

Seismic gaps and intraplate seismicity around Rodrigues Ridge (Indian Ocean) from time-domain array analysis

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10

Contents of this file

Figures S1 and S2

Tables S1 and S2

15

Introduction

Figure S1 shows the influence of the model parameters on the determination of the epicentral distance for an event that occurs at a distance of ~120 km from the array.

20 Figure S2 shows the influence of the model parameters on the determination of the epicentral distance for an event that occurs at a distance of ~265 km from the array.

Table S1 provides detailed information of the events located using the array deployed on the island of Rodrigues.

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Table S2 gives details of the events in each of the seismic clusters observed.

Cluster 1

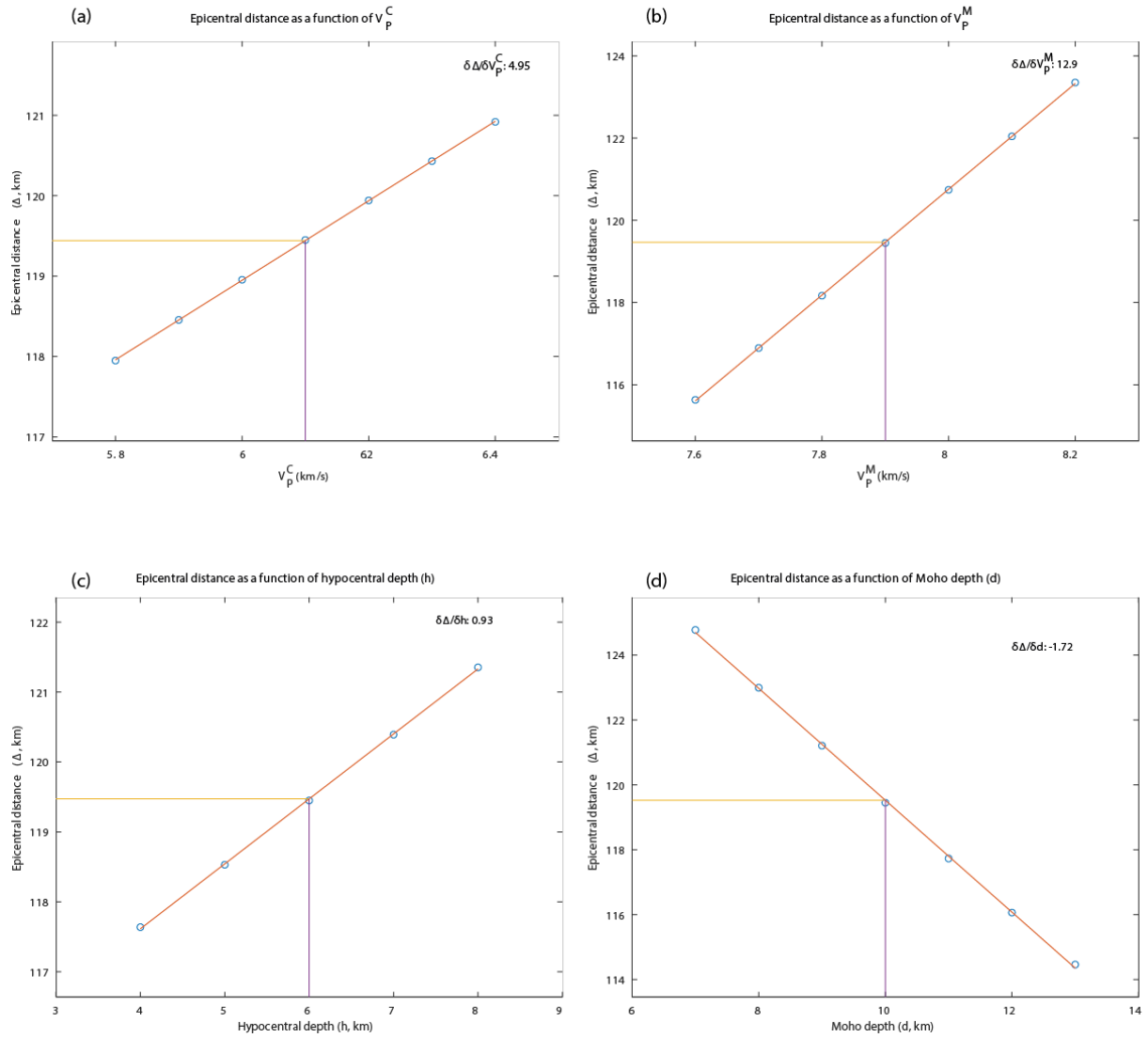


Figure S1. Influence of model parameters on the epicentral distance for events at a distance of ~140 km. Changes are shown for (a) the crustal P-wave velocity (V_p^C), (b) the P-wave velocity in the mantle V_p^M , (c) the hypocentral depth (h) and (d) the Moho depth (d).

