



CALIFORNIA INSTITUTE OF TECHNOLOGY
PASADENA CALIFORNIA

SEISMOLOGICAL LABORATORY

BULLETIN

APRIL-JUNE 1939

(PASADENA AND AUXILIARY STATIONS)

Pasadena and auxiliary stations, 1939 Page 22

Date	Sta.	Phase	h	m	s	Remarks
Apr 1	P	ePNEZ	02	14	05	Tucson: iP=02:14:30
	MW	iPNEZ			05	
	R	iPZ			07	
	LJ	ePZ			04	
	T	ePNE			15	
Apr 1	H	ePE			12	Tucson: e=02:50:47, i=02:53:02
	P	iZ	02	52	24	
	MW	eZ		50	03	
		iZ		52	26	
		eZ		50	17	
Apr 1	R	iZ		52	26	Tucson: i=11:50:55, i=11:51:58
	MW	eZ	11	51	55	
		iZ		53	26	
Apr 1	R	iZ		51	49	Near Apia, which reports: iP=12: 05:12, iS=12:05:35 Tucson: iP=12:54:54
	P	iPZ	12	15	26	
	MW	iZ		45	26	
Apr 1	R	iZ		43	29	Tucson: iP=13:54:48
	MW	iPZ		29	29	
	R	eZ	13	52	27	
		eZ		22	22	
		eZ		22	22	
Apr 1	P	iPNEZ	19	58	48	Near Apia, which reports: iP=21:38:10, iS=21:38:47 Tucson: iP=21:49:14 Deep? Tucson: iP=02:17:08 c, i=02:17:17
	MW	iPZ		49	49	
	R	iPZ		52	52	
	T	iPZ		50	50	
	P	ePEZ	21	48	48	
Apr 1	MW	ePZ		48	48	Tucson: iP=21:49:14
	R	ePZ		49	49	
	P	ePZ	02	17	53	
Apr 2	MW	iPZ		52	52	Tucson: iP=02:17:08 c, i=02:17:17
	R	iZ		18	02	
		iPZ		17	48	
		iZ		58	58	
	MW	ePZ	04	24	46	
Apr 2	R	iZ		28	32	Tucson: eP=04:24:27, e=04:28:58
		iPZ		24	40	
		iZ		28	35	
Apr 2	P	iPZ	11	56	39	Tucson: iP=11:57:04 d
	MW	iPZ		41	41	
	R	iPZ		41	41	
Apr 3	P	iPNEZ	12	50	33	Deep? Tucson: iP=12:50:57 d, i=12:51:47
	MW	iZ		51	23	
	R	iPZ		50	35	
		ePZ		36	36	
		ePE		43	43	
Apr 3	H	ePNE		42	42	Normal? Tucson: iP=15:59:25, i=15:59:40
	P	ePZ	15	59	03	
		iZ		18	18	
	PX	eLE	16	28		
	R	ePZ	15	59	05	
Apr 4	H	ePE		07	07	Tucson: eP=03:46:48
	MW	iPZ	03	46	44	
	T	iPZ		29	29	
	H	ePN		33	33	
	MW	iPZ	10	03	02	
Apr 4	R	iPZ		02	50	Tucson: iP=10:01:56
	T	iPZ		03	16	
	H	ePNE		08	08	
Apr 4	P	ePZ	10	23	47	Normal. Tucson: eP=10:24:11
	PX	eLNEZ		50	50	
	MW	eZ		23	54	
	R	eZ		50	50	
	T	eZ		54	54	

Pasadena and auxiliary stations, 1939 Page 23

Date	Sta.	Phase	h	m	s	Remarks
Apr 5	P	iPNEZ	16	55	30	d (Deep) Florissant: 20.0°S., 168.8° E., O=16:42:40 Strasbourg: 20°S., 168°E. Manila: 19°S., 168°E. Wellington: 20°S., 169°E., O=16:42.6 Pasadena: 19 1/2°S., 168°E., O=16:42:40, h=70 km. Tucson: iP=16:55:53 d, i=16:56:04, eP'P'=17:21:26
	PX	iE	17	05	54	
		iSEZ		06	04	
		iE		07	24	
		iE		08	14	
		eSSN		12	37	
		iLN		19	04	
	P	eP'P'Z		21	38	
	MW	iPEZ	16	55	30	
		eP'P'Z	17	21	28	
	R	iPEZ	16	55	32	
		eE	17	05	56	
		eNEZ		06	06	
		eP'P'Z		21	30	
		iPNEZ	16	55	28	
Apr 5	LJ	iPNEZ			30	Tucson: eP=18:55:57
	MW	iPZ	18	55	33	
	P	eZ	20	55	15	
Apr 5	P	ePZ	23	07	24	Tucson: eP=20:55:39 Tucson: eP=23:07:48
	MW	iPZ		25	25	
	R	iPZ		27	27	
Apr 5	H	ePE		35	35	Tucson: eP=23:24:02
	P	ePZ	23	20	36	
	MW	iPNZ		37	37	
Apr 6	R	iPZ		41	41	Tucson: iP=00:57:14
	P	iPNZ	00	56	48	
	MW	iPNZ		49	49	
Apr 6	R	iPZ		51	51	May be part of preceding. Tucson: iP=01:12:22 c Tucson: iP=01:43:54
	H	ePE		52	52	
	P	iPZ	01	12	01	
Apr 6	R	eZ		04	04	Tucson: iP=01:43:54
	P	iPNEZ	01	43	30	
	MW	iPNEZ		31	31	
Apr 6	LJ	ePZ		31	31	Tucson: iP=04:39:26 Deep? Tucson: iP=05:02:39, i=05:03:10. Andes, according to La Plata.
	H	ePNE		34	34	
	MW	ePZ	04	40	03	
Apr 6	P	iPZ	05	03	18	Tucson: iP=09:34:23
	MW	iPZ		18	18	
	P	iZ		04	03	
Apr 6	P	ePNEZ	09	35	11	Normal. Tucson: iP=09:34:23
	PX	eLNE		42.4	42.4	
	R	ePZ		35	06	
Apr 7	P	ePZ	09	10	39	Tucson: iP=16:16:44 North Japan. Mizusawa reports: P=16:05:12, S=16:05:56 Tucson: iP=10:37:40
	MW	ePZ		39	39	
	R	ePZ		49	49	
	LJ	eZ		57	57	
	P	ePNZ	13	09	08	
Apr 7	MW	ePZ		11	11	Tucson: iP=16:16:44
	R	ePZ		12	12	
	P	iPZ	16	16	11	
	MW	iPZ		12	12	
	R	iPZ		14	14	
Apr 8	P	ePNEZ	10	37	16	Tucson: iP=10:37:40
		eZ		40	55	
	MW	iPNEZ		37	17	
	R	eZ		40	45	
		iPZ		37	19	
Apr 8	SB	ePZ		12	12	Tucson: iP=14:08:06 c
	LJ	ePZ		17	17	
	H	ePE		26	26	
	P	iPNZ	14	07	41	
	MW	iPZ		42	42	
Apr 11	R	eZ		44	44	Tucson: iP=14:08:06 c
	LJ	eZ		42	42	
	P	iPZ	17	59	06	
	MW	ePZ		06	06	
	R	ePZ		02	02	

Pasadena and auxiliary stations, 1939

Date	Sta.	Phase	h	m	s	Remarks
Apr 11	MW	ePZ	21	03	06	Tucson:eP=21:03:25
	R	ePZ			06	
Apr 12	P	iPZ	07	59	21	Tucson:iP=07:59:44
	MW	iPZ			21	
	R	iPZ			23	
	T	ePNZ			31	
Apr 12	MW	iPZ	10	32	41	Tucson:eP=10:32:07
	R	iPZ			39	
		iZ			33	
Apr 12	P	ePZ	13	52	30	Normal? Tucson:iP=13:53:16, i=13:53:24
	PX	eLNEZ	14	04		
	MW	iPZ	13	52	31	
		iZ			38	
	R	iPZ			35	
		iNEZ			42	
	T	iPNEZ			19	
	H	ePNE			28	
Apr 15	P	iPZ	03	04	16	Tucson:iP=03:04:39
	MW	iPZ			17	
Apr 15	MW	iPZ	07	00	21	Tucson:iP=06:59:45
	R	iZ			04	
		iPZ			00	
		iZ			01	
Apr 15	P	ePZ	07	11	00	Tucson:iP=07:11:20
	MW	iPZ			01	
	R	iPZ			03	
Apr 15	P	iPZ	07	45	42	Tucson:iP=07:44:48, i=07:45:27
	MW	iPZ			42	
	R	iPZ			38	
Apr 15	P	eZ	09	16	27	Tucson:eP=09:16:58. URSS:30°N., 145°E. Pasadena:29°N., 143°E., O=09:04: 00, using URSS data and Manila
	MW	eZ			27	
	R	iPZ			30	
Apr 15	P	ePNZ	14	22	09	Tucson:eP=14:23:23
	MW	iPZ			09	
	R	ePEZ			16	
	T	ePNE			21	
	H	ePNE			55	
Apr 15	P	iPNEZ	15	45	38	Normal. Tucson:iP=15:44:40
	PX	eLNEZ			51.0	Southern Mexico.
	MW	iPNEZ			45	
	R	iPNEZ			33	
	SB	eZ			49	
	LJ	ePE			20	
	T	ePNE			46	
	H	ePNEZ			45	
Apr 15	PX	eLNEZ	21	00.0		Normal. Wellington:60°S., 148°E., O=20:03.8
Apr 16	P	iPNEZ	10	19	42	
	MW	iPNEZ			43	
	R	iPZ			45	
	T	iPNEZ			45	
Apr 17	P	iPNEZ	02	37	49	Deep? Tucson:iP=02:38:09 c, i=02:38:28
	MW	iPNEZ			50	
	R	iPNEZ			51	
	SB	iPZ			45	
	LJ	iPNEZ			50	
	T	iPNEZ			58	
	H	iPNEZ			56	
Apr 18	P	ePNEZ	00	55	19	Tucson:iP=00:55:43
	MW	iPNZ			20	Near Apia, which reports: P=00:45:09, S=00:45:56
	SB	ePZ			15	
	LJ	ePZ			19	
	T	iPNEZ			29	
	H	iPNEZ			27	

Pasadena and auxiliary stations, 1939

Date	Sta.	Phase	h	m	s	Remarks
Apr 18	P	iPNEZ	06	34	25	c Normal? Damage in Chile.
	PX	ePPNEZ			37	USCGS:27°S., 71°W., O=06:22.7
		iSNE			44	Strasbourg:27°S., 70°W.
		iSSN			48	O=06:22:42. J.S.A:26.8°S.,
		iGN			54	70.2°W., O=06:22:50, h=100 km.
	P	iP'P'Z	07	01	48	Pasadena:"iS" may be SKS
	MW	iPNEZ	06	34	25	c Tucson:iP=06:33:53, iP'P'=07:02:52
		eSNE			44	
		iP'P'Z	07	02	14	
	R	ePNE	06	34	25	
		eSNE			44	
	SB	iPZ			34	
	LJ	iPNEZ			18	
		eSNE			43	
	T	iPNEZ			34	
		eSNEZ			44	
		eP'P'Z	07	01	46	
	H	iPNEZ	06	34	33	
		eSNE			44	
		eP'P'Z	07	01	51	
Apr 18	P	ePZ	13	06	41	Tucson:iP=13:06:10
	MW	iPZ			42	
	T	ePNEZ			54	
Apr 18	P	iPZ	18	17	48	Near Apia, which reports: eP=18:07:02, iS=18:07:32
	MW	iPZ			49	Tucson:iP=18:18:13
	R	iPZ			50	
	T	ePEZ			18	
Apr 18	MW	iPZ	19	17	02	Tucson:eP=19:16:30, i=19:46:40. Andes, according to La Plata, which reports: P=19:08.5, S=19:10.7
	R	iPZ			16	
		iZ			17	
	T	iPNEZ			16	
		eZ			26	
Apr 19	P	iPNZ	07	42	39	d Normal. 32°35'N., 117.48'W., O=07:42:11. Felt in San Diego County, Boulder:eP=07:43:33, iS=07:44:27. Tucson:eP=07:43:37
	R	iSN			43	
		iPZ			42	
		iSE			57	
	LJ	iPNEZ			22	
		iSN			30	
	T	iPNEZ			43	
		iSN			44	
	H	iPNEZ			43	
		iSNE			44	
Apr 19	P	iPZ	15	42	32	Tucson:iP=15:42:01
	MW	iPZ			32	
	R	iPZ			29	
	T	iPEZ			46	
Apr 19	P	iPZ	16	36	40	Andes, according to La Plata Tucson:iP=16:36:09
	MW	iPZ			41	
	R	ePZ			37	
Apr 19	P	iPZ	16	55	30	Andes, according to La Plata. Tucson:eP=16:55:00
	MW	iPZ			32	
	R	iPZ			28	
Apr 20	P	ePZ	17	55	41	Deep? Damage at Kingstown (St. Vincent, B.W. I.). Fort-de- France reports:P=17:46:47.5, S=17:47:10.5. Tucson:iP=17:54:5, i=17:55:22
	MW	ePZ			41	
	R	ePZ			37	
Apr 20	PX	eLNEZ	23	29		Normal? Near 47°S., 167½°E?
Apr 21	MW	iPZ	01	43	46	Tucson:iP=01:44:32
	R	iPZ			49	
	T	iPEZ			27	
	H	ePNE			38	

Pasadena and auxiliary stations, 1939 Page 26

Date	Sta.	Phase	h	m	s	Remarks
Apr 21	P	iPNEZ	04	39	43	Deep. USCGS: 50°N., 140°E., approx. O=04:29:2, h=500 km. J.S.A.: 48.6°N., 138.0°E., O=04:29:11, h=550 km. Strasbourg: 47°N., 141°E., h=500; 550 km. Pasadena: 47-1/2°N., 140°E., O=04:29:04, h=520 km. Tucson: iP=04:40:14, eP'P'=05:06:40
		ipPZ	41	35		
		iSNEZ	48	28		
	PX	iSNEZ	51	42		
		eE	56	04		
	P	eP'P'Z	05	06	57	
	MW	iPNEZ	04	39	43	
		ipPZ	41	36		
		iSNEZ	48	29		
eP'P'Z		05	06	43		
iZ		10	02			
R	iPNEZ	04	39	45		
	ipPZ	41	39			
	iSNEZ	48	33			
	eP'P'Z	05	06	29		
	eZ	09	53			
LJ	iPNEZ	04	39	51		
	ipPZ	41	46			
	iSNEZ	48	44			
	eSNE	39	31			
	iPNEZ	41	21			
T	ipPZ	39	35			
	iPNEZ	39	35			
	eSNZ	48	15			
	eZ	11	42	43		
	iZ	43	28			
Apr 22	P	eZ	42	45	Felt at Menado, Celebes. Tucson: e=11:42:56	
		iZ	42	45		
	R	eZ	43	16		
	T	eZ	01			
	R	ePZ	13	42		30
Apr 22	R	iZ	37		Tucson: iP=13:40:02, iS=13:41:09 Deep? Tucson: iP=06:33:08, i=06:33:25	
		ePZ	13	42		37
	P	iZ	06	32		48
	MW	iPZ	51			
	R	iPZ	33	07		51
Apr 23	T	iZ	29		Normal. USCGS: 1°S., 170°W., O=16:23.1. Strasbourg: 2°N., 180°W., O=16:23:12. J.S.A.: 0.1°N., 18.0°W., O=16:23:09 Tucson: iP=16:36:21	
		ePZ	16	40		49
	P	eZ	47	28		
	PX	eE	49	42		
	eLNEZ	17	11			
Apr 24	P	ePEZ	12	46	58	Tucson: eP=13:02:01
		iPNEZ	59			
	MW	ipPZ	13	01	59	
	T	iPZ	59			
	P	ePZ?	03	43	28	
Apr 25	P	ePZ	28		Tucson: eP=05:00:11 Deep? Tucson: iP=11:31:10	
		ePZ	25			
	MW	iPZ	04	59		34
	R	ePZ	41	31		48
	MW	iPNEZ	41	32		26
Apr 25	P	eZ	31	47	Deep. Felt at Lima, Peru. J.S.A.: 12.2°S., 75.3°W., O=12:53:44, h=150 km. Tucson: iP=13:03:06 d, i=13:03:41	
		iPNEZ	32	26		
	MW	iPNZ	32	26		
	iZ	02				
	T	iPNEZ	31	54		
Apr 25	H	ePZ	13	03	46	d
		iPNEZ	04	10		
	P	iZ	24			
	iZ	12	01	24		
	PX	iSZ	04	04		
Apr 25	MW	iSNEZ	03	46	d	
		iPNZ	04	10		
	iZ	21				
	iEZ	12	01			
	eSE	12	01			

