

Similar to previous years, the fine weather took a break in October. After fireworks of clear nights with the climax in Indian summer, we switched to autumn melancholy with cloudy and rainy weather. Our statistics shows many gaps and the number of observing nights per camera reduced noticeable. Whereas in September almost 90% of the cameras observed in twenty or more nights, it was only 60% in October. In every third night of September we counted at least 70 active cameras. In October that happened in every tenth night only, even though there were two cameras more than in September. With overall 47,000 meteors from 9,200 hours of effective observing time, the output of the video network was below the average of the previous five years.

Stefano Crivello observed with his camera STG38 between June 26 and October 11 without a single break, which add up to 108 observing nights in a row. That’s probably unique in the history of the IMO network.

As for meteor activity, October is a wealthy month with the Orionids and a number of minor showers, not to forget that also the sporadic rate reaches peak values. The most important shower, however, was tainted twice in 2016. The lunar phase was quite unfavourable, since the waning moon was located close to the Orionid radiant at the time of maximum, and also the weather was particularly poor until the middle of the third decade. The overall profile (figure 1, red) shows clearly enhanced flux density between October 18 and 20 (solar longitude 206-208°) which exceeds the long-term average (green) by up to a factor of two, whereas the activity profile matches nicely with the long-term average in the time before and thereafter. An independent confirmation would be desirable, but is not possible in the absence of visual data.

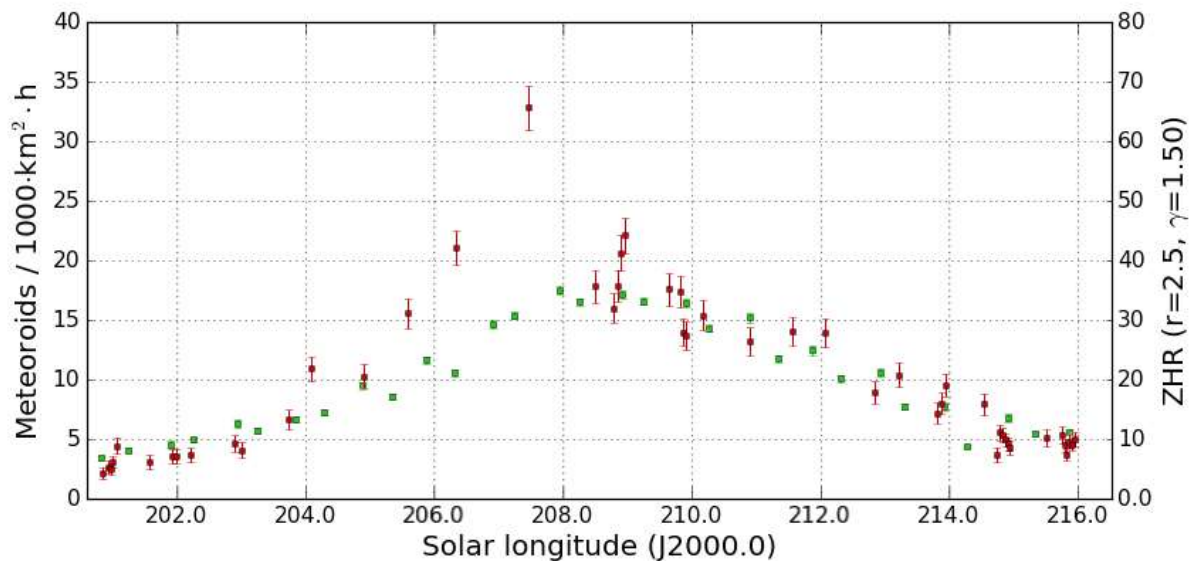


Figure 1: Comparison of the flux density of the Orionids 2016 (red) with the average of the years 2011-2015 (green), derived from video data of the IMO Video Meteor Network.

If the result is compared with the Taurids, we get an inconsistent picture: Whereas northern Taurid activity was nearly constant in all of October, we see enhanced southern Taurid rates on October 20 as well (figure 2). Hence, it cannot be ruled out, that both outliers result at least partly from data with stronger scatter because of poor circumstances.

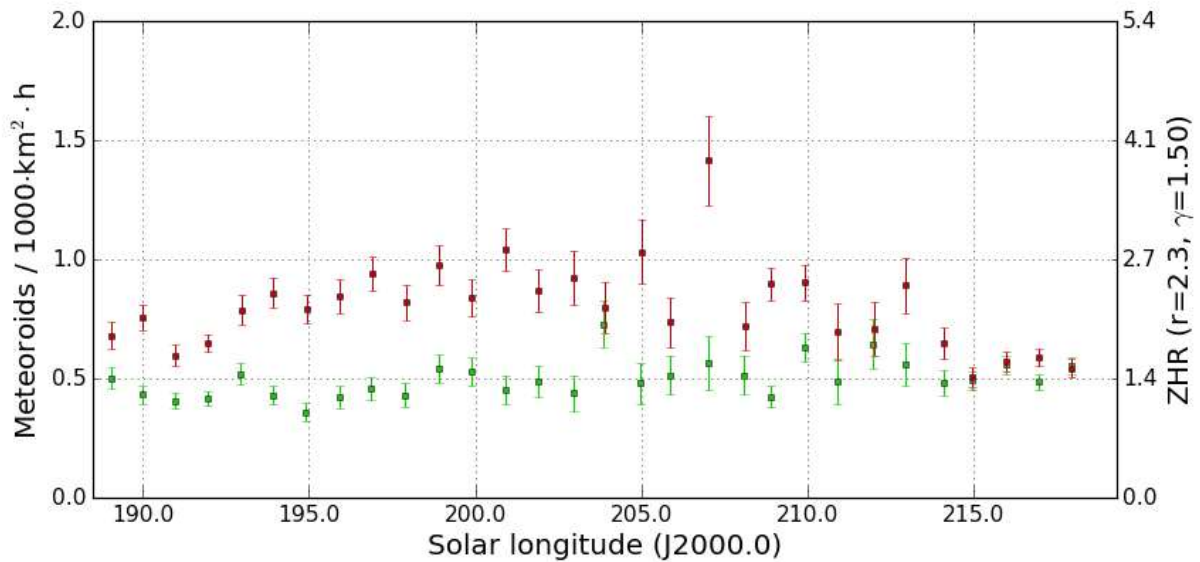


Figure 2: Flux density profile of the northern (green) and southern Taurids (red) in October 2016, derived from video data of the IMO Video Meteor Network.

Looking at the October Camelopardalids of early October it is surprising that “outbursts” are predicted and observed. As we showed already in 2009, this is an annual shower which can typically be observed only every few years at a particular site because of its short duration. The peak predicted by Esko Lyytinen for the afternoon hours of October 5 (solar longitude 192.56°) matches to the maximum observed in previous years. Hence, it’s not really a surprise that both Finnish video systems and Japanese forward scatter systems detected “enhanced” rates. The IMO network cameras were not active by that time, but the activity profiles since 2011 (figure 3, left) show that Camelopardalid activity was observed at exactly the same time in other years. On the right side of figure 3 we present the averaged activity profile of the past six years. Peak flux density occurs at solar longitude 192.58°, which matches perfectly to the prediction.

