

## NAGASAKI, JAPAN.

## SEISMIC BULLETIN

NAGASAKI METEOROLOGICAL OBSERVATORY

 $\phi=32^{\circ} 44'03''$   $\lambda=129^{\circ}52'31''$   $h=130.6m.$ 

Lithologic foundation: Volcanic Agglomerate.

## INSTRUMENTAL CONSTANTS

INSTRUMENT	COMPONENT	MASS	DAMPING	To	$\frac{r}{To^2}$	$\mathcal{E}$	V
Wiechert	N-S	200	Air	3.4	0.030	2.4	77
	E-W	"	"	4.4	0.027	2.3	66
Wiechert	U-D	80	"	4.7	0.072	3.6	73
Omori	N-S	16	Magnetic	19.0	0.006	2.8	20
Omori	E-W	16	"	15.4	0.005	2.1	20
Omori	N-S	20		2.9	0.116		50
	E-W	20		2.9	0.163		50
C. M. O.	NE-W	2.3	Magnetic	3.9	0.097	2.3	2
	NW-SE	2.3	"	3.9	0.055	1.6	2
	U-D	2.8	"	4.8	0.030	1.7	2

International  
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No.	Date	Phase	Time 135° E			Period s.	Amplitude			$\Delta$	Remarks	
			h.	m.	s.		AZ $\mu$	AE $\mu$	AN $\mu$			
1	2 Jan.	$\bar{P}$	1	40	17.9			+2.6	+2.3	97	Felt at Nagasaki, slightly.	
		$\bar{S}$	"	"	31.0			+45	-91		Upper valley of R. Kikuti.	
		M	"	"	40.2	1.8		+200	-200			
		C	"	41	39.2							
		F	"	47	08.1							
2	4 "	$\bar{P}$	3	30	37.2					42	Local shock, Tiziwa Bay.	
		$\bar{S}$	"	"	42.9							
		F	"	31	02.6							
3	8 "	eP	11	23	26.6	2.7				297	Genkai-nada.?	
		i	"	"	52.5	0.8						
		eS?	"	24	06.6	2.2						
		F	"	29	47.0							
4	" "	$\bar{P}$	20	14	05.2					18	Local shock.	
		$\bar{S}$	"	"	07.6							
		F	"	"	23.5							
5	12 "	e $\bar{P}$	4	33	26.5			-0.4	-0.1	102	Kii-channel.	
		$\bar{S}$	"	"	40.2		-1	-4	+6			
		M	"	"	44.9	1.0	-4	-10	+15			
		e	"	"	53.6							
		F	"	35	15.0							
6	13 "	P	6	08	29.6	1.2	+1.4	-1.3	-30	2633	NE part of Okhotsk sea.	
		PP	"	09	03.2	3.3		-65	-67			
		PP	"	"	04.1	4.2	+48					
		PPP	"	"	17.7		-41					
		S	"	12	45.1				+6			
		SS	"	13	41.9	11.3	-9	-18	+68			
		M	"	"	52.1	11.3	+20	+40	+136			
		C	"	14	47.6							
		F	11	08	08.0							
7	14 "	eP?	3	48	49.8					5388	Distant earthquake.	
		eS	"	55	53.2							
		F	4	01	02.5							
8	16 "	P	17	10	19.6	2.4	+1.3	+11.0	2074	2074	South china sea.	
		M	"	"	23.1	$\begin{matrix} E 2.4 \\ N 4.9 \end{matrix}$	+9	+91				
		S	"	13	49.0	6.0	+19	-14				
		F	"	40	49.0							
9	18 "	eP	7	34	00.5		+0.1	+0.2	2884	2884	South Ocean.	
		eS	"	38	35.1	10.0	-3	-4				
		F	"	52	39.4							
10	19 "	$\bar{P}$	1	19	34.1		+0.5	+0.4	108	108	Upper valley of R. Kikuti.	
		$\bar{S}$	"	"	48.6							
		P	"	20	54.2							

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## INSTRUMENTAL CONSTANTS

INSTRUMENT	COMPONENT	MASS	DAMPING	$T_0$	$\frac{r}{T_0^2}$	$\beta$	V
Wiechert	N - S	200	Air	3.4	0.030	2.4	77
	E - W	"	"	4.4	0.027	2.3	66
Wiechert	U - D	80	"	4.7	0.072	3.6	73
Omori	N - S	16	Magnetic	19.0	0.006	2.8	20
Omori	E - W	16	"	15.4	0.005	2.1	20
Omori	N - S	20		2.9	0.116		50
	E - W	20		2.9	0.163		50
C. M. O.	NE - W	2.3	Magnetic	3.9	0.097	2.3	2
	NW - SE	2.3	"	3.9	0.055	1.6	2
	U - D	2.3	"	4.8	0.030	1.7	2



No.	Date	Phase	Time 135° E			Period	Amplitude			$\Delta$	Remarks
			h.	m.	s.		Az	Ae	An		
									km.		
22	4 Mar.	$\bar{P}$	18	25	30.7				80	<i>Neighbourhood of Kumamoto.</i>	
		$\bar{S}$	"	"	41.5		-1.4	+2.4			
		F	"	26	31.0						
23	7 "	P	10	43	13.9		+6.5	+4.5	5261	<i>Distant earthquake.</i>	
		S	"	50	10.2		+15.6	-7.6			
		M <sub>N</sub>	"	"	24.6	7.1					+100
		M <sub>E</sub>	"	"	33.9	7.1		+52			
		F	12	30	55.0						
24	9 "	P	11	15	08.8				1582	<i>Away to S coast of Is. Hatijo.</i>	
		S	"	17	53.6						
		L	"	19	41.9						
		F	"	40	45.5						
25	10 "	P	23	39	42.8		+1.3	-1.0	2360	<i>Away to SE coast of Titijima.</i>	
		S	"	43	36.8						
		F	"	50	36.8						
26	15 "	$\bar{P}$	19	14	17.8				214	<i>Bungo Channel.</i>	
		$\bar{S}?$	"	"	46.6						
		F	"	16	06.0						
27	20 "	P	20	18	40.7					<i>Local shock.</i>	
		F	"	19	36.7						
28	27 "	eL	18	30	24.8					<i>Distant earthquake.</i>	
		F	"	42	02.2						
29	28 "	$\bar{P}$	22	12	52.3				29	<i>Local shock.</i>	
		$\bar{S}$	"	"	56.2						
		F	"	13	03.4						
30	30 "	$\bar{P}$	14	04	32.3				22	<i>Ditto.</i>	
		$\bar{S}$	"	"	35.3						
		F	"	"	52.3						
31	31 "	$\bar{P}$	3	34	15.2				13	<i>Ditto.</i>	
		$\bar{S}$	"	"	16.9						
		F	"	"	51.0						

