Rio de Janeiro

VISTO

Director

MINISTÉRIO DA EDUCAÇÃO E SAÚDE
Observatório Nacional

North South Component — 1950 — East West Component

JANUARY-10

e = 03h38m20s
e = 40 41
F = 51 ±

Weak waves

JANUARY 10

		h	m	s	
e	=	16	38	10	?
e	=		40	42	
e	=		43	10	
e	=		45	16	
e	=		46	40	
F	=	17	28	+	
				−	

e = 16h39m35s
e = 40 48
e = 43 10
e = 45 14
e = 47 00
F = 17 28 ±

Weak waves

JANUARY 30

iP	=	01h	03m	48s
PR1	=		05	00
PR2	=		05	19
e	=		06	44
e	=		07	48
e	=		08	38
eS	=		09	40
PcS	=		09	54
i	=		10	07
ScS	=		14	20
L	=		15	20
M	=		18.6	
F	=	03	25	±

P	=	01h	03m	45s
PR1	=		05	04
PR2	=		05	17
PR3	=		05	43
e	=		06	45
e	=		07	50
e	=		08	45
S	=		09	38
PcS	=		09	55
SR1	=		12	20
SR3	=		13	40
L	=		15	00
M	=		18.2	
F	=	03	25	±

FEBRUARY 1

e	=	11h	48m	47s
e	=		52	00
e	=		56	14
e	=		56	40
e	=		57	10
F	=	12	09	±

		h	m	s	
e	=	11	51	00	?
e	=		51	55	
e	=		56	50	
e	=		57	15	
F	=	12	09	±	

Small amplitudes
Beginning lost in changing paper

FEBRUARY 3

No record

		h	m	s
e	=	00	00	17
e	=		21	30
e	=		51	10
F	=	02	07	±

Small amplitudes

MINISTÉRIO DA EDUCAÇÃO E SAÚDE
Observatório Nacional

VISTO

Sodré de Gusmão
DIRECTOR

North South Component

East West Component

FEBRUARY 3

No record

e = 02 34 18
e = 39 30
e = 03 09 21
F = 04 07 ±

Small amplitudes

FEBRUARY 22

No record

	h	m	s
e =	11	29	36
e =		32	08
e =		32	29
e =		33	52
e =		35	33
F =		32	16 ±

Small amplitudes

FEBRUARY 22

	h	m	s
e =	16	11	20
e =		13	10
e =		20	20
F =		26	±

Beginning undefined

Weak waves

	h	m	s
e =	16	10	30
e =		11	21
e =		12	10
e =		13	05
e =		18	00
e =		20	10
F =		26	±

FEBRUARY 22

	h	m	s
e =	18	10	25
e =		12	16
F =		16	±

Weak waves

	h	m	s
e =	18	10	20
e =		11	21
e =		12	15
F =		16	±

FEBRUARY 28

	h	m	s
iP'_2 =	10	40	26
e =		40	53
e =		41	05
pP'_2 =		42	16
sP'_2?=		42	50
PR_1 =		44	00
i =		44	30
iSKS =		46	23
SKKS =		49	16
i =		50	47
e =		51	47
i =		52	22
i =		54	50
e =		57	51
i =		59	03
i =	11	01	30
SR_1 =		02	40
e =		03	50
iSSP =		04	30
i =		07	37
F =	13	19	±

	h	m	s
eP'_2 =	10	40	30
e =		40	50
e =		41	08
sP''_2?=		42	48
e =		43	10
PR_1 =		44	03
e =		44	30
pPP? =		45	11
SKS =		46	20
e =		49	40
e =		50	48
e =		51	37
e =		54	29
e =		54	51
pPS? =		56	00
e =	11	01	20
i =		03	47
iSSP =		04	35
e =		07	12 ?
F =	13	19	±

VISTO

Sodré da Gama
DIRECTOR

MINISTÉRIO DA EDUCAÇÃO E SAÚDE
Observatório Nacional

MARCH 2

North South Component

		h	m	s
iP	=	18	47	10
PR_1	=		48	20
PR_2	=		48	49
PR_3	=		49	06
PcP	=		49	35
e	=		50	10
e	=		52	20
S	=		53	02
PcS	=		53	12
SR_1	=		55	40
SR_2	=		56	10
SR_3	=		56	27
ScS	=		56	58
F	=	20	34	±

East West Component

		h	m	s
eP	=	18	47	16
PR_1	=		48	20
PR_2	=		48	39
PR_3	=		49	04
PcP	=		49	30
e	=		50	05
e	=		51	38
iS	=		53	04
PcS	=		53	33
SR_1	=		55	27
SR_2	=		56	09
SR_3	=		56	43
F	=	20	34	±

