

The weather continued to remain cooperative to the observers in July. A short glimpse at the tables shows, that there are hardly any bigger „holes“ in the monthly statistics, i.e. that there were continuously good observing conditions. This is also reflected by the fact, that more than 2/3 of the 77 cameras were active in twenty or more observing nights. With 69 active cameras, July 3/4 was the best night.

Despite the good conditions, the outcome was only comparable to July 2012 but fell clearly short of the totals of the previous year. More than 6,700 observing hours are 15% less than in July 2013, and the overall number of meteors reduced by the same percentage to 30.000.

With the alpha Capricornids and Southern delta Aquariids, July offers two well-known meteor showers that peak at the end of the month. The activity interval of the Capricornids lasts from early July to mid-August, but only at the July/August border the rates stand clearly out of the sporadic background. Figure 1 shows the activity profile of the last four years (computed with $\gamma=1.5$), which shows significant variations with respect to the peak flux density. Whereas in 2013 and 2014 identical values of about 2 meteoroids per 1,000 km² and hour were reached, it was clearly less in 2011 (resp. the peak occurred earlier) and with 2.5 meteoroids clearly more in 2012.

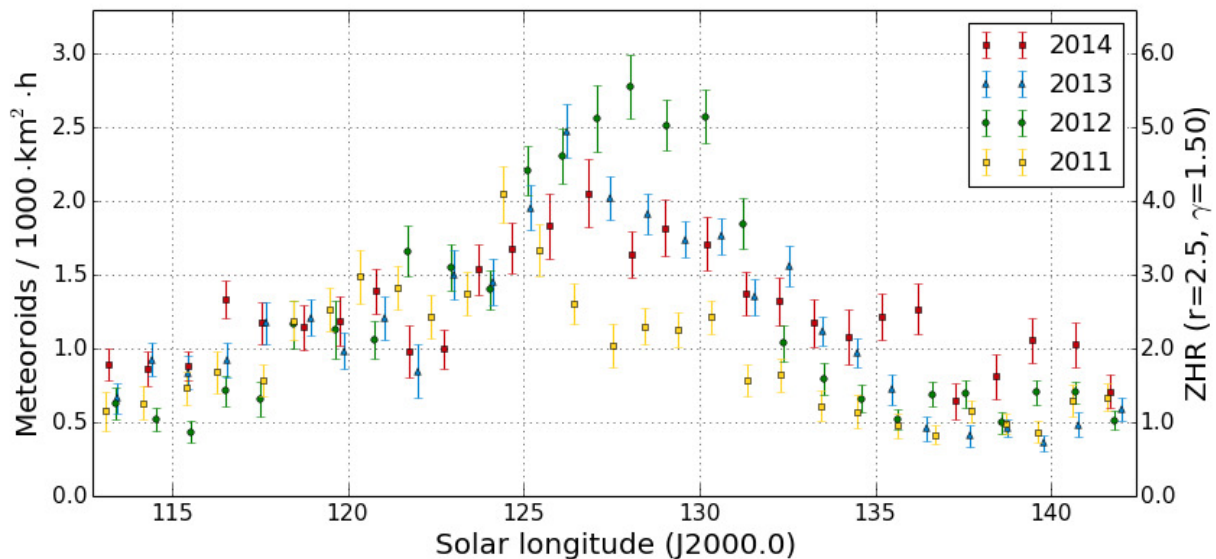


Figure 1: Flux density profile of the alpha Capricornids, obtained from IMO network video observations 2011-2014.

If all four profiles are averaged, we obtained the expected smooth graph with an activity plateau between 125 and 130° solar longitude (figure 2). Note that we obtained a similar profile already in our 2009 meteor shower analysis, but there the plateau occurred between 120 and 125° solar longitude. Did the Capricornids arrive late in the past few years (which would explain the early peak in 2011)? Looking at the MDC shower list we find five parameter sets all referring to solar longitude 127°, which corresponds to the current activity profile.

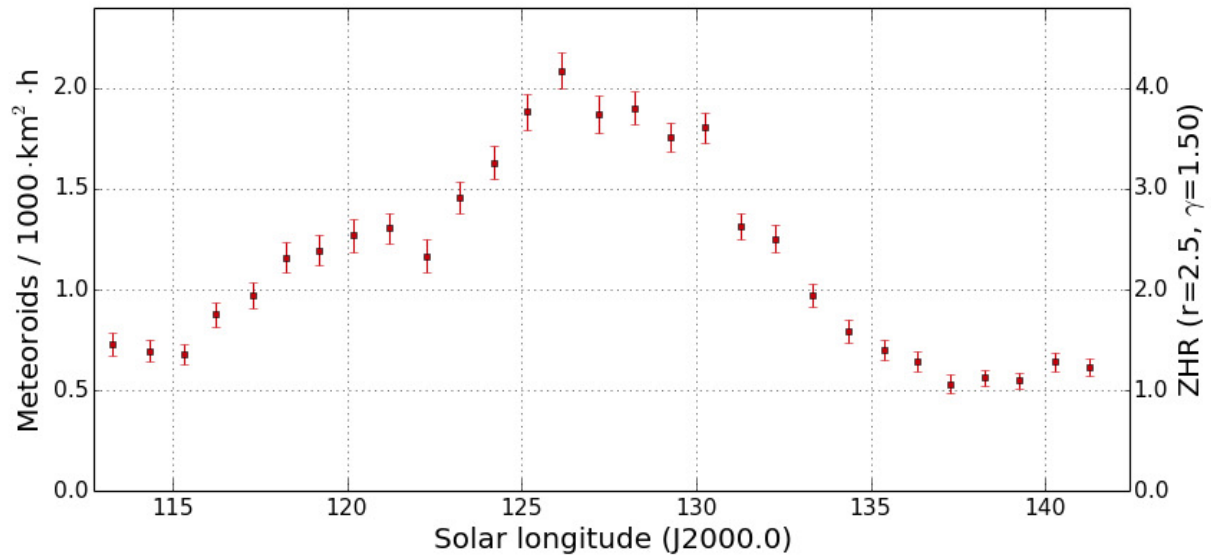


Figure 2: Flux density profile of the alpha Capricornids, averaged over the years 2011-2014.

The population index was not easy to determine. The 2014 data alone with less than 100 Capricornids per night were not sufficient to obtain reliable values. If the observations from 2011 to 2014 are combined, however, we have a data set of 300 to 500 Capricornids per night, which yields a good r-value for most nights. The curves in the diagram that depict the dependency of the flux density from the population index for different limiting magnitudes often intersect at a single point (e.g. on July 26/27, figure 3 left). The overall profile (figure 3, right) presents another surprise, since the population index increases almost all the time. It starts with values from 2.5 and reaches a minimum of 1.7. So maybe the Capricornids show some mass sorting effect like the Geminids, such that the percentage of larger meteoroids after the peak is higher than before the peak. The visual handbook of IMO lists a population index of $r=2.5$ and points out that many bright alpha Capricornids can be seen.