Cluster 3

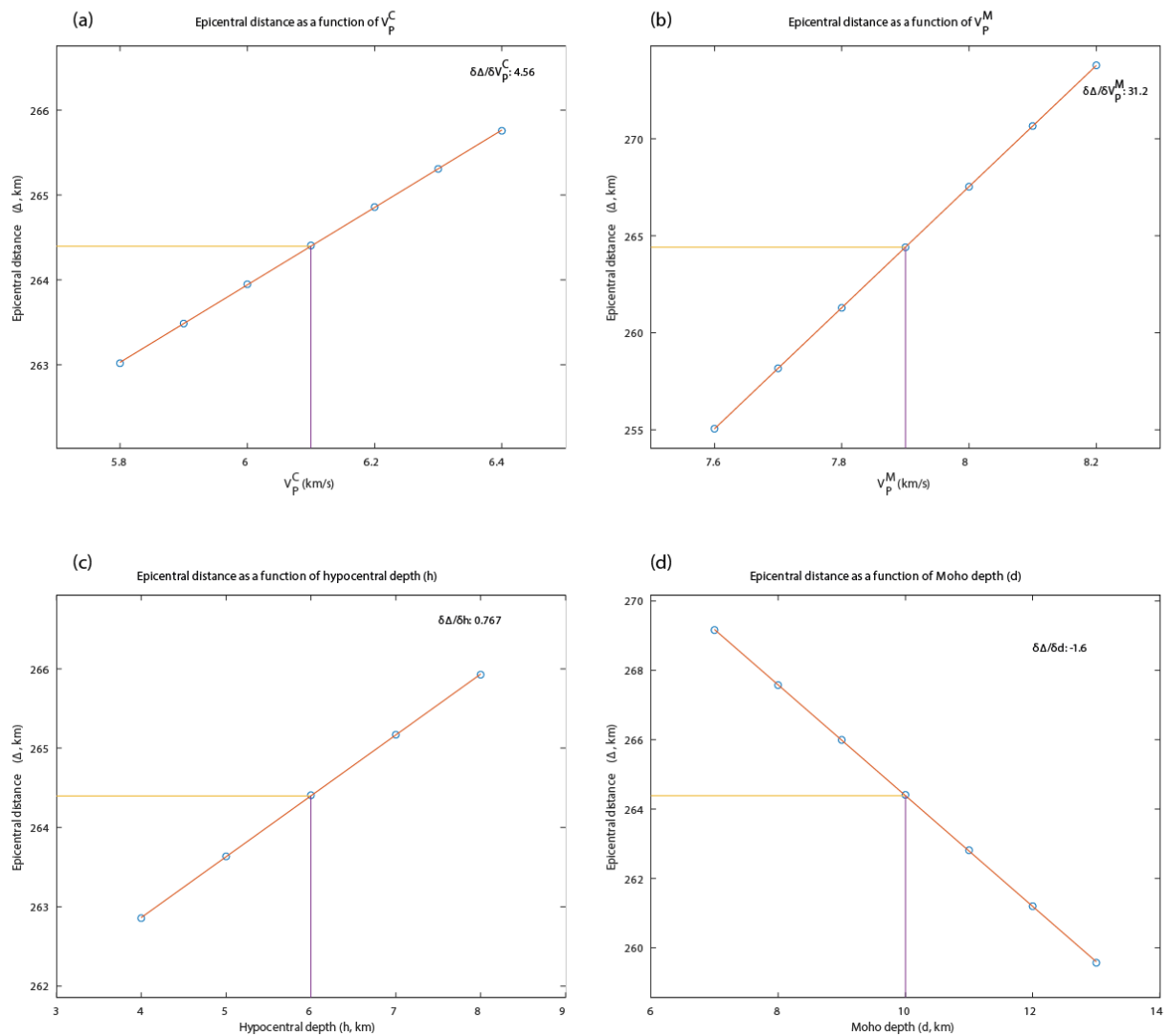


Figure S2. Influence of model parameters on the epicentral distance for events at a distance of ~ 265 km. Changes are shown for (a) the crustal P-wave velocity (V_p^C), (b) the P-wave velocity in the mantle V_p^M , (c) the hypocentral depth (h) and (d) the Moho depth (d).

