

Documentation preserved at the Ufficio Centrale di Ecologia Agraria (Rome),  
reproduced on 2002 by SGA Storia Geofisica Ambiente (Bologna)  
on behalf of the Istituto Nazionale di Geofisica e Vulcanologia (Rome),  
in the frame of the EUROSEISMOS project.  
These data are considered public domain and may be freely distributed  
or copied for non-profit purposes provided the project is properly quoted.



GEODÆTISK INSTITUT  
DANMARK

BULLETIN  
OF THE SEISMOLOGICAL STATION

# SCORESBY-SUND

NO. 1

JAN.—AUG. 1928

PUBLISHED BY THE  
GEODETIC INSTITUTE  
COPENHAGEN · DENMARK



The seismological station Scoresby-Sund in Eastern Greenland was erected during the winter 1927—28 by the Geodetic Institute of Copenhagen by funds granted by the Carlsberg foundation.

The station is equipped with 3 components Galitzin pendulums. The horizontal components have been working since Jan. 12th 1928, the vertical component has been working regularly since July 13th but, previous to this, it has occasionally been recording.

The work at the buildings which were build for the pendulums and for the recording apparatus was not entirely completed until the middle of May. Therefore recording has often been interrupted for several hours in the day and, if not actually interrupted, disturbed by the work. Also draught, occasioned by swift changes of temperature, seems to have caused some disturbance. Thus the records are not complete, and the readings here published do not perfectly represent the yielding power of the station under more favourable circumstances.

The time-marking clock has also suffered from frequent disturbances and abrupt changes of temperature, and though it has been controlled daily by Nauen scientific time signals, the uncertainty in time determinations may exceed a second.

Records from the station are only received once a year. The present bulletin contains the readings of all the records which were received in September 1928.

A detailed description of the station and its equipment will soon be published.



## Scoresby-Sund.

$\lambda = 21^{\circ}57' \text{ W. } \varphi = 70^{\circ}29' \text{ N. } h = 69 \text{ m.}$

Lithologic foundation: Granite.

### Instruments:

Galitzin pendulums with photo-galvanometric registration, 3 components.

Constants (mean values):

Component	$l$	$T_1$	$A_1$	$\mu^2$	$T$	$k$
$N$	12.0	12.44	100	0	12.5	29; from $^{27/6} 42$
$E$	12.0	11.92	100	0	11.9	39
$Z$	14.1	10.12	100	0	9.5	34

### Seismometric readings: Notation

- $P$  — normal first preliminary tremors, longitudinal waves.  
 $PP \dots$  — longitudinal waves reflected at the earth's surface.  
 $S$  — normal second preliminary tremors, transverse waves.  
 $SS \dots$  — transverse waves reflected at the earth's surface.  
 $PS; PPS; \dots$  — waves reflected at the earth's surface which travel partly as longitudinal, partly as transverse waves.  
 $P'$  — longitudinal waves that have traversed the earth's central core.  
 $S_c P_c S$  — waves which traverse the mantle as transverse waves but are refracted through the core with longitudinal oscillation.  
 $P_c P_c S$  — waves which pass the mantle on one side of the core as longitudinal waves, on the other side as transverse waves and are refracted through the core with longitudinal oscillation.  
 $S_c P_c \overline{P_c} S$  — waves which traverse the mantle as transverse waves, are refracted through the core with longitudinal vibration and are reflected on its inner boundary.  
 $L$  — long, or surface, waves; main phase.  
 $L'$  — surface waves travelling along the major arc to the station.  
 $M(M_1, M_2, \dots)$  — waves of greatest amplitude in the surface waves.  
 $m(m_1, m_2, \dots)$  — waves of greatest amplitude in other phases.  
 $C$  — regular waves at the end of main phase.  
 $F$  — end of discernible movement.  
 $i$  — sharply defined beginning of a phase.  
 $e$  — gradual beginning of a phase.  
 $\epsilon$  — beginning of a phase which is but faintly discernible.  
 $A_N, A_E, A_Z$  — half amplitude of earth motion measured from the position of equilibrium in microns (1 micron,  $\mu = 1/10^3 \text{ mm}$ ) positive towards north, east or zenith.  
 $\Delta$  — arcual distance from the station to the epicenter.



Scoresby-Sund.

No.	Date	Phase			Time (G. M. T.)			Period	Amplitude			Remarks			
									A <sub>N</sub>	A <sub>E</sub>	A <sub>Z</sub>				
		N	E	Z	h	m	s	sec	μ	μ	μ				
1	1928 Jan. 29														
					F			0.5							
2	„ 30														
								3	45.3						
					L	ε	ε		54						
3	„ 30														
					F			4	21						
4	Febr. 3														
					L			5	20						
5	„ 7														
					F			4.9							
6	„ 13														
								13	54	56					
									56	22					
								14	4.1						
									7						
									9.4		17	-9			
7	„ 21														
8	„ 26														
9	„ 26														

△ = c. 40°.  
Siberia.

Strong microseismic movement.

△ = c. 40°.  
Siberia.

△ = 41°.







Scoresby-Sund.

