Results of the IMO Video Meteor Network – November 2015

Sirko Molau, Abenstalstr. 13b, 84072 Seysdorf *2016/03/10*

In October 2015, the record-breaking year took a short rest. After we obtained one record after the other, the preceding month was rather modest. The more prominent showed November its superiority.

Looking at the observing statistics we note larger gaps, but November isn't summer and for this month the output was extraordinary. The best night was November 4/5, when 73 of 82 cameras were active. 51 cameras managed to observe in twenty or more nights, and many of these had to pause in no more than two or three nights. In particular in south European countries like Spain or Italy the observers enjoyed perfect observing conditions, but also in Germany where this month is renowned for dirty weather. When skies were clear, it was often for the full night, such that in total more than 12,000 hours of effective observing time could be collected. That's a third more than in the currently best November 2011, and the second best result in the history of the IMO network at all. The meteor yield was even better. We recorded over 57,000 meteors which is a plus of 60% compared to 2011. For the first time since the Leonid storm of 2001, November provided more meteors than the two preceding months.

Particularly remarkable was the time until November 8, when we recorded between 2,000 and 4,000 meteors each night. Readers of the IMO Meteor Shower Calendar and other predictions will immediately think of the Taurids. Model calculations by David Asher had predicted the return of the "Taurid swarm" in the last three days of October and the first November decade. That's a particularly active segment of the Taurids which also comes along with many fireballs. Indeed the last October night was accompanied by a brilliant fireball that was well observed in East Germany, but also in neighboring countries (figure 1).

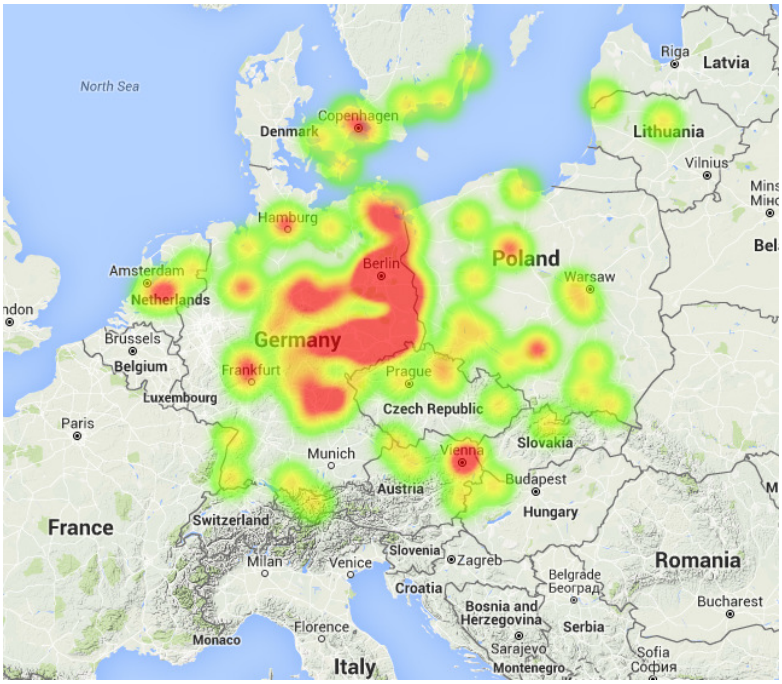

Figure 1: *"Heat map" of the fireball on October 31, 2015, at 18:06 UT over East Germany. The plot represents 141 observing reports that were received via the fireball report form of AKM and IMO.*

Via the AKM fireball report form we received almost a hundred reports in a few days, at the end we were contacted by 141 eye witnesses. Since I receive an e-mail for every incoming report, my mailbox quickly filled. When the stream of reports continued for several days I started to wonder why casual observers from the public would report their sightings only a week after the event. So I had a closer look and was surprised to learn, that these report belonged to ever new fireballs! Only after mid-November the stream of reports petered out suddenly.

Figure 2 shows how many different events were reported via the fireball report form in October and November. The analysis is not highly professional as it does not account for the weather, for example. Still it confirms remarkably, that the predicted high fireball rate due to the Taurid swarm had materialized. In total we counted 35 fireballs with over 370 individual reports!

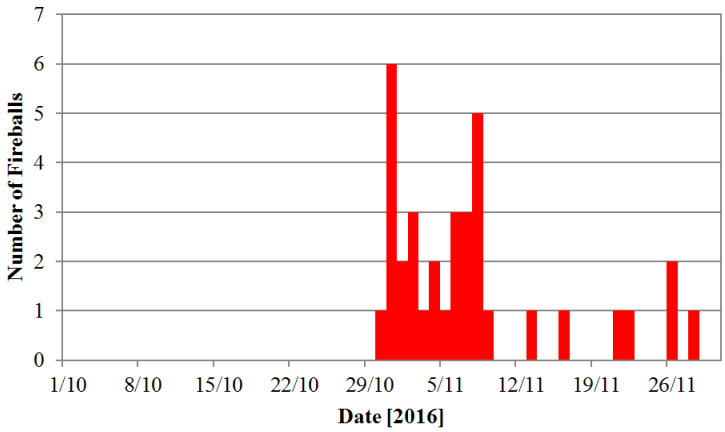

Figure 2: *Number of fireball events that were reported in October and November 2015 from observers in Germany via the fireball report forms of AKM and IMO.*

Now the question was, whether the activity of "ordinary" Taurids that we observe with our video cameras was affected in the same way? The flux density of the Northern Taurids was within the usual boundaries, whereas the activity of the Southern Taurids was well above the typical level (figure 3).

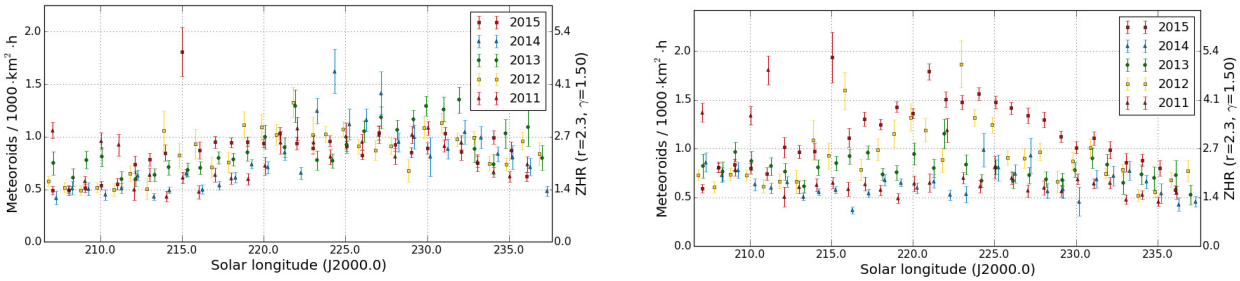

Figure 3: *Comparison of the flux density profile of the Northern (left) and Southern Taurids (right) in 2015 and in the preceding years, derived from observations of the IMO video network.*

The deviation is even more prominent in figure 4, where we compare the flux density profile of 2015 with the average profile of the last four years. The outlier at 215° solar longitude can be ignored, since the data set from that night is insufficient. We see that the Northern Taurids follow their long-term trend with the activity starting only a few days earlier. The Southern Taurids, however, show up to twice the normal activity between 212 and 235° solar longitude (October 25 till November 17) if we subtract the constant background (sporadic chance alignments).

