

Result of the IMO Video Meteor Network – July 2018

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In July, the number of cameras and observers in the IMO network has increased again – 41 meteor observers have operated an overall of 82 video cameras. Among them is Javor Kac, who has reactivated SRAKA from Mihaela Triglav and meanwhile operates five video cameras. The weather in July was fine. We could record over 34,000 meteors in more than 8,300 hours of effective observing time. 64 video cameras spread across all regions managed to observe in twenty or more observing nights. Three of the four cameras of Stefano Crivello operated even without a single missing night. That all sounds very promising, but the results were in fact below average compared to the previous years. Between 2015 and 2017 we could collect more observing hours and meteors in that month.

There is no relevant meteor shower activity in the first half of July, but a number of meteor showers compete with each other towards the end of the month. Since we have already most data of August available, we could perform a detailed analysis of these showers already now. The smallest of them are the gamma Draconids, which no one would have at the radar unless they had experienced a short-duration outburst in 2016 at 125.132° solar longitude. Unfortunately, that time interval was outside the European observing window in 2018, so we could not check if there was another outburst this year. Figure 1 compares the activity profile of 2018 with the average of the years 2011-2017 (without 2016). The peak time (125° solar longitude) matches well, but the activity level was lower.

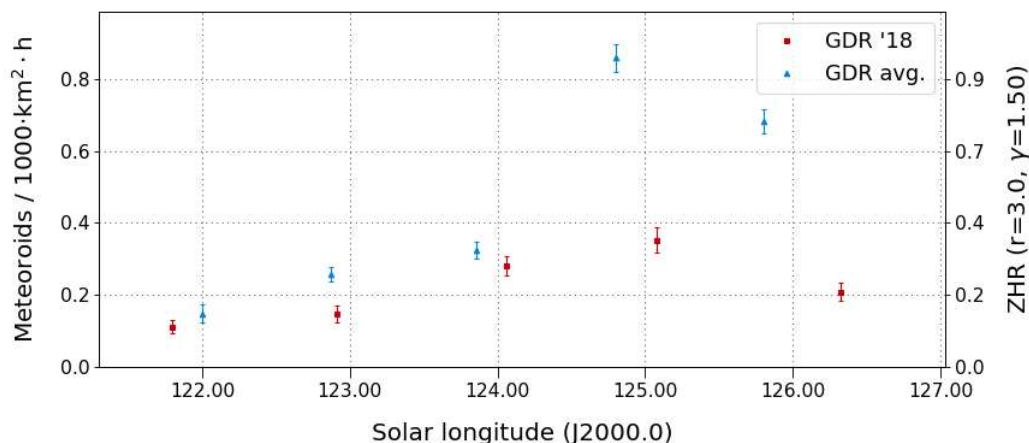


Figure 1: Flux density profile of the gamma Draconids 2018 (red) and in the average of 2011-2017 (without 2016, blue), derived from video data of the IMO Network.

The Pisces Austrinids are somewhat stronger and their activity interval lasts longer, but they are more difficult to observe because of their southern radiant position. The activity profile shows no clear peak but rather some enhanced activity over an interval of about ten days. The 2018 data match well to the long-term profile of the years 2011-2017 (figure 2)

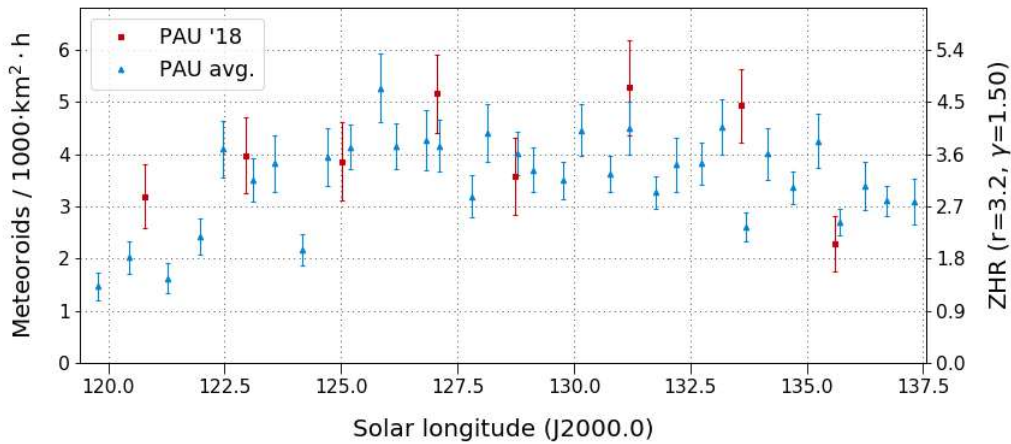


Figure 2: Flux density profile of the Pisces Austrinids 2018 (red) and in the average of 2011-2017 (blue), derived from video data of the IMO Network.

Less active, but better visible are the alpha Capricornids. With their peak flux density of about 2 meteoroids per 1,000 km² and hour they cannot compete with large meteor showers, but their rate is sufficient to create a well-defined activity profile (figure 3). Also in this case, the observations of 2018 match to the long-term average of the previous years - only the peak activity occurred one day earlier. However, if the error bars are taken into consideration, the regular peak time of 126° solar longitude has about the same activity level (figure 3).

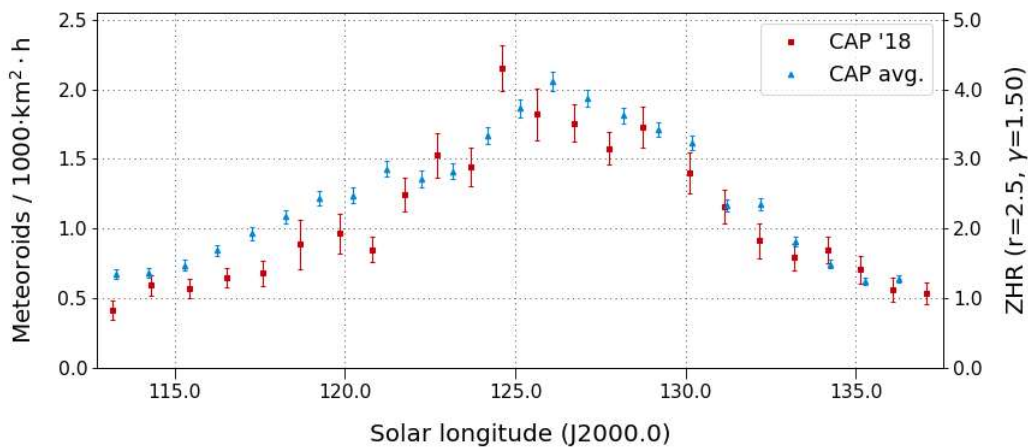


Figure 3: Flux density profile of the alpha Capricornids 2018 (red) and in the average of 2011-2017 (blue), derived from video data of the IMO Network.