No.	Date	Phase			Time (G. M. T.)			Period	Amplitude			Remarks		
									A <sub>N</sub>	A <sub>E</sub>	A <sub>Z</sub>			
		N	E	Z	h	m	s	sec	μ	μ	μ			
15	March 16	P		e	5	20	20					Δ = c. 135°.		
		"	ε	e			20.4							
		PP	e	e	e		22	34						
		P <sub>c</sub> P <sub>c</sub> S	i	e	i		23	44						
		S <sub>c</sub> P <sub>c</sub> S	e				27	23						
			e	e	e			28.6						
		S <sub>c</sub> P <sub>c</sub> P <sub>c</sub> S	e	e	e			29.4						
			e	e				32	18					
			e						50					
		S <sub>c</sub> P <sub>c</sub> S P	e	ε	e			32.9						
					e			36.5						
		SS						40.0						
		SSS						44.9						
			ε	e				55						
			e		e			59						
		L					6	2						
		M <sub>1</sub>						10.6	25				102	
		M <sub>2</sub>						12.2	23		318			
		M <sub>3</sub>						16.2	21		255			
		M <sub>4</sub>						17.3	19				129	
L'						57								
M <sub>1</sub> '					7	1.9	18		75					
M <sub>2</sub> '						15.2	17		71					
M <sub>3</sub> '						16.3	19			42				
F						11.0								
16	" 22	P		e	4	28	14					Δ = 68°.8. Felt in Mexico.		
		"	e	i			19							
		PP	e	e			31.1							
		PPP	e	e			32	31						
			e				34	46						
			e					35.9						
		S	e	e			37	24						
		"	i	e				31						
			e				39	31						
		SS		e				42.1						
			e					43.4						
		SSS		e				44.2						
			e	e				46.5						
	e	e				48.7								
L						51								
M <sub>1</sub>					5	0.7	18			708	On the N component the light is too faint in the maxima.			
M <sub>2</sub>					3.4	16			470					
L'						6.8								
F						8.5								
17	" 26	L			5	55	3							
		F					6.4							
							6.8							



Scoresby-Sund.

No.	Date	Phase			Time (G. M. T.)			Period	Amplitude			Remarks	
									A <sub>N</sub>	A <sub>E</sub>	A <sub>Z</sub>		
			N	E	Z	h	m	s	sec	μ	μ	μ	
18	1928 March 27					5	34						
		(L)	e				37						
		L		e			43						
		F					6.3						
19	" 27			ε	ε	8	43.4						Destructive in NE Italy.
		L			e		47						
		"		e			48						
		M <sub>1</sub>					52.4	14			12		
		M <sub>2</sub>					52.7	14	-19				
		F					9.5						
20	" 27					19.5							
		L				20	6						
		M <sub>1</sub>					14.6	25		-12			
		M <sub>2</sub>					22.4	19	-6				
		F					20.9						
21	" 27	L				21	10						There is a faint preceding movement.
		M <sub>1</sub>					15.5	22	6				
		M <sub>2</sub>					16.5	20		5			
		F					21.8						
22	" 29	P	e	ε		5	17	18					△ = 69°.
				ε			18	49					
		S	i	i			26	32					
		m					26.6		15; 13	-34	-69		
				e			29	20					
		L*)											
		F					6.7						
23	" 31	P				0	37	39					△ = 41°. Destructive near Smyrna.
		PP					39	13					
		S					43	51					
		SS	e				46	46					
		"		e			47.1						
		SSS					47	35					
				e			48	26					
		L					51						
		M <sub>1</sub>					53.9	18			-50		
		M <sub>2</sub>					55.6	14	-65				
F					2.4								
24	April 7	L				21	10						
		F					21.6						
25	" 9	L				18	32						No records from 17 <sup>h</sup> 26 <sup>m</sup> to 18 <sup>h</sup> 32 <sup>m</sup> . Felt in Peru.
		F					(20.0)						



Scoresby-Sund.

No.	Date	Phase			Time (G. M. T.)			Period	Amplitude			Remarks
									A <sub>N</sub>	A <sub>E</sub>	A <sub>Z</sub>	
		N	E	Z	h	m	s	sec	μ	μ	μ	
26	1928 April 13-14											
		P	e		23	27	25					△ = 70°. South of Mexico.
		"	ε				27.7					
		S					36	42				
				ε				42.6				
		L	e					53				
		"		e				57				
		M <sub>1</sub>						58.6	19	-16		
M <sub>2</sub>				0	0.2		18		-12			
F						0.8						
27	" 14	P	e	e	9	7	10					△ = 39°. Destructive in Bulgaria.
		PP					8	26				
		PPP						40				
			e	e				55				
				e				9.3				
				e				9	46			
				e				11.0				
		S						13	6			
		SS						15.3				
		L						18.5				
		M <sub>1</sub>						26.9	13		107	
		M <sub>2</sub>						28.8	13	99		
C							c. 11					
F						11.2						
28	" 15						22	28				
		F					22.7					
29	" 16	L					9	0				
		F		△				9.7				
30	" 17	P	ε	ε	3	36	17				△ = 66°. Felt in Mexico.	
				e				37				
		PPP		e				40	35			
		S		e				45	10			
		"		e					14			
			i	i					23			
		PS						46	10			
				e					57			
				ε				49				
		SSS						52.9				
		e				56						
L						59						
M <sub>1</sub>				4	3.9		23	64				
M <sub>2</sub>					10.7		18		59			
F					5.5							
31	" 18	L			4	18						
		M					22.2	18	7			
		F					4.9					



Scoresby-Sund.