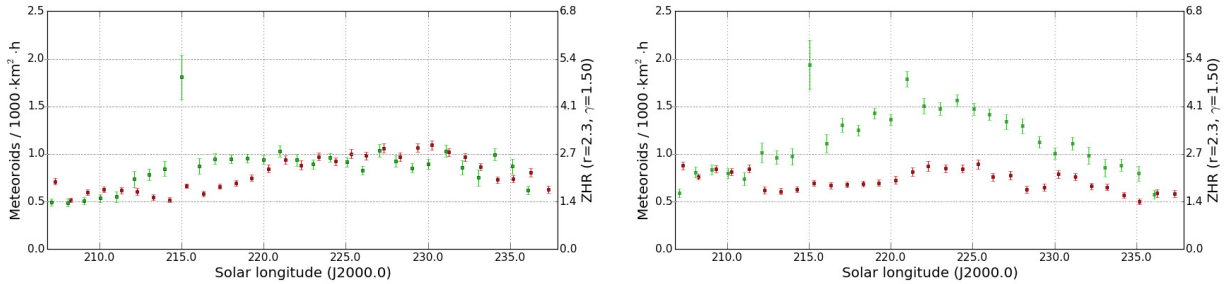

Figure 4: *Comparison of the flux density profile of the Northern (left) and Southern Taurids (right) in 2015 (green) and in the preceding years (red).*

We analysed the population index between October 20 and November 20 utilizing the same algorithm as in the previous months including the perception coefficient correction. We did not account for the long-term trend (e.g. affected by the lunar phase) because the sporadic meteors did not provide an adequate data set.

Figure 5 shows the population index profile for the Northern and Southern Taurids. Both showers present a flat profile with little deviations in the first decade of November. The mean population index of both showers was 2.2.

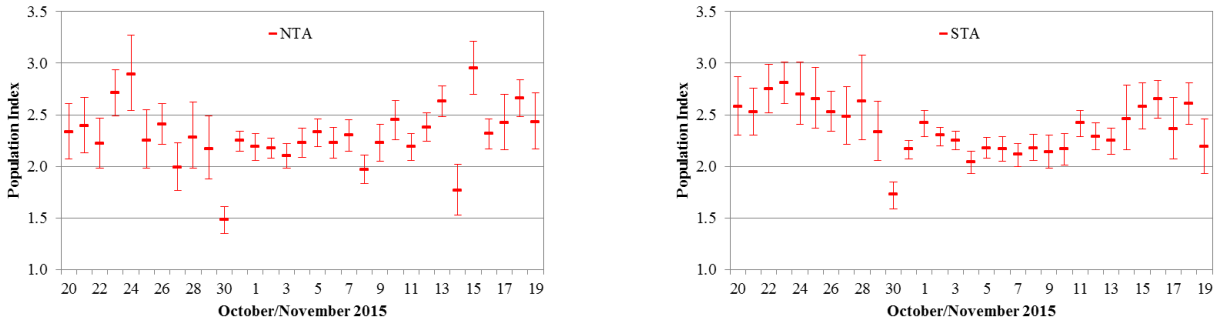

Figure 5: *Population index profile of the Northern (left) and Southern Taurids (right) in October/November 2015.*

Particularly interesting is a massive dip of the r-value on October 30/31. This dip is also prominent in the combined profile, where all Taurids were pooled into one shower (figure 6, left). Thanks to the larger meteor count, the scatter in this plot is even smaller. The r-value decreases by 0.6 in that night. Disenchanting is a look at the sporadic r-profile (figure 6, right). It shows much larger variations than the Taurid profile, but particularly on October 29/30 and 30/31 also this profile shows a significant dip of about -0.6.

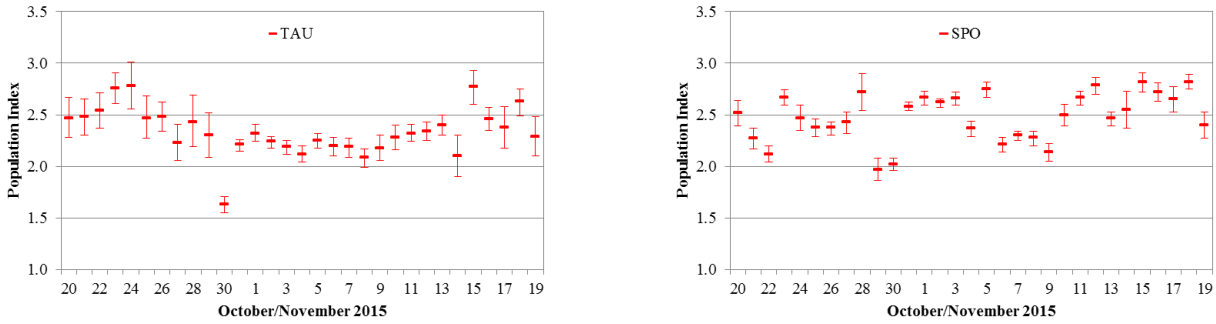

Figure 6: *Population index profile of the Taurids (left) and sporadic meteors (right) in October/November 2015.*

So we can only conclude that the r-value of the Taurids is 0.4 smaller than the sporadic population index in the first days of November (figure 7). However, there are further hints for an unusual brightness distribution on October 30/31. The percentage of Taurids which is recorded by cameras with poor limiting magnitude and large fields of view was typically smaller than or equally large as the percentage of the most sensitive cameras. Only in the particular October night, the weaker cameras were much more successful in recording Taurids that others.

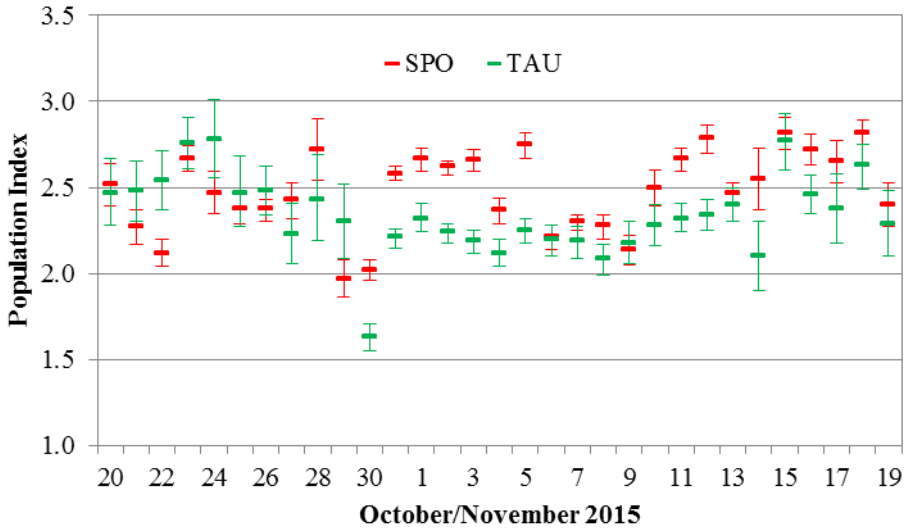

Figure 7: *Comparison of the population index profile of the Taurids and sporadic meteors in October/November 2015.*

Beside the Taurids, there were no spectacular events in November. Neither the Leonids nor the alpha Monocerotids provided surprises. Both showers presented the same activity profile as in the years before – the alpha Monocerotids hardly detectable and the Leonids with distinct activity. Figure 8 shows the average profile of the Leonids from 2011 to 2015. The activity starts to grow at 230° solar longitude. With 7 meteoroids per 1,000 km^2 and hour, the largest flux density is reached at 237°, and then the activity falls back to the original level within four days.