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Lithologic foundation: Volcanic Agglomerate.

### INSTRUMENTAL CONSTANTS

INSTRUMENT	COMPONENT	MASS	DAMPING	$T_0$	$\frac{r}{T_0^2}$	$\epsilon$	V
Wiechert	N - S	200	Air	3.4	0.030	2.4	77
	E - W	"	"	4.4	0.027	2.3	66
Wiechert	U - D	80	"	4.7	0.072	3.6	73
Omori	N - S	16	Magnetic	19.0	0.006	2.8	20
Omori	E - W	16	"	15.4	0.005	2.1	20
Omori	N - S	20		2.9	0.116		50
	E - W	20		2.9	0.163		50
C. M. O.	NE - W	2.3	Magnetic	3.9	0.097	2.3	2
	NW - SE	2.3	"	3.9	0.055	1.6	2
	U - D	2.3	"	4.8	0.030	1.7	2

No.	Date	Phase	Time 135° E			Period s.	Amplitude			$\Delta$ km.	Remarks
			h.	m.	s.		Az $\mu$	AE $\mu$	AN $\mu$		
32	1 Apr.	eP	5	20	30.8				2238	Off ESE coast of Kinkazan.	
		eS	"	24	14.3						
		M	"	26	14.0	6.0		+3.9			
		F	"	34	45.5						
33	12 "	P	6	47	24.5	0.5		+2.6	131	Ariake Bay.	
		S	"	"	42.5	0.7		+3.2			
		M	"	"	43.8	0.7		-13			
		C	"	48	01.6						
		F	"	49	41.0						
34	15 "	P	14	59	31.8				96	Southern part of Amakusa Nada.	
		S	"	"	44.7						
		F	15	01	48.5						
35	16 "	P	9	55	30.4				1457	Kashima Nada.	
		S	"	58	03.1						
		F	10	02	45.2						
36	30 "	P	0	41	36.4					Hyuga Nada.	
		F	"	44	07.4						

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Lithologic foundation: Volcanic Agglomerate.

### INSTRUMENTAL CONSTANTS

INSTRUMENT	COMPONENT	MASS	DAMPING	$T_0$	$\frac{r}{T_0^2}$	$\epsilon$	V
Wiechert	N - S	200	Air	3.4	0.030	2.4	77
	E - W	"	"	4.4	0.027	2.3	66
Wiechert	U - D	80	"	4.7	0.072	3.6	73
Omori	N - S	16	Magnetic	19.0	0.006	2.8	20
Omori	E - W	16	"	15.4	0.005	2.1	20
Omori	N - S	20		2.9	0.116		50
	E - W	20		2.9	0.163		50
C. M. O.	NE - W	2.3	Magnetic	3.9	0.097	2.3	2
	NW - SE	2.3	"	3.9	0.055	1.6	2
	U - D	2.3	"	4.8	0.030	1.7	2

No.	Date	Phase	Time 135° E			Period s.	Amplitude			$\Delta$ km.	Remarks
			h.	m.	s.		AZ $\mu$	AE $\mu$	AN $\mu$		
37	2 May	P	0	50	47.0	16.1 15.0		+13		2597	Distant earthquake.
		S	"	54	59.7		-25				
		L	1	08	59.7						
		M	"	11	06.6		+630				
		M	"	12	06.6		-670				
		C	"	13	23.9						
38	" "	P	23	30	08.2					2305	Neighbourhood of Kunijiri Channel.
		S	"	33	57.2						
		F	"	58	57.2						
39	6 "	P	11	36	16.8	0.4 0.9	+5.2	-2.6	-0.6	106	Away to W coast of Amakusa.
		S	"	"	31.1						
		M	"	"	33.1		+13.0	+12.5			
		C	"	"	48.4						
		F	"	38	48.4						
40	" "	P	14	50	50.4					106	Chijiwa Bay.
		S	"	51	04.7						
		F	"	52	37.8						
41	8 "	P	14	22	29.2	0.5 0.7	-0.5	+1.2	-1.5	72	Neighbourhood of Kumamoto.
		S	"	"	38.9		-4.1	+3.6	+5.2		
		C	"	23	00.8						
		F	"	24	42.5						
42	12 "	P	9	23	56.8					18	Local shock.
		S	"	"	59.2						
		F	"	24	18.9						
43	15 "	P	17	40	45.4	0.8 1.1 1.1	-0.7	+1.2	-1.1	292	Off the coast of Is. Tanegashima.
		S <sub>EN</sub>	"	41	24.8		-2.0	+2.3			
		S <sub>V</sub>	"	"	26.5		-1.3				
		C	"	"	46.3						
		F	"	45	31.3						
44	21 "	P	18	14	53.5	1.4				180	Away to W coast of Amakusa.
		S	"	15	17.8						
		M	"	"	36.5		-16	+25			
		C	"	"	52.8						
		F	"	20	25.6						
45	22 "	P	1	35	59.4	E2.1 N1.0 1.9 3.3 2.0	+9.6	-11.7	+8.0	188	Remarkable shock in the sea off the coast of Hyuga. Felt in the city of Nagasaki, but not at our observatory. In S phase needles of Wiechert's horizontal pendulum were thrown out of the scale.
		S	"	36	24.6		-153	-118	+114		
		MV	"	"	32.0		1.9	-5265			
		ME	"	37	02.9		3.3	-1190			
		MN	"	"	11.9		2.0		-2000		
		F	2	35	55.1						
46	" "	P	1	52	37.3					184	After shock.
		S	"	53	02.1						
		F	"	"	50.0						

