Preliminary Bulletin

of the Dodaira Micro-earthquake Observatory

and its Substation

Jan., 1969

Dodaira Micro-earthquake Observatory

Earthquake Research Institute, the University of Tokyo

Preliminary Bulletin of the Dodaira Micro-earthquake Observatory and its Substation

Observation stations

		N	E	h
Dodaira	(D or DDR)	35°59'54".0	139°11'36".2	800m
Tsukuba	(T or TSK)	36°12'39".0	140° 6'35".0	280m
Kiyosumi	(K or KYS)	35°11'51".6	140° 8'53".6	230m
Shiroyama (temporary)	(S or SRY)	35°36'30".0	139°16'27".0	254m

Expressions: Am: Amplitude in millimicron (half of peak to trough*) of P motion maximum within few cycles after the onset recorded by a short period vertical seismograph.

*In 1967 double amplitude (peak to trough) was used as Am.

T : Period in sec of the measured P maximum

t : Teleseism

All stations are radio-telemetered to Tokyo giving records on a multi-channel ink-recording oscillograph. The paper speed of the recorder is 1 mm per sec. For stronger events high speed recorder (10 mm/sec) is also triggered. The system is also recorded in parallel on multi channel magnetic tape through a trigger system using an endless tape loop. Direct filter sum of short period seismometers at Dodaira and/or on line short period filter outputs of Tsukuba are also used for the

detection of weak teleseismic signals. For teleseismic events records of long period and medium period seismographs are occasionally used, applying off line frequency filter, if necessary.

The Bulletin includes the preliminary readings sent to USCGS for teleseisms and larger near shocks with total durations (F-P) of short period vertical seismograph at Tsukuba (TSK) with magnification about 140.000 at 1 c/s or sensitivity about 300×10^{-3} mm/microkine at 10 c/s being longer than 100 seconds which correspond approximately shocks with $M \geq 3.5$. For the minor near earthquakes with $F\text{-}P \angle 100$ sec or $M \angle 3.5$, frequency of S-P times at each station is added at the end of the Bulletin, which may easily give a general idea of local seismicity around the station.

Date	Station	Phase	Time(G.M.T.)			t	T	Am
JAN. 1	S	eP	00	59	34.4			
	D	iP			38.7			
	T	iP			41.5			
	T	eP	05	00	55.7	t	0.5	2.9
	D	eP		01	02.3			
	D	iP	07	28	49.6			
	S	iP			55.2			
	T	iP		29	05.0			
	K	eP			10.9			
	T	iP	09	13	33.2	t	1.0	41.0
	D	eP			40.3			
	S	eP			42.1			
	T	iP	14	58	58.1			
	D	iP		59	02.2			
	S	iP			02.8			
	D	eP	15	01	37.7			
	T	eP			42.0			
	T	eP	17	54	31.6	t	0.5	3.4
		eS		57	13.2			
	D	eP		54	37.6			
		eS		57	25.5			
	T	iP	22	24	15.8			
	D	eP			26.4			
	S	eP			27.6			
	S	eP	23	57	35.4	t		
	D	eP			37.0			
	T	eP			42.3		0.5	7.7
JAN. 2	T	iP	14	12	00.1	t	1.0	31.0
	D	eP			07.5			
	S	eP			10.0			
	S	eP	15	56	37.3	t		
	D	eP			37.9			
	T	eP			39.5			
	T	eP	18	08	34.2			
	D	eP			43.0			
	T	eP	19	58	49.1			
	D	eP		59	00.0			
JAN. 3	D	eP	03	27	08.2	t		
	T	eP			12.3		1.4	120.2
	T	iP	05	10	19.0			
	D	iP			29.3			
	T	eP	09	21	05.1			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
JAN. 3	D	eP	09	35	02.0			
	T	eP			06.1			
	D	eP	11	38	02.6			
	T	eP			04.9			
	T	eP	12	14	03.6			
	D	eP			13.0			
	T	eP	12	50	54.5			
	D	eP		51	03.9			
	T	eP	13	19	12.2			
	T	eP	13	34	42.9	t	1.1	57.6
	D	eP			48.8			
	D	eP	16	05	37.4			
	T	eP			37.7			
	T	eP	16	56	30.2			
	D	eP			40.0			
	T	eP	18	45	20.0			
	D	eP			25.2			
	T	eP	19	19	24.4	t	0.5	4.2
JAN. 4	T	iP	00	30	10.6			
	D	iP			11.5			
	T	iP	02	35	40.2			
	D	eP			47.9			
	S	eP	09	15	23.3	t		
	D	eP			25.6			
	T	iP			27.5		0.5	8.7
		eS?		18	03.3			
	T	iP	11	12	51.7			
	D	eP		13	00.9			
	T	iP	11	28	53.2			
	D	iP		29	04.5			
	S	iP			08.3			
	S	iP	14	02	28.7			
	T	iP			31.8			
	D	iP			32.9			
	D	eP	14	14	09.6	t?		
	T	iP	16	33	24.9			
	D	iP			36.0			
	S	iP			39.6			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
JAN. 4	D	eP	22	44	40.9	t		
		ePcP		46	29.4			
		eScP?		50	09.6			
		eScS		54	29.8			
	S	eP		44	41.6			
	T	eP			43.1		0.5	10.1
		ePcP		46	29.8			
JAN. 5	D	eP	01	40	05.3	t		
	T	eP			06.8		0.5	9.2
	T	eP	04	47	11.2			
	D	eP	06	22	06.0			
	T	eP			07.0			
	S	eP	07	35	30.9	t		
	D	eP			34.6			
		eX			44.4			
		eS		41	02.0			
	T	eP		35	36.7		1.0	35.3
	T	iP	11	53	15.1			
	D	eP			22.9			
	S	eP			24.9			
	T	iP	12	35	21.4			
	D	iP			32.3			
	S	iP			32.5			
					04.1			
	T	eP	13	10	04.1			
	S	eP	13	28	27.2			
	T	eP			34.3			
	S	iP	13	35	08.3	t		
	T	iP			10.7		1.2	388.0
	D	iP			11.5	LZ	20.4	119.0U
		ePcP		37	01.4			
		eS		42	05.1			
		eScS		45	27.7			
		eX	14	05	56.9			
	T	eP	14	24	59.4	t?		
	S	eP	16	21	25.7	t		
	D	eP			31.3			
		ePcP		23	58.9			
	T	eP		21	33.6		0.5	7.1
		ePcP		23	59.4			
	S	eP	16	59	10.5	t		
	D	eP			13.3			
		eS	17	05	47.1			
	T	eP	16	59	17.3		0.5	8.9
	T	eP	18	55	59.6			

Date	Station	Phase	Time(G.M.T.)	t	T	Am
JAN. 5	S	eP	21 26 42.5			
	T	iP	46.9			
	D	eP	48.2			
JAN. 6	D	eP	01 13 26.8	t		
	D	eP	02 14 14.3	t		
	T	iP	04 17 13.9			
	D	iP	24.5			
	S	eP	06 51 29.9	t		
	D	eP	33.2			
	T	eP	34.6		1.0	57.8
	T	iP	12 16 18.1			
	D	eP	27.1			
	D	eP	12 39 23.9	t		
	T	iP	13 48 14.4	t		
	D	eP	24.6			
	S	eP	27.0			
	S	eP	15 42 06.7	t		
	T	eP	07.9		1.2	23.6
	D	eP	09.3			
	S	iP	15 48 06.1	t		
	T	iP	07.4		2.1	930.0
	D	iP	08.7	LZ	20.0	157.5U
		eS	55 15.8			
	D	eP	16 41 40.5			
	T	eP	42.8			
	D	eP	17 15 27.3	t		
	T	eP	17 30 00.7			
	D	eP	03.8			
	S	eP	17 42 46.2	t		
	D	eP	47.5			
	T	eP	48.8		1.4	72.7
	T	eP	20 38 10.0	t	1.0	26.4
		eX	22.7			
	D	eP	13.6			
		eX	25.9			
	D	eP	21 01 57.8	t		
	T	eP	21 54 34.6			
	D	eP	38.3			
JAN. 7	S	eP	01 01 49.8			
	T	iP	51.1			
	D	eP	54.4			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
JAN. 7	S	eP	01	21	57.5	t		
	D	eP		22	01.4			
		eS		28	14.8			
	T	iP		22	01.7		0.5	11.4
		eS		28	16.8			
	T	iP	03	34	12.0			
	D	iP			22.8			
	S	eP	07	05	02.1	t		
	D	eP			04.3			
	T	eP			07.1		0.5	3.3
	S	iP	07	30	53.3			
	D	iP			55.4			
	T	iP			59.3			
	D	eP	08	04	13.4			
	T	iP			15.8			
	T	eP	08	50	09.7			
	D	eP			18.5			
	D	eP	15	10	48.0			
	T	eP			48.7			
	S	eP	17	55	52.7	t		
	T	eP			54.1		1.0	21.1
	D	eP			56.0			
	T	iP	21	30	04.0			
	D	eP			11.8			
	T	eP	22	01	43.6	t	1.1	25.6
	D	eP			50.9			
	S	eP			54.2			
JAN. 8	T	eP	01	26	06.2			
	D	eP			15.0			
	D	eP	01	27	54.5	t		
	S	eP	02	29	22.1			
	D	eP			28.0			
	T	eP			32.5			
	T	eP	07	08	53.0			
	D	eP		09	02.0			
	S	iP	07	26	56.8			
	D	iP		27	02.0			
	T	iP			02.9			
	T	iP	11	05	54.7			
	D	eP		06	05.0			
	D	eP	14	04	03.3	t		
	T	eP			07.3		0.5	1.8

Date	Station	Phase	Time(G.M.T.)			t	T	Am
JAN. 8	T	eP	18	28	06.0			
	D	eP			14.4			
		eS		29	09.3			
	T	iP	18	50	40.6			
	D	eP			50.8			
	T	iP	20	29	14.8			
	D	eP			23.1			
	S	eP			23.2			
	S	eP	22	00	59.6			
	D	eP		01	03.1			
	T	eP			04.8			
JAN. 9	S	iP	03	29	03.8			
	T	iP			06.6			
	D	iP			08.1			
	T	eP	09	28	01.8			
	D	eP			11.5			
	T	iP	12	06	55.7			
	D	iP		07	05.0			
	S	eP			07.5			
	D	iP	12	42	50.6			
	T	eP			57.9			
	S	eP	13	51	01.6	t		
	D	eP			03.6			
	T	eP			04.7		0.5	3.0
	D	eP	15	22	32.2			
	T	eP			32.5			
	D	eP	15	55	59.2	t?		
	T	eP		56	02.6		0.5	2.0
	S	eP	16	41	21.4	t		
	T	eP			24.0		0.5	4.9
	D	eP			24.8			
	T	iP	20	00	24.8			
	D	iP			33.8			
	S	eP			37.9			
	T	eP	21	34	37.6			
	D	eP			42.8			
	T	eP	23	15	49.5			
	D	eP		16	00.4			
JAN.10	T	iP	00	15	08.1			
	D	eP			16.8			
	D	eP	00	21	53.6			
	T	eP			57.4			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
JAN.10	T	iP	01	40	39.1			
	D	iP			49.2			
	S	eP	03	23	16.9	t		
	D	eP			20.6	LZ	17.6	7.6U
		eS		26	41.5			
	T	eP		23	29.0		1.2	20.0
	T	eP	06	16	11.6			
	D	eP			19.0			
	S	eP	13	10	04.3			
	D	iP			09.4			
	T	iP			09.8			
	T	iP	14	30	21.0			
	D	iP			31.0			
		eS		31	25.2			
	S	eP		30	34.9			
	T	eP	15	29	56.1			
	D	eP		30	04.0			
	S	iP	19	23	20.9			
	T	iP			26.1			
	T	eP	19	38	28.4			
JAN.11	T	eP	04	14	09.0			
	S	eP	04	38	07.0	t		
	T	eP			07.9		1.1	37.8
	T	eP	04	50	34.6			
	S	eP	04	59	23.7	t		
	T	eP			24.5		1.2	40.7
	T	eP	06	37	24.9	t	1.1	22.4
	T	eP	10	39	01.3			
	D	eP			11.5			
	T	iP	16	43	08.9			
	D	eP			16.8			
	S	eP	23	49	23.8			
	D	iP			27.8			
	T	iP			29.5			
JAN.12	T	iP	05	06	51.7			
	D	iP		07	00.8			
	D	eP	06	28	46.3			
	T	eP			53.6			
	T	eP	11	10	57.2			
	D	eP		11	04.8			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
JAN.12	T	eP	14	32	12.5	t	1.0	15.4
	D	eP			15.1			
	T	eP	15	14	02.7			
	D	eP			03.0			
JAN.13	D	iP	00	58	17.2			
	T	iP			21.4			
	S	iP	09	03	32.6	t		
	T	iP			34.9		1.2	88.8
	D	iP			35.7	LZ	20.0	2.1U
		epP?			53.4			
	K	eP			38.5			
	D	eP	12	36	36.6	t		
	T	eP			45.0		0.5	2.1
	S	iP	18	28	01.5			
	D	iP			03.6			
	K	iP			04.8			
	T	iP			06.8			
	T	eP	18	30	35.1			
	D	eP			43.1			
	T	iP	20	17	45.2			
	K	eP			51.0			
	D	eP			55.4			
	T	eP	22	15	45.3			
	D	eP			55.5			
JAN.14	T	eP	00	34	57.8			
	D	eP		35	07.0			
	S	eP			11.0			
	K	eP			19.8			
	S	iP	03	59	18.3			
	D	iP			19.5			
	K	iP			22.3			
	T	iP			24.0			
	T	eP	05	56	22.8			
	D	eP			26.9			
	T	eP	14	34	07.2	t	0.5	4.9
		eS		37	29.3			
	D	eP		34	07.8			
		eS		37	24.9			
	T	iP	16	02	27.4			
	D	iP			37.3			
	S	iP			40.4			
	K	iP			41.4			
	T	eP	21	02	12.8			
	D	eP			21.1			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
JAN.14	T	iP	22	33	01.4			
	D	eP			09.8			
	T	eP	23	24	32.7	t	1.0	57.8
	S	eP			32.9			
	D	eP			34.6	LZ	20.0	6.1U
JAN.15	T	eP	03	24	37.8			
	D	eP	10	55	27.2			
	T	eP			31.3			
	K	iP	11	50	45.1			
	T	iP			46.4			
	S	iP			49.0			
	D	iP			50.8			
	S	eP	13	07	02.3	t		
	D	eP			06.6			
	T	eP			11.0		1.2	24.5
	T	eP	15	31	35.7			
	D	eP			45.8			
	T	iP	16	32	43.6			
	D	eP			52.2			
	T	eP	16	45	16.4			
	D	eP			26.1			
	T	iP	19	06	14.4			
	K	iP			17.4			
	S	iP			17.5			
	D	iP			18.0			
	T	eP	19	42	02.3	t		
	D	eP			06.5			
	S	eP			08.0			
	T	eP	20	20	06.0			
	D	eP			11.4			
	D	eP	20	41	19.3			
	T	eP			20.0			
JAN.16	D	iP	01	59	16.7			
	S	eP			22.3			
	T	iP			25.9			
	K	eP			36.3			
	D	eP	04	33	28.8			
	T	eP			31.1			
	D	iP	07	25	31.4			
	T	iP			32.2			
	S	iP			34.8			
	K	eP			40.6			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
JAN.16	T	eP	09	18	30.9			
	D	eP			43.0			
	T	eP	09	34	26.5			
	D	eP			34.9			
	D	eP	10	37	07.2	t		
	K	eP	12	31	43.2			
	S	iP			51.4			
	D	eP			56.6			
	T	eP			56.8			
	S	eP	15	23	32.0	t		
	D	eP			33.1			
	T	eP			42.0	-	0.5	3.6
	T	iP	15	36	19.4			
	D	iP			27.7			
	S	eP			31.8			
	K	eP			34.2			
	K	eP	17	10	04.4	t		
	S	eP			11.0			
	D	eP			14.6			
		eS		13	07.2			
	T	iP		10	16.2		1.4	74.7
	T	iP	20	32	24.8			
	D	iP			33.4			
	S	eP			36.8			
	K	eP			39.5			
	T	eP	21	48	05.1	t	0.5	4.7
	S	eP	23	38	58.7			
	K	eP		39	00.8			
	T	eP			03.4			
	D	eP			04.7			
JAN.17	D	iP	20	42	42.6			
	S	eP			44.7			
	T	iP			46.1			
	K	eP			54.0			
JAN.18	S	eP	03	22	17.2	t		
	D	eP			18.0			
	T	eP			18.4		1.9	120.3
	S	eP	03	57	52.8	t		
	D	eP			54.2			
		ePcP		59	47.3			
	T	eP		57	59.4		1.0	18.2
	S	eP	04	03	41.2	t		
	D	eP			42.4			
	T	eP			47.8		1.1	21.9

Date	Station	Phase	Time(G.M.T.)			t	T	Am
JAN.18	T	eP	13	50	24.4			
	D	eP			33.6			
	K	eP	17	21	11.0			
	S	iP			13.1			
	D	iP			19.8			
	T	eP			24.2			
	T	eP	20	38	35.5			
	D	eP			45.5			
JAN.19	T	iP	05	04	27.5			
	K	eP			31.2			
	D	eP			36.3			
	S	eP			37.4			
	T	iP	07	04	12.1			
	D	iP			17.7			
		eScS		16	59.0			
	S	iP		04	22.0			
	K	iP			25.9			
	D	iP	07	27	31.4	t?		
	S	iP	07	33	00.2	t		
	D	iP			02.5			
		epP			42.0			
		ePcP		35	31.2			
	T	eP		33	06.1		1.0	31.8
	T	iP	15	17	14.2			
	K	iP			16.5			
	S	iP			16.9			
	D	iP			17.6			
	T	iP	18	05	41.2			
	D	iP			49.3			
	S	eP			53.7			
	K	eP			55.8			
	K	iP	19	00	20.9	t		
	S	iP			25.0			
	T	iP			26.7		0.5	42.4
	D	iP			28.8	LZ	16.0	20.7U
		eScP		05	14.9			
		eS		08	15.5			
		eScS		10	14.2			
		eX1		30	11.2			
		eX2			20.3			
		eP1'P1'			28.2			
	T	eP	21	07	50.0			
	S	eP	21	32	46.6			
	T	eP			52.4			
	D	eP			53.2			

Date	Station	Phase	Time(G.M.T.)	t	T	Am
JAN.20	D	eP	01 14 28.0	t		
	S	iP	04 08 58.3			
	D	iP	58.4			
		iS	09 46.2			
	T	iP	03.2			
	K	eP	03.9			
	T	eP	10 44 04.0			
	D	eP	14.2			
	S	eP	12 33 43.7	t		
	T	eP	45.6			
	D	eP	46.6	LZ	20.0	8.7U
	T	eP	14 25 47.6	t		
		eS	30 48.3			
	D	eP	25 48.3	LZ	12.8	8.3U
		eX	26 00.0			
		eS	30 35.2			
	S	eP	25 51.9			
	T	iP	16 39 01.9			
	D	iP	12.9			
	S	iP	15.3			
	D	eP	17 42 30.0	t		
	T	eP	22 33 05.3			
	D	eP	14.7			
	S	eP	19.5			
	T	eP	23 11 27.6			
	D	iP	38.0			
	S	eP	40.8			
JAN.21	T	eP	00 10 47.7			
	T	iP	00 13 30.4			
	K	eP	41.1			
	D	iP	41.4			
	S	iP	43.9			
	S	eP	11 53 01.4			
	D	iP	06.4			
	T	iP	09.4			
	S	iP	01 55 28.6	t		
	D	eP	32.0			
		ePcP	57 16.3			
		eScP	02 00 53.8			
		ePcS	01 10.4			
		eS	56.3			
	T	eP	55 35.4		0.5	14.9
	T	iP	03 09 42.9			
	K	iP	44.9			
	S	iP	46.0			
	D	iP	47.1			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
JAN.21	D	eP	04	18	02.0	t		
		cPcP		19	29.8			
	T	eP	08	36	13.3			
	D	eP			23.3			
	T	eP	14	46	43.5	t	0.5	1.8
	T	eP	23	17	36.2	t	1.0	50.0
	D	eP			39.0			
	S	eP			43.0			
JAN.22	T	eS	00	47	52.4	t	1.2	109.2
	D	eP			58.4	LZ	16.0	1.3U
		eS		52	25.7			
	S	eP		48	01.0			
	T	eP	01	0.6	20.2			
	T	eP	03	22	55.6	t	1.1	52.4
	D	eP		23	01.3			
	S	eP			04.1			
	D	eP	05	57	33.9	t ?		
	T	eP	17	18	38.5	t	1.2	98.1
	D	eP			48.3	LZ	20.0	1.3 U
		eS		21	56.6			
	S	eP		18	53.0			
	D	eP	22	31	38.2			
	T	eP			44.7			
JAN.23	K	eP	02	01	03.2			
		eS		02	16.4			
	S	iP		01	05.0			
		eS		02	20.4			
	D	iP		01	09.1			
		eS		02	28.1			
	T	iP		01	10.5			
		eS		02	31.4			
	T	eP	03	21	51.7			
	T	eP	03	26	05.6			
	D	eP			17.0			
	D	eP	08	15	20.3			
	T	eP			23.8			
	T	iP	14	02	07.2			
	D	iP			12.5			
	S	iP			14.8			
	K	iP			17.2			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
JAN.24	K	iP	00	32	09.8			
	S	iP			13.6			
	T	iP			15.8			
	D	iP			17.0			
	K	iP	02	43	09.0	t		
	S	iP			13.0			
	T	iP			13.3		0.7	291.0
	D	iP			15.6	LZ	16.0	3.3U
		esP?		45	21.2			
		ePP			57.4			
		eS		51	40.2			
		eScS		52	24.6			
		eP1′P1′	03	11	12.0			
	T	eP	02	56	07.5	t	0.5	6.8
	D	eP			16.7			
	T	iP	04	01	24.5			
	D	eP			32.4			
	T	eP	04	34	31.8			
	D	eP			40.0			
	T	eP	06	55	45.5			
	D	eP			55.4			
	S	eP	19	46	15.8			
	D	eP			19.2			
	T	eP			29.0			
	T	eP	23	03	33.6			
	D	eP			43.7			
	T	eP	23	17	21.4			
JAN.25	S	iP	05	26	22.5	t		
		ePcP		28	47.4			
	D	iP		26	25.4			
		ePcP		28	49.2			
		eS		32	05.0			
		eScS		36	44.1			
	T	iP		26	39.2		0.5	45.0
		ePcP		28	49.6			
	T	iP	10	09	07.8			
	D	iP			17.1			
	D	eP	10	45	46.0	t?		
	T	eP	12	15	36.4	t	1.0	42.0
		eX			46.0			
	D	eP			41.8			
		eX			48.0			
	S	eP			44.0			
		eX			53.0			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
JAN.25	T	eP	12	16	42.2			
	D	eP			52.4			
	S	eP	13	21	45.0	t		
	D	eP			47.9			
	T	eP			50.8		0.5	3.9
	T	iP	17	47	29.5			
	D	iP			37.7			
	T	iP	18	36	07.9			
	D	eP			13.9			
	T	eP	19	59	49.0			
	D	eP			58.2			
	T	eP	20	05	41.5			
	D	eP			47.9			
	T	eP	21	08	32.0			
	D	eP			41.3			
	D	eP	23	42	21.8	t		
		ePcP		44	02.8			
	T	eP		42	23.9		1.0	24.3
JAN.26	S	iP	05	07	34.8	t		
	T	eP			37.3		1.2	29.6
	D	eP			38.0			
	S	eP	06	12	17.1	t		
	D	eP			19.4			
	T	eP			22.9		0.5	7.0
	D	eP	10	09	19.5	t		
	D	eP	11	20	17.0	t?		
	S	eP	12	40	16.6	t		
	D	eP			19.8			
	T	eP			23.8		0.5	3.7
	T	eP	15	10	58.4	t	1.2	228.7
	D	eP		11	04.1			
		eS		15	35.3			
	S	iP		11	06.0			
	K	eP			11.4			
	D	eP	15	44	03.3	t		
		eS		47	24.6			
	T	eP		44	07.5			
	T	eP	15	54	22.9	t	0.5	3.7
	D	eP			28.7			
	S	eP			31.2			
	T	eP	16	31	39.5	t	0.5	3.4
	D	eP			47.1			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
JAN.26	D	eP	16	45	47.0	t		
	T	eP			48.0		0.5	3.1
	T	eP	16	50	40.0	t	1.0	55.0
	D	eP			43.1			
	S	eP			46.3			
	T	eP	16	54	18.1	t	1.1	33.3
	D	eP			22.1			
	S	eP			26.1			
	D	eP	20	32	25.1	t		
	T	eP	20	40	43.3			
JAN.27	D	eP	03	06	32.2	t		
	D	eP	03	21	12.6	t		
	D	eP	10	12	26.3	t		
	T	eP	10	15	36.0			
	D	eP			44.4			
	S	eP	13	21	06.1	t		
		eX1			21.0			
	D	eP			10.3			
		eX1			27.7			
		ePcP		24	32.3			
		eX2			39.0			
		eS?		25	35.3			
	T	eP		21	11.4		0.5	9.5
		eX1			27.1			
	S	eP	18	33	43.8	t		
	T	eP			44.6		0.5	7.5
	D	eP			46.8			
	T	iP	18	39	27.8			
	D	iP			32.8			
		eS		40	01.9			
	S	iP		39	38.7			
	K	eP			42.6			
	T	eP	20	26	09.5			
	D	eP			20.7			
	S	eP			24.4			
	K	eP			36.0			
	T	eP	21	27	17.6			
JAN.28	D	eP	00	30	27.9	t		
	S	eP			31.4			
	T	eP			34.9		0.5	3.7
	T	eP	00	38	27.7	t	1.6	75.0
	D	eP			30.8			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
JAN.28	D	iP	04	07	39.3			
	S	eP			40.0			
	T	iP			44.8			
	K	eP			50.4			
	T	eP	05	40	41.4			
	D	eP			49.6			
		eS		42	29.2			
	K	eP	07	56	53.0			
	D	eP			57.7			
	T	eP		57	00.4			
	K	eP	09	56	07.3			
	S	eP			14.6			
	D	eP			19.1			
	T	eP			19.2			
	T	eP	10	07	34.9			
	D	iP			43.3			
	S	eP			47.7			
	S	eP	11	39	50.8	t		
	D	eP			53.5			
	T	eP	11	42	05.5			
	D	eP			13.8			
	D	eP	13	18	53.8	t		
	T	eP	16	49	12.2			
	D	eP			20.1			
	D	eP	16	52	07.2	t		
	K	iP	17	20	57.2			
	T	iP			59.0			
	S	iP		21	00.2			
	D	iP			02.3			
	D	eP	19	39	32.7	t?		
JAN.29	T	eP	04	55	56.2			
	T	eP	05	24	35.3	t	1.0	30.6
	D	eP			39.5			
	T	eP	05	34	41.6			
	D.	eP			41.8			
	T	eP	07	33	24.3			
	D	eP			33.5			
	T	eP	08	24	54.7			
	D	eP		25	03.4			
	S	eP	11	26	56.8	t		
	D	eP			58.0			
	T	eP		27	02.4		0.5	8.2

Date	Station	Phase	Time(G.M.T.)	t	T	Am
JAN.29	T	eP	17 55 42.4	t	1.4	110.0
	S	eP	44.2			
	D	eP	49.0	LZ	20.8	2.9U
	T	eP	18 25 12.0			
	D	eP	20.9			
	S	eP	19 39 30.9	t		
	T	eP	32.0		0.5	3.6
	D	eP	34.8			
	D	eP	22 17 32.3	t		
	T	eP	22 53 19.5			
	D	eP	29.5			
JAN.30	T	eP	02 04 19.0			
	D	iP	31.0			
	D	eP	02 40 09.7	t		
		ePcP?	42 50.9			
	T	eP	40 12.8		0.5	4.2
		ePcP?	42 52.1			
	T	eP	04 50 19.0			
	D	eP	26.6			
	S	eP	10 36 04.2	t		
	K	eP	05.3			
	D	eP	06.9	LZ	20.2	670.0U
		ePP	37 36.7	LE	20.5	274.0U
		eS	41 36.1	LN	21.5	674.0U
		esS?	52.0			
		ePcS	42 03.3			
		eSS?	43 06.9			
		eScS	46 49.0			
		esScS?	47 08.9			
	T	eP	36 10.5		1.1	63.8
	D	eP	12 44 54.8	t		
		ePcP	47 41.4			
	S	iP	13 28 53.8			
	K	eP	55.7			
	D	iP	55.9			
	T	eP	29 00.3			
	D	eP	14 10 21.3	t		
	D	eP	14 49 42.2			
	T	eP	43.8			
	T	iP	14 57 29.2			
	D	iP	38.8			
	S	iP	41.4			
	K	eP	43.4			
	D	eP	15 08 22.1	t		

Date	Station	Phase	Time(G.M.T.)			t	T	Am
JAN.30	S	eP	17	25	58.4	t		
	D	eP		26	02.5			
		epP			20.7			
	T	eP			05.7		0.5	10.3
	D	eP	18	37	36.0	t		
	S	eP	18	42	45.6	t		
	D	eP			58.2			
		eS		47	42.1			
	T	eP		42	52.0		0.5	5.0
	T	eP	20	56	07.5			
	D	iP			16.8			
		iS		57	47.0			
	S	eP		56	21.0			
	K	eP			25.2			
	T	eP	22	10	37.0			
	D	eP			47.8			
JAN.31	S	eP	00	50	44.6	t		
	D	eP			48.8			
		ePP		52	20.0			
		eS		56	10.9			
		eScP		57	15.1			
		ePcS?			23.0			
	T	eP		50	53.2		1.4	82.4
		eScP		57	17.6			
	T	iP	04	15	04.9	t	0.5	48.9
	D	iP			11.1			
	S	eP			14.7			
	S	eP	09	03	14.0	t		
	D	eP			17.1	LZ	20.0	2.5U
	T	eP			21.6		0.5	3.9
	S	eP	13	54	55.0	t		
	D	eP			56.9	LZ	20.0	9.5U
	T	eP		55	01.6		0.5	4.2
	D	eP	13	59	27.3	t		
	T	eP			30.9		0.5	5.3
	K	iP	15	09	54.7	t		
	T	iP			58.7		1.3	171.1
	S	iP			59.0			
	D	iP		10	01.7			
	T	iP	15	39	47.0			
	D	iP			55.6			
		iS		40	04.4			
	S	iP			00.8			
	K	eP			05.1			
	T	eP	16	53	29.2			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
JAN.31	D	eP	19	44	24.7	t		
	T	eP	22	02	50.1			
	K	eP	22	26	29.5			
	S	eP			35.0			
	T	iP			40.8			
	D	eP			44.0			
	S	eP	23	42	28.3	t		
	D	eP			31.1			

The reports to be added for July 1968.

Date	Station	Phase	Time(G.M.T.)			t	T	Am
JUL.17	T	eP	22	11	31.5			
	D	eP			32.8			
	T	eP	23	12	55.1			
	D	eP		13	05.1			
	S	eP			06.8			
	K	eP	23	26	59.3	t		
	S	eP		27	04.7			
	T	eP			08.9		0.5	27.0
	D	eP		~~30~~	09.~~9~~2			
		eS		30	26.3			
JUL.18	T	eP	00	33	10.1	t	0.5	21.4
	D	eP			10.4			
	T	eP	00	36	57.8			
	D	iP		37	07.9			
	S	eP			11.8			

Date / S—P	1	2	3	4	5	6	7	8	9	10	11	12	13
0— 0.9													
1— 1.9													
2— 2.9													
3— 3.9													
4— 4.9													
5— 5.9	2	1			2	1	2		1				
6— 6.9	1	2	1				1		3		1		1
7— 7.9	1	2	1		2		1	1	2	2	1	1	1
8— 8.9	3	1		*	4	2	2		3	1		1	4
9— 9.9	4	1	2		2	1	2		*	2	2		1
10—10.9	1	1	2	5	4	5			4	1	1	4	2
11—11.9	2			1	2	2		2		1	3	1	1
12—12.9	1	1	1	*	2			1			2	2	1
13—13.9				1		2			1		1	2	
14—14.9			2		1	3							
15—15.9		3			1	*	1*	*		1	1	1	
16—16.9						1						1	1
17—17.9		1			1*	*			2	2			1
18—18.9						2	1	1	*	1			
19—19.9							1	2		1	1		1
20—20.9		2*		2			1		1*		*	1	1
21—21.9	*	1	*						*		1		1
22—22.9	1		*		1	1		1	1				1
23—23.9												1	1
24—24.9	1												
25—25.9										1			
26—26.9							1						1
27—27.9								*		*		1	
28—28.9			1						2				
29—29.9													
above 30 sec	1		2	4	3	1				1		5	2
?													
Total	18	16	12	13	25	21	13	8	20	14	14	21	21
no observation													

Date / S—P	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total
0— 0.9																			
1— 1.9																			
2— 2.9																			
3— 3.9																			
4— 4.9	1																		1
5— 5.9			1		1				1		1	2	3	1	1		1		21
6— 6.9	1	3	6			1	1		1		1		1	1	1			1	28
7— 7.9	1		1	1		5		2	2		4	1	1	2	3	1	2	2	43
8— 8.9	2	1	2	1	2	1		5	3	3	4	2	4	1	2			3	57
9— 9.9	1	1*	2	2		3	2	4	2	2	2	2	3	3	1	1	2	4	54
10—10.9	6*	2		4	3	2			1	3	4	1	4*	1	4	1		2	68
11—11.9		1	1	1	2	1		3*	2	2	2	1	2			1		1	35
12—12.9		1	1			1	1				1	2			2	2			22
13—13.9	3	2			1			1	2	1	3						1	1	22
14—14.9				*	1			1	2				1	1	1	1	3		17
15—15.9			2			1	1	1*	1	3	1						2		20
16—16.9			2	2	2				1	1		1	2		2			2	18
17—17.9		2		1	1		2	2				1							16
18—18.9			1			1	1		3	2						1	1		15
19—19.9	2			1	1		2		1	1					1	1	1		17
20—20.9	*	1			1	1	1		2	1	1	1				1	1		19
21—21.9	1			1	1	1		2		2		1		1		1		1	15
22—22.9									1				3		1				11
23—23.9					1					1		1							5
24—24.9		1		1													2		5
25—25.9										1					*				2
26—26.9						1									*				3
27—27.9													*				1		2
28—28.9							1											1	5
29—29.9																			
above 30 sec	1	2	2	2	4	2	2	2	1				4	3		3	3		50
?							1			1									2
Total	19	17	21	17	21	21	15	23	26	24	24	16	28	14	19	14	20	18	
no observation																			

Remarks: *: indicates a larger earthquake which is included in the main table the Bulletin.

Dodaira, Jan.

Date / S−P	1	2	3	4	5	6	7	8	9	10	11	12	13
0− 0.9													
1− 1.9													
2− 2.9													
3− 3.9							1						
4− 4.9	1												
5− 5.9									1				
6− 6.9	*									1			
7− 7.9	1		1		1								
8− 8.9		1											
9− 9.9			1										
10−10.9	1	1			1				*	2			
11−11.9				1	1	1			1				1
12−12.9		1	1		1		1	1	1	2		1	2
13−13.9	4**	3	1		1			3	3	4	1	1	1
14−14.9					1			*	1				
15−15.9	2		1	*	1	1		1					
16−16.9	1					1							
17−17.9						1							2
18−18.9											1	1	
19−19.9			1				1		*				
20−20.9													
21−21.9							1		1			1	
22−22.9		1											
23−23.9		1					*				1		
24−24.9									*				
25−25.9						*	1	*	*			1	
26−26.9						*		1					
27−27.9									1				
28−28.9		*						1		1			
29−29.9													
above 30 sec				1			1	1				1	1
?											3		
Total	10	8	6	2	7	4	6	8	9	10	3	6	7
no observation										16h ~ 20h	01h40m ~ 02h, 04h ~ 17h40m.		
Remarks				Noisy			Noisy					Noisy	

Date / S−P	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total
0− 0.9																			
1− 1.9																			
2− 2.9								1											1
3− 3.9								2											3
4− 4.9				1															2
5− 5.9						1	2	2						2				1	9
6− 6.9				1		*									1				3
7− 7.9			1	1	1						1		1	1		1			10
8− 8.9		1							1	1			1	1			1	1	8
9− 9.9				3			2		2	*	1				1	1			11
10−10.9	1	*		3			1				1			1	1	1		1	15
11−11.9			1*			1	*		3					1			*	2	13
12−12.9	2		1*	1	1	1	1		2			3				3			26
13−13.9		4	3		1	1		2*		3	4	2	1	1		2	1	1	48
14−14.9				4		1	2	1	1		1*		1						13
15−15.9		1	1*	*	1		1	1				1				1	1	1	15
16−16.9			1								1		1*					1	6
17−17.9	1	1		1		1			2			1		1	1		1		13
18−18.9	**		1		1			1		1		1					3	1	11
19−19.9							1	*	1		1								5
20−20.9		1				1							2	1		2			7
21−21.9		1																	4
22−22.9									1	1			1	1		1			6
23−23.9												1					1		4
24−24.9						1	1	*											2
25−25.9										1	1								4
26−26.9																			1
27−27.9					1									1	*			1	4
28−28.9	1																		3
29−29.9																			0
above 30 sec				1	1	1	3	2		1		1	4	1	2	4	5	3	34
?		1																	
Total	5	10	9	16	7	9	14	12	13	8	11	10	12	12	6	16	13	13	
no observation																			

Remarks: *: indicates a larger earthquake which is included in the main table the Bulletin.

Preliminary Bulletin

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and its Substation

Jan., 1969

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Observation stations

		N	E	h
Dodaira	(D or DDR)	35°59'54".0	139°11'36".2	800m
Tsukuba	(T or TSK)	36°12'39".0	140° 6'35".0	280m
Kiyosumi	(K or KYS)	35°11'51".6	140° 8'53".6	230m
Shiroyama	(S or SRY) (temporary)	35°36'30".0	139°16'27".0	254m

Expressions:

Am: Amplitude in millimicron (half of peak to trough*) of P motion maximum within few cycles after the onset recorded by a short period vertical seismograph.
*In 1967 double amplitude (peak to trough) was used as Am.

T : Period in sec of the measured P maximum

t : Teleseism

All stations are radio-telemetered to Tokyo giving records on a multi-channel ink-recording oscillograph. The paper speed of the recorder is 1 mm per sec. For stronger events high speed recorder (10 mm/sec) is also triggered. The system is also recorded in parallel on multi channel magnetic tape through a trigger system using an endless tape loop. Direct filter sum of short period seismometers at Dodaira and/or on line short period filter outputs of Tsukuba are also used for the

detection of weak teleseismic signals. For teleseismic events records of long period and medium period seismographs are occasionally used, applying off line frequency filter, if necessary.

The Bulletin includes the preliminary readings sent to USCGS for teleseisms and larger near shocks with total durations (F-P) of short period vertical seismograph at Tsukuba (TSK) with magnification about 140.000 at 1 c/s or sensitivity about 300×10^{-3} mm/microkine at 10 c/s being longer than 100 seconds which correspond approximately shocks with $M\geq3.5$. For the minor near earthquakes with $F\text{-}P\angle100$ sec or $M\angle3.5$, frequency of S-P times at each station is added at the end of the Bulletin, which may easily give a general idea of local seismicity around the station.

Date	Station	Phase	Time(G.M.T.)			t	T	Am
FEB. 1	K	eP	03	39	22.0	t		
	S	eP			25.9			
	T	eP			29.0		0.5	9.7
	D	eP			30.1			
		eS		43	05.0			
	T	eP	04	05	45.9			
	D	eP			55.1			
	K	iP	09	00	41.8			
	S	iP			48.7			
	D	iP			54.4			
	T	eP			55.0			
	S	eP	12	59	00.3	t		
	T	eP			04.6		0.5	8.2
	D	eP			08.5			
	S	eP	16	25	48.1	t		
	D	eP			50.3			
		ePcP?		28	35.3			
	T	eP		25	56.3		0.5	3.3
	T	eP	16	32	32.7	t	0.5	2.1
	S	eP			33.9			
	D	eP			36.1			
	D	eP	23	22	39.8			
	S	eP			43.0			
	T	iP			43.9			
FEB. 2	D	eP	00	24	10.0	t		
	S	eP	01	45	19.0	t		
	D	eP			21.7	LZ	16.0	13.4U
		ePcP		48	06.0			
	T	eP		45	26.0		0.5	9.6
	D	eP	02	13	38.0	t		
		ePcP		16	21.9			
	D	eP	03	15	34.2	t		
	S	eP	05	28	01.7	t		
	D	eP			02.8	LZ	20.0	3.1U
		ePcP		30	46.0			
	D	eP	07	39	50.0	t		
		eS		42	27.2			
	T	eP		39	50.9		0.5	2.9
	T	iP	08	57	58.0			
	D	eP		58	06.7			
		eS		59	32.2			
	S	eP		59	12.4			
	K	eP			13.0			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
FEB. 2	T	eP	14	42	19.2			
	D	eP			27.1			
	D	eP	17	15	02.0	t		
	T	iP	19	08	25.2			
	D	iP			36.7			
	S	eP			38.6			
	K	eP			40.0			
FEB. 3	T	eP	00	51	00.4			
	S	eP			07.3			
	D	eP			08.5			
	T	eP	01	41	45.6			
	D	eP			55.2			
	K	eP	03	46	41.3			
	S	eP			49.0			
	T	eP			53.7			
	D	eP			53.7			
	S	eP	08	01	44.0	t		
	T	eP			45.0		1.2	31.7
	D	eP			46.0			
	S	eP	08	03	47.4	t		
	T	eP			49.0		2.4	75.8
	D	eP			52.9			
	S	eP	08	24	03.4	t		
	T	eP			04.1		0.5	5.4
	D	eP			06.0			
	K	iP	08	28	28.3	t		
	S	iP			31.8			
	T	iP			32.5		1.2	77.1
	D	iP			34.4			
		epP		29	26.8			
	T	iP	08	32	58.1			
	D	eP		33	05.4			
	S	eP			09.7			
	K	eP			13.0			
	T	eP	09	01	04.7	t	1.0	92.8
	D	eP			14.6			
		eS		04	24.9			
	S	eP		01	18.6			
	S	eP	09	50	51.7	t		
	D	eP			54.4			
	T	eP			58.3		0.5	4.6
	D	eP	10	28	52.3			
	T	eP			55.3			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
FEB. 3	T	eP	15	20	00.3			
	D	eP			09.4			
	S	eP			15.8			
	K	eP			18.5			
	D	eP	17	18	26.1	t		
	S	eP	19	08	01.0	t		
	D	eP			03.4	LZ	19.2	5.0U
		eS		15	34.0	LE	20.0	3.2U
		eScS		18	27.4	LN	20.0	9.1U
	T	eP		08	08.0		1.0	27.8
	D	eP	19	37	38.7	t		
	S	eP	20	26	56.3			
	K	eP			57.8			
	D	eP		27	00.5			
	T	eP			01.7			
	T	eP	21	21	32.0			
		eS		22	45.3			
	D	eP		21	40.2			
		eS		22	59.0			
	K	eP		21	44.7			
	S	eP			45.2			
	S	eP	21	48	09.6	t		
		ePcP		50	59.0			
	K	eP		48	13.1			
	D	eP			13.6	LZ	20.0	56.7U
		iPP		49	32.1	LE	21.0	33.0U
		iPcP		50	59.2	LN	20.0	76.5U
		iS		53	33.6			
		iScP		54	43.2			
		ePeS?			46.2			
		eScS		58	37.5			
	T	eP		48	16.7		1.0	82.2
		ePcP		51	01.2			
	T	eP	22	12	47.7			
	D	eP			59.1			
	T	eP	22	35	59.0			
	D	eP		36	08.3			
FEB. 4	T	iP	01	07	28.1			
	K	eP			37.1			
	D	eP			39.0			
	S	iP			41.7			
	D	eP	01	46	58.1	t		
		eS		52	03.7	LZ	20.0	29.0U
						LE	20.4	31.7U
						LN	20.0	48.6U
	S	eP		46	59.3		1.2	
	T	eP		47	06.6			43.5

Date	Station	Phase	Time(G.M.T.)	t	T	Am
	T	eP	04 02 04.6			
	D	eP	16.8			
	K	eP	17.2			
	S	eP	18.0			
	T	eX1	04 29 32.0	t	1.7	78.1
	S	eX1	33.2			
	D	ePKP	28.1	LZ	20.0	8.9U
		eX1	34.8	LE	21.2	11.4U
		eX2	49.1	LN	22.0	16.0U
	T	eP	05 03 42.9			
	D	eP	53.2			
	T	eP	06 44 50.9			
	T	iP	07 21 19.1			
	D	eP	30.1			
	S	eP	32.0			
	T	eP	08 44 51.5			
	D	iP	45 01.2			
	S	eP	04.5			
	D	eP	17 04 26.3	t		
	D	eP	17 14 35.2	t		
	T	eP	39.9		0.6	5.3
	S	iP	20 34 49.2			
	T	iP	49.9			
	D	iP	52.2			
	T	iP	23 04 54.0			
	D	iP	05 04.3			
	S	eP	07.6			
FEB. 5	T	iP	02 39 30.3			
	D	eP	42.8			
	K	eP	09 52 40.0			
	S	eP	47.6			
	T	eP	52.1			
	D	eP	52.4			
	T	iP	18 47 59.8			
	D	iP	48 09.4			
	S	iP	11.5			
	K	eP	14.2			
FEB. 6	T	eP	04 32 03.1			
	D	eP	11.1			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
FEB. 6	K	eP	05	27	02.5			
	S	eP			04.1			
	D	eP			08.6			
	T	eP			09.8			
	T	eP	06	00	24.0	t?	1.0	44.6
	K	eP	07	36	18.4	t		
	S	eP			27.4			
	T	eP			32.0		0.5	32.2
	D	eP			32.4			
		eS		39	13.0			
	T	iP	08	37	21.8			
	D	eP			29.8			
	S	eP			34.8			
	K	eP			41.3			
	T	iP	09	40	30.1	t	0.5	29.1
	D	iP			36.7			
	S	iP			38.6			
	S	eP	16	20	33.3			
	T	eP			34.8			
	D	eP			36.3			
	K	eP	19	11	58.9			
	S	eP		12	00.3			
	D	eP			05.0			
	T	eP			06.8			
FEB. 7	D	eP	05	01	20.4	t		
	T	eP			22.9		0.5	6.6
	D	eP	06	22	59.6	t		
	K	eP	14	58	16.7			
	S	eP			25.6			
	T	eP			28.8			
	D	eP			31.2			
	K	eP	15	16	49.7			
	T	eP			59.6			
	S	eP			59.8			
	D	eP		17	05.5			
	K	iP	16	12	44.0			
	S	iP			47.9			
	D	iP			52.2			
	T	iP			52.6			
FEB. 8	D	iP	02	34	58.2			
	T	iP			58.8			
	T	eP	09	21	53.6			
	D	eP		22	00.5			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
FEB. 8	T	iP	23	09	47.8			
	D	iP			58.7			
	K	eP			59.4			
	S	eP		10	00.4			
FEB. 9	S	eP	04	18	34.4	t		
	D	eP			38.2			
	T	eP			41.6		0.5	2.9
	T	eP	08	44	13.5			
	D	eP			13.8			
	T	eP	10	14	36.8			
	D	eP			46.5			
	D	eP	14	33	35.2	t		
	T	eP			40.5		0.5	2.4
	D	eP	15	41	43.4	t		
	T	iP	23	16	15.1			
	D	iP			26.0			
FEB.10	T	iP	04	10	54.8			
	K	eP			55.8			
	D	eP		11	04.2			
	S	eP			05.1			
	T	eP	06	11	52.2	t	0.5	5.9
	D	eP			57.6			
	S	eP	07	25	17.8	t		
	D	eP			19.2			
	T	eP			23.5		0.5	3.4
	T	eP	10	05	53.5			
	D	iP		06	03.0			
	S	iP			06.6			
	D	eP	14	15	51.3	t		
	S	eP	14	26	42.0	t		
	D	eP			45.2			
	T	eP			50.0		0.5	8.3
	T	eP	21	50	23.5			
	D	eP			31.8			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
FEB.10	K	iP	23	08	04.3	t		
		eScP		12	58.8			
		eS		16	26.7			
	S	iP		08	07.7			
		eScP		12	59.2			
	T	iP		08	08.2		1.0	94.7
		eScP		12	59.2			
	D	iP		08	10.3	LZ	20.0	15.7U
		ePP		10	28.0	LE	20.0	30.8U
		eScP		13	03.6	LN	20.0	30.8U
		eS		16	33.0			
		esSorScS		17	20.0			
		eSS		21	26.2			
		esSS		22	16.0			
		eP'P'?		38	42.9			
		eP'P'P'?		58	06.0			
	T	eP	23	32	38.4	t	0.5	7.2
	D	eP			47.1			
		ePcP?		34	17.1			
		ePP		35	32.0			
		epPP?		36	08.8			
		eS		41	27.9			
FEB.11	K	eP	10	30	33.0			
	S	eP			44.7			
	T	eP			46.3			
	D	eP			49.2			
	T	eP	13	09	45.6			
	D	eP			54.6			
	T	eP	15	19	08.2			
	D	eP			18.6			
	T	eP	16	14	52.3	t		
	D	eP			55.9			
	T	eP	19	50	08.0			
	D	eP			17.5			
	T	eP	20	28	10.5			
	D	eP			18.5			
	S	eP2	22	17	21.6	t		
	D	eP1			20.6			
		eP2			23.7			
		eS		22	56.9			
	T	eP1		17	21.5		1.0.	52.2
		eP2			26.6			
	K	eP2			29.1			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
FEB.11	S	eP	22	23	36.8	t		
		eScP		28	28.0			
	K	eP		23	37.0			
		eScP		28	28.3			
	D	iP		23	39.9	LZ	20.8	86.5U
		ePcP		25	21.8	LE	20.0	70.8U
		eScP		28	29.0			
		eS		29	47.0			
		eScS		32	55.3			
	T	iP		23	43.4		1.0	103.1
		eScP		28	32.0			
FEB.12	K	eP	09	47	02.1			
	D	eP			08.3			
	T	eP			10.3			
	D	iP	15	36	30.0			
	S	iP			31.4			
	T	iP			34.4			
	K	iP			49.3			
	T	iP	15	45	16.1	t	1.2	71.3
	D	iP			21.2			
	S	iP			24.4			
	S	eP	16	17	21.0	t		
	D	eP			23.2			
	T	eP			26.9		0.5	5.8
	D	eP	16	34	12.3	t		
	S	eP			16.4			
	T	eP	21	03	36.5			
	D	eP			45.3			
	T	iP	21	03	53.4			
	D	iP		04	04.0			
	S	iP			06.0			
	K	eP			07.3			
	D	eP	22	23	28.4			
	T	eP			30.0			
FEB.13	T	eP	01	43	12.6	t	1.2	44.5
	D	eP			19.4			
	S	eP			21.2			
	S	eP	02	51	31.4	t		
	D	eP			33.7			
	T	eP			37.4		1.2	18.5
	D	eP	10	14	52.5	t		
	D	eP	10	29	05.1	t		
		ePP		30	09.8	LZ	20.0	5.0U
		eScS?		39	25.6	LE	20.0	3.7U
						LN	20.0	8.6U

Date	Station	Phase	Time(G.M.T.)			t	T	Am
FEB.13	K	eP	23	38	04.8			
	S	eP			08.5			
	D	eP			14.9			
	T	eP			16.5			
FEB.14	T	eP	06	55	07.5			
	D	eP			16.0			
	T	eP	11	02	23.4			
	D	eP			30.0			
	S	eP			35.0			
	T	iP	13	30	11.0			
	D	iP			21.6			
	K	eP			23.6			
	S	iP			24.5			
	T	iP	14	09	35.4			
	D	eP			45.6			
	K	eP			51.1			
	S	eP			53.3			
	T	eP	17	33	10.6			
	D	iP			22.7			
	S	eP			24.7			
	K	iP	19	13	16.8			
	S	iP			27.0			
	T	iP			28.0			
	D	iP			31.6			
FEB.15	T	eP	07	01	29.6	t		
	D	eP			32.6			
	D	eP	07	10	43.8	t		
	D	eP	08	53	58.8	t		
	S	iP	13	29	04.0	t		
	T	eP			06.4		0.5	4.6
	D	eP			07.3			
	K	eP	13	58	25.7	t		
	S	iP			29.7			
		ePcP?		59	27.6			
	T	eP		58	31.2		1.2	38.0
	D	iP			33.6			
		ePcP?		59	29.8			
	T	eP	20	33	44.0			
	D	eP			52.6			
FEB.16	T	eP	00	07	42.9	t	0.5	5.0
	T	iP	06	30	39.2			
	D	iP			48.8			
	S	eP			50.8			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
FEB.16	T	eP	11	31	48.7			
	D	eP			59.3			
FEB.17	T	eP	00	24	13.5			
	D	eP			24.0			
	S	eP	00	49	33.8			
	D	eP			37.8	LZ	20.0	67.1U
		ePP		51	55.2	LE	19.6	49.5U
		eS		55	30.6	LN	20.0	71.4U
		eSS		57	04.5			
	T	eP		49	43.6		0.5	19.1
	T	iP	01	09	59.8			
	D	eP		10	06.3			
	S	eP			07.8			
	S	eP	01	22	22.4	t		
	D	eP			25.6			
		eX		24	27.8			
	T	eP		22	27.8		1.2	42.9
		eX		25	06.5			
	D	eP	01	32	45.3	t		
	D	eP	01	43	06.8	t		
	D	eP	01	45	14.1	t		
	S	eP	02	07	03.0	t		
	D	eP			06.5			
	D	eP	02	41	48.1	t		
	T	eP	06	26	07.6			
	D	eP			17.7			
	S	eP			21.8			
	T	eP	07	02	10.7			
	D	eP			12.7			
	T	eP	07	24	36.8			
	D	eP			46.2			
	T	iP	07	29	33.0			
	D	iP			41.6			
	S	iP			44.8			
	K	iP			47.1			
	T	eP	08	37	08.8			
	D	eP			18.2			
	T	eP	09	23	24.4			
	D	iP			34.6			
	S	eP			37.4			

