

ANNUAL REPORT  
OF THE  
METEOROLOGICAL  
AND THE  
SEISMOLOGICAL OBSERVATIONS  
MADE AT THE  
INTERNATIONAL LATITUDE OBSERVATORY  
OF MIZUSAWA  
FOR  
THE YEAR 1930.

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LATITUDE  $39^{\circ} 8' N.$ , LONGITUDE  $141^{\circ} 8' E.$ ,  
HEIGHT ABOVE MEAN SEA LEVEL 61 METRES.

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PUBLISHED BY THE INTERNATIONAL LATITUDE OBSERVATORY  
OF MIZUSAWA.

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1931.



The present report gives the results of the meteorological and seismological observations made at this observatory during the year 1930. No alteration has been made in the nature and methods of observation. The observations and the calculations were made by Messrs. M. Uchida, S. Satô, I. Kumagai, and G. Obata under the superintendence of Dr. T. Ikeda.

The followings are to be noted with respect to the meteorological observations:

*Hours of observations*—*Japanese Central Standard Time* (i. e. mean time of the meridian 9h east from Greenwich) is adopted.

*Air Pressure*.—The barometric readings in millimetres are reduced to the freezing point of water, the corrections to sea level and to standard gravity are given at the bottom of the page for each month.

*Air and Earth Temperatures*.—The degrees are given in Centigrade.

\* *Wind*.—The velocity is expressed in metres per second. The direction was observed relative to the sixteen points of the compass.

*Cloud*—The amount is estimated by the scale 0-10, the forms are those of the *International classification*, and the direction of motion is indicated relative to the sixteen points of the compass.

*Tension of Water Vapour*.—is given in millimetres.

*Relative Humidity*.—is given in percentages.

*Precipitation*.—The amount is given in millimetres.

*Clear and Cloudy Days*.—The amount of cloud is less than 2 exclusive, for the former; and more than 8 inclusive, for the latter.

*Duration of Sunshine*.—is recorded by a Jordan sunshine-recorder.

*Amount of Evaporation*.—is given in millimetres, for each day,—that is from 10h of the preceding day to 10h of the day in question, according to the instruction of the Central Meteorological Observatory in Tôkyô.

*The heights of the meteorological instruments* are as follows,

*Barometer*—63.1m above sea level.

*Air temperature thermometer*.—1.3m above the ground,

*Anemometer*.—15.4m above the ground,

*Wind vane*.—16.6m above the ground,

\* Note: The wind velocity is measured by the Robinson anemometer. Since January first of the year 1925 a new factor for this instrument has been used. The ratio of new factor to the old one is 0.7/1.0.



In recording meteorological phenomena the following symbols are used:—

●	Rain	⊕	Snow drift	C	Cirrus
×	Snow	←	Ice crystal	CS	Cirro-stratus
⚡	Thunder storm	⊙	Solar corona	CK	Cirro-cumulus
⊥	Thunder without lightning	⊕	Solar halo	KC	Alto-cumulus
<	Lightning without thunder	∪	Lunar corona	SC	Alto-stratus
△	Graupel	∩	Lunar halo	SK	Strato-cumulus
▲	Hail	↘	Gales	N	Nimbus
≡	Mist, fog	∩	Rainbow	K	Cumulus
□	Hoar frost	∪	Aurora	KN	Cumulo-nimbus
∩	Dew	∞	Dust haze	S	Stratus
∇	Silver thaw	⊠	Snow lying	∞	Wave cloud
~	Glazed frost	⊥	Ice Column in the ground	∩	Zodiacal light

The *descriptions* of the *meteorological instruments* are found in the annual reports for the years 1902, 1904, 1905, 1910, and 1916.

The *seismological instruments* in use are *two Omori's horizontal pendulums*, of the same type as that described in p. 8 of No. 5, "Publication of the Earthquake Investigation Committee in Foreign Language." one serving to register the EW component, and the other the NS component, of seismological movements.

The *time* adopted in the Seismological observations is *Greenwich Local Time*.

	EW Component Apparatus	NS Component Apparatus
Period of free oscillation	16 seconds	36 seconds
Multiplication of the pointer	100 times	20 times
Weight of heavy cylinder	45.0 kilograms	17.6 kilograms
Horizontal distance of the centre of the cylinder from the point of support	20 Centimetres	75 Centimetres
Vertical distance between the points of support and suspension	104 Centimetres	104 Centimetres

July, 1931

H. Kimura, *Rigakuhakushi*

*Director of the International Latitude Observatory*

*in Mizusawa.*



# SEISMOLOGICAL OBSERVATIONS



EARTHQUAKES.