The population index of 2018 shows no peculiarities (figure 4, left). The sporadic r-value varies in the observing interval between $r=2,5$ and $2,9$. The population index of the alpha Capricornids varies in a similar fashion, but the difference between both profiles is not constant. At the begin and end of the activity period both values are almost identical. However, with $r=2.0$ the population index of the alpha Capricornids at peak time is about 0.4 smaller than the sporadic value. We obtain the same picture when we take all data between 2011 and 2018 to calculate the population index profile (figure 4, right)

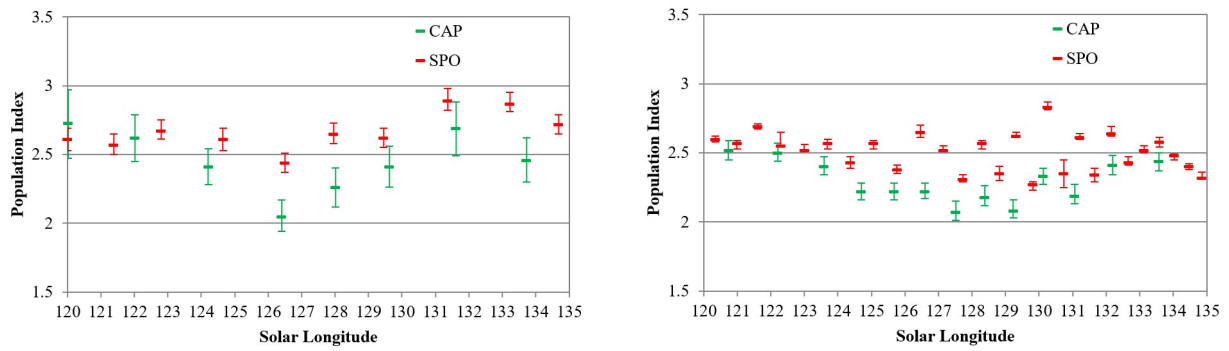


Figure 4: Population index of the alpha Capricornids (green) and sporadic meteors (red) in 2018 (left), and in the average of 2011-2018 (right).

Finally, we have the strongest meteor shower of July, the southern delta Aquariids. Their flux density is comparable to the Perseids, but the ZHR is clearly lower and the southern radiant is not as well-positioned for the European observers. The activity profile of the southern delta Aquariids is almost symmetric – only towards the end of the activity interval the flux density is not going fully down to the start value. The profile shows hardly any scatter thanks to the high meteor number, and the values of 2018 fit well to the average of the previous years (figure 5).

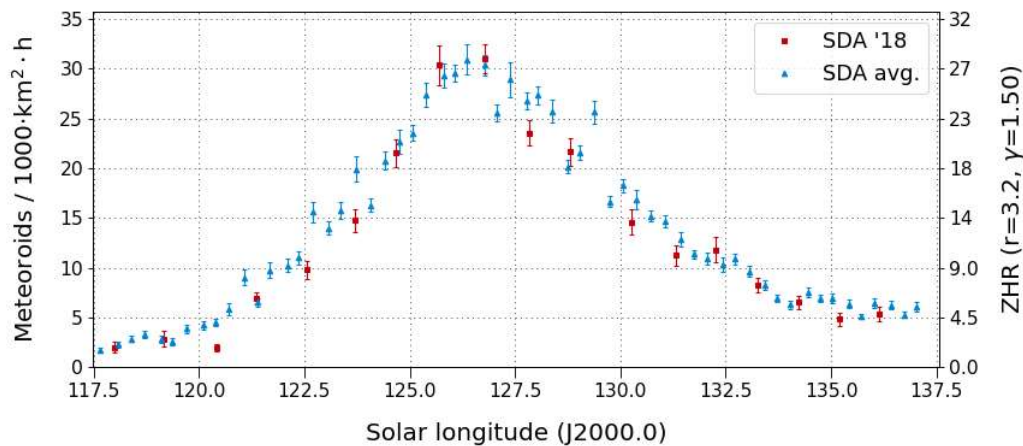


Figure 5: Flux density profile of the southern delta Aquariids 2018 (red) and in the average of 2011-2017 (blue), derived from video data of the IMO Network.

The population index of the southern delta Aquariids is over the full activity interval about 0.4 smaller than the sporadic r-value. Just right after the peak, the population index rises shortly and does not deviate from the sporadic meteors anymore, i.e. the percentage of faint meteors is increasing. Due to scatter in the population index profile of sporadic meteors, however, we cannot say for sure if that is a one-time effect of 2018 or not, even if we combine all available data from 2011 till 2018 (figure 6, right).

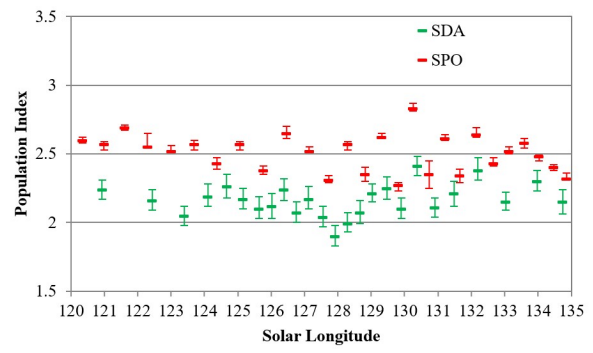
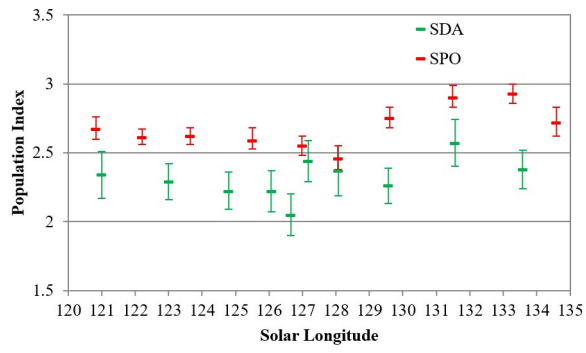


Figure 6: Population index of the southern delta Aquariids (green) and sporadic meteors (red) in 2018 (left), and in the average of 2011-2018 (right).