MARCH 3

		h	m	s
e	=	06	19	50
e	=		25	40
F	=		59	±

		h	m	s
e	=	06	25	48
F	=		59	±

Beginning undiscernable

Weak waves

MARCH 3

		h	m	s
e	=	11	12	40
e	=		45	10
F	=	12	07	±

		h	m	s
e	=	11	12	41
e	=		45	00
F	=	12	07	±

Weak waves

MARCH 3

		h	m	s
iP	=	15	48	35
PR_1	=		50	00
PR_2	=		50	18
iS	=		54	31
e	=		55	15
F	=	16	41	±

		h	m	s
eP	=	15	48	36
PR_1	=		50	00
iS	=		54	33
e	=		55	10
F	=	16	41	±

Small amplitudes

MARCH 4

		h	m	s
SR_2	=	15	47	10
i	=		56	00
PKKS	=		56	50
i	=		57	39
i	=		58	14
e	=	16	01	49
e	=		02	40
e	=		05	30
F	=		39	±

		h	m	s
SR_2	=	15	47	12
e	=		56	15
e	=		57	40
e	=		58	20
e	=	16	01	50
i	=		02	46
e	=		05	27
F	=		39	±

Small amplitudes

MINISTÉRIO DA EDUCAÇÃO E SAÚDE
Observatório Nacional

North South Component

MARCH 7

East West Component

Lamp out

		h	m	s
e	=	02	28	02
e	=		40	50
e	=		42	49
e	=	03	29	00
F	=	04	33	±

Amplitudes extremely small.

MARCH 12

		h	m	s
e	=	19	16	21
e	=		17	10
F	=		36	±

Weak waves

		h	m	s
e	=	19	17	15
F	=		36	±

Beginning undiscernable

MARCH 14

		h	m	s
iS	=	03	21	38
i	=		25	36
ScS	=		26	19
i	=		26	48
e	=		27	00
e	=		27	30
e	=		27	50
e	=		28	10
F	=		57	±

Beginnings undiscernable
Small amplitudes.

		h	m	s
eS	=	03	21	36
e	=		22	40
e	=		25	43
ScS	=		26	10
i	=		26	47
i	=		28	10
F	=		57	±

MARCH 15

		h	m	s
e	=	16	37	30
e	=		38	45
e	=		39	50
e	=		41	00
F	=	17	41	±

Small amplitudes

		h	m	s	
e	=	16	35	48	?
e	=		37	19	
e	=		38	47	
e	=		39	30	
i	=		40	00	
i	=		41	12	
i	=		41	49	
F	=	17	41	±	

Better record

MARCH 18

		h	m	s
e	=	04	48	23
e	=		52	47
e	=		56	20
e	=		57	10
e	=	05	00	20
e	=		01	40
F	=		54	±

		h	m	s
e	=	04	48	29
i	=		52	41
i	=		55	50
e	=		57	20
e	=	05	00	10
e	=		00	48
e	=		01	22
e	=		02	03
F	=		54	±

Better record

MINISTÉRIO DA EDUCAÇÃO E SAÚDE
Observatório Nacional

North South Component

MARCH 27

East West Component

		h	m	s
e	=	06	27	19
e	=		27	48
i	=		28	00
e	=		28	25
F	=		40	±

Small amplitudes

		h	m	s
e	=	06	27	20
i	=		28	00
e	=		28	21
e	=		28	54
i	=		29	18
e	=		29	40
F	=		40	±

Better record

MARCH 27

No record

		h	m	s	
e	=	13	45	04	
e	=	14	04	20	
e	=		08	50	
F	=	15	13	±	

Weak waves

MARCH 27

		h	m	s
e	=	22	00	02
e	=		23	25
F	=	23	18	±

Very weak waves

		h	m	s
e	=	22	00	00
e	=		23	28
F	=	23	18	±

MARCH 29

		h	m	s
e	=	18	19	25
e	=		25	20
e	=	19	00	03
F	=		32	±

Beginning doubtful

		h	m	s	
e	=	18	19	40	?
e	=		25	10	
F	=	19	32	±	

Poor record

Weak waves.

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MINISTÉRIO DA EDUCAÇÃO E SAÚDE
Observatório Nacional

North South Component

East West Component

1 9 5 0

A P R I L - 10

e	=	17h	09m	41s		e	=	17h	09m	40s	
e	=		10	25		e	=		11	10	
e	=		11	35		e	=		11	25	
e	=		12	50		e	=		11	34	
e	=		13	15		e	=		12	04	
e	=		14	16		e	=		12	20	
e	=		14	47		e	=		12	48	
F	=		29	±		e	=		13	15	
						e	=		14	37	
					Small amplitudes	F	=		29	±	

A P R I L - 14

iS	=	20h	16m	45s		iS	=	20h	16m	41s	
ScS	=		19	00		ScS	=		19	00	
SR_1	=		20	10		SR_1	=		20	15	
e	=		20	35		SR_2	=		22	31	
SR_2	=		22	30		L	=		25	40	
L?	=		25	32		i	=		27	20	
i	=		27	10		F	=	21	24	±	
F	=	21	24	±							

