

1934



OBSERVATOIRE DE TANANARIVE (MADAGASCAR)

BULLETIN SÉISMIQUE

JANVIER 1934

$\varphi = 18^{\circ} 55' 02'' S$   $\lambda = 47^{\circ} 33' 06'' E$  altitude = 1375 m. Sous-sol-gneiss granitique

Instruments : Deux pendules Mainka (masse 450 kilog.) NS, EW

|       |       |     |         |           |
|-------|-------|-----|---------|-----------|
|       | $T_0$ | V   | $v : 1$ | $r/T_0^2$ |
| $A_N$ | 11.3  | 114 | 3.0     | 0.010     |
| $A_E$ | 12.4  | 120 |         | 0.011     |

| NUMÉROS | DATE  | PHASE       | HEURE<br>(Greenwich) | PÉRIODE | AMPLITUDE |    | DISTANCE<br>km. | REMARQUES   |    |    |
|---------|-------|-------------|----------------------|---------|-----------|----|-----------------|---|----|----|
|         |       |             |                      |         | N.        | E. |                 |   |    |    |
| 1       | 3     | $\bar{P}$   | h. m. s.<br>21 06 15 |         |           |    |                 | Local   |    |    |
|         |       | $\bar{S}$   | 19                   |         |           |    |                 |   |    |    |
|         |       | fin         | 21 08                |         |           |    |                 |   |    |    |
| 2       | 10    | traces      | 0 40 46              |         |           |    |                 | Local   |    |    |
|         |       | $\bar{S}$   | 49                   |         |           |    |                 |   |    |    |
|         |       | fin         | 0 42                 |         |           |    |                 |   |    |    |
| 3       | 10    | i $\bar{P}$ | 13 19 35             |         |           |    | 135             | senti II-III à Tananarive                                   |    |    |
|         |       | i           | 39                   |         |           |    |                 |   |    |    |
|         |       | i $\bar{S}$ | 52                   |         |           |    |                 |   |    |    |
|         |       | i M         | 55                   |         |           |    |                 |   |    |    |
|         |       | fin         | 13 22                |         |           |    |                 |   |    |    |
| 4       | 15    | P           | 8 53 24              |         |           |    | 6 555           | destructeur aux Indes<br>région Patna<br>St : 27.5 N 86.5 E |    |    |
|         |       | i           | 30                   |         |           |    |                 |   |    |    |
|         |       | i           | 37                   |         |           |    |                 |   |    |    |
|         |       | PP          | 55 46                |         |           |    |                 |   |    |    |
|         |       | E           | 57                   |         |           |    |                 |   |    |    |
|         |       | E           | 57 36                |         |           |    |                 |   |    |    |
|         |       | N           | 57 57                |         |           |    |                 |   | 12 | 13 |
|         |       | E           | 59 30                |         |           |    |                 |   |    |    |
| N       | 59 42 |             |                      |         |           |    |                 |   |    |    |

| NUMÉROS | DATE                  | PHASE       | HEURES<br>(Greenwich)                                | PÉRIODE | AMPLITUDE |       | DISTANCE<br>km. | REMARQUES        |
|---------|-----------------------|-------------|--|---------|-----------|-------|-----------------|------------------|
|         |                       |             |  |         | N.        | E.    |                 |                  |
| 4       | 15 <sup>(suite)</sup> | N E         | <sup>h.</sup> <sup>m.</sup> <sup>s.</sup><br>9 00 36 |         |           |       |                 |                  |
|         |                       | S           | 01 36  |         |           |       |                 |                  |
|         |                       | S S E       | 05 42  |         |           |       |                 |                  |
|         |                       | S S S N     | 08 20  | 15      | 233       |       |                 |                  |
|         |                       | N           | 10 15  |         |           |       |                 |                  |
|         |                       | L           | 11 50  |         |           |       |                 |                  |
|         |                       | M           | 15 ca  | 18      | >1100     | >1450 |                 |                  |
|         | fin                   | 12 10       |  |         |           |       |                 |                  |
| 5       | 19                    | i $\bar{P}$ | 20 55 53   |         |           |       |                 | Local            |
|         |                       | i $\bar{S}$ | 56   |         |           |       |                 |                  |
|         |                       | fin         | 20 58  |         |           |       |                 |                  |
| 6       | 20                    | $\bar{P}$   | 13 23 25   |         |           |       |                 | Local            |
|         |                       | i           | 28   |         |           |       |                 |                  |
|         |                       | i $\bar{S}$ | 31   |         |           |       |                 |                  |
|         |                       | fin         | 13 25  |         |           |       |                 |                  |
| 7       | 23                    | L N         | 1 13   |         |           |       |                 |                  |
|         |                       | M           | 1 18   |         |           |       |                 |                  |
|         |                       | fin         | 1 22   |         |           |       |                 |                  |
| 8       |                       | traces      | 1 57   |         |           |       |                 | Océan Indien (?) |
|         |                       | E           | 59 33  | 9       |           |       |                 |                  |
|         |                       | E           | 2 00 52  | 6       |           |       |                 |                  |
|         |                       | M           | 03 38  | 7       |           |       |                 |                  |
|         |                       | fin         | 2 10   |         |           |       |                 |                  |



International  
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| NUMÉROS | DATE | PHASE       | HEURE<br>(Greenwich) |    |    | PÉRIODE | AMPLITUDE |        | DISTANCE<br>km.      | REMARQUES |
|---------|------|-------------|----------------------|----|----|---------|-----------|--------|----------------------|-----------|
|         |      |             |                      |    |    |         | N.        | E.     |                      |           |
| 9       | 23   | traces      | h.                   | m. | s. |         |           |        | Local                |           |
|         |      | N           | 13                   | 25 | 52 |         |           |        |                      |           |
|         |      | i $\bar{S}$ |                      | 26 | 08 |         |           |        |                      |           |
|         |      | fin         | 13                   | 27 |    |         |           |        |                      |           |
| 10      | 28   | traces      | 8                    | 51 | 40 |         |           |        | Local                |           |
|         |      | $\bar{S}$   |                      |    | 56 |         |           |        |                      |           |
|         |      | fin         | 8                    | 54 |    |         |           |        |                      |           |
| 11      | 28   | (P') E      | 19                   | 30 | 02 |         |           | 16 560 | micros. de cyclone   |           |
|         |      | E           |                      | 41 | 41 |         |           |        |                      |           |
|         |      | E           |                      | 43 | 50 | 14      |           |        | Mexique - Acapules   |           |
|         |      | P P S       |                      | 46 | 27 | 15      |           |        | J.S.A. 16.8 N 99.6 W |           |
|         |      | S S         |                      | 53 | 40 | 18      |           |        | H = 19. 10. 03       |           |
|         |      | L N         | 20                   | 20 | 11 |         |           |        |                      |           |
|         |      | (M) E       |                      | 32 | 31 | 22      |           |        |                      |           |
| 12      | 31   | M           |                      | 36 | 06 | 19      |           |        | Local                |           |
|         |      | M           |                      | 42 | 40 | 19      |           |        |                      |           |
|         |      | fin         | 21                   | 10 |    |         |           |        |                      |           |
|         |      | i $\bar{P}$ | 10                   | 22 | 52 |         |           |        |                      |           |
|         |      | i $\bar{S}$ |                      |    | 56 |         |           |        |                      |           |
| fin     | 10   | 25          |                      |    |    |         |           |        |                      |           |

Le Directeur de l'Observatoire,  
CH. POISSON, s. J.

OBSERVATOIRE DE TANANARIVE (MADAGASCAR)

BULLETIN SÉISMIQUE

FÉVRIER 1934

$\phi = 18^{\circ} 55' 02'' S$   $\lambda = 47^{\circ} 33' 06'' E$  altitude = 1375 m. Sous-sol-gneiss granitique

Instruments : Deux pendules Mainka (masse 450 kilog.) NS, EW

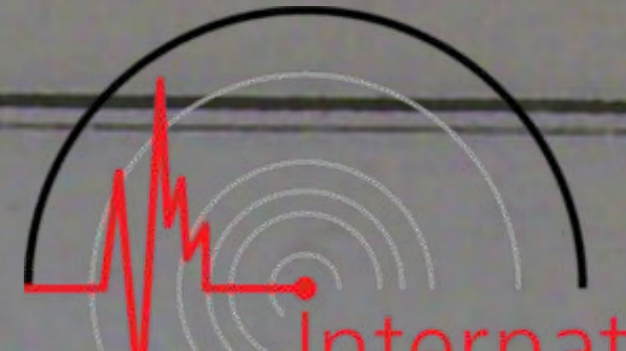
|       | $T_0$ | V   | $v : 1$ | $r/T_0^2$ |
|-------|-------|-----|---------|-----------|
| $A_N$ | 11.5  | 107 | 3.2     | 0.012     |
| $A_E$ | 12.6  | 114 | 4.0     | 0.011     |

| NUMÉROS | DATE  | PHASE    | HEURE<br>(Greenwich) | PÉRIODE | AMPLITUDE |       | DISTANCE<br>km. | REMARQUES                             |
|---------|-------|----------|----------------------|---------|-----------|-------|-----------------|---------------------------------------|
|         |       |          |                      |         | N.        | E.    |                 |                                       |
| 13      | 4     | traces E | h. m. s.<br>13 40 40 |         |           |       | 6 100<br>ca     | Perse 35 N 54 E<br>d'après Strasbourg |
|         |       | SN       | 41 43                |         |           |       |                 |                                       |
|         |       | N        | 42 58                | 12      |           |       |                 |                                       |
|         |       | SSE      | 45 22                |         |           |       |                 |                                       |
|         |       | SSS      | 46 42                |         |           |       |                 |                                       |
|         |       | L N      | 51 13                | 21      |           |       |                 |                                       |
|         |       | L E      | 51 25                | 24      |           |       |                 |                                       |
|         |       | M        | 56 40                | 15      |           |       |                 |                                       |
| fin     | 14 50 |          |                      |         |           |       |                 |                                       |
| 4       | 5     | P        | 22 21 58             |         |           | Local |                 |                                       |
|         |       | P        | 22 01                |         |           |       |                 |                                       |
|         |       | S        | 22 10                |         |           |       |                 |                                       |
|         |       | i        | 22 12                |         |           |       |                 |                                       |
|         |       | fin      | 22 24                |         |           |       |                 |                                       |
| 5       | 9     | traces E | 9 56                 |         |           |       |                 |                                       |
|         |       | L        | 10 17 57             | 30      |           |       |                 |                                       |
|         |       | E        | 20 33                | 24      |           |       |                 |                                       |
|         |       | fin      | 10 30                |         |           |       |                 |                                       |