| Date,time (yymmdd,hh:mm:ss) | Lat. (°) | Lon. (°) | M_L | Dist.±SD (km) | BAZ (°) | BAZ error | | v_a (km/s) |
|--------------------------------|----------|-------------|---------|---------------|------------|-------------|-------------|-----------------|
| | | | | | | Min. (°) | Max. (°) | |
| 141104,12:18:31 | -20.512 | 65.101 | 3.5±0.3 | 194.46±3.14 | 117.55 | 113.45 | 122.68 | 8.186 |
| 141125,00:53:54 | -22.083 | 64.061 | 3.3±0.2 | 271.46±2.61 | 166.50 | 164.17 | 167.94 | 8.600 |
| 141127,01:57:58 | -22.093 | 64.063 | 3.5±0.2 | 272.58±2.88 | 166.50 | 164.69 | 167.69 | 8.600 |
| 150107,21:03:19 | -21.946 | 63.448 | 2.9±0.2 | 248.59±1.35 | 179.96 | 178.71 | 181.21 | 8.656 |
| 150117,19:24:18 | -20.217 | 65.022 | 2.7±0.0 | 174.05±2.77 | 109.13 | 108.38 | 111.75 | 8.344 |
| 150202,21:07:05 | -20.791 | 65.060 | 2.3±0.1 | 206.88±12.20 | 125.78 | 123.28 | 129.23 | 9.154 |
| 150212,22:08:04 | -19.076 | 62.273 | 2.2±0.1 | 141.80±2.99 | 299.66 | 297.65 | 301.21 | 8.036 |
| 150214,08:46:45 | -18.078 | 64.898 | 2.6±0.1 | 237.25±4.41 | 40.32 | 35.85 | 44.06 | 9.384 |
| 150217,21:43:41 | -19.117 | 62.277 | 2.4±0.3 | 139.22±1.86 | 298.12 | 296.10 | 299.66 | 7.974 |
| 150217,22:36:07 | -19.112 | 62.290 | 1.8±0.1 | 138.24±2.54 | 298.57 | 297.10 | 300.07 | 7.767 |
| 150308,19:02:23 | -20.579 | 64.350 | 1.8±0.0 | 135.01±3.65 | 135.82 | 133.21 | 139.34 | 8.845 |
| 150310,20:57:35 | -18.896 | 64.157 | 2.3±0.3 | 117.39±2.08 | 39.62 | 38.43 | 41.76 | 10.787 |
| 150311,14:46:41 | -18.924 | 64.187 | 2.0±0.4 | 117.00±2.06 | 41.76 | 38.43 | 42.88 | 10.818 |
| 150321,10:30:34 | -18.913 | 64.194 | 2.2±0.1 | 118.49±2.55 | 41.64 | 39.41 | 42.80 | 11.240 |
| 150321,11:41:39 | -18.918 | 64.193 | 3.0±0.3 | 117.98±1.66 | 41.76 | 39.62 | 42.88 | 10.818 |
| 150322,19:13:48 | -18.844 | 64.084 | 1.6±0.0 | 117.38±1.60 | 34.89 | 30.27 | 36.04 | 10.096 |
| 150323,02:08:22 | -18.918 | 64.159 | 2.1±0.4 | 115.59±3.47 | 40.43 | 39.18 | 42.71 | 11.448 |
| 150324,23:49:14 | -18.917 | 64.193 | 2.7±0.4 | 118.05±2.40 | 41.76 | 38.43 | 42.88 | 10.818 |
| 150325,04:36:39 | -18.913 | 64.194 | 2.1±0.1 | 118.36±1.65 | 41.64 | 39.41 | 42.71 | 11.24 |
| 150325,09:52:03 | -18.909 | 64.201 | 2.3±0.3 | 119.20±1.59 | 41.76 | 39.62 | 43.92 | 10.818 |
| 150325,12:53:06 | -18.768 | 63.971 | 2.2±0.3 | 118.42±3.02 | 27.84 | 25.96 | 43.88 | 9.977 |