( 1 9 3 0 )



No.	Date 1930	P				S				L				Duration of Total Earthquake (mean)	Maximum Range of Motion				Character of Motion	Intensity	Remarks
		E	W	N	S	E	W	N	S	E	W	N	S		E	W	N	S			
1	Jan. 3	h	m	s	m	s	m	s	m	s	m	s	m	mm	mm	mm	mm	Slow	Feeble		
2	3	11	?		?		55	13	55	13	-	-	-	?	0.02	?					
3	3	18	?		-	-	10	46	-	-	-	-	-	?	0.02	-					
4	5	1	23	01	?		25	31	25	31	-	-	-	12.9	0.08	0.11					
5	5	18	54	07	54.9		55	38	55	41	-	-	-	14.0	0.38	0.45					
6	5	23	-	-	?		-	-	?		-	-	-	?	-	0.04					
7	7	10	41.7		-	-	42	44	-	-	-	-	-	?	0.01	-					
8	9	10	?		?		59	34	59	31	-	-	-	?	0.02	0.02					
9	11	7	14.3		-	-	15	02	-	-	-	-	-	?	0.01	-					
10	11	21	23	08	23	05	24	47	24	47	-	-	-	5.5	0.03	0.03					
11	15	10	47.5		?		48	19	48	18	-	-	-	?	0.03	0.04					
12	16	19	?		-	-	55	26	-	-	-	-	-	?	0.01	-					
13	18	7	12	17	12	16	18	39	18	43	?		?	?	?	?					
14	21	4	?		-	-	29	44	-	-	-	-	-	?	0.01	-					
15	21	13	59	49	59	48	60	12	60	13	-	-	-	5.2	0.03	0.05					
16	21	20	53	37	?		53	54	?		-	-	-	2.7	0.02	0.02					
17	25	1	?		-	-	44	57	-	-	-	-	-	?	0.00	-					
18	25	11	43.0		42.9		43	34	43	35	-	-	-	?	0.01	0.03					
19	28	17	?		-	-	42	57	-	-	-	-	-	?	?	-					
20	30	18	19	23	19.5		20	02	20	04	-	-	-	5.5	0.06	0.03					
21	Feb. 1	4	34	11	?		34	39	34.5		-	-	-	4.9	0.02	0.04					
22	1	23	08	09	08	12	08	50	08	53	-	-	-	6.0	0.08	0.10					
23	2	11	26	04	?		27	01	27	02	-	-	-	5.0	0.02	0.02					
24	2	15	02.1		02.0		?		08	45	?		?	?	?	?					
25	2	21	02	22	?		02	58	?		-	-	-	3.9	0.02	0.01					
26	3	2	45.1		?		46	22	46	19	-	-	-	?	0.01	?					
27	5	0	32	42	?		34	22	?		-	-	-	7.0	0.02	?					
28	5	3	59.2		?		60	51	?		-	-	-	?	0.01	?					
29	6	21	17.9		-	-	18	22	-	-	-	-	-	?	0.01	-					
30	7	8	42.9		?		43	39	43	17	-	-	-	?	0.09	0.06					
31	9	13	17	29	17.7		18	29	18	36	-	-	-	5.1	0.03	0.02					
32	11	6	?		-	-	04	12	-	-	-	-	-	?	0.01	-					
33	14	12	45.7		?		46	31	?		-	-	-	?	0.01	0.01					
34	14	18	?		?		50	42	?		-	-	-	?	0.01	0.01					
35	15	1	25	25	25.4		26	32	26.5		-	-	-	5.6	0.03	0.05					
36	20	23	37.5		?		38.9	?	?		-	-	-	?	0.01	0.02					
37	23	10	15	11	15.2		16	13	16	17	-	-	-	6.2	0.04	0.05					
38	24	10	48	19	48.4		48	51	48	49	-	-	-	4.8	0.09	0.10					
39	24	20	58.3		-	-	59	08	-	-	-	-	-	?	0.04	-					
40	Mar. 1	17	43	30	?		44	27	?		-	-	-	3.5	0.00	?					
41	2	9	?		?		58	56	?		-	-	-	?	0.01	0.01					
42	2	15	?		?		34	57	?		-	-	-	?	0.02	0.01					
43	2	17	59	41	?		59	54	59	56	-	-	-	2.9	0.02	0.05					
44	3	20	12	08	12.2		13	11	13.2		-	-	-	5.3	0.02	0.04					
45	6	3	34	10	34	09	36	17	36	16	-	-	-	7.4	0.05	0.06					
46	7	6	?		-	-	14	18	-	-	-	-	-	?	0.01	-					
47	7	15	26.1		-	-	27	23	-	-	-	-	-	?	0.01	-					
48	7	21	33	21	33.4		33	46	33	47	-	-	-	3.6	0.04	0.05					
49	7	23	36	03	36	04	37	19	37	21	-	-	-	5.4	0.04	0.05					
50	9	9	41	21	41.4		41	43	41	40	-	-	-	7.4	0.42	0.32					
51	9	10	55	37	55.6		56	46	56	50	-	-	-	6.0	0.02	0.04					
52	9	11	12	58	13.0		13	20	13	24	-	-	-	6.9	0.12	0.10					
53	9	12	08	45	-	-	09	10	-	-	-	-	-	4.2	0.02	-					
54	9	19	?		-	-	14	22	-	-	-	-	-	?	?	-					
55	9	23	30	33	-	-	30	38	-	-	-	-	-	1.1	0.00	-					
56	10	16	30	10	30	09	32	20	32	21	-	-	-	10.5	0.90	0.71					