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	100.5	678
BERER	Berkó	Ludanyhalaszi/HU	HULUD1 (0.8/3.8)	5542	4.8	3847	8	47.5	322
BIATO	Bianchi	Mt. San Lorenzo/IT	OMSL1 (1.2/4)	6435	4.0	1705	27	129.1	369
BOMMA	Bombardini	Faenza/IT	MARIO (1.2/4.0)	5794	3.3	739	29	168.5	943
BREMA	Breukers	Hengelo/NL	MBB3 (0.75/6)	2399	4.2	699	29	134.3	336
BRIBE	Klemt	Herne/DE	HERMINE (0.8/6)	2374	4.2	678	29	128.9	577
		Berg. Gladbach/DE	KLEMOI (0.8/6)	2286	4.6	1080	29	130.8	479
CARMA	Carli	Monte Baldo/IT	BMH2 (1.5/4.5)*	4243	3.0	371	22	116.1	766
CASFL	Castellani	Monte Baldo/IT	BMH1 (0.8/6)	2350	5.0	1611	19	107.8	376
CINFR	Cineglosso	Faenza/IT	JENNI (1.2/4)	5886	3.9	1222	30	184.5	727
CRIST	Crivello	Valbrenvena/IT	ARCI (0.8/3.8)	5566	4.6	2575	31	158.4	603
			BILBO (0.8/3.8)	5458	4.2	1772	31	154.4	674
			C3P8 (0.8/3.8)	5455	4.2	1586	27	113.9	464
			STG38 (0.8/3.8)	5614	4.4	2007	31	139.1	913
ELTMA	Eltri	Venezia/IT	MET38 (0.8/3.8)	5631	4.3	2151	24	95.9	357
FORKE	Förster	Carlsfeld/DE	AKM3 (0.75/6)	2375	5.1	2154	23	87.7	489
GONRU	Goncalves	Foz do Arelho/PT	FARELHO1 (0.75/4.5)	2286	3.0	208	8	20.8	44
		Tomar/PT	TEMPLAR1 (0.8/6)	2179	5.3	1842	28	153.4	721
			TEMPLAR2 (0.8/6)	2080	5.0	1508	25	147.3	546
			TEMPLAR3 (0.8/8)	1438	4.3	571	25	127.6	224
			TEMPLAR4 (0.8/3.8)	4475	3.0	442	27	146.1	574
			TEMPLAR5 (0.75/6)	2312	5.0	2259	25	121.5	409
GOVMI	Govedic	Sredisce ob Dr./SI	ORION2 (0.8/8)	1447	5.5	1841	20	96.1	308
			ORION3 (0.95/5)	2665	4.9	2069	22	112.5	201
			ORION4 (0.95/5)	2662	4.3	1043	23	95.7	180
HERCA	Hergenrother	Tucson/US	SALSA3 (0.8/3.8)	2336	4.1	544	15	90.3	229
HINWO	Hinz	Schwarzenberg/DE	HINWO1 (0.75/6)	2291	5.1	1819	28	122.2	518
IGAAN	Igaz	Budapest/HU	HUPOL (1.2/4)	3790	3.3	475	17	77.7	90
JONKA	Jonas	Budapest/HU	HUSOR (0.95/4)	2286	3.9	445	26	118.2	254
			HUSOR2 (0.95/3.5)	2465	3.9	715	25	111.9	244
KACJA	Kac	Kamnik/SI	CVETKA (0.8/3.8)	4914	4.3	1842	14	53.0	330
		Kostanjevec/SI	METKA (0.8/12)*	715	6.4	640	24	94.5	256
		Kamnik/SI	REZIKA (0.8/6)	2270	4.4	840	14	58.4	420
		Ljubljana/SI	SRAKA (0.8/6)*	2222	4.0	546	20	80.6	438
		Kamnik/SI	STEFKA (0.8/3.8)	5471	2.8	379	13	52.8	240
KOSDE	Koschny	La Palma / ES	ICC9 (0.85/25)*	683	6.7	2951	7	37.6	454
			LIC2 (3.2/50)*	2199	6.5	7512	9	45.8	574
LOJTO	Łojek	Grabniak/PL	PAV57 (1.0/5)	1631	3.5	269	3	6.9	33
MACMA	Maciejewski	Chelm/PL	PAV35 (0.8/3.8)	5495	4.0	1584	23	61.4	237
			PAV36 (0.8/3.8)*	5668	4.0	1573	26	90.2	366
			PAV43 (0.75/4.5)*	3132	3.1	319	23	42.6	112
			PAV60 (0.75/4.5)	2250	3.1	281	26	96.3	415
MARRU	Marques	Lisbon/PT	CAB1 (0.75/6)	2362	4.8	1517	28	176.2	862
			RAN1 (1.4/4.5)	4405	4.0	1241	21	97.7	276
MOLSI	Molau	Seysdorf/DE	AVIS2 (1.4/50)*	1230	6.9	6152	28	117.8	1223
			ESCIMO2 (0.85/25)	155	8.1	3415	28	140.0	389
			MINCAM1 (0.8/8)	1477	4.9	1084	28	134.4	800
		Ketzür/DE	REMO1 (0.8/8)	1467	6.5	5491	26	104.5	831
			REMO2 (0.8/8)	1478	6.4	4778	25	107.9	760
			REMO3 (0.8/8)	1420	6.4	1967	25	122.0	676
			REMO4 (0.8/8)	1478	6.5	5358	25	120.7	995
MORJO	Morvai	Fülöpszallas/HU	HUFUL (1.4/5)	2522	3.5	532	23	125.2	227
MOSFA	Moschini	Rovereto/IT	ROVER (1.4/4.5)	3896	4.2	1292	24	96.1	208
NAGHE	Nagy	Budapest/HU	HUKON (0.8/3.8)	5500	4.0	1575	27	99.8	387
		Piszkestető/HU	HUPIS (0.8/3.8)	5615	4.0	1524	28	88.2	420
		Zamardi/HU	HUZAM (0.8/6)	2358	4.7	1266	7	32.4	65
OCHPA	Ochner	Albiano/IT	ALBIANO (1.2/4.5)	2944	3.5	358	14	62.6	158
OTMI	Otte	Pearl City/US	ORIE1 (1.4/5.7)	3837	3.8	460	29	177.3	586
PERZS	Perkó	Becsehely/HU	HUBEC (0.8/3.8)*	5498	2.9	460	19	89.1	265
ROTEC	Rothenberg	Berlin/DE	ARMEFA (0.8/6)	2366	4.5	911	21	85.5	222
SARAN	Saraiva	Carnaxide/PT	RO1 (0.75/6)	2362	3.7	381	19	69.4	145
			RO2 (0.75/6)	2381	3.8	459	22	115.0	247
			RO3 (0.8/12)	710	5.2	619	23	125.5	338
			RO4 (1.0/8)	1582	4.2	549	19	96.0	116
			SOFIA (0.8/12)	738	5.3	907	21	59.3	162
SCALE	Scarpa	Alberoni/IT	LEO (1.2/4.5)*	4152	4.5	2052	23	95.7	142
SCHHA	Schremmer	Niederkrüchten/DE	DORAEMON (0.8/3.8)	4900	3.0	409	30	127.1	475
SLAST	Slavec	Ljubljana/SI	KAYAK1 (1.8/28)	563	6.2	1294	21	79.6	334
			KAYAK2 (0.8/12)	741	5.5	920	17	92.7	165
STOEN	Stomeo	Scorze/IT	MIN38 (0.8/3.8)	5566	4.8	3270	27	98.4	691
			NOA38 (0.8/3.8)	5609	4.2	1911	21	78.0	333
			SCO38 (0.8/3.8)	5598	4.8	3306	27	93.3	632
STRJO	Strunk	Herford/DE	MINCAM2 (0.8/6)	2354	5.4	2751	28	120.6	783
			MINCAM3 (0.8/6)	2338	5.5	3590	28	104.2	235
			MINCAM4 (0.8/6)	2306	5.0	1412	30	120.3	310
			MINCAM5 (0.8/6)	2349	5.0	1896	28	113.7	414
			MINCAM6 (0.8/6)	2395	5.1	2178	30	112.3	476
TEPIS	Teplizky	Agostyan/HU	HUAGO (0.75/4.5)	2427	4.4	1036	25	115.6	420
			HUMOB (0.8/6)	2388	4.8	1607	27	116.3	376
WEGWA	Wegrzyk	Nieczaszyn/PL	PAV78 (0.8/6)	2286	4.0	778	23	82.1	285
YRJL	Yrjölä	Kuusankoski/FI	FINEXCAM (0.8/6)	2337	5.5	3574	2	4.2	31
ZAKJU	Zakrajšek	Petkovec/SI	TACKA (0.8/12)	714	5.3	783	21	103.0	259
Sum							31	8348.7	34264