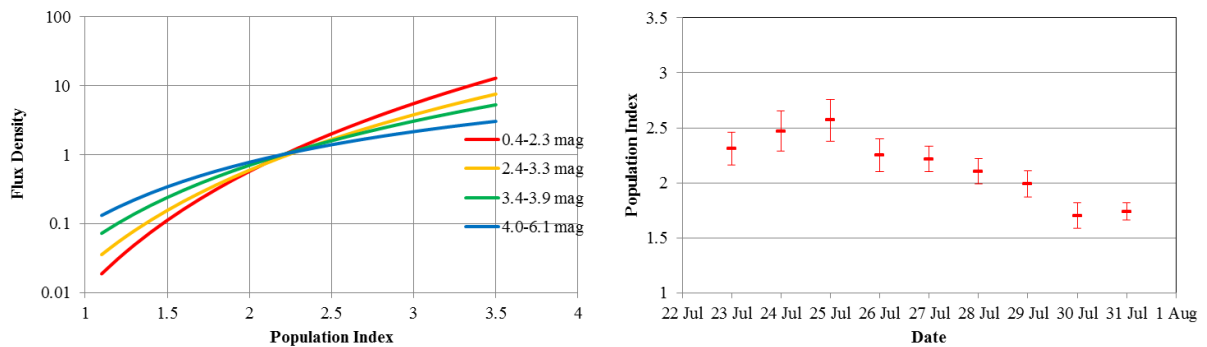


Figure 3: Flux density vs. population index for different limiting magnitudes on July 26/27 (left) and the complete population index profile of the alpha Capricornids (right), obtained from IMO network data of 2011 till 2014.

The Southern delta Aquariids are active from mid-July till mid-August. Also here we find variations in the peak flux density, whereby 2011 is a lower outlier with just 15 meteoroids per 1,000 km² and hour and the years 2012 till 2014 yield peak rates between 30 and 45 (figure 4).

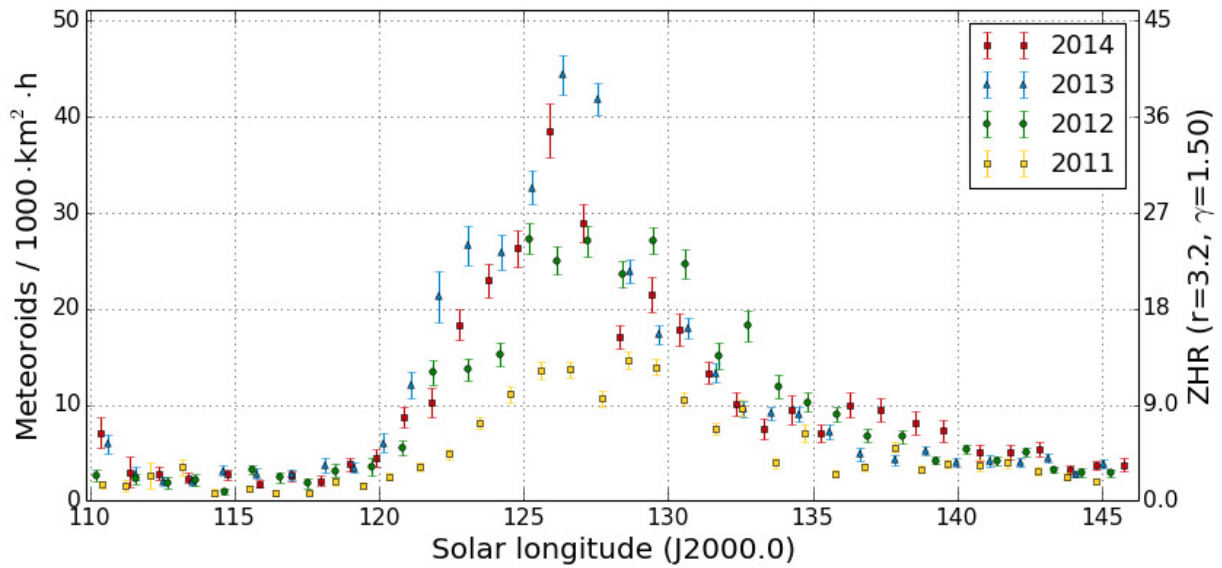


Figure 4: Flux density profile of the Southern delta Aquariids, obtained from IMO network video observations 2011-2014.

The averaged flux density profile shows the well-known asymmetric shape where the descending branch is shallower than the ascending. Even at the Perseids' peak, the shower still stands out from the sporadic background.

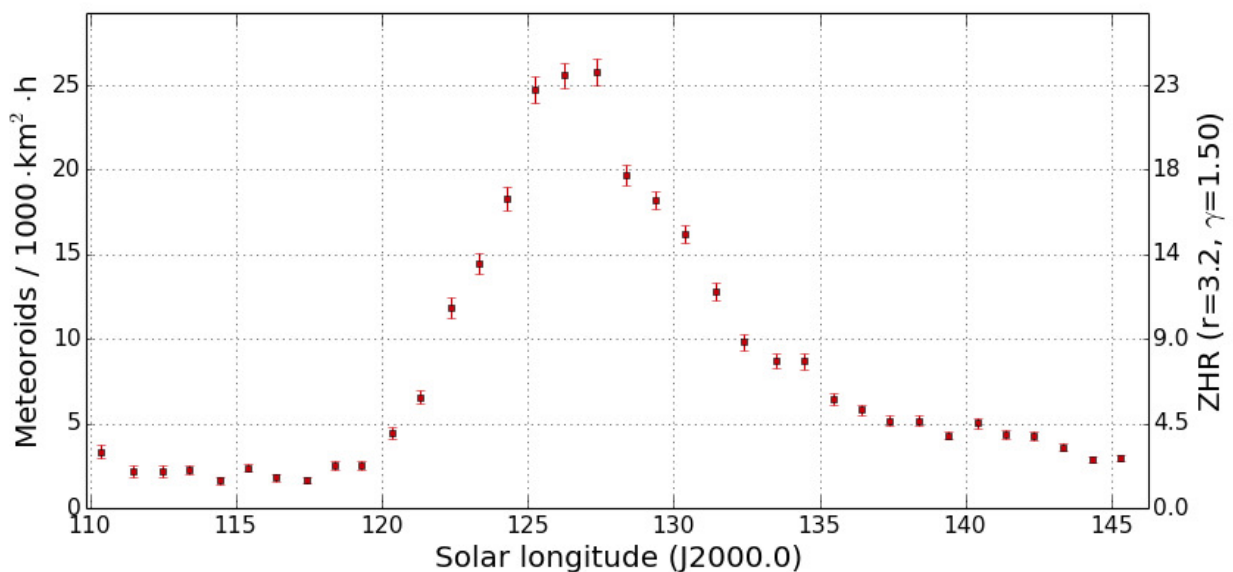


Figure 5: Flux density profile of the Southern delta Aquariids, averaged over the years 2011-2014.

There were more data available to calculate the population index profile of the Southern delta Aquariids – between 200 and 1,000 meteors per night if the observations from the last four years are combined. In some cases the intersection point was well defined again (e.g. on July 28/30, figure 6 left), but in others it was not.

The overall population index profile (figure 6, right) has a different shape than the profile of the Capricornids. Here the value wobbles around 2.0 and reaches smaller figures of 1.75 towards their maximum at the end of July. Unfortunately the profile ends at July 31, since the August data of 2014 are not yet processed. Still there is a large discrepancy compared to the data given in the IMO handbook: With $r=3.2$ the Southern delta Aquariids have the biggest population index of all IMO working list of meteor showers, i.e. they shall have a bigger fraction of faint meteors than any other shower and the sporadic meteors. That cannot be confirmed from our data, however.