Continued

Pasadena and auxiliary stations, 1939 Page 27

Date	Sta.	Phase	h	m	s	Remarks
Continued						
Apr 25	R	ePNE	13	03	41	
		eSE	11	53		
	LJ	ePNZ	03	41		
	T	eNZ	04	12		
	H	iPNEZ	04	00		
Apr 25	P	iPNEZ	13	50	32	c Deep? Near Apia, which reports: iP=13:39:55, iS=13:40:31 Tucson: iP=13:50:57, i=13:51:15
		iZ	54			
	MW	iPNEZ	33			
	R	ePNE	34			
	T	iPNEZ	43			
Apr 25	P	iPNEZ	16	51	04	Tucson: iP=16:22:39 d
		iZ	22	01		
	MW	iPNEZ	02			
	T	iPZ	21	48		
	H	iPZ	53			
Apr 26	MW	ePZ	12	47	22	Tucson: iP=12:47:42 Tucson: iP=18:42:19, e=18:44:18
		P	iPZ	18	41	
		eZ	43	41		
	MW	iPZ	41	46		
	T	iPEZ	33			
Apr 26	P	eZ	21	47	20	Tucson: iP=21:44:06, eS=21:45.3
		MW	eZ	20		
	R	eNE	46	58		
	LJ	eN	27			
	P	iPZ	05	26	55	
Apr 27	MW	iPZ	27	08	Tucson: eP=05:26:23	
		T	ePZ	55		
	P	iPZ	13	33		00
	MW	ePZ	22	01		23
	P	eSNEZ	02	30		
Apr 27	MW	iPZ	01	01	Tucson: eP=22:02:40	
		T	eSNE	02		27
	H	ePZ	01	00		
	P	iSZ	01	30		
	P	ePZ	13	30		52
Apr 29	MW	iZ	31	14	Deep? Tucson: eP=13:30:19	
		iPZ	30	53		
	R	iZ	31	13		
	P	iPZ	30	56		
	P	iZ	31	16		
Apr 30	P	ePZ	03	08	19	Normal. Very large. Destructive in the Solomon Islands. USCGS: 11°S., 158°E., O=02:55.4 Strasbourg: 7.5°S., 159.6°E., O=02:55:35, h=100 km. J.S.A.: 10.8°S., 158.5°E., O=02:55:24 Wellington: 10°S., 158°E., O=02:55.5. Tucson: eP=03:08:48
		iSKSE	18	59		
	MW	iE	19	08		
	PX	iNZ	35			
	MW	iN	20	58		
Apr 30	PX	eLN	05	36.1		
		eW2N	05	05.6		
	MW	iPZ	03	08		20
	R	eNE	19	17		
	SB	iPZ	08	22		
Apr 30	LJ	eNE	19	01		
		ePNEZ	08	17		
	T	eNE	19	02		
	P	iPZ	08	28		
	H	eN	19	27		
Apr 30	T	ePNEZ	08	22		
		iNEZ	14	35		
	P	eE	19	02		
	H	ePNEZ	08	26		
	P	eE	19	03		
Apr 30	H	eN	19	03		
		eN	19	19		

Pasadena and auxiliary stations, 1939 Page 28

Date	Sta.	Phase	h	m	s	Remarks
Apr 30	P	iPZ	03	33	30	Aftershock. Tucson: eP=03:34:03
	MW	iPNEZ			31	
	R	iPNEZ			34	
	SB	ePZ			26	
	LJ	iPNEZ			34	
Apr 30	P	iPNEZ	03	42	31	Aftershock. Tucson: iP=03:43:00
	MW	iPNEZ			32	Additional small aftershocks;
	R	iPZ			36	times of P at Mt. Wilson as fol-
	SB	ePEZ			28	lows: 04:13:13, 04:27:07, 04:38:32,
	LJ	ePZ			34	04:43:26, 05:17:36, 05:55:57,
	T	iPNEZ			34	06:05:04, 06:15:03, 07:00:17
	H	iPNEZ			35	
Apr 30	P	iPNEZ	07	18	44	Aftershock of 03h08m (largest
	MW	iPNZ			45	since those immediately following)
	R	iPNEZ			46	Recorded at Riverview. Small
	LJ	iPZ			48	aftershocks, P at Mt. Wilson at
	T	ePNEZ			47	08:00:55, 08:40:01
Apr 30	P	ePZ	09	25	48	Aftershock. (Recorded at Riverview)
	MW	iNEZ			59	
	R	iPNEZ			26	00
	LJ	iNZ			25	52
	T	iPZ			26	01
	H	iZ			25	52
Apr 30	P	ePZ	09	59	50	Aftershock
	MW	ePNEZ			50	
	R	ePE			32	
	LJ	ePZ			32	
	T	iPZ			34	
Apr 30	P	iPZ	12	00	40	Aftershock
	MW	ePZ			51	
	R	eZ			41	
	LJ	iPZ			41	
	T	ePZ			45	
Apr 30	P	ePZ	12	55	53	Aftershock
	MW	ePZ			53	
	R	iPZ			55	
Apr 30	P	ePZ	14	15	07	Tucson: e=14:16:17. Apparently not
	MW	iNEZ			50	an aftershock of 03h.
	R	iZ			16	02
	LJ	iPZ			15	07
	T	iNEZ			51	
	H	iPZ			09	
Apr 30	P	iPZ	14	50	13	
	MW	ePZ			51	38
	R	eZ			52	01
	LJ	eZ			50	15
	T	ePZ			51	41
	H	iZ			51	41
Apr 30	P	ePZ	25	08	20	
	MW	ePZ			23	
	R	iPZ			23	
Apr 30	P	iPZ	23	11	24	May be part of the preceding.
	MW	iPZ			25	
	R	iPZ			27	
	LJ	ePZ			27	

Pasadena and auxiliary stations, 1939 Page 29

Date	Sta.	Phase	h	m	s	Remarks
May 1	P	iPZ	04	40	52	Tucson: e=04:41:22
	MW	iPNEZ			52	
	R	iPNEZ			54	
	LJ	ePZ			55	
	T	ePNEZ			54	
	H	ePNEZ			54	
May 1	P	iPZ	05	06	53	
	MW	iPZ			53	
	R	eZ			09	19
	LJ	iPZ			06	55
May 1	P	iPZ	06	10	21	Normal? Destructive at Akita,
	MW	iPZ			12	05
	R	eSNE			20	13
	LJ	eSNE			21	53
	T	eP'P'Z			39	14
	H	iPNEZ			10	22
	MW	iPZ			12	05
	R	eSNE			20	16
	LJ	iPNZ			10	24
	T	iPNEZ			12	08
	H	iPNEZ			10	17
	MW	iPZ			12	03
	R	iNEZ			07	
	LJ	iPZ			10	31
	T	iPEZ			12	17
	H	ePNEZ			10	12
	MW	iPNEZ			12	00
	R	eSE			19	56
	LJ	eSE			20	33
	T	eP'P'Z			39	23
	H	iPNEZ			10	16
	MW	iPZ			12	00
	R	eNEZ			05	
May 1	P	ePZ	07	26	15	Not from Japan.
	MW	ePZ			13	
	R	ePZ			16	
	LJ	ePZ			15	
May 1	P	iPNEZ	07	40	10	c Tucson: iP=07:40:42 c
	MW	iPNEZ			10	c Aftershock, Japan.
	R	iPNEZ			13	c C.M.O. (from Osaka): 40.0°N.,
	SB	iPZ			05	139.6°E. Felt at Mizusawa, which
	T	iPNEZ			00	c reports: iP=07:28:42, S=07:29:01
	H	ePNE			05	
May 1	P	ePZ	10	12	19	
	MW	iPNZ			20	
	R	ePZ			22	
	LJ	ePNEZ			22	
	T	ePEZ			12	02
May 1	P	ePEZ	12	02	27	Aftershock, Japan
	MW	ePZ			26	Tucson: eP=12:02:59
	R	ePZ			29	
	SB	iPZ			22	
	LJ	ePNEZ			17	
	T	ePNE			19	
May 1	P	ePNZ	15	11	36	Andes, according to La Plata.
	MW	ePN			38	Tucson: iP=15:11:08
	R	iPZ			34	
	LJ	iPNZ			50	
	T	ePNE			45	
May 1	P	ePNZ	16	17	43	Normal. Aftershock of Japanese
	MW	eLN			37.5	earthquake at 06h.
	R	ePNE			17	46
	LJ	ePNE			38	Tucson: iP=16:18:16
	T	iPZ			42	
	H	ePZ			40	
	MW	iPNEZ			33	
	R	ePNE			34	

Pasadena and auxiliary stations, 1939 Page 30

Date	Sta.	Phase	h	m	s	Remarks
May 1	P	iPNEZ	21	55	32	Normal. Felt in Humboldt County, California. Tucson:e=21:56:52
		eSE		57	02	
		iPZ		55	06	
	T	iSNZ		56	30	
		ePNEZ		55	46	
May 1	H	iPNEZ	23	53	45	Normal. Felt strongly at San Diego, with slight damage. 32°00'N., 117°30'W., O=23:53:08 Boulder City:eP=23:54:25, iS=23:55:31. Tucson:P=23:54:30 Foreshock at 20:23. Many after-shocks.
	P	iPNEZ		54	22	
		iSE		53	46	
	MW	iPNEZ		54	23	
		iSE		53	42	
	R	iPNEZ		54	12	
		iSNE		53	26	
	LJ	iPNEZ			38	
		iSNE		54	28	
	T	iPNEZ		55	53	
		iSNE		54	14	
	H	iPNEZ		55	20	
May 2	MW	ePZ	02	25	48	Tucson:iP=06:28:40
	R	ePZ			57	
May 2	MW	ePZ	06	27	54	
	R	ePZ			58	
	T	ePNZ			36	
	H	iPNEZ			42	
May 2	MW	ePZ	10	25	31	Tucson:e=10:25:57
	R	ePZ			35	
May 2	R	ePNZ	11	42	18	
	P	iPZ			19	
	MW	iPZ			22	
May 2	R	iPNEZ	13	16	22	Normal. USCGS: 29.5°N., 113.8°W., O=13:14.8. J.S.A.: 29.4°N., 113.5°W., O=13:14:49. Tucson:iP=13:15:46. This shock apparently not felt at San Diego Reports to that effect probably are due to confusion with shocks of May 1, 23h, May 3, 23h, etc.
	P	iSNE		17	31	
	PX	iLE			40	
		iLN		16	23	
	MW	ePNE			12	
	R	ePZ			41	
	SB	ePZ			01	
	LJ	ePNEZ			58	
	T	ePNZ			45	
	H	ePNEZ			44	
May 3	P	ePZ	07	18	45	
	MW	iPZ			47	
	R	iPZ			46	
	T	iPNEZ			59	
May 3	P	iPZ	16	42	59	Normal?
	PX	eLE		17	23	
	T	iPNEZ		16	43	
May 3	P	ePZ	19	48	57	Normal. Tucson:eP=19:48:17
		eSN		49	46	
	LJ	iPZ		48	35	
		iSZ		49	22	
May 3	P	ePNZ	23	58	48	Normal. 32°00'N., 117°30'W., O=23:58:09. Felt in San Diego. Boulder City:iP=23:59:34 Tucson:eP=23:59:41
		iSN		59	53	
	MW	iPNEZ		58	49	
		iSNE		59	24	
	R	iPNEZ		58	44	
		iSNE		59	12	
	LJ	iPNEZ		58	27	
	T	iPZ		59	33	
		eSNE		24	00	
	H	iPNEZ		23	59	
May 4	P	iSN	24	00	17	Deep? Tucson:iP=04:09:12, i=04:09:44
		ePZ	04	08	52	
		eZ		09	21	
	MW	iPZ		08	51	
		iZ		09	25	
	R	ePZ		08	51	
		iZ		09	24	
	T	iPNEZ		00	00	
		iNEZ			33	

Pasadena and auxiliary stations, 1939 Page 31

Date	Sta.	Phase	h	m	s	Remarks
May 4	P	ePZ	17	33	09	
	R	iPZ			13	
May 4	P	iPNEZ	20	45	39	d Normal. 36.0°N., 114.8°W., O=20:44.7. Near Boulder City. Felt strongly in that vicinity. Many aftershocks. Boulder City:iP=20:44:49 Tucson:iP=20:46:03
		eSNE		46	32	
	MW	iPNEZ		45	38	
		iSE		46	31	
	R	iPNEZ		45	33	
		iSNE		46	21	
	LJ	iPNEZ		45	45	
		iSN		46	42	
	T	iPZ		45	38	
	H	iSNEZ		46	27	
May 5	P	eZ	12	31	43	
	MW	eZ			39	
	R	eZ			43	
May 5	R	ePZ	20	38	52	Tucson:iP=20:39:17
May 6	P	iPNEZ	06	08	09	Normal. USCGS: 5°N., 84°W., O=06:00.2
		iPPNEZ		09	54	J.S.A.: 7.5°N., 84.5°W., O=06:00:30
	PX	iSNE		14	42	Tucson:iP=06:07:19
		eLNE		17.9		
	MW	iPNEZ		06	09	
		iZ		09	36	
		iPPNEZ			54	
	R	iPNEZ		08	03	
		eSNE		14	23	
	LJ	iPZ		07	59	
		eSNE		14	23	
	T	iPNEZ		08	25	
	H	ePNEZ			18	
		eSNE		14	48	
May 6	P	ePZ	08	50	30	Deep? Felt in Concepcion, Chile, according to La Plata. Tucson: iP=08:50:03, i=08:50:17
	MW	iPZ			31	
		iZ			45	
	R	iPZ			27	
		iZ			41	
	H	iPNEZ			38	
May 6	P	iPNEZ	20	17	17	d Normal. Wellington: 40°S., 160°E., O=20:04.3
	PX	eE		27	53	
		iE		28	07	Tucson:eP=20:17:44
		eLNEZ		44.7		
	R	iPNEZ		17	20	d
	SB	ePZ			12	
	LJ	iPNEZ			19	
	T	iPNEZ			21	
	H	ePNEZ			20	
May 7	P	iPZ	02	45	48	Tucson:iP=02:46:15
	MW	iPNEZ			47	
	R	iPEZ			50	
	T	ePNEZ			53	
	H	ePN			52	
May 7	P	ePZ	07	22	56	Tucson:eP=07:23:29. Japan. Mizusawa reports:eP=07:12:58, eS=07:14:39
	MW	ePZ			56	
	R	ePZ			59	
	T	ePNEZ			51	
	H	ePNEZ			54	
May 8	P	iPEZ	01	58	22	d Normal. Azores. USCGS: 37°N., 24°W., O=01:46.8. Strasbourg: 37°N., 23.9°W., O=01:46:52. J.S.A.: 36.4°N., 24.3°W., O=01:46:58, h=90-100 km. Boulder City:iP=01:58:04, iS=02:07:17. Tucson:iP=01:57:57 eP'P'Z=02:26:06
	PX	eSE		02	07	
		eN		08	31	
		eLN		17.9		
	P	eP'P'Z		26	02	
	MW	iPNEZ		01	58	
		eZ		02	25	
		eP'P'Z		26	02	

