

## Results of the IMO Video Meteor Network – April 2013

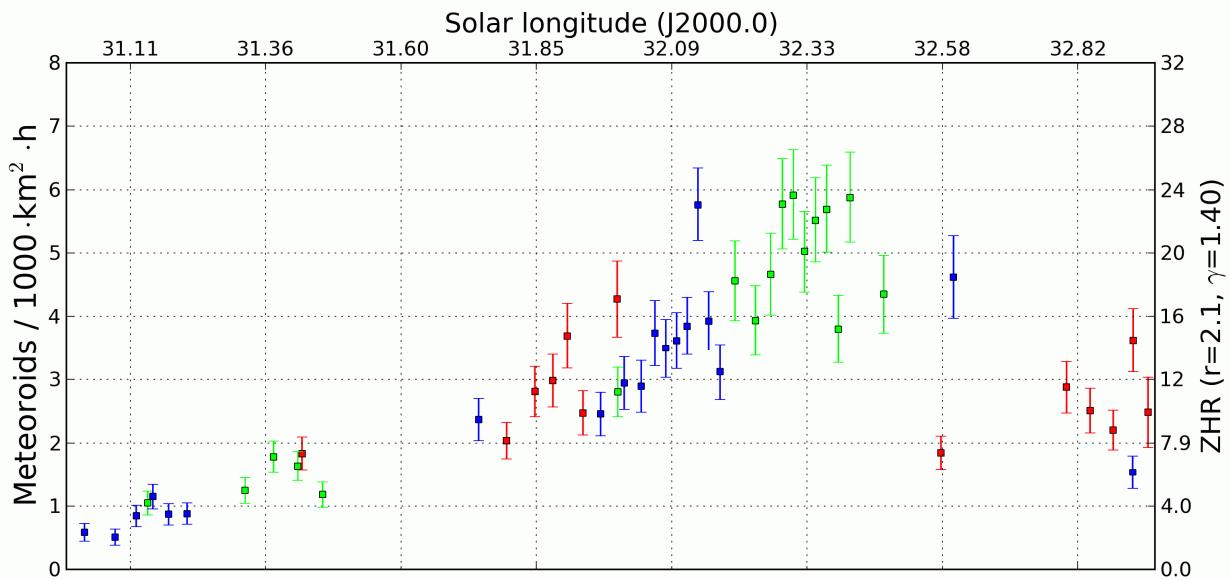
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Starting with the second quarter of 2013, the observing conditions finally improved. Whereas there are still big gaps in the observing statistics early April, we enjoyed fine observing conditions at most sites in the rest of the month. Observers in Hungary, Germany and at the Iberian Peninsula were particularly successful, whereas there were fewer clear nights in Slovenia and Italy, for example. In the end, 30 out of 75 video cameras obtained twenty or more observing nights. The overall effective observing time in April increased by thousand to almost 7.000 hours compared to last year. The meteor yields was still slightly below the result of 2012, because a few particularly sensitive cameras are currently inactive.

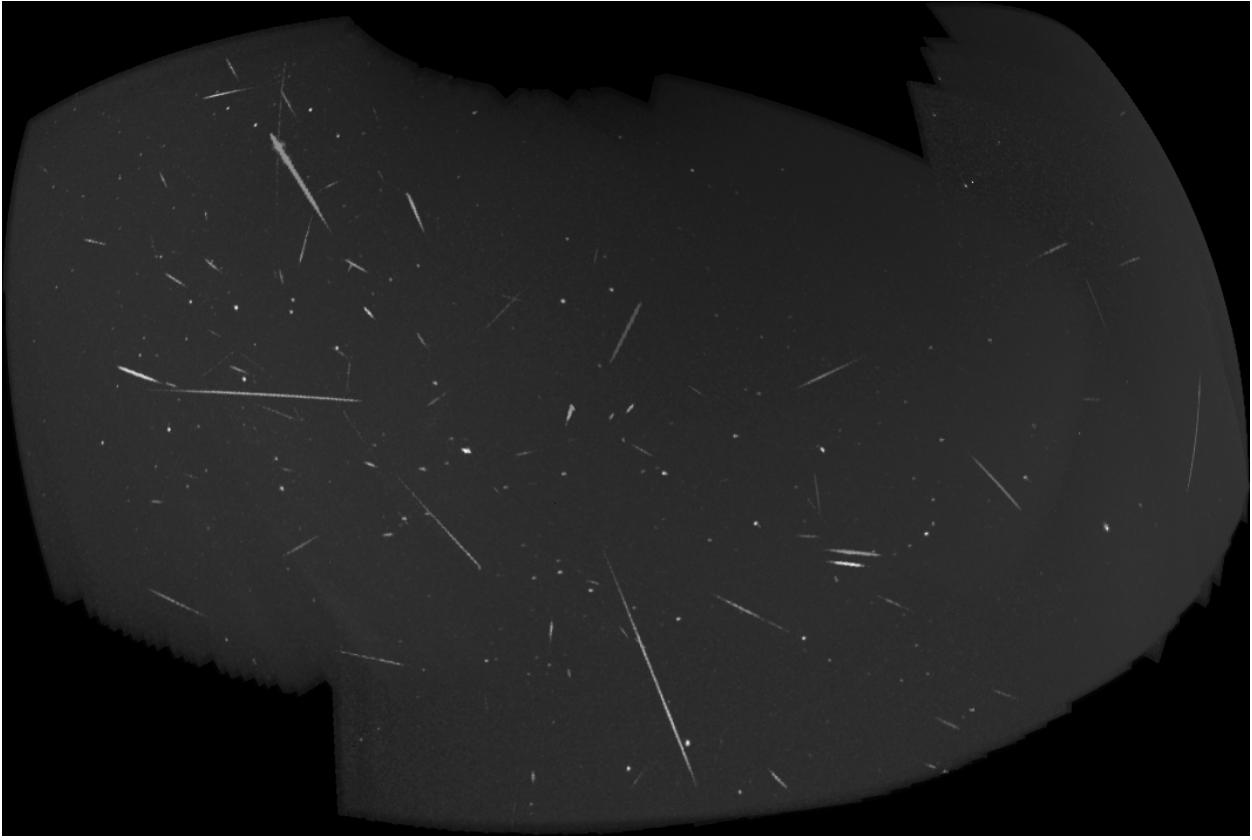
After the long winter break, April presented the first shower that clearly stands out from the sporadic background, which is low at this time of year, anyway. The boundary conditions for the Lyrids were “sub-optimal”, though. The maximum was forecasted for the noon hours (UT) of April 22, i.e. at the European daytime three days before full Moon. This is reflected by the activity profile that we derived from 840 shower members. Neither on April 21/22 nor in the following night we saw a clear peak. Alternatively we compare the flux density profile of 2011 (green), 2012 (blue) and 2013 (red) over two degrees solar longitude around the maximum (figure 1).

The subjectively best picture was obtained with a relatively small zenith exponent of 1.4. All three data sets give a consistent picture – only in 2013 the activity at the ascending branch was somewhat higher. One more year, and we get for the first time a complete flux density profile for this shower.



**Figure 1:** Flux density profile of the Lyrids around their time of maximum, derived from data of 2011 (green), 2012 (blue) and 2013 (red).

Even though the overall number of recorded Lyrids was quite small this year, it is sufficient to create nice shower images with the new Panorama tool. The program, which is still in test, supports different projection types by now. As an example, figure 2 shows meteors from the cameras REMO1 to REMO3 on April 21/22 and 22/23. The combined image is presented in orthographic projection.



**Figure 2:** Shower image of the Lyrids from recordings of REMO1, REMO2 and REMO3 on April 21/22 and 22/23, 2013.

With respect to the meteor shower analysis of spring 2012, we published already in the last April report results for the Lyrids (6 LYR), nu Cygnids (409 NCU), delta Aquilids (131 DAL), sigma Leonids (136 SLE), the Southern May Ophiuchids (17 SOP) and the April chi Librids (22 XLI). According to the MDC list, these showers are either established or have working list status. Here we complete the analysis by two candidates for unknown meter showers. Both are located in the southern hemisphere and at the upper end of the velocity scale (table 1). The first candidate is visible between April 8 and 15 with roughly 200 shower members in our database. The second candidate is represented by almost 150 meteors between April 12 and 15. Even though the scatter in right ascension and declination is relatively small, none of the two can be regarded as a save detection because they never reach a rank below 10. Thus we do not report them to the MDC until there is independent confirmation for one or the other.