## EARTHQUAKES.

( 1 9 3 0 )

No.	Date 1930	P				S				L				Duration of Total Earthquake (mean)	Maximum Range of Motion				Character of Motion	Intensity	Remarks
		E	W	N	S	E	W	N	S	E	W	N	S		E	W	N	S			
111	May 1	h	m	s	m	s	m	s	m	s	m	s	m	s	m	mm	mm	Slow	Feeble		
112	4	18	37.9	-	-	38	23	-	-	-	-	-	-	?	0.00	-	/"	/"			
113	4	12	56	18	-	-	57	13	-	-	-	-	-	4.5	0.01	-	/"	/"			
114	4	16	57	02	-	-	57	42	-	-	-	-	-	4.7	0.01	-	/"	/"			
115	5	13	54	00	53.5	-	60	39	60	34	72	04	70	53	50.6	1.28	0.98	/"	/"		
	6	22	45	55	46	00	55	34	55	56	71	46	72	04	67.0	0.02	0.54	/"	/"		
116	8	5	10.3	?	-	10	39	?	-	-	-	-	-	?	?	?	/"	/"			
117	11	21	04.7	-	-	05	10	-	-	-	-	-	-	?	0.01	-	/"	/"			
118	12	1	51	09	-	-	51	28	-	-	-	-	-	1.9	?	-	/"	/"			
119	12	12	27	52	27	51	28	42	28.7	-	-	-	-	6.4	0.02	0.04	/"	/"			
120	13	23	57	20	?	-	58	32	?	-	-	-	-	6.8	0.01	0.02	/"	/"			
121	14	8	36	37	?	-	37	38	37	38	-	-	-	4.3	0.01	0.02	/"	/"			
122	15	19	40	09	?	-	41	05	?	-	-	-	-	5.6	0.02	0.02	/"	/"			
123	16	20	15	18	15	16	16	23	16	22	-	-	-	12.3	0.13	0.09	/"	/"			
124	18	7	56	05	-	-	56	34	-	-	-	-	-	3.5	0.01	-	/"	/"			
125	19	10	32	56	?	-	33	26	33.6	-	-	-	-	4.2	0.02	0.01	/"	/"			
126	19	15	09	02	09	04	13	10	13	10	?	-	?	?	?	?	/"	/"			
127	20	11	21	16	21.2	-	26	00	25	55	?	-	?	?	?	?	/"	/"			
128	20	22	?	-	?	-	12	55	?	-	-	-	-	?	0.02	?	/"	/"			
129	23	16	39	23	39	21	40	18	40	18	-	-	-	20.3	0.84	0.88	Quick	Weak	Felt		
130	23	21	34	23	34.4	-	35	11	35	04	-	-	-	6.2	0.04	0.05	Slow	Feeble			
131	26	18	34	10	34.2	-	34	53	34	54	-	-	-	5.1	0.04	0.05	/"	/"			
132	27	12	20	30	?	-	20	53	20	57	-	-	-	2.9	0.02	0.04	/"	/"			
133	27	14	12.2	-	?	-	12	32	?	-	-	-	-	?	0.02	?	/"	/"			
134	28	12	07.9	-	-	-	08	13	-	-	-	-	-	?	0.01	-	/"	/"			
135	28	19	18.0	-	-	-	18	40	-	-	-	-	-	?	0.01	-	/"	/"			
136	28	19	32.5	?	-	33	06	33	05	-	-	-	-	?	0.04	0.03	/"	/"			
137	30	3	42	58	?	-	43	24	43.5	-	-	-	-	5.6	0.04	0.03	/"	/"			
138	31	17	59	08	59	08	59	47	59	46	-	-	-	20.6	0.82	1.08	Quick	Weak	Felt		
139	June 1	9	?	-	?	-	01	40	?	-	-	-	-	?	0.02	0.01	Slow	Feeble			
140	1	9	17	38	17	36	18	05	18	00	-	-	-	8.4	0.97	0.62	/"	/"			
141	2	19	?	-	-	28	45	-	-	-	-	-	-	?	0.00	-	/"	/"			
142	2	20	20	20	-	-	20	51	-	-	-	-	-	3.8	0.01	-	/"	/"			
143	3	18	12	04	12.0	-	14	13	14	13	-	-	-	6.8	0.10	0.06	/"	/"			
144	3	19	58.2	-	?	-	60	14	60.4	-	-	-	-	?	0.01	0.02	/"	/"			
145	4	1	18.6	-	-	-	19	05	-	-	-	-	-	?	0.01	-	/"	/"			
146	4	9	58	28	58	27	64	51	64	51	?	-	?	?	?	?	/"	/"			
147	8	15	46	04	46.1	-	46	36	46	35	-	-	-	6.1	0.02	0.05	/"	/"			
148	11	0	57	59	57	57	65	03	64	48	71	36	71	37	34.2	0.01	0.46	/"	/"		
149	11	4	22.2	-	?	-	22	39	?	-	-	-	-	?	0.01	?	/"	/"			
150	13	1	00	32	-	-	01	06	-	-	-	-	-	9.3	0.01	-	/"	/"			
151	17	2	59	30	59	30	59	56	60	01	-	-	-	4.8	0.05	0.06	/"	/"			
152	18	11	25.8	-	25.8	-	26	52	26	54	-	-	-	?	0.05	0.03	/"	/"			
153	18	12	12	32	12	31	12	55	12	54	-	-	-	6.8	0.10	0.10	/"	/"			
154	18	17	49.7	-	-	-	50	08	-	-	-	-	-	?	0.00	-	/"	/"			
155	23	6	15.1	-	?	-	15	37	?	-	-	-	-	?	0.01	?	/"	/"			
156	23	19	42.4	-	?	-	42	55	?	-	-	-	-	?	0.01	0.01	/"	/"			
157	24	21	49	03	?	-	49	17	?	-	-	-	-	2.5	0.02	?	/"	/"			
158	25	11	12.2	-	?	-	13	19	?	-	-	-	-	?	0.01	?	/"	/"			
159	25	13	04	06	04.0	-	05	19	05	19	-	-	-	5.9	0.02	0.02	/"	/"			
160	25	13	44.3	-	?	-	45	41	?	-	-	-	-	?	0.01	0.02	/"	/"			
161	25	15	01.2	-	?	-	02	18	?	-	-	-	-	?	0.01	?	/"	/"			
162	27	14	06.1	-	?	-	06	30	06	30	-	-	-	?	0.01	0.01	/"	/"			
163	29	0	25.9	-	26.0	-	26	34	26	38	-	-	-	?	0.01	0.01	/"	/"			
164	July 2	21	11	54	11	59	18	28	18	24	24	02	24	17	41.6	0.07	0.28	/"	/"		
165	4	16	34	21	34.3	-	34	51	34	51	-	-	-	4.6	0.03	0.02	/"	/"			