No.	Date	Phase	Time 135° E			Period s.	Amplitude			Δ km.	Remarks
			h.	m.	s.		AZ μ	AE μ	AN μ		
47	22 "	P	1	58	33.0				163	<i>After shock.</i>	
		S	"	"	55.0						
		F	2	00	40.0						
48	" "	P	2	10	54.2				194	<i>Ditto.</i>	
		S	"	11	20.3						
		F	"	14	25.0						
49	" "	P	2	21	31.4				207	<i>Ditto.</i>	
		S	"	"	59.3						
		ME	"	22	03.3	1.4	+2.2	-1.4			+1.0
		MN	"	"	04.1	1.4		+10			+11
		F	"	25	25.0			-18			+18
50	" "	P	3	12	12.6				221	<i>Ditto.</i>	
		S	"	"	42.4						
		F	"	14	55.0						
51	" "	P	6	28	22.2				188	<i>Ditto.</i>	
		S	"	"	47.4						
		F	"	30	04.8						
52	" "	P	9	20	30.4				215	<i>Ditto.</i>	
		S	"	"	59.3						
		F	"	23	24.7						
53	24 "	P	14	26	09.1				206	<i>Ditto.</i>	
		S	"	"	36.9						
		F	"	28	21.0						
54	" "	P	22	49	37.3				16	<i>Chijiwa Bay.</i>	
		S	"	"	39.5						
		F	"	50	07.3						
55	27 "	eP	7	51	21.5				6696	<i>Middle part of Argentine.</i>	
		eS	"	59	33.9						
		eL	8	10	18.0	40.9	-3	+3			
		M <sub>1</sub>	"	18	57.7	24.4	-12				
		M <sub>2</sub>	"	23	09.2	19.1	-8	-15			
		M <sub>3</sub>	"	25	37.4	17.4	-12	+18			
		M <sub>4</sub>	"	30	31.2	13.9	+17				
		C	"	42	55.0						
		F	9	05	48.0						
56	" "	P	8	01	29.5				202	<i>After shock of No. 45.</i>	
		S	"	"	56.8						
		F	"	02	51.6						
57	31 "	eP	9	13	26.9				1787	<i>Off SW coast of the Cape Erimo.</i>	
		eS	"	16	30.6						
		F	"	26	13.5						



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Wiechert	U - D	80	"	4.7	0.072	3.6	73
Omori	N - S	16	Magnetic	19.0	0.006	2.8	20
Omori	E - W	16	"	15.4	0.005	2.1	20
Omori	N - S	20		2.9	0.116		50
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C. M. O.	NE - W	2.3	Magnetic	3.9	0.097	2.3	2
	NW - SE	2.3	"	3.9	0.055	1.6	2
	U - D	2.3	"	4.8	0.030	1.7	2

No.	Date	Phase	Time 135° E			Period s.	Amplitude			$\Delta$ km.	Remarks
			h.	m.	s.		Az $\mu$	AE $\mu$	AN $\mu$		
58	2 June	P	3	00	07.3				698	SE off the Island Okinawa.	
		S	"	01	22.1						
		F	"	13	10.5						
59	3 "	iP	1	24	41.5	0.3	+9.6	-5.9	+7.6	22	Tidiwa Bay. Felt at Nagasaki, shi
		iS	"	"	44.5	0.4	+5	-23	+11		
		M	"	"	44.7	0.4	+14	+20	-28		
		C	"	"	50.4						
		F	"	26	08.9						
60	" "	eP	6	40	09.4	1.3	-2.5	+2.6	+1.4	641	Off the coast of Sima.
		i	"	"	10.6	1.5	-2.5	+27	+14		
		S	"	41	19.5	3.5	-8.2	-16.2	+19.7		
		MN	"	"	26.8	5.2			-523		
		MV	"	"	29.9	7.0	-284				
		ME	"	"	29.9	4.9		+461			
		F	"	7	14	33.0					
61	6 "	P	8	53	27.1				16	Local shock.	
		S	"	"	29.3						
		F	"	"	46.4						
62	8 "	P	4	53	31.4				228	Bungo Channel.	
		S	"	54	02.0						
		F	"	56	03.4						
63	9 "	P	8	18	33.5				184	Upper Valley of River Midori-gu Kumamoto prefecture.	
		S	"	"	58.3						
		F	"	20	01.5						
64	" "	iP	12	22	04.2	0.4	+9.6	+4.5	+7.6	27	Tidiwa Bay. Felt in the city Nagasaki, but not at the observato
		iS	"	"	07.3	0.5	-5	+17	+15		
		C	"	"	14.2						
		F	"	24	01.5						
65	" "	eP	18	12	42.0	1.1		-0.2	-1.5	2393	SE off Iturup Is.
		M	"	"	45.5	4.2		+7.8	+17.4		
		eS	"	16	38.3	4.9		-1.4			
		M	"	"	48.5	4.9,4.4		+15.6	-11.8		
		M	"	17	10.0	4.9,4.1		+9.7	+18.2		
		eL	"	18	36.9	27.7					
		F	19	02	01.2						
66	12 "	P	4	32	56.9	0.5	+0.2	-0.7	+0.3	214	Hguga-nada.
		S	"	33	25.7	1.1	-4.1	+2.7	+5.3		
		M	"	"	34.3	1.2	-6.9	+11.4	-21.2		
		C	"	34	03.0						
		F	"	39	28.0						
67	" "	P	14	18	45.9				173	Ditto.	
		S	"	19	09.2						
		F	"	20	57.4						
68	" "	P	15	09	57.7				176	Ditto.	
		S	"	10	21.3						
		F	"	11	57.7						

