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Department of Geophysics
School of Sciences
Mashad , Iran

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For any additional information address your correspondence to:

Department of Geophysics
School of Sciences
Ferdowsi University
Mashad, Iran

Notice: During the period of August 20-September 1976 covered by Vol.1, No.3 of this Bulletin no earthquakes were listed since no stations were operative during this period.

INTRODUCTION

With the publication of the Bulletin of Seismographic Network of Ferdowsi University, (SNFU) the Department of Geophysics of the School of Sciences at this University assumes the responsibility of local and regional significance in the northeastern province of Iran at regular intervals. In the light of current industrial expansion of the whole country and the ensued regional development programs such an undertaking appears to have long been overdue. Ferdowsi University is therefore, pleased to have initiated this task for an area nearly $1/3$ size of the country. The monitored area shown on the enclosed map is approximately a $10^{\circ} \times 10^{\circ}$ quadrangle covering northeastern and parts of northern and central regions of Iran as well as sections of Soviet Turkmenia and western Afghanistan.

The enclosed map also shows locations of the seismographic stations of SNFU. operative during the period covered by this issue. pertinent information concerning the recording stations is given in the table following these general remarks. The map also serves as a graphic display of the spacial distribution of the epicenters for the location of which sufficient data were available. The data concerning the origin time, hypocentral coordinates and magnitude (M_L) of the earthquakes are given in a list against their reference number.

The computed magnitudes are based on the equivalent Wood-Anderson trace amplitude and the California attenuation curves derived by Richter and should at this stage only serve as an indication of the strength of the earthquake sources in a relative sense.

The central station (MUI), located in the School of Sciences, Mashad, consists of a short-period Benioff seismometer in combination with a Helicorder. In their present form the out stations are generally single component semi-permanent instruments of MEQ-800 series housed in temporary huts. The magnification at one second for MUI is about 30,000 and for others is around 100,000.

The arrival times reported at other regional seismographic stations are incorporated, whenever available, for the determination of hypocentral parameters. In the hypocentral location of the earthquakes use is made of University's IBM 370 (Model 135) Computer System by means of a program for three layer case originally developed by F.T.Turcotte (1964) and currently used in its modified form by the Seismographic Stations, University of California, at Berkeley. Whenever the hypocenter does not converge to an acceptable depth the earthquake focus is restricted to a 10 km depth below the surface.

Turcotte, F.T. (1964) " Epicenters and Focal Depths in the Hollister Region of Central California " , Doctoral Dissertation, University of California" Berkeley.

List of Stations in Operation during January-June 1977

Station	Code	Latitude N	Longitude E	Elev. meters	Foundation material	Date established
Kakhk	KHI	34 08.6	58 38.5	1600	Metamorph shale and sandstone	April 1971
Khabushan	KHB	37 19.0	58 17.2	1400	Limestone	April 1977
Mashad University	MUI	36 18.7	59 36.3	1000	Recent Alluvium	January 1972
Shahrud	SHD	36 26.0	54 56.5	1500	Limestone	March 1975
Taghi Ghanbar	TGI	32' 57.8	59 11.6	1800	Andesite	May 1975

