

DEPARTMENT OF COMMERCE
U. S. Coast and Geodetic Survey.



Preliminary Earthquake Report of the Seismological Station at
TUCSON, Arizona

Instruments: Wood-Anderson. T - 10 s. V - 435. Damping nearly critical.
See quarterly seismological reports of the C. and G. Survey for other constants.

Date	Phase	Time	Period	Amplitude, Trace		Remarks
		h. m. s.	s.	E	N	
				In 1/10 mm		
1929						
Jan. 5	eE	0 40 27				Local
	eN	0 40 26				
	eEN	0 40 49	2	7	10	F Oh 46m.
Jan. 13	iPE	0 14 02				
	iPN	0 14 01				
	PR2E	0 18 17				
	iSEN	0 22 56				
	SR1E	0 27 52				
	SR2N	0 30 46				
	LE	0 35 30	20	150		
	LN	0 35 14	24		120	
	F	2.8				
Jan. 13	eEN	15 04.5				Seismic origin doubtful.
Jan. 16	eEN	2 56 58	3	5	6	Local
	F	3 00				
Jan. 16	ME	19 09.0	18	4		Weak. Beginning and end masked by microseisms.
Jan. 17	PEN	11 54 23				
	PR1EN	11 56 21				
	PR2EN	11 57 00				
	PR3E	11 57 27				
	PR3N	11 57 23				
	SE	12 01 05				
	SN	12 01 02				
	LE	12 08 53	20	10		
	LN	12 08 40	20		10	
	F	13.1				
Jan. 17	eN	13 28 08	4		5	
	F	13 31				
Jan. 19	ePEN	3 25 14				
	LEN	3 40 20	16	4	5	
	F	4.5				

1929		h. m. s.	s.			
Jan. 21	PEN	10 38 30				
	PR ₁ N	10 39 56				
	SE	10 44 28				
	SN	10 44 25				
	LEN	10 50 01	26	30	10	
	ME	10 53 27	14	30		
	LN	10 53 30	16		20	
	F	11.5				
Jan. 24	iPEN	20 42 20				
	PR ₁ EN	20 43 00				
	SEN	20 46 56				
	LEN	20 49 50	18	980	830	
	F	22.8				
Jan. 25	e _{EN}	22 38 29	3	5	5	
Jan. 25	e _{EN}	23 32 52	3	2	3	
	F	23 35				
Jan. 26	PEN	2 36 25				
	SR ₁ E	2 43 56				
	SR ₁ N	2 43 52				
	LE	2 46 45	18	10		
	LN	2 46 51	18		10	
	F	3.0				
Jan. 26	e _E	20 25 10	1	2		Local
	F	20 27				
Jan. 26	e _{EN}	20 52 45				
	e _{EN}	21 00 43				
	LEN	21 05 17	14	8	5	
	F	21.4				
Jan. 28	e _{EN}	3 35 43				Heavy microseisms?
Jan. 28	PEN	22 02 31				
	SEN	22 07 14				
	LEN	22 11 55	14	15	15	
	F	22.6				
Jan. 31	PEN	18 11 13				
	SEN	18 15 58				
	LEN	18 19 16	18	20	50	
	LN	18 22 04	20		100	
	F	18.9				

(Signed) A. K. Ludy,
Observer in Charge.

Tucson, Arizona,
February 7, 1929.

DEPARTMENT OF COMMERCE
U. S. Coast and Geodetic Survey



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TUCSON, Arizona.

Instruments: Wood-Anderson. T - near 10 s. V - 435. Damping nearly critical.
See quarterly seismological reports of the C. and G. Survey for other constants.

Date	Phase	Time	Period	Amplitude, Trace		Remarks
				E	N	
1929		h. m. s.	s.	In 1/10 mm.		
Feb. 1	eN	17 32 06				
	PR ₁ E	17 32 13				
	PR ₁ N	17 32 17				
	<u>S_cP_cS_N</u>	17 39 02				
	ePS _N	17 42 33				
	ePPS _N	17 44 05	30		20	
	SR ₁ N	17 48 15				
	eSR ₂ N	17 54.2				
	LqE	17 59.3	40, 13			
	eLN	18 16.9				
	F	18.8				
Feb. 2	PeN	0 13 27				
	<u>IS_cP_cS_{EN}</u>	0 24 15				
	PS _E ?	0 25 21				
	SR ₁ E	0 30.2				
	iLqN	0 37.3	30			
	M ₁ N	0 40.0	45		40	
	iLrE	0 42.2	42	50		
	F	2.3				
Feb. 3	Pe	18 06 17				
	eSE	18 10 50				
	eLq?	18 14 40				
	LE	18 15.8				
	M ₁ E	18 17.5	16	11		
	M ₁ N	18 19.5	14		8	
	F	18.8				
Feb. 4	Pe	10 25 20				3000 km. ± ?
	PR ₁ N?	10 26 06				
	LEN	10 34.0				
	M ₁ E	10 36.4	16	10		
	M ₁ N	10 37.5	17		6	
	F	11.0				
Feb. 5	eEN	3 56.5				3000 km. ± ?
	LEN	3 58.6	17	6	6	
	F	4.3				

