



UNIVERSITY OF CAIRO

HELWAN OBSERVATORY



# SEISMOLOGICAL REPORT

## FOR THE YEAR 1945

*Published under the Direction of*

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1954



**SEISMOLOGICAL REPORT**  
**1945**



# HELWAN OBSERVATORY



## Sismological Bulletin

Constants of the Station:

$$\phi = 29^{\circ} 51' \text{N.} \quad \lambda = 31^{\circ} 20' \text{E.} \quad h = 115 \text{ m.}$$

NATURE OF STRATA: Limestone rock.

INSTRUMENTS: Galitzin Wilip Aperiodic Seismograph, Photo Galvanometric Registration, Vertical Component.  
Milne-Shaw Seismographs, Photographic Registration, two Horizontal Components.

Component	Date from which Constants apply	Pendulum Free Period T sec.	Galvanometer Free Period T <sub>1</sub> sec.	Damping Constant	Transmission Coefficient K	Static Magnification V
N	Monthly	12.0				250
E	"	12.0				250
Z	9-6-1938	11.16	11.13	+0.05	175	1000

The Seismological station at Helwan is superintended by Assis. Professor Azouz Ismail who carried out the measurements contained in this volume.

\*\* Confused with the succeeding earthquake.

\*\*\* Lost in changing the pader.



No.	Date 1945	Comp.	Phase	G.M.T.			Period Sec.	Amplitude			$\Delta$ Kms.	Remarks
				H	M.	S.		$A_n$ $\mu$	$A_e$ $\mu$	$A_z$ $\mu$		
1	1	Z Z ZN N N N	P e e S PS e F	1	31	21 46 23 04 30 18				7265	Preceded by microseisms	
				3	0							
2	6	Z Z	P e	00	32	24 00					Very weak	
3	6	Z Z Z N ZN	P PP PPP S SS F	20	10	15 37 47 08 48				2345		
				0	7							
4	8	Z Z Z ZN Z	P PP S SS e F	22	45	12 24 39 54 09				1445		
				23	4							
5	9	Z Z Z Z N N	P i e e e (S) e F	21	41	02 15 33 06 36 38					" "	
				22	5							
6	11	Z Z Z Z ZEN	P PPP e e S F	2	07	57 26 45 14 58				2445		
				3	2							
7	12	Z Z Z Z NE N NE N N N	P e e PP S e PS e e M F	18	51	02 42 12 15 26 40 14 54 18 48	20	+ 38		9235	Preceded by microseisms	
				19								
				22	0							
8	13	Z Z Z E EN	eP e e e (S) F	12	10	06 30 00 33 57					" " "	
				13	5							
9	14	Z Z ZN N	eP e S SS F	1	17	55 06 38 48				1000	" " "	
				1	6							
10	15	Z Z Z N Z NE	eP PPP e e S SS F	5	33	32 12 15 41 55 50				2710	" " "	
				6	6							
11	15	Z Z NZ N	P e (S) (SS) F	17	26	16 58 12 54				2380	" " "	
				18	6							





No.	Date	Comp.	Phase	G M.T.			Period	Amplitude			$\Delta$	Remarks
				H.	M.	S.		Sec.	$A_n$	$A_e$		
								$\mu$	$\mu$	$\mu$	Kms.	
12	16	Z Z Z E N	P e PP S e F	13 14 15.0	49 51 52 59 00	18 53 36 42 24					9300	Preceded by microseisms
13	18	Z Z Z N	eP e (PPP) (S) F**	3	22 23 24 29	09 41 51 42						Very weak
14	18	Z N	eP (S) F	3 4 4.8	54 02	36 06						" "
15	27	Z ENZ Z Z	Pn Sn i i F	3	14 15	13 42 02 17					225	Local (not felt)
16	27	ENZ Z Z	Pn Sn S*	13	10 11	54 24 28					267	Very weak Local (not felt)
17	29	Z Z Z Z Z NE N N N	eP e e e PP S e PPS F	21	13 14 15 17 24 25 26	42 51 09 27 15 38 10 12					10035	Preceded by microseisms
18	February 1	Z EN Z	i i i F	8	16 17 18	54 42 42						" " "
19	1	Z Z Z	e e e	10	55 58 59	20 30 03						" " "
20	1	Z Z	eP e F	12	33 36	09 15						" " "
21	1	Z Z Z	eP e e F	19 20 20.4	58 06 10	43 48 42						" " "
22	2	Z Z N N	Pn Pg Sn Sg F	15	25 26	06 30 09 39					600	Local (not felt)
23	3	Z Z Z	eP e e F	11	56 57	31 08 39						Very weak
24	4	Z ENZ Z Z Z	P e e e e F	1	46 48 49 50	40 02 53 11 27						" "
25	8	Z Z Z	eP e e F	14	14 18 22	30 12 15						" "
26	10	Z NZ NZ E E E	iP PP PPP e S e	5	10 13 15 20 21	26 24 36 20 51 15					9335	Dilatation