Date	Station	Phase	Time (G. M. T.)			t	T	Am
FEB. 17	T	eP	13	21	18.4	t	0.5	10.1
	D	eP			26.9			
	S	eP			30.0			
	T	eP	13	31	14.0			
	D	eP			18.9			
	S	eP			25.0			
	K	iP	17	27	39.3			
	S	eP			41.2			
	T	eP			43.9			
	D	iP			44.7			
	T	eP	19	35	00.3			
	D	eP			08.2			
	D	eP	20	20	25.5	t		
	T	eP			30.0		0.5	4.0
	D	eP	21	58	18.2			
	S	eP			24.4			
	T	eP			28.6			
FEB. 18	D	eP	00	50	52.2			
	T	eP		51	13.8			
	T	eP	01	54	24.4			
	D	eP			35.2			
	T	eP	02	35	12.7			
	D	eP			22.6			
	T	eP	04	54	33.0			
	D	eP			41.3			
	D	eP	05	50	53.4			
	T	eP		51	01.9			
	T	eP	08	51	29.8			
	D	eP			37.3			
	D	eP	11	44	54.6			
	T	eP			56.5			
	T	iP	12	19	18.5			
	D	eP			26.8			
	S	eP			30.0			
	T	eP	15	47	57.9			
	D	eP		48	07.8			
	T	eP	16	23	43.6			
	D	eP			51.1			
	S	iP	19	43	32.8			
	D	iP			34.0			
	T	iP			38.4			

Date	Station	Phase	Time (G. M. T.)			t	T	Am
FEB. 18	S	eP	20	53	09.0	t		
	T	eP			09.7		1.0	23.2
	D	eP			11.8			
FEB. 19	T	eP	15	00	34.1			
	D	eP			43.0			
	D	eP	18	25	41.9			
	T	eP			43.5			
	D	eP	18	31	02.9			
	T	eP			04.0			
FEB. 20	D	eP	03	10	33.0	t		
	S	eP	10	02	06.0	t		
	D	eP			11.6	LZ	20.0	67.8U
		ePP		03	33.5	LE	20.0	60.1U
		ePcP?		04	57.8	LN	20.0	67.9U
		eScP		08	40.8			
		eScS		12	42.0			
	T	eP		02	12.5		1.2	53.7
	S	eP	10	36	51.3	t		
	D	eP			56.4	LZ	19.6	39.3U
		ePcP		39	39.3	LE	20.0	32.0U
		eScS		47	28.0	LN	20.0	40.2U
	T	eP		36	59.0		0.5	25.1
	D	eP	12	37	22.7	t		
						LZ	20.0	2.3U
						LE	20.0	2.3U
						LN	20.0	2.9U
	T	eP	13	34	42.5			
	D	eP			53.5			
	S	eP	17	04	45.9	t		
	D	eP			50.9	LZ	20.0	23.6U
						LE	20.0	16.6U
						LN	20.0	30.6U
	T	eP			57.2		1.2	33.3
	T	eP	17	15	46.6			
	D	eP			54.6			
	S	eP		16	01.6			
	K	eP			03.5			
	T	eP	19	12	32.5			
	D	eP			33.6			
	T	eP	19	54	58.2	t	0.5	3.9
	T	eP	20	19	38.0			
FEB. 21	K	iP	03	38	16.0			
	T	iP			19.5			
	S	iP			22.7			
	D	iP			24.9			
	T	iP	06	40	12.3			
	S	eP			23.0			
	D	eP			23.6			
	K	eP			26.2			

Date	Station	Phase	Time (G. M. T.)	t	T	Am
FEB. 21	T	iP	06 42 48.8			
	S	eP	52.3			
	D	eP	59.6			
	T	eP	06 46 20.0			
	D	eP	29.7			
	D	eP	06 52 13.7	t		
	T	eP	10 11 32.2			
	D	eP	43.4			
	S	eP	44.9			
	T	iP	12 36 58.4			
	D	iP	37 09.7			
	S	iP	11.0			
	T	eP	14 31 24.2			
	D	eP	35.5			
	T	iP	14 58 55.5			
	D	eP	59 07.0			
	S	eP	08.3			
	D	iP	20 18 15.5			
	S	iP	21.0			
	T	iP	26.6			
	K	eP	34.8			
	T	eP	22 04 08.0			
	D	eP	12.6			
	D	eP	23 08 22.0	t		
FEB. 22	T	eP	02 03 37.0			
	D	eP	46.7			
	S	eP	50.2			
	K	eP	52.3			
	T	iP	03 07 06.8			
	D	iP	17.3			
	S	eP	20.3			
	K	eP	20.4			
	D	eP	03 24 11.3	t		
	T	eP	03 40 35.2			
	S	eP	43.2			
	D	eP	45.7			
	T	eP	04 29 20.9			
	D	eP	30.0			
	S	eP	35.6			
	T	iP	08 01 29.0			
	K	eP	36.2			
	D	eP	40.5			
	S	eP	41.9			

Date	Station	Phase	Time (G. M. T.)			t	T	Am
FEB. 22	T	iP	13	25	02.7			
	K	eP			08.0			
	D	eP			13.1			
	S	eP			14.4			
	S	eP	18	22	14.2	t		
	T	eP			16.3		0.5	2.6
	D	eP			16.5			
	S	iP	23	06	07.8	t		
	D	iP			10.6			
		iPcP		07	42.5			
		eS		12	07.0			
	T	iP		06	14.8		1.0	75.7
		iPcP		07	43.6			
FEB. 23	S	eP	00	44	56.6	t		
		ePP		46	51.5			
	D	eP		45	00.3	LZ	20.0	103.0U
		eS		50	44.6	LE	20.0	60.7U
						LN	20.4	139.5U
	T	eP		45	03.6		2.2	735.0
		ePP		46	52.8			
	S	iP	02	10	25.8			
	D	iP			29.8			
	K	iP			30.6			
	T	iP			32.8			
	T	iP	03	16	16.6			
	D	iP			27.3			
	K	eP	09	13	01.2			
	S	eP			07.5			
	D	eP			08.4			
	T	eP			10.2			
	S	eP1	12	44	08.1			
		eP2			14.0			
	D	eP1			09.0			
		eP2			16.1			
	K	eP2			18.7			
	T	eP1			15.7			
		eP2			22.1			
	S	eP	16	12	48.4			
	T	eP			51.9			
	D	eP			53.5			
	T	eP	19	50	02.7			
	D	eP			10.8			
	S	eP			25.1			

Date	Station	Phase	Time (G. M. T.)			t	T	Am
FEB. 24	K	iP	00	16	35.5	t		
	S	eP			36.1			
	D	iP			40.3			
		epP?		18	01.6			
		ePP		19	12.0			
		iScP		22	15.1			
		iPcS			27.5			
		eS			57.8			
		iScS		26	32.6			
	T	eP		16	42.4		1.2	206.5
	S	eP	01	08	09.8	t		
	D	eP			13.2			
	T	eP			17.6		0.5	6.6
	T	eP	04	04	05.5			
	D	eP			16.3			
	S	iP	09	54	06.0			
	D	iP			08.0			
	K	eP			08.8			
	T	iP			12.3			
	S	eP	16	48	19.0	t		
	D	eP			21.9			
	T	eP			26.6		1.3	26.7
	T	iP	19	45	36.2			
	D	eP			46.8			
	T	eP	19	48	28.4			
	T	eP	21	03	27.5			
	D	eP			38.1			
FEB. 25	T	eP	01	37	27.2			
	D	eP			38.0			
	D	eP	14	25	52.0	t		
	T	eP			52.6		1.4	62.5
	S	eP			53.6			
	T	eP1	16	37	26.9	t		
		eP2			30.4		0.9	26.2
	D	eP1			32.0			
	D	iP	16	40	36.0			
	S	eP			37.3			
	T	iP			39.2			
FEB. 26	D	eP	01	37	22.2			
	T	eP			26.3			
	D	eP	01	42	10.3	t		
	D	eP	04	06	54.7			
	T	eP			59.2			

Date	Station	Phase	Time (G. M. T.)			t	T	Am
EB. 26	D	eP	06	18	28.6			
	T	eP			37.2			
	D	eP	08	19	39.9	t		
	K	iP	10	25	09.8			
	T	iP			13.1			
	S	eP			21.2			
	D	eP			24.1			
	T	eP	11	25	57.4			
	D	eP			58.5			
	T	eP	16	19	37.7			
	D	eP			47.7			
EB. 27	K	iP	02	34	20.5			
	T	iP			29.0			
	S	eP			31.4			
	D	iP			33.4			
	T	eP	16	19	48.7			
	D	eP			50.8			
	D	eP	18	51	30.1	t?		
	D	eP	20	24	29.3	t?		
	S	iP	21	07	19.1			
	D	iP			20.8			
	T	iP			29.6			
	D	eP	22	42	22.3	t		
	T	eP			27.2		0.5	3.6
EB. 28	T	eP	01	21	36.1			
	D	eP			45.9			
	D	eP1	02	54	30.5	t		
		eP2			34.3			
		eP3			43.0			
		eP4			49.2			
		eX1		58	08.8			
		eX2			29.1			
		ePP			45.6			
		eX3	03	00	08.6			
		eS		05	29.0			
		eX4		10	30.6			
		ePKKP			52.5			
		eX5		11	14.7			
	T	eP1	02	54	30.7		1.8	185.0
		eP2			35.4			
		eP3			43.3			
	K	eP1			35.7			
	T	eP	04	00	45.7			
	D	eP			53.1			

Date	Station	Phase	Time (G. M. T.)			t	T	Am
FEB. 28	D	eP	06	05	46.0			
	T	eP			55.5			
	T	eP	11	51	18.6			
	D	eP			26.8			
	T	eP	12	21	12.4			
	D	eP			21.2			
	T	eP	13	51	41.5	t	1.0	21.4
	D	eP			48.5			
	S	eP			52.1			
	T	eP	15	43	49.4			
	D	eP			56.7			
	T	iP	19	51	55.2			
	D	iP		52	06.1			
	S	eP			08.6			
	K	eP			10.1			

Dodaira, Feb.

Date / S—P	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	Total
0— 0.9					1																								1
1— 1.9																1													1
2— 2.9						1									1	1													3
3— 3.9													1																1
4— 4.9														1															1
5— 5.9																1		2							1				4
6— 6.9	1																							1					2
7— 7.9				1					1					1			1			1									5
8— 8.9		1		4					1						1					1			1						9
9— 9.9				1								2				1				2				1				1	8
10—10.9						1					1				1			1						1	1				6
11—11.9		1	1	1	2	1		1						2			1			1				2		1			14
12—12.9	2	1		2	2			1	1		1	1	3	1	1	1	1			2		1	3			1	1		26
13—13.9		2	1	1	1*		2	1*	1		1				1	2	3		2		1	4*	1	2	4	*		1	31
14—14.9	1					*	1						1			1		1*				1		3		2	1	1	13
15—15.9		1													1		*	1			1				1				5
16—16.9							1				1		*					1	1				3		1				8
17—17.9		1*		1						1	1	1	1	1				1					2				1*	1	12
18—18.9				1			1					1	1						1		1*							1	7
19—19.9										*	1	1				1	1				1								5
20—20.9													1				1		1	1	1							1	6
21—21.9																						1						1	2
22—22.9							1								1									1		1			4
23—23.9												1																1	2
24—24.9					1	1								*												*			2
25—25.9	1									1						1					*								3
26—26.9			*												*		1					**			1				2
27—27.9	1	1		*	*																1*	2							5
28—28.9																					1**								1
29—29.9									*												1*								1
above 30sec	3	1		1		1	2	1		1		1			1	1		1	4						1		1		20
?	1							1		1		2			1		1		1			1			1				10
Total	10	9	2	13	7	5	8	5	4	4	6	10	8	6	9	11	10	8	10	8	8	10	10	11	11	5	4	8	
no observation					10h～17h Noisy	Noisy										08h 00m ～ 10h 00m											05h40m～06h04m 14h12m～16h46m 18h00m～10h15m		
Remarks	*:indicates a larger earthquake which is included in the main table the Bulletin.																												

Tsukuba, Feb.

Date / S—P	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	Total
0— 0.9																													
1— 1.9																													
2— 2.9																													
3— 3.9																													
4— 4.9															1														1
5— 5.9	1	1		1	1			1	1	1		1	1		2	1		1	1	3	2					1	1		21
6— 6.9	1		2		3			1	1								1			2			1			1			13
7— 7.9		1	1	1	1					2	1	1	1	1	1		2	3		4		1		1	1		1		24
8— 8.9				5	5	1		1	1	7	2	1	1	1		2	2	3	1	2			3	3		1		1	43
9— 9.9	1	1*	2	5	3	4	2	1	2	4	2	1	4*	2	2	2	4*	2	1		1	1	1	1		1	1	7	58
10—10.9		4	1	4	2	1	2		1	*		2			1		1				2	1	2	2		1	4	1	32
11—11.9		2	2		1*	2*	2	2		1	1		2		1		1				1				1		2*		21
12—12.9			1	1		1	3		1	3	2	2		1		1	1					1	1				1	3	23
13—13.9		3		1		1	2	*	2						1		1					1			1		1	2	16
14—14.9		1					2	1	2*						1			*		1						*		1	9
15—15.9								1			1	1		1	1			1	1			*	2	1	3			1	14
16—16.9	1			*	2		1					1	1								2**	2	1			1		1	13
17—17.9		2									1			*					2		1**	3		1		*			10
18—18.9	1	1	*	*							1	1	1	1	*					1		2*							9
19—19.9				*	1			1					2				1				1		2				1		9
20—20.9		1		4			1		1		2			1					2	1		*		1			1		15
21—21.9					1				1													*		1			1		4
22—22.9					1			1														1			1	1			5
23—23.9								1													1				1		1		4
24—24.9	1		1										1																3
25—25.9						1												1				1		1			2		6
26—26.9				1																									1
27—27.9																									*				
28—28.9											1		1																2
29—29.9						1						1			1					1		1							5
above 30sec	1	4	1	1			3		1					3			2	1	3			2	1	2	3	1		1	30
?							4	5		5	1	8		1			2			2		1							29
Total	7	21	11	24	21	12	22	16	14	23	15	20	15	12	12	6	18	12	11	17	11	18	14	14	11	8	17	18	
no observation																													

Remarks: *:indicates a larger earthquake which is included in the main table the Bulletin.

Preliminary Bulletin

of the Dodaira Micro-earthquake Observatory

and its Substation

Feb. 1969

Dodaira Micro-earthquake Observatory

Earthquake Research Institute, the University of Tokyo

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Preliminary Bulletin of the Dodaira Micro-earthquake Observatory and its Substation

Observation stations

		N	E	h
Dodaira	(D or DDR)	35°59'54".0	139°11'36".2	800m
Tsukuba	(T or TSK)	36°12'39".0	140° 6'35".0	280m
Kiyosumi	(K or KYS)	35°11'51".6	140° 8'53".6	230m
Shiroyama	(S or SRY) (temporary)	35°36'30".0	139°16'27".0	254m

Expressions:

- Am: Amplitude in millimicron (half of peak to trough*) of P motion maximum within few cycles after the onset recorded by a short period vertical seismograph.
  *In 1967 double amplitude (peak to trough) was used as Am.
- T : Period in sec of the measured P maximum
- t : Teleseism

All stations are radio-telemetered to Tokyo giving records on a multi-channel ink-recording oscillograph. The paper speed of the recorder is 1 mm per sec. For stronger events high speed recorder (10 mm/sec) is also triggered. The system is also recorded in parallel on multi channel magnetic tape through a trigger system using an endless tape loop. Direct filter sum of short period seismometers at Dodaira and/or on line short period filter outputs of Tsukuba are also used for the

detection of weak teleseismic signals. For teleseismic events records of long period and medium period seismographs are occasionally used, applying off line frequency filter, if necessary.

The Bulletin includes the preliminary readings sent to USCGS for teleseisms and larger near shocks with total durations (F-P) of short period vertical seismograph at Tsukuba (TSK) with magnification about 140.000 at 1 c/s or sensitivity about 300×10^{-3} mm/microkine at 10 c/s being longer than 100 seconds which correspond approximately shocks with $M \geq 3.5$. For the minor near earthquakes with F-P $<$ 100 sec or $M < 3.5$, frequency of S-P times at each station is added at the end of the Bulletin, which may easily give a general idea of local seismicity around the station.

Date	Station	Phase	Time (G.M.T.)			t	T	Am
MAR. 1	T	eP	00	50	22.7			
	D	eP			31.9			
	T	iP	02	03	34.8			
	D	iP			44.1			
	S	eP			47.4			
	K	eP			48.2			
	T	eP	05	22	49.2			
	D	eP			57.0			
	T	iP	09	16	32.2			
	D	iP			40.5			
	T	eP	11	31	51.9			
	D	eP		32	00.3			
MAR. 2	D	eP	04	54	24.2	t		
	D	eP	04	56	51.5	t		
	D	iP	05	40	26.8			
	T	iP			34.5			
	D	eP	14	05	23.0	t		
	T	eP			28.0		1.0	15.0
	T	eP	15	15	27.7			
MAR. 3	T	eP	08	51	20.5			
	K	eP	13	22	50.4			
	S	eP		23	00.3			
	T	eP			02.8			
	D	eP			05.2			
	T	iP	14	54	08.4	t	0.5	28.7
	D	iP			15.3			
		eX		58	17.4			
	S	iP		54	18.6			
	D	eP	16	41	22.5	t		
	D	eP	20	28	40.7	t		
MAR. 4	D	eP	06	33	44.9	t		
	T	eP	09	26	10.1			
	D	eP			19.0			
	S	eP	14	06	56.0			
	T	eP			58.8			
	T	eP	15	49	15.2	t	0.5	5.6

Date	Station	Phase	Time(G.M.T.)	t	T	Am
MAR. 4	S	iP	17 49 06.9			
	T	iP	09.8			
	D	eP	11.1			
MAR. 5	T	eP	03 50 00.8			
	D	eP	08.3			
	S	eP	13 58 34.2	t		
	D	eP	37.7			
	T	eP	43.0		1.2	46.3
	S	eP	16 17 46.7	t		
	D	eP	51.3			
	T	eP	54.8		1.0	18.6
	K	iP	17 24 43.8			
	T	iP	50.2			
	S	eP	54.6			
	D	eP	58.6			
	T	eP	19 21 11.8			
	D	eP	12.9			
	D	iP	19 42 27.1	t		
	S	iP	28.6			
		epP	43 18.1			
	T	iP	42 31.2		1.0	170.0
		epP	43 21.0			
	K	iP	42 35.0			
MAR. 6	S	eP	01 12 33.5	t		
	D	eP	36.5			
		ePcP?	15 28.5			
	S	eP	01 27 17.6	t		
	D	eP	21.0			
	T	eP	27.5		0.5	6.8
	S	eP	03 32 27.2	t		
	D	eP	28.3			
	T	eP	33.6		0.5	3.3
	D	eP	07 09 11.7	t		
	D	eP	07 46 56.8	t?		
	D	eP	09 54 10.3			
	T	eP	13.6			
	T	eP	17 24 24.1			
	D	eP	32.4			
	T	eP	17 28 02.9			
	D	eP	06.2			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
MAR. 7	S	iP	01	55	01.1	t		
	T	eP			01.2		1.1	23.6
	D	iP			03.6			
	D	iP	06	43	42.2			
	T	iP			43.4			
	S	iP			44.0			
	K	iP			49.3			
	D	eP	08	35	20.0	Explosion		
	S	iP			22.5			
	T	iP			23.1		0.5	53.4
		ePcP		36	59.4			
	K	iP		35	29.5			
	T	eP	08	50	12.5			
	D	eP			21.7			
	S	eP	09	17	08.8	t		
	D	eP			09.5			
	S	iP	10	34	07.3			
	K	eP			08.1			
	D	iP			10.4			
	T	eP			13.7			
	T	eP	11	03	51.3			
	D	eP			56.1			
	S	eP	23	01	53.7	t		
	D	eP			56.1			
	T	eP		02	01.0		0.5	5.9
	T	eP	23	44	55.8			
	D	eP		45	03.2			
MAR. 8	T	eP	00	10	49.8			
	D	eP			59.0			
	T	eP	04	25	11.5			
	D	eP			20.7			
	T	iP	10	21	23.2			
	D	iP			27.7			
	S	eP			33.9			
	K	eP			36.3			
	D	eP	11	36	50.4	t		
	S	eP	11	56	23.1	t		
	D	eP			24.9			
	T	eP			27.9		1.0	10.0
	S	eP	21	13	07.2	t		
	D	eP			11.0			
	T	eP			13.3		0.5	5.9

Date	Station	Phase	Time(G.M.T.)			t	T	Am
MAR. 9	T	iP	11	38	26.0	t	0.5	49.4
	D	iP			31.6			
		iS		41	00.3			
	S	iP		38	35.6			
	K	eP			38.2			
	S	eP	12	40	39.4	t		
	T	eP			40.1		0.5	8.7
	D	iP			42.1			
	D	eP	13	13	26.5	t		
		ePP		15	55.0			
	T	eP		13	32.6		0.5	3.6
	K	eP	13	55	32.3	t		
	S	eP			33.4			
	D	eP			35.4	LZ	21.0	7.0U
		ePP		57	41.0			
		eS	14	01	41.0			
		eScS		05	52.8			
	T	eP	13	55	36.6		1.0	113.6
	K	iP	14	27	21.8			
	S	iP			29.6			
	D	iP			35.1			
	T	iP			35.3			
	K	eP	14	41	36.0			
	S	eP			45.6			
	T	eP			49.6			
	D	eP			50.8			
	S	eP	14	46	32.2	t		
	K	eP			32.5			
	D	eP			36.8			
		ePP		48	39.5			
	T	iP		46	39.0		1.0	120.0
	T	eP	16	01	30.5	t	1.0	29.3
	T	eP	16	07	49.9	t	1.0	17.8
MAR. 10	S	eP	05	39	49.0	t		
	D	eP			51.5			
		eS		43	47.7			
	T	eP		39	55.6		1.2	25.0
	K	iP	07	01	43.7	t		
	S	iP			46.4			
	D	iP			50.1	LZ	20.0	17.6U
		ePcP		03	41.5	LE	20.0	15.5U
		eScP		07	14.3	LN	20.0	21.4U
		ePcS?			38.5			
		eS			55.5			
		eScS		11	34.5			
	T	iP		01	50.3		1.4	229.9

Date	Station	Phase	Time(G.M.T.)	t	T	Am
MAR.10	T	eP	15 42 23.5			
	D	eP	24.3			
	T	iP	15 52 57.2			
	D	iP	53 06.8			
	K	eP	08.5			
	S	iP	08.8			
	T	eP	23 22 48.8			
	D	eP	23 06.3			
MAR.11	K	eP	09 33 10.7			
	S	eP	19.3			
	T	eP	23.4			
	D	eP	24.9			
	S	eP	09 45 30.5			
	T	eP	34.6			
	D	eP	35.3			
	T	iP	12 32 32.0			
	D	eP	41.5			
		eX	52.7			
	S	iP	45.4			
	K	eP	47.6			
	S	eP	15 37 34.1			
	D	eP	36.2			
		eX	38 11.5			
	T	eP	37 41.2			
	T	eP	15 40 55.2			
	D	eP	41 05.5			
	S	eP	08.5			
	K	eP	09.4			
	K	eP	18 09 50.0			
	S	eP	59.6			
	T	eP	10 02.9			
	D	eP	04.0			
	T	iP	19 37 08.0			
	K	eP	13.9			
	D	eP	15.8			
	S	eP	16.8			
	S	iP	19 41 14.0			
	T	eP	17.2			
	D	eP	18.8			
MAR.12	T	eP	06 48 21.9			
	S	eP	10 45 52.2			
	T	eP	56.8			
	T	eP	11 58 54.8	t	0.5	6.8

Date	Station	Phase	Time(G.M.T.)			t	T	Am
MAR.12	S	iP	13	48	32.0			
	T	eP			35.4			
	S	eP	15	24	23.3			
	T	eP			26.8			
	T	eP	15	37	49.9			
	T	eP	17	45	21.7			
	S	eP	20	25	12.4			
	T	eP			16.0			
	T	iP	20	39	31.9			
	D	iP			33.5			
	T	iP	23	03	17.6	t	0.5	14.1
	S	eP	23	19	05.0			
	T	eP			08.4			
	T	iP	23	20	12.6			
	D	iP			14.4			
MAR.13	K	eP	03	24	16.0			
	S	eP			24.4			
	T	eP			27.6			
	D	eP			29.5			
	K	iP	15	05	20.6			
	T	iP			21.4			
	S	iP			23.3			
	D	iP			25.2			
	T	eP	16	13	44.2			
	S	eP			52.2			
	K	eP			52.4			
	D	eP			55.6			
	T	eP	18	55	22.2			
	D	eP			25.3			
	T	eP	19	31	08.1			
	D	eP			08.6			
	S	eP	20	48	14.1	t		
	D	eP			16.5			
		ePcP		49	31.8			
		eScP		52	34.3			
		eS		54	37.8			
		eScS		57	11.8			
	T	eP		48	19.4		0.5	5.9
	T	eP	21	49	08.0			
	D	eP			17.0			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
MAR.13	T	eP	23	17	04.2			
	D	eP			12.4			
	T	eP	23	19	33.0			
	D	eP			41.6			
MAR.14	T	eP	00	31	00.9			
	D	eP			01.9			
	T	eP	03	07	48.2			
	D	eP			48.3			
	T	eP	04	26	16.0			
	D	eP			18.6			
	T	eP	04	36	15.0			
	D	eP			22.0			
	D	eP	05	46	07.5			
	T	eP			10.7			
	S	iP	11	32	38.1			
	T	iP			41.4			
	D	iP			42.9			
	T	eP	11	35	18.8			
	D	eP			22.0			
	S	eP	12	56	25.4			
	D	eP			28.8			
	T	eP			32.5			
	T	eP	15	20	57.3			
	D	eP		21	04.2			
	S	eP	15	31	06.0			
	D	eP			14.8			
	T	eP			23.0			
	T	eP	21	30	17.2			
	D	eP			25.9			
	S	eP	22	56	54.7	t		
	D	eP		57	01.8			
MAR.15	T	eP	01	11	11.7			
	D	eP			20.5			
	D	eP	01	24	02.6			
	S	eP			03.9			
	T	eP			11.6			
	T	eP	03	03	49.2			
	D	eP			57.8			
	S	eP		04	04.0			

Date	Station	Phase	Time(G.M.T.)	t	T	Am
MAR.15	T	eP	04 24 48.2	t	0.5	10.3
	D	eP	53.4			
	S	eP	57.0			
	T	eP	06 25 29.8			
	D	eP	40.8			
	S	eP	43.7			
	K	eP	44.6			
	D	eP	11 52 19.1	t		
	T	eP	22.0		0.5	2.9
	S	eP	11 54 22.0	t		
	D	eP	23.3	LZ	5.0	14.4U
		eS?	58 14.9	LE	3.0	11.8U
				LN	5.0	11.8U
	T	eP	54 24.6		1.3	50.0
	T	eP	12 56 02.4			
	D	eP	09.6			
	T	iP	13 42 04.6	t	1.2	96.3
	D	iP	11.0	LZ	3.0	14.4U
		ePcP	44 54.0	LE	5.0	11.8U
				LN	3.0	11.8U
	S	iP	42 13.6			
	T	eP	14 16 31.8	t	0.5	3.9
	T	eP	16 11 35.6			
	D	eP	35.7			
MAR.16	T	iP	00 47 44.5			
	S	eP	57.8			
	T	eP	06 58 02.7			
	D	eP	12.6			
	S	eP	13.0			
	T	iP	08 35 32.2			
	D	iP	36.3			
	S	iP	38.2			
	K	iP	41.0			
	K	eP	13 15 36.0			
	S	eP	44.5			
	T	eP	48.0			
	D	eP	50.1			
	T	iP	15 55 04.2			
	D	iP	14.5			
	K	iP	16.2			
	S	iP	17.5			
	T	eP	16 04 06.0			
	D	eP	16.2			

Date	Station	Phase	Time(G.M.T.)	t	T	Am
MAR.16	T	iP	16 58 24.4			
	D	iP	32.9			
	S	iP	36.9			
	K	iP	38.1			
	S	eP	23 04 17.2	t		
	D	eP	18.1			
	T	eP	26.0		0.5	5.0
MAR.17	S	eP	01 05 51.7	t		
	T	eP	52.0		1.0	19.3
	D	eP	54.2			
	K	eP	01 39 48.1	t		
	S	eP	50.6			
	T	eP	52.8		0.5	16.8
	D	iP	55.0			
	S	eP	17 09 13.6			
	D	iP	15.0			
	K	ep	17.0			
	T	iP	20.0			
	T	eP	18 24 06.8			
	D	eP	14.9			
	T	eP	19 08 01.6			
	D	eP	08.4			
MAR.18	T	iP	02 27 50.3			
	D	eP	58.8			
	S	eP	28 02.5			
	S	eP	03 36 08.4	t		
	T	eP	10.6		1.7	64.6
	D	eP	11.4			
	T	eP	03 43 27.8	t	1.4	29.9
	D	eP	28.0			
	D	eP	05 33 19.2			
	T	eP	20.6			
	T	eP	11 32 47.9			
	D	eP	57.8			
	T	iP	13 42 25.2			
	D	iP	34.9			
	T	iP	16 19 16.6			
	D	eP	26.1			
		epP	38.1			
	S	eP	29.1			
	K	eP	29.6			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
MAR.18	K	iP	17	40	40.7			
	T	eP			47.4			
	S	eP			54.1			
	D	eP			57.4			
	S	eP	22	46	48.4	t		
	T	eP			54.6			
	D	eP			55.7			
MAR.19	T	eP	03	15	09.0			
	D	eP			16.8			
	S	eP			21.2			
	D	eP	06	15	54.0	t		
	D	eP	06	49	38.8	t		
	T	eP	12	11	43.1			
	D	eP			52.2			
	S	eP1	14	02	05.5			
		eP2			16.1			
		iScP		11	02.7			
	D	eP1		02	07.9			
		eP2			16.7			
		eS1		04	22.6			
		eS2			39.1			
		iScP		11	03.6			
		eScS		14	38.8			
	K	eP		02	15.4			
		eScP		11	03.7			
	T	eP		02	17.0		1.2	83.3
		eScp		11	04.0			
	T	eP	14	54	18.4			
	D	eP			27.6			
	D	eP	15	43	15.9			
	T	eP			19.0			
	D	eP	15	47	33.8			
	T	eP			35.1			
	T	eP	18	21	36.8			
	D	eP			45.8			
	S	eP			48.7			
	T	eP	21	35	09.0			
	D	eP			19.1			
MAR.20	T	eP	01	08	57.9			
	D	eP		09	05.6			
	K	iP	02	13	40.4			
	T	iP			41.4			
	S	iP			42.8			
	D	iP			45.0			

Date	Station	Phase	Time(G.M.T.)	t	T	Am
MAR.20	T	eP	08 30 08.1	t	1.6	119.5
	D	eP	12.3			
	S	eP	12.4			
	K	iP	13 32 35.8			
	S	iP	38.4			
	D	iP	42.7			
	T	iP	44.3		1.3	53.3
	S	eP	16 24 50.9	t		
		iPcP	28 03.1			
	D	eP	24 54.2	LZ	20.0	255.0U
		ePP	25 41.4	LE	20.0	188.0U
		ePcP	28 05.3	LN	20.0	176.0U
		epPcP	23.5			
		eS	29 44.3			
		eScP	31 45.7			
		ePcS	47.9			
		eScS	35 43.8			
	T	eP	24 57.3			
		iPcP	28 05.3			
	S	eP	16 41 55.2	t		
	D	eP	57.9			
	T	eP	42 07.5		1.0	11.8
	T	eP	18 22 56.8		1.1	23.6
	D	eP	23 02.6			
	S	eP	04.5			
	S	iP	18 43 26.2			
	D	iP	27.2			
	T	iP	29.0			
	S	iP	21 38 11.4			
	T	eP	16.4			
	D	iP	17.2			
MAR.21	T	iP	03 06 25.0			
	D	iP	33.9			
	S	eP	37.2			
	K	eP	37.7			
	T	eP	06 44 18.2			
	D	eP	27.1			
	S	eP	07 41 20.8			
	D	eP	22.2			
	T	eP	32.2			
	T	eP	12 06 10.8			
	D	eP	20.0			
	T	eP	12 09 16.7	t	1.6	157.1
	D	eP	23.8			
	S	eP	29.3			

Date	Station	Phase	Time(G.M.T.)	t	T	Am
MAR.21	S	eP	13 29 48.6			
	D	eP	30 03.8			
	T	eP	19.7			
	T	eP	14 33 09.0			
	D	eP	19.7			
	S	eP	23.2			
	T	eP	14 54 00.3			
	D	eP	08.6			
	S	eP	13.9			
	T	eP	16 09 53.5			
	D	eP	10 07.5			
MAR.22	D	iP	01 58 47.9			
	S	iP	51.2			
	T	iP	52.8			
	K	eP	58.7			
	D	eP	05 01 53.2	t		
	T	eP	57.5		1.2	50.9
	T	eP	05 54 42.6	t	1.4	84.4
	D	eP	44.8			
	T	eP	11 58 20.0			
	D	eP	26.8			
	T	iP	13 38 16.7			
	D	eP	25.4			
	S	eP	27.2			
	K	eP	33.2			
	S	eP	17 38 34.2	t		
	D	eP	35.6			
	T	eP	42.6		0.5	2.4
	T	eP	17 49 01.0			
	S	eP	06.8			
	D	eP	08.0			
MAR.23	T	eP	05 13 48.7			
	D	eP	57.4			
	S	eP	14 01.2			
	T	iP	08 04 31.1			
	D	iP	40.0			
	S	eP	42.2			
	S	eP	13 26 16.1			
	D	eP	20.0			
	T	eP	23.2			
	T	iP	14 11 19.6			
	S	eP	32.6			
	T	eP	15 47 25.8	t		

Date	Station	Phase	Time(G.M.T.)			t	T	Am
MAR.23	D	eP	21	21	01.9	t		
	T	eP			03.4		1.1	40.7
	S	eP			03.5			
	D	eP	23	14	03.6	t		
	T	eP			07.2			
MAR.24	S	iP	01	05	04.9	t		
	T	eP			05.0		1.2	53.2
	D	eP			07.1			
	S	eP	10	28	33.0			
	T	eP			37.0			
	D	eP			38.4			
	T	eP	13	29	44.8			
	D	eP			55.2			
	S	eP		30	05.0			
	D	eP	15	04	36.3	t		
	T	eP			42.9		0.5	3.7
	D	eP	22	55	04.4	t		
	T	eP			08.0		0.5	3.4
MAR.25	K	eP	02	26	03.6			
	S	eP			13.8			
	D	eP			18.2			
	T	eP			18.4			
	S	eP	02	30	37.2			
	T	eP			41.6			
	D	eP			42.8			
	T	eP	07	08	22.0			
	D	eP			29.8			
	D	eP	07	13	57.0			
	T	eP			57.0			
	S	eP	10	01	04.0			
	K	eP			12.4			
	D	iP			17.6			
	T	iP			18.0			
	S	eP	11	34	27.6			
	D	iP			28.9			
	T	iP			33.2			
	T	ePcP?	13	25	01.3	t		
	S	eP		23	52.4			
	D	eP			54.5			
		ePcP?		25	02.0			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
MAR.25	D	ePKP1	13	33	32.3	t		
		ePKP2			50.4			
		eX		34	02.4			
	T	ePKP2		33	51.6			
	S	ePKP2			51.9			
	K	ePKP2			55.7			
	T	eP	16	48	00.4			
	T	eP	19	29	39.0			
	T	iP	19	52	32.3			
	K	eP			38.8			
	D	iP			42.7			
	S	eP			44.8			
	D	eP	20	28	38.2	t?		
MAR.26	T	iP	03	02	29.0			
	D	iP			33.0			
	S	iP			35.3			
	K	iP			37.6			
	T	eP	04	37	14.8	t	0.5	7.9
	D	eP			15.0			
	D	eP	08	27	07.4	t		
	S	eP	15	00	22.6			
	D	eP			24.8			
	T	eP			28.2			
	S	eP	15	04	39.8			
	D	iP			43.6			
	T	eP			45.8			
	D	eP	15	33	01.2	t		
MAR.27	T	eP	00	45	21.2			
	D	eP			30.3			
	D	eP	02	44	07.3	t		
	D	eP	03	34	41.3	t		
	S	iP	04	41	42.3			
	K	eP			44.4			
	D	iP			44.6			
	T	iP			48.9			
	S	eP	04	52	59.0	t		
	D	eP		53	01.7	LZ	20.0	10.0U
		eX			09.8	LE	20.0	7.8U
						LN	20.0	12.6U
	T	eP			06.0		1.2	35.2

Date	Station	Phase	Time(G.M.T.)			t	T	Am
MAR.27	K	eP1	06	11	58.4			
		eP2			59.4			
	S	eP1		12	06.4			
		eP2			09.0			
	T	eP1			11.5			
		eP2			15.2			
	D	eP1			11.8			
		eP2			13.6			
	T	eP	07	57	37.5			
	D	eP			41.9			
	K	iP	08	26	41.3	t		
	S	iP			46.7			
	D	iP			51.0			
		eS		29	48.0			
	T	iP		26	51.0		0.5	58.4
	T	eP	10	48	41.7			
	D	eP			42.7			
	T	eP	11	28	43.9	t	0.5	2.1
	S	eP	12	48	04.4	t		
	D	eP			07.7	LZ	20.0	99.3U
		ePP		49	41.0	LE	20.0	67.1U
		ePcP		50	54.9	LN	20.0	73.5U
		eS		53	21.8			
		eX1			47.4			
		eScP		54	39.8			
		ePcS			45.3			
		eScS		58	32.5			
		eX2		59	05.4			
	K	eP		48	08.0			
	T	eP			10.3		1.1	30.5
	K	eP	13	04	51.6			
	S	eP			55.1			
	D	eP			58.5			
	T	eP		05	00.0			
	T	eP	13	10	54.3			
	D	eP		11	03.1			
	T	eP	13	47	47.3			
	D	eP			52.7			
	T	eP	14	23	12.8			
	D	eP			21.3			
	T	eP	15	27	51.0			
	D	eP			53.8			
	T	eP	20	52	01.1	t	0.5	2.9
	D	eP			04.0			
	T	eP	21	00	51.2			
	D	eP		01	00.3			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
MAR.27	T	eP	21	09	15.1			
	S	eP			20.0			
	D	eP			24.4			
MAR.28	D	iP	02	00	53.3	t		
		ePcP?		01	07.8			
	S	eP		00	54.4			
	T	iP			54.7		1.1	97.6
	K	iP	03	07	40.8			
	S	iP			48.8			
	T	iP			53.6			
	D	iP			54.0			
	T	eP	06	25	27.2			
	D	eP			36.2			
	T	iP	07	28	03.2			
	D	iP			06.4			
	S	iP			08.5			
	K	iP			11.9			
	K	eP	09	27	11.8	t		
	S	eP			19.3			
		eX1			25.0			
	D	iP			24.7	LZ	20.0	51.4U
		eX1			30.5	LE	20.0	54.1U
		eS		29	53.5	LN	20.0	66.8U
		eX2 X		30	05.5			
	T	eP		27	24.9		0.5	15.3
		eX1			30.7			
	T	eP	11	06	11.0			
	D	eP			20.0			
	T	eP	11	31	16.4	t	1.1	8.9
	D	eP			22.2			
	T	eP	11	58	52.8			
	D	eP	12	01	13.2			
	T	eP			15.2			
	T	eP	17	28	15.4			
	T	eP	20	32	29.6			
	D	eP			38.6			
	T	eP	21	27	31.2			
	D	eP			41.4			
	K	eP	23	49	53.8			
	S	eP		50	04.7			
	T	iP			06.3			
	D	eP			08.8			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
MAR.29	S	eP	06	16	54.7	t		
	D	eP			57.0			
	T	eP		17	02.0		1.2	35.2
	T	eP	07	46	21.0			
	D	eP			33.7			
	T	iP	11	45	14.0			
	D	iP			22.8			
	D	eP	12	08	47.4	t		
	T	eP			59.2		0.5	1.6
	D	eP	14	00	53.2	t		
	S	eP			55.8			
	T	eP			56.5		1.4	6.2
	T	eP	14	39	36.4			
	D	eP			44.9			
	K	eP	20	56	41.3			
	T	eP			45.6			
	S	eP			51.8			
	D	eP			55.0			
MAR.30	T	eP	08	01	43.2	t?		
	D	eP			44.5			
	T	eP	08	52	47.6			
	D	eP			54.9			
	T	eP	15	20	58.0			
	D	eP		21	09.2			
	D	eX	21	03	27.9	t?		
	T	eX			32.6			
MAR.31	D	eP	00	11	36.8			
	T	eP			39.0			
	T	eP	05	48	36.6			
	D	eP			48.5			
	D	eP	07	28	29.8	t		
		ePcP?			35.1	LZ	20.0	12.1 U
						LE	20.0	31.1 U
						LN	20.4	31.2 U
	S	eP			30.8			
	T	eP			32.4		1.4	266.2
	K	eP			40.5			
	D	eP	08	03	46.3	t		
	T	eP			57.6		0.5	5.8
	S	eP	12	01	29.4			
	T	eP			30.7			
	D	eP			32.2			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
MAR.31	T	eP	12	33	58.6			
	S	eP	12	47	57.6			
	D	eP		48	01.7			
	T	eP			03.4			
	D	iP	19	26	41.6			
		ePcP		33	11.6			
		eScP		36	04.3			
		epPcS		39	38.4			
	T	iP			45.7			
	K	iP			52.6			
	K	eP	20	23	19.6			
	S	eP			25.7			
	D	eP			30.5			
		eS		25	45.4			
	T	iP		23	31.9			
	K	eP	20	26	40.6			
	S	eP			50.8			
	D	eP			53.6			
	T	eP			54.0			

S-P \ Date	1	2	3	4	5	6	7	8	9	10	11	12	13
0– 0.9													
1– 1.9													
2– 2.9													
3– 3.9													
4– 4.9											1		
5– 5.9						2		1		2	1	1	5
6– 6.9	1	2		2		1	2			2		3	3
7– 7.9	1	1	1	1	2	1	3	3	1				
8– 8.9	1	1	3	1	1		1	2			4	1	2
9– 9.9	4	1	1	1	2	5		3	2	2	2		1
10–10.9	1		3	2	1		1			3	4	2	1
11–11.9	1	2		1		1		1		1	1	1*	1
12–12.9		1			*		3	3	2	1	1		
13–13.9	1*		2				1	1	1	1			
14–14.9		1	1	2	3	3				1	1		
15–15.9	*		1		2	1		1		2			
16–16.9					1		1		1				
17–17.9									1		1	1	1
18–18.9	4	1		1				1	2			1	1
19–19.9	1	3					1		1				3
20–20.9				1					1				
21–21.9			1					1	1				
22–22.9					1		1			1			
23–23.9													
24–24.9						1							
25–25.9	1		1										
26–26.9							1	*					
27–27.9			1						1				
28–28.9													
29–29.9	1												
above 30 sec	1	1	1	2	1		1	1	1		1	1	1
?		1				3	1		1			2	
Total	18	15	16	14	14	18	17	18	16	16	17	13	19
no observation												09h47m ~ 13h19m	

S-P \ Date	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total
0– 0.9																			
1– 1.9																			
2– 2.9																			
3– 3.9																			
4– 4.9	1				1														3
5– 5.9	3	1							1	2	2	2	1	3	1	2			30
6– 6.9		1		1	1	1						1	3		1	2	1	3	31
7– 7.9		1			4	3	1	1	2	2	2	1		1	1	4	5	1	43
8– 8.9	3	2	*			3	2	3	2	2		1		2	1	1			39
9– 9.9		1				2		1	2	1	5	1	1		3	1	3	1	46
10–10.9	2	3	2		3	1	1	3	1		2		2		2	1		3	44
11–11.9	1	1		1	1	1	1*				1		1	2					20
12–12.9			1		2	1			*		1		1	1			1		19
13–13.9	3	1	1	2	2	2					1				3		1		23
14–14.9		1						1*		*		1	1	1			1		18
15–15.9	1					1		1	1	2	2		2		1			1	19
16–16.9	2		1		1			1			1			1					10
17–17.9					*					1	1			2			*		8
18–18.9					2			1	1			*		1				2	18
19–19.9		2				1*			1			1		1					15
20–20.9				1	1		1	3	1	1			1	2	1				14
21–21.9				1										1			1	1	7
22–22.9						1			1										5
23–23.9	1																		1
24–24.9				1	3				1										6
25–25.9					1						1*								4
26–26.9																*			1
27–27.9									1										3
28–28.9													1	1					2
29–29.9																			1
above 30 sec	2	3	6	3	1	2	2		1	1	1	2		1		1		1	39
?						1			1					2					12
Total	19	17	11	10	23	20	8	15	17	12	20	10	14	22	14	12	13	13	
no observation																			

Remarks *: indicates a larger earthquake which is included in the main table the Bulletin.

Date / S-P	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total
0— 0.9																																
1— 1.9																																
2— 2.9															2																	2
3— 3.9															2																	2
4— 4.9			1																													1
5— 5.9																																
6— 6.9			1																1			1*										3
7— 7.9						2									1	*		2	1		1		1					1	1		1	11
8— 8.9				1				2			2	1		1						1		1	2	1	1	*		1*		3	1	18
9— 9.9								1		2				1		1										1		2		1		9
10—10.9		2		1	1	1																1					1			1		8
11—11.9	3	1						1				1	2	*				1	3		2		1					1				16
12—12.9	7	1	1		1	1	1				2	1*	1		2		1			*		2	2	2		1	2		1		1	30
13—13.9	1			1				1	2							1				1	2	1	1					2		1		14
14—14.9	*	*		2			1					1		1	1	2		1		1	*			1			2	1				14
15—15.9	1				1			2	1										1							1	2	1		1		11
16—16.9		1	1	1	1					1						1		1			1		1*					1				10
17—17.9	1		2	1				1			1				1										1*	1		1		1	2	13
18—18.9		2		1		1											1			1					1							7
19—19.9		1	1				1								1													1			2	7
20—20.9		1					1	1				1							1							1						6
21—21.9	1										1								1					1			2	1				7
22—22.9	*														1				1		1											3
23—23.9									1						1						1							1				4
24—24.9									2		2			1												1						6
25—25.9									1									*				1		1								3
26—26.9																		1				1	1				1					4
27—27.9		1					1																									2
28—28.9			1			*								1			1	1								1					1	6
29—29.9																						1			1	*						2
above 30 sec	2	1	1	1	1	1	1	1	3	1	2	4		1	1	3	5	2	1	1		2	2	1		1	2		3			44
?	2	2	1	1																												6
Total	18	13	10	10	5	6	6	10	10	4	10	9	3	6	13	8	8	9	10	5	8	11	11	7	4	8	12	14	5	8	8	
no observation			12h ~ 15h	19h ~ 24h	00h ~ 10h					01h09m ~ 06h22m		14h20m ~ 24h	00h ~ 11h			06h29m ~ 10h10m							22h58m ~ 24h	00h00m ~ 05h01m								
Remarks	*: indicates a larger earthquake which is included in the main table the Bulletin.																															

The reports to be added for July 1968.

Date	Station	Phase	Time(G.M.T.)			t	T	Am
JUL.23	T	iP	05	36	45.4			
	T	iP	10	19	45.2			
	T	iP	12	06	47.1			
	D	eP			57.3			
	S	eP			59.4			
	T	eP	12	23	38.2			
	T	eP	14	19	22.0			
	T	iP	16	08	59.0			
	T	iP	16	15	36.6			
	T	iP	18	10	25.8			
	D	eP			36.1			
	S	eP			38.5			
	K	eP			38.9			
	T	iP	18	28	17.8			
	D	iP			27.8			
	S	eP			30.7			
	T	iP	19	16	52.8			
	T	iP	19	29	41.1			
	D	iP			52.1			
	K	eP			52.2			
	S	eP			54.0			
	T	eP	20	58	59.5			
	T	iP	23	01	22.0			
	D	eP			32.4			
	S	eP			35.6			
	T	iP	23	03	48.9			
	D	eP			59.0			
	S	eP			59.1			
	K	eP		04	00.0			

Preliminary Bulletin

of the Dodaira Micro-earthquake Observatory

and its Substation

March, 1969

Dodaira Micro-earthquake Observatory

Earthquake Research Institute, the University of Tokyo

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Preliminary Bulletin of the Dodaira Micro-earthquake Observatory and its Substation

Observation stations

		N	E	h
Dodaira	(D or DDR)	35°59'54".0	139°11'36".2	800m
Tsukuba	(T or TSK)	36°12'39".0	140° 6'35".0	280m
Kiyosumi	(K or KYS)	35°11'51".6	140° 8'53".6	230m
Shiroyama	(S or SRY) (temporary)	35°36'30".0	139°16'27".0	254m

Expressions:
Am: Amplitude in millimicron (half of peak to trough*) of P motion maximum within few cycles after the onset recorded by a short period vertical seismograph.
*In 1967 double amplitude (peak to trough) was used as Am.
T : Period in sec of the measured P maximum
t : Teleseism

All stations are radio-telemetered to Tokyo giving records on a multi-channel ink-recording oscillograph. The paper speed of the recorder is 1 mm per sec. For stronger events high speed recorder (10 mm/sec) is also triggered. The system is also recorded in parallel on multi channel magnetic tape through a trigger system using an endless tape loop. Direct filter sum of short period seismometers at Dodaira and/or on line short period filter outputs of Tsukuba are also used for the

detection of weak teleseismic signals. For teleseismic events records of long period and medium period seismographs are occasionally used, applying off line frequency filter, if necessary.

The Bulletin includes the preliminary readings sent to USCGS for teleseisms and larger near shocks with total durations (F-P) of short period vertical seismograph at Tsukuba (TSK) with magnification about 140.000 at 1 c/s or sensitivity about 300×10^{-3} mm/microkine at 10 c/s being longer than 100 seconds which correspond approximately shocks with $M\geq3.5$. For the minor near earthquakes with $F\text{-}P<100$ sec or $M<3.5$, frequency of S-P times at each station is added at the end of the Bulletin, which may easily give a general idea of local seismicity around the station.