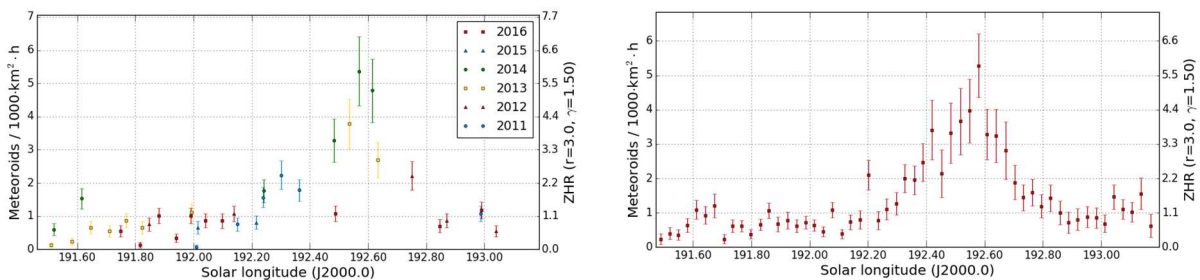


Figure 3: Activity profile of the October Camelopardalids. The individual values of the years 2011-2016 are shown on the left side, the average profile on the right side.

The other meteor showers of October provided no surprise either. The Draconids were virtually non-existent, the Leonis Minorids and epsilon Geminids showed a low activity level without a clear peak, and the activity profile of the October Ursae Majorids fits well to the observations of previous years (figure 4).

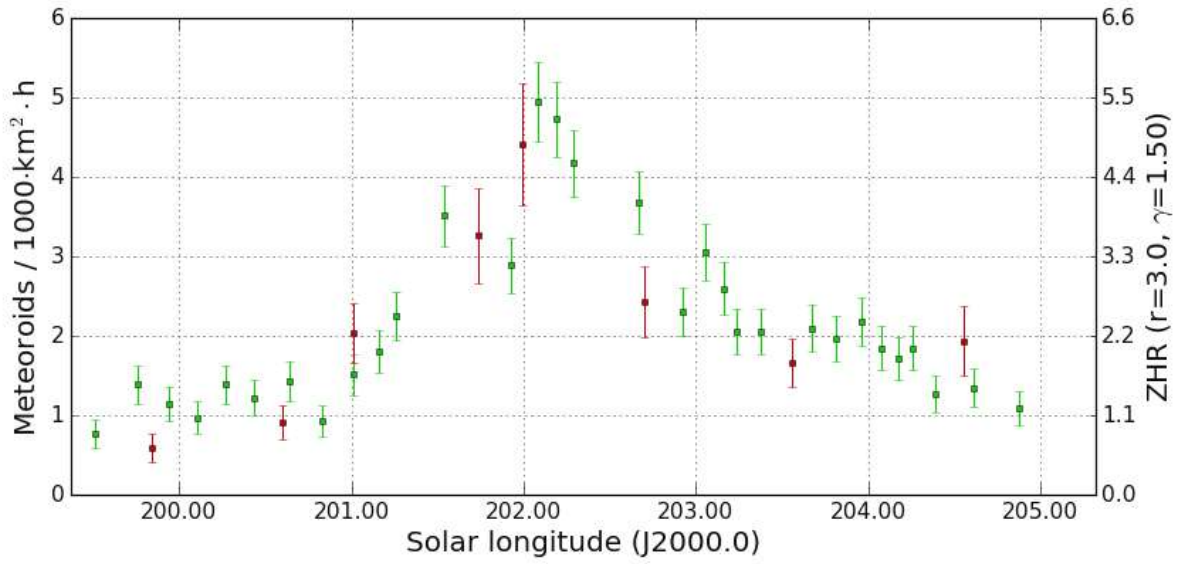


Figure 4: Comparison of the flux density of the October Ursae Majorids 2016 (red) with the average of the years 2011-2015 (green), derived from video data of the IMO Video Meteor Network.