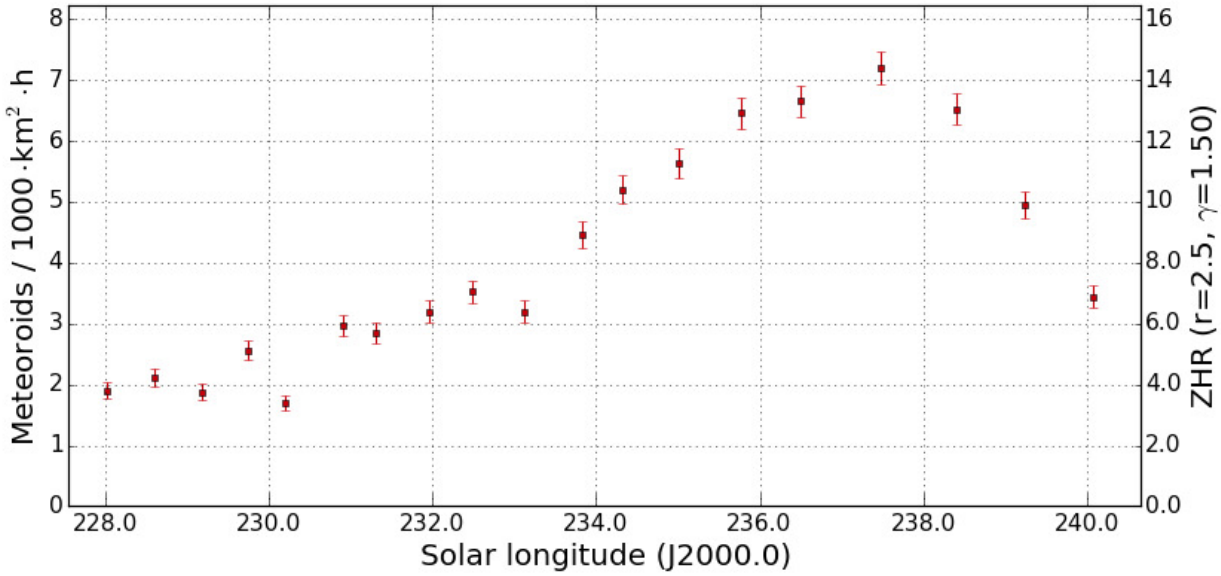

Figure 8: *Averaged flux density profile of the Leonids 2011-2015, derived from observations of the IMO video network.*

1. Observers

Code	Name	Place	Camera	FOV [^{o2}]	St.LM [mag]	Eff.CA [km^2]	Nights	Time [h]	Meteors
ARLRA	Arlt	Ludwigsfelde/DE	LUDWIG2 (0.8/8)	1475	6.2	3779	25	122.1	762
BANPE	Bánfalvi	Zalaegerszeg/HU	HUVCSE01 (0.95/5)	2423	3.4	361	21	55.5	424
BERER	Berkó	Ludanyhalaszi/HU	HULUD1 (0.8/3.8)	5542	4.8	3847	18	151.5	943
BOMMA	Bombardini	Faenza/IT	MARIO (1.2/4.0)	5794	3.3	739	19	134.1	807
BREMA	Breukers	Hengelo/NL	MBB3 (0.75/6)	2399	4.2	699	9	40.1	131
BRIBE	Klemt	Herne/DE	HERMINE (0.8/6)	2374	4.2	678	14	84.1	337
		Berg. Gladbach/DE	KLEMOI (0.8/6)	2286	4.6	1080	18	74.9	322
CASFL	Castellani	Monte Baldo/IT	BMH1 (0.8/6)	2350	5.0	1611	28	288.6	1290
			BMH2 (1.5/4.5)*	4243	3.0	371	29	295.2	1085
CRIST	Crivello	Valbrevenna/IT	BILBO (0.8/3.8)	5458	4.2	1772	29	184.0	1048
			C3P8 (0.8/3.8)	5455	4.2	1586	25	128.8	547
			STG38 (0.8/3.8)	5614	4.4	2007	28	195.5	1589
CSISZ	Csizmadia	Baja/HU	HUVCSE02 (0.95/5)	1606	3.8	390	21	131.2	328
DONJE	Donati	Faenza/IT	JENNI (1.2/4)	5886	3.9	1222	21	180.7	1110
ELTMA	Eltri	Venezia/IT	MET38 (0.8/3.8)	5631	4.3	2151	16	152.3	692
FORKE	Förster	Carlsfeld/DE	AKM3 (0.75/6)	2375	5.1	2154	16	103.0	555
GONRU	Goncalves	Tomar/PT	TEMPLAR1 (0.8/6)	2179	5.3	1842	27	263.2	1300
			TEMPLAR2 (0.8/6)	2080	5.0	1508	27	271.9	1144
			TEMPLAR3 (0.8/8)	1438	4.3	571	27	257.7	600
			TEMPLAR4 (0.8/3.8)	4475	3.0	442	27	265.8	1142
			TEMPLAR5 (0.75/6)	2312	5.0	2259	27	250.1	1210
GOVMI	Govedic	Sredisce ob Dr./SI	ORION2 (0.8/8)	1447	5.5	1841	22	184.8	944
			ORION3 (0.95/5)	2665	4.9	2069	20	149.7	377
			ORION4 (0.95/5)	2662	4.3	1043	23	183.3	462
HERCA	Hergenrother	Tucson/US	SALSA3 (0.8/3.8)	2336	4.1	544	29	282.1	987
HINWO	Hinz	Schwarzenberg/DE	HINWO1 (0.75/6)	2291	5.1	1819	19	118.4	677
IGAAN	Igaz	Debrecen/HU	HUDEB (0.8/3.8)	5522	3.2	620	15	120.3	307
		Hodmezovasar./HU	HUHOD (0.8/3.8)	5502	3.4	764	18	72.1	246
		Budapest/HU	HUPOL (1.2/4)	3790	3.3	475	7	49.1	37
JONKA	Jonas	Budapest/HU	HUSOR (0.95/4)	2286	3.9	445	24	182.4	447
			HUSOR2 (0.95/3.5)	2465	3.9	715	24	176.8	422
KACJA	Kac	Kamnik/SI	CVETKA (0.8/3.8)	4914	4.3	1842	20	185.6	1358
		Kostanjevec/SI	METKA (0.8/12)*	715	6.4	640	2	21.5	120
		Ljubljana/SI	ORION1 (0.8/8)	1402	3.8	331	23	149.0	314
		Kamnik/SI	REZIKA (0.8/6)	2270	4.4	840	21	200.6	2353
			STEFKA (0.8/3.8)	5471	2.8	379	22	180.7	1159
KOSDE	Koschny	Izana Obs./ES	ICC7 (0.85/25)*	714	5.9	1464	26	216.9	1905
		La Palma / ES	ICC9 (0.85/25)*	683	6.7	2951	28	194.2	1366
