

Results of the IMO Video Meteor Network – February 2017

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75 video cameras contributed to the IMO network in February 2017. They recorded about 14,000 meteors in 7,000 hours of effective observing time. The monthly statistics reveal large gaps and so the output was below the average of the last five years. The bandwidth of this month reached from less than a hundred meteors in the night of February 11/12 up to more than a thousand meteors per night at the middle of February. With an average of 2.0 meteors per hour we approach the annual activity low.

Since there are no noteworthy meteor shower in February, we focused on a set of minor showers close to the detection limit. Specifically, we analyzed six meteor showers in detail which we detected in the IMO network data during our 2012/2013 analysis. Which activity profile will we get now that we collected continuous flux density measurements over six years? The answer will be given by the following figures.

The alpha Coronae Borealis (429 ACB) are active beyond the boundary between January and February. Overall, we recorded 1,500 shower members between January 26 and February 4 at an effective collection area of 830,000 km² and hour. For comparison: At the same time, we observed 9,000 sporadic and 3,000 Anthelion meteors. The mean profile (Figure 1) shows a constant level of activity with a flux density of 2 meteoroids per 1,000 km² and hour. The activity profiles of the individual years do not differ significantly from the average.

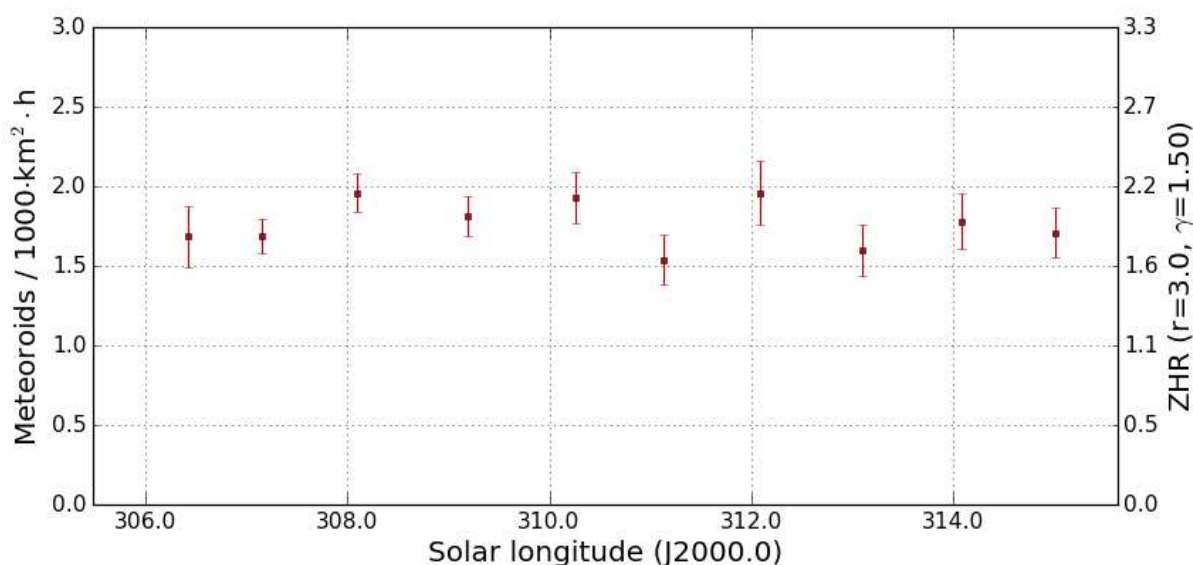


Figure 1: Average flux density profile of the alpha Coronae Borealis in the years 2012 to 2017, derived from video data of the IMO Network.

The activity period of the February epsilon Virginids (506 FEV) reaches from January 28 to February 8. 1,700 shower members (12,000 SPO / 3,600 ANT) were recorded at this time with an effective collection area of more than 1.3 million km² and hour. Also here we find a smooth activity profile without a clear peak (figure 2), but the absolute flux density level is lower than before. The individual annual profiles do not provide additional information.

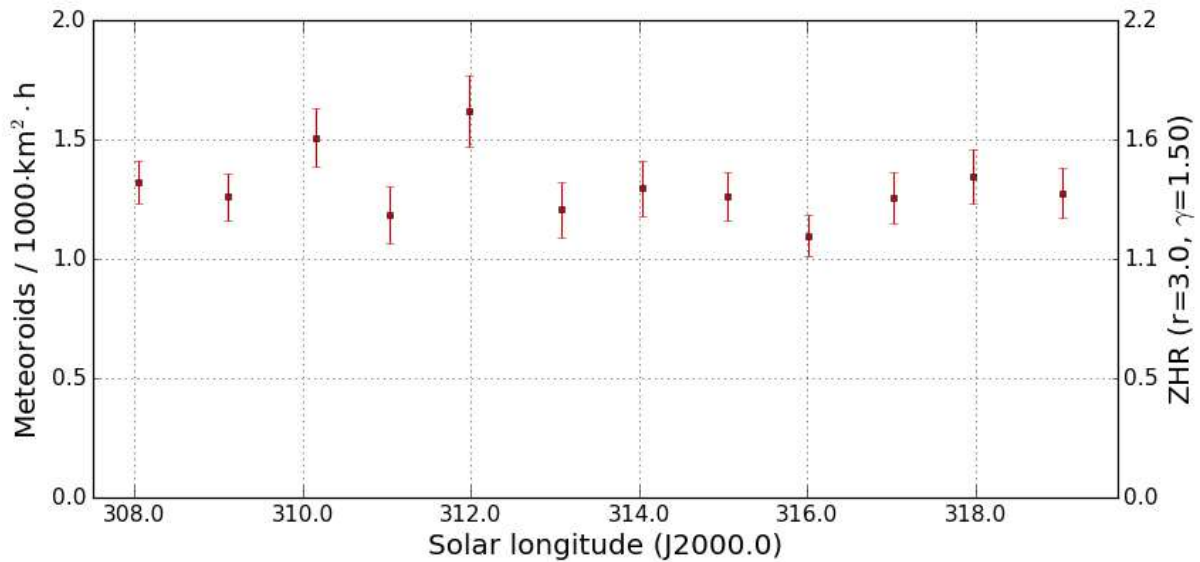


Figure 2: Average flux density profile of the February epsilon Virginids in the years 2012 to 2017, derived from video data of the IMO Network.

In parallel, but with a shorter activity window, we find the February eta Draconids (427 FED). The shower is detectable between February 2 and 5 and provides the smallest flux density of all showers analyzed here, but it is the only one with a classical activity profile (figure 3). Thanks to the circumpolar radiant we obtained a remarkable effective collection area of 880,000 km² and hour despite the short activity interval. Overall 400 shower members (4,000 SPO / 1,200 ANT) were recorded. Peak activity is reached at 315.2° solar longitude (February 3, 2017, at 2:00 UT). A look at the individual years reveals that the 2013 peak was particularly prominent.