Small amplitudes
Reading difficult due to micro disturbance

A P R I L - 15

e	=	15	09	38		e	=	15h	09m	40s	
F	=		45	±		e	=		26	41	
						F	=		45	±	

Weak waves

A P R I L - 30

iS	=	10h	48m	06s		iS	=	10h	48m	05s	
e	=		59	38		PS	=		48	12	
PKKP?	=	11	00	30		PKKP?	=	11	00	30	
e	=		01	23		e	=		01	18	
e	=		02	00		e	=		02	03	
e	=		03	10		e	=		03	11	
PKKS	=		03	30		PKKS?	=		03	31	
F	=	12	18	±		e	=		05	04	
						e	=		05	20	
						F	=	12	18	±	

Small amplitudes

A P R I L - 30

e	=	17h	56m	08s		e	=	17h	56m	10s	
e	=		56	20		e	=		56	20	
F	=	18	08	±		F	=	18	08	±	

Weak waves

A P R I L - 30

e	=	18h	38m	51s		e	=	18h	38m	50s	
e	=		39	00		e	=		39	05	
e	=		39	10		e	=		39	09	
e	=		39	23		e	=		40	12	
e	=		39	40		e	=		41	11	
e	=		41	10		e	=		41	45	
e	=		41	38		F	=	19	12	±	
F	=	19	12	±							

Small amplitudes

MINISTÉRIO DA EDUCAÇÃO E SAÚDE
Observatório Nacional

North South Component

East West Component

1 9 5 0
M A Y - 1

No record

e = 00h05m10s
e = 08 40
e = 14 39
e = 15 25
e = 15 45
e = 16 30
e = 16 55
F = 41 ±

Short amplitudes

---

1 9 5 0
M A Y - 11

e = 00h01m47s
e = 15 20
e = 25 10
F = 01 21 ±

e = 00h01m40s
e = 02 15
e = 11 10
e = 15 07
e = 21 00
e = 24 55
F = 01 30 ±

Small amplitudes

M A Y - 17

e = 18h45m36s
e = 13 20
e = 15 00
F = 20 41 ±

e = 18h45m36s
e = 13 05
e = 15 00
F = 20 41 ±

Small amplitudes

M A Y - 19

PPS = 03h10m41s
SR1 ?= 16 22
e = 42 20
F = 04 24 ±

PPS = 03h10m40s
SR1 = 16 28
e = 42 00
F = 04 30 ±

Extremely small amplitudes
Reading difficult due to micro disturbance

M A Y - 21

eP = 18h53m11s
e = 53 31
PR1 = 54 00
PR2 = 54 30
e = 55 31
e = 56 20
F = 19 18 ±

Small amplitudes

Reading difficult due to micro interference.

eP = 18h53m11s
e = 53 38
PR1 = 54 08
PR2 = 54 35
PcP = 55 44
e = 56 06
e = 57 40
eS = 58 30
e = 59 00
SR2 = 19 00 50
SR3 = 01 10
F = 19 18 ±

MINISTÉRIO DA EDUCAÇÃO E SAÚDE
Observatório Nacional

1 9 5 0

M A Y - 24

North South Component

e = 04h34m10s
F = 39 ±

East West Component

e = 04h34m00s
F = 39 ±

Weak waves

M A Y - 26

PR = 01h38m27s
PKS = 39 46
SR1 = 55 30
SRn? = 02 00 25
e = 19 46
F = 03 57 ±

Poor record

PR1 = 01h38m30s
PKS = 39 45
PPS ?= 50 00
e = 52 10
SR1 = 55 36
SR2 = 02 00 14
e = 06 13
e = 09 55
e = 19 56
e = 21 07
F = 03 57 ±

M A Y - 28

e = 05h30m20s
e = 33 15
e = 33 40
e = 36 02 ?
F = 50 ±

Beginnings undiscernible in both components.
Reading interfered with by micros.

e = 05h28m10s
e = 29 30
e = 30 47 ?
e = 31 30
e = 33 17
e = 34 16
e = 34 40
e = 36 00
F = 50 ±

Small amplitudes.