Continued

Date	Sta.	Phase	h	m	s	Remarks
						Continued
May 8	R	iPNEZ	01	58	18	
		eP'P'Z	02	26	05	
	SB	ePNEZ	01	58	28	
	LJ	ePZ			23	
		eSNE	02	07	54	
	T	iPNEZ	01	58	14	
		eP'P'Z	02	26	00	
	H	ePNEZ	01	58	15	
		eSNE	02	07	39	
May 8	P	ePZ	08	16	39	Japan
	MW	ePZ			42	E.R.I.: 35.52°N., 141.11°E.
	R	ePZ			44	Tucson: iP=C8:17:14
	H	ePNE			34	
May 8	P	ePZ	16	26	49	Normal. Azores, aftershock of
	MW	iPZ			50	d Olh. Tucson: iP=16:26:26
	R	ePZ			49	
	LJ	ePZ			52	
	T	ePNE			44	
	H	eNE			50	
May 9	P	ePNZ	07	35	05	Normal. J.S.A.: 51.0°N., 152.5°W.,
	PX	iSE			40	0=07:28:43. URSS: 55.0°N., 155.0°W.
		eLN			44.5	We find 57°N., 155°W., 0=07:28:23,
	MW	iPNEZ			06	using URSS data, Victoria, West-
	R	iPZ			09	ton, Florissant and Stuttgart.
	T	ePNEZ			34	Tucson: iP=07:35:50
	H	iZ			53	
May 9	P	iPZ	12	39	32	Tucson: iP=12:39:54 c,
	MW	iPZ			33	i=12:40:24
	R	iPZ			34	
	T	ePNEZ			38	
	H	ePNEZ			38	
May 10	P	ePZ	00	52	44	Tucson: iP=00:52:43
	MW	iPZ			46	
	R	iPZ			42	
May 10	P	iPNEZ	07	52	44	Normal. USCGS: 51°N., 179°W.,
		iSNEZ			59	0=07:44.4. J.S.A.: 51°N., 177.2°W.,
	PX	eLN			02.6	0=07:44:25. URSS: 50°N., 180°E.
	MW	iPNEZ	07	52	43	Tucson: iP=07:53:28
		eSE			59	
	R	iPNEZ			57	
	SB	ePE			42	
	LJ	iPNEZ			55	
	T	iPNEZ			30	
		eSNE			59	
	H	iPNEZ			52	
		eSN			59	
May 10	MW	iPZ	10	46	15	Tucson: iP=10:46:59
	R	ePZ			15	
May 10	R	iPZ	15	59	26	Tucson: iP=15:58:56
May 10	P	ePZ	19	52	05	Normal. Tucson: iP=19:52:54
	PX	eLN?	20	02.4		
	R	eZ	19	52	18	
	T	ePNZ			00	
May 10	P	ePZ	20	18	15	Tucson: iP=20:18:47
	R	iPZ			18	
	T	iPNEZ			11	
	H	iPNEZ			13	
May 11	P	iPZ	02	43	51	Normal. Foreshock of 18h Nevada;
		eSNE			45	felt at Manhattan, Tonopah, etc.
	MW	iPZ			43	Boulder City: eP=02:43:40,
		iSNEZ			45	iS=02:44:21
	R	iPZ			43	Tucson: eP=02:44:49
		iSNEZ			45	
	T	iPNEZ			43	
		iSNEZ			39	
	H	iPZ			30	
		iSNEZ			44	

Date	Sta.	Phase	h	m	s	Remarks
May 11	P	iPNZ	14	10	07	d Tucson: iP=14:10:30
	R	iPZ			09	d
	LJ	ePZ			09	
	T	iPZ			13	
May 11	P	iP"Z	17	49	55	Deep? Felt in Java, according
		iZ			50	to Batavia.
	R	eP"Z			49	
		iZ			50	
May 11	P	iPNZ	18	05	51	Normal. Nevada, 38°35'N., 117°50'
		iSE			06	W., 0=18:04:43
	MW	ePNE			05	Felt over a wide area in Nevada.
		iSNE			06	Strong at Manhattan, Tonopah and
	R	iPZ			05	Mina. Boulder City: iP=18:05:40,
		iSNE			07	iS 18:06:33 Tucson: iP=18:06:48.
	SB	iPZ			05	Many aftershocks, the largest
		iSE			06	recorded at Tinemaha as follows:
	LJ	iPZ			06	May 11 iP=20:59:55, iS=21:00:12
		iSNE			07	May 13 iP=02:49:32, iS=02:49:48
	T	iPNEZ!			05	d May 17 iP=18:19:12, iS=18:19:30
	H	iPEZ			24	
		iSE			05	
May 12	P	iPEZ	07	46	23	Normal? Tucson: iP=07:47:08 c
		iZ			47	
	PX	eNE	08	04.5	59	
	MW	iPNEZ	07	46	23	
	R	iPZ			27	
	LJ	iPNEZ			35	
	T	iPNEZ			40	
	H	ePEZ			15	
May 12	P	iPZ	09	08	42	Tucson: iP=09:08:10
	MW	iPZ			41	
	R	iPZ			38	
May 12	P	iZ	14	16	36	Deep? Tucson: iP 14:16:46.
	MW	iPZ			12	i=14:17:11. Northern Japan.
		iZ			36	Mizusawa reports: iP 14:05:54
	R	iPZ			14	iS=14:06:38
		eZ			39	
May 12			19			See note at end of this issue, page 44
May 13	P	iPNZ	00	54	58	d Deep. Andes, according to LaPlata
		eZ			55	d Tucson: iP=00:54:24 d,
	MW	iPNEZ			54	i=00:55:15
	R	iPZ			54	
		eZ			55	
	SB	iPZ			04	
	H	iPZ			04	
May 13	P	iPZ	08	52	30	
	MW	iPZ			26	
	R	ePZ			31	
May 13	P	iP"NZ	13	17	54	Deep? Felt in N. Sumatra, accord-
		iZ			18	ing to Batavia.
		iSKPNZ			21	Tucson: eP"=13:18:07,
	MW	iP"NZ			17	iSKP=13:21:24
		eZ			18	
		iPPZ			20	
		iSKPZ			21	
	R	iP"Z			17	
		eZ			18	
		iSKPZ			21	
		iSKPNEZ			08	
May 13	P	iPNEZ	20	05	52	c Deep? Japan.
	MW	iPNZ			53	c Tucson: iP=20:06:24, e=20:06:55
	R	iPZ			56	
		iZ			06	
	SB	ePNEZ			05	
	T	iPNEZ			45	
	H	ePNEZ			48	
May 14	P	iPZ	00	42	57	
	MW	iPZ			58	c
	R	iPZ			59	
	SB	ePZ			51	

Pasadena and auxiliary stations, 1939

Date	Sta.	Phase	h	m	s	Remarks		
May 14	P	iPNEZ	18	25	29	Normal? Wellington: 37° S, 180° E, O=18:12.5. Felt in East Cape district (North Island, New Zealand). Tucson: iP=18:25:45		
	PX	iPPZ		29	06			
		eSE		36	28			
		eLZ?		53				
	MW	iPZ		25	30			
	R	iPZ			30			
		ePPZ		29	13			
	SB	ePZ		25	27			
	LJ	iPNEZ			28			
	T	eNEZ			52			
May 15	P	ePZ	06	20	34	d Deep? Near Apia which reports: eP=06:10:33, iS=06:41:18 d Tucson: iP=06:24:00 d		
	MW	iPZ			35			
	R	iPZ			36			
	LJ	iPNEZ			35			
	T	iPNEZ			45			
May 15	P	iPZ	21	29	17	Normal? Central America. Possibly a multiple shock. Tucson: eP=21:28:24, i=21:29:23, i=21:34:26, i=21:32:20		
		iNEZ		30	14			
		iZ		32	36			
	PX	eLE?		44.2				
	R	iPZ		29	44			
		iZ		30	06			
		iZ		31	40			
		iZ		32	35			
		iZ		33	39			
	T	iPNEZ		29	33			
May 16	P	eZ		30	23	Tucson: iP=04:29:28 c		
		eZ		31	44			
		eZ		32	39			
	P	iPZ	04	29	03			
	MW	iPNZ			06			
	R	iPZ			07			
	T	iPZ			13			
	May 16	P	ePZ	07	33		55	Normal. Formosa. Rather strong at Arisan, according to Taihoku, which reports: iP=07:20:40.0, iS=07:21:00.0 Tucson: e=07:34.4, ePP=07:38:44
		eZ		36	58			
	PX	ePPEZ		37	45			
	eLEZ		08	05.7				
MW	ePZ	07	33	56				
	eZ		36	59				
	eZ		42	56				
R	ePZ		33	52				
	eZ		37	51				
T	ePNEZ		33	38				
May 16	P	eZ	14	31	04	Normal.		
	PX	eLE	15	04.7				
	MW	eZ	14	31	03			
May 16	R	eZ			06	Tucson: eP=14:58:02		
	MW	eZ	14	59	02			
	R	eZ			03			
May 16	T	eN			42	Tucson: iP=23:34:51. Near Apia, which reports: eP=23:24:24, iS=23:25:50		
	PX	ePZ	23	34	29			
	MW	ePZ			29			
	R	ePZ			30			
	LJ	ePZ			28			
May 17	T	ePNEZ			39	Tucson: eP=00:29:15		
	PX	ePZ	00	28	47			
	MW	iPNEZ			47			
	R	iPEZ			51			
	LJ	ePZ			50			
May 17	T	ePNEZ			54	Tucson: i=01:17:45, i=01:17:51		
	H	ePNEZ			56			
	MW	eZ	01	17	05			
May 17	MW	iZ	13	14	14			
	R	iPZ			46			

Pasadena and auxiliary stations, 1939

Date	Sta.	Phase	h	m	s	Remarks
May 17	PX	ePZ	15	23	57	Normal?
		eLZ			57	
	MW	iPZ			23 58	
	R	ePPZ			27 43	
May 17	P	ePZ			24 02	Normal? S may be SKS. J.S.A.: region of 29.0° N., 143.5° E., O=18:31.0. Strasbourg: 24.0° N., 143° E., O=18:30.4. URSS: 24.5° N., 146.0° E. Pasadena: 24.0° N., 144° E., O=18:30:32. Tucson: iP=18:43:45, iPP=18:47:10
		ePPZ			27 53	
	PX	iPNEZ	18	43	03	
		iZ			19	
		iSE			53 24	
		iNE			35	
		eLN	19	06.2		
	MW	iPNEZ	18	43	03	
		iZ			18	
		eSNEZ			53 19	
May 17	R	iPNEZ			43 06	Tucson: e=19:25:08
		eSNEZ			53 29	
	SB	iPNEZ			42 58	
		iSEZ			53 15	
	LJ	ePEZ			43 10	
		eSE			53 29	
	T	iPNEZ			42 58	
		eSEZ			53 14	
		eN			28	
	H	iPNEZ			43 01	
May 17	P	eZ	19	25	39	Tucson: e=19:25:08
	MW	eZ			42	
	R	iZ			50	
May 18	R	eZ			35	Tucson: eP=17:24:32
		iZ			46	
	MW	eZ	17	23	52	
May 18	R	eZ			55	Tucson: eP=17:24:32
	P	iPZ	20	00	52	
	MW	iPZ			53	
May 18	R	ePZ			55	Tucson: eP=23:59:35
	MW	ePZ	23	58	57	
	R	ePZ			55	
May 19	MW	iZ	04	10	57	Tucson: i=04:09:18, i=04:09:40
	R	eZ			21	
May 19	P	iPZ	09	07	26	Tucson: iP=09:07:54 c
	MW	iPZ			27	
	R	ePZ			28	
May 19	T	iPNEZ			34	Tucson: iP=12:05:40
	P	iPZ	09	44	42	
	MW	iPZ			43	
May 19	R	iPZ			45	Tucson: iP=12:05:40
	P	iPZ	12	05	16	
	MW	iPZ			16	
May 19	R	iPZ			18	Japan. E.R.I: 34.54° N., 140.48° E. Tucson: iP=12:22:45
	P	iPZ	12	22	14	
	MW	iPZ			14	
May 19	P	iPNEZ	18	36	37	d (Deep) Δ=72°, h=100 km. Northern Chile. J.S.A.: 17.0° S., 70.0° W., O=18:25:47, h=100 km. Pasadena: 18° S., 69° W., O=18:25.6, h=100 km. Tucson: iP=18:35:59, eP'P'=19:04:41
		iPEZ			37 03	
		iSPEZ			15	
	PX	iSE			45 44	
		eE			46 28	
	P	iP'P'Z	19	04	23	
	MW	iPNEZ	18	36	36	
		iPPZ			37 03	
		eSNE			45 42	
		eNE			46 28	
May 19	R	iP'P'Z	19	04	24	d
		iPNEZ	18	36	33	
		iPPNEZ			59	
		eP'P'Z	19	04	24	

Continued

Date	Sta.	Phase	h	m	s	Remarks
Continued						
May 19	SB	iPNEZ	18	36	43	
	LJ	iPNEZ			28	
	T	ipPZ			51	
May 21	H	iPZ			49	
		ipPZ		37	16	
		eSNE		46	08	
	P	eE			53	
		iPNEZ	20	36	44	Deep! $\Delta=82^\circ$, $h=600$ km. Tonga region $O=20:24:48$. Wellington: $22\frac{1}{2}^\circ$ S., 180° , $O=20:21.9$, $h=600$ km. Tucson: $iP=20:33:33$ d, $ipP=20:35:47$, $isP=20:37:03$, $i=20:51:35$, $iP'P'=21:02:11$
		iPNEZ		33	11	
	iNEZ!			14		
	MW	epPZ		35	20	
		esPZ		36	27	
		iSNE		42	36	
	R	iPZ		33	12	
		iNEZ			14	
epPZ			35	20		
R	esPZ		36	26		
	eSNE		42	41		
	iPZ		33	13		
SB	iNEZ			16		
	ipPZ		35	20		
	isPZ		36	30		
LJ	eSNEZ		42	40		
	iPNEZ		33	09		
	ipPZ		35	17		
T	eSNE		42	31		
	iPNEZ		33	14		
	iPNEZ			30		
H	eSNEZ		42	53		
	iPZ		33	20		
	epPZ		35	28		
May 22	PX	eSNE		42	52	
		eLNEZ	02	21		
	MW	epZ	01	48	43	
May 23	P	iPNZ	02	54	40	Normal? Felt in north New Guinea, according to Batavia URSS: 2° S., 140.5° E. Deep. J.S.A.: near 18.0° N., 101.0° W., $O=02:49:42$. Depth slightly below normal. Felt in Central Mexico. Pasadena: 18° N., 101° W., $O=02:49:43$, $h=90$ km. Tucson: $iP=02:54:39$, $i=02:55:06$, $i=02:58:43$
		iEZ		55	00	
	PX	eNZ		58	19	
		eE	03	03	52	
	MW	iE	02	54	41	
		iPEZ		55	00	
	R	iEZ		58	35	
		iZ		54	34	
		iPEZ			52	
	LJ	iEZ		58	33	
		iPNZ		54	26	
		iPNZ		55	02	
May 23	H	eN	03	02	30	
		ePE	02	54	57	
	R	eP"Z	04	38	13	
May 24	P	eNEZ	20	43	34	Normal. Tucson: $eP''=04:38:16$, $e=04:41:02$. Strasbourg: 10° N., 60° E., $O=04:19$. Pasadena: 9° N., 59° E., $O=04:18:45$, using all available data Normal. Tucson: $iP=20:10:21$, $eS=20:11.5$. Boulder City: $e=20:13:41$
		eZ			33	
	R	eNEZ		42	51	
May 24	MW	eNEZ	23	36	15	
		eZ			15	
	R	iZ			20	
T	iZ			11		
	iZ			19		
	eZ			21		