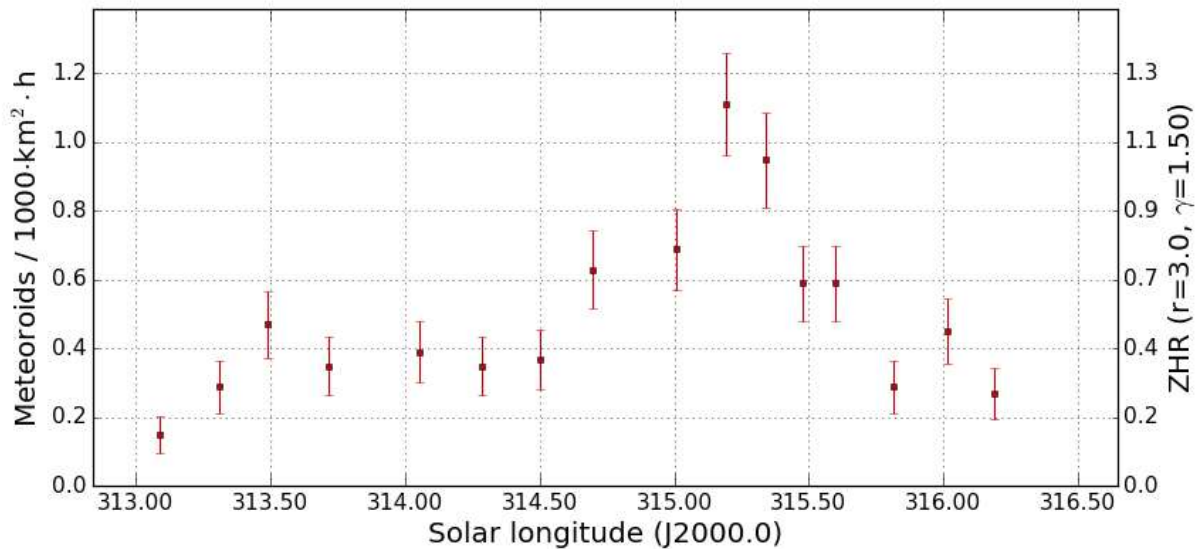


Figure 3: Average flux density profile of the February eta Draconids in the years 2012 to 2017, derived from video data of the IMO Network.

The minor shower of the pi Hydrids (101 PIH) is active between February 3 and 9. Despite the effective collection area of only 180,000 km² and hour we assigned 650 meteors to that radiant (7,000 SPO / 2,100 ANT). Indeed, the flux density reaches larger values of almost 4 meteoroids per 1,000 km² and hour. There are no outliers in the individual years.

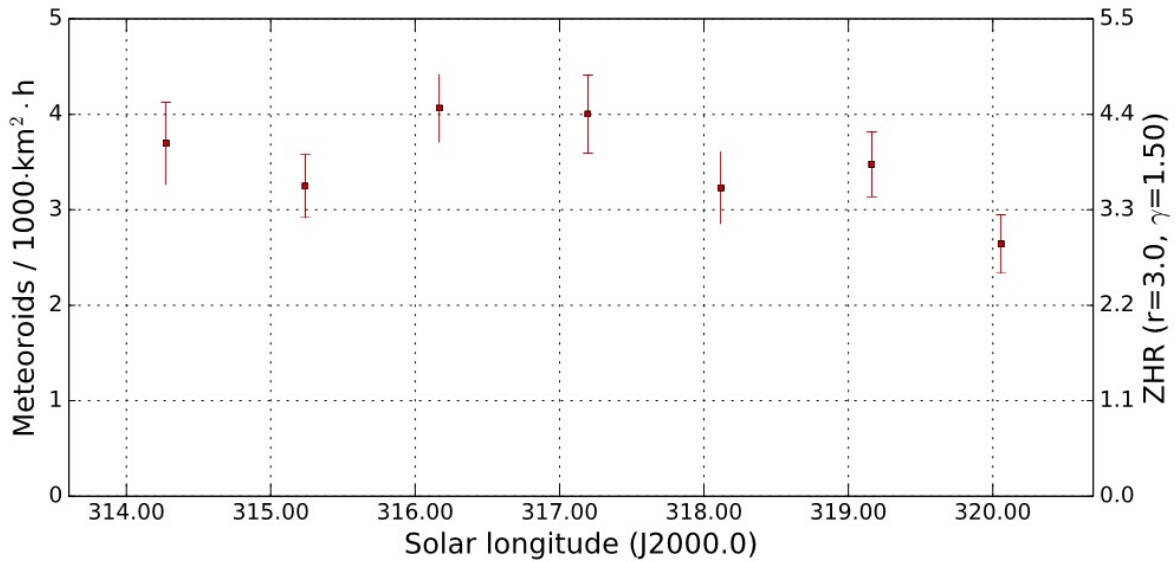


Figure 4: Average flux density profile of the pi Hydrids in the years 2012 to 2017, derived from video data of the IMO Network.

In the middle of February, we find the beta Herculids (418 BHE). We recorded 700 shower members (5,000 SPO / 1,700 ANT) with an effective collection area of 700,000 km² and hour between February 12 and 16. The flux density level is constant at a level of 1 meteoroid per 1,000 km² and hour (figure 5) and there are no significant deviations in individual years.