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	21	95.4	788
BANPE	Bánfalvi	Zalaegerszeg/HU	HUVCS01 (0.95/5)	2423	3.4	361	11	44.0	65
BERER	Berkó	Ludanyhalaszi/HU	HULUDI (0.8/3.8)	5542	4.8	3847	6	46.1	383
BOMMA	Bombardini	Faenza/IT	MARIO (1.2/4.0)	5794	3.3	739	22	140.6	939
BREMA	Breukers	Hengelo/NL	MBB3 (0.75/6)	2399	4.2	699	26	132.2	475
BRIBE	Klemt	Herne/DE	HERMINE (0.8/6)	2374	4.2	678	23	116.1	485
		Berg. Gladbach/DE	KLEMOI (0.8/6)	2286	4.6	1080	23	124.9	541
CARMA	Carli	Monte Baldo/IT	BMH2 (1.5/4.5)*	4243	3.0	371	23	150.9	540
CASFL	Castellani	Monte Baldo/IT	BMH1 (0.8/6)	2350	5.0	1611	24	174.7	858
CRIST	Crivello	Valbrenna/IT	BILBO (0.8/3.8)	5458	4.2	1772	26	161.3	924
			C3P8 (0.8/3.8)	5455	4.2	1586	20	142.8	692
			STG38 (0.8/3.8)	5614	4.4	2007	26	172.6	1424
DONJE	Donati	Faenza/IT	JENNI (1.2/4)	5886	3.9	1222	23	148.6	1049
ELTMA	Eltri	Venezia/IT	MET38 (0.8/3.8)	5631	4.3	2151	19	133.1	711
FORKE	Förster	Carlsfeld/DE	AKM3 (0.75/6)	2375	5.1	2154	8	40.0	178
GONRU	Goncalves	Foz do Arelho/PT	FARELHO1 (1.0/2.6)	6328	2.8	469	24	118.8	185
		Tomar/PT	TEMPLAR1 (0.8/6)	2179	5.3	1842	23	194.2	895
			TEMPLAR2 (0.8/6)	2080	5.0	1508	23	193.8	683
			TEMPLAR3 (0.8/8)	1438	4.3	571	24	165.3	265
			TEMPLAR4 (0.8/3.8)	4475	3.0	442	23	187.0	608
			TEMPLAR5 (0.75/6)	2312	5.0	2259	26	167.3	654
GOVMI	Govedic	Sredisce ob Dr./SI	ORION2 (0.8/8)	1447	5.5	1841	21	141.0	595
			ORION4 (0.95/5)	2662	4.3	1043	19	124.4	332
HERCA	Hergenrother	Tucson/US	SALSA3 (0.8/3.8)	2336	4.1	544	31	325.7	1255
HINWO	Hinz	Schwarzenberg/DE	HINWO1 (0.75/6)	2291	5.1	1819	15	41.6	175
IGAAN	Igaz	Hodmezovasar./HU	HUHOD (0.8/3.8)	5502	3.4	764	20	37.4	223
		Budapest/HU	HUPOL (1.2/4)	3790	3.3	475	5	22.6	21
JONKA	Jonas	Budapest/HU	HUSOR (0.95/4)	2286	3.9	445	14	93.1	254
			HUSOR2 (0.95/3.5)	2465	3.9	715	17	101.9	315
KACJA	Kac	Kamnik/SI	CVETKA (0.8/3.8)	4914	4.3	1842	13	76.9	355
		Kostanjevec/SI	METKA (0.8/12)*	715	6.4	640	3	21.0	72
		Ljubljana/SI	ORION1 (0.8/8)	1399	3.8	268	15	84.4	241
		Kamnik/SI	REZIKA (0.8/6)	2270	4.4	840	13	99.6	784
			STEFKA (0.8/3.8)	5471	2.8	379	13	72.6	224
KOSDE	Koschny	Izana Obs./ES	ICC7 (0.85/25)*	714	5.9	1464	25	168.0	1666
		La Palma / ES	ICC9 (0.85/25)*	683	6.7	2951	28	199.8	2465
		Izana Obs./ES	LIC1(2.8/50)*	2255	6.2	5670	27	194.7	2560
		La Palma / ES	LIC2 (3.2/50)*	2199	6.5	7512	27	221.0	2922
LOJTO	Łojek	Grabniak/PL	PAV57 (1.0/5)	1631	3.5	269	4	22.6	98
LOPAL	Lopes	Lisboa/PT	NASO1 (0.75/6)	2377	3.8	506	19	106.8	261
MACMA	Maciejewski	Chelm/PL	PAV35 (0.8/3.8)	5495	4.0	1584	15	64.1	303
			PAV36 (0.8/3.8)*	5668	4.0	1573	18	82.6	408
			PAV43 (0.75/4.5)*	3132	3.1	319	15	72.8	232
			PAV60 (0.75/4.5)	2250	3.1	281	20	91.3	475
MARGR	Maravelias	Lofoupoli/GR	LOOMECON (0.8/12)	738	6.3	2698	12	94.7	192
MARRU	Marques	Lisbon/PT	CAB1 (0.75/6)	2362	4.8	1517	29	181.7	674
			RAN1 (1.4/4.5)	4405	4.0	1241	26	161.4	572
MASMI	Maslov	Novosibirsk/RU	NOWATEC (0.8/3.8)	5574	3.6	773	3	26.6	133
MOLSI	Molau	Seysdorf/DE	AVIS2 (1.4/50)*	1230	6.9	6152	26	132.4	1402
			ESCIMO2 (0.85/25)	155	8.1	3415	24	129.7	451
			MINCAM1 (0.8/8)	1477	4.9	1084	22	123.6	819
		Ketzür/DE	REMO1 (0.8/8)	1467	6.5	5491	21	97.3	882
			REMO2 (0.8/8)	1478	6.4	4778	21	100.2	701
			REMO3 (0.8/8)	1420	5.6	1967	20	89.2	332
			REMO4 (0.8/8)	1478	6.5	5358	20	100.1	728
MORJO	Morvai	Fülöpszallas/HU	HUFUL (1.4/5)	2522	3.5	532	22	128.1	314
MOSFA	Moschini	Rovereto/IT	ROVER (1.4/4.5)	3896	4.2	1292	22	28.0	167
OTMI	Otte	Pearl City/US	ORIE1 (1.4/5.7)	3837	3.8	460	22	103.1	341
PERZS	Perkó	Becsehely/HU	HUBEC (0.8/3.8)*	5498	2.9	460	3	8.1	73
ROTEC	Rothenberg	Berlin/DE	ARMEFA (0.8/6)	2366	4.5	911	11	60.4	173
SARAN	Saraiva	Camaxide/PT	RO1 (0.75/6)	2362	3.7	381	24	143.0	346
			RO2 (0.75/6)	2381	3.8	459	27	138.0	509
			RO3 (0.8/12)	710	5.2	619	28	182.4	809
			SOFIA (0.8/12)	738	5.3	907	27	154.6	410
SCALE	Scarpa	Alberoni/IT	LEO (1.2/4.5)*	4152	4.5	2052	22	145.4	303
SCHHA	Schremmer	Niederkrüchten/DE	DORAEMON (0.8/3.8)	4900	3.0	409	22	138.4	524
SLAST	Slavec	Ljubljana/SI	KAYAK1 (1.8/28)	563	6.2	1294	14	86.4	320
			KAYAK2 (0.8/12)	741	5.5	920	13	84.7	122
STOEN	Stomeo	Scorze/IT	MIN38 (0.8/3.8)	5566	4.8	3270	23	139.5	1214
			NOA38 (0.8/3.8)	5609	4.2	1911	23	143.1	1023
			SCO38 (0.8/3.8)	5598	4.8	3306	22	143.6	1411
STRJO	Strunk	Herford/DE	MINCAM2 (0.8/6)	2354	5.4	2751	23	98.6	581
			MINCAM3 (0.8/6)	2338	5.5	3590	20	86.7	316
			MINCAM4 (1.0/2.6)	9791	2.7	552	11	54.2	41
			MINCAM5 (0.8/6)	2349	5.0	1896	20	85.0	345
			MINCAM6 (0.8/6)	2395	5.1	2178	21	87.3	347
TEPIS	Teplizky	Agostyan/HU	HUAGO (0.75/4.5)	2427	4.4	1036	19	104.1	335
			HUMOB (0.8/6)	2388	4.8	1607	17	100.2	418
TRIMI	Triglav	Velenje/SI	SRAKA (0.8/6)*	2222	4.0	546	18	80.6	199
WEGWA	Wegrzyk	Nieznaszyn/PL	PAV78 (0.8/6)	2286	4.0	778	16	44.4	221
YRJIL	Yrjölä	Kuusankoski/FI	FINEXCAM (0.8/6)	2337	5.5	3574	10	64.2	261
Sum							31	9184.6	47587