		h. m. s.	s.			
Feb. 8	PEN SE?	2 10 47 2 15 35				3000 km. $\pm$?
	LEN LN LE F	2 19 03 2 21.4 2 22.0 2.7	17 20 18	9	11	
Feb. 10	PEN SE?	3 43 16 3 47 59				3000 km. $\pm$?
	LE LN LE F	3 51.8 3 51.6 3 54.3 4.2	15 16	11	10	
Feb. 10	iPEN	15 44 50				Drum stopped; no time control. 50 s. in iP is reliable.
Feb. 13	PEN eN SN? iSE? LE LN M ₁ N F	22 19 05 22 23 12 22 23 40 22 23 52 22 27.3 22 27.2 22 30.5 23.0	23 23 20		21	3000 km. $\pm$?
Feb. 15	PEN SEN? SEN? eE LE LN F	8 10 37 8 15 22 8 15 50 8 17 26 8 19.6 8 19.2 9.0	25 25			3000 km. $\pm$? The 7 records from Feb. 4 to Feb. 16 are all of the same general character. S is very difficult to identify.
Feb. 20	eEN F	21 25 23 ?	4	8	8	
Feb. 22	iPEN PR ₁ EN iSEN SR ₁ EN LqN LrE F	20 52 39 20 55 03 21 01 35 21 05.8 21 09.2 21 12.9 22.5	50			
Feb. 24	eEN F	21 47 20 21 51	3	5	5	
Feb. 26	PEN SEN SR ₁ E LEN F	9 08 48 9 15 08 9 18.4 9 19.1 10.0	22	15	15	(signed) A. K. Ludy, Observer in Charge. Tucson, Arizona. March 7, 1929.

DEPARTMENT OF COMMERCE
U. S. Coast and Geodetic Survey



Preliminary Earthquake Report of the Seismological Station at
TUCSON, Arizona.

Instruments: Wood-Anderson T_0 - 10 s. V - 435 Damping: h - .85
See quarterly seismological reports of the C. and G. Survey for other constants.

Date	Phase	Time	period	Trace Amplitude		Remarks
				E	N	
1929		h. m. s.	s.	In 1/10 mm.		
Mar. 1	P _N	7 36 28	4		9	
	P _E	7 36 28	4	9		
	e _E	7 38 01	4	5		
	eS _N	7 40 53	13		10	
	eS _E	7 40 56	14	12		
	e _N	7 43 37	20		16	
	e _E	7 44 27				
	eL _{1N}	7 46.0				
	M _{1N}	7 46 35	14		42	
	eL _E	7 45 11				
	M _{1E}	7 46 30	13	50		
	F	8 39				
Mar. 1	eP _N	8 58.1	3		1	
	eP _E	8 58.1	2	1		
	eS _N	9 02 31				
	eS _E	9 02.8				
	e _E	9 04 27				
	eL _N	9 07 27	13		7	
	eL _E	9 07 53				
	M _{1E}	9 08.0	14	10		
Mar. 1	F	9 23				
	P _{EN}	15 45 06				
	S _E	15 49 25				
	S _N	15 49 18				
	L _E	15 52 21	13	2		
	L _N	15 52 18	13		2	
Mar. 1	F	16.4				
	P _{EN}	21 02 20				
	S _{EN}	21 06 49				
	L _E	21 09 57	13	1		
	L _N	21 10 10	13		1	
	F	21.5				

Tucson - March, 1929.

		h. m. s.	s.		
Mar. 2	eN eE F	8 00.7 7 59.0 8 07			
Mar. 5	eEN i(L)E i(L)N F	2 59 25 3 05 13 3 05 14 3 15	2 4 4	3 3	3 15
Mar. 7	iPEN SE SN SR1E SR1N eEN LE F	1 43 09 1 49 53 1 49 57 1 52 53 1 53 00 1 55 40 1 57 23 6.5			First impulse on both com- ponents downward, indicating a westward and northward motion of the ground.
Mar. 7	eN i(P)E F	5 53.7 5 53 41 5 56	4	4	
Mar. 9	eE eE ME F	2 24 49 2 34 42 2 53 06 4.5	20	15	NS very weak.
Mar. 9	eN SN eN eN LN F	11 08 57 11 16 36 11 21 08 11 23 42 11 33 20 14.3	20		Beginning weak. EW lost.
Mar. 10	eE eN i(L)EN ME F	14 48 19 14 48 25 14 57 49 14 58 01 15 05	2 2 7	2 15	2
Mar. 10	eE eN F	14 57 46 14 57 50 15 02	2 2	1	5
Mar. 11	eN eE eE eN F	8 11.1 8 09.8 8 11 57 8 11 45 8 16	4		4

Tucson - March, 1929.