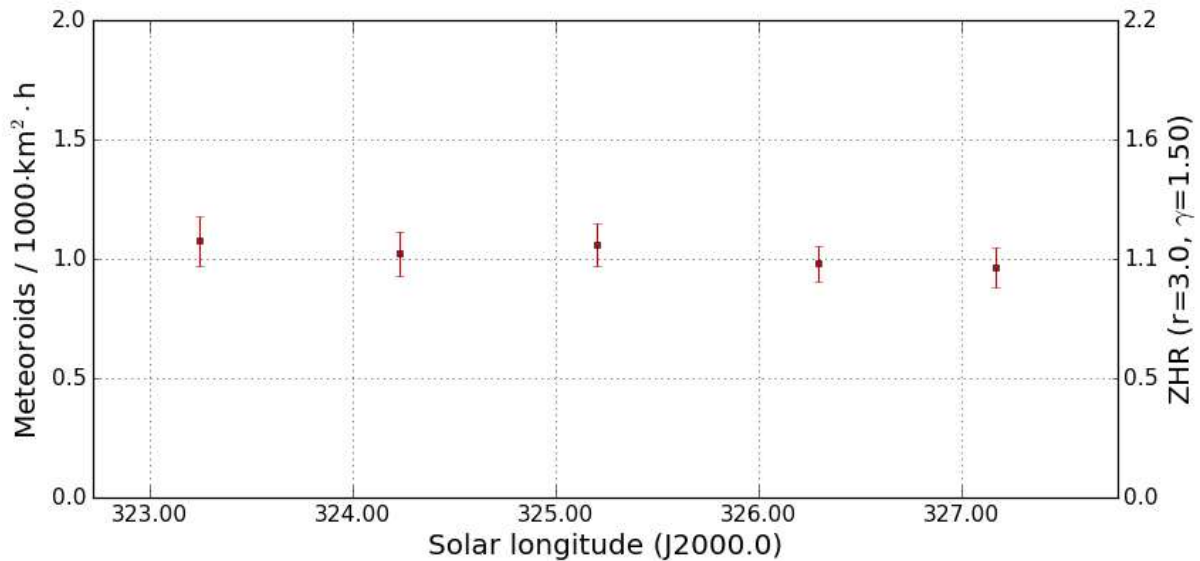


Figure 5: Average flux density profile of the beta Herculids in the years 2012 to 2017, derived from video data of the IMO Network.

Last but not least we obtained data from 2,000 February mu Virginids (516 FMV) from February 14 to 28 (14,000 SPO / 4,800 ANT). The collection area of the IMO network summed up to nearly a million km² and hour. The activity profile shows only small variations as in the other cases before (figure 6) and the flux density scatters around a value of 2.

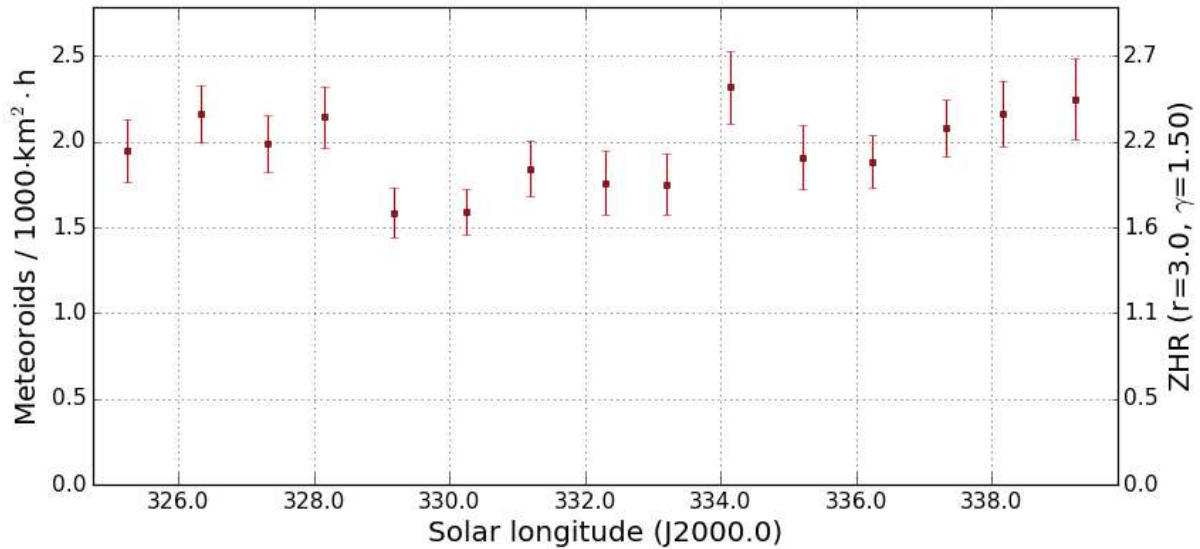


Figure 6: Average flux density profile of the February mu Virginids in the years 2012 to 2017, derived from video data of the IMO Network.

Looking at the profiles of the individual years we find indeed an outlier on February 18/19, 2014, at which the flux density was by a factor 4 to 5 higher than usual (figure 7). In detail this peak is made up of ten shower members which were recorded in a night with a particularly small effective collection area. In fact, we can even further pin down the outlier to five shower meteors recorded by all active video network cameras between 2 and 4 UT. So we can assume that this outlier is of statistical nature only.

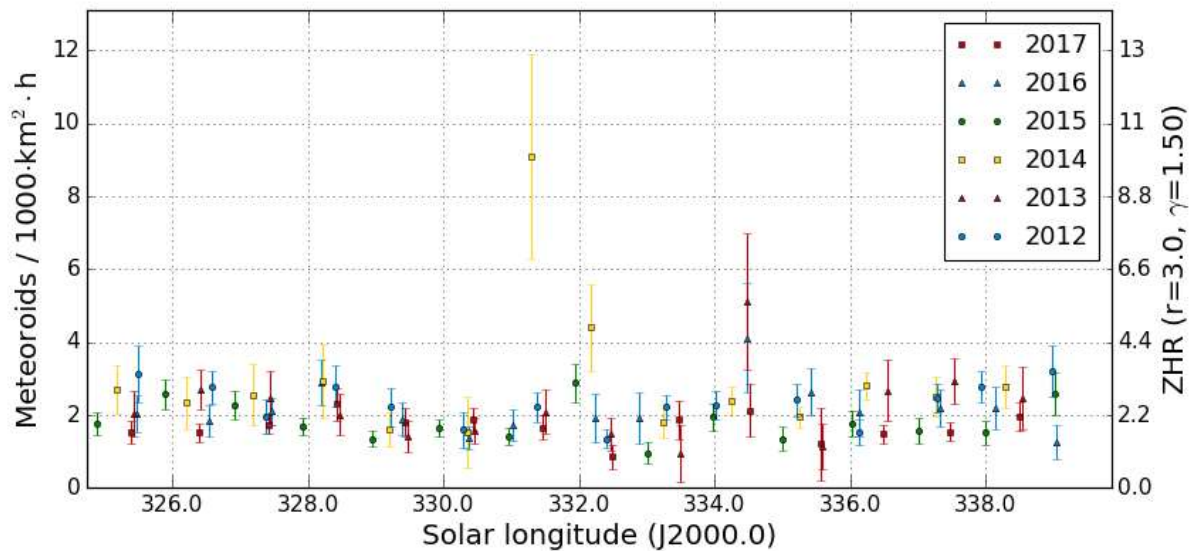


Figure 7: Individual profiles of the February mu Virginids in the years 2012 to 2017.

In summary we can conclude that no February source stands clearly out of the background. Only the February eta Draconids provide a classical activity profile with a peak on February 2/3. In this case, our video cameras are particularly effective data collectors thanks to the favorable location of the radiant and the low meteor shower velocity.