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| NUMÉROS | DATE | PHASE       | HEURES<br>(Greenwich)                              | PÉRIODE | AMPLITUDE |     | DISTANCE<br>km. | REMARQUES       |
|---------|------|-------------|--|---------|-----------|-----|-----------------|-----------------|
|         |      |             |  |         | N.        | E.  |                 |                 |
| 16      | 9    | E           | <sup>h.</sup> 11 <sup>m.</sup> 39 <sup>s.</sup> 54 | 6       |           |     |                 |                 |
|         |      | E           | 47 12  | 15      |           |     |                 |                 |
|         |      | L N         | 51 44  |         |           |     |                 |                 |
|         |      | M           | 55 18  | 15      |           |     |                 |                 |
|         |      | fin         | 12 15  |         |           |     |                 |                 |
| 17      | 12   | $\bar{P}$   | 9 28 22  |         |           |     | Local           |                 |
|         |      | $\bar{S}$   | 28 28  |         |           |     |                 |                 |
|         |      | fin         | 9 30   |         |           |     |                 |                 |
| 18      | 12   | traces      | 12 02 à 12.20                                      |         |           |     | Lointain        |                 |
| 19      | 14   | i P         | 4 11 44  | 5       | —         | +   | 8 780           | Mer de Chine    |
|         |      | PP          | 14 43  | 6       |           |     |                 | 17.5 N 119.5 E  |
|         |      | e S E       | 21 41  | 12      |           |     |                 | d'après Manille |
|         |      | S N         | 21 46  |         |           |     |                 |                 |
|         |      | P S N       | 22 26  |         |           |     |                 |                 |
|         |      | SS          | 26 54  | 21      |           | 51  |                 |                 |
|         |      | S S S       | 30 35  | 17      |           |     |                 |                 |
|         |      | e L E       | 36 20  | 33      |           |     |                 |                 |
|         |      | M E         | 45   | 18      |           | 170 |                 |                 |
|         |      | M N         | 45 15  | 18      | 62        |     |                 |                 |
|         |      | fin         | 6 20   |         |           |     |                 |                 |
| 20      | 15   | i $\bar{P}$ | 20 53 48   |         |           |     | Local           |                 |
|         |      | i $\bar{S}$ | 53 54  |         |           |     |                 |                 |
|         |      | fin         | 20 55  |         |           |     |                 |                 |



| NUMÉROS | DATE               | PHASE            | HEURE<br>(Greenwich)                              | PÉRIODE | AMPLITUDE |    | DISTANCE<br>km. | REMARQUE              |
|---------|--------------------|------------------|---|---------|-----------|----|-----------------|-----------------------|
|         |                    |                  |   |         | N.        | E. |                 |                       |
| 21      | 19                 | e (P)            | <sup>h.</sup> 10 <sup>m</sup> 34 <sup>s.</sup> 07 |         |           |    |                 | début douteux         |
|         |                    | S                | 41 41   | 13      |           |    |                 | microséismes          |
|         |                    | L                | 51  |         |           |    |                 |                       |
|         |                    | M                | 53  |         |           |    |                 |                       |
|         |                    | fin              | 11 40   |         |           |    |                 |                       |
| 22      | 22                 | traces E         | 8 24 32   |         |           |    |                 |                       |
|         |                    | LE               | 34 50   | 30      |           |    |                 |                       |
|         |                    | E                | 37  | 22      |           |    |                 |                       |
|         |                    | M                | 39  | 18      |           |    |                 |                       |
|         |                    | fin              | 9   |         |           |    |                 |                       |
| 23      | 24                 | ePP <sub>E</sub> | 6 41 52   |         |           |    | 11 500          | Pacifique             |
|         |                    | E                | 42 02   | 9       |           |    |                 | 21 N 145 E            |
|         |                    | PPP              | 44 22   |         |           |    |                 | d'après U. S. C. G. S |
|         |                    | SKS <sub>E</sub> | 48 18   |         |           |    |                 |                       |
|         |                    | PS               | 51 15   |         |           |    |                 |                       |
|         |                    | PPS <sub>E</sub> | 51 58   |         |           |    |                 |                       |
|         |                    | SS               | 56 43   | 18      |           |    |                 |                       |
|         |                    | LN               | 7 07 37   | 30      |           |    |                 |                       |
|         |                    | LE               | 13 40   | 30      |           |    |                 |                       |
|         |                    | M                | 17  | 21      |           |    |                 |                       |
| fin     | dans le<br>suivant |                  |   |         |           |    |                 |                       |

| NUMÉROS | DATE  | PHASE       | HEURE<br>(Greenwich)                                 | PÉRIODE | AMPLITUDE |        | DISTANCE<br>km.              | REMARQUES               |
|---------|-------|-------------|--|---------|-----------|--------|------------------------------|-------------------------|
|         |       |             |  |         | N.        | E.     |                              |                         |
| 24      | 24    | E           | <sup>h.</sup> <sup>m.</sup> <sup>s.</sup><br>7 52 25 |         |           |        |                              | réplique du précédent ? |
|         |       | E           | 8 09 19  |         |           |        |                              |                         |
|         |       | L E         | 31   |         |           |        |                              |                         |
|         |       | M           | 41 20  |         |           |        |                              |                         |
|         |       | fin         | 9 20   |         |           |        |                              |                         |
| 25      | 24    | $\bar{P}$   | 18 00 19   |         |           |        | Local                        |                         |
|         |       | $\bar{S}$   | 00 23  |         |           |        |                              |                         |
|         |       | fin         | 18 02  |         |           |        |                              |                         |
| 26      | 27    | $\bar{P}$   | 18 32 21   |         |           | 90     |                              |                         |
|         |       | i $\bar{S}$ | 32 33  |         |           |        |                              |                         |
|         |       | fin         | 18 34  |         |           |        |                              |                         |
| 27      | 28    | traces (P)  | 14 43  |         |           | 11 480 | 4 S 153 E<br>d'après Manille |                         |
|         |       | E           | 46 35  |         |           |        |                              |                         |
|         |       | E           | 49 44  |         |           |        |                              |                         |
|         |       | S K S       | 53 39  |         |           |        |                              |                         |
|         |       | E N         | 54 05  |         |           |        |                              |                         |
|         |       | P S         | 56 43  |         |           |        |                              |                         |
|         |       | S S         | 15 03 14   |         |           |        |                              |                         |
|         |       | L           | 09   | 30      |           |        |                              |                         |
|         |       | M 1 E       | 14   |         | 40        |        |                              |                         |
|         |       | M 2 E       | 17   |         | 40        |        |                              |                         |
| fin     | 15 55 |             |  |         |           |        |                              |                         |

## OBSERVATOIRE DE TANANARIVE (MADAGASCAR)

### BULLETIN SÉISMIQUE

MARS 1934

$\varphi = 18^{\circ} 55' 02'' \text{ S}$     $\lambda = 47^{\circ} 33' 06'' \text{ E}$    altitude = 1375 m. Sous-sol-gneiss granitique

Instruments : Deux pendules Mainka (masse 450 kilog.) NS, EW

|       |       |     |         |           |
|-------|-------|-----|---------|-----------|
|       | $T_0$ | V   | $v : 1$ | $r/T_0^2$ |
| $A_N$ | 11.3  | 110 | 3.2     | 0.009     |
| $A_E$ | 12.5  | 128 | 3.6     | 0.010     |

| NUMÉROS | DATE | PHASE  | HEURE<br>(Greenwich)  | PÉRIODE                  | AMPLITUDE |       | DISTANCE<br>km. | REMARQUES   |
|---------|------|--|---|--------------------------|-----------|-------|-----------------|---|
|         |      |  |   |                          | N.        | E.    |                 |   |
| 28      | 1    | M<br>fin   | <sup>h.</sup> 20 <sup>m.</sup> 35<br>20 44                  | 18                       |           |       |                 | Océan Pacifique   |
| 29      | 1    | PP <sub>E</sub><br>SKS<br>S<br>PPS<br>N<br>L<br>M<br>fin | 22 02<br>09 22<br>10 20<br>12 24<br>25<br>32<br>35 13<br>23 | 12<br><br><br><br><br>20 |           | 11080 |                 | Chili<br>39 S. 73 W.<br>d'après U. S. C. G. S.<br>H = 21.45.4 |
| 30      | 3    | i P̄<br>i S̄<br>i<br>fin                                 | 12 58 30<br>58 42<br>45<br>13                               |                          |           | 90    |                 | Local   |
| 31      | 4    | e E<br>e M <sub>E</sub><br>fin                           | 6 37 19<br>55 08<br>7 05                                    | 19                       |           |       |                 | Nouvelles Hébrides  |



| NUMÉROS | DATE  | PHASE           | HEURES<br>(Greenwich)                              | PÉRIODE | AMPLITUDE |    | DISTANCE<br>km. | REMARQUES   |
|---------|-------|-----------------|--|---------|-----------|----|-----------------|---|
|         |       |                 |  |         | N.        | E. |                 |   |
| 32      | 5     | PP <sub>E</sub> | <sup>h.</sup> 12 <sup>m.</sup> 04 <sup>s.</sup> 42 |         |           |    | 11525           | Nouvelle Zélande<br>40.5 S. 176 E.<br>H = 11.46.18<br>d'après Pasadena. |
|         |       | SKS             | 11 05  |         |           |    |                 |   |
|         |       | S <sub>E</sub>  | 12 12  |         |           |    |                 |   |
|         |       | PS              | 13 40  |         |           |    |                 |   |
|         |       | SS              | 19 18  |         |           |    |                 |   |
|         |       | NE              | 24 31  |         |           |    |                 |   |
|         |       | L               | 30 10  | 30      |           |    |                 |   |
|         |       | L <sub>E</sub>  | 34 28  |         |           |    |                 |   |
|         |       | L <sub>N</sub>  | 34 58  |         |           |    |                 |   |
|         |       | M1              | 43 13  | 17      | 57        | 54 |                 |   |
|         |       | M2              | 44 40  | 17      |           | 54 |                 |   |
| M3      | 48 15 | 15              | 72   | 72      |           |    |                 |   |
|         |       | fin             | 14 30  |         |           |    |                 |   |
| 33      | 8     | P <sub>E</sub>  | 23 06 59   |         |           |    | 1900            | Océan Indien  |
|         |       | NE              | 10 51  |         |           |    |                 |   |
|         |       | L               | 11 17  | 9       |           |    |                 |   |
|         |       | M               | 12 26  | 7       |           |    |                 |   |
|         |       | fin             | 23 30  |         |           |    |                 |   |
| 34      | 10    | traces E        | 10 00 06   |         |           |    |                 | géné par microséismes.  |
|         |       | e               | 06 24  | 11      |           |    |                 |   |
|         |       | e               | 10 11 00   | 12      |           |    |                 |   |
| 35      | 11    | E               | 18 30 56   |         |           |    | 450?            | Local   |
|         |       | iS              | 32 05  |         |           |    |                 |   |
|         |       | fin             | 18 36  |         |           |    |                 |   |

| NUMÉROS | DATE  | PHASE | HEURE<br>(Greenwich)                                 | PÉRIODE | AMPLITUDE |    | DISTANCE<br>km. | REMARQUES        |
|---------|-------|-------|--|---------|-----------|----|-----------------|------------------|
|         |       |       |  |         | N.        | E. |                 |                  |
| 36      | 12    | i P   | <sup>h.</sup> <sup>m.</sup> <sup>s.</sup><br>2 26 09 |         |           |    |                 | local            |
|         |       | S     | 26 12  |         |           |    |                 |                  |
|         |       | fin   | 2 28   |         |           |    |                 |                  |
| 37      | 12    | E     | 17 01 51   |         |           |    |                 |                  |
|         |       | E     | 08 30  |         |           |    |                 |                  |
|         |       | E     | 26 15  | 18      |           |    |                 |                  |
|         |       | L     | 28   | 30      |           |    |                 |                  |
|         |       | M     | 37   | 18      |           |    |                 |                  |
|         |       | fin   | 17 55  |         |           |    |                 |                  |
| 38      | 12    | L     | 20 44  |         |           |    |                 |                  |
|         |       | M     | 51 36  | 17      |           |    |                 |                  |
|         |       | fin   | 21   |         |           |    |                 |                  |
| 39      | 13    | E     | 13 51 15   | 7       |           |    |                 | faible sur N. S. |
|         |       | E     | 14 01 33   | 10      |           |    |                 |                  |
|         |       | e     | 05 21  |         |           |    |                 |                  |
|         |       | e     | 08 44  | 15      |           |    |                 |                  |
|         |       | e     | 10 00  | 14      |           |    |                 |                  |
|         |       | L     | 10 18  | 22      |           |    |                 |                  |
|         |       | M 1   | 14 45  | 17      |           |    |                 |                  |
|         |       | M 2   | 19   | 15      |           |    |                 |                  |
|         |       | M 3   | 22   | 15      |           |    |                 |                  |
| fin     | 14 55 |       |  |         |           |    |                 |                  |