* active field of view smaller than video frame

2. Observing Times (h)

October	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
ARLRA	4.0	9.4	0.2	7.6	-	-	4.9	1.1	4.8	3.0	-	-	4.5	5.5	-
BANPE	1.2	-	3.4	-	-	-	2.7	-	0.5	-	-	-	4.0	-	-
BERER	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BOMMA	-	9.8	11.0	9.4	-	2.5	10.4	0.2	-	11.3	6.4	3.7	-	-	-
BREMA	7.1	0.9	1.7	10.7	7.6	-	-	6.3	5.1	7.1	0.2	-	4.0	1.3	11.3
BRIBE	4.9	0.6	3.3	10.8	9.5	-	-	3.2	1.4	7.1	-	3.1	5.8	2.1	10.8
-	3.0	-	7.9	10.8	10.8	-	2.5	3.4	1.9	7.9	-	6.6	3.5	1.8	10.2
CARMA	-	10.4	9.7	10.8	2.7	7.6	4.9	-	0.7	-	11.2	6.3	-	-	11.4
CASFL	-	10.8	10.6	11.1	3.3	9.0	8.3	0.7	1.2	-	10.3	8.3	-	-	11.6
CRIST	1.1	10.5	10.7	10.8	1.6	2.1	8.2	10.8	0.2	3.2	10.9	-	-	0.2	8.5
-	4.1	6.6	10.7	10.7	-	1.4	7.4	10.7	-	-	11.1	-	-	0.6	10.8
-	2.8	10.5	10.7	10.8	2.5	2.4	8.4	10.9	0.2	4.7	11.1	-	-	0.4	10.2
DONJE	-	10.0	11.0	10.6	-	3.3	10.2	-	-	2.0	7.6	6.8	-	0.2	-
ELTMA	-	1.7	10.2	10.3	2.0	7.1	9.5	-	-	7.0	4.8	4.6	-	-	2.4
FORKE	3.7	2.1	-	3.6	-	-	-	-	6.1	-	-	-	-	-	0.4
GONRU	6.9	7.2	8.7	3.2	0.5	4.5	0.2	3.8	-	0.3	-	4.8	5.8	5.9	0.5
-	9.3	10.8	10.8	10.8	10.6	10.1	11.0	10.2	7.1	6.4	-	2.8	6.8	10.2	2.9
-	9.7	10.9	10.9	10.5	10.8	10.0	11.1	10.6	7.4	6.3	-	2.1	6.6	9.7	3.0
-	6.5	10.7	10.6	10.6	10.2	9.4	9.2	6.5	4.3	-	-	2.1	5.7	8.9	2.0
-	7.2	10.9	10.9	10.5	10.1	10.1	10.9	9.9	7.2	6.1	-	2.7	6.5	9.2	2.9
-	6.5	10.7	10.0	10.5	10.2	9.1	10.4	6.5	4.4	2.6	-	1.4	5.4	8.9	1.0
GOVMI	9.8	-	9.4	8.1	7.1	-	8.7	0.8	10.4	-	5.0	5.9	1.4	-	-
-	9.3	-	-	7.2	7.4	-	6.6	-	7.9	-	4.6	4.4	-	0.5	-
HERCA	10.3	11.1	4.4	11.0	10.5	10.8	9.7	10.8	9.9	11.2	11.2	11.3	10.8	11.4	9.7
HINWO	5.1	6.1	-	4.8	-	-	0.6	-	1.5	-	-	-	-	-	1.6
IGAAN	3.3	-	1.5	-	0.5	0.2	0.7	2.3	1.7	-	-	-	1.1	1.1	-
-	8.5	-	-	5.1	-	-	3.5	-	5.1	-	-	0.4	-	-	-
JONKA	9.1	-	-	4.5	-	8.2	8.1	3.5	9.3	-	-	-	9.5	2.4	0.2
-	8.9	-	-	4.7	-	7.2	7.6	2.9	9.0	-	-	2.1	8.9	4.0	1.3
KACJA	-	-	4.5	5.6	10.7	7.4	-	-	6.8	-	0.8	8.8	-	-	-
-	-	-	10.8	-	-	-	-	-	-	-	-	-	-	-	-
-	6.0	-	5.0	10.5	10.9	5.7	0.7	-	5.1	-	3.9	9.3	-	-	-
-	-	-	9.0	10.4	11.0	8.3	-	-	6.9	-	0.8	11.3	-	-	-
-	-	-	4.9	6.3	10.8	8.1	-	-	6.8	-	0.9	8.6	-	-	-
KOSDE	10.2	-	6.1	10.3	10.3	10.4	9.5	8.5	10.5	9.0	10.5	3.4	-	3.2	-
-	10.2	5.1	10.3	10.3	10.4	10.4	10.4	9.1	10.5	9.5	8.5	4.6	6.0	4.1	0.4
-	9.9	4.2	8.4	10.0	9.9	9.7	9.2	8.6	10.5	8.8	9.8	3.4	3.2	10.7	-
-	10.2	5.1	10.3	10.3	10.4	10.4	10.4	10.4	10.5	9.5	8.5	4.6	5.9	5.6	-
LOPAL	-	-	-	1.3	-	8.4	-	-	-	-	-	-	-	6.7	-
LOTJO	6.8	5.3	10.4	10.3	6.9	6.0	9.8	5.7	4.7	-	-	-	8.4	7.5	1.5
MACMA	7.8	-	-	-	3.0	9.1	0.9	5.0	0.6	-	-	-	3.0	-	-
-	7.8	1.7	-	0.4	3.1	9.8	1.1	5.3	-	-	-	-	11.4	8.2	-
-	4.0	-	-	-	3.0	10.1	-	3.7	-	-	-	-	11.3	7.4	-
-	9.3	1.8	-	0.5	3.0	10.1	1.2	5.9	1.3	-	-	-	11.4	8.4	-
MARGR	8.9	9.0	9.0	8.9	-	-	-	-	-	-	-	-	-	5.0	5.0
MARRU	6.8	10.4	9.1	9.6	9.4	9.1	10.6	9.3	7.9	6.6	-	1.1	6.1	10.6	3.4
-	7.1	10.9	9.1	11.0	5.8	11.1	10.1	4.8	11.1	9.6	-	8.3	6.8	9.9	-
MASMI	-	7.7	9.0	9.9	-	-	-	-	-	-	-	-	-	-	-
MOLSI	0.1	0.3	5.1	8.1	-	-	1.4	9.0	9.2	-	0.4	8.4	4.6	0.6	2.0
-	-	0.4	4.6	8.8	-	-	1.6	6.9	9.3	-	-	8.6	6.6	1.9	2.6
-	-	-	4.1	8.5	-	-	1.1	8.1	9.7	-	-	8.3	4.6	1.3	1.2
-	5.6	10.3	1.0	9.4	-	-	4.4	3.0	3.7	-	-	-	3.5	6.2	-
-	5.9	10.6	1.0	9.4	-	-	5.3	3.1	3.6	-	-	-	2.9	4.5	-
-	5.3	9.2	0.9	9.2	-	-	4.1	2.4	2.4	-	-	-	2.2	5.4	-
-	5.8	10.1	1.0	9.6	-	-	4.5	3.1	3.9	-	-	-	2.7	5.7	-
MORJO	10.6	-	0.7	2.9	-	2.9	9.1	7.6	11.0	-	-	3.7	9.9	7.0	2.7
MOSFA	-	0.6	2.0	2.3	1.0	1.8	0.4	-	0.3	-	2.6	1.2	-	-	3.5
OTTMI	0.2	0.7	0.6	7.9	5.4	-	1.2	1.2	1.4	0.2	-	-	5.1	5.6	-
PERZS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ROTEC	3.9	10.3	-	6.9	-	-	3.9	-	2.9	-	-	-	4.0	-	-
SARAN	6.9	7.7	10.8	10.8	10.5	10.8	-	8.5	10.7	8.0	-	5.8	5.3	-	-
-	6.2	10.8	10.4	-	8.6	10.1	-	7.3	1.4	8.4	-	7.3	7.5	7.0	1.8
-	6.1	10.6	10.5	9.5	8.6	9.8	-	8.6	9.2	8.4	-	7.9	9.8	7.3	1.9
-	7.1	10.5	10.1	10.8	6.2	10.8	10.2	6.9	8.9	7.2	-	6.2	5.4	-	-
SCALE	-	3.9	8.9	10.3	2.2	6.3	8.1	-	-	6.5	6.5	7.1	-	-	1.5
SCHHA	2.7	3.0	6.4	10.9	9.2	-	-	5.6	4.8	7.9	1.0	3.7	1.5	-	10.1
SLAST	-	-	1.9	10.3	8.5	8.8	2.3	-	5.6	-	6.2	8.8	-	-	-
-	1.1	-	-	10.6	10.7	8.8	2.9	-	5.4	-	3.1	9.5	-	-	-
STOEN	-	4.5	10.8	11.1	2.6	7.0	6.3	0.2	0.3	6.1	6.7	7.9	-	-	3.0
-	-	4.4	10.5	10.8	3.1	7.9	5.5	0.2	0.5	5.9	6.3	7.3	-	-	3.3
-	-	5.3	10.5	10.9	2.8	8.0	5.9	-	0.9	5.8	7.4	8.3	-	-	3.3
STRJO	4.8	0.5	6.3	10.9	6.0	-	4.2	5.0	0.4	8.0	-	-	-	3.9	6.2
-	3.1	-	4.9	10.8	6.1	-	3.9	4.1	-	7.8	-	-	0.7	3.2	6.6
-	2.8	-	4.6	10.8	5.3	-	-	-	-	-	-	-	-	-	-
-	4.0	0.5	5.4	10.8	5.8	-	3.9	4.1	-	8.0	-	-	0.5	1.6	6.4
-	3.1	0.2	5.6	10.9	5.9	-	3.5	4.1	0.3	7.7	-	-	-	3.9	7.6
TEPIS	8.8	-	-	10.0	-	3.7	5.8	0.8	3.4	-	-	-	7.1	4.0	0.4
-	10.5	-	-	9.7	-	2.2	7.7	0.4	1.3	-	-	-	6.5	-	0.7
TRIMI	1.4	-	1.4	3.1	1.6	0.5	-	-	7.6	-	7.8	9.5	-	-	1.0
WEGWA	6.0	-	-	5.0	-	8.4	0.2	-	0.2	-	-	-	6.9	1.3	-
YRJIL	9.3	10.2	-	2.3	10.1	9.8	4.1	-	8.2	-	-	-	-	-	-
Sum	368.6	347.5	434.2	628.4	356.7	376.7	361.1	291.6	327.0	235.1	186.1	262.3	261.1	242.0	188.8