EARTHQUAKES.

( 1 9 3 0 )



No.	Date 1930	P				S				L				Duration of Total Earthquake (mean)	Maximum Range of Motion				Character of Motion	Intensity	Remarks
		E	W	N	S	E	W	N	S	E	W	N	S		E	W	N	S			
166	July 4	h	m	s	m	s	m	s	m	s	m	s	m	s	m	mm	mm	Slow	Feeble		
167	4	17	46.2		-	-	46	36	-	-	-	-	-	-	?	0.01	-	Slow	Feeble		
168	4	23	13.2		?		13	46	13	56	-	-	-	-	?	0.01	0.02	Slow	Feeble		
169	4	23	29	20	29	28	29	54	29	56	-	-	-	-	3.2	0.01	0.01	Slow	Feeble		
170	5	7	26	49	-	-	27	26	-	-	-	-	-	-	3.2	0.00	-	Slow	Feeble		
171	5	8	57	36	57	35	58	02	58	05	-	-	-	-	4.6	0.05	0.05	Slow	Feeble		
172	6	1	22	39	-	-	22	56	-	-	-	-	-	-	0.9	0.01	-	Slow	Feeble		
173	7	0	51	14	-	-	51	38	-	-	-	-	-	-	2.8	0.01	-	Slow	Feeble		
174	9	15	48	29	-	-	48	55	-	-	-	-	-	-	4.4	0.01	-	Slow	Feeble		
175	10	12	35	55	35.9		37	06	37	06	-	-	-	-	4.8	0.01	0.01	Slow	Feeble		
176	10	15	48	34	48.5		48	53	48	51	-	-	-	-	2.7	0.01	0.02	Slow	Feeble		
177	11	4	34	46	34.7		34	59	34	59	-	-	-	-	3.6	0.06	0.07	Quick	Weak	Felt	
178	13	19	33.9		?		39.6		?		?		?	?	0.00	0.03	Slow	Feeble			
179	14	10	24.9		25.0		25	31	25	31	-	-	-	-	?	0.02	0.02	Slow	Feeble		
180	15	22	47	14	-	-	47	25	-	-	-	-	-	-	2.0	0.01	-	Slow	Feeble		
181	18	3	21.8		-	-	21	57	-	-	-	-	-	-	?	0.00	-	Slow	Feeble		
182	19	23	19	56	20.0		20	43	20	46	-	-	-	-	9.2	0.09	0.05	Slow	Feeble		
183	20	5	51	15	51.3		51	46	51	49	-	-	-	-	5.6	0.07	0.10	Slow	Feeble		
184	21	7	58	02	58.0		59	13	59	14	-	-	-	-	5.1	0.01	0.01	Slow	Feeble		
185	22	19	27	35	27 34		28	49	28	49	-	-	-	-	34.7	1.10	1.08	Quick	Weak	Felt	
186	23	1	?		?		?		?		-	-	-	-	?	0.00	0.05	Slow	Feeble		
187	24	14	29.3		-	-	29	46	-	-	-	-	-	-	?	0.00	-	Slow	Feeble		
188	25	5	51.1		?		52	19	52.5		-	-	-	-	?	0.01	?	Slow	Feeble		
189	27	17	?		-	-	00	22	-	-	-	-	-	-	?	0.01	-	Slow	Feeble		
190	29	9	24.5		-	-	24	59	-	-	-	-	-	-	?	0.01	-	Slow	Feeble		
191	Aug. 4	18	23.5		-	-	23.9		-	-	-	-	-	-	?	0.01	-	Slow	Feeble		
192	9	3	53.3		53.4		53	54	53	53	-	-	-	-	?	0.01	0.02	Slow	Feeble		