Date	Sta.	Phase	h	m	s	Remarks
May 26	P	iPNZ	09	53	06	Normal? Strasbourg: probably about 55° N., 110° E. URSS: 55° N., 110° E. Pasadena (using all available data): 53° N., 109° E., $O=09:40:35$. Tucson: $e=09:53:55$
	PX	eLEZ	10	26		
	MW	iPNEZ	09	53	04	
	T	ePNEZ		52	51	
May 26	P	ePNE		53	01	Deep. Near Japan: $h=400$ km. Tucson: $iP=12:29:24$ c, $ipP=12:30:59$
		ipPZ	12	28	53	
	MW	epPZ		30	26	
May 26	R	iPNEZ		28	53	Normal, $\Delta=102^\circ$. New Guinea near 3° S., 141° E. Felt at Genjem, New Guinea, according to Batavia.
		ipPZ		30	22	
	iPZ		28	57		
	eZ		30	29		
May 26	LJ	iPNEZ		29	03	Tucson: $iP=19:20:59$
		iPNEZ		28	42	
	H	iPNEZ			47	
May 26	P	iPNEZ	18	04	16	Deep? Tucson: $eP''=20:25:44$. Felt on Soemba, according to Batavia.
		epPZ		08	13	
	PX	iSKSE		14	56	
May 26	MW	eLE		36.9		Tucson: $iP=19:20:59$
		iPZ		04	15	
	R	epPZ		08	25	
May 26	R	iPZ		04	18	Tucson: $iP=19:20:59$
		ePZ	19	20	34	
	MW	iPZ			39	
May 26	P	iP"Z	20	25	32	Deep? Tucson: $eP''=20:25:44$. Felt on Soemba, according to Batavia.
		iZ		26	21	
	MW	iP"Z		25	31	
May 27	R	iP"Z			33	(Deep) $h=70$ km. Strasbourg: Burma about 25° N., 95° E. Bombay: 25.5° N., 94.3° E., $O=03:45.7$. Tucson: $iP''=04:04:29$, $i=04:07:58$, $ePKKP=04:15:05$
		eP"Z	04	04	19	
	PX	iPPE		05	22	
May 28	P	iPKKPZ		15	19	Normal? Tucson: $iP=02:39:05$ c
		eLE		36		
	PX	eP"Z		04	16	
May 28	P	iPNEZ	02	39	55	Normal? Tucson: $iP=02:39:05$ c
		eLZ		53.7		
	MW	iPNEZ		39	54	
May 29	R	ePNE			48	Tucson: $i=00:33:17$
		ePNE		40	10	
	P	iZ	00	35	06	
May 29	MW	eZ		33	41	Normal. Tucson: $iP=06:08:28$
		iZ		35	07	
	P	ePNEZ	06	08	45	
May 29	PX	eLE		10	58	Normal. Roughly 31.8° N., 113.8° W., $O=06:33.8$. Tucson: $iP=06:34:01$, $i=06:34:10$
		iPEZ		08	45	
	MW	ePNE			42	
May 29	LJ	ePNEZ			26	Tucson: $iP=06:43:30$
		ePNE		09	27	
	H	ePNE			11	
May 29	P	ePZ	06	34	50	Normal. Roughly 31.8° N., 113.8° W., $O=06:33.8$. Tucson: $iP=06:34:01$, $i=06:34:10$
		iSNE		35	52	
	MW	iPZ		34	51	
May 29	P	iSZ		35	49	Tucson: $iP=06:43:30$
		iPZ		34	33	
	LJ	iSNEZ		35	18	
May 29	P	iPZ	06	43	12	Tucson: $iP=06:43:30$
		epZ			14	
	MW	ePZ	11	47	35	
May 30	P	eZ	09	36	09	Tucson: $eP=09:36:25$
		eZ			05	
	MW	eE			13	
May 30	R	eE			07	Tucson: $eP=14:50:58$
		epZ	14	51	57	
	H	ePZ			50	
May 30	R	iPZ	15	38	39	Deep? Tucson: $eP=17:24:36$, $i=17:24:46$
		ePZ	17	24	01	
	P	iZ			14	
May 30	R	iPZ			06	Continued
		iZ			16	

Pasadena and auxiliary stations, 1939

Date	Sta.	Phase	h	m	s	Remarks
Continued						
May 30	SB T	eZ ePNEZ iNEZ	17	24	07 23 24	
May 31	H P R T	eNE iPZ ePZ ePNEZ	18	15	04 06 00	Tucson: iP=18:15:36
June 1	R	eZ	12	25	04	Tucson: iP=12:24:09 c
June 1	P PX R T H	ePZ eLNE iPZ ePNEZ ePNE	12	46	27 55 26 22 45	Normal. Near Fort-de-France. Boulder City: eP=12:46:22 Tucson: iP=12:45:32 c
June 1	R	iPZ	14	02	34	Tucson: iP=14:01:54
June 2	P PX P PX MW	ePZ iZ ePPE iSKSE ePKKPZ eLE ePZ eZ iZ ePKKPZ ePZ eZ	03	47	35 54 52 58 03 22.1 47 51 52 03 03 03 05 16	Normal. $\Delta=108^\circ$, $\delta=03:33.3$, near $4^\circ N.$, $127^\circ E.$ Felt on Celebes and in the Moluccas (according to Batavia); Mindanao and Sulu (according to Manila). Tucson: i=03:51:58, iPKKP=04:02:39
June 2	SB MW P	iPZ iPNEZ	03	47	37 56	Tucson: iP=05:36:10 Tucson: iP=16:56:32
June 2	P MW R T	iPZ iPZ iPNZ			10 11 55	Tucson: e=07:50:14
June 3	P	eZ	07	50	11	
June 3	MW P	eZ iPZ	14	21	09 10	Tucson: iP=14:24:34
June 3	MW P	iPZ iPNZ	14	36	35 37	Deep. (h=100 km) Andes according to LaPlota, which reports: P=14:26.9, S=14:28.8
	MW R	iZ iPZ eZ		36	34 37 31	
	SB LJ T	eZ iPZ iPZ			40 27 38	
June 4	P	iP"Z iNZ iZ	00	42	44 43 46	Deep. Felt in the Lesser Sunda Islands, according to Batavia. URSS: $9.5^\circ S.$, $126.5^\circ E.$, h=100 km. Tucson: iP"=00:42:56, i=00:43:19
	MW	iP"NEZ iZ iZ		42	43 43 46	
	SB	iP"Z iZ		42	44 43	
June 4	H P	eP"NE ePZ eSNZ	01	21	05 23 22	Normal. Arizona-New Mexico. Reported felt at Silver City, New Mexico. Several aftershocks recorded. Boulder City: eP=01:20:59, iS=01:22:18 Tucson: iP=01:19:43
	R	iLE ePNE eSN		24	10 00 07	
	T	ePNE eSNE		23	22 50	
June 4	PX MW T	iPZ iPNEZ ePE	08	59	26 25 27	Tucson: eP=08:59:51

Pasadena and auxiliary stations, 1939

Date	Sta.	Phase	h	m	s	Remarks
June 4	P MW R SB LJ T H	ePNEZ iPNEZ ePNEZ ePNEZ ePNEZ ePNE ePNZ	12	09	19 20 21 15 18 29 28	Normal? Surface waves recorded. Not far from Apia, which reports: eP=11:59:14, e=11:59:30, i=12:00:37, iS=12:00:43, $\Delta=7.9^\circ$ Tucson: iP=12:09:42 c
June 4	MW R	iPZ ePZ	15	30	35 35	
June 4	P MW R	iPNEZ iZ iPZ	20	29	44 31 26 29 46 31 26 29 47	Deep. Tucson: iP=20:30:07 d, i=20:31:50, i=20:32:42
	SB	ePNEZ eEZ iPNEZ			29 31 26 29 55	
June 5	H P MW R H	ePNE iPNZ iPNEZ iPZ ePE	09	40	22 22 24 29	Tucson: iP=09:40:45 d d
June 5	P R	iPZ iPZ	15	36	51 55	Tucson: iP=15:37:30
June 5	P PX R T H	ePZ eLZ ePZ ePE eNE	23	14	20 38.1 14 12 18	Normal. Strasbourg: $39^\circ N.$, $37^\circ W.$, $O=23:03.5$. Pasadena: $36^\circ N.$, $34\frac{1}{2}^\circ W.$, $O=23:03:31$. Tucson: eP=23:13:51
June 6	P MW T	iPZ iPZ iPNZ	01	33	25 27	Tucson: iP=01:33:48 d
June 6	P MW R	iPZ iPZ iPZ	09	39	12 13 09	Tucson: iP=09:38:39
June 6	P MW R	eZ eZ eZ	20	19	02 03 46 59	Tucson: iP=20:18:07, i=20:18:19
June 7	MW R	eZ eZ	01	16	49 38	Tucson: e=01:16:38
June 7	P PX MW R	iPZ eLEZ iPNEZ iPZ	01	39	07 16 07 10	Normal? P very sharp Tucson: iP=01:39:44 c
	T H	iPNE ePNE		38	55 59	
June 7	P MW	ePZ ePZ	15	20	30 30	Tucson: iP=15:19:27
June 8	P MW R T	iPNEZ iPZ iPZ ePZ	03	18	24 25 27 31	Tucson: iP=03:18:48 c c
June 8	P PX MW R LJ T H	iPNEZ iZ eLNZ iScSE iPNEZ iPNEZ ePNE ePNEZ ePNE	09	23	10 12 31.6 33 23 10 03 22 23 31 22	Tucson: iP=09:22:11
June 8	P PX MW R	ePZ eLEZ ePZ	15	37	13 14 13 14	Normal.

Pasadena and auxiliary stations, 1939

Date	Sta.	Phase	h	m	s	Remarks
June 8	P	iPNEZ	20	58	14	d Deep.USCGS: 15°S., 173°W., O=20:47.4, h=100 km. Apia reports iP=20:47:35, iS=20:48:04, R.F.5. J.S.A: 14.5°S., 174.3°W., O=20:46:55, h=100 km. Wellington 16°S., 174°W., O=20:46.9, h=100 km. Tucson: iP=20:58:39 d, eS=21:08:18, eP'P'=21:25:32, iSKPP'=21:29:19 Pasadena: 15.7°S., 174°W., O=20:46:53, h=100 km.
		ipPEZ			40	
	PX	iSEZ	21	07	26	
	MW	iPNEZ	20	58	15	
		eSNEZ	21	07	34	
	R	iPNEZ	20	58	16	
		ipPZ			42	
		eSNE	21	07	36	
	LJ	iPNEZ	20	58	14	
		eSNE	21	07	32	
	T	iPNEZ	20	58	24	
	June 9	H	eSNE	21	07	
		iPNE	20	58	23	
		eSN	21	07	47	
P		ePZ	00	21	08	
PX		iSE		26	12	
		eLE		28.8		
MW		iPZ		21	10	
R		iPZ			23	
LJ		ePNEZ			00	
		eNEZ			34	
T		eNEZ			29	
H		eNE			28	
June 9	P	iPZ	00	56	51	Normal. Tucson: iP=00:55:49
	PX	eSE	01	01	44	
		eLE		05.6		
	MW	ePZ	00	56	49	
	R	iPEZ			57	
	T	ePZ		57	02	
	H	ePNE			02	
	PX	eLEZ	19	56		
	P	iPNEZ	07	26	19	
	MW	iPNEZ			20	
	R	ePNE			24	
	T	ePNEZ		25	45	
June 11	H	ePNEZ		26	03	Tucson: iP=08:39:19
	P	iPZ	08	38	55	
	MW	iPZ			55	
	T	ePZ		39	04	
	P	iPNEZ	04	13	52	
	PX	ePPNZ		15	44	
		iSNE		20	50	
	MW	eLN		30.4		
		iPNEZ		13	50	
	R	eSNE		20	50	
		eSNE		13	48	
	LJ	iPEZ		20	42	
June 12	T	iPNEZ		13	48	Normal? Tucson: eP=15:51:15
		ipPZ		15	00	
		eSNE		20	56	
	H	iPNEZ		13	53	
		eSNE		20	52	
	P	ePZ	15	50	38	
	PX	eLE?	16	00	12	
	MW	iPZ	15	50	34	
	R	ePZ			37	
	T	iPNEZ			06	
	H	ePNE			24	
	June 13	P	ePZ	17	16	
		iSNEZ		17	07	
MW		iPZ		16	19	
		iSNZ		17	03	
R		iPNZ		16	20	
		iSNZ		17	05	

Continued

Pasadena and auxiliary stations, 1939

Date	Sta.	Phase	h	m	s	Remarks
June 13	LJ	iPZ	17	16	37	Continued
		iSN		17	18	
	T	iPNE		15	47	
		iSNE			59	
	H	iPNEZ			52	
		iSNE		16	07	
	P	iPNZ	20	47	28	
	MW	ePNEZ			28	
	R	ePZ			25	
	P	iP"Z	20	58	26	
	PX	eSPZ	21	08	17	
	June 13	MW	iP"Z		58	
		eZ		59	33	
R		iP"Z		58	28	
		eZ		59	18	
P		iPZ	00	10	45	
MW		iPZ			46	
R		iPZ			45	
T		ePNE			51	
R		eZ	18	07	04	
R		eZ	19	09	14	
T		ePZ			24	
R		eZ	21	39	55	
June 15	P	ePNEZ	21	45	22	Tucson: iP=21:39:31 Tucson: e=21:45:51 URSS: 23.5°N., 135.0°E.
	R	ePZ			25	
	T	ePZ			15	
	P	iPZ	12	14	05	
		iZ			29	
	MW	ePZ			01	
	R	ePNEZ			07	
	P	iPNEZ	19	27	27	
		iZ			47	
	MW	ePNE			30	
	R	iPNEZ			33	
	LJ	iPNEZ			39	
June 18	H	iPNEZ	16	53	33	Deep? Central America. Tucson: iP=16:52:40 iPcP=16:55:20, i=16:55:37
	P	iZ			54	
		iPcPZ		55	40	
		iZ			55	
	MW	iPNEZ		53	33	
		iZ			53	
	R	iPEZ			29	
		iPcPZ		55	36	
		iZ			53	
	LJ	iPNEZ		53	24	
		iZ			43	
	June 19	H	ePNE			
P		iPNEZ	22	54	21	
MW		iPNEZ			22	
R		iPNEZ			23	
LJ		iPZ			21	
T		iPNEZ			29	
H		iPNEZ			29	
P		iPZ	06	19	44	
MW		iPZ			46	
R		iPZ			52	
T		iPZ			24	
June 20		P	iZ	12	43	24
		iZ			36	
	MW	iPNEZ			24	
		iZ			36	
	R	iPNEZ			20	
		iNEZ			33	
	LJ	ePNEZ			14	
		eZ			28	