* 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	3.6	3.6	3.8	3.8	3.9	3.9	3.7	2.5	-	1.8	-	0.9	4.2	4.2	4.4
BERER	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BIATO	6.7	6.3	5.4	6.7	4.9	1.7	6.8	4.0	6.3	3.8	6.0	3.7	3.2	5.6	3.7
BOMMA	-	5.4	1.6	6.8	3.8	6.8	3.6	2.4	-	5.8	6.8	7.1	6.9	3.8	6.8
BREMA	5.2	5.3	4.2	4.7	3.5	5.3	5.4	5.5	-	4.5	4.3	5.3	5.7	5.8	5.8
BRIBE	4.8	4.7	3.0	4.0	4.6	2.2	5.0	5.0	-	3.7	1.3	5.1	4.9	5.3	5.3
	4.7	4.7	1.3	4.7	4.8	3.5	4.9	5.0	-	5.0	1.4	4.2	4.5	5.1	5.3
CARMA	-	3.3	0.6	4.6	-	-	6.7	6.2	0.7	-	-	-	2.3	4.8	2.5
CASFL	-	-	-	4.6	-	-	5.6	6.3	-	-	-	-	2.3	5.1	2.5
CINFR	-	6.2	2.9	6.7	5.4	6.9	4.7	3.2	3.9	5.9	6.8	6.9	6.8	5.2	7.0
CRIST	5.4	5.9	2.9	4.0	5.3	3.8	5.9	5.5	6.2	0.6	3.7	5.0	6.5	5.4	3.6
	5.1	5.8	2.6	3.5	5.2	5.1	6.4	5.0	6.3	1.3	4.2	4.8	6.5	4.6	2.7
	4.1	6.3	-	-	1.3	5.1	6.1	2.3	5.3	-	0.3	1.7	6.6	2.0	-
	5.3	5.9	3.1	3.9	5.1	4.8	6.4	5.5	6.4	0.8	4.2	4.6	6.4	2.9	0.8
ELTMA	-	1.9	-	5.7	-	4.2	0.2	0.6	-	-	0.7	-	6.6	-	2.1
FORKE	2.5	2.8	2.3	1.2	-	-	4.2	1.9	-	-	-	3.8	-	4.0	1.8
GONRU	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5
	3.1	7.2	7.3	6.7	5.1	3.9	7.3	3.1	-	-	0.5	4.5	6.5	0.3	7.0
	2.3	7.2	7.4	6.2	4.7	3.8	7.4	-	-	-	-	4.6	6.5	0.9	7.1
	2.5	6.6	6.8	5.0	3.5	3.0	6.7	2.4	-	-	-	1.4	6.8	-	6.8
	2.3	7.3	7.2	5.8	2.9	3.8	7.4	3.1	-	0.2	-	4.5	6.5	0.5	7.0
	2.4	5.2	6.9	5.7	3.1	2.7	6.6	2.5	-	-	0.2	-	6.3	0.7	6.6
GOVMI	4.3	-	-	5.8	1.6	-	-	1.5	3.5	-	-	4.5	6.2	-	5.6
	5.0	-	-	6.2	3.1	-	5.0	2.5	5.3	-	-	2.2	6.4	-	6.1
	2.3	-	-	5.6	2.1	-	4.1	2.3	4.5	0.2	-	4.0	5.9	1.8	4.6
HERCA	8.0	7.4	8.2	4.1	6.4	7.6	7.2	-	-	-	-	-	-	-	-
HINWO	5.1	4.9	5.1	3.3	-	4.8	4.2	1.8	1.3	3.8	4.4	3.8	5.4	5.5	3.0
IGAAN	5.2	5.3	5.4	4.1	0.9	-	-	3.9	2.0	-	2.3	6.0	5.7	5.8	6.0
JONKA	5.8	5.4	4.8	4.6	3.8	-	1.7	4.1	2.0	3.1	1.0	6.2	6.2	6.1	6.3
	5.9	5.9	4.7	4.7	4.0	-	-	1.2	1.3	2.7	0.2	6.2	6.1	6.3	6.3
KACJA	-	-	-	3.9	-	1.5	5.2	-	5.1	-	-	-	3.9	-	-
	-	0.3	0.3	4.8	-	-	5.4	2.6	3.2	-	-	1.6	6.7	0.7	5.5
	-	-	-	4.1	-	1.5	6.2	-	6.0	-	-	-	4.0	-	-
	-	-	-	4.9	-	0.8	4.7	-	5.3	-	-	0.1	3.3	-	0.7
	-	-	-	4.3	-	-	5.6	-	5.3	-	-	-	3.9	-	-
KOSDE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOTJO	-	-	-	4.7	-	-	-	-	1.9	-	-	-	-	-	-
MACMA	-	-	4.2	4.7	3.5	3.8	2.5	3.9	4.9	2.9	-	4.4	-	-	1.4
	-	-	4.6	5.1	3.2	4.1	2.9	4.5	5.1	2.1	-	4.8	0.2	0.2	1.5
	-	-	3.7	4.3	1.7	2.6	2.7	2.0	2.5	0.2	-	2.2	0.2	-	0.4
	-	-	4.7	5.0	3.5	4.4	3.3	4.4	5.2	2.6	-	4.7	1.4	0.2	1.4
MARRU	3.3	7.1	5.3	6.5	5.5	6.0	7.3	6.2	-	0.7	3.1	7.3	6.5	2.6	4.4
	-	5.3	0.2	-	5.5	-	7.0	7.0	6.3	-	1.9	-	-	-	2.2
MOLSI	4.6	4.6	2.9	4.7	1.6	3.6	4.8	4.8	1.7	3.5	4.9	5.0	5.0	5.1	4.8
	5.3	5.3	4.3	5.4	1.9	4.3	5.5	5.5	2.0	3.7	5.3	5.7	5.7	5.7	5.1
	5.3	5.3	3.7	5.3	1.1	4.0	5.4	5.4	2.2	3.6	2.0	5.7	5.7	5.1	5.2
	3.7	3.7	3.8	3.4	3.9	3.9	3.6	4.0	-	-	-	4.1	4.3	4.3	4.3
	3.8	3.9	4.0	3.7	4.0	4.1	3.7	4.2	-	-	-	4.3	4.5	4.6	4.6
	4.5	4.5	4.5	4.0	4.5	4.6	4.3	4.7	-	-	-	4.7	5.0	5.0	5.1
	4.3	4.4	4.4	4.1	4.5	4.5	4.2	4.5	-	-	-	4.6	5.0	5.0	5.0
MORJO	6.1	5.9	6.0	5.0	5.9	2.7	1.7	0.7	6.0	-	-	6.2	6.3	6.2	6.3
MOSFA	-	1.5	0.2	3.8	4.5	5.2	6.6	6.2	0.6	-	2.7	1.7	2.0	1.5	-
NAGHE	5.9	5.9	5.9	4.0	0.6	-	-	4.2	0.8	1.7	1.0	3.3	6.0	6.1	6.1
	3.1	4.0	3.9	3.1	-	-	2.6	3.4	1.3	1.5	1.0	3.4	5.1	4.7	4.9
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OCHPA	-	-	0.4	-	-	4.5	4.4	4.5	-	-	-	0.9	-	-	-
OTTMI	6.9	6.9	2.1	7.0	7.0	7.0	7.0	6.9	6.2	7.0	-	1.8	7.1	7.1	7.3
PERZS	5.8	-	-	3.6	-	-	6.1	5.0	-	-	-	-	-	1.6	6.2
ROTEC	4.1	4.3	4.2	4.2	3.2	4.4	4.3	2.2	-	-	-	0.9	2.7	4.8	4.8
SARAN	-	6.6	6.2	0.7	-	-	4.0	6.2	-	-	-	1.5	2.4	-	4.3
	-	7.5	6.5	3.9	1.9	-	7.1	7.7	-	-	-	0.9	2.7	-	-
	-	7.3	7.1	5.1	2.6	2.6	7.1	7.4	-	-	-	-	2.7	0.4	3.9
	-	6.9	4.9	1.8	-	-	6.6	7.2	-	-	0.2	0.7	-	-	3.6
	-	5.4	2.8	3.1	-	0.8	3.9	6.0	-	-	-	0.4	-	-	3.3
SCALE	-	4.7	2.0	5.3	3.7	2.8	-	0.2	-	-	1.2	-	6.7	-	1.8
SCHHA	4.9	5.0	1.4	1.1	4.6	4.7	4.9	5.2	-	4.9	1.0	5.3	5.4	5.5	5.5
SLAST	-	-	-	5.3	0.4	0.3	4.7	-	5.3	-	-	-	5.2	0.4	2.3
	-	1.3	-	6.3	-	-	5.8	-	6.0	-	-	-	5.7	-	-
STOEN	-	5.1	1.3	4.7	3.0	2.4	0.3	1.8	-	-	1.1	0.9	5.2	1.6	2.1
	-	-	0.9	5.5	4.2	2.3	1.3	-	-	-	2.7	2.2	5.8	2.6	2.3
	-	5.4	1.3	4.6	3.9	2.5	0.8	2.0	-	-	1.8	1.3	4.7	1.2	2.2
STRJO	4.5	4.5	4.5	4.5	2.6	4.6	4.7	4.8	-	2.4	0.7	4.9	5.1	4.4	5.2
	-	-	2.8	3.5	2.0	4.5	4.6	4.7	-	1.0	0.2	5.0	5.0	4.5	5.1
	4.3	4.0	4.7	4.7	2.7	4.8	4.8	4.9	-	0.4	0.2	5.0	5.1	4.6	5.2
	4.3	-	4.4	4.4	2.8	4.7	4.7	4.7	-	2.0	0.5	4.3	4.9	4.5	5.0
	4.4	4.6	4.4	4.4	2.5	3.9	4.7	4.7	-	3.1	0.2	4.7	4.9	4.2	4.4
TEPIS	5.6	5.0	5.6	5.1	1.8	-	4.4	4.5	1.8	-	-	0.9	5.7	6.0	6.0
	5.5	5.6	5.6	5.6	2.0	-	4.5	1.3	1.0	-	1.2	5.5	5.5	5.7	5.4
WEGWA	2.2	4.5	3.4	-	-	2.3	-	4.6	0.3	0.2	2.4	-	1.5	3.4	5.1
YRJIL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZAKJU	-	-	-	6.1	-	2.6	5.3	-	4.8	-	-	-	5.2	0.9	2.6
Sum	204.0	286.8	240.6	332.0	195.3	206.2	334.4	264.0	145.8	86.7	83.6	221.9	331.8	212.1	289.7