Date	Station	Phase	Time(G.M.T.)	t	T	Am
APR. 1	T	iP	05 02 59.3			
	D	iP	03 09.3			
	S	iP	12.3			
	K	eP	12.9			
	T	iP	13 16 32.8			
	S	iP	41.0			
	K	eP	44.6			
	D	iP	48.2			
	D	eP	16 46 24.9	t		
	S	eP	26.1			
	T	eP	28.7		1.0	10.4
	T	eP	16 53 48.2			
	D	eP	50.2			
	K	eP	17 33 33.5			
	S	eP	35.1			
	D	eP	39.9			
	T	eP	41.0			
	S	eP	20 38 51.6	t		
	D	eP	53.5			
	T	eP	57.7		0.5	11.2
APR. 2	S	eP	02 55 52.6			
	K	eP	55.1			
	D	eP	59.0			
	T	eP	56 00.3			
	D	eP	07 33 02.0	t?		
	T	eP	14 31 12.6			
	D	eP	23.7			
	S	iP	15 24 17.0			
	T	iP	21.2			
	D	iP	21.7			
	T	eP	17 32 29.0			
	D	eP	39.4			
	S	eP	40.7			
APR. 3	S	iP	00 29 14.2			
	D	iP	19.3			
	T	iP	20.0			
	T	eP	04 29 36.9			
	D	eP	45.9			
	D	eP	05 58 01.0			
	T	eP	04.8			
	S	eP	11 17 41.5			
	T	eP	44.0			
	D	eP	46.0			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
APR. 3	D	eP	12	16	26.9			
	T	eP			29.5			
	T	eP	12	21	44.5	t	0.5	1.2
	D	eP			49.8			
	S	eP	15	10	30.1	t?		
	D	eP			33.3			
	T	eP			36.0		0.5	13.2
	T	eP	15	56	54.8			
	D	eP		57	05.2			
	S	eP			16.3			
	T	eP	16	34	00.1			
	D	eP			10.3			
	S	eP			14.3			
	T	eP	17	43	18.7			
	D	eP			28.6			
	T	iP	17	58	12.8			
	S	iP			17.5			
	D	iP			18.6			
	T	iP	18	40	55.3			
	S	eP		41	03.5			
	D	eP			04.1			
	D	eP	19	13	05.0	t		
	D	eP	19	27	19.0	t		
	D	eP	22	25	00.0	t		
	T	eP			00.3		1.4	31.2
	S	eP			00.4			
APR. 4	T	iP	02	45	28.8			
	S	eP			38.4			
	D	eP			39.0			
	T	eP	03	48	56.1			
	D	eP		49	06.1			
	S	iP	07	02	29.3			
	T	iP			33.7			
	D	iP			34.0			
	T	eP	08	13	48.9	t?	1.4	63.6
	D	eP	08	51	16.1	t		
	S	eP	14	00	44.3	t		
	D	eP			46.0			
	T	eP			50.9		0.5	9.2

Date	Station	Phase	Time (G.M.T.)			t	T	Am
APR. 4	S	iP	17	23	05.7			
	T	eP			10.1			
	D	iP			10.3			
	D	eP	23	03	11.3	t		
	T	eP			21.8		1.2	143.5
	S	eP			29.0			
APR. 5	T	iP	05	44	29.1			
	D	iP			38.4			
	T	eP	16	09	22.8			
	D	eP			33.2			
	S	eP			35.7			
	D	iP	16	36	35.2			
	S	iP			41.3			
	T	iP			45.6			
	T	eP	16	46	25.3			
	D	eP			34.3			
	S	eP			38.3			
APR. 6	T	eP	00	07	43.5			
	S	eP			45.4			
	D	eP			49.8			
	S	iP	00	47	28.0			
	T	iP			32.2			
	D	iP			32.8			
	D	iP	04	02	01.1	t		
	S	iP			02.7			
	T	iP			02.8		1.4	118.2
	T	eP	09	24	08.8			
	D	eP			15.1			
	T	eP	18	09	11.7			
	D	eP	20	28	51.2	t		
	T	eP			53.0		0.5	1.1
	S	eP	23	30	01.4	t		
	T	eP			01.5			
	D	eP			03.9			
APR. 7	D	iP	01	30	13.5			
	T	iP			15.4			
	T	eP	09	46	34.5	t	0.5	6.0
	D	eP			38.0			
	S	eP			40.9			
	S	eP	13	08	43.3			
	D	eP			46.1			
	T	eP			50.1			

Date	Station	Phase	Time(G.M.T.)	t	T	Am
APR. 7	T	eP	15 12 10.9			
	T	eP	15 52 25.1			
	T	eP	16 18 16.7			
	D	eP	20.1			
	T	eP	18 41 48.9			
	D	eP	57.7			
	T	eP	20 34 07.9	t	1.5	75.8
	D	eP	09.8			
	S	eP	12.5			
APR. 8	T	eP	02 37 48.0			
	D	eP	56.6			
	D	eP	08 16 29.8			
	S	eP	09 35 00.6			
	T	eP	00.7			
	D	eP	04.1			
	T	iP	10 21 03.1			
	D	iP	12.5			
	S	iP	16.3			
	D	eP	10 28 50.6	t		
		ePcP?	31 17.8			
	T	eP	28 56.2		0.5	6.3
	T	eP	16 21 39.0			
	D	eP	48.5			
	T	eP	17 19 17.9			
	D	eP	27.6			
	T	eP	19 03 01.8			
	D	eP	11.1			
	S	eP	14.9			
	S	eP	22 56 53.1			
	D	eP	59.0			
	T	eP	57 12.2			
APR. 9	S	eP	02 43 21.1			
	D	eP	29.3			
	T	eP	30.7			
	T	iP	12 57 43.1			
	D	iP	46.0			
	S	iP	49.8			
	T	eP	14 43 48.3			
	D	eP	57.7			
	S	eP	58.0			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
APR. 9	D	eP	18	41	09.4			
	T	eP			13.1			
	T	eP	21	50	08.7	t	1.4	26.0
	D	eP			10.8			
APR.10	T	eP	01	27	44.5			
	S	eP			54.2			
	D	eP			55.4			
	D	eP	04	30	27.3			
	T	eP			27.9			
	D	eP	07	24	28.2	t		
	T	eP			33.1		0.5	5.0
	T	eP	10	20	59.4			
	D	eP		21	07.3			
	D	eP	11	23	06.5			
	T	eP			09.6			
	S	eP			10.0			
	D	iP	11	51	32.9			
	S	iP			38.2			
	T	iP			43.0			
	D	iP	14	16	23.9			
	S	iP			24.2			
	T	iP			28.8			
	D	iP	14	56	07.2			
		eScS	15	07	47.6			
	S	iP			10.1			
	T	iP			10.4			
	T	eP	20	05	02.5			
	D	eP			02.6			
	S	eP	22	01	15.7	t		
	D	eP			18.0			
		eS		04	23.7			
	T	eP		01	24.6		1.4	289.6
		eS		05	29.1			
	T	eP	23	59	00.3			
	D	eP			11.3			
	S	eP			13.5			
APR.11	D	eP	09	56	25.4	t		
	T	eP	11	19	25.5			
	D	eP			35.6			
	T	eP	16	31	25.7			
	D	eP			28.3			

Date	Station	Phase	Time(G.M.T.)	t	T	Am
APR.12	T	iP	06 52 46.3			
	D	iP	56.6			
		eS	53 15.3			
	S	iP	52 59.2			
	S	iP	09 29 57.4			
	T	iP	58.3			
	D	iP	30 00.4			
	S	eP	09 55 30.6			
	D	eP	32.8			
	T	eP	36.6			
	D	eP	10 51 11.1	t		
	T	eP	13 41 04.5			
	D	eP	13.8			
	T	eP	18 03 19.3			
	D	eP	29.2			
	T	eP	19 13 50.5			
	D	eP	58.6			
	T	eP	19 47 30.5			
	S	eP	32.0			
	D	eP	36.5			
APR.13	T	iP	00 18 24.6			
	D	iP	35.6			
	S	eP	38.4			
	D	eP	05 47 27.4			
	T	eP	07 24 13.5	t	1.0	13.5
	D	eP	15.2			
	T	eP	07 43 34.8			
	D	eP	42.2			
	T	eP	10 28 44.1			
	D	eP	52.3			
	S	iP	13 15 06.7	t		
		ix	12.4			
	D	eP	09.7			
	T	eP	20.5		1.2	21.3
	T	iP	13 46 40.3			
	D	iP	44.9			
		eS	55.8			
	S	iP	45.4			
	S	iP	14 02 24.5			
	D	iP	26.8			
	T	iP	30.6			

Date	Station	Phase	Time (G.M.T.)			t	T	Am
APR.13	T	eP	14	59	02.9			
	S	eP			04.6			
	D	eP			08.3			
	S	eP1	15	34	22.3	t		
		eP2			27.0			
	D	eP1			22.4	LZ	20.0	4.7U
		eP2			27.2			
	T	eP1			26.8		1.2	50.0
	S	eP	17	12	49.8			
	D	eP			54.2			
	T	eP			55.8			
	D	eP	17	33	02.0	t		
	T	eP			06.2		1.0	10.0
	D	eP	18	26	28.8	t		
	T	eP	19	49	24.2			
	D	eP			34.2			
	S	iP	23	40	55.6	t		
	D	iP			58.6	LZ	20.0	10.0U
		ePcP		42	48.1			
		eScP		46	23.6			
		ePcS			43.3			
		eS		47	11.9			
		eScS		50	43.6			
	T	iP		41	01.8		0.4	26.7
		ePcP		42	48.8			
		eScP		46	24.6			
APR.14	S	iP	07	09	03.8	t		
	D	iP			05.7			
	T	iP			09.7		0.5	13.2
	T	eP	13	24	34.5	t	1.3	26.7
	D	eP			35.0			
	D	eP	16	53	44.6			
	T	eP			45.6			
	D	eP	18	07	47.0	t?		
	T	eP	20	18	51.3			
	D	eP			59.9			
APR.15	T	eP	02	02	33.6			
	D	eP			43.2			
	S	eP			46.4			
	D	eP	06	40	49.4			
	T	eP			51.8			
	T	eP	17	17	08.7			
	D	eP			18.2			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
APR.15	T	iP	17	32	02.4			
	D	iP			12.3			
	T	eP	17	41	42.0			
	D	eP			51.1			
	T	eP	17	58	46.8			
	D	eP			56.0			
	T	eP	20	56	43.3			
	D	eP			52.9			
	D	iP	22	23	00.8	t		
		iPcP		24	18.0			
		iS		29	15.2			
	T	iP		23	04.4		1.1	65.9
		iPcP		24	19.7			
APR.16	S	eP	01	30	22.9	t		
	D	eP			25.2			
		ePP		32	38.5			
		eX			57.4			
		eS		36	29.2			
		eScS		40	43.5			
	T	eP		30	27.7		1.4	192.2
	D	eP	05	36	47.7	t?		
	S	iP	12	29	00.4	t		
	T	iP			01.8		1.4	155.8
	D	iP			03.6			
	T	eP	12	39	23.8			
	T	eP	12	59	10.7			
	T	eP	13	12	40.4	t?	0.5	16.3
	T	eP	15	00	19.7			
	T	eP	15	14	41.9			
	T	iP	19	59	59.1			
	T	eP	21	33	04.6			
	T	eP	22	42	57.3			
APR.17	T	iP	03	59	53.5			
	S	iP			55.7			
	T	iP	04	57	18.9			
	S	iP			31.9			
	T	eP	12	54	20.7	t	0.5	4.7

Date	Station	Phase	Time(G.M.T.)			t	T	Am
APR.17	T	eP	18	41	37.2			
	S	eP			41.0			
	S	iP	21	45	36.6			
	T	eP			41.7			
APR.18	T	eP	04	40	30.6			
	D	eP			39.5			
	S	eP	07	01	54.4			
	D	eP		02	01.0			
	T	eP			03.9			
	T	eP	08	00	24.6			
	D	iP			35.0			
	S	iP			38.4			
	T	eP	12	06	34.1			
	D	eP			43.6			
	D	eP	12	39	42.3	t		
		iX			55.9			
		ePcP		41	57.0			
		eS		45	43.4			
	T	eP		39	45.0		1.2	351.9
	S	eP			47.7			
	S	iP	15	30	30.9	t		
	D	eP			32.0			
		eX			52.7			
		eS		33	29.6			
	T	eP		30	36.8		0.5	2.9
	T	iP	19	35	39.6			
	D	iP			46.3			
	S	eP			49.6			
APR.19	T	iP	00	13	01.4			
	D	iP			04.9			
	S	iP			06.8			
	T	iP	01	23	54.8			
	D	iP		24	05.2			
	T	iP	03	26	52.2			
	D	iP		27	03.0			
	T	iP	04	27	15.0			
	D	iP			18.4			
	S	iP			24.3			
	T	iP	07	20	33.6			
	D	iP			37.8			
	S	iP			39.6			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
APR. 19	S	iP	08	54	30.5	t		
	D	eP			32.5			
	T	eP			36.4		0.5	16.3
	T	eP	15	19	18.7			
	D	eP			26.9			
	S	eP			31.3			
	T	eP	19	18	40.6			
	D	eP			47.8			
	T	eP	19	35	23.8	t	1.4	28.6
	D	eP			28.1			
	S	eP			30.1			
APR. 20	T	eP	03	55	21.8			
	S	eP			35.5			
	D	eP	04	57	17.2			
	S	eP			18.3			
	T	eP			22.5			
	S	eP	07	20	08.0			
	D	eP			09.7			
	T	eP			14.0			
	T	eP	19	46	21.5			
APR. 21	S	iP	05	34	35.1			
	D	iP			37.6			
	T	iP			41.5			
	S	iP	07	21	08.2			
	D	eP			10.0			
	T	eP			17.1			
	T	iP	07	59	19.3			
	D	iP			28.1			
	S	iP			29.6			
	D	eP	11	01	12.6			
	D	eP	16	13	48.0	t		
	T	eP			53.5		0.5	2.1
	D	eP	17	22	52.8			
	T	iP			53.6			
	S	eP			59.6			
	T	eP	17	44	32.7			
	D	eP			33.5			
	T	eP	21	45	17.9			
	D	eP			28.0			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
APR. 22	T	eP	00	49	37.5			
	D	eP			46.0			
	D	eP	00	59	42.4			
	T	eP			46.6			
	T	eP	05	08	14.6			
	D	eP			20.0			
	T	eP	05	29	33.6			
	D	eP			42.2			
	T	eP	07	01	42.0	t		
	T	iP	08	12	25.2			
	D	iP			34.8			
	S	iP			37.9			
	S	eP	11	40	43.9			
	D	eP			48.8			
	T	eP			50.3			
	T	eP	15	04	06.5	t		
	T	eP	17	17	26.1			
	T	eP	19	29	44.0			
	D	eP			45.9			
	D	iP	22	46	20.0	t		
	S	eP			20.3			
	T	iP			23.3		0.5	3.9
APR. 23	T	eP	02	21	52.1			
	D	eP		22	01.9			
	S	eP	06	19	16.9			
	T	eP			22.3			
	T	eP	10	30	41.2			
	D	eP			49.7			
	S	iP	11	06	25.4			
	T	iP			27.2			
	D	iP			28.2			
	T	iP	12	45	48.9			
	S	iP			50.2			
	D	iP			52.6			
	T	eP	13	50	00.0	t	1.0	17.1
	S	eP	17	55	27.5	t		
	D	eP			30.5			
	T	eP			34.3		0.5	10.5

Date	Station	Phase	Time(G.M.T.)			t	T	Am
APR.23	D	eP	20	21	27.0			
	T	eP			27.8			
APR.24	T	eP	02	15	06.6			
	D	eP			14.6			
	S	eP			20.0			
	T	iP	02	25	41.6	t	1.0	122.1
	D	iP			47.6			
		ePcP		28	04.6			
	S	iP		25	49.8			
	T	eP	03	34	00.3			
	D	eP			09.2			
	T	eP	03	37	24.8			
	T	eP	03	40	10.4			
	T	eP	03	46	10.0	t	0.5	2.9
	T	eP	07	37	07.9	t	1.3	37.8
	D	eP			10.0			
	T	eP	12	39	28.2	t	0.5	4.7
	T	eP	16	25	43.8			
	D	eP			54.4			
	T	eP	22	06	37.5			
	D	eP			47.1			
	T	eP	22	45	47.5	t	0.5	5.8
	D	eP			48.7			
APR.25	T	eP	01	42	40.0	t	0.5	2.4
	D	eP			40.4			
	D	eP	03	05	32.2			
	T	eP			38.0			
	T	iP	03	29	38.9			
	S	iP			41.3			
	D	iP			43.0			
	T	eP	09	22	01.0	t	0.5	2.4
	D	eP			05.0			
	D	eP	13	27	35.0	t		
	D	iP	18	49	30.2			
	S	eP			35.8			
	T	iP			41.2			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
APR.25	D	eP	21	27	46.8	t		
	S	eP			49.7			
	T	eP			50.6		0.5	3.0
	T	iP	21	36	26.6			
	D	iP			35.8			
	S	iP			39.8			
APR.26	S	eP	05	22	13.2	t		
	D	eP			18.9			
		eS		26	04.3			
	T	eP		22	17.3		1.1	31.7
	T	eX	06	18	45.7	t	1.2	61.1
	D	ePKP?			39.0			
		eX			47.4			
	S	eX			48.1			
	T	eX	06	22	44.2			
	S	eX			45.8			
	D	ePKP1 ?			38.2			
		eX			46.9			
		ePKP2		23	00.8			
	T	eP	07	20	19.2			
	S	eP			28.6			
	S	eP	10	22	50.1			
	D	eP			53.8			
	T	eP			56.3			
	S	eP	19	10	36.8	t		
	D	eP			40.8			
	T	eP			49.0		0.5	3.4
	S	eP	22	00	10.6	t		
	T	eP			14.9		1.1	17.9
	D	eP			15.0			
APR.27	S	eP	01	44	42.7			
	D	eP			45.3			
		ePcP		46	54.8			
	T	eP		44	51.7		1.2	19.1
	T	iP	09	47	45.6			
	D	iP			56.7			
	S	iP			59.0			
	D	eP	13	19	24.8	t		
	T	eP			25.2		0.5	3.2
	S	eP	15	19	47.6			
	D	iP			48.6			
	T	iP			53.3			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
APR.28	S	eP	00	51	29.4	t		
	D	eP			29.6			
		eS		55	38.9			
		eScS	01	02	40.3			
	T	eP	00	51	30.1		1.3	44.4
	S	eP1	01	33	39.3	t		
		eP2			45.0			
		eP3?			55.6			
	D	eP1			41.1			
		eP2			47.0			
		eP3?			58.3			
		eS		36	31.6			
	T	eP1		33	47.4		0.5	15.6
		eP2			53.0			
		eP3?		34	08.3			
	T	iP	05	05	36.4			
	D	iP			42.2			
	S	iP			42.6			
	T	iP	07	16	16.4			
	D	iP			25.7			
	T	eP	07	36	13.7	t	1.0	32.1
	S	eP			14.6			
	D	eP			17.0			
		epP		37	32.3			
		eS		45	12.1			
		eScS		46	01.6			
	T	eP	12	57	40.1	t	0.5	2.6
	S	eP	13	03	27.4	t		
	D	eP			27.7			
	T	eP			29.6		1.2	8.3
	S	iP	19	47	30.1	t		
		epP?			49.6			
	T	eP			32.4		1.2	51.9
	D	eP			32.8			
		epP?			51.2			
	T	iP	23	28	23.9			
	D	eP			34.0			
	S	eP			37.3			
APR.29	D	eP	04	48	59.7	t		
	T	eP		49	02.7		1.0	52.1
	T	eP	16	10	02.2			
	D	iP			12.0			
	S	eP			15.8			
	T	eP	17	32	58.8			
	D	eP		33	08.2			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
APR.29	T	eP	19	27	48.9			
	T	eP	19	32	09.4			
	D	eP			17.3			
	T	eP	20	12	13.2			
	D	eP			20.5			
	T	eP	21	21	23.8	t	0.5	16.3
	D	eP			34.2			
		eS		24	06.9			
	S	eP		21	41.4			
APR.30	S	eP	01	17	28.8	t		
	D	eP			31.6			
	T	eP			36.7		1.2	17.6
	D	eP	01	26	07.2			
	T	eP			10.3			
	T	eP	03	35	49.9			
	S	eP	04	15	21.0			
	T	iP			22.4			
	D	iP			22.5			
	S	eP	09	50	29.0			
	D	eP			34.0			
	T	eP			34.8			
	T	eP	09	54	45.7	t?		
	T	eP	17	12	03.3	t	1.1	19.5
	D	eP			07.6			
	S	eP			08.6			
	S	eP	20	42	49.8	t		
	D	eP			52.8			
	T	eP			53.0		1.2	13.4
	T	eP	21	32	01.2			
	T	eP	22	16	53.7	t?		

Tsukuba, Apr.

Date / S-P	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Total
0– 0.9																															
1– 1.9																															
2– 2.9																															
3– 3.9																															
4– 4.9							1															1				2					4
5– 5.9	2	2	1		2	1			1	1	2		2	1	2		1		1				2			1	1	2	2		27
6– 6.9	1			1	2	2	1	1	2				1			2	1		*		1	1	2			1			3		22
7– 7.9	1	1	1	1			4	3	1	1	1	1		1		1	1	5			1	3	1	1		1		2	1	2	35
8– 8.9	4	3	1	1	1		1	1	1		1	2			1		2				2	4	4	2	2	1	3	2	2		41
9– 9.9	1	2	1		1	1	4		3	1	1		1	5	1	4		3		1	2	2	2*			5		2	4	3	50
10–10.9	2	1			1	2	1			2	5	2	1	1	3	1	1	1	3	2	1	2	1	2	3	2	1		4		45
11–11.9	1	1		1	2		1	2	2	7		2	2	3	1	1			2	1		1	2	1				3	1	2	39
12–12.9	2	1		1		2	1			2	1		2		2	1	1		1	2		1	1	1	1			1	1	*	25
13–13.9	1	1	2	*			1	1		1		1	1		3	1	2	*	1	3			1		1	1	1	2	2		27
14–14.9	1			*	1		1	2						2			*	1					*	3			*	1*	3		15
15–15.9	1			1			1				1		1	1		2	1	1		3	3		1	1	1	1					20
16–16.9	1	1	1*			1		1*		1	2							1	3	1	1			1					1*		16
17–17.9			4	1	*		1		1		1		2			1		1				1				1				1	15
18–18.9			1			2	3	4			*	1		2	1		1	2			1		1	1			1			1	22
19–19.9			1*			4	2				1	1		1		1		1	2							1				1	16
20–20.9		1	1		*	1			2		1		1	1								1*			1					1	11
21–21.9										1			1			1									1	2					6
22–22.9	1			1			1	1		*													1			*			1		6
23–23.9										*			*												2			1			3
24–24.9																						1						1			2
25–25.9												1	1	1						*											3
26–26.9						**																									
27–27.9																							1								1
28–28.9							1						1																		2
29–29.9						1		*													1		*			1					3
above 30 sec	1		1	1	2	1	1	2	2	1	6		1		3	2	4	2	4	4	1	1					5	3	2		50
?					1	1																			2		1			2	7
Total	20	14	15	9	13	19	26	18	15	18	23	11	18	19	17	18	15	18	17	17	14	19	20	13	14	20	13	20	27	13	
no observation																															
Remarks	* : indicates a larger earthquake which is included in the main table the Bulletin.																														

Dodaira, Apr.

S-P \ Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Total
0— 0.9																															
1— 1.9																															
2— 2.9																						1									1
3— 3.9																						1			1						2
4— 4.9																						1							1		2
5— 5.9			1												1																2
6— 6.9				1																					1				1		3
7— 7.9		1	1					1			1		2	1	2	1		1	1	2											14
8— 8.9			2			1			1	1								1			1		1	1	1	1			2		13
9— 9.9							1				1					1										2			1		6
10—10.9			1*		1		2	1	2				*	1		2		1	*			1				1				3	16
11—11.9			1		2		1		1		1		2	1	1			1	1	1	1	1	4		1	2			1	1	24
12—12.9	1		2			6	2		2	1*			3	3				3			1	1		1	1	2			1	1	31
13—13.9	1		1	1		1*	2	3		1	2	*	1	1	1	1		2			2		1*		1	3		2		1*	28
14—14.9		1		*								*	1		1			1	*				*			1			1	1	7
15—15.9						1	1		1	1	1	1	1		2	1				1	1	2	2	1	1	1		1		1	21
16—16.9			2	2*	2*		1									1				1	1*										10
17—17.9	*		1			1	1	2			2	2										1			1	1			1	1	14
18—18.9	1	1	1				1				1										1				1	1	1				9
19—19.9	1				1		2					1	1									*	1						1	1	9
20—20.9	1			*	1				1		1								1	1							1	*	1		8
21—21.9						1																						2			3
22—22.9				2			1				*	1						1							2	1	*	1			9
23—23.9	1*		1		1									1				1		*											5
24—24.9				*			1		*		1		*																*		2
25—25.9													1			1		1			1										4
26—26.9				1							1								2						1		1				6
27—27.9					*			1*	1						1	1															4
28—28.9																															
29—29.9																															
above 30 sec					2	1	1	4		2	1				2	4				2	1				2		1		2		25
?	1			1				1	1		1															1			1		7
Total	7	3	14	8	10	12	17	13	10	6	14	5	12	8	11	13		13	5	8	10	9	9	3	14	17	4	6	14	10	
no observation																21h34m ~ 24h		00h ~ 10h		06h ~ 12h51m											
Remarks	*: indicates a larger earthquake which is included in the main table the Bulletin.																														

Preliminary Bulletin

of the Dodaira Micro-earthquake Observatory

and its Substation

April, 1969

Dodaira Micro-earthquake Observatory

Earthquake Research Institute, the University of Tokyo

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Preliminary Bulletin of the Dodaira Micro-earthquake Observatory and its Substation

Observation stations

		N	E	h
Dodaira	(D or DDR)	35°59'54".0	139°11'36".2	800m
Tsukuba	(T or TSK)	36°12'39".0	140° 6'35".0	280m
Kiyosumi	(K or KYS)	35°11'51".6	140° 8'53".6	230m
Shiroyama	(S or SRY) (temporary)	35°36'30".0	139°16'27".0	254m

Expressions:

Am: Amplitude in millimicron (half of peak to trough*) of P motion maximum within few cycles after the onset recorded by a short period vertical seismograph.
*In 1967 double amplitude (peak to trough) was used as Am.

T : Period in sec of the measured P maximum

t : Teleseism

All stations are radio-telemetered to Tokyo giving records on a multi-channel ink-recording oscillograph. The paper speed of the recorder is 1 mm per sec. For stronger events high speed recorder (10 mm/sec) is also triggered. The system is also recorded in parallel on multi channel magnetic tape through a trigger system using an endless tape loop. Direct filter sum of short period seismometers at Dodaira and/or on line short period filter outputs of Tsukuba are also used for the

detection of weak teleseismic signals. For teleseismic events records of long period and medium period seismographs are occasionally used, applying off line frequency filter, if necessary.

The Bulletin includes the preliminary readings sent to USCGS for teleseisms and larger near shocks with total durations (F-P) of short period vertical seismograph at Tsukuba (TSK) with magnification about 140.000 at 1 c/s or sensitivity about 300×10^{-3} mm/micro-kine at 10 c/s being longer than 100 seconds which correspond approximately shocks with $M \geq 3.5$. For the minor near earthquakes with $F\text{-}P \angle 100$ sec or $M \angle 3.5$, frequency of S-P times at each station is added at the end of the Bulletin, which may easily give a general idea of local seismicity around the station.

Date	Station	Phase	Time (G.M.T.)			t	T	Am
MAY. 1	T	iP	03	23	16.7	t	1.2	40.7
	S	iP			16.8			
	D	eP			19.2			
	S	eP	05	17	16.1	t	1.1	31.7
	T	eP			16.3			
	D	eP			18.9			
	T	eP	05	44	25.6			
	D	eP			34.6			
	T	iP	10	22	55.6			
	S	eP		23	04.0			
	D	eP			06.4			
	S	eP	11	58	43.6	t		
		ePcP	12	01	24.5			
	D	eP	11	58	46.8			
		ePcP	12	01	26.5			
		eS		03	48.0			
		eScS		08	53.8			
	T	eP	11	58	51.4		0.5	10.5
		ePcP	12	01	26.8			
	T	eP	13	28	53.6			
	D	eP		29	03.2			
	T	eP	17	49	55.2			
	D	eP	18	14	47.2	t		
	S	eP			48.4			
	T	eP			48.9		1.1	19.5
	T	iP	19	16	02.9	t	1.4	472.1
	S	iP			03.0			
	D	iP			05.7			
		ePcP			31.7			
		ePP		18	42.2			
		eS?		24	51.7			
		eP'P'		45	17.8			
	T	eP	19	26	05.0			
	D	eP			13.0			
	T	eP	20	19	27.8	t?		
MAY. 2	S	eP	03	19	54.1	t		
	D	eP			55.6			
	T	eP		20	05.0		0.5	2.8
	T	eP	08	44	51.2			
	D	eP			59.5			
	T	eP	09	36	19.7			
	T	eP	18	29	03.4			
	S	eP			04.0			
	D	eP			06.0			

Date	Station	Phase	Time (G.M.T.)			t	T	Am
MAY. 2	T	eP	20	41	26.5			
	D	eP			35.3			
	S	eP			49.2			
	T	iP	22	46	47.4			
	D	iP			56.0			
	S	eP			59.9			
MAY. 3	T	eP	04	46	17.4			
	D	eP			25.2			
	S	iP	06	13	13.8			
	D	iP			17.3			
	T	iP			20.2			
	T	iP	12	34	02.2			
	S	eP			10.5			
	D	eP			11.8			
	S	iP	15	46	31.2			
	D	iP			35.6			
	T	iP			45.6			
	T	iP	18	37	06.0			
	S	eP			14.8			
	D	eP			16.3			
	T	eP	18	57	21.7	t	0.8	5.8
	D	eP			26.3			
	T	iP	19	09	57.6			
	S	iP		10	05.8			
	D	iP			06.0			
	T	eP	21	27	59.6	t	0.5	2.1
MAY. 4	S	iP	02	37	20.0			
	T	eP			25.0			
	D	iP			25.7			
	T	iP	06	40	32.1			
	D	iP			41.2			
	S	eP			44.5			
	S	iP	07	17	54.2	t		
	T	iP			54.7		1.4	61.7
	S	eP	12	46	41.2	t		
	T	eP			44.6			
	D	eP			45.1			
	T	eP	15	20	40.3	t		

Date	Station	Phase	Time (G.M.T.)			t	T	Am
MAY. 4	S	iP	17	25	44.0	t		
		ePcP		27	56.9			
	D	iP		25	47.1			
		ePcP		27	58.5			
		eScP		31	32.1			
		eS			49.5			
		eScS		35	44.6			
	T	iP		25	50.1		1.2	30.1
		ePcP		27	59.7			
	S	eP	17	54	49.2	t		
	T	eP			50.9			
	D	eP			51.0			
MAY. 5	T	eP	02	48	13.4			
	D	eP			20.8			
	T	eP	03	16	23.5			
	D	eP			31.7			
	S	iP	04	08	49.8			
	D	iP			54.6			
	T	iP			56.3			
	T	eP	07	33	29.0			
	D	eP			37.4			
	T	iP	08	20	35.2			
	S	iP			37.1			
	D	iP			39.5			
	T	eP	08	37	33.4			
	S	eP	09	52	02.7	t		
	D	eP			07.4			
	T	eP			14.5		0.5	3.3
	T	eP	10	16	40.3			
	D	eP			43.1			
	T	eP	10	20	03.6	t		
	T	iP	12	15	36.4			
	S	iP			37.6			
	D	iP			39.8			
	D	eP	14	12	27.9	t		
	T	eP			34.3		1.2	19.5
	T	iP	15	00	49.1			
	D	eP			59.2			
	S	eP		01	03.2			
	D	eP	17	52	55.9	t		
	T	eP			59.4		0.5	5.3
MAY. 6	T	eP	02	18	25.6			
	D	eP			36.4			
	S	eP			37.8			

Date	Station	Phase	Time (G.M.T.)			t	T	Am
MAY. 6	T	iP	02	19	20.8			
	D	iP			26.5			
	S	iP			27.3			
	T	iP	06	54	25.6			
	D	iP			29.4			
	S	iP			31.4			
	D	eP	11	25	32.5			
	T	eP			33.4			
	S	eP			39.0			
	T	eP	18	02	12.7			
	D	eP			22.5			
MAY. 7	T	eP	04	11	22.5			
	D	eP			28.5			
	T	eP	06	21	24.0			
	D	eP			25.8			
	S	eP	08	58	48.2	t		
	D	eP			51.3			
	T	eP			56.0		1.1	8.9
	S	iP	10	35	20.6			
	D	iP			24.2			
	T	iP			24.7			
	T	iP	13	57	01.3	t	1.4	63.6
	D	iP			05.7			
	S	iP			06.8			
	T	eP	14	53	31.0	t	0.5	2.4
	D	eP			32.9			
	T	eP	15	43	31.0			
	D	eP			41.7			
MAY. 8	T	eP	01	53	00.3			
	D	eP			09.6			
	S	eP	01	55	06.6	t		
		eX			14.7			
	T	eP			12.0		1.2	91.7
		eX			18.3			
	D	eP			12.7			
		eX			18.8			
		eS		59	16.0			
	T	iP	02	48	16.0			
	S	iP			17.0			
	D	iP			20.5			
	S	eP	04	24	24.4	t		
	D	eP			31.2			
	T	eP			33.8		0.5	8.7
	T	eP	11	33	54.8			

Date	Station	Phase	Time (G.M.T.)			t	T	Am
MAY. 8	T	eP	16	55	22.0			
	D	eP			31.3			
	S	eP			34.4			
	T	iP	18	38	16.0			
	D	eP			25.0			
	T	eP	20	54	30.7			
	D	eP			42.2			
	S	eP	22	44	57.2	t		
	D	eP		45	02.4			
	T	eP			04.2		1.2	16.7
MAY. 9	S	eP	06	55	17.6			
	D	eP			23.8			
	S	eP	08	38	20.5			
	D	eP			24.7			
	S	iP	09	39	36.4			
	D	eP			42.2			
	T	eP			42.3			
	T	eP	17	40	44.7	t?		
MAY. 10	D	eP	02	15	36.3			
	T	iP			41.2			
	S	eP	10	49	02.9			
	T	eP			04.4			
	D	eP			08.1			
	S	iP	12	17	47.8	t		
	T	eP			48.1		0.5	4.2
	D	eP			50.4			
	T	eP	13	06	23.8	t	1.4	42.9
	D	eP			30.6			
		eX			35.7			
	S	eP			30.7			
		eX			37.8			
	T	eP	16	57	13.8			
	D	eP			24.2			
	D	eP	18	05	34.6			
	T	eP			36.3			
	S	eP	19	06	44.8			
	T	eP			48.3			
	T	eP	19	10	26.9			
	T	eP	20	22	31.8			
	D	eP	21	52	02.3			
	S	eP			04.7			
	T	eP			06.2			

Date	Station	Phase	Time (G.M.T.)			t	T	Am
MAY.10	T	eP	23	17	10.5			
	D	eP			16.3			
MAY.11	D	eP	00	30	26.3	t		
	T	eP			28.6		1.2	23.2
	T	iP	01	23	11.1			
	D	eP			20.8			
	T	eP	10	45	12.1			
	D	eP			21.0			
	S	eP			25.2			
	S	iP	12	14	15.2	t		
	T	iP			19.1		0.5	47.7
	D	iP			19.7			
		eS		17	48.5			
		ePcP?			58.5			
		eScP		31	59.8			
	S	eP	14	28	31.4	t		
	T	eP			32.6		1.2	16.7
	D	eP			34.9			
	T	eP	16	05	36.0			
	D	eP			44.3			
MAY.12	T	eP	08	41	02.5			
	D	eP			12.1			
	T	eP	09	28	04.0			
	D	eP			11.6			
	T	eP	16	03	56.2			
	D	eP	18	19	48.3			
	T	eP			52.0			
	S	iP	18	53	15.3			
	D	iP			20.7			
	T	iP			22.0			
	T	eP	22	32	18.5			
	D	eP			26.8			
	S	eP			31.5			
MAY.13	T	iP	03	55	04.6			
	K	iP			06.6			
	S	iP			07.8			
	D	iP			09.3			
	D	eP	06	07	15.2	t		
	T	eP			18.1		0.5	3.7
	T	eP	08	42	04.8			
	D	eP			12.8			
	T	eP	10	13	56.3	t?	0.5	2.1

Date	Station	Phase	Time (G.M.T.)			t	T	Am
MAY. 14	T	eP	20	36	12.2			
	D	eP			21.4			
	S	eP			26.9			
	K	eP			29.5			
MAY. 15	K	iP	01	56	19.9			
	S	iP			26.2			
	T	iP			30.4			
	D	iP			30.9			
	T	eP	02	32	54.8			
	D	eP		33	05.5			
	K	eP	02	49	50.4			
	S	iP			56.2			
	T	iP		50	00.3			
	D	iP			00.9			
	K	iP	05	39	47.2			
	S	iP			53.4			
	T	iP			57.8			
	D	iP			58.4			
	T	eP	07	07	05.0			
	D	eP			15.8			
	D	eP	07	58	23.0			
		eX			30.4			
	T	eX			37.9			
	T	eP	12	18	28.9	t?		
	K	iP	14	50	00.2			
	S	iP			06.1			
	T	iP			10.1			
	D	iP			10.7			
	T	eP	15	08	33.4			
	D	eP			40.5			
	T	eP	17	31	04.6			
	D	eP			15.0			
	K	iP	17	33	55.4			
	S	iP		34	01.4			
	T	iP			05.6			
	D	iP			06.3			
	K	iP	18	19	52.8			
	S	iP			59.0			
	T	iP		20	02.8			
	D	iP			03.7			
	D	eP	20	49	15.9	t		
		eX		50	18.4			
	S	eP		49	17.3			
	T	eP			19.7		1.4	93.0

Date	Station	Phase	Time(G.M.T.)			t	T	Am
MAY.15	S	eP	22	46	06.4	t		
	D	eP			09.9			
		ePcP?		49	18.9			
		eS		52	27.5			
	T	eP		46	13.6		1.2	27.8
	T	eP	23	14	36.1			
	D	eP			41.5			
MAY.16	T	eP	02	05	27.0			
	D	eP			34.7			
	T	iP	02	15	10.4			
	D	eP			18.0			
	S	eP			21.6			
	K	eP			28.7			
	D	eP	04	11	22.0	t	Explosion?	
	S	eP			22.1			
	T	eP			22.9		0.5	32.8
	K	eP			29.6			
	S	iP	06	57	46.2			
	K	iP			47.4			
	D	iP			48.9			
	T	iP			43.0			
	S	iP	07	15	01.4	t		
	T	eP			01.5		1.4	58.4
	D	eP			04.0	LZ	24.0	2.9U
	K	iP	11	45	26.8			
	S	iP			33.0			
	T	iP			37.6			
	D	iP			38.0			
	K	iP	14	15	55.5			
	S	iP		16	01.6			
	T	iP			05.7			
	D	iP			06.4			
	T	eP	20	17	29.4			
	D	eP			39.1			
	K	iP	20	36	40.0			
	S	iP			46.2			
	T	iP			50.6			
	D	iP			51.4			
	S	eP	23	41	01.5			
	T	eP			06.6			
	D	eP			06.8			
MAY.17	D	iP	00	05	17.2			
	S	eP			23.2			
	T	eP			28.6			

Date	Station	Phase	Time (G.M.T.)			t	T	Am
MAY.17	K	iP	08	22	21.5			
	S	iP			27.8			
	T	iP			32.1			
	D	iP			32.6			
	T	eP	09	07	20.3			
	D	eP			29.2			
	K	iP	10	30	00.7			
	T	iP			06.6			
	S	iP			11.9			
	D	iP			16.5			
	T	iP	11	16	10.0			
	D	iP			19.2			
	K	iP	11	40	44.0			
	S	iP			50.3			
	T	iP			54.8			
	D	iP			55.3			
	T	iP	14	04	55.4			
	D	iP		05	06.1			
	S	iP			08.6			
	K	iP	18	31	12.4			
	S	iP			18.8			
	T	iP			23.1			
	D	iP			23.5			
	T	iP	22	20	04.8			
	D	iP			14.6			
	S	eP			17.1			
	K	eP			18.5			
	S	iP	23	37	46.5			
	T	iP			50.4			
	D	iP			51.2			
MAY.18	D	eP	00	24	15.3	t		
	T	iP	01	00	07.0			
	D	iP			11.2			
	S	eP			13.3			
	K	eP			15.6			
	T	iP	01	02	32.2			
	D	iP			40.5			
	S	eP			44.5			
	K	eP			46.9			
	K	eP	08	37	12.7			
	S	eP			18.5			
	T	eP			22.9			
	D	eP			23.1			
	T	eP	08	53	11.8	t	1.2	51.9
	D	eP			17.2			
	S	iP			19.2			

Date	Station	Phase	Time (G.M.T.)			t	T	Am
MAY. 18	T	eP	09	48	03.8			
	D	eP			11.1			
	T	eP	10	48	47.8			
	D	eP	11	30	18.1			
	T	eP			19.4			
	T	eP	15	02	14.2			
	T	eP	20	57	41.5			
	D	eP			50.2			
	S	eP		58	02.4			
	T	eP	21	33	56.5			
	D	eP		34	01.0			
	K	iP	22	01	58.0			
	S	iP		02	03.7			
	T	iP			07.8			
	D	iP			08.5			
	S	eP	22	58	53.4			
	T	eP			55.8			
	D	eP			58.2			
	K	eP	23	14	02.9			
	S	eP			12.8			
	T	eP			16.2			
	D	eP			18.1			
MAY. 19	S	eP	02	31	50.4			
	T	eP			53.4			
	D	eP			55.6			
	K	iP	03	55	09.3			
	S	iP			15.3			
	T	iP			19.4			
	D	iP			20.5			
	K	iP	04	17	39.8			
	S	iP			46.2			
	T	iP			50.2			
	D	iP			51.0			
	K	iP	07	48	35.7			
	S	iP			41.7			
	T	iP			46.0			
	D	iP			46.5			
	T	eP	10	50	30.2			
	D	eP			31.5			
	K	iP	13	55	46.7			
	S	iP			53.0			
	T	iP			57.0			
	D	iP			57.8			

Date	Station	Phase	Time (G.M.T.)			t	T	Am
MAY.20	T	eP	00	51	11.0			
	D	eP			21.0			
	T	iP	06	36	38.1			
	D	iP			47.8			
	S	eP			51.1			
	K	eP			52.3			
	K	iP	07	12	58.1			
	T	iP			58.4			
	S	iP		13	05.4			
	D	eP			06.3			
	T	eP	14	23	01.0			
	D	eP			08.3			
	K	eP			17.0			
	S	eP			17.5			
	T	eP	15	01	51.2			
	D	eP			58.5			
		eS		03	43.7			
	S	eP		02	03.7			
	K	eP			10.7			
	K	iP	15	06	12.5			
	S	iP			13.1			
	D	iP			17.6			
	T	iP			19.5			
	T	eP	22	13	57.9			
	D	eP		14	05.0			
MAY.21	D	eP	03	02	37.7	t		
		eScS?		13	23.4	LZ	20.0	7.1U
		esScS?			50.7			
	T	eP	04	34	21.2			
	D	eP			30.6			
	S	eP			35.4			
	T	eP	08	44	56.2			
	D	eP		45	14.5			
	K	eP	10	14	28.5			
	S	eP			39.0			
	T	eP			43.1			
	D	eP			43.8			
	D	eP	15	41	06.0	t		
	S	eP			07.5			
	T	eP			09.8		1.0	33.6
	K	eP			13.9			
	S	eP	15	46	36.6			
	D	eP			38.4			
	K	eP			44.2			
	T	eP			47.5			

Date	Station	Phase	Time (G.M.T.)			t	T	Am
MAY.21	D	iP	17	56	03.8			
	S	iP			09.8			
	T	iP			14.8			
	K	eP			22.7			
	T	eP	21	47	46.0			
	D	eP			58.5			
		eS		49	57.2			
MAY.22	K	iP	04	07	30.8			
	T	eP			36.0			
	S	eP			42.0			
	D	eP			45.4			
	T	eP	08	06	30.1			
	D	eP			39.1			
	T	iP	09	37	30.4			
	K	eP			40.9			
	D	eP			41.0			
	S	eP			44.0			
	T	iP	11	41	01.0			
	D	iP			10.4			
	K	iP			12.5			
	S	iP			12.6			
	T	eP	19	19	53.1			
	D	eP		20	00.5			
	K	iP	19	56	39.3			
	T	iP			41.0			
	S	iP			42.3			
	D	iP			45.3			
	T	eP	20	59	35.7	t	0.5	2.9
	D	eP			43.8			
	K	eP	21	36	27.3			
	S	eP			34.0			
	D	eP			37.0			
	T	eP			38.0			
	S	eP	22	39	42.0	t		
	D	eP			43.9			
MAY.23	K	eP	11	34	02.0			
	D	eP			09.2			
	T	eP			10.9			
	T	eP	13	12	44.5	t	0.5	1.2
	D	eP			51.0			
		eX			58.3			
	S	eP			52.7			
	D	eP	14	41	59.2	t		

Date	Station	Phase	Time (G.M.T.)			t	T	Am
MAY.23	K	eP	15	52	11.0			
	S	eP			20.7			
	T	eP			25.7			
	D	eP			25.8			
	S	eP	16	17	28.2	t		
	D	eP			31.3			
	T	eP			35.5		0.5	7.9
	K	eP	16	23	18.6			
	S	eP			27.6			
	T	eP			31.8			
	D	eP			32.5			
	S	eP	17	16	42.5	t		
	D	eP			43.9			
	T	eP			48.1		0.5	3.7
	T	iP	18	36	12.0			
	D	iP			17.0			
	S	eP			19.8			
	K	eP			22.0			
	T	iP	21	33	22.0			
	D	eP			30.8			
	S	eP			31.4			
	T	iP	23	04	13.4			
	D	iP			16.7			
	S	iP			19.0			
	K	iP			23.0			
MAY.24	K	eP	01	44	45.1			
	S	eP			53.0			
	D	eP			57.0			
	T	eP			57.5			
	S	eP	05	06	19.5			
	T	eP			22.6			
	D	eP			24.3			
	T	iP	06	21	37.5			
	D	iP			48.0			
	K	eP			51.0			
	S	eP			52.5			
	S	eP	11	38	19.7			
	T	eP			13.5			
	D	eP			24.8			
	K	eP	16	36	22.0	t		
	S	eP			24.3			
	T	eP			25.8		0.5	6.6
	D	eP			29.7			
	K	eP	20	07	15.4			
	S	eP			22.8			
	T	eP			29.0			
	D	eP			29.7			

Date	Station	Phase	Time (G.M.T.)			t	T	Am
MAY.25	T	eP	00	47	40.1			
	D	eP			49.5			
	K	eP			52.5			
	S	eP			53.0			
	K	eP	14	23	23.1	t		
	T	eP			26.8		0.5	8.0
	D	eP			27.5			
	T	eP	19	09	30.0			
	D	eP			38.3			
MAY.26	T	eP	00	00	25.4			
	S	eP	02	15	57.2			
	D	eP			58.7			
	T	eP		16	02.0			
	T	eP	10	56	20.2	t	0.5	3.4
	K	iP	13	32	50.1			
	S	eP			56.6			
	T	eP		33	00.8			
	D	eP			01.0			
	D	eP	15	00	10.3	t?		
	T	eP	19	38	05.0			
	D	eP			13.1			
	D	iP	20	58	50.6			
	T	iP			53.6			
	S	iP			54.4			
	K	iP		59	01.2			
MAY.27	S	eP	03	12	08.2	t		
	D	eP			11.4			
	T	eP			11.8		0.5	3.3
	K	iP	06	06	54.2			
	S	iP		07	00.3			
	T	iP			04.3			
	D	iP			05.0			
	S	iP	09	34	19.4	t		
		ePcP		36	36.6			
	D	iP		34	22.6			
		ePcP		36	38.0			
		eS		40	15.4			
	T	iP		34	27.6		1.1	30.9
		ePcP		36	39.3			
	K	iP	11	49	49.6	t		
	S	eP			56.1			
	D	iP		50	01.2			
		eS		52	38.0			
	T	eP		50	01.9		1.0	16.5

Date	Station	Phase	Time (G.M.T.)			t	T	Am
MAY.27	K	iP	12	44	42.6			
	T	eP			49.4			
	S	iP			53.6			
	D	eP			57.0			
	S	eP	15	10	32.1	t		
	T	eP			33.5		1.4	23.4
	D	eP			35.4			
	D	eP	16	37	59.0	t		
	T	eP		38	02.8		1.2	12.0
	T	eP	20	55	06.2	t	0.5	5.0
	D	eP			15.1			
		eS		57	59.8			
MAY.28	D	eP	03	46	46.2	t		
		eX		47	56.8			
	D	eP	13	17	10.5	t		
	T	eP	13	49	03.5	t	1.3	44.4
	D	eP			06.3			
	S	eP			07.2			
	T	eP	13	52	14.0	t	1.2	61.1
	D	eP			20.8			
	K	eP	15	31	16.0			
	T	eP			29.8			
	D	eP			31.2			
	T	eP	17	15	37.0			
	D	eP			46.3			
	K	iP	19	53	17.8			
	D	iP			23.3			
	T	iP			25.8			
	T	iP	22	26	38.8			
	D	iP			47.1			
	K	eP			52.9			
	K	eP	23	44	14.2			
	D	iP			19.6			
	T	eP			22.2			
MAY.29	T	eP	07	28	18.4	t	1.4	32.5
	D	eP			23.7			
	T	eP	08	43	36.5	t	1.0	33.6
	D	eP			38.1			
	T	eP	10	32	53.9	t		
	D	eP			55.6			
	T	eP	11	32	50.5	t	1.3	25.6
	D	eP			52.4			

Date	Station	Phase	Time (G.M.T.)			t	T	Am
MAY.29	T	iP	13	17	24.4			
	D	iP			34.2			
	S	iP			37.6			
	T	eP	13	18	56.9			
	D	eP		19	06.0			
	T	iP	13	47	08.3			
	D	eP			18.1			
	K	eP			21.5			
	T	eP	16	28	48.6	t	0.5	1.6
	D	eP			50.0			
MAY.30	D	eP	06	05	30.5	t		
	T	iP	11	55	42.2			
	D	iP			51.3			
	K	eP			55.0			
	T	eP	15	26	19.3	t		
	D	eP			23.5			
	T	eP	16	07	35.6	t	1.4	45.2
	D	eP			36.2			
	T	eP	16	34	46.4	t	1.3	26.1
	D	eP			47.2	LZ	20.0	4.0U
MAY.31	T	iP	04	26	27.6			
	D	eP			37.9			
	D	eP	04	33	48.6			
	T	eP			50.4			
	D	eP	05	10	21.6	t	Explosion ?	
	T	iP			24.3		0.5	47.6
	T	iP	08	50	25.0			
	D	eP			36.4			
	D	eP	10	45	43.4			
	T	eP			52.2			
	T	eP	11	18	20.7			
	D	iP			31.2			
	D	eP	13	32	18.4	t?		
	D	iP	14	10	08.6			
	T	iP			11.6			
	D	iP	14	12	54.4			
	T	iP			55.2			
	T	eP	18	37	20.6			
	D	eP			29.2			
	T	eP	21	52	45.2			

Date	Station	Phase	Time (G.M.T.)	t	T	Am
MAY.31	T	eP	22 35 35.0	t?	1.1	25.0

Tsukuba, May.

S-P \ Date	1	2	3	4	5	6	7	8	9	10	11	12	13
0- 0.9													
1- 1.9													
2- 2.9													
3- 3.9													
4- 4.9													
5- 5.9	1	2		1	2	1		5		4			3
6- 6.9			1	1			1		1	1		1	1
7- 7.9	1	1	1	2	2		3	1	2	2	2	2	1
8- 8.9	1				1	2	2	4	2	2		1	1
9- 9.9	4			1	1**	2	1			1	1	3	2
10-10.9	1	1		1	2	*		1		1			2
11-11.9	1				2		2	1	1	1	2	1	
12-12.9		1	2*	4*	1	4		1		2	2	1	
13-13.9	1			1							1	1	
14-14.9	1							1	2	1			1
15-15.9	*					2			1				
16-16.9						3		1					
17-17.9					1	*							1
18-18.9					1		1			2	2		1
19-19.9	2							2		1			
20-20.9		1		1					1			2	
21-21.9													
22-22.9	1		1				1						
23-23.9					*								
24-24.9													
25-25.9													1
26-26.9	1*			*									
27-27.9													
28-28.9													1
29-29.9												1	
above 30sec	3	1	1	1	4		1		1		1	2	1
?							1		2				
Total	18	7	6	13	17	14	13	17	13	18	11	15	16
no observation									11h41m ~ 17h51m				

S-P \ Date	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total
0- 0.9																			
1- 1.9																			
2- 2.9																			
3- 3.9																			
4- 4.9																			
5- 5.9	3			1	2	2			3	1			2	2	1		1		37
6- 6.9	1	1			1					1	1		1				1		14
7- 7.9			1	1	3	1		2	1	1				1		1	2	1	35
8- 8.9	2		1	1	1	4	1		1	3	3	1	1	2		3	1	1	42
9- 9.9		3	2	3	2	1			2	*	3	4	1		1	2	1	*	41
10-10.9		1	3	6			1		1	2		2				1	2		28
11-11.9			1	2	*	4				1	1		1	1	1		2	2	27
12-12.9			1	2	2		1	2	1	1		1			1	1		1	32
13-13.9				1				1	2	1		1	1	1					12
14-14.9			1	2									1	1	1	1			13
15-15.9		*	1*	3*	2	2**	1		1	1					1	2	1	2	20
16-16.9		6	1**	4*	2**	3*	5	2	*	2					1		2	*	32
17-17.9	1	5**	8*	5	2	8	4	7	3	1	1	2	1*		1	2	*		53
18-18.9			2	2**	1	1		2	1	1	1	2		**					20
19-19.9		1		1			1		2						2	1	1		14
20-20.9		1		1		1	4	1*			*				1				14
21-21.9															2			1	3
22-22.9		**						1	1				1			1		1	8
23-23.9									1*										1
24-24.9														1					1
25-25.9										1	1								4
26-26.9									1						1				2
27-27.9				1		1												1	3
28-28.9											1								2
29-29.9				1						2									4
above 30sec	1		1		2	1	1	2	1	2		1	3		1	1	2		35
?						1	1		1										6
Total	8	18	23	37	20	30	20	20	23	21	12	14	13	9	15	16	16	10	
no observation		12h11m ~ 13h42m					02h40m ~ 04h40m								15h26m ~ 16h40m	14h22m ~ 15h07m			

Remarks: *: indicates a larger earthquake which is included in the main table the Bulletin.

Dodaira, May.

Date / S-P	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total
0– 0.9																																
1– 1.9																	1															1
2– 2.9					1			1															1						1		1	5
3– 3.9																																
4– 4.9	2																	1														3
5– 5.9	1																															1
6– 6.9									1									1														2
7– 7.9			1		1			1								2	1					1			2					1		10
8– 8.9									1	2		1	2	1					1								*			2		10
9– 9.9				1		1*									1		1	2	1					1*	1	1						10
10–10.9	2	1			1	1*					1		3			12	1						1							1		14
11–11.9	1	1	1	2	2	**	2		1	2		3	1	1		1	1	1				2		1*					1			24
12–12.9		2			1*		3		2		2	2	1	1	1	1	2	1	3		1		1					2	1	1	1	29
13–13.9	2	1	1	1	*	2	1			1		1	1	1	1		*	1	1	1	1	4	*	1	2	1		1	1			27
14–14.9				*	1	1		1		1					1			*		1			1		1			2		2		12
15–15.9					1		*	1			1				1*	1	1*	2*	1	3	1			1	1			1				16
16–16.9	1											2	1		5	7	4**	5*	5**	3	5*	2	2	1		2*	2	1		1	1	50
17–17.9				1											12*	4***	4	**	8***	5	3	3	3	1	2			1	3	2	1*	53
18–18.9				1*					1			1	1		5*	4*	4**		3	1	6	1			1		*	1	1		1	32
19–19.9	*		2		*		1				1		1								1		1							1		8
20–20.9				*											*		1		1	1						1	1					5
21–21.9			*	1					1		1						1							1						*		5
22–22.9																		*		1		1		*								2
23–23.9					1	1																										2
24–24.9																												1				1
25–25.9									1					1														1			*	3
26–26.9				*	1									1				1			1			1						1		5
27–27.9							1	1		1							1								1							5
28–28.9						*														1				1			*				1	3
29–29.9	1																														1	2
above 30sec		1	1	3	1				1				1				2						1		1		1	1	1			15
?				1	1		1	1					1						1	1										1		8
Total	10	6	6	11	12	6	9	6	9	7	6	10	13	5	27	22	25	15	25	18	19	14	11	9	12	5	4	12	9	13	7	
no observation											03h16m ~ 06h33m			5																		
Remarks	*:indicates a larger earthquake which is included in the main table the Bulletin.																															

