

No. 47.

1938.

Geodætisk Institut
Proviantgaarden, Copenhagen, Denmark.

Bulletin
of the seismological station

KØBENHAVN

$\varphi = 55^{\circ}41' \text{ N. } \lambda = 12^{\circ}27' \text{ E. } h = 13 \text{ m.}$

Lithologic foundation: chalk.

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Instruments:

Galitzin-Wilip seismographs.

Constants:

Component	l	A_1	T_1		μ^2	T	k
	cm	cm	sec			sec	
N	12.5	100	12.59		−0.02	12.7	103
E	12.5	100	12.60	$\frac{5}{8} - \frac{31}{12}$	0.0	12.5	102
Z	14.5	100	11.52		0.2	9	92

E recorded from July 22.

Wiechert 1000 kg. horizontal seismograph.

Wiechert 1300 kg. vertical seismograph.

Constants:

Component		T	ν	ϱ	V
		sec		mm	
N	$\frac{1}{7} - \frac{8}{8}$	10.4	4.0	0.5	205
	$\frac{8}{8} - \frac{30}{9}$	9.9	3.6	0.6	205
E	$\frac{1}{7} - \frac{8}{8}$	8.7	3.2	0.3	210
	$\frac{8}{8} - \frac{30}{9}$	9.2	4.3	1.3	240
Z		5.6	4.4	0.1	140

Milne-Shaw seismograph, E component, (until $\frac{12}{9}$), with the approximate constants $T = 12^s$ $\nu = 20$ $V = 300$.

Benioff vertical seismograph, $T_1 = \frac{1}{4}^s$ $T = 1^s$.

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No.	Date	Hour	Forerunners				L	Un-defined	△	Remarks
			P	S						
	1938		m s	m s	h m s	m s	h m	h m	°	
	July									
1	1	12					54			
2	2	1						51		
3	2	7	i 45 24	49 20	49 25		52		22	Spitsbergen.
4	2	12					37			
5	4	17					.8			
6	4	21			32 0*	35.1	1.3			Loyalty Islands region.
7*	5*	2			23.1	26 24	1.1			
8	5	3			17.1		1.0			
9*	5*	22			26 39	30 1*	69			Loyalty Islands region.
10*	6*	1			43 55	46.5	1.4			Fiji Islands region.
11	6	7					.3			
12	6	8						39		Seismic?
13	6	9			59 4	65.4	1.9			
14	6	13			i 13 4		.7			
15	7	7					53			
16	7	17					1.3			Small preceding movement.
17	8	6					40			
18	8	14	i 11 15				.7			
19	11	16					39			
20	12	12			56 17		1.7			
21	13	20					8			
22	13	20	i 18 19	21 5	22 45					Rumania. Deep focus.
23	14	3					.5			
24	14	23			54.4	73.0	1.7			No G. Z record.
25	16	10					.3			
26	16	16					.7			
27	17	11			28.1		.6			
28	17	13					69			Disturbed.
29	18	1						4		The French Alps.
30	19	20					.2			Small preceding movement. No [Galitzin records.
31	19	21			47		1.4			No Galitzin records.
32	20	0	27 59	31 35	i 28 1	i 28 14	33		20	Greece. Deeper than normal.
33*	20*	12			6 51					
34	21	9	21.1	29 39			.7		64	Off East Africa.
35	21	22	0 54	4 52	5 13		9		22	Asia Minor.
36	22	8			12 0	18.0	.4			Beginning disturbed. Off Mexico.
37	23	20			18 39		1.0			
38	23	23			20 45		1.0			
39	24	13	i 23 34	32 50	33.6		44		71	Aleutian Islands.
40	25	10					.5			
41	25	22					.7			
42	26	15						.8		No Galitzin records.
43	27	1	33 34	37.1			39		20	
44	27	13	28 4*	32.1	28 10	32 14	34		23	S uncertain.
45	27	16					14			
46	27	17			18.1		36			