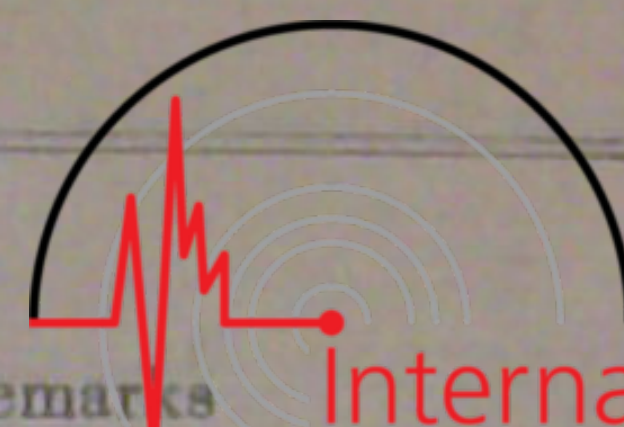






No.	Date	Comp.	Phase	G.M.T.			Period	Amplitude			$\Delta$	Remarks		
				H.	M.	S.		Sec.	$A_n$	$A_e$			$A_z$	
				$\mu$	$\mu$	$\mu$				Kms.				
37	11/12 (contd.)	Z	PP			59								
		N	S	22	01	00								
		N	SP		02	03								
		N	sPS			48								
		N	eF		03	24								
				1.1										
38	12	Z	iP	1	42	09					1555	Dilatation		
		Z	PP			18								
		Z	e			43	18							
		Z	S			44	45							
		NZ	SS			45	03							
		N	MF			49	48	12	+71					
				3.0										
39	12	Z	e	20	55	30						Very weak		
		Z	e		56	00								
		Z	e		58	33								
		Z	iF			36								
		N	F		21	1								
				21.1										
40	17	Z	e	21	56	07						Near earthquake		
		Z	e			18								
		NZ	iM	22	01	36								
		N	F		03									
				22.3										
41	18	Z	e	00	12	50					11610			
		Z	PP		16	15								
		N	S		24	00								
		N	PS		25	24								
		N	SS		31	16								
			F		2.6									
42	18	Z	e	3	18	18								
		Z	e		19	09								
		N	MF		21									
						3.6								
						8	07	28					3335	
43	18	N	eP											
		N	(S)		12	26								
		N	e		13	09								
		N	e		14	22								
		N	ScS		18	00								
		N	MF		19	48	12	-96						
						10.3								
44	18/19	N	eF	23	24	00						Very weak		
						0.2								
45	20	N	iPn	8	00	46					1077			
		N	SnF		02	36								
				10.2										
46	23	N	eF	6	15	26						" "		
						7.0								
47	23/24	N	eP	23	33	26					12065			
		N	e		37	06								
		N	PP			48								
		N	PPP		40	18								
		N	e		41	30								
		N	e		42	06								
		N	e		43	18								
		N	e		44	12								
		N	SS		53	18								
		N	MF		00	42	54	18	+43					
						3.0								
						4	57	08						
						5.1								
48	30	N	i			26								
		N	iF											
						5.1								
		49	31	N	iPn	22	11	42					1410	
				N	Sn		15	03						
N	S*				16	00								
N	Sg					38								
	F				24	0								
				24.0										
50	April 4	N	e	00	46	48								
		N	e		51	00								
		N	e		57	30								
		N	i		58	30								
		N	i		59	42								
						59	42							





