

سازمان برنامه و بودجه

# زلزله‌های سال ۱۹۶۹ کشور ایران



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این نشریه حاوی زلزله هائی است که در سال ۱۹۶۹ در کشور ایران روی داده است و دوهین نشریه ای است که باین صورت از طرف این دفتر انتشار می یابد وچون در سطح بین المللی مورد استفاده قرار میگیرد بر حسب تقویم میلادی وبه زبان انگلیسی تهیه شده است .

گرچه همانطوریکه در مقدمه نشریه شماره ۵۳ ذکر شد هدف از تهیه این مجموعه ها ورود درمباحث لرزه شناسی ( Seismology ) نیست وبیشتر استفاده های مهندسی مورد نظر میباشد ، لکن از آنجا که تلفیق اطلاعات حاصله از دستگاههای لرزه شناسی و اطلاعات ماکروسیسیمیک در محاسبه مراکز زلزله کاربرد دارد تهیه کاتالوکی از زلزله های ایران که اطلاعات کسب شده از دستگاههای لرزه شناسی در سطح جهانی و در سطح منطقه را با اطلاعات محلی تواما " مورد توجه قرار دهد میتواند برای بررسی زلزله های گذشته ایران مفید واقع شود .

در این نشریه در مواردیکه عددی برای بزرگی ( Magnitude ) زلزله ای ذکر شده آن عدد متوسط ارقامی است که توسط پایگاههای مختلف گزارش شده است که با مقیاس ریختر است ، درحالاتی که از پایگاههای کشور شوروی استفاده وباحروف ( MPP ) وبه ( TSK ) نمایش داده شده مقدار بزرگی بر حسب مقیاس کشور شوروی ذکر گردیده و عدد بزرگی در برانتز نمایش داده شده است همچنین در مواردیکه با محسروف ( GDZ ) نمایش داده شده است مقدار بزرگی با مقیاس ریختر و با استفاده از پایگاههای داخل کشور ایران و توسط آقای دکتر گودرزی محاسبه شده است و در این موارد عدد بزرگی با حرف نشان داده شده است .

توضیحات دیگر مربوط به این کاتالوگ در مقدمه نشریه شماره ۵۳ ذکر شده است ، انتظار دارد با کمک متخصصین فن وعلاقمدان ، این قبیل مجموعه ها تکمیل گردد و احيانا " چنانچه خطاهائی در ارقام وتوضیحات مندرج در آن ها وجود دارد تذکر فرمایند که رفع ومجموعه های دقیق تری در اختیار قرار گیرد .

دفتر تحقیقات واستانداردهای فنی





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pr Local press and weekly Tehran Journals including foreign press. i. e. Sedayeh Mardom, Paygham-i-Emruz, Mehr-i-Iran. Khurassan. Ayandeghan. Pars, Farman, Majlei Tehran Musaver. Burs. Nadayi Iran, Mardi Mobarez, Post-i-Tehran.

RLS Red Lion and Sun Organization damage and relief report, mainly from local RLS agencies.

Bordet E., Berberian M. (1971) " Reconnaissance geologique du massif Sahand". Rapport Preliminaire. Geological Survey of Iran.

Dewey J. , Grantz A. (1974) " The Ghir earthquake of April 10, 1972 "Bull. Seism. Soc. America, Vol. 64



## REFERENCES

- BC        Bureau Central International de Seismologie, Strasbourg.
- GDZ       Moazami-Goudarzi K. (1972) " The unknown Earthquakes of Iranian plateau" Bull. Faculty Sci, . vol. 4, no. 1. Tehran
- IC        International Seismological Center, Edinburgh, Scotland.
- HF        Haffors. Observatory, Stockholm.
- LA        LASA Center, Lincoln Laboratory, MIT Lexington, Mass. U. S. A.
- NEP =    Institute Physics of the Earth. Acad. Sci. Turkm. SSR. Ashkhabad.
- TSK =    Institute of Geophysics AN Gruz. SSR: Seism. Institute Azarb. SSR.
- QU        Geophysical Institute, Quetta.
- SL        Central Seismological Observatory. Shillong: Assam
- UR        Moscow Institute Physics of the Earth. Acad. Sci. USSR Moscow.
- US        US Coast and Geodetic Survey. Science Centre. Maryland U. S. A.