**Table 1:** Parameters of two possibly unknown meteor shower from the analysis of the IMO network in 2012.

| Source   | Solar Longitude |                 | Right Ascension |              | Deklination |              | Vinf           |                 |
|----------|-----------------|-----------------|-----------------|--------------|-------------|--------------|----------------|-----------------|
|          | Mean<br>[°]     | Interval<br>[°] | Mean<br>[°]     | Drift<br>[°] | Mean<br>[°] | Drift<br>[°] | Mean<br>[km/s] | Drift<br>[km/s] |
| IMO 2012 | 22              | 19-25           | 266             | +0.5         | -15         | +0.3         | 67             | -               |
|          | 23              | 22-25           | 278             | +1.0         | -6          | +0.1         | 70             | -               |

## 1. Observers

| Code  | Name           | Place                | Camera             | FOV<br>[° <sup>2</sup> ] | St.LM<br>[mag] | Eff.CA<br>[km <sup>2</sup> ] | Nights | Time<br>[h] | Meteors |
|-------|----------------|----------------------|--------------------|--------------------------|----------------|------------------------------|--------|-------------|---------|
| ARLRA | Arlt           | Ludwigsfelde/DE      | LUDWIG1 (0.8/8)    | 1488                     | 4.8            | 726                          | 1      | 6.9         | 7       |
| BANPE | Bánfalvi       | Zalaegerszeg/HU      | HUVCSE01 (0.95/5)  | 2423                     | 3.4            | 361                          | 14     | 80.5        | 72      |
| BASLU | Bastiaens      | Hove/BE              | URANIA1 (0.8/3.8)* | 4545                     | 2.5            | 237                          | 2      | 9.0         | 6       |
| BERER | Berkó          | Ludanyhalaszi/HU     | HULUD1 (0.8/3.8)   | 5542                     | 4.8            | 3847                         | 20     | 143.4       | 509     |
|       |                |                      | HULUD2 (0.95/4)    | 3398                     | 3.8            | 671                          | 19     | 137.3       | 123     |
|       |                |                      | HULUD3 (0.95/4)    | 4357                     | 3.8            | 876                          | 20     | 145.1       | 137     |
| BIRSZ | Biro           | Agostyan/HU          | HUAGO (0.75/4.5)   | 2427                     | 4.4            | 1036                         | 20     | 120.6       | 122     |
| BOMMA | Bombardini     | Faenza/IT            | MARIO (1.2/4.0)    | 5794                     | 3.3            | 739                          | 12     | 64.0        | 180     |
| BREMA | Breukers       | Hengelo/NL           | MBB3 (0.75/6)      | 2399                     | 4.2            | 699                          | 21     | 113.5       | 143     |
|       |                |                      | MBB4 (0.8/8)       | 1470                     | 5.1            | 1208                         | 17     | 87.7        | 117     |
| BRIBE | Brinkmann      | Herne/DE             | HERMINE (0.8/6)    | 2374                     | 4.2            | 678                          | 18     | 83.6        | 134     |
|       |                | Berg, Gladbach/DE    | KLEMOI (0.8/6)     | 2286                     | 4.6            | 1080                         | 16     | 74.7        | 74      |
| CASFL | Castellani     | Monte Baldo/IT       | BMH1 (0.8/6)       | 2350                     | 5.0            | 1611                         | 18     | 96.1        | 138     |
|       |                |                      | BMH2 (1.5/4.5)*    | 4243                     | 3.0            | 371                          | 15     | 78.1        | 107     |
| CRIST | Crivello       | Valbrevenna/IT       | BILBO (0.8/3.8)    | 5458                     | 4.2            | 1772                         | 22     | 108.2       | 206     |
|       |                |                      | C3P8 (0.8/3.8)     | 5455                     | 4.2            | 1586                         | 20     | 98.1        | 136     |
|       |                |                      | STG38 (0.8/3.8)    | 5614                     | 4.4            | 2007                         | 22     | 122.1       | 287     |
| ELTMA | Eltri          | Venezia/IT           | MET38 (0.8/3.8)    | 5631                     | 4.3            | 2151                         | 15     | 32.9        | 210     |
| GANKA | Gansel         | Dingden/DE           | DARO01 (1.4/3.6)   | 7141                     | 3.1            | 652                          | 18     | 75.9        | 80      |
| GONRU | Goncalves      | Tomar/PT             | TEMPLAR1 (0.8/6)   | 2179                     | 5.3            | 1842                         | 24     | 170.9       | 467     |
|       |                |                      | TEMPLAR2 (0.8/6)   | 2080                     | 5.0            | 1508                         | 25     | 175.3       | 335     |
|       |                |                      | TEMPLAR3 (0.8/8)   | 1438                     | 4.3            | 571                          | 24     | 172.2       | 237     |
|       |                |                      | TEMPLAR4 (0.8/3.8) | 4475                     | 3.0            | 442                          | 24     | 165.2       | 305     |
| GOVMI | Govedic        | Sredisce ob Dr./SI   | ORION2 (0.8/8)     | 1447                     | 5.5            | 1841                         | 13     | 70.8        | 120     |
|       |                |                      | ORION3 (0.95/5)    | 2665                     | 4.9            | 2069                         | 23     | 70.4        | 132     |
|       |                |                      | ORION4 (0.95/5)    | 2662                     | 4.3            | 1043                         | 22     | 78.7        | 152     |
| IGAAN | Igaz           | Baja/HU              | HUBAJ (0.8/3.8)    | 5552                     | 2.8            | 403                          | 24     | 148.8       | 229     |
|       |                | Debrecen/HU          | HUDEB (0.8/3.8)    | 5522                     | 3.2            | 620                          | 24     | 169.8       | 192     |
|       |                | Hodmezovasar./HU     | HUHOD (0.8/3.8)    | 5502                     | 3.4            | 764                          | 23     | 160.8       | 177     |
| JONKA | Jonas          | Budapest/HU          | HUPOL (1.2/4)      | 3790                     | 3.3            | 475                          | 19     | 135.8       | 61      |
| KACJA | Kac            | Budapest/HU          | HUSOR (0.95/4)     | 2286                     | 3.9            | 445                          | 21     | 154.2       | 164     |
|       |                | Kamnik/SI            | CVETKA (0.8/3.8)   | 4914                     | 4.3            | 1842                         | 7      | 43.3        | 92      |
|       |                | Kostanjevec/SI       | METKA (0.8/12)*    | 715                      | 6.4            | 640                          | 10     | 62.5        | 127     |
|       |                | Ljubljana/SI         | ORION1 (0.8/8)     | 1402                     | 3.8            | 331                          | 14     | 62.1        | 36      |
|       |                | Kamnik/SI            | REZIKA (0.8/6)     | 2270                     | 4.4            | 840                          | 7      | 47.1        | 169     |
|       |                |                      | STEFKA (0.8/3.8)   | 5471                     | 2.8            | 379                          | 7      | 38.7        | 79      |
| KERST | Kerr           | Glenlee/AU           | GOCAM1 (0.8/3.8)   | 5189                     | 4.6            | 2550                         | 16     | 46.5        | 283     |
| KISSZ | Kiss           | Suly sap/HU          | HUSUL (0.95/5)*    | 4295                     | 3.0            | 355                          | 20     | 150.3       | 81      |
| KOSDE | Koschny        | Izana Obs./ES        | ICC7 (0.85/25)*    | 714                      | 5.9            | 1464                         | 18     | 132.2       | 682     |
| LERAR | Leroy          | Noordwijkerhout/NL   | LIC4 (1.4/50)*     | 2027                     | 6.0            | 4509                         | 16     | 83.7        | 145     |
| MACMA | Maciejewski    | Gretz/FR             | SAPHIRA (1.2/6)    | 3260                     | 3.4            | 301                          | 8      | 20-9        | 28      |
|       |                | Chelm/PL             | PAV35 (1.2/4)      | 4383                     | 2.5            | 253                          | 18     | 85.3        | 96      |
|       |                |                      | PAV36 (1.2/4)*     | 5732                     | 2.2            | 227                          | 18     | 90.2        | 143     |
|       |                |                      | PAV43 (0.95/3.75)* | 2544                     | 2.7            | 176                          | 11     | 59.3        | 52      |
| MARGR | Maravelias     | Lofoupoli/GR         | LOOMECON (0.8/12)  | 738                      | 6.3            | 2698                         | 21     | 93.3        | 192     |
| MOLSI | Molau          | Seysdorf/DE          | AVIS2 (1.4/50)*    | 1230                     | 6.9            | 6152                         | 12     | 68.6        | 371     |
|       |                | Ketzür/DE            | MINCAM1 (0.8/8)    | 1477                     | 4.9            | 1084                         | 16     | 92.0        | 105     |
|       |                |                      | REMO1 (0.8/8)      | 1467                     | 5.9            | 2837                         | 24     | 121.1       | 444     |
|       |                |                      | REMO2 (0.8/8)      | 1478                     | 6.3            | 4467                         | 25     | 142.0       | 368     |
|       |                |                      | REMO3 (0.8/8)      | 1420                     | 5.6            | 1967                         | 19     | 102.3       | 95      |
| MORJO | Morvai         | Fülpöszallas/HU      | HUFUL (1.4/5)      | 2522                     | 3.5            | 532                          | 24     | 164.4       | 189     |
| OCAF  | Ocana Gonzales | Madrid/ES            | FOGCAM (1.4/7)     | 1890                     | 3.9            | 109                          | 21     | 163.1       | 119     |
| OCHPA | Ochner         | Albiano/IT           | ALBIANO (1.2/4.5)  | 2944                     | 3.5            | 358                          | 9      | 2.6         | 16      |
| OTTMI | Otte           | Pearl City/US        | ORIE1 (1.4/5.7)    | 3837                     | 3.8            | 460                          | 16     | 49.8        | 142     |
| PERZS | Perkó          | Becsehely/HU         | HUBEC (0.8/3.8)*   | 5498                     | 2.9            | 460                          | 23     | 142.9       | 363     |
| PUCRC | Pucer          | Nova vas nad Dra./SI | MOBCAM1 (0.75/6)   | 2398                     | 5.3            | 2976                         | 16     | 104.6       | 174     |
| ROTEC | Rothenberg     | Berlin/DE            | ARMEFA (0.8/6)     | 2366                     | 4.5            | 911                          | 12     | 47.1        | 59      |
| SARAN | Saraiva        | Carnaxide/PT         | RO1 (0.75/6)       | 2362                     | 3.7            | 381                          | 24     | 122.9       | 192     |
|       |                |                      | RO2 (0.75/6)       | 2381                     | 3.8            | 459                          | 23     | 157.4       | 200     |
|       |                |                      | SOFIA (0.8/12)     | 738                      | 5.3            | 907                          | 25     | 157.9       | 157     |
| SCALE | Scarpa         | Alberoni/IT          | LEO (1.2/4.5)*     | 4152                     | 4.5            | 2052                         | 5      | 2.1         | 11      |
| SCHHA | Schremmer      | Niederkrüchten/DE    | DORAEMON (0.8/3.8) | 4900                     | 3.0            | 409                          | 23     | 101.1       | 174     |
| SLAST | Slavec         | Ljubljana/SI         | KAYAK1 (1.8/28)    | 563                      | 6.2            | 1294                         | 13     | 51.1        | 72      |
| STOEN | Stomeo         | Scorzè/IT            | MIN38 (0.8/3.8)    | 5566                     | 4.8            | 3270                         | 23     | 86.5        | 279     |
|       |                |                      | NOA38 (0.8/3.8)    | 5609                     | 4.2            | 1911                         | 18     | 84.5        | 190     |
|       |                |                      | SCO38 (0.8/3.8)    | 5598                     | 4.8            | 3306                         | 19     | 108.8       | 303     |
| STORO | Štork          | Ondrejov/CZ          | OND1 (1.4/50)*     | 2195                     | 5.8            | 4595                         | 1      | 6.1         | 73      |
| STRJO | Strunk         | Herford/DE           | MINCAM2 (0.8/6)    | 2362                     | 4.6            | 1152                         | 15     | 62.5        | 68      |
|       |                |                      | MINCAM3 (0.8/12)   | 728                      | 5.7            | 975                          | 17     | 72.7        | 85      |
|       |                |                      | MINCAM4 (1.0/2.6)  | 9791                     | 2.7            | 552                          | 11     | 43.8        | 47      |
|       |                |                      | MINCAM5 (0.8/6)    | 2349                     | 5.0            | 1896                         | 18     | 78.1        | 132     |
| TEPIS | Tepliczky      | Budapest/HU          | HUMOB (0.8/6)      | 2388                     | 4.8            | 1607                         | 21     | 115.3       | 325     |
| TRIMI | Triglav        | Velenje/SI           | SRAKA (0.8/6)*     | 2222                     | 4.0            | 546                          | 14     | 14.4        | 92      |
| YRJIL | Yrjölä         | Kuusankoski/FI       | FINEXCAM (0.8/6)   | 2337                     | 5.5            | 3574                         | 19     | 94.7        | 210     |
| ZELZO | Zelko          | Budapest/HU          | HUVCSE03 (1.0/4.5) | 2224                     | 4.4            | 933                          | 8      | 42.4        | 62      |
|       | Sum            |                      |                    |                          |                |                              | 30     | 6968.8      | 12681   |