No.	Date	Phase			Time (G. M. T.)			Period	Amplitude			Remarks	
									A <sub>N</sub>	A <sub>E</sub>	A <sub>Z</sub>		
	1928		<i>N</i>	<i>E</i>	<i>Z</i>	<i>h</i>	<i>m</i>	<i>s</i>	sec	μ	μ	μ	
32	April 18	<i>P</i>	<i>e</i>	<i>e</i>		19	30	4					△ = 38°.
		<i>PP</i>	<i>e</i>	<i>i</i>		31	20						Destructive in Bulgaria.
			<i>e</i>			32	52						
		<i>S</i>				35	53						
		<i>SS</i>				37.8							There is an uncertainty of c. 3 sec.s in the time determination.
		<i>L</i>				40							
		<i>M<sub>1</sub></i>				45.8			15	— 228			
		<i>M<sub>2</sub></i>				46.9			14		— 226		
		<i>C</i>							c. 15				
		( <i>L'</i> )				22	10						
		( <i>L''</i> )				22.7							
		<i>F</i>				23.3							
33	„ 18	<i>P</i>		<i>ε</i>		23	22.1						Repetition of the preceding shock.
		<i>SS</i>				30							
		<i>L</i>				37							
		<i>F</i>				23.9							
34	„ 22		<i>ε</i>	<i>ε</i>		5	13	8					
			<i>ε</i>	<i>ε</i>		14	22						
			<i>ε</i>	<i>ε</i>		15	19						
		<i>L</i>				21							
		<i>F</i>				5.7							
35	„ 22	<i>L</i>				20	34						Bulgaria.
		<i>M<sub>1</sub></i>				40.1			16	29			
		<i>M<sub>2</sub></i>				40.4			15		15		
		<i>F</i>				21.3							
36	„ 27	<i>P</i>			<i>ε</i>	20	48	1					△ = c. 92°.
		<i>PP</i>				51	36						Peru.
		$\frac{S_c P_c S}{S_c P_c S}$				58.6							
		$\frac{S_c P_c P_c S}{S_c P_c P_c S}$				58	55						
		<i>PS</i>				59.9							
			<i>ε</i>			21	13.9						
		<i>L</i>				17							
		<i>M</i>				23.3			24	31			
		<i>F</i>				22.2							
37	May 1		<i>ε</i>	<i>ε</i>		0	40.3						
			<i>ε</i>	<i>ε</i>		46							
		<i>L</i>				1	12						
		<i>M</i>				20.2			17	3			
		<i>F</i>				1.8							
38	„ 1	<i>P</i>				19	2	30					△ = 41°.
		<i>PP</i>				4	13						
		<i>S</i>				8	42						
		<i>SS</i>				11.7							
		<i>SSS</i>				13.9							



Scoresby-Sund.

No.	Date	Phase			Time (G. M. T.)			Period	Amplitude			Remarks
									A <sub>N</sub>	A <sub>E</sub>	A <sub>Z</sub>	
		N	E	Z	h	m	s	sec	μ	μ	μ	
38	1928 May 1											
		L					16					
		M <sub>1</sub>						19.4	17		-24	
		M <sub>2</sub>						21.1	18	-26		
							20.7					
39	„ 2	P					22 2 11					
		PP						3 46				
		S						8 23				
			ε	e				9.0				
		SS						11.9				
		L						14				
		M <sub>1</sub>						19.4	18	-25		
		M <sub>2</sub>						19.5	18		25	
		F						23.7				
40	„ 8	P	i	e			4 55 16		+	-		
		PP						57.1				
		PPP						58 8				
		S						5 2 42				
		SS						6.1				
		SSS						7.9				
		L						10				
		M						10.5	13	7		
		F						6.1				
41	„ 12		ε				20 42					
				ε				48 35				
					ε			48.7				
						ε		49.6				
		L						56				
		M <sub>1</sub>						58.2	20		4	
		M <sub>2</sub>						21 3.6	13	-2		
F						21.8						
42	„ 14	L					3 54					
		F					4.4					
43	„ 14-15	P					22 27 20		+	-		
		S	e					37 48				
		„		i				50				
		m						38	14; 11	-58	33	
		PPS						39.3				
					e			41.7				
		SS						44				
			e	e				51				
		L						55				
		M <sub>1</sub>						57.1	31		264	
M <sub>2</sub>						58.5	28					
M <sub>3</sub>						23 5.4	19	-75				
M <sub>4</sub>						5.7	18		81			
L'						0 39						
F*)												

\*) F in following.



Scoresby-Sund.

No.	Date	Phase			Time (G. M. T.)			Period	Amplitude			Remarks
									A <sub>N</sub>	A <sub>E</sub>	A <sub>Z</sub>	
		N	E	Z	h	m	s	sec	μ	μ	μ	
44	May 15				2	48.8						Repetition of preceding shock.
		P				59	8					
		S				3	16					
		L				21.6			21	7		
		M <sub>1</sub>				25.2			21		5	
		M <sub>2</sub>				4.8						
45	" 15				6	6						
						10.2						
						14.9						
		L				46						
		F				7.6						
46	" 16				5	23.2						△ = c. 59°.
		P				26.9						
		PPP				31.3						
		S				42						
		L				44						
		F				6.2						
47	" 16				8	9						△ = c. 85°. La Paz gives △ = 1760 km.
		P				19	43					
		S				20.9						
		PS				25.7						
		SS				35						
		L				9.3						
48	" 17				11	36						
		L				12.4						
		F										
						2	32					
						36						
49	" 18					45						
		L				55.5			19; 20	-4	3	
		M										
		F*)										
50	" 18				3	45						
		L				4.3						
51	" 19				3	51.9						
						4	4					
		L*)										
52	" 19				4	50						
		L				5	0.1			18	1	
		M				5.8						
53	" 19				10	8						
		L				11.3						



Scoresby-Sund.