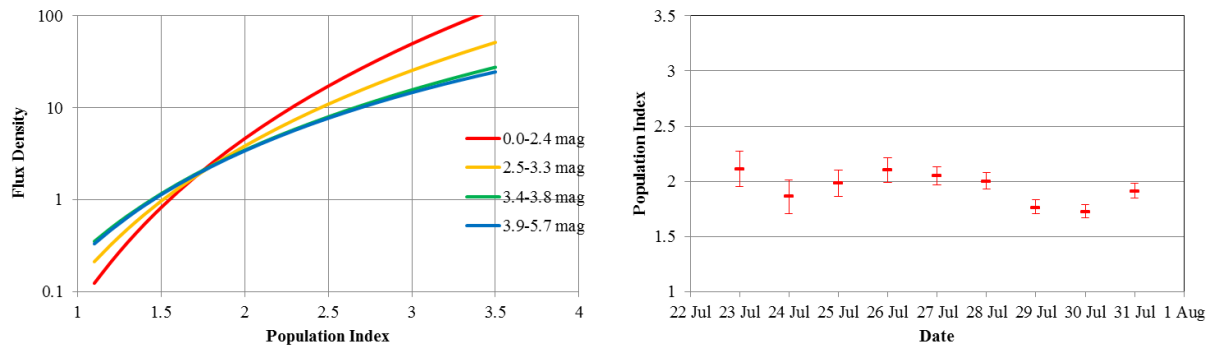


Figure 6: Flux density vs. population index for different limiting magnitudes on July 26/27 (left) and the complete population index profile of the Southern delta Aquariids (right), obtained from IMO network data of 2011 till 2014

1. Observers

Code	Name	Place	Camera	FOV [°]	St.LM [mag]	Eff.CA [km ²]	Nights	Time [h]	Meteors
ARLRA	Arlt	Ludwigsfelde/DE	LUDWIG2 (0.8/8)	1475	6.2	3779	27	96.2	706
BANPE	Bánfalvi	Zalaegerszeg/HU	HUVCS01 (0.95/5)	2423	3.4	361	21	25.5	184
BERER	Berkó	Ludanyhalaszi/HU	HULUD1 (0.8/3.8)	5542	4.8	3847	18	91.9	603
			HULUD3 (0.95/4)	4357	3.8	876	18	86.9	167
BOMMA	Bombardini	Faenza/IT	MARIO (1.2/4.0)	5794	3.3	739	29	117.7	729
BREMA	Breukers	Hengelo/NL	MBB3 (0.75/6)	2399	4.2	699	20	65.6	145
			MBB4 (0.8/8)	1470	5.1	1208	22	60.6	144
BRIBE	Klemt	Herne/DE	HERMINE (0.8/6)	2374	4.2	678	15	62.2	190
		Berg. Gladbach/DE	KLEMOI (0.8/6)	2286	4.6	1080	20	83.5	283
CASFL	Castellani	Monte Baldo/IT	BMH1 (0.8/6)	2350	5.0	1611	21	71.2	298
			BMH2 (1.5/4.5)*	4243	3.0	371	23	70.1	258
CRIST	Crivello	Valbrenna/IT	BILBO (0.8/3.8)	5458	4.2	1772	29	111.4	535
			C3P8 (0.8/3.8)	5455	4.2	1586	24	93.5	441
			STG38 (0.8/3.8)	5614	4.4	2007	29	122.0	655
DONJE	Donati	Faenza/IT	JENNI (1.2/4)	5886	3.9	1222	29	128.3	814
ELTMA	Eltri	Venezia/IT	MET38 (0.8/3.8)	5631	4.3	2151	20	69.5	263
FORKE	Förster	Carlsfeld/DE	AKM3 (0.75/6)	2375	5.1	2154	17	71.3	302
GONRU	Goncalves	Tomar/PT	TEMPLAR1 (0.8/6)	2179	5.3	1842	29	155.0	697
			TEMPLAR2 (0.8/6)	2080	5.0	1508	26	153.1	590
			TEMPLAR3 (0.8/8)	1438	4.3	571	25	126.5	260
			TEMPLAR4 (0.8/3.8)	4475	3.0	442	27	154.5	603
			TEMPLAR5 (0.75/6)	2312	5.0	2259	25	136.8	563
GOVMI	Govedic	Sredisce ob Dr./SI	ORION2 (0.8/8)	1447	5.5	1841	11	42.7	209
			ORION3 (0.95/5)	2665	4.9	2069	10	34.5	61
			ORION4 (0.95/5)	2662	4.3	1043	24	90.4	198
HERCA	Hergenrother	Tucson/US	SALSA3 (1.2/4)*	2198	4.6	894	26	103.0	219
HINWO	Hinz	Schwarzenberg/DE	HINWO1 (0.75/6)	2291	5.1	1819	25	86.3	378
IGAAN	Igaz	Baja/HU	HUBAJ (0.8/3.8)	5552	2.8	403	24	115.1	260
		Debrecen/HU	HUDEB (0.8/3.8)	5522	3.2	620	26	119.0	277
		Hodmezovasar./HU	HUHOD (0.8/3.8)	5502	3.4	764	27	109.4	218
		Budapest/HU	HUPOL (1.2/4)	3790	3.3	475	22	115.8	99
JONKA	Jonas	Budapest/HU	HUSOR (0.95/4)	2286	3.9	445	24	110.2	227
KACJA	Kac	Kamnik/SI	CVETKA (0.8/3.8)	4914	4.3	1842	15	67.1	409
		Kostanjevec/SI	METKA (0.8/12)*	715	6.4	640	1	6.3	28
		Ljubljana/SI	ORION1 (0.8/8)	1402	3.8	331	18	73.5	101
		Kamnik/SI	REZIKA (0.8/6)	2270	4.4	840	16	75.0	477
			STEFKA (0.8/3.8)	5471	2.8	379	12	49.6	204
KISSZ	Kiss	Sulysap/HU	HUSUL (0.95/5)*	4295	3.0	355	19	73.2	91
KOSDE	Koschny	Izana Obs./ES	ICC7 (0.85/25)*	714	5.9	1464	28	176.8	1989
		La Palma / ES	ICC9 (0.85/25)*	683	6.7	2951	28	190.6	2495
LOJTO	Łojek	Grabniak/PL	PAV57 (1.0/5)	1631	3.5	269	15	58.4	142
MACMA	Maciejewski	Chelm/PL	PAV35 (0.8/3.8)	5495	4.0	1584	17	52.9	236
			PAV36 (0.8/3.8)*	5668	4.0	1573	19	79.3	404
			PAV60 (0.75/4.5)	2250	3.1	281	22	75.1	439
MARGR	Maravelias	Lofoupoli/GR	LOOMECON (0.8/12)	738	6.3	2698	5	28.6	103
MASMI	Maslov	Novosibirsk/RU	NOWATEC (0.8/3.8)	5574	3.6	773	19	47.0	263
MOLSI	Molau	Seysdorf/DE	AVIS2 (1.4/50)*	1230	6.9	6152	23	100.5	1150
			MINCAM1 (0.8/8)	1477	4.9	1084	24	99.5	464
		Ketzür/DE	REMO1 (0.8/8)	1467	6.5	5491	28	97.0	830
			REMO2 (0.8/8)	1478	6.4	4778	28	91.7	515
			REMO3 (0.8/8)	1420	5.6	1967	4	11.8	22
			REMO4 (0.8/8)	1478	6.5	5358	26	94.1	607
MOSFA	Moschini	Rovereto/IT	ROVER (1.4/4.5)	3896	4.2	1292	22	27.2	184
OCHPA	Ochner	Albiano/IT	ALBIANO (1.2/4.5)	2944	3.5	358	16	40.3	119
OTTMI	Otte	Pearl City/US	ORIE1 (1.4/5.7)	3837	3.8	460	22	108.6	322
PERZS	Perkó	Becsehely/HU	HUBEC (0.8/3.8)*	5498	2.9	460	23	103.3	483
PUCRC	Pucer	Nova vas nad Dra./SI	MOBCAM1 (0.75/6)	2398	5.3	2976	9	36.5	112
ROTEC	Rothenberg	Berlin/DE	ARMEFA (0.8/6)	2366	4.5	911	17	72.9	198
SARAN	Saraiva	Carnaxide/PT	RO1 (0.75/6)	2362	3.7	381	23	150.5	350
			RO2 (0.75/6)	2381	3.8	459	25	163.3	489
			RO3 (0.8/12)	710	5.2	619	25	165.1	726
			SOFIA (0.8/12)	738	5.3	907	24	150.4	323
SCALE	Scarpa	Alberoni/IT	LEO (1.2/4.5)*	4152	4.5	2052	21	64.1	212
SCHHA	Schremmer	Niederkrüchten/DE	DORAEMON (0.8/3.8)	4900	3.0	409	20	71.7	254
STOEN	Stomeo	Scorze/IT	MIN38 (0.8/3.8)	5566	4.8	3270	27	85.1	618
			NOA38 (0.8/3.8)	5609	4.2	1911	26	81.9	448
			SCO38 (0.8/3.8)	5598	4.8	3306	27	84.9	620
STRJO	Strunk	Herford/DE	MINCAM2 (0.8/6)	2354	5.4	2751	23	91.7	324
			MINCAM3 (0.8/6)	2338	5.5	3590	24	86.0	420
			MINCAM4 (1.0/2.6)	9791	2.7	552	22	85.8	301
			MINCAM5 (0.8/6)	2349	5.0	1896	21	78.2	264
			MINCAM6 (0.8/6)	2395	5.1	2178	24	87.0	308
TEPIS	Tepliczky	Agostyan/HU	HUAGO (0.75/4.5)	2427	4.4	1036	22	100.3	242
		Budapest/HU	HUMOB (0.8/6)	2388	4.8	1607	26	62.1	430
TRIMI	Triglav	Velenje/SI	SRAKA (0.8/6)*	2222	4.0	546	19	63.4	191
ZELZO	Zelko	Budapest/HU	HUVCS03 (1.0/4.5)	2224	4.4	933	8	12.6	24
			HUVCS04 (1.0/4.5)	1484	4.4	573	6	8.4	21
Sum							31	6709.0	30528