193	10	2	19.9		?		20	10	?		-	-	-	-	?	0.02	?	Slow	Feeble		
194	10	13	?		?		12	32	?		-	-	-	-	?	0.01	0.01	Slow	Feeble		
195	15	3	42	11	?		42	30	?		-	-	-	-	1.4	0.01	0.01	Slow	Feeble		
196	17	9	29	32	29 34		30	19	30	21	-	-	-	-	12.1	0.20	0.26	Slow	Feeble		
197	18	19	42	45	42 46		43	15	43	18	-	-	-	-	7.3	0.07	0.08	Slow	Feeble		
198	19	12	41	13	?		42	29	?		-	-	-	-	5.7	0.01	0.02	Slow	Feeble		
199	19	17	42	30	42.5		43	07	43	08	-	-	-	-	9.2	0.13	0.18	Slow	Feeble		
200	20	20	59	01	59 00		63	25	63	34	67	57	68	31	33.3	0.02	0.22	Slow	Feeble		
201	20	22	?		-	-	11	30	-	-	-	-	-	-	?	0.01	-	Slow	Feeble		
202	21	10	44	47	44.8		45	30	45	28	-	-	-	-	10.2	0.28	0.24	Slow	Feeble		
203	21	15	07	20	?		08	30	08.3		-	-	-	-	6.0	0.01	0.03	Slow	Feeble		
204	22	1	31.5		31.8		31	58	32	21	-	-	-	-	?	0.01	0.02	Slow	Feeble		
205	23	11	?		-	-	04	32	-	-	-	-	-	-	?	0.01	-	Slow	Feeble		
206	24	2	45.2		-	-	45	55	-	-	-	-	-	-	?	0.00	-	Slow	Feeble		
207	26	12	40	11	40.2		41	08	41	08	-	-	-	-	7.6	0.07	0.07	Slow	Feeble		
208	26	19	12.0		-	-	12	39	-	-	-	-	-	-	?	?	-	Slow	Feeble		
209	27	0	?		-	-	15	24	-	-	-	-	-	-	?	?	-	Slow	Feeble		
210	27	4	?		-	-	49	50	-	-	-	-	-	-	?	0.01	-	Slow	Feeble		
211	28	7	?		-	-	17	06	-	-	-	-	-	-	?	0.01	-	Slow	Feeble		
212	29	20	04	06	04 09		05	19	05	21	-	-	-	-	7.4	0.11	0.12	Quick	Weak	Felt	
213	Sept. 4	4	18	16	18 18		18	28	18	31	-	-	-	-	7.4	0.29	0.35	Quick	Weak	Felt	
214	9	15	43	48	?		44	00	44	01	-	-	-	-	3.4	0.04	0.02	Slow	Feeble		
215	10	22	24	57	?		25	33	?		-	-	-	-	7.3	0.01	?	Slow	Feeble		
216	13	3	46	02	-	-	46	15	-	-	-	-	-	-	1.9	0.01	-	Slow	Feeble		
217	14	1	?		-	-	39	29	-	-	-	-	-	-	?	?	-	Slow	Feeble		
218	14	1	40	20	40 18		40	34	40	34	-	-	-	-	4.1	0.04	0.05	Slow	Feeble		
219	14	21	?		-	-	32	26	-	-	-	-	-	-	?	0.01	-	Slow	Feeble		
220	15	2	09.8		?		10	07	?		-	-	-	-	?	0.01	?	Slow	Feeble		
220	15	7	03	08	?		03	24	03	26	-	-	-	-	3.1	0.02	0.03	Slow	Feeble		



## EARTHQUAKES.

( 1 9 3 0 )