| NUMÉROS | DATE | PHASE    | HEURE<br>(Greenwich) |    |    | PÉRIODE | AMPLITUDE |                  | DISTANCE<br>km.  | REMARQUES |
|---------|------|----------|----------------------|----|----|---------|-----------|------------------|--|-----------|
|         |      |          | b.                   | m. | s. |         | N.        | E.               |  |           |
| 40      | 13   | E        | 15                   | 08 | 14 |         |           |                  | faible sur N. S.   |           |
|         |      | E        |                      | 12 | 50 |         |           |                  |  |           |
|         |      | E        |                      | 14 | 40 |         |           |                  |  |           |
|         |      | L        |                      | 19 |    | 30      |           |                  |  |           |
|         |      | eM       |                      | 24 |    | 21      |           |                  |  |           |
|         |      | M        |                      | 28 |    | 18      |           |                  |  |           |
|         |      | fin      |                      | 16 |    |         |           |                  |  |           |
| 41      | 15   | i        | 10                   | 34 | 31 |         |           |                  | local  |           |
|         |      | i        |                      | 34 | 38 |         |           |                  |  |           |
|         |      | fin      | 10                   | 36 |    |         |           |                  |  |           |
| 42      | 15   | traces L | 11                   | 41 |    |         |           | Nouvelle Zélande |  |           |
|         |      | M        | 11                   | 44 | 16 |         |           |                  |  |           |
|         |      | fin      | 12                   | 15 |    |         |           |                  |  |           |
| 43      | 15   | i P̄     | 13                   | 01 | 37 |         |           | 140              | senti entre Anosibé et<br>Vatomandry, à l'Est de<br>Tananarive |           |
|         |      | i S̄     |                      | 01 | 55 |         |           |                  |  |           |
| 44      | 15   | i P̄     | 13                   | 02 | 02 |         |           | 140              | replique du précédent  |           |
|         |      | i S̄     |                      | 02 | 20 |         |           |                  |  |           |
|         |      | fin      | 13                   | 05 |    |         |           |                  |  |           |
| 45      | 20   | traces E | 2                    | 55 | 33 |         |           | 11500            | voir bulletin de<br>Manila                                     |           |
|         |      | (PS)     | 3                    | 05 | 31 |         |           |                  |  |           |
|         |      | e        |                      | 14 |    |         |           |                  |  |           |
|         |      | L        |                      | 27 |    |         |           |                  |  |           |
|         |      | M        |                      | 34 |    |         |           |                  |  |           |
|         |      | M        |                      | 42 |    |         |           |                  |  |           |
| fin     | 3    | 55       |                      |    |    |         |           |                  |  |           |

| NUMÉROS | DATE | PHASE   | HEURES<br>(Greenwich)                              | PÉRIODE | AMPLITUDE |    | DISTANCE<br>km. | REMARQUES   |
|---------|------|---------|--|---------|-----------|----|-----------------|---|
|         |      |         |  |         | N.        | E. |                 |   |
| 46      | 22   | i P̄    | <sup>h.</sup> 18 <sup>m.</sup> 22 <sup>s.</sup> 15 |         |           |    | 70              | local   |
|         |      | i S̄    | 22 24  |         |           |    |                 |   |
|         |      | fin     | 18 25  |         |           |    |                 |   |
| 47      | 23   | P̄      | 19 41 41   |         |           |    |                 | local   |
|         |      | S̄      | 44   |         |           |    |                 |   |
|         |      | i       | 47   |         |           |    |                 |   |
|         |      | fin     | 19 44  |         |           |    |                 |   |
| 48      | 24   | P P E   | 12 23 45   |         |           |    | 12040           | Pacifique<br>10 S. 161 E.<br>d'après U. S. C. G. S. |
|         |      | S K S E | 29 33  | 15      |           |    |                 |   |
|         |      | S       | 31 06  |         |           |    |                 |   |
|         |      | P S     | 32 45  | 14      |           |    |                 |   |
|         |      | S S     | 39 00  | 27      |           |    |                 |   |
|         |      | S S S   | 42 36  | 18      |           |    |                 |   |
|         |      | L E     | 55 06  | 30      |           |    |                 |   |
|         |      | e M     | 13 02  | 21      |           |    |                 |   |
|         |      | fin     | 13 45  |         |           |    |                 |   |
| 49      | 24   | E       | 14 05  | 30      |           |    |                 | réplique du précédent ?                             |
|         |      | L       | 07   | 27      |           |    |                 |   |
|         |      | e M     | 18   | 21      |           |    |                 |   |
|         |      | M       | 21   | 21      |           |    |                 |   |
|         |      | fin     | 15   |         |           |    |                 |   |

# OBSERVATOIRE DE TANANARIVE (MADAGASCAR)

## BULLETIN SÉISMIQUE

AVRIL 1934

$\phi = 18^{\circ} 55' 02'' S$   $\lambda = 47^{\circ} 33' 06'' E$  altitude = 1375 m. Sous-sol-gneiss granitique

Instruments : Deux pendules Mainka (masse 450 kilog.) NS, EW

|       | $T_0$ | V   | $v : 1$ | $r/T_0^2$ |
|-------|-------|-----|---------|-----------|
| $A_N$ | 11.3  | 112 | 3.0     | 0.013     |
| $A_E$ | 12.5  | 120 | 3.5     | 0.014     |

| NUMÉROS | DATE  | PHASE           | HEURE<br>(Greenwich) | PÉRIODE | AMPLITUDE |      | DISTANCE<br>km. | REMARQUES             |
|---------|-------|-----------------|----------------------|---------|-----------|------|-----------------|-----------------------|
|         |       |                 |                      |         | N.        | E.   |                 |                       |
| 50      | 4     | $\bar{P}$       | h. m. s.<br>11 00 53 |         |           |      |                 | local                 |
|         |       | i               | 00 57                |         |           |      |                 |                       |
|         |       | i               | 01 01                |         |           |      |                 |                       |
|         |       | fin             | 11 02                |         |           |      |                 |                       |
| 51      | 7     | $\bar{P}$       | 14 49 01             |         |           | 80   |                 | local                 |
|         |       | $\bar{S}$       | 49 11                |         |           |      |                 |                       |
|         |       | fin             | 14 51                |         |           |      |                 |                       |
| 52      | 10    | $P_E$           | 10 33 55             | 6       |           | 8220 |                 | îles de la Sonde ?    |
|         |       | (S)             | 43 02                |         |           |      |                 |                       |
|         |       | PS              | 43 59                |         |           |      |                 |                       |
|         |       | N               | 44 11                | 24      |           |      |                 |                       |
|         |       | LE              | 58 10                |         |           |      |                 |                       |
|         |       | eM <sub>E</sub> | 11 07 20             |         |           |      |                 |                       |
| fin     | 11 30 | 18              |                      |         |           |      |                 |                       |
| 53      | 12    | $\bar{P}$       | 11 02 12             |         |           | 75   |                 | senti II à Tananarive |
|         |       | $\bar{S}$       | 02 21                |         |           |      |                 |                       |
|         |       | fin             | 11 04                |         |           |      |                 |                       |

| NUMÉROS | DATE | PHASE            | HEURE<br>(Greenwich) | PÉRIODE | AMPLITUDE |            | DISTANCE<br>km. | REMARQUES                |
|---------|------|------------------|----------------------|---------|-----------|------------|-----------------|--------------------------|
|         |      |                  |                      |         | N.        | E.         |                 |                          |
| 54      | 14   | P̄               | h. m. s.<br>14 56 29 |         |           |            |                 | local                    |
|         |      | S̄               | 56 33                |         |           |            |                 |                          |
|         |      | fin              | 14 58                |         |           |            |                 |                          |
| 55      | 15   | P <sub>E</sub>   | 22 27 35             | 4       |           |            | 9555            | Philippines              |
|         |      | PP <sub>E</sub>  | 30 57                |         |           |            |                 | 8 N. 127 E.              |
|         |      | SKS <sub>E</sub> | 37 47                |         |           |            |                 | H = 22. 14. 58           |
|         |      | SE <sub>N</sub>  | 38 04                |         |           |            |                 | d'après Strasbourg       |
|         |      | PS <sub>E</sub>  | 39 03                |         |           |            |                 |                          |
|         |      | SS <sub>E</sub>  | 44 09                | 15      |           |            |                 |                          |
|         |      | L                | 55 43                | 24      |           |            |                 |                          |
|         |      | M                | 23 05                | 18      |           |            |                 |                          |
| 56      | 17   | fin              | 24                   |         |           |            |                 |                          |
|         |      | P̄               | 18 21 21             |         |           |            | 75              | région lac Itasy         |
|         |      | i                | 24                   |         |           |            |                 | senti III à Miarinarivo  |
|         |      | S̄               | 31                   |         |           |            |                 |                          |
| 57      | 20   | fin              | 18 23                |         |           |            |                 |                          |
|         |      | P̄               | 16 05 44             |         |           |            | 80              | local                    |
|         |      | S̄               | 55                   |         |           |            |                 |                          |
|         |      | M                | 59                   |         |           |            |                 |                          |
| 58      | 23   | fin              | 16 07                |         |           |            |                 |                          |
|         |      | P                | 7 54 13              |         |           |            | 160             | Nord Est de Tananarive   |
|         |      | P̄               | 16                   |         |           |            |                 | vallée du Mangoro —      |
|         |      | i                | 32                   |         |           |            |                 | lac Alaotra,             |
|         |      | S̄               | 36                   |         |           |            |                 | senti III-IV Andilamena, |
|         |      | i                | 40                   |         |           |            |                 | Moramanga, Ambohi-       |
| fin     | 8.0  |                  |                      |         |           | tsilaozana |                 |                          |
|         |      |                  |                      |         |           |            | II à Tananarive |                          |

| NUMÉROS | DATE | PHASE          | HEURES<br>(Greenwich) | PÉRIODE | AMPLITUDE |    | DISTANCE<br>km. | REMARQUES                                   |
|---------|------|----------------|-----------------------|---------|-----------|----|-----------------|---|
|         |      |                |                       |         | N.        | E. |                 |   |
| 59      | 24   | P̄             | h. m. s.<br>22 34 44  |         |           |    | 50              | local                                       |
|         |      | S̄             | 34 51                 |         |           |    |                 |   |
|         |      | fin            | 22 36                 |         |           |    |                 |   |
| 60      | 25   | P̄             | 23 54 17              |         |           |    |                 | local                                       |
|         |      | S̄             | 54 20                 |         |           |    |                 |   |
|         |      | fin            | 23 56                 |         |           |    |                 |   |
| 61      | 26   | traces         | 21 25 17              |         |           |    |                 | Nouvelles Hébrides<br>d'après Manila        |
|         |      | L              | 55 41                 | 27      |           |    |                 |   |
|         |      | M              | 22 03 02              | 18      |           |    |                 |   |
|         |      | fin            | 22 20                 |         |           |    |                 |   |
| 62      | 27   | L <sub>E</sub> | 21 42 03              | 20      |           |    |                 | Pacifique<br>23 S. 173 E.<br>d'après Manila |
|         |      | M <sub>E</sub> | 52 06                 | 15      |           |    |                 |   |
|         |      | fin            | 22 15                 |         |           |    |                 |   |