* active field of view smaller than video frame

2. Observing Times (h)

July	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
ARLRA	4.4	4.5	4.5	3.1	2.8	4.6	-	1.9	0.6	1.2	4.4	1.1	-	3.2	2.6
BANPE	2.0	-	0.9	0.3	2.0	-	0.2	0.6	-	-	1.1	1.3	1.9	-	2.4
BERER	5.6	-	5.7	5.8	-	5.5	-	-	5.8	-	-	4.9	-	-	5.5
	4.4	-	5.6	5.8	-	5.6	-	-	5.8	-	-	5.0	-	-	5.0
BOMMA	4.7	6.8	6.6	3.1	6.8	6.4	0.6	4.1	0.7	3.2	5.9	0.5	0.2	6.4	7.0
BREMA	-	4.6	4.6	1.6	-	-	1.4	-	1.8	4.4	4.5	1.4	0.4	-	3.5
	-	-	3.6	-	-	0.2	1.1	-	-	3.6	4.1	1.9	0.2	3.5	2.9
BRIBE	4.8	4.8	4.7	0.6	-	-	-	-	-	1.9	-	-	-	4.8	-
	4.8	4.8	4.7	1.8	0.7	-	-	-	-	-	-	-	-	4.7	0.2
CASFL	-	6.1	6.4	1.1	6.5	1.4	-	-	-	0.5	3.6	-	-	4.6	3.3
	0.2	6.2	6.3	0.7	6.3	1.6	-	-	-	-	3.0	-	0.2	6.0	3.6
CRIST	3.8	6.3	6.3	1.1	6.3	6.1	0.4	5.7	1.7	3.1	2.2	1.6	1.0	4.6	6.6
	3.5	5.0	6.0	0.5	1.4	1.1	-	6.4	1.9	3.9	3.7	3.5	-	6.4	6.6
	4.7	6.3	6.3	1.1	6.1	6.1	0.5	4.7	2.0	4.3	4.5	2.5	1.3	1.0	6.6
DINJE	5.4	6.8	6.6	4.4	6.7	6.8	0.4	3.9	2.0	3.4	5.4	0.7	1.3	7.0	6.9
ELTMA	1.5	4.6	5.7	0.6	5.8	6.4	0.6	0.2	-	1.1	2.0	-	-	2.8	6.8
FORKE	3.1	4.8	4.5	-	-	4.0	-	-	-	-	-	-	5.1	-	3.4
GONRU	3.6	7.2	5.3	6.5	0.5	7.2	7.3	7.4	7.2	7.2	7.2	1.4	1.0	3.8	7.0
	4.2	7.4	5.5	-	-	7.4	7.4	7.4	7.4	7.4	7.4	4.4	-	3.9	7.3
	2.2	7.1	4.0	7.0	-	7.2	7.3	7.2	7.2	7.2	7.2	3.7	-	3.5	4.3
	2.3	7.3	4.7	6.5	-	6.9	7.4	7.4	7.4	7.4	7.4	4.5	1.1	3.8	7.2
	2.4	7.3	4.6	6.7	-	7.4	7.4	7.4	7.4	7.4	7.4	7.3	3.8	-	3.4
GOVMI	4.8	-	5.2	2.3	5.7	3.9	-	-	-	-	-	-	-	-	-
	6.1	-	6.1	2.7	4.3	3.7	-	-	-	-	-	-	-	-	-
	6.0	-	6.0	2.8	5.0	4.0	3.6	3.8	-	-	3.0	1.6	3.2	2.2	6.3
HERCA	8.4	8.4	4.5	1.0	0.2	-	7.2	2.8	-	0.2	0.3	1.4	2.1	0.3	-
HINWO	2.4	4.7	4.8	0.7	0.6	4.1	-	-	-	4.9	1.1	5.1	4.1	2.2	3.5
IGAAN	6.1	3.2	6.0	6.1	5.5	6.2	4.4	2.4	6.0	-	-	3.2	0.3	-	6.3
	5.7	-	5.7	5.8	2.9	4.2	5.6	1.9	2.2	-	-	5.2	5.7	5.8	4.8
	6.1	4.0	6.1	6.0	4.6	6.2	3.6	1.2	6.2	1.2	-	3.3	2.8	-	6.5
	5.9	-	5.9	5.6	3.4	5.8	5.5	-	6.0	-	0.4	5.6	-	4.8	6.3
JONKA	5.9	-	5.9	6.0	4.2	6.0	-	1.0	5.4	-	1.2	4.8	-	2.7	6.3
KACJA	6.0	-	6.0	4.8	5.8	5.9	-	0.3	-	-	2.5	-	1.3	-	3.5
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	5.9	-	5.9	4.8	5.8	6.0	-	1.6	-	-	4.7	-	2.7	-	6.2
	6.1	-	6.2	5.3	6.1	6.3	-	1.4	-	-	4.0	0.4	1.6	-	4.3
	6.0	-	6.1	4.9	5.8	6.2	-	0.3	-	-	2.3	0.2	1.4	-	3.8
KISSZ	5.4	-	5.6	-	0.9	4.9	4.4	-	4.4	-	-	2.3	1.3	1.2	5.7
KOSDE	-	7.5	8.0	8.0	-	2.9	2.4	8.1	4.4	0.7	3.0	5.9	8.1	8.2	8.1
	8.2	8.2	8.2	8.2	-	8.3	8.3	7.8	6.8	5.8	3.6	4.8	3.9	3.9	3.4
LOJTO	-	-	2.2	0.1	-	2.7	4.2	-	3.6	-	-	-	4.3	4.4	-
MACMA	5.0	-	2.1	5.3	1.2	4.3	1.4	5.0	0.2	-	-	-	1.6	5.3	4.1
	5.5	-	5.4	5.3	2.3	4.6	2.8	5.6	3.2	1.2	-	-	4.5	5.8	4.5
	4.5	-	2.4	2.5	-	-	1.7	4.7	2.7	1.1	-	-	3.9	5.1	4.1
MARGR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MASMI	-	1.6	2.1	-	2.2	-	2.4	2.5	-	2.7	2.6	2.0	2.1	2.1	-
MOLSI	3.9	4.4	4.7	3.5	3.9	-	1.0	-	-	-	-	1.3	3.0	3.6	4.9
	4.2	4.9	5.6	1.8	4.3	0.5	1.1	-	-	-	-	1.5	3.4	3.9	5.6
	4.3	4.4	4.3	3.5	1.8	3.9	1.2	-	1.7	3.4	4.4	3.2	-	3.4	1.8
	4.3	4.5	4.4	3.5	1.9	4.0	1.1	0.8	1.8	2.6	4.0	1.7	-	3.1	1.8
	4.1	4.5	1.6	-	-	-	-	-	-	-	-	-	-	-	-
	4.2	4.5	4.4	3.2	2.0	3.9	1.0	0.9	1.6	2.8	4.3	2.8	-	3.2	1.8
MOSFA	-	2.8	2.9	-	1.5	0.8	-	-	0.2	0.3	2.0	-	-	3.2	0.8
OCHPA	-	-	2.4	-	4.1	2.6	-	-	-	0.2	4.0	-	-	-	0.9
OTTMI	-	3.7	7.0	6.8	2.3	4.1	0.4	-	6.6	-	-	-	3.8	6.2	5.3
PERZS	6.1	-	6.2	5.5	4.6	6.2	1.2	3.5	-	-	1.6	2.0	0.4	3.5	5.3
PUCRC	5.7	-	-	-	6.1	6.1	-	-	-	-	2.2	-	-	0.5	6.5
ROTEC	3.4	4.1	4.2	-	-	4.4	-	-	-	-	4.0	-	-	3.0	-
SARAN	-	6.7	-	4.9	-	4.4	-	7.2	7.4	6.7	6.8	5.6	6.6	6.3	7.3
	-	6.1	0.7	5.0	-	4.7	7.3	7.4	7.4	6.9	7.2	7.4	7.1	7.4	7.5
	-	6.8	0.7	4.6	-	5.8	7.3	7.1	7.3	6.8	7.2	7.4	7.1	7.4	7.4
	-	6.7	-	3.2	-	4.4	6.9	7.0	6.9	5.4	4.9	5.3	5.7	7.3	7.4
SCALE	0.9	4.3	3.9	0.2	5.6	6.2	-	0.5	-	2.1	4.4	-	-	4.4	5.9
SCHHA	5.1	4.6	5.0	-	0.7	1.2	-	-	-	-	-	-	0.2	5.1	1.5
STOEN	1.1	3.8	6.4	0.7	4.9	6.5	1.6	1.3	-	2.0	2.7	-	-	5.9	6.7
	0.4	4.0	6.2	0.4	5.4	6.5	0.5	0.4	-	2.4	2.8	-	-	5.9	6.8
	0.3	3.9	6.6	0.7	5.3	6.4	1.5	1.3	-	3.3	3.4	-	-	5.5	6.8
STRJO	3.7	3.7	3.8	-	2.2	-	-	-	-	4.1	2.5	3.7	-	4.3	4.4
	3.7	3.7	3.8	-	2.7	0.3	0.6	-	-	4.1	4.0	3.7	0.6	4.3	4.4
	4.5	4.6	4.7	-	2.4	-	-	-	-	0.2	3.6	4.1	-	3.0	3.4
	3.7	3.7	3.8	-	2.4	-	1.0	-	-	-	-	0.1	-	4.1	4.4
	3.4	3.7	3.8	-	1.9	-	0.2	-	-	4.0	3.8	3.4	0.9	4.3	4.4
TEPIS	5.6	-	-	5.6	1.3	5.7	5.4	-	4.3	-	-	5.9	-	4.7	6.0
	3.2	-	4.4	4.0	1.0	4.9	3.7	-	2.6	-	1.8	2.9	0.5	1.5	3.9
TRIMI	1.3	-	3.8	1.7	3.7	6.3	-	5.4	-	-	0.5	-	0.3	-	3.5
ZELZO	-	-	-	0.5	-	-	-	1.1	-	1.2	-	-	3.0	-	4.2
	-	-	-	0.6	-	-	-	1.0	-	1.4	-	-	1.5	-	3.0
Sum	254.7	249.6	334.8	206.4	190.4	287.9	144.6	157.5	160.4	142.3	191.7	159.6	103.1	246.8	323.9