July	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
ARLRA	4.4	3.4	4.5	4.4	4.4	-	3.1	4.9	4.8	4.6	4.9	4.7	-	0.1	5.1	2.9
BERER	6.1	-	-	-	5.1	-	-	-	6.2	-	4.9	5.0	-	6.8	6.8	6.6
BIATO	1.6	7.1	2.3	7.3	-	7.1	2.6	6.1	-	6.7	-	2.5	5.3	-	1.8	3.9
BOMMA	3.2	7.0	7.1	7.1	6.9	7.1	1.9	7.0	6.9	6.6	5.9	7.5	6.2	7.0	7.0	6.5
BREMA	5.1	5.8	2.8	5.9	0.2	6.2	-	6.3	3.9	1.8	5.8	6.4	5.9	0.2	1.6	5.9
BRIBE	5.3	5.2	5.3	5.3	-	5.7	5.4	5.8	3.1	4.5	5.9	5.9	2.4	1.7	2.8	5.7
	5.4	4.5	5.6	5.5	1.6	-	5.1	5.7	5.3	4.0	5.9	6.0	3.1	4.5	6.1	3.4
CARMA	6.6	6.9	7.0	7.0	-	-	-	7.1	5.7	5.5	4.6	5.2	7.1	7.6	7.4	6.7
CASFL	6.9	7.0	7.0	7.0	-	-	-	7.2	5.5	3.8	4.1	5.5	6.6	7.3	7.5	6.0
CINFR	3.6	7.0	7.1	7.1	7.0	7.2	3.1	7.2	7.2	7.1	6.0	7.5	7.1	7.4	7.4	7.0
CRIST	6.4	6.7	6.7	5.7	2.0	4.0	2.0	6.8	7.0	6.4	2.4	7.0	5.7	5.8	6.9	7.2
	4.8	6.7	6.7	5.9	3.4	3.4	1.4	6.8	6.8	3.5	2.7	6.6	4.9	7.2	7.2	7.3
	6.7	6.1	4.9	0.5	0.8	3.9	0.8	6.9	7.0	7.0	2.0	3.7	1.0	7.2	7.3	7.0
	3.8	1.7	6.7	6.1	2.5	1.7	0.2	1.3	7.0	6.4	1.8	6.8	5.6	6.9	7.2	7.3
ELTMA	1.8	6.4	6.2	6.8	3.2	3.9	0.2	6.8	3.1	3.6	7.2	5.1	1.4	7.1	6.4	4.7
FORKE	5.6	5.5	5.8	5.7	4.8	-	-	5.5	5.7	5.9	4.3	5.6	1.1	0.3	6.4	1.0
GONRU	1.3	-	-	-	2.0	-	-	-	0.6	-	4.7	5.6	-	0.7	-	5.4
	6.8	3.5	7.6	0.8	6.8	3.4	6.5	7.0	3.2	-	7.8	7.8	7.4	7.5	6.9	7.9
	6.9	3.3	7.6	-	6.6	2.5	6.5	7.5	3.3	-	7.9	8.0	7.4	7.5	6.1	8.1
	6.3	2.3	5.1	-	6.2	1.2	5.3	7.0	2.7	-	6.4	5.9	7.5	7.7	4.6	7.9
	6.9	3.0	7.3	-	6.7	1.4	6.4	7.1	3.3	-	7.9	7.9	7.4	7.3	6.9	8.1
	6.2	2.3	6.0	-	6.0	-	5.6	7.0	2.7	-	6.3	4.5	6.8	7.4	4.0	7.8
GOVMI	2.0	6.3	-	6.3	1.9	-	-	6.6	6.1	-	3.0	5.6	5.4	6.2	7.0	6.7
	2.5	6.6	-	6.7	5.4	-	-	6.9	6.1	1.4	2.9	6.1	5.1	7.2	7.2	6.6
	1.8	5.7	-	6.2	5.2	-	-	-	5.6	0.3	5.9	3.7	4.3	6.6	6.6	6.4
HERCA	1.0	-	1.6	7.8	5.1	-	6.3	5.0	7.1	7.5	-	-	-	-	-	-
HINWO	5.5	4.8	5.6	5.7	4.9	-	-	5.7	5.4	6.0	6.2	5.8	0.5	1.9	5.7	2.1
IGAAN	3.1	-	-	-	-	-	-	-	-	-	-	-	4.2	6.1	6.3	5.4
JONKA	4.8	-	-	4.7	6.5	-	4.2	4.9	5.7	3.9	0.3	-	2.9	6.5	7.0	5.7
	4.9	-	-	5.8	6.3	-	3.3	4.0	4.5	1.7	1.6	-	4.0	6.8	7.0	6.5
KACJA	-	-	-	2.1	5.9	-	-	6.6	4.6	-	0.8	3.0	0.6	6.6	-	3.2
	0.6	4.0	4.5	5.8	5.7	-	-	4.9	4.0	2.1	5.0	2.4	4.1	5.9	7.1	7.3
	-	-	-	2.2	5.9	-	-	6.9	5.3	-	2.0	3.2	0.7	7.0	-	3.4
	-	4.7	6.5	5.8	5.8	-	-	5.7	2.8	1.2	2.6	6.6	0.9	6.0	6.6	5.6
	-	-	-	2.3	5.8	-	-	7.0	3.8	0.2	0.7	3.7	-	6.9	-	3.3
KOSDE	-	-	-	-	-	-	-	7.2	6.7	5.7	-	5.3	4.9	4.4	-	3.4
	-	-	-	-	-	-	-	6.0	4.4	4.2	4.5	5.5	3.4	6.0	4.6	7.2
LOTJO	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-	-	-
MACMA	2.5	-	0.5	3.2	0.7	1.4	-	-	2.1	1.2	3.9	4.0	0.7	2.6	0.7	1.7
	4.2	-	1.9	5.5	2.6	2.8	0.2	-	5.0	4.7	6.1	5.5	2.4	5.7	1.6	3.7
	0.3	-	-	2.6	-	2.5	-	0.2	1.9	2.3	3.1	3.0	0.5	2.7	0.2	0.8