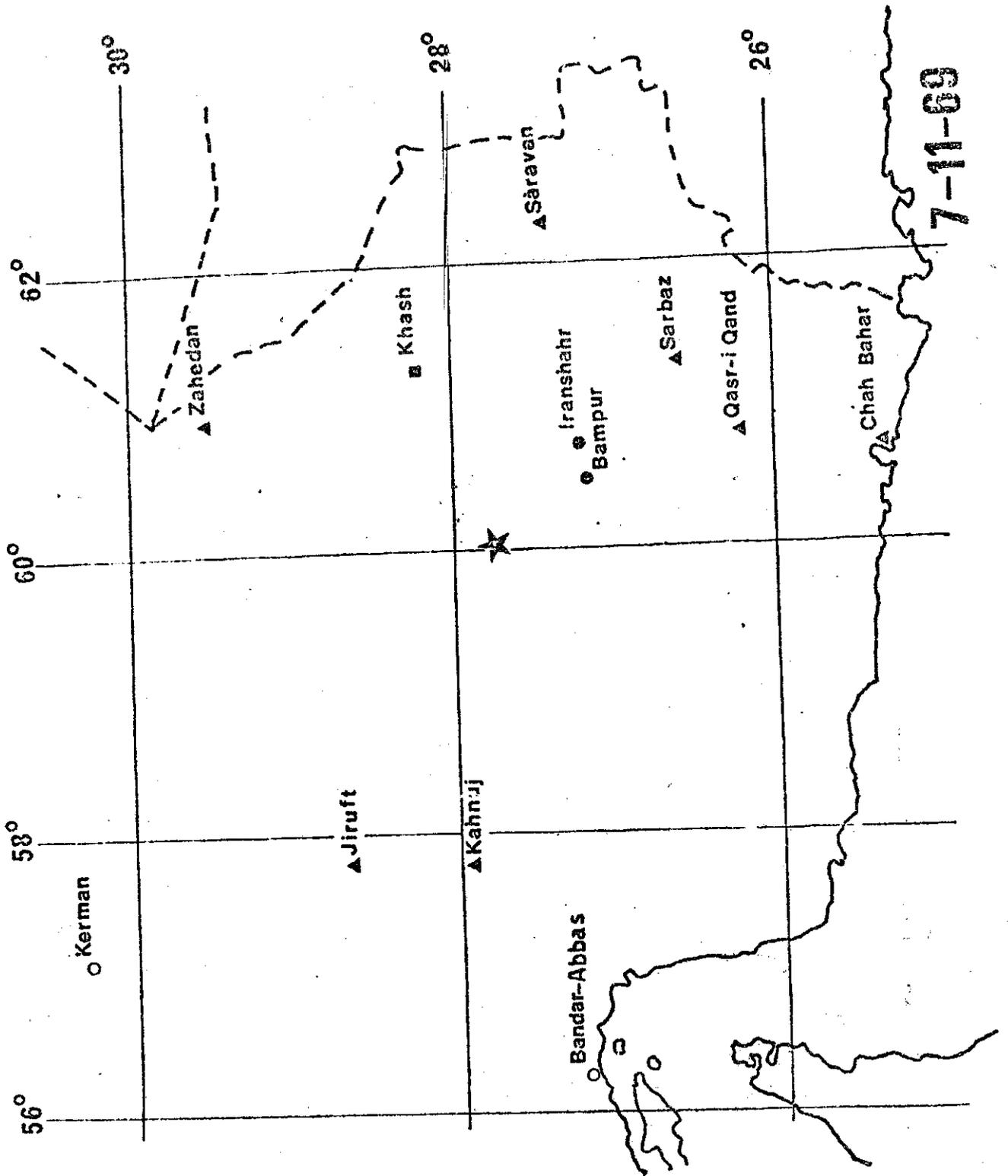
## STATION REPORTS

- KER = Kermanshah Seismological Station
- MAS = Mashhad Seismic Station
- TAB = Tabriz Seismic Station
- TEH = Tehran Geophysical Institute

## PRESS REPORTS

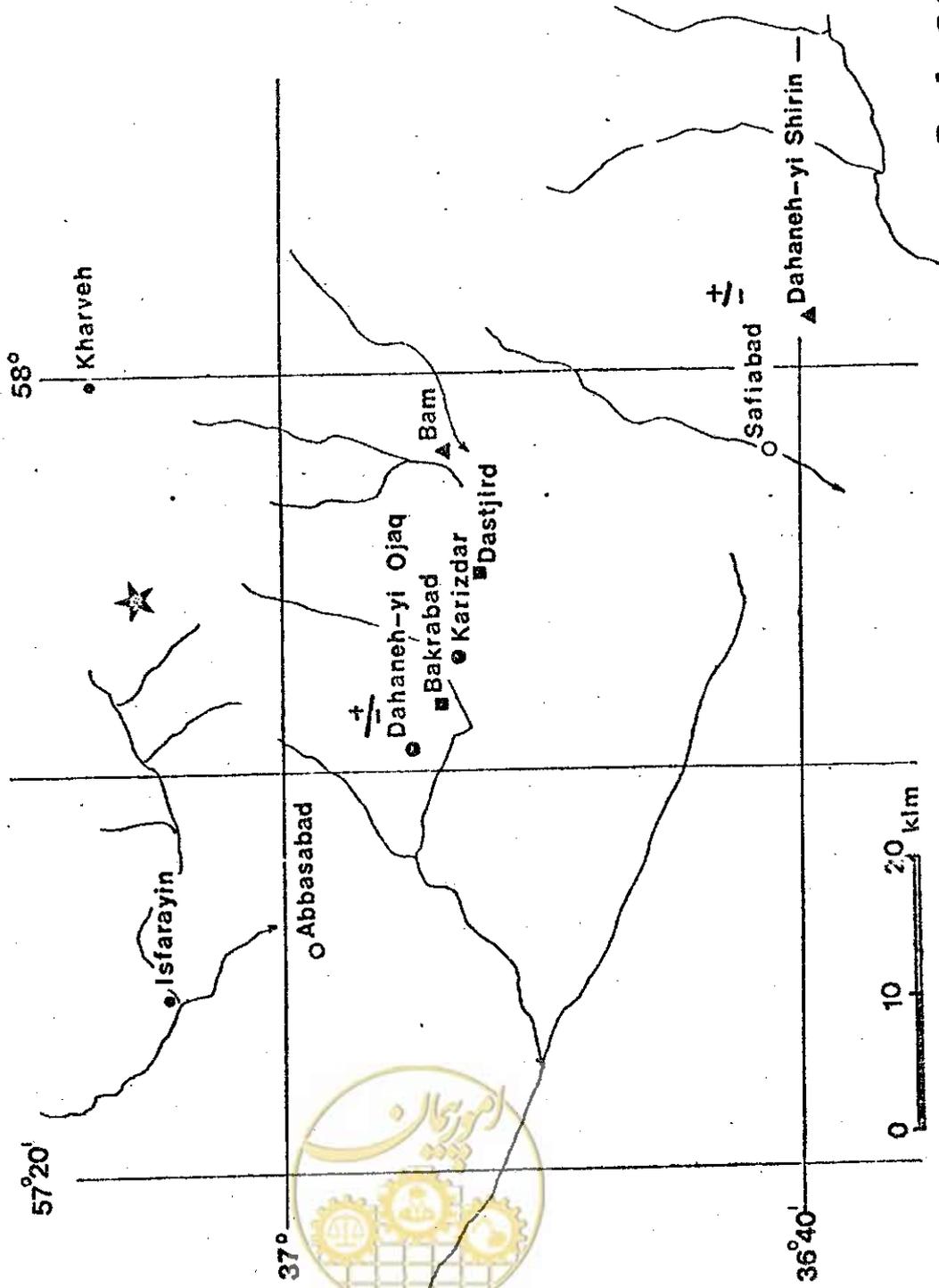
- et = Ittila't, Tehran
- Ke = Keyhan Tehran