No.	Date 1930	P				S				L				Duration of Total Earthquake (mean)	Maximum Range of Motion				Character of Motion	Intensity	Remarks
		E	W	N	S	E	W	N	S	E	W	N	S		E	W	N	S			
221	Sept. 17	h	m	s	m	s	m	s	m	s	m	s	m	s	m	mm	mm	Slow	Feeble		
222	21	10	54	56	54	55	55	12	55	14	-	-	-	-	6.2	0.09	0.07	≡	≡		
223	21	1	36	55	?		37	39	?		-	-	-	-	4.9	0.01	?	≡	≡		
224	21	9	33	15	-	-	34	09	-	-	-	-	-	-	4.6	0.00	-	≡	≡		
225	21	11	04	17	?		04	46	04.8		-	-	-	-	2.1	0.01	?	≡	≡		
226	21	23	?		11	45	?	-	20	12	?		?	41.6	-	0.12	≡	≡			
227	22	2	38.9		-	-	39	27	-	-	-	-	-	?	0.00	-	≡	≡			
228	22	3	27.4		-	-	27	59	-	-	-	-	-	?	0.00	-	≡	≡			
229	23	0	?		?		29	02	29	03	-	-	-	?	0.01	0.01	≡	≡			
230	24	6	?		-	-	32	50	-	-	-	-	-	?	?	-	≡	≡			
231	26	4	46	05	?		46	56	?		-	-	-	4.4	0.01	?	≡	≡			
232	26	19	56	26	56	28	56	57	57	02	-	-	-	5.4	0.05	0.05	≡	≡			
233	28	6	?		?		05	37	05	36	-	-	-	?	0.01	0.02	≡	≡			
234	28	9	53.2		?		53	42	?		-	-	-	?	0.01	?	≡	≡			
235	28	20	46.1		?		46	48	?		-	-	-	?	0.01	?	≡	≡			
236	29	4	?		?		57	33	57	34	-	-	-	?	0.01	0.02	≡	≡			
237	30	4	56.2		-	-	56	45	-	-	-	-	-	?	0.01	-	≡	≡			
238	Oct. 1	21	28	54	28	55	35	26	35	28	38	49	38	38.0	0.01	0.09	≡	≡			
239	2	2	59	07	-	-	63	30	-	-	67	29	-	17.8	?	-	≡	≡			
240	2	7	?		?		34	29	?		-	-	-	?	0.01	0.02	≡	≡			
241	2	10	02	08	02	07	02	45	02	45	-	-	-	9.0	0.25	0.26	≡	≡			
242	3	15	51.8		-	-	52	20	-	-	-	-	-	?	0.01	-	≡	≡			
243	5	18	28	34	-	-	28	53	-	-	-	-	-	2.2	0.00	-	≡	≡			
244	7	4	19.2		?		19	52	?		-	-	-	?	0.01	?	≡	≡			
245	7	19	?		?		11	56	11	57	-	-	-	?	0.01	0.01	≡	≡			
246	8	10	29	17	29	18	37	26	37	24	43	26	43	?	0.01	0.07	≡	≡			
247	8	19	39	38	39.7		40	00	40	02	-	-	-	3.3	0.03	0.02	≡	≡			
248	12	8	58	53	?		59	40	?		-	-	-	5.0	0.01	0.01	≡	≡			
249	14	0	51	02	?		51	16	?		-	-	-	1.6	0.04	0.05	≡	≡			
250	15	21	18.8		?		19	18	?		-	-	-	?	0.01	?	≡	≡			
251	16	21	33.8		-	-	34	57	-	-	-	-	-	?	0.01	-	≡	≡			
252	16	19	39	38	39.7		40	00	40	02	-	-	-	3.3	0.03	0.02	≡	≡			
253	17	9	?		?		59	40	?		-	-	-	5.0	0.01	0.01	≡	≡			
254	18	18	50.4		?		51	02	51	02	-	-	-	?	0.01	0.01	≡	≡			
255	19	2	?		-	-	59	20	-	-	-	-	-	?	0.00	-	≡	≡			
256	23	20	22.6		?		23	22	?		-	-	-	?	0.01	?	≡	≡			
257	24	16	42.2		?		42	45	42	45	-	-	-	?	0.03	0.01	≡	≡			
258	24	20	19	56	19	56	23	53	23	51	?		?	86.8	?	0.82	≡	≡			
259	24	22	22	45	?		23	22	23	21	-	-	-	3.8	0.02	0.03	≡	≡			
260	25	12	?		-	-	12	01	-	-	-	-	-	?	0.01	-	≡	≡			
261	26	5	?		-	-	48	07	-	-	-	-	-	?	0.01	-	≡	≡			
262	27	4	?		?		?		?		-	-	-	?	0.01	0.02	≡	≡			
263	Nov. 1	21	15	01	15.1		18	59	19	00	?		?	32.4	0.08	0.07	≡	≡			
264	8	20	54	36	-	-	54	44	-	-	-	-	-	1.4	0.02	-	≡	≡			
265	8	3	29.3		-	-	38.3		-	-	?		-	?	?	-	≡	≡			
266	9	3	50	45	-	-	51	25	-	-	-	-	-	3.8	0.01	-	≡	≡			
267	9	19	16	37	16	19	22	22	22	27	29	44	28	39.5	0.01	0.13	≡	≡			
268	10	13	36	17	36.4		36	42	36	45	-	-	-	4.5	0.05	0.05	≡	≡			
269	10	13	52.1		52.0		58.1		58.2		61.9		61.8	?	?	0.05	≡	≡			
270	11	8	33	38	34.0		39	07	38	55	?		?	?	?	?	≡	≡			
271	14	22	11	49	?		13	04	13	04	-	-	-	3.9	0.01	0.02	≡	≡			
272	15	0	09	18	09	20	09	31	09	32	-	-	-	6.6	0.39	0.56	Quick	Weak	Felt		
273	15	0	57	25	57.3		60	58	61.1		?		?	?	?	?	Slow	Feeble			
274	18	8	52.0		?		52	48	?		-	-	-	?	0.01	0.02	≡	≡			
275	18	10	08.8		?		09	39	?		-	-	-	?	0.01	0.02	≡	≡			
275	18	13	39.2		?		39	38	39	41	-	-	-	?	0.03	0.05	≡	≡			