No.	Date	Comp.	Phase	G.M.T.			Period	Amplitude			Δ	Remarks
				H.	M.	S.		Sec.	A <sub>n</sub>	A <sub>e</sub>		
				μ	μ	μ	Kms					
50	4 (contd.)	N N	i i F	01 2.4	00 01	54 50						
51	5	N	e F	5 5.6	27	44						Very weak
52	7	N N N	e e M F	10 11 11.7	56 14	06 28 03	10	+10				
53	10	N N N N N N N N	P e PP S e e e M F	1 3.0	34 37 38 45 46 47 12	36 54 08 30 54 38 18				9990		
54	10	N N N	(e) e M F	16 17 17.6	15 37 0.1	34 42						" "
55	11	N	e F	16 17.8	20	48						" "
56	14	N	M F	5 5.7	17							" "
57	15	N N N	P e e	2	47 48 51	54 30 06						
58	15	N N	ePg eSg F	14	38 41	52 57				44		" " Local (not felt)
59	16	N	ePn e	11	20	36 52						Very weak Local (not felt)
60	18	N N N N N	(eP) S e PS M F	13 15.0	17 27 28 55	30 36 54 18				8890		
61	19	N N N N N	(-PKKP) (SPK) (PP) e e e F	13 16.5	24 27 28 35 45	30 12 24 48 15						Far Earthquake
62	19	N N N N	eP PP e SS F	17 18 18.6	54 56 00 04	12 00 14 24				5420		
63	21	N N N	e e e F	14 14.6	14 15	24 20 48						Very weak
64	22	N	e F	10 11.0	17	00						
65	29	N N N	iP e e F	2 3.4	45 46	18 12 24						" "
66	May 9	N N N N	i e e e F	3 4 5.0	54 57 01 04	18 54 18 29						





No.	Date	Comp.	Phase	G.M.T.			Period Sec.	Amplitude			$\Delta$ Kms.
				H.	M.	S.		$A_n$ $\mu$	$A_e$ $\mu$	$A_z$ $\mu$	
67	10	N N	P M F	00 1'0	01 28	38 28	15	+7			
68	10	N N	e e F	5 6'0	44 45	06 06					
69	10	N	M F	18 20'0	52						
70	11	N N	ePn Sn F	7 7'6	27 28	35 50				721	
71	11	N N	ePn Sn F	19	34 35 38	42 30				444	
72	11	N N N	eP e e F	20 21'0	21 25	46 26 54				Very weak	
73	19	N N N N N	e e e e F	15 18'0	25 35 36 37 40	54 15 09 08 12					
74	25	N N N	Pg e e F	5	28 30	16 36 45				Local (not felt)	
75	29	N	i F	17 18'9	58	00				Very weak	
76	June 1	N N N	e e M F	22 23 23'6	43 51 00	56 27					
77	3	N N N N N	e e e e M F	13 14 15'7	31 32 33 39 08	38 12 40 32					
78	4	N N N N N N N	eP e PPP s i i e M F	12 14'5	17 18 23 24 26 36	00 33 54 06 36 03 06 57	12	-16		4445	
79	7	N N N N N	Pn e Sn e S* Sg F	1 2'1	23 25 26	18 47 24 06 12 43				1243	
80	11	N	M F	15 15'6	29					Very weak	
81	14	N N	i M F	00 1'3	03 20	18				" "	
82	14	N N N	e e i F	4 4'4	09 10	30 48 06				" "	
83	20	N N N	eP SKS SKKS	1	36 47	39 06 20				9945	