7-11-69





3-1-69



(NEF)  
(NEF)  
NEF)

10  
(5)  
(5)

•  
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57.3  
53.0  
53.0

37.3  
40.0  
40.0

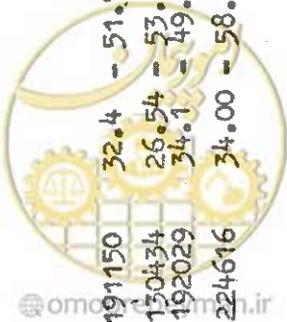
122507  
094644  
115327

Dec. 19  
20  
26

Notes: (1) The damage to villages near  $37^{\circ}48'$  -  $46^{\circ}44'$ , i.e. to Shisan, Nahr, Miardan, vulakkhaneh, and Khatunabad attributed by Bordet (1971) to an earthquake on the 6th April 1969, was in fact due to a flush-flood on that date (RLS, IGS).



iv. 25	105805	38.5 - 55.5	•	3.7	33	(IC, NEP)	
	113925	38.2 - 55.5	•	(9)		(NEP)	
	152825	38.1 - 55.6	•	(9)		(NEP)	
	190532	38.2 - 55.6	•	(10)		(NEP)	
	202520	38.3 - 55.6	•	(10)		(NEP)	
26	051429	38.3 - 55.4	•	(9)		(NEP)	
27	032349	37.7 - 57.1	•	(9)		(NEP)	
	033531	38.2 - 55.5	•	(9)		(NEP)	
	101335	38.4 - 54.3	•	(9)		(NEP)	
	115920	38.0 - 58.1	•	(5)		(NEP)	
28	012931	36.78 - 44.99	4.7		34	V+	60
							Caused some damage in the <u>Rezaiyeh</u> region; in <u>Rezaiyeh</u> old walls collapsed causing panic at <u>Piranshahr</u> and <u>Nagadeh</u> and surroundings; followed by two aftershocks. (IC, US, UR, BC, TAB, et/8 Azar)
							(IC, US)
30	191150	32.4 - 51.7	•	4.2L		(GDZ)	
ic. 1	150434	26.54 - 53.55	4.8		39	(IC, US)	
2	192029	34.1 - 49.2	•	4.6L		(GDZ)	
2	224616	34.00 - 58.76	5.0		40	V+	110
							Strong in Dasht-e Bayaz region at <u>Musavi</u> , <u>Charneh</u> , and <u>Majdabad</u> causing panic in <u>Bidisghun</u> , <u>Khurzad</u> and <u>Biabani Khanik</u> . Felt in <u>Ferdows</u> , <u>Gonabad</u> and <u>Biijistan</u> . (IC, US, UR, ke, et/15, 16 Azar, ICS)
3	023149	24.88 - 65.56	4.9	5.0	33	(IC, US, QU, UR)	
3	105857	40.0 - 53.0	•	(4)		(NEP)	
4	193019	37.7 - 55.9	•	(10)		(NEP)	Felt in <u>Ferdows</u> (GDZ)
5	2030		•			(NEP)	
5	220008	36.9 - 56.8	•	(9)		(NEP)	
9	200613	37.0 - 57.1	•	(10)		(NEP)	
10	110002	35.2 - 49.2	•	3.8L		(GDZ)	
11	052558	36.8 - 59.0	•	(10)		(NEP)	
15	051503	37.0 - 56.7	•	(6)		(NEP)	
	055217	38.0 - 55.4	•	(10)		(NEP)	
	061346	38.2 - 55.5	•	(9)		(NEP)	
	212704	37.6 - 56.4	•	(9)		(NEP)	



4	210559	40.18 - 50.21	•	4.5	56	(IC, US, UR, TSK)
5	190220	26.60 - 53.71	•	4.4	50	(IC, US, ICS)
6	043608	26.60 - 53.80	5.0	4.8	89	(IC, US, ICS)
7	0150	-	•	•	•	Felt in <u>Aliabad-i Gorgan</u> (et/18 Aban)
7	131842	26.60 - 53.61	4.6	•	19	(IC, US)
7	151605	26.60 - 53.72	5.0	4.8	35	(IC, US, ICS)
7	163027	26.55 - 53.59	5.0	5.0	23	(IC, US, UR)
7	183404	27.80 - 60.02	6.1	6.7	74	
					500	

The earthquake caused some damage in the region of Bampur and Iranshahr. It was strongly felt, causing pa in Khush and great concern in Lavan, Zahedan, Sarayan, Sarbaz, Qasr-i Qand, Chah Behar, Kahnui, and Jiruft. The shock was perceptible in Kerman and in Bandar Abbas. It was followed by many shocks causing people to stay outdoors, Figure 2.