		h. m. s.	s.			
Mar. 11	e	13 34 54				EW off gram.
	e _N	13 45 36	10		5	
	F	13 55				
Mar. 12	e _E	2 19 16				
	e _{EN}	2 20 10	2	6	6	
	F	2 24				
Mar. 12	L _{EN}	2 49 29	16	2	2	
Mar. 13	e _{EN}	2 27 00	2	2	2	
	F	2 30				
Mar. 13	e _N	23 16 20				No record on EW.
	F	23 20				
Mar. 19	e _{EN}	7 58 56	2	2	2	
	F	8 05				
Mar. 19	e _N	9 30 02				EW off gram.
	S _N	9 30 50				
	S _N	9 31 16				
	L _N	9 31 34	2		4	
	F	9 43				
Mar. 19	e _N	9 44 05	2		5	EW off gram.
	F	9 50				
Mar. 19	P _{EN}	20 59 25				
	S _{EN}	21 03 53				
	L _{EN}	21 07 27	24	5	5	
	M _E	21 11 37	18	7		
	M _N	21 11 14	20		7	
	F	22.2				
Mar. 21	P _{EN}	2 42 39				
	P _{R1EN}	2 43 21				
	S _{EN}	2 47 11				
	S _{R1EN}	2 48 34				
	L _{EN}	2 50 15	20	8	13	
	F	4.5				
Mar. 23	e _{EN}	6 49 13				
	e _{EN}	6 49 30				
	e _{EN}	6 49 53				
	e _{EN}	6 50 00	1	3	3	
	F	6 54				

Tucson - March, 1929.

		h. m. s.	s.			
Mar. 23	e _{EN} F	8 ²⁸ 40 8 31	1	2	2	
Mar. 23	P _{EN} ? P _{EN} S _{EN} S _{EN} F	11 32 49 11 33 04 11 33 35 11 33 47 11 50	2	25	19	Recorded on magnetograph. S-P = 43 s = 340 Km (at 25 Km depth) 0 = 11-32-08
Mar. 28	0 P _{EN} PR _{1E} PR _{1N} S _E S _N L _E L _N F	10 20 3 15 01 3 15 22 3 15 24 3 18 42 3 18 40 3 20 42 3 20 35 3.8	5 5	6	5	20.3 14°3' N 99°8' W
Mar. 30	P _{EN} S _{EN} L _{EN} F	16 21 41 16 26 16 16 29 41 16 40	4	1	8	

(Signed) Albert K. Ludy

Observer in Charge.

Tucson, Arizona,
April 4, 1929.

DEPARTMENT OF COMMERCE
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TUCSON, Arizona.

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Date	Phase	Time	Period	Trace Amplitude		Remarks
				E	N	
1929		h. m. s.	s.	In 1/10 mm.		
Apr. 6	PEN	1 21 55				
	eE	1 22 23				
	eN	1 22 37				
	M _E	1 27 33	8	5		
	M _N	1 26 21	8		3	
	F	1 37				
Apr. 7	PN	19 37 27				E off gram.
	SN	19 41 47				
	LN	19 44 45	5		70	
	F	20.4				
Apr. 9	eE	2 43 27				
	eEN	2 51 02	16	5	5	
	F	3.0				
Apr. 9	eN	17 32 14	1		2	E off gram.
	F	17 36				
Apr. 10	eEN	9 26 08				
	eEN	9 32 52				
	M _{EN}	9 35 51	8	5	4	
	F	9 44				
Apr. 16	eEN	10 53 32				
	F	11 00				
Apr. 18	eEN	5 06 14	2	4	2	
	F	5 11				
Apr. 22	eEN	21 07 10	12	4	2	
	F	21 15				
Apr. 23	PEN	17 46 38				
	PE	17 49 05				
	PN	17 49 01				
		(continued)				

Tucson - April, 1929.

		h. m. s.	s.			
Apr. 23		(continued)				
	SE	17 49 48				
	SN	17 49 49				
	LEN	17 50 35	4	70	70	
	MN	17 51 26	4		90	
	F	18 06				
Apr. 25	eEN	8 45 26				
	eEN	8 45 50				
	iEN	8 46 09	2	40	30	
	F	8 56				
Apr. 25	eEN	9 41 37				
	eEN	9 41 54				
	iEN	9 42 13	2	20	20	
	F	9 52				
Apr. 25	eEN	9 52 59	2	3	2	
	F	9 57				
Apr. 27	PEN	11 47 11				
	SEN	11 52 00				
	LEN	11 55 28	8	10	10	
	ME	11 58 45	10	20		
	MN	11 58 37	10		20	
	F	12.5				
Apr. 30	PN	18 40 00				E off gram.
	PN	18 40 23				
	SN	18 40 41				
	SN	18 41 00				
	LN	18 41 26	2		50	
	F	18 54				
Apr. 30	eEN	23 51 55	6	10	5	
	F	24.1				

(Signed) Albert K. Ludy,
Observer in Charge.

Tucson, Arizona,
May 4, 1929.