October	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
ARLRA	-	-	1.5	1.3	1.9	1.8	-	5.0	-	2.1	3.1	4.9	8.1	10.2	10.5	-
BANPE	-	-	-	-	-	-	6.0	2.4	1.5	-	4.8	-	-	-	10.6	6.9
BERER	-	-	-	-	-	-	9.5	-	-	-	-	6.3	2.2	8.7	11.4	8.0
BOMMA	4.3	-	10.8	3.2	1.1	11.9	-	1.2	-	0.9	1.4	9.4	12.1	12.0	5.9	1.7
BREMA	4.8	11.7	3.2	2.0	1.8	0.2	9.9	7.2	-	1.4	-	0.5	8.8	5.5	3.6	8.3
BRIBE	4.8	10.1	1.7	0.2	0.3	-	6.9	1.3	-	-	1.9	-	-	7.7	7.7	10.9
	7.4	5.7	1.1	-	1.9	-	3.2	-	-	-	1.1	1.7	0.4	9.0	11.4	11.7
CARMA	2.7	1.9	3.7	-	11.4	2.5	2.7	-	-	5.5	3.9	6.8	9.9	12.0	6.6	5.6
CASFL	5.9	3.3	6.1	-	11.8	2.9	3.7	-	-	7.0	4.2	7.0	12.1	12.2	6.7	6.6
CRIST	0.9	2.4	5.0	1.0	5.7	9.8	-	-	-	4.5	1.8	11.2	11.2	11.9	12.0	5.1
	2.4	1.5	1.5	0.6	7.5	7.4	-	-	-	-	-	-	11.9	11.9	12.0	12.0
	0.6	3.2	4.6	1.0	6.1	10.0	-	-	-	6.0	2.1	11.8	11.8	11.8	12.0	6.0
DONJE	5.3	-	10.3	2.0	1.1	11.9	7.8	2.0	-	1.5	2.1	9.1	12.2	12.1	6.5	3.0
ELTMA	3.3	-	7.6	-	-	11.9	4.5	-	-	-	3.4	9.8	10.3	11.3	11.4	-
FORKE	10.9	-	-	-	-	-	-	-	-	-	-	-	-	-	3.5	9.7
GONRU	-	-	5.5	-	-	-	2.1	8.8	1.3	7.1	5.3	3.9	9.0	8.2	10.7	4.6
	-	-	-	3.4	4.5	-	-	-	-	5.5	9.0	10.0	11.7	11.7	11.7	6.9
	-	-	-	3.7	4.6	-	-	-	-	5.2	8.7	9.6	11.8	12.0	11.2	7.4
	-	-	0.5	-	3.9	-	-	1.5	2.3	3.4	9.0	7.7	11.6	11.8	10.7	6.2
	-	-	-	4.2	4.6	-	-	-	-	4.5	8.6	8.7	11.7	11.9	11.4	6.3
	-	-	0.5	3.0	3.8	-	-	0.8	2.2	3.2	8.4	6.9	11.5	11.7	11.2	6.5
GOVMI	1.2	-	-	-	-	6.4	11.5	6.3	7.1	-	0.2	7.1	3.3	8.8	10.5	12.0
	2.3	-	-	-	-	5.4	11.5	3.6	6.8	-	1.0	6.9	6.8	10.1	10.2	11.9
HERCA	11.4	10.7	11.2	11.2	11.6	10.4	11.5	10.5	10.7	8.2	11.2	10.9	8.1	10.8	11.5	11.7
HINWO	11.4	-	1.4	1.9	-	-	1.8	0.2	0.3	-	0.9	-	-	0.2	3.8	-
IGAAAN	-	0.2	-	0.2	-	-	1.5	2.9	1.6	-	2.3	0.9	1.7	4.5	7.9	1.3
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
JONKA	-	-	-	-	-	-	7.2	-	-	-	-	7.9	-	11.0	4.4	7.8
	-	-	-	-	-	-	7.6	-	-	-	2.6	8.8	3.8	9.3	4.9	8.3
KACJA	-	-	-	-	-	3.2	-	-	-	-	-	5.1	3.6	6.8	3.2	10.4
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0	9.2
	3.7	-	-	-	-	-	-	-	-	-	-	0.8	6.2	2.9	4.0	9.7
	-	-	-	-	-	6.4	-	-	-	-	5.4	6.9	7.5	3.3	12.4	-
	-	-	-	-	-	1.5	-	-	-	-	-	4.2	3.3	6.6	3.3	7.3
KOSDE	-	5.5	4.5	7.4	-	10.8	10.2	1.4	4.2	-	6.2	1.5	5.7	0.5	5.5	2.7
	-	3.8	5.3	5.3	4.3	7.6	5.9	0.3	-	3.2	0.4	-	10.9	11.0	11.0	11.0
	-	10.5	5.7	9.9	-	9.9	9.3	1.0	5.3	-	7.5	2.5	5.8	1.3	6.7	3.0
	-	10.7	10.7	10.7	-	8.8	9.0	0.6	0.2	3.5	0.7	-	11.0	11.0	11.0	11.0
LOPAL	6.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOTJO	-	2.0	7.3	4.6	5.5	0.2	0.4	3.5	-	-	-	-	-	-	-	-
MACMA	6.6	8.0	-	-	-	-	-	-	-	0.6	-	9.9	1.0	6.4	1.0	1.2