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	17	85.9	327
BOMMA	Bombardini	Faenza/IT	MARIO (1.2/4.0)	5794	3.3	739	17	102.8	268
BREMA	Breukers	Hengelo/NL	MBB3 (0.75/6)	2399	4.2	699	11	77.2	108
BRIBE	Klemt	Herne/DE	HERMINE (0.8/6)	2374	4.2	678	14	87.8	151
		Berg. Gladbach/DE	KLEMOI (0.8/6)	2286	4.6	1080	15	84.0	132
CARMA	Carli	Monte Baldo/IT	BMH2 (1.5/4.5)*	4243	3.0	371	16	124.9	449
CASFL	Castellani	Monte Baldo/IT	BMH1 (0.8/6)	2350	5.0	1611	15	119.8	252
CINFR	Cineglosso	Faenza/IT	JENNI (1.2/4)	5886	3.9	1222	16	98.7	288
CRIST	Crivello	Valbrenna/IT	BILBO (0.8/3.8)	5458	4.2	1772	14	89.7	175
			C3P8 (0.8/3.8)	5455	4.2	1586	14	90.9	351
			STG38 (0.8/3.8)	5614	4.4	2007	16	111.1	168
ELTMA	Eltri	Venezia/IT	MET38 (0.8/3.8)	5631	4.3	2151	12	72.0	111
FORKE	Förster	Carlsfeld/DE	AKM3 (0.75/6)	2375	5.1	2154	11	81.3	150
GONRU	Goncalves	Foz do Arelho/PT	FARELHO1 (1.0/2.6)	6328	2.8	469	6	7.7	23
		Tomar/PT	TEMPLAR1 (0.8/6)	2179	5.3	1842	23	173.1	373
			TEMPLAR2 (0.8/6)	2080	5.0	1508	23	163.9	277
			TEMPLAR3 (0.8/8)	1438	4.3	571	19	144.6	121
			TEMPLAR4 (0.8/3.8)	4475	3.0	442	23	153.7	287
			TEMPLAR5 (0.75/6)	2312	5.0	2259	22	141.2	260
GOVMI	Govedic	Sredisce ob Dr./SI	ORION2 (0.8/8)	1447	5.5	1841	18	117.3	138
			ORION4 (0.95/5)	2662	4.3	1043	12	86.4	85
HERCA	Hergenrother	Tucson/US	SALSA3 (0.8/3.8)	2336	4.1	544	25	216.3	338
HINWO	Hinz	Schwarzenberg/DE	HINWO1 (0.75/6)	2291	5.1	1819	15	90.8	165
IGAAN	Igaz	Hodmezovasar./HU	HUHOD (0.8/3.8)	5502	3.4	764	13	77.1	58
		Budapest/HU	HUPOL (1.2/4)	3790	3.3	475	10	57.6	27
JONKA	Jonas	Budapest/HU	HUSOR (0.95/4)	2286	3.9	445	11	42.9	51
			HUSOR2 (0.95/3.5)	2465	3.9	715	12	52.6	44
KACJA	Kac	Kamnik/SI	CVETKA (0.8/3.8)	4914	4.3	1842	7	53.0	131
		Kostanjevec/SI	METKA (0.8/12)*	715	6.4	640	16	100.3	111
		Ljubljana/SI	ORION1 (0.8/8)	1399	3.8	268	9	48.9	28
		Kamnik/SI	REZIKA (0.8/6)	2270	4.4	840	8	58.0	237
			STEFKA (0.8/3.8)	5471	2.8	379	6	49.9	77
KOSDE	Koschny	Izana Obs./ES	ICC7 (0.85/25)*	714	5.9	1464	12	72.3	368
		La Palma / ES	ICC9 (0.85/25)*	683	6.7	2951	14	119.1	736
		Izana Obs./ES	LIC1(2.8/50)*	2255	6.2	5670	14	119.5	736
LOJTO	Łojek	Grabniak/PL	PAV57 (1.0/5)	1631	3.5	269	9	60.5	81
LOPAL	Lopes	Lisboa/PT	NASO1 (0.75/6)	2377	3.8	506	18	95.2	82
MACMA	Maciejewski	Chelm/PL	PAV35 (0.8/3.8)	5495	4.0	1584	14	67.2	70
			PAV36 (0.8/3.8)*	5668	4.0	1573	11	60.7	49
			PAV43 (0.75/4.5)*	3132	3.1	319	13	60.2	55
			PAV60 (0.75/4.5)	2250	3.1	281	11	64.3	99
MARRU	Marques	Lisbon/PT	CAB1 (0.75/6)	2362	4.8	1517	22	166.0	262
			RAN1 (1.4/4.5)	4405	4.0	1241	16	137.1	156
MASMI	Maslov	Novosibirsk/RU	NOWATEC (0.8/3.8)	5574	3.6	773	4	17.2	31
MOLSI	Molau	Seysdorf/DE	AVIS2 (1.4/50)*	1230	6.9	6152	21	119.6	550
			ESCIMO2 (0.85/25)	155	8.1	3415	16	121.6	220
			MINCAM1 (0.8/8)	1477	4.9	1084	18	109.4	281
		Ketzür/DE	REMO1 (0.8/8)	1467	6.5	5491	18	89.1	290
			REMO2 (0.8/8)	1478	6.4	4778	19	102.3	366
			REMO3 (0.8/8)	1420	5.6	1967	16	98.9	177
			REMO4 (0.8/8)	1478	6.5	5358	18	96.7	310
MORJO	Morvai	Fülöpszallas/HU	HUFUL (1.4/5)	2522	3.5	532	12	89.4	68
OTMI	Otte	Pearl City/US	ORIE1 (1.4/5.7)	3837	3.8	460	21	138.1	180
PERZS	Perkó	Becskehely/HU	HUBEC (0.8/3.8)*	5498	2.9	460	20	141.3	274
ROTEC	Rothenberg	Berlin/DE	ARMEFA (0.8/6)	2366	4.5	911	6	34.1	27
SARAN	Saraiva	Camaxide/PT	RO1 (0.75/6)	2362	3.7	381	19	135.2	141
			RO2 (0.75/6)	2381	3.8	459	21	142.8	191
			RO3 (0.8/12)	710	5.2	619	21	131.1	224
			RO4 (1.0/8)	1582	4.2	549	18	82.2	80
			SOFIA (0.8/12)	738	5.3	907	16	110.3	102
SCALE	Scarpa	Alberoni/IT	LEO (1.2/4.5)*	4152	4.5	2052	12	69.0	69
SCHHA	Schremmer	Niederkrüchten/DE	DORAEMON (0.8/3.8)	4900	3.0	409	15	100.2	179
SLAST	Slavec	Ljubljana/SI	KAYAK1 (1.8/28)	563	6.2	1294	2	10.9	28
			KAYAK2 (0.8/12)	741	5.5	920	2	16.6	5
STOEN	Stomeo	Scorze/IT	MIN38 (0.8/3.8)	5566	4.8	3270	15	90.6	255
			NOA38 (0.8/3.8)	5609	4.2	1911	15	100.8	252
			SCO38 (0.8/3.8)	5598	4.8	3306	13	66.0	221
STRJO	Strunk	Herford/DE	MINCAM2 (0.8/6)	2354	5.4	2751	15	88.3	230
			MINCAM3 (0.8/6)	2338	5.5	3590	16	85.2	126
			MINCAM5 (0.8/6)	2349	5.0	1896	14	90.8	149
			MINCAM6 (0.8/6)	2395	5.1	2178	15	85.7	111
TEPIS	Tepliczky	Agostyan/HU	HUAGO (0.75/4.5)	2427	4.4	1036	16	106.2	91
			HUMOB (0.8/6)	2388	4.8	1607	18	117.6	146
WEGWA	Wegrzyk	Nieznaszyn/PL	PAV78 (0.8/6)	2286	4.0	778	12	72.6	80
YRJIL	Yrjölä	Kuusankoski/FI	FINEXCAM (0.8/6)	2337	5.5	3574	12	87.0	127
Sum							28	7030.3	14036