		Izana Obs./ES	LIC1(2.8/50)*	2255	6.2	5670	20	134.4	1757
		Noordwijkerhout/NL	LIC4 (1.4/50)*	2027	6.0	4509	11	43.3	106
LOJTO	Łojek	Grabniak/PL	PAV57 (1.0/5)	1631	3.5	269	8	56.9	117
LOPAL	Lopes	Lisboa/PT	NASO1 (0.75/6)	2377	3.8	506	4	7.8	56
MACMA	Maciejewski	Chelm/PL	PAV35 (0.8/3.8)	5495	4.0	1584	19	95.2	544
			PAV36 (0.8/3.8)*	5668	4.0	1573	19	97.9	481
			PAV43 (0.75/4.5)*	3132	3.1	319	16	102.8	358
			PAV60 (0.75/4.5)	2250	3.1	281	18	107.0	523
MARGR	Maravelias	Lofoupoli/GR	LOOMECON (0.8/12)	738	6.3	2698	22	177.2	668
MARRU	Marques	Lisbon/PT	CAB1 (0.8/3.8)	5291	3.1	467	29	257.6	1107
			RAN1 (1.4/4.5)	4405	4.0	1241	27	249.8	912
MOLSI	Molau	Seysdorf/DE	AVIS2 (1.4/50)*	1230	6.9	6152	28	185.7	1843
			ESCIMO2 (0.85/25)	155	8.1	3415	25	180.5	338
			MINCAM1 (0.8/8)	1477	4.9	1084	27	150.9	957
		Ketzür/DE	REMO1 (0.8/8)	1467	6.5	5491	25	131.5	747
			REMO2 (0.8/8)	1478	6.4	4778	25	135.1	680
			REMO3 (0.8/8)	1420	5.6	1967	16	84.8	364
			REMO4 (0.8/8)	1478	6.5	5358	21	124.8	736
MORJO	Morvai	Fülöpszallas/HU	HUFUL (1.4/5)	2522	3.5	532	23	163.2	392
MOSFA	Moschini	Rovereto/IT	ROVER (1.4/4.5)	3896	4.2	1292	26	73.3	484
OCHPA	Ochner	Albiano/IT	ALBIANO (1.2/4.5)	2944	3.5	358	3	22.4	54
OTTMI	Otte	Pearl City/US	ORIE1 (1.4/5.7)	3837	3.8	460	7	38.6	152
PERZS	Perkó	Becsehely/HU	HUBEC (0.8/3.8)*	5498	2.9	460	23	193.8	1282
ROTEC	Rothenberg	Berlin/DE	ARMEFA (0.8/6)	2366	4.5	911	13	78.1	141
SARAN	Saraiva	Carnaxide/PT	RO1 (0.75/6)	2362	3.7	381	26	229.2	626
			RO2 (0.75/6)	2381	3.8	459	25	279.4	958
			RO3 (0.8/12)	710	5.2	619	24	263.5	981
			SOFIA (0.8/12)	738	5.3	907	26	266.4	765
SCALE	Scarpa	Alberoni/IT	LEO (1.2/4.5)*	4152	4.5	2052	10	79.9	171
SCHHA	Schremmer	Niederkrüchten/DE	DORAEMON (0.8/3.8)	4900	3.0	409	22	103.3	476
SLAST	Slavec	Ljubljana/SI	KAYAK1 (1.8/28)	563	6.2	1294	23	179.7	745
			KAYAK2 (0.8/12)	741	5.5	920	22	197.0	383
STOEN	Stomeo	Scorze/IT	MIN38 (0.8/3.8)	5566	4.8	3270	20	169.5	1151
			NOA38 (0.8/3.8)	5609	4.2	1911	20	173.2	1052
			SCO38 (0.8/3.8)	5598	4.8	3306	21	170.9	1279
STORO	Stork	Ondrejov/CZ	OND1 (1.4/50)*	2195	5.8	4595	1	2.0	9
STRJO	Strunk	Herford/DE	MINCAM2 (0.8/6)	2354	5.4	2751	19	82.0	479
			MINCAM3 (0.8/6)	2338	5.5	3590	18	83.6	400
			MINCAM4 (1.0/2.6)	9791	2.7	552	17	29.8	82
			MINCAM5 (0.8/6)	2349	5.0	1896	18	79.3	328
			MINCAM6 (0.8/6)	2395	5.1	2178	18	81.2	284
TEPIS	Tepliczky	Agostyan/HU	HUAGO (0.75/4.5)	2427	4.4	1036	25	170.7	518
			HUMOB (0.8/6)	2388	4.8	1607	23	159.7	762
YRJIL	Yrjölä	Kuusankoski/FI	FINEXCAM (0.8/6)	2337	5.5	3574	7	53.5	274
Sum							30	12044.2	57369