Preliminary Bulletin

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and its Substation

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Earthquake Research Institute, the University of Tokyo

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Observation stations

		N	E	h
Dodaira	(D or DDR)	35°59'54".0	139°11'36".2	800m
Tsukuba	(T or TSK)	36°12'39".0	140° 6'35".0	280m
Kiyosumi	(K or KYS)	35°11'51".6	140° 8'53".6	230m
Shiroyama	(S or SRY) (temporary)	35°36'30".0	139°16'27".0	254m

Expressions: Am: Amplitude in millimicron (half of peak to trough*) of P motion maximum within few cycles after the onset recorded by a short period vertical seismograph.
*In 1967 double amplitude (peak to trough) was used as Am.

T : Period in sec of the measured P maximum

t : Teleseism

All stations are radio-telemetered to Tokyo giving records on a multi-channel ink-recording oscillograph. The paper speed of the recorder is 1 mm per sec. For stronger events high speed recorder (10 mm/sec) is also triggered. The system is also recorded in parallel on multi channel magnetic tape through a trigger system using an endless tape loop. Direct filter sum of short period seismometers at Dodaira and/or on line short period filter outputs of Tsukuba are also used for the

detection of weak teleseismic signals. For teleseismic events records of long period and medium period seismographs are occasionally used, applying off line frequency filter, if necessary.

The Bulletin includes the preliminary readings sent to USCGS for teleseisms and larger near shocks with total durations (F-P) of short period vertical seismograph at Tsukuba (TSK) with magnification about 140.000 at 1 c/s or sensitivity about 300×10^{-3} mm/microkine at 10 c/s being longer than 100 seconds which correspond approximately shocks with $M \geq 3.5$. For the minor near earthquakes with $F\text{-}P < 100$ sec or $M < 3.5$, frequency of S-P times at each station is added at the end of the Bulletin, which may easily give a general idea of local seismicity around the station.

Date	Station	Phase	Time (G.M.T.)			t	T	Am
JUN. 1	T	iP	00	03	44.4	t	0.5	77.0
		epP?		04	11.8			
		eX		05	07.7			
		eS		09	35.8			
	T	eP	01	03	10.3			
	K	eP	01	59	57.8			
	D	eP	02	00	05.8			
	T	iP			07.6			
	D	iP	07	33	55.0			
	T	iP		34	06.2			
	D	eP	13	55	51.4	t		
	T	eP			56.3		0.5	5.9
	T	eP	19	17	33.4	t?		
	D	eP	20	05	10.4	t		
	T	iP	21	23	52.0			
	K	eP		24	02.5			
	D	eP			03.2			
	D	eP	23	28	03.7	t		
JUN. 2	T	eP	01	50	22.3			
	D	eP			30.4			
	S	eP	05	44	32.0	t		
	T	eP			39.3		1.3	20.0
	D	eP			40.0			
		eS		48	39.6			
		eScP		51	49.6			
		eScS		55	36.0			
	T	eP	09	57	12.3	t	0.5	2.6
	D	eP			18.0			
	T	iP	15	54	47.4			
	D	iP			58.5			
	K	eP		55	00.3			
	S	eP			01.2			
	T	eP	20	39	43.1			
	D	eP			50.0			
	T	iP	21	57	18.2			
	S	eP			24.1			
	D	iP			29.1			
	K	eP			30.7			
JUN. 3	T	eP	00	27	45.0			
	D	eP			52.5			
	S	eP			57.5			

Date	Station	Phase	Time (G.M.T.)			t	T	Am
JUN. 3	T	eP	02	05	29.3			
	D	eP			40.3			
	S	eP			42.3			
	T	eP	16	23	42.7			
	D	eP			50.1			
	S	eP			56.7			
	T	eP	17	12	48.3			
	D	eP			56.8			
	S	eP		13	00.5			
	T	eP	21	54	18.0			
	D	iP			27.5			
	K	eP			30.9			
	S	iP			31.0			
JUN. 4	D	iP	02	59	28.5			
	S	iP			28.6			
	T	iP			31.2			
	T	eP	03	49	48.9			
	D	eP			59.8			
	T	eP	07	06	09.5			
	D	eP			17.6			
	S	eP	08	33	48.9			
	T	eP			50.8			
	D	eP			53.1			
	T	eP	13	55	21.9			
	D	eP			31.4			
	K	eP			34.8			
	S	eP			35.0			
	T	eP	14	15	02.2			
	D	eP			11.6			
	K	eP			14.2			
	S	eP			15.3			
	K	eP	16	49	07.0	t?		
	D	eP			12.8			
		eX		51	01.0			
	T	eP		49	16.3		0.5	14.8
		eX		51	01.2			
	K	eP	19	39	46.4			
	S	eP			55.4			
	T	eP			59.5			
	D	eP		40	00.4			
	T	iP	20	38	03.5			
	D	eP			13.6			

Date	Station	Phase	Time (G.M.T.)			t	T	Am
JUN. 4	T	eP	20	49	30.8			
	D	eP			40.4			
	S	eP			42.0			
	K	eP			43.6			
JUN. 5	S	iP	04	51	39.3			
	T	iP			41.0			
	D	iP			45.6			
	T	eP	09	40	30.1			
	S	eP			37.5			
	D	eP			39.6			
	D	eP	10	04	11.4	t		
	D	eP	10	54	41.0	t		
	T	eP	11	17	27.5			
	D	eP			35.8			
	D	eP	12	51	01.0			
	S	eP			03.6			
	T	eP			14.1			
	S	eP	17	27	02.0	t		
	D	eP			05.8			
		ePcP		29	35.1			
		eS		32	36.8			
		eScP		33	10.4			
		eScS		37	17.3			
	T	eP		27	08.6		1.0	24.0
	T	iP	18	42	30.9			
	D	iP			40.6			
	S	eP			43.8			
	K	eP			45.5			
	D	eP	21	00	53.1			
	T	eP			58.6			
	T	eP	22	19	00.9			
	D	eP			12.3			
	S	iP			14.8			
	K	eP			17.6			
	T	eP	22	22	35.8			
	D	eP			46.8			
	S	eP			49.4			
	T	eP	22	28	11.2			
	D	eP			22.0			
JUN. 6	T	eP	04	28	01.6			
	D	eP			02.8			
	T	eP	07	02	26.8			
	D	eP			32.0			
	S	eP			38.1			

Date	Station	Phase	Time(G. M. T.)	t	T	Am
JUN. 6	S	eP	12 32 20.3	t		
	D	eP	22.0			
	D	eP	14 28 10.8	t?		
	T	iP	15 48 25.3			
	D	iP	36.3			
	K	eP	36.5			
	S	eP	38.3			
	T	eP	19 07 47.6			
	D	eP	50.8			
JUN. 7	D	eP	04 22 53.9	t		
		eX	23 00.9			
	T	eP	07 57 41.0			
	D	eP	48.4			
	T	iP	12 04 45.0			
	D	eP	56.3			
	S	eP	58.5			
	T	iP	13 28 57.4			
	S	iP	58.5			
	D	iP	59.8			
	T	eP	22 54 38.8	t	1.3	85.6
	D	eP	44.5			
		ePP?	56 52.5			
		eS	23 03 01.9			
	S	eP	22 54 46.9			
JUN. 8	D	eP	08 48 18.7			
	T	eP	14 54 22.4	t	1.2	131.5
	D	eP	28.8			
		ePP	53.5			
		ePcP	58 21.0			
		eS	30.0			
	T	eP	18 26 35.1			
	D	eP	40.5			
	T	eP	21 12 10.3	t	1.0	9.3
	D	eP	11.8			
	S	iP	21 50 55.1	t		
	T	eP	55.7		1.1	14.6
	D	eP	57.6			
		eS	59 48.2			
JUN. 9	D	eP	01 59 30.5	t		
	S	eP	02 16 12.4	t		
	D	eP	17.1			
	T	eP	21.4		1.1	12.1

Date	Station	Phase	Time (G.M.T.)	t	T	Am
JUN. 9	S	eP	02 22 58.6	t		
	D	eP	23 04.3			
	T	eP	06.3		1.2	50.9
	T	eP	03 37 39.9			
	D	eP	45.8			
	S	eP	06 58 41.8	t		
	T	eP	46.5		1.1	16.3
	D	eP	46.8			
		eScS?	07 08 55.8			
	D	iP	07 03 17.2			
	T	iP	17.3			
	S	iP	24.1			
	D	eP	08 40 42.6	t		
		eX	55.6			
	T	eP	12 07 04.6			
	D	eP	05.3			
	T	eP	14 22 52.8	t	1.0	15.3
	D	eP	23 00.4			
	S	eP	03.5			
	S	eP	22 04 30.0	t		
	T	eP	31.3		0.5	6.2
	D	eP	32.7	LZ	20.0	2.7U
	T	eP	23 12 09.4			
	D	eP	18.9			
	S	eP	20.3			
JUN. 10	D	iP	00 26 49.6			
	S	eP	54.6			
	T	eP	27 00.4			
	T	eP	09 47 17.9			
	D	eP	26.2			
	D	iP	10 53 53.0			
	S	iP	57.8			
	T	iP	54 03.9			
	T	eP	15 33 11.7	t	1.1	12.2
	D	eP	18.3			
	T	iP	16 42 21.7			
	D	iP	30.3			
	S	iP	34.2			
	D	eP	17 21 22.5	t		
		eX	22 01.9			
	T	eP	22 53 05.5			
	D	eP	14.8			
	S	eP	18.0			

Date	Station	Phase	Time(G.M.T.)	t	T	Am
JUN. 10	T	eP	22 55 03.0			
	D	eP	23 01 17.1	t		
		eX	02 07.7			
	S	eP	01 18.9			
	T	eP	21.3		1.1	44.1
	D	eP	23 39 59.8	t		
		eX	40 48.9			
	S	eP	01.7			
	T	eP	03.8		1.1	43.6
JUN. 11	T	eP	01 07 23.9	t	1.6	46.6
	D	eP	28.8			
	T	eP	01 14 14.7	t	1.4	18.5
	D	eP	18.9			
	D	eP	04 57 17.0	t		
	D	eP	09 31 34.4			
	S	eP	36.4			
	T	iP	38.9			
	K	eP	44.0			
	S	eP	15 13 16.3			
	D	eP	20.7			
	T	eP	22.4			
	K	eP	15 43 38.9			
	S	eP	46.3			
	D	eP	50.9			
	T	eP	51.6			
	T	eP	23 23 05.3	t		
	D	eP	06.8			
	D	eP	23 56 17.7	t		
JUN. 12	S	eP	04 17 14.2			
	D	eP	20.3			
	T	eP	22.5			
	T	iP	05 23 21.8			
	D	iP	32.2			
	S	eP	35.4			
	K	eP	35.9			
	T	iP	07 42 37.1			
	D	iP	46.9			
	S	iP	49.7			
	K	eP	50.1			
	T	eP	07 49 35.4			
	D	eP	44.0			
	T	eP	08 04 47.9			
	D	eP	54.8			

Date	Station	Phase	Time (G.M.T.)			t	T	Am
JUN. 12	T	eP	09	12	01.1			
	D	eP			10.2			
	T	eP	10	26	59.4			
	D	eP		27	08.5			
	S	eP			12.4			
	T	eP	10	33	46.8			
	D	eP			56.0			
	D	eP	12	28	46.1	t		
	D	eP	12	57	53.3	t		
	D	eP	15	26	15.7	t		
		eX			31.3	LZ	20.0	4.6U
		eS		36	47.8			
	S	eP		26	16.8			
	T	eP			17.0		1.8	286.3
	T	eP	16	17	39.8			
	D	eP			50.9			
	S	eP			54.2			
	T	eP	18	59	27.3			
	D	eP			36.4			
	S	eP			40.0			
	T	eP	19	03	34.4	t		
	D	eP			45.0			
		eS		07	11.2			
	T	eP	21	56	48.1	t	0.5	5.3
	T	eP	22	04	38.8			
	D	eP			40.4			
JUN. 13	T	eP	08	52	25.0	t	0.6	202.9
	D	eP			34.3	LZ	20.0	39.3U
		eS		55	45.9			
		eScP	09	01	05.0			
		eScS		04	49.0			
	S	eP	08	52	38.0			
	K	eP			40.0			
	T	eP	13	50	44.2			
	D	eP			54.2			
	T	eP	14	17	17.2			
	D	eP			17.8			
	T	eP	15	25	02.1			
	D	eP			07.0			
	D	eP	16	38	14.4	t		
	D	eP	18	44	39.2	t		

Date	Station	Phase	Time(G. M. T.)	t	T	Am
JUN. 13	D	eP	22 10 31.1	t		
JUN. 14	T	eP	00 29 38.2	t		
	D	eP	45.4			
	K	eP	03 31 19.1	t		
	S	eP	23.5			
	T	eP	26.3		1.2	244.2
	D	eP	26.8			
		eS?	38 21.3			
	D	eP	03 46 09.3	t		
	T	eP	04 07 20.0			
	D	eP	29.2			
	K	iP	08 12 29.5			
	T	iP	39.2			
	S	iP	40.1			
	D	iP	43.8			
	K	iP	08 16 53.0			
	T	iP	17 03.0			
	S	iP	04.0			
	D	iP	07.6			
	K	iP	08 38 20.8			
	S	iP	27.0			
	T	iP	29.1			
	D	iP	31.7			
	D	eP	09 31 20.8	t		
	T	eP	22.9		1.0	4.3
	S	eP	09 33 48.2	t		
	T	eP	51.3		1.3	25.9
	D	eP	51.9			
		eS	39 57.5			
	D	eP	14 45 09.1	t?		
	T	eP	20 09 06.4			
	D	eP	10.9			
	K	eP	21 53 50.6			
	S	eP	58.3			
	T	eP	54 03.0			
	D	eP	03.5			
	D	eP	22 55 25.5	t?		
JUN. 15	S	eP	04 33 24.5	t		
	D	eP	27.8			
		eS?	40 10.4			
	T	eP	31.6		1.0	2.6
	D	eP	14 41 03.3			
	T	eP	04.7			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
JUN. 15	S	iP	17	05	46.4	t		
	D	eP			48.7			
	T	eP			52.3		1.1	67.4
	D	eP	22	08	24.0			
JUN. 16	K	eP	08	07	54.6			
	S	eP			57.3			
	D	eP		08	02.0			
	T	eP			04.0			
	T	iP	08	45	50.0			
	D	iP			53.8			
	S	iP			56.2			
	K	iP			58.7			
	S	eP	15	53	34.0	t		
	D	eP			47.8			
	T	eP			49.9		0.5	7.8
	~~from West Direction~~							
	S	iP	17	22	30.0			
	D	iP			30.9			
	K	iP			34.6			
	T	iP			35.8			
	D	eP	20	12	~~5~~53.8	t		
	T	eP			57.4			
	D	eP	20	20	41.8			
JUN. 17	T	eP	01	06	32.1			
	D	eP			36.3			
	T	eP	07	56	22.7			
	D	eP			30.8			
	K	iP	19	30	15.3	t		
	S	iP			20.8			
		eScP		38	00.6			
	D	iP		30	25.0	LZ	20.0	21.4U
		eS		33	32.8			
		eScP		38	01.5			
		ePcS?			11.0			
		eScS		41	43.8			
	T	iP		38	25.1		1.4	367.3
		eScP			01.8			
	D	eP	20	06	05.6	t		
JUN. 18	D	eP	00	11	06.3	t		
		ePP		15	02.2	LZ	20.0	17.7U
		eS		21	49.8	LE	20.0	10.7U
	S	eP		11	09.3			
	T	eP			09.8		1.8	220.0
	T	eP	00	31	54.7	t	1.0	37.1
	D	eP		32	00.3			

Date	Station	Phase	Time (G.M.T.)	t	T	Am
JUN. 18	T	cP	01 47 56.8	t	1.1	31.5
	D	eP	48 01.1			
	S	eP	02.7			
	D	eP	02 25 02.0	t		
		eX	08.5			
	S	iP	08 22 53.8			
	D	iP	56.0			
	K	iP	56.2			
	T	iP	23 00.3			
	T	iP	12 33 11.2			
	S	eP	22.8			
	D	iP	29.6			
	D	eP	20 17 30.6	t		
	T	eP	34.4		0.5	4.6
	D	eP	20 50 33.8	t		
		eX	36.2			
		ePcP	52 55.2			
		eS	56 16.8			
	T	eP	50 36.9		1.1	34.8
	D	eP	23 41 10.7	t		
	T	eP	23 51 43.0	t	1.0	211.0
	D	eP	49.3	LZ	20.0	2.9U
		ePcP	52 03.0			
		eS	57 57.9			
JUN. 19	T	eP	04 53 59.8	t	0.5	3.7
	D	eP	54 07.3			
	K	iP	05 15 02.8			
	S	iP	11.2			
	T	iP	16.4			
	D	iP	16.5			
	D	eP	06 01 42.1	t		
	T	eP	46.5		0.5	5.9
	S	eP	07 05 40.8			
	D	eP	44.0			
	T	eP	52.5			
	T	iP	13 33 24.4			
	K	eP	25.6			
	S	eP	33.2			
	D	eP	33.9			
	K	eP	13 46 40.0	t		
	S	iP	44.2			
	T	iP	44.3		1.1	168.2
	D	iP	46.8			
		eX	47 10.0			

Date	Station	Phase	Time (G. M. T.)			t	T	Am
JUN. 19	T	eP	18	33	08.2			
	D	eP			17.8			
	T	eP	18	52	32.6			
	D	eP			42.1			
	T	eP	19	01	39.3	t	1.2	74.0
	D	eP			45.9			
	S	eP			49.3			
	T	eP	20	00	48.6			
	D	eP			57.0			
	D	eP	20	32	55.0	t		
	T	eP	21	40	49.2	t	1.2	42.9
	D	eP			55.0			
		eX		41	09.2			
JUN. 20	T	eP	02	45	47.1	t	1.1	97.9
		ePP			59.4			
		ePcP		47	38.2			
	D	eP		45	53.1			
		ePP		46	05.0			
		ePcP		47	38.8			
		eS		52	25.5			
	S	eP		45	55.0			
	T	iP	06	41	47.4			
	D	iP			56.6			
	S	iP			59.8			
	K	iP		42	00.4			
	T	eP	13	00	05.2	t	0.5	3.7
	D	eP			06.2			
	T	eP	15	38	59.3			
	D	iP		39	07.3			
	S	eP			12.0			
	K	eP			13.9			
	T	iP	21	19	47.8			
	D	iP			58.5			
	K	eP		20	00.8			
	S	eP			00.9			
	T	eP	23	04	05.7			
	D	eP			14.6			
JUN. 21	D	eP	04	28	45.7	t		
	D	eP	05	10	43.5	t?		
	D	eP	05	29	34.5	t		

Date	Station	Phase	Time(G.M.T.)			t	T	Am
JUN. 21	S	eP	06	42	20.3	t		
	D	eP			23.3			
		eX		45	42.7			
	T	eP		42	26.4			
	D	eP	07	53	06.4	t		
		eX		56	31.0			
	T	eP		53	13.0		1.0	18.0
	T	iP	08	30	58.3			
	D	iP		31	08.4			
	S	iP			11.6			
	K	eP			12.1			
	D	eP	15	20	10.5	t		
		epP		21	25.7			
		eScP		24	26.6			
		eS		26	35.0			
		eScS		29	06.4			
	T	eP		20	14.0		1.1	31.8
	D	eP	16	04	20.1	t		
	T	eP			27.0		0.5	3.3
	D	eP	16	46	03.5	t		
	T	eP			06.0		1.2	92.2
JUN. 22	T	eP	02	38	07.5	t	1.4	98.2
	D	eP			17.3			
		eX			33.2			
		eS		41	48.0			
	S	eP		38	19.5			
	T	iP	10	51	47.8	t	1.0	217.0
	D	eP			55.0			
		eX1		52	16.4			
		eX2			25.7			
		ePcP		54	40.0			
		eScP		58	21.2			
		ePcS			28.6			
		eScS	11	02	20.1			
	S	iP	10	51	56.5			
	T	eP	16	04	41.6	t	0.5	4.0
	D	eP			48.0			
	S	eP	18	44	05.8	t		
	T	eP			10.2		1.1	44.3
	D	eP			10.5			
		eS		47	31.6			
	D	eP	21	23	30.7			
	T	eP			31.5			
	T	eP	23	12	41.8			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
JUN. 23	K	eP	03	14	44.4			
	S	eP			53.9			
	T	eP			57.6			
	D	eP			58.6			
	T	eP	04	28	58.3			
	D	eP		29	00.4			
	T	iP	05	57	34.3			
	D	iP			44.7			
	S	iP			47.5			
	K	eP			47.6			
	T	iP	17	56	46.1			
	K	eP			51.1			
	D	eP			56.4			
	S	eP			57.2			
JUN. 24	T	eP	01	21	03.2			
	D	iP			13.7			
	S	eP			16.0			
	K	iP			17.1			
	K	iP	01	22	26.0			
	S	eP			28.7			
	D	eP			29.5			
	T	eP			35.5			
	S	eP	03	36	56.7	t		
	T	eP		37	01.2		1.5	63.8
	D	eP			01.6	LZ	20.0	2.1U
		ePP?			36.5			
		ePcP		38	54.6			
		eScP		42	34.2			
		eS		43	14.8			
		eScS		46	52.0			
	S	eP	11	03	45.2	t		
	D	eP			48.7	LZ	20.0	2.9U
		ePcP		07	15.2	LE	20.0	2.0U
	T	eP		03	52.4		1.0	17.0
	D	iP	11	25	40.7			
	S	iP			42.4			
	T	iP			43.2			
	K	iP			48.4			
	K	iP	15	08	45.6			
	S	iP			56.0			
	T	eP			57.4			
	D	eP		09	00.9			
	T	eP	17	01	57.2			
	D	eP		02	07.3			
	T	eP	19	20	00.8			
	D	eP			09.0			

Date	Station	Phase	Time (G. M. T.)	t	T	Am
JUN. 25	D	eP	00 15 30.0	t LZ	20.0	2.3U
	T	eP	40.0			
	T	eP	04 01 34.4			
	D	eP	41.8			
	D	eP	07 33 49.7	t		
	D	eP	08 28 44.0	t		
	T	eP	18 26 34.8			
	D	eP	44.3			
	K	iP	20 51 32.7			
	T	iP	41.0			
	S	eP	42.4			
	D	eP	45.5			
	K	iP	21 18 14.8			
	T	iP	23.0			
	S	eP	24.3			
	D	eP	28.0			
JUN. 26	K	eP	01 18 45.6			
	S	eP	48.8			
	D	iP	53.0			
		eS	19 29.8			
	T	iP	18 55.1			
	T	iP	03 31 53.8			
	S	iP	55.7			
	K	iP	56.0			
	D	iP	57.3			
	T	iP	10 03 28.8			
	D	eP	34.0			
	K	cP	35.4			
	S	eP	35.7			
	T	eP	12 17 50.5			
	T	eP	12 55 38.3			
	D	eP	41.3			
	T	eP	14 24 57.7			
	D	eP	25 05.3			
	S	eP	10.9			
	K	eP	11.4			
	T	eP	15 41 17.7			
	D	eP	26.5			
	D	eP	15 43 04.7	t?		
	D	eP	15 48 41.8			
	T	eP	43.7			
	S	eP	44.3			

Date	Station	Phase	Time (G.M.T.)			t	T	Am
JUN. 26	D	eP	22	24	47.5			
	T	eP			52.0			
	D	eP	22	54	39.9			
	T	eP			41.5			
	T	iP	23	36	33.1			
	D	iP			34.9			
JUN. 27	T	eP	02	17	21.4			
	D	eP			28.9			
	S	eP			34.3			
	K	eP			35.8			
	T	eP	03	19	54.2			
	D	eP		20	02.6			
	S	eP			06.1			
	D	eP	04	51	40.5	t?		
	T	eP	07	51	03.8	t	0.5	2.2
	D	eP			07.3			
	D	eP	08	01	17.6	t		
	T	eP			21.0		0.5	4.1
	K	iP	11	48	21.2			
	S	iP			26.7			
	D	iP			32.0			
	T	iP			32.6			
	S	eP	12	55	09.6			
	D	eP			14.1			
	T	eP			16.2			
	D	iP	14	42	56.5			
	S	iP			56.7			
	T	iP			57.3			
	K	iP		43	01.3			
	T	eP	15	41	16.5	t	1.0	2.1
	D	eP			18.0			
	S	eP	21	11	07.8			
	K	eP			10.0			
	D	eP			10.4			
	T	eP			14.2			
	T	iP	21	29	49.7			
	D	iP			59.9			
	K	eP		30	02.5			
	S	eP			02.9			
	D	eP	22	42	50.0	t		

Date	Station	Phase	Time(G.M.T.)			t	T	Am
JUN. 28	T	iP	02	14	31.4			
	D	iP			39.2			
	K	eP			41.2			
	S	eP			43.1			
	S	eP	08	28	30.5	t		
	D	eP			32.2			
	T	eP			37.1		0.5	13.3
	S	eP	14	28	20.0	t		
	D	eP			23.4			
	T	eP			26.6		1.2	36.4
		ePcP		29	43.0			
	K	iP	16	00	32.5			
	S	iP			35.4			
	D	iP			39.7			
	T	iP			40.4			
	D	eP	17	45	42.6	t		
	T	eP			56.2			
	T	eP	17	55	17.0			
	D	eP			25.5			
	S	eP	21	35	27.7	t		
	T	eP			29.2		1.0	19.0
	D	eP			30.3			
	S	iP	22	51	06.6			
	T	iP			07.2			
	K	iP			07.9			
	D	iP			08.0			
JUN. 29	S	eP	02	25	56.0			
	D	eP		26	01.1			
	T	eP			03.4			
	S	eP	02	52	21.6			
	D	eP			27.6			
	T	eP			29.9			
	S	iP	08	07	04.2	t		
	T	eP			04.6		1.2	85.7
	D	eP			06.8			
	S	eP	10	45	56.0	t		
	T	eP			58.5		1.1	46.6
	D	eP			58.8	LZ	20.0	3.4U
						LE	20.0	1.8U
	D	eP	11	28	14.7			
	S	iP			16.4			
	T	eP			18.6			
	T	eP	17	27	04.0			
	D ~~DR~~							
						LZ	20.0	4.8U

Date	Station	Phase	Time (G. M. T.)	t	T	Am
JUN. 30	T	eP	09 42 25.6		0.5	5.2
	D	eP	34.7			
		eS	44 55.1			
	T	eP	11 02 33.9			
	D	eP	41.2			
	T	eP	19 21 46.9			
	D	eP	51.9			

Tsukuba, Jun. '69

Date / S − P	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Total
0 -- 0.9																															
1 -- 1.9																															
2 -- 2.9																															
3 — 3.9																															
4 — 4.9								1																							1
5 — 5.9	*			2			1	1			1	1		1	1		2	2	2	2	2			1	1	1	2				23
6 — 6.9	1		1	1	2					4	1			1	2	1		2	2		1	2		1	1	1		1	2		27
7 — 7.9	3	1	3	1		1	1	3	2	3	1	1	1	2	1	1	5	2	3	2	2	1		2	2	1	2	1	3	2	53
8 — 8.9	1	1	5	2	3	1	2		1	2	2	3	1	1		2	5	1	3	4	2	4	2	6	2		2	5		6	69
9 — 9.9	2	6		2	1	1	2	2	2	3	2	2	4		5	3	4	5	2	1	1	6	4	4			1	3		5	73
10 — 10.9	3	1	1	1	4*		3		3	1		3	2	1	1	2	3	4	1	1		2	2		2	3	1	1	4*	5	55
11 — 11.9	1		1		2	2	3*	1			2	2	1	2			1	4	1*	1	3	5		3	2	1	2	4	2	1	47
12 — 12.9		1	2		2	3	2	1	2	1	2			4	1					1	1		1		1		1		1		27
13 — 13.9	1		3		1		1	1					2	2		1		1			2	2	2	2			2	1	4	2	30
14 — 14.9	1			*					2	2		1*		1	1					1	2	1	1	1		1				1	16
15 — 15.9		2*		1	1			2	2		5	1	1	1	1	1	1	1	2	2		1			2	2	2*	3	1		35
16 — 16.9	2		1		1		2	1	2			1	1		2		1	2		1	1	1			1			1		2	23
17 — 17.9	1	1	2		1	**	3	1			2	1	1		1	2				1	1							1	1		20
18 — 18.9		1	2	1	2	1*					1	1	1*	1		2	1	1	1	1	1		2		1		1	1	2	1	26
19 — 19.9	3	1	*	1				1			1	1		*			1	1	1	3							1	1	1	1	18
20 — 20.9	1		1	1							1					1		1	1		2		2	1	1		*	1	1		15
21 — 21.9	1	1			1			1		1			2							2		1		1	2					1	14
22 — 22.9	2*	1	1						1	**			1			1	*	1		1		1						1			11
23 — 23.9													1	1				1					1	1	1				1		7
24 — 24.9													1																	1	2
25 — 25.9				1									1	2									1		1				1	1	8
26 — 26.9												1	1						*	1					1	1		1			6
27 — 27.9																			1						1	1					3
28 — 28.9																															
29 — 29.9																	1														1
above 30 sec	1	1		3	2		2	3			4	6	3	3	2	2	2		3	4	1	3	4	4	10	2	2	5	1	2	76
?	2	3				1			2									1	1	2	1	3	3	3	1		1	3	2		29
Total	26	21	23	17	23	10	22	19	19	18	25	25	25	23	18	19	27	30	24	31	23	33	25	30	33	14	20	34	27	31	715
no observation						07h ~ 17h Noisy		09h ~ 17h																		05h ~ 12h Noisy					
Remarks	*: indicates a larger earthquake which is included in the main table the Bulletin.																														

Dodaira, Jun. '69

Date / S−P	1	2	3	4	5	6	7	8	9	10	11	12	13	14
0 − 0.9														
1 − 1.9														
2 − 2.9		1												
3 − 3.9												1		
4 − 4.9	2			1										
5 − 5.9								1						
6 − 6.9									*	1		1		
7 − 7.9	1				1	1				2				
8 − 8.9		1		1	1			1						1
9 − 9.9				1					2	1	1			
10 − 10.9	1	1					1		2		1			
11 − 11.9	1	1		1					2	1	1	1		
12 − 12.9	1	1	3	2*	1				1	4	1			2*
13 − 13.9	6*	3	1			2	1*	2	2	4*	3		4	2
14 − 14.9		3	1			2					3			1
15 − 15.9	2	1	2						1				3	2
16 − 16.9	1	1	2	1	2		1	1	1	1		1	1	
17 − 17.9	3	1	2		**			2		1	1	1		1
18 − 18.9		1	*		1		1		2			3		
19 − 19.9	1		1			1	*		1				2	
20 − 20.9			1				2				1		1	
21 − 21.9			1				1							
22 − 22.9					1				1			*		1
23 − 23.9			1							1			2	
24 − 24.9														
25 − 25.9			*			3***	1	1			1			
26 − 26.9		*				*							1*	
27 − 27.9		1		1									1	
28 − 28.9								1						
29 − 29.9														
above 30 sec		3					1	2			2	4	1	4
?													1	
Total	19	19	15	8	7	9	9	11	15	16	15	12	17	14
no observation	06h17m ~ 10h05m							09h ~ 17h						

Date / S−P	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Total
0 − 0.9																	
1 − 1.9																	
2 − 2.9																	1
3 − 3.9																	1
4 − 4.9																	3
5 − 5.9					1			1									3
6 − 6.9										1		*		1			4
7 − 7.9	1		1	1			1			1			1	1	1	2	15
8 − 8.9	1	*	2	1	2	2	2					1	1				17
9 − 9.9		2						2			1						10
10 − 10.9				3				1		1		1**	1	2	1		16
11 − 11.9			1	1	1	3		1	1				1	1*	3		21
12 − 12.9	2	1	1	1	1			2	1	2		2	1	1	3	1	35
13 − 13.9			3	1*	3	4	1	2	2	1	2	2			1*	2	54
14 − 14.9			4					2		1	1	1		2	1		22
15 − 15.9					1										1	1	14
16 − 16.9					1		1	2		2	2		*	2	1	2	26
17 − 17.9		2	1	1		2		2			1		1	3	2	1	28
18 − 18.9	1	2	1	1		1	1		2		2				1	3	23
19 − 19.9	1		1				1	2			1						12
20 − 20.9				3			1		1					1	2		13
21 − 21.9										1			*		*	1	4
22 − 22.9						1					1		1	1			7
23 − 23.9		1					2*	1								1	9
24 − 24.9						1			1						1		3
25 − 25.9					*				1	1				1			8
26 − 26.9							*									1	2
27 − 27.9										2							6
28 − 28.9							1										2
29 − 29.9	1			1							1				1		4
above 30 sec	1		1		2	2	1	4		2	3	3			1	1	38
?				1	2	1	2	2	1	1	3	1	1	1	1	1	19
Total	8	8	16	15	14	17	14	24	10	16	18	11	8	17	21	17	420
no observation																	

Remarks: * : indicates a larger earthquake which is included in the main table the Bulletin.

Preliminary Bulletin

of the Dodaira Micro-earthquake Observatory

and its Substation

June, 1969

Dodaira Micro-earthquake Observatory

Earthquake Research Institute, the University of Tokyo

1969

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Preliminary Bulletin of the Dodaira Micro-earthquake Observatory and its Substation

Observation stations

		N	E	h
Dodaira	(D or DDR)	35°59'54".0	139°11'36".2	800m
Tsukuba	(T or TSK)	36°12'39".0	140° 6'35".0	280m
Kiyosumi	(K or KYS)	35°11'51".6	140° 8'53".6	230m
Shiroyama	(S or SRY) (temporary)	35°36'30".0	139°16'27".0	254m

Expressions: Am: Amplitude in millimicron (half of peak to trough*) of P motion maximum within few cycles after the onset recorded by a short period vertical seismograph.

*In 1967 double amplitude (peak to trough) was used as Am.

T : Period in sec of the measured P maximum

t : Teleseism

All stations are radio-telemetered to Tokyo giving records on a multi-channel ink-recording oscillograph. The paper speed of the recorder is 1 mm per sec. For stronger events high speed recorder (10 mm/sec) is also triggered. The system is also recorded in parallel on multi channel magnetic tape through a trigger system using an endless tape loop. Direct filter sum of short period seismometers at Dodaira and/or on line short period filter outputs of Tsukuba are also used for the

detection of weak teleseismic signals. For teleseismic events records of long period and medium period seismographs are occasionally used, applying off line frequency filter, if necessary.

The Bulletin includes the preliminary readings sent to USCGS for teleseisms and larger near shocks with total durations (F-P) of short period vertical seismograph at Tsukuba (TSK) with magnification about 140.000 at 1 c/s or sensitivity about 300×10^{-3} mm/microkine at 10 c/s being longer than 100 seconds which correspond approximately shocks with $M\geq3.5$. For the minor near earthquakes with $F\text{-}P<100$ sec or $M<3.5$, frequency of S-P times at each station is added at the end of the Bulletin, which may easily give a general idea of local seismicity around the station.

Date	Station	Phase	Time(G.M.T.)	t	T	Am
JUL.1	T	eP	00 22 46.3			
	D	eP	54.8			
	T	eX	04 12 57.1	t		
	T	iP	09 13 12.3			
	D	iP	19.2			
	S	iP	20.9			
	K	eP	21.0			
	K	eP	17 41 33.3			
	S	eP	42.0			
	D	eP	45.4			
	T	eP	45.7			
	D	eP	18 16 37.0			
	T	eP	41.3			
	D	eP	18 19 13.0			
	T	eP	13.6			
	T	eP	18 33 18.9	t	1.1	31.8
	S	eP	19.9			
	D	eP	21.5			
	T	eP	20 44 29.7			
	D	eP	37.8			
	S	eP	41.9			
	D	eP	20 56 19.5			
	T	eP	21.1			
JUL.2	T	eP	03 14 03.7			
	D	eP	07 13 20.0			
	T	eP	21.5			
	T	eP	08 29 19.1	t	0.5	5.9
	D	eP	20.1			
	D	eP	09 11 15.2			
	T	eP	16.3			
	D	eP	10 07 09.1			
	K	eP	10 35 02.1			
	S	eP	02.8			
	D	eP	05.4			
	T	eP	09.6			
	T	iP	12 15 52.4			
	D	eP	16 01.0			
	K	eP	05.4			
	S	eP	06.0			
	T	eP	17 39 05.0	t	1.2	20.8
	D	eP	07.3			
		eX	17.5			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
JUL.2	T	eP	19	52	02.1	t?		
JUL.3	T	eP	02	39	18.5			
	D	eP			22.6			
	T	eP	06	40	47.8	t	1.0	16.0
	D	eP			53.3			
	D	eP	14	14	02.5	t		
	T	eP			04.5		0.5	5.6
	T	eP	15	32	01.2			
	D	eP			07.9			
	K	eP	16	22	11.8			
	T	eP			15.4			
	S	eP			23.8			
	D	eP			26.3			
	T	iP	17	59	57.3			
	D	eP	18	00	08.0			
	K	eP			10.4			
	S	eP			10.7			
	T	eP	18	07	59.8	t	1.2	39.0
	D	eP		08	06.0			
	T	eP	20	26	04.4			
	D	eP			11.2			
	T	eP	23	53	44.6			
	D	eP			52.3			
	T	eP	23	53	54.6	t?	1.0	35.0
JUL.4	D	eP	02	22	51.0			
	T	eP			53.4			
	D	eP	02	55	20.3	t	Explosion ?	
	S	eP			21.6			
	T	iP			22.8		0.5	30.7
	K	eP			29.0			
	T	eP	04	56	48.7			
	D	eP			58.1			
	T	eP	06	59	32.4	t	1.1	25.0
	S	eP			34.0			
	D	eP			36.6			
	K	eP	08	52	58.1			
	T	eP		53	06.0			
	S	eP			10.0			
	D	eP			13.6			
	D	eP	14	16	31.8			
	S	iP			33.9			
	T	eP			43.6			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
JUL.4	D	eP	15	23	01.7	t?		
	T	iP	20	10	11.3			
	D	eP			18.6			
	S	eP			22.1			
	K	eP			24.1			
	T	iP	23	18	07.8			
	D	iP			13.0			
	S	eP			15.4			
JUL.5	S	eP	01	43	38.6	t		
	T	eP			39.6		1.0	61.0
	D	eP			41.0			
	D	eP	01	51	35.1	t		
		eX		53	41.9			
	T	eP		51	41.0		0.5	5.6
	D	eP	03	47	36.3	t?		
	D	eP	07	47	56.5	t?		
	T	eP	07	48	53.0			
	K	eP	11	16	49.3	t		
	S	eP			54.3			
	T	eP			59.1		1.0	101.0
	D	eP		17	04.0			
		eS		20	33.1			
	T	eP	15	27	43.9	t	0.5	17.4
	D	eP			50.5			
	T	eP	15	37	59.7			
JUL.6	S	iP	08	33	45.3			
	K	iP			47.3			
	D	iP			47.5			
	T	iP			51.7			
	D	eP	11	01	02.5	t		
	D	eP	11	39	5.8	t		
	T	eP	14	02	02.3	t?	0.5	2.2
	D	eP			03.3			
	T	eP	14	12	10.2	t	0.5	5.2
	D	eP			11.3			
	T	eP	14	42	11.9	t	0.5	4.4
	D	eP			15.2			
JUL.7	T	eP	03	44	47.7	t	0.5	6.0
	S	eP			49.2			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
JUL.7	K	eP	04	47	45.6	t		
	S	iP			51.6			
	T	eP			53.2		1.2	240.3
		eS		51	42.5			
	T	eP	06	00	39.9	t	1.0	30.0
	S	eP	09	31	59.8			
	K	eP		32	00.3			
	T	eP			06.3			
	T	eP	12	29	35.6			
	T	eP	14	08	50.0			
	D	eP			59.2			
	T	eP	16	11	30.3			
	T	eP	21	44	47.4			
JUL.8	T	iP	02	27	57.2			
	S	iP		28	02.3			
	K	iP			05.2			
	T	iP	02	58	59.4			
	D	iP			06.7			
	K	iP			07.6			
	S	iP			07.8			
	T	iP	03	22	50.9			
	D	iP			57.6			
	K	eP			59.6			
	S	iP		23	00.0			
	S	eP	04	13	34.0	t		
		ePcP		16	06.8			
	D	eP		13	27.7			
		ePcP		16	08.7			
	T	eP		13	41.0		1.0	54.0
		ePcP		16	09.1			
	K	iP	05	30	20.9			
	S	iP			27.2			
	T	eP			31.6			
	D	eP			31.9			
	T	eP	07	14	20.2			
	D	eP			30.0			
	T	eP	10	18	34.8			
	T	eP	10	28	51.6			
	D	eP			59.1			
	S	eP		29	04.4			
	K	eP			06.2			
	D	eP	12	13	58.6			
	T	eP		14	02.6			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
JUL.8	D	eP	15	10	13.9			
	T	eP			18.8			
	T	eP	17	10	37.6			
	D	eP			39.6			
	S	eP			43.1			
	K	eP			49.9			
	S	eP	22	53	59.2	t		
	D	eP		54	03.2			
		eS?		57	03.6			
	T	eP		54	04.3		0.5	8.5
JUL.9	D	eP	00	53	33.8			
	T	eP			35.0		0.5	6.1
	S	eP	02	45	12.7			
	D	eP			15.7			
	T	eP			35.0			
	D	eP	02	49	00.4			
	T	eP			02.7			
	T	eP	02	53	52.8			
	S	eP	05	22	37.3	t?		
	D	eP			41.7			
	T	eP			42.6		0.5	5.6
	T	eP	06	10	18.0	t?	0.5	3.1
	T	eP	06	20	56.8			
	D	eP		21	02.6			
	T	eP	08	14	56.6			
	D	eP		15	06.7			
	S	eP	10	22	51.7			
	D	eP			58.0			
	T	eP		23	03.2			
	T	eP	14	32	27.3			
	D	eP			38.7			
	S	eP			40.7			
	S	eP	15	50	34.2	t?	0.5	5.9
	D	eP			35.0			
	T	eP			40.6			
	K	iP	17	05	50.7			
	S	iP			58.9			
	T	eP		06	03.7			
	D	eP			03.9			
	T	eP	21	31	44.3			
	D	eP			45.0			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
JUL.9	S	eP	22	30	47.3			
	T	eP			50.7			
	D	eP			53.0			
	S	eP	23	00	36.0	t?		
	D	eP			38.7			
	T	eP			44.0		0.5	7.9
	T	eP	23	37	10.7			
	D	eP			22.0			
	S	eP			29.4			
JUL.10	S	eP	04	20	29.5	t		
	D	eP			31.7			
	T	eP			35.6		0.5	5.6
	T	ePKP?	09	02	18.1	t		
		eX			25.8			
	S	ePKP?			18.9			
	D	ePKP?			21.0			
		eX			39.0			
	T	eP	11	48	57.3			
	D	eP		49	05.4			
	S	eP			14.3			
	T	eP	13	27	01.4			
	S	eP	15	25	37.7	t	0.5	28.1
	D	eP			42.7			
	T	eP			42.8			
	T	eP	19	17	18.7	t		
	D	eP			25.3			
	T	eP	20	06	12.2			
	D	eP			20.0			
	S	eP			25.3			
	S	eP	21	28	14.7	t?		
	D	eP			16.9			
	T	eP			17.3			
JUL.11	K	eP	07	10	22.0			
	S	eP			32.5			
	T	eP			36.4			
	T	iP	07	44	56.8			
	D	iP		45	07.4			
	T	iP	08	57	33.8			
	D	eP			40.2			
	S	eP			43.0			
	K	eP			48.1			
	T	iP	10	38	53.1			
	D	iP		39	01.8			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
J L.11	T	iP	11	50	37.1			
	D	iP			45.9			
	S	iP			49.7			
	T	eP	16	52	02.3			
	D	eP			11.0			
	T	eP	17	03	52.8	t?	0.5	3.0
	D	eP			53.4			
	S	iP	21	58	36.7			
	D	iP			40.0			
	K	iP			40.8			
	T	iP			42.6			
JUL.12	S	eP	05	59	47.0	t		
	T	eP			50.7		0.5	6.3
	D	eP			51.0			
	S	eP	06	03	05.3	t		
	T	eP			06.9			
	D	eP			07.5			
	D	eP	06	08	56.0	t		
	T	eP		09	00.3			
	T	eP	13	03	55.6			
	D	eP		04	04.3			
	S	eP			10.8			
	T	eP	13	27	18.6	t	0.5	2.4
	D	eP			19.6			
	D	eP	15	14	13.5			
	T	eP			14.0			
	T	eP	18	12	33.0	t?		
	T	eP	19	17	37.1			
	D	eP			46.2			
	K	eP			50.0			
	S	eP			50.5			
	T	eP	19	28	08.6			
	D	eP			18.3			
	T	eP	19	52	18.3			
	D	eP			27.0			
	K	eP	20	23	12.0			
	S	eP			21.2			
	D	eP			27.4			
	T	eP			28.7			
	K	iP	23	20	15.2			
	T	eP			25.8			
	S	eP			26.4			
	D	eP			31.5			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
JUL.13	T	eP	00	19	07.3	t	1.0	28.0
	D	eP			13.1			
	S	eP			15.2			
		eP						
	T	eP	03	05	29.6			
	D	eP			39.3			
	K	eP			42.0			
	S	eP			42.5			
	T	eP	05	43	35.7			
	D	eP			43.7			
	T	eP	06	04	33.7	t	1.2	36.3
	S	eP			35.7			
	D	eP			36.1			
	T	eP	06	35	42.2			
	D	eP			53.5			
	S	eP	14	07	35.1	t		
	T	eP			35.7		0.5	4.1
	D	eP			46.3			
JUL.14	T	eP	00	13	48.3			
	D	eP			58.0			
	T	eP	05	18	10.8			
	D	eP			12.7			
	T	eP	06	00	18.8			
	S	eP			29.2			
	D	iP			30.0			
	K	iP			32.2			
	T	eP	08	45	03.4			
	D	eP			13.7			
	S	eP			17.0			
	D	eP	09	31	53.5	t	0.5	7.0
	T	eP			59.0			
	T	eP	12	29	26.0			
	D	eP			29.7			
	S	eP			35.3			
	T	eP	14	18	14.3			
	D	eP			21.3			
	T	eP	15	57	00.6			
	T	eP	16	05	38.3			
	T	eP	20	02	45.0			
JUL.15	T	eP	01	32	11.7			
	D	eP			20.0			
	T	eP	01	50	10.4			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
JUL.15	D	iP	02	36	50.8			
	T	iP			54.2			
	S	eP			58.2			
	K	eP		37	10.2			
	T	eP	03	04	00.4			
	D	eP			10.2			
	S	eP			13.3			
	T	eP	06	10	06.2			
	D	eP			14.8			
	T	eP	07	20	35.0			
	D	eP			44.7			
	S	eP			48.0			
	K	eP	08	12	04.0			
	T	eP			16.8			
	D	eP			17.0			
	T	eP	09	08	56.8	t?	1.1	9.2
	D	eP	13	44	57.5	t		
	T	eP		45	00.6		0.5	2.2
	K	iP	20	30	23.8			
	S	iP			32.7			
	D	iP			37.2			
	T	eP			38.3			
	T	iP	20	51	22.8			
	K	iP			31.3			
	D	iP			33.3			
	S	iP			34.5			
	T	iP	21	27	48.4			
	K	eP			56.5			
	D	iP			58.8			
	S	iP			59.0			
	T	eP	21	51	01.8			
	D	eP			11.8			
	T	iP	23	43	34.6			
	D	iP			38.0			
	S	eP			41.8			
	K	eP			45.0			
JUL.16	K	iP	03	25	47.0			
	T	iP			57.7			
	D	iP			58.3			
	D	iP	04	39	42.2			
	T	iP			44.6			
	K	iP			47.1			
	T	eP	04	54	07.0	t?	0.5	5.6
	D	eP			13.8			

Date	Station	Phase	Time(G.M.T.)	t	T	Am
JUL.16	K	iP	06 10 48.6			
	S	iP	56.3			
	T	iP	11 01.1			
	D	iP	01.9			
	T	eP	08 21 29.4	t	1.2	955.0
		eS	25 15.7			
	D	eP	21 36.0			
	S	eP	38.8			
	K	eP	40.5			
	T	eP	10 31 38.3	t	1.2	40.3
	D	eP	45.4			
	S	eP	49.5			
	S	eP	12 47 10.6	t		
	D	eP	14.8			
	T	eP	23.0		1.2	13.0
	K	eP	12 59 10.0	t		
	S	eP	13.0			
	D	eP	18.0			
	T	eP	19.4		1.3	23.3
		eS?	13 03 12.4			
	T	eP	14 01 05.4			
	D	eP	14.9			
	K	eP	17.9			
	T	eP	14 35 41.1			
	T	eP	14 42 25.4			
	T	eP	15 07 02.8	t	1.2	50.7
	D	eP	07.6			
	S	eP	08.6			
	T	iP	17 51 02.6			
	D	eP	09.6			
	K	eP	13.2			
	S	eP	15.2			
JUL.17	T	eP	06 18 24.5			
	D	eP	33.0			
	K	eP	06 49 36.8			
	D	eP	43.6			
	T	eP	46.8			
	T	eP	08 43 02.8			
	T	eP	16 23 38.1			
	T	eP	17 30 58.2			
	T	eP	17 36 03.6			

Date	Station	Phase	Time (G.M.T.)	t	T	Am
JUL.17	T	eP	17 41 20.8	t	1.1	38.1
	D	eP	29.2			
	S	eP	32.7			
	K	eP	20 33 22.5			
	D	eP	30.4			
	T	eP	32.8			
	T	eP	21 00 12.2	t?	0.5	4.8
	S	eP	22 35 15.1	t		
	D	eP	16.0			
	T	eP	17.6		1.1	21.0
JUL.18	D	eP	01 43 46.3			
	T	eP	49.4			
	D	eP	04 16 22.6	t?		
	T	eP	25.6		1.0	11.0
	D	eP	04 21 47.6	t		
	T	eP	48.6		1.0	13.0
	S	eP	05 28 33.2	t		
	T	eP	37.5		1.2	283.0
		eS?	31 19.5			
	K	eP	28 43.0			
	T	eP	09 38 00.7	t?	0.5	3.9
	T	eP	09 55 06.4			
	D	eP	16.7			
	T	eP	13 37 41.0	t	1.1	25.0
	T	ePKP?	14 33 51.0	t	1.2	18.9
		eX	34 05.4			
	T	eP	19 33 06.7			
	T	eP	19 40 59.0	t	1.1	14.6
	T	eP	21 00 06.5	t	0.5	2.6
	T	eP	23 37 07.0	t	1.6	32.5
JUL.19	T	iP	01 35 46.0			
	K	iP	47.3			
	S	iP	47.4			
	D	iP	49.3			
	D	eP	01 41 30.7	t		
	T	eP	34.0		1.0	6.0
	D	eP	01 55 54.8	t		
	T	eP	55.0		1.1	15.9
	S	eP	57.0			