J U N E - 1

No record

PR1 = 17h01m08s
ScP = 05 16
iS = 06 00
sS ?= 06 37
e = 07 09
e = 07 36
SR1 = 08 09
SR2 = 09 00
ScS ?= 09 38
i = 10 40
iL = 11 32
i = 12 21
i = 12 40
F = 51 ±

MINISTÉRIO DA EDUCAÇÃO E SAÚDE
Observatório Nacional

North South Component

J U N E - 8

East West Component

iP	=	16h14m07s	
PR1	=	15 10	
iS	=	19 25	
e	=	19 55	?
SR1	=	21 22	
SR2	=	22 50	
L	=	23 57	
ScS	=	24 38	
F	=	18 04	±

Moderate amplitudes

iP	=	16h14m07s	
PR1	=	15 08	
PR2	=	15 19	
PRn	=	15 29	
PcP	=	16 37	
e	=	18 20	
iS	=	19 28	
e	=	19 50	
SR1	=	21 20	
SR2	=	21 47	
SRn	=	22 25	
L	=	23 35	
ScS	=	24 54	
F	=	18 04	±

J U N E - 12

e	=	21h26m11s	
e	=	30 20	
e	=	31 00	
e	=	33 06	
e	=	33 20	
e	=	34 07	
F	=	22 30	±

e	=	21h26m10s	
e	=	29 33	
i	=	30 20	
e	=	30 42	
i	=	31 12	
e	=	31 23	
i	=	33 20	
e	=	34 00	
F	=	22 25	±

Small amplitude.

J U N E - 20

e	=	13h50m03s	
F	=	14 58	±

e	=	13h43m30s	
e	=	48 27	
e	=	50 00	
F	=	14 58	±

Weak waves

J U N E - 23

e	=	21h04m10s	
e	=	05 11	
e	=	08 16	
e	=	09 08	
F	=	23	±

Very small amplitudes

Beginnings dou

e	=	21h04m05s	
e	=	05 17	
e	=	07 11	
e	=	07 40	
e	=	08 10	
e	=	09 34	
e	=	11 17	
F	=	23	±

Small amplitudes

J U N E - 25

e	=	23h27m20s	
e	=	29 10	
F	=	25 02	±

Reading made diffecult by strong micro disturbance

Extremely small amplitudes

e	=	22h46m32s	?
e	=	47 50	
e	=	57 52	
e	=	23 27 30	
e	=	29 18	
e	=	35 00	
F	=	25 02	±

Beginning doubtful

Small amplitudes.

MINISTÉRIO DA EDUCAÇÃO E SAÚDE
Observatório Nacional

North South Component . East West Component

1 9 5 0

J U L Y - 2

No record

		h	m	s
SR_1	=	23	07	40
SR_2	=		08	55
e	=		09	35
e	=		09	50
i	=		10	30
i	=		10	40
L?	=		11	09
F	= perturbed by micros Small amplitudes			

J U L Y - 9

		h	m	s
P	=	01	49	45
iS	=		58	04
e	=	02	00	28
e	=		00	44
SR_1	=		02	00
e	=		06	02
e	=		07	18
L	=		09	17
PKKP	=		11	00
i	=		12	08
e	=		13	30
F	= Overlapped by following disturbance			

J U L Y - 9

No record

		h	m	s	
S	=	02	49	48	Beginning
SR_1	? =		53	14	overlapped
e	=		55	27	by preceding
e	=		57	08	disturbance
e	=		57	21	
e	=		57	48	
i	=		58	10	
i	=	03	00	39	
i	=		01	24	
i	=		03	00	
e	=		03	15	
e	=		03	50	
e	=		04	40	
F	=	04	11	±	

Sedro' de Game
DIRETOR

MINISTÉRIO DA EDUCAÇÃO E SAÚDE
Observatório Nacional

North South Component

1 9 5 0

J U L Y - 9

East West Component

		h	m	m
iP	=	04	45	30
e	=		46	06
pP ?	=		47	10
sP ?	=		48	30
i	=		48	41
e	=		48	52
i	=		49	10
iS	=		49	37
e	=		50	50
e	=		51	32
e	=		52	40 ?
i	=		52	50
iScS	=		54	47
i	=		55	27
i	=		59	00
i	=	05	03	07
F	=		59	±

No record

J U L Y - 9

		h	m	s
i	=	09	52	18
sP?	=		53	32
iS	=		54	55
ScP?	=		55	39
e	=		56	07
i	=		57	38
e	=		58	10
i	=		58	21
i	=		59	00
ScS?	=		59	48
i	=	10	00	00
i	=		01	37
sScS?	=		03	30
F	=	11	39	±

No record

J U L Y - 21

		h	m	s
PR_1	=	20	53	25
e	=		53	47
iPKS	=		54	38
PR_2	=		56	31
SKS	=		58	24
SKKS	=	21	00	03
PKKP	=		01	37
PS	=		03	40
PPS	=		05	20
e	=		06	00
e	=		16	05
e	=		36	26
F	=	23	46	±

		h	m	s
PR_1	=	20	53	26
e	=		53	50
iPKS	=		54	39
PS	=	21	03	48
PPS	=		05	15
e	=		06	30
e	=		16	12
F	=	23	46	±