Imp. Cath. Trivie

*Le Directeur de l'Observatoire,  
CH. POISSON, s. j.*

## OBSERVATOIRE DE TANANARIVE (MADAGASCAR)

### BULLETIN SÉISMIQUE

MAI 1934

$\varphi = 18^{\circ} 55' 02'' \text{ S}$     $\lambda = 47^{\circ} 33' 06'' \text{ E}$    altitude = 1375 m. Sous-sol-gneiss granitique

Instruments : Deux pendules Mainka (masse 450 kilog.) NS, EW

|       | $T_0$ | V   | $\nu : 1$ | $r/T_0^2$ |
|-------|-------|-----|-----------|-----------|
| $A_N$ | 11.5  | 106 | 3.0       | 0.014     |
| $A_E$ | 12.4  | 119 | 3.5       | 0.015     |

| NUMÉROS | DATE | PHASE | HEURE<br>(Greenwich) | PÉRIODE | AMPLITUDE |     | DISTANCE<br>km. | REMARQUES                                      |
|---------|------|-------|----------------------|---------|-----------|-----|-----------------|--|
|         |      |       |                      |         | N.        | E.  |                 |  |
| 63      | 1    | i P E | 7 14 16              | 3       |           |     | 5825            | Océan Indien.<br>6.5 N 94 E.<br>d'après Manila |
|         |      | i     | 14 49                | 5       |           |     |                 |  |
|         |      | e     | 16 57                |         |           |     |                 |  |
|         |      | E (S) | 21 44                | 15      |           |     |                 |  |
|         |      | fin   | 8                    |         |           |     |                 |  |
| 64      | 2    | i P   | 14 16 45             |         |           | 80  | local           |  |
|         |      | i S   | 55                   |         |           |     |                 |  |
|         |      | i M   | 57                   |         |           |     |                 |  |
|         |      | fin   | 14 19                |         |           |     |                 |  |
| 65      | 3    | i E   | 2 17 26              |         |           | 110 | local-faible    |  |
|         |      | S E   | 40                   |         |           |     |                 |  |
|         |      | fin   | 2 19                 |         |           |     |                 |  |
| 66      | 3    | i     | 12 44 49             |         |           |     | local           |  |
|         |      | fin   | 12 46                |         |           |     |                 |  |

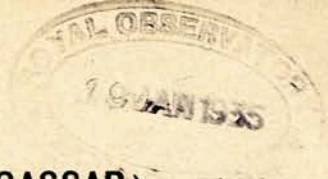


| NUMÉROS | DATE | PHASE                   | HEURE<br>(Greenwich) | PÉRIODE | AMPLITUDE |    | DISTANCE<br>km. | REMARQUES   |  |
|---------|------|-------------------------|----------------------|---------|-----------|----|-----------------|---|--|
|         |      |                         |                      |         | N.        | E. |                 |   |  |
| 47      | 4    | S K P                   | h. m. s.<br>4 59 03  |         |           |    | 15220           | Alaska.<br>61.0 N 145.1 W.<br>H = 4.36.15<br>d'après J. S. A. |  |
|         |      | Changeement de feuilles |                      |         |           |    |                 |   |  |
|         |      | S S S                   | 5 20 05              |         |           |    |                 |   |  |
|         |      | E                       | 47 20                | 36      |           |    |                 |   |  |
|         |      | L E                     | 48 50                | 30      |           |    |                 |   |  |
|         |      | M                       | 6 00                 | 18      |           |    |                 |   |  |
|         |      | fin                     | 7                    |         |           |    |                 |   |  |
| 68      | 7    | i P̄                    | 22 10 12             |         |           |    | 110             | local   |  |
|         |      | i S̄                    | 26                   |         |           |    |                 |   |  |
|         |      | fin                     | 22 12                |         |           |    |                 |   |  |
| 69      | 17   | i P̄                    | 0 56 37              |         |           |    | 70              | senti II à Tananarive   |  |
|         |      | i S̄                    | 46                   |         |           |    |                 |   |  |
|         |      | M                       | 49                   |         |           |    |                 |   |  |
|         |      | fin                     | 0 59                 |         |           |    |                 |   |  |
| 70      | 19   | traces E                | 1 45 59              |         |           |    |                 |   |  |
|         |      | E                       | 46 53                |         |           |    |                 |   |  |
|         |      | L                       | 49 26                |         |           |    |                 |   |  |
|         |      | fin                     | 2                    |         |           |    |                 |   |  |

| NUMÉROS | DATE | PHASE    | HEURES<br>(Greenwich) |    |    | PÉRIODE | AMPLITUDE |    | DISTANCE<br>km.                       | REMARQUES |
|---------|------|----------|-----------------------|----|----|---------|-----------|----|---------------------------------------|-----------|
|         |      |          | h.                    | m. | s. |         | N.        | E. |                                       |           |
| 71      | 27   | traces N | 13                    | 31 | 05 | 9       |           |    | Océan Indien ?<br>plus fort sur N. S. |           |
|         |      | N        |                       | 35 | 36 |         |           |    |                                       |           |
|         |      | E        |                       | 35 | 46 |         |           |    |                                       |           |
|         |      | M        |                       | 37 | 46 |         |           |    |                                       |           |
|         |      | fin      |                       | 13 | 45 |         |           |    |                                       |           |

Imp. Cath. T/rt/e

Le Directeur de l'Observatoire,  
CH. POISSON, s. J.



**OBSERVATOIRE DE TANANARIVE (MADAGASCAR)**

**BULLETIN SÉISMIQUE**

**JUIN 1934**

$\varphi = 18^{\circ} 55' 02'' S$     $\lambda = 47^{\circ} 33' 06'' E$    altitude = 1375 m. Sous-sol-gneiss granitique

Instruments : Deux pendules Mainka ( masse 450 kilog. ) NS, EW

|       |       |     |         |           |
|-------|-------|-----|---------|-----------|
|       | $T_0$ | V   | $v : 1$ | $r/T_0^2$ |
| $A_S$ | 12.6  | 118 | 3.5     | 0.016     |
| $A_E$ | 13.5  | 108 | 3.2     | 0.013     |

| NUMÉROS | DATE  | PHASE       | HEURE<br>(Greenwich) | PÉRIODE | AMPLITUDE |    | DISTANCE<br>km. | REMARQUES   |
|---------|-------|-------------|----------------------|---------|-----------|----|-----------------|---|
|         |       |             |                      |         | N.        | E. |                 |   |
| 72      | 3     | $\bar{P}$   | h. m. s<br>17 07 18  |         |           |    | 10600           | local   |
|         |       | i $\bar{S}$ | 07 21                |         |           |    |                 |   |
|         |       | L           | 07 30                |         |           |    |                 |   |
|         |       | fin         | 17 09                |         |           |    |                 |   |
| 73      | 9     | P P E       | 13 16 34             |         |           |    | 10600           | Pacifique<br>vers 6°5 S 145°5 E<br>d'après Manila |
|         |       | S K S       | 22 36                | 6       |           |    |                 |   |
|         |       | S           | 23 25                |         |           |    |                 |   |
|         |       | P S         | 24 49                | 9       |           |    |                 |   |
|         |       | e           | 26 07                |         |           |    |                 |   |
|         |       | L           | 48 15                | 23      |           |    |                 |   |
|         |       | M           | 52 30                | 18      |           |    |                 |   |
|         |       | M           | 57 30                | 20      |           |    |                 |   |
| fin     | 14 20 |             |                      |         |           |    |                 |   |
| 74      | 3     | $\bar{P}$   | 14 05 05             |         |           |    | 100             | local   |
|         |       | i           | 16                   |         |           |    |                 |   |
|         |       | $\bar{S}$   | 18                   |         |           |    |                 |   |
|         |       | fin         | 14 07                |         |           |    |                 |   |

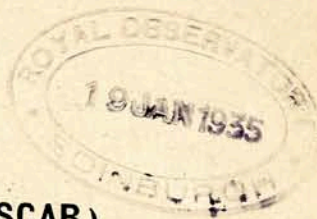
| NUMÉROS | DATE  | PHASE   | HEURE'<br>(Greenwich) | PÉRIODE | AMPLITUDE |    | DISTANCE<br>km. | REMARQUES  |
|---------|-------|---------|-----------------------|---------|-----------|----|-----------------|--|
|         |       |         |                       |         | N.        | E. |                 |  |
| 75      | 13    | i P     | h. m. s.<br>22 19 10  | 15      |           |    | 5280            | Afghanistan<br>29.5 N 63.5 E<br>d'après Strasbourg |
|         |       | P P E   | 21 16                 |         |           |    |                 |  |
|         |       | N       | 21 25                 |         |           |    |                 |  |
|         |       | S       | 26 08                 |         |           |    |                 |  |
|         |       | E N     | 26 37                 |         |           |    |                 |  |
|         |       | S S N   | 29 13                 |         |           |    |                 |  |
|         |       | S S S E | 30 31                 |         |           |    |                 |  |
|         |       | L E     | 32 50                 |         |           |    |                 |  |
|         |       | L N     | 33 01                 |         |           |    |                 |  |
|         |       | M1      | 37 30                 |         |           |    |                 |  |
|         |       | M2      | 39 30                 |         |           |    |                 |  |
| fin     | 23 20 |         |                       |         |           |    |                 |  |
| 76      | 18    | P       | 23 42 51              |         |           | 35 | local           |  |
|         |       | S       | 42 56                 |         |           |    |                 |  |
|         |       | fin     | 23 45                 |         |           |    |                 |  |
| 77      | 23    | P       | 1 43 44               |         |           | 35 | local           |  |
|         |       | S       | 43 49                 |         |           |    |                 |  |
|         |       | fin     | 1 46                  |         |           |    |                 |  |

| NUMÉROS | DATE | PHASE           | HEURES<br>(Greenwich)                                | PÉRIODE | AMPLITUDE |    | DISTANCE<br>km. | REMARQUES   |
|---------|------|-----------------|--|---------|-----------|----|-----------------|---|
|         |      |                 |  |         | N.        | E. |                 |   |
| 78      | 24   | P               | <sup>h.</sup> <sup>m.</sup> <sup>s.</sup><br>6 12 51 |         |           |    | 11650           | Chili<br>22 S 68 W<br>profondeur 100 km.<br>H 5.59.39<br>d'après J. S. A. |
|         |      | SKS             | 24 09  | 10      |           |    |                 |   |
|         |      | SKKS            | 24 54  |         |           |    |                 |   |
|         |      | S <sub>N</sub>  | 25 42  |         |           |    |                 |   |
|         |      | PS              | 26 57  | 16      |           |    |                 |   |
|         |      | N               | 28 00  |         |           |    |                 |   |
|         |      | SS              | 32 41  |         |           |    |                 |   |
|         |      | eM <sub>E</sub> | 53   |         |           |    |                 |   |
|         |      | M <sub>N</sub>  | 56 30  |         |           |    |                 |   |
|         |      | M               | 7 03 30  |         |           |    |                 |   |
| fin     | 7 25 |                 |  |         |           |    |                 |   |
| 79      | 24   | P̄              | 18 09 15   |         |           |    | 170             | local   |
|         |      | iS̄             | 09 36  |         |           |    |                 |   |
|         |      | fin             | 18 11 30   |         |           |    |                 |   |
| 80      | 25   | P̄ <sub>N</sub> | 4 14 12  |         |           |    | 30              | local   |
|         |      | S̄ <sub>N</sub> | 14 16  |         |           |    |                 |   |
|         |      | fin             | 4 15 30  |         |           |    |                 |   |
| 81      | 28   | P               | 8 24 44  |         |           |    |                 | local   |
|         |      | S               | 24 47  |         |           |    |                 |   |
|         |      | fin             | 8 26   |         |           |    |                 |   |

| NUMÉROS | DATE | PHASE | HEURES<br>(Greenwich) | PÉRIODE | AMPLITUDE |    | DISTANCE<br>km. | REMARQUES   |
|---------|------|-------|-----------------------|---------|-----------|----|-----------------|---|
|         |      |       |                       |         | N.        | E. |                 |   |
| 82      | 29   | P     | h. m. s.<br>8 35 50   |         |           |    |                 | choc local<br>superposé au suivant  |
| 83      | 29   | i P   | 8 35 47               |         |           |    |                 | interprétation douteuse<br>ondes longues peu<br>visibles<br>foyer profond ? |
|         |      | (S)   | 44 17                 |         |           |    |                 |   |
|         |      | M     | 47 41                 |         |           |    |                 |   |
|         |      | fin   | 9 10                  |         |           |    |                 |   |

Imp. Cath. T'rite

Le Directeur de l'Observatoire,  
CH. POISSON, s. J.