No.	Date	Comp.	Phase	G.M.T.			Period	Amplitude			Δ	Remarks
				H.	M.	S.		Sec.	A <sub>n</sub>	A <sub>e</sub>		
				μ	μ	μ				Kms.		
83	20 (contd.)	N N	S e F		48	28 27						
				3.1								
84	20	N N N N N N N	eP e e SKS S e e M F	17	48	00 12 06 55 58 26 42 59 12 18 00 36 21.0	15	+ 7			9780	
85	27	N N N N	(PPP) (PS) e e F	13	30	30 46 39 09 43 36 17.0					13110	
86	29	N	i F	4	48	18						Very weak
				5.8								
87	30	N N N N N N	ePKP SKS e S e e F	5	52	02 12 59 01 54 02 36 03 46 09 28 7.0					14890	
88	July 11	E E	e e F	15	13	40 55						" "
				15.6								
89	15	E E E	eP e (SKS) F****	5	48	54 06 21						
90	22	E E E	eP S M F	10	50	36 20 11 03 12.2	18	+14			7120	
91	23	N N N N N	eP e S e M F	4	05	36 24 18 36 34 6.5	15	-43			7090	
92	31	N N	e M F	5	14	12 42 6.6						
93	August 1/2	E NE N N N N	eP e e S M F	22	35	21 30 18 26 00 23 0.5	18	+ 5			8945	
94	2	E N	eP S F	18	04	17 30 19.3					9000	
95	3	N	e F	4	38	00 6.5						" "
96	4	E E E E E	P PP PPP S e F	14	51	41 51 59 14 40 16.0					1500	
97	6/7	Z N EN	e e M F	23	35	18 36 00 08 1.0						Preceded by Microseisms Very weak
98	7	Z Z	eP PP	22	20	48 24					9980	Preceded by Microseisms









No.	Date	Comp.	Phase	G.M.T.			Period	Amplitude			Δ	Remarks
				H.	M.	S.		Sec.	A <sub>n</sub>	A <sub>e</sub>		
				μ	μ	μ	Kms.					
112	29 (conid.)	Z	e	10	39	36				15480	Preceded by microseisms	
		Z	PKP		42	00						
		Z	e			17						
		Z	PP		44	48						
		Z	SKP		45	32						
		Z	SKKS		51	33						
			F**									
113	29	Z	e	12	52	34						
		Z	e		53	15						
			F	14.2								
114	29	Z	eP	15	15	04						
		Z	i			16						
		N	e		25	10						
			F	17.2								
115	30/31	Z	eP	23	50	08					Very weak	
		Z	e		51	32						
		Z	e		53	54						
		Z	e		55	00						
			F	2.0								
116	September 1/2	Z	ePKP	23	03	35	18			14445		
		Z	e		04	18						
		Z	(SKP)		06	51						
		Z	e		09	18						
		Z	e			51						
		E	(S)		13	45						
		E	e		25	48						
		E	M		00	07						34
			F	3.0								
											— 33	
117	2	Z	P <sub>n</sub>	11	55	15				544	Felt in Cairo	
		N	P*			24						
		N	S <sub>n</sub>		56	12						
			F	13.0								
118	3	Z	e	13	09	16					Preceded by microseisms	
		EN	M		30							
			F	14.4								
119	4	Z	e	3	02	00					" " "	
		Z	e			10						
			F	4.0								
120	5	Z	e	1	38	45					" " "	
		EN	e		43	00						
			F	2.0								
121	5/6	Z	PKP	22	07	48	18			13890		
		Z	i		08	28						
		Z	PP		09	30						
		Z	e		10	06						
		Z	PKS		11	25						
		Z	PPP		12	12						
		Z	e		14	30						
		Z	SKS			55						
		Z	eS		17	28						
		E	e		22	15						
		N	M		23	02						38
			F	1.6								
											— 11	
122	6	Z	e	1	46	33					Very weak	
		Z	e		47	54						
		Z	e		59	07						
			F	4.0								
123	6	Z	e	4	29	49					" "	
		Z	e		30	05						
		Z	e			29						
			F	4.7								
124	6	Z	e	15	09	42					" "	
		Z	e		10	12						
		Z	e		11	06						
		Z	e		12	08						
		NE	e		19	36						
		N	M		55							
			F	17.4								
125	7	ZN	iP	15	52	09				1835	Dilatation	
		Z	PP			24						
		ZN	FPP			33						