Commencements undiscernible

Moderate amplitudes

J U L Y - 30

		h	m	s
e	=	01	04	10
F	=		51	±

		h	m	s
e	=	00	08	40
e	=		11	00
e	=	01	04	15
e	=		06	10
F	=	02	04	±

Weak waves

Sodré da Gama
DIRETOR

MINISTÉRIO DA EDUCAÇÃO E SAÚDE
Observatório Nacional

North South Component — August - 2 — East West Component

		h	m	s	
e	=	14	33	08	?
F	=		59		±

		h	m	s	
e	=	14	20	00	
e	=		32	20	
e	=		34	15	
F	=	15	19		+ −

Weak waves

AUGUST - 3

		h	m	s
S?	=	22	32	26
SR_1	=		35	43
e	=		38	47
e	=		39	10
e	=		39	31
L?	=		39	47
M_1	=		40	10
M_2	=		40	20
M_3	=		40	30
F	=	24	31	±

		h	m	s
S	=	22	32	33
SR_1	=		35	43
SR_2	=		36	23
e	=		38	41
e	=		39	06
i	=		39	30
i	=		39	43
M	=		40	00
F	=	24	31	+ −

AUGUST - 5

		h	m	s
e	=	09	41	40
e	=		41	50
e	=		50	14
e	=	10	09	10
F	=	11	08	±

		h	m	s
e	=	09	41	50
e	=		50	20
e	=	10	09	11
F	=	11	24	±

Weak waves

AUGUST - 7

No record

		h	m	s
e	=	03	05	28
e	=		09	10
e	=		16	50
e	=		30	20
F	=	04	47	±

Weak waves

AUGUST - 13

		h	m	s
e	=	17	07	06
e	=		15	50
F	=		40	±

		h	m	s
e	=	17	02	05
e	=		05	20
e	=		07	04
e	=		15	30
F	=		40	±

Weak waves

MINISTÉRIO DA EDUCAÇÃO E SAÚDE
Observatório Nacional

AUGUST - 14

North South Component

		h	m	s
iP	=	22	55	05
e	=		55	20
e	=		55	46
e	=		56	37
e	=		57	10
i	=		57	37
iS	=		58	03
e	=		58	20
PcP ?	=		58	50
F	=	25	42	±

East West Component

		h	m	s
iP	=	22	55	05
e	=		55	25
e	=		55	40
e	=		56	20
e	=		56	38
i	=		57	27
e	=		57	32
iS	=		58	03
e	=		58	21
F	=	25	54	±

AUGUST - 15

		h	m	s
iP'_1	=	14	29	12
P'_2	=		29	22
e	=		29	31
e	=		29	50
e	=		30	34
e	=		31	00
e	=		31	29
i	=		32	35
PR_1	=		32	46
i	=		33	12
e	=		33	30
i	=		34	14
SKS	=		36	19
PKKP	=		38	21
e	=		39	19
PKKS	=		41	33
e	=		42	20
SKSP	=		42	30
i	=		51	06
i	=		54	00
e	=		59	45
SR_1 ?	=		01	36
SSP	=		04	03
e	=		10	04
L	=		17	00
F	=	20	15	±

No record

The M phases were interfered with in changing photographic paper

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AUGUST - 26

		h	m	s
e	=	05	46	15
e	=		48	10
F	=	06	11	±

Beginning undiscernible

		h	m	s
e	=	05	32	20
e	=		40	12
e	=		46	03
e	=		48	00
F	=	06	14	±

Weak waves

Sodré da Gama
DIRECTOR

MINISTÉRIO DA EDUCAÇÃO E SAÚDE
Observatório Nacional

AUGUST - 31

North South Component

		h	m	s	
e	=	07	30	00	
e	=		36	40	Doubtful
e	=		50	45	
e	=	08	42	40	?
F	=	09	14	±	

Extremely weak waves

East West Component

		h	m	s	
e	=	07	36	30	
e	=		51	08	?
e	=	08	36	20	
F	=	09	22	±	

SEPTEMBER - 10

No record

		h	m	s
PR_1	=	15	37	38
iPKS	=		38	40
e	=		56	19
L	=	16	15	30
F	=	17	48	±

Small amplitudes

SEPTEMBER - 16

		h	m	s
e	=	01	14	27
e	=		21	40
e	=		25	46
e	=		27	44
e	=		29	06
e	=		35	40
F	=	02	27	±

Small amplitudes

		h	m	s	
e	=	01	14	30	
e	=		25	45	
e	=		27	22	?
e	=		29	00	
e	=		30	01	
F	=	02	27	±	

SEPTEMBER - 19

		h	m	s	
e	=	20	51	07	
e	=		54	40	
e	=	21	01	14	
e	=		20	00	
e	=		45	20	
e	=		49	10	
F	=	disturbed by micros			

No record

SEPTEMBER - 22

		h	m	s
eP	=	08	02	45
PR_1	=		04	56
eS	=		11	20
e	=		22	45
e	=		23	43
PKKS?	=		26	50
F	=		49	±

		h	m	s
P	=	08	02	38
PR_1	=		04	50
S	=		11	21
L	=		22	43
e	=		23	49
PKKS ?	=		26	45
F	=		56	±