(IC, US, UR, QU, pr.ke, et/17, 18, 19 Aban, ICS)  
(IC, US)  
(NEP)

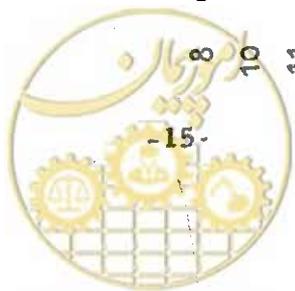
Damaging earthquakes in the sparsely populated area between Khur and Balyazeh where a number of settlements were destroyed. In the villages of Dudkin and Ardib the qanat water increased after the earthquakes.  
(IC, US, UR, BC, ke, et/20 Aban, 13 Azar, ICS)  
(GDZ)

(IC, US, UR)  
(GDZ) felt in Borazjan.

(NEP)  
(NEP)  
(IC, US, UR, BC, NEP)  
(IC, US, UR, BC, NEP)  
(NEP)

Very strong in Ferdowsi; no damage (et/5 Azar)

(IC, US, UR)  
(NEP)



15	065749	34.5 - 54.5	•	4.6L	•	
15	235850	26.73 - 53.05	4.9	5.0	29	
16		-	•	3.0L	•	
17	081524	38.0 - 58.0	•	(5)	•	
21	013250	36.5 - 53.3	•	(10)	•	
23	114042	38.37 - 55.53	4.9	5.0	14	
24	134418	38.57 - 55.44	5.0	4.5	00	
24	190549	38.2 - 55.6	•	(9)	•	
24	2250	-	•	•	•	IV+
25	091608	38.56 - 55.53	4.8	•	33	
25	095705	38.2 - 58.5	•	(10)	•	



8	091609	40.0 - 53.0	(4)	(NEP)
Sep. 9	133507	36.8 - 59.0	(10)	(NEP)
12	041549	40.0 - 53.0	(4)	(NEP)
13	081115	38.4 - 45.3	(10)	(TSK)
13	175438	38.2 - 44.7	(10)	(TSK)
14	0500	-		Felt in <u>Gorgan</u> (ke/24 Shahr)

15	080237	40.0 - 53.0	(4)	(NEP)
16	101916	38.0 - 58.1	(6)	(NEP)
19	140705	38.0 - 58.1	(5)	(NEP)
21		-		Felt in <u>Ahar</u> (ke/31 Shahr)
21	195645	37.3 - 55.2	(10)	(NEP)
22	143207	40.0 - 53.0	(4)	(NEP)
25	192329	36.71 - 55.12	4.3 32	VII 100

Damaging in the Kheroluz (Khan or Khasulyan) area southeast of Shakpasand where adobe houses collapsed no operation. Strongly felt in Gorgan and adjacent rockfall on highway pass to Shahrud (IC, US, NEP, I PR, et/3 Mebr.)

26	044404	36.3 - 50.0	3.8	(1A)
26	1755	-		Felt in <u>burnbird</u> and neighborhood. (ke, et/7 Mebr)
28	110222	38.0 - 56.1	(6)	(NEP)
	113113	40.0 - 53.0	(5)	(NEP)
29	115212	39.2 - 53.7	(10)	(NEP)

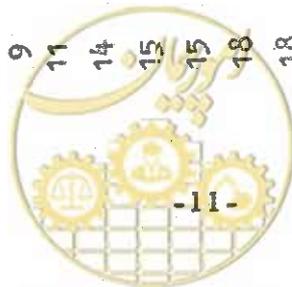
30		-		Felt at <u>Absharian</u> in <u>Larestan</u> (et/9 Mebr.)
31	0000	-	4.013	(GDC)
Oct. 2	053900	37.2 - 56.8	(10)	(NEP)
Oct. 2	200021	40.0 - 53.0	(4)	(NEP)
	202555	40.0 - 53.0	(4)	(NEP)

Comparatively strong in Ferdows and its villages caused no damage. (et/13 Mebr.)