	3.9	-	2.1	5.4	2.2	3.8	-	1.6	4.8	4.7	6.0	5.9	3.1	5.3	2.8	3.9
MARRU	7.5	7.5	7.6	-	7.5	7.1	7.6	6.3	6.9	-	7.8	7.8	6.9	7.9	8.0	8.0
	6.5	6.9	6.5	-	2.2	0.6	6.8	2.7	1.2	-	5.4	5.0	6.1	4.7	-	7.7
MOLSI	5.2	4.8	5.3	5.4	-	-	-	5.2	5.6	5.0	1.5	5.2	0.3	1.4	6.0	5.3
	5.8	5.2	5.9	6.0	-	-	-	5.3	6.2	6.3	3.6	5.5	0.8	5.5	6.6	6.6
	5.8	5.2	5.9	6.0	-	-	-	3.8	6.2	6.2	4.5	6.4	0.9	6.5	6.6	5.4
	4.5	4.2	4.5	4.5	4.5	-	4.5	4.7	4.7	4.8	4.7	4.8	-	0.1	5.1	1.9
	4.7	4.6	4.7	4.8	4.8	-	3.7	4.9	4.9	4.9	4.7	5.1	-	-	5.1	1.6
	5.1	4.9	5.2	5.3	5.3	-	4.5	5.6	5.5	5.7	5.6	5.8	-	-	6.0	2.1
	5.1	5.1	5.2	5.2	5.4	-	4.1	5.5	5.5	5.7	5.5	5.7	-	-	5.9	2.3
MORJO	3.9	-	-	6.4	6.5	-	-	-	4.2	6.5	4.8	-	7.0	6.9	7.0	7.0
MOSFA	-	-	7.0	6.0	-	2.8	-	7.2	3.8	4.8	2.3	2.9	5.7	7.4	7.1	2.6
NAGHE	1.2	0.4	-	1.6	6.5	0.8	1.1	5.5	6.3	2.9	1.1	-	4.7	6.2	6.2	3.8
	3.7	0.2	1.0	0.9	5.1	0.7	-	3.5	5.0	1.5	5.6	3.4	1.2	5.6	5.4	3.4
	-	-	-	-	-	-	-	-	-	-	-	-	4.8	6.5	5.2	6.1
OCHPA	-	5.8	5.3	5.6	-	-	-	7.2	-	5.1	-	-	5.3	3.1	7.2	3.3
OTTMI	7.3	7.3	1.1	1.9	4.0	7.4	7.5	7.5	5.3	7.6	7.6	-	7.0	7.8	7.8	2.9
PERZS	2.6	5.8	-	6.4	5.0	-	-	0.7	5.4	0.9	6.1	3.0	6.4	4.6	6.9	7.0
ROTEC	4.8	-	-	-	4.8	-	4.4	5.3	5.3	5.1	5.4	4.3	-	2.0	-	-
SARAN	8.0	7.9	5.2	-	3.6	-	-	0.5	0.3	-	0.5	1.3	5.0	1.6	-	3.6
	7.6	7.9	6.5	-	3.2	1.3	8.0	3.1	3.0	-	6.6	8.3	7.2	5.1	0.8	8.2
	7.7	7.6	6.8	-	4.4	2.3	7.9	4.0	3.1	-	6.9	8.0	7.3	5.1	-	8.2
	7.8	7.0	4.6	-	-	-	7.9	1.7	1.2	-	5.9	8.0	7.1	4.7	-	8.2
	7.9	7.4	4.8	-	2.7	0.5	1.9	0.5	0.3	-	0.2	0.7	1.5	1.2	-	4.0
SCALE	1.1	6.8	6.8	6.4	2.6	4.3	-	7.0	3.4	2.4	4.1	6.1	-	7.3	6.0	3.0
SCHHA	2.3	5.6	5.6	5.5	0.2	5.3	5.5	5.8	5.2	4.6	3.2	5.3	1.9	0.7	4.6	6.4
SLAST	-	5.5	5.6	5.5	5.2	-	-	6.2	4.8	1.8	2.3	2.5	0.2	6.4	3.4	6.3
	-	6.4	6.4	6.4	6.1	-	-	6.7	5.1	2.3	3.2	4.5	-	6.9	7.0	6.6
STOEN	2.3	6.7	6.9	6.8	1.6	3.2	-	6.7	2.9	3.5	4.2	6.1	2.6	7.2	6.2	2.0
	3.7	7.0	7.0	7.0	-	3.6	-	-	3.2	-	4.1	6.8	4.6	-	0.5	0.7
	0.6	5.8	6.8	6.9	1.0	0.8	-	2.9	2.9	4.2	4.0	5.8	4.7	7.1	6.5	1.6
STRJO	5.2	4.0	5.4	5.3	3.6	-	4.8	5.6	5.7	1.1	5.3	2.6	4.9	-	5.3	4.4
	5.1	3.8	5.3	3.9	4.1	0.2	5.1	5.7	4.5	0.9	4.1	4.5	4.7	0.2	5.8	3.4
	4.6	4.0	5.4	4.5	3.4	0.9	5.5	5.4	5.4	1.1	5.1	4.1	5.0	0.8	5.4	4.3
	5.1	3.9	5.2	4.9	3.8	-	5.2	5.4	5.5	1.1	5.3	2.8	4.8	0.8	5.5	3.2
	4.2	3.6	5.1	3.1	3.3	0.4	4.6	5.4	5.3	0.8	5.0	3.9	5.3	0.6	5.1	1.5
TEPIS	5.2	-	0.3	6.2	6.2	-	-	6.2	6.4	4.2	3.5	2.4	5.2	6.0	6.7	4.7
	4.9	-	0.2	5.8	5.6	-	2.0	5.0	5.5	5.5	3.9	2.5	5.0	6.6	6.7	2.7
WEGWA	0.6	-	-	-	5.1	3.9	-	5.0	4.9	5.5	3.2	4.2	3.4	6.0	5.9	4.5
YRJIL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.0	2.2
ZAKJU	-	6.5	6.5	6.6	6.2	-	0.5	6.8	5.2	2.6	4.4	6.5	3.4	6.7	6.3	7.3
Sum	306.4	308.8	313.6	317.0	279.6	115.3	173.2	382.7	352.7	239.1	325.2	361.8	288.8	372.8	385.6	391.2

