

No. 46.

1938.

Geodætisk Institut

Proviantsgaarden, Copenhagen, Denmark.

Bulletin of the seismological station

KØBENHAVN

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

Lithologic foundation: chalk.

No. 46. April—June 1938.

Instruments:

Galitzin-Wilip seismographs.

Constants:

Component	l	A_1	T_1		μ^2	T	k
	cm	cm	sec			sec	
N	12.5	100	12.61		-0.03	12.6	102
Z	14.5	100	11.55	$\frac{1}{4} - \frac{12}{5}$	0.1	9	96
				$\frac{12}{5} - \frac{30}{6}$	0.1	10	92

Wiechert 1000 kg. horizontal seismograph.

Wiechert 1300 kg. vertical seismograph.

Constants:

Component		T	ν	ρ	V
		sec		mm	
N	$\frac{1}{4} - \frac{28}{4}$	9.4	3.3	0.4	205
	$\frac{28}{4} - \frac{30}{6}$	10.3	3.9	0.4	205
E		8.8	3.3	0.3	210
Z		5.2	4.1	0.2	165

Milne-Shaw seismographs, N and E components, 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									
	April		m s	m s	h m s	m s	h m	h m	°	
1	1	1					.5			
2	1	21		54.1			1.2		Pacific Ocean.	
3	2	6			31	35.1	1.0			
4	2	7	41 35				1.1			
5	3	12					.0		Faint.	
6	9	12						44	Seismic?	
7	10	5					37		Small preceding movement.	
8*	13*	2	i49 24	i52 20	i52 24				Mediterranean Sea.	
9*	14*	1	i27 15	35 56	i27 44	28 0*			Burma.	
10	14	8						32	Seismic?	
11	14	13						18	Seismic?	
12	14	16					.8			
13	16	21					.1			
14	17	15			4		.4			
15*	19*	11	4 6	7 59*	i4 11				22	Anatolia, Turkey.
16	19	22			4 19	4 49	.9			
17	19	23	i16 3	20 7					23	Turkey.
18	20	6			i46 39	49 50	1.6		e 63 ^m .8.	
19	21	1			43.6	49 26	1.1			
20	22	4			35 19		.7			
21	22	15						32	Seismic?	
22	23	0	40 11	50 24	43.3	55.7	1.1	82	East of Riukiu Islands.	
23	23	6	i11 47	17 56*	13 18	21.4	.4	40	Iran.	
24	23	9	i33 45	39 55	35 24	43.2	.8	40	»	
25	23	23			i16 37					
26	24	3						.7		
27	25	9	9 25	13 40					24	Asia Minor.
28	25	10					.7			
29	25	11					.8			
30	25	14	i57 3	67 8			1.4	80	Japan.	
31	25	17			30 59*		.7			
32	26	13					.8		Disturbed.	
33	27	10					.9		»	
34	29	2					.8			
35	29	5						5	Small preceding movement.	
	M j									
36	1	1					.0		Some preceding movement.	
37	2	15					.6			
38	3	0						.3		
39	3	2	28 6	39 9	38 42		.9		92	P— Mexico.
40	3	10						2	Seismic?	
41	3	19	27 14	36 33	32 15	37 10	.9		72	
42	4	6			16.5		.7			
43	6	4						21		
44	6	5					6			
45	6	14			36 21					

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			P	S						
			m s	m s	h m s	m s	h m	h m	°	
46	1938 May 6	18	29 53				.9			P not certain, possibly 30 ^m 2 ^s . [Off West Nicaragua.
47	7	3						15		Faint.
48	7	3						50		»
49	7	6						40		
50	8	14			.2		.7			
51	9	14						48		Seismic?
52	11	3					.9			
53*	11*	14			58 32	69 35	1.4			Off Mexico.
54	11	15						36		Seismic?
55*	12*	15	54 16		57.9	i 59 15	1.5			New Guinea.
56	12	21	39 32	45 50	49 0*	49 16			42	
57	12	22	i 14 41	18 48			21		23	
58	13	1						32		
59	13	1			58 19		61			
60	13	2	i 58 55	63 28	59 39		66		26	
61	13	3					.7			
62	13	4					15			
63	13	5					.9			
64	13	8					8			
65	13	9					.6			
66	13	13					4			
67	13	15			39 55		.9			
68	14	1					54			Small preceding movement.
69	14	4			0 20					
70	14	4	i 50 40	54 49			58		23	
71	14	6			i 12 26					
72	14	7			4.2		7			
73	14	7					54			
74	14	12			23 32	28.0	48			e 31 ^m .2. Faint.
75	14	14					.9			
76	15	0					.9			
77	15	3	39 5	43 39			47		26	P small, uncertain.
78	15	14					.2			
79	15	19					.7			
80	16	1					.2			
81	16	1			i 25 58	i 26 2				
82	16	7					.9			Small preceding movement.
83	16	14			i 6 36	i 6 52	.5			
84	16	16					.4			Small preceding movement.
85	16	18			46		50			
86	18	11					32			
87	19	15					29			
88*	19*	17	i 22 32		26 6	26 40				Celebes.
89	20	18					21			
90	22	8			8					Disturbed. No G. Z record.
91	22	8			43					Disturbed. No G. Z record.