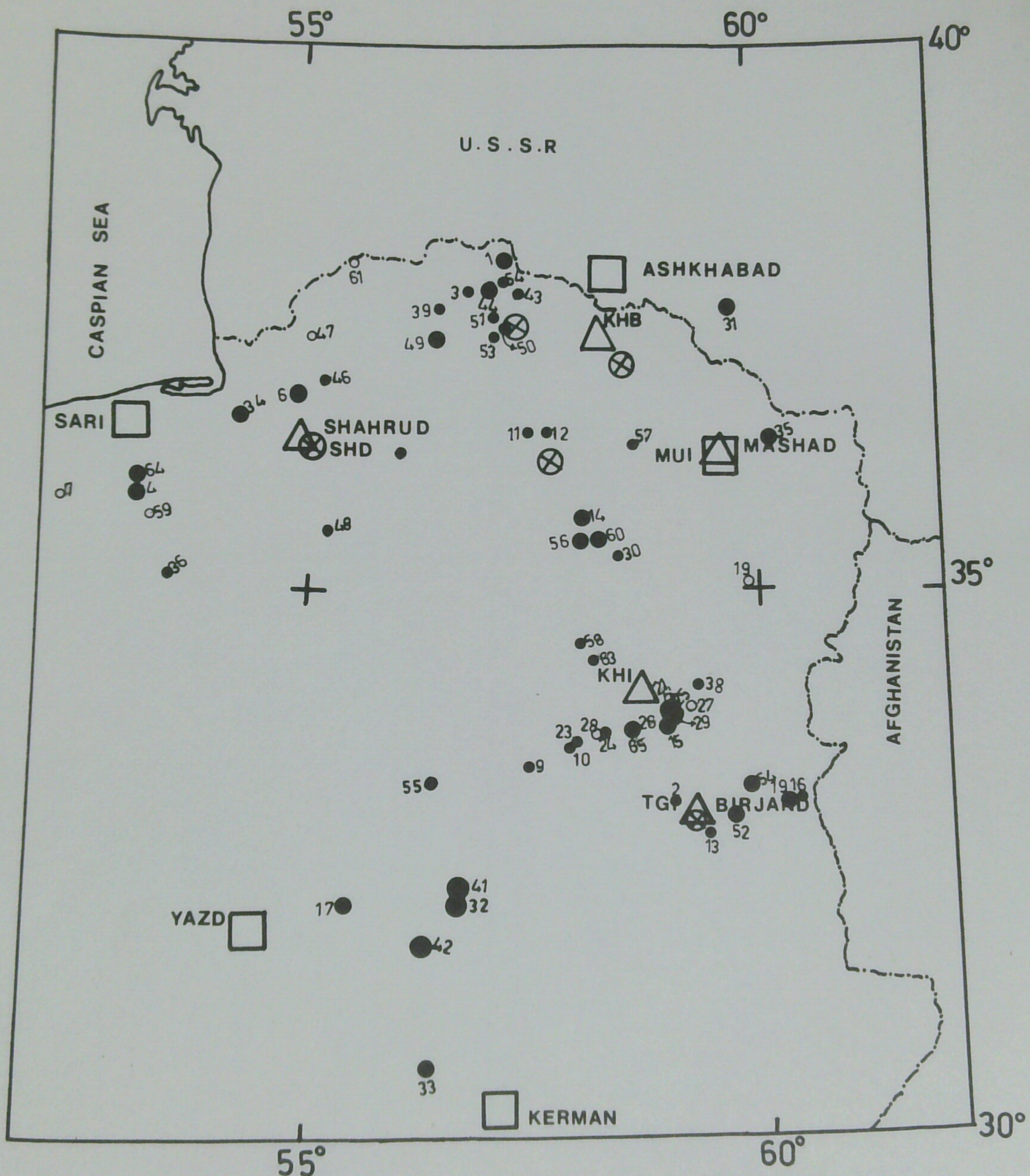
List of Earthquakes in Northeastern Iran during
January-June 1977