3. Results (Meteors)

July	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
ARLRA	31	19	24	21	21	27	19	7	-	14	-	1	33	33	44
BERER	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BIATO	13	8	5	2	14	1	22	7	13	12	15	15	16	22	19
BOMMA	-	19	7	32	14	24	15	16	-	33	31	30	31	13	31
BREMA	13	10	7	8	8	8	9	9	-	8	8	14	9	18	21
BRIBE	16	15	9	7	25	2	24	24	-	15	8	25	17	35	30
17	18	2	11	12	3	21	26	-	14	5	10	6	14	25	
CARMA	-	9	2	16	-	-	39	27	2	-	-	-	4	12	7
CASFL	-	-	-	6	-	-	21	17	-	-	-	-	1	12	4
CINFR	-	19	1	29	9	28	9	19	6	28	19	23	23	13	25
CRIST	14	16	6	3	8	11	26	8	10	2	11	21	23	19	6
10	17	8	5	11	21	42	13	11	4	13	24	32	17	6	
12	16	-	-	6	13	21	6	15	-	2	5	26	12	-	
21	34	10	8	20	16	65	27	24	2	13	18	15	1	6	
ELTMA	-	3	-	16	-	17	1	3	-	-	4	-	12	-	6
FORKE	19	24	21	8	-	-	20	4	-	-	-	12	-	16	4
GONRU	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
8	27	30	22	8	7	38	5	-	-	1	8	21	1	33	
5	22	17	10	14	11	25	-	-	-	-	6	12	3	28	
2	4	16	3	5	3	15	1	-	-	-	4	6	-	6	
8	13	31	13	3	4	33	2	-	1	-	6	11	3	22	
1	12	22	20	7	2	21	3	-	-	1	-	13	1	14	
GOVMI	7	-	-	16	12	-	-	12	5	-	-	9	15	-	14
9	-	-	6	3	-	13	3	7	-	-	2	9	-	4	
5	-	-	5	2	-	9	4	6	1	-	4	8	1	6	
HERCA	17	20	16	7	18	10	21	-	-	-	-	-	-	-	
HINWO	21	26	26	5	-	15	15	4	2	10	11	13	27	17	9
IGAAN	3	4	5	2	2	-	-	3	5	-	3	3	3	8	11
JONKA	7	9	7	9	4	-	1	10	6	3	2	9	13	20	16
6	9	7	8	4	-	-	1	2	3	1	12	12	10	17	
KACJA	-	-	-	21	-	3	18	-	35	-	-	-	27	-	-
-	1	2	14	-	-	15	7	11	-	-	3	14	2	19	
-	-	-	27	-	3	37	-	32	-	-	-	47	-	-	
-	-	-	22	-	2	24	-	22	-	-	1	14	-	2	
-	-	-	14	-	-	21	-	25	-	-	-	13	-	-	
KOSDE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOTJO	-	-	-	17	-	-	-	-	15	-	-	-	-	-	-
MACMA	-	-	9	14	7	9	10	7	18	8	-	10	-	-	2
-	-	13	25	4	14	18	10	18	12	-	21	1	1	1	
-	-	4	3	2	5	9	5	3	1	-	7	1	-	2	
-	-	22	32	10	27	16	12	24	6	-	24	1	1	3	
MARRU	5	23	26	29	14	22	26	18	-	1	6	19	18	4	6
-	4	1	-	14	-	17	9	7	-	2	-	-	-	4	
MOLSI	37	54	19	34	3	40	58	62	7	34	59	74	53	65	26
12	22	10	18	1	12	23	15	3	7	9	23	17	8	3	
25	25	10	20	1	16	27	23	1	10	13	35	28	46	6	
33	21	26	15	23	27	22	26	-	-	-	31	40	38	36	
30	30	35	21	30	34	17	19	-	-	-	27	40	38	35	
18	22	20	16	30	29	15	22	-	-	-	34	21	27	35	
33	41	39	26	52	43	23	34	-	-	-	38	40	58	43	
MORJO	5	9	5	10	6	3	1	1	11	-	-	7	12	11	10
MOSFA	-	3	1	4	12	8	14	6	1	-	5	3	2	2	-
NAGHE	13	21	18	6	2	-	-	10	9	2	7	12	12	23	16
9	13	12	10	-	-	7	10	7	4	1	15	16	19	31	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OCHPA	-	-	3	-	-	7	8	11	-	-	-	3	-	-	-
OTTMI	26	18	12	34	12	14	31	46	41	40	-	16	21	30	31
PERZS	15	-	-	7	-	-	4	14	-	-	-	-	-	7	22
ROTEC	10	10	12	10	8	9	12	3	-	-	-	2	4	12	20
SARAN	-	9	4	2	-	-	5	2	-	-	-	2	1	-	4
-	17	2	2	1	-	18	18	-	-	-	1	3	-	-	
-	13	15	5	10	1	9	14	-	-	-	-	1	1	14	
-	3	5	3	-	-	3	5	-	-	1	1	-	-	5	
-	8	10	3	-	3	1	8	-	-	-	1	-	-	11	
SCALE	-	3	6	5	2	5	-	1	-	-	1	-	4	-	5
SCHHA	18	20	4	1	12	10	12	19	-	14	2	21	8	24	27
SLAST	-	-	-	12	1	1	23	-	24	-	-	-	32	2	2
-	1	-	8	-	-	11	-	8	-	-	-	5	-	-	
STOEN	-	10	11	21	37	10	2	14	-	-	7	1	13	13	25
-	-	5	16	28	6	4	-	-	-	-	12	2	10	11	6
-	15	11	32	37	7	5	11	-	-	11	2	7	11	17	
STRJO	31	33	21	17	12	31	30	39	-	19	3	37	35	46	53
-	-	10	4	1	10	12	9	-	2	1	13	7	12	7	
14	4	11	8	5	11	16	11	-	2	1	17	14	12	19	
13	-	17	9	6	27	22	20	-	10	2	18	15	10	25	
21	10	18	8	10	19	14	21	-	8	1	23	19	26	22	
TEPIS	12	14	13	2	9	-	15	14	11	-	-	2	10	24	21
14	8	13	5	7	-	14	7	7	-	2	13	12	18	15	
WEGWA	8	10	10	-	-	3	-	9	2	1	5	-	5	14	15
YRJIL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZAKJU	-	-	-	13	-	3	11	-	6	-	-	-	7	3	3
Sum	667	868	764	923	639	697	1245	853	462	331	299	833	1048	920	1064