## EARTHQUAKES.

( 1 9 3 0 )

No.	Date 1930	P				S				L				Duration of Total Earthquake (mean)	Maximum Range of Motion				Character of Motion	Intensity	Remarks
		E	W	N	S	E	W	N	S	E	W	N	S		E	W	N	S			
276	Nov. 18	h	m	s	m	s	m	s	m	s	m	s	m	s	m	mm	mm	Slow	Feeble		
277	19	14	13.4		13.5		14	16	14.4		-	-	-	-	?	0.02	0.03	≡	≡		
278	25	1	10	12	10.3		10	37	10	36		-	-	-	4.2	0.04	0.07	≡	≡		
279	25	7	07.0		?		07	53	?			-	-	-	?	0.01	?	≡	≡		
280	26	19	03	59	03	57	05	01	05	01		-	-	-	129.6	?	9.40	≡	≡		
	26	4	53.6		-	-	54	30	-	-		-	-	-	?	0.00	-	≡	≡		
281	26	8	?		-	-	?		-	-		-	-	-	?	0.00	-	≡	≡		
282	26	22	22.3		?		22	56	?			-	-	-	?	0.01	?	≡	≡		
283	27	1	04	42	?		04	59	05	00		-	-	-	2.3	0.04	0.03	≡	≡		
284	27	13	51	10	?		51	46	?			-	-	-	3.5	0.02	0.02	≡	≡		
285	28	11	54	18	?		54	29	54	31		-	-	-	2.2	0.03	0.04	≡	≡		
286	29	7	10	34	10.6		11	10	11	12		-	-	-	3.6	0.02	0.03	≡	≡		
287	Dec. 2	4	22.4		22.5		23	07	23	07		-	-	-	?	0.02	0.03	≡	≡		
288	2	7	?		?		08	45	08	49		?		21.0	?	0.01	0.06	≡	≡		
289	3	3	30.7		?		31	38	?			-	-	-	?	0.01	0.02	≡	≡		
290	3	18	59	54	60.0		66	29	66	25		74	03	73	20	75.3	?	4.44	≡	≡	
291	5	19	07	32	07	32	07	58	?			-	-	-	6.2	0.10	0.05	≡	≡		
292	6	7	08.9		-	-	10	18	-	-		-	-	-	?	0.01	-	≡	≡		
293	6	17	?		-	-	58	59	-	-		-	-	-	?	?	-	≡	≡		
294	6	19	?		-	-	59	28	-	-		-	-	-	?	?	-	≡	≡		
295	7	6	06.4		?		06	58	07.0			-	-	-	?	0.02	0.05	≡	≡		
296	8	8	06	07	?		10	26	?			17	14	?	23.4	0.01	0.05	≡	≡		
297	8	9	42.5		-	-	43	16	-	-		-	-	-	?	0.01	-	≡	≡		
298	8	23	38	44	38	43	39	05	39	05		-	-	-	4.1	0.06	0.04	≡	≡		
299	9	11	05.6		-	-	05	58	-	-		-	-	-	?	0.01	-	≡	≡		
300	12	12	47	08	?		47	48	47	48		-	-	-	3.3	0.03	0.04	≡	≡		
301	13	14	23	46	23	45	24	26	24	27		-	-	-	13.0	0.58	0.68	Quick	Weak	Felt	
302	14	21	?		?		21	27	?			-	-	-	?	0.01	?	Slow	Feeble		
303	15	5	23.2		?		23	58	?			-	-	-	?	0.01	0.02	≡	≡		
304	19	10	53.7		-	-	54	37	-	-		-	-	-	?	0.01	-	≡	≡		
305	20	14	04.0		?		06	01	06	00		-	-	-	?	0.02	?	≡	≡		
306	21	12	16	28	?		18	03	18	03		-	-	-	8.4	0.01	?	≡	≡		
307	21	14	56	35	56	36	60	54	60	42		61	47	61	55	15.3	?	?	≡	≡	
308	23	7	34	52	?		36	20	?			-	-	-	6.2	0.01	?	≡	≡		
309	23	21	42	14	?		43	34	?			-	-	-	4.8	0.01	?	≡	≡		
310	23	23	56	09	?		56	57	?			-	-	-	12.1	0.50	?	Quick	Weak	Felt	
311	24	7	11	47	11	46	12	05	12	07		-	-	-	4.7	0.07	0.05	Slow	Feeble		
312	25	13	05	12	?		05	45	05	48		-	-	-	3.9	0.02	0.02	≡	≡		
313	26	7	?		54.8		?		56	02		-	-	-	?	0.01	0.03	≡	≡		
314	29	20	58.0		?		58	39	?			-	-	-	?	0.01	?	≡	≡		
315	31	11	17.1		17.0		19	22	19	24		-	-	-	?	0.01	0.01	≡	≡		