No.	Date	Phase			Time (G. M. T.)			Period	Amplitude			Remarks	
									A <sub>N</sub>	A <sub>E</sub>	A <sub>Z</sub>		
	1928		N	E	Z	h	m	s	sec	μ	μ	μ	
54	May 20	P	i	ε		16	40	38					Δ = 71°. Felt near Tokyo.  M disturbed by work at the station.
		PP						43.3					
		S							50	3			
		PPS								51.3			
		SS									54.3		
		L					17		8				
55	" 21	L				2		53					
		M						59.8	8		1		
		F							3.3				
56	" 24	L				6		0					
		M						8					
		F							18.6	20		4	
57	" 24	L				6		0					
		M						8					
		F							6.9				
58	" 26	L				19		58					
		M <sub>1</sub>						20	0.3	17		4	
		M <sub>2</sub>							4.5	11		1	
		F							20.4				
59	" 26	L				6		17					
		F							6.5				
			ε	ε		8		53.1					
60	" 27			ε				54.7					
		F						9.4					
		P	i	e		10	1	32				Δ = 69°. Sea of Japan.	
		PP						4	9				
	e						6.4						
		e					7.3						
61	" 28	S	e	i		10		40					
		PS						11.2					
		SS	e					15.3					
		"		i				15	22				
		SSS							18.7				
		L		e					21				
		"							22				
		M <sub>1</sub>							27.3	32		271	
		M <sub>2</sub>							27.8	24		— 154	
		M <sub>3</sub>							30.3	22		213	
M <sub>4</sub>							32.8	20		— 182			
F							(15.0)						
61	" 28	L				7		13					
								18					
									39				
		M <sub>1</sub>						48.4	23			5	
		M <sub>2</sub>							51.4	20		11	
F							9.2						



Scoresby-Sund.

No.	Date	Phase			Time (G. M. T.)	Period	Amplitude			Remarks	
							A <sub>N</sub>	A <sub>E</sub>	A <sub>Z</sub>		
62	1928 May 28	PP	N	E	Z	<i>h m s</i>	sec	$\mu$	$\mu$	$\mu$	Aftershock to no. 60.
			$\epsilon$			15 49 31					
				$\epsilon$		52.5					
			S	$\epsilon$	$\epsilon$	55 57					
			PS	$\epsilon$		56.4					
			SS			16 0					
			L			8					
			M <sub>1</sub>			14.2	23	5			
63	" 31	L									
						7 46 14					
						8 2					
			M <sub>1</sub>			9.5	19		4		
			M <sub>2</sub>			16.3	16	2			
64	" 31	P									
						14 1.3					
			S	$\epsilon$	$\epsilon$	11 32					
			SS	$\epsilon$		17					
			L	$\epsilon$		32					
			"		$\epsilon$	37					
65	" 31	F									
						15.0					
				$\epsilon$	$\epsilon$	21 19					
				$\epsilon$		23					
				$\epsilon$		26					
				$\epsilon$		31					
			L		$\epsilon$	48					
66	" 31	" M F									
						50					
						53.5	27	5			
						22.3					
				$\epsilon$	$\epsilon$	23 46.9					
67	June 1	(P)									
						0 3.4					
						0.5					
			M <sub>1</sub>			0 41.7	18		7		
			M <sub>2</sub>			44	17	- 4			
68	" 1	P									$\Delta = 69^\circ$ .
						2.0					
			L		$\epsilon$	12 33.8					
			F			44					
68	" 1	PPP									
						59					
						13.4					
						13 23 30		+	+		
						26.1					
						27.4					
68	" 1	SSS									
						32 40					
						37.4					
						40.7					



Scoresby-Sund.

No.	Date	Phase			Time (G. M. T.)			Period	Amplitude			Remarks
									A <sub>N</sub>	A <sub>E</sub>	A <sub>Z</sub>	
		N	E	Z	h	m	s	sec	μ	μ	μ	
68	1928 June 1				13	47						
		L										
		M <sub>1</sub>					51.3		20	— 12		
		M <sub>2</sub>					56.1		17		— 24	
		M <sub>3</sub>				14	0.5		18	21		
		F			16.5							
69	" 1				22	26.5						
		L				45						
		F			23.1							
70	" 3		ε	ε	3	58						
		F			4.3							
71	" 3		ε		7	10						
			ε			17						
		L				27						
		F			7.9							
72	" 3		ε		8	45						
		S		e	52	34						
		(L)		e	9	7						
		(L)	e		9							
		M <sub>1</sub>			19.6		18	12				
		M <sub>3</sub>			25.2		15		14			
		F			10.8							
73	" 3		ε		22	24						
		L			23	2						
		M				7.3		20	3			
		F			23.7							
74	" 4	L			2	46						
		F			3.2							
75	" 7		ε	e	6	42	26					
		F			48							
76	" 8		ε	ε	15	0						
			ε	ε		11						
			ε	ε		16						
		L			15.5							
		M <sub>1</sub>			15	46.2		21	10			
		M <sub>2</sub>			49.1		19		5			
		F			17.3							
77	" 9	L			3	14						
		F			3.7							



Scoresby-Sund.

No.	Date	Phase			Time (G. M. T.)			Period	Amplitude			Remarks		
									A <sub>N</sub>	A <sub>E</sub>	A <sub>Z</sub>			
78	June 15	P	N	E	Z	h	m	s	sec	μ	μ	μ	Δ = c. 95°. No N record.	
						6	25.9							
							29	41						
		S <sub>c</sub> P <sub>c</sub> S					36	28						
								38						
		PS					42							
								51						
		L					58							
								7	2.7	26		- 42		
		M <sub>1</sub>					10.7			20		70		
	9.5													
M <sub>2</sub>														
F														
79	„ 15	L				19	10					No records from 17 <sup>h</sup> 30 <sup>m</sup> to 19 <sup>h</sup> 10 <sup>m</sup> .		
							19.7							
F														
80	„ 17	P	e	i		3	30	42	13	+	-	107	Δ = 71°. Mexico.	
							30.9							
		m <sub>1</sub>					31.0			13				- 128
								33	28					
		PP			e		35	1		12				52
								35.1						
		PPP			i		35	21						
								36	16					
		m <sub>3</sub>			e		38	21						
								40	3					
		S			i	i	40.8							
								42	7					
		PS			i		42.2			13		136		
								42.3		14		- 139		
		m <sub>4</sub>					45	1						
									24					
		m <sub>5</sub>			i	i	47	51						
	49.8													
SS			e		51.3									
						53								
„			e		55									
						9.1								
L			e											
„			e											
F														
81	„ 17		e	e		7.0						Overlapped by preceding disturbance. F can not be determined.		
							7	18.9						
e														
82	„ 17	P	e	e		22	32.3		22	-	6	Δ = c. 70°.*) in following.		
							41.6							
		S					48			20			- 4	
								58						
		SS					23	0						
		L			e									
								3.5						
		„					4.5							
M <sub>1</sub>														
M <sub>2</sub>														
F*)														



Scoresby-Sund.