SEPTEMBER - 23

Reding difficult on account of micro disturbance

		h	m	s
e	=	00	15	30
e	=		17	55
e	=		19	20
e	=		25	04
F	=	01	22	±

Extremely weak waves

		h	m	s
e	=	00	16	20
e	=		17	50
e	=		19	21
e	=		22	20
e	=		25	00
F	=	01	22	±

VISTO

Sodré de Gama

DIRETOR

MINISTÉRIO DA EDUCAÇÃO E SAÚDE
Observatorio Nacional

North South Component

SEPTEMBER - 29

East West Component

No record

		h	m	s
eP	=	06	44	00
PR_1	=		46	48
iS	=		53	33
PS	=		54	15
e	=		55	20
SR_1	=		58	31
e	=		59	12
SR_2	=	07	02	00
e	=		02	29
PKKP	=		02	55
e	=		06	10
e	=		08	45
e	=		11	20
SKKKS?	=		15	08
F	=	09	00	±

Strong micro disturbance

MINISTÉRIO DA EDUCAÇÃO E SAÚDE
OBSERVATÓRIO NACIONAL
Rio de Janeiro-Brazil-June 15, 1951

The Director
U.S. Coast and Geodetic Survey
Washington 25, - U.S.A.

I am sending you enclosed herewith our seismograph interpretations for the months of October, November and December, 1950.

Very truly yours

Director

MINISTÉRIO DA EDUCAÇÃO E SAÚDE
Observatório Nacional

1950

OCTOBER 5

North South Component

e = 01h24m40s
e = 41 30
e = 44 32
F = 02 46 ±

Weak Waves

East West Component

e = 01h24m45s
e = 41 20
e = 44 30
F = 02 46 ±

OCTOBER 5

P = 16h18m39s
e = 18 44
PcP = 19 21
PR1 = 20 50
e = 23 10
e = 25 21
S = 26 14
ScS = 28 40
SR1 = 29 49
SR2 = 32 06
L? = 36 10
F = 20 05 ±

P = 16h18m41s
e = 18 45
PcP = 19 20
PR1 = 20 44
e = 23 10
e = 23 59
e = 24 50
S = 26 13
SR2 = 32 09
L? = 36 00
F = 20 14 ±

OCTOBER 5

e = 23h31m10s
e = 33 20
e = 34 18
F = 59 ±

e = 23h31m14s
e = 33 19
e = 34 17
F = 59 ±

Small amplitudes

OCTOBER 8

P'2 = 03h43m09s
e = 43 49
iPR1 = 47 03
i = 47 55
e = 49 20
iSKS = 50 01
PR2 = 50 38
PR? = 51 01
PKKS = 55 30
SKSP = 56 37
PPS = 04 00 05
e = 00 37
e = 02 08
e = 02 37
iSR1 = 06 16
e = 08 40
SR2 = 12 10
i = 18 12
e = 26 45
L = 34 20
F = 06 47 ±

P'2 = 03h43m14s
e = 43 35
e = 46 24
iPR1 = 47 00
e = 47 45
e = 49 20
iSKS = 50 10
PR2 = 50 40
e = 53 00
e = 55 01
PKKS = 55 46
SKSP = 57 00 ?
PPS = 59 43
e = 04 02 03
SR1 = 06 14
i = 06 32
SR2 = 12 11
e = 18 09
L? = 34 19
F = 06 47 ±

MINISTÉRIO DA EDUCAÇÃO E SAÚDE
Observatório Nacional

OCTOBER 10

North South Component

e = $17^h06^m20^s$
e = 10 25
F = 46 ±

East West Component

e = $17^h06^m19^s$
e = 10 20
F = 46 ±

Weak Waves

OCTOBER 21

e = $10^h04^m00^s$
e = 12 39
e = 19 00
F = 41 ±

e = $10^h04^m00^s$
e = 12 37
e = 19 05
F = 41 ±

Weak Waves

OCTOBER 23

No record

iP = $16^h23^m20^s$
PcP = 24 15
iPR_1 = 25 40
PR_2 = 27 20
e = 30 19
iScS = 33 12
iSR_1 = 35 10
i = 35 40
i = 41 01
e = 43 06
e = 43 40
F = 20 08 ±