Jul. 1	060054	28.23 - 55.36	4.8	81	In the Bandar-Abbas area strongly felt at <u>Kahghom</u> , (NEP)
Jul. 1	093535	40.0 - 53.0	.	(4)	Hajjiabad and vicinity without damage. (pr.ke/12 Tir.)
1	174017	38.6 - 45.4	.	4.0	IV+ Violent in Marand, followed by aftershocks 15 minutes later. (TSK, ke/12 Tir.)
4		-	.	.	Series of shocks felt in <u>Kakhk</u> causing panic. (et/IC, US)
8	162722	23.57 - 64.44	5.2	4.5	30 In the last 24 hours light shocks felt at <u>Agha-Jar</u> causing panic. (et/19 Tir)
9		-	.	.	(NEP) Strongly felt at <u>Bojnurd</u> causing concern. (NEP, ke)
9	083007	40.0 - 53.0	.	(5)	(TSK)
11	210913	38.5 - 57.2	.	3.8	(NEP)
14	142008	38.5 - 45.1	.	(10)	(NEP)
15	124957	36.0 - 56.5	.	(9)	(NEP)
15	173253	38.0 - 58.1	.	(10)	(NEP)
18	095917	38.0 - 58.1	.	(6)	(NEP)
18	205939	36.7 - 54.8	.	3.8	(IC, US, UR, BC)
20	223732	28.26 - 57.55	4.9	.	71 (NEP)
27	124846	36.6 - 55.5	.	3.6	(NEP)
27	172611	36.4 - 55.9	.	3.7	(NEP)
28	1930	-	.	.	Felt at <u>Tasuj</u> and <u>Khaneh</u> (ke/7 Mord.)
29	0030	-	.	.	<u>Lar</u> strongly shaken (et/9 Mord.)
29	053532	36.4 - 57.5	.	(10)	(NEP)
29	104944	38.0 - 58.1	.	(5)	(NEP)
29	115523	38.0 - 58.1	.	(4)	(NEP)
29	143502	36.7 - 54.8	.	(10)	(NEP)
31	140733	36.4 - 53.0	.	3.6	(NEP)
Aug. 1	232249	34.8 - 46.4	4.9	.	225 Strongly felt at <u>Qasr-i Shirin</u> (IC, US, ke, et/11)
2	070157	39.2 - 43.9	.	(10)	(TSK)
2	191255	38.0 - 56.1	.	(6)	(NEP)



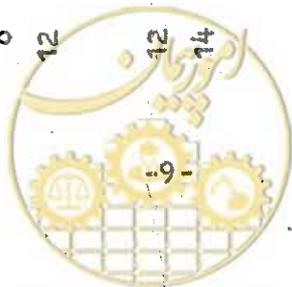
Strongly felt at Niar and Ardabil area, (et/4 Khord.)

Date	Time	Intensity	Duration	Direction	Notes
May 25	010611	39.2 - 44.4	(10)	(TSK)	
May 26	225625	38.5 - 43.9	(9)	(TSK)	
May 27	010324	38.7 - 43.4	(12)	(TSK, BC)	
May 30	112851	32.9 - 50.3	4.4L	(GDZ)	
Jun. 1	123629	26.66 - 60.52	4.7	(IC, US, BC, UR)	
Jun. 2	074459	38.0 - 57.6	(10)	(NEP)	
Jun. 2	205112	37.2 - 56.7	(9)	(NEP)	
Jun. 2	231159	38.0 - 58.1	(6)	(NEP)	
Jun. 3	070915	38.0 - 58.1	(6)	(NEP)	
Jun. 4	162131	25.50 - 61.13	4.7	(IC, US, UR)	
Jun. 8	223002	37.6 - 56.6	(9)	(NEP)	
Jun. 9	044645	37.7 - 56.6	(9)	(NEP)	
Jun. 9	231608	39.4 - 45.7	(9)	(TSK)	
Jun. 10	055231	40.0 - 53.0	(5)	(NEP)	
Jun. 11	043521	38.0 - 57.8	(8)	(NEP)	
Jun. 16	0315	-	4.5L	(GDZ)	
Jun. 20	172823	31.9 - 50.0	5.3	(IC, US, UR, BC, QU, )	
Jun. 21	163508	27.48 - 57.52	5.2	(NEP)	
Jun. 24	084525	37.2 - 58.3	3.8	(TSK)	
Jun. 25	044748	39.7 - 44.5	(9)	(NEP)	
Jun. 27	215844	37.8 - 57.3	(8)	(NEP)	
Jun. 28	094741	38.0 - 58.1	(6)	(IC, US, UR, BC)	
Jun. 28	223213	32.38 - 56.26	4.7	(TSK)	
Jul. 1	021327	38.3 - 46.4	4.5	(TSK)	
Jul. 1		-	(10)		

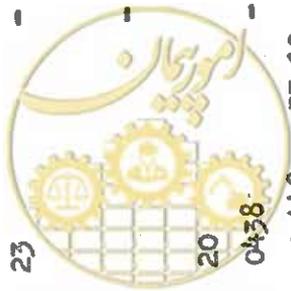
Felt in Jahrum (ke/28 Khord)

Continuous earthquakes have shaken the Ferdows areas of Hasarabad and Hussainabad, causing no damage (et/11 Tir)