* active field of view smaller than video frame

2. Observing Times (h)

February	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
ARLRA	11.7	-	-	-	-	-	-	-	2.0	0.5	-	4.1	10.0	10.5	10.5
BOMMA	-	-	0.8	-	-	-	4.6	2.3	-	-	-	-	-	11.9	11.9
BREMA	-	-	6.3	-	3.3	-	-	-	1.8	-	-	12.3	12.3	12.1	8.1
BRIBE	2.8	4.8	6.2	-	5.7	-	-	-	-	-	0.5	12.1	12.0	12.0	5.5
	1.7	3.2	5.8	0.7	8.4	-	-	-	-	-	0.9	9.0	12.2	12.0	6.8
CARMA	1.7	-	1.6	10.7	-	3.6	-	5.4	-	-	4.1	11.9	5.9	12.0	12.0
CASFL	-	0.6	1.1	10.0	-	3.7	-	5.4	-	-	-	12.2	5.8	12.1	12.1
CRIST	-	-	-	3.5	-	4.7	3.4	-	-	-	-	-	-	5.0	11.7
	-	-	3.5	9.0	-	3.5	3.3	-	-	-	-	-	-	11.8	10.6
	-	-	3.8	8.4	-	4.9	5.5	-	-	-	-	-	-	5.2	-
DONJE	-	-	0.7	-	-	-	5.7	2.5	-	-	-	-	-	12.0	12.0
ELTMA	-	-	-	2.9	-	-	-	4.5	-	-	-	3.9	-	10.8	11.9
FORKE	4.8	2.0	-	-	4.5	-	-	-	-	-	-	6.8	12.2	12.1	12.1
GONRU	0.8	-	0.2	-	-	-	-	-	-	2.5	-	0.4	-	-	-
	-	1.6	-	5.7	10.7	-	11.8	8.6	4.3	3.3	-	-	2.1	9.5	11.6
	-	1.3	-	5.7	9.9	-	12.0	8.1	4.2	2.1	-	-	1.7	8.5	9.7
	0.9	-	-	4.7	11.9	-	11.8	8.0	2.8	-	-	-	-	10.3	11.5
	-	0.3	-	4.4	9.7	-	11.8	6.7	2.3	3.1	-	-	1.1	9.3	8.9
	0.8	-	-	5.1	11.2	-	11.5	6.9	2.1	0.5	-	0.9	-	6.3	9.1
GOVMI	2.2	9.4	8.9	0.7	-	0.2	-	-	-	-	-	-	11.9	11.8	11.8
	0.8	7.9	7.7	0.4	-	-	-	-	-	-	-	-	10.4	11.6	11.3
HERCA	10.5	10.9	11.4	11.3	11.0	5.7	10.3	10.5	8.8	11.2	10.7	5.8	3.8	7.2	4.1
HINWO	10.5	0.6	-	-	1.6	-	-	-	-	1.2	5.4	6.2	12.1	12.1	12.0
IGAAN	-	-	-	0.8	-	-	-	-	-	8.5	5.2	9.6	-	3.0	-
	-	-	2.6	-	-	-	-	-	-	7.2	8.0	1.9	-	-	-
JONKA	-	-	6.0	-	-	-	-	-	-	2.9	3.3	-	-	-	-
	-	-	4.9	-	0.2	-	-	-	-	4.5	2.0	-	-	-	-
KACJA	-	-	-	-	-	-	-	-	-	-	-	-	-	3.2	11.7
	3.6	-	7.6	4.9	-	-	-	-	-	-	-	-	3.3	10.2	11.0
	-	-	-	-	-	-	-	-	-	-	-	-	-	3.4	9.4
	-	-	-	-	-	-	-	-	-	-	-	-	-	6.7	12.0
	-	-	-	-	-	-	-	-	-	-	-	-	-	3.2	12.0
KOSDE	3.4	7.1	8.4	3.0	2.6	-	3.1	2.6	2.2	-	-	-	-	-	-
	10.7	9.9	10.8	9.2	8.8	8.3	6.4	5.6	1.4	-	-	-	-	-	-
	7.3	10.9	10.9	8.0	8.9	8.3	7.3	6.3	1.4	-	-	-	-	-	-
LOJTO	1.8	-	-	-	-	-	-	-	2.8	10.8	4.9	-	7.4	11.6	-
LOPAL	-	0.2	-	3.8	10.1	-	-	8.4	3.1	-	-	-	-	-	5.6