	9.4	8.7	-	-	-	-	3.9	-	-	1.3	-	0.6	2.2	6.3	1.0	0.4
	6.8	8.4	-	-	-	-	2.9	-	-	0.4	-	7.7	0.5	5.4	0.8	0.4
	9.6	4.5	0.7	-	-	-	3.8	0.8	-	-	-	8.8	1.2	6.9	1.1	1.0
MARGR	6.3	-	-	6.8	-	10.9	8.3	7.9	8.7	-	-	-	-	-	-	-
MARRU	-	0.5	2.5	2.6	3.9	0.6	1.2	0.9	0.8	2.0	7.5	8.7	11.6	11.6	11.5	5.8
	-	-	8.6	3.6	5.0	0.5	2.5	3.2	0.3	5.1	1.0	-	5.2	2.3	6.5	2.0
MASMI	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MOLSI	7.6	-	0.5	1.6	4.8	2.6	11.2	0.9	6.7	4.7	2.9	11.2	-	10.4	8.4	9.7
	10.0	-	-	0.8	2.8	0.6	8.3	0.2	3.8	4.9	3.7	12.0	1.1	10.5	8.4	11.3
	7.2	-	-	3.4	1.1	11.2	0.7	6.6	2.9	3.2	11.4	0.9	10.2	8.0	9.9	-
	-	-	1.9	2.5	2.8	0.4	0.6	6.0	-	5.4	4.0	2.2	7.3	8.4	8.7	-
	-	-	2.6	2.5	2.8	0.7	1.1	7.3	-	5.5	3.9	2.4	7.4	8.4	9.3	-
	-	-	2.9	2.0	2.5	-	0.8	4.4	-	4.5	2.9	2.2	6.4	9.0	10.5	-
	-	-	-	2.6	2.9	0.5	1.0	7.2	-	5.5	4.1	2.5	7.9	9.0	10.5	-
MORJO	-	-	-	1.4	-	1.3	11.8	4.0	7.3	-	0.7	8.4	5.2	8.2	4.9	6.8
MOSFA	0.9	-	0.5	-	0.6	0.3	0.6	-	-	0.2	1.1	1.1	1.7	2.3	2.8	0.2
OTTMI	-	0.9	10.3	1.6	11.7	-	11.8	11.8	8.7	-	-	2.9	5.9	-	6.2	1.8
PERZS	0.7	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	3.5
ROTEC	-	-	-	-	-	-	-	3.1	-	4.8	2.9	-	8.1	9.6	-	-
SARAN	0.7	1.3	-	-	3.3	-	1.4	2.4	0.8	6.0	3.2	6.5	4.0	5.4	8.7	3.5
	0.2	2.2	7.2	1.5	3.4	-	0.5	2.2	0.3	6.3	2.6	3.5	6.9	4.6	8.0	1.8
	0.6	3.8	8.5	3.4	3.9	-	1.7	2.9	0.7	7.2	3.7	6.3	10.8	7.8	10.3	2.6
	0.8	3.6	7.7	3.7	3.5	-	1.6	3.4	0.5	5.5	1.3	2.8	5.8	4.6	7.5	2.0
SCALE	3.5	-	8.8	0.3	0.5	11.3	3.4	-	-	-	1.7	11.1	11.5	11.9	11.2	8.9
SCHHA	6.6	8.3	3.4	2.7	-	-	9.3	-	-	-	5.6	4.6	-	7.2	12.4	11.5
SLAST	-	-	-	-	-	-	2.2	-	-	-	-	2.6	6.3	9.7	4.3	8.9
	-	-	-	-	-	-	-	-	-	-	-	3.6	6.9	8.1	4.6	9.4
STOEN	1.4	-	5.3	-	1.3	11.6	4.1	-	-	-	1.2	11.7	11.7	11.8	11.5	1.4
	3.2	-	6.8	-	2.6	11.5	4.0	-	-	-	2.7	11.5	11.3	11.5	11.2	1.1
	1.7	-	6.1	-	2.5	11.4	5.0	-	-	-	1.4	11.1	11.4	11.2	11.1	1.6
STRJO	5.9	2.1	2.1	0.3	2.0	0.2	3.1	6.6	-	-	-	-	5.8	7.6	1.0	5.7
	7.0	2.7	1.7	-	0.6	-	1.2	6.2	-	-	-	-	6.6	5.5	0.3	3.7
	-	-	-	-	-	-	-	5.8	-	0.5	-	1.0	3.6	7.1	2.8	9.9
	5.4	2.2	0.3	-	-	-	2.5	6.3	-	-	-	-	6.7	6.2	0.2	4.2
	6.0	1.7	2.5	-	0.7	-	1.3	6.3	-	-	-	-	5.5	6.2	0.3	4.0
TEPIS	7.1	-	-	-	-	0.3	6.0	5.4	7.7	-	11.6	9.4	-	5.5	5.4	1.7
	7.8	-	-	-	-	-	1.2	5.4	7.9	-	11.7	9.6	-	4.7	6.4	6.5
TRIMI	2.7	-	-	-	-	9.6	6.4	2.6	3.4	-	0.3	4.0	7.9	9.8	-	-
WEGWA	-	-	1.1	-	3.0	2.0	0.4	1.9	1.9	-	1.8	-	-	3.6	0.7	-
YRJIL	-	-	-	0.6	-	-	-	-	-	-	0.2	-	-	-	-	9.4
Sum	215.2	142.1	201.7	117.3	163.9	218.3	280.0	176.3	109.6	146.0	198.7	378.6	451.7	584.7	518.4	414.9