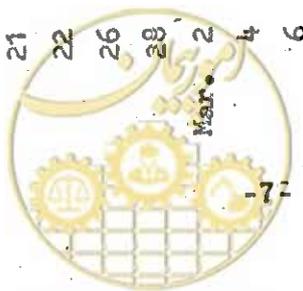
May	1	020857	37.6 - 56.6	.	4.0	(NEP)	
	1	030749	37.6 - 56.6	.	(9)	(NEP)	
	1	050730	37.6 - 56.6	.	(10)	(NEP)	
	1	073235	37.6 - 56.6	.	(10)	(NEP)	
	2	103240	37.8 - 57.6	.	(9)	(NEP)	
	3	001127	37.8 - 57.6	.	(9)	(NEP)	
	4	172526	37.8 - 57.1	.	(9)	(NEP)	
	8	020857	37.6 - 56.6	.	4.0	(NEP)	
	8	174550	37.3 - 56.4	.	(9)	(NEP)	
	12	122247	35.5 - 53.1	.			29 V Widely felt in Amol, Babol, Sari, Babolsar and in towns of Mazandaran causing concern and panic; no damage (IC, US, ke, et/23 Ord.)
	12	190908	27.88 - 56.50	4.9	4.7		(IC, US, UR)
	14	004456	38.6 - 44.4	4.5	4.5		At Ghotur several houses were destroyed and Mokhal was involved in a slide where about 40 animals were killed. The shock was felt in Khoi and Shahpur. (UR, IC, US, TBC, et/27 Ord., pr)
	14	160344	38.5 - 48.2	.	(10)	(TSK)	
	15	0735	-	.			Two shocks (0730, 0735) at Masjid-e Soleyman causing panic, (et/27 Ord.)
	18	20	-	.			Strongly felt in Germl and Lenkoran (?) (ke/30 Ord)
	20	1730	-	.			South of Ferdows, strongly felt. At Sarayan and A districts a number of houses were damaged. (et/1 Khor)
	21	094124	38.4 - 44.8	.	(9)	(TSK)	
	22	1130	-	.			A comparatively strong earthquake in Bandar Abbas caused fear among the inhabitants (et/1 Khor)
	22	121220	38.0 - 58.1	.	(7)	(NEP)	



Mar. 25	2030	-	.	VI	In the village of <u>Kazlag</u> in the dependencies of <u>Khmrush Rustam-i Khalkhal</u> , 80 of the 100 houses were damaged without casualties (ke, et/6 Far.)
26	07	-	.	IV	More shocks at <u>Kazlag</u> and <u>Sarejshah</u> in <u>Khalkhal</u> (et/7 F) (NEP)
26	093747	38.7 - 53.8	(10)		
26	100102	38.7 - 53.8	(10)		
26	120202	39.00 - 53.50	4.4	V	Strongly felt at <u>Nebitdagh</u> and <u>Bala Indac</u> (IC, UR, NEP)
26	132420	39.3 - 54.5	3.6		
29	21	-	.	VI+	In the village of <u>Khayvar-i Khalkhal</u> houses were completely ruined without casualties (et/10 Far.) (NEP)
Apr. 2	23	-	.	VII	In the environs of <u>Adharshahr</u> in <u>Azarbaijan</u> a strong earthquake caused heavy damage in the village of <u>Mirza Rashin</u> where 2 people were killed. (et, ke/14 Far.)
2		-	.		Strongly felt in the region of <u>Mehranrud</u> in <u>Fars</u> and in <u>Bi-Rashin</u> in the <u>Isku</u> province (et/14 Far.)
3	20	-	.		More shocks in <u>Lar</u> causing panic (et/16 Far.)
7	0438	-	.		Strongly felt in <u>Shiraz</u> (ke/19 Far.)
9	010448	37.10 - 54.51	4.2	IV	Felt in <u>Gorgan</u> (IC, US, ke/21 Far.) (US)
12	230731	40.5 - 43.0	.		(NEP)
13	051111	38.2 - 57.0	(9)		(NEP)
14	120202	37.8 - 57.4	(9)		(IC, US, UR)
14	131323	27.79 - 54.68	5.0	50	(NEP)
24	120239	38.0 - 58.1	(6)		Felt in the <u>Kazirun</u> area where it caused panic, (IC, US, UR, et/10, 11 Ord.)
29	043739	29.59 - 51.54	5.6	21	(NEP)
30	130705	37.9 - 56.9	.		3.6



Date	Time	Mag. Range	Mag.	Dir.	Mag.	Dir.	Mag.	Dir.	Notes
Feb. 8	232334	29.82 - 50.95	5.1	5.1	42	(IC, US, UR)	Felt in Mianeh (GDZ)		
11	0420	-	.	.		(NEP)			
12	191914	38.1 - 58.2	.	(8)		(IC, US, UR, QU)			
13	111125	24.99 - 62.75	5.2	5.1	27		Slight damage in the Bozorghai area (12/29 Beh.)		
16	-	-	.	.		IV			
16	213942	36.1 - 57.9	.	(10)		(NEP)			
19	085306	40.0 - 53.0	.	(5)		(NEP)			
19	221220	32.2 - 50.7	.	3.5L		(GDZ)			
21	101650	38.1 - 58.0	.	(6)		(NEP)			
22	033313	39.7 - 43.9	.	(9)		(TSK)			
26	044538	37.8 - 57.1	.	(9)		(NEP)			
28	194345	38.5 - 48.2	.	(10)		(TSK)			
Mar. 2	2330	-	.	.		III	Strongly felt at Sananded (ke/13 Isf.)		
4	173549	30.14 - 57.61	4.3		53	(IC, US)			
6	202715	39.6 - 43.3	.	(11)		(TSK)			
7	172024	39.2 - 46.2	.	(9)		(TSK)			
8	123115	36.4 - 54.7	.	(10)		(NEP)			
10	031426	37.5 - 48.3	.	(10)		V	Violent shock at Ki-i Balaj (37.70° - 48.35°) of t Khalkhal district causing panic and slight damage to houses. (TSK, et/11 Isf.)		
12	174341	28.36 - 53.26	4.5	4.7	51	(DEM, IC, US)			
18	132002	37.9 - 57.8	.	(7)		(NEP)			
18	204145	36.5 - 55.8	.	(10)		(NEP)			
18	223817	36.6 - 55.5	.	(9)		(NEP)			
23	081204	38.4 - 45.9	.	(9)		(TSK)			
24	064313	37.3 - 56.6	.	(10)		(NEP)			
24	065622	37.3 - 56.6	.	(9)		(NEP)			