No	Date	Comp.	Phase	G.M.T.			Period	Amplitude			Δ	Remarks
				H.	M.	S.		A <sub>n</sub>	A <sub>e</sub>	A <sub>z</sub>		
							Sec.	μ	μ	μ	Kms.	
125	7 (contd.)	ZE ZN	e S F		55	04 09						
				16.4								
126	8	Z Z N E	e e e M F	3	52 57	21 54						Preceded by microseisms
				4	11	48						
				5.0								
127	9	Z Z Z ZE Z N N E N	iPKP i e PP SKP e i SS i F	4	22	22 45					15635	Dilatation
					23	10						
					25	16						
					26	18						
					43	34						
					45	29						
				7.2								
128	9	ZN Z Z	i e e F	19	46	42 55						Very weak
					48	00						
				20.0								
129	12	Z Z Z Z Z N E E	iP e PP PPP e eS e ScS M F	00	57 58	43 04 54					3665	Dilatation
					59	18						
				1	00	37						
					02	58						
					05	06						
					08	05						
					13	09	6		-14			
				2.3								
130	12	Z Z Z	e e e F	16	32	42 30						Very weak
					35	06						
					36							
				17.0								
131	13	Z Z Z Z Z Z Z N N N	iPKP e PP e pPPP e e SKS S sS sPS F	11	35	45 15					12890	Compression h = 100 Kms.
					36	57						
					38	03						
					39	12						
						52						
					41	25						
					42	35						
					44	24						
					45	12						
					47	08						
				14.0								
132	14	Z Z Z Z Z Z E Z E	iP e e e e e S PS M F	2	13	27 33					7555	Compression
					14	12						
					15	21						
					16	16						
					17	09						
					22	27						
					42	48						
					42	15	22		+34			
				4.3								
133	19	N	e F	10 11.5	55	50						Very weak
134	19	Z Z Z Z Z Z N N N	iP pP sP e e PP S e PS F	12	40	34 00					9510	Dilatation h = 100 Kms.
					41	14						
					42	05						
					43	06						
						51						
					50	54						
					51	07						
					52	02						
				14.0								
135	20	Z Z	e e F***	5	54	20 21						Preceded by microseisms
					55							





No.	Date	Comp.	Phase	G.M.T.			Period	Amplitude			Δ	Remarks
				H.	M.	S.		Sec.	A <sub>n</sub>	A <sub>e</sub>		
				H.	M.	S.	Sec.	μ	μ	μ	Kms.	
136	22 (contd.)	Z Z Z Z Z	e e e e e F**	9	29 30 31 34	39 21 42 48 29						Preceded by microseisms
137	22	Z Z Z N Z NE N N N	iP (PP) e (S) e i i M F	10	21 23 25 27 28 31	21 51 18 42 51 18 36 50	10	+ 13			2665	Compression
138	23	Z Z NE	eP e (S) F	15	45 47 54	33 34 48						Preceded by microseisms
139	24	Z Z Z Z	(eP) e i i F	1	21 23 25	33 54 22 09						
140	25	Z Z Z	e e e F	13	00 01	09 51 30						Very weak
141	26	Z	e F	13	45	47						" "
142	27	Z Z Z	e e e F	9	03 04 05	40 08 31						" "
143	29	Z Z	e e F	2	10 11	12 12						" "
144	29	Z Z	e e F	5	04	14 27						" "
145	29	Z Z Z	e e e F	7	02 03	18 39 10						
146	October 1	Z Z Z Z N N N N N	P e PP e e S e M F	5	23 24 25 28 29 38	00 15 05 51 20 06 54 54	12	- 30			3445	
147	2	Z Z	e e F	00	49	05 30						Very weak
148	6	Z Z	e e F	22	16	37 48						" "
149	7	EN N	e M F	13 14	48 26	36						" "
150	9	Z Z Z Z	e e e e F	3	17 19	16 25 15 31						" "
151	9	Z Z	iP e	14	49	09 15						Dilatation