\* active field of view smaller than video frame

## 2. Observing Times (h)

| April | 01    | 02   | 03   | 04   | 05   | 06    | 07    | 08    | 09   | 10    | 11    | 12    | 13    | 14    | 15    |     |
|-------|-------|------|------|------|------|-------|-------|-------|------|-------|-------|-------|-------|-------|-------|-----|
| ARLRA | -     | -    | -    | -    | -    | -     | -     | -     | -    | -     | -     | -     | -     | -     | -     |     |
| BANPE | -     | -    | -    | -    | -    | -     | 5.8   | -     | -    | -     | -     | -     | 5.2   | 5.3   | 7.0   |     |
| BASLU | 7.2   | -    | -    | -    | -    | -     | -     | -     | -    | -     | -     | -     | -     | -     | -     |     |
| BERER | 3.7   | -    | -    | -    | -    | -     | -     | -     | -    | 4.2   | 1.3   | -     | 8.4   | 8.6   | 7.3   |     |
|       | 3.9   | -    | -    | -    | -    | -     | -     | -     | 3.4  | -     | -     | 8.5   | 8.6   | 8.5   |       |     |
|       | 3.5   | -    | -    | -    | -    | -     | -     | -     | 4.4  | -     | -     | 8.7   | 8.6   | 8.5   |       |     |
| BIRSZ | 0.4   | -    | -    | 2.5  | -    | 8.9   | -     | -     | 2.8  | 8.7   | 5.1   | -     | 8.5   | 8.4   | 8.4   |     |
| BOMMA | -     | -    | 3.4  | -    | -    | -     | -     | -     | -    | 9.0   | -     | -     | 6.4   | -     | 3.0   |     |
| BREMA | 9.1   | 6.0  | 2.4  | 1.9  | -    | 5.2   | 6.6   | -     | -    | -     | -     | -     | -     | 8.2   | 6.8   |     |
|       | 8.9   | 5.2  | 1.6  | -    | -    | 5.2   | 6.7   | -     | -    | -     | -     | -     | -     | 5.6   | 3.3   |     |
| BRIBE | 9.2   | 7.0  | -    | -    | -    | 2.8   | 5.6   | -     | 3.1  | -     | -     | -     | -     | 8.1   | 2.5   |     |
|       | 9.2   | 8.4  | -    | 5.2  | -    | 3.4   | 4.9   | 2.3   | -    | -     | -     | -     | -     | 8.3   | 2.5   |     |
| CASFL | 1.6   | 0.9  | 7.7  | -    | 0.8  | 1.5   | -     | -     | -    | 3.6   | -     | 5.9   | 9.0   | 9.0   | 8.3   |     |
|       | -     | 0.3  | 6.1  | -    | -    | 0.2   | -     | -     | 2.4  | -     | -     | 4.7   | 8.4   | 8.7   | 5.4   |     |
| CRIST | -     | 2.8  | 5.6  | -    | 3.7  | 1.3   | 5.4   | -     | 2.2  | 7.8   | -     | 8.3   | 8.4   | 8.7   | 8.4   |     |
|       | -     | 1.5  | 2.0  | -    | 3.0  | 0.6   | 5.3   | -     | 1.8  | 4.1   | -     | 7.9   | 8.8   | 8.7   | 7.3   |     |
|       | -     | 4.8  | 4.6  | -    | 4.2  | 5.2   | 6.3   | -     | -    | 7.7   | -     | 8.5   | 7.9   | 8.7   | 8.7   |     |
| ELTMA | -     | -    | -    | -    | -    | -     | 3.7   | 0.2   | -    | -     | 1.2   | 0.3   | 2.8   | 2.4   | 2.3   |     |
| GANKA | 7.9   | -    | -    | -    | -    | 7.1   | 5.7   | 1.5   | -    | -     | -     | 0.6   | -     | 7.9   | 7.3   |     |
| GONRU | -     | 1.4  | -    | -    | 9.5  | 7.5   | -     | 3.6   | -    | -     | 7.4   | 7.8   | 9.2   | 5.8   | 9.0   |     |
|       | 1.3   | 3.8  | -    | -    | 9.6  | 4.4   | -     | 3.7   | -    | -     | 7.3   | 7.6   | 9.2   | 5.7   | 9.0   |     |
|       | 5.0   | 1.8  | 2.7  | 2.4  | 9.6  | -     | -     | -     | -    | -     | 5.4   | 9.1   | 9.2   | 5.6   | 9.2   |     |
|       | -     | 1.4  | -    | -    | 9.6  | 2.5   | -     | 1.6   | -    | -     | 6.9   | 7.5   | 9.2   | 5.6   | 9.0   |     |
| GOVMI | -     | -    | -    | -    | -    | -     | -     | -     | -    | -     | -     | -     | -     | -     | -     |     |
|       | -     | -    | -    | -    | -    | -     | 4.9   | 2.4   | 1.0  | 3.0   | -     | 0.5   | 3.8   | 0.5   | 2.7   |     |
|       | -     | -    | -    | -    | -    | -     | 6.7   | 0.8   | 0.4  | 5.2   | 1.3   | -     | 6.1   | 4.2   | 8.0   |     |
| IGAAN | 5.4   | -    | -    | -    | -    | 9.1   | -     | 2.2   | 2.2  | 7.7   | 6.5   | 4.4   | 4.0   | 5.6   | 5.4   |     |
|       | 9.0   | -    | -    | -    | -    | -     | 9.1   | 1.9   | -    | 7.6   | 5.8   | 2.4   | 6.4   | 8.7   | 8.6   |     |
|       | 7.7   | -    | -    | 0.9  | -    | -     | -     | 2.2   | -    | 8.9   | 6.3   | 4.4   | 8.7   | 8.5   | 8.6   |     |
| JONKA | -     | -    | -    | -    | -    | -     | -     | -     | -    | 8.2   | 5.9   | 2.7   | 8.5   | 8.1   | 8.2   |     |
| KACJA | -     | -    | -    | -    | -    | -     | -     | -     | -    | 6.7   | -     | -     | 8.7   | -     | -     |     |
|       | -     | -    | -    | -    | -    | -     | -     | -     | -    | -     | -     | -     | 9.0   | -     | -     |     |
|       | -     | -    | -    | -    | -    | -     | -     | -     | -    | 8.0   | -     | -     | 5.1   | 3.1   | -     |     |
|       | -     | -    | -    | -    | -    | -     | -     | -     | -    | 6.8   | -     | -     | 8.8   | -     | -     |     |
|       | -     | -    | -    | -    | -    | -     | -     | -     | -    | 6.5   | -     | -     | 8.9   | -     | -     |     |
| KERST | -     | -    | 4.9  | 9.3  | 4.2  | -     | 0.2   | 1.5   | -    | -     | -     | 1.3   | 3.6   | 2.3   | 1.5   |     |