DEPARTMENT OF COMMERCE
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Date	Phase	Time	Period	Trace Amplitude		Remarks
				E	N	
1929		h. m. s.	s.	In 1/10 mm.		
May 1	?S _{EN}	8 02 26	16	2		
	?M _E	8 33 25				
	F	9.0				
May 1	PR _{1N}	15 56 34	22		8	E component off sheet.
	PR _{2N}	15 59 09				
	S _N	16 04 02				
	PS _N	16 05 13				
	PPS _N	16 06 01				
	SR _{1N}	16 11 01				
	eSR _{2N}	16 19 42				
	L _N	16 25 56				
	F	18.4				
May 5	e _{EN}	5 48 23	2	5	5	
	F	5 56				
May 6	e _{EN}	5 28 42	20	3		Beginning and ending weak.
	M _E	6 08 18				
May 10	e _{EN}	17 31 06		10	10	
	(?)S _{EN}	17 42 06				
May 12	P _{EN}	9 40 15	15	20	10	
	S _E	9 44 45				
	S _N	9 44 42				
	L _E	9 47 55				
	L _N	9 48 05				
	M _{EN}	9 50 42				
	F	10.3				
May 13	e _{EN}	9 29 18		20	20	
	(?)S _{EN}	9 34 57				
	F	9 50				
May 13	e(L) _N	15 19 24	4		6	Record lost on EW.
	F	15 23.0				

Tucson - May, 1929.

		h. m. s.	s.			
May 14	e _{EN} F	3 59 15 4 08	4	10	8	
May 17	e _{PE} e _{L1E} M _{1E} F	0 08 21 0 17 26 0 18 42 0 27	4 9	1 4		No record on NS.
May 18	M _E M _N	7 24 08 7 30 10	22 22	10	7	Beginning and ending weak and masked in microseisms.
May 20	P _{EN} PR _{1E} S _{EN} L _E L _N F	5 01 51 5 03 51 5 09 04 5 17 00 5 16 31 6.5	 18 18	20	10	
May 21	P _{EN} S _{EN} L _E L _N F	16 48 48 16 59 46 17 18 06 17 14 42 18.0	 22 22	10	10	
May 24	e _{PE} L _{1N} M _{1N} L _{1E} M _{1E} F	13 14 42 13 15 34 13 16.0 13 15 24 13 16.2 13 18	2 7 7	1 2	4	
May 25	P _{EN} (?)S _{EN} F	3 48 43 3 53 32 4 10				
May 25	P _N (?)S _N F	12 08 57 12 16 12 12 24				E component off sheet.
May 26	P _{EN} PR _{1E} PR _{1N} S _{EN} SR _{1EN} L _E L _N M _E F	22 45 15 22 46 02 22 45 59 22 50 03 22 51 47 22 52 33 22 52 43 22 58 50 2.1	 16 16 8	300 300	170	
May 27						

Tucson - May, 1929.

		h. m. s.	s.		
May 28	P _N	0 01 24			E component off sheet.
	S _N	0 05 47			
	L _N	0 09 04	14	20	
	M _N	0 11 36	14	20	
	F	2.0			
May 29	e _{EN}	4 44 22			
	e _{EN}	4 48 26	8	8 8	
	F	5.0			
May 30	P _N	9 55 26			E component off sheet.
	S _N	10 05 20			
	L _N	10 16 42	16	10	
	F	11.5			

(Signed) Albert K. Ludy,
Observer in Charge.

Tucson, Arizona,
June 5, 1929.

DEPARTMENT OF COMMERCE
U. S. Coast and Geodetic Survey



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TUCSON, Arizona.

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Date	Phase	Time	Period	Trace Amplitude		Remarks
				E	N	
1929		h. m. s.	s.	In 1/10 mm.		
June 2	P _E	21 50 49	4	5		
	P _N	21 50 49	4		2	
	?e _E	21 52 42	3	3		
	e _N	21 52 51	5		2	
	e _E	21 54 20	4	5		
	iS _E	22 00 46	5	15		
	S _N	22 00 45	5		6	
	?e _E	22 02 43	12	7		
	e _N	22 07.0				
	eL _E	22 15.8	22	5		
	eL _{1N}	22 15.7	22		4	
	F	23 00				
June 3	eP _N ?	20 48 21	4		1	
	e _N	20 57 30	6		3	
	eL _{1E}	21 29.2				
	M _{1E}	21 36.1	20	6		
	eL _{1N}	21 32.6	21		5	
	F	21 45				
June 6	?S _E	11 14 18				Beginning weak; N not operating.
	L _E	11 21 27	16	1		
	F	12.0				
June 8	e _{EN}	18 06 52				
	L _E	18 17 59	14	1		
June 9	S _{EN}	1 13 14				
	L _{1E}	1 20 37	12	1.		
	L _{1N}	1 19 27	14		2	
	F	1.6				
June 9	e _N	8 16 53				E off gram.
	L _{1N}	8 29 52	16		3	
	F	8.8				

Tucson - June, 1929.

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1929		h. m. s.	s.		
June 9	P _N	9 19 25			E off gram.
	S _N	9 28 45			
	L _{1N}	9 39 11	22	20	
	F	11.0			
June 10	P _{EN}	23 14 22			
	L _{1E}	23 39 08	10	5	
	L _{1N}	23 41 08	10	5	
	F	24.2			
June 13	P _{EN}	0 23 42			Finish lost in next shock.
	PR _{1EN}	0 26 09			
	S _{EN}	0 33 07			
	L _{1E}	0 43 51	22	10	
	L _{1N}	0 43 32	22	20	
June 13	P _{EN}	0 37 27			
	S _{EN}	0 46 39			
	L _{1N}	0 54 39	22	20	
	M _{1E}	1 04 19	22	20	
	F	3.0			
June 13	P' _{EN}	9 42 48			
	PR _{1EN}	9 43 38			
	e _E	9 53 38			
	e _N	9 51 46			
	SR _{1E}	9 59 12			
	SR _{1N}	9 59 37			
	L _{1N}	10 10 39	26	20	
	F	12.0			
June 15	P _{EN}	0 39 28			
	S _{EN}	0 45 21			
	L _{1EN}	0 47 23	6	8	8
	F	1.0			
June 15	?e _E	1 51 31			
	e _{PN} ?	1 51 38	2		1
	e _E	1 51 39	2	3	
	F	1 54.3			
June 15	e _E	17 43 50	2	4	
	e _N	17 43 55	3		1
	F	17 47.0			
June 16	P _N	23 01 34			
	P' _{EN}	23 05 02			
	PR _{1EN}	23 05 40			
	S _E	23 13 16			
		(continued)			