No	Date	Comp.	Phase	G.M.T.			Period	Amplitude			$\Delta$	Remarks
				H.	M.	S.		Sec.	$A_n$	$A_e$		
								$\mu$	$\mu$	$\mu$	Kms.	
151	9 (contd.)	Z Z EN	PP PPP S F		52 54 59	15 09 26						
				17.4								
152	13	Z Z NE	P e (S) F	00	39 49	06 11 42					9555	Very weak
				2.0								
153	14	Z Z Z Z	eP e e e F	4	27	05 12 23 48 10						" "
				6.3								
154	15	Z Z Z	iP e e	18	33 34	05 34 27						Dilatation Very weak
155	16	N E EN N N N	eP e SKS e S PPS F	16	16 19 26 27 28	12 51 33 50 06 33					10065	
				19.0								
156	18	Z Z Z Z	e e e e F	11	28 29	06 21 05 39						" "
				11.6								
157	21	Z Z Z Z N	iP e e PP S F	3	33 36 43	05 22 42 03 00					8620	Compression
				5.3								
158	25	NZ Z Z Z Z N N N N	iP PcP e PP e e SKS S e e F	15	11	18 24 06 42 35 32 36 03 28 36					9780	Dilatation
				17.0								
159	26	Z N E E	P PPP S SS F	13	59 14	21 42 09 25					1665	
				16.0								
160	27	Z Z E	ePKP e e F	11	43 52	12 28 45						Very weak
				12.8								
161	28	ENZ Z Z Z Z N E N	P e PP PPP e e S M F	00	22	00 18 30 42 10 24 24 04 36	9	+57			2510	
				2.5								
162	28	Z Z Z	iP i i	5	56 57 59	45 32 27						Dilatation Very weak
163	29	Z Z	e i	5	18 19	51 12						" "
164	29	N E	e e	11	18 19	36 21						" "



No.	Date	Comp.	Phase	G.M.T.			Period	Amplitude			$\Delta$	Remarks
				H	M.	S.		Sec.	$A_n$	$A_e$		
								$\mu$	$\mu$	$\mu$	Kms.	
164	29 (contd.)	NE	M F	12 13.0	03							
165	29	N	e F	13 14.1	55	42						Very weak
166	November 3	ENZ NE E	Pn Sn S* F	14 15.3	56 57	03 54 06					477	
167	3	Z Z Z NE N N	eP e PP e S PS F	22 24.0	22 25 33 34	09 22 51 06 22 27					10445	
168	7	NE NE	e M F	23 23.5	04 11	45						" "
169	8	Z Z E E	eP e e (S) F	9 10.0	16 17 22 24	00 03 38 50					7220	" "
170	8	Z Z E	eP e e F	10 11.0	12 15 19	11 05 52						" "
171	14	N N	i i F	00 0.7	03 06	06 42						
172	18	Z Z Z Z	Pn e P* Sn S* F	5 5.6	28 29	17 23 33 33 57					722	
173	18	Z	e F	7 7.7	26	10						" "
174	20	ZN Z N N N N N Z	P PPP e e S SS i i F***	6	31 32 33 34 35	00 11 06 45 42 10 46 23					1520	
175	22	Z Z Z Z Z	(ePn) i i i e e F	00 0.3	13	15 38 49 09 42 07						Near earthquake
176	22	Z Z Z Z Z	(ePn) i i e e e F	2 2.3	10 11 12 13	06 42 59 44 34 24						" "
177	22	Z Z E N N	P e SKS S PPS F	21 22.3	03 04 14 15 16	54 06 27 00 36					10335	Preceded by Microseisms
178	26	Z Z Z	iPKP PKKP e	5	31 32 34	51 09 10					17110	Dilatation