| KISSZ | 7.8   | -    | -    | -    | -    | -     | 0.7   | -     | -    | 8.9   | 5.1   | -     | 8.7   | 8.5   | 8.6   |     |
| KOSDE | -     | -    | -    | -    | -    | -     | -     | 9.7   | 9.7  | 9.6   | 7.6   | 9.6   | 9.0   | 8.5   | 7.5   |     |
|       | 8.4   | 7.5  | -    | -    | -    | -     | 2.6   | 1.4   | -    | 0.2   | -     | -     | -     | -     | 4.6   |     |
| LERAR | -     | -    | -    | -    | -    | -     | -     | -     | -    | -     | -     | -     | 0.6   | 7.6   | -     |     |
| MACMA | 1.2   | -    | -    | -    | -    | -     | 7.0   | 8.2   | -    | 1.4   | -     | -     | 4.3   | -     | 8.5   |     |
|       | 1.2   | -    | -    | -    | -    | -     | -     | 8.7   | -    | 1.7   | -     | -     | 4.5   | -     | 8.0   |     |
|       | 1.8   | -    | -    | -    | -    | -     | -     | 8.5   | -    | -     | -     | -     | 3.7   | -     | 8.4   |     |
| MARGR | 5.9   | 0.2  | 0.9  | 6.8  | 5.6  | 6.4   | 0.7   | 6.8   | 5.7  | 2.7   | 7.9   | 5.9   | 7.3   | 4.7   | -     |     |
| MOLSI | 3.3   | -    | 2.9  | -    | -    | -     | 5.3   | -     | -    | -     | -     | -     | 3.0   | 6.0   | 7.9   | 7.8 |
|       | 3.4   | -    | 3.0  | -    | -    | -     | 7.2   | -     | -    | 4.1   | -     | -     | 6.7   | 6.3   | 8.5   | 8.4 |
|       | 9.1   | 3.7  | 3.8  | -    | -    | 8.4   | 8.0   | 7.6   | -    | 2.0   | -     | 6.6   | 8.1   | 8.1   | 3.4   |     |
|       | 9.0   | 9.0  | 4.5  | -    | -    | 8.4   | 8.4   | 8.5   | -    | 2.0   | 8.3   | 6.9   | 8.2   | 8.1   | 4.4   |     |
|       | 9.1   | 3.5  | 3.0  | -    | -    | 8.4   | 7.2   | 6.4   | -    | -     | -     | 6.5   | 8.2   | 7.9   | 3.6   |     |
| MORJO | 5.1   | -    | -    | 3.2  | -    | 7.0   | -     | -     | 3.4  | 9.0   | 5.6   | 3.3   | 8.8   | 8.7   | 8.6   |     |
| OCAF  | 6.8   | 8.6  | 3.5  | 2.2  | 7.9  | 9.4   | -     | 8.5   | -    | -     | 9.2   | 8.7   | 9.2   | 7.8   | 9.0   |     |
| OCHPA | -     | -    | 0.2  | -    | -    | 0.2   | -     | -     | 0.3  | 0.2   | -     | 0.5   | -     | 0.5   | -     |     |
| OTTMI | 9.5   | 3.3  | 2.4  | 2.5  | 0.2  | -     | 1.0   | 3.5   | -    | -     | -     | -     | -     | -     | -     |     |
| PERZS | -     | -    | -    | -    | -    | 8.3   | 3.1   | 4.4   | 8.4  | 4.2   | -     | 6.3   | 5.8   | 8.7   |       |     |
| PUCRC | -     | -    | -    | -    | -    | 9.0   | 9.0   | -     | 1.1  | 8.5   | -     | 8.1   | 8.6   | 8.6   | 5.3   |     |
| ROTEC | -     | 0.7  | -    | -    | -    | 7.1   | -     | 3.1   | -    | -     | 1.1   | 4.9   | -     | 7.8   | -     |     |
| SARAN | 3.8   | -    | 4.4  | 0.4  | 7.7  | 1.7   | -     | -     | -    | -     | 0.7   | 9.0   | 8.9   | -     | 9.3   |     |
|       | 1.1   | -    | 3.7  | 2.1  | 8.2  | -     | -     | 2.6   | -    | -     | 5.8   | 9.2   | 9.2   | -     | 9.1   |     |
|       | 0.5   | -    | 5.0  | 2.1  | 8.4  | 3.1   | -     | 2.9   | -    | -     | 6.2   | 8.9   | 9.0   | -     | 8.7   |     |
| SCALE | -     | -    | -    | -    | -    | -     | -     | -     | -    | -     | -     | -     | -     | -     | -     |     |
| SCHHA | 9.4   | 9.0  | 1.8  | 5.8  | -    | 1.1   | -     | 2.8   | 1.4  | -     | -     | 0.7   | -     | 7.8   | 5.3   |     |
| SLAST | -     | -    | -    | -    | -    | -     | -     | -     | -    | -     | 3.6   | -     | -     | 8.3   | 3.7   |     |
| STOEN | 0.4   | 0.2  | 1.6  | -    | -    | 4.4   | -     | -     | 1.4  | 7.2   | -     | 3.7   | 7.9   | 8.9   | 6.5   |     |
|       | -     | 0.3  | -    | -    | -    | -     | -     | -     | -    | 2.0   | -     | 4.0   | 7.8   | 8.8   | 7.4   |     |
|       | 0.8   | -    | 2.8  | -    | -    | 3.9   | -     | -     | 4.0  | 7.3   | -     | 5.2   | 8.3   | 9.0   | 8.1   |     |
| STORO | -     | -    | -    | -    | -    | -     | 6.1   | -     | -    | -     | -     | -     | -     | -     | -     |     |
| STRJO | 7.5   | 0.8  | -    | -    | -    | 2.3   | 8.0   | -     | -    | -     | -     | -     | 1.3   | 7.4   | 2.8   |     |
|       | 8.1   | -    | -    | -    | -    | -     | 1.3   | -     | -    | -     | 1.3   | 1.7   | 2.2   | 7.6   | 3.2   |     |
|       | 7.7   | -    | -    | -    | -    | 2.2   | 7.8   | 2.7   | 2.0  | -     | -     | -     | -     | 7.5   | 3.2   |     |
| TEPIS | -     | -    | -    | -    | -    | 8.6   | -     | -     | 1.8  | 8.6   | 4.8   | -     | 7.8   | 8.4   | 8.0   |     |
| TRIMI | -     | -    | -    | -    | -    | -     | -     | -     | -    | 1.0   | -     | -     | 2.6   | 0.2   | -     |     |
| YRJIL | 5.3   | -    | 7.2  | 7.5  | 4.9  | 7.3   | -     | 6.8   | 5.1  | 6.2   | -     | -     | -     | -     | -     |     |
| ZELZO | -     | -    | -    | -    | -    | -     | -     | -     | -    | -     | -     | -     | -     | -     | 7.2   |     |
| Sum   | 219.2 | 92.1 | 91.7 | 54.8 | 97.1 | 167.5 | 162.0 | 125.5 | 57.8 | 222.6 | 136.6 | 203.2 | 390.6 | 386.3 | 383.0 |     |