* active field of view smaller than video frame

2. Observing Times (h)

November	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
ARLRA	11.4	11.3	7.2	1.0	6.5	2.6	5.9	5.4	-	-	2.1	5.2	5.9	0.3	-
BANPE	4.2	5.4	3.7	2.1	3.3	2.6	1.9	5.0	-	0.9	4.3	4.2	1.4	0.6	-
BERER	4.8	12.2	12.1	12.4	11.9	8.0	-	7.9	3.6	10.8	10.4	11.1	3.8	3.8	0.8
BOMMA	12.1	9.8	8.6	11.4	10.7	12.4	12.4	12.3	12.4	10.4	8.8	-	-	-	-
BREMA	7.5	7.0	6.1	2.7	-	-	-	-	-	-	-	-	2.9	-	-
BRIBE	12.4	12.5	7.1	1.3	-	-	6.1	-	-	-	-	-	8.4	-	-
	12.4	12.3	6.2	2.0	-	-	6.7	4.3	-	0.4	0.3	-	7.8	-	1.2
CASFL	12.3	12.4	5.3	12.4	12.3	12.6	12.6	12.6	12.7	12.7	12.7	12.8	12.2	12.8	12.9
	12.1	12.2	5.2	12.3	11.9	11.6	12.4	12.4	12.4	12.5	12.5	12.6	10.6	11.4	12.0
CRIST	12.0	11.9	0.2	5.8	11.7	12.0	12.3	11.2	12.3	0.5	5.5	8.0	0.5	1.8	1.8
	12.0	11.5	-	0.2	5.3	12.2	12.3	-	3.7	-	5.9	4.1	0.8	0.7	0.3
	12.0	12.1	-	5.2	11.6	11.7	12.3	11.2	12.3	0.6	5.4	8.0	0.2	5.9	1.6
CSISZ	12.5	11.7	1.0	4.3	9.4	4.4	1.8	12.4	1.4	3.6	8.8	12.3	9.6	-	0.5
DONJE	11.5	10.6	9.3	12.4	10.6	12.2	12.4	12.3	12.2	9.1	6.3	2.8	-	-	-
ELTMA	12.1	12.4	11.5	11.9	11.6	11.3	12.3	11.3	-	-	-	-	-	-	-
FORKE	11.6	12.3	12.4	0.8	11.0	0.8	1.8	8.9	-	-	9.6	3.4	1.1	-	-
GONRU	-	-	1.4	3.5	-	11.6	11.7	11.7	12.1	12.1	11.7	4.6	12.3	12.2	10.9
	-	-	1.4	3.8	-	11.8	11.8	11.8	12.3	12.3	11.8	6.1	12.4	12.4	10.6
	0.2	-	-	2.0	-	11.8	12.0	12.0	12.1	12.1	12.2	3.9	12.2	12.2	10.2
	-	-	1.2	2.6	-	11.8	11.8	11.8	12.3	12.2	11.1	6.2	12.4	12.3	10.8
	0.2	-	-	2.1	-	11.9	12.0	12.0	12.0	12.0	12.2	4.3	12.2	12.1	10.2
GOVMI	10.1	12.1	9.7	12.0	10.9	10.4	9.6	12.4	3.7	7.1	12.5	12.6	6.7	1.5	-
	5.0	7.7	9.7	9.5	9.8	10.5	9.6	12.4	3.7	6.3	12.5	12.6	4.8	-	2.3
	12.1	12.1	9.5	11.0	10.9	10.7	9.9	12.4	2.8	6.6	12.5	12.6	5.7	-	2.0
HERCA	11.5	11.6	11.5	1.8	9.0	11.9	11.8	11.3	12.0	11.8	11.7	12.0	12.0	12.0	1.9
HINWO	12.4	12.2	12.5	0.6	10.4	2.5	6.3	9.6	-	-	8.7	3.5	2.8	-	-
IGAAN	10.2	10.7	12.3	12.4	12.3	-	-	-	-	6.8	5.8	11.1	3.9	3.1	3.7
	6.8	5.8	2.2	1.4	0.5	-	-	6.4	0.5	4.9	6.8	7.0	4.5	0.8	1.4
	5.1	5.0	-	10.7	5.7	5.4	-	6.8	-	10.4	-	-	-	-	-
JONKA	12.3	12.4	12.3	12.4	12.5	3.4	-	8.9	3.2	11.2	9.3	12.8	7.1	10.4	1.0
	12.3	12.4	12.4	12.4	12.4	3.1	-	8.9	2.9	10.6	9.7	12.8	6.5	9.9	1.5
KACJA	9.7	6.4	9.1	10.1	11.1	12.2	12.3	12.4	11.1	12.5	12.1	11.8	10.2	-	8.2
	-	-	11.0	10.5	-	-	-	-	-	-	-	-	-	-	-
	9.7	7.4	11.9	8.2	5.1	9.7	10.8	7.9	6.7	10.5	8.3	6.7	1.7	-	4.0
	12.2	11.7	9.2	10.1	11.2	12.2	12.5	12.5	10.0	12.5	12.2	12.0	11.0	-	9.4
	10.7	6.4	9.2	0.1	11.2	11.9	12.3	12.5	11.1	12.5	12.2	11.9	10.0	-	8.5
KOSDE	9.4	11.0	11.0	11.1	11.0	11.1	11.1	11.1	11.2	2.7	7.3	5.2	10.7	4.7	-
	6.0	5.6	8.0	8.5	8.9	10.0	10.9	10.9	10.9	3.4	8.5	0.7	10.9	6.0	-
	7.2	8.5	8.4	8.3	8.5	8.5	8.3	8.4	8.5	2.1	-	-	-	-	-
	-	8.9	2.5	-	-	-	9.3	3.8	-	-	-	-	7.8	-	0.5
LOJTO	9.4	12.3	12.4	0.7	-	-	-	-	-	-	-	8.9	-	-	-
LOPAL	-	1.2	-	-	-	2.0	1.9	2.7	-	-	-	-	-	-	-
MACMA	11.3	12.5	12.6	6.5	-	-	-	1.0	0.2	-	-	8.5	1.2	-	-
	11.2	12.3	12.4	6.3	-	-	-	0.4	0.2	-	-	5.9	-	0.2	-
	11.3	12.6	12.4	6.5	-	-	-	-	-	-	-	8.5	1.6	-	-
	11.1	12.5	12.5	6.5	-	-	-	0.9	-	-	0.2	8.8	1.4	-	-
MARGR	-	4.8	8.9	9.7	9.7	-	-	-	9.6	9.7	9.7	-	7.6	5.7	8.6
MARRU	-	1.3	0.6	3.9	4.1	10.8	11.3	12.0	11.9	12.1	12.3	7.8	9.4	12.1	10.7
	-	2.8	-	0.4	-	11.2	10.4	9.6	10.8	12.1	12.1	4.9	12.0	12.3	4.2
MOLSI	11.7	11.7	9.2	8.0	10.7	7.2	10.6	6.1	5.4	7.4	12.2	10.9	4.5	-	9.2
	12.2	12.2	9.3	8.2	10.1	6.8	11.4	3.2	3.0	6.6	12.6	11.4	4.6	-	8.8
	11.6	11.6	8.6	5.7	8.9	1.4	7.4	2.7	0.6	5.6	10.6	9.7	2.4	-	8.2
	12.2	12.1	1.3	5.0	5.5	2.8	6.6	3.9	-	-	0.9	7.9	7.7	-	-
	12.1	12.2	1.8	5.2	5.3	4.2	7.2	5.0	-	-	1.1	8.3	7.8	-	-
	8.0	-	1.9	-	9.6	3.2	5.5	-	-	-	1.2	-	7.4	-	-
	12.6	12.4	1.3	5.3	6.0	3.7	7.9	4.5	-	-	-	8.1	7.9	-	-
MORJO	12.3	12.3	6.2	10.8	6.0	-	2.3	12.4	2.5	10.8	10.0	12.8	6.6	4.7	0.5
MOSFA	3.6	4.1	2.9	3.6	4.5	4.5	3.0	4.3	2.1	2.7	4.8	3.7	0.2	0.7	3.7
OCHPA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OTTMI	3.9	8.7	-	1.2	1.5	9.7	5.8	7.8	-	-	-	-	-	-	-
PERZS	12.1	12.2	12.3	11.9	12.3	12.0	9.6	12.6	3.4	7.6	12.7	12.7	11.6	2.6	1.1
ROTEC	12.1	12.2	12.1	-	7.5	-	3.3	3.4	-	-	-	5.2	-	-	-
SARAN	-	-	-	0.7	-	12.1	12.1	12.4	11.9	11.7	12.0	6.0	12.0	12.2	4.7
	-	-	-	-	-	12.0	12.4	12.1	12.0	11.7	12.1	10.4	12.5	12.6	4.2
	-	-	-	-	-	11.7	12.0	11.7	11.5	11.2	11.6	11.5	12.1	11.8	4.3
	-	-	-	1.1	-	12.0	12.2	8.5	12.0	11.8	12.0	5.7	12.2	12.1	4.8
SCALE	11.9	12.0	-	-	-	12.3	-	-	-	-	-	-	-	-	-
SCHHA	12.3	12.0	7.6	1.1	-	0.8	6.6	0.5	0.3	0.4	0.2	0.2	9.0	-	-
SLAST	10.7	8.3	10.8	6.3	10.0	11.2	11.6	11.6	9.5	11.6	10.9	8.6	1.7	-	6.1
	10.6	8.6	10.5	6.8	9.8	11.3	11.9	11.7	9.9	11.9	11.6	10.3	5.1	-	8.6
STOEN	12.3	12.4	11.0	11.7	12.4	12.5	12.7	12.6	-	-	-	-	-	0.7	-
	12.4	12.4	10.5	11.6	12.4	12.6	12.3	12.6	-	-	-	-	-	2.9	0.2
	12.4	11.3	10.6	11.6	12.4	12.5	12.5	12.5	-	-	-	-	-	1.1	0.5
STORO	-	-	2.0	-	-	-	-	-	-	-	-	-	-	-	-
STRJO	11.8	12.5	9.3	5.0	0.6	0.5	5.8	-	0.2	-	-	-	8.6	-	-
	11.5	12.3	9.4	5.9	0.6	-	5.4	0.3	-	-	-	-	8.4	-	-
	8.7	7.7	4.3	2.8	0.2	-	1.5	-	-	-	-	-	1.6	-	-
	12.0	12.5	8.9	5.6	0.4	-	5.7	-	0.2	-	-	-	8.3	-	-
	12.1	12.3	8.8	5.5	-	0.4	5.0	0.7	-	-	-	-	8.7	-	-
TEPIS	-	10.5	12.2	6.9	8.2	8.6	-	12.5	3.5	1.2	11.5	12.5	7.7	2.4	0.8
	12.1	12.2	10.9	6.5	-	4.3	-	12.4	3.0	2.5	11.8	12.4	7.3	2.7	0.5
YRJIL	7.9	12.6	3.3	12.7	6.9	-	-	-	-	-	-	-	-	-	-
Sum	673.4	709.1	541.1	470.5	464.8	521.1	561.1	579.7	365.8	402.7	495.8	476.5	452.1	243.7	217.9