July	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
ARLRA	3.6	5.1	5.2	5.2	5.2	5.4	5.5	4.3	-	2.0	5.7	2.1	1.1	0.9	-	6.0
BANPE	-	0.8	1.1	1.6	0.7	1.3	-	1.4	0.7	0.8	1.8	-	0.7	1.9	-	-
BERER	5.8	5.2	4.9	1.7	3.3	-	-	5.5	6.6	6.6	5.3	-	-	-	1.5	6.7
BOMMA	5.9	5.5	3.4	1.7	1.8	-	-	5.5	6.6	6.6	5.5	-	-	-	1.0	6.2
BREMA	6.5	4.2	7.0	7.1	-	2.1	0.8	3.0	0.4	3.4	1.4	7.3	3.4	-	0.7	7.4
BRIBE	5.1	5.3	5.1	0.6	-	1.0	3.6	-	-	-	5.8	-	-	1.9	5.9	3.1
CASFL	4.9	5.2	3.7	0.3	-	0.8	1.7	5.4	0.4	-	-	1.1	2.3	3.3	5.6	4.8
CRIST	5.2	5.2	4.7	2.2	-	-	-	-	-	-	5.8	5.7	3.4	-	4.0	4.4
DINJE	5.4	5.3	5.0	2.8	-	-	5.3	5.7	3.7	3.7	5.9	5.5	3.6	-	4.6	5.3
ELTMA	4.5	1.8	6.8	3.3	0.5	4.0	1.1	-	6.9	-	-	3.0	0.6	-	1.4	3.8
FORKE	4.9	0.5	6.7	3.6	1.6	3.7	2.3	-	5.5	0.3	-	2.4	-	0.2	1.2	3.1
GONRU	6.3	6.7	6.7	3.6	1.0	1.4	1.8	-	5.1	-	3.0	5.8	2.0	1.9	6.1	3.2
GOVMI	6.3	6.7	6.7	3.1	-	-	1.7	-	3.5	-	2.4	4.7	-	1.2	5.6	1.7
HERCA	6.6	6.7	6.7	4.6	1.6	2.2	3.3	-	3.2	-	6.8	6.1	2.2	2.2	6.5	5.3
HINWO	7.1	4.6	7.1	7.3	-	2.8	0.6	4.3	0.9	4.6	1.6	7.4	3.6	-	1.2	7.5
IGAAN	2.6	1.0	6.3	6.3	-	-	-	-	-	5.1	-	5.7	2.3	-	-	2.1
JONKA	1.3	5.3	5.5	5.4	3.0	-	5.7	4.0	-	-	4.1	3.4	-	-	-	5.3
KACJA	4.6	7.6	-	6.1	7.2	7.7	3.3	3.5	1.7	3.4	5.9	5.5	4.6	7.8	6.3	-
KISSZ	4.7	7.4	-	6.7	7.4	7.8	3.4	3.3	1.1	3.6	6.0	5.6	4.6	8.0	6.4	-
KOSDE	3.4	5.8	-	6.4	7.6	7.7	2.4	-	-	1.3	4.5	2.8	3.2	-	5.8	0.5
LOJTO	4.7	7.4	-	6.8	7.4	7.8	3.5	2.1	-	3.0	6.0	5.6	4.5	8.0	6.4	-
MACMA	3.4	6.8	-	6.6	7.7	7.7	2.5	1.5	-	-	4.5	2.8	3.1	8.0	5.8	-
MARGR	-	-	-	-	-	-	-	3.7	2.2	5.5	3.4	0.4	-	5.6	-	-
MASMI	-	-	-	-	-	-	-	3.7	1.8	5.3	-	0.2	0.6	-	-	-
MOLSI	6.2	6.3	1.7	6.4	4.9	2.8	-	6.6	-	4.9	1.1	0.2	0.2	1.6	-	-
MOSFA	1.5	1.2	6.0	1.2	6.7	1.3	8.8	4.7	7.4	5.8	5.2	-	-	6.6	6.2	3.6
OCHPA	1.5	5.4	5.4	5.5	2.5	-	5.7	3.8	-	4.7	2.7	1.5	2.7	0.5	-	6.2
OTTMI	6.2	5.2	6.5	6.6	5.7	-	1.4	6.8	6.8	6.6	2.6	-	-	2.6	-	2.4
PERZS	5.3	1.9	5.9	6.2	5.9	-	0.2	-	5.6	6.6	6.2	5.4	1.4	5.1	2.9	4.9
PUCRC	2.1	3.2	4.4	6.6	5.6	-	0.9	3.5	6.6	6.8	5.4	0.1	1.0	4.6	-	0.8
ROTEC	6.3	5.8	5.4	6.1	-	-	-	5.2	5.4	6.8	6.6	-	4.0	5.3	-	3.7
SARAN	6.3	4.0	4.7	5.8	2.5	-	-	6.7	6.6	5.6	6.5	1.6	2.6	5.3	-	2.6
SCHHA	-	5.8	6.5	6.5	3.9	1.7	-	6.6	-	-	-	-	-	-	-	-
STOEN	-	-	-	6.3	-	-	-	-	-	-	-	-	-	-	-	-
STRJO	-	5.7	6.4	6.8	3.2	-	-	4.1	-	1.5	-	1.1	0.4	-	-	0.7
TEPIS	-	6.3	6.6	6.7	5.2	1.7	-	6.8	-	-	-	-	-	-	-	-
TRIMI	-	6.0	-	-	-	-	-	6.6	-	-	-	-	-	-	-	-
ZELZO	3.7	-	5.8	6.0	-	-	-	0.8	6.3	5.8	5.3	-	1.6	1.8	-	-