## PULSATORY OSCILLATIONS.

( 1930 ) (EW Component)

International  
Seismological  
Centre

No.	Beginning			Ending			Maximum				Double Amplitude
	Date			Date			Date				
	Month	Day	Hour	Month	Day	Hour	Day	Hour	Day	Hour	
1	December (1929)	31	0	January (1930)	2	14	1	0	1	3	5
2	January (1930)	2	21		5	0	3	12	3	14	4
3		5	21		7	20	6	12	6	16	5
4		8	13		11	14	8	21	9	0	5
5		14	17		15	18	14	23	15	1	4
6		15	22		17	21	17	2	17	4	4
7		28	21		31	10	29	13	29	16	11
8	February	2	1	February	4	1	2	23	3	1	7
9		5	17		8	4	7	13	7	16	4
10		9	12		15	5	12	17	12	21	13
11		16	13		19	0	16	23	17	1	8
12		19	3		21	21	19	20	19	23	6
13		24	4		28	9	25	3	25	6	10
14	March	3	9	March	5	14	3	21	4	0	10
15		7	11		12	2	8	18	8	21	10
16		12	23		17	1	13	21	14	0	10
17		20	19		23	21	21	5	21	8	3
18		27	23		31	8	29	16	29	18	10
19	April	1	20	April	4	20	3	4	3	6	17
20		10	15		12	9	11	3	11	5	9
21		17	21		19	10	18	2	18	5	3
22		19	17		23	11	21	8	21	11	11
23		24	0		27	2	26	4	21	6	19
24		29	2		30	20	30	1	30	4	4
25	May	2	1	May	3	13	2	12	2	15	10
26		4	17		7	16	6	4	6	6	10
27		7	19		11	17	10	12	10	14	14
28		19	1		21	11	20	6	20	9	8
29		28	2		30	5	29	2	29	4	4
30	June	2	0	June	3	14	3	3	3	6	3
31		5	6		6	18	6	3	6	5	4
32		14	23		19	12	17	4	17	7	14
33		25	10		28	9	26	13	26	15	7
34	July	5	5	July	7	8	6	13	6	16	3
35		18	22		19	23	19	7	19	9	4
36		29	22	August	3	9	30	23	31	1	5
37	August	18	18		21	12	19	21	20	0	4
38		26	9		28	23	26	21	27	0	5
39		29	19		31	16	30	6	30	9	5
40	September	4	22	September	6	21	6	1	6	3	4
41		7	0		9	15	8	6	8	9	5
42		13	18		18	8	15	20	15	23	5
43		21	21		25	1	23	10	23	13	11
44	October	1	20	October	5	16	2	19	2	22	5
45		20	0		21	14	20	11	20	14	6
46		24	23		28	0	26	20	26	23	10
47		28	21		30	18	29	12	29	15	9
48		30	20	November	6	1	2	7	2	10	11
49	November	9	6		10	16	9	21	10	0	10
50		10	23		14	21	12	5	12	8	8
51		16	1		18	14	16	21	17	0	7
52		20	0		26	1	21	5	21	8	12
53		30	9	December	1	22	30	23	1	1	20
54	December	2	17		4	22	4	3	4	6	7
55		9	1		10	5	9	11	9	14	6
56		11	0		12	12	11	21	12	0	5
57		12	19		15	11	13	6	13	9	10
58		16	1		19	17	19	5	19	7	4
59		24	1		26	1	25	4	25	6	3
60		28	1		29	0	28	13	28	16	5