

| No.<br>crt. | Year | Month | Day | 3-h | V0<br>(km/s) | V1<br>(km/s) | Δt1 | Vmax<br>(km/s) | Dur<br>(days) | ΔV1<br>(km/s) | ΔVM<br>(km/s) | I       | Source                 | IMF   | Dst_min<br>(nT) | Dst_date<br>(mm:dd:hh) | Bz_min<br>(nT) | Bz_date<br>(mm:dd:hh) | SSC_date<br>(mm:dd:hh) | Energy<br>estimate<br>ΔWε (J) | Energy<br>estimate<br>ΔW (J) | SYM-H_min<br>(nT) | SYM-H_date<br>(mm:dd:hh:min) |
|-------------|------|-------|-----|-----|--------------|--------------|-----|----------------|---------------|---------------|---------------|---------|------------------------|-------|-----------------|------------------------|----------------|-----------------------|------------------------|-------------------------------|------------------------------|-------------------|------------------------------|
| 1           | 2015 | 1     | 4   | 6   | 395.7        | 518.3        | 9   | 518.3          | 2.5           | 122.6         | 122.6         | 306.5   | CH648                  | -     | -71             | 01:04:21               | -6.4           | 01:04:20              |                        | 1.01E+15                      | 1.50E+17                     | -75               | 01:04:21:46                  |
|             |      |       |     |     |              |              |     |                |               |               |               |         |                        |       | -42             | 01:06:09               | -6.6           | 01:06:08              |                        |                               |                              | -48               | 01:06:10:04                  |
| 2           | 2015 | 1     | 10  | 1   | 397.3        | 560          | 10  | 560            | 4.1           | 162.7         | 162.7         | 667.07  | CH649                  | +     | -30             | 01:10:01               | -2.9           | 01:09:23              |                        |                               |                              | -36               | 01:10:01:17                  |
|             |      |       |     |     |              |              |     |                |               |               |               |         |                        |       | -30             | 01:11:13               | -1.8           | 01:11:12              |                        |                               |                              | -36               | 01:11:13:30                  |
| 3           | 2015 | 1     | 20  | 7   | 283          | 474.7        | 8   | 476            | 5.4           | 191.7         | 193           | 1042.2  | CH*                    | -     |                 |                        |                |                       |                        |                               |                              |                   |                              |
| 4           | 2015 | 1     | 26  | 2   | 335.3        | 488          | 12  | 501            | 5.8           | 152.7         | 165.7         | 961.06  | CH*                    | -     | -34             | 01:26:10               | -10.9          | 01:26:09              |                        |                               |                              | -54               | 01:26:10:30                  |
| 5           | 2015 | 1     | 31  | 8   | 399          | 646.7        | 8   | 685.7          | 5.1           | 247.7         | 286.7         | 1462.17 | CH*                    | -     |                 |                        |                |                       |                        |                               |                              |                   |                              |
| 6           | 2015 | 2     | 7   | 8   | 399.7        | 551.3        | 6   | 551.3          | 1.9           | 151.7         | 151.7         | 288.23  | CH652                  | +     | -38             | 02:07:10               | -5.3           | 02:07:08              |                        |                               |                              | -45               | 02:07:10:12                  |
| 7           | 2015 | 2     | 17  | 1   | 343          | 460.7        | 12  | 460.7          | 3.5           | 117.7         | 117.7         | 411.95  | CH654                  | -     | -64             | 02:18:00               | -12            | 02:17:21              |                        | 1.70E+15                      | 3.30E+16                     | -70               | 02:17:23:58                  |
|             |      |       |     |     |              |              |     |                |               |               |               |         |                        |       | -32             | 02:19:04               | -5.2           | 02:19:03              |                        |                               |                              | -34               | 02:19:04:08                  |
| 8           | 2015 | 2     | 22  | 6   | 303          | 431          | 9   | 480.3          | 5.2           | 128           | 177.3         | 921.96  | CH655                  | +     | -56             | 02:24:07               | -5.6           | 02:24:05              |                        | 2.50E+16                      | 2.14E+17                     | -62               | 02:24:07:02                  |
|             |      |       |     |     |              |              |     |                |               |               |               |         |                        |       | -31             | 02:25:08               | -2.4           | 02:25:06              |                        |                               |                              | -38               | 02:25:07:59                  |
| 9           | 2015 | 2     | 27  | 8   | 324.7        | 462.7        | 8   | 638.3          | 6.1           | 138           | 313.6         | 1912.96 | CH*                    | +/-,- | -46             | 03:01:08               | -5.4           | 03:01:07              |                        |                               |                              | -61               | 03:01:07:56                  |
|             |      |       |     |     |              |              |     |                |               |               |               |         |                        |       | -54             | 03:02:08               | -8.5           | 03:02:06              |                        | 1.95E+16                      | 2.46E+17                     | -70               | 03:02:08:51                  |