No.	Date	Phase	Time 135° E			Period s.	Amplitude			Δ km.	Remarks
			h.	m.	s.		AZ μ	AE μ	AN μ		
69	12 "	P S F	20 " 56 21 06	50 12.3 57.1	22.1				4053	Distant Earthquake.	
70	13 "	eP eS F	9 " 21 into the next	17 02.5	00.9 4.3	1.1 4.3	-0.8	-1.3	-2.3 +6.8	2456	SE off Iurup Is.
71	" "	eP eS eL M F	9 " 22 " 24 " 26 into the next	18 59.9 25.7 51.0	59.9 17.1 17.9	1.1 3.4 17.1 17.9		-3.2 +4.6 +16.2	+6.1 +6.0 -18.9	2440	Ditto.
72	" "	eP eS eL M M F	9 " 34 " 36 " 37 " 38 10 24	30 43.3 32.0 05.0 47.3 56.5	35.3 3.8 25.2 23.2 17.1	0.9 3.8 25.2 23.2 17.1		-3.9 -13.0 +9.5 +7.8	+13.6 -16.7 +21.2	2540	Ditto.
73	" "	P S L M <sub>1</sub> M <sub>2</sub> M <sub>3</sub> M <sub>4</sub> C F	18 " 34 " 36 " 38 " 40 " 42 " 43 " 44 19 55	29 46.1 41.8 46.0 25.3 10.7 35.6 10.7 57.0	57.0 4.0 18.7 15.0 18.7 16.9 18.7	4.9 4.0 18.7 15.0 18.7 16.9 18.7	+4.8	-2.1 -15.6 +19.5 +13.0 +9.8 +15.6 +9.7	+4.8 +6.1 -33.3 -37.9 -45.5 -36.9 -42.4	3082	Distant Earthquake.
74	14 "	eP eS F	4 " 57 5 16	53 20.9 57.5	00.4				2698	Ditto.	
75	" "	eP eS F	8 " 10 9 05	05 28.9 58.0	56.3				2856	Ditto.	
76	15 "	P S F	6 " 03 " "	02 00.1 16.9	54.6				41	Tidwa Bay.	
77	" "	P S F	15 " " " 11	10 49.7 11.0	31.2				138	Amakusa-nada.	
78	17 "	P S F	2 " " " 12	11 49.2 13.0	46.8				18	Tidwa Bay. Felt at Kutinotu.	
79	" "	P S L M M F	7 8 02 " 11 " 29 " 31 9 29	59 57.5 24.6 20.8 02.9 57.5	54.7	20.3 17.6		+5.2 +7.8	-26.5 -30.3	1778	Distant Earthquake.
80	" "	eP eS F	19 " 26 20 20	21 02.1 57.7	43.8				2670	Ditto.	
81	19 "	eP eS F	16 " 40 17 22	36 41.5 58.9	11.0	2.3		+0.7	-6.1	2833	Ditto.
82	27 "	eP eS F	1 " 53 2 09	51 53.4 58.5	38.8					1266	NE off the cape of Inubosaki.
83	" "	eP eS M M M F	22 " 10 23 12 " 15 " 43 0 04	06 57.4 00.9 57.4 01.3 58.9	58.9	18.0 18.9 19.1		-6 -5	+7 +8	2418	Distant Earthquake.
84	30 "	eP eS F	11 " 54 12 30	50 12.3 10.0	05.0					2530	Ditto.



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## NAGASAKI, JAPAN.

## SEISMIC BULLETIN

## NAGASAKI METEOROLOGICAL OBSERVATORY

 $\phi = 32^{\circ}44'03''$  $\lambda = 129^{\circ}52'31''$ 

h = 130.6m.

Lithologic foundation: Volcanic Agglomerate.

## INSTRUMENTAL CONSTANTS

INSTRUMENT	COMPONENT	MASS	DAMPING	T <sub>0</sub>	$\frac{r}{T_0^2}$	$\epsilon$	V
Wiechert	N - S	200	Air	4.7	0.039	4.4	100
	E - W	"	"	5.3	0.041	5.5	100
Wiechert	U - D	80	"	4.1	0.015	3.0	83
Omori	N - S	16	Magnetic	18.5	0.006	2.8	20
Omori	E - W	16	"	15.5	0.005	2.1	20
Omori	N - S	20		2.9	0.116		50
	E - W	20		2.9	0.163		50
C. M. O.	NE - W	2.3	Magnetic	3.9	0.097	2.3	2
	NW - SE	2.3	"	3.9	0.055	1.6	2
	U - D	2.3	"	4.8	0.030	1.7	2