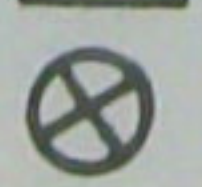
Map No.	Date 1977	Origin Time (G.C.T.)	Latitude N	Longitude E	Magn- itude	h km	No.of Stas.	Remark
January								
01	08	16 26 51.7	37 57.9	57 11.6	3.2	10.0	3	
02	09	09 35 42.9	32 58.9	59 07.4	2.7	10	4	
03	11	02 28 38.1	37 42.6	56 43.8	2.9	10	4	
04	11	21 43 48.8	35 51.1	53 00.0	3.4	10	6	
05	13	15 30 54.2	29 58.4	58 06.3	3.9	10	5	
06	22	17 56 54.3	36 45.8	54 50.3	3.0	10	5	
07	23	21 49 19.8	35 52.9	52 15.0	1.6	40.1	5	
08	24	05 34 24.9	33 49.7	59 09.3	2.3	10	3	
09	28	09 58 27.8	33 19.9	57 28.3	2.7	10	3	
February								
10	05	00 42 16.7	33 30.3	57 51.1	2.3	10	3	
11	06	11 13 56.2	36 25.3	57 32.9	2.2	10	4	
12	07	21 22 21.4	36 25.1	57 04.0	2.4	10	3	
13	13	19 47 56.5	32 39.8	59 24.6	2.4	10	3	
14	23	05 11 48.4	35 35.2	58 09.7	3.0	10	4	
15	25	06 25 45.9	40 06.8	56 42.7	4.0	10	4	
March								
16	02	18 20 50.0	33 02.2	60 24.0	2.7	10	3	
17	05	19 57 15.5	32 04.0	55 26.5	3.4	10	4	
18	07	00 33 59.5	33 54.0	59 06.0	3.3	10	4	
19	07	12 52 14.6	35 00.0	59 56.0	1.8	10	3	
20	08	09 07 48.5	33 00.0	60 16.2	3.5	10	4	
21	13	13 44 11.6	33 58.0	59 06.3	1.3	10	3	
22	15	17 49 58.4	33 51.0	59 05.3	—	10	3	
23	15	20 35 47.0	33 34.2	57 57.0	2.1	18.4	3	
24	16	01 08 14.0	33 39.0	58 20.0	2.3	26.4	3	

Map No.	Date 1977	Origin Time (G.C.T.)	Latitude N	Longitude E	Magn- itude	h km	No.of Stas.	Remark
March								
25	19	03 29 08.5	33 49.5	59 07.5	4.1	10	4	
	19	03 29 07.5	33.687	59.476	—	29	21	U.S.G.S
26	19	17 13 43.8	33 44.7	58 57.5	3.0	10	5	
27	19	22 55 35.9	33 53.5	59 20.0	1.5	10	3	
28	19	23 37 42.3	33 38.5	58 15.8	1.5	15.3	3	
29	21	05 24 49.0	33 47.0	59 09.0	1.2	10	3	
30	25	01 38 52.2	35 16.9	58 27.0	2.8	7.3	4	
31	25	17 44 14.5	37 32.6	59 46.7	3.9	10	5	
April								
32	02	22 16 07.7	32 05.5	56 39.5	4.1	1.2	5	
	02	22 16 10.7	32.226	56.640	4.7	33	28	U.S.G.S
33	03	14 46 05.9	31 38.4	56 23.6	3.7	10	4	
34	10	21 22 17.9	36 35.6	54 19.4	3.6	10	5	
	10	21 22 22.2	36.722	54.750	—	33	18	U.S.G.S
35	21	13 39 58.7	36 20.6	60 10.3	3.4	71.0	4	
36	22	00 05 56.3	35 09.3	53 24.6	2.9	10	4	
37	23	23 53 20.1	22 57.5	58 19.9	3.5	10	5	
38	24	01 05 09.2	34 03.8	59 21.5	2.1	10	3	
39	27	00 57 36.7	37 33.0	56 27.0	2.6	10	4	
May								
40	02	15 17 52.3	36 45.1	55 17.6	5.5	10	6	
	02	15 17 48.9	36.958	55.246	5.3	19.	45	U.S.G.S
41	02	18 09 50.0	32 15.7	56 42.6	4.1	10	7	
42	03	16 26 55.9	31 40.7	56 18.4	4.1	6.8	6	
	03	16 26 57.7	31.722	56.246	5.0	42	17	U.S.G.S
43	04	00 57 42.5	37 40.7	57 21.9	2.9	10	3	