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			P	S								
	1938		<i>m</i>	<i>s</i>	<i>m</i>	<i>s</i>	<i>h</i>	<i>m</i>	<i>h</i>	<i>m</i>	°	
47	July 27	19	56	9	60	9		63			22	Greenland Sea.
48	27	23					27					
49	28	6					.4					
50	28	8					.9					
51	29	13	<i>i</i> 19	28	30	10	29.9	35.9			88	No Galitzin records. Off Sumatra.
52	30	19								38		Manchuria.
53	31	22	<i>i</i> 4	52	13	32	6	10	14	19	65	
54	Aug. 1	4						.4				
55	1	11								10		
56	2	0						.8				Argentina.
57	3	9						.1				
58	3	13						64				
59*	4*	9	8	35	18	54	<i>i</i> 19	39				
60	5	14	<i>i</i> 25	40	32.1		27.4	35.4			43	No Galitzin records.
61	5	17								8		Greenland Sea. » » » » » » » » » » » »
62	8	13	11	25								
63	8	13	13	31								
64	8	13	19	10				24				
65	8	15	39	38	43.3			44				
66	8	16	19	52				24				
67	8	16	54	8				58				
68	8	19						.1				
69	9	4						21				
70	9	14					56	58				
71	9	18						39				Small preceding movement. Read on Benioff Z. Disturbed.
72	10	2						.6				
73	10	10	45	43								
74	10	12						52				
75	12	2						36				
76	12	4					29					
77	13	9						1.1		39		
78	14	2						.0				
79	14	8						.9				
80	14	20					57.5	1.1				
81	15	11					9.1	11				Disturbed. Burma. Seismic? Small preceding movement. Sumatra. <i>P</i> 18 ^m .9 small, uncertain. Riu-Kiu [Islands.
82*	16*	4	<i>i</i> 38	43	<i>i</i> 47	33	41	10	48.1	1.0		
83	16	9									10	
84	17	2						.4				
85*	18*	9	43	12	54	12	53	33				
86	18	19			28	41	28	55	.8			
87	18	23							.0			
88	20	6							.1			
89	20	9					7.2		.5			
90	22	15								33		
91	22	21					55.4		1.1			

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			P	S						
	1938		<i>m s</i>	<i>m s</i>	<i>h m s</i>	<i>m s</i>	<i>h m</i>	<i>h m</i>	°	
92	Aug. 23	8					.7			Small preceding movement.
93	24	16					.7			
94*	25*	1	41 21	52 35	45 5	53 36	1.3			Off Sumatra.
95	27	8						51		Seismic?
96	28	21	7 39	11 17			13		20	Greenland Sea. <i>P</i> and <i>S</i> quite [small.
97	29	2					.6			
98*	29*	15	35 32	46 35	46 9	47.4	1.1			Philippine Islands.
99	30	12			9.3	18.9	.7			Phases not clearly marked. North
100	30	17			27.5	33.6	1.1			[of New Guinea.
101	30	19			38.6		41			
102*	31*	18			4.7					New Ireland Island.
	Sept.									
103	1	3	6 28	16.6			.6		81	Riu Kiu Islands.
104*	1*	23	1 6		4 26	11 31	.5			Off Guatemala.
105	3	4	51 18	55 46			58		26	
106	3	6	41 26				48			
107	4	0					.7			
108	4	4					.4			
109	4	19	34 42		45 18		1.1			<i>P</i> quite small, uncertain. Philippine [Islands.
110	4	20	i34 39				1.0			<i>P</i> +.
111	4	21	i23 21				.9			
112	4	22					.8			
113	5	15			2 36	3 49	1.1			<i>e</i> 7 ^m 40 ^s .
114	6	13	i34 14	39.1			46		29	Caspian Sea.
115	6	20	i57 23	66.9			1.4		74	<i>P</i> +. <i>S</i> small, uncertain. South of [Kurile Islands.
116	7	2	8 15		12 21	18 50	.7			<i>P</i> +. <i>E</i> of Mindanao.
117*	7*	4	i15 31	25 36	18.4	26.4	41		80	Formosa.
118	7	12					.1			
119	7	13			18.4	19.4	.9			<i>e</i> 23 ^m 45 ^s , 28 ^m .4, 29 ^m .3.
120	9	6					.7			
121	9	17					1.8			Some preceding movement.
122	9	19					.5			
123	10	22			i35 1		1.1			
124	11	18					2			
125	11	20					.4			
126	12	6					.8			
127	14	9					.5			
128	15	13						38		Seismic?
129	18	1						.1		
130	18	1			50		1.1			
131	18	3	i54 53	58 21					19	<i>P</i> (−1.4, +1.0, −1.3; +5.9, −2.0, [+4.2). Greece.
132	18	14					.4			
133	19	0			i49 21					
134	19	12					.8			
135	19	20					.3			

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			P	S						
	1938		<i>m s</i>	<i>m s</i>	<i>h m s</i>	<i>m s</i>	<i>h m</i>	<i>h m</i>	°	
136	Sept. 20	13					45			
137	20	14					.9			
138	20	16					.4			
139	20	22			26		30			
140	21	2					.0			
141	21	19	<i>i 3 59</i>	13 51	7.1	14.2			78	P+. SS 19 ^m .1. Japan.
142	22	5	29 44				35			
143	22	5	36 37	40 35			42		22	P—.
144	22	6	28 11				34			
145	24	13						29		Seismic?
146	25	16			44 55		1.3			
147	25	20			36 38		1.3			
148	26	13						2		Seismic?
149	27	0						.3		
150	27	2	40 45	48 5	42.8		57		52	P+. Abyssinia.
151*	27*	10			36 1*	46.0	1.2			Solomon Islands region.
152	28	18			35.1	36.3	1.2			Solomon Islands.
153	30	9					.5			