Tucson - June, 1929.

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1929		h. m. s.	s.			
June 16		(continued)				
	SN	23 13 09				
	SR ₁ E	23 19 57				
	SR ₁ N	23 20 36				
	L ₁ E	23 35 01	22	150		
	L ₁ N	23 35 07	24		100	
17	F	2.0				
June 22	eL ₁ N	16 18.3				EW overlapped.
	M ₁ N	16 26	18		6	
	F	16 48				
June 24	eN	18 34 07				E off gram.
	SN	18 40 50				
	F	19.0				
June 25	eL ₁ N	6 42 48	18		2	E off gram.
June 25	eL ₁ N	9 43 43	16		2	E off gram.
June 27	P _{EN}	13 01 51				
	PR ₁ E	13 05 25				
	PR ₁ N	13 05 31				
	PR ₂ N	13 07 21				
	PR ₃ N	13 08 35				
	S _{EN}	13 11 53				
	SR ₁ E	13 16 25				
	SR ₁ N	13 16 36				
	SR ₃ E	13 22 05				
	SR ₃ N	13 22 11				
	L ₁ E	13 26 03	22	40		
	L ₁ N	13 26 31	22		30	
	M ₁ N	13 48 17	20		70	
	F	17.0				
June 30	e _E	3 04 08				
	e _E	3 13 36				
	L ₁ E	3 36 06	28	2		
	L ₁ N	3 49 50	20		1	
	F	4.2				

(Signed) Albert K. Ludy,
Observer in Charge.

Tucson, Arizona,
July 3, 1929.

DEPARTMENT OF COMMERCE
U. S. Coast and Geodetic Survey



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TUCSON, Arizona.

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Date	Phase	Time	Period	Trace Amplitude		Remarks
				E	N	
1929		h. m. s.	s.	In 1/10 mm.		
July 3	P _N	1 00 24				E off gram.
	PR _{1N}	1 01 40				
	PR _{2N}	1 02 09				
	S _N	1 06 19				
	F	1.5				
July 3	e _N	18 43 14	17		4	Extremely weak action on the E-W component.
	?e _E	18 44.4				
	F	19 05				
July 4	P _N	4 36 08				E off gram.
	PR _{1N}	4 37 46				
	S _N	4 42 28				
	L _N	4 48 47		20		
	F	5.5				
July 5	P _{EN}	14 28 12				
	PR _{1EN}	14 30 24				
	PR _{2EN}	14 31 10				
	S _{EN}	14 35 31				
	SR _{1E}	14 39 13				
	L _E	14 43 11	16	90		
	L _N	14 43 01			60	
	F	17.5				
	July 5	P _{EN}	22 45 27			
PR _{1E}		22 47 46				
S _{EN}		22 52 43				
SR _{1E}		22 56 25				
SR _{1N}		22 56 07				
L _E		23 00 54	20	20		
L _N		23 00 33	18		20	
M _E		23 05 18	18	30		
F		24.5				

1929		h. m. s.	s.		
July 6	PEN PR ₁ EN SE SN LEN F	2 12 55 2 15 06 2 20 13 2 20 16 2 28 21 4.8	16	10 10	
July 6	PN PR ₁ N SN SR ₁ N SR ₂ N LN F	9 56 38 9 59 17 10 04 59 10 09 32 10 11 43 10 16 06 11.0	18	10	E off gram.
July 6	eE eN eE eE eN F	21 52 47 21 52 35 21 53 13 21 53 26 21 53 32 22.0		10 5	
July 7	PEN PR ₁ E SEN SR ₁ E LE LN F	21 32 19 21 34 36 21 39 41 21 43 23 21 47 33 21 47 11 2.0	20 20	160 140	
July 8					
July 8	PN SN SN LN F	16 48 13 16 49 38 16 50 00 16 50 32 17.2	5	60	E off gram. Reported felt at Long Beach, California.
July 10	PEN SEN SEN LN F	18 59 27 19 00 14 19 00 25 19 00 42 19 07	1	10	
July 11	PEN SEN F	21 06 15 21 13 33 21.8			
July 12	eN MN F	16 02 22 16 14 28 16.6	16	2	E off gram.

Pueson - July, 1929.