Date	Station	Phase	Time (G.M.T.)			t	T	Am
JUL.19	T	ePKP	05	14	28.0	t	1.3	132.2
		eX1			45.3			
	S	ePKP			31.2			
		eX1			48.7			
	D	ePKP			31.9			
		eX1			49.3			
		eX2			58.5			
	S	eP	05	21	46.5	t		
	T	eP			46.8		1.0	32.0
	D	eP			49.0			
	K	eP	05	31	24.2			
	S	eP			25.0			
	D	eP			32.0			
	T	eP			35.0			
	T	eP	09	16	15.5			
	D	eP			25.3			
	K	eP			27.7			
	S	eP			28.9			
	D	eP	09	25	48.0			
	T	eP			48.1			
	S	eP			51.2			
	K	eP			51.3			
	D	eP	11	00	21.5	t		
	S	eP			24.7			
	T	eP			28.3		0.5	2.2
	D	eP	11	41	14.0			
	T	eP			19.0			
	S	eP			23.0			
	T	eP	11	44	27.2			
	D	eP			35.7			
	T	eP	12	29	59.3			
	D	eP		30	00.2			
	T	eP	14	10	25.8			
	D	eP			36.0			
	K	eP	16	30	59.0			
	S	eP		31	02.0			
	D	eP			05.8			
	T	eP			08.0			
	S	eP	18	08	05.3	t		
	T	eP			05.5		1.3	24.8
	T	eP	18	32	01.0			
	D	eP			10.0			
	S	eP			14.3			
	K	eP			18.0			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
JUL.19	K	iP	22	15	27.0			
	T	iP			29.2			
	S	iP			30.2			
	D	iP			32.3			
JUL.20	T	eP	01	07	23.4			
	D	eP			35.0			
	S	eP			36.3			
	T	eP	02	12	30.0			
	D	eP	12	33	36.0	t		
	S	eP			37.0			
	T	eP			40.3		0.5	2.0
	T	eP	16	08	27.0			
	T	eP	16	42	37.0			
	T	eP	17	33	07.0			
	T	eP	20	00	46.5	t	1.3	39.1
	T	eP	20	14	19.5	t	1.4	154.5
	T	eP	20	47	08.0	t	1.0	11.0
	T	eP	22	32	54.5			
	T	eP	23	58	23.5	t	1.1	20.0
JUL.21	D	eP	04	00	43.4			
	K	eP			43.7			
	T	eP			47.0			
	T	eP	04	42	37.0			
	D	eP			47.0			
	K	eP	11	54	44.7			
	T	eP			47.7			
	S	eP			54.7			
	D	eP			58.1			
	T	eP	13	51	05.2			
	T	eP	13	52	36.3	t?		
	T	eP	13	54	50.6	t?		
	T	eP	19	09	56.5			
	T	eP	19	10	49.0			
	T	eP	19	45	13.3			
	T	eP	20	16	59.2			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
JUL.21	T	eP	22	13	36.8	t	1.2	103.2
		epP			49.0			
		ePcP		16	01.1			
		eS		18	52.9			
	T	eP	22	30	07.2			
JUL.22	T	eP	01	07	42.3			
	D	eP			49.6			
	K	iP	02	45	44.3			
	D	iP			55.7			
	T	iP			55.8			
	T	eP	05	55	11.8			
	D	eP			18.7			
	T	eP	06	10	06.4			
	D	eP			15.3			
	S	eP	07	45	50.4			
	D	eP			53.3			
	T	eP		46	05.0			
	T	eP	08	48	36.6			
	D	eP			45.3			
	T	eP	10	14	11.6			
	T	eP	11	02	40.8	t	1.0	20.0
	T	eP	12	53	50.7			
	D	eP		54	00.6			
	S	eP			04.2			
	D	eP	13	59	47.0	t		
	T	eP			48.1		1.2	23.4
	T	eP	14	49	46.5	t	0.5	2.2
	S	eP	17	23	21.0	t		
	T	eP			22.5		1.8	97.2
	D	eP			24.3			
	T	iP	19	06	08.7			
	D	iP			18.0			
	D	eP	19	56	14.2			
	T	eP			19.0			
JUL.23	S	eP	01	17	11.6			
	K	iP			21.0			
	T	eP			24.5			
	S	eP	02	55	22.4	Explosion		
	T	eP			23.2		0.5	61.4
	K	eP			30.0			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
JUL.23	T	eP	07	17	03.9			
	S	eP			09.0			
	D	eP			16.6			
	D	eP	08	12	10.8	t		
	T	iP	08	28	24.6			
	K	iP			27.5			
	D	eP			34.3			
	K	eP	08	30	20.0			
	T	eP			20.7			
	T	iP	08	58	11.7			
	K	iP			14.7			
	D	eP			20.8			
	T	eP	10	12	48.4			
	T	iP	11	26	05.0			
	K	iP			07.8			
	D	eP			14.3			
	D	eP	12	54	31.3			
	T	eP			35.0			
	T	iP	13	15	00.3			
	D	iP			10.8			
	K	eP			13.7			
	T	iP	14	29	02.2			
	K	iP			05.3			
	D	eP			11.7			
	K	eP	16	28	57.3			
	D	eP		29	02.0			
	T	eP			04.8			
	T	eP	20	12	52.5			
JUL.24	T	eP	00	26	58.3			
	D	eP		27	00.3			
	T	eP	01	29	02.0			
	D	eP			14.8			
	T	eP	03	18	47.0	t	0.5	5.6
	D	eP			48.5			
	T	eP	05	10	22.5	t	1.0	21.0
	D	eP			24.7			
	T	eP	12	18	23.7	t	1.0	10.0
	T	iP	14	58	22.1			
	D	eP			29.3			
	K	eP			36.9			

Date	Station	Phase	Time(G.M.T.)	t	T	Am
JUL.24	D	eP	15 18 23.0	t		
	T	eP	27.3		0.5	7.4
	S	eP	15 38 59.2			
	T	eP	39 12.3			
	D	eP	13.7			
	T	eP	16 23 08.0	t	1.2	85.7
	D	eP	16.3			
	T	iP	16 33 36.0			
	K	iP	38.4			
	D	eP	44.7			
JUL.25	K	eP	01 01 33.7			
	D	eP	42.3			
	T	eP	43.8			
	T	eP	06 25 04.0			
	T	eP	06 28 12.3	t	1.0	25.0
	T	eP	09 12 07.0	t	0.5	8.5
	T	eP	10 25 36.5	t	0.5	4.8
	S	eP	11 50 08.7	t		
	D	eP	13.0			
	T	eP	20.0			
	T	eP	13 02 00.8	t	1.0	51.5
	S	eP	09.0			
	D	eP	12.3			
		eX	03 18.3			
	S	eP	13 41 59.2	t	1.0	52.0
		ePcP	43 34.0			
	D	eP	41 02.3			
		ePcP	43 35.0			
	T	eP	41 05.3			
		ePcP	43 36.3			
	T	eP	16 10 28.3			
	D	eP	36.8			
	K	eP	20 31 41.3			
	S	eP	51.0			
	T	eP	55.0			
	D	eP	56.3			
	D	eP	21 03 43.0			
	S	eP	46.0			
	T	eP	48.2			
	D	eP	22 55 28.0	t		
		eX	33.3	LZ	20.0	14.0U
				LE	20.0	13.0U

Date	Station	Phase	Time(G.M.T.)			t	T	Am
JUL.25	S	eP			30.2			
	T	eP			36.7		1.4	54.5
	T	eP	23	04	06.4	t	0.5	17.0
	D	eP			12.8			
JUL.26	D	iP	00	22	40.8			
	S	iP			41.2			
	T	iP			45.7			
	K	iP			48.0			
	T	eP	05	19	59.9			
	K	eP		20	01.8			
	T	eP	05	58	30.0			
	S	iP	14	39	20.3			
	K	iP			24.4			
	T	iP			27.7			
	S	eP	14	55	02.8	t		
	T	eP			03.4		1.4	29.1
	D	eP			05.7			
	T	eP	15	11	38.5			
	T	eP	15	39	40.3	t	1.0	16.0
	D	eP			47.5			
	S	eP			48.3			
	D	eP	16	29	34.6	t		
	T	eP			35.7		0.5	3.7
	T	eP	17	37	41.6	t	0.5	5.5
JUL.27	T	eP	00	57	18.0			
	D	eP			32.8			
	S	iP	02	24	38.3	t		
	T	eP			39.2		1.4	87.1
	D	eP			42.8			
		eX		25	23.7			
	K	eP	09	30	42.8			
	T	eP			54.8			
	T	eP	09	45	32.5			
	T	eP	10	25	28.4			
	T	eP	11	03	37.0			
	T	eP	12	28	39.3			
	T	iP	16	43	48.3			
	S	eP			59.0			
	K	eP		44	01.0			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
JUL.27	T	eP	21	30	49.2	t		
	D	eP			53.0			
	S	eP			57.3			
	S	eP	22	31	00.2	t		
	D	eP			05.0			
	T	eP			06.8			
JUL.28	T	eP	06	38	29.3	t	1.2	25.7
		eX			38.7			
	D	eP			34.5			
		eX			45.0			
	K	eP	06	45	30.5			
	T	eP			34.8			
	S	eP			42.3			
	D	eP			44.3			
	D	eP	07	28	12.8			
	T	eP			18.0			
	T	iP	10	20	51.3			
	D	eP			57.0			
	K	eP		21	04.0			
	K	eP	11	40	43.5			
	D	eP			46.0			
	T	eP			50.0			
	D	eP	13	05	11.8	t		
	K	eP			14.8			
	T	eP			20.4		1.0	208.0
	K	eP	15	40	37.0			
	D	eP			50.3			
	T	eP			50.4			
	T	eP	18	22	22.5			
	D	eP			23.0			
JUL.29	T	eP	02	02	54.3	t	1.2	57.1
	D	eP			54.4			
	K	eP	03	23	20.0			
	T	eP			30.0			
	T	eP	06	33	55.5	t	1.6	77.5
	D	eP			57.0			
		eX1		34	29.6			
		eX2			51.0			
	T	eP	08	40	53.1			
	T	iP	13	15	03.0			
	S	iP			04.0			
	D	iP			06.1			
	D	eP	16	48	58.8		0.5	7.7
	T	eP			59.3			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
JUL.29	D	eP	18	20	46.0	t		
	T	eP			47.0		0.5	5.9
	D	iP	19	17	10.0			
	T	eP			12.5			
	T	eP	22	45	20.0			
	D	eP			30.5			
JUL.30	D	eP	03	26	55.0			
	T	eP			55.8			
	T	eP	03	52	05.0			
	D	eP			05.4			
	K	eP	04	20	25.6			
	S	iP			35.7			
	T	eP			39.3			
	D	eP			40.3			
	T	eP	04	27	49.7			
	T	eP	12	49	08.8			
	S	eP			21.4			
	K	eP			22.2			
	T	eP	17	15	15.4	t	1.2	64.3
	D	eP			21.5			
	K	iP	18	42	29.0			
	S	iP			35.0			
	D	iP			40.3			
	T	eP			40.8			
JUL.31	D	eP	02	42	10.0	t?		
	T	eP			15.6		0.5	7.4
	T	eP	06	49	01.5			
	T	eP	11	30	21.2	t	1.1	82.9
	D	eP			29.0			
	S	eP			29.4			
	D	eP	18	44	38.0	t		
	T	eP?			52.7		1.0	20.0
	T	eP	19	02	04.0			
	T	eP	21	16	23.4			
	D	eP			32.4			
	S	eP			37.8			

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S—P \ Date	1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16		17		18	
0 — 0.9																																				
1 — 1.9																																				
2 — 2.9																																				
3 — 3.9																																				
4 — 4.9											1		1																							
5 — 5.9			1		1		4		1		3		1			**			2		1		1		1		1		1				1		1	
6 — 6.9	2		1		1		1		1				1				1		2		1		2								2		1		1	
7 — 7.9	2		3				2		1	*	1				2	*	2		1				1		1		1		4		4	*	5		2	
8 — 8.9	1	*	4		5		2		4		4		1		2		5		5		8		5		1		6		2		1	*	2		3	
9 — 9.9	1		7		5		6		1		3		1		3		2				8		2		7		4		7		2	*	4		5	
10 — 10.9	3		2		2		3		5		4		3		2		2		1		3		3	*			1	*	1		2		2		3	
11 — 11.9	2		2				1	*			2						2		2				3		3		2		5		3	*	3		2	
12 — 12.9	4		2		1		1		1		4		1		3		2		2				2		1		3		2		2		1		1	
13 — 13.9			1		3		1				3		2										3		1		1		3		3		2		3	
14 — 14.9	1		1				1		2		3		3		3		2	*	1		2		2		1		1		2				3		3	
15 — 15.9	2		1				2		3						1				1		1		1		1						1	*	4			
16 — 16.9	1		1		1					*			1		1	*					1		3		1		4		1	*						
17 — 17.9									2		2				3																	*	1		3	
18 — 18.9	1		1		1			*	1								2				2		1		1		1		1		1	*	1			
19 — 19.9	1				1			*	1												2				1	*								*		
20 — 20.9					1		2				1												1		1										1	
21 — 21.9	2																				1	*									3					
22 — 22.9							1		1								1		1	*			1		3		3								1	
23 — 23.9	3								2										1																	
24 — 24.9																					1						1									
25 — 25.9							1		1				1										1								1				1	
26 — 26.9								*									1																1			
27 — 27.9													1																						1	
28 — 28.9																									1										1	
29 — 29.9					1						1												1												2	
30.0 — 59.9	9		7	**** *			9	**	3	*	1	*	5	**	1	***	1	***	6	**	4	**	4	*	7	**** *	7	***	10	**** ****	3	***	6			**
60.0 — 179.9	1	**		**** *		*	1	***				*			1	***		**** *		***	2	**		*	1	***		**		*	2	*		***	1	***
t		*		**		****		****		***		****		***		*		***		****		***		**** *		****		*		**		**** *		*		***** ****
?	4		6		6		5		7		4		12		8		3	*	5		9	*	5		9		2		6		4		4			*
Total	40	4	40	12	29	5	43	13	37	6	37	6	34	5	30	11	26	13	30	10	46	9	42	8	42	13	38	7	45	12	34	16	41	5	35	15
no observation															07h30m ~ 11h22m																					

Remarks * : indicates a larger earthquake which is included in the main table the Bulletin.

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S-P \ Date	19		20		21		22		23		24		25		26		27		28		29		30		31		Total1	Total2	Total3
0 — 0.9																													
1 — 1.9																													
2 — 2.9																													
3 — 3.9																													
4 — 4.9																											2		2
5 — 5.9	2		1		5		3						1				3		1				2				38	2	40
6 — 6.9	2		1		2		1		1						1		4		6		1		1		1		38		38
7 — 7.9	4		1		5		6		2	*	4		2		2		1		2		4		3				68	4	72
8 — 8.9	5		2		5		2		3		2		1		6		1		1		3	*	3		2		97	3	100
9 — 9.9	4	*	3		2		7	*	27	******	16		9	*	7	*	1		3				2		3		152	11	163
10 — 10.9	1		4	*	2		3		16		3		7		7		1		3		2		2		4		97	3	100
11 — 11.9	1		1		1		1		6		1		2		1		2				2						50	2	52
12 — 12.9	2				1		3		3				1		2										1		46		46
13 — 13.9	2				2	*	1		2		1		1			*					2				3		40	2	42
14 — 14.9	1		2		3		3		1		1				2		1		2	*							47	2	49
15 — 15.9	1		1				3		2						1						1		1		2		30	1	31
16 — 16.9			2		1		1		2				2		2		2							*	1		28	4	32
17 — 17.9	3			*			1				1						1			*	1						18	3	21
18 — 18.9	4						2			*	1								2		2				1		26	3	29
19 — 19.9			1		2										1				1				1		1		13	3	16
20 — 20.9			1		1				2						1				2		1		2	*			17	1	18
21 — 21.9	3		3						1								1						1		1		16	1	17
22 — 22.9			3			**							1		1								1				18	3	21
23 — 23.9					1			*									2										9	1	10
24 — 24.9													1												1		4		4
25 — 25.9																						*					7	1	8
26 — 26.9	1		1				1						1		1												7	1	8
27 — 27.9		*																									2	1	3
28 — 28.9																	1										3		3
29 — 29.9										*														*			5	2	7
30 — 59.9	4	******	4	*	5	***	5	*******	3	**	5	**	3	*	3	****	2	**	3	**	1		4			**	125	75	200
60 — 179.9	1	*	1	**		**	2	****		*	1	***		**		*	4	****		*		***		****			18	67	85
t		********		*		******		****		***		***		********		***		***		****		**		*		***		109	109
?	1			*	1				4		1		1		1			*						*			108	6	114
Total	42	17	32	7	40	14	45	17	75	15	37	8	33	12	39	10	27	11	26	9	20	7	23	9	21	5	1,129	311	1,440
no observation													06h00m ~ 08h20m						08h10m ~ 10h16m		19h50m ~ 22h00m								

Remarks * : indicates a larger earthquake which is included in the main table the bulletin.

1969

Preliminary Bulletin

of the Dodaira Micro-earthquake Observatory

and its Substation

July, 1969

Dodaira Micro-earthquake Observatory

Earthquake Research Institute, the University of Tokyo

Preliminary Bulletin

of the Dodaira Micro-earthquake Observatory

and its Substation

Aug., 1969

Dodaira Micro-earthquake Observatory

Earthquake Research Institute, the University of Tokyo

Preliminary Bulletin of the Dodaira Micro-earthquake Observatory and its Substation

Observation stations

		N	E	h
Dodaira	(D or DDR)	35°59'54".0	139°11'36".2	800m
Tsukuba	(T or TSK)	36°12'39".0	140° 6'35".0	280m
Kiyosumi	(K or KYS)	35°11'51".6	140° 8'53".6	230m
Shiroyama (temporary)	(S or SRY)	35°36'30".0	139°16'27".0	254m

Expressions:

Am: Amplitude in millimicron (half of peak to trough*) of P motion maximum within few cycles after the onset recorded by a short period vertical seismograph.
*In 1967 double amplitude (peak to trough) was used as Am.

T : Period in sec of the measured P maximum

t : Teleseism

All stations are radio-telemetered to Tokyo giving records on a multi-channel ink-recording oscillograph. The paper speed of the recorder is 1 mm per sec. For stronger events high speed recorder (10 mm/sec) is also triggered. The system is also recorded in parallel on multi channel magnetic tape through a trigger system using an endless tape loop. Direct filter sum of short period seismometers at Dodaira and/or on line short period filter outputs of Tsukuba are also used for the

detection of weak teleseismic signals. For teleseismic events records of long period and medium period seismographs are occasionally used, applying off line frequency filter, if necessary.

The Bulletin includes the preliminary readings sent to USCGS for teleseisms and larger near shocks with total durations (F-P) of short period vertical seismograph at Tsukuba (TSK) with magnification about 140.000 at 1 c/s or sensitivity about 300×10^{-3} mm/microkine at 10 c/s being longer than 100 seconds which correspond approximately shocks with $M\geq3.5$. For the minor near earthquakes with $F\text{-}P\angle 100$ sec or $M\angle 3.5$, frequency of S-P times at each station is added at the end of the Bulletin, which may easily give a general idea of local seismicity around the station.

Date	Station	Phase	Time(G.M.T.)			t	T	Am
AUG. 1	T	eP	01	49	05.0			
	D	eP			1.24			
	T	eP	03	24	10.0			
	D	eP			20.0			
	S	eP	05	09	31.8	t		
	D	eP			34.3			
	T	eP	09	30	13.0			
	K	iP	11	08	17.2			
	S	eP			26.0			
	T	eP			28.8			
	D	eP			30.0			
	S	eP	11	21	34.7			
	D	eP			39.0			
	T	eP			40.7			
	T	eP	12	16	36.6	t	1.0	31.0
	S	eP			37.0			
	D	eP			37.7			
	D	eP	15	27	22.0			
	T	eP			23.6			
	T	iP	19	47	59.0			
	K	eP		48	07.8			
	D	eP			09.0			
	S	eP			10.0			
	K	eP	20	18	03.0			
	S	eP			07.5			
	D	eP			12.7			
	T	eP			13.2			
	T	eP	23	08	15.7			
	D	iP			24.7			
	S	eP			28.0			
	T	eP	23	46	34.0			
	D	eP			43.4			
		eS		49	02.0			
		eScP?		54	09.4			
	S	eP		46	47.3			
	K	eP			53.3			
AUG. 2	T	eP	00	37	09.4			
	D	eP			18.7			
		eS		39	35.0			
		ePcP		42	58.3			
	S	eP			22.7			
	D	eP	00	54	55.4			
	T	eP	01	16	27.4		0.5	5.9
	D	eP			37.2			
		eS		18	53.6			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
AUG. 2	T	eP	02	42	57.1		0.5	10.4
		eS		45	03.0			
	D	eP		43	06.4			
	T	eP	03	39	05.8			
	D	eP			15.3			
	S	eP	04	38	23.1	t		
	D	eP			28.9			
		eX		40	22.6			
	T	eP		38	29.8		1.0	32.0
	S	iP	04	52	56.6	t		
	K	eP			57.9			
	D	eP			58.8			
	T	eP		53	02.4		1.2	94.2
	T	eP	05	28	59.4			
	D	eP		29	08.9			
	T	eP	06	06	59.4			
	D	eP		07	10.0			
		eS		09	25.4			
	T	eP	10	20	46.0		1.1	15.9
	D	eP			56.1			
		eS		23	10.2			
	T	iP	10	28	50.1			
	D	iP			52.8			
	T	eP	14	10	23.4			
	D	eP			24.4			
	T	eP	14	18	44.2			
	T	eP	17	44	44.2	t	1.2	54.5
	D	eP			49.4			
	T	eP	20	20	21.8	t?		
AUG. 3	D	eP	00	30	17.6	t		
		epP?		32	13.3			
		eS?		35	14.3			
		eScS		40	20.5			
	T	eP		30	18.5		1.2	70.2
	S	eP	04	23	44.2	t		
	D	eP			46.8			
		eS		27	13.8			
	T	eP		23	51.8		1.0	18.0
	T	eP	07	51	09.8		1.4	78.2
		eX			22.2			
	D	eP			18.9			
		eS		53	35.0			
	S	eP		51	25.0			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
AUG. 3	T	iP	11	27	55.0			
	D	eP			57.0			
	T	eP	11	53	31.4			
	T	eP	15	46	02.1			
	T	eP	18	19	13.8			
	D	eP			23.8			
	T	iP	23	52	37.4			
	D	iP			47.7			
AUG. 4	T	eP	10	29	55.5	t	1.2	19.0
	D	eP		30	02.6			
	T	eP	14	13	44.0			
	D	eP			52.0			
	S	eP			58.4			
	K	eP	17	26	31.7	t		
	S	iP			33.7			
		ePcP		28	12.8			
		eScP		31	12.0			
	D	iP		26	37.0			
		epP?		27	40.7			
		ePcP		28	14.7			
		eScP		31	14.5			
		ePcS		32	10.3			
		eS			25.8			
		eScS		35	38.0			
	T	eP		26	39.8		0.7	272.0 (above)
		ePcP		28	15.0			
		eScP		31	15.8			
AUG. 5	T	eP	00	55	34.2			
	D	ep			37.2			
	S	eP	02	20	09.3	t		
	D	eP			12.6	LN	20.4	6.9U
		eX			25.5	LE	20.0	27.7U
		ePP?		22	49.0	LZ	22.0	49.4U
		eS		25	54.6			
		eScS		30	32.6			
	T	eP		20	16.1		1.2	142.0
	S	eP	03	27	50.7	t		
	D	eP			54.8			
	T	eP			59.6		0.5	11.8
	D	eP	04	42	42.5			
	T	eP			45.2			
	S	eP	06	58	33.1	t		
	D	eP			36.0			
	T	eP			39.4		0.5	8.1

Date	Station	Phase	Time (G.M.T.)			t	T	Am
AUG. 5	S	eP	09	27	21.4	t		
	D	eP			22.1			
	T	eP			28.2			
	S	eP	13	10	25.9	t		
	D	eP			29.2			
	T	eP			33.0		0.5	4.4
	K	eP	13	53	04.9			
	S	eP			08.0			
	D	eP			11.6			
	T	eP			13.9			
	T	eP	14	58	27.4			
	D	eP			36.6			
	S	eP	16	40	18.8	t		
	D	eP			21.7	LN	20.0	2.6 U
		eS		46	45.8	LE	20.0	3.8 U
		eScS		50	23.5	LZ	20.0	4.1 U
	T	eP		40	22.1		1.2	78.0
	T	eP	17	12	42.0			
	D	eP			51.0			
	K	eP	18	19	36.9			
	S	eP			44.8			
	T	eP			49.6			
	D	eP			50.0			
	T	iP	18	34	59.2			
	D	iP		35	06.3			
	S	iP			09.8			
	K	eP			12.4			
	D	eP	20	50	20.8			
	T	eP			25.6			
	D	eP	21	35	38.4	t		
	T	eP			43.5		0.5	7.8
AUG. 6	K	iP	08	41	14.6			
	S	iP			22.8			
	T	eP			27.9			
	D	eP			28.1			
	K	eP	08	51	35.3			
	S	eP			43.6			
	T	eP			48.6			
	D	eP			49.1			
	T	iP	10	22	00.6			
	D	iP			09.3			
	S	eP			12.6			
	K	eP			14.2			

Date	Station	Phase	Time (G.M.T.)	t	T	Am
AUG. 6	D	eP	16 59 15.5			
	T	eP	19.3			
AUG. 7	S	eP	01 57 20.2	t		
	D	eP	24.1			
	T	eP	26.5		0.5	17.0
	S	iP	04 32 15.0			
	K	eP	15.8			
	D	iP	17.7			
	T	eP	21.2			
	T	eP	04 50 46.5			
	D	eP	54.8			
	D	iP	05 37 19.9			
	S	iP	20.5			
	T	iP	24.4			
	K	eP	28.0			
	T	iP	06 50 46.0	t	1.0	173.0
	D	eP	52.1			
	S	eP	55.2			
	K	eP	58.4			
	T	eP	09 43 13.6	t	0.5	7.0
	D	eP	15.1			
	T	eP	11 54 14.4			
	D	eP	23.6			
	D	eP	14 08 22.0	t		
	T	eP	26.0		0.5	5.2
	T	eP	15 34 31.6			
	D	eP	40.6			
	T	eP	17 32 44.6			
	D	eP	54.5			
AUG. 8	T	eP	02 23 52.4			
	K	eP	59.4			
	D	eP	24 03.6			
	T	iP	03 17 55.8			
	D	iP	18 02.6			
	T	eP	05 31 46.4	t?		
	D	eP	49.0			
	T	eP	06 37 50.2			
	D	iP	06 40 02.6			
	T	eP	04.5		1.2	208.0
	K	eP	09.0			
	K	eP	09 49 38.8			
	T	eP	51.5			
	D	eP	53.8			

Date	Station	Phase	Time (G.M.T.)			t	T	Am
AUG. 8	D	eP	11	18	44.0	t?		
	D	eP	11	28	11.2	t		
		eX			43.6			
	T	eP			12.0		1.2	52.0
		eX			44.8			
	K	eP	11	58	46.8			
	D	eP			54.6			
	T	eP			56.4			
	D	iP	12	58	07.1			
	T	iP			11.9			
	K	eP			12.4			
	D	eP	14	03	05.8			
	T	iP			09.4			
	K	iP			10.4			
	D	eP	14	53	18.5	t?		
	T	eP	15	51	28.6			
	D	eP			37.2			
	T	eP	16	35	57.7	t?		
	T	eP	16	51	07.3			
	T	eP	18	36	37.0			
	D	eP			46.4			
	K	eP	20	51	56.1	t		
	D	eP		52	00.4	LN	20.0	10.0U
		epP?			27.8	LE	20.0	11.0U
		ePcP		53	51.6	LZ	20.0	20.0U
		eScP		57	22.5			
		ePcS			43.0			
		eS		58	06.8			
		eScS	21	01	41.6			
	T	eP	20	52	03.3		0.9	377.0
AUG. 9	K	iP	05	27	38.5	t		
	T	iP			42.6		1.0	79.0
	D	iP			45.0			
	T	iP	10	56	45.4			
	D	iP			56.6			
	K	eP			58.3			
	D	eP	16	38	08.0	t		
	T	eP			08.9		1.0	14.0
	T	eP	17	13	35.6	t?		
	K	eP	18	26	15.8			
	T	eP			29.8			
	D	eP			31.6			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
AUG. 9	K	eP	19	05	58.4			
	T	eP		06	01.6			
	D	eP			02.4			
AUG.10	T	iP	03	03	11.4			
	K	eP			15.4			
	D	iP			16.4			
	T	eP	09	39	53.4			
	D	eP		40	03.9			
	T	eP	12	24	10.4			
	D	eP			19.8			
	T	eP	12	36	57.8			
	D	eP		37	06.3			
	K	eP	16	49	32.4			
	D	eP			44.6			
	T	eP			44.9			
	T	eP	17	23	17.2			
	K	eP	17	51	36.6			
	T	eP			50.2			
	D	eP			52.6			
	T	eP	19	56	43.1			
	T	eP	21	11	39.0			
	D	eP			49.0			
	K	iP	21	17	01.2			
	T	iP			01.7			
	D	eP			11.0			
	T	eP	21	38	07.4			
	D	eP			08.7			
	T	eP	21	47	12.8			
	D	eP			22.1			
	T	eP	23	08	15.0			
	K	eP			23.8			
	D	eP			25.6			
AUG.11	K	iP	03	31	15.4			
	T	iP			16.1			
	D	iP			20.7			
	T	eP	03	38	34.8			
	T	eP	04	24	57.8			
	D	eP		25	07.6			
	K	eP	13	02	32.0			
	T	eP			45.6			
	D	eP			47.1			

Date	Station	Phase	Time(G.M.T.)	t	T	Am
AUG.11	T	eP	16 59 32.9			
	T	eP	19 00 41.9			
	T	eP	19 43 06.2			
	D	iP	16.4			
	K	eP	17.5			
	T	eP	19 52 13.0			
	D	eP	21.2			
	T	eP	20 45 23.3			
	D	eP	33.0			
	T	eP	21 01 03.0			
	D	eP	13.0			
	T	eP	21 04 25.7			
	D	eP	35.3			
	T	eP	21 10 09.4			
	D	eP	18.3			
	T	eP	21 24 00.6			
	D	eP	09.6			
	T	eP	21 28 47.5			
		eX	29 00.2			
	D	eP	28 56.4			
	T	eP	21 29 36.2			
	D	eP?	46.3			
	D	eP	21 38 22.3			
	D	eP	21 57 50.7			
	T	eP	22 29 48.9			
	D	eP	59.8			
	T	eP	22 44 04.0			
	D	eP	12.5			
	T	eP	22 56 04.4			
	D	eP	15.0			
	T	eP	23 05 03.8			
	T	eP	23 14 15.7			
	D	eP	27.2			
	T	eP	23 23 53.4			
	D	eP	24 03.7			
	T	eP	23 36 21.3			
	D	eP	31.4			

Date	Station	Phase	Time(G.M.T.)	t	T	Am
AUG.11	T	eP	23 41 29.9			
	D	eP	39.6			
	K	eP	23 59 50.4	t		
	D	eP	53.8			
		ePcP	00 02 26.6			
		eS	05 31.0			
		eScS	10 17.5			
	T	eP	23 59 58.0		1.3	178.2
AUG.12	T	eP	00 17 38.0			
	D	eP	48.0			
	T	eP	00 21 07.1			
	T	eP	00 28 04.2			
	D	eP	41.0			
	D	eP	00 43 39.0			
	T	eP	00 55 37.2			
	D	eP	48.8			
	T	eP	01 16 46.8			
	T	eP	01 30 36.4			
	D	eP	46.8			
	T	eP	01 37 11.3			
	D	eP	22.0			
	T	eP	01 46 42.1			
	D	eP	51.8			
	T	eP	02 03 45.6			
	T	eP	02 08 51.8			
	D	eP	09 01.6			
	T	eP	02 21 44.2			
	D	eP	52.6			
	D	eP	02 28 49.8	t		
		eX1	29 02.5			
		eX2	28.3			
	T	eP	28 52.8		1.1	26.1
	T	eP	02 33 35.1			
	T	eP	02 36 49.0			
	D	eP	56.7			
	T	eP	02 39 16.6			
	T	eP	02 46 52.7			
	D	eP	47 02.0			
	T	eP	03 07 48.5			
	D	eP	58.0			

Date	Station	Phase	Time(G.M.T.)	τ	T	Am
AUG.12	T	eP	03 11 27.4			
	D	eP	33.4			
	T	eP	03 35 44.2			
	D	eP	53.8			
	T	eP	03 51 27.5			
	D	eP	36.5			
	T	eP	03 58 09.3			
	D	eP	18.2			
	T	eP	04 00 37.4			
	D	eP	46.9			
	T	eP	04 14 56.0			
	D	eP	15 04.8			
	K	eP	09.7			
	T	eP	04 29 02.4			
	D	eP	11.8			
	T	eP	04 50 34.2			
	D	eP	44.1			
	T	eP	04 55 45.3			
	D	eP	54.0			
	K	eP	56 01.1			
	T	eP	05 05 41.2			
	D	eP	50.2			
	T	eP	05 11 02.4			
	D	eP	11.4			
	T	eP	05 26 23.6			
	T	eP	05 55 48.6			
		eX	56 02.0			
	D	eP	55 57.0			
	S	eP	59.8			
	K	eP	56 03.6			
	T	eP	06 02 25.1			
	T	eP	06 32 54.8			
	T	iP	06 40 57.2			
	D	eP	41 05.8			
	S	eP	08.6			
	T	eP	06 45 03.8			
	D	eP	13.6			
	S	eP	16.0			
	T	eP	06 51 32.7			
	D	eP	41.2			

Date	Station	Phase	time(G.M.T.)			t	T	Am
AUG.12	T	eP	07	05	55.9			
	D	eP		06	04.9			
	S	eP			09.0			
	T	eP	07	08	58.7			
	T	eP	07	12	58.8			
	D	eP		13	07.6			
	S	eP			10.9			
	T	eP	07	40	29.4			
	D	eP			38.2			
	T	eP	07	56	47.0			
	D	eP			57.1			
	S	eP		57	01.6			
	T	eP	08	44	10.6			
	D	eP			20.3			
	T	eP	09	23	16.4			
	D	eP			25.8			
	T	eP	09	27	47.4			
	D	eP			56.5			
	S	eP		28	00.0			
	T	eP	09	35	53.4			
	D	eP		36	01.6			
	S	eP			06.0			
	K	eP			08.4			
	T	eP	09	53	57.8			
	T	eP	09	56	42.4			
	D	eP			53.0			
	T	eP	10	14	33.8			
	D	eP			43.8			
	T	eP	10	24	47.4			
	D	eP			58.2			
	T	eP	10	41	59.0			
	D	eP		42	10.4			
	T	eP	10	49	55.3			
	D	eP		50	06.8			
	T	eP	11	23	43.6			
	D	eP			52.6			
	S	eP			57.6			
	K	eP			59.2			
	T	eP	11	40	25.4			
	D	eP			35.4			
	T	eP	11	44	20.4			

Date	Station	Phase	Time (G.M.T.)	t	T	Am
AUG.12	T	eP	11 59 13.0			
	D	eP	20.2			
	S	eP	25.8			
	T	eP	12 05 18.2			
	D	eP	28.0			
	T	eP	12 15 28.2			
	S	eP	13 28 14.6	t		
	D	eP	18.5			
		eX	27.0			
		ePcP?	30 47.2			
		eS	34 10.2			
		eScS	38 37.0			
	T	eP	28 21.3		1.1	65.9
	T	eP	12 33 57.1			
	D	eP	34 07.0			
	S	eP	10.2			
	T	eP	12 46 48.0			
	D	eP	57.5			
	S	eP	47 00.2			
	K	eP	02.0			
	T	eP	13 14 41.6			
	D	eP	50.9			
	T	eP	13 20 23.7			
	D	eP	32.5			
	S	eP	36.1			
	K	eP	38.9			
	T	eP	13 25 37.6			
	D	eP	47.1			
	T	eP	13 47 49.9			
	D	eP	48 00.4			
	T	eP	13 56 57.0			
	D	eP	57 07.2			
	T	eP	14 29 55.0			
	D	eP	30 04.8			
	T	eP	14 40 52.3			
	D	eP	41 02.4			
	T	eP	15 14 30.8			
	D	eP	41.6			
	T	eP	15 28 04.8			
	D	eP	14.0			
	S	eP	17.0			
	T	eP	15 30 35.6			
	D	eP	44.6			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
AUG.12	T	eP	15	43	39.8			
	T	eP	15	52	15.8			
	D	eP			25.0			
	T	eP	16	32	12.8			
	T	eP	16	45	55.4			
	D	eP		46	04.6			
	T	eP	16	52	08.1			
	D	eP			18.0			
	T	eP	17	02	49.2			
	D	eP			58.4			
	K	eP	17	06	56.0			
	S	eP		07	04.8			
	T	eP			09.0			
	D	eP			10.8			
	T	eP	17	10	54.6			
	D	eP		11	03.9			
	S	eP			08.0			
	T	eP	17	37	15.6			
	D	eP			24.4			
	T	iP	17	47	03.0			
	D	iP			07.4			
	S	iP			13.8			
	K	eP			20.0			
	T	iP	17	55	36.9			
	D	eP			41.4			
	S	iP			47.7			
	K	iP			54.4			
	T	iP	18	20	33.8			
	D	iP			38.2			
	S	iP			43.4			
	K	eP			50.8			
	T	eP	18	51	53.4			
	D	eP			04.8			
	D	eP	19	22	37.2			
	T	eP	20	20	49.6			
	D	eP		21	00.9			
	T	eP	20	41	32.2			
	D	eP			40.8			
	T	eP	21	18	11.4			
	D	eP			20.1			
	S	eP			23.7			
	K	eP			24.2			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
AUG.12	T	eP	21	58	29.3			
	D	eX			44.8			
	T	eP	23	08	08.9			
	D	eP			18.2			
	S	eP			21.7			
	T	eP	23	18	02.6			
		eX			12.4			
	D	eP			11.2			
	S	eP			14.8			
	T	eP	23	51	36.9			
	D	eP			46.4			
	T	eP	23	54	54.0			
	D	eP			02.1			
AUG.13	T	eP	00	20	36.3			
	D	eP			45.8			
	T	eP	01	04	33.1			
	D	eP			44.9			
	T	eP	01	39	37.8			
	D	eP			47.4			
	T	eP	02	00	03.3			
	T	eP	02	09	30.6			
	D	eP			39.5			
	T	eP	02	30	28.4			
	D	eP			38.3			
	T	iP	03	03	30.2			
	D	eP			34.8			
	S	eP			40.2			
	K	eP			46.8			
	T	eP	03	15	28.0			
	D	eP			36.0			
	T	eP	03	31	23.7			
	D	eP			32.4			
	S	eP			35.8			
	K	eP			38.6			
	T	eP	03	49	37.1			
	D	eP			47.0			
	T	eP	03	53	59.8			
	D	eP		54	09.6			
	T	eP	04	14	51.1			
	D	eP			59.6			

Date	Station	Phase	Time (C.M.T.)	t	T	Am
AUG.13	T	eP	04 30 35.8			
	D	eP	42.8			
	S	eP	46.8			
	T	eP	04 39 49.3			
	D	eP	59.1			
	D	eP	05 27 53.5			
	T	eP	05 57 11.0			
	D	eP	21.3			
	T	eP	06 12 39.0			
	D	eP	48.8			
	K	eP	06 38 37.0			
	T	eP	49.4			
	D	eP	50.4			
	T	iP	07 26 10.0			
	D	iP	20.0			
	S	eP	23.0			
	T	eP	08 33 49.9			
	D	eP	58.6			
	S	eP	34 01.3			
	K	eP	03.2			
	T	eP	09 22 56.6			
	D	eP	23 06.2			
	T	eP	09 26 19.0			
	D	eP	29.2			
	T	eP	09 30 20.3			
	D	eP	30.2			
	T	eP	10 09 28.5			
	D	eP	44.6			
	D	eP	11 09 40.8			
	D	eP	11 51 23.4			
	T	eP	26.0			
	T	eP	12 15 19.2			
	D	eP	29.5			
	S	eP	30.7			
	T	iP	12 29 09.9			
	D	iP	20.5			
	S	eP	23.2			
	K	eP	23.3			
	T	eP	13 39 25.4			
	T	eP	14 25 03.2			
	D	eP	12.2			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
AUG.13	T	eP	14	31	09.0			
	D	eP			19.2			
	T	eP	15	01	06.4			
	D	eP			15.0			
	T	eP	15	47	37.0			
	D	eP			48.2			
	T	eP	16	31	37.0			
	D	eP			48.0			
	T	eP	17	06	03.0			
	D	eP			12.2			
	T	eP	17	18	21.8			
	D	eP			31.0			
	T	eP	18	11	24.7			
	D	eP			33.4			
	T	eP	18	50	15.0			
	D	eP			20.2			
	T	eP	19	35	53.7			
	D	eP		36	02.3			
	S	eP			06.0			
	T	eP	20	11	34.5			
	D	eP			42.6			
	T	eP	21	15	10.7			
	D	eP			20.3			
	T	eP	21	29	34.0			
	T	eP	21	56	18.3			
	D	eP			26.9			
	T	eP	22	02	54.6			
	T	eP	22	09	54.8			
	D	eP		10	04.2			
	T	eP	22	34	30.2			
	T	eP	22	44	32.4			
	D	eP			42.4			
	T	eP	22	59	29.2			
	D	eP			38.0			
	S	eP			41.4			
	K	eP			45.0			
	T	eP	23	15	17.4			
	D	eP			28.4			
	T	eP	23	42	13.8			

Date	Station	Phase	Time (G.M.T.)	t	T	Am
AUG.13	T	eP	23 49 37.6			
	D	eP	47.4			
AUG.14	K	eP	00 19 55.0			
	S	eP	20 02.6			
	T	eP	06.7			
	D	eP	07.0			
	S	eP	00 36 26.5	t		
	D	eP	35.0			
	T	eP	37.0		1.1	36.4
	T	eP	01 49 44.4			
	D	eP	53.6			
	T	eP	03 09 37.2			
	D	eP	46.4			
	S	eP	49.6			
	K	eP	49.6			
	T	eP	03 33 00.7			
	D	eP	09.6			
	T	eP	03 40 05.1			
	D	eP	14.1			
	T	eP	04 13 10.8			
	D	eP	22.0			
	T	eP	04 50 03.0			
	D	eP	11.8			
	T	eP	05 12 01.4			
	D	eP	10.0			
	T	eP	05 43 42.4			
	D	eP	51.2			
	T	eP	06 09 12.3			
	T	iP	06 11 05.3			
	D	eP	05.3			
	S	eP	11.1			
	T	eP	06 22 32.0			
	D	eP	41.4			
	T	eP	08 31 57.8			
	T	eP	09 01 58.2			
		eX	02 08.4			
	D	eP	07.8			
	T	eP	10 19 37.1			
	D	eP	46.9			
	T	eP	11 06 25.0			
	D	eP	34.1			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
AUG.14	T	eP	11	53	20.7			
	D	eP			29.6			
	S	eP			32.2			
	K	eP			33.4			
	T	eP	12	18	32.3			
	D	eP			41.5			
	K	iP	12	39	20.6			
	S	iP			27.0			
	T	iP			31.4			
	D	iP			31.7			
	T	eP	12	54	51.1			
	D	eP		55	01.2			
	T	eP	13	33	46.8			
	D	eP			35.6			
	T	eP	14	22	08.0			
	D	eP			17.0			
	K	eP			20.5			
	S	eP			21.4			
	T	eP	14	40	29.6			
		eX			41.7			
	D	eP			39.3			
	T	eP	15	13	34.1			
	D	eP			44.0			
	T	iP	15	15	59.2			
	D	eP		16	08.2			
	T	eP	15	21	38.9			
	D	eP			53.2			
	T	eP	15	25	56.7			
	D	eP		26	06.4			
	T	eP	15	29	51.6			
	D	eP		30	01.4			
	S	eP			03.8			
	T	eP	15	40	26.9			
	D	eP			36.0			
	S	eP			39.6			
	T	eP	15	46	14.7			
	D	eP			24.9			
	T	eP	15	59	29.3			
	D	eP			38.6			
	T	eP	16	21	20.0			
	D	eP			29.3			
	T	eP	16	24	54.7			
	D	eP		25	04.0			

Date	Station	Phase	Time (G.M.T.)			t	T	Am
AUG.14	T	eP	16	30	01.0			
	D	eP			10.8			
	T	iP	16	49	07.4			
	K	eP			11.9			
	D	eP			18.2			
	S	eP			19.7			
	T	eP	17	00	49.6			
	D	eP			58.8			
	T	eP	17	06	59.0			
	D	eP		07	08.6			
	K	eP			10.7			
	S	eP			12.0			
	T	eP	17	15	00.0			
	D	eP			10.0			
	T	eP	17	24	31.7			
	D	eP			45.5			
	T	eP	17	41	06.9			
	D	eP			16.6			
	T	eP	17	53	27.2			
	D	eP			36.4			
	K	eP			39.0			
	S	eP			39.9			
	T	eP	18	23	45.3			
	D	eP			54.7			
	T	eP	18	39	53.6			
	D	eP		40	02.8			
	T	eP	18	48	47.8			
	D	eP			58.2			
	T	eP	18	54	01.6			
	D	eP			10.5			
	T	eP	20	17	48.8			
	D	eP			58.1			
	S	eP		18	01.3			
	T	eP	21	13	13.0			
	D	eP			22.8			
	D	eP	21	55	02.8			
	D	eP	21	57	52.2			
	T	iP	22	14	46.0			
	D	eP			54.9			
	S	eP			58.4			
	T	eP	22	59	28.4			
	D	eP			37.8			

Date	Station	Phase	Time (G.M.T.)	t	T	Am
AUG.14	T	eP	23 08 13.4			
	T	eP	23 53 20.9	t?		
	D	eP	30.8			
	S	eP	33.8			
AUG.15	T	eP	00 05 38.6			
	D	eP	47.4			
	S	iP	00 37 50.5			
	D	iP	51.4			
	T	iP	52.6			
	K	iP	55.6			
	T	eP	00 40 23.0			
	D	eP	31.2			
	T	eP	00 55 04.6			
	D	eP	14.6			
	K	eP	01 03 28.1			
	S	eP	37.2			
	T	eP	41.3			
	D	eP	42.4			
	T	eP	01 09 23.8			
	D	eP	32.5			
	T	eP	03 38 03.2			
	S	eP	03 45 18.8	t		
	T	eP	24.8		1.4	63.3
	D	eP	25.2			
	T	eP	04 21 46.9			
	D	eP	55.8			
	T	eP	04 29 35.8			
	T	eP	04 34 10.7			
		eX	24.8			
	D	eP	20.0			
	S	eP	23.1			
	K	eP	23.8			
	T	eP	04 40 17.7			
	D	eP	27.8			
	T	eP	04 42 41.6			
	T	eP	04 48 55.4			
	T	eP	05 24 08.0			
	T	eP	06 14 39.0			
	T	eP	06 20 47.7			
	D	eP	58.2			

Date	Station	Phase	Time (G.M.T.)			t	T	Am
AUG.15	T	eP	07	24	09.0			
		eX			20.4			
	D	eP			18.7			
	K	iP	08	44	58.9			
	S	iP		45	04.2			
		ePcP		53	01.7			
	D	eP		45	08.8			
		ePcP		53	02.9			
	T	eP		45	09.7			
		ePcP		53	03.7			
	T	eP	09	18	51.3			
	T	iP	09	48	17.3			
	D	iP			17.4			
	S	iP			19.5			
	K	iP			24.4			
	T	eP	09	58	41.2			
	D	eP			50.2			
	D	eP	10	04	31.0			
	T	eP	10	13	25.6			
	D	eP			42.8			
	T	eP	10	36	18.0			
	D	eP			36.3			
	T	eP	10	57	09.3			
	D	eP			19.6			
	T	eP	11	04	47.0			
	D	eP			56.3			
	T	eP	11	32	05.6			
		eX			18.2			
	D	eP			14.2			
	T	eP	11	49	43.6			
	D	eP			54.8			
	T	eP	12	09	13.0			
	D	eP			23.0			
	S	iP	12	43	54.0			
	K	iP			55.4			
	D	iP			57.1			
	T	iP		44	00.9			
	T	eP	12	45	43.7			
	T	eP	14	12	02.8			
	D	eP			12.6			
	D	eP	15	24	56.4			
	S	eP			57.3			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
AUG.15	K	iP	16	26	13.5			
	S	eP			24.0			
	T	eP			24.2			
	D	eP			28.5			
	T	eP	16	58	29.0			
	D	eP			38.2			
	T	eP	17	02	55.7			
	D	eP		03	06.1			
	K	eP	19	14	28.0	t		
	S	eP			31.6			
	T	eP			32.4		1.0	12.0
	D	eP			34.2			
	T	eP	20	08	27.0			
	D	eP			35.8			
	S	eP			38.8			
	T	iP	20	17	18.4			
	D	iP			23.4			
	S	iP			26.7			
	K	eP			29.6			
	T	iP	20	49	53.6			
	D	eP		50	02.2			
	S	eP			05.8			
	K	eP			06.8			
	T	eP	20	54	05.2			
	T	iP	22	45	52.6			
	D	iP		46	01.9			
	K	eP			05.0			
	S	iP			05.3			
	T	eP	22	59	21.4			
	D	eP			31.0			
	T	eP	23	15	29.0			
	T	eP	23	38	01.8			
AUG.16	K	eP	01	18	28.0	t		
	S	eP			33.1			
	T	eP			38.1		0.9	20.0
	D	eP			38.6			
		eS		22	26.5			
	T	eP	01	29	23.0			
	D	eP			32.8			
	T	eP	01	50	32.6			
	D	eP			41.4			
	T	eP	02	45	20.2			
	D	eP			29.4			

Date	Station	Phase	Time (G.M.T.)			t	T	Am
AUG. 16	T	eP	03	16	47.6			
	D	eP			57.4			
	T	eP	03	30	13.2			
	D	eP			22.8			
	S	eP			26.8			
	T	iP	03	39	46.4			
	D	iP			50.0			
	S	iP			52.0			
	K	iP			55.0			
	T	eP	04	56	05.2			
	D	eP			13.8			
	T	eP	06	17	45.0			
	D	eP			54.9			
	T	eP	08	41	27.0			
	D	eP			35.9			
	T	eP	08	49	55.8			
	D	eP		50	04.8			
	S	eP			07.6			
	T	eP	09	05	34.2			
	D	eP			43.4			
	S	eP			46.3			
	T	eP	09	25	02.1			
	D	eP			11.3			
	T	eP	10	05	04.5			
	D	eP			13.5			
	T	eP	10	25	55.5			
	T	eP	11	51	06.8			
	D	eP			16.6			
	T	eP	12	05	07.6			
	D	eP			16.8			
	T	eP	12	11	04.3			
	D	eP			12.8			
	T	eP	12	25	05.7			
	D	eP			16.2			
	T	eP	12	46	15.0			
		eX			27.0			
	T	eP	12	56	04.8			
	D	eP			14.1			
	T	eP	13	14	46.5			
	D	eP			56.5			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
AUG.16	T	eP	13	36	30.8			
	D	eP			40.0			
	T	eP	15	13	25.0			
	D	eP			33.4			
	T	eP	15	17	36.0			
	D	eP			45.8			
	K	eP			48.4			
	S	eP			48.8			
	D	iP	16	11	38.7			
	T	iP			40.8			
	S	iP			45.4			
	K	iP			55.7			
	T	eP	16	15	05.0			
	T	eP	16	24	04.8			
	D	eP			15.0			
	T	eP	17	15	48.4			
		eX		16	00.0			
	D	eP		15	58.0			
	K	eP			59.8			
	S	eP		16	00.8			
	T	eP	18	20	40.9			
	S	iP	18	34	06.3			
	K	iP			08.4			
	D	iP			09.9			
	T	iP			12.8			
	T	eP	18	47	38.4	t	1.0	21.0
		eX1			47.7			
		eX2		48	16.3			
	D	eP		47	40.5			
	T	eP	18	53	08.1			
	D	eP			17.3			
	T	eP	20	27	02.1			
	D	eP			11.3			
	S	iP	21	05	21.0			
	K	iP			22.5			
	D	iP			24.1			
	T	iP			24.9			
	T	eP	22	23	02.1			
	D	eP			11.1			
	T	eP	23	27	35.5			
	D	eP			45.1			
AUG.17	T	eP	01	55	40.4			
	D	eP			49.7			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
AUG.17	T	eP	04	03	11.1			
	D	eP			21.1			
	T	eP	05	54	26.1			
	D	eP			36.7			
	T	eP	07	40	16.7	t?	1.1	23.9
	K	iP	08	05	22.0			
	S	iP			28.3			
	T	iP			32.7			
	D	iP			33.0			
	T	eP	08	32	53.8	t	1.0	21.0
	D	eP		33	00.3			
	S	eP			01.6			
	T	eP	08	42	32.1			
	D	eP			42.6			
	T	eP	08	52	02.2			
	D	eP			11.0			
	T	eP	10	18	44.1	t	1.0	15.0
	D	eP			44.2			
	T	eP	11	38	54.9			
	D	eP		39	04.4			
	S	eP			06.7			
	T	iP	11	56	26.4			
	D	iP			32.5			
	S	eP			37.4			
	K	eP			40.8			
	S	eP	12	38	35.5	t		
	D	eP			43.6			
	T	eP			38.3		1.0	11.0
	T	eP	13	04	19.6			
	D	eP			29.8			
	T	eP	14	08	01.3	t?		
	D	eP			02.2			
	T	eP	14	51	10.0			
	T	eP	16	17	37.6	t	1.0	21.5
	D	eP			39.0			
	T	eP	18	11	16.7			
	D	eP			25.5			
	S	eP			30.3			
	K	ePKP?	20	26	08.5	t		
	T	ePKP?			11.2		1.2	23.4
		ePP?		28	01.5			
	D	ePKP?		26	16.5			
		ePP?		28	05.1			

Date	Station	Phase	Time (G.M.T.)			t	T	Am
AUG.17	T	eP	22	12	21.8			
AUG.18	T	eP	00	10	54.6			
	D	eP		11	04.7			
	T	eP	00	12	46.3			
	D	eP	02	24	31.0	t		
	T	eP			33.7		1.0	13.0
	D	eP	05	18	32.6			
	K	iP	05	26	08.1			
	S	iP			18.2			
	T	iP			21.3			
	D	iP			23.2			
	T	eP	05	38	55.5			
	D	eP		39	05.0			
	K	iP	06	34	27.8			
	S	iP			37.5			
	T	eP			41.8			
	D	eP			42.8			
	T	eP	06	53	36.2			
	D	eP			45.0			
	T	eP	07	47	14.5	t	1.3	32.6
		eX			44.6			
	D	eP			15.3			
		eX			45.6			
	S	eX			43.5			
	T	eP	08	34	44.3			
	T	eP	08	54	44.8			
	T	eP	09	29	36.8			
	D	eP			47.3			
	S	iP	10	13	52.8			
	D	iP			57.4			
	K	eP		14	03.6			
	T	iP			07.4			
	T	eP	10	48	10.2	t?	1.3	31.1
	T	eP	10	51	53.6			
	D	eP		52	02.6			
	S	eP			05.9			
	T	eP	11	45	48.7			
	D	eP			57.5			
	S	eP		46	01.1			
	T	eP	12	07	19.8			
	D	eP			29.0			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
AUG.18	T	eP	12	24	45.4			
	D	eP			54.0			
	T	eP	13	49	31.5			
	D	eP			40.8			
	K	eP	14	21	24.6	t		
	S	eP			28.9			
	T	eP			29.5		1.3	32.7
	D	eP			30.5			
	T	eP	14	54	38.5			
	D	eP			47.2			
	T	eP	15	08	03.8	t	1.2	29.9
	D	eP			04.9			
	T	eP	16	31	52.8			
	D	eP		32	01.8			
	T	eP	16	41	40.3			
	D	eP			50.1			
	T	eP	18	31	43.9			
	D	eP			53.9			
	T	eP	18	38	39.6			
	T	eP	18	45	06.9			
	D	eP			15.4			
	S	eP			18.6			
	T	eP	20	39	09.1			
	D	eP			19.0			
	D	eP	21	25	43.4	t?		
	T	eP	21	31	16.8			
	D	eP			26.9			
	T	eP	22	08	08.3			
	D	eP			18.2			
	T	eP	23	29	46.0			
	D	eP			56.4			
AUG.19	T	eP	00	00	22.3			
	D	eP			32.5			
	T	eP	00	03	36.0			
	D	eP			46.6			
	S	eP	01	15	34.9	t		
	T	eP			35.6		1.2	15.5
	K	eP			36.2			
	D	eP			37.4			