## OBSERVATOIRE DE TANANARIVE (MADAGASCAR)

### BULLETIN SÉISMIQUE

JUILLET 1934

$\varphi = 18^{\circ} 55' 02'' \text{ S}$     $\lambda = 47^{\circ} 33' 06'' \text{ E}$    altitude = 1375 m. Sous-sol-gneiss granitique

Instruments : Deux pendules Mainka (masse 450 kilog.) NS, EW

|       |       |     |         |           |
|-------|-------|-----|---------|-----------|
|       | $T_0$ | V   | $v : 1$ | $r/T_0^2$ |
| $A_N$ | 13.2  | 112 | 3.4     | 0.010     |
| $A_E$ | 12.6  | 119 | 3.6     | 0.018     |

| NUMÉROS | DATE | PHASE       | HEURE<br>(Greenwich) | PÉRIODE  | AMPLITUDE |    | DISTANCE<br>km. | REMARQUES  |
|---------|------|-------------|----------------------|----------|-----------|----|-----------------|--|
|         |      |             |                      |          | N.        | E. |                 |  |
| 84      | 6-7  | traces N    | h. m. s.<br>23 20 30 | 27<br>19 |           |    |                 | 41.3 N   125.3 W<br>H = 22.48.56<br>d'après U. S. C. G. S. |
|         |      | L           | 0 11 30              |          |           |    |                 |  |
|         |      | L           | 15 42                |          |           |    |                 |  |
|         |      | M           | 20 30                |          |           |    |                 |  |
|         |      | fin         | 0 40                 |          |           |    |                 |  |
| 85      | 9    | $\bar{P}$   | 0 28 50              |          |           |    |                 | local  |
|         |      | i $\bar{S}$ | 56                   |          |           |    |                 |  |
|         |      | i           | 59                   |          |           |    |                 |  |
|         |      | i           | 0 29 03              |          |           |    |                 |  |
| 86      | 9    | traces N    | 3 27 32              |          |           |    |                 | local-réplique   |
|         |      | $\bar{P}$   | 59                   |          |           |    |                 |  |
|         |      | $\bar{S}$   | 28 05                |          |           |    |                 |  |
|         |      | fin         | 3 29 30              |          |           |    |                 |  |

| NUMÉROS | DATE | PHASE       | HEURES<br>(Greenwich)                                 | PÉRIODE | AMPLITUDE |     | DISTANCE<br>km. | REMARQUES   |
|---------|------|-------------|---|---------|-----------|-----|-----------------|---|
|         |      |             |   |         | N.        | E.  |                 |   |
| 87      | 10   | i P         | <sup>h.</sup> <sup>m.</sup> <sup>s.</sup><br>12 15 22 |         | + 9       | + 4 | 140             | senti II-III à Tananarive<br>et au nord, région entre<br>Ambatondrazaka et<br>Andilamena. |
|         |      | i $\bar{S}$ | 15 40   |         | 13        | 12  |                 |   |
|         |      | i M         | 15 44   |         |           |     |                 |   |
|         |      | fin         | 12 18 30  |         |           |     |                 |   |
| 88      | 12   | (P) E       | 14 42 13  |         |           |     | 9500            | mer de Chine ?  |
|         |      | (S)         | 52 48   |         |           |     |                 |   |
|         |      | (P S)       | 53 43   |         |           |     |                 |   |
|         |      | e           | 54 53   | 20      |           |     |                 |   |
|         |      | fin         | 15 10   |         |           |     |                 |   |
| 89      | 18   | P P E       | 1 57 51   |         |           |     | 14510           | Panama<br>destructeur à David.<br>8.2 N 82.5 W<br>profondeur 65 km.<br>d'après J. S. A.   |
|         |      | S K P E N   | 59 08   | 10      |           |     |                 |   |
|         |      | S N         | 2 06 21   | 16      |           |     |                 |   |
|         |      | P S E       | 08 18   |         |           |     |                 |   |
|         |      | P P S E     | 09 54   |         |           |     |                 |   |
|         |      | S S E N     | 15 09   | 16      |           |     |                 |   |
|         |      | S S S E     | 20 39   |         |           |     |                 |   |
|         |      | L N         | 34 50   | 30      |           |     |                 |   |
|         |      | L E         | 36 30   |         |           |     |                 |   |
|         |      | N           | 39 30   | 27      | 88        |     |                 |   |
|         |      | E           | 44 30   | 21      |           | 73  |                 |   |
|         |      | M 1 E       | 49 30   | 20      |           | 110 |                 |   |
|         |      | M N         | 54  | 19      | 62        |     |                 |   |
|         |      | M 2 E       | 57  | 18      |           | 93  |                 |   |
| fin     | 4    |             |   |         |           |     |                 |   |



| NUMÉROS | DATE | PHASE     | HEURE<br>(Greenwich) | PÉRIODE | AMPLITUDE |    | DISTANCE<br>km. | REMARQUES   |       |    |     |
|---------|------|-----------|----------------------|---------|-----------|----|-----------------|---|-------|----|-----|
|         |      |           |                      |         | N.        | E. |                 |   |       |    |     |
| 90      | 18   | P P E     | h. m. s.<br>17 21 42 | 9       |           |    | 14510           | région David,<br>réplique du précédent,<br>même profondeur.   |       |    |     |
|         |      | S K P     | 22 49                |         |           |    |                 |   |       |    |     |
|         |      | (S) N     | 29 43                |         |           |    |                 |   |       |    |     |
|         |      | P S E     | 31 42                |         |           |    |                 |   |       |    |     |
|         |      | S S E     | 33 07                |         |           |    |                 |   |       |    |     |
|         |      | S S S N   | 38 49                |         |           |    |                 |   |       |    |     |
|         |      | L E N     | 57                   |         |           |    |                 |   | 30    |    |     |
|         |      | e M       | 18 10 50             |         |           |    |                 |   |       |    |     |
|         |      | M 2       | 16                   |         |           |    |                 |   |       |    |     |
|         |      | fin       | 18 40                |         |           |    |                 |   |       |    |     |
| 91      | 18   | P P E N   | 19 59 40             | 12      |           |    | 12440           | Océan Pacifique<br>14 S. 167 E.<br>H = 19.40<br>d'après U. S. C. G. S.<br>14.25 S. 162 E.<br>d'après Perth. |       |    |     |
|         |      | E         | 20 02 38             |         |           |    |                 |   |       |    |     |
|         |      | S K K S N | 06 07                |         |           |    |                 |   |       |    |     |
|         |      | P S E N   | 08 33                |         |           |    |                 |   |       |    |     |
|         |      | P P S E N | 09 53                |         |           |    |                 |   |       |    |     |
|         |      | S S N     | 15 27                |         |           |    |                 |   |       |    |     |
|         |      | S S E     | 15 39                |         |           |    |                 |   |       |    |     |
|         |      | L         | 34 30                |         |           |    |                 |   | 36    |    |     |
|         |      | m         | 37 30                |         |           |    |                 |   | 22-26 | 52 | 265 |
|         |      | M E       | 44                   |         |           |    |                 |   | 18    | 80 |     |
|         |      | M N       | 46                   |         |           |    |                 |   | 18    | 36 |     |
|         |      | M 2 N     | 21 50                |         |           |    |                 |   | 20    | 52 |     |
|         |      | fin       | 22 30                |         |           |    |                 |   |       |    |     |

| NUMÉROS | DATE  | PHASE     | HEURE<br>(Greenwich) | PÉRIODE | AMPLITUDE |         | DISTANCE<br>km. | REMARQUES   |
|---------|-------|-----------|----------------------|---------|-----------|---------|-----------------|---|
|         |       |           |                      |         | N.        | E.      |                 |   |
| 92      | 19    | L         | h. m. s.<br>0 41     |         |           |         |                 | 11.4 S. 166 E.<br>d'après Chiufeng.                   |
|         |       | M         | 1 03                 |         |           |         |                 |   |
|         |       | fin       | 1 15                 |         |           |         |                 |   |
| 93      | 19    | P E       | 1 40 12              |         |           | 9445    |                 | 2° S. 133° E.<br>d'après Manila.                      |
|         |       | S E N     | 50 42                | 12      |           |         |                 |   |
|         |       | S S       | 56 39                |         |           |         |                 |   |
|         |       | L N       | 2 02 30              | 33      |           |         |                 |   |
|         |       | L E       | 08                   |         |           |         |                 |   |
|         |       | M         | 11 36                | 20      |           |         |                 |   |
|         |       | fin       | 2 45                 |         |           |         |                 |   |
| 94      | 19    | L         | 6 41 15              | 28      |           |         |                 | 6.5 S. 176 E.<br>d'après Chiufeng.                    |
|         |       | e M       | 46 21                | 20      |           |         |                 |   |
|         |       | fin       | 7                    |         |           |         |                 |   |
| 95      | 19    | (SKKS) E  | 8 02 54              | 8       |           | (12500) |                 | Océan Pacifique.<br>d'après Manila :<br>13.45 S 168 E |
|         |       | (P S)     | 05 42                | 9       |           |         |                 |   |
|         |       | (P P S) N | 07 07                |         |           |         |                 |   |
|         |       | S S E     | 12 23                | 20      |           |         |                 |   |
|         |       | L         | 31 30                | 33      |           |         |                 |   |
|         |       | e M       | 38 08                | 18      |           |         |                 |   |
|         |       | M 2       | 42                   | 15      |           |         |                 |   |
|         |       | L 2       | 9 54                 | 22      |           |         |                 |   |
|         |       | M 3       | 10 02                | 15      |           |         |                 |   |
| fin     | 10 45 |           |                      |         |           |         |                 |   |