November	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
ARLRA	1.4	2.6	3.9	1.1	5.2	1.8	2.2	9.5	3.6	-	2.7	12.2	7.3	3.8	-
BANPE	4.3	-	4.1	0.3	-	-	3.2	-	0.3	-	1.2	-	2.3	0.2	-
BERER	7.6	-	12.6	-	-	-	-	-	13.1	4.6	-	-	-	-	-
BOMMA	-	-	-	2.9	-	-	0.7	-	0.8	-	0.2	0.7	1.8	2.4	3.3
BREMA	-	-	-	2.9	-	0.3	3.1	-	-	-	7.6	-	-	-	-
BRIBE	-	0.6	1.5	-	7.0	6.1	2.6	2.6	-	2.4	13.5	-	-	-	-
	-	1.8	2.9	-	2.0	2.6	-	2.9	-	0.2	2.9	6.0	-	-	-
CASFL	12.9	3.3	12.9	3.5	9.7	3.5	4.0	1.3	11.2	7.9	12.0	-	-	11.7	13.4
	12.5	-	12.1	2.0	6.7	2.4	4.2	2.9	8.8	6.9	13.1	13.1	10.0	13.2	13.2
CRIST	0.5	3.9	-	3.9	5.0	2.1	2.2	7.1	6.4	2.9	8.2	12.5	7.1	5.8	8.9
	-	1.6	-	0.9	2.2	2.9	2.5	8.7	6.5	1.6	8.6	11.8	6.7	3.1	2.7
	0.5	4.7	-	5.5	7.5	1.3	2.7	3.6	8.1	3.3	10.4	12.9	7.2	7.7	10.0
CSISZ	13.4	1.1	12.6	7.8	-	-	1.6	0.3	-	-	-	-	-	-	0.7
DONJE	-	-	0.3	2.7	-	-	9.3	-	7.7	-	0.3	12.2	7.0	10.9	8.6
ELTMA	-	-	-	-	-	-	5.4	2.7	12.1	-	3.9	8.9	5.4	11.1	8.4
FORKE	1.2	-	5.4	-	-	4.6	-	7.5	-	-	-	10.6	-	-	-
GONRU	7.8	11.9	12.4	10.7	7.5	12.3	10.7	12.2	6.3	7.8	9.3	3.5	12.1	12.6	10.3
	7.9	11.2	12.5	10.8	7.0	12.6	10.8	12.6	8.9	8.8	10.9	3.3	12.6	12.8	10.7
	7.6	12.3	12.3	9.3	6.1	12.1	10.8	12.5	4.8	6.4	12.1	2.6	12.7	12.7	10.5
	7.8	10.6	12.4	10.6	7.5	12.2	10.8	12.4	7.6	7.6	10.4	3.9	12.5	12.7	10.3
	7.4	12.2	12.1	9.4	6.3	12.1	10.4	12.5	4.6	5.6	7.0	2.6	11.9	12.6	10.2
GOVMI	10.3	-	12.8	4.8	0.7	-	-	-	-	-	7.8	-	8.9	5.5	2.7
	10.3	-	11.1	4.3	-	-	1.0	-	-	-	-	-	2.9	3.7	-
	10.3	-	12.8	3.9	-	-	2.8	0.7	-	-	6.6	-	6.4	4.9	4.1
HERCA	2.0	7.3	11.7	11.6	11.9	11.6	11.9	8.9	10.3	2.4	-	4.2	10.6	12.0	11.9
HINWO	-	-	8.3	-	3.3	3.5	1.5	8.6	0.4	-	-	6.7	4.6	-	-
IGAAN	3.3	2.2	12.9	-	-	-	-	9.6	-	-	-	-	-	-	-
	6.8	-	7.2	4.9	-	-	2.2	-	-	-	-	-	2.0	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
JONKA	12.1	0.6	13.0	0.4	-	-	4.8	3.7	6.3	-	10.0	-	2.1	-	0.2
	12.6	1.2	12.7	0.3	-	-	2.6	3.1	3.4	1.0	10.7	-	1.4	-	-
KACJA	12.0	-	4.9	-	-	-	-	4.3	-	-	-	-	2.0	9.4	3.8
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7.0	0.3	7.1	0.4	-	-	1.3	-	-	-	8.9	-	4.7	10.0	0.7
	12.1	1.3	11.8	-	-	-	-	2.2	-	-	-	-	1.8	9.3	3.4
	12.1	1.4	5.5	-	-	-	-	5.3	-	-	1.0	-	1.8	9.4	3.7
KOSDE	11.3	11.3	8.3	11.3	11.4	9.1	1.0	5.0	1.7	-	5.8	4.9	-	7.2	-
	10.9	10.9	10.0	9.9	4.7	7.9	1.5	5.9	3.6	4.5	5.0	1.5	4.0	4.7	-
	-	-	-	7.3	8.1	8.7	1.0	4.9	-	3.0	8.6	6.5	3.5	6.1	-
	-	-	1.6	0.8	-	2.1	5.4	-	-	-	-	-	-	0.6	-
LOJTO	-	-	-	2.1	-	-	3.7	-	7.4	-	-	-	-	-	-
LOPAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MACMA	2.1	0.4	-	3.1	-	-	6.1	4.8	7.5	5.7	4.7	0.3	-	0.8	5.9
	1.7	0.2	2.1	4.8	-	-	4.8	5.1	7.7	8.5	6.9	2.7	-	-	4.5
	1.8	-	0.8	3.9	-	-	6.1	5.3	7.7	8.7	7.8	3.0	-	-	4.8
	1.9	-	2.6	5.2	-	-	5.9	5.3	7.6	8.7	8.1	2.7	-	-	5.1
MARGR	11.1	10.6	12.2	12.2	12.2	11.5	11.1	9.9	-	0.9	0.7	0.2	-	0.6	-
MARRU	9.2	9.0	6.6	12.3	8.4	12.2	9.3	12.1	5.4	5.6	8.2	3.6	11.1	12.6	11.7
	10.7	12.2	9.3	10.0	6.1	11.0	8.0	11.7	6.1	7.1	11.9	11.4	12.5	12.5	6.5
MOLSI	10.0	3.9	12.0	1.4	0.2	2.8	6.9	11.5	0.9	-	0.6	0.8	8.9	0.6	0.4
	9.7	3.4	12.5	-	-	2.5	8.0	9.9	2.1	0.2	1.3	2.8	7.7	-	-
	8.6	3.0	11.6	1.0	0.2	2.8	6.7	10.6	1.8	-	0.4	-	6.9	0.4	1.9
	1.5	2.0	4.5	2.8	5.0	2.3	1.8	8.1	1.6	-	9.0	13.3	6.9	4.8	2.0
	1.2	2.0	4.6	3.0	5.6	2.3	1.7	7.3	2.7	-	8.1	13.5	7.5	4.0	1.4
	-	-	4.5	3.1	6.6	3.0	-	9.1	3.0	-	3.6	11.6	-	3.5	-
	1.8	1.9	4.3	2.7	5.5	-	2.1	8.4	-	-	7.8	13.6	-	5.4	1.6
MORJO	12.9	3.4	13.0	4.0	-	-	8.8	6.1	3.3	-	-	-	1.3	0.2	-
MOSFA	3.2	-	-	-	-	0.6	0.7	2.4	0.7	2.0	2.5	4.3	1.4	3.6	3.5
OCHPA	-	-	-	-	-	-	-	8.5	10.9	3.0	-	-	-	-	-
OTTMI	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PERZS	12.8	1.8	12.9	6.9	-	-	3.4	0.5	-	-	-	-	6.9	1.9	-
ROTEC	-	0.6	2.5	-	3.5	-	-	-	1.7	-	3.3	10.7	-	-	-
SARAN	12.2	12.0	11.5	12.0	5.8	9.1	6.9	8.7	3.5	5.8	8.4	10.1	1.9	7.2	6.3
	12.1	12.1	12.0	12.5	9.0	12.1	9.8	12.8	8.7	9.3	12.6	12.6	12.7	13.0	6.1
	11.8	11.8	11.6	12.1	9.4	-	9.4	12.5	9.9	8.9	12.1	11.9	12.3	12.5	7.9
	11.9	12.1	10.9	11.8	8.9	11.0	6.4	12.2	9.9	9.8	12.7	12.5	12.8	9.2	9.9
SCALE	-	-	-	-	-	-	8.9	2.2	8.2	0.2	9.7	-	5.8	-	8.7
SCHHA	-	-	2.2	-	4.8	8.6	8.4	14.2	0.2	5.1	8.4	-	0.2	0.2	-
SLAST	11.5	1.6	12.6	-	-	-	1.6	0.9	-	-	6.6	-	5.5	7.9	2.6
	12.6	2.6	12.8	1.0	-	-	-	-	-	-	12.3	-	6.6	7.9	2.6
STOEN	1.1	-	-	-	-	0.1	10.1	1.8	10.2	0.3	5.9	12.5	8.6	13.2	7.4
	2.7	-	-	-	-	0.5	9.8	1.9	9.3	-	7.9	12.1	8.0	12.4	8.7
	2.7	-	-	0.3	-	0.5	10.4	2.1	12.4	0.2	9.4	13.2	8.9	13.4	-
STORO	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
STRJO	-	1.8	1.5	0.9	1.7	5.1	-	4.2	-	1.0	8.0	2.7	0.8	-	-
	-	1.6	1.8	-	1.7	5.3	-	2.4	-	0.9	11.4	1.6	-	1.3	1.8
	-	0.2	0.3	0.3	0.2	0.5	-	0.2	-	-	0.4	0.5	0.2	0.2	-
	-	1.5	1.3	-	1.3	5.1	-	3.1	-	0.3	9.2	1.9	-	0.5	1.5
	-	1.5	1.4	0.9	2.0	4.1	-	2.5	-	0.3	10.5	3.4	-	1.1	-
TEPIS	12.8	0.9	12.8	0.6	-	-	3.5	5.7	12.5	6.3	12.1	1.3	2.9	0.8	-
	12.6	1.6	12.8	0.8	0.2	-	3.8	-	11.6	3.4	11.3	-	3.0	-	-
YRJIL	-	2.8	-	-	-	-	-	7.3	-	-	-	-	-	-	-
Sum	430.1	232.8	503.2	275.9	218.1	244.8	318.3	404.8	311.0	179.1	452.5	331.4	334.6	367.8	264.5