MACMA	-	-	-	-	-	-	-	-	6.9	8.0	4.1	-	3.6	6.9	-
	2.2	-	-	-	-	-	-	-	-	9.9	-	-	4.7	6.2	-
	2.2	-	-	-	-	-	-	-	9.4	9.2	1.8	-	2.7	1.8	-
	-	-	-	-	-	-	-	-	-	6.9	3.6	-	4.9	8.2	-
MARRU	-	4.5	-	5.7	11.9	-	11.7	8.8	6.6	2.3	-	1.0	4.3	9.5	9.0
	-	-	-	5.5	11.3	-	11.7	10.8	-	-	-	-	2.2	5.2	5.6
MASMI	1.1	4.7	-	-	-	-	-	5.3	-	-	-	-	-	-	6.1
MOLSI	-	9.3	3.6	3.8	0.5	-	0.2	4.9	-	2.5	4.4	-	11.5	11.4	11.4
	-	11.6	3.1	4.7	-	-	-	4.7	-	4.5	3.4	-	11.9	11.9	11.8
	-	7.0	2.9	4.1	0.5	-	-	4.6	-	2.9	2.4	-	10.7	11.4	11.8
	9.1	-	2.1	-	-	-	-	1.8	4.0	-	-	6.5	10.2	9.9	9.8
	10.2	-	2.8	-	-	-	-	2.0	3.8	1.0	-	6.6	11.2	11.1	11.1
	9.8	-	2.2	-	-	-	-	-	3.8	-	-	7.0	10.6	11.4	11.6
	9.7	-	2.7	-	-	-	-	0.5	2.0	1.1	-	6.6	10.6	11.3	11.9
MORJO	-	5.7	7.9	-	-	-	-	-	-	-	6.3	12.0	5.1	-	-
OTTMI	7.2	2.5	12.3	2.5	12.3	-	-	3.9	3.0	0.5	-	12.0	11.9	2.8	4.3
PERZS	2.6	11.4	8.5	1.7	-	-	8.4	-	-	-	-	-	10.7	12.0	12.0
ROTEC	12.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SARAN	0.2	1.2	-	5.8	8.6	-	8.3	9.2	-	-	-	-	-	-	6.4
	0.2	-	-	3.0	9.5	-	11.6	10.8	-	0.9	-	-	1.2	5.8	6.2
	-	1.9	-	5.4	8.9	-	10.4	9.8	-	1.7	-	-	1.9	4.9	5.7
	-	-	-	0.2	5.7	-	11.7	-	-	0.2	-	-	0.2	1.3	4.3
	-	-	-	3.7	11.9	-	11.4	9.2	-	-	-	-	-	4.1	5.2
SCALE	-	-	-	-	-	-	-	6.3	-	-	-	4.0	8.9	11.7	9.7
SCHHA	4.1	2.1	7.4	1.5	6.8	-	-	-	2.0	-	-	8.6	12.3	12.2	8.0
SLAST	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
STOEN	-	-	1.0	5.3	-	-	-	4.1	-	-	-	3.8	9.8	12.0	12.0
	-	-	1.1	5.2	-	-	-	4.8	-	-	-	7.0	10.1	12.0	11.9
	-	-	1.1	5.6	-	-	0.2	5.9	-	-	-	-	-	12.1	-
STRJO	3.1	9.0	6.7	-	1.1	-	-	-	-	1.3	0.3	6.4	12.3	12.1	10.0
	2.6	8.9	7.6	-	1.2	-	-	-	-	2.8	-	7.7	11.4	12.1	11.3
	3.3	9.3	7.5	-	0.8	-	-	-	-	2.9	-	5.4	12.1	12.1	10.4
	2.5	7.5	7.2	-	0.3	-	-	-	-	0.8	-	7.7	12.3	12.0	10.1
TEPIS	-	5.6	8.8	1.2	3.2	0.4	-	-	-	7.9	9.5	11.6	11.9	11.9	8.8
	-	4.2	7.8	-	2.5	-	2.9	-	-	3.4	8.3	10.4	11.9	11.9	6.2
WEGWA	-	-	-	-	0.6	-	-	-	-	-	4.3	6.5	-	11.9	11.3
YRJIL	-	-	-	-	-	10.9	4.4	11.8	3.1	9.5	-	-	8.9	9.1	2.5
Sum	158.3	177.1	213.5	177.8	216.1	54.2	201.4	211.0	83.8	138.5	93.4	227.9	376.2	567.6	533.3