| 10          | 2015 | 3     | 6   | 1   | 414.7        | 564.3        | 13  | 567            | 3.6           | 149.6         | 152.3         | 548.28  | CH657                  | +     |                 |                        |                |                       |                        |                               |                              |                   |                              |
| 11          | 2015 | 3     | 21  | 1   | 581          | 690.3        | 11  | 690.3          | 4             | 109.3         | 109.3         | 437.2   | CH660                  | +     | -57             | 03:21:00               | -3.4           | 03:20:22              |                        | 7.57E+14                      | 2.29E+16                     | -60               | 03:21:00:25                  |
|             |      |       |     |     |              |              |     |                |               |               |               |         |                        |       | -43             | 03:22:14               | -2.1           | 03:22:12              |                        |                               |                              | -43               | 03:22:14:14                  |
|             |      |       |     |     |              |              |     |                |               |               |               |         |                        |       | -39             | 03:23:21               | -1.7           | 03:23:20              |                        |                               |                              | -43               | 03:23:21:19                  |
| 12          | 2015 | 3     | 31  | 1   | 320          | 426.3        | 14  | 570.7          | 13.9          | 106.3         | 250.7         | 3484.73 | CH661                  | +     |                 |                        |                |                       |                        |                               |                              |                   |                              |
| 13          | 2015 | 4     | 14  | 1   | 297.7        | 597.3        | 14  | 696.7          | 6.2           | 299.6         | 399           | 2473.8  | CH663                  | -     | -37             | 04:14:22               | -5.4           | 04:14:21              |                        |                               |                              | -46               | 04:14:22:32                  |
|             |      |       |     |     |              |              |     |                |               |               |               |         |                        |       | -79             | 04:16:23               | -6             | 04:16:23              |                        | 5.87E+15                      | 1.51E+17                     | -88               | 04:16:23:29                  |
| 14          | 2015 | 4     | 20  | 3   | 380          | 570.3        | 10  | 570.3          | 4.4           | 190.3         | 190.3         | 837.32  | CH664                  | +     |                 |                        |                |                       |                        |                               |                              |                   |                              |
| 15          | 2015 | 4     | 30  | 2   | 288.3        | 440          | 13  | 440            | 5.5           | 151.7         | 151.7         | 834.35  | CH665                  | +     |                 |                        |                |                       |                        |                               |                              |                   |                              |
| 16          | 2015 | 5     | 12  | 2   | 342          | 466.3        | 6   | 720.3          | 6.4           | 124.3         | 378.3         | 2421.12 | CH667                  | -     | -76             | 05:13:06               | -8.9           | 05:13:05              |                        | 7.47E+16                      | 3.26E+17                     | -98               | 05:13:06:59                  |
| 17          | 2015 | 5     | 18  | 5   | 351.3        | 531.3        | 9   | 531.3          | 4.4           | 180           | 180           | 792     | CH668                  | +     | -44             | 05:19:03               | -4.4           | 05:19:02              |                        |                               |                              | -64               | 05:19:02:55                  |
| 18          | 2015 | 5     | 28  | 1   | 290.7        | 401.3        | 15  | 401.3          | 7.1           | 110.6         | 110.6         | 785.26  | CH670                  | +     |                 |                        |                |                       |                        |                               |                              |                   |                              |
| 19          | 2015 | 6     | 7   | 2   | 299.7        | 652          | 12  | 652            | 7             | 352.3         | 352.3         | 2466.1  | CH671                  | -     | -73             | 06:08:08               | -14.4          | 06:08:06              |                        | 1.09E+16                      | 9.92E+16                     | -105              | 06:08:07:45                  |
|             |      |       |     |     |              |              |     |                |               |               |               |         |                        |       | -42             | 06:09:18               | -1.8           | 06:09:18              |                        |                               |                              | -60               | 06:09:18:49                  |
| 20          | 2015 | 6     | 14  | 2   | 453.7        | 576.7        | 4   | 590.7          | 3.8           | 123           | 137           | 520.6   | CH672                  | +     | -44             | 06:17:15               | -5.7           | 06:17:14              |                        |                               |                              | -36               | 06:17:15:52                  |
|             |      |       |     |     |              |              |     |                |               |               |               |         |                        |       | -32             | 06:18:15               | -2.9           | 06:18:15              |                        |                               |                              | -30               | 06:18:15:53                  |