Date	Station	Phase	Time(G.M.T.)	t	T	Am
AUG.19	S	eP	01 48 15.3	t?		
	D	eP	18.8			
	T	eP	23.4		1.0	15.5
	T	eP	02 21 19.2			
	D	eP	28.6			
	T	eP	02 26 02.2			
	D	eP	11.1			
	T	iP	04 01 25.0			
	D	iP	25.5			
	S	iP	31.1			
	K	iP	32.2			
	T	eP	07 12 55.7			
	D	eP	13 06.4			
	S	eP	08 04 10.7	t		
	T	iP	11.2		1.2	37.5
	D	iP	13.8			
	T	iP	08 16 25.3			
	K	eP	31.5			
	D	iP	36.4			
	S	iP	37.8			
	T	iP	08 52 09.8			
	D	iP	18.0			
	K	eP	22.0			
	S	iP	23.0			
	T	eP	09 32 25.5			
	D	eP	37.4			
	T	eP	10 21 03.0			
	D	eP	12.5			
	T	iP	12 16 42.2			
	D	iP	52.7			
	S	eP	56.0			
	K	eP	56.6			
	D	eP	15 59 40.5	t		
	T	eP	41.6		1.0	8.5
	T	iP	21 07 50.2			
	K	eP	51.1			
	S	eP	59.7			
	D	eP	08 00.0			
	T	eP	23 38 38.3			
	D	eP	48.2			
AUG.20	T	eP	05 36 30.5			
	D	eP	41.6			

Date	Station	Phase	Time(G.M.T.)	t	T	Am
AUG.20	T	iP	07 53 39.4	t	1.0	97.5
	D	iP	47.7			
	S	eP	51.8			
	K	eP	52.9			
	T	eP	10 14 13.7			
	D	eP	22.8			
	K	eP	11 26 08.7			
	S	iP	13.8			
	D	iP	18.6			
	T	iP	18.9			
	T	eP	14 22 10.4			
	D	eP	19.8			
	S	eP	24.2			
	T	iP	16 34 54.1			
	D	iP	35 03.6			
	S	iP	06.7			
	S	eP	17 30 04.9	t	1.3	25.5
	D	eP	08.6			
	T	eP	08.8			
	T	iP	18 20 53.4			
	D	iP	21 04.7			
	S	iP	06.6			
AUG.21	T	eP	00 30 48.1			
	D	iP	57.3			
	S	eP	31 02.2			
	T	eP	01 21 54.2			
	D	eP	22 04.0			
	T	iP	02 46 05.5			
	D	eP	15.2			
	S	eP	18.8			
	T	eP	03 34 13.0			
	D	eP	22.9			
	S	eP	26.6			
	T	eP	04 49 30.3			
	D	eP	39.6			
	S	eP	43.4			
	T	eP	05 12 36.8			
	D	eP	46.6			
	T	eP	07 53 42.0			
	D	eP	50.6			
	S	eP	55.5			
	T	eP	09 01 46.8			
	D	eP	55.4			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
AUG.21	T	iP	10	07	50.9			
	D	eP			55.8			
	S	eP		08	01.6			
	T	iP	13	22	09.0			
	K	eP			19.4			
	D	iP			19.9			
	S	iP			21.7			
	T	eP	13	26	16.0			
	D	eP			24.4			
	T	iP	13	41	48.8			
	D	iP			59.6			
	S	iP		42	01.9			
	T	eP	13	52	33.0	t?		
	D	eP			39.5			
	T	eP	14	38	56.0	t	1.2	27.9
	D	eP		39	01.4			
	T	eP	15	05	42.0			
	D	eP			51.2			
	T	eP	15	18	24.9			
	D	eP			35.6			
	S	eP			39.5			
	T	eP	15	49	41.6			
	D	eP			51.6			
	D	iP	16	29	03.1			
	S	iP			09.2			
	T	eP			12.6			
	K	eP			23.9			
	T	eP	16	31	15.8			
	D	eP			27.4			
	T	eP	17	15	39.6			
	D	eP			49.8			
	S	eP			53.1			
	K	eP			55.1			
	T	eP	17	22	51.7			
	D	eP		23	02.0			
	T	eP	17	24	36.6			
	D	eP			47.0			
	T	eP	17	41	02.1			
	D	eP			12.4			
	D	eP	19	32	39.7	t?		
	T	eP	20	34	13.6	t	1.2	22.1
	D	eP			21.8			

Date	Station	Phase	Time(G.M.T.)	t	T	Am
AUG.21	T	eP	22 20 44.4			
	D	eP	54.6			
AUG.22	T	eP	04 42 33.4			
	D	eP	45.2			
	T	eP	05 32 26.8			
	D	eP	35.6			
	T	iP	07 14 36.0			
	D	iP	44.8			
	S	eP	47.0			
	T	eP	07 51 25.2	t	1.0	20.0
	D	eP	27.1			
	T	iP	08 41 59.0			
	D	iP	42 03.1			
	S	eP	05.0			
	K	eP	08.0			
	T	iP	13 05 33.4			
	D	iP	43.4			
	S	eP	46.1			
	T	eP	15 09 21.2			
	D	eP	31.4			
	S	eP	15 53 19.0	t		
	D	eP	21.4			
	T	eP	21.8		1.0	62.5
	S	eP	20 00 29.8			
	D	eP	32.2			
	T	eP	35.6			
AUG.23	T	iP	02 55 28.5			
	D	iP	38.6			
	S	eP	40.0			
	T	iP	05 08 13.2			
	D	iP	23.3			
	T	iP	06 40 34.1			
	D	iP	43.5			
	K	eP	45.9			
	S	iP	47.3			
	T	eP	06 50 06.4			
	D	eP	15.0			
	D	eP	08 02 46.6	t		
	T	eP	47.3		1.0	52.5
	T	eP	08 37 32.2			
	D	eP	42.3			

Date	Station	Phase	Time (G.M.T.)			t	T	Am
AUG.23	T	eP	09	26	32.1			
	D	iP			42.7			
	S	eP			46.7			
	T	eP	13	29	50.0			
	D	eP			59.2			
	D	eP	14	11	53.0	t ?		
	T	eP	19	26	53.6	t	1.1	38.5
	T	eP	19	57	56.1			
	D	iP		58	06.0			
	K	eP			08.2			
	S	iP			09.0			
	K	eP	20	20	26.4			
	T	eP			28.7			
	S	eP			36.0			
	D	eP			38.1			
AUG.24	T	eP	03	29	51.7	t	0.5	5.5
	T	iP	04	51	21.5			
	D	iP			31.7			
	S	eP			34.9			
	T	eP	09	57	11.2			
	D	eP			21.0			
	T	eP	10	51	27.7			
	D	eP			37.4			
	S	eP			40.3			
	S	eP	12	47	30.2	t		
	T	eP			33.8		0.5	5.1
	D	iP			33.9			
	T	eP	13	10	36.4			
	D	eP			46.2			
	T	iP	13	27	06.2			
	D	iP			15.8			
	S	eP			19.0			
	T	eP	14	10	45.8			
	D	eP			55.6			
	T	eP	15	09	17.4	t	0.5	6.5
	T	iP	18	27	13.9			
	D	iP			24.0			
	T	iP	22	04	14.5			
	D	iP			24.5			
	K	eP			26.2			
	S	iP			27.1			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
AUG.24	T	eP	23	02	39.1			
	D	eP			49.0			
	S	eP			52.2			
	T	eP	23	43	49.0			
	D	eP			59.1			
	S	eP		44	02.3			
AUG.25	T	iP	00	35	38.7			
	D	iP			44.0			
	S	eP			46.8			
	K	eP			49.0			
	T	iP	01	07	30.2			
	D	iP			40.4			
	S	iP			43.7			
	T	eP	01	13	16.1			
	D	eP			26.2			
	S	eP			29.4			
	T	eP	06	56	50.4			
	D	eP			59.6			
	S	eP	10	00	20.4			
	D	eP			23.9			
	T	eP			25.2			
	T	eP	11	46	35.6			
	D	eP			46.3			
	K	eP	13	46	41.4			
	S	eP			49.6			
	T	eP			51.8			
	D	eP			54.1			
	T	iP	14	06	11.4			
	D	iP			20.9			
	S	eP			24.6			
	T	eP	16	54	55.1			
	D	eP		55	04.2			
	T	eP	17	14	18.2			
	D	iP			28.3			
	K	eP			30.4			
	S	eP			31.4			
	T	eP	18	24	40.2			
	D	iP			50.3			
	S	eP			53.3			
	T	iP	20	24	52.8			
	D	iP		25	03.0			
	S	eP			06.3			
	T	eP	20	42	37.5			
	D	eP			47.2			
	S	eP			50.4			

Date	Station	Phase	Time (G.M.T.)			t	T	Am
AUG.25	D	eP	21	39	25.1	t		
	T	eP			29.2		0.5	5.1
AUG.26	K	iP	01	03	09.6			
	S	iP			18.8			
	T	eP			21.1			
	D	eP			23.1			
	T	eP	02	13	18.1			
	D	eP	02	28	08.9	t		
	T	iP			10.0		1.1	26.2
	T	eP	02	39	55.2			
	T	eP	03	16	21.1			
	D	eP			30.8			
	T	eP	03	23	13.1	t	1.2	29.9
	D	eP			13.7			
	S	iP	06	27	04.3			
	D	iP			10.6			
	K	iP			14.1			
	T	iP			19.4			
	T	eP	08	16	22.6			
	D	eP			33.1			
	K	eP	09	50	36.2			
	S	eP			45.1			
	T	eP			50.6			
	D	eP			51.2			
	T	eP	10	12	35.5			
	D	eP			45.2			
	T	eP	14	00	24.4			
	D	eP			24.7			
	S	iP	16	24	45.0			
	D	iP			46.7			
	T	iP			47.7			
	K	iP			48.6			
	S	eP	17	05	53.4	t		
	D	eP			55.8			
		eX		07	47.6			
	T	eP		05	56.7		1.2	27.3
	S	eP	19	20	59.0	t		
	D	eP		21	03.2			
		eX			18.2			
	T	eP			04.4		1.5	34.1
	S	iP	20	37	10.1			
	D	eP			12.9			
	K	eP			18.3			
	T	eP			22.0			

Date	Station	Phase	Time (G.M.T.)	t	T	Am
AUG. 26	T	eP	20 45 15.9			
	D	eP	25.3			
	S	eP	27.5			
	T	eP	23 40 17.8			
	D	iP	28.1			
		eX	39.0			
	K	eP	30.1			
	S	eP	30.8			
AUG. 27	T	eP	00 12 25.3			
	D	eP	33.4			
	T	eP	00 28 40.0			
	D	eP	50.4			
	T	eP	01 12 35.5			
	D	eP	44.3			
	S	eP	47.5			
	K	eP	47.6			
	T	eP	01 19 21.0			
	D	eP	29.8			
	T	eP	01 30 42.0			
	D	eP	50.8			
	S	eP	55.6			
	K	eP	57.1			
	T	eP	02 33 27.3			
	D	eP	35.3			
	T	eP	02 39 23.1			
	D	eP	32.9			
	T	eP	03 28 21.8			
	D	eP	30.4			
	S	eP	34.0			
	T	eP	03 34 43.2			
	D	eP	53.8			
	S	eP	54.6			
	T	eP	03 46 02.3			
	D	eP	10.8			
	S	eP	08 54 50.8	t		
	D	eP	55.2			
	T	eP	55.9		1.1	28.4
	T	eP	10 36 05.0			
	T	eP	10 47 50.0			
	D	eP	48 00.0			
	T	eP	13 08 47.2			
	D	eP	56.0			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
AUG.27	S	eP	13	32	43.8	t		
	D	eP			45.8			
		eS		39	03.2			
	T	eP		32	49.6		1.2	81.8
	T	eP	15	11	46.3			
	T	eP	16	08	01.3			
	D	eP			11.0			
	S	eP			14.9			
	T	eP	16	29	04.8			
	D	eP			14.5			
	T	eP	16	56	05.4			
	T	eP	18	07	39.3			
	D	eP			48.0			
	T	eP	18	46	38.2			
	D	eP			48.6			
	T	eP	19	17	33.0			
	D	eP			42.9			
	K	eP	19	24	53.7			
	S	eP		25	03.7			
	T	eP			05.7			
	D	eP			08.1			
	K	iP	19	51	18.2			
	T	iP			27.2			
	S	iP			29.5			
	D	eP			23.6			
	T	eP	21	05	09.4			
	D	eP			17.0			
	S	eP			17.0			
	T	eP	22	12	54.2	t?		
	D	eP	22	45	15.2	t		
	T	eP			18.9		1.2	38.5
AUG.28	K	eP	03	33	09.0			
	S	eP			10.7			
	D	eP			13.6			
	T	eP			17.2			
	D	eP	04	07	38.4	t		
	S	eP			39.2			
	T	eP			43.0		1.2	122.0
	T	eP	04	46	43.0			
	D	eP			52.2			

Date	Station	Phase	Time (G.M.T.)	t	T	Am
AUG.28	T	iP	07 24 56.8			
	K	iP	57.4			
	S	eP	25 03.2			
	D	eP	04.7			
	T	eP	11 03 29.2			
	D	eP	36.4			
	T	eP	11 45 35.1			
	D	eP	45.8			
	K	eP	45.8			
	S	eP	48.9			
	T	eP	13 01 56.2	t		
	D	eP	14 06 13.8	t		
	T	eP	17.1		1.4	36.4
	T	eP	14 22 53.7			
	T	eP	14 55 53.8			
	D	eP	56 02.6			
	S	eP	05.8			
	K	eP	06.6			
	D	eP	15 47 09.2			
	T	eP	15 56 55.1			
	D	eP	57 04.9			
	T	eP	16 09 12.2			
	D	eP	22.7			
	T	eP	16 18 04.2			
	D	eP	12.2			
	T	eP	16 43 37.5			
	T	eP	19 08 42.2			
	K	iP	19 42 06.8			
	S	iP	10.6			
	D	iP	15.2			
	T	iP	16.6			
	T	eP	21 37 29.9			
	D	eP	40.2			
	S	eP	41.7			
	T	eP	22 10 57.9			
		eX	11 07.8			
	D	eX	16.9			
	K	eP	23 12 20.7			
	S	eP	27.6			
	D	eP	31.7			
	T	eP	33.0			

Date	Station	Phase	Time (G.M.T.)			t	T	Am
AUG.30	T	eP	07	56	30.4			
	D	eP			39.1			
	S	eP			43.6			
	K	eP			43.8			
	T	eP	08	30	17.0			
	D	eP			26.3			
	S	eP			29.0			
	T	eP	08	50	17.6			
	T	eP	10	04	13.0			
	T	eP	10	13	51.0			
	D	eP		14	00.3			
	S	eP	12	59	33.8	t		
	K	eP			35.0			
	D	eP			37.8			
		ePcP	13	01	27.3			
	T	eP	12	59	38.0		1.4	48.2
	T	eP	18	43	05.3			
	D	eP			14.5			
	K	iP	19	42	14.7			
	S	eP			19.3			
	D	eP			22.7			
	T	eP			25.0			
AUG.31	T	eP	02	52	48.4			
	D	eP			56.8			
	T	eP	03	17	27.8			
	D	eP			36.3			
	S	eX	04	14	51.6	t?		
	S	eP	09	28	49.9	t?		
	K	eP	11	02	43.8	t		
	S	eP			47.9			
	T	eP			49.6		1.2	83.1
	D	eP			50.9			
	D	iP	11	18	42.5			
	S	iP			46.3			
	T	iP			54.4			
	K	iP			59.7			
	T	eP	13	12	37.5			
	D	eP			47.6			
	T	eP	15	00	06.8			
	D	eP			16.3			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
AUG.31	T	iP	17	40	03.8			
	K	iP			11.3			
	D	iP			14.4			
	S	eP			15.8			
	T	eP	18	09	02.0			
	D	eP			12.2			
	S	iP	19	13	43.1			
	D	eP			45.8			
	T	eP			57.0			
	K	iP		14	02.4			
	T	eP	20	55	27.4			
	T	eP	20	58	45.4	t	1.2	38.9
	D	eP			46.3			
	T	eP	22	19	07.2			
	D	eP			15.8			

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S-P \ Date	1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16		17		18	
0— 0.9																																				
1— 1.9																																				
2— 2.9																																				
3— 3.9																																				
4— 4.9																																				
5— 5.9			1		6		3		1				2		3		3				3						2									
6— 6.9	2		2		1								2		1		1		2		1				1				1		1	*	1		1	
7— 7.9	1		3		2		2		1		2		1		2		3		1		1	*			3	*	8	*	2		5		6	*	3	
8— 8.9	4		4		2		2		2		2		3		1		7		6		1		2		6				3		1		3		4	
9— 9.9	3		1				2	*	3		3		5		4				3		4	*					2		1		3		2		4	
10— 10.9	2		4				2		2		1		2		5		2	*	1	*	2		3		1		2		1		2		1	**	2	
11— 11.9	2		1		2				4		4				2		3		1		1										1				1	
12— 12.9	5		4		1				1				6			**	2		3		2				1		1				6					
13— 13.9		*	4								1	*	4		3		1		1								1		1	*	1					
14— 14.9	1						1		1		1		1		1				1		1		1						1		2		1			
15— 15.9	2				2				2				1		1		2		2		3						1		4				1			*
16— 16.9			1				2		1				1				1		1		3						3		2		1					
17— 17.9				*	3		3		1		1				1				1									*	2		2		1	*		
18— 18.9	1											*					1				2					*			2				1			
19— 19.9	1		1				3		1		1				1	*	1										1		1						1	
20— 20.9	1		1				1		1		1		2	*			2						1						2							
21— 21.9	1						1		2				1		2										1		1				1				1	
22— 22.9					1										1						1										1					
23— 23.9											1		1						1						1				4							
24— 24.9			2	*							1				1				1										1							
25— 25.9						*	1				1		2																		1				1	*
26— 26.9			1																												1					*
27— 27.9											1					*			1										1							
28— 28.9																																				
29— 29.9																													2							
30— 59.9	3	****	2	****	2		3	**	1	**	2	***	2	***	3	****	3		2	**	5	****	2	****	2	*	4		14	**	6	*	1	*	9	
60—179.9	1	**		********		**		*		**		**		*		**		***	1	***	1	****	1	*	2	25*	11	40*	12	57*	2	32*	7	18*	7	16*
t		**		**		****		*		******		**		****		**		***		**								*		**		**		******		******
?	1			**			1				1								1			*			6		4				2		12		16	
Total	31	9	32	18	22	7	27	5	24	10	24	9	36	9	32	12	32	7	30	8	31	13	10	5	24	28	41	43	57	62	39	36	37	29	50	25
No observation																							A : 251 7:30	10:00							22h00m 00h 07h00m ~ ~ ~ 24h00m 01h 07h30m					

Remarks *: indicates a larger earthquake which is included in the main table the Bulletin. A: Aftershock of Nemuro-oki

Tsukuba, Aug., '69

Date / S−P	19		20		21		22		23		24		25		26		27		28		29		30		31		Total1	Total2*	Total3
0− 0.9																													
1− 1.9																													
2− 2.9			1																								1		1
3− 3.9																													
4− 4.9																							1						1		1
5− 5.9	1		2				3		1		1				1				1				4				38		38
6− 6.9	1		3		2				3						2						2		1				31	1	32
7− 7.9	4	*	2		6	*	2		1		2			*	1		2		2	*	2		2		3		75	8	83
8− 8.9	2		1		2		2		2		1		2		1		3				3		2		1		75		75
9− 9.9	1		4		4						2		2		2		1		3	*	1		2		3		65	3	68
10− 10.9	4		3	*	5		1				3		2						1		3		4		2		63	5	68
11− 11.9	3		1				3		1		3		1				2		3		1		1		1		42		42
12− 12.9	3		1				2								2			*			1		1		1		43	3	46
13− 13.9	2		3				1				1	*									2				2		28	4	32
14− 14.9	1						1				1					*	1				3				1		21	1	22
15− 15.9	2				1		1		2			*							1				1		1		30	2	32
16− 16.9	1						1									*											18	1	19
17− 17.9	1		2			*	1		1								1		1				1				23	4	27
18− 18.9	1		3		1		5		1				1		1										1		21	2	23
19− 19.9	1	*	1		1	*									1						1						17	3	20
20− 20.9			1				5	*					3		2				1		1		3				28	2	30
21− 21.9			1										1				1		3	*		*					17	2	19
22− 22.9		*	1		2						1		1						2		1		2				14	1	15
23− 23.9			2				3		1				2				1		1								18		18
24− 24.9																					1						7	1	8
25− 25.9			1				1														1				4		13	2	15
26− 26.9							1						1													*	4	2	6
27− 27.9													1														4	1	5
28− 28.9																													
29− 29.9											1				1						1						5		5
30− 59.9	1	*	5	*	13	**	8	*********	32	*******	19	****	15	*********	19	11*	3	****	7	******	4	*****	6	**	5	*	203	101	304
60−179.9	14	16*	11	****	4	*********	6	****	4	**	3	**	1	**	5		1	11*	1	********	1	*********		11*		****	96	301	397
t		****		**		***		**		**		***		*		***		****		*****		***		*		*		79	79
?	4		8		1		3		2		9		12		10	*	5	*	5		2		4		6		115	5	120
Total	47	24	57	8	42	17	50	16	51	11	47	11	45	13	48	17	21	21	32	22	32	18	34	14	31	7	1,116	534	1,650
No observation																	14h ~ 16h Test												

Remarks *: indicates a larger earthquake which is included in the main table the Bulletin. A: Aftershock of Nemuro-oki

Dodaira, Aug., '69

S-P \ Date	1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16		17		18	
0— 0.9																																				
1— 1.9																			1																	
2— 2.9																																				
3— 3.9																																				
4— 4.9																									1											
5— 5.9																	1																			
6— 6.9									1																											
7— 7.9			1		2														1								1					*	1	*		
8— 8.9			1										2				2												1				1	*		*
9— 9.9			1		1						1																			*	1		1			
10— 10.9											1																				1		1			*
11— 11.9			1														1		1		1						1	*	2		1				1	
12— 12.9							2								3										1	*			2		3		1	*	3	
13— 13.9							1		1								2		1	*	4		1				2		1		2		2		1	
14— 14.9				*	3				1						1						1								1					*		
15— 15.9	1	*												*			1				1				1				1				3			
16— 16.9	1				1		1		1								1										1	*	2							
17— 17.9	1						1	*	1				1			**									1		1				1					
18— 18.9	1																		1		1						1						1			
19— 19.9				*			1																								1					
20— 20.9													1					*				*														
21— 21.9			1													*																				
22— 22.9											1						1		1																	
23— 23.9	1						1												1																	
24— 24.9			1									*																								
25— 25.9			1									*									1								1							
26— 26.9																											1								1	
27— 27.9											1														1	*									1	*
28— 28.9					1	*			1												1										1					
29— 29.9																						*									1					
30— 59.9		**	1	**	1				1	**	1	**	1	***		****				*	2	**		*	2	*	1		1		2		1		3	
60—179.9		**		**** ****		*		**		**		**		*		**		**		****		****		**	2	25*	21	33*	12	51*	1	29*	5	16*	3	14*
t		***		**		***		*		**** **		**		****		****		**		*								*		*		**		**** *		**** *
?				**			1					*	4		4							*			6		5						3		15	
Total	5	8	8	16	9	5	8	4	7	10	5	9	9	9	8	13	9	5	7	7	12	10	1	3	15	28	34	36	24	53	15	32	20	25	28	22
No observation			06h00m ~ 08h00m												10h ~ 13h25m									A:25 1 7:30 10:00												

Remarks*: indicates a larger earthquake which is included in the main table the Bulletin. A: Aftershock of Nemuro-oki

Dodaira, Aug., '69

C-P \ Date	19		20		21		22		23		24		25		26		27		28		29		30		31		Total1	Total2	Total3
0− 0.9																													
1− 1.9																											1		1
2− 2.9							1																				1		1
3− 3.9																													
4− 4.9																											1		1
5− 5.9																											1		1
6− 6.9	1																										2		2
7− 7.9					1										1								1				9	2	11
8− 8.9								*	1		1		1												1		11	3	14
9− 9.9	1		1								2					*			1								10	2	12
10− 10.9	1	*												*							1				1		6	3	9
11− 11.9	1		1										1					*			1		1				14	2	16
12− 12.9					1		2	*					1		3												22	4	26
13− 13.9	1		2		2								1						2		1		1				28	1	29
14− 14.9			1		1	*			1								2						1		1		14	3	17
15− 15.9	1				1								1			*							1		5		17	2	19
16− 16.9									1																	*	9	3	12
17− 17.9							1								1		1				1				1		11	3	14
18− 18.9	1		1			**	2																1		1		11	2	13
19− 19.9	1																	*									3	2	5
20− 20.9	1		1										2						1								6	2	8
21− 21.9											1	**			1					*							3	2	5
22− 22.9																											3	2	5
23− 23.9					1																		1				5		5
24− 24.9				*					1																		2	2	4
25− 25.9			1				1																				5	1	6
26− 26.9		*																							1		3	1	4
27− 27.9	1		1																	*					1		6	3	9
28− 28.9					1								1							*							6	2	8
29− 29.9							1												1								3	1	4
30− 59.9	2	*	2		5	**	2	**** *	5	*	3		4		1	***			5		2	***	1	*	1	*	50	37	87
60−179.9	12	16*	7	**** *	2	***** ****	1	**** ****	8	**** ****	11	* * ** **	5	11*	8	**** ***	2	13*		11*		13*	7	**** *	1	****	108	316	424
t		**** *		**		***		***		***		**		*		***		****		****		***		*		*		77	77
?	6		9		5		3		5		3		7		3		7	*	5		4		9		3		107	5	112
Total	30	24	27	8	20	17	14	18	22	12	21	10	24	13	18	15	12	20	15	18	10	19	24	7	17	7	478	483	961
No obser-vation																													

Remarks * : indicates a larger earthquake which is included in the main table the Bulletin. A:Aftershock of Nemuro-oki

Preliminary Bulletin of the Dodaira Micro-earthquake Observatory and its Substation

Observation stations

		N	E	h
Dodaira	(D or DDR)	35°59'54".0	139°11'36".2	800m
Tsukuba	(T or TSK)	36°12'39".0	140° 6'35".0	280m
Kiyosumi	(K or KYS)	35°11'51".6	140° 8'53".6	230m
Shiroyama (temporary)	(S or SRY)	35°36'30".0	139°16'27".0	254m

Expressions:

Am : Amplitude in millimicron (half of peak to trough*) of P motion maximum within few cycles after the onset recorded by a short period vertical seismograph.
*In 1967 double amplitude (peak to trough) was used as Am.

T : Period in sec of the measured P maximum

t : Teleseism

All stations are radio-telemetered to Tokyo giving records on a multi-channel ink-recording oscillograph. The paper speed of the recorder is 1 mm per sec. For stronger events high speed recorder (10 mm/sec) is also triggered. The system is also recorded in parallel on multi channel magnetic tape through a trigger system using an endless tape loop. Direct filter sum of short period seismometers at Dodaira and/or on line short period filter outputs of Tsukuba are also used for the

Preliminary Bulletin of the Dodaira Micro-earthquake Observatory and its Substation

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ic signals. For teleseismic events records of long period and medium period seismographs are occasionally used, applying off line frequency filter, if necessary.

The Bulletin includes the preliminary readings sent to USCGS for teleseisms and larger near shocks with total durations (F-P) of short period vertical seismograph at Tsukuba (TSK) with magnification about 140.000 at 1 c/s or sensitivity about 300×10^{-3} mm/microkine at 10 c/s being longer than 100 seconds which correspond approximately shocks with $M \geq 3.5$. For the minor near earthquakes with $F\text{-}P < 100$ sec or $M < 3.5$, frequency of S-P times at each station is added at the end of the Bulletin, which may easily give a general idea of local seismicity around the station.

Date	Station	Phase	Time(G.M.T.)			t	T	Am
SEP. 1	T	eP	03	10	00.4			
	T	eP	05	33	44.7	t	1.4	36.4
	K	eP	05	54	42.5			
	T	eP			53.1			
	K	eP	06	28	48.4			
	S	eP			58.0			
	T	eP		29	01.0			
	T	eP	08	52	59.3			
	D	eP		53	08.5			
	T	iP	09	17	15.8			
	K	eP			26.3			
	D	iP			26.7			
	S	iP			29.5			
	T	eP	09	47	13.1			
	D	iP			21.8			
	S	eP			26.0			
	K	eP			26.2			
	T	eP	09	51	57.7			
	D	eP		52	07.2			
	K	eP			09.6			
	S	eP			10.7			
	T	eP	11	21	41.0			
	D	eP			50.4			
	T	eP	17	04	52.2			
	D	eP		05	01.6			
	T	eP	17	32	34.5			
	D	eP			43.9			
	S	eP	18	24	11.7	t		
	T	eP			12.4		1.1	29.5
	D	eP			14.8			
	T	eP	18	49	11.7			
	D	eP			20.4			
	S	eP			24.8			
	K	eP			25.6			
	T	eP	21	25	21.2	t	0.5	4.1
	T	eP	22	17	08.9			
	D	eP			18.2			
SEP. 2	T	eP	01	28	41.8			
	D	eP			52.6			
	T	eP	04	06	43.5	t	1.6	50.0
		eX_1		07	12.4			
		eX_2			58.0			
	D	eP		06	45.7	~~t~~	~~1.6~~	~~50.0~~
		eX_1		07	16.9			

Date	Station	Phase	Time(G.M.T.)	t	T	Am
	T	eP	07 18 36.6			
	D	iP	43.1			
	S	eP	50.3			
	T	iP	11 47 26.4			
	S	iP	28.2			
	D	iP	30.2			
	D	iP	12 07 38.7			
	S	iP	42.3			
	T	iP	50.5			
	K	iP	55.2			
	D	eP	12 25 49.2			
	S	iP	52.7			
	T	eP	26 00.8			
	K	eP	06.0			
	S	eP	12 38 41.3			
	K	eP	41.5			
	D	iP	46.0			
	T	eP	48.6			
	T	eP	15 22 09.1			
	D	eP	18.1			
	S	eP	22.5			
	T	eP	16 55 20.6	t	1.0	76.0
	S	eP	23.5			
	D	eP	23.9			
SEP.3	T	eP	04 21 28.4			
	D	eP	36.7			
	D	eP	05 05 29.8	t		
	T	eP	32.9		1.0	13.5
	T	eP	06 58 44.9			
	T	eP	07 33 08.1			
	D	eP	09.8			
	T	iP	07 59 37.5			
	D	iP	40.6			
	D	eP	12 10 18.2			
	S	eP	21.6			
	T	eP	29.7			
	D	eP	15 27 01.2	t?		
	S	eP	16 21 26.2			
	D	eP	31.4			
	T	eP	33.4			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
SEP.3	T	iP	18	37	46.2			
	S	iP			47.6			
	D	iP			50.5			
	T	eP	21	37	13.8			
	D	eP			23.6			
	T	eP	22	03	39.3			
	D	eP			49.8			
	S	eP	22	11	08.9			
	D	eP			09.8			
	T	eP	22	52	29.4			
	D	eP			39.9			
SEP.4	T	eP	03	12	12.2			
	D	eP			20.1			
	S	eP			25.0			
	S	iP	03	56	49.4			
	T	iP			50.8			
	D	iP			54.0			
	T	eP	04	32	21.8			
	D	eP			30.6			
	D	eP	05	41	57.4			
	T	eP	11	35	57.0			
	D	eX	16	37	50.0	t?		
	T	eP	17	12	13.2			
	D	eP			22.7			
	T	eP	19	52	54.2			
	D	eP		53	04.8			
	T	eP	21	14	49.2			
	D	eP			57.4			
	S	eP		15	01.2			
	K	eP			01.4			
	D	eP	22	34	53.0			
	T	eP			57.2			
	T	eP	23	48	48.4			
	D	eP			57.6			
SEP.5	T	eP	05	18	20.6			
	D	eP			28.4			
	T	eX	06	35	25.4	t?		

Date	Station	Phase	Time(G.M.T.)	t	T	Am
SEP.5	S	eP	11 46 46.8	t		
	D	eP	48.3			
		eS	50 33.2			
	K	eP	46 52.1			
	T	eP	53.4		1.1	62.5
	T	eP	12 27 36.1			
	D	eP	46.0			
	S	eP	49.4			
	K	eP	15 45 59.1			
	S	eP	46 07.2			
	T	eP	12.8			
	D	eP	13.4			
	S	eP	16 14 48.4	t		
	T	eP	51.5		0.5	6.3
	D	eP	52.0			
	T	eP	17 04 43.0			
	D	eP	53.8			
	K	eP	53.9			
	S	eP	55.6			
	T	eP	20 14 02.6			
	D	eP	10.6			
	S	eP	22 08 54.6	t		
	D	eP	56.0			
	T	eP	09 05.8		1.2	85.8
SEP.6	D	eP	01 12 45.3	t?		
	T	eP	50.6			
	T	eP	06 05 10.7			
	T	eP	07 45 42.9			
	D	eP	51.6			
	S	eP	53.3			
	T	eP	10 45 04.2			
	D	eP	14.0			
	T	eP	11 45 31.8		0.9	25.3
	D	eP	39.6			
	S	eP	44.0			
	K	eP	44.6			
	T	eP	14 48 45.0	t?		
	K	eP	14 58 30.5	t		
	S	eP	33.0			
	T	eP	34.8		1.0	26.5
	D	eP	36.3			
	S	eP	16 18 37.4			
	T	eP	42.6			
	D	eP	43.3			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
SEP.6	K	eP	17	16	38.2	t		
	S	eP			40.6			
	T	eP			43.6		1.3	59.3
	D	eP			44.2			
	T	eP	19	00	42.1			
	D	eP			51.0			
	T	eP	20	14	42.1			
	S	eP	21	10	33.6			
	T	eP			38.8			
	D	eP			38.9			
SEP.7	S	eP	00	25	21.1			
	D	eP			22.9			
	T	eP			31.6			
	S	eP	03	14	35.6	t		
	T	eP			38.4		1.4	68.2
	D	eP			39.3			
	T	eP	06	42	46.7			
	D	eP			57.0			
	T	eP	06	54	45.6			
	D	eP			55.6			
	T	eP	08	40	22.9			
	D	eP			32.2			
	S	eP	08	48	32.0	t		
	T	eP			34.8		1.2	106.3
	D	eP			35.4			
	T	eP	12	35	54.2			
	D	eP		36	02.8			
	S	eP			03.9			
	S	eP	13	49	38.0			
	T	eP			45.1			
	D	eP			45.8			
	S	eP	14	05	42.6			
	D	eP			50.8			
	T	eP			52.3			
	T	eP	18	45	52.0			
	D	eP		46	02.0			
	T	eP	20	06	16.4			
		eX			26.8			
	D	eX			37.6			
SEP.8	T	eP	02	40	03.6			
	D	eP			13.8			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
SEP. 8	T	eP	02	45	30.4			
	D	eP			39.6			
	S	eP	05	57	58.6			
	D	eP		58	08.6			
	T	eP			08.8			
	K	eP	12	53	25.3	t		
	S	eP			26.9			
		ePcP		55	20.3			
	D	eP		53	30.0			
		eX			40.0			
		epP?			59.0			
		ePcP		55	22.8			
		eS		59	17.0			
	T	eP		53	33.1		1.1	44.3
	S	eP	19	09	30.0			
	T	eP			33.3			
	D	eP			34.6			
	T	eP	21	00	02.0			
	D	eP			09.8			
SEP. 9	D	iP	05	16	07.2			
	T	eP			17.8			
	K	iP			19.2			
	D	eP	05	20	45.2			
	D	eP	05	24	42.4			
	T	eP			52.4			
	D	eP	05	25	49.4			
	T	eP			59.8			
	D	eP	05	30	26.6			
	T	eP			42.1			
	T	eP	05	32	06.7			
	D	eP	05	36	44.3			
	T	eP			56.4			
	D	eP	05	43	19.9			
	T	eP			30.1			
	D	eP	05	47	26.8			
	T	eP			39.4			
	D	eP	05	48	51.2			
	T	eP		49	02.6			
	D	eP	06	18	00.5			
	D	eP	06	33	22.6			
	T	eP			34.0			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
SEP.9	D	eP	06	56	09.5			
	T	eP			19.4			
	D	eP	07	25	53.5			
	T	eP		26	05.4			
	D	eP	07	40	44.9			
	T	eP			57.1			
	D	eP	08	08	50.0			
	T	eP		09	02.6			
	D	eP	08	44	11.8			
	T	eP			22.6			
	T	eP	15	07	09.8			
	D	eP			20.0			
	D	eP	17	20	12.6			
	T	eP			22.9			
	K	iP	18	29	50.6			
	D	iP			51.8			
	T	iP			51.8			
	D	eP	20	15	19.4			
	T	eP			30.3			
	D	iP	20	32	30.1			
	T	eP			40.4			
	S	eP			42.6			
	T	eP	20	39	12.9			
	D	eP			22.8			
	D	eP	20	57	41.7			
	T	eP			50.7			
	T	eP	21	59	03.2			
	D	eP			11.2			
	T	eP	23	54	16.5			
	D	eP			33.5			
SEP.10	D	eP	01	00	42.4			
	T	eP			54.0			
	T	eP	01	41	16.8			
	T	eP	02	56	50.2			
	S	eP	04	15	14.5			
	K	eP	04	22	50.5			
	T	eP			59.8			
	S	eP	04	31	56.0			
	T	eP		32	05.9			

Date	Station	Phase	Time(G.M.T.)	t	T	Am
SEP.10	T	eP	07 17 56.2			
	D	eP	18 04.8			
	T	eP	07 49 13.4			
	D	eP	22.0			
	S	eP	25.2			
	T	iP	09 43 03.2			
	D	iP	14.0			
	S	iP	16.5			
	D	iP	11 59 13.7			
	S	iP	15.0			
	T	eP	23.3			
	D	iP	12 03 48.1			
	S	iP	49.2			
	T	eP	58.1			
	K	eP	04 01.0			
	D	eP	15 21 19.6			
	S	eP	20.9			
	T	eP	30.7			
	D	iP	16 03 19.6			
	S	iP	20.4			
	T	iP	30.4			
	K	eP	31.8			
	D	iP	16 47 43.8			
	S	iP	44.3			
	T	iP	54.6			
	K	eP	55.8			
	D	iP	18 19 12.6			
	S	iP	13.3			
	T	iP	23.6			
	K	eP	25.9			
	D	iP	18 23 21.8			
	S	iP	22.3			
	T	iP	32.5			
	K	eP	35.0			
	D	iP	19 25 04.6			
	S	iP	05.2			
	T	iP	15.4			
	K	eP	17.6			
SEP.11	S	eP	03 20 17.9	t		
	D	eP	19.0			
	T	eP	26.6		1.0	53.0
	T	eP	04 10 23.2	t	0.5	17.6
	S	eP	04 24 27.7			
	D	eP	29.9			
	T	eP	34.1			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
SEP.11	T	iP	06	21	16.4			
	D	iP			25.3			
	S	iP			28.5			
	K	eP			29.6			
	D	eP	09	09	23.7			
	S	eP			24.2			
	T	eP			31.8			
	D	eP	09	10	01.6			
	S	eP			02.6			
	K	eP	12	55	01.9			
	S	eP			10.6			
	T	eP			15.0			
	D	eP			15.6			
	D	iP	15	02	25.4			
	S	iP			26.0			
	T	iP			36.7			
	K	eP			38.7			
	D	iP	16	21	24.0			
	S	iP			24.6			
	T	iP			34.9			
	K	eP			37.7			
	D	eP	17	58	56.0			
	S	eP			56.8			
	T	eP		59	08.8			
	D	iP	18	39	05.4			
	S	iP			06.3			
	T	eP			16.1			
	K	eP	18	46	35.6			
	T	eP			45.3			
	D	eP			48.6			
	D	iP	19	14	17.2			
	S	iP			18.2			
	T	eP			27.7			
	K	eP			29.3			
	D	eP	19	30	03.8	t		
	T	eP			06.6		0.5	3.5
	D	eP	22	12	06.0			
	S	eP			07.0			
	T	eP			16.7			
SEP.12	T	eP	01	20	58.2			
	D	eP		21	07.7			
	K	eP	01	21	52.8			
	T	eP			59.0			
	S	eP		22	05.4			
	D	eP			08.0			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
SEP.12	T	eP	02	17	31.1			
	D	eP			40.0			
	T	eP	03	25	38.5	t	1.1	90.3
	S	eP			38.6			
	D	eP			41.4			
	T	eP	07	22	18.1	t	1.0	34.0
	D	eP			24.3			
	T	eP	07	49	08.6	t	1.0	19.5
	D	eP			17.5			
	T	eP	08	06	44.4	t	1.2	51.8
	D	eP			50.8			
	T	eP	08	15	52.5	t	1.0	29.5
	D	eP			58.7			
	T	eP	09	03	35.4	t	1.2	61.1
	D	eP			41.6			
		ePP		06	24.6			
		eS		10	06.3			
	S	eP		03	43.8			
	D	eP	09	54	22.2			
	S	eP			23.8			
	T	eP			32.0			
	T	eP	11	49	50.0			
	D	eP			59.6			
	T	eP	13	28	25.0			
	D	eP			34.1			
	T	iP	14	16	56.0			
	D	iP		17	06.3			
	K	iP			11.4			
	T	eP	15	06	46.2	t	1.2	60.0
	D	eP			52.9			
	K	eP			54.6			
	S	eP			54.8			
	T	eP	18	47	39.3	t	0.5	6.5
	D	eP			45.2			
SEP.13	K	eP	00	44	56.2	t		
	S	eP			59.3			
	T	eP		45	00.9		1.0	21.5
	D	eP			01.8			
	T	eP	01	44	28.6			
	S	iP	02	58	16.6			
	T	iP			24.6			
	K	iP			30.1			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
SEP.13	T	eP	11	12	42.6	t	1.2	98.6
		eX1			52.8			
		eX2		13	17.8			
	S	eP		12	45.3			
		eX1			55.1			
	K	iP	11	19	33.5			
	S	iP			43.9			
	T	iP			44.4			
	T	eP	11	54	19.4			
	K	eP			31.6			
	S	eP			32.2			
	T	eP	12	19	14.9			
	T	eP	12	35	48.9			
	T	eP	15	51	33.8			
	D	eP			44.4			
	T	eP	16	46	11.0			
	D	eP			20.6			
	K	eP	18	55	59.6			
	S	eP		56	08.6			
	T	eP			11.4			
	D	eP			13.6			
	T	eP	20	01	55.2			
	D	eP		02	04.4			
	S	eP			08.2			
	T	eP	22	54	39.7			
	T	eP	23	56	39.6			
	D	eP			49.7			
SEP.14	T	eP	06	14	00.9			
	D	eP			11.0			
	T	eP	12	51	18.0			
	D	eP			27.0			
	K	eP			30.3			
	S	eP			30.6			
	D	iP	14	31	46.3			
	S	iP			47.1			
	T	iP			57.3			
	K	iP			58.6			
	D	iP	14	39	23.6			
	S	iP			24.2			
	T	eP			35.6			
	D	eP	14	55	18.0	t		
	T	eP			24.7		1.3	76.3

Date	Station	Phase	Time(G.M.T.)	t	T	Am
SEP.14	D	eP	16 24 20.2	t		
		eX	25 26.6			
	S	eP	24 20.5			
	T	eP	22.6		1.0	36.0
	T	eP	23 05 34.0			
	D	eP	44.6			
	D	iP	23 50 16.6			
	S	iP	17.4			
	T	iP	27.5			
	K	eP	30.4			
SEP.15	T	iP	07 33 55.3	t	1.1	118.2
	K	eP	57.6			
	D	iP	57.7			
		eX	34 30.5			
	S	eP	33 57.9			
	D	iP	08 31 31.3			
	T	eP	33.7			
	T	eP	11 15 33.4	t	0.5	3.5
	S	eP	33.9			
	D	eP	38.4			
	T	eP	12 02 08.8			
	T	iP	14 11 14.7			
	D	iP	21.8			
	S	eP	26.8			
	K	eP	28.9			
	T	eP	14 32 40.6			
	D	eP	50.8			
	T	eP	14 51 43.6	t	1.1	182.0
		eX	53 04.9			
	D	eP	51 50.0			
	S	eP	52.2			
	K	eP	17 01 02.6			
	S	eP	10.1			
	T	eP	14.6			
	D	iP	15.1			
	T	eP	18 50 37.1			
	D	eP	46.3			
	T	eP	20 22 25.4			
SEP.16	T	eP	01 20 08.2			
	D	eP	17.4			
	D	eP	02 25 42.8			
	T	eP	44.0			

Date	Station	Phase	Time(G.M.T.)	t	T	Am
SEP.16	T	eP	03 30 33.2			
	D	eP	41.5			
	S	eP	08 03 51.1	t		
	D	eP	52.8			
		eS	06 35.4			
	T	eP	03 58.2		0.5	9.2
	T	eP	08 19 56.4			
	D	iP	14 40 21.2			
	S	iP	21.8			
	T	eP	32.8			
	T	eP	14 42 01.0	t	1.6	438.0
	D	eP	05.3	Explosion		
		ePP	45 01.2			
		eS?	49 15.5			
	K	eP	42 05.7			
	S	eP	06.3			
	D	iP	21 29 07.9			
	S	iP	08.4			
	T	eP	20.0			
SEP.17	T	eP	02 20 13.7	t?	1.1	27.3
	D	eP	19.9			
	D	iP	14 03 29.8			
	S	iP	30.5			
	T	eP	40.6			
	T	eP	16 08 25.4			
	S	eP	18 42 45.0			
	D	eP	47.0			
	K	eP	52.0			
	T	eP	57.0		2.1	143.0
	S	eP	18 53 05.0			
	D	eP	07.3			
	T	eP	16.8		1.7	142.0
SEP.18	T	eP	01 43 28.8			
	D	eP	39.2			
	S	eP	02 30 02.2			
	D	eP	08.6			
	T	eP	11.2			
	S	eP	05 18 04.3	t		
	T	eP	06.2		0.5	2.9
	D	eP	06.9			
	T	eP	06 09 49.9			
	D	eP	57.8			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
SEP.18	T	eP	11	54	39.2			
	D	eP			48.0			
	S	eP			52.4			
	S	eP	12	04	53.3	t		
	D	eP			57.8			
	T	eP			59.0		1.2	63.6
	T	eP	15	15	31.9			
	D	eP			40.8			
	T	eP	21	42	56.0			
SEP.19	D	eP	01	35	59.2	t		
		ePP		37	07.3			
		ePcP		39	09.0			
		eS		40	02.0			
		eScP		42	22.2			
		eScS		46	03.1			
	T	eP		36	03.1		1.5	204.0
	S	eP	06	00	51.3			
	D	eP			53.2			
	K	eP			55.7			
	T	eP			57.8			
	T	eP	12	02	44.9			
	D	eP			51.8			
	T	eP	12	13	51.2			
	D	eP		14	01.2			
	T	iP	15	47	11.2			
	D	eP			21.1			
	S	eP			24.2			
	K	eP			26.0			
	T	eP	17	01	12.2			
	D	eP			19.4			
	D	iP	19	00	12.2			
	S	iP			13.3			
	T	eP			23.1			
	T	eP	20	44	04.0			
	L	eP			12.8			
	S	eP			17.8			
	T	eP	23	42	52.6			
	D	eP		43	01.4			
SEP.20	T	eP	01	25	10.6			
	D	eP			20.8			
	T	eP	05	21	34.5	t	1.2	101.0
	D	eP			35.2			

Date	Station	Phase	Time(G.M.T.)	t	T	Am
SEP.20	D	eP	09 04 08.5	t		
	T	eP	11.9			
	S	iP	09 15 43.3			
	D	iP	47.7			
	K	iP	55.2			
	T	iP	58.6			
	T	eP	10 14 21.4			
	D	eP	31.4			
	T	eP	10 36 57.1			
	D	eP	37 05.7			
	T	eP	13 49 09.2			
	D	eP	18.8			
	D	eP	14 17 19.8	t		
	S	eP	21.1			
	T	eP	23.6		1.0	25.1
	D	iP	23 42 02.5			
	S	iP	03.2			
	K	eP	16.2			
SEP.21	D	eP	02 20 33.0	t		
		eX1	40.2			
		eX2	54.0			
	K	eP	39.3			
	S	eP	40.3			
	T	eP	03 59 21.0			
	D	iP	31.0			
	S	eP	34.8			
	T	eP	06 01 59.0			
	D	iP	02 09.0			
	S	eP	12.6			
	K	eP	20.5			
	T	eP	06 04 07.3			
	D	eP	17.1			
	K	eP	07 22 27.5	t		
	T	eP	31.7		1.2	157.0
	S	eP	31.8			
	D	eP	34.4			
	T	eP	12 09 17.5			
	D	eP	27.4			
	T	eP	16 27 47.3			
	D	eP	48.0			
	D	iP	23 21 29.0			
	S	eP	34.5			
	T	eP	39.2			
	K	eP	50.2			

Date	Station	Phase	Time(G.M.T.)	t	T	Am
SEP. 22	T	eP	02 37 52.2			
	S	eP	38 06.0			
	T	eP	02 42 35.9			
	T	eP	03 17 54.6			
	D	eP	18 04.6			
	D	iP	08 19 32.7			
	S	iP	33.4			
	T	iP	33.9			
	K	iP	37.3			
	T	iP	11 39 25.8			
	D	iP	35.6			
	S	eP	38.4			
	D	eP	12 41 14.7	t?		
	T	eP	15.7			
	D	eP	13 32 17.2			
	D	eP	16 22 34.8	t		
		ePcP	24 40.8			
	S	eP	22 36.4			
	T	eP	38.0		1.0	15.6
		ePcP	24 42.0			
SEP. 23	T	eP	02 26 41.4			
	D	eP	49.2			
	T	eP	04 06 46.7			
	D	eP	53.2			
	T	eP	04 45 54.4			
	D	eP	46 03.8			
	S	eP	05 24 22.0			
	D	eP	27.1			
	T	eP	28.0			
	T	eP	05 51 42.1			
	D	eP	51.3			
	D	iP	06 52 42.4			
	S	iP	43.4			
	T	eP	53.2			
	T	eP	14 23 31.7	t		
	D	eP	33.4			
	K	eP	19 25 33.2			
	S	eP	42.1			
	T	eP	44.6			
	D	eP	47.0			
	T	eP	22 19 47.1			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
SEP.24	T	iP	01	37	06.2			
	D	iP			14.1			
	S	eP			17.8			
	S	eP	02	20	11.0			
	T	eP			14.8			
	D	eP			16.5			
	S	eP	20	31	21.0	t		
	T	eP			21.6		1.1	68.7
	D	eP			23.3			
SEP.25	T	eP	03	27	50.4	t?		
	S	iP	05	24	51.5			
	D	iP			53.4			
	K	iP			55.2			
	T	iP			57.9			
	D	eP	07	34	01.9	t?		
	T	eP	22	15	22.2			
	D	eP			30.3			
SEP.26	T	eP	05	55	27.4			
	D	eP	07	11	06.4	t		
	T	eP			07.3		1.2	58.0
	S	eP	08	33	23.0	t		
	D	eP			25.3			
	T	eP			29.4		1.2	24.0
	T	eP	10	18	33.1			
	D	eP			42.4			
	T	eP	11	33	48.2	t	1.1	42.0
	D	eP			53.8			
	S	eP			56.1			
	T	eP	11	40	12.4			
	D	eP			21.2			
	K	iP	18	28	45.5			
	T	iP			46.2			
	S	iP			48.4			
	D	iP			50.4			
SEP.27	T	eP	04	04	26.0			
	D	eP			35.4			
	S	eP			39.8			
	T	eP	06	37	36.4			
	D	eP			45.6			
	T	eP	08	54	42.1	t	1.4	78.2
	D	eP			48.6			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
SEP.27	S	eP	09	23	57.5	t		
	D	eP			59.6			
		eX1		24	11.4			
		eX2			20.9			
	T	eP		23	59.7		1.4	82.8
	T	eP	14	23	04.4			
	D	eP			14.6			
	S	eP			18.1			
	T	eP	15	25	54.9			
	D	eP		26	05.0			
	T	eP	17	59	08.8			
	S	eP	18	47	05.6	t		
	D	eP			08.0			
	T	eP			08.6		1.2	63.7
	S	eP	19	23	06.8	t		
	D	eP			08.8			
	T	eP			11.8		1.2	23.9
SEP.28	S	eP	07	23	06.8			
	T	eP			09.6			
	D	eP			12.0			
	T	eP	07	50	21.2			
	D	eP			31.4			
	S	eP			34.8			
	S	eP	10	28	25.7	t		
	T	eP			26.2		1.0	19.0
	D	eP			28.4			
	T	eP	16	19	12.1			
	D	eP			21.0			
	S	eP	18	05	35.8	t		
	K	eP			36.8			
	D	eP			39.7			
		ePcP		08	09.6			
	T	eP		05	42.8		1.0	30.0
		ePcP		08	10.4			
	L	eP	19	02	26.5	t		
	S	eP			29.0			
	T	eP			30.6		1.2	37.5
	T	iP	19	10	55.6			
	K	iP			56.4			
	D	eP		11	03.8			
	S	eP			04.0			

Date	Station	Phase	Time(G.M.T.)	t	T	Am
SEP.28	K	eP	19 55 08.6	t		
	S	eP	13.8			
	D	eP	17.1			
	T	eP	18.4		1.1	228.0
		ePP?	56 35.6			
	D	eP	21 39 42.3	t?		
	T	eP	47.7			
	T	eP	21 56 04.5			
	D	eP	12.2			
	D	eP	23 06 50.4	t		
	T	eP	53.0		1.5	51.0
	S	eP	53.7			
SEP.29	D	eP	07 19 31.4	t		
	S	eP	09 41 53.2			
	T	eP	57.9			
	D	eP	58.8			
	D	eP	13 45 19.3			
	T	eP	19.9			
	T	eP	16 06 53.3			
	D	eP	07 02.6			
	S	eP	16 27 51.2	t		
	D	eP	54.0			
		eX1	28 19.0			
		eX2	29 39.2			
		eS	33 32.7			
	T	eP	27 57.3		1.8	269.0
	D	eP	18 00 57.5			
		eX	01 08.8			
	S	eP	01.0			
	K	eP	03.5			
	D	eP	18 06 05.5			
	T	eP	18 24 37.4			
	T	eP	20 16 28.3			
	D	eP	38.0			
	D	eX	20 25 50.5	t		
		eX	26 08.7	LZ	20.0	11.1U
				LE	20.0	9.0U
				LN	20.0	12.8U
	D	iP	20 42 00.3			
	S	iP	05.4			
	T	iP	09.8			
	K	eP	18.7			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
SEP.29	T	iP	21	11	24.6			
	D	iP			35.5			
	S	iP			37.6			
	K	eP			40.0			
	T	eP	23	52	24.4			
	D	eP			34.5			
SEP.30	T	iP	01	09	57.1			
	K	iP			59.0			
	S	iP		10	00.3			
	D	iP			01.4			
	T	iP	03	01	34.4			
	S	iP			35.5			
	K	iP			35.6			
	D	iP			36.6			
	T	eP	04	32	12.0			
	D	eP			20.9			
	T	eP	07	22	07.3			
	D	eP			17.0			
	T	eP	07	56	39.7			
	D	eP			50.6			
	T	eP	09	10	24.9			
	D	eP			35.6			
	T	iP	12	40	27.8			
	D	iP			37.4			
	S	eP			39.9			
	K	eP			49.9			
	T	eP	15	00	06.6			
	D	eP			15.8			
	D	eP	17	13	33.9	t		
	T	eP			15.8		1.0	13.0
	S	eP	18	03	39.2	t		
	D	eP			40.5	LZ	20.0	2.4U
						LE	20.0	6.2U
						LN	19.0	7.1U
	T	eP			40.7		1.1	14.2
	K	eP	18	27	26.1			
	S	eP			32.5			
	D	eP			37.6			
	T	eP			37.8			

Dodaira, Sep., 1969

S-P sec \ Date	1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16		17		18	
0 — 0.9																																				
1 — 1.9																																				
2 — 2.9																																				
3 — 3.9																																				
4 — 4.9																																				
5 — 5.9																																				
6 — 6.9																																				
7 — 7.9																	1																		1	
8 — 8.9					1	*																					1		1							
9 — 9.9													1		1				1												1					
10 — 10.9	2																										2								1	
11 — 11.9			1						1								1			*											1					
12 — 12.9											2		1						1				1				2		1				1		1	
13 — 13.9	3		2	*							2		1						1				1								1		2		1	
14 — 14.9			2								1						1		1				1				1				1				1	
15 — 15.9	1						2		1		1				1				2		1						1				2				1	
16 — 16.9	2		1	*				*	1		2				1										1											
17 — 17.9	2	**		*			1										1		1				1				1		1							
18 — 18.9	2	*				*			2		1										1								1							
19 — 19.9					2			*	1											*																
20 — 20.9					1										1								1												1	
21 — 21.9																	2						3				1		1		2		1			
22 — 22.9	1				1						1		1				84	16*	31	****	18	*** ***	16	*** **	3		7	**	4	*	6		3	**	2	
23 — 23.9	1									*			1		1		6		9	***	5	**	3	**	2		1					*				
24 — 24.9																																				
25 — 25.9																	1		2																	
26 — 26.9																	1						1										1			
27 — 27.9																			1				1												1	
28 — 28.9											1								1										1							
29 — 29.9																							1													
30 — 59.9	3	***				*		*	1	**	3	*		**					1	*	1	**		***			1			*			1		3	
60 — 179.9		***	2	*** ***		**		**** ***		****		*** **		**** ****	1	*** **	1	*	1	*** **	2	*		****				**** ***	1	***		*** ***	2			*** **
t		*		**		**		*		**		****		***		*						*		**** ***		***		*		****		**		*		**
?	5	*	1	*	3		6		3		4		3		1		2	*	3		1		1		2		1		6		4		3		2	*
Total	22	11	9	12	8	7	9	11	10	9	18	10	8	13	7	6	101	18	56	15	29	12	31	21	8	3	19	10	17	9	18	9	14	3	15	8
No observation																										10h16m ~ 22h10m										

Remarks * : indicates a larger earthquake which is included in the main table the Bulletin.