February	16	17	18	19	20	21	22	23	24	25	26	27	28
ARLRA	1.1	-	2.4	-	1.3	7.2	6.7	1.9	9.8	-	0.6	3.0	2.6
BOMMA	11.8	0.2	12.0	5.4	9.6	2.6	1.2	0.2	-	8.4	11.3	5.3	3.3
BREMA	-	-	8.9	-	-	-	-	-	4.1	-	-	2.9	5.1
BRIBE	2.3	-	10.5	-	-	-	-	1.7	10.2	-	-	1.5	-
	2.1	-	9.7	-	-	-	-	-	9.5	0.8	-	1.2	-
CARMA	12.0	9.9	8.5	11.3	3.3	11.0	-	-	-	-	-	-	-
CASFL	12.0	10.2	8.4	11.1	4.0	11.1	-	-	-	-	-	-	-
CRIST	1.1	10.2	11.6	6.5	5.7	5.5	2.5	-	5.7	11.3	4.7	-	5.6
	-	10.0	10.5	2.3	5.3	-	-	-	1.9	11.3	1.1	-	5.6
	-	-	11.6	6.7	5.8	6.6	3.3	-	5.9	11.3	5.8	-	6.1
DONJE	12.0	0.6	11.9	5.9	10.5	2.6	-	2.1	-	11.6	11.4	6.0	3.6
ELTMA	3.0	-	5.1	3.8	4.7	-	-	-	1.9	11.3	8.2	-	-
FORKE	-	-	4.2	-	-	-	-	0.5	5.2	-	8.3	8.6	-
GONRU	-	-	-	-	-	-	-	-	-	-	-	1.3	2.5
	11.6	11.1	9.1	11.5	11.4	11.4	10.9	1.5	8.8	1.1	5.8	2.8	6.9
	11.5	10.9	8.8	11.6	11.6	11.5	9.9	2.7	9.0	1.1	4.6	1.2	6.3
	11.5	11.0	7.8	11.4	11.3	11.3	7.0	0.9	8.2	-	1.4	0.9	-
	11.5	11.2	8.4	11.6	11.6	11.5	10.7	1.6	8.9	0.7	1.6	0.5	6.3
	11.6	10.9	7.7	11.2	11.2	10.5	5.9	-	7.9	1.1	1.1	0.9	6.8
GOVMI	7.9	-	0.3	7.8	6.3	2.2	3.7	3.5	-	11.2	7.7	9.8	-
	7.4	-	-	-	-	-	-	2.4	-	11.1	6.3	9.1	-
HERCA	10.8	6.3	-	-	1.3	10.9	11.2	8.4	10.5	9.6	3.0	11.1	-
HINWO	0.2	-	3.9	-	-	-	-	3.8	7.5	-	5.6	8.1	-
IGAAN	-	-	-	-	5.5	9.2	6.6	8.0	-	9.8	1.7	6.5	2.7
	-	-	3.5	-	2.4	8.7	-	-	-	10.8	5.0	7.5	-
JONKA	-	-	2.0	-	2.7	4.9	3.0	0.3	-	11.4	2.2	4.2	-
	-	-	1.7	-	3.2	7.2	1.4	5.1	-	11.5	4.0	6.9	-
KACJA	11.6	-	-	8.2	5.2	-	-	-	-	11.3	1.8	-	-
	10.9	-	-	9.1	5.3	1.6	0.9	1.6	0.6	11.4	8.5	9.8	-
	5.7	-	-	7.7	4.9	0.6	-	-	-	8.7	7.0	1.5	-
	12.0	-	-	8.3	5.4	-	-	-	-	11.4	1.9	0.3	-
	11.8	-	-	6.5	4.9	-	-	-	-	11.5	-	-	-
KOSDE	-	-	-	-	-	-	-	-	-	10.6	9.4	10.5	9.4
	-	-	-	-	-	-	9.6	-	-	10.6	10.6	9.6	7.6
	-	-	-	-	-	-	9.9	-	-	10.6	8.6	10.6	10.5
LOJTO	9.4	-	-	-	-	0.7	-	-	-	-	-	11.1	-
LOPAL	11.2	3.8	3.6	8.8	8.6	6.2	0.5	4.2	10.2	-	1.4	2.5	3.0
MACMA	9.9	-	-	4.4	-	2.5	0.5	0.5	1.0	7.6	-	5.8	5.5
	10.4	-	-	4.2	-	2.7	-	-	1.5	8.1	-	6.2	4.6
	6.3	-	-	3.6	-	1.5	-	-	1.9	7.7	-	7.0	5.1
	10.5	-	-	4.4	-	3.3	-	-	1.7	8.3	-	7.0	5.5
MARRU	11.6	11.6	10.2	11.5	11.4	11.5	7.7	5.4	-	-	4.0	0.8	5.0
	11.7	11.6	3.9	11.5	11.4	10.2	5.3	8.0	11.2	-	-	-	-
MASMI	-	-	-	-	-	-	-	-	-	-	-	-	-
MOLSI	5.0	-	5.3	0.8	-	-	1.8	3.2	10.9	7.2	10.8	9.5	1.6
	5.4	-	6.8	-	-	-	2.4	-	11.3	7.5	11.2	9.4	-
	4.8	-	6.0	-	-	-	1.2	1.5	11.3	6.7	11.2	8.4	-
	2.4	-	2.5	-	1.3	5.8	6.4	2.0	9.5	-	1.1	2.1	2.6
	3.1	-	3.1	-	2.1	6.8	7.1	2.9	10.6	-	1.1	2.2	3.5
	3.2	-	3.2	-	1.4	7.3	8.0	3.3	10.2	-	-	2.6	3.3
	-	-	3.3	-	2.0	6.9	7.3	3.0	10.8	-	1.4	2.4	3.2
MORJO	-	-	-	-	6.8	8.5	6.2	7.6	-	11.4	3.9	8.0	-
OTTMI	5.3	11.8	11.7	8.7	-	1.0	11.2	-	-	2.1	10.8	0.3	-
PERZS	7.3	-	6.3	8.7	8.5	1.7	4.7	4.8	2.1	11.4	7.4	10.1	1.0
ROTEC	-	-	0.5	-	-	8.7	3.5	0.8	8.4	-	-	-	-
SARAN	12.1	11.7	6.6	11.9	11.6	9.2	6.7	4.4	11.7	-	2.6	3.2	3.8
	11.8	11.7	7.4	11.3	11.2	9.6	6.2	3.9	11.5	-	1.9	2.9	4.2
	11.0	11.3	7.1	10.8	10.7	6.4	4.2	2.2	8.0	-	1.6	3.0	4.2
	11.6	10.9	4.4	9.8	8.5	0.6	0.3	-	6.8	-	0.9	1.7	3.1
	11.5	11.3	6.0	11.8	-	1.3	-	3.5	11.5	-	1.4	2.7	3.8
SCALE	3.4	3.8	7.2	-	-	-	-	-	0.5	11.4	1.5	-	0.6
SCHHA	5.1	-	11.9	-	-	-	-	2.6	11.5	-	-	4.1	-
SLAST	-	-	-	-	-	-	-	-	-	6.2	4.7	-	-
	-	-	-	-	-	-	-	-	-	9.4	7.2	-	-
STOEN	4.0	7.2	6.8	1.8	-	-	-	-	3.0	11.6	7.2	-	1.0
	4.0	8.4	7.0	-	4.7	-	-	-	3.5	11.6	8.5	-	1.0
	3.9	8.2	-	1.0	4.2	-	-	-	3.1	11.0	8.9	-	0.8
STRJO	3.5	-	8.4	-	-	2.2	-	-	10.7	-	-	1.2	-
	3.3	-	1.6	-	-	1.7	-	-	10.4	-	0.2	1.2	1.2
	3.4	-	8.9	-	-	2.4	-	-	10.7	-	-	1.6	-
	3.0	-	7.9	-	-	2.1	-	-	10.6	-	-	1.1	0.6
TEPIS	-	-	8.8	4.8	2.2	8.5	1.1	-	-	-	-	-	-
	-	-	8.7	-	2.3	7.5	1.6	-	1.6	11.3	6.0	9.1	-
WEGWA	5.7	-	-	11.4	-	6.1	-	1.0	5.0	-	0.8	8.0	-
YRJIL	-	-	-	-	-	8.2	-	4.0	4.6	10.0	-	-	-
Sum	408.2	225.8	343.6	299.1	263.3	299.2	198.3	115.0	352.9	392.0	266.9	276.8	159.1

