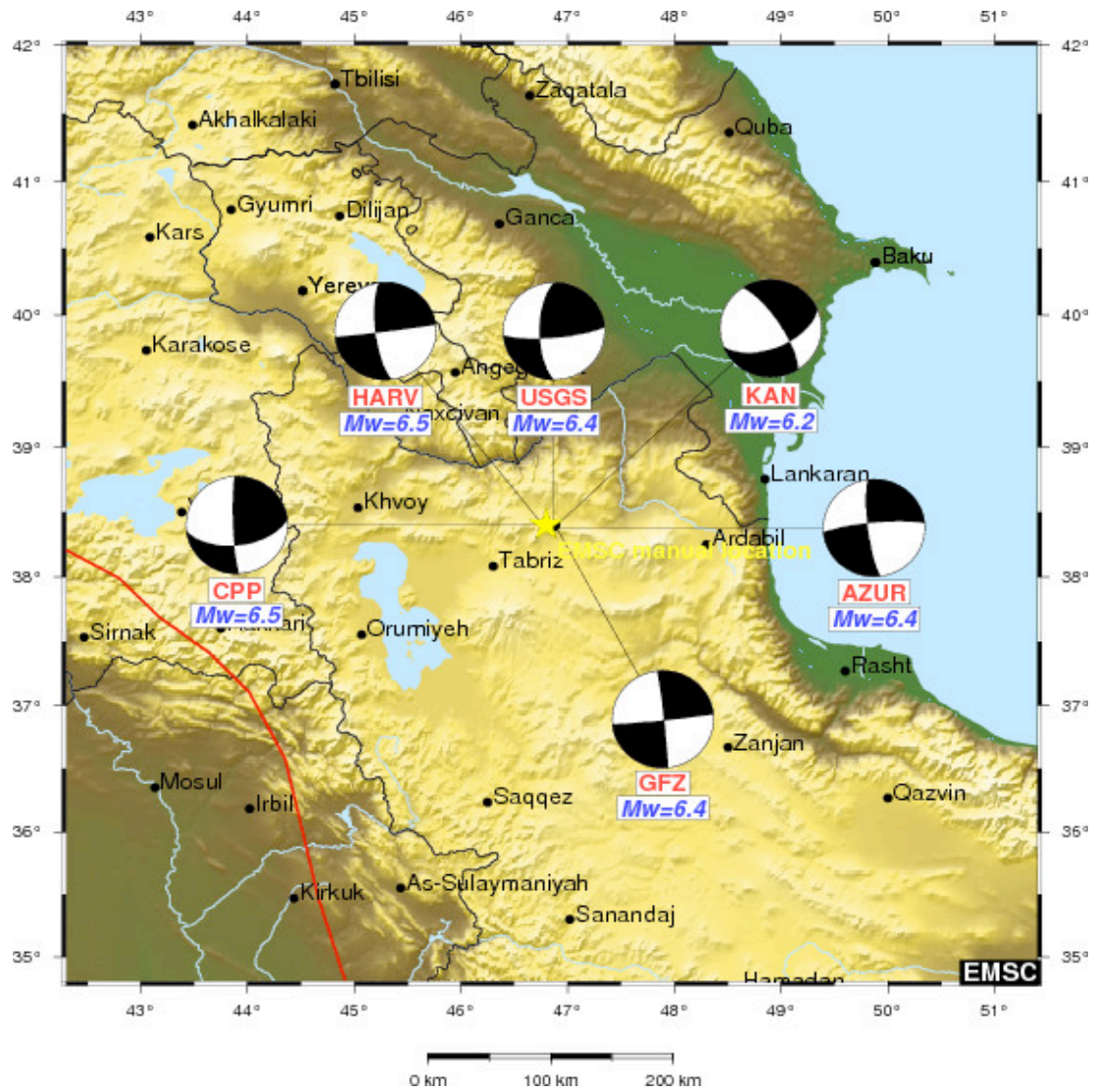
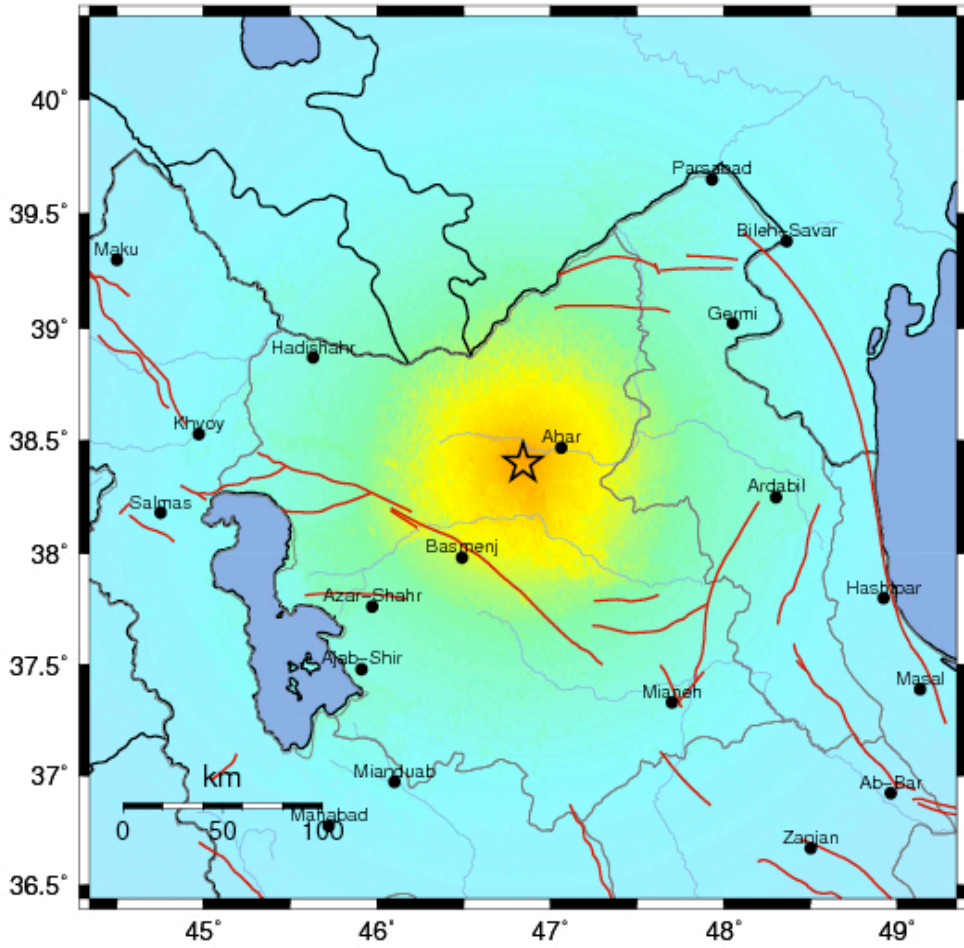