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No.	Date	Phase	Time 135° E			Period s.	Amplitude			$\Delta$ km.	Remarks
			h.	m.	s.		Az $\mu$	AE $\mu$	AN $\mu$		
85	4 July	eP eS F	5	03	59.5 06.5 08.6				610		
86	5 "	eP eS M F	23	26	56.7 33 10.5 42 03.5 <i>lost into the</i>	1.4 3.5 20.6 <i>next</i>	+1.0 +3	-0.5 -2	$\pm 0.0$	4476	<i>shock</i>
87	" "	eP eS F	23	43	05.7 48 57.0 0 50 10.5				4071		
88	6 "	eP eS F	7	44	16.2 50 40.1 8 19 21.0				4663		
89	" "	eP eS F	11	11	48.3 18 15.9 53 11.0				4729		
90	8 "	eP i eS L M M F	6	31	06.2 " " 09.7 37 29.3 41 09.0 45 09.4 47 07.4 8 31 30.0	0.9 6.0 24.0 $\begin{matrix} E 20.0 \\ N 18.2 \\ E 20.0 \\ V 23.4 \end{matrix}$	+0.8 -6.5 $\pm 0.0$ +2.4 $\pm 0.0$ +7.5	-0.9 +5.0 -5.5 +10.0 +6.5 +6.4	$\pm 0.0$ +1.0 $\pm 0.0$ -14.8 -10.1 $\pm 0.0$	4647	
91	13 "	P F	3	00	31.8 13 18.5						
92	" "	eP ePP eS? eSS? F	23	58	29.9 59 58.7 0 04 50.8 08 07.3 18 20.2	2.7 3.6 14.0		-0.3 +2.0	+1.5 -0.6 -1.5	4608	
93	14 "	P MP eS L F	18	42	11.7 " " 30.8 46 31.5 48 23.7 19 23 22.0	1.3 3.5 $\begin{matrix} E 5.0 \\ N 5.9 \end{matrix}$ 31.6		-1.6 +17 +4	-3.0 +20 -1.0	2688	
94	15 "	e F	13	02	57.4 56 23.8						
95	" "	eL F	17	20	43.3 45 24.4						
96	16 "	eP eS? F	22	50	21.5 51 18.4 53 27.3				423?		
97	17 "	P S F	17	45	52.6 52 09.6 18 16 28.9	2.0 4.5		-0.6 -0.2	-0.9 +1.6	4540	
98	21 "	P eS F	22	20	27.9 24 07.9 28 37.9	2.0 5.0		+0.2 +2.0	+3.4 $\pm 0.0$	2200	
99	27 "	eP eS? L M M M C F	7	50	20.8 52 07.5 " " 35.7 " " 53.3 " " 55.2 53 36.8 " " 52.8 8 17 52.8	1.4 $\begin{matrix} E 4.3 \\ N 4.0 \end{matrix}$ 3.6 3.6 9.0	-8 +14	+1 +3 +9 -42 -26	994		



# NAGASAKI, JAPAN.

## SEISMIC BULLETIN

NAGASAKI METEOROLOGICAL OBSERVATORY

$\phi=32^{\circ}44'03''$

$\lambda=129^{\circ}52'31''$

$h=130.6m.$

Lithologic foundation: Volcanic Agglomerate.

### INSTRUMENTAL CONSTANTS

INSTRUMENT	COMPONENT	MASS	DAMPING	$T_0$	$\frac{r}{T_0^2}$	$\epsilon$	V
Wiechert	N - S	200	Air	4.7	0.039	4.4	100
	E - W	"	"	5.3	0.041	5.5	100
Wiechert	U - D	80	"	4.1	0.015	3.0	83
Omori	N - S	16	Magnetic	18.5	0.006	2.8	20
Omori	E - W	16	"	15.5	0.005	2.1	20
Omori	N - S	20		2.9	0.116		50
	E - W	20		2.9	0.163		50
C. M. O.	NE - W	2.3	Magnetic	3.9	0.097	2.3	2
	NW - SE	2.3	"	3.9	0.055	1.6	2
	U - D	2.3	"	4.8	0.030	1.7	2



No.	Date	Phase	Time 135° E			Period	Amplitude			$\Delta$	Remarks
			h.	m.	s.		AZ	AE	AN		
100	4 Aug.	$\bar{P}$	1	00	33.3	0.9	+0.8	-0.6	-3.0	161	<i>Felt in the city of Nagasaki, but not at this Obs. Epicenter in Genkainada</i>
		$\bar{S}$	"	"	55.0	1.2		+17	+20		
		M	"	"	58.1	1.2	+21	+27	+44		
		C	"	01	41.3						
		F	"	05	12.0						
101	" "	$\bar{P}$	21	59	34.1		+3.3	+2.0	-4.0?	19	<i>Felt slightly accompanying an earthquake sound like a bang. Epicenter in Tizawa Bay.</i>
		$\bar{S}$	"	"	36.6		+11	-9	-12		
		F	22	00	00.6						
102	6 "	$\bar{P}$	11	29	52.0						
		F	"	30	09.4						
103	8 "	eL	22	13	30.0	16.0					
		M	"	15	46.0			+12	+23		
		F	"	33	30.0						
104	" "	e $\bar{P}$	22	29	43.6					88	
		$\bar{S}$	"	"	55.5			+1.2	-3.5		
		F	"	30	29.9						
105	" "	i $\bar{P}$	22	33	35.1	0.6	-5.6	+1.2	+4.5	88	<i>Felt in the city of Nagasaki. Epicenter is Itosima District, Miyazaki Prefecture. Hukuoka</i>
		i $\bar{S}$	"	"	46.9	0.8	+14	+30	-75		
		M	"	"	50.2	0.8	+30	-75	+50		
		C	"	34	29.9						
		F	"	36	49.9						
106	16 "	e $\bar{P}$	15	16	58.5					184	
		e $\bar{S}$	"	17	23.3	E 0.8 N 1.0		+1.0	-1.4		
		F	"	18	38.9						
107	19 "	P	11	45	46.4	E 2.0 N 3.0		+1	+2	1316	
		P <sub>M</sub>	"	"	47.8	E 2.9 N 3.9		-7	-25		
		S	"	48	06.0	E 7.2 N 7.0		-9	+6		
		L	"	"	45.0	E 16.4		-13	+3		
		M	"	49	30.1	E 18.4 N 20.5		-10	+21		
		M	"	50	36.0	E 15.8		-29	±0		
		M	"	52	12.4	E 12.3 N 14.3		+10	-30		
		C	"	55	59.0						
		F	12	15	00.0						
108	20 "	P	5	47	12.7				-2	1243	
		eS	"	49	25.0						
		F	6	04	00.0						
109	21 "	P	1	41	01.9				-2.8	1315	
		S	"	43	21.4				-1.0		
		F	2	03	01.9						
110	28 "	P	22	02	46.2						
		F	"	04	29.2						
111	29 "	eP	3	54	52.8					1334	
		eS?	"	57	18.4						
		M	4	00	05.5	14.0		-16	+15		
		M	"	01	46.2	14.0		-13	+12		
		F	"	28	18.6						
112	31 "	$\bar{P}$	12	03	32.0					185	
		$\bar{S}$	"	"	56.9						
		F	"	04	24.5						
113	" "	$\bar{P}$	12	08	03.5					156	
		$\bar{S}$	"	"	24.5						
		F	"	09	23.5						

## NAGASAKI, JAPAN.

## SEISMIC BULLETIN

NAGASAKI METEOROLOGICAL OBSERVATORY

 $\varphi = 32^{\circ}44'03''$  $\lambda = 129^{\circ}52'31''$ 

h = 130.6m.