| April  | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24    | 25    | 26    | 27    | 28    | 29    | 30    |
|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| ARLRA  | -     | -     | -     | -     | 6.9   | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| BANPE  | 6.4   | 6.8   | 6.4   | -     | -     | 4.7   | 7.6   | 6.2   | 7.7   | 0.3   | -     | 6.5   | -     | 4.6   |       |
| BASLU  | -     | -     | -     | -     | -     | 1.8   | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| BERER  | 8.4   | 8.4   | 8.3   | 8.3   | 7.9   | 7.9   | 8.1   | 8.0   | 7.9   | 7.8   | 7.7   | -     | 6.4   | 7.3   | 7.5   |
|        | 8.5   | 8.4   | 8.3   | 8.3   | 8.0   | 8.2   | 8.1   | 8.1   | 8.0   | 7.9   | 7.9   | 0.9   | 6.4   | 7.2   | 7.6   |
| BIRSZ  | 8.5   | 8.4   | 8.3   | 8.3   | 8.0   | 8.2   | 7.7   | 8.1   | 8.0   | 7.9   | 7.9   | 0.9   | 6.4   | 7.2   | 7.6   |
|        | 6.9   | 6.8   | 5.4   | -     | 1.5   | 8.0   | 6.7   | 7.4   | 5.9   | 7.1   | -     | -     | 7.5   | -     | 3.7   |
| BOMMA  | 8.3   | 8.4   | 8.7   | -     | -     | -     | -     | 8.5   | -     | 2.7   | 2.4   | -     | 2.6   | -     | 0.6   |
| BREMA  | 4.1   | 4.5   | 7.9   | 7.8   | 7.2   | 1.2   | -     | 6.2   | 2.4   | 4.3   | -     | 6.9   | 7.1   | 0.7   | 7.0   |
|        | -     | 3.6   | 5.4   | 7.8   | 6.3   | 0.9   | -     | -     | -     | 4.5   | -     | 6.6   | 7.0   | 3.2   | 5.9   |
| BRIBE  | -     | 6.8   | 7.7   | -     | 4.6   | -     | 1.5   | 1.5   | 4.4   | 5.5   | -     | 6.4   | 4.0   | 2.2   | 0.7   |
|        | -     | 7.2   | 4.5   | 2.5   | 1.4   | -     | -     | -     | -     | -     | -     | 5.9   | 4.3   | 3.4   | 1.3   |
| CASFL  | 8.1   | 8.8   | 8.7   | -     | -     | -     | 2.0   | 6.3   | 8.4   | 5.0   | -     | -     | -     | 0.5   | -     |
|        | 3.3   | 8.6   | 8.6   | -     | -     | -     | 1.7   | 6.2   | 8.2   | 5.3   | -     | -     | -     | -     | -     |
| CRIST  | 8.2   | 8.5   | 8.5   | 0.6   | 2.2   | 0.2   | 2.7   | 7.2   | 6.5   | -     | -     | -     | -     | 0.4   | 0.6   |
|        | 8.5   | 8.6   | 6.0   | -     | 2.2   | 1.5   | 3.2   | 7.7   | 7.8   | 1.6   | -     | -     | -     | -     | -     |
|        | 8.4   | 8.5   | 8.5   | 0.7   | 3.2   | 0.6   | 5.4   | 6.3   | 8.2   | 3.1   | -     | -     | -     | 0.6   | 2.0   |
| ELTMA  | 0.5   | 3.2   | 1.3   | -     | -     | -     | 5.2   | 3.7   | 3.1   | 0.2   | -     | -     | -     | -     | -     |
| GANKA  | -     | 5.8   | 2.8   | 2.8   | 6.9   | 0.9   | 0.5   | 3.1   | 1.5   | 7.4   | -     | -     | -     | 0.2   | 6.0   |
| GONRU  | 9.1   | 8.6   | 8.9   | 8.9   | 8.5   | 5.0   | 4.7   | 8.8   | 8.8   | 5.8   | 7.5   | 8.7   | 7.2   | 4.7   | 4.5   |
|        | 9.2   | 9.1   | 4.6   | 9.0   | 7.2   | 7.3   | 8.6   | 8.9   | 8.9   | 5.8   | 7.2   | 8.7   | 7.6   | 5.8   | 5.8   |
|        | 9.1   | 9.0   | 8.6   | 8.9   | 8.8   | 5.5   | 8.7   | 8.6   | 8.2   | 5.3   | 7.3   | 8.6   | 8.0   | -     | 7.6   |
|        | 9.2   | 7.8   | 9.0   | 9.0   | 7.1   | 6.7   | 8.8   | 8.8   | 8.2   | 6.1   | 6.9   | 8.6   | 7.1   | 4.1   | 4.5   |
| GOVMI  | -     | -     | 6.3   | 7.5   | 8.4   | 1.2   | 1.1   | 8.2   | 8.2   | 7.9   | 6.2   | 2.4   | 7.8   | 1.3   | 4.3   |
|        | 8.5   | 4.0   | 5.0   | 1.9   | 1.8   | 0.6   | 0.9   | 8.0   | 2.9   | 7.8   | 0.2   | 1.6   | 7.7   | 0.2   | 0.5   |
|        | 7.7   | 3.9   | 2.1   | 1.7   | 1.5   | 0.4   | -     | 6.9   | 6.7   | 5.2   | 0.3   | 1.0   | 7.0   | 0.7   | 0.9   |
| IGAAN  | 5.7   | 4.7   | 8.5   | 8.5   | 8.3   | 8.2   | 4.9   | 8.1   | 7.7   | 8.0   | 7.9   | -     | 7.9   | 7.6   | 0.3   |
|        | 8.5   | 8.4   | 8.4   | 8.2   | 8.2   | 5.1   | 7.2   | 8.0   | 8.0   | 7.8   | 7.7   | 3.3   | 7.7   | 7.3   | 6.5   |
|        | 8.5   | 8.5   | 8.4   | 8.4   | 7.9   | 8.2   | 3.1   | 8.1   | 7.6   | 8.0   | 8.0   | 4.6   | 7.5   | 7.8   | -     |
|        | 8.2   | 8.1   | 7.6   | 7.8   | 4.8   | 7.8   | 6.2   | 7.7   | 7.4   | 7.6   | 7.4   | -     | 7.3   | 6.3   | -     |
| JONKA  | 8.5   | 8.0   | 8.4   | 8.4   | 7.7   | 8.2   | 7.7   | 8.0   | 7.4   | 8.0   | 7.9   | -     | 7.7   | 5.8   | 6.5   |
| KACJA  | 2.5   | 6.8   | 5.7   | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | 5.7   | 7.2   |
|        | 8.4   | 8.1   | 8.2   | 0.5   | -     | -     | -     | 7.6   | 8.0   | 3.0   | -     | -     | 8.0   | -     | 1.7   |
|        | 2.2   | -     | 5.3   | -     | 3.0   | 0.7   | 1.0   | 8.0   | 8.0   | 7.2   | -     | -     | 4.9   | 3.7   | 1.9   |
|        | 3.5   | 7.1   | 5.7   | -     | -     | -     | -     | -     | -     | -     | -     | -     | 8.0   | 7.2   | -     |
|        | 1.5   | 5.3   | 4.1   | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | 5.6   | 6.8   |
| KERST  | -     | 2.7   | 5.8   | -     | 5.3   | 0.2   | 2.8   | 0.4   | 0.5   | -     | -     | -     | -     | -     | -     |