3. Results (Meteors)

November	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
ARLRA	130	135	43	3	35	6	63	23	-	-	4	30	66	1	-
BANPE	39	47	26	15	25	17	14	40	-	6	33	30	10	4	-
BERER	13	106	71	136	72	59	-	28	5	52	47	63	7	22	1
BOMMA	77	46	40	78	70	95	77	112	72	34	41	-	-	-	-
BREMA	13	43	24	9	-	-	-	-	-	-	-	-	8	-	-
BRIBE	61	62	49	8	-	-	26	-	-	-	-	-	29	-	-
	85	61	41	6	-	-	25	6	-	1	2	-	33	-	7
CASFL	70	75	23	62	66	66	59	70	55	49	56	91	48	18	64
	56	70	19	74	41	55	54	56	29	53	44	55	27	28	52
CRIST	92	96	1	26	51	102	69	84	71	2	41	60	3	4	2
	61	49	-	1	27	65	61	-	18	-	41	6	6	2	1
	147	148	-	22	100	141	118	125	108	3	78	101	1	18	4
CSISZ	27	46	4	13	12	9	3	50	1	9	37	37	15	-	1
DONJE	63	69	51	98	75	119	91	122	89	38	26	5	-	-	-
ELTMA	67	82	45	48	62	80	47	43	-	-	-	-	-	-	-
FORKE	88	102	109	3	37	3	15	18	-	-	36	13	7	-	-
GONRU	-	-	3	7	-	85	73	69	79	89	61	8	80	70	40
	-	-	4	3	-	72	78	69	69	52	41	7	48	58	25
	1	-	-	1	-	27	41	39	32	35	35	1	35	29	13
	-	-	2	5	-	53	67	78	67	72	48	5	50	75	27
	1	-	-	3	-	74	72	75	66	74	72	5	70	67	28
GOVMI	75	87	68	48	45	55	45	72	10	27	85	77	22	1	-
	8	18	27	28	21	34	23	37	3	11	28	34	15	-	9
	37	30	41	30	29	26	19	35	3	13	35	26	16	-	5
HERCA	47	37	54	2	30	52	42	52	41	52	46	45	41	45	1
HINWO	79	101	110	1	51	8	31	22	-	-	45	20	15	-	-
IGAAN	16	18	54	50	35	-	-	-	-	10	10	31	3	2	17
	29	10	6	4	3	-	-	29	4	13	31	19	8	2	6
	8	2	-	3	2	7	-	6	-	9	-	-	-	-	-
JONKA	36	30	27	35	36	3	-	11	5	23	34	35	4	21	6
	28	43	27	17	32	5	-	21	7	20	41	31	11	13	3
KACJA	65	31	133	60	96	112	97	119	54	85	104	88	46	-	33
	-	-	68	52	-	-	-	-	-	-	-	-	-	-	-
	25	20	36	22	6	25	26	16	9	18	19	7	3	-	8
	144	164	168	129	168	180	135	182	56	165	185	152	77	-	36
	58	30	91	64	93	87	65	98	39	91	80	70	37	-	20
KOSDE	92	108	121	141	125	122	107	83	92	12	65	25	82	22	-
	19	39	47	76	69	85	97	51	76	4	80	2	58	44	-
	104	119	165	144	139	155	140	115	122	17	-	-	-	-	-
	-	19	9	-	-	-	23	14	-	-	-	-	21	-	2
LOJTO	18	23	33	1	-	-	-	-	-	-	-	15	-	-	-
LOPAL	-	10	-	-	-	15	12	19	-	-	-	-	-	-	-
MACMA	86	109	75	18	-	-	-	4	1	-	-	45	1	-	-
	73	100	83	18	-	-	-	1	1	-	-	31	-	1	-
	43	68	63	14	-	-	-	-	-	-	-	21	2	-	-
	76	82	85	19	-	-	-	1	-	-	1	31	3	-	-
MARGR	-	5	22	49	46	-	-	-	46	47	42	-	44	11	36
MARRU	-	10	3	18	24	57	82	71	56	61	66	24	23	66	22
	-	8	-	2	-	38	35	40	41	34	35	15	40	47	11
MOLSI	135	171	81	59	69	67	98	73	23	47	172	92	74	-	166
	39	26	22	10	9	15	14	10	1	12	24	16	15	-	26
	89	98	51	34	36	10	38	43	4	16	76	42	29	-	86
	104	55	5	20	24	9	66	6	-	-	4	41	82	-	-
	97	59	1	12	13	13	60	12	-	-	3	35	86	-	-
	32	-	3	-	19	16	25	-	-	-	2	-	65	-	-
	126	65	1	22	23	9	62	8	-	-	-	38	101	-	-
MORJO	28	37	7	26	10	-	5	34	2	26	32	42	8	6	1
MOSFA	20	34	22	26	31	35	21	30	13	17	31	21	1	4	24
OCHPA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OTTMI	28	40	-	7	6	30	19	22	-	-	-	-	-	-	-
PERZS	85	95	64	63	78	99	64	109	7	28	103	109	56	4	1
ROTEC	31	29	27	-	17	-	8	2	-	-	-	5	-	-	-
SARAN	-	-	-	1	-	48	27	36	38	32	33	9	34	32	6
	-	-	-	-	-	59	68	45	50	46	55	11	36	50	10
	-	-	-	-	-	72	55	50	49	33	42	14	61	39	13
	-	-	-	1	-	41	39	35	57	36	41	5	28	36	10
SCALE	36	29	-	-	-	36	-	-	-	-	-	-	-	-	-
SCHHA	70	61	56	10	-	5	37	2	2	1	1	1	47	-	-
SLAST	52	28	77	30	39	48	56	58	31	61	62	26	13	-	10
	30	23	35	12	18	36	19	27	13	24	21	13	9	-	9
STOEN	114	138	77	66	130	122	96	90	-	-	-	-	-	1	-
	114	109	67	70	110	121	76	82	-	-	-	-	-	5	1
	143	142	65	86	122	124	111	85	-	-	-	-	-	4	3
STORO	-	-	9	-	-	-	-	-	-	-	-	-	-	-	-
STRJO	75	117	66	25	3	4	38	-	1	-	-	-	48	-	-
	61	89	36	22	1	-	32	1	-	-	-	-	52	-	-
	15	19	8	4	1	-	9	-	-	-	-	-	10	-	-
	47	78	33	12	4	-	25	-	1	-	-	-	42	-	-
	39	75	17	14	-	1	28	1	-	-	-	-	42	-	-
TEPIS	-	57	43	12	10	46	-	36	4	3	54	41	12	2	1
	58	80	57	12	-	31	-	56	6	7	70	67	22	4	2
YRJIL	36	87	11	65	18	-	-	-	-	-	-	-	-	-	-
Sum	3961	4399	3112	2387	2514	3291	3228	3159	1729	1670	2601	1989	2088	858	849