Lithologic foundation: Volcanic Agglomerate.

International  
Seismological  
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## INSTRUMENTAL CONSTANTS

INSTRUMENT	COMPONENT	MASS	DAMPING	$T_0$	$\frac{r}{T_0^2}$	$\epsilon$	V
Wiechert	N - S	200	Air	4.7	0.039	4.4	100
	E - W	"	"	5.3	0.041	5.5	100
Wiechert	U - D	80	"	4.7	0.099	5.0	71
Omori	N - S	16	Magnetic	18.5	0.006	2.8	20
Omori	E - W	16	"	15.5	0.005	2.1	20
Omori	N - S	20		2.9	0.116		50
	E - W	20		2.9	0.163		50
C. M. O.	NE - W	2.3	Magnetic	3.9	0.097	2.3	2
	NW - SE	2.3	"	3.9	0.055	1.6	2
	U - D	2.3	"	4.8	0.030	1.7	2

No.	Date	Phase	Time 135° E			Period s.	Amplitude			$\Delta$ km.	Remarks				
			h.	m.	s.		AZ $\mu$	AE $\mu$	AN $\mu$						
114	2 Sept.	P	20	17	59.5	2.7	+1.1	$\pm 0$	+0.5	2665	South Ocean?				
		S	"	22	17.5		+1								
		F	21	10	18.5										
115	4 "	$\bar{P}$	10	17	56.7	2.7	+2.3	+1.0	+1.4	33	Off the coast of Nomo.				
		$\bar{S}$	"	18	01.1		+2	+7	-5						
		F	"	"	40.0										
116	7 "	$\bar{P}$	20	37	40.8	2.7	+1.1	-0.5	+0.3	17	Central part of Tiziwa Bay. Felt at Obama and Kutinotu.				
		$\bar{S}, M$	"	"	43.1		-1.4	+4.2	+4.3						
		F	"	38	20.0										
117	12 "	P	7	21	30.5	2.7	-1.4	-1.0	-2.0	1235	Neighbourhood of Kwarenko, Taiwan.				
		eS	"	23	42.0							6.3	+1		
		L	"	26	19.0							14.0	+4		
		ME	"	29	20.0							12.0	+4		
		MN	"	"	43.0							8.0			+2
		MZ	"	"	45.5							12.0	+2		
		F	"	45	20.0										
118	13 "	$\bar{P}$	11	22	51.5	2.7				57	Local Shock.				
		$\bar{S}?$	"	"	59.1									+1	
		L	"	23	10.9							-1		+3	
		M	"	"	12.9							-4		+7	
		F	"	27	20.0										
119	20 "	eP	13	10	04.7	2.7	-1.3			254	Away to the Western coast of Yakushima?				
		$\bar{S}?$	"	"	39.0							1.4	+8		
		MZ	"	"	51.9							2.3			
		ME	"	"	56.0							2.8	-20		
		MN	"	"	59.0							2.0			+22
		C	"	11	23.0										
F	"	16	13.0												
120	28 "	$\bar{P}$	9	55	53.8	0.4				13	Local Shock.				
		$\bar{S}, M$	"	"	55.1							$\pm 0$	-1.0		
		F	"	56	36.1							+2.0	+4.0		
121	29 "	P	0	00	21.6	2.2	-1.4			1909	Northern part of Japan Sea?				
		PR <sub>1</sub>	"	"	39.2							1.5	+0.5	+1.4	
		eS	"	03	36.5							1.5		+1.0	
		M	"	"	42.7							2.2	$\pm 0.7$	+2.2	
		F	"	08	05.5										

## NAGASAKI, JAPAN.

## SEISMIC BULLETIN

## NAGASAKI METEOROLOGICAL OBSERVATORY

 $\varphi = 32^{\circ}44'03''$   $\lambda = 129^{\circ}52'31''$   $h = 130.6\text{m.}$ 

Lithologic foundation: Volcanic Agglomerate.



## INSTRUMENTAL CONSTANTS

INSTRUMENT	COMPONENT	MASS	DAMPING	$T_0$	$\frac{r}{T_0^2}$	$\epsilon$	V
Wiechert	N - S	200	Air	4.7	0.039	4.4	100
	E - W	"	"	5.3	0.041	5.5	100
Wiechert	U - D	80	"	4.7	0.099	5.0	71
Omori	N - S	16	Magnetic	18.5	0.006	2.8	20
Omori	E - W	16	"	15.5	0.005	2.1	20
Omori	N - S	20		2.9	0.116		50
	E - W	20		2.9	0.163		50
C. M. O.	NE - W	2.3	Magnetic	3.9	0.097	2.3	2
	NW - SE	3.2	"	3.9	0.055	1.6	2
	U - D	2.3	"	4.8	0.030	1.7	2