| 21          | 2015 | 6     | 24  | 4   | 556          | 700.6        | 6   | 754.3          | 4.5           | 144.7         | 198.3         | 892.35  | CME,<br>CH673          | +     | -86             | 06:25:16               | -6.7           | 06:25:13              |                        | 1.46E+16                      | 2.15E+17                     | -82               | 06:25:14:39                  |
|             |      |       |     |     |              |              |     |                |               |               |               |         |                        |       | -55             | 06:28:07               | -5.4           | 06:28:05              |                        | 8.31E+14                      | 1.62E+16                     | -63               | 06:28:06:22                  |
| 22          | 2015 | 7     | 4   | 1   | 310.7        | 538.7        | 7   | 538.7          | 6.2           | 228           | 228           | 1413.6  | CH675                  | -     | -67             | 07:05:05               | -10.1          | 07:05:05              |                        | 1.53E+17                      | 1.26E+18                     | -87               | 07:05:04:52                  |
| 23          | 2015 | 7     | 10  | 3   | 318          | 626          | 9   | 626            | 10.5          | 308           | 308           | 3234    | CH676                  | +     | -61             | 07:13:15               | -4.8           | 07:13:12              |                        | 1.71E+16                      | 6.15E+17                     | -63               | 07:13:15:33                  |
| 24          | 2015 | 7     | 20  | 1   | 284.3        | 390.7        | 14  | 495.3          | 10.5          | 106.4         | 211           | 2215.5  | CHs677,<br>678         | +     | -63             | 07:23:07               | -11            | 07:23:05              |                        | 2.13E+16                      | 1.88E+17                     | -83               | 07:23:07:28                  |
|             |      |       |     |     |              |              |     |                |               |               |               |         |                        |       | -36             | 07:26:00               | -4.2           | 07:25:23              |                        |                               |                              | -39               | 07:25:23:59                  |
| 25          | 2015 | 7     | 30  | 5   | 342          | 579.3        | 10  | 603            | 6.4           | 237.3         | 261           | 1670.4  | CH679                  | -     |                 |                        |                |                       |                        |                               |                              |                   |                              |
| 26          | 2015 | 8     | 5   | 8   | 371.3        | 555          | 6   | 557.7          | 6.4           | 183.7         | 186.4         | 1192.96 | CHs680,<br>681         | +     |                 |                        |                |                       |                        |                               |                              |                   |                              |
| 27          | 2015 | 8     | 14  | 3   | 323          | 497.7        | 13  | 572            | 8.1           | 174.7         | 249           | 2016.9  | CHs682,<br>683         | +     | -84             | 08:16:07               | -8.4           | 08:16:06              | 08:15:08               | 1.21E+16                      | 2.97E+17                     | -94               | 08:16:07:37                  |
|             |      |       |     |     |              |              |     |                |               |               |               |         |                        |       | -38             | 08:17:16               | -3.7           | 08:17:14              |                        |                               |                              | -32               | 08:17:16:33                  |
|             |      |       |     |     |              |              |     |                |               |               |               |         |                        |       | -50             | 08:19:06               | -6.2           | 08:19:04              |                        | 2.01E+15                      | 8.58E+16                     | -57               | 08:19:06:14                  |
| 28          | 2015 | 8     | 22  | 4   | 363          | 569          | 10  | 569            | 5             | 206           | 206           | 1030    | CH684                  | +     | -43             | 08:23:08               | -8.5           | 08:23:07              |                        |                               |                              | -62               | 08:23:08:34                  |
| 29          | 2015 | 8     | 28  | 4   | 335.3        | 471.3        | 12  | 491.3          | 8.9           | 136           | 156           | 1388.4  | CH685                  | -     | -92             | 08:27:20               | -10.8          | 08:27:18              |                        | 7.42E+14                      | 2.90E+16                     | -101              | 08:27:20:32                  |
| 30          | 2015 | 9     | 6   | 3   | 435.7        | 589          | 11  | 589            | 2.8           | 153.3         | 153.3         | 429.24  | CH687                  | +     | -70             | 09:07:20               | -8.2           | 09:07:18              |                        | 1.32E+17                      | 1.58E+18                     | -73               | 09:07:20:16                  |
| 31          | 2015 | 9     | 10  | 3   | 385.3        | 623.3        | 10  | 623.3          | 4             | 238           | 238           | 952     | CH688                  | +     | -98             | 09:09:12               | -10.2          | 09:09:08              |                        | 1.47E+17                      | 1.22E+18                     | -100              | 09:09:12:18                  |
|             |      |       |     |     |              |              |     |                |               |               |               |         |                        |       | -81             | 09:11:14               | -0.3           | 09:11:14              |                        | 1.90E+16                      | 2.47E+17                     | -95               | 09:11:14:26                  |