Map No.	Date 1977	Origin Time (G.C.T.)	Latitude N	Longitude E	Magn- itude	h km	No.of Stas.	Remark
May								
44	09	05 36 23.4	37 40.8	57 08.9	3.1	10	5	
45	10	03 58 00.7	37 45.0	57 11.6	2.9	18.0	5	
46	10	09 00 14.4	36 50.3	55 14.7	2.5	10	4	
47	16	23 07 07.6	37 19.6	55 03.7	1.5	10	3	
48	20	16 24 57.9	35 29.5	55 08.1	2.6	10	4	
49	21	14 00 48.9	37 17.4	56 29.5	3.0	2.3	6	
50	22	10 49 46.5	37 21.5	57 09.6	2.5	10	3	
51	22	11 00 19.9	37 24.5	57 08.4	2.8	7.5	3	
52	22	16 14 07.5	32 52.5	59 44.2	3.0	10	3	
53	24	11 37 43.3	37 19.1	57 07.6	2.8	10	5	
54	30	15 55 11.7	33 09.9	59 52.3	3.6	10	5	
June								
55	03	18 34 31.6	33 11.0	56 22.9	2.5	10	3	
56	04	21 28 10.9	35 23.2	58 04.4	3.0	10	5	
57	07	23 01 01.7	36 18.2	58 39.4	2.5	31.4	5	
58	09	16 06 37	34 29.3	58 03.1	2.1	43.0	3	
59	12	09 25 51.3	35 43.1	53 18.5	1.8	10	3	
60	13	08 53 58.2	35 23.6	58 18.9	3.6	27.4	5	
	13	08 53 58.7	35.352	58.249	—	33	12	U.S.G.S
61	14	13 58 39.0	37 58.9	55 31.2	1.8	10	3	
62	17	05 24 38.6	36 11.7	56 01.8	2.8	10	4	
63	17	21 09 43.9	35 20.2	58 21.3	2.2	10	4	
64	22	23 17 18.4	36 01.2	53 08.5	3.1	12	6	
	22	23 17 19.7	36.049	53.175	—	33	6	U.S.G.S
65	28	08 09 06.9	33 40.9	58 34.1	3.4	29.8	5	

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RECORDING STATIONS 
 PROVINCIAL CENTERS 
 TOWNS 

MAGNITUDE
 ○ 1.0 - 1.9
 ● 2.0 - 2.9
 ● 3.0 - 3.9
 ● 4.0 - AND GREATER
 ○ NOT COMPUTED

مقدمه

این نشریه حاوی اطلاعاتی درباره زمین لرزه هائی میباشد که در عرض شش ماهی که روی جلد تعیین شده در منطقه وسیعی از شمال شرق ایران شامل خراسان و نواحی مجاور وقوع یافته است این اطلاعات بر اساس علامات ثبت شده بوسیله ایستگاههای شبکه لرزه نگاری دانشگاه فردوسی و با استفاده از مشاهدات دیگر ایستگاههای منطقه (در مواردیکه در دسترس قرار داشته اند) با استفاده از کامپیوتر دانشگاه محاسبه گردیده اند و شامل اطلاعاتی درباره توزیع زمانی و مکانی و توان تخریبی (ماگنیتود) زمین لرزه ها در ناحیه ای بوسعت متجاوز از یک میلیون کیلومتر مربع بترتیبی که در نقشه ضمیمه ملاحظه میگردد، میباشد.

ارزش اطلاعات منتشر شده از دو جنبه علمی و مهندسی قابل توجه است. محاسبه و جمع آوری مداوم آن از یک طرف بروشن شدن تصویر سیستموتکتونیکی منطقه در رابطه با تحولات زمین شناسی آن کمک مینماید و از طرف دیگر مسئولین برنامه ریزی طرحهای صنعتی و عمرانی را در انتخاب صحیح تر ضرائب مقاومت در برابر زمین لرزه های احتمالی آینده در طرحهاییکه بررسی مینمایند راهنمایی خواهد نمود. باید توجه داشت که ضریب زمانی روند سیستموتکتونیکی نسبتاً "طولانی" است و دقت و نتیجه گیریهای مورد بحث بطور مستقیم با طول زمان جمع آوری اطلاعات متناسب است.

در نظر است این نشریه سالیانه دوبار هر یک بفواصل ششماه بطور مرتب منتشر گردد و چنانچه توسعه تجهیزات فنی و نیروی انسانی گروه ژئوفیزیک دانشگاه فردوسی اجازه دهد، تدریجاً "منطقه مورد عمل بکلیه نقاط کشور توسعه یابد". از نظر هم آهنگی و امکان مقایسه با نشریه های مشابه بین المللی تاریخ و زمان وقوع زمین لرزه ها در فهرست ضمیمه بتاریخ اروپائی و ساعت گرینویچ داده شده اند.