No.	Date	Comp.	Phase	G.M.T.			Period	Amplitude			$\Delta$	Remarks
				H.	M.	S <sub>4</sub>		Sec.	A <sub>n</sub>	A <sub>e</sub>		
								$\mu$	$\mu$	$\mu$	Kms.	
194	8	Z	ePKP	1	22	51					13280	
		Z	PP		24	09						
		Z	e		25	30						
		Z	PPP		26	44						
		Z	e		28	10						
		Z	SKS		29	45						
		Z	SKKS		31	08						
		E	PS	34	04							
			F	4.6								
195	8	E	M	20	15	36	14		-10			
			F	20.6								
196	9	ZN	eP	6	12	24					1890	
		N	i		54							
		N	i		13	03						
		N	is		15	33						
			F	6.5								
197	11	Z	P	10	27	56					3500	
		Z	e		28	24						
		Z	e		29	22						
		E	e		32	49						
		E	(S)		33	04						
		E	M		41	36						
			F	11.2								
198	13	Z	e	1	36	27						Very weak
		Z	e		37	40						
		Z	e		38	18						
		Z	e		39	09						
			F	1.8								
199	16	Z	i	11	59	24						" "
		NE	M		12	13						
			F		12.5							
200	16	NE	M	23	43							
			F		24.0							
201	18	Z	eP	3	29	34					3390	Preceded by microseisms
		Z	e		30	13						
		Z	(PP)		28							
		NE	s		34	42						
		N	e		36	06						
			F	4.2								
202	18/19	Z	Pn	23	55	04					688	" " "
		Z	e		21							
		Z	Pg		34							
		EN	Sn		56	14						
		Z	i		45							
			F	0.5								
203	20	EZ	iP	4	12	15					10165	Dilatation
		Z	i		51							
		Z	ePP		15	45						
		Z	e		18	18						
		E	i		23	00						
		Z	PS		24	15						
		Z	PPS		48							
			F	6.0								
204	21	Z	P	18	41	21						Preceded by microseisms
		NZ	i		42	27						
		ENZ	i		43	57						
			F		19.1							
205	23	Z	P	8	22	51					10165	" " "
		Z	PcP		57							
		Z	PP		26	27						
		Z	e		28	43						
		E	SKS		33	14						
		EZ	e		33	33						
		E	PS		34	54						
			F		10.0							
206	25	Z	eP	1	39	00					12720	" " "
		Z	PP		42	38						
		N	SKS		49	36						
		N	e		50	10						
		N	e		54							
		N	e		51	16						





No.	Date	Comp.	Phase	G.M.T.			Period	Amplitude			Δ	Remarks
				H.	M.	S.		A <sub>n</sub>	A <sub>e</sub>	A <sub>z</sub>		
							Sec,	μ	μ	μ	Kms.	
207	27	Z	e F			58					13220	Preceded by microseisms
		Z	ePKP	3.1								
		Z	PP	4	59	48						
		N	S	5	01	03						
		N	SS		09	00						
208	28	E N E N N	PP S PS SS M F				20	+17			13335	
				18	08	56						
					16	52						
					18	51						
					24	24						
209	29	NZ	M F	19	59	09	18 <sup>3</sup>	-48				Very weak
				23.0								
				14	05							
				14.7								
210	30	Z Z Z Z N N	ePKP i i e SKP PPS e F	1	07	30					13335	Confused with microseisms
					08	24						
						42						
					09	06						
					10	17						
					20	08						
					21	20						
				4.0								

Tremors were also recorded at:

	D	H	D.	H	D	H	D	H
Jan.	13	9	22	8	28	21		
Feb.	3	1	5	17	6	20	8	1
Mar.	1	0	5	1	6	17	31	7
Apr.	1	23	5	4	14	22	15	21
May	21	0	22	5	23	7		
	1	5,9	5	3	10	9	11	23
	12	9	16	20	17	11	19	4,6,9
June	23	10	28	11				
	6	1	7	14	12	17	14	22
	26	8	27	19				
July	1	18,8	3	17	4	16	9	17
	21	18	22	0,22	28	3	29	9
Aug.	2	22	3	8	9	13	11	0
	13	3	21	17				
Sept.	1	0	16	19	25	15		
Oct.	4	2	7	0	9	4.5	10	13
	16	22	24	2	27	1		
Nov.	2	19	16	19	21	3	28	11
	29	3						
Dec.	1	14	2	19,21,23	3	6	5	7,9,14
	6	16	7	5	9	21	14	14
	10	23	22	20	27	2		