| KISSZ  | 8.5   | 8.5   | 8.4   | 8.4   | 8.3   | 8.2   | 8.1   | 8.1   | 7.8   | 8.0   | -     | -     | 7.8   | 5.1   | 6.8   |
| KOSDE  | 7.0   | 5.9   | -     | -     | 2.3   | 7.4   | 6.8   | -     | 6.2   | 9.2   | -     | 9.1   | -     | 3.4   | 3.7   |
|        | 7.0   | -     | 6.9   | 7.0   | 6.9   | 6.8   | -     | -     | -     | 4.5   | -     | 4.7   | 4.1   | 5.0   | 6.1   |
| LERAR  | -     | 3.9   | -     | 0.3   | 2.0   | 1.1   | 2.1   | 3.3   | -     | -     | -     | -     | -     | -     | -     |
| MACMA  | 8.2   | 7.8   | 7.4   | 2.9   | 3.8   | 7.5   | 5.5   | 1.8   | -     | 0.2   | 5.4   | 2.5   | -     | 1.7   | -     |
|        | 8.2   | 8.1   | 8.0   | -     | 3.5   | 7.9   | 6.5   | 2.2   | 6.4   | 0.8   | 6.0   | 4.5   | 1.2   | -     | 2.8   |
|        | -     | -     | -     | -     | -     | 8.1   | 7.8   | 2.3   | 6.7   | 2.5   | 7.7   | -     | 1.8   | -     | -     |
| MARGR  | -     | 6.6   | 2.6   | 3.1   | 2.7   | 3.8   | 3.9   | -     | -     | 3.1   | -     | -     | -     | -     | -     |
| MOLSI  | -     | 6.3   | -     | -     | -     | -     | -     | 6.4   | 7.2   | 7.1   | -     | -     | -     | 5.4   | -     |
|        | -     | 8.3   | -     | -     | -     | -     | 2.4   | 8.0   | 7.9   | 7.8   | 1.6   | -     | -     | 6.4   | 2.0   |
|        | 0.4   | 6.6   | 2.7   | 6.8   | 7.2   | 6.5   | 5.8   | 3.6   | 2.7   | 0.7   | -     | -     | 2.3   | 2.7   | 4.3   |
|        | 1.1   | 7.0   | 3.8   | 7.1   | 7.6   | 5.9   | 5.8   | 4.2   | 1.7   | 0.6   | -     | -     | 2.6   | 4.2   | 4.7   |
|        | -     | 4.5   | -     | 3.3   | 6.8   | 6.1   | 6.0   | 3.2   | 2.5   | -     | -     | -     | 2.3   | -     | 3.8   |
| MORJO  | 8.5   | -     | 8.5   | 8.4   | 8.4   | 8.3   | 7.7   | 8.2   | 7.6   | 8.0   | 7.9   | 1.7   | 7.9   | 7.5   | 3.1   |
| OCAFRA | 9.0   | 9.0   | 9.0   | 8.5   | 8.8   | 2.2   | 8.5   | 8.7   | 8.6   | -     | -     | -     | -     | -     | -     |
| OCHPA  | 0.2   | 0.2   | 0.3   | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| OTTMI  | -     | -     | -     | 2.6   | 1.2   | -     | 0.2   | -     | -     | 3.4   | 6.2   | 2.2   | 7.0   | 2.6   | 2.0   |
| PERZS  | 8.6   | 8.6   | 8.4   | 6.2   | 5.5   | 4.0   | 2.5   | 8.0   | 6.6   | 7.2   | 6.2   | 2.8   | 7.9   | 3.8   | 7.4   |
| PUCRC  | -     | -     | -     | -     | 3.9   | -     | 2.6   | 7.9   | 7.9   | 6.6   | -     | -     | 6.3   | 5.5   | 5.7   |
| ROTEC  | -     | 6.9   | -     | 3.4   | 6.3   | 3.1   | 1.0   | 1.7   | -     | -     | -     | -     | -     | -     | -     |
| SARAN  | 8.9   | 8.4   | 6.6   | 3.9   | 4.8   | 6.1   | 5.7   | 3.3   | 2.0   | 1.6   | 1.0   | 8.8   | 8.7   | 1.9   | 5.3   |
|        | 9.0   | 8.9   | 9.0   | 8.9   | 8.0   | 8.5   | 8.8   | 8.7   | -     | 8.6   | 2.2   | 8.6   | 8.5   | 3.1   | 5.6   |
|        | 9.0   | 8.3   | 8.8   | 8.2   | 7.9   | 8.5   | 8.2   | 7.1   | 4.3   | 5.6   | 1.3   | 8.3   | 8.5   | 3.5   | 5.6   |
| SCALE  | -     | -     | -     | -     | -     | 0.2   | 0.5   | 0.3   | -     | -     | -     | -     | 0.2   | 0.9   | -     |
| SCHHA  | -     | 5.9   | 7.5   | 3.2   | 5.4   | 1.9   | 0.3   | 5.6   | 5.7   | 7.1   | -     | 6.3   | 5.1   | 1.3   | 0.7   |
| SLAST  | -     | 4.5   | 4.5   | 5.2   | 1.4   | 0.4   | -     | -     | 7.0   | 7.8   | 1.1   | 0.4   | -     | 3.2   | -     |
| STOEN  | 0.7   | 7.2   | 5.0   | -     | -     | 0.2   | 4.3   | 7.4   | 7.4   | 1.9   | 2.2   | 0.3   | 1.1   | 3.5   | 3.1   |
|        | 3.6   | 8.0   | 3.6   | -     | -     | -     | 5.0   | 8.1   | 8.2   | 5.6   | 2.4   | 0.5   | 1.6   | 4.6   | 3.0   |
|        | 4.2   | 8.3   | 5.5   | -     | -     | -     | 6.5   | 7.3   | 8.5   | 6.1   | -     | -     | 2.5   | 6.2   | 4.3   |
| STORO  | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| STRJO  | -     | -     | 7.2   | -     | 5.9   | -     | 2.1   | 1.9   | 2.4   | 3.6   | -     | 4.8   | -     | -     | 4.5   |
|        | -     | 3.6   | 6.9   | 2.9   | 7.2   | -     | 3.0   | 5.0   | 3.6   | 5.1   | -     | 5.9   | -     | -     | 4.1   |
|        | -     | 3.6   | 7.0   | -     | 6.6   | -     | 2.3   | 4.5   | 2.2   | 3.4   | -     | -     | -     | 1.3   | 3.7   |
|        | -     | 3.2   | 7.4   | 2.8   | 6.8   | -     | 3.2   | 4.7   | 2.6   | 3.6   | -     | 5.3   | -     | 1.6   | 3.8   |
| TEPIS  | 6.5   | 2.2   | 2.9   | 0.5   | 1.0   | 4.4   | 1.9   | 7.3   | 7.8   | 7.5   | 7.1   | -     | 6.5   | 6.9   | 4.8   |
| TRIMI  | 1.0   | 1.0   | 1.3   | 0.2   | 1.6   | 0.4   | -     | 1.4   | 1.0   | -     | -     | -     | 0.8   | 0.7   | 1.2   |
| YRJIL  | 5.2   | 3.7   | 1.0   | -     | 5.6   | 5.5   | 4.3   | -     | 4.5   | 4.3   | -     | 2.4   | 4.4   | -     | 3.5   |
| ZELZO  | -     | -     | -     | 2.5   | -     | 8.2   | 2.9   | -     | 6.3   | 6.3   | -     | -     | -     | 5.3   | 3.7   |
| Sum    | 313.2 | 406.4 | 386.1 | 242.1 | 302.2 | 235.5 | 265.1 | 360.4 | 346.6 | 319.3 | 151.1 | 154.6 | 260.8 | 204.8 | 230.6 |