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No.	Date	Hour	Forerunners				L	Un-defined	△	Remarks
			P		S					
	1938									
	May		<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*	23*	7	<i>i</i> 30 30	<i>i</i> 40 22	33 22	35 16			78	Japan.
93	23	8	<i>i</i> 34 23		44.7					Disturbed. No Galitzin records.
94	23	16					0			
95	24	10					1			
96	26	11					52			
97	27	21	27 16	30.2	<i>i</i> 27 20					<i>P</i> not certain. Adriatic Sea.
98	28	0	<i>i</i> 9 45				17			
99	28	10	25 51	35.5			.8		75	Off Oregon.
100	28	11					.8			
101	28	16	<i>i</i> 53 34	63 2*	58.0	63 40	76		73	SSS 70 ^m .8. Kurile Islands.
102*	30*	14			49 8	52 9	1.5			New Hebrides Islands.
103	30	21					.0			Faint.
104	30	23	<i>i</i> 39 31	48.8	54		1.0		71	
105	31	3					3			
106	31	9			4 31					
107	31	14			8 0					
108	31	17	<i>i</i> 59 56	63 49	63 58*		66		22	<i>P</i> —.
109	31	19	<i>i</i> 39 21	43 14	43 23		46		22	<i>P</i> + . Repetition.
110	June 2	15						.3		Small preceding movement.
111	2	17						9		
112	3	0					1.1			Small preceding movement.
113	3	16	42 59	47 3*			51		23	Asia Minor.
114	5	17					.2			
115	5	23					.0			
116	9	18					4			Small.
117*	9*	19	29 20		32.8	<i>i</i> 33 48				Banda Sea.
118*	10*	10	5 55	16 5	8 57	10 51	32		81	Pacific Ocean.
119	10	16					3			Followed by groups of small long [waves; shocks not clearly [separated.
120	10	18	18 52		29 39	35 24	.8			Mexico.
121	10	20					.2			Superposed on preceding shock.
122	11	1			<i>i</i> 45 38					
123	11	10					.0			
124	11	10	<i>i</i> 59 17							Belgium.
125	11	18					.2			
126	11	18					.8			
127	12	2			55 50		77			
128	13	3					1.2			Some preceding movement.
129*	16*	2	<i>i</i> 27 31	37.7	30.7	34.2	56		81	Riu-Kiu Islands.
130	16	13					.0			
131	16	23					.5			
132	17	13					21			
133	17	14						0		Read on Benioff Z. Seismic?
134	17	14						17		» » » » »
135	18	0	<i>i</i> 55 10	65 0*	<i>i</i> 55 22	<i>i</i> 65 27	83		77	<i>P</i> + . Japan.

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No.	Date	Hour	Forerunners				L	Un-defined	△	Remarks
			P	S						
	1938									
	June		<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*	20*	23	<i>i</i> 58 27	64 57	60 5	67 51			44	Kirghiz ASSR.
137	21	7					.4			
138	23	0					.1			
139	23	1					.9			
140*	23*	13			14 45	17 45	.9			East of Loyalty Islands.
141	24	13					.1			
142	24	19			57.6		62			
143	25	9						11		Seismic?
144	25	23	<i>i</i> 49 57	53 58	50 25		56		23	<i>P</i> +. Greenland Sea. Deeper than [normal. Mexico.
145	28	19	<i>i</i> 30 30		41 7		60			
146	29	3						55		
147	29	10					.6			
148	29	11						19		Seismic?
149	29	14					.7			
150	29	19			<i>i</i> 3 47		1.0			<i>PKP</i> +
151	30	17			4 0	7.1	.8			<i>PKS</i> 7 ^m 45 ^s . Northeast of Loyalty [Islands.
152	30	21			36.3					