| 150327,17:32:44 | -18.903 | 64.203 | 1.8±0.0 | 119.91±1.66 | 41.64 | 39.41 | 42.71 | 11.24 |
| 150327,18:28:19 | -18.913 | 64.194 | 1.6±0.0 | 118.37±1.32 | 41.64 | 38.43 | 42.80 | 11.24 |
| 150328,18:36:13 | -18.900 | 64.179 | 2.3±0.2 | 118.54±1.42 | 40.61 | 38.43 | 57.08 | 11.011 |
| 150330,02:12:43 | -18.923 | 64.218 | 2.8±0.2 | 119.31±2.31 | 42.88 | 39.62 | 45.00 | 10.627 |
| 150331,01:04:36 | -18.929 | 64.211 | 2.3±0.3 | 118.32±2.27 | 42.88 | 38.67 | 46.08 | 10.627 |
| 150331,16:30:29 | -18.903 | 64.181 | 2.3±0.1 | 118.37±2.52 | 40.77 | 38.67 | 42.88 | 10.605 |
| 150406,20:25:42 | -18.870 | 64.156 | 3.0±0.3 | 119.55±2.11 | 38.67 | 36.88 | 41.88 | 10.57 |
| 150407,13:28:36 | -17.740 | 64.661 | 2.8±0.1 | 253.75±5.94 | 30.48 | 29.07 | 32.49 | 10.295 |
| 150408,14:54:35 | -18.548 | 65.115 | 2.2±0.0 | 217.82±4.25 | 53.87 | 50.19 | 57.33 | 8.867 |
| 150408,15:50:50 | -19.099 | 64.371 | 2.0±0.1 | 118.49±1.54 | 55.11 | 52.24 | 55.11 | 10.096 |
| 150412,16:15:36 | -18.917 | 64.190 | 2.4±0.2 | 117.84±1.78 | 41.64 | 40.61 | 42.80 | 11.240 |
| 150413,23:40:29 | -18.664 | 63.648 | 1.6±0.0 | 118.28±1.91 | 10.35 | 10.35 | 10.67 | 12.107 |
| 150416,00:51:55 | -18.917 | 64.190 | 2.2±0.2 | 117.83±1.67 | 41.64 | 40.61 | 43.88 | 11.24 |
| 150419,17:46:08 | -22.086 | 64.006 | 3.0±0.2 | 270.49±2.78 | 167.69 | 165.33 | 169.11 | 8.641 |
| 150422,02:36:21 | -18.891 | 64.156 | 2.1±0.3 | 117.73±2.73 | 39.41 | 38.43 | 41.64 | 11.206 |
| 150425,22:12:51 | -18.886 | 64.161 | 1.6±0.1 | 118.47±2.18 | 39.41 | 38.43 | 40.61 | 11.206 |
| 150506,17:19:15 | -20.288 | 64.410 | 2.1±0.3 | 120.42±1.51 | 122.37 | 80.85 | 176.67 | 15.585 |
| 150508,07:19:32 | -22.006 | 64.042 | 3.3±0.3 | 262.87±3.42 | 166.21 | 164.69 | 167.69 | 8.781 |
| 150511,21:01:30 | -18.541 | 65.125 | 2.3±0.0 | 220.12±2.09 | 54.05 | 53.12 | 56.62 | 8.221 |
| 150518,14:40:30 | -18.364 | 64.764 | 3.0±0.2 | 204.80±2.75 | 43.21 | 38.10 | 46.85 | 8.970 |
| 150518,17:50:30 | -21.873 | 65.970 | 2.9±0.0 | 356.70±2.02 | 132.81 | 129.54 | 136.01 | 10.640 |
| 150521,07:09:33 | -18.568 | 65.205 | 2.7±0.0 | 225.23±2.91 | 55.94 | 52.12 | 60.56 | 9.095 |
| 150526,00:24:46 | -23.453 | 64.345 | 3.0±0.1 | 426.62±4.98 | 167.42 | 165.02 | 169.87 | 8.824 |
| 150604,12:38:18 | -18.874 | 64.166 | 2.3±0.2 | 120.64±1.73 | 39.62 | 38.67 | 42.80 | 10.787 |