No.	Date	Phase	Time 135° E			Period s.	Amplitude			$\Delta$ km.	Remarks
			h.	m.	s.		Az $\mu$	AE $\mu$	AN $\mu$		
122	6 Oct.	P eL F	2	05	02.7 00.0 00.0					Very faint.	
123	" "	P eS? F	4	04	45.8 59.5 30.0				1897	Ditto.	
124	8 "	eP S MN ME C F	6	29	13.3 20.6 21.2 21.7 34.7 06.7	0.4 0.5 0.6	+1.4 -14	-0.5? +2.0 -7.0	+1.5 +3.3 -9.4	55	Local shock.
125	10 "	ePEN iPz SN Sz,M SE,M MN C F	4	45	52.9 53.1 11.3 11.8 11.9 11.9 37.0 55.5	0.8 2.0 2.4	+1.8 +6.6	-1.2 +14	-0.8 +5.0 -27	137	
126	17 "	e eL M M M M C F	5	38	24.5 52.4 49.5 40.0 13.6 20.0 40.0 40.0	18.0 9.5 8.0 10.0 10.0		+4 -5 +3	+3		Distant earthquake.
127	19 "	eP ePP? eS? F	19	33	01 16 36 36	3.0 3.5				10850	Chiric?
128	20 "	P S F	8	11	58.0 01.2 25.0				24	Local shock.	
129	22 "	iP S F	19	01	16.2 19.9 09.0		+2.0	+3.0	+3.0	28	Local shock.
130	24 "	eP? eS? eL M F	15	30	52.0 39.0 49.0 13.0 00	18.0		+9	-10	5085?	Distant earthquake.
131	25 "	eP iP iS M M C F	3	57	29.8 30.4 32.1 32.7 37.5 38.2 38.8 39.9 25.0 07.0	0.8 1.0 0.4 0.7 1.0 0.5 0.7 1.0	-1.0 -12 -14 -40	+0.4 +20 +42 -72	S~ -13 +105 +228	58	Neighbourhood of Misumi, Kumamoto Prefecture. Felt moderately at Nagasaki.

No.	Date	Phase	Time 135° E			Period	Amplitude			$\Delta$ km.	Remarks
			h.	m.	s.		AZ $\mu$	AE $\mu$	AN $\mu$		
132	25 Oct.	$\bar{P}_Z$	8	01	14.3	0.7		-4.9	+6.5	45	<i>After shock.</i>
		$\bar{P}_{NE}$	"	"	14.6						
		$\bar{S}_{NE,M}$	"	"	20.7						
		$\bar{S}_Z$	"	"	20.9						
		F	"	02	36 0						
133	" "	$e\bar{P}_{NE}$	21	34	07.4	0.4	+0.3	-1.0	+1.0	29	<i>Southern part of Simabara Peninsula.</i>
		$e\bar{P}_Z$	"	"	07.7						
		$\bar{S}_Z$	"	"	10.9						
		$\bar{S}_{ZE}$	"	"	11.3						
		MNE	"	"	11.5						
		MZ	"	"	11.9						
		C	"	"	36.5						
		F	"	37	03.5						
134	26 "	$i\bar{P}_Z$	0	31	46.5		-3.0	+2.0	+2.0?	30	<i>Ditto.</i>
		$i\bar{P}_{NE}$	"	"	47.2						
		$\bar{S}_Z$	"	"	50.9						
		$\bar{S}_{NE}$	"	"	51.2						
		C	"	32	00						
		F	"	33	00						
135	" "	$\bar{P}$	6	40	34.5						<i>Ditto.</i>
		F	"	41	13.0						
136	" "	$\bar{P}$	12	04	59.2					38	<i>Ditto.</i>
		$\bar{S}$	"	05	04.2						
		F	"	"	32.5						
137	28 "	P	4	31	18.7					864?	
		S?	"	32	53.1						
		F	"	34	00						
138	29 "	$\bar{P}$	12	36	00.4					27	<i>Southern part of Simabara Peninsula.</i>
		$\bar{S}$	"	"	04.0						
		F	"	"	17.5						

# NAGASAKI, JAPAN.

## SEISMIC BULLETIN

NAGASAKI METEOROLOGICAL OBSERVATORY

$\phi = 32^{\circ}44'03''$

$\lambda = 129^{\circ}52'31''$

$h = 130.6\text{m.}$

Lithologic foundation: Volcanic Agglomerate.



### INSTRUMENTAL CONSTANTS

INSTRUMENT	COMPONENT	MASS	DAMPING	$T_0$	$\frac{r}{T_0^2}$	$\epsilon$	V
Wiechert	N - S	200	Air	4.7	0.039	4.4	100
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Wiechert	U - D	80	"	4.7	0.099	5.0	71
Omori	N - S	16	Magnetic	18.5	0.006	2.8	20
Omori	E - W	16	"	15.5	0.005	2.1	20
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	NW - SE	3.2	"	3.9	0.055	1.6	2
	U - D	2.3	"	4.8	0.030	1.7	2

No.	Date	Phase	Time 135° E			Period	Amplitude			$\Delta$	Remarks
			h.	m.	s.		Az	AE	AN		
139	2 Nov.	eP	1	03	29.7			+0.2		150	<i>Near shock.</i>
		S	"	"	50.0	1.1		-1.2	-2.0		
		M	"	04	03.3	1.0		-5.0			
		F	"	05	18.0						
140	5 "	eP	20	43	27.0	4.0	+1.0	-0	+1.5	2673	<i>Distant earthquake. Phase S is very faint.</i>
		MP	"	"	28.8	4.0	-4.0	+2.2	-9.0		
		eS	"	47	45.5	8.0					
		F	"	59	17.7						
141	16 "	eP	3	56	22.0	2.9, 3.0		+2.3	-1.0	2950	<i>Distant earthquake.</i>
		eSE	4	01	01.3	12.4		-2.5			
		eSN	"	"	07.5	12.4			-3.0		
		MN	"	"	31.7	16.5			+35		
		ME	"	"	35.8	16.5		-16			
		ME	"	02	24.5	13.0		-17			
		MEN	"	04	24.3	18.0, 25.0		-10	+15		
		MN	"	06	57.5	11.0			+22		
		ME	"	07	12.5	14.8		-10			
		MEN	"	08	31.6	18.0, 14.8		-12	+26		
		MEN	"	10	36.3	11.0, 13.0		-10	+10		
F	"	52	00								
142	17 "	eP	12	49	19					2540	<i>Ditto.</i>
		eS	"	53	27						
		L	"	54	49						
		ME	"	55	21	26.0		-15			
		MN	"	56	42	28.0			-11		
		F	13	52	19						
143	19 "	eP?	6	26	00					569	<i>Very faint.</i>
		eL	"	31	40						
		F	7	22	00						
144	20 "	eP?	14	55	44.1					569	<i>Near shock.</i>
		iP	"	"	57.3	1.0	-3	+8	+5		
		S	"	57	00.9	{ E1.0 E1.0	+7	-6	-26		
		MN	"	"	14.4	2.8			+50		
		MZ	"	"	16.5	2.9	+13				
		ME	"	"	17.4	2.6		-33			
		C	"	58	04.4						
		F	15	06	01.4						
145	24 "	P	21	45	36.9						<i>Local shock. Very faint.</i>
		F	"	"	59.1						