S- phase lost at change of line on the record

OCTOBER 24

e = $00^h05^m30^s$
e = 08 32
e = 11 06
F = 45 ±

Small amplitude

OCTOBER 24

e = $01^h00^m05^s$
e = 11 20
e = 23 21
e = 29 00
F = 02 46 ±

Small amplitude

OCTOBER 26

No record

e = $04^h43^m20^s$? Doubtful
e = 48 10
F = 05 39
Very small amplitudes

MINISTÉRIO DA EDUCAÇÃO E SAÚDE
Observatório Nacional

OCTOBER 26

North South Component

e = 16h07m20s
e = 32 00
e = 37 08
F = 17 23 ±

East West Component

e = 16h07m20s
e = 32 02
e = 37 01
F = 17 52 ±

Very small amplitudes

NOVEMBER 2

P'1 = 15h47m40s
e = 48 12
i = 49 15
e = 50 20
PR1 = 51 11
i = 52 12
i = 52 38
SKS = 54 34
i = 55 29
PKKP = 56 12
e = 56 51
SKKS = 58 01
SKKKS = 58 53
PKKS = 59 40
i = 16 00 37
SKKS = 02 47
i = 06 50
SR1 = 11 01
SSP1 = 11 34
E = 39 14
F = 18 41 ±

P'1 = 15h47m40s
e = 48 14
e = 49 07
e = 50 21
PR1 = 51 08
i = 52 01
SKS = 54 38
e = 55 20
PKKP = 56 09
SKKKS = 58 48
i = 16 00 33
e = 02 16
i = 03 15
i = 06 30
SR1 = 11 19
i = 17 02
i = 32 33
i = 34 15
e = 40 10
F = 19 10 ±

NOVEMBER 5

e = 16h58m06s doubtful
e = 17 06 40
e = 12 00
F = 30 ±

e = 16h53m50s
e = 58 07
-e = 17 06 35
e = 11 02 ?
e = 12 03
F = 30 ±

Weak waves

NOVEMBER 5

e = 18h13m30s
e = 23 32
e = 25 01
e = 19 06 30
F = 56 ±

e = 18h13m30s
i = 23 37
e = 19 06 30
F = 56 ±

Weak waves

NOVEMBER 8

PR1 = 02h40m43s
iPKS = 41 32
e = 42 12
e = 43 33
SKS = 45 01
e = 54 01
e = 03 04 35

PR1 = 02h40m41s
e = 41 22
PKS = 41 30
e = 42 17
e = 43 34
SKS = 44 43
SR1 = 59 10

MINISTÉRIO DA EDUCAÇÃO E SAÚDE
Observatório Nacional

North South Component

L? = 26 31
F = 05 30 ±

East West Component

e = 03 03 30
e = 04 28
F = 05 26 ±

Weak amplitudes

NOVEMBER 17

e = $16^h13^m10^s$
F = 28 ±

e = $16^h12^m01^s$
eL = 13 14
F = 28 ±

Beginning interferred with
by micros.

Weak waves

NOVEMBER 17

e = $19^h48^m20^s$
e = 53 06
e = 20 01 34
F = 47 ±

e = 19 48 20
e = 49 21 ?
e = 20 01 30
F = 47 ±

Weak waves

NOVEMBER 20

e = $12^h40^m28^s$
e = 44 05
e = 46 10
e = 47 01
e = 49 02
F = 13 07 ±

e = $12^h40^m30^s$
e = 43 36
e = 44 10
e = 46 08
e = 47 01
e = 48 45 ?
F = 13 07 ±

Very small amplitudes

NOVEMBER 21

e = $20^h40^m11^s$
e = 50 20
e = 51 30
e = 52 07
e = 52 28
e = 52 47
F = 21 32 ±

e = $20^h40^m10^s$
e = 50 23
e = 51 36
e = 51 58
e = 52 20
e = 52 48
F = 21 32 ±

Small amplitudes

NOVEMBER 24

e = $14^h02^m20^s$
e = 03 10
F = 33 ±

e = 14 02 21
e = 03 12
F = 33 ±

Weak waves

MINISTÉRIO DA EDUCAÇÃO E SAÚDE
Observatório Nacional

DECEMBER 1

North South Component

iP	=	$14^h 58^m 06^s$
pP?	=	58 23
PR_1	=	59 38
iS	=	15 03 50
i	=	05 33
SR_1	=	06 09
iSR	=	06 58
e	=	08 29
L	=	09 06
e	=	10 10
F	=	16 59 ±

East West Component

P	=	$14^h 58^m 06^s$
pP	=	58 20
iS	=	15 03 50
e	=	05 12
i	=	05 50
SR_1	=	06 10
e	=	07 32
e	=	08 30
L	=	09 07
e	=	10 09
F	=	17 21 ±

DECEMBER 2

iP	=	$15^h 24^m 41^s$
pP?	=	26 27
sP	=	27 40
e	=	33 30
ScS	=	34 00
e	=	35 20
e	=	37 08
e	=	37 38
F	=	16 24 ±

iP	=	$15^h 24^m 42^s$
pP	=	26 27
sP	=	27 40
e	=	33 12
ScS	=	34 06
e	=	35 20
e	=	37 38
e	=	38 04
F	=	16 32 ±