| NUMÉROS | DATE | PHASE    | HEURES<br>(Greenwich) | PÉRIODE | AMPLITUDE |    | DISTANCE<br>km. | REMARQUES  |
|---------|------|----------|-----------------------|---------|-----------|----|-----------------|--|
|         |      |          |                       |         | N.        | E. |                 |  |
| 96      | 21   | PP       | 6 38 08               | 5       |           |    |                 | Océan Pacifique<br><br>18.2 S. 164 E<br>d'après J. S. A.<br>12 S. 173 E.<br>d'après Manila.<br>6.3 S 169.5 E<br>d'après Chiufeng |
|         |      | SKKS     | 44 09                 | 8       |           |    |                 |  |
|         |      | iPS      | 47 39                 |         |           |    |                 |  |
|         |      | EN       | 48 13                 |         |           |    |                 |  |
|         |      | EN       | 49 06                 | 15      |           |    |                 |  |
|         |      | SS       | 53 51                 | 16      |           |    |                 |  |
|         |      | eLE      | 7 06 30               | 36      |           |    |                 |  |
|         |      | eME      | 15 30                 | 22      |           |    |                 |  |
|         |      | M1E      | 17                    | 22      |           | 44 |                 |  |
|         |      | M2       | 22 30                 | 18      |           | 30 |                 |  |
|         |      | M3       | 24 30                 | 17      |           | 38 |                 |  |
|         |      | M        | 8 30                  |         |           |    |                 |  |
| fin     | 9 15 |          |                       |         |           |    |                 |  |
| 97      | 21   | traces E | 11 33 30              |         |           |    | 14510           | Panama<br>destructeur Armuelle.<br><br>réplique du n° 89.  |
|         |      | LN       | 39                    |         |           |    |                 |  |
|         |      | LE       | 43                    |         |           |    |                 |  |
|         |      | eM       | 50 33                 |         |           |    |                 |  |
|         |      | M        | 55                    |         |           |    |                 |  |
|         |      | fin      | 12 10                 |         |           |    |                 |  |

| NUMÉROS | DATE | PHASE       | HEURE.<br>(Greenwich)                              | PÉRIODE | AMPLITUDE |    | DISTANCE<br>km. | REMARQUES |
|---------|------|-------------|--|---------|-----------|----|-----------------|-----------|
|         |      |             |  |         | N.        | E. |                 |           |
| 98      | 28   | traces (PP) | <sup>h.</sup> 22 <sup>m.</sup> 48 <sup>s.</sup> 59 |         |           |    |                 |           |
|         |      | S           | 51 48  |         |           |    |                 |           |
|         |      | SS          | 55 33  |         |           |    |                 |           |
|         |      | e L         | 58 09  | 27      |           |    |                 |           |
|         |      | e M         | 23 05 30   | 20      |           |    |                 |           |
|         |      | fin         | 23 40  |         |           |    |                 |           |
| 99      | 31   | i           | 12 31 19   |         |           |    |                 | local     |
|         |      | i           | 31 22  |         |           |    |                 |           |
|         |      | fin         | 12 33  |         |           |    |                 |           |


**OBSERVATOIRE DE TANANARIVE (MADAGASCAR)**
**BULLETIN SÉISMIQUE**
**AOUT 1934**
 $\varphi = 18^{\circ} 55' 02'' \text{ S}$     $\lambda = 47^{\circ} 33' 06'' \text{ E}$    altitude = 1375 m. Sous-sol-gneiss granitique

Instruments : Deux pendules Mainka (masse 450 kilog.) NS, EW

|       | $T_0$ | V   | $v : 1$ | $r/T_0^2$ |
|-------|-------|-----|---------|-----------|
| $A_N$ | 13.2  | 120 | 3.2     | 0.02      |
| $A_E$ | 12.6  | 121 | 3.3     | 0.02      |

| NUMÉROS | DATE | PHASE    | HEURE<br>(Greenwich) | PÉRIODE | AMPLITUDE |    | DISTANCE<br>km. | REMARQUES  |
|---------|------|----------|----------------------|---------|-----------|----|-----------------|--|
|         |      |          |                      |         | N.        | E. |                 |  |
| 100     | 7    | (P P)    | h. m. s<br>3 59 23   |         |           |    | 12450           | début incertain<br>microséismes.<br><br>14 S   167 E<br>H = 3.40.0<br>d'après U. S. C. G. S. |
|         |      | e E P S  | 4 09 17              | 10      |           |    |                 |  |
|         |      | E        | 10 42                | 15      |           |    |                 |  |
|         |      | e S S    | 15 21                | 36      |           |    |                 |  |
|         |      | e M E    | 37 18                | 24      |           |    |                 |  |
|         |      | e M N    | 37 30                | 21      |           |    |                 |  |
|         |      | M E      | 40 30                | 20      |           |    |                 |  |
|         |      | M N      | 43                   | 18      |           |    |                 |  |
|         | fin  | 5        |                      |         |           |    |                 |  |
| 101     | 10   | i P̄     | 2 48 48              |         |           |    | 125             | local  |
|         |      | R i P̄ N | 48 53                |         |           |    |                 |  |
|         |      | i S̄     | 49 04                |         |           |    |                 |  |
|         |      | M        | 49 09                |         |           |    |                 |  |
|         |      | fin      | 2 51                 |         |           |    |                 |  |

| NUMÉROS | DATE  | PHASE            | HEURE<br>(Greenwich) | PÉRIODE | AMPLITUDE |    | DISTANCE<br>km. | REMARQUES   |
|---------|-------|------------------|----------------------|---------|-----------|----|-----------------|---|
|         |       |                  |                      |         | N.        | E. |                 |   |
| 102     | 13    | traces P         | h. m. s.             |         |           |    | 9210            | microséismes gênants.<br>senti aux Philippines<br>Mindanao<br>8.20 N 126.50 E<br>d'après Manila |
|         |       | E S              | 0 01 44              |         |           |    |                 |   |
|         |       |                  |                      | 12      |           |    |                 |   |
|         |       | E P S            | 12 00                |         |           |    |                 |   |
|         |       |                  | 13 19                |         |           |    |                 |   |
|         |       | E S S            | 13 19                |         |           |    |                 |   |
|         |       |                  | 18 06                |         |           |    |                 |   |
|         |       | N                | 23 30                |         |           |    |                 |   |
|         |       | L E              | 29 18                | 27      |           |    |                 |   |
|         | 32 40 |                  |                      |         |           |    |                 |   |
|         | M E   | 34 15            | 22                   |         |           |    |                 |   |
|         | M N   | 34 30            |                      |         |           |    |                 |   |
|         | fin   | 0 50             |                      |         |           |    |                 |   |
| 103     | 17    | i $\bar{P}$ N    | 4 28 00              |         |           |    |                 | local<br>presque rien sur E W   |
|         |       | i                | 04                   |         |           |    |                 |   |
|         |       | i                | 28 34                |         |           |    |                 |   |
|         |       | fin              | 4 30                 |         |           |    |                 |   |
| 104     | 17    | i $\bar{P}$ N    | 5 46 58              |         |           |    | 130             | local.<br>deux choes.<br>très faible sur E W.   |
|         |       | i ( $\bar{S}$ )  | 47 14                |         |           |    |                 |   |
|         |       | i ( $\bar{P}$ 2) | 47 48                |         |           |    |                 |   |
|         |       | i ( $\bar{S}$ 2) | 48 04                |         |           |    |                 |   |
|         |       | fin              | 5 50                 |         |           |    |                 |   |

| NUMÉROS | DATE | PHASE      | HEURES<br>(Greenwich) | PÉRIODE | AMPLITUDE |    | DISTANCE<br>km. | REMARQUES   |
|---------|------|------------|-----------------------|---------|-----------|----|-----------------|---|
|         |      |            |                       |         | N.        | E. |                 |   |
| 105     | 21   | traces P E | h. m. s.<br>19 35 34  | 4       |           |    | 5435            | Océan Indien, près<br>de Sumatra ?<br>vers 1 S 94 E<br>d'après Manila |
|         |      | E (PPP)    | 38 43                 |         |           |    |                 |   |
|         |      | E P S      | 43 12                 |         |           |    |                 |   |
|         |      | E          | 43 28                 | 16      |           |    |                 |   |
|         |      | e L        | 50 52                 | 30      |           |    |                 |   |
|         |      | L          | 52 50                 | 24      |           |    |                 |   |
|         |      | M          | 54 30                 | 19      |           |    |                 |   |
|         |      | M          | 59 19                 | 15      |           |    |                 |   |
|         |      | fin        | 20 15                 |         |           |    |                 |   |
| 106     | 24   | traces E   | 0 23 34               |         |           |    |                 |   |
|         |      | e          | 28 40                 | 16      |           |    |                 |   |
|         |      | e          | 33 43                 |         |           |    |                 |   |
|         |      | e          | 37 16                 |         |           |    |                 |   |
|         |      | e M        | 46 30                 | 21      |           |    |                 |   |
|         |      | fin        | 1                     |         |           |    |                 |   |
| 107     | 31   | traces N   | 15 23 34              |         |           |    |                 | Afghanistan ?   |
|         |      | e N        | 29 31                 |         |           |    |                 |   |
|         |      | e L        | 31 40                 | 21      |           |    |                 |   |
|         |      | e M        | 35 28                 | 15      |           |    |                 |   |
|         |      | fin        | 15 40                 |         |           |    |                 |   |

**OBSERVATOIRE DE TANANARIVE (MADAGASCAR)**
**BULLETIN SÉISMIQUE**
**SEPTEMBRE 1934**
 $\varphi = 18^{\circ} 55' 02'' \text{ S}$     $\lambda = 47^{\circ} 33' 06'' \text{ E}$    altitude = 1375 m. Sous-sol-gneiss granitique

Instruments : Deux pendules Mainka (masse 450 kilog.) NS, EW

|       | $T_0$ | V   | $v : 1$ | $r/T_0^2$ |
|-------|-------|-----|---------|-----------|
| $A_N$ | 13.0  | 120 | 3.0     | 0.020     |
| $A_E$ | 12.7  | 112 | 3.2     | 0.023     |

| NUMÉROS | DATE | PHASE                | HEURE<br>(Greenwich) | PÉRIODE | AMPLITUDE |    | DISTANCE<br>km. | REMARQUES |
|---------|------|----------------------|----------------------|---------|-----------|----|-----------------|-----------|
|         |      |                      |                      |         | N.        | E. |                 |           |
| 108     | 2    | i $\overline{P}$     | h. m. s<br>16 16 54  |         |           |    | 125             | local     |
|         |      | i $\overline{EN}$    | 17 05                |         |           |    |                 |           |
|         |      | i $\overline{S}$     | 17 10                |         |           |    |                 |           |
|         |      | fin                  | 16 19                |         |           |    |                 |           |
| 109     | 4    | i ( $\overline{P}$ ) | 15 10 17             |         |           |    | 170             | local     |
|         |      | i ( $\overline{S}$ ) | 10 38                |         |           |    |                 |           |
|         |      | fin                  | 15 12                |         |           |    |                 |           |
| 110     | 17   | e P                  | 22 22 47             |         |           |    | 160             | local     |
|         |      | $\overline{P}$       | 22 51                |         |           |    |                 |           |
|         |      | $\overline{S}$       | 23 10                |         |           |    |                 |           |
|         |      | i                    | 23 17                |         |           |    |                 |           |
|         |      | M                    | 23 20                |         |           |    |                 |           |
|         |      | fin                  | 22 25                |         |           |    |                 |           |



| NUMÉROS | DATE | PHASE | HEURES<br>(Greenwich) | PÉRIODE | AMPLITUDE |    | DISTANCE<br>km. | REMARQUES           |
|---------|------|-------|-----------------------|---------|-----------|----|-----------------|---------------------|
|         |      |       |                       |         | N.        | E. |                 |                     |
| 111     | 20   | EN    | h. m. s.<br>10 12 50  |         |           |    |                 | origine séismique ? |
|         |      | fin   | 10 13 05              |         |           |    |                 |                     |
| 112     | 22   | P     | 18 26 44              |         |           |    |                 | local               |
|         |      | fin   | 18 28                 |         |           |    |                 |                     |
| 113     | 24   | P     | 11 10 48              |         |           | 30 |                 | local               |
|         |      | S     | 10 53                 |         |           |    |                 |                     |
|         |      | fin   | 11 13                 |         |           |    |                 |                     |

Imp. Cath. T/rive

Le Directeur de l'Observatoire,  
CH. POISSON, s. J.