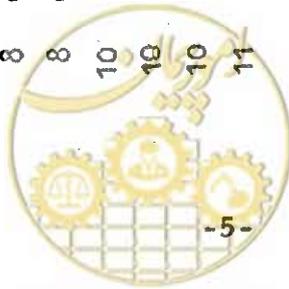
Jan.	26	022553	36.81	-	54.47	4.8	4.7	17	VI	90	Widely felt, causing panic in places without damage. The shock was felt in <u>Gorgan (V+)</u> , <u>Bandar Shah (V-)</u> , <u>Behshahr (IV)</u> , <u>Akayyla</u> , <u>Adilap</u> , <u>Bait-Hajji</u> , <u>Chalayuk</u> , <u>Gudra Olum</u> , <u>Gazan Kuli</u> , <u>Karadefich</u> , <u>Shahman</u> in the USSR and <u>Gonbad-e Kabus (IV)</u> , also at <u>Chikishlar (III)</u> . To the south of <u>Gorgan</u> it is alleged that the shock caused more serious damage. (IC, US, UR, NEP, ke/6 Bah., et/6 Bah.)
	27	0555	-	-	-	.	.		V-		Strong aftershock, causing panic in <u>Bandar Shah (et/8 B)</u>
Jan.	27	104C37	40.0		53.0	.	(6)		(NEP)		
	30	093021	40.0		53.0	.	(6)		(NEP)		Felt at <u>Gonbad (pr/GDZ)</u>
	30	0230				.	(5)		(NEP)		
	31	081010	40.0		53.0	.			(NEP)		
	31	185427	37.3	-	55.4	.	3.5				
Feb.	1	0651				.			III		Felt in <u>Baneh</u> and vicinity (ke/13 Bah.)
	1	0815				.			IV		Strongly felt in the region of <u>Marand</u> (ke/13 Bah.)
	1	0931				.			III		More shocks in <u>Baneh</u> (ke/13 Bah, TAB)
	1	115120	39.2	-	44.4	.	(9)		(TSK)		
	2	115626	37.6	-	56.6	.	(9)		(NEP)		
	2	145415	38.2	-	58.1	.	(6)		(NEP)		
	3	111826	28.0	-	58.1	.	(5)		(NEP)		
	4	102056	38.0	-	58.1	.	(7)		(NEP)		
	5	202354	38.6	-	45.7	5.1	4.4	39	V+	160	Strongly felt at <u>Shabistar</u> , <u>Tasui</u> and <u>Yekan Oliya (V)</u> causing panic but no damage. Minor damage reported from some villages of <u>Marand</u> . <u>Khoi</u> and <u>Shahmur</u> also shaken as well as <u>Marand</u> for 5 seconds. The shock was reported from as far as <u>Goris</u> in the USSR where it was felt with an intensity IV. (IC, US, UR, TSK, et/17 Bah., ke/17 Bah., et/21 Bah.)
	5	2357				.			III+		Felt at <u>Khoi</u> followed by other shocks (et, ke/21 Bah.)
	7	010307	32.64	-	48.21	4.7	4.6	45	IV+	75	Strongly felt at <u>Andimeshgh</u> and in the <u>Dizful</u> area within a radius of 75 kilometres; it caused no damage. (IC, US, UR, ke/19 Bah.)

The shock was strongly felt in Sabzevar, Quchan, Bojnurd, and Shirvan. It was also felt, awaking people in Nishapur. The earthquake was also felt in Mashhad, and Meymeh, as well as in Ashkehabad. Figure 1. Seismic moment  $M_0 = 2 \times 10^{24}$  dyne-cm. Thrust, 100°E.

(Data based on field study of event as well as ELS file IC, US, QU, BC, NEP, MOS)

Successive shocks at Dahaneh-yi Ojaq (ke) (NEP)

Jan. 4	110525	38.0	- 58.1	.	(6)	(GDZ)	
4	191657	35.8	- 54.7	.	2.6L	(GDZ)	
5	184545	33.9	- 50.5	.	3.5L	(GDZ)	
6	191845	35.3	- 49.4	.	2.5L	(NEP)	
8	081641	37.4	- 58.0	.	(8)	(NEP)	
8	094715	38.0	- 57.3	.	(9)	(IC, UR, ICS)	
10	112256	31.7	- 48.3	.	4.0	(GDZ)	
10	204408	32.7	- 49.4	.	3.5L	(IC, UR, US)	
10	231636	32.40	- 48.68	4.6	4.5		
11	071422	37.3	- 58.5	.	3.6		
11	1843	-	-	.			Sharply felt in <u>Quchan</u> and neighbouring areas (aus. panic and slight damage (NEP, et/21,22 Dey., ke)
12	083325	38.0	- 58.1	.	(6)		Strongly felt in <u>Gorgan</u> and vicinity (et/22 Dey.) (NEP)
13		-	-	.			Small and continuous shocks at night in the <u>Dahaneh Ojaq</u> area (et/24 Dey.)
16	2138	-	-	.			A series of shocks in <u>Osmuyeh</u> starting at 0415. 16h15m strong shock of III+; shocks culminating at 214 with a shock that broke window panes (et/28 Dey.)
18		-	-	.			Strong earthquake caused panic and also some damage at <u>Minab-i Marand</u> (? <u>Minab-i Marand</u> = 38.72 - 45.80, or <u>Minab-i Marand</u> = 38.43 - 45.92) (et/29 Dey.)
18		-	-	.			Midnight, a comparatively strong shock lasting 3 s caused some damage in the <u>Sabzevar</u> region (et/29 Dey.)
20	1058	-	-	.			Felt in <u>Arak</u> (ke/? Bah.)
22	090340	37.4	- 61.8	.	(10)		(NEP)