July	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
ARLRA	34	2	25	31	20	-	12	39	36	35	44	42	-	1	49	14
BERER	25	-	-	-	12	-	-	-	35	-	32	25	-	71	73	49
BIATO	3	30	4	25	-	9	4	27	-	13	-	9	24	-	13	24
BOMMA	14	34	39	47	30	29	7	45	44	43	55	44	25	53	68	70
BREMA	9	16	9	9	1	16	-	17	13	5	16	19	11	2	7	36
BRIBE	28	21	21	17	-	9	21	27	20	19	26	35	7	9	17	48
	26	13	23	20	3	-	12	14	26	12	25	37	9	16	42	17
CARMA	59	46	64	52	-	-	-	66	26	48	38	23	32	75	75	44
CASFL	27	16	20	33	-	-	-	43	15	16	25	11	17	33	36	23
CINFR	7	24	22	26	14	17	6	37	35	46	50	40	27	47	43	35
CRIST	19	32	23	16	2	15	5	31	29	24	6	35	30	43	56	53
	22	49	24	23	7	20	7	38	37	20	7	35	23	43	34	51
	9	17	12	3	5	16	4	26	35	31	8	25	8	46	41	44
	8	12	50	38	5	6	1	9	84	23	6	75	53	80	88	95
ELTMA	10	21	12	26	15	11	1	31	12	14	32	25	9	37	23	16
FORKE	24	20	28	33	17	-	-	43	32	31	38	32	8	2	48	5
GONRU	2	-	-	-	1	-	-	-	3	-	8	12	-	2	-	15
	38	8	43	2	26	7	32	34	13	-	42	52	53	53	45	64
	28	5	19	-	12	2	28	25	8	-	36	52	42	42	30	64
	9	2	9	-	4	3	7	18	4	-	16	11	23	19	12	22
	19	8	13	-	18	5	20	26	5	-	35	37	47	69	56	66
	19	2	14	-	19	-	18	28	3	-	27	20	26	38	11	67
GOVMI	2	16	-	26	13	-	-	18	10	-	18	12	11	28	29	35
	3	10	-	8	9	-	-	13	9	5	6	12	8	28	21	13
	5	9	-	7	9	-	-	-	7	1	18	5	13	15	16	24
HERCA	6	-	13	31	12	-	11	9	14	24	-	-	-	-	-	-
HINWO	23	18	26	24	15	-	-	25	24	37	37	23	4	5	48	8
IGAAN	4	-	-	-	-	-	-	-	-	-	-	-	2	10	13	9
JONKA	6	-	-	9	8	-	7	8	15	13	2	-	7	19	24	20
	11	-	-	14	7	-	5	12	10	3	5	-	15	23	24	23
KACJA	-	-	-	23	23	-	-	35	36	-	7	20	1	63	-	18
	3	9	19	21	18	-	-	9	14	4	11	3	7	12	22	16
	-	-	-	28	36	-	-	54	58	-	13	14	3	48	-	20
	-	34	37	17	14	-	-	26	19	3	21	42	5	40	31	62
	-	-	-	9	8	-	-	31	21	1	5	30	-	53	-	9
KOSDE	-	-	-	-	-	-	-	90	81	87	-	72	25	55	-	44
	-	-	-	-	-	-	-	68	44	48	66	68	26	79	58	117
LOTJO	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
MACMA	7	-	3	14	6	4	-	13	8	20	21	4	24	6	13	13
	10	-	8	25	14	9	1	-	16	21	30	26	10	31	11	16
	2	-	5	5	-	3	-	1	5	8	15	9	3	14	1	4
	6	-	5	21	5	15	-	6	21	25	36	25	8	38	14	12
MARRU	29	38	29	-	30	25	41	27	33	-	55	58	45	77	67	91
	24	29	16	-	1	3	18	9	3	-	8	18	30	11	-	48
MOLSI	71	43	76	77	-	-	-	66	65	41	10	41	1	14	52	41
	13	8	25	16	-	-	-	19	19	19	8	19	1	23	20	16
	56	23	57	58	-	-	-	36	55	39	14	44	4	50	50	28
	40	7	27	39	24	-	19	52	43	59	55	58	-	1	60	9
	41	11	41	34	24	-	17	45	32	55	32	29	-	-	35	8
	31	9	37	25	29	-	16	41	47	29	36	41	-	-	38	8
	31	19	49	43	31	-	17	51	49	45	68	36	-	-	73	13
MORJO	4	-	-	11	10	-	-	-	11	8	9	-	15	22	24	22
MOSFA	-	-	8	12	-	6	-	15	11	14	13	7	6	24	23	8
NAGHE	9	3	-	14	13	2	4	13	18	13	7	-	21	33	44	42
	19	2	3	2	24	5	-	13	13	6	36	18	9	48	46	22
	-	-	-	-	-	-	-	-	-	-	-	-	21	28	35	36
OCHPA	-	10	13	11	-	-	-	18	-	20	-	-	11	14	17	12
OTTMI	18	14	3	10	11	22	16	16	13	14	26	-	11	15	20	5
PERZS	6	28	-	19	13	-	-	1	18	3	14	7	23	18	23	23
ROTEC	14	-	-	-	12	-	6	12	15	19	19	10	-	3	-	-
SARAN	21	16	6	-	3	-	-	3	1	-	3	8	16	10	-	29
	6	17	14	-	5	1	19	1	5	-	9	33	25	13	1	36
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	6	4	1	-	-	-	9	1	1	-	4	12	15	7	-	30
	22	12	5	-	3	4	14	4	2	-	1	4	9	9	-	28
SCALE	3	6	9	7	7	5	-	9	6	4	11	8	-	16	11	8
SCHHA	8	17	21	12	1	14	18	23	18	15	19	27	7	5	26	52
SLAST	-	40	42	21	20	-	-	21	19	11	8	5	1	17	8	24
	-	10	8	8	7	-	-	13	13	5	6	14	-	19	11	18
STOEN	17	60	40	46	9	17	-	58	33	36	38	35	19	58	47	14
	17	36	29	34	-	19	-	-	22	-	26	27	18	-	2	3
	4	37	39	34	6	3	-	12	37	46	29	43	28	86	52	10
STRJO	29	19	40	24	12	-	23	33	54	12	35	16	22	-	36	21
	12	9	13	4	6	1	16	12	9	4	7	13	12	1	20	8
	5	7	11	9	4	2	8	25	20	3	16	9	13	1	24	8
	11	9	11	10	6	-	17	24	22	3	25	18	22	1	30	11
	17	11	20	9	5	1	25	32	25	4	23	17	16	4	42	5
TEPIS	16	-	2	21	19	-	-	26	21	13	15	6	26	47	38	23
	16	-	1	23	16	-	2	16	19	14	28	2	18	30	34	22
WEGWA	5	-	-	-	18	4	-	11	12	17	20	13	19	26	34	24
YRJIL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	15
ZAKJU	-	16	17	14	12	-	2	17	12	5	13	21	10	29	16	29
Sum	1175	1069	1307	1330	795	334	548	1810	1729	1244	1649	1838	1145	2135	2260	2283