**OBSERVATOIRE DE TANANARIVE (MADAGASCAR)**
**BULLETIN SÉISMIQUE**
**OCTOBRE 1934**
 $\varphi = 18^{\circ} 55' 02'' \text{ S}$     $\lambda = 47^{\circ} 33' 06'' \text{ E}$    altitude = 1375 m. Sous-sol-gneiss granitique

Instruments : Deux pendules Mainka (masse 450 kilog.) NS, EW

|       | $T_0$ | V   | $v : 1$ | $r/T_0^2$ |
|-------|-------|-----|---------|-----------|
| $A_N$ | 13.1  | 104 | 3.1     | 0.010     |
| $A_E$ | 12.9  | 106 | 3.0     | 0.017     |

| NUMÉROS | DATE | PHASE       | HEURE<br>(Greenwich) | PÉRIODE | AMPLITUDE |    | DISTANCE<br>km. | REMARQUES                    |
|---------|------|-------------|----------------------|---------|-----------|----|-----------------|------------------------------|
|         |      |             |                      |         | N.        | E. |                 |                              |
| 114     | 1    | i $\bar{P}$ | h. m. s<br>12 57 31  |         |           |    | 50              | local                        |
|         |      | $\bar{S}$   | 57 38                |         |           |    |                 |                              |
|         |      | fin         | 12 59                |         |           |    |                 |                              |
| 115     | 4    | $\bar{P}$   | 18 10 23             |         |           |    | 45              | local faible                 |
|         |      | $\bar{S}$   | 10 29                |         |           |    |                 |                              |
|         |      | fin         | 18 12                |         |           |    |                 |                              |
| 116     | 4    | i $\bar{P}$ | 18 49 21             |         |           |    | 75              | local                        |
|         |      | i $\bar{S}$ | 49 31                |         |           |    |                 |                              |
|         |      | fin         | 18 52                |         |           |    |                 |                              |
| 117     | 4    | $\bar{P}$   | 19 26 50             |         |           |    |                 | local faible                 |
|         |      | fin         | 19 28                |         |           |    |                 |                              |
| 118     | 4    | $\bar{P}$   | 19 58 37             |         |           |    | 75              | réplique faible<br>du n° 116 |
|         |      | i $\bar{S}$ | 58 47                |         |           |    |                 |                              |
|         |      | fin         | 20                   |         |           |    |                 |                              |

| NUMÉROS | DATE | PHASE       | HEURE<br>(Greenwich) | PÉRIODE | AMPLITUDE |    | DISTANCE<br>km. | REMARQUES   |
|---------|------|-------------|----------------------|---------|-----------|----|-----------------|---|
|         |      |             |                      |         | N.        | E. |                 |   |
| 119     | 7    | i $\bar{P}$ | h. m. s.<br>15 42 22 |         |           |    |                 | local   |
|         |      | $\bar{S}$   | 42 25                |         |           |    |                 |   |
|         |      | fin         | 15 44                |         |           |    |                 |   |
| 120     | 7    | i           | 16 57 00             |         |           |    |                 | local faible  |
|         |      | i           | 57 02                |         |           |    |                 |   |
|         |      | fin         | 16 59                |         |           |    |                 |   |
| 121     | 10   | e P P E     | 16 01 10             | 15      |           |    | 13360           | très profond 0.09<br>Pacifique Sud<br>vers 23 S 176 W<br>d'après U. S. C. G. S. |
|         |      | E           | 01 18                |         |           |    |                 |   |
|         |      | N           | 01 19                |         |           |    |                 |   |
|         |      | P P P E     | 03 05                |         |           |    |                 |   |
|         |      | (S) E N     | 08 17                |         |           |    |                 |   |
|         |      | N           | 11 58                |         |           |    |                 |   |
|         |      | S S E       | 16 43                |         |           |    |                 |   |
|         |      | E           | 19 03                |         |           |    |                 |   |
|         |      | fin         | 17                   |         |           |    |                 |   |
| 122     | 13   | i $\bar{P}$ | 23 04 31             |         |           |    |                 | local.  |
|         |      | i           | 04 39                |         |           |    |                 |   |
|         |      | fin         | 23 06                |         |           |    |                 |   |

| NUMÉROS | DATE | PHASE            | HEURE<br>(Greenwich) | PÉRIODE | AMPLITUDE <sup>E</sup> |       | DISTANCE<br>km. | REMARQUES                           |
|---------|------|------------------|----------------------|---------|------------------------|-------|-----------------|-------------------------------------|
|         |      |                  |                      |         | N.                     | E.    |                 |                                     |
| 123     | 18   | traces L         | h. m s.<br>8 41 40   | 17      |                        |       |                 | 11 S. 167 E.<br>d'après Manila.     |
|         |      | L                | 45 30                |         |                        |       |                 |                                     |
|         |      | M <sub>1</sub> E | 47 40                |         |                        |       |                 |                                     |
|         |      | M <sub>2</sub> E | 54 02                |         |                        |       |                 |                                     |
|         |      | fin              | 9 15                 |         |                        |       |                 |                                     |
| 124     | 18   | traces L         | 9 55 40              |         |                        |       |                 | suite du précédent ?                |
|         |      | fin              | 10 20                |         |                        |       |                 |                                     |
| 125     | 26   | P P E            | 17 28 07             | 6       |                        | 10555 |                 | 30.5 N. 132 E.<br>d'après Chiufeng. |
|         |      | S K S E          | 35 01                |         |                        |       |                 |                                     |
|         |      | L                | 57 40                |         |                        |       |                 |                                     |
|         |      | fin              | 18 10                |         |                        |       |                 |                                     |
| 126     | 27   | traces L N       | 10 51                | 15      |                        |       |                 | microséismes nombreux               |
|         |      | e M              | 11 02 40             |         |                        |       |                 |                                     |
|         |      | M N              | 06                   |         |                        |       |                 |                                     |
|         |      | fin              | 11 25                |         |                        |       |                 |                                     |
| 127     | 29   | e M N            | 16 51 10             | 18      |                        |       |                 | peu visible sur E W.                |
|         |      | M N              | 53 30                |         |                        |       |                 |                                     |
|         |      | fin              | 17 15                |         |                        |       |                 |                                     |

| NUMÉROS | DATE | PHASE            | HEURES<br>(Greenwich) | PÉRIODE | AMPLITUDE |    | DISTANCE<br>km. | REMARQUES      |
|---------|------|------------------|-----------------------|---------|-----------|----|-----------------|----------------|
|         |      |                  |                       |         | N.        | E. |                 |                |
| 128     | 31   | (traces E)       | 9 09 08               |         |           |    |                 | début douteux. |
|         |      | (traces E)       | 12 05                 |         |           |    |                 | Océan Indien ? |
|         |      | e N              | 14 11                 |         |           |    |                 |                |
|         |      | e L N            | 17 29                 |         |           |    |                 |                |
|         |      | L E              | 17 40                 |         |           |    |                 |                |
|         |      | M E N            | 18 30                 |         |           |    |                 |                |
|         |      | M <sub>2</sub> N | 19 37                 |         |           |    |                 |                |
|         |      | fin              | 9 45                  |         |           |    |                 |                |

## BULLETIN SÉISMIQUE

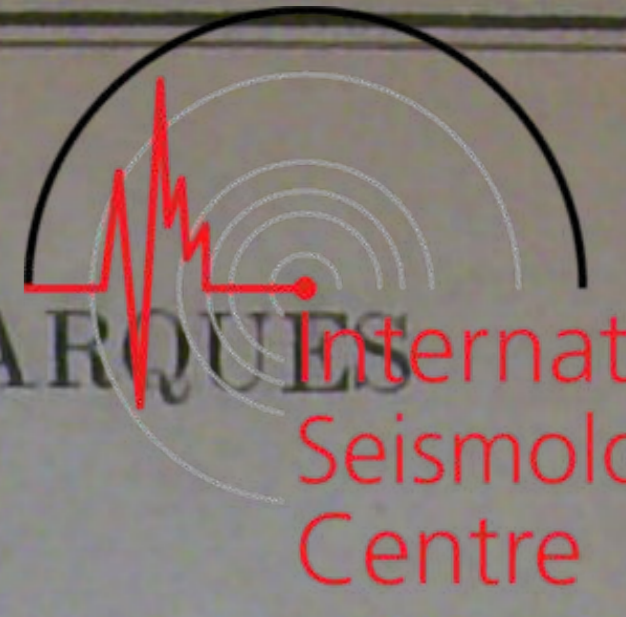
NOVEMBRE 1934

 $\varphi = 18^{\circ} 55' 02'' \text{ S}$      $\lambda = 47^{\circ} 33' 06'' \text{ E}$     altitude = 1375 m. Sous-sol-gneiss granitique

Instruments : Deux pendules Mainka (masse 450 kilog.) NS, EW

|       | $T_0$ | V   | $v : 1$ | $r/T_0^2$ |
|-------|-------|-----|---------|-----------|
| $A_N$ | 13.1  | 124 | 3.3     | 0.012     |
| $A_E$ | 12.1  | 127 | 3.2     | 0.018     |

| NUMÉROS | DATE | PHASE          | HEURE<br>(Greenwich) | PÉRIODE | AMPLITUDE |    | DISTANCE<br>km. | REMARQUES      |
|---------|------|----------------|----------------------|---------|-----------|----|-----------------|----------------|
|         |      |                |                      |         | N.        | E. |                 |                |
| 129     | 4    | e M            | h. m. s<br>2 50      | 18      |           |    |                 |                |
|         |      | M <sub>2</sub> | 3 06                 | 16      |           |    |                 |                |
|         |      | fin            | 3 25                 |         |           |    |                 |                |
| 130     | 4    | e P S N        | 3 43 26              |         |           |    | 12860           | 23.30 S 178 E  |
|         |      | S S N          | 49 14                |         |           |    |                 | d'après Manila |
|         |      | e L E N        | 4 10 10              | 18      |           |    |                 |                |
|         |      | M N            | 16 20                |         |           |    |                 |                |
|         |      | M N            | 20 15                | 15      |           |    |                 |                |
|         |      | fin            | 4 40                 |         |           |    |                 |                |
| 131     | 5    | E              | 10 43 45             |         |           |    |                 | local          |
|         |      | i E            | 43 57                |         |           |    |                 |                |
|         |      | i E            | 44 01                |         |           |    |                 |                |
|         |      | fin            | 10 46                |         |           |    |                 |                |
| 132     | 19   | traces N       | 2 48 54              |         |           |    |                 | Océan indien ? |
|         |      | e M N          | 52 00                | 8       |           |    |                 |                |
|         |      | fin            | 2 57                 |         |           |    |                 |                |