No.	Date	Phase			Time (G. M. T.)			Period	Amplitude			Remarks	
									A <sub>N</sub>	A <sub>E</sub>	A <sub>Z</sub>		
83	1928 June 17-18		N	E	Z	h	m	s	sec	μ	μ	μ	Δ = c. 70°.
		P	ε	e		23	36	6					
		PPP											
		S											
		SS											
		L	e			0	1						
		"		e									
		M <sub>1</sub>							21	- 13			
M <sub>2</sub>							20		7				
F					1.0								
84	June 21	PP	e	ε		11	1	9					Δ = c. 127°.
			ε										
		PPP											
		$\overline{S_e P_e S}$											
		$\overline{S_e P_e P_e S}$											
		SS					18	14					
		SSS											
		(L)	e	e			32						
		L					46						
		M <sub>1</sub>					52.5		20	23			
		M <sub>2</sub>					53.3		19		- 14		
		L'					12	44					
F					14.2								
85	" 21	L				18	42					No records from 16 <sup>h</sup> 38 <sup>m</sup> to 18 <sup>h</sup> 42 <sup>m</sup> .	
		L'				19	12						
		M <sub>1</sub> '					17.4		22	4			
		M <sub>2</sub> '					19.1		21		7		
		M <sub>3</sub> '					29.2		18	7			
		F					20.8						
86	" 23	L				7	45						
		F					7.9						
87	" 24				c. 4	44					No time-marks.		
88	" 25		ε	ε		7	45						
			ε	ε			47						
			ε				52						
		L				8	8						
		F					8.7						
89	" 29	$\overline{(S_e P_e S)}$				20	4	27					
							8						
		L					36						
F					20.9								



Scoresby-Sund.

No.	Date	Phase			Time (G. M. T.)			Period	Amplitude			Remarks	
									A <sub>N</sub>	A <sub>E</sub>	A <sub>Z</sub>		
		N	E	Z	h	m	s	sec	μ	μ	μ		
90	1928 June 29-30	PP	e	ε		23	10	18					Δ = c. 120°.
		S <sub>c</sub> P <sub>c</sub> S	e					15.8					
									18.4				
		PS	ε					20					
		SS	e	e				27.2					
		SSS						31.8					
		L						41					
		M <sub>1</sub>						42.4	50		- 192		
		M <sub>2</sub>						48.8	24		- 32		
		M <sub>8</sub>						53.7	22	30			
M <sub>4</sub>						56.6	20	- 43					
F						2.6							
91	July 1	(L)		ε		9	49						
		L					53						
		M <sub>1</sub>				10	5.2	19	4				
		M <sub>2</sub>					6.7	19		4			
		F					10.6						
92	„ 2	L				2	41						
		F					2.9						
93	„ 2			ε		10	11						
		L					16						
		F					11.1						
94	„ 6		ε			1	7						
			ε	ε			15.2						
			ε				23						
			ε				26						
		L		ε			30						
		F					1.9						
95	„ 7	P	ε	ε		3	45	8				Δ = c. 70°.	
		S					54.4						
		SS					59						
		L				4	7						
		M <sub>1</sub>					17.8	13		3			
		M <sub>2</sub>					20.4	13	- 4				
F					4.8								
96	„ 8	(L)		ε		12	25						
		L					33						
		M <sub>1</sub>					39.3	22	6				
		M <sub>2</sub>					43.7	18		2			
		F					13.1						



Scoresby-Sund.

No.	Date	Phase			Time (G. M. T.)			Period	Amplitude			Remarks	
									A <sub>N</sub>	A <sub>E</sub>	A <sub>Z</sub>		
		N	E	Z	h	m	s	sec	μ	μ	μ		
97	1928 July 9	PP	ε	•		21	44.2					Δ = c. 120°.	
		PPP	ε	ε			47.2						
		$\overline{S_c P_c S}$	e				49.3						
		$\overline{S_c P_c P_c S}$	ε				50.8						
				ε				51.4					
				e				51.8					
		PS	e					53.4					
		PPS	e					55.7					
		(L)	e				22	14					
								16					
		L						27					
		M <sub>1</sub>						29.9	17	14			
		M <sub>2</sub>						36.6	20	-20			
F						24.3							
98	" 10	P	e			2	13.9				Δ = c. 70°.		
			ε				15.2						
		S					23.3						
		L					40						
		M <sub>1</sub>					45.2	21	-9				
		M <sub>2</sub>					50.1	16		5			
F						3.4							
99	" 11		e			3	13.2						
							13	44					
							31						
		L					4	3					
		M <sub>1</sub>					12.2	18		2			
		M <sub>2</sub>					12.5	18		2			
L'						58							
F						5.3							
100	" 13		ε			9	56.9						
		L					10	29					
		M					32.7	23		8			
F						11.2							
101	" 15	P				9	41	22			Δ = 41°. Destructive at Smyrna and Torbali.		
		PP					42.9						
		PPP					43	21					
			ε					45.3					
		S	e				47	33					
		"	e					46					
		SS						50.7					
		SSS						52.1					
		L						54					
		M <sub>1</sub>						57.4	22			4	
M <sub>2</sub>						59.2	15	-5					
F						10.8							



Scoresby-Sund.