3. Results (Meteors)

October	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
ARLRA	51	109	1	80	-	-	17	2	32	11	-	-	45	8	-
BANPE	9	-	3	-	-	-	5	-	3	-	-	-	5	-	-
BERER	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BOMMA	-	41	68	57	-	3	47	1	-	72	55	10	-	-	-
BREMA	40	3	2	44	20	-	-	16	18	34	2	-	9	4	36
BRIBE	22	2	10	43	38	-	-	9	8	19	-	16	16	17	55
	12	-	30	53	55	-	7	16	3	43	-	42	6	14	56
CARMA	-	33	27	27	13	20	7	-	3	-	38	10	-	-	42
CASFL	-	46	42	46	12	31	17	1	2	-	50	25	-	-	64
CRIST	2	41	69	70	4	14	29	53	1	4	63	-	-	1	35
	22	41	66	46	-	6	22	22	-	-	44	-	-	3	53
	21	70	106	96	8	16	38	70	1	16	105	-	-	3	63
DONJE	-	52	92	88	-	4	65	-	-	15	67	15	-	1	-
ELTMA	-	2	42	32	18	17	29	-	-	25	41	13	-	-	3
FORKE	28	4	-	2	-	-	-	-	18	-	-	-	-	-	9
GONRU	9	12	12	7	3	6	1	3	-	2	-	8	11	2	1
	49	66	61	54	46	53	55	51	26	13	-	4	52	32	7
	34	42	50	48	42	38	33	30	22	8	-	3	38	43	5
	13	16	27	18	10	15	15	10	5	-	-	1	6	11	1
	26	52	31	45	36	39	39	25	10	13	-	5	33	24	3
	44	40	52	49	30	22	42	21	11	2	-	2	38	30	2
GOVMI	41	-	54	44	23	-	35	1	36	-	8	20	3	-	-
	19	-	-	21	12	-	15	-	20	-	3	11	-	2	-
HERCA	32	41	14	45	43	37	19	22	37	35	32	42	31	36	36
HINWO	31	16	-	18	-	-	3	-	3	-	-	-	-	-	3
IGAAN	22	-	12	-	3	1	5	17	15	-	-	-	7	6	-
	6	-	-	7	-	-	4	-	3	-	-	1	-	-	-
JONKA	22	-	-	21	-	18	24	2	18	-	-	-	5	3	1
	12	-	-	21	-	21	23	2	20	-	-	2	12	7	2
KACJA	-	-	14	9	89	31	-	-	24	-	1	33	-	-	-
	-	-	34	-	-	-	-	-	-	-	-	-	-	-	-
	13	-	11	51	53	26	2	-	13	-	5	19	-	-	-
	-	-	66	78	124	56	-	-	25	-	4	75	-	-	-
KOSDE	-	-	3	17	52	22	-	-	12	-	3	16	-	-	-
	110	-	65	115	103	98	78	54	95	78	110	24	-	18	-
	145	42	110	110	117	105	133	96	141	130	119	66	89	88	1
	162	29	95	143	181	169	123	89	138	118	148	16	46	71	-
	142	71	143	137	152	149	156	132	138	149	131	55	92	90	-
LOPAL	-	-	-	3	-	43	-	-	-	-	-	-	-	25	-
LOTJO	22	10	22	28	25	12	17	10	5	-	-	-	28	12	2
MACMA	24	-	-	-	25	39	1	16	3	-	-	-	7	-	-
	21	1	-	1	43	68	3	19	-	-	-	-	44	16	-
	7	-	-	-	20	23	-	6	-	-	-	-	28	6	-
	22	2	-	1	29	58	1	25	2	-	-	-	44	22	-
MARGR	21	31	19	26	-	-	-	-	-	-	-	-	-	8	4
MARRU	46	33	46	38	26	24	47	33	18	16	-	2	41	76	8
	26	41	35	31	28	34	21	4	43	21	-	37	32	35	-
MASMI	-	31	44	58	-	-	-	-	-	-	-	-	-	-	-
MOLSI	1	4	19	129	-	-	32	107	114	-	1	58	46	11	15
	-	1	10	44	-	-	7	33	27	-	-	32	25	6	5
	-	-	8	64	-	-	10	52	60	-	-	41	46	10	7
	78	113	5	114	-	-	22	24	50	-	-	-	26	24	-
	74	98	10	93	-	-	17	16	32	-	-	-	30	9	-
	32	45	1	47	-	-	9	9	5	-	-	-	5	4	-
	60	110	10	98	-	-	15	19	30	-	-	-	11	5	-
MORJO	23	-	2	11	-	4	25	12	18	-	-	4	9	9	4
MOSFA	-	4	13	14	8	12	2	-	2	-	16	8	-	-	4
OTTMI	1	4	3	7	2	-	8	7	9	1	-	-	46	18	-
PERZS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ROTEC	10	33	-	25	-	-	4	-	5	-	-	-	4	-	-
SARAN	14	14	24	27	15	25	-	16	24	21	-	11	19	-	-
	25	49	37	-	29	43	-	9	2	34	-	34	32	14	3
	31	64	51	57	34	51	-	17	43	49	-	69	40	25	3
	23	25	26	22	17	32	27	15	25	17	-	19	23	-	-
SCALE	-	7	14	13	8	6	8	-	-	14	21	7	-	-	1
SCHHA	6	14	14	69	45	-	-	20	12	33	2	20	2	-	32
SLAST	-	-	10	50	49	33	5	-	7	-	10	24	-	-	-
	4	-	-	17	20	14	1	-	5	-	5	10	-	-	-
STOEN	-	8	99	83	38	36	41	1	2	54	90	37	-	-	7
	-	11	76	48	32	32	25	1	3	57	71	33	-	-	5
	-	20	110	88	50	58	46	-	7	53	103	40	-	-	8
STRJO	25	1	27	96	28	-	40	40	2	36	-	-	-	20	33
	9	-	12	58	20	-	18	29	-	13	-	-	3	8	12
	2	-	4	4	1	-	-	-	-	-	-	-	-	-	-
	12	2	12	82	15	-	25	31	-	17	-	-	1	10	26
	4	1	12	47	15	-	23	22	1	25	-	-	-	10	33
TEPIS	8	-	-	33	-	23	22	1	1	-	-	-	7	11	3
	37	-	-	58	-	13	36	3	1	-	-	-	23	-	3
TRIMI	10	-	9	24	11	3	-	-	11	-	7	20	-	-	3
WEGWA	33	-	-	11	-	34	1	-	1	-	-	-	33	9	-
YRJIL	53	44	-	11	52	36	5	-	29	-	-	-	-	-	-
Sum	1903	1692	2196	3472	1972	1773	1652	1342	1500	1248	1355	1040	1199	917	699