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NOTES

- No. 8. April 13. 2^h. 39°8' N 15°11' E; $\Delta = 16^\circ.6$; $h = \text{ca. } 300 \text{ km}$. eP 49^m22^s, quite small. iP 49^m24^s. e 49^m44^s; i_Z 49^m59^s; e 50^m5^s. iS_E 52^m20^s, iS_N 52^m24^s.
- No. 9. April 14. 1^h. Burma. Depth 120 km. eP_Z 27^m12^s, iP 27^m15^s, condensation. ipP 27^m44^s, sP 28^m0^s (in time-break). PP 29^m44^s. S 35^m56^s. e 36^m.7. e_E 37^m.0. e 38^m2^s (in time-break). SS 40^m.2; SSS 43^m.7. L small.
- No. 15. April 19. 11^h. Anatolia, Turkey. eP_Z 4^m6^s, read on Wiechert Z , quite small, not certain; iP_Z 4^m7^s, small, and i 4^m11^s, large, read on Benioff Z . i 4^m12^s large on Wiechert N, E, Z . e_Z 4^m26^s. e 5^m22^s. eS 7^m59^s. e_N 8^m11^s, i_E 8^m16^s. L not very large, probably some depth of focus.
- No. 53. May 11. 14^h. Off Mexico; $\Delta = \text{ca. } 90^\circ$. e_Z 58^m32^s. e_E 61^m9^s; $(PP)_Z$ 61^m39^s. e_E 67^m45^s. e_Z 68^m0^s. e_N 68^m.5. $(S)_E$ 68^m50^s. (PS) 69^m35^s. (PPS) 70^m.6. SS 75^m.0.
- No. 55. May 12. 15^h. New Guinea; $\Delta = \text{ca. } 120^\circ$. P 54^m16^s and P' 57^m.9, both small. iPP 59^m15^s. PPP 61^m.8. SKS 65^m.0. e 66^m.1, 66^m30^s, 67^m16^s, not large and not very clearly marked. e 68^m.0; e_Z 68^m.6. iPS 68^m54^s, very large. PPS 70^m31^s, large. e 71^m.4, 73^m.9. SS 75^m49^s, 76^m15^s, very large. SSS 80^m.3 very large.
- No. 88. May 19. 17^h. Celebes; $\Delta = \text{ca. } 100^\circ$. iP 22^m32^s, preceded by small movement. e_Z 25^m36^s. P' 26^m6^s. PP 26^m40^s large. PPP 28^m56^s, e_N 29^m.2. $e_{E,Z}$ 30^m37^s, e_N 31^m.6. SKS 33^m10^s, and $(SKKS)_N$ 34^m12^s, large. $(S)_E$ 34^m.9. PS 35^m32^s and PPS 36^m.4, large. e 37^m20^s. (SS) 40^m.
- No. 92. May 23. 7^h. Japan. iP 30^m30^s ($-5.2, x, 6.8$; $6.2, x, -15.0$) (No Galitzin E record, therefore no E amplitudes). PP 33^m22^s, PPP 35^m16^s. e 39^m.8. iS 40^m22^s, very large. e 40^m44^s. e_E 41^m13^s, 42^m.2. SS 45^m.0. e 46^m.0 followed by movement of long period; the beginning of L uncertain.
- No. 102. May 30. 14^h. New Hebrides Islands; $\Delta = \text{ca. } 140^\circ$. P' 49^m8^s, large on Z . PP 52^m9^s. $PKS_{N,E}$ 52^m52^s. PPP 55^m.3. SKS 57^m2^s. $(SKKS)$ 58^m.8. e 60^m43^s, 62^m17^s. PS or PPS 64^m23^s. e 66^m4^s. SS 70^m.9. SSS 75^m.6.
- No. 117. June 9. 19^h. Banda Sea; $\Delta = \text{ca. } 105^\circ$. P 29^m20^s and P' 32^m.8 small. iPP 33^m48^s. PPP 36^m0^s. SKS 39^m33^s. $iSKKS$ 40^m15^s. e 41^m.0, 41^m21^s, 42^m41^s. PS 43^m3^s and PPS 43^m.9 large. SS 48^m.5, 49^m.0. SSS_N 53^m3^s.
- No. 118. June 10. 10^h. Pacific Ocean. P 5^m55^s, quite small, dilatation. i 6^m8^s large. PP 8^m57^s. i_Z 9^m14^s. PPP 10^m51^s; $PPPP$ 12^m.5. S 16^m5^s large. PPS 17^m.1 large, followed by large oscillations. e_N 19^m.8. SS 21^m.1, 21^m.4. SSS 24^m.9, 25^m.7 very large. L large.
- No. 129. June 16. 2^h. Riu-Kiu Islands. iP 27^m31^s, condensation; first movement quite small, followed 27^m32^s by large oscillations. i 27^m41^s. PP 30^m.7. $PPPP$ 34^m.2. S 37^m.7 large, but beginning not well defined. e 38^m15^s, 38^m.7. SS 42^m.7, 43^m.4. SSS 47^m.2.
- No. 136. June 20. 23^h. Kirghiz ASSR. iP 58^m27^s condensation; i 58^m29^s large. PP 60^m5^s large. S_N 64^m57^s; S_E 65^m0^s (in time-break). e 65^m35^s. e_N 67^m.2. $i(SS)_Z$ 67^m51^s, e_E 67^m.9, e_N 68^m0^s; followed by large oscillations; the beginning of L uncertain.
- No. 140. June 23. 13^h. East of Loyalty Islands; $\Delta = \text{ca. } 140^\circ$. P' 14^m45^s, condensation. PP 17^m45^s. PKS 18^m28^s. PPS 30^m.5. SS 36^m.6; SSS 41^m.5.