Pasadena and auxiliary stations, 1939

Date	Sta.	Phase	h	m	s	Remarks	
June 21	P	iPNZ	11	29	46	Nevada. Approximately 38.6°N., 117.8°W., O=11:28.5. Boulder City: iP=11:29:39 Tucson: iP=11:30:37	
	MW	iSEZ		30	45		
		iPZ		29	44		
		eSEZ		30	41		
	R	iPZ		29	41		
		iSE		30	50		
	T	iPNEZ		28	58		
		iSE		29	14		
	H	ePNE		14	41		
		iSE		41	41		
June 22	P	iPNEZ	08	46	25	Deep? iP very sharp. Tucson: eP=08:46:54	
	MW	iPZ		25	25		
	R	iPZ		27	27	Deep? Tucson: iP=15:08:39 c i=15:10:43. Near Apia, which reports: eP=14:58:27, etc.	
	LJ	ePZ		28	28		
	T	iPNEZ		25	25		
June 22	P	iPNEZ	15	08	19		
	MW	iPZ		18	18		
		iZ		10	21		
	R	ePZ		08	20		
		eZ		10	23		
	SB	ePZ		08	13		
	LJ	ePNEZ		17	17		
	T	iPNEZ		29	29	Tucson: e=18:44:58	
		iZ		10	32		
	H	ePNEZ		08	26		
		iZ		10	29		
June 22	P	iZ	18	43	32		
	MW	iZ		32	32		
	R	iZ		40	40		
	T	iZ		06	06		
June 22	P	ePPZ	19	38	31		Normal. Destructive at Accra, Gold Coast. USCGS: 5°N., 1°W., O=19:19:33. J.S.A.: 6.3°N., 1.1°W., O=19:19:42. Strasbourg: 5.8°N., 0.0°E., C=19:19:35
		ePKKPZ		49	24		
	PX	eLN	20	09	5		
	MW	ePKKPZ	19	49	21		
	R	ePPZ		38	26		
		ePKKPZ		49	24		
	T	ePPZ		38	03		
		ePKKPZ		49	25		
June 23	MW	iZ	00	48	19	Tucson: e=00:46:43	
	R	iZ		47	58		
June 23	P	ePZ	23	24	54	Near Apia, which reports: eP=23:14:09, iS=23:14:40 Tucson; iP=23:25:20	
	MW	ePZ		25	04		
	R	ePZ		24	51	Normal. Roughly 23°N., 108°W., O=23:05.8. Tucson: iP=23:58:05	
	SB	ePZ		25	06		
June 23	P	ePNEZ	23	59	11		
	PX	iPNEZ	24	01	51		
		eSNE		04	5		
		eLNE		04	5		
	MW	iPZ	23	59	10		
	R	ePEZ		03	03		
	SB	ePNZ		58	52		
	LJ	ePEZ		59	43		
	T	iPNEZ		59	43	Tucson: e=04:32:21, e=04:32:43, i=04:33:34	
	H	iPNEZ		40	40		
June 24	PX	eZ	04	33	24		
	MW	eZ		00	00		
		eZ		25	25		
	R	eZ		32	56		
		ePZ		33	20		
	T	eZ		13	13		
June 24	P	iPNEZ	08	16	51		Deep? Tucson: iP=08:15:51
	MW	iPZ		51	51		
	R	iPZ		45	45		
		iZ		58	58		
	T	ePNEZ		17	14		
	H	iPNEZ		07	07		

Pasadena and auxiliary stations, 1939

Date	Sta.	Phase	h	m	s	Remarks	
June 24	P	iPNEZ	13	02	53	Normal. Felt widely in west central California. Damage to a few structures in San Benito County. Epicenter on San Andreas Fault near 36.4°N., 121.0°W. Tucson: eP=13:04:18	
		iSNE		03	38		
	MW	iPNEZ		02	53		
		iSNE		03	42		
	R	ePNEZ		03	01		
	SB	iPZ		02	39		
		iSN		03	25		
	T	iPZ		02	39		
		iSN		03	25		
	H	iPNEZ		02	44		
		iSNE		03	27		
June 24	P	iPNEZ	16	28	05	Normal. Felt in San Diego, etc. 32°00'N., 117°30'W., O=16:27:27	
	MW	iSE		39	39		
		ePN		04	04	Tucson: iP=16:28:51	
		iSE		40	40		
	R	iPZ		02	02		
		iSNE		31	31		
	SB	ePZ		18	18		
		iSN		59	59		
	LJ	iPNEZ		27	44		
	T	iPZ		28	46		
	H	iPNEZ		33	33		
		iSNEZ		29	39		
June 26	P	eSNE	05	51	26	Normal. Boulder City: P=05:49:03 Tucson: iP=05:47:49	
	MW	iPZ		49	15		
		eSNEZ		51	26	Tucson: e=07:34:20	
	R	iPZ		49	03		
		iZ		50	31		
		eSN		50	56		
		iSEZ		51	00		
	T	ePZ		49	26		
		iZ		50	00		
	H	eSE		51	57		
		iPNEZ		49	54		
		eSNE		51	40		
June 26	P	iZ	07	33	49	Tucson: e=07:34:20	
	MW	iZ		50	50		
	R	eZ		27	27		
		eZ		51	51		
	T	eNEZ		43	43		
	H	eNE		46	46		
June 27	P	iNEZ	10	43	13		Tucson: iP=15:24:22 Tucson: iP=15:43:02 Normal. Philippines. USCGS: 8°N., 128°E., O=23:04.4. J.S.A.: 7.8°N., 126.3°E., O=23:04:27 Manila: 7°30'N., 127°E. Felt generally in Mindano, Leyte and Samar. Tucson: e=23:22:24, i=23:22:59, iP=23:33:55
	R	iZ		32	32		
	T	iNEZ		36	36		
June 27	R	eZ	15	23	54		
June 27	R	eZ	15	42	33		
June 27	P	ePNEZ	23	18	34		
		eZ		22	02		
		eZ		44	44		
	PX	ePPEZ		58	58		
		eSKSNE		29	14		
		ePSE		32	20		
	P	iPKKPZ		34	25		
	PX	eLZ		48	48		
	MW	ePZ		18	34		
		eZ		22	48		
	R	ePZ		18	39		
		eZ		22	03		
		eZ		42	42		
		iPKKPZ		34	23		
	LJ	ePPNEZ		22	53		
		eSKSNE		29	21		
		iPKKPZ		34	20		
	T	ePZ		18	31		
		ePKKPZ		34	29		
	H	ePE		18	37		
		eSKSNE		29	11		

Pasadena and auxiliary stations, 1939

Page 44

Date	Sta.	Phase	h	m	s	Remarks
June 28	P	iPNEZ	08	45	44	Tucson:iP=08:45:09
	MW	iPNEZ			43	La Plata:P=08:37.9,S=08:40.0
	R	iPZ			40	Felt in the province of Salta
	T	ePNZ			54	(Argentina).
June 29	P	ePNEZ	09	53	26	Tucson:iP=09:52:21,S=09:54.1
		iNEZ			30	
		eNE			57	15
	MW	iPZ			53	26
	T	ePNE			54	02
June 30	MW	iPZ	19	47	00	Tucson:iP=19:47:47
	R	iPZ			04	
		iPZ			46	43
	T	iPZ				

C. F. Richter
December 1, 1940

Correction to previous issue, page 7. Shock of January 24, 1939, 19h-20h. Under Remarks, for $\circ = 19:58:53$ read $\circ = 19:48:53$. This determination made using data furnished by the U.S. Coast and Geodetic Survey.

Addendum to page 33:

May 12	P	iPNEZ	19	25	32	Normal. Felt in San Diego and Riverside Counties. $33^{\circ}28'N.$, $116^{\circ}35'W.$, $\circ=19:25:04$. Boulder City:iP=19:25:57, iS=19:26:36. Tucson:iP=19:26:16
		iSNE			52	
	MW	iPNEZ			32	
		iSNE			52	
	R	iPZ			20	d
		iSNE			33	
	SB	iPNEZ			57	
	LJ	iPNEZ			20	
		iSNE			31	
	H	iPZ			50	
		iSNE		26	37	

CALIFORNIA INSTITUTE OF TECHNOLOGY

PASADENA CALIFORNIA

SEISMOLOGICAL LABORATORY

BULLETIN

OCTOBER-DECEMBER 1939



(PASADENA AND AUXILIARY STATIONS)

Date	Sta.	Phase	h	m	s	Remarks
Oct 1	P	ePNE	09	13	23	Tucson: iP=09:13:48 c
	MW	iPNEZ			24	
	R	iPNEZ			25	
	T	iPNEZ			30	
Oct 1	Pr	iPZ	11	08	27	Tucson: iP=11:08:24 d South America. La Plata reports: P=10:58:41 S=10:59.9
	P	ePNE			55	
	MW	iPNZ			54	
	R	iPNEZ			51	
Oct 3	LJ	ePEZ	09	37	47	Tucson: iP=09:38:22 d
	T	iPNEZ			06	
	H	iPNEZ			08	
	P	iPZ			37	
Oct 3	MW	iPZ	13	52	38	Deep. Tucson: iP=13:52:45 c h=600 km. Probably southeast of Fiji Is. Apia reports: iP=13:43:19 iS=13:44:50
	R	iZ			57	
	T	ePZ			52	
	P	iPNEZ!			23	
Oct 3	MW	iZ	54	25	25	Apia reports: iP=13:43:19 iS=13:44:50
	R	iSPZ!			55	
	SE	ePZ			52	
	LJ	iPNEZ!			22	
Oct 4	T	iZ	22	54	43	Normal. Tucson: iP=22:24:51
	H	iPNEZ			28	
	P	epPZ			32	
	MW	ePZ			25	
Oct 5	R	iZ	05	07	45	Deep. South America? Tucson: iP=05:06:32 d
	LJ	iSNE			26	
	P	iPZ			25	
	MW	eN			26	
Oct 7	R	ePNE	21	01	35	Deep? Tucson: e=21:01:49 Bombay: 8.5°S. 129.0°E O = 20:43:03
	LJ	eSN			26	
	P	iZ			25	
	MW	iZ			15	
Oct 8	P	iPNZ	00	02	07	Deep. Peru (using St. Louis and Weston) h=100 km. Tucson: iP=00:01:49 d
	MW	iPNZ			08	
	R	eZ			03	
	SE	ePN			07	
Oct 8	LJ	iPZ	05	07	13	Deep? Tucson: iP=05:07:54 c
	T	iPZ			06	
	P	iPNZ			07	
	MW	eZ			03	
Oct 8	SE	iPZ	22	03	05	Tucson: eP=22:07:24
	LJ	iPZ			06	
	T	iPNZ			07	
	P	eZ			05	
Oct 9	RR	iPZ	02	30	42	Normal. Tucson: eP=02:31:05 Wellington: 20°S. 170°E. O=02:17.9
	P	ePZ			57.7	
	MW	iPNEZ			30	
	R	iPZ			43	
Oct 9	H	ePNEZ	09	13	23	Tucson: iP=09:13:48 c
	MW	iPNEZ			24	
	R	iPNEZ			25	
	T	iPNEZ			30	

Date	Sta.	Phase	h	m	s	Remarks
Oct 9	P	ePZ	03	37	01	Tucson: iP=03:37:24 c
	MW	iPNEZ			02	
	R	iPZ			03	
	H	ePNEZ			06	
Oct 10	Pr	iPZ	08	15	04	Shock reported felt in Humboldt County, California, at 06:10
	P	iPNZ			55	
	MW	iPZ			55	
	R	iPZ			16	
Oct 10	T	ePZ	14	07	00	Japan. C.M.O.: 37.5°N. 141.6°E. Tucson: eP=14:07:18
	H	ePNEZ			38	
	P	ePZ			01	
	MW	ePZ			01	
Oct 10	H	ePZ	18	43	46	Normal? Surface waves recorded. USCGS: 41°N. 143°E. O=18:32:03 JSA: 41.2°N. 143.4E. O=18:32:12 CMO: 38.4°N. 143.0°E. Felt at Mizusawa, which reports, iP=18:32:22 Tucson: iP=14:44:19
	P	ePEZ			46	
	PX	iNZ			56	
	MW	iSEZ!			53	
Oct 10	R	ePNZ	19	02	46	Normal? Aftershock, Japan. C.M.O.: 38.3°N. 143.0°E. Felt at Mizusawa, which reports: iP=18:51:18 S=18:51:38 Tucson: iP=19:03:11
	SE	iZ			55	
	LJ	eNEZ			57	
	T	iZ			39	
Oct 10	H	ePNEZ	19	04	43	Aftershock.
	P	ePZ			37	
	MW	iPNZ			48	
	R	iNZ			38	
Oct 11	R	ePZ	05	43	25	Tucson: iP=05:43:21
	SE	iZ			20	
	H	iZ			19	
	P	ePZ			24	
Oct 12	MW	iPZ	03	29	30	Tucson: iP=03:30:14
	R	ePZ			24	
	P	iPZ			30	
	MW	iPZ			35	
Oct 12	LJ	ePZ	08	51	21	Tucson: e=08:50:39
	T	eZ?			15	
	P	eZ			29	
	MW	eZ			14	
Oct 12	R	iPNEZ	22	36	58	Tucson: iP=22:37:43 c
	P	iPNEZ			58	
	MW	iPZ			37	
	R	iPZ			02	
Oct 13	SE	iPZ	02	41	49	Tucson: iP=02:41:08
	LJ	iPZ			36	
	T	iPZ			37	
	H	iPNEZ			42	
Oct 13	P	iPZ	15	44	39	Tucson: iP=15:44:56
	MW	iPZ			37	
	R	iPZ			35	
	H	ePZ			47	
Oct 13	P	iPZ	02	30	42	Tucson: iP=02:30:42
	MW	eLZ			57.7	
	R	iPNEZ			30	
	H	iPZ			45	

Date	Sta.	Phase	h	m	s	Remarks
Oct 14	P	iPEZ	06	11	54	Tucson: iP=06:11:06. Felt in Venezuela near 10°N. 63°W. Fort-de-France reports: Pn=06:03:30, S=06:04:28 etc.
	MW	ePNEZ			55	
	R	ePZ			51	
	LJ	ePZ			51	
	T	ePNEZ		12	02	
Oct 15	P	iPNZ	20	56	37	Tucson: iP=20:56:22
	MW	iZ			38	
	R	iZ			42	
Oct 17	P	iPNEZ	06	34	39	Deep. USCGS: 16°S. 168°E. 0=06:22.0, h=100 km. JSA: 16.8°S. 167.7°E. 0=06:22:08, h=110 km. Wellington: 15-1/2°S. 167-1/2°E. 0=06:22.1, h=125 km. Tucson: iP=06:35:06 d iP=06:35:33 iP'P'=07:00:32
	PX	ipPZ		35	06	
		isPZ			22	
		iPPZ		38	02	
		eSNE		44	57	
		iN		45	03	
	P	ePKKPZ		52	44	
	PX	iLN		57	34	
	P	iP'P'Z	07	00	48	
		iSKPP'Z		03	53	
		eP'P'P'Z		21	25	
	MW	iPNEZ	06	34	35	
		eSNE		44	56	
		iPKKPZ		52	43	
		iP'P'Z	07	00	43	
	iSKPP'Z		03	57		
	eP'P'P'Z		21	11		
R	iPNEZ	06	34	42		
	ipPZ		35	12		
	iPPEZ		38	08		
	eSNE		44	57		
	iPKKPZ		52	42		
	eP'P'Z	07	00	35		
SE	iPNEZ	06	34	34		
	iPPNEZ		37	53		
	eP'P'Z	07	00	43		
LJ	iPNZ	06	34	42		
	ipPZ		35	11		
	eSNE		44	53		
	eP'P'Z	07	00	43		
	eSKPP'NZ		03	56		
T	iPNEZ	06	34	45		
	ePPZ		38	09		
	eSNE		44	53		
	eP'P'NEZ	07	00	44		
H	iPNEZ	06	34	44		
	ePPEZ		38	06		
	eSNZ		45	00		
	iPKKPZ		52	42		
	eP'P'NEZ	07	00	50		
	eSKPP'Z		03	58		
Oct 17	P	eZ	09	12	02	Aftershock? Tucson: eP=09:12:23
	MW	iZ			03	
	R	eZ			05	
Oct 17	P	eZ	13	43	34	Tucson: eP=13:47:54, i=43:09
	MW	ePZ			37	
	R	ePZ			36	
	LJ	ePZ			43	
Oct 18	P	ePZ	14	19	35	Tucson: iP=14:13:57 c
	MW	iPNZ			35	
	R	iPNEZ			31	
	LJ	iPNEZ			31	
	H	ePNEZ			42	