Macroseismic data - References

Time	GMT	Epicentre	M <sub>b</sub>	M <sub>s</sub>	h	I <sub>o</sub>	r <sub>3</sub>
Jan. 1	100200	37.4 - 57.3	.	(10)			
1	21	-	.	(10)			
2	100929	36.4 - 58.8	.				
3		-	.				
3	031637	37.10 - 57.83	5.6	6.0	4	VIII	250

Two shocks felt in Maku (ke)

Strongly felt at Zirab (et/15 Day)

Damaging earthquake in the baksh of Bam, shahrestan Isfarain. In all 5 people were killed and 47 were injured; about 150 animals were killed and more than 300 houses were ruined. Estimated total damage 10 million Rls.

In Dahaneh-yi Ojaq 27 houses were destroyed and 5 people killed; a great number of cows and sheep perished. The water from the four local qanats diminished after the earthquake but afterwards finally returned to their former yield without being cleared out. About 3 kilometres to the northeast of the village ground deformations are still visible, most probably associated with a large-scale incipient landslide. The village was rebuilt lower down on level ground.

In Karizdar all 64 houses were ruined and three people were injured. The village was rebuilt by the government. The village of Bakrabad which is situated in the plains suffered less damage; a few flat roofs collapsed without casualties. In Dastjird two houses collapsed injuring some people. In Bam the shock was strongly felt causing some damage to the public health building, a new brick construction. There was no damage in Abbasabad and Safiabad, but the shock caused panic. In Dahaneh-yi Shirin a few flat roofs collapsed and crockery fell down from the shelves. About five kilometres to the north of the village large masses of rock slumped blocking a spring of water and causing wide cracks to form. A large boulder came down from the hills. Qanats of drinking water ran dry temporarily.



assessment in epicentral regions of Iranian earthquakes requires further study. The location of the epicenter and of its major after-shocks are shown by stars. for the latter case open.

In a catalogue like this, composed from press reports and from microseismic data estimated using different methods and instruments, many errors will doubtless be found. Also, with the great number of place names, although we have followed the official Village Gazetteer of Iran, mistakes are unavoidable. We would be most grateful, therefore, for any corrections, or notices of omissions, that could help to eventually produce an earthquake catalogue of Iran for this century that is as accurate and reliable as possible.



the related macroseismic information which material in combination with field evidence, permits a re examination of focal estimates delineation of seismic zones establishment of recurrence relations and the assessment of seismic risk for engineering purposes

Entries in this catalogue have been arranged to read as follows:

The date and origin time of the event is given in hours minutes and seconds(GMT). When no seconds or minutes are shown the time refers to macroseismic information and the time at which the shock was felt locally(GMT). The focal location of the event estimated from instrumental results, i. e. the geographical coordinates of the epicenter and focal depth in kilometres, is shown and the agency reporting this location is given first in the reference column.

Other agencies reporting different focal estimates are also shown. In all cases magnitude values are the average of those reported by different stations. In the case of K-TKSE magnitudes determined by the Soviet networks (TSK and NEP) these / are given in brackets. Magnitudes derived by GDZ refer to local values of the Tehran station and they are marked with an L.

The radius of perceptibility  $r_3$  in kilometres and the maximum intensity  $I_0$  (MM), when known, are also given. Asterisked entries indicate minimum values.

The location maps prepared for two of the stronger earthquakes in 1969 show the relative intensity of the event at different localities. Referring to Figure 3 of Bulletin No. 53 symbols (a) to (d) designate localities at which intensities differed by approximately one unit of intensity rating on an arbitrary scale. No isoseismals were drawn on these figures as the problem of Intensity

As an outgrowth of the Joint Project in Engineering Seismology initiated early in 1973 by the Plan & Budget Organization, the Arya-Mehr University in Tehran and the Engineering Seismology Section of Imperial College, London, the documentation of the seismicity of Iran has now reached the stage which allows the publication of some preliminary results on the distribution of earthquakes in Iran for this century.

This is the second issue of a bulletin to be published by the Plan & Budget Organization at irregular intervals which, hopefully, and in a short period of time, will cover the documentation of all seismic events found to have occurred during the present century. The principle emphasis of this presentation is on the engineering effects of earthquakes in Iran rather than on the purely seismological aspects of the events.

The much needed assessment of earthquake risk in Iran cannot be achieved by relying solely on the local or world-wide seismograph data available. The five first class seismic stations at present in existence in Iran are inadequate to locate with accuracy small to moderate local earthquakes which can be equally as damaging as larger shocks. The identification and assessment of macroseismic effects, therefore both contribute to the information available and is invaluable, in combination with the instrumental data in reducing bias in the determination of focal parameters particularly of focal depth, for earlier events. A re-location programme based on a joint epicenter determination technique and using macroseismic data is already well advanced. The purpose of this catalogue is thus to present in an orderly fashion both instrumental data and





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# IRAN EARTHQUAKES 1969

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