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NOTES

- No. 7. July 5. 2^h. Loyalty Islands region; $\Delta = \text{ca. } 145^\circ$. P_Z' 23^m.1 small; 23^m36^s larger. PP 26^m24^s. Later phases not clearly marked, e_N 27^m3^s, e_Z 27^m53^s. e_N 30^m46^s, 31^m51^s. PS_Z 38^m.5. L not large.
- No. 9. July 5. 22^h. Loyalty Islands region; $\Delta = \text{ca. } 150^\circ$. P_Z' 26^m39^s quite small; e 26^m44^s larger. e_Z 29^m.0. PP 30^m1^s. SS 49^m.2; SSS 54^m.0. L not large.
- No. 10. July 6. 1^h. Fiji Islands region; $\Delta = \text{ca. } 145^\circ$. P_Z' 43^m55^s, i (Benioff Z) 44^m4^s. e_Z 46^m.5, e_N 47^m51^s. Much oscillatory movement, phases not clearly marked. SS 66^m.7, SSS 71^m.2. L not large.
- No. 33. July 20. 12^h. Two or three shocks. e_Z 6^m51^s, 11^m57^s. $e_{N,E}$ 12^m23^s, e_Z 13^m48^s. e 20^m24^s, 21^m57^s.
- No. 59. Aug. 4. 9^h. Argentina; $\Delta = \text{ca. } 105^\circ$; depth about 200 km. No Galitzin records. P_Z 8^m35^s quite small. e 18^m54^s, i 19^m39^s, e 20^m4^s, e 21^m39^s clearly marked phases.
- No. 82. Aug. 16. 4^h. Burma. iP 38^m43^s (x , -3.2 , $+3.0$; x , $+6.0$, -7.7). PP 41^m10^s; PPP 42^m46^s. e 43^m.3, 43^m48^s, e 47^m.4. iS_N 47^m33^s large. PS 48^m.1. (ScS) $_N$ 48^m41^s. e 50^m.9, SS_E 51^m.9. SSS 54^m.8.
- No. 85. Aug. 18. 9^h. Sumatra; $\Delta = \text{ca. } 95^\circ$; depth about 100 km. P small 43^m12^s, condensation. pP 43^m35^s. SKS_E 53^m33^s. S 54^m12^s. e 54^m.8. e_E 55^m17^s, 55^m.9. e_N 59^m.6. e_E 60^m.4. L small.
- No. 94. Aug. 25. 1^h. Off Sumatra; $\Delta = \text{ca. } 95^\circ$. Deeper than normal. eP 41^m21^s, dilatation. pP 41^m55^s. PP 45^m5^s. e 47^m.1, 48^m.9. SKS_E 51^m.9, $S_{N,E}$ 52^m35^s. PS 53^m36^s.
- No. 98. Aug. 29. 15^h. Destructive in the Philippines; $\Delta = \text{ca. } 90^\circ$. P quite small, 35^m32^s. e_E 40^m.9. SKS_E 46^m9^s. S 46^m35^s. PS 47^m.4. e_E 49^m.3.
- No. 102. Aug. 31. 18^h. New Ireland Island; $\Delta = \text{ca. } 120^\circ$; depth about 350 km. Quite small beginning on Z 3^m.4. PP 4^m.7. e_Z 6^m.0. e 6^m42^s; 9^m.1. e_E 12^m25^s. e 13^m44^s. e_E 14^m.5. e 16^m.3. e_Z 17^m33^s. L small.
- No. 104. Sept. 1. 23^h. Off Guatemala; $\Delta = \text{ca. } 85^\circ$. P 1^m6^s, condensation. PP 4^m26^s. (SKS) 11^m31^s. PS 12^m49^s. SS 17^m.3.
- No. 117. Sept. 7. 4^h. Formosa. iP 15^m31^s (-0.9 , -1.5 , $+2.5$; $+1.2$, $+2.5$, -4.6). PP 18^m.4; PPP 20^m.5 quite small; $PPPP$ 22^m4^s. S 25^m36^s. PS 26^m.4. SS 31^m.1; SSS 35^m.0.
- No. 151. Sept. 27. 10^h. Solomon Islands region; $\Delta = \text{ca. } 125^\circ$. PP 36^m1^s, in time-break. e 43^m.3. PS 46^m.0, PPS 47^m.5.