Sum	8.2	2.9	8.0	7.6	4.3	8.3	8.3	8.3	8.4	8.4	1.8	8.4	-	8.5	8.0	2.1
Sum	4.0	4.5	3.2	6.0	7.0	8.0	8.5	8.5	-	8.6	8.6	8.2	8.7	8.7	8.7	-
Sum	4.5	-	-	-	-	-	-	-	-	5.9	-	-	1.4	1.7	3.6	0.3
Sum	5.5	-	-	-	-	-	-	-	-	5.5	4.1	0.7	4.6	1.8	6.4	-
Sum	4.7	4.6	4.9	5.5	0.2	5.5	3.4	-	-	5.2	2.5	-	-	0.5	5.0	0.4
Sum	-	-	-	-	-	-	-	-	7.6	-	3.0	-	-	0.9	8.5	8.6
Sum	-	3.3	1.5	1.1	3.6	2.7	-	-	-	4.1	-	-	1.0	-	4.1	3.3
Sum	3.3	5.2	5.3	4.8	4.2	-	5.5	5.6	5.6	5.7	2.9	5.7	6.4	-	-	6.1
Sum	3.3	6.1	6.1	5.2	3.7	-	6.2	6.3	5.1	5.5	2.7	5.7	-	0.2	-	6.6
Sum	3.0	5.0	5.1	5.1	5.0	5.1	5.4	3.3	-	1.3	4.5	1.5	1.6	1.0	2.9	5.9
Sum	3.4	5.0	5.2	5.2	4.8	5.2	5.5	3.1	-	0.7	3.4	0.9	-	0.9	2.8	6.1
Sum	-	-	-	1.6	-	-	-	-	-	-	-	-	-	-	-	-
Sum	3.5	5.2	5.2	5.2	5.1	5.3	5.5	3.2	-	-	4.8	-	1.5	-	2.9	6.1
Sum	0.9	1.2	1.4	0.8	1.0	1.2	0.5	-	1.1	0.3	-	2.3	0.3	-	1.0	0.7
Sum	4.8	3.6	6.2	4.0	0.9	1.0	-	-	-	2.8	-	-	0.9	-	0.7	1.2
Sum	4.9	7.2	4.1	5.5	6.7	4.8	4.2	-	4.8	-	-	-	7.4	0.7	6.8	5.3
Sum	5.5	6.1	6.5	6.3	6.2	4.8	-	6.9	-	1.1	4.9	2.5	-	6.4	-	-
Sum	2.0	-	-	1.7	-	-	-	5.7	-	-	-	-	-	-	-	-
Sum	3.7	-	5.0	5.0	5.0	5.1	4.8	3.9	-	3.9	3.5	-	-	4.0	-	5.9
Sum	6.9	4.0	-	7.1	7.4	7.7	7.6	-	-	7.7	7.2	7.9	7.9	7.7	1.5	-
Sum	7.4	3.9	-	6.4	7.6	7.7	7.4	-	-	7.7	7.3	7.9	7.9	7.8	2.2	-
Sum	7.2	4.2	-	7.5	7.6	7.6	7.4	-	-	7.6	7.3	7.8	7.8	7.7	2.5	-
Sum	7.1	3.5	-	7.6	7.4	7.7	7.6	-	-	7.7	7.2	7.7	6.4	7.7	1.7	-
Sum	3.6	1.3	6.6	3.8	-	1.6	-	-	0.2	3.9	1.7	-	2.7	0.3	-	-
Sum	5.1	5.3	3.3	1.6	1.7	-	4.7	5.8	5.7	5.1	5.6	-	-	0.7	-	3.7
Sum	2.4	1.7	6.8	6.3	0.9	3.9	0.2	-	1.7	5.3	0.9	5.6	2.8	0.4	0.3	2.3
Sum	2.5	1.9	6.3	6.2	1.2	4.2	0.6	-	1.9	5.4	0.8	4.6	3.2	0.5	-	0.9
Sum	2.0	2.1	6.6	6.1	1.2	4.4	0.3	-	1.9	5.3	1.1	4.2	2.4	0.4	0.2	1.7
Sum	4.5	4.2	4.5	4.0	-	3.2	3.8	4.8	0.7	3.3	5.8	5.9	5.5	-	3.1	6.0
Sum	4.3	-	4.6	3.9	-	3.4	3.7	3.6	-	1.7	5.7	5.9	4.8	-	2.7	5.8
Sum	5.1	4.5	5.3	4.8	-	2.7	4.0	5.7	-	0.3	5.8	2.7	5.9	-	2.5	6.0
Sum	4.5	4.0	4.6	3.9	-	3.1	2.8	4.9	-	2.2	5.7	5.9	4.7	-	2.9	5.8
Sum	4.5	4.3	4.5	3.0	-	2.6	2.8	5.0	-	1.5	5.8	5.5	5.8	-	1.8	6.1
Sum	3.9	5.6	4.1	6.2	-	0.6	-	6.4	4.4	5.6	6.2	1.1	4.1	5.8	-	1.8
Sum	1.5	2.3	1.3	2.3	-	0.4	-	2.9	2.8	3.2	2.5	0.8	1.3	4.9	0.3	1.2
Sum	0.3	6.6	4.6	5.5	1.8	3.6	-	4.7	-	4.7	-	-	-	1.7	-	3.4
Sum	-	-	1.4	-	-	0.2	-	-	-	-	-	-	-	-	-	-
Sum	-	-	0.9	-	-	-	-	-	-	-	-	-	-	-	-	-
Sum	279.9	286.2	291.0	330.1	198.2	198.0	180.0	217.7	146.9	247.5	252.2	208.2	171.3	169.4	174.1	204.6