Fig.2

IIEES ShakeMap : Ahar

AUG 11 2012 12:23:17 AM GMT M 6.2 N38.40 E46.84 Depth: 10.0km ID:IR201208111223



Map Version 1 Processed Tue Jun 28, 2011 08:32:20 AM MDST

PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	none	none	none	Very light	Light	Moderate	Moderate/Heavy	Heavy	Very Heavy
PEAK ACC.(%g)	<0.17	0.17-1.4	1.4-4.0	4.0-9	9-17	17-32	32-61	61-114	>114
PEAK VEL.(cm/s)	<0.12	0.12-1.1	1.1-3.4	3.4-8	8-16	16-31	31-59	59-115	>115
INSTRUMENTAL INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+

Scale based upon Wald, et al.; 1999

Fig.3

IIEES Peak Accel. Map (in %g) : Ahar

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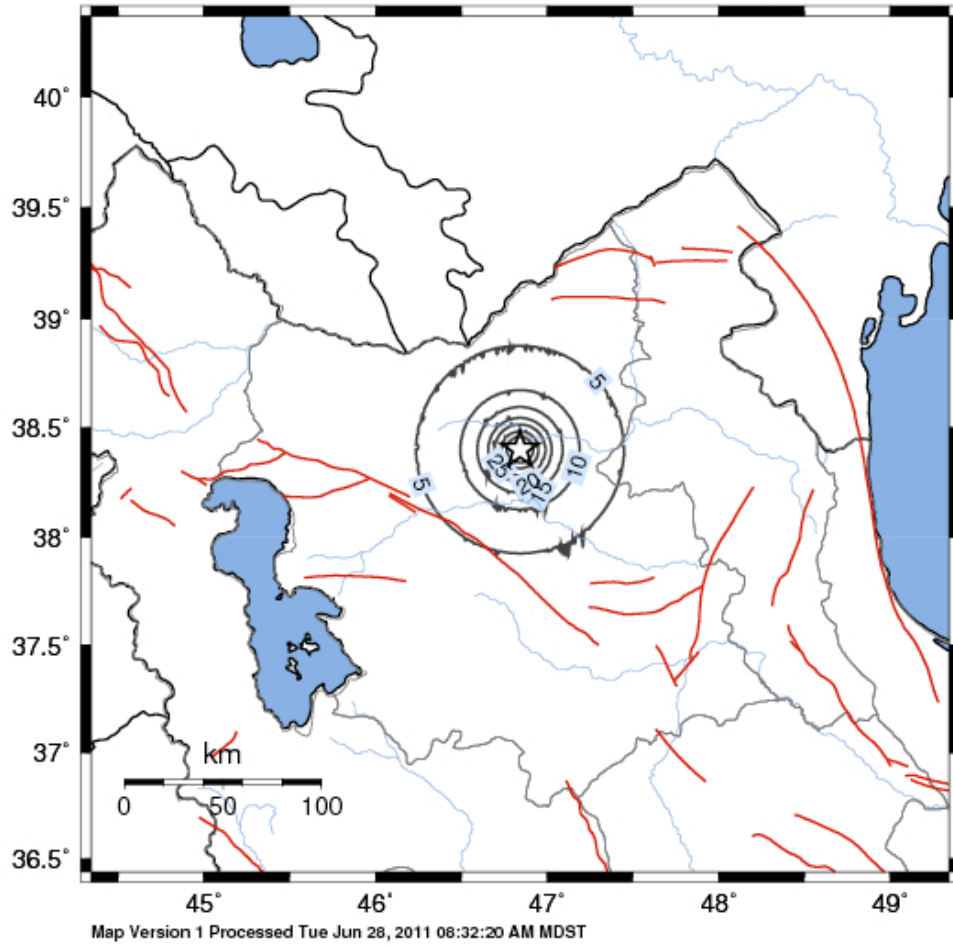


Fig.4



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Fig.5



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Fig.6



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Fig.7