No.	Date	Phase			Time (G. M. T.)			Period	Amplitude			Remarks		
									A <sub>N</sub>	A <sub>E</sub>	A <sub>Z</sub>			
102	July 18	P	N	E	Z	h	m	s	sec	μ	μ	μ	Δ = 83°. Destructive in Peru.	
			i	i	i	19	17	38		+	-	+		
					ε									
			S				28	4						
			S <sub>c</sub> P <sub>c</sub> S	i					12					
			m				28.7			16	70			
			PS				29.1							
			SS				33							
			SSS				38.5							
			(L)				41							
			L				47							
			M <sub>1</sub>				48.4			34		-100		
			M <sub>2</sub>				48.7			27	111			45
M <sub>3</sub>				53.8			18							
M <sub>4</sub>				58.9			17	-65						
C							17-18							
F				23.5										
103	" 19	F			2	9								
						17								
104	" 19-20				23	57	53							
			ε	ε										
			e											
			ε	ε	0	8.2								
			e											
			e	ε										
			e											
				ε										
		L												
		M												
		(L')			1.6			21	-3					
		F			2.0									
105	" 21		ε	ε	2	59								
			e		3	2.2								
			e	ε		5.3								
			e	ε		8.6								
			ε			20								
			e	ε		32								
		L				41								
		F				4.4								
106	" 21	L			7	11								
		F				7.6								
107	" 22	P			7	39.5						Δ = c. 72°.		
		S		e	49	0								
			e			47								
		SS				53								
		SSS				56.4								



Scoresby-Sund.

No.	Date	Phase			Time (G. M. T.)			Period	Amplitude			Remarks	
									A <sub>N</sub>	A <sub>E</sub>	A <sub>Z</sub>		
		N	E	Z	h	m	s	sec	μ	μ	μ		
107	1928 July 22		<i>e</i>		8	5							
		<i>L</i>				8.3		21	2				
		<i>L</i>		<i>e</i>		10							
		<i>M</i> <sub>2</sub>				13.2		17		3			
		<i>F</i>			9.1								
108	„ 23		<i>ε</i>	<i>ε</i>	8	5							
			<i>ε</i>			15.8							
			<i>ε</i>			26							
			<i>ε</i>			32							
		<i>L</i>				58							
		<i>M</i>			9	7.0	20	2					
		<i>F</i>			10.0								
109	„ 23	<i>L</i>			16.5								
		<i>F</i>			17.6								
110	„ 25	<i>L</i>			19	25							
		<i>F</i>			19.7								
111	„ 26	<i>L</i>			13	26							
		<i>F</i>			13.7								
112	„ 26		<i>e</i>	<i>e</i>	19	37							
		<i>M</i>			38.7		7		-2				
		<i>F</i>			45								
113	„ 27	<i>L</i>			16	15							
		<i>F</i>			16.7								
114	„ 28	<i>PP</i>			20	9.0						Δ = c. 102°.	
		<i>S<sub>c</sub>P<sub>c</sub>S</i>			15.6								
		<i>PS</i>			18	3							
		<i>SS</i>			24								
					42								
		<i>L</i>			44								
		<i>M</i>			49.4		21	2					
		<i>F</i>			21.4								
115	„ 30		<i>ε</i>		2	55.1							
			<i>ε</i>			59.6							
			<i>ε</i>	<i>ε</i>	3	4							
		<i>L</i>		<i>e</i>		8							
		„		<i>e</i>		10							
		<i>M</i> <sub>1</sub>				27.2		17		11			
		<i>M</i> <sub>2</sub>				27.8		16		-10			
		<i>F</i>			4.2								
116	„ 30	<i>L</i>			7	48							
		<i>F</i>			57								



Scoresby-Sund.

No.	Date	Phase			Time (G. M. T.)			Period	Amplitude			Remarks
									A <sub>N</sub>	A <sub>E</sub>	A <sub>Z</sub>	
		N	E	Z	h	m	s	sec	μ	μ	μ	
117	1928 Aug. 1				19	6	13					
		F										
118	" 1	L			19	50						This and the two following shocks were felt in Iceland.
		M <sub>1</sub>						8		-4		
		M <sub>2</sub>						7	4			
		F			20	2						
119	" 1	L			20	31.5						*) in following.
		M <sub>1</sub>						14		-4		
		M <sub>2</sub>						7		5		
		M <sub>3</sub>						7	4			
		F*)										
120	" 1	L			20	49.5						
		M <sub>1</sub>						8		4		
		M <sub>2</sub>						7	-4			
		F			21	2						
121	" 2		ε		6	49						
			ε	ε								
			ε	ε								
		L			7	3						
		M <sub>1</sub>						18	4			
		M <sub>2</sub>						16		2		
		F										
122	" 3	L			7	32						
		F										
123	" 4				18	50*)						*) No records from 16 <sup>h</sup> 30 <sup>m</sup> to 18 <sup>h</sup> 50 <sup>m</sup> .  Destructive in Mexico.
		L			19	1						
		M <sub>1</sub>							-360			
		M <sub>2</sub>								450		
		M <sub>3</sub>									80	
		M <sub>4</sub>							310			
		M <sub>5</sub>								200		
		C						16-20				
		F										
					23	4						
124	" 5	P			14	54.9						△ = c. 87°.
		PP										
		S <sub>c</sub> P <sub>c</sub> S			15	5.4						
		PPS										
		SS										
		L										
		M <sub>1</sub>						22		2		
		M <sub>2</sub>						20	4			
		F										
					16	2						



Scoresby-Sund.