| | | | | | | | | |
|-----------------|---------|--------|---------|--------------|--------|--------|--------|--------|
| 150707,21:57:28 | -18.851 | 65.329 | 2.5±0.2 | 219.57±3.83 | 64.52 | 59.46 | 67.26 | 8.731 |
| 150730,02:43:14 | -18.925 | 64.211 | 2.2±0.3 | 118.58±2.04 | 42.71 | 40.43 | 43.83 | 11.475 |
| 151001,19:22:45 | -18.882 | 64.164 | 2.2±0.0 | 119.09±1.46 | 39.41 | 38.43 | 41.64 | 11.206 |
| 151012,20:47:05 | -21.948 | 64.092 | 2.8±0.2 | 257.66±2.97 | 165.02 | 163.49 | 167.42 | 8.734 |
| 151020,16:51:28 | -19.179 | 65.825 | 2.6±0.0 | 256.32±3.34 | 77.06 | 74.19 | 80.51 | 8.249 |
| 151114,20:36:38 | -18.627 | 64.081 | 1.7±0.3 | 137.74±0.87 | 29.07 | 25.96 | 30.27 | 9.861 |
| 151115,18:42:15 | -18.491 | 65.077 | 2.6±0.1 | 218.54±1.61 | 51.90 | 48.46 | 54.60 | 8.640 |
| 151130,16:19:41 | -18.221 | 58.380 | 3.4±0.2 | 557.87±5.53 | 286.43 | 284.08 | 288.48 | 7.651 |
| 151130,22:27:54 | -21.952 | 64.108 | 2.9±0.2 | 258.56±4.60 | 164.69 | 163.13 | 167.42 | 8.919 |
| 151211,17:20:39 | -18.756 | 65.642 | 2.8±0.0 | 253.78±13.46 | 65.54 | 62.28 | 67.26 | 8.811 |
| 151217,23:27:55 | -18.403 | 65.045 | 2.8±0.2 | 222.24±2.09 | 49.39 | 46.73 | 51.90 | 8.811 |
| 160212,19:21:45 | -19.390 | 63.382 | 1.5±0.1 | 36.27±1.09 | 349.27 | 346.66 | 352.28 | 9.503 |
| 160215,17:29:25 | -18.778 | 63.993 | 1.3±0.0 | 118.52±1.81 | 29.07 | 25.96 | 39.62 | 9.861 |
| 160330,21:54:15 | -18.408 | 65.093 | 2.2±0.1 | 225.67±4.41 | 50.35 | 46.79 | 53.87 | 8.935 |
| 160402,18:13:37 | -18.449 | 65.041 | 2.8±0.1 | 218.59±2.11 | 50.35 | 47.64 | 53.87 | 8.935 |
| 160412,19:28:01 | -19.247 | 65.814 | 2.8±0.2 | 253.54±5.78 | 78.66 | 76.23 | 80.93 | 8.852 |
| 160421,18:15:49 | -17.650 | 62.573 | 2.0±0.0 | 246.86±5.48 | 337.99 | 336.68 | 339.34 | 10.178 |
| 160503,21:31:33 | -17.751 | 64.701 | 2.8±0.2 | 254.84±4.73 | 31.44 | 29.59 | 34.09 | 9.626 |

Table S1. Details of the events detected and located using Rodrigues array.