### 3. Results (Meteors)

| April | 01  | 02  | 03  | 04  | 05  | 06  | 07  | 08  | 09  | 10  | 11  | 12  | 13  | 14  | 15  |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| ARLRA | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   |
| BANPE | -   | -   | -   | -   | -   | -   | 6   | -   | -   | -   | -   | -   | 5   | 3   | 5   |
| BASLU | 4   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   |
| BERER | 12  | -   | -   | -   | -   | -   | -   | -   | -   | 22  | 3   | -   | 26  | 20  | 26  |
|       | 2   | -   | -   | -   | -   | -   | -   | -   | 3   | -   | -   | 8   | 6   | 14  |     |
|       | 2   | -   | -   | -   | -   | -   | -   | -   | 5   | -   | -   | 16  | 7   | 10  |     |
| BIRSZ | 1   | -   | -   | 2   | -   | 7   | -   | -   | 2   | 12  | 1   | -   | 13  | 2   | 7   |
| BOMMA | -   | -   | 25  | -   | -   | -   | -   | -   | -   | 24  | -   | -   | 18  | -   | 10  |
| BREMA | 16  | 3   | 1   | 2   | -   | 4   | 5   | -   | -   | -   | -   | -   | -   | 10  | 6   |
|       | 11  | 3   | 1   | -   | -   | 6   | 5   | -   | -   | -   | -   | -   | -   | 11  | 3   |
| BRIBE | 16  | 7   | -   | -   | -   | 9   | 5   | -   | 5   | -   | -   | -   | -   | 13  | 6   |
|       | 15  | 6   | -   | 5   | -   | 3   | 1   | 2   | -   | -   | -   | -   | -   | 15  | 4   |
| CASFL | 1   | 1   | 9   | -   | 1   | 4   | -   | -   | -   | 4   | -   | 15  | 17  | 12  | 7   |
|       | -   | 1   | 7   | -   | -   | 2   | -   | -   | 11  | -   | -   | 10  | 7   | 8   | 5   |
| CRIST | -   | 2   | 6   | -   | 5   | 2   | 6   | -   | 1   | 6   | -   | 16  | 20  | 29  | 15  |
|       | -   | 1   | 1   | -   | 4   | 2   | 5   | -   | 3   | 6   | -   | 11  | 14  | 16  | 9   |
|       | -   | 7   | 5   | -   | 5   | 4   | 9   | -   | -   | 11  | -   | 21  | 29  | 35  | 25  |
| ELTMA | -   | -   | -   | -   | -   | 21  | 2   | -   | -   | 6   | 2   | 17  | 16  | 14  | 20  |
| GANKA | 3   | -   | -   | -   | -   | 7   | 2   | 1   | -   | -   | -   | 1   | -   | 6   | 3   |
| GONRU | -   | -   | -   | -   | 19  | 7   | -   | 1   | -   | -   | 13  | 17  | 29  | 8   | 28  |
|       | 3   | 2   | -   | -   | 26  | 5   | -   | 4   | -   | -   | 10  | 9   | 12  | 7   | 18  |
|       | 6   | 1   | 2   | 2   | 15  | -   | -   | -   | -   | 4   | 16  | 12  | 3   | 10  |     |
|       | -   | 2   | -   | -   | 15  | 1   | -   | 1   | -   | -   | 7   | 7   | 14  | 4   | 18  |
| GOVMI | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   |
|       | -   | -   | -   | -   | -   | 7   | 3   | 1   | 8   | -   | 2   | 9   | 3   | 4   |     |
| IGAAN | 4   | -   | -   | -   | -   | 12  | -   | 3   | 1   | 9   | 4   | 3   | 10  | 11  | 14  |
|       | 8   | -   | -   | -   | -   | -   | 1   | 1   | -   | 7   | 6   | 1   | 9   | 11  | 15  |
|       | 7   | -   | -   | 2   | -   | -   | -   | 1   | -   | 12  | 3   | 5   | 11  | 9   | 11  |
| JONKA | -   | -   | -   | -   | -   | -   | -   | -   | -   | 7   | 1   | 1   | 4   | 3   | 2   |
| KACJA | -   | -   | -   | -   | -   | -   | -   | -   | -   | 12  | -   | -   | 25  | -   | -   |
|       | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | 13  | -   | -   |
|       | -   | -   | -   | -   | -   | -   | -   | -   | -   | 4   | -   | -   | 3   | 4   | -   |
|       | -   | -   | -   | -   | -   | -   | -   | -   | -   | 15  | -   | -   | 54  | -   | -   |
|       | -   | -   | -   | -   | -   | -   | -   | -   | -   | 12  | -   | -   | 30  | -   | -   |
| KERST | -   | -   | 28  | 38  | 9   | -   | 1   | 10  | -   | -   | -   | 8   | 30  | 10  | 9   |
| KISSZ | 5   | -   | -   | -   | -   | -   | 1   | -   | -   | 4   | 1   | -   | 4   | 2   | 5   |
| KOSDE | -   | -   | -   | -   | -   | -   | -   | 49  | 56  | 53  | 39  | 47  | 61  | 59  | 54  |
|       | 23  | 19  | -   | -   | -   | -   | 2   | 3   | -   | 1   | -   | -   | -   | -   | 9   |
| LERAR | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | 1   | 3   | -   |
| MACMA | 1   | -   | -   | -   | -   | -   | 5   | 3   | -   | 2   | -   | -   | 5   | -   | 8   |
|       | 1   | -   | -   | -   | -   | -   | -   | 8   | -   | 1   | -   | -   | 4   | -   | 9   |
|       | 1   | -   | -   | -   | -   | -   | -   | 1   | -   | -   | -   | -   | 2   | -   | 3   |
| MARGR | 20  | 1   | 6   | 17  | 4   | 4   | 1   | 12  | 19  | 1   | 14  | 13  | 18  | 2   | -   |
| MOLSI | 6   | -   | 16  | -   | -   | 46  | -   | -   | -   | -   | -   | 22  | 44  | 72  | 60  |
|       | 1   | -   | 4   | -   | -   | 3   | -   | -   | 1   | -   | 4   | 10  | 11  | 11  |     |
|       | 44  | 16  | 14  | -   | -   | 46  | 38  | 16  | -   | 1   | -   | 21  | 32  | 30  | 7   |
|       | 45  | 11  | 3   | -   | -   | 41  | 34  | 19  | -   | 2   | -   | 10  | 38  | 25  | 5   |
|       | 15  | 1   | 1   | -   | -   | 8   | 6   | 3   | -   | -   | -   | 7   | 4   | 8   | 2   |
| MORJO | 3   | -   | -   | 1   | -   | 7   | -   | -   | 1   | 15  | 3   | 2   | 11  | 12  | 14  |
| OCAF  | 7   | 4   | 3   | 2   | 8   | 8   | -   | 4   | -   | -   | 6   | 8   | 4   | 6   | 4   |
| OCHPA | -   | -   | 1   | -   | -   | 1   | -   | -   | 2   | 1   | -   | 3   | -   | 3   | -   |
| OTTMI | 11  | 11  | 18  | 18  | 1   | -   | 3   | 3   | -   | -   | -   | -   | -   | -   | -   |
| PERZS | -   | -   | -   | -   | -   | 29  | 6   | 3   | 37  | 2   | -   | 23  | 9   | 19  |     |
| PUCRC | -   | -   | -   | -   | -   | 12  | 14  | -   | 4   | 14  | -   | 12  | 20  | 18  | 7   |
| ROTEC | -   | 1   | -   | -   | -   | 10  | -   | 1   | -   | -   | 1   | 3   | -   | 8   | -   |
| SARAN | 1   | -   | 6   | 2   | 11  | 2   | -   | -   | -   | 5   | 4   | 11  | -   | 13  |     |
|       | 3   | -   | 1   | 1   | 2   | -   | -   | 5   | -   | -   | 7   | 7   | 14  | -   | 14  |
|       | 3   | -   | 7   | 3   | 7   | 1   | -   | 1   | -   | -   | 9   | 2   | 12  | -   | 9   |
| SCALE | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   |
| SCHHA | 14  | 8   | 4   | 5   | -   | 2   | -   | 3   | 2   | -   | -   | 2   | -   | 13  | 7   |
| SLAST | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | 8   | -   | -   | 18  | 11  |
| STOEN | 1   | 1   | 12  | -   | -   | 30  | -   | -   | 5   | 14  | -   | 6   | 21  | 20  | 15  |
|       | -   | 1   | -   | -   | -   | -   | -   | -   | -   | 4   | -   | 5   | 19  | 20  | 16  |
|       | 2   | -   | 8   | -   | -   | 31  | -   | -   | 16  | 9   | -   | 3   | 19  | 28  | 20  |
| STORO | -   | -   | -   | -   | -   | -   | 73  | -   | -   | -   | -   | -   | -   | -   | -   |
| STRJO | 8   | 2   | -   | -   | -   | 3   | 6   | -   | -   | -   | -   | -   | 1   | 9   | 3   |
|       | 3   | -   | -   | -   | -   | -   | 9   | -   | -   | -   | 1   | 1   | 4   | 3   | 1   |
|       | 15  | -   | -   | -   | -   | 1   | 7   | 1   | 1   | -   | -   | -   | -   | 19  | 4   |
| TEPIS | -   | -   | -   | -   | -   | 19  | -   | -   | 3   | 14  | 7   | -   | 22  | 24  | 24  |
| TRIMI | -   | -   | -   | -   | -   | -   | -   | -   | -   | 6   | -   | -   | 17  | 1   | -   |
| YRJIL | 7   | -   | 12  | 19  | 16  | 14  | -   | 15  | 6   | 13  | -   | -   | -   | -   | -   |
| ZELZO | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | 6   |     |
| Sum   | 351 | 113 | 201 | 119 | 148 | 336 | 339 | 182 | 145 | 396 | 161 | 343 | 892 | 724 | 693 |