Dodaira, Sep., 1969

S-P sec \ Date	19		20		21		22		23		24		25		26		27		28		29		30		Total I	Total II	Total III
0 — 0.9																											
1 — 1.9																											
2 — 2.9																								*		1	1
3 — 3.9									1																1		1
4 — 4.9											1														1		1
5 — 5.9													1						1						2		2
6 — 6.9								*							1										1	1	2
7 — 7.9							1		1														2		6		6
8 — 8.9					1		1		1		1		2												9	1	10
9 — 9.9			1								1		1												7		7
10 — 10.9			1		1		2								1										10		10
11 — 11.9				*	1														1						6	2	8
12 — 12.9	1		3				1		3														2	*	20	1	21
13 — 13.9			2				5	*	1				2		1		1		1				1	**	28	4	32
14 — 14.9			2		1			*					1					*	1				2		16	2	18
15 — 15.9					1		1												1		1	*			17	1	18
16 — 16.9																	1		1						10	2	12
17 — 17.9			1																						9	3	12
18 — 18.9							1		1															*	9	3	12
19 — 19.9	1				1				1																6	2	8
20 — 20.9			2		1								1												8		8
21 — 21.9													1				2								13		13
22 — 22.9	2		1	*		*	2		2	*		※													185	40	225
23 — 23.9		*																							29	10	39
24 — 24.9									1																1		1
25 — 25.9									1				1						2						7		7
26 — 26.9				*													1								4	1	5
27 — 27.9			1														1				1				6		6
28 — 28.9																			1						4		4
29 — 29.9	1																								2		2
30 — 59.9		*	2	*	3	****	1		2	**		*		*		*	1				1			*	24	29	53
60 — 179.9		**	1	*** ***	2		1	**		***						***		**		***		****		**** ****	14	105	119
t		*		***		**		*		**				**		***		**		***		*** ***		**		64	64
?	3		3		2		3				1	*	4		3		4	*	3		2		4		83	6	89
Total	8	5	20	13	14	7	19	6	15	8	4	3	14	3	6	7	11	6	12	6	5	11	11	16	558	278	816
No observation																											

Remarks * : indicates a larger earthquake which is included in the main table the bulletin

Tsukuba, Sep. 1969

Date / S–P sec	1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16		17		18	
0 — 0.9																																				
1 — 1.9																																				
2 — 2.9																																				
3 — 3.9																																				
4 — 4.9			1																				1													
5 — 5.9			1			*	1						2								1						1								1	
6 — 6.9	1		2		1		2		1		1				1		1						1		2		1				2					
7 — 7.9	3		2		1		2		2		1		2				1				2		2		2		2		2		3				2	
8 — 8.9	3		2		2		1		3				1		1		2		2		1		2		1		3		2		1				2	
9 — 9.9	3		4	*	2		2		1		3		2		1				2		4		3		1		2		5				1		1	
10 — 10.9	4		1	*	1			*	3		4		1		2		2		6	*			2		1		1		4		2		1		1	
11 — 11.9	1	*	3		2		1		1		1				1				2	*	1		2		3				1		1		1		1	
12 — 12.9	1		5				2		4		1		6		1		3		2						1		3		1		1					
13 — 13.9					3		3		1		1						3		3						1		3				2		1		2	
14 — 14.9			2						3		2				3				2		1		1		2		1				1		1		1	
15 — 15.9	2		2		2				1		4		1		3		2		1		1								1		1		1			
16 — 16.9	1									*	1		1										1		1		2				3					
17 — 17.9	1				1		1	*					2		1				2				1		1		1		1							
18 — 18.9															1		1		1				1		1				1							
19 — 19.9			1																1		1										2					
20 — 20.9																					1						2								2	
21 — 21.9																							1						1							
22 — 22.9					1						2		1							*				***					1				1		1	
23 — 23.9	1		2								4	*									1						1									
24 — 24.9			1	*	1				1								1												2		1					
25 — 25.9	4	**					1				1								1										1							
26 — 26.9	1			*	2	*			1		1														1	*										
27 — 27.9	1														1						1												1			
28 — 28.9																	1					*	1		1		1		1							
29 — 29.9																																				
30 — 59.9	13	********	9	**	3		4	**	3	***	3	*	2	*	3		23	15*	6	12*	6	*********	7	*********	4	*	2	**	1	*	2	**	3	**	4	*
60 — 179.9	2	****	2	****	2	***	2	******		***	3	*****	1	10*	1	*****	2	**	2	****	4	*		**	4	****	1	********	2	*****	1	******				******
t		**		***		**				**		*****		***		*						**		*******		****		*		****		**		*		**
?	4		2		2	*	6		4		4		3		6		11		7		1		2		6		4		8		4		4		2	
Total	46	17	42	13	26	8	28	10	29	9	37	12	25	14	26	6	53	17	40	19	26	13	28	21	33	10	31	11	35	10	27	10	15	3	20	9
No observation																																				

Remarks * : indicates a larger earthquake which is included in the main table the Bulletin.

S-P sec \ Date	19		20		21		22		23		24		25		26		27		28		29		30		Total I	Total II*	Total III
0 — 0.9																											
1 — 1.9																											
2 — 2.9																											
3 — 3.9																											
4 — 4.9																									2		2
5 — 5.9			2		2				1		1		5		1				1				1		21	1	22
6 — 6.9			1		1						1				1		1								21		21
7 — 7.9	1		2				2	*	1		2		3		2				6		1		1	*	50	2	52
8 — 8.9	2		1		2						4		1								2			*	41	1	42
9 — 9.9	4		3		2		3		1		1		2		1		1	*	1		2	*	1		59	3	62
10 — 10.9	2		1		4		2		1		2		4						4		1		2	**	59	5	64
11 — 11.9	1		2		4				1		1										1		1	*	33	3	36
12 — 12.9	2		3				3				2		2		2		3				3		1		52		52
13 — 13.9									2	*			1				1				1				28	1	29
14 — 14.9					2								2				2		1						27		27
15 — 15.9			1		2		1	*			1						1		1				4		33	1	34
16 — 16.9	1		2	*					1			*					1						1		16	3	19
17 — 17.9	1	*			1						1								1				1		17	2	19
18 — 18.9	2			*	1								1				2		1		2				15	1	16
19 — 19.9			1				1		3										1						11		11
20 — 20.9			1		1		3						1		1						1		2		15		15
21 — 21.9									1						1		1				1				6		6
22 — 22.9			1		1			*	1						1										11	5	16
23 — 23.9			1																1		1				12	1	13
24 — 24.9																							1		8	1	9
25 — 25.9			1				1		1												1				12	2	14
26 — 26.9																							1		7	3	10
27 — 27.9											1														5		5
28 — 28.9					1																				6	1	7
29 — 29.9							1								1										2		2
30 — 59.9	1	**	2	***	2	****	2		2	**	3	*	5	*	1	*		**	2	***	3		2	*****	123	95	218
60 — 179.9	1	**	1	*****	2		2	***	1	***		**				***		*			2	***		***	38	104	142
t		*		***		*		*		**				**		***		**		***		******		*		65	65
?	5		6		2		6		5		3		8		6		2		2	*	4		4		133	2	135
Total	23	6	32	13	30	5	27	7	22	8	23	4	35	3	18	7	15	6	22	7	26	10	23	14	863	302	1,165
No observation					06h50m ~ 11h48m																16h15m ~ 17h53m		02h40m ~ 03h10m				

Remarks * : indicates a larger earthquake which is included in the main table the bulletin.

Preliminary Bulletin

of the Dodaira Micro-earthquake Observatory

and its Substation

Sep., 1969

Dodaira Micro-earthquake Observatory

Earthquake Research Institute, the University of Tokyo

Preliminary Bulletin

of the Dodaira Micro-earthquake Observatory

and its Substations

Oct., 1969

Preliminary Bulletin of the Dodaira Micro-earthquake Observatory and its Substation

Observation stations

		N	E	h
Dodaira	(D or DDR)	35°59'54".0	139°11'36".2	800m
Tsukuba	(T or TSK)	36°12'39".0	140° 6'35".0	280m
Kiyosumi	(K or KYS)	35°11'51".6	140° 8'53".6	230m
Shiroyama	(S or SRY) (temporary)	35°36'30".0	139°16'27".0	254m

Expressions: Am: Amplitude in millimicron (half of peak to trough*) of P motion maximum within few cycles after the onset recorded by a short period vertical seismograph.

*In 1967 double amplitude (peak to trough) was used as Am.

T : Period in sec of the measured P maximum

t : Teleseism

All stations are radio-telemetered to Tokyo giving records on a multi-channel ink-recording oscillograph. The paper speed of the recorder is 1 mm per sec. For stronger events high speed recorder (10 mm/sec) is also triggered. The system is also recorded in parallel on multi channel magnetic tape through a trigger system using an endless tape loop. Direct filter sum of short period seismometers at Dodaira and/or on line short period filter outputs of Tsukuba are also used for the

detection of weak teleseismic signals. For teleseismic events records of long period and medium period seismographs are occasionally used, applying off line frequency filter, if necessary.

The Bulletin includes the preliminary readings sent to USCGS for teleseisms and larger near shocks with total durations (F-P) of short period vertical seismograph at Tsukuba (TSK) with magnification about 140.000 at 1 c/s or sensitivity about 300×10^{-3} mm/microkine at 10 c/s being longer than 100 seconds which correspond approximately shocks with $M \geq 3.5$. For the minor near earthquakes with F-P $\angle$ 100 sec or M $\angle$ 3.5, frequency of S-P times at each station is added at the end of the Bulletin, which may easily give a general idea of local seismicity around the station.

Date	Station	Phase	Time(G.M.T.)			t	T	Am
OCT. 1	D	eP	04	11	20.1	t	Explosion	
	S	eP			22.3			
	T	eP			22.8		0.5	26.2
	S	eP	05	25	15.8	t		
	T	eP			16.3		1.4	98.0
	D	eP			18.9	LZ	20.0	6.7U
						LE	20.0	4.4U
						LN	20.0	86U
	S	eP	06	35	36.6	t		
	T	eP			37.9		0.5	10.5
	D	eP			39.5			
	K	eP	08	29	26.7			
	S	eP			30.1			
	T	eP			35.0			
	D	eP			36.2			
	T	eP	12	15	49.1			
	D	eP			59.0			
	T	eP	15	38	23.2			
	D	eP			32.8			
	T	eP	17	19	56.0	t?		
	D	eP			58.1			
	S	eP	20	13	09.8	t		
	D	eP			10.3			
	T	eP			10.9		1.1	53.5
	K	eP	20	48	08.2			
	S	eP			17.2			
	T	eP			20.1			
	D	eP			23.3			
	T	eP	20	58	11.3	t?		
OCT. 2	S	iP	04	10	26.5	t		
	T	iP			26.9		1.0	38.0
	D	iP			29.2			
	S	eP	11	13	09.8			
	T	eP			12.8			
	D	eP			14.4			
	T	eP	11	52	30.2			
	D	eP			40.2			
	T	eP	15	45	57.5			
	D	eP		46	07.8			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
OCT. 2	T	iP	22	12	23.6	t	1.2	702.0
		iPcP		15	15.4	Explosion		
	D	iP		12	30.0	LZ	20.0	1.7U
		iPcP		15	17.4	LE	20.0	1.3U
		eS		17	58.6	LN	20.0	4.3U
		ePcS		19	02.0			
	S	iP		12	32.1			
		iPcP		15	17.8			
	K	eP		12	33.6			
OCT. 3	T	iP	01	56	23.4	t	1.2	247.0
	D	iP			29.9			
	S	iP			33.0			
	K	iP			36.3			
	S	eP	09	04	13.0			
	T	eP			17.2			
	D	eP			18.2			
	K	eP	09	07	16.2			
	S	eP			25.4			
	T	eP			28.5			
	D	eP			30.4			
	K	iP	12	03	27.2			
	S	iP			32.4			
	T	iP			35.3			
	D	iP			36.5			
	T	eP	13	45	49.0			
	D	eP		46	01.1			
	D	iP	13	51	16.7			
	S	iP			19.0			
	T	iP			21.0			
	K	eP			28.2			
	D	eP?	15	10	17.8	t?		
	S	eP	15	48	47.4	t		
	D	eP			49.4			
	T	eP			53.4			
	T	eP	22	37	43.0			
	D	eP			53.0			
OCT. 4	T	eP	02	35	24.1			
	T	iP	07	18	22.2			
	D	eP			30.0			
	S	eP			31.1			
	T	eP	07	55	13.4			
	D	eP			19.0			
	K	eP	10	07	41.0			
	S	eP			48.7			
	D	eP			54.6			
	T	eP			54.9			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
OCT. 4	T	eP	10	52	39.4			
	D	eP			46.4			
	S	eP	14	23	42.3	t		
	D	eP			44.9			
	T	eP			48.3		0.5	6.5
	S	eP	14	27	26.8	t		
	D	eP			28.6			
	T	eP			33.0		0.5	5.4
OCT. 5	K	iP	03	00	37.1			
	T	iP			42.0			
	S	iP			44.5			
	D	iP			47.4			
	K	iP	03	03	18.9			
	T	iP			27.0			
	D	iP			32.2			
	S	iP			32.8			
	T	eP	03	31	55.3			
	D	eP		32	04.2			
	T	iP	06	11	00.0			
	D	iP			03.8			
	S	iP			06.4			
	K	eP			07.8			
	T	eP	07	36	56.2			
	D	eP		37	05.6			
	T	eP	17	52	27.6			
	D	eP			36.1			
	S	eP			41.5			
	K	eP	20	56	55.8	t		
	S	eP			58.4			
	D	eP		57	00.9			
	T	eP			01.4		1.2	41.6
	T	eP	23	02	24.4			
	D	eP			34.6			
	T	eP	23	04	37.7			
	D	eP			47.2			
	K	eP	23	06	11.6			
	S	eP			21.0			
	T	eP			25.0			
	D	eP			26.4			
OCT. 6	D	iP	01	41	15.4			
	S	iP			19.5			
	T	iP			24.8			
	K	iP			32.6			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
OCT. 6	K	iP	01	43	28.6			
	S	iP			34.8			
	D	eP			39.0			
	T	iP			39.4			
	T	eP	03	14	50.4			
	K	iP	07	33	01.2			
	T	iP			02.5			
	S	iP			02.6			
	D	iP			04.7			
	S	eP	12	53	40.7	t		
		ePcP?		57	02.5			
	D	eP		53	42.7			
		ePcP?		57	04.8			
	T	eP		53	42.7		1.2	18.2
		ePcP?		57	06.2			
	T	eP	14	07	10.0			
	D	eP			20.5			
	T	eP	20	23	04.0			
	D	eP			13.0			
	K	iP	22	32	45.9			
	S	iP			56.1			
	T	eP			58.0			
	D	eP		33	00.7			
OCT. 7	S	eP	03	57	09.5	t		
	K	eP			09.9			
	D	eP			11.4			
	T	eP			15.4		1.0	23.0
	T	eP	05	21	32.1	t?		
	T	eP	05	33	08.7			
	D	eP			09.9			
	S	eP	12	42	21.5			
	D	eP			26.0			
	T	eP			28.0			
	T	iP	13	35	04.5			
	D	eP			12.7			
	S	eP			17.5			
	K	eP			19.6			
	T	iP	15	16	57.5			
	K	eP		17	07.0			
	D	iP			08.2			
	S	iP			10.5			
	D	eP	16	03	34.8	t		
	T	eP			34.8		0.5	3.5
	D	eP	16	40	29.8			
	T	eP			31.2			

Date	Station	Phase	Time(G.M.T.)	t	T	Am
OCT. 8	S	eP	02 28 18.8	t		
	D	eP	23.2			
	T	eP	25.7		0.5	4.6
	T	eP	03 03 03.2	t	0.9	23.2
	S	eP	05.4			
	D	eP	05.5			
		eX	36.4			
	T	eP	03 52 31.0			
	D	eP	39.2			
	K	eP	04 08 45.4			
	S	eP	55.0			
	T	eP	58.3			
	D	eP	09 01.2			
	T	iP	06 15 57.7			
	D	iP	16 05.8			
	S	eP	09.6			
	K	eP	10.2			
	S	eP	06 37 22.0	t		
	D	eP	26.1			
	T	eP	27.8		1.2	71.5
	T	eP	14 20 36.6			
	D	eP	46.9			
	T	eP	16 11 04.6			
	D	eP	09.2			
	T	eP	16 29 17.7			
	T	eP	16 54 38.7			
	D	eP	41.3			
OCT. 9	T	eP	08 07 03.0	t	1.1	77.9
	D	eP	05.2			
	T	eP	12 16 03.4	t	0.9	40.0
	D	eP	08.6			
		eX	17 10.4			
	S	eP	16 12.6			
	T	eP	14 09 49.8			
	D	eP	59.2			
	T	eP	17 15 21.2			
	D	eP	30.8			
	D	iP	17 33 57.4			
	S	iP	57.8			
	T	eP	34 07.9			
	K	eP	10.8			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
OCT. 9	K	eP	17	39	01.9			
	S	eP			05.1			
	D	iP			09.5			
	T	eP			11.2			
	T	eP	18	57	30.8			
	D	eP			38.2			
	S	eP	19	49	14.8	t		
	D	eP			19.0			
		eS		52	31.4			
	T	eP		49	19.4		0.5	4.1
	T	iP	22	05	31.0			
	D	eP			38.2			
	T	eP	23	59	32.8			
	D	eP			43.0			
OCT.10	T	eP	00	16	06.0			
	D	eP			15.3			
	S	eP			17.0			
	T	eP	06	38	53.3			
	D	eP		39	01.2			
	S	eP			06.0			
	K	eP			10.6			
	S	eP	17	12	22.1	t?		
	D	eP			25.3			
	T	eP	17	47	50.3			
	D	eP		48	00.8			
OCT.11	K	iP	03	22	11.7			
	T	iP			12.7			
	S	iP			19.5			
	D	iP			21.1			
	T	eP	21	13	19.8			
	D	eP			29.0			
	D	eP	21	58	51.8	t?		
OCT.12	S	eP	03	38	16.9	t		
		ePcP		40	30.2			
	D	eP		38	19.8			
		ePcP		40	32.2			
	T	eP		38	23.7		1.0	37.8
		ePcP		40	33.0			
	T	eP	09	52	47.0			
	D	eP			57.4			
	T	eP	10	24	55.0			
	D	eP	13	46	56.0	t		
	T	eP			56.3		0.5	5.4

Date	Station	Phase	Time(G.M.T.)	t	T	Am
OCT.12	T	eP	14 27 24.0	t	0.5	10.5
	D	eP	27.4			
	S	eP	16 13 28.1	t		
	D	eP	30.7			
	T	eP	34.6		0.5	11.9
	T	eP	19 27 31.7			
	T	eP	22 43 44.9			
	D	eP	54.4			
OCT.13	D	eP	01 15 08.7	t		
	S	eP	10.0			
	T	eP	10.7		1.1	78.4
	K	eP1	07 05 48.4	t		
	S	eP1	52.6			
	T	eP1	54.1			
		eP2	58.0		1.5	450.0
	D	eP1	55.2			
		eP2	58.8	LZ	20.0	6.4U
		eX	06 26.0	LE	20.0	4.4U
		eS	14 01.3	LN	20.0	7.1U
		eScS	15 28.5			
	T	eP	07 15 28.5			
	D	eP	37.2			
	T	eP	12 59 15.0			
	D	eP	21.4			
	T	eP	20 05 26.2			
	D	eP	36.1			
OCT.14	T	eP	02 30 37.6			
	D	eP	46.4			
	K	eP	50.5			
	S	eP	50.6			
	S	eP	04 15 24.3	t?		
	D	eP	26.2			
	T	eP	29.2			
	S	eP	04 16 03.8	t?		
	T	eP	04.6			
	D	eP	06.3			
	D	eP	04 19 34.5	t?		
	K	eP	06 56 17.8			
	D	eP	24.6			
	T	eP	27.0			

Date	Station	Phase	Time(G.M.T.)	t	T	Am
OCT.14	T	eP	07 09 34.8	t	1.0	230.0
		ePcP	10 39.3		Explosion	
	D	eP	09 35.0			
		ePcP	10 39.6			
	S	eP	09 37.8			
		ePcP	10 41.0			
	K	eP	09 43.5			
	T	eP	12 23 03.0			
	D	eP	13.0			
	T	eP	13 18 47.5			
	T	eP	19 38 21.2			
	D	eP	22.6			
	D	eP	20 40 19.8			
	S	eP	22.2			
	T	eP	24.0			
	K	eP	30.8			
	T	eP	20 59 44.8			
	D	eP	54.6			
	T	eP	22 41 02.6			
	D	eP	10.9			
	T	eP	22 53 02.5	t	1.2	36.4
	D	eP	09.4			
	T	eP	23 13 03.8	t	1.1	57.4
	D	eP	09.7			
	S	eP	13.0			
OCT.15	T	eP	00 11 02.3	t	2.0	133.0
	S	eP	02.3			
	D	eP	04.2			
	K	eP	01 19 48.8	t		
	S	eP	52.3			
	T	eP	54.1			
	D	eP	54.9			
	T	eP	01 38 09.9			
	D	eP	20.0			
	D	eP	05 48 05.2	t?		
	T	eP	13 34 11.8			
	T	eP	16 26 10.5			
OCT.16	D	eP	02 11 39.2			
	T	eP	44.6			
	D	eP	06 38 37.4			
	S	eP	42.6			
	T	eP	48.5			
	K	eP	56.6			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
OCT.16	T	eP	08	45	57.7			
	D	eP		46	06.4			
	T	eP	10	25	50.8			
	K	eP			56.4			
	D	eP		26	00.9			
	S	eP			02.5			
	T	eP	16	06	45.4			
	T	eP	17	47	03.0	t	1.0	23.0
OCT.17	K	iP	00	10	43.8			
	T	iP			45.7			
	S	iP			47.3			
	D	iP			49.6			
	T	eP	01	01	29.0			
	D	eP			39.8			
	S	eP	01	32	39.3	t		
	D	eP			39.6	LZ	20.0	7.9 U
		eX		33	10.6	LE	20.0	23.7 U
		eScP		38	15.6	LN	20.0	2.8 U
		eS		42	28.3			
		eScS		43	38.8			
	K	eP		32	44.0			
	T	eP			44.2		1.2	288.0
		eX		33	14.6			
		eScP		38	17.0			
	T	eP	08	29	19.5	t?		
	D	eP			22.1			
	T	iP	12	03	09.1			
	D	iP			14.0			
	S	eP			16.9			
	K	eP			19.0			
	S	eP	16	49	22.2			
	D	eP			24.3			
	T	eP			34.0			
		eX			47.8			
	T	eP	19	38	39.0			
	D	eP			47.6			
	T	eP	21	19	14.2			
	D	eP			24.3			
OCT.18	T	iP	01	14	49.5			
	D	iP			56.8			
	S	eP		15	00.6			
	K	eP			03.0			
	D	eP	02	44	30.1			

Date	Station	Phase	Time(G.M.T.)	t	T	Am
OCT.18	T	iP	08 49 55.6	t	1.1	240.5
	D	iP	50 01.9			
		eScS?	09 00 00.2			
	S	iP	08 50 04.3			
	T	eP	19 24 41.4			
	D	eP	50.8			
	K	iP	20 42 37.2			
	S	iP	39.8			
	D	iP	44.4			
	T	iP	46.2			
	T	iP	23 39 07.8			
	D	iP	13.8			
	S	eP	17.9			
	K	eP	20.2			
OCT.19	T	eP1	12 30 20.0			
		eP2	23.0			
	D	eP1	22.0			
		eP2	26.4			
	S	eP1	29.8			
	K	eP1	34.8			
	D	iP	16 16 35.5			
	S	iP	39.7			
	T	iP	47.6			
	K	eP	53.6			
	K	eP	18 14 28.2			
	S	eP	33.7			
	D	eP	38.4			
	T	eP	39.7			
OCT.20	T	eP	04 12 15.2			
	D	eP	24.9			
	S	eP	28.6			
	T	iP	04 54 03.7			
	K	eP	07.0			
	S	iP	08.6			
	D	iP	08.8			
	T	eP	06 23 32.0			
	D	eP	41.2			
	T	eP	14 49 44.8			
OCT.21	T	eP	01 42 05.3			
	D	eP	14.6			
	S	eP	17.5			
	D	eP	11 53 09.4			
	T	eP	13 03 13.6			
	D	eP	23.1			
	D	eP	13 36 47.0			

Date	Station	Phase	Time(G.M.T.)	t	T	Am
OCT.21	T	iP	21 00 15.6	t	1.0	199.0
	D	iP	22.0	LZ	20.0	2.2U
		ePcP	03 04.8	LE	20.0	3.1U
	S	iP	00 24.0	LN	20.0	5.0U
OCT.22	K	iP	05 26 02.8			
	T	iP	04.5			
	S	iP	05.9			
	D	iP	08.1			
	S	eP	06 06 09.6	t		
	T	eP	13.0		1.4	76.3
	D	eP	13.2			
		eX	07 56.3			
	T	eP	06 47 10.5			
	D	eP	20.2			
	S	eP	23.6			
	D	eP	07 19 57.4	t		
		eX	21 50.0			
	T	eP	07 39 40.7			
	D	eP	50.4			
	S	eP	52.2			
	K	eP	53.5			
	T	eP	07 55 15.2	t		
	D	eP	24.2			
	T	eP	09 20 28.9	t	1.3	124.0
	D	eP	35.0			
	S	eP	38.0			
	T	eP	10 41 33.6	t	1.2	78.0
	D	eP	36.2			
	S	eP	37.6			
	T	eP	12 18 43.4	t	1.3	95.2
	D	eP	48.6			
	S	eP	54.4			
	T	eP	19 53 46.6	t?		
	T	eP2	23 03 22.7	t	1.4	109.0
	D	eP1	18.3			
		eP2	27.2			
	S	eP	28.5			
OCT.23	T	eP	02 35 32.6			
	D	eP	42.0			
	K	eP	10 23 45.5			
	S	eP	50.6			
	D	eP	55.0			
	T	eP	55.3			
	T	eP	10 39 47.1			
	D	eP	55.5			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
OCT.23	T	eP	16	51	34.3			
	D	eP			44.3			
	S	eP			46.4			
	K	eP			48.2			
	T	eP	23	43	32.0			
	D	eP			42.2			
OCT.24	D	eP	00	37	28.5	t		
	T	eP	00	53	40.0	t	1.2	94.8
	D	eP			45.6			
		eRX			58.9			
	T	eP	02	39	05.2			
	D	eP			18.4			
	T	iP	05	06	36.5			
	D	iP			39.5			
	S	eP			44.7			
	K	eP			49.0			
	S	eP	11	38	35.4			
	T	eP			38.6		0.5	11.3
	D	eP			39.2			
	D	eP	14	28	42.5	t?		
	T	eP			51.8		0.5	2.9
	T	eP	17	24	14.5			
	D	eP			20.5			
	T	eP	20	19	56.4			
	D	eP		20	06.0			
	T	eP	22	08	46.4			
	D	eP			54.0			
OCT.25	D	eP	05	24	10.6	t		
	T	eP			15.8		1.0	21.0
	T	eP	12	06	04.2			
	D	eP			14.5			
	S	eP			17.6			
	K	eP			23.0			
	T	eP	14	42	41.8			
	D	eP			52.0			
	S	ep	18	19	23.3			
	D	ep			24.0			
	T	ep			29.0			
	K	ep			30.0			
OCT.26	S	iP	03	56	30.8	t		
	T	eP			31.2		1.4	67.3
	D	iP			33.0			

Date	Station	Phase	Time(G.M.T.)	t	T	Am
OCT.26	S	eP	04 26 21.4	t		
	T	eP	22.4		1.2	28.4
	D	eP	23.6	LZ	20.0	2.2U
				LE	20.0	2.5U
				LN	20.0	3.6U
	T	eP	05 30 33.3	t		
	S	eP	33.4			
	D	eP	36.0			
	T	eP	06 48 51.4	t	1.2	152.0
	S	eP	51.5			
	D	eP	54.0	LZ	20.0	2.3U
				LE	20.0	3.1U
				LN	20.0	5.0U
	T	eP	11 27 28.0			
	D	eP	37.3			
	T	eP	11 30 17.8			
	D	eP	25.5			
	T	eP	12 51 30.9			
	T	eP	13 35 47.6			
	D	eP	55.4			
	K	eP	15 21 36.7			
	S	eP	46.6			
	T	eP	50.8			
	D	eP	52.0			
	T	eX	16 01 09.0	t		
	D			LZ	20.0	2.9U
				LE	20.0	6.9U
				LN	20.0	9.3U
	T	eP	19 18 05.0			
	D	eP	13.8			
	S	eP	18.0			
	S	eP	21 37 10.4	t		
	D	eP	12.4			
		eX	35.3			
	D	ePKP?	21 58 34.1	tLZ	24.0	2.8U
				LE	24.0	2.1U
	T	eP	23 20 29.7			
	S	eP	23 44 02.4			
	T	eP	07.0			
	D	eP	07.7			
OCT.27	T	eP	08 23 28.4	t	1.7	82.4
	D	eP	28.6	LZ	20.0	7.2U
	S	eP	29.0	LE	20.0	23.7U
				LN	20.0	32.2U

Date	Station	Phase	Time(G.M.T.)	t	T	Am
OCT.27	K	eP	11 41 34.5			
	S	eP	43.0			
	T	eP	47.0			
	D	eP	47.2			
	K	eP	12 32 34.2			
	S	eP	45.0			
	T	eP	46.7			
	D	eP	50.0			
	T	eP	18 38 09.0			
	D	eP	18.0			
	T	eP	18 49 01.1			
	D	eP	03.6			
	S	eP	09.9			
	D	eP	19 55 25.4	t?		
OCT.28	T	iP	02 53 02.6			
	D	iP	11.9			
	S	eP	12.2			
	K	eP	15.4			
	K	eP	10 06 25.4			
	S	eP	27.1			
	D	eP	31.2			
	T	eP	33.6			
	D	eP	18 54 13.4	t		
	S	eP	13.6			
	T	eP	16.0		1.1	33.0
	D	eP	19 26 53.0			
	T	eP	22 19 17.3			
OCT.29	T	eP	04 39 00.3			
	D	eP	09.9			
	T	eP	13 11 00.4			
	D	eP	09.4			
	T	eP	14 33 29.8			
	D	eP	37.0			
	T	eP	14 46 02.9			
	D	eP	13.0			
	T	eP	16 23 43.6			
	D	eP	49.0			
	S	eP	16 47 02.4	t		
	D	eP	03.2			
	T	eP	07.4		1.2	18.2

Date	Station	Phase	Time(G.M.T.)			t	T	Am
OCT.30	T	eP	23	44	07.0			
OCT.31	T	eP	02	13	38.2			
	D	eP			47.8			
	S	eP			52.6			
	T	eP	06	46	16.7			
	D	eP			25.6			
	S	eP			30.0			
	T	iP	07	00	42.2			
	K	eP			52.8			
	D	eP			53.1			
	S	eP			55.6			
	T	eP	07	38	11.8	t	1.5	38.3
	D	eP			14.2	LZ	20.0	1.1U
						LE	20.0	1.2U
						LN	20.0	1.7U
	D	eP	08	51	37.0	t?		
	T	eP	11	39	33.8	t	1.3	134.0
	D	eP pP			40.0	LZ	20.0	29.4U
		e~~PP~~?			54.4	LE	20.0	30.7U
		ePcP		42	23.0	LN	20.0	39.4U
		eS		44	59.0			
		eScP		46	05.4			
		eScS		50	06.2			
	S	eP		39	42.2			
	K	eP			43.4			
	T	eP	11	53	02.0	t	1.2	23.4
	D	eP			08.2			
	T	eP	12	30	45.6			
	D	eP			54.8			
	T	eP	13	48	57.0			
	D	eP		49	06.4			
	S	eP	21	56	45.0	t		
	D	eP			47.0			
	T	eP			51.6		1.2	22.1

Dodaira, Oct. ,1969

S-P \ Date	1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16		17		18	
0 — 0.9																																				
1 — 1.9							2																													
2 — 2.9					2		3				9		1																							
3 — 3.9																																				
4 — 4.9					1																															
5 — 5.9																																				
6 — 6.9	1		1				2																1													
7 — 7.9							1			*					1				1						1										1	
8 — 8.9							1												1										1							
9 — 9.9					1	*					1		2				1												4						1	
10 — 10.9	1									*	1										1		1											*		
11 — 11.9												*																					1			
12 — 12.9			1		3		1						1						3				4		1				1				1			
13 — 13.9	2		1		3		1				1														1						2		1	*	1	
14 — 14.9					2				1						1		1		2						1		1				1	*			1	
15 — 15.9	1									*					2																					
16 — 16.9	1				1						2	*			1		1												1		1					
17 — 17.9																																*			1	
18 — 18.9			1						1							*	1		1										1		1					
19 — 19.9			1						1													*											1			
20 — 20.9									1		1						1																			
21 — 21.9					1				1					*		*	2														1		1			
22 — 22.9			1				1								1				1	*									1		1					
23 — 23.9																							1												1	
24 — 24.9																																				
25 — 25.9		*											1										1		1						1					
26 — 26.9								*															1													
27 — 27.9									1																											
28 — 28.9																																				
29 — 29.9																																				
30 — 59.9	1			**	1	*		*	1			***		*	3					****	1		1			*	1		2	****		**				
60 — 179.9		***		**		***		**		*		*		***		****	1	***		***		*		**	1	**	1	****	1	*				*		*
t		******		***		**		***				**		*		****		**		*		*		****		***		****		*****				**		
?	4		3		4		1	**	2	*		*	4		2		4		3		4		3		5		1				2		1		2	
Total	11	9	9	7	19	7	13	9	9	5	15	9	9	6	11	10	12	5	12	9	6	3	13	6	11	6	4	8	12	10	10	4	6	5	8	
No observation																																				

Remarks*: indicates a larger earthquake which is included in the main table of the Bulletin.

Dodaira, Oct., 1969

S-P \ Date	19		20		21		22		23		24		25		26		27		28		29		30		31		I	II	III
0 – 0.9																													
1 – 1.9							1																				3		3
2 – 2.9																											15		15
3 – 3.9																													
4 – 4.9							1												1								3		3
5 – 5.9																													
6 – 6.9																											5		5
7 – 7.9	1										1												1				8	1	9
8 – 8.9									1				1				1								1		7		7
9 – 9.9							1		1		2						1								1		16	1	17
10 – 10.9											1				2		1							**	2		10	4	14
11 – 11.9	1	*	1														1		1				2		1		8	2	10
12 – 12.9	2			*	1						1						1			*			1		2		24	2	26
13 – 13.9			1	*			1		1														1		3		20	2	22
14 – 14.9																			1		2						14	1	15
15 – 15.9					1						1				1						2			*			8	2	10
16 – 16.9											1		1				1				1		1		3		16	1	17
17 – 17.9									1								3				1		1				7	1	8
18 – 18.9							1				1		1														9	1	10
19 – 19.9							2																		2		7	1	8
20 – 20.9											1						2		1		1				1		9		9
21 – 21.9					1																1		1	*	1		10	3	13
22 – 22.9			1						1														1		2		11	1	12
23 – 23.9			1								1											*					4	1	5
24 – 24.9																	1						1				2		2
25 – 25.9															1						2						7	1	8
26 – 26.9		*													1				1	*							3	3	6
27 – 27.9											1								1								3		3
28 – 28.9																							1				1		1
29 – 29.9																													
30 – 59.9		*	2		1		1	**				**	1	*		**	1	***		*	1			**	2	*	20	35	55
60 – 179.9		*		***		**				***		***		****	1	**		**		*	1	****		***	1	**	7	69	76
t								**** ***		*		***		*		****		****		*		*		***		**** **		74	74
?	2		4		1	**	3	*	2		2		3		1		1				1			*	2	**	67	13	80
Total	6	4	10	5	5	4	11	10	7	4	13	8	7	6	7	8	14	9	6	5	13	6	11	13	24	11	324	219	543
No obser-vation																													

Remarks*: indicates a larger earthquake which is included in the main table of the Bulletin.

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-P \ Date	1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16		17		18	
0 − 0.9																																				
1 − 1.9																																				
2 − 2.9																																				
3 − 3.9																																				
4 − 4.9							1																													
5 − 5.9									1	*	2				2				1		1								3							
6 − 6.9	1						2		2		1		1						1						1		1		3		1				2	
7 − 7.9			1		3		1		5	*	1				3				1		2		1		1		2		3				2	*	1	
8 − 8.9	4		3		1		1	*	1		4	*	2		3		1		1		2		2		3		2		4		2					
9 − 9.9			3		2		6		3		6	*	3		6		4		1			*	1		1		1				1					
10 − 10.9	1		2		1		2		3	*	3		4		2		3		3		1		2		1		1		4			*	2	*	1	
11 − 11.9	3		1		2		3				1		2		1		3		1				1		3		2		1		2		3		1	
12 − 12.9	1		2		2	*			1						2		1												2		2		1			
13 − 13.9	1		1		2		1		3												1						1		1		1				1	
14 − 14.9	1				1		2						1		1	*					1				2		1									
15 − 15.9	1										1		1		3										2						1		1			
16 − 16.9	1		1		1						1		1				1		1		1		1								2					
7 − 17.9			3						1		1	*											2		1											
8 − 18.9			1																				1						1						1	
9 − 19.9	2				2		1		1				1						3		1		2		1				1				1			
0 − 20.9					1		1		1										1				1													
1 − 21.9	1				1		1																1				1				1					
2 − 22.9	1						1						1																				1			
3 − 23.9		*							1		1										2				1						1	*				
4 − 24.9																	1		1																	
5 − 25.9														*					1	*					1				1							
6 − 26.9									1														1													
7 − 27.9											1		1		1				1																	
8 − 28.9															1																					
9 − 29.9																							1												1	
0 − 59.9	1	**	4	**	1	*	2	***	1	*	2	***	3	*	4	*	1		1	****	3		1			**	1	*	2	******	4	**	2	*		*
0 − 179.9		*	1	**		***		**		*		***		***		***	2	****		***		*	2	***	1	**		****				*	1	*		***
t		*****		****		**		**				**		**		****		**		*		*		***		***		***		*****				***		*
?	3		1		5	*		*					3				1		2		4		5		2		5		2		4		5		1	
otal	22	9	24	8	25	8	25	9	25	5	25	11	24	7	29	9	18	6	20	9	19	3	25	6	21	7	18	8	28	11	22	5	19	7	9	5
obser-vation																																			10h~15h test	

arks*: indicates a larger earthquake which is included in the main table Of the Bulletin.

Tsukuba, Oct., 1969

S-P \ Date	19		20		21		22		23		24		25		26		27		28		29		30		31		I	II	III
0 — 0.9																													
1 — 1.9																													
2 — 2.9																													
3 — 3.9																													
4 — 4.9																											1		1
5 — 5.9					4		1				1		1		1		3								2		23	1	24
6 — 6.9			1		1		3		2		2		1											*	1		27	1	28
7 — 7.9	1		1		1		2		2						1		1		2				1		2		41	2	43
8 — 8.9	2	*		*	3		3										3		1				1	**	2		51	6	57
9 — 9.9	1		2		2		2				1		3				1		2				5		1		58	2	60
10 — 10.9	1				2		2				2				1		3						4				51	3	54
11 — 11.9			1								1				1				1						2		36		36
12 — 12.9			1										1		2		1				3			*	2		24	2	26
13 — 13.9	1						1		2				1		1		1				1				2		23		23
14 — 14.9	1		1								2									*			1				15	2	17
15 — 15.9											2														1		13		13
16 — 16.9									1		1		1														14		14
17 — 17.9																											8	1	9
18 — 18.9									2								1				1						8		8
19 — 19.9											1										1						18		18
20 — 20.9									1		1																7		7
21 — 21.9																										*	6	1	7
22 — 22.9			1	*	1														1								7	1	8
23 — 23.9																										*	6	3	9
24 — 24.9																									1		3		3
25 — 25.9		*					1																		1		5	3	8
26 — 26.9																											2		2
27 — 27.9					1							*								*							5	2	7
28 — 28.9																											1		1
29 — 29.9																											2		2
30 — 59.9	1	*	2	*	1		2	***				**	2	*	3	**		***	1	*	1	*		***			46	49	95
60 — 179.9		*		**	2	**				**		**		****	1	***		**		*		****		***		****	10	70	80
t								**** **		**		**		*		****		***				*		***		****		69	69
?	4		5	*	2		2		4	*	2		2		7		3	*	3		4		2		4		87	5	92
Total	12	4	15	6	20	2	19	9	14	5	16	7	12	6	18	9	17	9	11	4	11	6	14	13	21	10	598	223	821
No observation			14h43m ~ 15h15m	test																	04h ~ 05h								

Remarks*: indicates a larger earthquake which is included in the main table of the Bulletin.

Preliminary Bulletin

of the Dodaira Micro-earthquake Observatory

and its Substations

Oct., 1969

Dodaira Micro-earthquake Observatory

Earthquake Research Institute, the University of Tokyo

Preliminary Bulletin

of the Dodaira Micro-earthquake Observatory

and its Substations

Nov., 1969

Dodaira Micro-earthquake Observatory

Earthquake Research Institute, the University of Tokyo

Preliminary Bulletin of the Dodaira Micro-earthquake Observatory and its Substation

Observation stations

		N	E	h
Dodaira	(D or DDR)	35°59'54".0	139°11'36".2	800m
Tsukuba	(T or TSK)	36°12'39".0	140° 6'35".0	280m
Kiyosumi	(K or KYS)	35°11'51".6	140° 8'53".6	230m
Shiroyama	(S or SRY) (temporary)	35°36'30".0	139°16'27".0	254m

Expressions:

Am : Amplitude in millimicron (half of peak to trough*) of P motion maximum within few cycles after the onset recorded by a short period vertical seismograph.
*In 1967 double amplitude (peak to trough) was used as Am.

T : Period in sec of the measured P maximum

t : Teleseism

All stations are radio-telemetered to Tokyo giving records on a multi-channel ink-recording oscillograph. The paper speed of the recorder is 1 mm per sec. For stronger events high speed recorder (10 mm/sec) is also triggered. The system is also recorded in parallel on multi channel magnetic tape through a trigger system using an endless tape loop. Direct filter sum of short period seismometers at Dodaira and/or on line short period filter outputs of Tsukuba are also used for the

detection of weak teleseismic signals. For teleseismic events records of long period and medium period seismographs are occasionally used, applying off line frequency filter, if necessary.

The Bulletin includes the preliminary readings sent to USCGS for teleseisms and larger near shocks with total durations (F-P) of short period vertical seismograph at Tsukuba (TSK) with magnification about 140.000 at 1 c/s or sensitivity about 300×10^{-3} mm/microkine at 10 c/s being longer than 100 seconds which correspond approximately shocks with M$\geq$3.5. For the minor near earthquakes with F-P$\angle$100 sec or M$\angle$3.5, frequency of S-P times at each station is added at the end of the Bulletin, which may easily give a general idea of local seismicity around the station.