Date	Sta.	Phase	h	m	s	Remarks
Oct 19	P	iPZ	12	01	15	Normal? USCGS: 48°N. 70°W. 0=11:54.0 Ottawa: 47.8°N. 69.9°W. JSA: 47.6°N. 70.0°W. 0=11:53:58 Tucson: iP=12:00:45
	PX	eLNEZ		14	06	
	MW	iPEZ		01	15	
		eLZ		14	05	
	R	iPZ		01	12	
	LJ	iPZ			19	
	T	iPNEZ			03	
	H	ePNEZ			05	
	Pr	iPZ			14	
		iLZ		13	48	
Oct 20	P	ePZ	07	24	42	Tucson: eP=07:24:29
	MW	iPZ			43	
	R	iPZ			42	
Oct 20	H	ePNEZ			57	Tucson: e=11:40:29
	Pr	ePZ			38	
	P	iNZ	11	39	17	
Oct 20		eZ			40	Tucson: iP=20:13:04 c
	MW	iZ			39	
		eZ			40	
	R	eZ			39	
	Pr	eZ			39	
Oct 20	P	iZ	20	13	56	Normal. JSA: 9.0°N. 83.0°W. 0=20:06:01 Felt at Balboa, etc. Tucson: iP=20:13:04 c
	PX	eLNEZ		14	51	
	MW	ePNEZ		13	56	
	R	ePNEZ			50	
	SE	ePZ		14	08	
	LJ	ePNZ		13	48	
	T	iPNEZ		14	10	
	H	ePNEZ			03	
	P	iPZ	11	16	55	
	MW	iPZ			56	
Oct 21	R	ePZ			57	Tucson: iP=11:17:17
	P	ePNZ	12	17	07	
Oct 21	MW	iPZ			06	Tucson: eP=12:16:33 Andes, according to La Plata
	R	iPZ			03	
Oct 22	P	iPNEZ!	11	51	55	Deep. Tucson: iP=11:51:19 d
		iZ		52	34	
	MW	iPNEZ!		51	55	
		iZ		52	35	
	R	iPNEZ		51	50	
		iZ		52	31	
	SE	iPEZ		52	01	
	LJ	iPNZ		51	46	
	T	iPNEZ		52	08	
	H	iPNZ			01	
Oct 22	Pr	iPZ			51	Japan. C.M.O.: 42.4°N. 144.2°E Felt at Mizusawa, which reports: P=14:40:41, S=41:23 Tucson: iP=14:51:38
		iZ			52	
	P	ePNEZ	14	51	06	
	MW	iPNEZ			06	
	R	iPZ			08	
	LJ	iPNZ			14	
	T	ePNEZ		50	55	
	H	iPNEZ			59	
	Pr	ePZ		51	13	
	P	ePZ	12	14	27	
Oct 24	MW	iPZ			28	Tucson: iP=13:14:50
	R	iPZ			29	
	T	iPZ			36	
Oct 24	Pr	ePZ			30	Deep. C.M.O. (according to Osaka): 42.0°N. 134.0°E. h=500 km Tucson: iP=14:55:21 c
	P	iPNEZ	14	54	51	
	MW	iPNEZ			52	
		iZ		58	07	
	R	iPZ		54	54	
	LJ	iPZ		55	01	
	T	iPNZ		54	42	
		iZ		55	00	
	H	iPZ		54	45	

Pasadena and auxiliary stations, 1939

Date	Sta.	Phase	h	m	s	Remarks
Oct 26	P	ePNZ	21	38	06	Normal. Near New Zealand Tucson: iP=21:38:23
	PX	eLNEZ	22	10		
	MW	iPNEZ	21	38	06	
	R	ePZ			07	
	T	ePNE			19	
Oct 27	Pr	eN			17	Tucson: iP=05:14:19
	MW	iPZ	05	15	15	
	R	iPZ			13	
	Pr	ePZ			04	
	P	ePZ	15	01	24	
Oct 27	MW	iPZ			24	Near New Zealand. Tucson: eP=15:01:41
	R	ePZ			25	
	Pr	ePZ			25	
	P	ePNZ	00	58	20	
	R	iZ			32	
Oct 29	SB	iPNEZ			16	Tucson: iP=22:23:30
	H	ePZ			14	
	P	ePNZ	11	45	19	
	MW	iPZ			23	
	R	iPZ			23	
Oct 29	P	iPZ	22	28	06	Tucson: iP=22:23:30
	MW	iPZ			07	
	P	iPNEZ	13	23	56	
	MW	epPZ			30	
	R	esPZ			51	
Oct 30	MW	iPPZ			26	Deep. We find 16°S.174°W., O=13:12:36, h=150 km., using Apia, New Zealand and Australian stations, Manila and Hong Kong. R.F.IV Apia, which reports: iP=13:13:25 Tucson: iP=13:24:21
	R	eSNE			33	
	MW	iPNEZ			28	
	R	iPZ			24	
	R	iPPZ			26	
	R	iPNEZ			23	
	SB	iPNEZ			24	
	T	iPNEZ			23	
	H	iPNEZ			24	
	H	iPZ			05	
Oct 30	P	iPZ	17	59	15	Tucson: iP=17:59:02 East Indies.
	MW	ePNEZ			14	
	R	iPZ			14	
	T	ePZ			33	
	H	ePNEZ			28	
Oct 30	P	ePZ	22	13	44	Normal. Near New Zealand. Tucson: eP=22:14:01
	PX	eLNE			47	
	MW	iPZ			13	
	R	ePZ			46	
	T	ePZ			54	
Oct 31	H	ePNE			01	Tucson: eP=03:02:31
	P	ePZ	03	03	41	
	MW	iPZ			42	
	R	iPZ			32	
	T	ePEZ			50	
Oct 31	P	iPZ	07	42	40	Tucson: iP=07:43:01
	MW	iPZ			41	
	R	eZ			44	
	T	iPZ			42	
	T	ePZ			48	
Oct 31	P	eZ	09	06	35	Tucson: eP=09:07:19
	MW	ePZ			36	
	R	iPZ			40	
	R	ePZ			40	
	P	ePNEZ	17	09	41	
Oct 31	MW	ePZ			41	Foreschock of 00h27m Nov 1 following
	P	eNEZ	21	36	54	
	MW	eZ			35	
	R	iZ			37	
	T	iNEZ			35	
Oct 31	R	iNZ			36	Foreschock of 00h27m Nov 1 following Tucson: eP=21:36:17
	T	eZ			37	
	R	iNEZ			35	
	R	iNZ			36	
	T	eZ			37	

Pasadena and auxiliary stations

Date	Sta.	Phase	h	m	s	Remarks
Nov 1	P	ePZ	00	27	33	Normal. Probably near 30°N. 114°W. La Jolla station undergoing repairs. Tucson: iP=00:27:05 Foreschock at 23h53m.Oct.31
	PX	iSE			28	
	MW	iPZ			27	
	R	iSNE			28	
	R	iPNEZ			27	
Nov 1	MW	iSE	05	59	59	Tucson: eP=06:00:26
	R	ePZ			06	
	T	ePZ			06	
	P	iPZ	06	20	24	
	MW	iPZ			23	
Nov 1	R	iPZ			26	Tucson: iP=06:20:48
	SB	ePZ			18	
	T	iPNEZ			29	
	H	ePNE			30	
	PX	eLZ	09	53		
Nov 1	P	iPNEZ	19	22	54	Normal Deep. Tucson: iP=19:23:19 d
	MW	iPZ			23	
	R	iPNEZ			22	
	R	iPNEZ			23	
	R	iPNEZ			22	
Nov 1	LJ	iPZ			23	Tucson: iP=19:23:19 d
	T	ePZ			22	
	H	iPNEZ			23	
	P	iPNEZ	20	11	49	
	MW	iPZ			50	
Nov 1	R	iPZ			52	According to Manila, felt at Guam at 19:59:07, distant 180 km., and deeper than normal. Tucson: eP=20:12:19
	SB	iPZ			46	
	T	iPNEZ			46	
	H	iPNEZ			48	
	P	ePZ	21	42	52	
Nov 1	MW	iPZ			52	Tucson: eP=21:42:29
	R	ePZ			49	
	T	ePZ			43	
	H	ePZ			43	
	P	iPZ	21	10	37	
Nov 2	MW	iPZ			38	Tucson: iP=21:11:01
	R	iPZ			39	
	T	ePNEZ			43	
	H	ePNEZ			43	
	P	ePNZ	19	51	54	
Nov 3	P	iZ			52	Normal? Tucson:eP=19:52:22
	PX	eLEZ	20	20.1	19	
	MW	iPNEZ			19	
	R	iPZ			57	
	R	iZ			52	
Nov 4	SB	ePZ			51	Tucson: eP=21:11:01
	LJ	ePNEZ			57	
	T	ePNEZ			52	
	H	ePNZ			51	
	P	ePKKPZ	10	45	00	
Nov 4	PX	eLZ	11	21.6		Normal. Tucson: ePP=10:34:01 ePKKP=10:44:51 Zurich: 32°N. 47°E. Bombay: 33.5°N. 48.5°E. O=10:15:04 Pasadena: 35°N.49°E. O=10:15.6 Tucson: iP=14:02:05
	MW	ePPZ	10	34	38	
	T	ePKKPZ			44	
	T	ePKKPZ			55	
	T	ePKKPZ			58	
Nov 4	P	iPNEZ	14	01	41	Tucson: eP=19:18:04
	MW	iPNEZ			42	
	R	iPZ			44	
	T	iPZ			48	
	P	eZ	19	18	09	
Nov 5	R	eZ			12	Central Atlantic Tucson: iP=02:13:52
	P	ePZ	02	14	25	
	MW	iPNEZ			25	
	R	iPNEZ			22	
	SB	ePNEZ			30	
Nov 5	LJ	ePZ			22	Tucson: iP=02:13:52
	T	ePNEZ			26	
	H	ePNEZ			24	

Pasadena and auxiliary stations, 1939 Page 72

Date	Sta.	Phase	h	m	s	Remarks
Nov 6	P	ePZ	21	08	39	Tucson: iP=21:07:57
	MW	iPNEZ			40	
	R	ePZ			35	
Nov 7	LJ	ePNZ	04	29	31	Tucson: iP=04:29:32
	P	ePZ			00	
	MW	ePZ			01	
Nov 7	R	iPZ	03	09	04	Tucson: eP=03:10:04
	MW	ePZ			40	
	R	ePZ			43	
Nov 7	P	ePZ	15	52	05	Normal? Tucson: iP=15:51:13 Felt at Port-au-Prince, Haiti Roughly 18°N. 72°W. O=15:44.0, using Fordham, Weston and Fort-de-France
	PX	iPoPZ			53	
	MW	eLZ?	16	13		
		ePZ	15	52	02	
	R	iPoPZ			53	
	SB	ePZ			51	
		ePZ			52	
		ePNE			11	
	P	iPNEZ	18	52	23	
	MW	iSNE			34	
Nov 7		iPNZ			22	Near Arlington, Riverside County. Felt over a wide area. Tucson: iP=18:53:32
	R	iSNE			32	
	SE	iPNEZ			13	
	LJ	iPNEZ			43	
		iPNEZ			30	
	T	iSNE			45	
		ePE			59	
	H	iSNE			53	
		iPNZ			52	
		iSN			17	
Nov 8	P	ePZ	01	24	11	Tucson: iP=01:24:36
	MW	iPZ			11	
	R	iPZ			15	
Nov 8	P	eZ	19	17	46	Tucson: eP=19:17:58
	MW	eZ			43	
	R	eZ			44	
Nov 9	P	iPNEZ	01	15	50	Deep. Tucson: iP=01:16:26 c
		iZ			16	
	MW	iPNEZ			15	
		iZ			16	
		iZ			35	
	R	iPNEZ			15	
	SE	iPZ			44	
	H	ePNE			37	
		iPNZ			42	
		iPNEZ	16	19	14	
Nov 9	P	iPNEZ			17	Deep? According to Manila, felt at Guam at 16:06:11, distant 160 km., deeper than normal. Tucson: iP=16:19:45 d Normal. Tucson: iP=03:21:30
	LJ	iPZ			19	
	H	iPNZ			13	
Nov 10	P	ePZ	08	22	29	Tucson: e=17:20:13 Wellington: 53°S. 160°E. O=16:49.7 Our readings may be PKKP, or may refer to another shock. Normal. Wellington: 10°S. 147-1/2°E., O=20:20.9 Bombay: 8°S. 149°E. O=20:20:54
	PX	eLNE			26.0	
	MW	ePNEZ			22	
Nov 10	P	ePZ	17	19	21	Tucson: e=17:20:13 Wellington: 53°S. 160°E. O=16:49.7 Our readings may be PKKP, or may refer to another shock. Normal. Wellington: 10°S. 147-1/2°E., O=20:20.9 Bombay: 8°S. 149°E. O=20:20:54
	MW	iZ			47	
	R	iZ			47	
	H	iZ			50	
		iZ			46	
Nov 10	P	ePZ	20	34	26	Tucson: iP=03:05:32
	PX	eLE	21	09.5		
	MW	ePZ	20	34	25	
Nov 11	R	ePZ			27	Tucson: iP=03:05:32
	LJ	ePZ			29	
	MW	iPZ	03	04	45	
	Pr	ePZ			49	
		iPZ			56	

Pasadena and auxiliary stations, 1939 Page 73

Date	Sta.	Phase	h	m	s	Remarks
Nov 11	MW	iPZ	09	04	47	Tucson: iP=09:04:45
Nov 11	P	iPZ	20	02	13	Tucson: eP=20:01:43 Andes, according to La Plata
	MW	iPZ			12	
	R	ePZ			09	
	LJ	ePZ			06	
Nov 12	MW	eZ	05	03	33	Tucson: iP=05:03:46
Nov 13	P	iPNEZ	07	49	10	Normal. USCGS: 47°35'N. 123°15'W. O=07:45:49 JSA: 47.7°N. 123.4°W. O=07:45:50 Felt in Oregon, Washington, and British Columbia. Moderate damage at many points in Washington, including Centralia, Olympia, Tacoma and Seattle. Boulder City: eP=07:49:03 eS=07:52:45 Tucson: iP=07:50:02
	PX	iNZ			21	
		iSNZ			52	
		eLN			07	
	MW	iPNEZ			49	
	R	iZ			22	
		iPNEZ			15	
	SB	iZ			23	
	LJ	iPNEZ			05	
	T	ePNE			43	
Nov 14	H	eNE			45	Tucson: iP=07:50:02
		iPN			47	
		iN			49	
	Pr	iPZ			02	
		iSZ			52	
	P	iPNEZ	02	08	13	
	MW	iPNEZ			12	
	R	iPNEZ			11	
	T	ePNE			07	
	H	ePN			08	
Nov 14	Pr	iPZ			10	Normal
	P	ePZ	12	50	47	
	PX	eLZ	13	24		
Nov 15	MW	ePZ	12	50	49	Tucson: eP=17:22:33
	R	ePZ			51	
	P	ePZ	17	22	23	
Nov 16	MW	ePZ			23	Tucson: iP=22:48:05
	R	ePZ			24	
	P	iPZ	22	47	39	
Nov 17	R	ePZ			41	Tucson: iP=05:42:01
	H	ePNE			47	
	P	ePZ	05	41	16	
Nov 17	MW	iPZ			16	Deep. Tucson: eP=09:15:02 Roughly 5°S. 155°E. O=09:01.5 h = 110 km.
	P	iPNEZ	09	14	33	
		ipPZ			15	
	MW	iPNEZ			14	
		ipPZ			15	
	R	iPNEZ			14	
		epPZ			15	
	SE	iPZ			14	
	LJ	ePNE			38	
	T	ePNE			34	
Nov 17	H	ePNEZ			36	Deep. Tucson: iP=18:51:09 d ipP=18:53:17 Wellington: 19-1/2°S. 180° O=18:39.6, h = 600 km. Pasadena: 21-1/2°S. 178°W. O=18:39.5 h = 600 km. using Wellington, Apia, Manila, Batavia, Melbourne and Zurich.
	P	iPNEZ	18	50	47	
		epPZ			52	
	PX	eSN	19	00	17	
		eZ			20	
	MW	iPNEZ	18	50	47	
		ipPZ			52	
		eZ			19	
	R	iPNEZ	18	50	49	
	SE	iPNEZ			43	
Nov 17	LJ	iPNEZ			47	Normal? Tucson: iP=19:40:45 d
	T	iPNEZ			55	
	H	iPNEZ			53	
	P	iPNZ	19	41	21	
		iZ			51	
		iZ			42	
		eLNE			46.5	
	PX	iPNEZ	41	20		
	MW	iZ			50	
		iZ			42	