| April | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  | 25  | 26  | 27  | 28  | 29  | 30  |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| ARLRA | -   | -   | -   | -   | 7   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   |
| BANPE | 6   | 4   | 3   | -   | -   | -   | 9   | 12  | 6   | 4   | 1   | -   | 5   | -   | 3   |
| BASLU | -   | -   | -   | -   | -   | 2   | -   | -   | -   | -   | -   | -   | -   | -   | -   |
| BERER | 39  | 34  | 31  | 22  | 17  | 66  | 47  | 14  | 26  | 32  | 8   | -   | 21  | 19  | 24  |
|       | 7   | 12  | 4   | 5   | 8   | 11  | 14  | 4   | 4   | 4   | -   | 1   | 5   | 6   | 5   |
|       | 8   | 4   | 8   | 7   | 10  | 17  | 8   | 4   | 6   | 11  | 3   | 1   | 2   | 3   | 5   |
| BIRSZ | 10  | 10  | 1   | -   | 2   | 23  | 9   | 8   | 2   | 7   | -   | -   | 2   | -   | 1   |
| BOMMA | 5   | 21  | 26  | -   | -   | -   | -   | 38  | -   | 6   | 3   | -   | 3   | -   | 1   |
| BREMA | 5   | 5   | 11  | 9   | 13  | 9   | -   | 6   | 3   | 5   | -   | 11  | 8   | 1   | 10  |
|       | -   | 6   | 9   | 16  | 14  | 4   | -   | -   | -   | 1   | -   | 9   | 10  | 3   | 5   |
| BRIBE | -   | 11  | 14  | -   | 12  | -   | 1   | 2   | 7   | 10  | -   | 7   | 5   | 3   | 1   |
|       | -   | 6   | 4   | 2   | 6   | -   | -   | -   | -   | -   | -   | 2   | 1   | 1   | 1   |
| CASFL | 4   | 9   | 14  | -   | -   | -   | 4   | 22  | 9   | 2   | -   | -   | -   | 3   | -   |
|       | 2   | 7   | 11  | -   | -   | -   | 8   | 14  | 10  | 4   | -   | -   | -   | -   | -   |
| CRIST | 7   | 25  | 13  | 1   | 5   | 1   | 10  | 25  | 9   | -   | -   | -   | -   | 1   | 1   |
|       | 8   | 9   | 7   | -   | 8   | 4   | 9   | 10  | 8   | 1   | -   | -   | -   | -   | -   |
|       | 10  | 25  | 30  | 2   | 3   | 1   | 11  | 31  | 18  | 1   | -   | -   | -   | 1   | 3   |
| ELTMA | 3   | 20  | 9   | -   | -   | -   | 21  | 33  | 25  | 1   | -   | -   | -   | -   | -   |
| GANKA | -   | 2   | 8   | 6   | 10  | 4   | 1   | 8   | 4   | 7   | -   | -   | -   | 1   | 6   |
| GONRU | 29  | 33  | 24  | 23  | 31  | 31  | 27  | 18  | 20  | 4   | 22  | 27  | 30  | 11  | 14  |
|       | 13  | 16  | 11  | 16  | 27  | 24  | 50  | 17  | 13  | 4   | 6   | 13  | 11  | 9   | 9   |
|       | 12  | 14  | 7   | 5   | 23  | 5   | 24  | 17  | 7   | 2   | 10  | 9   | 13  | -   | 18  |
|       | 10  | 9   | 14  | 14  | 33  | 22  | 47  | 7   | 11  | 6   | 10  | 12  | 19  | 6   | 16  |
| GOVMI | -   | -   | 13  | 9   | 12  | 2   | 6   | 23  | 13  | 15  | 4   | 7   | 11  | 2   | 3   |
|       | 14  | 2   | 4   | 6   | 7   | 2   | 4   | 18  | 6   | 10  | 1   | 8   | 9   | 1   | 3   |
|       | 11  | 4   | 5   | 5   | 8   | 3   | -   | 20  | 16  | 12  | 2   | 2   | 10  | 2   | 4   |
| IGAAN | 10  | 12  | 8   | 9   | 18  | 26  | 6   | 18  | 16  | 11  | 6   | -   | 11  | 6   | 1   |
|       | 18  | 14  | 17  | 6   | 8   | 11  | 15  | 9   | 4   | 6   | 2   | 2   | 10  | 6   | 5   |
|       | 6   | 11  | 8   | 5   | 11  | 23  | 2   | 15  | 9   | 10  | 2   | 2   | 6   | 6   | -   |
|       | 2   | 2   | 2   | 2   | 3   | 13  | 4   | 2   | 1   | 5   | 2   | -   | 3   | 2   | -   |
| JONKA | 9   | 12  | 9   | 8   | 6   | 17  | 10  | 9   | 11  | 9   | 3   | -   | 5   | 9   | 3   |
| KACJA | 3   | 12  | 19  | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | 14  | 7   |
|       | 18  | 10  | 14  | 2   | -   | -   | -   | 23  | 17  | 9   | -   | -   | 15  | -   | 6   |
|       | 1   | -   | 1   | -   | 1   | 1   | 1   | 6   | 6   | 4   | -   | -   | 2   | 1   | 1   |
|       | 15  | 28  | 15  | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | 16  | 26  |
|       | 1   | 12  | 12  | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | 3   | 9   |
| KERST | -   | 18  | 51  | -   | 45  | 1   | 20  | 2   | 3   | -   | -   | -   | -   | -   | -   |
| KISSZ | 3   | 11  | 6   | 2   | 5   | 8   | 11  | 3   | 1   | 3   | -   | -   | 1   | 4   | 1   |
| KOSDE | 52  | 59  | -   | -   | 8   | 39  | 15  | -   | 17  | 12  | -   | 30  | -   | 12  | 20  |
|       | 4   | -   | 8   | 12  | 22  | 7   | -   | -   | -   | 7   | -   | 4   | 6   | 7   | 11  |
| LERAR | -   | 1   | -   | 1   | 8   | 6   | 5   | 3   | -   | -   | -   | -   | -   | -   | -   |
| MACMA | 2   | 1   | 6   | 1   | 6   | 29  | 18  | 5   | -   | 1   | 1   | 1   | -   | 1   | -   |
|       | 13  | 4   | 10  | -   | 9   | 42  | 15  | 5   | 5   | 1   | 10  | 1   | 4   | -   | 1   |
| MARGR | -   | -   | -   | -   | -   | 18  | 13  | 2   | 5   | 1   | 3   | -   | -   | -   | -   |
| MOLSI | -   | 4   | 3   | 7   | 11  | 20  | 12  | -   | -   | 3   | -   | -   | -   | -   | -   |
|       | -   | 37  | -   | -   | -   | -   | -   | 14  | 30  | 12  | -   | -   | -   | 12  | -   |
|       | -   | 6   | -   | -   | -   | -   | 1   | 18  | 11  | 17  | 2   | -   | -   | 2   | 3   |
|       | 1   | 19  | 5   | 16  | 27  | 44  | 36  | 5   | 4   | 2   | -   | -   | 2   | 5   | 13  |
|       | 2   | 17  | 6   | 13  | 33  | 27  | 17  | 4   | 1   | 2   | -   | -   | 3   | 3   | 7   |
|       | -   | 2   | -   | 5   | 7   | 7   | 5   | 4   | 2   | -   | -   | -   | 1   | -   | 7   |
| MORJO | 10  | -   | 8   | 10  | 14  | 16  | 12  | 11  | 8   | 8   | 4   | 1   | 8   | 8   | 2   |
| OCAF  | 9   | 8   | 14  | 6   | 3   | 1   | 5   | 4   | 5   | -   | -   | -   | -   | -   | -   |
| OCHPA | 2   | 1   | 2   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   |
| OTTMI | -   | -   | -   | 15  | 8   | -   | 1   | -   | -   | 13  | 11  | 4   | 10  | 1   | 14  |
| PERZS | 24  | 22  | 16  | 6   | 17  | 17  | 6   | 39  | 18  | 11  | 8   | 15  | 16  | 5   | 15  |
| PUCRC | -   | -   | -   | -   | 8   | -   | 7   | 17  | 13  | 4   | -   | -   | 7   | 7   | 10  |
| ROTEC | -   | 10  | -   | 5   | 9   | 7   | 2   | 2   | -   | -   | -   | -   | -   | -   | -   |
| SARAN | 7   | 8   | 11  | 8   | 7   | 22  | 29  | 4   | 4   | 2   | 4   | 5   | 13  | 3   | 10  |
|       | 13  | 14  | 4   | 11  | 18  | 21  | 12  | 16  | -   | 4   | 4   | 6   | 13  | 6   | 4   |
|       | 10  | 5   | 8   | 6   | 8   | 19  | 15  | 5   | 3   | 4   | 1   | 6   | 9   | 1   | 3   |
| SCALE | -   | -   | -   | -   | -   | -   | 1   | 3   | 1   | -   | -   | -   | 1   | 5   | -   |
| SCHHA | -   | 9   | 11  | 6   | 21  | 8   | 1   | 9   | 8   | 11  | -   | 12  | 14  | 3   | 1   |
| SLAST | -   | 3   | 5   | 4   | 3   | 2   | -   | -   | 5   | 8   | 1   | 1   | -   | 3   | -   |
| STOEN | 3   | 14  | 16  | -   | -   | 1   | 31  | 44  | 22  | 3   | 5   | 1   | 2   | 7   | 5   |
|       | 3   | 11  | 12  | -   | -   | -   | 26  | 35  | 21  | 4   | 2   | 1   | 3   | 5   | 2   |
|       | 1   | 13  | 15  | -   | -   | -   | 51  | 41  | 24  | 6   | -   | -   | 2   | 7   | 7   |
| STORO | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   |
| STRJO | -   | -   | 8   | -   | 11  | -   | 2   | 6   | 2   | 2   | -   | 1   | -   | -   | 4   |
|       | -   | 6   | 11  | 2   | 14  | -   | 3   | 7   | 2   | 5   | -   | 11  | -   | -   | 2   |
|       | -   | 3   | 10  | -   | 10  | -   | 1   | 6   | 2   | 3   | -   | -   | -   | 1   | 1   |
|       | -   | 6   | 16  | 4   | 21  | -   | 4   | 14  | 1   | 5   | -   | 8   | -   | 1   | 4   |
| TEPIS | 22  | 13  | 23  | 3   | 7   | 36  | 13  | 11  | 34  | 17  | 6   | -   | 14  | 9   | 4   |
| TRIMI | 6   | 6   | 8   | 2   | 10  | 3   | -   | 10  | 5   | -   | -   | -   | 5   | 5   | 8   |
| YRJIL | 11  | 6   | 1   | -   | 13  | 29  | 9   | -   | 14  | 6   | -   | 4   | 6   | -   | 9   |
| ZELZO | -   | -   | -   | 4   | -   | 29  | 7   | -   | 7   | 6   | -   | -   | -   | 1   | 2   |
| Sum   | 484 | 738 | 680 | 329 | 686 | 781 | 754 | 782 | 565 | 386 | 147 | 225 | 360 | 260 | 361 |