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| Date,time (yymmdd,hh:mm:ss) | Lat. (°) | Lon. (°) | M_L | Dist.±SD (km) | BAZ (°) |
|--------------------------------|----------|----------|---------|------------------|---------|
| Cluster 1 | | | | | |
| 150310,20:57:35 | -18.896 | 64.157 | 2.3±0.3 | 117.39±2.08 | 39.62 |
| 150311,14:46:41 | -18.924 | 64.187 | 2.0±0.4 | 117.00±2.06 | 41.76 |
| 150321,10:30:34 | -18.913 | 64.194 | 2.2±0.1 | 118.49±2.55 | 41.64 |
| 150321,11:41:39 | -18.918 | 64.193 | 3.0±0.3 | 117.98±1.66 | 41.76 |
| 150322,19:13:48 | -18.844 | 64.084 | 1.6±0.0 | 117.38±1.60 | 34.89 |
| 150323,02:08:22 | -18.918 | 64.159 | 2.1±0.4 | 115.59±3.47 | 40.43 |
| 150324,23:49:14 | -18.917 | 64.193 | 2.7±0.4 | 118.05±2.40 | 41.76 |
| 150325,04:36:39 | -18.913 | 64.194 | 2.1±0.1 | 118.36±1.65 | 41.64 |
| 150325,09:52:03 | -18.909 | 64.201 | 2.3±0.3 | 119.20±1.59 | 41.76 |
| 150327,17:32:44 | -18.903 | 64.203 | 1.8±0.0 | 119.91±1.66 | 41.64 |
| 150327,18:28:19 | -18.913 | 64.194 | 1.6±0.0 | 118.37±1.32 | 41.64 |
| 150328,18:36:13 | -18.900 | 64.179 | 2.3±0.2 | 118.54±1.42 | 40.61 |
| 150330,02:12:43 | -18.923 | 64.218 | 2.8±0.2 | 119.31±2.31 | 42.88 |
| 150331,01:04:36 | -18.929 | 64.211 | 2.3±0.3 | 118.32±2.27 | 42.88 |
| 150331,16:30:29 | -18.903 | 64.181 | 2.3±0.1 | 118.37±2.52 | 40.77 |
| 150406,20:25:42 | -18.870 | 64.156 | 3.0±0.3 | 119.55±2.11 | 38.67 |
| 150412,16:15:36 | -18.917 | 64.190 | 2.4±0.2 | 117.84±1.78 | 41.64 |
| 150416,00:51:55 | -18.917 | 64.190 | 2.2±0.2 | 117.83±1.67 | 41.64 |
| 150422,02:36:21 | -18.891 | 64.156 | 2.1±0.3 | 117.73±2.73 | 39.41 |
| 150425,22:12:51 | -18.886 | 64.161 | 1.6±0.1 | 118.47±2.18 | 39.41 |
| 150604,12:38:18 | -18.874 | 64.166 | 2.3±0.2 | 120.64±1.73 | 39.62 |
| 150730,02:43:14 | -18.925 | 64.211 | 2.2±0.3 | 118.58±2.04 | 42.71 |
| 151001,19:22:45 | -18.882 | 64.164 | 2.2±0.0 | 119.09±1.46 | 39.41 |
| Cluster 2 | | | | | |
| 150212,22:08:04 | -19.076 | 62.273 | 2.2±0.1 | 141.80±2.99 | 299.66 |
| 150217,21:43:41 | -19.117 | 62.277 | 2.4±0.3 | 139.22±1.86 | 298.12 |
| 150217,22:36:07 | -19.112 | 62.290 | 1.8±0.1 | 138.24±2.54 | 298.57 |
| Cluster 3 | | | | | |
| 141125,00:53:54 | -22.083 | 64.061 | 3.3±0.2 | 271.46±2.61 | 166.50 |
| 141127,01:57:58 | -22.093 | 64.063 | 3.5±0.2 | 272.58±2.88 | 166.50 |
| 150419,17:46:08 | -22.086 | 64.006 | 3.0±0.2 | 270.49±2.78 | 167.69 |
| 150508,07:19:32 | -22.006 | 64.042 | 3.3±0.3 | 262.87±3.42 | 166.21 |
| 151012,20:47:05 | -21.948 | 64.092 | 2.8±0.2 | 257.66±2.97 | 165.02 |
| 151130,22:27:54 | -21.952 | 64.108 | 2.9±0.2 | 258.56±4.60 | 164.69 |

Table S2. Details of the events in Clusters 1, 2 and 3.