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1929					
July 14	PN SN LN	9 08 40 9 17 58 9 29 56			E off gram. F runs into next quake.
July 14	PN PR ₁ N SN LN F	9 47 54 9 50 36 9 56 58 10 07 28 11.0	18	8	E off gram.
July 15	e _{EN} e _{EN}	8 02 51 8 09 35			Weak.
July 17	P _{EN} PR ₁ E S _E S _N SR ₁ EN L _E L _N F	8 47 18 8 49 22 8 54 40 8 54 43 8 58 30 9 02 31 9 02 16 10.5	18	10 10	
July 18	e _{EN} e _{EN} e _E e _{EN} F	6 48 21 6 49 07 6 49 28 6 49 41 7 12	2	50 40	
July 21	e _{EN} e _{EN} F	4 23 34 4 24 06 4 27			
July 23	P _{EN} S _{EN} SR ₂ E L _{EN} F	18 53 33 19 01 41 19 08 37 19 12 24 20.0	14	30 30	
July 24	e _{EN} e _{EN} F	2 15 20 2 15 54 2 19	1	60 80	
July 24	e _{EN} e _{EN} e _{EN} e _{EN} F	11 55 37 11 56 02 11 56 39 11 56 51 12 08	2	20 10	

Tucson, July, 1929.

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1929		h. m. s.	s.			
July 26	e _{EN}	20 31 02				Weak.
July 26	e _{EN}	23 11 29				Weak.
July 30	P _{EN}	3 58 00				
	S _E	4 01 20				
	S _N	4 01 23				
	e _{EN}	4 02 41				
	L _E	4 03 12	4	40		
	L _N	4 03 15	4		50	
	F	4.3				
July 30	P _{EN}	7 49 20				
	S _{EN}	7 53 53				
	?L _{EN}	7 57 47				
	M _E	8 00 26	16	15		
	M _N	8 00 04	16		10	
	F	8.3				

(Signed) Albert K. Ludy,
Observer in Charge.

Tucson, Arizona.
August 7, 1929.

DEPARTMENT OF COMMERCE
U. S. Coast and Geodetic Survey

Preliminary Earthquake Report of the Seismological Station at
TUCSON, ARIZONA.

Instruments: Wood-Anderson T_0 - 11 s. V - 435 Damping: h - .85
See quarterly seismological reports of the C. and G. Survey for other constants.

Date	Phase	Time	Period	Trace Amplitude		Remarks
				E	N	
1929		h. m. s.	s.	In 1/10 mm.		
Aug. 3	P _{EN}	13 01 27				
	S _E	13 11 14				
	S _N	13 11 11				
	L _{EN}	13 24 21	16	3	1	
	F	13.8				
Aug. 3	M _{EN}	15 39 22	20	2	1	Beginning weak.
Aug. 3	M _{EN}	19 09 06	18	1	1	Beginning weak.
Aug. 4	?e _E	22 40 20	5	4		Beginning weak.
	M _E	23 00 30	16	2		
	M _N	22 59 11	16		2	
	F	23 15				
Aug. 12	e _{EN}	11 39 14	3	10	10	
	F	11 50				
Aug. 14	P _N	14 32 57				Possibly this is two quakes. E off sheet.
	S _N	14 42 24				
	F	15.2				
Aug. 14	iS _{EN} ?	19 07 57	4	7		
	e _N	19 13 33				
	?e _E	19 14.1				
	M _{1E}	19 17.5	9	5		
	F	19 46				
Aug. 15	P _{EN}	20 03 40				
	PR _{1EN}	20 05 12				
	PR _{3EN}	20 05 52				
	S _E	20 09 40				
	S _N	20 09 36				
	L _E	20 15 30	10	60		
	L _N	20 15 22	10		40	
	F	21.0				

Tucson - August, 1929.

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1929		h. m. s.	s.			
Aug. 17	iPEN	23 45 17		3-43		
	iSEN	23 49 00				
	LE	23 50 34	10	400		
	LN	23 50 40	10		350	
Aug. 18	F	1.0				
Aug. 18	PEN	9 10 48				
	PR ₁ EN	9 11 10				
	SEN	9 14 34				
	LE	9 16 33	5	80		
	LN	9 16 30	5		60	
	F	9.8				
Aug. 19	ME	3 41 34	20	5		
	F	4 21				
Aug. 20	PN	17 43 28				
	PR ₁ N	17 44 32				
	SN	17 48 57				
	SR ₂ N	17 51 51				
	ME	17 57 00	14		20	
	F	18.5				
Aug. 22	eE	4 44 18				
	ME	4 44 27	2	8	4	
	F	4 48				
Aug. 28	eE	19 11 54				
	eN	19 13 53				
	F	20.5				

First impulse downward on both components, indicating westward and northward motion of the ground.

Beginning weak. No activity on N-S component.

E off sheet.

Tucson, Arizona.
September 9, 1929.

(Signed) Albert K. Ludy,
Observer in Charge.

DEPARTMENT OF COMMERCE
U. S. Coast and Geodetic Survey

Preliminary Earthquake Report of the Seismological Station at
TUCSON, Arizona.

Instruments: Wood-Anderson T_0 - 11 s. V - 435 Damping: h - .85
See quarterly seismological reports of the C. and G. Survey for other constants.