October	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
ARLRA	-	-	2	11	5	5	-	20	-	4	57	18	83	90	137	-
BANPE	-	-	-	-	-	-	9	6	2	-	7	-	-	-	10	6
BERER	-	-	-	-	-	-	60	-	-	-	-	63	2	72	104	82
BOMMA	16	-	56	37	11	179	-	4	-	4	23	58	94	81	16	6
BREMA	17	44	5	15	7	1	54	20	-	4	-	2	34	9	18	17
BRIBE	10	48	6	1	1	-	51	2	-	-	5	-	-	42	25	39
	24	14	6	-	6	-	23	-	-	-	1	1	1	30	51	47
CARMA	5	17	12	-	64	9	3	-	-	31	30	18	42	44	23	22
CASFL	17	23	25	-	106	9	6	-	-	34	34	24	68	82	48	46
CRIST	5	15	18	7	25	87	-	-	-	11	20	83	74	86	75	32
	12	10	18	4	66	31	-	-	-	-	-	-	65	53	50	58
	3	25	18	4	30	113	-	-	-	25	29	141	109	145	123	46
DONJE	15	-	55	17	16	211	50	1	-	6	21	54	93	84	17	10
ELTMA	1	-	32	-	-	135	61	-	-	-	34	48	66	50	62	-
FORKE	54	-	-	-	-	-	-	-	-	-	-	-	-	-	7	56
GONRU	-	-	15	-	-	-	5	20	4	13	7	6	6	10	14	8
	-	-	-	6	11	-	-	-	-	26	46	19	66	80	52	20
	-	-	-	3	5	-	-	-	-	11	28	11	62	55	44	28
	-	-	2	-	3	-	-	7	9	7	15	10	16	28	14	6
	-	-	-	8	3	-	-	-	-	22	23	10	45	56	40	20
	-	-	3	2	6	-	-	8	16	18	31	6	64	61	39	15
GOVMI	5	-	-	-	-	32	67	21	15	-	1	41	8	35	61	44
	7	-	-	-	-	17	51	9	17	-	3	20	7	22	47	29
HERCA	48	47	45	65	52	51	58	53	65	48	51	34	18	43	47	28
HINWO	53	-	1	4	-	-	23	1	1	-	2	-	-	1	15	-
IGAAN	-	1	-	1	-	-	9	22	11	-	22	6	10	22	30	1
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
JONKA	-	-	-	-	-	-	30	-	-	-	-	39	-	27	37	7
	-	-	-	-	-	-	56	-	-	-	9	38	2	32	40	16
KACJA	-	-	-	-	-	9	-	-	-	-	-	14	10	72	6	43
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	35
	1	-	-	-	-	-	-	-	-	-	-	1	9	4	3	30
	-	-	-	-	-	30	-	-	-	-	-	14	39	123	4	146
	-	-	-	-	-	1	-	-	-	-	-	10	6	54	3	25
KOSDE	-	34	35	108	-	152	149	1	72	-	67	28	20	2	30	20
	-	42	66	58	47	66	72	1	-	28	6	-	152	141	152	142
	-	48	39	191	-	191	214	3	94	-	83	50	32	17	51	19
	-	89	103	124	-	57	145	2	1	37	10	-	169	166	133	149
LOPAL	27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOTJO	-	14	8	15	10	1	2	18	-	-	-	-	-	-	-	-
MACMA	40	31	-	-	-	-	-	-	-	10	-	81	5	8	6	7
	67	46	-	-	-	-	38	-	-	11	-	3	12	8	5	2
	34	26	-	-	-	-	21	-	-	3	-	48	3	3	2	2
	86	33	2	-	-	-	31	2	-	-	-	85	5	16	3	6
MARGR	3	-	-	7	-	26	17	6	24	-	-	-	-	-	-	-
MARRU	-	1	17	3	6	3	3	2	4	1	19	5	46	48	50	12
	-	-	23	30	12	5	10	22	3	18	3	-	14	12	22	10
MASMI	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MOLSI	35	-	2	9	57	34	171	2	59	20	25	147	-	107	118	79
	19	-	-	5	19	4	43	1	19	2	11	53	1	27	30	27
	22	-	-	30	11	105	3	31	11	29	82	1	56	82	58	-
	-	-	3	60	12	2	3	38	-	26	41	8	59	82	92	-
	-	-	1	15	9	2	8	34	-	22	36	9	59	54	73	-
	-	-	2	13	3	-	4	9	-	9	11	3	22	46	53	-
	-	-	-	41	7	1	3	38	-	29	33	16	47	72	83	-
MORJO	-	-	-	7	-	5	48	1	20	-	1	22	5	35	39	10
MOSFA	7	-	4	-	5	2	3	-	-	1	10	6	12	14	19	1
OTTMI	-	7	18	3	62	-	33	38	14	-	-	18	15	-	17	10
PERZS	4	-	-	-	-	-	-	-	-	-	-	-	-	43	-	26
ROTEC	-	-	-	-	-	-	-	3	-	6	14	-	48	21	-	-
SARAN	5	5	-	-	13	-	5	19	6	15	3	8	6	18	19	14
	1	21	14	10	18	-	3	17	2	26	4	16	7	20	30	9
	2	27	21	18	15	-	4	25	4	32	7	20	20	32	37	11
	1	15	11	13	17	-	3	20	1	12	1	1	7	15	17	5
SCALE	3	-	12	1	3	58	17	-	-	-	8	25	24	15	12	26
SCHHA	27	22	10	6	-	-	46	-	-	-	24	10	-	16	44	50
SLAST	-	-	-	-	-	-	2	-	-	-	-	2	14	64	10	40
	-	-	-	-	-	-	-	-	-	-	1	7	21	6	11	-
STOEN	2	-	13	-	13	209	56	-	-	-	8	108	96	105	100	8
	4	-	28	-	28	173	39	-	-	-	24	89	94	78	67	5
	8	-	29	-	40	234	68	-	-	-	8	138	108	99	91	5
STRJO	18	9	5	1	9	1	6	26	-	-	-	-	39	52	7	60
	21	13	6	-	3	-	5	14	-	-	-	-	19	16	2	35
	-	-	-	-	-	-	-	1	-	2	-	1	5	9	7	5
	11	12	2	-	-	-	7	8	-	-	-	-	23	21	1	27
	21	5	10	-	5	-	6	16	-	-	-	-	26	30	3	32
TEPIS	9	-	-	-	-	1	40	12	35	-	24	31	-	13	48	13
	17	-	-	-	-	-	1	14	53	-	32	35	-	13	64	15
TRIMI	1	-	-	-	-	40	14	8	6	-	2	1	12	17	-	-
WEGWA	-	-	7	-	27	11	3	16	7	-	15	-	-	9	4	-
YRJIL	-	-	-	3	-	-	-	-	-	-	1	-	-	-	-	27
Sum	788	744	810	926	887	2209	2064	614	595	585	1059	1939	2333	3234	2894	1946