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| NUMÉROS | DATE | PHASE       | HEURE<br>(Greenwich) | PÉRIODE | AMPLITUDE |    | DISTANCE<br>km. | REMARQUES  |
|---------|------|-------------|----------------------|---------|-----------|----|-----------------|--|
|         |      |             |                      |         | N.        | E. |                 |  |
| 133     | 19   | $\bar{P}$   | h. m. s.<br>10 56 07 |         |           |    |                 | local  |
|         |      | i S         | 56 15                |         |           |    |                 |  |
|         |      | fin         | 11                   |         |           |    |                 |  |
| 134     | 26   | $\bar{P}_E$ | 8 47 06              |         |           |    |                 | local  |
|         |      | $\bar{S}_E$ | 47 11                |         |           |    |                 |  |
|         |      | fin         | 8 50                 |         |           |    |                 |  |
| 135     | 26   | e S E       | 12 30 47             |         |           |    | 8700            | Philippines<br>dégâts région de Manila<br><br>paraît profond ? |
|         |      | N           | 31 04                |         |           |    |                 |  |
|         |      | E           | 31 08                |         |           |    |                 |  |
|         |      | P S E N     | 31 20                |         |           |    |                 |  |
|         |      | S S N       | 35 09                |         |           |    |                 |  |
|         |      | fin         | 12 37                |         |           |    |                 |  |
| 136     | 27   | e P E       | 6 26 24              | 8       |           |    | 8800            | 3 N 125 E<br>d'après Manila<br>L très faible,<br>pas de M.     |
|         |      | E           | 27 00                |         |           |    |                 |  |
|         |      | e S N       | 36 26                |         |           |    |                 |  |
|         |      | e           | 36 37                |         |           |    |                 |  |
|         |      | P S E N     | 37 01                |         |           |    |                 |  |
|         |      | e L         | 54 45                |         |           |    |                 |  |
|         |      | fin         | 7 10                 |         |           |    |                 |  |
| 137     | 29   | i E N       | 10 50 50             |         |           |    |                 | local  |
|         |      | i N         | 50 56                |         |           |    |                 |  |
|         |      | i N         | 51 01                |         |           |    |                 |  |
|         |      | fin         | 10 52                |         |           |    |                 |  |



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| NUMÉROS | DATE | PHASE   | HEURES<br>(Greenwich) | PÉRIODE | AMPLITUDE |    | DISTANCE<br>km. | REMARQUES          |
|---------|------|---------|-----------------------|---------|-----------|----|-----------------|--------------------|
|         |      |         |                       |         | N.        | E. |                 |                    |
| 138     | 30   |         | h. m. s.              |         |           |    |                 |                    |
|         |      | P' 2 E  | 2 25 45               |         |           |    | 17200           | 20.5 N 106 W       |
|         |      | P P E   | 29 11                 | 6       |           |    |                 | H = 2.05.12        |
|         |      | P S K S | 39 24                 | 12      |           |    |                 | d'après Strasbourg |
|         |      | E       | 44 25                 |         |           |    |                 |                    |
|         |      | S S     | 47 22                 |         |           |    |                 |                    |
|         |      | e L     | 3 20 09               |         |           |    |                 |                    |
|         |      | e M     | 3 26 50               |         |           |    |                 |                    |
|         |      | fin     | 4 15                  |         |           |    |                 |                    |
| 139     | 30   | E       | 13 10 52              |         |           |    |                 | local              |
|         |      | i E     | 11 06                 |         |           |    |                 |                    |
|         |      | N       | 11 08                 |         |           |    |                 |                    |
|         |      | fin     | 13 12                 |         |           |    |                 |                    |

*Le Directeur de l'Observatoire,*  
CH. POISSON, S. J.



OBSERVATOIRE DE TANANARIVE (MADAGASCAR)

BULLETIN SÉISMIQUE

DÉCEMBRE 1934

$\varphi = 18^{\circ} 55' 02'' S$   $\lambda = 47^{\circ} 33' 06'' E$  altitude = 1375 m. Sous-sol-gneiss granitique

Instruments : Deux pendules Mainka (masse 450 kilog.) NS, EW

|       |       |     |         |           |
|-------|-------|-----|---------|-----------|
|       | $T_0$ | V   | $v : 1$ | $r/T_0^2$ |
| $A_N$ | 13.1  | 112 | 3.0     | 0.017     |
| $A_E$ | 12.5  | 120 | 3.0     | 0.016     |

| NUMÉROS | DATE | PHASE   | HEURE<br>(Greenwich)   | PÉRIODE        | AMPLITUDE |       | DISTANCE<br>km. | REMARQUES   |
|---------|------|---|--|----------------|-----------|-------|-----------------|---|
|         |      |   |  |                | N.        | E.    |                 |   |
| 140     | 3    | traces L<br>e M<br>M<br>fin   | h. m. s<br>3 46<br>52 50<br>59 45<br>4 16                      |                |           |       |                 | Honduras<br>15 N 89 W                                       |
| 141     | 4    | i $\bar{P}$<br>i $\bar{S}$<br>fin                                   | 0 04 36<br>04 46<br>0 06                                       |                |           | 80    |                 | local   |
| 142     | 4    | i $\bar{P}$<br>i E<br>i $\bar{S}$<br>i M<br>fin                     | 2 05 02<br>05 06<br>05 23<br>05 26<br>2 09                     |                |           | 170   |                 | local   |
| 143     | 4    | e E S K S<br>E S K K S<br>E P P S<br>E N S S<br>L E<br>e M N<br>fin | 17 49 27<br>50 08<br>53 10<br>58 29<br>18 21 50<br>30<br>18 45 | 12<br>15<br>28 |           | 12010 |                 | Chili<br>19 S 70 W<br>H = 17.24.8<br>d'après U. S. C. G. S. |



| NUMÉROS | DATE | PHASE     | HEURE<br>(Greenwich) | PÉRIODE | AMPLITUDE |    | DISTANCE<br>km. | REMARQUES  |
|---------|------|-----------|----------------------|---------|-----------|----|-----------------|--|
|         |      |           |                      |         | N.        | E. |                 |  |
| 144     | 15   | traces P  | h. m. s.<br>2 08 10  |         |           |    | 7520            | Thibet<br>31.5 N 89 E<br>H = 1.57.30<br>d'après Strasbourg |
|         |      | i S       | 16 49                |         |           |    |                 |  |
|         |      | e         | 18 12                |         |           |    |                 |  |
|         |      | e (S S)   | 20 25                |         |           |    |                 |  |
|         |      | (S S)     | 21 44                |         |           |    |                 |  |
|         |      | e         | 22 07                |         |           |    |                 |  |
|         |      | e L E     | 24 04                |         |           |    |                 |  |
|         |      | L N       | 24 50                |         |           |    |                 |  |
|         |      | e M       | 27 22                |         |           |    |                 |  |
|         |      | M         | 28 20                |         |           |    |                 |  |
| M       | 34   | 15        |                      | 54      |           |    |                 |  |
| fin     | 3 45 |           |                      |         |           |    |                 |  |
| 145     | 15   | e L       | 10 15 45             | 12      |           |    |                 | rapproché  |
|         |      | M         | 16 42                | 8       |           |    |                 |  |
|         |      | fin       | 10 25                |         |           |    |                 |  |
| 146     | 17   | L         | 16 41                | 25      |           |    |                 |  |
|         |      | M         | 46                   | 18      |           |    |                 |  |
|         |      | fin       | 17                   |         |           |    |                 |  |
| 147     | 20   | $\bar{P}$ | 0 03 09              |         |           |    |                 | local  |
|         |      | $\bar{S}$ | 03 14                |         |           |    |                 |  |
|         |      | fin       | 0 05                 |         |           |    |                 |  |



| NUMÉROS | DATE | PHASE    | HEURE<br>(Greenwich) | PÉRIODE | AMPLITUDE |       | DISTANCE<br>km. | REMARQUES                          |
|---------|------|----------|----------------------|---------|-----------|-------|-----------------|------------------------------------|
|         |      |          |                      |         | N.        | E.    |                 |                                    |
| 148     | 22   | L        | h. m s.<br>11 05 03  | 20      |           |       |                 | début masqué par<br>microséismes   |
|         |      | M        | 06 39                | 15      |           |       |                 |                                    |
|         |      | fin      | 11 15                |         |           |       |                 |                                    |
| 149     | 22   | e L E    | 15 39 50             | 28      |           |       |                 | 8 N 89 W<br>d'après U. S. C. G. S. |
|         |      | M        | 43 24                | 21      |           |       |                 |                                    |
|         |      | M        | 46 45                | 18      |           |       |                 |                                    |
|         |      | fin      | 16                   |         |           |       |                 |                                    |
| 150     | 26   | P̄       | 22 49 58             |         |           |       |                 | local                              |
|         |      | S̄       | 50 01                |         |           |       |                 |                                    |
|         |      | i        | 50 04                |         |           |       |                 |                                    |
|         |      | fin      | 22 52                |         |           |       |                 |                                    |
| 151     | 28   | traces E | 12 19 29             |         |           | 14050 |                 | vers 20 S 170 W<br>d'après Manila  |
|         |      | E (L)    | 22 13                |         |           |       |                 |                                    |
|         |      | (L)      | 25 10                |         |           |       |                 |                                    |
|         |      | e M      | 30 55                |         |           |       |                 |                                    |
|         |      | fin      | 12 40                |         |           |       |                 |                                    |
| 152     | 30   | P̄       | 6 30 47              |         |           | 50    |                 | local                              |
|         |      | i S̄     | 30 53                |         |           |       |                 |                                    |
|         |      | fin      | 6 32                 |         |           |       |                 |                                    |



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| NUMÉROS | DATE | PHASE    | HEURES<br>(Greenwich) | PÉRIODE | AMPLITUDE |    | DISTANCE<br>km. | REMARQUES  |
|---------|------|----------|-----------------------|---------|-----------|----|-----------------|--|
|         |      |          |                       |         | N.        | E. |                 |  |
| 153     | 30   | traces N | h. m. s.<br>14 53 05  |         |           |    | 17850           | Californie<br>31 N 116 W<br>d'après U. S. C. G. S.   |
|         |      | e (L)    | 15 08                 | 30      |           |    |                 |  |
|         |      | e M      | 21                    | 18      |           |    |                 |  |
|         |      | M        | 25                    | 18      |           |    |                 |  |
|         |      | fin      | 15 45                 |         |           |    |                 |  |
| 154     | 31   | e E      | 19 26 21              |         |           |    | 17935           | Californie<br>30 N 116 W<br>d'après U. S. C. G. S.<br><br>début masqué par<br>microséismes |
|         |      | S S      | 29 36                 |         |           |    |                 |  |
|         |      | S S S    | 35 45                 |         |           |    |                 |  |
|         |      | e        | 41 54                 |         |           |    |                 |  |
|         |      | (L)      | 52 33                 |         |           |    |                 |  |
|         |      | (L)      | 56 13                 | 45      |           |    |                 |  |
|         |      | L        | 20 04                 | 30      |           |    |                 |  |
|         |      | E        | 11                    | 24      |           |    |                 |  |
|         |      | M        | 18                    | 21      |           |    |                 |  |
|         |      | M        | 26 30                 | 18      |           |    |                 |  |
|         |      | M        | 30                    | 18      |           |    |                 |  |
| fin     | 21   |          |                       |         |           |    |                 |  |

Imp. Cath. T. riv

Le Directeur de l'Observatoire,  
CH. POISSON, s. J.