Date	Phase	Time	Period	Trace Amplitude		Remarks
				E	N	
1929		h. m. s.	s.	In 1/10 mm.		
Sept. 5	PEN	10 02 16				
	PEN	10 02 34				
	SEN	10 03 17				
	SEN	10 03 36				
	LEN	10 03 57	8	5	4	
	F	10 20				
Sept. 8	eEN	10 45 37				
	eEN	10 46 47				
	LE	10 47 06	8	4		
	LN	10 46 59	8		2	
	F	11.0				
Sept. 8	eEN	11 13 04				
	F	11 24				
Sept. 8	eEN	11 53 36				
	F	12.0				
Sept. 12	eEN	5 02 03				Not a very distant shock.
	F	5 08				
Sept. 16	eL?N	4 11.5	8		5	
	eL?E	4 11.3	10	4		
	F	4 22				
Sept. 17	PEN	19 22 49				
	SEN	19 27 12				
	LEN	19 30 11	14	70	33	
	F	22.1				
Sept. 26	PEN	4 58 51				
	PR ₁ EN	4 59 56				
	SEN	5 04 03				
	LE	5 08 31	14	1		
	LN	5 08 36	14		1	
	F	6.3				

Tucson - September, 1929.

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1929		h. m. s.	s.		
Sept. 26	e _{EN} F	12 35 40 13.0			
Sept. 26	P _{EN} PR ₁ EN S _E S _N L _{EN} F	15 41 30 15 43 17 15 45 45 15 45 52 15 49 13 16.0	14	2	1
Sept. 26	P _{EN} F _{EN} S _{EN} S _{EN} L _{EN} F	20 01 51 20 02 07 20 02 51 20 03 05 20 03 24 20 16	2	5	5
Sept. 27	P _{EN} e _{EN} S _{EN} L _E F	23 17 55 23 18 23 23 19 35 23 20 40 24.0	6	46	
Sept. 28	e _N e _E F	22 30 10 22 30 00 22 43	9 8		5

Recorded on magnetograph.

Tucson, Arizona,
October 3, 1929.

Albert K. Ludy,
Observer in Charge.

DEPARTMENT OF COMMERCE
U. S. Coast and Geodetic Survey



Preliminary Earthquake Report of the Seismological Station at
TUCSON, Arizona.

Instruments: Wood-Anderson T_0 - 11 s. V - 435 Damping: h - .85
See quarterly seismological reports of the C. and G. Survey for other constants.

Date	Phase	Time h. m. s.	Period s.	Trace Amplitude		Remarks
				E	N	
1929				In 1/10 mm.		
Oct. 1	e _{EN}	20 42 41				
	e _E	20 43 16				
	i _E	20 43 23				
	i _N	20 43 22				
	e _{EN}	20 43 28	1	40	20	
	F	20 50				
Oct. 2	P _{EN}	10 34 31				
	S _{EN}	10 38 52				
	M _{EN}	10 43 07	8	10	10	
	F	11.0				
Oct. 4	P _{EN}	4 00 17				
	SR ₁ EN	4 08 06				
	L _{EN}	4 10 12	8	5	2	
	F	4.6				
Oct. 5	P _{EN}	17 10 33				
	S _{EN}	17 19 10				
	SR ₁ E	17 23 39				
	L _E	17 31 14	24	5		
	F	18.1				
Oct. 6	e _N	5 58 49				E off gram.
	e _N	6 07 30				
	F	6.7				
Oct. 6	P _N	7 59 28				E off gram.
	PR ₁ N	8 01 23				
	PR ₂ N	8 01 51				
	PR ₃ N	8 02 10				
	S _N	8 05 53				
	SR ₁ N	8 09 06				
	L _N	8 11 43	12		30	
	F	11.0				

Tucson - October, 1929.

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1929		h. m. s.	s.			
Oct. 6	eN	14 15 18				E overlapped.
	eN	14 16 06				
	F	14 30				
Oct. 8	PEN	17 28 40				
	SEN	17 39 09				
	SR3EN	17 51 08				
	LE	17 56 16	18	10		
	LN	17 56 22	18		10	
	ME	18 05 18	18	20		
	MN	18 05 43	18		15	
	F	19.0				
Oct. 14	MN	10 29 52	18		10	Beginning masked in micros. E off gram.
	F	10 48				
Oct. 19	PEN	10 23 42				
	PR1N	10 26 26				
	PR2N	10 27 55				
	PR3E	10 28 48				
	SEN	10 32 37				
	SR1EN	10 37 32				
	SR2N	10 40 23				
	SR3E?	10 40 52				
	SR3N?	10 41 13				
	LE	10 45 25	40	30		
	LN	10 45 35	40		30	
	F	12.0				
Oct. 24	eN	21 15 39				E overlapped.
	F	21 24				

Tucson, Arizona,
November 5, 1929.

Albert K. Ludy,
Observer in Charge.

DEPARTMENT OF COMMERCE
U. S. Coast and Geodetic Survey



Preliminary Earthquake Report of the Seismological Station at
TUCSON, Arizona.

Instruments: N-S, Wood-Anderson T_0 - 11 s. V - 435 Damping: h - .85
E-W, " " T_0 - 10 s. V - 435 Damping: h - .85
See quarterly seismological reports of the C. and G. Survey for other constants.