No.	Date	Phase			Time (G. M. T.)			Period	Amplitude			Remarks
									A <sub>N</sub>	A <sub>E</sub>	A <sub>Z</sub>	
		N	E	Z	h	m	s	sec	μ	μ	μ	
125	1928 Aug. 7				20	37						
		F				43						
126	" 8	L			3	21						
		F				3.7						
127	" 9	L			4	23						
		F				4.7						
128	" 10	P	ε	e	e	15	43	13				Δ = 55°.
		S	e	ε		50	50					
						52.4						
		SS				54.4						
		SSS				56						
		L				16.0						
		F				16.3						
129	" 12	P	ε		8	23.1						Δ = c. 103°.
		"		ε		23.6						
		P'		ε		26.9						
		PP	e			27	29					
				e		27.9						
		$\overline{S_c P_c S}$	e	e		33	15					
		$\overline{S_c P_c P_c S}$	e	e		34.0						
		PS	e			36						
		SS				41.9						
		SSS				45.4						
				e		52						
		L				9.0						
		F				10.8						
130	" 13				3	51.1						
		L			4	6						
		M <sub>1</sub>				16.1	19			2		
		M <sub>2</sub>				16.4	17		2			
		F				4.7						
131	" 15	P			15	47						
		S				52.9						
		L				59						
		F				16.3						



No. 2.

1928.

## Geodætisk Institut

Proviantgaarden, Copenhagen, Denmark.

### Bulletin of the seismological station

# SCORESBY SUND

$\varphi = 70^{\circ}29' N.$   $\lambda = 21^{\circ}57' W.$   $h = 69$  m.

Lithologic foundation: Granite.

No. 2. Aug.—Dec. 1928.

#### Instruments:

Galitzin pendulums with galvanometric registration.

#### Constants:

Component	$l$	$T_1$	$A_1$	$T$	$k$
	cm	sec	cm	sec	
$N$	12.0	12.4	100	11	70
$E$	12.0	11.9	100	10	65
$Z$	14.1	10.1	100		

The values of  $T$  and  $k$  are approximate mean-values; the damping has been nearly aperiodic.

$Z$  has not been very stable; the period has varied from about  $2^s$  to  $4^s$ .

Time-corrections have been determined daily by means of Nauen scientific time-signals and time is, in general, known to the second.



/ Scoresby-Sund.

No.	Date	Hour	Forerunners				L	Un- defined	△	Remarks
			P	S						
			<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>	°	
1	1928 Aug. 15	18								L; beginning disturbed.
2	16	7					.8			
3	17	19					.35			Seismic?
4	19	3					.0			
5	19	4					.6			
6	20	2			16.4					
7	22	7					.3			
8	22	20					.24			
9*	23*	1			34 31					Sea of Okhotsk.
10	23	4			.1		.4			
11	23	6						.5		
12	24	9			52.9					Alger.
13*	24*	22			4.0	12.7				
14	25	0					.3			
15	25	2					.4			
16	26	5					.1			
17	26	6					.1			Faint.
18	28	2					.0			
19	28	8			.9		1.3			
20	28	10					.4			
21	29	2						19		
22	29	3					.7			
23	29	5			46					Not very distant.
24	29	8					.0			
25	29	10					.6			No records 29 <sup>d</sup> 16 <sup>h</sup> 33 <sup>m</sup> —19 <sup>h</sup> 30 <sup>m</sup> .
26	30	7					.3			
27	30	22					.6			
	Sept.									
28*	1*	6	19.7	28 17	35.2		.7		63	Northern India.
29	2	0	5 20	14.5	18.9				69	Central America.
30	6	6		48 59			1.1			
31	6	9						.9		
32	11	1			6 23		.5			No records 6 <sup>d</sup> 23 <sup>h</sup> —7 <sup>d</sup> 11 <sup>h</sup> . E record only.
33*	11*	12	47 3*	54 38	49.5	58.7	.2		54	Pacific Ocean.
34	11	22						.1		
35	12	1			41.5					Distant; phases not clearly marked.
36	13	3			54.3		1.4			Faint preceding movement. No records 18 <sup>d</sup> 15 <sup>h</sup> —20 <sup>h</sup> . Bay of Aden.
37	18	20	4.1	13.5			.5			
38	19	3					.3			
39	19	8	27 54	38.1			.9		80	
40	21	13	39.8	50.0	43.4		1.1			Peru.
41	22	7					.1			
42	22	7			51 54	61 55	1.4			West of New Hebrides.
43	23	14					.4			
44	24	10					.2			
45	25	5			19 47					Japan.



Scoresby-Sund.

No.	Date	Hour	Forerunners				L	Un- defined	△	Remarks
			P	S						
	1928									
	Sept.		<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>	°	
46	25	8	13 13	21.7			.6		63	Japan.
47*	27*	0	54.6	63 10	63 41	70.4	1.2		63	Lesser Antilles.
	Oct.									
48	3	1					.3			
49*	9*	3	12 20	21 32	15.0	16 50			69	Mexico.
50	12	0					.1			
51	12	7		48 44			1.0			
52	13	13					.8			
53	13	16					.1			Disturbed.
54	15	9					.5			
55	15	14	30 12	38.9	32 24	46.0	.9		64	N record only. S faint.
56	19	10			.7		1.5			No records 23 <sup>d</sup> 17 <sup>h</sup> 2 <sup>m</sup> —18 <sup>h</sup> 52 <sup>m</sup> .
57	25	12			54		1.1			
58	28	15					.2			
59	30	5					.0			
60	31	20					.7			
	Nov.									
61	1	4	23 23				.7			Mexico.
62*	6*	4			26 19	27.5	1.0			Loyalty Islands.
63	7	15			42.9		.9			
64	11	23					.8			
65	15	13						.6		
66*	20*	20	48 52		59.4	60 44	1.3			Chile.
67	27	9						37		
68	28	2					.1			
69	28	7					.8			
70*	28*	11			2.7	12.6	.6			Sunda Islands.
71	29	16					.9			
72	29	18			23.3		1.2			South of Tonga Islands.
73	30	0					.4			" " " "
	Dec.									
74*	1*	4	21.0		25 35	35 4	.9			Chile.
75	2	4			49.3	55.3	1.2			"
76	2	22						56		Not very distant.
77	3	13					.0			
78	7	9						.7		Strong microseims.
79	9	0					.9			Salomon Islands.
80	9	5			35		1.0			" "
81	9	18			40		1.0			" "
82	10	5					.5			
83*	12*	20			41 43	42 37				NE of New Zealand.
84	14	0						54		
85	14	2					.9			
86*	19*	11			55.1	61.7				Mindanao.
87	21	6						.4		
88	22	14					.8			
89	26	21			55.4		1.2			
90*	28*	14			40	44.1	1.1			Mindanao.