Date	Sta.	Phase	h	m	s	Remarks
-continued-						
Nov 17	R	iPNEZ	19	41	17	d
		iZ			46	
	SE	eZ			27	
	T	iPNEZ			33	d
		eZ		43	27	
Nov 18	H	eNE			21	
	P	ePZ	00	25	46	Normal. Tucson: eP=00:26:12
	PX	eLN			50.4	
	MW	iPZ		25	47	
	R	ePZ			50	
	T	ePNEZ			55	
	H	ePNEZ			58	
Nov 18	P	iPNEZ	01	42	58	c Normal?
	PX	iSEZ		51	14	Distance 62°; Kamchatka.
		eLN		58.3		Bombay: 51°N. 157.5°E.,
	P	eP'P'Z	02	12	14	O = 01:32.9
	MW	iPNEZ	01	42	58	c Tucson: iP=01:43:35 c
		eP'P'Z	02	12	01	eP'P'=02:12:07
	R	iPNEZ	01	43	01	c
	SE	iPNEZ		42	51	
	LJ	iPNEZ		43	09	
	T	iPNEZ		42	45	c
	H	iPNEZ			50	
Nov 18	P	ePZ	07	52	55	Normal? Tucson: iP=07:52:16
		iZ		53	03	
	MW	iPEZ		52	55	
		iZ		53	03	
	R	ePZ		52	50	
		iZ			59	
Nov 18	T	iPNEZ		53	16	
	P	eNZ	12	18	47	
	MW	eNZ			47	
	R	eZ			46	
	T	eNEZ			54	
	H	eNE			55	
Nov 19	P	ePZ	19	17	27	Tucson: iP=19:18:06
	MW	iPZ			28	
	R	ePZ			30	
Nov 20	P	iPZ	14	26	23	Tucson: iP=14:26:49
	MW	iPZ			24	
Nov 20	P	ePZ	18	03	01	
	MW	ePNEZ			01	
	R	ePZ			09	
Nov 21	P	eZ	09	07	10	Normal. Turkey. About 39°N. 38°E.
	PX	eLZ		43.2		according to Zurich.
	MW	eZ		07	09	Tucson: e=09:07:10
Nov 21	P	ePZ	11	15	48	Deep. Hindu Kush.
		eP"Z		19	51	USCGS (revised) 35°N. 71°E.,
	PX	iPPZ		20	29	O=11:01:33, h=200 km.
		iSPPZ		21	36	Pasadena: 36-1/2°N. 70-1/2°E.,
		iZ		25	44	O=11:01:50, h=220 km.
		iSPZ		29	22	Tucson: eP=11:16:02
		iZ		30	34	iP=11:19:56
	P	iPKKPZ			56	iPP=11:20:20
		ipPKKPZ!		31	54	iPKKP=11:30:49
	PX	eSSZ		35	21	ipPKKP=11:31:45
		iSSNZ		36	11	
	MW	ePZ		15	49	
		iP"EZ		19	51	
		iPPEZ		20	29	
		iZ		25	46	
		eSPZ		29	16	
		iPKKPZ		30	57	
		ipPKKPZ!		31	55	

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Date	Sta.	Phase	h	m	s	Remarks
-continued-						
Nov 21	R	eP"NEZ	11	19	49	
		iPPNEZ		20	28	
		esPPZ		21	36	
		eNZ		30	36	
		iPKKPZ			55	
		ipPKKPZ		31	54	
	T	ePNZ		15	36	
		eP"Z		19	55	
		iPKKPZ		31	06	
		epPKKPZ		32	02	
	H	ePNEZ		15	40	
		iP"NZ		19	48	
Nov 21	P	ePZ	21	37	38	Normal
	PX	eLZ		22	11	
	MW	ePZ		21	37	
	R	ePZ			36	
	T	ePZ			38	
Nov 22	P	eZ	05	17	19	Deep? Tucson: eP=05:17:42
		iZ			23	North Japan. Mizusawa reports:
	MW	ePZ			09	eP=05:07:01, S=05:08:14
		iZ			23	
	R	iPZ			12	
		iZ			25	
	T	eNEZ			17	
	H	ePZ			02	
		eNEZ			18	
Nov 23	P	iPZ	05	40	55	Tucson: iP=05:41:19
	MW	iPZ			55	
	R	iPZ			57	
	T	iPNEZ		41	01	
	H	ePEZ			00	
Nov 24	P	ePZ	00	59	41	Tucson: eP=01:00:15
	MW	iPZ			40	
	R	ePZ			51	
Nov 24	P	iPZ	23	33	30	Normal.
		iZ		34	07	Tucson: iP=23:33:57
	PX	eLEZ			56	
	MW	iPNEZ			33	
	R	iPNEZ			31	
		iPNEZ			32	
	SE	ePNEZ			25	
	LJ	eNE			50	
	T	ePNEZ			38	
	H	ePNEZ			38	
Nov 26	P	iPNZ	06	36	05	d Deep. South America
		ipPZ			37	Tucson: iP=06:35:21 d
		iZ			49	
	MW	iPNEZ		36	05	d
		iZ			28	
		ipPZ			37	
		iZ			48	
	R	iPNEZ			00	
		ipPNEZ			33	
		iZ			45	
	T	iPNEZ		36	19	d
		ipPZ			50	
Nov 27	P	ePZ	14	18	40	Tucson: iP=14:18:59
	MW	ePZ			42	
	R	ePZ			43	
Nov 27	MW	iPZ	23	17	01	Tucson: iP=23:17:19
	R	ePZ			02	
Nov 28	P	iPNEZ	02	18	02	c Deep? Central America
		iZ			19	Tucson: iP=02:17:10 c
	MW	iPNEZ			02	
	R	iPZ		17	57	
		iZ		18	18	
	SE	ePNEZ			11	
	LJ	ePN		17	54	
	T	ePZ		18	13	
	H	iPNEZ			07	

Pasadena and auxiliary stations, 1939

Date	Sta.	Phase	h	m	s	Remarks
Nov 29	P	ePZ	04	33	41	Normal. Surface waves recorded Gulf of California? Tucson: iP=04:32:52 eS:04:34.3
		eSNZ		35	46	
	MW	iPNEZ		33	43	
		eSNE		35	52	
		ePNEZ		33	35	
Nov 29	R	iSNEZ		35	36	Tucson: iP=12:26:36
	LJ	eSNE			04	
		iPNEZ		34	21	
		ePNEZ			05	
	P	ePZ	12	25	56	
Dec 1	MW	iPZ			52	Normal. Tucson: eP=08:45:43
	R	ePZ			42	
	T	iPZ			42	
	P	ePZ	06	45	21	
	PX	eLEZ	07	08.6		
Dec 1	MW	ePZ	06	45	21	Tucson: e=06:55:55 Doubtful
	R	ePZ			25	
	MW	eZ	06	55	38	
	P	iZ	15	14	41	
	MW	iZ			41	
Dec 2	P	iPZ	03	02	28	Tucson: iP=03:02:52
	MW	iPZ			28	
	R	iPZ			30	
	H	iPZ			34	
	MW	ePZ	06	59	16	
Dec 3	MW	iPNEZ	16	38	37	Tucson: eP=06:59:04 Tucson: iP=16:39:08 d
	P	iPZ			37	
	MW	eZ			48	
	R	iPNEZ			38	
	SE	iPZ			31	
Dec 4	LJ	ePNEZ			43	Normal
	T	iPZ			33	
	H	iPNEZ			35	
	Pr	iPZ			43	
	P	ePNEZ	23	57	35	
Dec 4		iZ			44	Normal
	PX	iLNEZ			59	
	MW	iPNEZ			57	
	R	iPNEZ			42	
	T	iPNEZ			11	
Dec 5	H	iPNEZ			18	Normal. USCGS:14.5°N.92.5°W O = 08:30.2 JSA:13.5°N. 90.9°W. O=08:30:10, h=75 km. Felt in El Salvador. Tucson: iP=08:35:32
	Pr	ePZ			49	
	P	iZ	03	36	29	
		iPNEZ			39	
		iPcPZ			41	
Dec 5	PX	iSNEZ			34	Tucson: eP=15:19:32
	MW	eLNEZ			43.8	
		iPNEZ			36	
		iPcPZ			39	
		iSNEZ			41	
Dec 5	R	iPNEZ			20	Tucson: iP=08:35:32
		iPcPZ			39	
		eSNE			41	
	SE	iPNEZ			36	
	LJ	iPNEZ			16	
Dec 5		iPcPZ			39	Tucson: eP=15:19:32
	T	iPNEZ			36	
		iPcPZ			39	
	H	iPNEZ			36	
		iPcPZ			39	
Dec 5	Pr	eSNE			41	Tucson: eP=15:19:32
	MW	iPZ	15	19	20	
	R	iPZ			20	
		iZ			34	
	H	ePZ			40	
	Pr	ePZ			15	

Pasadena and auxiliary stations, 1939

Date	Sta.	Phase	h	m	s	Remarks
Dec 5	P	iPNEZ	17	58	28	Central America. Tucson: eP=17:57:35
	MW	iPEZ			28	
	R	ePZ			23	
	Pr	iPZ			17	
	P	iPZ	18	11	20	
Dec 5	MW	iPZ			20	Tucson: iP=18:11:45
	H	iPZ			27	
	P	iPZ	08	09	25	
	MW	iPZ			28	
	R	ePZ			26	
Dec 6	P	iPZ	18	11	51	Japan. C.M.O.=37.7°N.141.8E. Felt at Mizusawa, which reports: iP=18:00:31 S=18:00:52 Tucson: iP=18:12:24 Tucson: iP=19:12:40 Tucson: iP=20:37:55
	MW	iPZ			51	
	R	ePZ			55	
	H	ePNEZ			46	
	MW	eZ	19	12	17	
Dec 6	MW	ePZ	20	37	17	Tucson: iP=22:13:21
	R	ePZ			21	
	P	ePZ	22	12	44	
	MW	ePZ			44	
	R	iPZ			47	
Dec 7	T	iPZ			32	Tucson: iP=11:03:34 Suspected epicenter: Marianne Islands
	H	ePZ			36	
	P	iPNEZ	11	03	05	
	MW	iPNEZ			05	
	R	iPNEZ			07	
Dec 7	SE	ePZ			02	Normal? P very short period and complicated. Aleutian Islands; distant about 45° Tucson: iP=11:25:27 c
	LJ	ePNEZ			03	
	T	iPNEZ			02	
	H	iPNEZ			03	
	P	iPNEZ	11	24	44	
Dec 8	PX	eLNEZ			37.3	Tucson: iP=00:18:45
	MW	iPNEZ			24	
	R	iPNEZ			46	
	SE	iPZ			34	
	LJ	ePNEZ			53	
Dec 8	T	iPNEZ			29	Tucson: iP=00:18:45
	H	iPcPZ			26	
		iPNEZ			24	
		iPcPZ			26	
		eScPZ			30	
Dec 9	P	iPZ	00	18	08	Tucson: ePP=19:38:55
	MW	iPZ			08	
	R	iPZ			11	
	Pr	iPZ			17	
	P	ePZ	19	34	07	
Dec 10	MW	ePZ			07	Deep. Tucson: iP=03:32:24 ipP=03:33:24 Apia reports: iP=03:22:00 iS=03:23:05 Hence probable epicenter in Tonga Islands about 18°S., 175°W., h=250 km.
	R	ePZ	03	32	00	
	MW	iPZ			59	
		iPZ			00	
		iPZ			59	
Dec 10	R	ePZ			02	Tucson: iP=07:36:58
		epPZ			33	
	T	iPNEZ			32	
	H	iPZ			33	
		iPNEZ			32	
Dec 11	Pr	iPNEZ			33	Tucson: iP=07:36:58
		iPZ			32	
		iPZ			33	
		iZ	10	57	10	
	P	iZ			56	
Dec 11	MW	iZ			57	Tucson: iP=07:36:58
	R	eZ			56	
		iZ			57	
		iZ			57	
	MW	iPZ	07	37	19	
	R	ePZ			14	

Pasadena and auxiliary stations

Date	Sta.	Phase	h	m	s	Remarks
Dec 11	P	iPZ	10	52	18	Deep? Tucson: eP=10:51:41
		iZ			57	
	MW	iPNEZ			18	
Dec 12	R	iNEZ			58	Deep. Tucson: iP=02:55:11 d i=02:55:54
	P	iPZ	02	56	08	
		iZ			51	
Dec 12	MW	iPEZ			05	d Central America. Cape Girardeau report gives epicenter near 16.0°N. 94.0°W., O=02:50:13
		iZ			51	
	R	iPZ			01	
		iEZ			46	
	T	ePZ			22	
		iNZ		57	14	
	H	iPNZ		56	14	
		iNZ		57	03	
	Pr	iPZ		55	54	
		iZ		56	39	
Dec 13	P	ePNEZ	12	51	08	Tucson: eP=12:50:12
	MW	iPNZ			08	
	R	ePNEZ			50	
Dec 13	Pr	ePZ			50	Deep? Tucson: iP=15:16:40 i=15:17:04
	P	iPZ	15	16	05	
		iZ			28	
	MW	iPZ			08	
		iZ1			29	
	R	iPZ			08	
		iZ			32	
	SE	iPZ			21	
	LJ	eZ			37	
	T	ePZ		15	53	
Dec 13		iNEZ			16	Deep. Andes? (according to La Plata) Tucson: iP=13:55:28
	H	iPNEZ			15	
		iNEZ			18	
	Pr	iPZ			13	
		iZ			37	
	P	iPZ	18	56	06	
	MW	iPZ			07	
		iZ			33	
	R	iPZ			03	
	Pr	iPZ		55	59	
Dec 14	MW	iZ	01	33	43	Tucson: eP=17:30:58
	R	iPZ			34	
		ePZ			27	
Dec 15	MW	iPZ	17	31	31	Tucson: eP=03:29:14
	R	ePZ			15	
	Pr	ePZ			15	
Dec 16	MW	iPZ	03	28	55	Tucson: iP=03:47:37
	R	iPZ			57	
	H	ePZ			29	
Dec 16	Pr	iPZ			23	Tucson: iP=03:47:37
	P	ePZ	03	47	12	
	MW	iPZ			14	
Dec 16	R	ePZ			16	Deep. USCGS: 41.9°N. 147.3°E. O=10:46:5, h=80 km. JSA: 45.7°N. 145.3°E. O=10:46:35, h=80 km. C.M.O. (according to Osaka) 43.7°N. 147.2°E., h=120 km. Felt at Mizusawa which reports: iP=10:43:09, iS=10:49:17 Tucson: iP=10:58:15, iP=58:33, eP'P'=11:25:29
	T	ePZ			25	
	H	ePNEZ			21	
	Pr	iPZ			17	
	P	iPNZ	10	57	40	
		iPZ			57	
	PX	iSNEZ	11	06	46	
		iN			07	
		eLN			14.7	
	P	iP'P'Z			25	
Dec 16	MW	iPNEZ	10	57	40	c
		iPZ			58	
		eSNEZ	11	06	43	
		iP'P'Z			25	
		iP'P'Z			39	