Date	Phase	Time	Period	Trace Amplitude		Remarks
				E	N	
1929		h. m. s.	s.	In 1/10 mm.		
Nov. 1	e _{EN}	18 40 22	6	15	15	
	e _{EN}	18 40 43				
	F	18 52				
Nov. 6	e _E	5 46 52				N time marks missing.
	i _E	5 47 47				
	F	5 55				
Nov. 8	P _{EN}	3 27 57	18	10	10	
	S _{EN}	3 34 00				
	e _{EN}	3 38 16				
	L _{EN}	3 40 26				
	F	4.0				
Nov. 9	P _{EN}	1 49 09	12	10	10	
	PR ₁ EN	1 51 03				
	L _E	2 02 18				
	L _N	2 02 09				
	F	2.5				
Nov. 11	P _{EN}	12 10 08	10	10		
	e _E	12 13 10				
	L _E	12 14 48				
	F	12 30				
Nov. 15	e _{EN}	11 29 16	2	5	5	
	L _{EN}	11 29 45				
	F	11 34.5				
Nov. 16	e _{EN}	10 56 09	10	20	15	
	e _N	10 56 26				
	e _E	10 56 39				
	F	11 10				
Nov. 17	PR ₁ EN	4 02 30	26,16	28	10	
	PS _{EN}	4 12 10				
		(continued)				

Tucson - November, 1929.

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1929		h. m. s.	s.		
Nov. 17		(continued)			
	SR ₁ EN	4 18 20			
	SR ₂ EN	4 22 34	30,26	20	9
	M _E	4 34 24	28	25	
	M _N	4 30 07	28		20
	F				
Nov. 18	iP _{EN}	20 40 08	4		20
	iPR ₁ E	20 41 13	4	23	
	ePR ₁ N	20 41 56	4		26
	e _E	20 42 10			
	e _N	20 44 48			
	S _E	20 46 37	30	100	
	S _N	20 46 57	34		58
	e _N	20 49 12			
	e _E	20 49 58			
	e _E	20 52 32			
	e _N	20 52 50			
	iL ₁ EN	20 53 35			
	M ₁ EN	20 56.2	7	300	300
	F	22 40			
Nov. 18	e _{EN}	23 24 12	4	6	6
	F	23 36			
Nov. 23	e _E	0 30 28			
	M _{EN}	0 52 09			
	F	1.5			
Nov. 23	e _{EN}	20 49 30			
	F	21 00			
Nov. 25	e _{EN}	14 37 03			
	F	14 45			
Nov. 26	e _{EN}	8 09 13			
	F	8 11			
Nov. 28	e _{EN}	19 52 03			
	e _{EN}	19 53 21			
	F	20 05			

Weak activity; scarcely visible on NS.

Tucson, Arizona,
December 5, 1929.Albert K. Ludy,
Observer in Charge.

DEPARTMENT OF COMMERCE
U. S. Coast and Geodetic Survey



Preliminary Earthquake Report of the Seismological Station at
TUCSON, Arizona.

Instruments: N-S, Wood-Anderson T_0 - 11 s. V - 435 Damping: h - .85
E-W, " " T_0 - 10 s. V - 435 Damping: h - .85
See quarterly seismological reports of the C. and G. Survey for other constants.

Date	Phase	Time	Period	Trace Amplitude E N		Remarks
1929		h. m. s.	s.	In 1/10 mm.		
Dec. 5	eE	18 23 34				
	eEN	18 24 24	2	10		
	F	18 27				
Dec. 6	eE	20 40 30	6	2		Beginning masked in micros.
	eEN	20 46 26				
	ME	21 16 30	18	3		
	MN	21 22 12	18		3	
	F	22.0				
Dec. 9	PEEN	6 47 03				
	SEN	6 50 40				
	ME	6 54 31	4	10		
	F	7 00				
Dec. 9	PE	7 09 20				
	ME	7 57 12	30	10		
	MN	7 54 08	26		10	
	F	9.0				
Dec. 12	eEN	0 25 52				
	F	0 33				
Dec. 13	ME	9 03 47	20	2		
Dec. 15	eE	19 41 14	9	5		
	eN	19 41 14	5		5	
	F	19 45.0				
Dec. 17	PEEN	11 08 27				Gram changed during end portion.
	PR ₁ EN	11 10 51				
	PR ₂ E	11 11 46				
	SEN	11 16 19				
	PS _{EN}	11 16 38				
	LE	11 25 29	18	350		
	LN	11 25 36	18		350	
	F	15.0				

Tucson - December, 1929.

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1929		h. m. s.	s.		
Dec. 20	e ^{EN}	7 35 16			
	e ^E	7 37 46	4	10	
	e ^N	7 37 49			
	F	7 48			
Dec. 20	e ^{EN}	8 03 48			
	e ^E	8 04 33	4	20	
	e ^N	8 04 43			
	F	8 16			
Dec. 20	e ^{EN}	10 32 27	4	10	
	F	10 47			
Dec. 24	e ^N	5 11 40	20		2
	e ^E	5 11 20	20	5	
	F	5 34			

Tucson, Arizona.

Albert K. Ludy,
Observer in Charge.