| 32          | 2015 | 9     | 14  | 3   | 415.7        | 521.7        | 9   | 521.7          | 3.8           | 106           | 106           | 402.8   | CH689                  | +     | -41             | 09:14:16               | -4.4           | 09:14:14              |                        |                               |                              | -47               | 09:14:16:15                  |
| 33          | 2015 | 9     | 19  | 7   | 391          | 551.7        | 8   | 631            | 8.2           | 160.7         | 240           | 1968    | CHs690,<br>691,<br>CME | +/-,- | -75             | 09:20:15               | -3             | 09:20:12              | 09:20:06               | 1.53E+16                      | 3.28E+17                     | -70               | 09:20:15:49                  |
|             |      |       |     |     |              |              |     |                |               |               |               |         |                        |       | -37             | 09:23:17               | -6.7           | 09:23:16              |                        |                               |                              | -37               | 09:23:17:30                  |
| 34          | 2015 | 10    | 3   | 6   | 372.3        | 479.3        | 8   | 479.3          | 2.9           | 107           | 107           | 310.3   | CH*                    | +     | -55             | 10:04:09               | -7.7           | 10:04:04              |                        | 6.09E+15                      | 1.86E+17                     | -52               | 10:04:07:33                  |
| 35          | 2015 | 10    | 6   | 5   | 380          | 762.7        | 11  | 764.3          | 5.8           | 382.7         | 384.3         | 2228.94 | CH694                  | +     | -124            | 10:07:22               | -6.4           | 10:07:20              |                        | 2.71E+17                      | 3.17E+18                     | -124              | 10:07:22:23                  |
| 36          | 2015 | 10    | 12  | 3   | 437          | 568.7        | 7   | 568.7          | 3.4           | 131.7         | 131.7         | 447.78  | CH695                  | +     | -42             | 10:12:18               | -6.5           | 10:12:16              |                        |                               |                              | -39               | 10:12:18:29                  |
|             |      |       |     |     |              |              |     |                |               |               |               |         |                        |       | -46             | 10:14:06               | -4.9           | 10:14:04              |                        |                               |                              | -52               | 10:14:06:05                  |
| 37          | 2015 | 10    | 17  | 6   | 344          | 456.3        | 8   | 456.3          | 3.5           | 112.3         | 112.3         | 393.05  | CH695                  | -     | -48             | 10:18:09               | -11            | 10:18:08              |                        |                               |                              | -46               | 10:18:10:00                  |
| 38          | 2015 | 10    | 21  | 2   | 351.3        | 476          | 5   | 495            | 6.8           | 124.7         | 143.7         | 977.16  | CH696                  | -     |                 |                        |                |                       |                        |                               |                              |                   |                              |
| 39          | 2015 | 11    | 2   | 8   | 311.3        | 691.7        | 7   | 714            | 3.8           | 380.4         | 402.7         | 1530.26 | CH697                  | +     | -55             | 11:03:12               | -2.9           | 11:03:11              | 11:03:01               | 3.50E+16                      | 2.15E+17                     | -60               | 11:03:12:43                  |
|             |      |       |     |     |              |              |     |                |               |               |               |         |                        |       | -60             | 11:04:12               | -3.2           | 11:04:11              |                        | 1.08E+16                      | 3.05E+17                     | -67               | 11:04:13:01                  |
| 40          | 2015 | 11    | 8   | 5   | 462.3        | 599          | 11  | 713            | 4.2           | 136.7         | 250.7         | 1052.94 | CH698                  | +     | -58             | 11:10:13               | -6.2           | 11:10:11              |                        | 5.30E+16                      | 7.72E+17                     | -47               | 11:10:13:19                  |
| 41          | 2015 | 11    | 13  | 3   | 373.7        | 479.3        | 7   | 479.3          | 3.5           | 105.6         | 105.6         | 369.6   | CH699                  | +     | -32             | 11:14:07               | -2.2           | 11:14:04              |                        |                               |                              | -35               | 11:14:07:12                  |
| 42          | 2015 | 12    | 4   | 8   | 359.7        | 461.7        | 7   | 639.3          | 5             | 102           | 279.6         | 1398    | CH704                  | +     |                 |                        |                |                       |                        |                               |                              |                   |                              |
| 43          | 2015 | 12    | 9   | 8   | 440.7        | 633          | 8   | 658.7          | 4.1           | 192.3         | 218           | 893.8   | CHs704,<br>CH*         | +     |                 |                        |                |                       |                        |                               |                              |                   |                              |
| 44          | 2015 | 12    | 14  | 4   | 391.3        | 537.3        | 9   | 588            | 4.9           | 146           | 196.7         | 963.83  | CH705                  | -     | -47             | 12:14:19               | -12.2          | 12:14:16              | 12:14:13               |                               |                              | -60               | 12:14:19:04                  |