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Pasadena and auxiliary stations, 1939

Date	Sta.	Phase	h	m	s	Remarks	
-continued-							
Dec 16	R	iPNEZ	10	57	43	Aftershock. Mizusawa, iP=14:11:40 S=14:12:48 Tucson: iP=14:21:48 Normal. Surface waves recorded. Tucson: iP=17:57:48 S=17:59.3 Probably Gulf of California	
		ipPZ			06		
		eSNE	11	06	51		
		eP'P'Z			25		
	SE	iPNEZ	10	57	34		
		eSNE	11	06	33		
	LJ	ePNEZ	10	57	48		
		eSNEZ	11	07	04		
	T	iPNEZ	10	57	29		
		eSNE	11	06	27		
Dec 16	H	eP'P'Z			25	c	
		iPNEZ	10	57	33		
		eSNE	11	06	31		
		eP'P'Z			25		
	Pr	iPZ	10	57	48		
		ipPZ			58		
		eP'P'Z	11	25	33		
	Dec 16	P	iPZ	14	21		10
	MW	iPZ			11		
	R	iPZ			14		
Dec 16	Pr	iPZ			19	Tucson: iP=17:57:48 S=17:59.3 Probably Gulf of California	
	P	ePZ	17	58	45		
		eSN	18	01	16		
	MW	ePZ	17	58	49		
		iSZ	18	01	15		
	R	ePZ	17	58	40		
		eSZ	18	00	54		
	LJ	eSNEZ			28		
	Pr	ePZ	17	58	36		
		eSZ	18	00	41		
Dec 17	P	ePZ	07	46	39	Felt in Flores and Timor, according to Batavia.	
		iZ			51		
	MW	iPNEZ			40		
	R	ePZ			41		
	T	iPZ			26		
	H	ePNEZ			31		
	Pr	iPZ			51		
	P	iP'Z	08	07	29		
		iZ			51		
		iZ		10	57		
Dec 17	MW	iP'NEZ			07	Tucson: iP=06:39:26. New Hebrides. Roughly 15°S. 167°E., O=06:26.3, using Wellington, Riverview, Brisbane and Batavia.	
		iZ			29		
		iZ			52		
		iZ			57		
	R	eP'Z			07		
		iZ			52		
	H	iP'Z			29		
	Dec 18	P	iPNZ	06	38		59
		ePPZ			42		
	MW	iPNEZ			39		
R	iPNEZ			03			
LJ	ePZ			02			
T	ePNEZ			06			
H	ePNZ			05			
Pr	iPZ			05			
Dec 18	P	iPNZ	10	34	29	Felt in New Guinea, according to Riverview. Wellington: 5°S. 152°E., O=10:21.3	
	MW	iPNEZ			31		
		ePPZ			38		
	R	iPZ			34		
		ePZ			28		
	H	ePZ			31		
	Pr	iPZ			36		
	P	ePNZ	19	56	23		
		iPcPZ			58		
	MW	iPZ			56		
Dec 19		iPcPZ			50	Tucson: eP=19:55:28 iPcP=19:53:35 Central America?	
	R	ePZ			56		
		iPcPZ			52		
	T	ePNZ			56		
		iPcPNEZ			58		

Date	Sta.	Phase	h	m	s	Remarks
Dec 20	P	iP"NEZ	13	21	48	c Deep? East Indies Tucson: eP"=13:22:01 i = 13:24:16
		iZ		24	18	
	MW	iP"NEZ		21	48	
		iZ		24	18	
	R	iP"Z		21	48	
Dec 20	T	iZ		24	22	c Tucson: eP=18:27:20 Japan.C.M.O. (according to Osaka): 38.9°N. 142.1°E. Felt at Mizusawa, which reports: iP=18:15:20 iS=18:15:32
	H	iP"Z		21	47	
	Pr	iP"Z		47		
	P	ePZ	18	26	47	
	MW	ePZ		47		
Dec 20	H	eZ		27	01	c Tucson: eP=18:27:20 Japan.C.M.O. (according to Osaka): 38.9°N. 142.1°E. Felt at Mizusawa, which reports: iP=18:15:20 iS=18:15:32
				26	56	
	P	iZ	21	33	48	
	MW	iZ		49		
	R	iZ		52		
Dec 21	P	iPNEZ	21	02	16	c Normal. Damage in Costa Rica USCGS: 10.0°N. 85.0°W. O=20:54.8 JSA: 9.9°N. 84.7°W., O=20:54:47 Tucson: iP=21:01:23
	PX	iSNE		08	20	
		eLN		10	40	
	MW	iPNEZ		02	16	
	R	iPNEZ		11		
Dec 21	SE	eSNE		08	10	c Deep. Confused by the preced- ing. Destructive on Celebes. USCGS: 2°S. 122°E., O=21:00.5 JSA: 0°N. 122.0°E., O=21:00.5 Batavia: 0.3°S. 124.1°E., O=21:00:34, h=150 km
	LJ	ePNEZ		02	25	
	T	ePNEZ		06		
	H	iPNEZ		31		
	P	ePNEZ		23		
		iPZ	21	15	17	
		iP"NEZ		19	07	
		iPKKPZ		29	46	
	PX	eLN		45.2		
	MW	ePNEZ		15	16	
		iP"NEZ		19	07	
		iZ		30	03	
	R	iPNEZ		15	21	
		iP"NEZ		19	08	
		iPKKPZ		29	41	
SE	ePNEZ		15	11		
	iP"NEZ		19	06		
	iZ		30	02		
LJ	ePNEZ		15	25		
	iP"Z		19	12		
T	ePNEZ		15	13		
	iP"NEZ		19	07		
H	iPNEZ		15	15		
	iP"NEZ		19	07		
	iPKKPZ		29	59		
Dec 22	P	iPNEZ	04	51	30	c Normal. Costa Rica. USCGS: 9.6°N. 85.0°W., O=04:44.0 JSA: 9.8°N. 84.2°W., O=04:44:02 Tucson: iP=04:50:37
	PX	iSNE		57.0		
		eLN		05	02.2	
	MW	iPNEZ		04	51	
	R	iPNEZ		24		
Dec 22	SE	ePZ		38		c Normal. Gulf of California? Roughly 32°N. 113°W. O=06:59.7 Large foreshock at 05:50 Many aftershocks. Tucson: eP=07:00:14 approx. Boulder City: iP=07:00:52
	LJ	iPNEZ		22		
	T	iPNEZ		44		
	H	iPNEZ		38		
	Pr	iPZ		20		
Dec 22	MW	iPNEZ	05	21	44	c Normal. Gulf of California? Roughly 32°N. 113°W. O=06:59.7 Large foreshock at 05:50 Many aftershocks. Tucson: eP=07:00:14 approx. Boulder City: iP=07:00:52
	R	iPZ		48		
	Pr	iPZ		56		
	P	ePZ	07	00	43	
		iSNE		02	12	
Dec 22	R	ePZ		00	35	c Normal. Gulf of California? Roughly 32°N. 113°W. O=06:59.7 Large foreshock at 05:50 Many aftershocks. Tucson: eP=07:00:14 approx. Boulder City: iP=07:00:52
	LJ	iPN		25		
	Pr	iPZ		22		

Date	Sta.	Phase	h	m	s	Remarks
Dec 23	P	ePZ	17	18	33	Normal. Aftershock, Costa Rica Tucson: iP=17:17:41
	PX	eLN		32.3		
	R	iPZ		15	29	
Dec 24	Pr	iPNZ		43		Tucson: iP=12:43:06
		iPZ		23		
	P	iPNZ	12	42	21	
	R	iPZ		25		
	Pr	ePN		16		
Dec 24	H	iPNEZ		12		Tucson: iP=19:01:41 c North of Haiti. Roughly 20°N. 73°W., O=18:54.7, using NESA data.
	P	iPNEZ	19	02	32	
	R	iPNEZ		26		
	T	iPNEZ		34		
	Pr	iPNEZ		34		
Dec 24	P	iPZ	22	36	55	d Tucson: iP=22:36:14 d Probably Peru
	R	iPZ		50		
	T	iPNZ		37	05	
	H	ePNEZ		01		
	Pr	iPZ		36	46	
Dec 25	P	ePZ	13	03	05	Normal. North Atlantic. Tucson: iP=13:02:50
	PX	eLZ		27.3		
	T	iPNZ		02	55	
	H	iPZ		03	05	
	Pr	iPZ		15		
Dec 25	P	iPNZ	16	38	26	Normal
	PX	eLEZ	17	08.9		
	MW	ePNE	16	38	31	
	T	iPNEZ		29		
	Pr	ePZ		34		
Dec 25	P	iPZ	19	56	04	Tucson: iP=21:14:46 Tucson: iP"=22:41:38 East Indies
	Pr	ePZ		09		
	P	ePZ	21	14	35	
	P	iP"Z	22	41	27	
	H	iP"Z		27		
Dec 25	Pr	iP"Z		27		Tucson: iP=23:14:45
	P	ePNZ	23	15	29	
	T	ePNEZ		44		
	H	ePZ		38		
	Pr	iPZ		19		
Dec 26	P	iPNZ	07	13	44	Normal? Northwestern Calif- ornia?
		eSNEZ		15	31	
	T	ePZ		13	02	
		iNEZ		14	23	
	H	iSNE		14	10	
Dec 26		ePZ		13	14	Normal
	Pr	iNEZ		14	35	
		eZ		13	58	
		iZ		14	17	
		iZ		16	14	
Dec 26	P	iPNZ	07	22	25	Normal
		eSZ		24	13	
	T	iPNEZ		21	43	
		iZ		55		
		eSNE		22	45	
Dec 26	H	ePZ		04		(Deep) Small surface waves recorded. Depth about 70 km. Strong in Nicaragua. USCGS: 13.5°N. 88.4°W., O=11:55.2 Tucson: iP=12:00:56
		iNEZ		13		
	Pr	eSZ?		23	19	
		eZ		22	38	
		eZ		25	13	
Dec 26	P	iPNEZ	12	01	53	d (Deep) Small surface waves recorded. Depth about 70 km. Strong in Nicaragua. USCGS: 13.5°N. 88.4°W., O=11:55.2 Tucson: iP=12:00:56
		iPPZ		02	02	
		iSPZ		17		
		iPcPZ		04	29	
		iScPZ		03	10	
Dec 26	MW	ePNE	12	01	54	Tucson: iP=12:00:56
	LJ	ePNEZ		43		
		ePcPZ		04	26	

Date	Sta.	Phase	h	m	s	Remarks
-continued-						
Dec 26	T	ePNEZ	12	02	08	
		iPcPZ		04	34	
	H	ePNEZ		02	01	
		ePcPZ		04	33	
		eScPZ		03	12	
	Pr	ePZ		01	41	
		iPcPZ		04	27	
		iScPZ		08	05	
Dec 26	P	iPNEZ	21	57	15	Normal. Tucson: iP=21:56:22
	PX	eLN	22	08.2		Costa Rica (as on Dec 21, 21h
	MW	iPNEZ	21	57	14	etc.)
	LJ	ePNEZ			05	
	T	ePZ			30	
	H	iPNEZ			25	
	Pr	ePZ			04	
Dec 27	P	ePZ	00	11	30	Normal.
		eP"Z		14	52	USCGS: 39°N. 39°E. O=23:57.4
	PX	iPPZ		15	35	Strasbourg: 39.5°N. 33.2°E.,
		iSKSN		21	45	O=23:57:23
		ePSN		24	37	Very destructive in
	P	iPKKPZ		27	28	northern Turkey.
	PX	eSSN		30.2		Tucson: eP=00:11:20
		eGN		40.0		
		eG2N	02	04		
		eG4N	04	15		
	MW	ePNEZ	00	11	28	
	T	ePZ			17	
	H	ePZ			22	
		eP"Z		14	37	
	Pr	iPZ		11	32	
		iZ		15	25	
		ePKKPZ		27	49	
Dec 27	P	ePZ	02	58	05	Tucson: iP=02:57:13
	Pr	iPZ		57	55	Probably Costa Rica. No trace
						of aftershock of Turkish
						earthquake, originating about
						02h48m, recorded in Europe, etc.
						Normal? Distance 103°. New
						Guinea. Approximately 2°S.
						137°E., O=00:02:40, using
						Batavia, Manila, Melbourne,
						Medan, Mizusawa, Osaka, Palau
						and Riverview.
						Tucson: ePP=03:21:06
Dec 27	P	iPNEZ!	19	28	57	d Normal. 33°47'N. 118°08'W.,
	MW	iPNEZ			58	d O=19:28:49
		iSNE		29	05	c Felt generally in the Los
	R	iPNEZ			03	angeles Basin area; minor
		iSNE			15	damage near the epicenter.
	SB	iPNE			16	Boulder City: eP=19:29:45
		eSNE			34	iS=19:30:46
	LJ	iPNEZ			11	Tucson: eP=19:30:26
		iSNE			27	
	H	iPNEZ			29	
		iSNE		30	04	
	Pr	iPZ		29	11	c
Dec 27	P	ePZ	23	20	30	
	MW	ePZ			30	
	H	ePZ			29	
	Pr	ePZ			35	
Dec 27	P	ePNZ	23	50	45	c Tucson: iP=23:49:48
	MW	iPZ			45	c Southern Mexico?
	LJ	ePNEZ			32	
	T	ePNE		51	04	
	H	iPNEZ			50	
	Pr	iPZ			37	c

Date	Sta.	Phase	h	m	s	Remarks
Dec 28	P	iPNEZ	00	09	42	c Deep?
		iZ		10	09	Tucson: iP=00:10:08
	PX	eLEZ			37.2	
	MW	iPNZ		09	43	c
	R	ePNE			45	
	LJ	ePNEZ			45	
	T	ePNE			45	
	H	iPNEZ			45	
		eZ		10	11	
	Pr	iPZ		09	51	
		iZ		10	17	
Dec 28	P	iPNEZ	12	18	15	c Normal. Felt over a wide area
		iSNE			52	in western California.
	MW	iPNEZ			19	c 35°43'N. 120°20'W. O=12:15:33
		iSE			55	Tucson: eP=12:17:46
	R	ePNE			26	
	SB	iPNEZ			04	
	T	iPNE			31	
	H	iPNEZ			11	c
		iSN			42	
	Pr	iPZ			37	
Dec 29	P	iPNZ	17	34	28	Tucson: iP=17:33:32
		iPcPZ		33	45	Central America
	MW	iPNEZ		34	28	
	R	iPZ			21	
		iPcPZ		38	54	
	T	iPNEZ		34	40	
		ePcPZ		38	51	
	H	iPZ		34	34	
		ePcPZ		38	49	
Dec 30	P	iPZ	14	44	13	Tucson: iP=14:44:37
	MW	iPZ			13	
	T	iPZ			24	
Dec 31	P	ePZ	07	05	03	Tucson: iP=07:05:35
	MW	ePZ			04	Japan. C.M.O. (according to
	R	ePZ			05	Osaka) 35.8°N. 140.8°E.
	T	iPZ		04	55	
	H	ePZ			58	
	Pr	ePZ		05	11	

C.F. Richter
April 4, 1941