3. Results (Meteors)

July	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
ARLRA	25	37	34	11	21	46	-	3	2	1	31	1	-	8	15
BANPE	12	-	7	2	15	-	1	4	-	-	10	10	13	-	20
BERER	26	-	40	15	-	26	-	-	56	-	-	33	-	-	36
	5	-	11	5	-	17	-	-	10	-	-	9	-	-	11
BOMMA	26	28	26	12	28	45	1	32	1	18	27	3	1	33	53
BREMA	-	12	11	3	-	1	2	-	2	11	8	2	1	-	8
	-	-	10	-	-	1	4	-	-	5	7	5	1	7	3
BRIBE	15	8	13	3	-	-	-	-	-	5	-	-	-	14	-
	16	5	17	3	3	-	-	-	-	-	-	-	-	19	1
CASFL	-	14	19	4	18	7	-	-	-	3	15	-	-	21	7
	1	32	14	3	19	4	-	-	-	-	5	-	1	16	10
CRIST	24	33	15	3	32	21	1	30	9	16	6	8	5	17	19
	11	25	11	1	6	9	-	26	10	9	11	20	-	24	32
	22	39	18	4	23	33	3	17	7	18	17	19	8	6	40
DINJE	23	32	29	23	39	54	3	29	4	20	29	5	5	13	52
ELTMA	8	17	17	3	10	26	3	1	-	9	3	-	-	14	27
FORKE	7	22	25	-	-	22	-	-	-	-	-	17	-	14	6
GONRU	14	32	8	31	1	43	32	27	46	35	24	11	1	14	26
	13	31	14	-	-	35	25	30	27	32	24	7	-	10	34
	4	9	2	20	-	13	18	22	17	15	9	5	-	4	8
	6	30	9	21	-	32	26	36	22	28	29	10	3	9	39
	8	19	12	19	-	36	31	38	36	37	27	4	-	4	4
GOVMI	26	-	21	4	35	30	-	-	-	-	-	-	-	-	-
	9	-	14	4	6	7	-	-	-	-	-	-	-	-	-
	14	-	7	2	11	15	6	8	-	-	7	3	11	3	13
HERCA	14	5	6	1	1	-	7	12	-	1	1	7	3	1	-
HINWO	8	20	39	2	7	16	-	-	-	19	2	25	4	9	7
IGAAN	14	2	10	5	17	14	7	10	16	-	-	8	2	-	21
	11	-	11	12	3	7	12	1	2	-	-	15	9	16	18
	5	5	6	6	17	12	16	2	10	2	-	3	2	-	22
	3	-	5	3	6	5	3	-	10	-	1	3	-	2	4
JONKA	11	-	16	6	12	8	-	1	12	-	1	8	-	3	26
KACJA	29	-	30	12	38	50	-	1	-	-	24	-	8	-	37
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7	-	7	4	9	12	-	1	-	-	9	-	6	-	5
	42	-	43	22	43	50	-	8	-	-	24	1	9	-	25
	12	-	23	9	26	22	-	2	-	-	17	1	8	-	28
KISSZ	1	-	3	-	2	3	3	-	7	-	-	5	6	2	9
KOSDE	-	69	73	60	-	40	32	89	20	6	24	59	100	111	94
	68	83	87	85	-	96	97	112	95	90	73	75	46	46	19
LOJTO	-	-	8	7	-	1	6	-	9	-	-	-	3	9	-
MACMA	35	-	17	18	3	14	3	15	1	-	-	-	7	11	12
	40	-	17	32	3	16	9	23	9	11	-	-	8	36	19
	25	-	21	15	-	-	6	21	5	2	-	-	20	33	21
MARGR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MASMI	-	5	16	-	8	-	13	12	-	25	10	6	11	17	-
MOLSI	26	59	72	22	36	-	4	-	-	-	-	6	25	40	44
	20	17	18	3	17	1	4	-	-	-	-	2	12	18	16
	34	42	41	20	7	33	2	-	14	21	21	26	-	14	14
	16	34	30	12	16	28	4	3	7	6	12	6	-	3	7
	4	11	5	-	-	-	-	-	-	-	-	-	-	-	-
	31	27	40	9	9	20	1	2	10	18	19	11	-	14	8
MOSFA	-	15	14	-	9	5	-	-	1	2	13	-	-	25	6
OCHPA	-	-	13	-	14	6	-	-	-	1	11	-	-	-	1
OTTMI	-	14	16	22	16	11	1	-	11	-	-	-	6	17	15
PERZS	28	-	35	16	44	47	5	10	-	-	5	8	2	6	13
PUCRC	9	-	-	-	10	29	-	-	-	-	7	-	-	2	19
ROTEC	6	12	18	-	-	17	-	-	-	-	6	-	-	3	-
SARAN	-	12	-	5	-	13	-	18	15	13	9	12	7	12	13
	-	12	2	6	-	14	25	22	16	19	23	14	16	20	19
	-	22	1	13	-	20	38	44	32	23	29	25	24	32	30
	-	11	-	1	-	10	15	16	18	6	9	7	8	20	19
SCALE	2	11	12	1	16	17	-	2	-	8	10	-	-	17	27
SCHHA	10	8	15	-	1	2	-	-	-	-	-	-	1	13	8
STOEN	8	37	41	4	22	34	7	7	-	23	15	-	-	35	55
	2	28	32	1	15	23	4	2	-	9	6	-	-	43	46
	2	44	40	3	20	31	4	6	-	27	30	-	-	51	56
STRJO	13	12	13	-	6	-	-	-	-	10	5	8	-	13	8
	16	13	12	-	9	1	1	-	-	15	22	19	2	29	11
	9	11	16	-	4	-	-	-	-	1	7	14	-	16	12
	18	8	15	-	10	-	3	-	-	-	-	1	-	8	5
	13	8	12	-	2	-	1	-	-	10	10	9	2	19	9
TEPIS	9	-	-	2	6	17	5	-	14	-	-	7	-	5	19
	20	-	20	9	7	18	10	-	25	-	15	25	3	13	33
TRIMI	4	-	18	7	9	14	-	9	-	-	3	-	2	-	15
ZELZO	-	-	-	2	-	-	1	-	2	-	-	5	-	3	8
	-	-	-	2	-	-	1	-	5	-	-	5	-	-	7
Sum	940	1082	1393	655	767	1299	506	754	615	630	762	598	412	1037	1374