November	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
ARLRA	4	13	23	4	14	4	7	24	10	-	4	81	27	8	-
BANPE	32	-	34	2	-	-	21	-	2	-	9	-	17	1	-
BERER	29	-	132	-	-	-	-	-	90	10	-	-	-	-	-
BOMMA	-	-	-	5	-	-	4	-	4	-	1	4	12	16	19
BREMA	-	-	-	11	-	2	5	-	-	-	16	-	-	-	-
BRIBE	-	1	1	-	12	34	3	6	-	4	41	-	-	-	-
	-	9	4	-	4	12	-	12	-	1	5	8	-	-	-
CASFL	70	4	57	20	31	18	13	4	20	23	55	-	-	35	68
	46	-	44	9	18	9	11	10	13	13	31	51	21	45	51
CRIST	2	23	-	21	22	16	2	5	28	41	38	59	18	32	37
	-	7	-	3	11	15	3	43	7	8	33	42	8	17	12
	3	37	-	24	44	7	10	5	34	51	54	94	24	42	46
CSISZ	32	2	18	6	-	-	4	1	-	-	-	-	-	-	1
DONJE	-	-	2	2	-	-	45	-	24	-	2	75	27	56	31
ELTMA	-	-	-	-	-	-	11	24	41	-	38	41	10	25	28
FORKE	1	-	12	-	-	8	-	64	-	-	-	39	-	-	-
GONRU	24	45	54	56	18	69	65	68	18	30	29	7	52	64	37
	16	36	41	52	18	76	62	73	20	37	31	2	56	60	38
	10	35	25	21	2	34	26	30	9	20	24	1	22	31	21
	14	37	34	52	14	63	64	57	22	23	42	7	45	63	56
	16	79	57	42	15	62	58	83	5	25	29	3	48	50	31
GOVMI	65	-	68	12	1	-	-	-	-	-	19	-	35	20	7
	25	-	26	9	-	-	4	-	-	-	-	-	8	9	-
	27	-	26	8	-	-	10	1	-	-	3	-	21	14	7
HERCA	4	38	42	42	48	42	30	23	23	4	-	21	32	21	30
HINWO	-	-	34	-	28	15	5	58	2	-	-	41	11	-	-
IGAAN	7	9	40	-	-	-	-	5	-	-	-	-	-	-	-
	24	-	31	10	-	-	9	-	-	-	-	-	8	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
JONKA	17	2	42	2	-	-	22	8	13	-	21	-	13	-	1
	32	4	37	1	-	-	10	6	12	1	16	-	4	-	-
KACJA	105	-	13	-	-	-	-	20	-	-	-	-	18	74	5
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	11	2	9	1	-	-	2	-	-	-	18	-	5	25	1
	159	5	133	-	-	-	-	16	-	-	-	-	13	77	9
	94	3	15	-	-	-	-	18	-	-	8	-	17	77	4
KOSDE	83	109	98	99	106	74	2	22	5	-	30	44	-	36	-
	80	93	58	60	33	82	9	59	38	35	35	22	7	8	-
	-	-	-	114	110	111	6	41	-	14	50	32	8	51	-
	-	-	3	2	-	2	8	-	-	-	-	-	-	3	-
LOJTO	-	-	-	3	-	-	3	-	21	-	-	-	-	-	-
LOPAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MACMA	5	1	-	11	-	-	36	12	71	16	35	1	-	2	15
	3	1	12	7	-	-	16	12	50	21	36	3	-	-	12
	2	-	2	9	-	-	22	7	46	19	27	3	-	-	10
	5	-	19	14	-	-	27	16	52	29	44	5	-	-	14
MARGR	47	37	41	38	30	44	34	34	-	5	5	1	-	4	-
MARRU	26	25	14	72	31	68	50	52	3	22	22	9	44	50	36
	36	44	47	42	14	52	45	53	14	27	45	33	41	54	19
MOLSI	79	59	124	8	2	12	69	97	8	-	4	5	40	7	2
	15	9	22	-	-	1	16	22	2	1	3	2	6	-	-
	38	29	58	4	1	6	47	94	1	-	3	-	21	1	2
	3	15	37	11	18	14	4	22	2	-	19	105	20	46	15
	2	8	33	5	31	17	3	11	6	-	21	100	25	23	4
	-	-	34	6	22	7	-	19	8	-	11	82	-	13	-
	6	12	47	4	22	-	14	21	-	-	32	87	-	34	2
MORJO	40	2	41	4	-	-	22	9	7	-	-	-	2	1	-
MOSFA	22	-	-	-	-	4	3	15	4	12	18	26	5	22	23
OCHPA	-	-	-	-	-	-	-	28	10	16	-	-	-	-	-
OTTMI	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PERZS	110	6	102	24	-	-	19	3	-	-	-	-	39	14	-
ROTEC	-	1	7	-	4	-	-	-	1	-	2	7	-	-	-
SARAN	36	29	25	28	14	24	24	35	20	18	8	17	15	17	20
	43	39	37	33	14	35	52	51	19	35	45	43	32	32	18
	48	54	45	44	17	-	49	62	26	40	39	32	41	41	15
	37	38	35	37	12	31	34	41	29	18	22	29	30	27	16
SCALE	-	-	-	-	-	-	14	10	17	1	14	-	5	-	9
SCHHA	-	-	6	-	18	36	44	12	1	25	38	-	2	1	-
SLAST	42	4	72	-	-	-	1	2	-	-	6	-	9	16	2
	19	1	29	1	-	-	-	-	-	-	17	-	8	18	1
STOEN	2	-	-	-	-	1	55	17	50	2	49	57	26	29	29
	2	-	-	-	-	3	42	19	32	-	50	53	21	38	37
	6	-	-	1	-	3	54	23	54	1	68	88	33	63	-
STORO	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
STRJO	-	11	9	5	5	21	-	10	-	2	33	4	2	-	-
	-	4	8	-	6	31	-	2	-	4	40	2	-	7	2
	-	2	2	2	1	2	-	1	-	-	2	2	1	1	-
	-	2	6	-	6	32	-	5	-	1	19	3	-	3	9
	-	1	8	5	3	19	-	3	-	1	18	7	-	2	-
TEPIS	32	1	46	1	-	-	18	13	31	15	28	3	7	2	-
	52	3	73	4	1	-	26	-	62	14	40	-	15	-	-
YRJIL	-	7	-	-	-	-	-	50	-	-	-	-	-	-	-
Sum	1790	1038	2254	1113	821	1218	1374	1669	1087	685	1545	1483	1077	1528	852