Date	Station	Phase	Time (G.M.T.)			t	T	Am
NOV. 1	T	eP	11	21	34.3	t	1.3	87.1
	D	eP			38.8	LZ	20.0	10.0U
	S	eP			40.8	LE	20.0	7.2U
						LN	20.0	10.0U
	D	iP	11	21	53.8			
	S	eP			53.8			
	T	eP			59.0			
	K	eP		22	00.9			
	D	eP	13	58	36.2			
	T	eP	14	22	45.4			
	D	eP			54.7			
	K	eP	20	26	48.8			
	S	eP			57.4			
	T	eP		27	00.0			
	D	eP			01.0			
	D	eP	21	14	53.0	t		
NOV. 2	K	eP	02	43	37.4	t		
	S	eP			41.5			
	T	eP			41.8		1.2	20.8
	D	eP			43.8			
	T	iP	03	30	36.3			
	D	iP			45.4			
	K	eP			49.2			
	T	eP	06	20	48.0			
	D	eP			52.8			
	K	eP		21	00.5			
	T	iP	07	49	36.9			
	K	eP			41.5			
	D	iP			46.2			
	D	eP	08	49	17.9			
	D	eP	12	45	36.4			
	T	eP			41.0			
	D	eP	17	26	34.4			
	T	eP			38.9			
	D	eP	22	58	49.9	t		
		ePcP?	23	01	10.0			
	T	eP	22	58	52.2		1.2	29.9
NOV. 3	D	eP	01	58	12.0			
	T	eP			13.6			
	D	eP	03	42	42.8	t		
	T	eP			43.6		1.0	30.0
	T	eP	10	20	14.2			
	D	eP			22.2			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
NOV. 3	T	eP	10	32	21.6			
	D	eP			22.6			
	D	eP	10	50	08.8			
	T	eP	10	58	53.2	t?		
	D	eP			56.0			
	T	eP	18	30	42.0	t?		
	D	eP			46.6			
	T	eP	20	09	56.1			
	D	eP		10	05.4			
NOV. 4	K	iP	02	03	53.4			
	T	iP			55.4			
	S	iP			56.6			
	D	iP			59.0			
	D	eP	04	05	16.4	t		
	T	eP			21.8		1.1	27.3
	K	iP	05	20	47.5			
	T	iP			48.6			
	S	iP			50.0			
	D	iP			52.0			
	T	eP	08	04	20.6			
	D	eP			28.8			
	S	iP	08	51	42.4			
	K	iP			44.2			
	D	iP			44.8			
	T	iP			49.0			
	T	eP	09	23	02.6			
	D	eP			12.2			
	S	eP	12	15	12.4	t?		
	D	eP			15.6			
	T	eP	12	26	06.8			
	D	eP			15.2			
	T	eP	15	40	51.6			
	D	eP		41	01.4			
	D	eP	17	20	02.4			
	T	eP	17	21	26.4			
	D	eP			34.5			
	D	eP	22	00	55.3			
	D	eP	22	11	29.8	t		
		ePcP		13	46.3			
		eS		17	18.0			
	T	eP		11	34.5		0.5	13.5

Date	Station	Phase	Time(G.M.T.)			t	T	Am
NOV. 4	K	eP	23	50	27.7	t		
	S	eP			31.3			
	T	eP			32.6		1.6	152.0
	D	eP			33.8			
		eX		52	36.6			
NOV. 5	S	eP	01	38	24.7	t		
	T	eP			27.6		0.5	13.8
	D	eP			27.8			
	T	eP	18	06	00.6	t	1.2	93.5
	D	eP			05.4			
	S	eP			05.4			
	K	eP			06.5			
	S	eP	23	10	09.4	t		
	D	eP			10.9			
	T	eP			17.7		1.2	22.1
	T	eP	23	38	16.1			
	D	eP			23.2			
	T	eP	23	52	44.2			
	D	eP			53.0			
NOV. 6	T	eP	01	57	54.8			
	D	eP		58	05.8			
	S	eP	06	40	31.5	t		
	T	eP			34.4		1.2	61.1
	D	eP			35.0			
	T	eP	16	22	59.4			
	D	eP		23	08.6			
	S	eP			12.5			
	K	eP			12.7			
	T	eP	17	27	16.5			
	D	eP			26.5			
	T	eP	18	47	10.2			
	D	iP			21.1			
	K	eP			22.4			
	S	eP			24.1			
	T	eP	20	26	48.4	t	1.0	49.0
	D	eP			55.1	LZ	20.0	3.5U
		ePcP?		29	33.3	LE	20.0	3.7U
	S	eP		26	57.9	LN	20.0	4.2U
	T	eP	22	01	13.6			
	K	eP			23.4			
	D	iP			25.0			
	S	iP			27.3			
NOV. 7	S	eP	02	40	53.0	t		
	D	eP			55.7			
	T	eP			59.2		1.1	28.4

Date	Station	Phase	Time(G.M.T.)			t	T	Am
NOV. 7	T	eP	04	07	35.2			
	D	eP			42.5			
	K	eP			51.4			
	T	ePKP?	04	18	06.8	t		
		eX			21.3		1.0	53.0
	D	ePKP?			09.6			
		eX			24.4			
	T	eP	08	08	25.9			
	D	eP			33.6			
	S	eP			39.1			
	K	eP			40.4			
	T	eP	08	35	19.7			
	D	eP			26.1			
	S	eP			29.9			
	K	eP			34.9			
	T	eP	11	49	56.2			
	D	eP		50	04.8			
	S	eP			08.2			
	K	eP			08.2			
	S	eP	13	44	28.6			
	D	eP			32.2			
	K	eP			39.2			
	T	eP			44.5		1.0	76.0
	D	eP	18	44	44.8	t		
		epP		45	04.6	LZ	20.0	12.9U
		eS		53	26.5	LE	20.0	6.8U
		eP2'P2'				LN	20.0	17.2U
			19	13	19.4			
	S	eP	18	44	45.7			
		epP		45	06.1			
	T	eP		44	48.2		1.1	254.0
		epP		45	08.3			
	K	eP		44	51.6			
		epP		45	11.6			
	D	eP	19	29	04.8	t?		
	T	iP	23	03	40.0			
	K	eP			43.0			
	D	iP			48.7			
	S	eP			48.9			
NOV. 8	K	eP	01	51	33.4	t		
	S	eP			33.5			
	T	eP			35.6		2.0	195.0
	D	eP			36.8	LZ	20.0	7.9U
						LE	20.0	3.3U
						LN	20.0	10.2U
	T	eP	05	36	44.4			
	D	eP			53.7			
	S	eP			57.6			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
NOV. 8	T	eP	06	18	40.2			
	D	eP			49.1			
	S	eP			49.9			
	T	eP	07	24	14.6			
	D	eP			23.1			
	K	eP			28.1			
	S	eP	07	53	43.5			
	K	eP			44.5			
	D	eP			45.9			
	T	eP			50.0			
	S	iP	09	27	46.1			
	D	iP			46.6			
	T	iP			48.4			
	K	iP			51.3			
	T	eP	12	21	36.0	t	0.5	2.4
	D	eP			41.2			
	T	eP	15	10	32.1			
	D	eP			40.3			
	T	eP	17	37	00.3			
	D	eP			08.6			
	T	iP	20	15	11.7			
	D	iP			15.0			
	S	eP			17.9			
	K	eP			21.7			
	D	eP	21	10	28.3	t?		
	D	eP	22	02	12.3	t		
		eX1			31.1	LZ	20.0	1.3U
		eX2		04	51.8	LE	20.0	1.1U
		eS		08	25.6	LN	20.0	2.4U
	S	eP		02	13.0			
	T	eP			16.0		0.5	7.4
		eX1			32.6			
	S	iP	23	07	37.6			
	T	iP			37.9			
	K	iP			38.5			
	D	iP			39.2			
	S	eP	23	33	13.6	t		
	D	eP			17.8			
	T	eP			22.0		1.0	23.5
NOV. 9	D	eP	01	16	45.7	t		
	T	eP			50.8		0.5	7.1
	K	eP	05	19	25.2			
	S	eP			32.4			
	D	eP			36.7			
	T	eP			37.0			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
NOV. 9	K	iP	06	20	40.9			
	S	eP			48.6			
	T	iP			49.0			
	D	iP			51.9			
	D	eP	07	11	38.8			
	T	eP			47.3			
	K	iP	09	17	23.2	t		
	S	eP			27.4			
	T	eP			29.0		1.8	419.0
	D	iP			30.5			
		eX		22	03.2			
	D	eP	13	49	50.2			
	T	eP			53.8		1.2	22.7
	D	eP	19	51	33.1			
	S	eP			34.1			
	T	iP	22	23	51.1			
	D	iP		24	00.7			
	S	eP			03.0			
NOV.10	T	eP	08	15	58.7			
	T	eP	10	44	48.4			
	D	eP			58.1			
	S	eP	11	36	46.4	t		
	D	eP			49.6			
	T	eP			52.8		0.5	13.4
	D	eP	15	50	19.0	t	0.5	2.9
	K	eP	16	24	53.8			
	S	eP		25	03.9			
	T	eP			04.6			
	D	eP			09.2			
	T	eP	18	43	51.4	t	0.5	14.2
	T	eP	19	15	12.9			
	D	eP			23.8			
	D	eP	21	03	38.0			
	T	eP			40.8			
NOV.11	T	iP	06	16	39.9			
	K	eP			45.1			
	D	eP			48.5			
	S	eP			50.7			
	T	eP	11	14	15.0	t	1.2	30.5
	D	eP			17.2			
	T	eP	12	16	26.8			
	D	eP			35.8			

Date	Station	Phase	Time(G.M.T.)	t	T	Am
NOV.11	S	eP	15 31 47.3	t		
	D	eP	50.7			
	T	eP	51.7		0.5	3.4
	T	eP	18 47 54.7			
	D	eP	48 04.4			
	T	eP	23 03 47.1			
	D	eP	55.1			
NOV.12	T	iP	00 06 46.3			
	D	eP	57.3			
	T	eP	01 29 11.5			
	D	eP	21.2			
	D	eP	06 33 09.0	t		
	D	eP	07 01 08.0	t		
	T	eP	10 01 15.7			
	D	eP	25.2			
	T	eP	12 20 53.2			
	D	eP	21 01.1			
	T	eP	12 31 26.6			
	D	iP	35.7			
	S	eP	39.6			
	K	eP	42.3			
	S	eP	15 48 02.5	t		
	T	eP	05.8		0.5	5.5
	D	eP	06.0			
	K	iP	18 23 37.8			
	T	iP	40.6			
	S	iP	47.0			
	D	iP	49.1			
	T	iP	19 16 28.0	t	1.0	230.0
	D	iP	34.4	LZ	20.0	7.1
	K	eP	35.2	LE	20.0	6.6
	S	iP	36.1	LN	20.0	5.5
NOV.13	D	eP	05 08 54.5	t		
	T	eX1	08 11 22.1	t	1.4	220.0
		eX2	32.2			
	S	eX1	24.5			
	D	ePKP?	17.4			
		eX1	24.7			
		eX2	36.1			
	T	eP	15 53 57.1			
	D	eP	54 05.9			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
NOV.14	K	eP	07	48	28.7	t		
	T	eP			32.4		1.2	300.0
		epP		49	30.6			
	S	eP		48	32.6			
	D	eP			35.1			
		ePcP			57.6			
		epP		49	33.0			
		eS		57	27.8			
		eScS		58	27.8			
	T	eP	12	14	44.5	t	1.0	34.1
	D	eP			50.4			
	S	eP			53.0			
	D	eP	15	48	11.4	t?		
	K	eP	17	27	12.4			
	S	eP			12.4			
	D	eP			15.9			
	T	eP			19.0			
	D	eP	23	00	49.1			
	T	eP			53.0			
NOV.15	T	eP	01	49	28.2			
	D	eP			38.6			
	S	eP			41.6			
	T	eP	03	37	07.8			
	D	eP			16.3			
	S	eP			19.6			
	K	eP			20.8			
	T	eP	07	40	35.2			
	D	eP			43.8			
	K	eP	12	55	54.0			
	S	eP			59.6			
	D	eP		56	04.8			
	T	eP			05.5			
	S	eP	13	13	16.7			
	D	eP			16.8			
	T	eP			21.8			
	K	eP			22.8			
	T	iP	17	50	35.7			
	K	iP			46.4			
	D	iP			46.6			
	S	iP			48.5			
	K	eP	22	11	02.6			
	S	eP			07.8			
	D	eP			13.4			
	T	eP			14.2			
NOV.16	T	eP	03	11	21.9			
	D	eP			31.4			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
NOV.16	T	eP	08	07	32.9			
	D	eP			42.4			
	T	eP	10	56	34.4			
	D	eP			40.8			
	S	eP			42.8			
	K	eP			44.6			
	T	eP	19	07	35.2	t	1.1	35.8
		eX			49.6			
	D	eP			38.1			
		eX			53.4			
	T	eX	19	10	02.6	t		
	D	eP		09	53.4			
		eX		10	07.4			
	D	eP	20	17	03.9	t		
	S	eP			04.2			
	T	eP			04.4		0.5	5.8
NOV.17	S	eP	00	54	25.5	t		
	T	eP			26.4		1.2	63.7
	D	eP			28.2			
	T	eP	12	53	45.6			
	D	eP			53.2			
	T	eP	16	22	28.7			
	D	eP			37.9			
	T	eP	17	58	53.3			
	D	eP		59	03.2			
	S	eP			06.6			
	T	eP	22	30	55.2			
	D	eP		31	04.5			
NOV.18	S	eP	00	47	27.0			
	D	eP			28.0			
	T	eP			40.5			
	T	eP	02	44	59.0	t	1.2	37.7
	D	eP		45	03.7			
	T	iP	09	37	21.5			
	D	iP			31.6			
	S	eP			33.8			
	K	eP			35.0			
	T	eP	17	21	20.5			
	D	eP			29.9			
	S	eP			33.6			
	K	eP			35.4			
	T	eP	20	11	12.4			
	T	eP	20	57	03.6	t	1.0	36.0
	D	eP			05.8			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
NOV.19	D	eP	08	46	51.6			
	T	eP			52.5			
	S	eP			53.9			
	K	eP		47	01.4			
	T	eP	09	50	42.6			
	T	iP	22	36	32.2			
	K	iP			34.5			
	S	iP			35.6			
	D	eP			37.5			
	T	eP	00	06	38.0			
NOV.20	D	eP	03	48	59.1	t		
		eX		49	26.6			
	T	eP		49	03.2		0.5	7.3
		eX			23.3			
	K	eP	09	10	48.3			
	D	eP			56.6			
	T	eP			58.1			
	S	eP	09	57	39.7	t		
	D	eP			43.2			
	T	eP			43.5		0.5	11.0
	T	eP	16	08	41.0			
	D	eP			50.5			
	T	eP	21	02	37.2			
	D	eP			45.6			
	S	eP			49.5			
	K	eP			51.2			
	T	eP	23	54	50.1	t	1.5	90.1
	D	eP			52.1			
	S	eP			53.3			
NOV.21	T	eP	00	22	53.1	t		
	D	eP			54.8			
	S	eP			56.2			
	D	eP	00	38	34.8	t		
	S	eP	02	14	52.7	t		
	D	eP			54.2			
		eX1		15	05.4			
		eX2		41	29.0			
	K	eP		14	55.9			
	T	eP			58.2		1.4	176.0
	T	eP	03	44	53.2			
	D	eP		45	02.1			
	D	eP	07	32	39.5	t		

Date	Station	Phase	Time(G.M.T.)			t	T	Am
NOV.21	T	eP	08	14	38.8			
	D	eP			49.4			
	S	eP			51.2			
	T	eP	08	59	26.0			
	D	eP			34.3			
	T	eP	11	22	51.0			
	D	eP		23	00.0			
	T	eP	14	44	04.3			
	T	eP	17	23	50.1			
	D	eP			59.6			
	D	eP	17	57	06.0	t?		
NOV.22	S	eP	05	12	17.6	t		
	T	eP			19.0			
	D	eP			20.0			
	T	eP	06	21	07.8			
	D	eP			15.2			
	T	eP	06	41	10.2			
	D	eP			20.0			
	D	eP	11	26	58.0	t		
	T	eP		27	02.4		0.5	6.3
	S	eP	15	09	56.3	t		
	K	eP			56.7			
	D	eP			59.8			
		ePcP?		11	40.9			
	T	eP		10	03.5		1.0	74.0
	S	eP	19	39	05.8	t		
	T	eP			08.8		1.2	46.8
	D	eP			11.4			
	T	eP	20	14	26.5			
	D	eP			37.4			
	S	eP			41.6			
	K	eP			43.3			
	T	eP	23	15	11.9	t	2.0	610.0
	D	eP			17.0			
		eX			29.0			
		eS		20	41.4			
	S	eP		15	20.8			
	K	eP			21.2			
NOV.23	S	eP	04	20	54.0	t		
	T	eP			54.7			
	D	eP			56.8			
	T	eP	07	10	56.1			
	D	eP		11	04.6			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
NOV.23	S	eP	09	03	36.4	t		
	K	eP			40.5			
	T	eP			46.8		1.4	43.6
	D	eP			47.8			
	T	eP	11	13	31.0			
	T	eP	11	41	29.8			
	D	eP			39.3			
NOV.24	T	eP	13	34	54.4			
	T	eP	16	49	56.3	t		
	T	eP	17	49	40.0			
	T	eP	03	51	02.2	t	0.5	3.9
	D	eP			02.6			
	D	eP	07	47	31.0			
	T	eP			34.7			
	T	iP	13	53	13.0			
	K	eP			23.2			
	D	iP			23.6			
	S	eP			26.1			
	T	iP	15	54	42.7			
	D	iP			43.4			
	S	eP			45.0			
	K	eP			49.4			
	D	eP	17	32	27.5	t		
		eX		33	01.6			
	S	eP		32	28.0			
	T	eP			31.0		1.0	70.0
	K	eP			35.4			
	T	eP	21	26	31.9	t	1.2	50.6
	D	eP			34.0			
	K	iP	21	41	07.6	t		
	S	iP			11.8			
	T	iP			12.4		1.0	275.0
	D	iP			14.6			
		eX			37.1			
		eS		49	22.6			
	S	eP	22	11	53.1	t		
	D	eP			55.3			
	T	eP	23	00	26.1	t	1.0	24.0
	D	eP			31.8			
	S	eP			33.6			
NOV.25	T	eP	04	59	34.7	t	0.5	5.0
	D	eP			37.8			
	D	eP	10	44	46.8	t?		

Date	Station	Phase	Time(G.M.T.)	t	T	Am
NOV.25	T	eP	15 25 13.5	t		
	D	eP	15.4			
	S	eP	18 42 05.5	t		
	D	eP	08.2			
	T	eP	12.0			
	T	eP	19 35 09.2			
	D	eP	17.8			
	S	eP	19.8			
	D	eP	21 58 27.8	t		
	T	eP	30.0			
	T	eP	22 38 56.0	t		
	D	eP	59.2			
	T	eP	23 59 23.8			
	D	eP	33.6			
NOV.26	D	eP	09 28 18.1			
	S	eP	18.9			
	T	eP	29.8			
	K	eP	32.4			
	K	eP	12 54 00.6	t		
	S	eP	00.8			
	T	eP	03.4		1.0	35.0
	D	eP	04.8			
	D	eP	13 22 58.0	t?		
	D	eP	14 46 59.5	t?		
	D	eP	18 45 57.0	t?		
	D	eP	20 30 45.5	t?		
	T	eP	21 09 12.0			
	D	eP	20.7			
	D	eP	21 27 57.9	t?		
	D	eP	22 17 57.0	t?		
NOV.27	S	eP	03 17 48.6	t?		
	T	eP	51.2		0.5	8.2
	D	eP	53.0			
	T	eP	15 59 37.8			
	K	eP	18 25 20.3			
	S	eP	22.1			
	D	eP	27.0			
	T	eP	29.6			
	S	eP	19 47 46.3	t?		

Date	Station	Phase	Time(G.M.T.)			t	T	Am
NOV.27	S	eP	20	05	07.4	t		
	T	eP			11.0		0.5	3.7
	D	eP			11.8			
	K	eP	21	00	26.9			
	S	eP			31.7			
	D	eP			35.0			
	T	eP			36.9			
NOV.28	K	eP	01	36	14.0			
	S	eP			22.9			
	T	eP			26.8			
	D	eP			27.8			
	T	eP	04	23	59.5			
	D	eP		24	09.5			
	K	eP	13	55	03.0	t		
	S	eP			05.5			
	D	eP			07.2			
		ePcP		56	54.0			
		eScP	14	00	31.9			
		ePcS			47.4			
		eS		01	22.0			
	T	eP	13	55	10.6		1.5	61.8
		ePcP		56	54.5			
	T	eP	14	31	50.8			
	D	eP			51.2			
	S	eP	14	59	11.3	t?		
	D	eP			14.0			
	T	eP	16	13	59.5			
	D	eP		14	09.8			
	K	eP			11.9			
	S	eP			12.2			
	T	eP	20	21	20.4			
	D	eP			28.4			
	K	eP	22	24	40.2			
	S	eP			42.6			
	D	eP			46.0			
	T	eP			49.0			
	D	eP	22	31	07.3	t?		
NOV.29	K	eP	04	25	39.9	t		
	S	eP			40.0			
	D	eP			44.2			
	T	eP			45.8		0.5	17.4
	D	eP	11	28	43.5	t?		
	T	eP	16	14	47.4			
	D	eP			47.9			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
NOV.29	S	eP	16	44	45.7			
	D	eP			47.9			
	T	eP			57.8			
	D	eP	17	39	18.8			
	T	eP			20.9			
	S	eP	18	35	53.7	t?		
	D	eP			55.8			
NOV.30	T	eP	00	23	05.2	t?		
	T	eP	02	49	58.8			
	T	eP	03	41	18.3	t	1.1	Above 284.0 Explosion ?
	S	eP	04	23	51.4			
	K	eP			58.4			
	T	eP		24	02.2			
	T	eP	06	55	37.2			
	D	eP			45.7			
	K	iP	12	49	08.3			
	S	iP			13.7			
	T	iP			18.5			
	D	iP			18.7			
	K	iP	12	58	54.9			
	S	iP			59.2			
	D	iP		59	03.9			
	T	iP			04.2			
	T	eP	13	15	36.2			
	D	eP			43.6			

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S-P \ Date	1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16		17		18	
0— 0.9																																				
1— 1.9																																				
2— 2.9																																				
3— 3.9																																				
4— 4.9	1				1																														1	
5— 5.9	1		1		2				2						1		2				1						1						2		5	
6— 6.9	1								1				1		2	*	2		1				1				1						1		1	
7— 7.9			4		2		2		3		3		4		2		1		2	*		*			2	*	2		1		1		2		3	
8— 8.9	3		2	*	4				2		5		1		1		4		2		3										4		1			
9— 9.9	2		1	*	4		1	*	2		1		4		6		2	*	1				1		1						2		2		2	*
10—10.9	3		2		1		1	*	1		1		1		1			*	3		1		1		2		2		2		6				2	
11—11.9	2				1						1		1		3	*	1						1		1		1				4		1		1	
12—12.9	1		1				3		1		2				2		1		1		1		1		1		1		1				1			
13—13.9	1		1		1		1				1				2			*					1						1		1		2		1	
14—14.9	3				1		1		1										2		1		2				1		3		2		2			
15—15.9									1				3		1										2				3		1	*	1		3	
16—16.9							1				1												1						1		1					
17—17.9									1		1		1				1				1		2						1						1	
18—18.9									2				1	*										*					1						1	
19—19.9					2				1						1		1								1				2		2				2	
20—20.9																											1									
21—21.9													1	*																						
22—22.9			1								1												1								1				1	
23—23.9																							1													
24—24.9																									1				1							
25—25.9				*					1																											
26—26.9																									1		1									
27—27.9	1		1																												1					
28—28.9											1																			*			2			
29—29.9																											1									
30—59.9		*				*	1	***	2					****		***		**		*	1	**	2	**	3		1	*		*****		**	3			**
60—179.9		*		**		**		*		**	1	***		***		*		*		*		**		****	1					*	1	**		*		**
t		**		*		***		***		***		***		***		***		*****		*		**		*		***		**						****		*
?			1			*		*	4		2		4		5		2	**	3	*	5		3		5		2		2		2				8	
Total	19	4	15	6	19	7	11	10	25	5	21	6	22	12	27	9	17	13	15	5	14	7	18	8	21	4	15	3	19	7	29	5	20	5	26	6
No observation																																				

Remarks *: indicates a larger earthquake which is included in the main table of the Bulletin.

Tsukuba, Nov., 1969

S-P \ Date	19		20		21		22		23		24		25		26		27		28		29		30		I	II	III
0— 0.9																											
1— 1.9																											
2— 2.9																											
3— 3.9																											
4— 4.9			1		3																				7		7
5— 5.9	3		1				2		1				1				1				1				28		28
6— 6.9	3		1		2				1		2										1				22	1	23
7— 7.9			1		2		2		6		2		1		4		2		2		2		1		59	3	62
8— 8.9	1		2				3		1				1				1		2				2		45	1	46
9— 9.9	2		3	*			2				2		2		1						1		3		48	5	53
10— 10.9	2		3				1						1	*	3								2		42	3	45
11— 11.9			2		1		1												1		1		1		25	1	26
12— 12.9	1		2		2		1		1		1				2		1				2				31		31
13— 13.9	1								1		1						1		3				2		22	1	23
14— 14.9									1						1						1				22		22
15— 15.9	2		1																				1		19	1	20
16— 16.9	1		1				1		1				1												10		10
17— 17.9	2		1														1		2						15		15
18— 18.9	1						1						1				1								9	2	21
19— 19.9			1								1		2						1					*	17	1	18
20— 20.9	2										1		1					*			1	*			6	2	8
21— 21.9	1		1		1		1																	*	5	2	7
22— 22.9							1																		6		6
23— 23.9			1																						2		2
24— 24.9																									2		2
25— 25.9	1		1																						3	1	4
26— 26.9									1	*															3	1	4
27— 27.9															1										4		4
28— 28.9			1																						4	1	5
29— 29.9																									1		1
30— 59.9	3	**	3	*			2			*	1	**	3		1	**	1			**				**	27	41	68
60—179.9	1	**		*		**** ***		***		***		*				*				***		**	1	****	5	56	61
t		*		**		****		**		*****		**		**** ***		*****		*		*		*		**		73	73
?			1		5		2						1		1		3			***	4		4	*	63	9	72
Total	27	5	28	5	16	11	20	5	14	10	11	5	15	8	14	8	12	2	11	9	14	4	17	11	552	205	757
No observation										06h40m ~ 12h18m																	

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S-P \ Date	1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16		17		18	
0— 0.9																																				
1— 1.9																																				
2— 2.9															1																					
3— 3.9											1		1		1																					
4— 4.9													1																							
5— 5.9													2				1																			
6— 6.9																																			1	
7— 7.9	1		1						1				1		2				2				1										1			
8— 8.9			1		1								1				3		1		1						2						1		1	
9— 9.9	1				1		1									*	1		1		2						1									
10— 10.9	2								1						1		1		2										1		2				3	
11— 11.9	2		2		2		1		1								2	*			1		1		1				2				1		1	
12— 12.9	1		1		4		2	*	2				1								1		2		1		1		3				1		1	
13— 13.9	1		4		1		2	*			3		1				3			*		*	1				1		1		1		1		1	
14— 14.9									1		1		1								1		1		1		1								1	*
15— 15.9	2			*											1			*							1								1		1	
16— 16.9	1		1		1				1				1		1										2						1					
17— 17.9									1		1																1						2		2	
18— 18.9			1						1				2			*									2		1		1		1					
19— 19.9					1										1																1				1	
20— 20.9	1				1		1												1				1		1		2		1							
21— 21.9	1		1																				1		2						1		1			
22— 22.9	1				1		1								1						2		1				1		1		2		1		1	
23— 23.9			1				2				1																		1		1					
24— 24.9																											1								1	
25— 25.9				*																									3				1			
26— 26.9									1				1		1						1														2	
27— 27.9									1						1		1								2		1								2	
28— 28.9							1								2															*	1					
29— 29.9			1						1					**	1		1										1									
30— 59.9	1	*				*	1				2		4	**		**		**	1		3	**	1	**	2		2		1	****			5			*
60—179.9		**	1	***	1	***	1	****	3	***	1	***	1	*****	1	**		**		*		**		****	2		1	*		**	1	****		*		**
t		**		**		***		***		***		***		***		****		*****		*		**		***		****		**		*				****		*
?	1		3	*		*		*	1	*			3		3		1	**	2	*	1			*	3	*	1		2		2	*	3			
Total	16	5	18	8	14	8	13	10	16	7	10	6	21	12	18	10	14	13	10	4	13	7	10	10	20	5	18	3	17	8	14	5	19	5	19	5
No observation					06h00m ~ 06h30m				Noisy																								Noisy			

Remarks*: indicates a larger earthquake which is included in the main table of the Bulletin.

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S-P \ Date	19		20		21		22		23		24		25		26		27		28		29		30		Ⅰ	Ⅱ	Ⅲ
0— 0.9																											
1— 1.9			1																						1		1
2— 2.9							1												1						3		3
3— 3.9																									3		3
4— 4.9																									1		1
5— 5.9											1														4		4
6— 6.9																							1		2		2
7— 7.9	2		1						1				1										1		16		16
8— 8.9			4						1												2				19		19
9— 9.9	1		2				2						1				2				1				17	1	18
10— 10.9	1				1				1		1		1		1		1		2		1		1		24		24
11— 11.9	1						1		1				1		2						1		1		25	1	26
12— 12.9	1		1	*	2						3				1		1		2		2		3		37	2	39
13— 13.9			2				3		1		1				2		1		1		1		1		34	3	37
14— 14.9	1		2		1		3						1		1		2				1		1		21	1	22
15— 15.9					2		1		2						1		1						1		14	2	16
16— 16.9	2		1		1						2				1						1		1		18		18
17— 17.9							1		1								1						1		11		11
18— 18.9	1		1				1		1				1		1				1						16	1	17
19— 19.9			1		1		1								1									*	8	1	9
20— 20.9							1				1				1		2								14		14
21— 21.9	1		1										1						1						11		11
22— 22.9	3				1								1		2	*	1				1		1		23	1	24
23— 23.9	2										1														9		9
24— 24.9													1				1								4		4
25— 25.9					1						1		1						1			*			8	2	10
26— 26.9			1																						7		7
27— 27.9							1		1				1				1	*							12	1	13
28— 28.9															1						2				7	1	8
29— 29.9	1								1				2								1				10	2	12
30— 59.9	6		4	*	2		2		1	*	4	*	5		5	*	4		2	**				*	58	24	82
60—179.9	1	**	1			**** **	1	***	2			*	1		2	*	1			***	1	**	1	****	24	66	90
t		*		**		**** *		***		*** **		*		**** ***		**** ***		*****		***		***		*		89	89
?	2		1		2		1		1		2				2				1		2		2	*	42	11	53
Total	26	3	24	4	14	11	20	6	15	6	17	3	19	7	24	10	19	6	12	8	17	6	16	8	503	209	712
No observation													12h07m ~ 12h45m										07h00m ~ 13h19m				

Preliminary Bulletin

of the Dodaira Micro-earthquake Observatory

and its Substations

Nov., 1969

Dodaira Micro-earthquake Observatory

Earthquake Research Institute, the University of Tokyo

Preliminary Bulletin

of the Dodaira Micro-earthquake Observatory

and its Substations

Dec., 1969

Dodaira Micro-earthquake Observatory

Earthquake Research Institute, the University of Tokyo

Preliminary Bulletin of the Dodaira Micro-earthquake Observatory and its Substation

Observation stations

		N	E	h
Dodaira	(D or DDR)	35°59'54".0	139°11'36".2	800m
Tsukuba	(T or TSK)	36°12'39".0	140° 6'35".0	280m
Kiyosumi	(K or KYS)	35°11'51".6	140° 8'53".6	230m
Shiroyama	(S or SRY) (temporary)	35°36'30".0	139°16'27".0	254m

Expressions: Am: Amplitude in millimicron (half of peak to trough*) of P motion maximum within few cycles after the onset recorded by a short period vertical seismograph.

*In 1967 double amplitude (peak to trough) was used as Am.

T : Period in sec of the measured P maximum

t : Teleseism

All stations are radio-telemetered to Tokyo giving records on a multi-channel ink-recording oscillograph. The paper speed of the recorder is 1 mm per sec. For stronger events high speed recorder (10 mm/sec) is also triggered. The system is also recorded in parallel on multi channel magnetic tape through a trigger system using an endless tape loop. Direct filter sum of short period seismometers at Dodaira and/or on line short period filter outputs of Tsukuba are also used for the

detection of weak teleseismic signals. For teleseismic events records of long period and medium period seismographs are occasionally used, applying off line frequency filter, if necessary.

The Bulletin includes the preliminary readings sent to USCGS for teleseisms and larger near shocks with total durations (F-P) of short period vertical seismograph at Tsukuba (TSK) with magnification about 140.000 at 1 c/s or sensitivity about 300×10^{-3} mm/microkine at 10 c/s being longer than 100 seconds which correspond approximately shocks with M$\geq$3.5. For the minor near earthquakes with F-P$\angle$100 sec or M$\angle$3.5, frequency of S-P times at each station is added at the end of the Bulletin, which may easily give a general idea of local seismicity around the station.

Date	Station	Phase	Time(G.M.T.)			t	T	Am
DEC. 1	T	eP	00	49	28.1			
	D	eP			32.7			
	D	eP	09	43	38.4			
	S	eP			38.6			
	K	eP			44.8			
	D	eP	13	08	25.7	t		
	D	eP	17	34	38.9			
	S	eP			44.0			
	D	eP	20	39	40.9	t		
	D	eP	20	54	38.2	t		
		eX			47.4			
	S	eP			38.3			
	D	eP	22	47	47.9	t		
						LZ	20.0	2.8 U
						LE	20.0	1.8 U
						LN	20.0	2.8 U
DEC. 2	K	eP	08	31	47.1	t?		
	S	eP			52.5			
	D	eP			56.4			
	D	eP	10	44	13.1			
	K	iP	14	11	06.8			
	S	iP			12.3			
	D	iP			17.0			
	D	eP	16	20	13.3			
	K	eP	17	31	22.8	t?		
	S	eP			26.8			
	D	eP			30.6			
	S	eP	18	03	00.9	t		
	D	eP			04.7	LZ	20.0	6.8 U
		eX			27.0	LE	20.0	1.8 U
		eS		07	40.2	LN	20.0	6.1 U
		eScP		09	38.0			
	D	eP	19	03	01.6			
	S	eP			04.8			
	K	eP			07.2			
	D	eP	21	15	33.7			
	D	eP	22	13	21.4			
	S	eP			24.6			
	K	eP			29.6			
DEC. 3	K	iP	04	31	33.3			
	S	iP			34.8			
	D	iP			37.0			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
DEC. 3	D	eP	07	38	34.6			
	T	eP			37.8			
	T	eP	08	37	59.8			
	D	eP		38	09.4			
	D	iP	12	19	55.0			
	S	eP			59.6			
	T	eP		20	05.8			
	K	eP			14.1			
	T	eP	12	40	01.2	t	1.0	48.0
	D	eP			06.4			
	S	eP			09.6			
DEC. 4	S	eP	03	08	07.0	t		
	D	eP			10.5			
	T	eP			11.6		1.4	87.9
	T	eP	08	51	45.6			
	D	eP			55.2			
	K	eP			58.0			
	S	eP			59.0			
	S	eP	11	39	11.0	t		
	D	eP			14.8			
	T	eP			16.0		1.1	62.0
	D	eP	12	48	15.0			
		eX			22.6			
	S	eP			15.0			
		eX			22.6			
	T	eP			25.8			
	S	iP	14	10	10.3			
	D	iP			10.8			
	T	iP			15.8			
	K	iP			15.8			
	T	eP	22	44	53.0	t		
	T	eP	22	46	30.6			
	D	eP			36.7			
	T	eP	23	49	20.8			
	D	iP			31.2			
	S	eP			34.2			
DEC. 5	T	eP	07	28	30.6			
	D	eP			38.6			
	S	iP	15	04	41.8			
	K	iP			43.8			
	D	iP			44.1			
	T	iP			48.2			
	S	eP	17	28	16.6			
	D	eP			19.4			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
DEC. 5	T	iP	17	40	48.9			
	D	eP			59.1			
	D	eP	21	42	15.0	t?		
	D	eP	22	28	14.0			
	S	eP			16.2			
	T	eP			23.6			
	T	eP	22	44	43.0	t	1.0	37.0
	D	eP			49.0			
DEC. 6	D	iP	01	19	29.2			
	S	iP			32.4			
	T	iP			32.5			
	K	iP			39.3			
	D	eP	07	13	24.6	t		
	S	eP			26.1			
	T	eP			27.1		1.2	24.8
	K	eP			31.8			
	T	eP	11	34	34.6			
	S	iP	13	17	12.8			
	K	iP			13.1			
	D	eP			15.2			
	T	iP			16.2			
	D	eP	15	14	00.5	t		
	K	eP	15	36	33.5			
	S	eP			42.3			
	T	eP			45.0			
	D	eP			46.4			
DEC. 7	S	eP	04	05	34.2	t		
	D	eP			38.4			
	T	eP	04	20	37.8			
	T	eP	06	21	04.6			
	D	eP			13.2			
	T	eP	09	41	54.0			
	S	eP	13	40	34.5	t		
	D	eP			37.1			
	T	eP			40.8		0.5	60.6
	D	eP	21	52	09.8	t		
	T	eP			18.8		1.0	23.0
	T	eP	22	03	27.8			
	S	eP	22	39	59.4	t		
	D	eP		40	03.6			
	T	eP			04.6		0.5	63.3

Date	Station	Phase	Time(G.M.T.)	t	T	Am
DEC. 8	D	eP	05 11 10.1	t		
		ePcP	13 38.0			
	T	eP	11 12.5		1.0	18.0
DEC. 9	T	eP	00 45 25.7			
	D	eP	03 32 51.0	t		
	T	eP	56.0		0.5	12.8
	T	eP	12 24 48.8			
	T	iP	16 35 02.6			
	D	eP	12.5			
	S	eP	15.7			
	K	eP	16.5			
	T	eP	22 01 29.3			
	D	eP	38.8			
	S	eP	41.4			
DEC.10	T	eP	01 48 00.9			
	D	eP	09.6			
	T	eP	16 45 29.3			
	K	eP	20 03 38.2	t		
	S	eP	40.2			
	T	eP	44.6		1.2	55.8
	D	eP	45.0	LZ	20.0	18.9 U
				LE	20.0	7.3 U
				LN	20.0	11.3 U
	T	eP	21 47 46.9			
	D	eP	22 01 43.0	t?		
	D	eP	23 51 17.3	t?		
DEC.11	K	eP	00 55 17.2			
	S	eP	20.7			
	D	eP	25.6			
	T	eP	27.6			
	T	eP	13 51 29.0			
	D	eP	38.2			
	D	eP	17 16 08.9	t		
DEC.12	T	eP	01 14 25.8			
	D	eP	35.5			
	S	eP	38.6			
	K	eP	38.8			
	T	eP	06 08 17.0			

Date	Station	Phase	Time(G.M.T.)	t	T	Am
DEC.12	T	iP	07 12 46.1			
	D	iP	53.1			
	S	eP	57.4			
	K	eP	13 00.2			
	S	eP	20 00 29.0	t?		
	D	eP	31.6			
	T	iP	21 49 50.9			
	S	iP	52.4			
	K	iP	53.1			
	D	iP	53.2			
DEC.13	S	iP	03 41 31.2			
	D	iP	33.2			
	K	eP	33.6			
	T	iP	37.4			
	S	eP	04 10 52.5	t		
	D	eP	55.6			
		ePcP?	13 21.9			
	T	eP	10 59.5		1.1	52.2
	T	eP	13 31 55.7			
	K	eP	20 16 06.7			
	T	eP	18.2			
	D	eP	22.0			
	S	eP	21 40 50.9	t		
	D	eP	56.9			
		eX	41 12.8			
		eS	44 19.5			
	K	eP	40 59.2			
	T	eP	41 05.4		1.3	209.0
	T	ePKP?	21 53 12.1	t	1.0	30.0
		eX	28.6			
	D	ePKP?	13.4			
		eX	32.7			
	D	eP	22 13 33.0	t		
	T	eP	35.3		1.1	13.7
	T	eP	23 01 47.8			
	D	eP	58.5			
DEC.14	S	eP	00 03 33.3			
	D	eP	35.8			
	K	eP	36.3			
	T	eP	40.0			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
DEC.14	K	eP	02	48	59.8	t		
	S	eP		49	00.7			
	D	eP			03.9	LZ	20.0	24.4 U
		epP			35.4	LE	20.0	9.9 U
		ePP		50	26.4	LN	20.0	12.2 U
		ePcP		51	36.3			
		eS		54	34.0			
		eScS		59	19.8			
	T	eP		49	06.8		1.4	228.0
DEC.15	K	eP	09	15	48.6			
	S	eP			58.8			
	T	eP		16	00.4			
	D	eP			03.1			
	K	eP	12	03	48.7			
	S	eP			56.7			
	D	eP		04	01.0			
	T	eP			01.6			
	T	eP	16	05	46.2			
	D	eP			54.8			
	S	eP			56.5			
	K	eP		06	04.6			
	S	eP	18	49	04.6	t		
	D	eP			05.8	LZ	20.0	7.2 U
	T	eP			08.2	LE	20.0	2.2 U
		(1.1 sec., 44.2MU)				LN	20.0	6.7 U
	K	eP	06	40	16.8			
	D	eP			23.4			
	T	eP			23.5			
	D	iP	09	49	26.3			
	K	eP			27.0			
	T	iP			31.0			
	K	eP	11	30	58.2			
	T	eP		31	11.1			
	D	eP			14.2			
	D	iP	18	04	04.1			
	K	eP			06.3			
	T	iP			09.3			
	T	iP	20	51	37.1			
	K	eP			46.0			
	D	iP			47.7			
DEC.16	T	eP	09	06	26.6			
	D	eP			34.8			
	K	iP	17	43	01.4			
	T	iP			02.4			
	D	iP			05.1			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
DEC.17	D	eP	04	42	16.8			
	T	eP			21.2			
	K	eP			26.8			
	K	iP	10	33	05.4			
	T	eP			15.3			
	D	eP			17.4			
	T	eP	15	12	02.3	t?		
	D	eP			07.7			
	T	eP	20	53	21.0	t	1.1	19.3
	D	eP			22.6			
DEC.18	T	eP	02	19	40.6			
	D	eP			41.6			
	K	eP			51.9			
	T	eP	06	16	12.1			
	D	eP			20.2			
	D	eP	06	21	36.5	t		
	T	iP	10	21	32.8			
	D	iP			42.5			
	K	eP			46.3			
	T	iP	13	34	22.2			
	D	iP			27.0			
		eScS?		46	37.5			
	K	eP		34	35.7			
	K	iP	23	05	10.0			
	T	eP			16.3			
	D	eP			21.9			
DEC.19	T	eP	04	32	06.1			
	D	eP			15.6			
	K	iP	09	01	51.1			
	T	iP			57.6			
	D	eP		02	03.5			
	K	eP	09	03	32.6			
	T	eP			47.0			
	T	eP	13	39	59.7	t		
	D	eP		40	02.0			
	T	eP	18	44	36.6			
	D	eP			46.0			
DEC.20	K	iP	05	39	45.4			
	T	eP			51.8			
	D	eP			57.5			

Date	Station	Phase	Time (G.M.T.)	t	T	Am
DEC.20	K	eP	05 40 08.8			
	T	eP	15.6			
	D	eP	20.4			
	K	iP	09 17 57.2			
	T	iP	18 09.6			
	D	iP	11.2			
	T	eP	10 33 00.3			
	K	eP	00.6			
	D	eP	09.4			
	K	eP	13 13 13.5	t?		
	D	eP	17.2			
	T	eP	20.6		0.5	22.2
	T	eP	14 27 53.1			
	D	eP	28 02.6			
	K	iP	20 41 14.8			
	D	iP	23.2			
	T	iP	26.0			
DEC.21	K	eP	00 41 04.2	t		
	T	eP	08.4		1.2	81.9
	D	eP	10.4			
	T	iP	01 54 40.7			
	K	eP	41.8			
	D	eP	50.7			
	D	iP	02 37 27.8			
	T	iP	29.2			
	K	iP	30.5			
	D	iP	10 20 37.1	t		
	K	eP	39.2			
	T	iP	46.7		1.0	73.0
	T	eP	12 21 59.5			
	D	eP	22 08.2			
	K	eP	15.7			
	T	iP	16 34 28.6			
	K	eP	36.6			
	D	iP	39.4			
	K	eP	16 44 04.4			
	D	iP	15.5			
	T	iP	17.0			
	T	iP	21 57 55.1			
	D	iP	58 04.7			
	K	eP	10.1			
DEC.22	T	eP	00 13 25.6			
	D	eP	33.0			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
DEC.22	T	eP	01	17	13.1			
	D	eP			22.1			
	D	eP	03	51	46.9	t?		
	T	eP	11	26	47.7	t	1.2	63.6
	D	eP			53.8			
	T	eP	20	03	35.6			
	D	eP			46.6			
	D	eP	21	03	39.6	t?		
DEC.23	T	eP	07	40	41.0			
	D	eP			50.9			
	T	iP	13	28	25.7	t	1.0	32.5
	D	iP			30.8	LZ	20.0	6.3U
						LE	20.0	6.3U
						LN	20.0	8.3U
	D	eP	14	13	37.5	t		
	T	eP			41.1			
	T	eP	15	52	35.3			
	D	eP			46.5			
	T	iP	19	45	16.4			
	D	iP			21.1			
	K	eP			26.0			
	D	eP	23	05	49.6			
	T	eP			55.2			
DEC.24	T	eP	02	06	36.5			
	D	eP			47.0			
	T	iP	18	10	44.5			
	D	iP			53.9			
	K	eP			57.2			
	D	eP	18	40	17.9	t		
DEC.25	T	eP	07	39	40.5			
	D	eP			51.9			
	T	eP	08	33	56.4			
	D	eP		34	06.6			
	K	eP	19	16	42.9			
	D	iP			49.4			
	T	eP			51.6			
	T	ePKP	21	51	31.8	t	1.3	71.5
		ePP		53	24.0			
	D	ePKP		51	34.2	LZ	28.0	128.0U
		ePP		53	26.5	LE	28.0	96.0U
						LN	28.0	104.0U

Date	Station	Phase	Time(G.M.T.)			t	T	Am
DEC.25	D	eP	22	50	05.0	t		
	T	eP			05.2		1.1	14.2
DEC.26	T	ePKP?	00	26	28.4	t	1.1	105.0
		eX			43.5			
	D	ePKP?			34.0			
		eX			48.7			
	D	eP	10	59	24.0			
	T	eP			28.6			
	K	eP	16	30	19.7			
	S	eP			23.3			
	D	eP			27.2			
	T	eP			29.0			
	K	eP	17	46	30.0			
	S	eP			36.0			
	D	eP			42.2			
	T	eP			42.6			
	T	iP	22	55	03.2			
	D	iP			13.0			
	S	eP			15.4			
	K	eP			17.6			
	T	eP	23	00	53.0			
	D	eP		01	01.7			
DEC.27	K	eP	15	22	14.2			
	S	eP			24.1			
	T	eP			28.5			
	D	eP			29.6			
	S	iP	15	33	51.8			
	K	eP			52.1			
	D	iP			55.2			
	T	eP			58.3			
	D	eP	15	59	24.2			
	S	iP			26.6			
	T	iP			28.5			
	K	eP			34.0			
DEC.28	T	iP	00	44	45.6			
	K	iP			46.1			
	S	iP			46.7			
	D	iP			48.1			
	T	eP	01	21	21.9			
	D	eP			31.3			
	S	eP			34.2			
	K	eP			38.1			
	D	eP	03	55	23.0	t	explosion?	
	S	iP			24.0			
	T	iP			24.9			
	K	eP			31.1			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
DEC.28	T	eP	04	26	50.1			
	D	eP		27	00.0			
	T	eP	04	55	19.0			
	D	eP			29.1			
	S	eP			32.6			
	K	eP			33.3			
	T	eP	05	08	00.3			
	D	eP			10.4			
	D	iP	07	44	53.3			
	S	iP			54.0			
	T	iP		45	04.0			
	K	eP			06.1			
	T	eP	14	40	08.5			
	D	eP			18.9			
	S	eP			22.3			
	S	iP	17	43	24.0			
	K	iP			24.9			
	T	iP			25.9			
	D	iP			26.0			
	S	iP	20	51	09.0			
	T	iP			09.4			
	K	iP			10.1			
	D	iP			10.2			
DEC.29	T	eP	06	42	32.9			
	D	eP			42.3			
	S	eP	09	40	46.3			
	D	eP			51.3			
	T	eP			52.6			
	S	eP	16	25	56.4			
	D	eP		26	00.6			
	T	eP			17.1			
DEC.30	T	iP	09	09	10.8			
	D	iP			16.3			
	S	eP			18.4			
	S	iP	11	24	43.1	t		
		iX		26	57.8			
	D	eP		24	45.9			
		eX		26	59.4			
	T	eP		24	50.1		1.0	30.0
		eX		27	00.8			
	S	eP	15	25	29.4			
	T	eP			33.5			
	D	eP			34.6			

Date	Station	Phase	Time(G.M.T.)			t	T	Am
	S	iP	17	45	51.2			
	D	iP			53.7			
	T	eP			57.8			
DEC.31	T	eP	03	39	28.4			
	D	eP			38.7			
	S	eP			42.7			
	T	eP	05	41	10.0			
	D	eP			19.8			
	S	eP			22.2			
	T	eP	07	39	35.1	t?		
	S	eP			38.3			
	D	eP			39.4			
	T	iP	15	47	48.4			
	D	iP			58.6			
	S	eP		48	01.1			
	S	eP	19	04	34.6			
	D	eP			38.9			
	T	eP			48.0		1.0	32.7
	S	iP	23	46	38.4	t		
		ePcP		48	03.0			
	D	eP		46	40.9			
		ePcP		48	05.1			
		ePP		49	56.7			
		eS?		52	55.4			
	T	eP		46	44.6		1.0	21.6
		ePcP		48	06.2			

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S−P \ Date	1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16		17		18	
0 − 0.9																																				
1 − 1.9																																				
2 − 2.9																																				
3 − 3.9																																				
4 − 4.9																																				
5 − 5.9							1										2				1		2				1				2					
6 − 6.9					3		3		2										1		1		1		2				2		4		3			
7 − 7.9	3						2		4		1				1		3				2		1		5		1		2		3		2			*
8 − 8.9					2		2		3				3		5		2		2		1		5		2		5		2		5		4		6	
9 − 9.9	3				2		1		3		1				4		2				2		2		4		1		3		2	*	2		3	
10 − 10.9					1		1						3		2		4		2		1				1						3		3			
11 − 11.9	1										1		2						1						3	*	1		1		2		1			
12 − 12.9	2										1		1		1		1		1		1		1		1		1						2	**		
13 − 13.9							3		1		1	*			1						1			*					1							
14 − 14.9	1						1					*	2						1								1		1							
15 − 15.9										*					1		1				1										1				1	
16 − 16.9											1		1												1						1		1		1	
17 − 17.9	1						1										1		1	*	1				1				1		1					
18 − 18.9							2		1				1				1		2						1		1			*						
19 − 19.9	1											*									2						1		1				2			
20 − 20.9							1				1				1		1								1				1				1			
21 − 21.9						*	1						1												1											
22 − 22.9													1		1		1		1										1							
23 − 23.9									1												1								1							
24 − 24.9																							2													
25 − 25.9								*																											1	
26 − 26.9																											1								1	
27 − 27.9																													1							
28 − 28.9									1																1						1					
29 − 29.9																									1											
30 − 59.9	1									**	1	*	1	**	1		1	*		*			1	*	3	*		**** *		**	2	**	3			
60 − 179.9		*				**	1	*		*		**	1	**		*		*		*		*** *				*				*	1		1	*		***
t						*		**				**		*		***		*				*		*		*		****		*						**
?							2	*	3		1		1				3		1		5		5		2		2		8		1		5		4	
Total	13	1			8	4	22	5	19	4	9	8	18	5	18	4	23	3	13	3	20	6	20	3	30	4	16	9	26	5	29	3	30	3	17	6
No observation		17h49m ~ 24h00m	00h~24h		00h ~ 16h05m						11h00m ~ 13h00m																									

Remarks*: indicates a larger earthquake which is included in the main table of the Bulletin.

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S-P \ Date	19		20		21		22		23		24		25		26		27		28		29		30		31		I	II	III
0 – 0.9																													
1 – 1.9																													
2 – 2.9																													
3 – 3.9																													
4 – 4.9																													
5 – 5.9	1				1		2		1						1		1		1		1		1		1		20		20
6 – 6.9	1		1		2				1				1		1		1		2		1		2		3		38		38
7 – 7.9	3		2		1		2		5		4		1		1		3		2				3				57	1	58
8 – 8.9	2		3		4		1		4		1		3	*	1		3		3		3		7		5		89	1	90
9 – 9.9	3		4		2		1		2		3	*	1		3		4		2		1		2				63	2	65
10 – 10.9	2		3	*	1		1		3		4		4		3		1	*	1		1				4		49	2	51
11 – 11.9					2	*			1		4				1		1		1				3		3		29	2	31
12 – 12.9	1		1		1	*	3		1		4		1		1		1			*	1				1		29	4	33
13 – 13.9	1	**	1	**	3		2				2		2				1		1			*	1				22	7	29
14 – 14.9			1	*	3		1		1				1				1						1		2		18	2	20
15 – 15.9									1		1						3		1								11	1	12
16 – 16.9			1		1	*	1																1		1		11	1	12
17 – 17.9									1		1		1				1				1				2		15	1	16
18 – 18.9	1								1		1		1		1		1		1								16	1	17
19 – 19.9									1	*									1		1						10	2	12
20 – 20.9							1		2		1	*					1				1						13	2	15
21 – 21.9															1						1				1		6		6
22 – 22.9			1					*																	1		7	1	8
23 – 23.9											1												1				5		5
24 – 24.9																											2		2
25 – 25.9	1																								1	*	3	2	5
26 – 26.9											1						1										4		4
27 – 27.9	1							*											1								3	1	4
28 – 28.9			1																						1		5		5
29 – 29.9					1																						2		2
30 – 59.9		*	4		2		1		1			*	1			*	1	**	2	****	1	*	1			*	28	27	55
60 – 179.9		*		**		*	1	***		*		*		**		*		*		*****		*				**	5	45	50
t		*		*		**		*		**						***				*				*		*		34	34
?	2		7		3		3		1		3		3		3		7		4		5	*	2	**	2		88	4	92
Total	19	5	30	7	27	6	20	6	27	4	31	4	20	3	17	5	32	4	23	11	18	4	25	3	28	5	668	143	791
No observation																													

Remarks*: indicates a larger earthquake which is included in the main table of the Bulletin.

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S-P \ Date	1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16		17		18	
0 – 0.9																																				
1 – 1.9																																				
2 – 2.9																							1													
3 – 3.9																																				
4 – 4.9																							1													
5 – 5.9																	1																			
6 – 6.9																	1										1				1					
7 – 7.9	1				1						2		1																							
8 – 8.9			1				2		1						3		1		1		1								1		1		1			
9 – 9.9						*															3															
10 – 10.9									1			*	1				1				1		1								1					
11 – 11.9	3						1								2		1						1		1		1				3					
12 – 12.9	1						1						4				2				1		2		5		2						1			
13 – 13.9	1		1		1	*	2		1		1		2		2				1		2				1	*	1		3		1				1	
14 – 14.9					1		1		1		3				1								1		2				1		1		2	*		
15 – 15.9			1				1				1		1								1				1		2				1		1			*
16 – 16.9							1		1			*	1		1				1		1				2		1				1				1	
17 – 17.9	1		2				1		1		2						3		1		1		1		1		2			*	1	*				
18 – 18.9	1		1	*									2												2											
19 – 19.9							1						1						1					*	1				2					*		
20 – 20.9	1									*	1		2								1		1								1					
21 – 21.9	1		2					*					1						1																	
22 – 22.9	2								1			*	1						1						1											
23 – 23.9			1																		1								1		1					
24 – 24.9	2		1														1								1											
25 – 25.9			1										1																							
26 – 26.9																			1						1											
27 – 27.9			1								1		1				1						1		1											
28 – 28.9			1												1					*	1												1			
29 – 29.9							3																		1											
30 – 59.9	1	*	2			**	1	*	1		2	*	2	*			4		2	*			3		1	*	1	**** *	1	**	1	**	1	*	2	
60 – 179.9	1	*	1	**	1	***	1	*		**	1	*	1	*			1			*	2	**	1	*	3				1	*			2			**
t		*		****		***		**				***		***		***		*				***		*		**		****		*						***
?			1			*			2		1	*	1				3		1		1		6		1		1		3		4		6		1	*
Total	16	3	17	7		11	16	5	10	3	15	9	23	5	10	3	20	1	11	3	17	5	20	3	26	4	12	9	13	5	18	3	15	3	5	7
No observation			Noisy				Noisy																													

Remarks*: indicates a larger earthquake which is included in the main table of the Bulletin.

Dodaira, Dec., 1969

S−P \ Date	19		20		21		22		23		24		25		26		27		28		29		30		31		I	II	III
0 − 0.9																													
1 − 1.9																													
2 − 2.9	1																						6				8		8
3 − 3.9																					1						1		1
4 − 4.9							1		1														2				5		5
5 − 5.9																											1		1
6 − 6.9							1								2						1						7		7
7 − 7.9					1						2						1								3		12		12
8 − 8.9	1								1								1						1				17		17
9 − 9.9				*							1				1		3		1		1		2				12	2	14
10 − 10.9	2		1				1				1		1		1								1	*			14	2	16
11 − 11.9	1					*			1		1	*	1				1						1		1		20	2	22
12 − 12.9	3		1		1				3		1			*	1		5		1						2		37	1	38
13 − 13.9			1		1				1		1		2		1		3	*	1		1	*			1		34	4	38
14 − 14.9	1		1		2	*					1		1		1		1			*							22	3	25
15 − 15.9		*		**	2								1		1		1								1		16	4	20
16 − 16.9					1			*	2		2		1								1		1		1		20	2	22
17 − 17.9		*			3	*			2		2								1								25	4	29
18 − 18.9			1		2						1																10	1	11
19 − 19.9																					1						7	2	9
20 − 20.9																											7	1	8
21 − 21.9							1		2		1		1										1		2		13	1	14
22 − 22.9			1		1				1						1		1						1				12	1	13
23 − 23.9							1																				5		5
24 − 24.9			1																								6		6
25 − 25.9																				*							2	1	3
26 − 26.9			1							*																	3	1	4
27 − 27.9													1				1								1		9		9
28 − 28.9											1	*					1								2		8	2	10
29 − 29.9			1		1								1												1		8		8
30 − 59.9	2		1		1		2	*				*	2		1	*	2	**		**	1	*	1	*	2	**	40	29	69
60 − 179.9	1	*		**		*	2	***	2	*		*	1	**		*		*		*	1	*	1		1	**	25	35	60
t		*		*		**		**		***				*		***				*				*		*		50	50
?	2		3	*	2		3		4		1		2		1							*	1		1		52	5	57
Total	14	4	13	7	18	6	12	7	20	5	16	4	15	4	11	5	21	4	4	6	8	4	19	3	19	5	458	153	611
No observation															Noisy				13h22m ~ 24h00m		00h ~ 02h43m								

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Preliminary Bulletin

of the Dodaira Micro-earthquake Observatory

and its Substations

Dec., 1969

Dodaira Micro-earthquake Observatory

Earthquake Research Institute, the University of Tokyo