Lamp out at arrival of S- wave

DECEMBER 2

e	=	$20^h 11^m 32^s$	No record
e	=	12 15	Doubtful
PR_1	=	13 37	
PR_2	=	16 08	
i	=	17 18	
SKS	=	18 10	
i	=	19 27	
iScSP?	=	22 38	
PS	=	23 40	
PKKS	=	23 56	
i	=	24 33	
ScSPKP?	=	26 32	
e	=	29 28	
e	=	33 35	
SR_2	=	35 37	
e	=	39 45	
i	=	43 10	
L	=	47 22	
e	=	49 25	
F	=	23 11 ±	

DECEMBER 4

iP'_1	=	$16^h 47^m 38^s$
pP'	=	48 01
e	=	49 40
e	=	50 48
PR_1	=	51 10

iP'_1	=	$16^h 47^m 38^s$
pP'	=	48 02
e	=	49 55
e	=	50 52
PR_1	=	51 09

MINISTÉRIO DA EDUCAÇÃO E SAÚDE
Observatório Nacional

North South Component

pPR1 = 51 40
e = 52 12
e = 53 40
PSKS = 17 01 17
F = 18 53 ±

East West Component

e = 53 44
PSKS = 17 01 16
e = 04 20
SR_1 = 10 06
F = 19 10 ±

DECEMBER 10

No record

Reading of minutes difficult for some phases.

P = $02^h 57^m 01^s$
S = 03 02 10
e = 02 45
SR_1 = 04 10
i = 05 20
L? = 06 30
i = 10 44
F = 54 ±

DECEMBER 10

No record

P'_1 = $13^h 42^m 05^s$
pP'? = 43 10
e = 44 24
isPKS = 47 32
iPR_2 = 48 39
pPR_2 = 49 20
e = 50 30
SKKS = 51 12
i = 51 57
i = 52 29
i = 53 14
SKSP = 54 40
e = 56 42
sPS = 57 30
i = 14 01 36
iSR_1 = 03 40
L? = 10 20
F = lost by change of paper.

DECEMBER 11

No record

P = $03^h 37^m 39^s$
pP? = 38 43
e = 41 37
sS? = 42 18
e = 42 46
e = 45 20
e = 47 50
ScS = 48 12
F = 57 ±

Very small amplitudes

DECEMBER 11

e = $13^h 53^m 45^s$ doubtful
e = 56 21
e = 59 36
e = 14 01 06
e = 01 31

e = $13^h 53^m 40^s$
e = 56 17
e = 59 46
e = 14 02 10
e = 02 40

MINISTÉRIO DA EDUCAÇÃO E SAÚDE
Observatório Nacional

North South Component

e = 01 40
e = 04 35
F = 29 ±

East West Component

e = 04 15
e = 04 42
F = 29 ±

Very small amplitudes

DECEMBER 14

P = $02^h07^m35^s$
pP = 08 25
e = 12 08
iPR1 = 12 28
PR2 = 15 01
e = 15 20
iSKS = 17 42
iSKKS = 19 01
iS? = 20 02
pS? = 21 01
iPKKP = 21 43
e = 24 30
F = 06 03 ±

P = $02^h07^m35^s$
pP = 08 23
e = 11 10
e = 12 02
iPR1 = 12 29
e = 14 01
PR2 = 15 11
e = 15 53
e = 17 30
iSKS = 17 43
iSKKS = 19 01
iS? = 20 02
iPKKP = 21 40
i = 22 21
F = 06 18 ±

DECEMBER 14

e = $14^h26^m53^s$? Begenning
PcP = 27 17 lost at change
iPR1 = 29 31 of line on the
PR? = 31 32 record
iS = 35 30
iPS = 35 47
iSKS = 36 51
SR1 = 39 52
i = 40 23
i = 43 21
i = 43 40
e = 48 30
i = 49 10
i = 49 34
F = 18 06 ±

P = $14^h26^m38^s$
e = 26 52
PcP = 27 05
PR1 = 29 32
PR2 = 30 31
e = 33 35
e = 35 01
iS = 35 31
iPS = 35 42
i = 40 10
F = 18 08 ±

Reading very difficult at close of record

DECEMBER 18

e = $15^h41^m46^s$
e = 51 05
F = 16 50 ±

e = $15^h41^m42^s$
e = 51 10
F = 16 53 ±

Weak waves

MINISTÉRIO DA EDUCAÇÃO E SAÚDE
Observatório Nacional

DECEMBER 21

North South Component

S	=	$11^h 46^m 39^s$
e	=	47 20
SR_1	=	47 42
SR_2	=	48 06
e	=	49 12
PcS	=	49 36
e	=	50 04
e	=	50 17
i	=	50 33
e	=	50 42
i	=	50 50
i	=	51 36
e	=	52 40
ScS	=	53 20
e	=	54 21
e	=	55 12
F	=	12 23 ±

East West Component

S	=	$11^h 46^m 39^s$
e	=	47 20
e	=	49 10

Record poor