# NAGASAKI, JAPAN.

## SEISMIC BULLETIN

NAGASAKI METEOROLOGICAL OBSERVATORY

$\phi = 32^{\circ}44'03''$

$\lambda = 129^{\circ}52'31''$

$h = 130.6\text{m.}$

Lithologic foundation: Volcanic Agglomerate.



### INSTRUMENTAL CONSTANTS

INSTRUMENT	COMPONENT	MASS	DAMPING	$T_0$	$\frac{r}{T_0^2}$	$\epsilon$	V
Wiechert	N - S	200	Air	4.7	0.039	4.4	100
	E - W	"	"	5.3	0.041	5.5	100
Wiechert	U - D	80	"	4.6	0.006	3.9	74
Omori	N - S	16	Magnetic	18.5	0.006	2.8	20
Omori	E - W	16	"	15.5	0.005	2.1	20
Omori	N - S	20		2.9	0.116		50
	E - W	20		2.9	0.163		50
C. M. O.	NE - W	2.3	Magnetic	3.9	0.097	2.3	2
	NW - SE	3.2	"	3.9	0.055	1.6	2
	U - D	2.3	"	4.8	0.030	1.7	2

No.	Date	Phase	Time 135° E			Period s.	Amplitude			J km.	Remarks	
			h.	m.	s.		Az	AE	AN			
146	4 Dec.	P	6	46	01.6		μ	μ	μ	31	<i>Phase S is faint.</i>	
		S	"	"	05.8		+2.7	-2.5	+3.0			
		F	"	"	35.0							
147	" "	eL	15	18	20					4761	<i>Surface wave of a distant earthquake.</i>	
		F	"	24	0							
148	5 "	P	0	11	57.1					4761	<i>Microseisms.</i>	
		F	"	12	20							
149	9 "	ePz	15	58	00.1	2.0	-0			4761	<i>Distant earthquake.</i>	
		ePEN			02.3	1.9		+1.0	+0.9			
		eS	16	04	29.4	2.6		+1	-1			
		eL	"	10	40	30.0		+2	-2			
		M	"	15	11	20.0		+10	-15			
		M	"	17	52	14.0		+12	-17			
		Mz	"	19	39	13.7		+13				
		ME	"	"	44	14.6	+7					
		MN	"	"	50	13.5			-11			
		C	"	22	26							
F	"	42	16									
150	14 "	P	23	44	59.2					19	<i>Tiziva Bay.</i>	
		S	"	45	01.7		-2.0	-4.0	-4.6			
		F	"	"	16.2							
151	16 "	P?	20	38	53.9					4325	<i>Distant earthquake, very faint.</i>	
		S?	"	44	59.6							
		L	"	50	53.0							
		F	21	22	00							
152	17 "	e	0	05	57					4123	<i>South Ocean?</i>	
		F	"	25	57							
153	" "	ePz	20	05	40.2					4123	<i>South Ocean?</i>	
		PP	"	07	07.0		3.8	+4	+6			
		S	"	11	34.0		12	-20	+10			
		SS	"	14	01.7		16	-12	+18			
		eL	"	16	19.0		17	+30	-40			
		eLz	"	"	25.0		20	+21				
		ME	"	"	32		22		-58			
		MN	"	"	53		20					-90
		Mz	"	17	26		20	-30				
		Mz	"	18	55		17	+20				
		ME	"	19	51		17		-56			
		MN	"	"	52		17					+54
		MEN	"	21	03		15		-60			+60
		Mz	"	"	25		15	+25				
		Mz	"	22	05		16	+24				
		MEN	"	23	10		14		-50			+40
		Mz	"	28	02		12	+21				
MEN	"	"	27	13		+45	-45					
F												
154	" "	eP	21	19	09.5					4128	<i>Ditto.</i>	
		eS	"	25	04.0							
		F	"	53	00							
155	18 "	P	16	01	17.0	4.7				1850	<i>Phase S is very faint.</i>	
		eS	"	04	27.0		-3	-5				
		F	"	22	00							

*Continuous*

No.	Date	Phase	Time 135° E			Period	Amplitude			<i>Δ</i> km.	Remarks
			h.	m.	s.		μ	μ	μ		
156	19 Dec.	eP	1	08	55.0				403	<i>Near shock.</i>	
		eS?	"	09	49.3						
		F	"	17	00						
157	24 "	P	19	47	34.1				56	<i>Local shock.</i>	
		S	"	"	41.6	0.4	+1	+1			
		F	"	48	18.8						
158	27 "	P	22	38	58.9	2.3	-3	+1	3615	<i>Distant earthquake.</i>	
		S	"	44	23.6	2.5		-4			
		F	"	49	—			-1			
159	30 "	P	8	09	09.6				28	<i>Neighbourhood of Unzen.</i>	
		S	"	"	13.4						
		F	"	10	00						
160	" "	P	8	24	29.7				26	<i>Ditto.</i>	
		S	"	"	33.2						
		F	"	25	15.0						
161	" "	P	9	57	29.8		+3.0	-2.2	31	<i>Ditto.</i>	
		S	"	"	34.0			+2.0			
		F	"	58	05.0						
162	31 "	P	10	08	22.3	3.2		+0	2724	<i>Distant earthquake.</i>	
		S	"	12	44.7	5.2		+2			
		F	"	28	35.8			-1.5			



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