Scoresby-Sund.

NOTES

- No. 9. Aug. 23. 1<sup>h</sup>. Sea of Okhotsk. *E* record only. 34<sup>m</sup>31<sup>s</sup> clearly marked, presumably *S*. The rest of the record faint.
- No. 13. Aug. 24. 22<sup>h</sup>. Several later phases, but not clearly marked.
- No. 28. Sept. 1. 6<sup>h</sup>. Northern India. *E* record only. *P* and *S* distinct phases, but beginning of *P* uncertain. *SSS* clearly marked.
- No. 33. Sept. 11. 12<sup>h</sup>. Pacific Ocean. *E* record only. *P* small, beginning uncertain, possibly in time-break. *S* clearly marked. 55<sup>m</sup>.9 another phase seems to begin. *SS* prominent. In *M* a period of about 12<sup>s</sup>.
- No. 47. Sept. 27. 0<sup>h</sup>. Lesser Antilles. *P* not clearly marked. On *E*, *S* and *PS* well defined. 64<sup>m</sup>28<sup>s</sup> a phase, most clearly marked on *N*, possibly *S<sub>c</sub>S*. *SS*, 68<sup>m</sup>.0, small. *SSS* well marked on *N*. The beginning of *L* has long periods; *M* small.
- No. 49. Oct. 9. 3<sup>h</sup>. Mexico. Very strong record. *P* large, but owing to microseismic movement the beginning not quite certain; *P<sub>E</sub>*, *P<sub>Z</sub>* 12<sup>m</sup>20<sup>s</sup>, *P<sub>N</sub>* 12<sup>m</sup>28<sup>s</sup>. *PP* not strong, *PPP* larger and followed by continued strong movement. *S* not very clearly marked owing to strong preceding movement; followed by very large movement. *L* very large, the beginning uncertain.
- No. 62. Nov. 6. 4<sup>h</sup>. Loyalty Islands;  $\Delta = c. 130^\circ$ . On *Z* faint movement precedes *PP*, 26<sup>m</sup>19<sup>s</sup>. *P<sub>c</sub>P<sub>c</sub>S*, 27<sup>m</sup>.5, clearly marked on *N*. Later forerunners largest on *N*; *PS*, 38<sup>m</sup>.0; other phases not clearly marked. *L* not large.
- No. 66. Nov. 20. 20<sup>h</sup>. North Chile;  $\Delta = c. 100^\circ$ . Masked by microseisms. *P* small, but distinct on *Z*. *PP*, 52<sup>m</sup>.8, not much larger. Previous to *S<sub>c</sub>P<sub>c</sub>S*, 59<sup>m</sup>.4, some increase of movement. *S<sub>n</sub>*, 60<sup>m</sup>44<sup>s</sup>, sharp on *N*. The beginning of *PS*, c. 61<sup>m</sup>.6, not certain; later increase of movement due to *PPS*. *SS* 66<sup>m</sup>.2. Regular *M* group about 21<sup>h</sup>.5.
- No. 70. Nov. 28. 11<sup>h</sup>. Sunda Islands. Quite strong forerunners, but disturbed by microseisms and not very clearly marked. *M* not large, but of long duration.
- No. 74. Dec. 1. 4<sup>h</sup>. Chile;  $\Delta = 112^\circ$ . *E* record only. *P* faint. 25<sup>m</sup>.2 increase of movement preceding *PP*, 25<sup>m</sup>35<sup>s</sup>, strong and clearly marked. *PPP*, 25<sup>m</sup>50<sup>s</sup>, and *S<sub>c</sub>P<sub>c</sub>S*, 31<sup>m</sup>39<sup>s</sup>, well defined. Some other phases, less clearly marked, precede *PS* 35<sup>m</sup>4<sup>s</sup>, large and sharp. *SS* 40<sup>m</sup>.9. The beginning of *L* uncertain owing to large preceding movement. Large *M* group c. 5<sup>h</sup>.2.
- No. 83. Dec. 12. 20<sup>h</sup>. NE of New Zealand;  $\Delta = c. 140^\circ$ . *P'* 41<sup>m</sup>43<sup>s</sup>; *P<sub>c</sub>P<sub>c</sub>S* 42<sup>m</sup>37<sup>s</sup>. Later phases not clearly marked. The beginning of *L* uncertain, c. 21<sup>h</sup>.4; several regular *M* groups.
- No. 86. Dec. 19. 11<sup>h</sup>. Mindanao;  $\Delta = c. 100^\circ$ . Strong record, but phases not clearly marked. Faint beginning c. 51<sup>m</sup>.7. *PP* 55<sup>m</sup>.1. After 61<sup>m</sup>.7 strong, increasing movement. Some large oscillations. 78<sup>m</sup>, possibly the beginning of *L*. Large *M* groups.
- No. 90. Dec. 28. 14<sup>h</sup>. Mindanao,  $\Delta = c. 100^\circ$ . No *N* record. Faint beginning; after 44<sup>m</sup>.1 continued irregular movement without well-marked phases. The beginning of *L* not certain; regular *M* group about 82<sup>m</sup>.