July	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
ARLRA	18	60	49	48	31	46	65	34	-	10	26	2	3	1	-	78
BANPE	-	7	8	11	5	8	-	10	4	6	13	-	4	14	-	-
BERER	38	26	28	12	4	-	-	50	57	56	60	-	-	-	3	37
	10	12	7	3	1	-	-	11	20	10	10	-	-	-	1	14
BOMMA	30	28	41	32	-	14	5	10	2	17	5	79	20	-	6	106
BREMA	6	13	11	1	-	2	8	-	-	-	12	-	-	2	26	4
	14	9	9	1	-	1	6	12	1	-	-	2	12	6	16	12
BRIBE	12	21	10	2	-	-	-	-	-	-	15	21	15	-	18	18
	17	27	10	5	-	-	18	24	15	14	22	14	15	-	14	24
CASFL	17	13	24	17	2	27	6	-	36	-	-	12	2	-	5	29
	12	1	20	8	2	22	7	-	30	2	-	16	-	1	11	21
CRIST	21	33	35	7	1	5	12	-	14	-	13	37	14	8	61	35
	19	39	39	9	-	-	10	-	19	-	10	30	-	6	51	14
	32	55	47	16	3	5	16	-	8	-	27	54	13	1	53	51
DINJE	47	20	62	32	-	17	2	10	3	31	2	105	16	-	2	105
ELTMA	6	7	25	13	-	-	-	-	-	14	-	30	19	-	-	11
FORKE	5	23	20	13	5	-	18	26	-	-	15	10	-	-	-	54
GONRU	12	13	-	30	48	35	8	20	3	9	20	21	23	74	36	-
	15	23	-	33	36	31	11	10	2	7	15	15	18	63	29	-
	5	9	-	12	14	32	3	-	-	1	13	2	2	-	20	1
	9	22	-	15	40	37	6	6	-	8	22	14	23	61	40	-
	5	34	-	24	51	42	5	9	-	-	12	1	8	66	31	-
GOVMI	-	-	-	-	-	-	-	26	8	19	11	2	-	27	-	-
	-	-	-	-	-	-	-	8	1	10	-	1	1	-	-	-
	13	10	5	8	9	8	-	23	-	12	2	1	1	6	-	-
HERCA	10	5	9	1	3	3	21	10	16	16	8	-	-	24	25	9
HINWO	6	25	26	24	3	-	25	20	-	23	7	7	12	3	-	39
IGAAN	11	12	5	17	6	-	1	19	32	17	5	-	-	4	-	5
	9	2	11	16	9	-	1	-	8	25	21	18	4	12	5	19
	9	4	3	16	10	-	1	13	22	13	3	1	2	9	-	4
	5	7	3	4	-	-	-	3	2	10	5	-	2	10	-	3
JONKA	16	5	6	10	1	-	-	9	18	19	18	2	2	10	-	7
KACJA	-	45	31	36	14	7	-	47	-	-	-	-	-	-	-	-
	-	-	-	28	-	-	-	-	-	-	-	-	-	-	-	-
	-	7	4	10	1	-	-	9	-	3	-	2	2	-	-	3
	-	41	46	37	14	7	-	65	-	-	-	-	-	-	-	-
	-	32	-	-	-	-	-	24	-	-	-	-	-	-	-	-
KISSZ	5	-	6	6	-	-	-	2	8	9	8	-	1	5	-	-
KOSDE	79	37	82	83	31	89	98	90	92	104	23	128	-	123	127	26
	31	37	19	60	79	113	119	114	-	122	127	135	140	150	177	-
LOJTO	-	-	-	14	-	9	6	-	-	-	4	18	21	7	20	-
MACMA	14	-	-	-	-	-	-	-	-	23	-	-	10	14	37	2
	38	-	-	-	-	-	-	-	-	36	25	2	19	9	52	-
	17	32	25	37	1	35	20	-	30	19	-	-	-	3	48	3
MARGR	-	-	-	-	-	-	-	-	25	-	13	-	-	1	26	38
MASMI	-	20	8	6	11	10	-	-	-	29	-	-	5	-	23	28
MOLSI	12	57	59	71	38	-	63	97	84	68	28	73	63	-	-	103
	8	12	22	23	6	-	17	25	49	41	16	43	-	1	-	73
	11	63	56	68	36	41	69	26	-	8	11	6	7	1	36	102
	8	41	38	35	26	27	31	16	-	3	10	1	-	1	31	63
	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-
	14	40	56	22	23	26	42	31	-	-	7	-	5	-	25	97
MOSFA	6	10	12	5	6	8	3	-	8	2	-	19	3	-	7	5
OCHPA	15	11	14	2	1	7	-	-	7	-	-	-	4	-	4	8
OTPMI	15	15	12	7	24	15	7	-	13	-	-	-	39	2	22	22
PERZS	18	19	26	30	15	10	-	57	-	4	27	11	-	47	-	-
PUCRC	4	-	-	7	-	-	-	25	-	-	-	-	-	-	-	-
ROTEC	9	-	27	21	13	6	7	6	-	7	9	-	-	11	-	20
SARAN	9	5	-	18	25	19	21	-	-	14	12	28	36	26	8	-
	15	6	-	20	30	29	20	-	-	21	22	27	39	40	12	-
	17	10	-	30	52	41	40	-	-	36	25	44	42	49	7	-
	6	3	-	17	27	25	13	-	-	18	13	14	15	24	8	-
SCALE	10	7	13	9	-	8	-	-	1	15	9	-	16	1	-	-
SCHHA	14	26	6	3	2	-	12	38	33	12	24	-	-	4	-	22
STOEN	7	16	55	26	2	33	2	-	19	34	11	49	60	1	2	13
	7	18	35	26	2	28	3	-	12	26	5	29	41	4	-	1
	8	24	39	31	2	45	2	-	21	45	15	35	30	2	1	6
STRJO	17	15	15	6	-	8	13	32	1	3	35	29	23	-	11	28
	23	-	19	9	-	14	21	17	-	6	36	42	22	-	16	45
	14	15	18	9	-	12	15	23	-	2	31	10	21	-	9	32
	9	16	17	9	-	12	9	25	-	3	29	27	15	-	10	15
	5	13	13	6	-	9	7	39	-	4	19	34	22	-	11	31
TEPIS	5	17	9	14	-	2	-	11	11	21	26	1	15	23	-	3
	11	19	13	20	-	3	-	26	19	29	21	6	10	44	2	9
TRIMI	2	15	15	14	6	11	-	16	-	12	-	-	-	4	-	15
ZELZO	-	-	2	-	-	1	-	-	-	-	-	-	-	-	-	-
	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Sum	912	1309	1326	1315	773	1045	915	1224	717	1146	1052	1310	957	1005	1185	1513