3. Results (Meteors)

February	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
ARLRA	55	-	-	-	-	-	-	-	1	1	-	9	22	44	61
BOMMA	-	-	7	-	-	-	9	6	-	-	-	-	-	29	28
BREMA	-	-	12	-	2	-	-	-	1	-	-	12	22	22	19
BRIBE	5	3	10	-	11	-	-	-	-	-	1	15	33	26	8
	1	1	7	2	23	-	-	-	-	-	2	9	26	25	8
CARMA	2	-	7	50	-	21	-	18	-	-	12	36	21	53	63
CASFL	-	2	2	22	-	20	-	7	-	-	-	24	11	24	34
CRIST	-	-	-	4	-	28	8	-	-	-	-	-	-	20	40
	-	-	7	13	-	7	5	-	-	-	-	-	-	26	21
	-	-	10	34	-	31	16	-	-	-	-	-	-	33	-
DONJE	-	-	4	-	-	-	19	5	-	-	-	-	-	15	32
ELTMA	-	-	-	4	-	-	-	18	-	-	-	2	-	14	21
FORKE	14	3	-	-	7	-	-	-	-	-	-	7	21	29	33
GONRU	1	-	1	-	-	-	-	-	-	14	-	1	-	-	-
	-	2	-	16	21	-	36	17	14	2	-	-	1	19	35
	-	2	-	4	19	-	33	18	11	5	-	-	1	10	16
	1	-	-	4	11	-	14	4	1	-	-	-	-	5	6
	-	1	-	6	16	-	35	17	11	4	-	-	2	12	23
	4	-	-	7	25	-	22	14	3	2	-	5	-	12	24
GOVMI	3	13	16	5	-	1	-	-	-	-	-	-	7	12	14
	2	10	10	1	-	-	-	-	-	-	-	-	9	6	9
HERCA	19	19	18	12	11	6	14	16	13	13	14	6	3	5	14
HINWO	21	4	-	-	3	-	-	-	-	2	2	16	24	27	22
IGAAN	-	-	-	1	-	-	-	-	-	5	4	9	-	1	-
	-	-	1	-	-	-	-	-	-	2	4	3	-	-	-
JONKA	-	-	13	-	-	-	-	-	-	3	4	-	-	-	-
	-	-	12	-	1	-	-	-	-	3	4	-	-	-	-
KACJA	-	-	-	-	-	-	-	-	-	-	-	-	-	1	39
	3	-	7	13	-	-	-	-	-	-	-	-	4	10	12
	-	-	-	-	-	-	-	-	-	-	-	-	-	4	7
	-	-	-	-	-	-	-	-	-	-	-	-	-	11	67
	-	-	-	-	-	-	-	-	-	-	-	-	-	1	25
KOSDE	23	58	49	41	6	-	8	9	5	-	-	-	-	-	-
	61	72	61	63	50	64	56	48	16	-	-	-	-	-	-
	30	83	68	75	56	55	49	34	12	-	-	-	-	-	-
LOJTO	2	-	-	-	-	-	-	-	2	15	3	-	8	22	-
LOPAL	-	1	-	6	8	-	-	7	3	-	-	-	-	-	7
MACMA	-	-	-	-	-	-	-	-	9	6	2	-	2	2	-
	1	-	-	-	-	-	-	-	4	4	-	-	6	1	-
	1	-	-	-	-	-	-	-	15	6	2	-	5	2	-
	-	-	-	-	-	-	-	-	12	3	-	-	12	4	-
MARRU	-	3	-	13	35	-	22	18	12	1	-	2	3	13	12
	-	-	-	4	16	-	18	14	-	-	-	-	2	4	10
MASMI	1	7	-	-	-	-	-	7	-	-	-	-	-	-	16
MOLSI	-	15	30	39	2	-	1	17	-	3	3	-	40	44	64
	-	3	6	10	-	-	-	7	-	7	3	-	32	18	23
	-	4	17	23	1	-	-	8	-	4	1	-	30	18	29
	42	-	2	-	-	-	-	1	9	-	-	21	37	42	48
	52	-	8	-	-	-	-	5	11	1	-	16	36	54	49
	31	-	2	-	-	-	-	-	1	-	-	18	14	36	18
	27	-	7	-	-	-	-	1	4	1	-	14	34	39	56
MORJO	-	7	10	-	-	-	-	-	-	-	7	5	1	-	-
OTTMI	12	10	14	12	8	-	-	8	2	3	-	14	14	12	8
PERZS	3	28	25	10	-	-	19	-	-	-	-	-	12	26	19
ROTEC	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SARAN	1	1	-	4	12	-	10	7	-	-	-	-	-	-	12
	1	-	-	3	19	-	22	19	-	1	-	-	1	6	15
	-	3	-	6	20	-	17	31	-	2	-	-	3	4	17
	-	-	-	1	8	-	10	-	-	1	-	-	1	3	7
	-	-	-	5	8	-	10	10	-	-	-	-	-	1	10
SCALE	-	-	-	-	-	-	-	6	-	-	-	1	14	10	5
SCHHA	10	1	13	2	19	-	-	-	2	-	-	13	21	27	10
SLAST	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
STOEN	-	-	8	4	-	-	-	26	-	-	-	3	25	47	35
	-	-	7	4	-	-	-	20	-	-	-	5	31	33	39
	-	-	11	16	-	-	1	18	-	-	-	-	-	45	-
STRJO	3	20	22	-	5	-	-	-	-	3	3	17	33	33	23
	2	14	18	-	3	-	-	-	-	1	-	10	16	23	16
	3	24	15	-	1	-	-	-	-	2	-	13	18	22	16
	4	7	9	-	1	-	-	-	-	2	-	6	19	21	9
TEPIS	-	6	15	1	1	3	-	-	-	5	3	13	13	4	8
	-	4	14	-	1	-	3	-	-	3	9	15	12	12	2
WEGWA	-	-	-	-	1	-	-	-	-	-	6	7	-	14	16
YRJIL	-	-	-	-	-	12	4	23	4	13	-	-	14	13	5
Sum	451	431	575	540	431	248	461	484	162	152	92	347	716	1151	1285

February	16	17	18	19	20	21	22	23	24	25	26	27	28
ARLRA	1	-	13	-	5	18	14	7	58	-	2	3	13
BOMMA	40	1	31	5	19	2	2	1	-	29	35	10	14
BREMA	-	-	4	-	-	-	-	-	6	-	-	4	4
BRIBE	2	-	14	-	-	-	-	2	20	-	-	1	-
	3	-	7	-	-	-	-	-	12	2	-	4	-
CARMA	51	44	17	29	2	23	-	-	-	-	-	-	-
CASFL	27	36	7	24	2	10	-	-	-	-	-	-	-
CRIST	3	30	27	25	7	1	5	-	10	34	12	-	34
	-	13	14	8	5	-	-	-	6	26	1	-	23
	-	-	30	35	14	5	5	-	24	57	14	-	43
DONJE	16	1	23	2	7	1	-	2	-	11	19	2	9
ELTMA	2	-	6	2	3	-	-	-	9	20	10	-	-
FORKE	-	-	8	-	-	-	-	4	6	-	9	9	-
GONRU	-	-	-	-	-	-	-	-	-	-	-	4	2
	31	26	27	27	22	20	10	5	17	2	3	3	17
	26	22	14	18	19	19	3	2	11	4	6	1	13
	16	15	7	14	7	4	1	2	5	-	1	3	-
	26	27	24	31	19	11	3	1	7	1	1	2	7
	19	22	22	17	25	12	2	-	7	4	3	4	5
GOVMI	6	-	2	6	5	1	1	2	-	19	6	19	-
	3	-	-	-	-	-	-	3	-	17	5	10	-
HERCA	21	8	-	-	1	17	19	12	27	32	2	16	-
HINWO	1	-	8	-	-	-	-	2	15	-	6	12	-
IGAAN	-	-	-	-	2	10	4	7	-	5	1	7	2
	-	-	1	-	1	5	-	-	-	5	3	2	-
JONKA	-	-	2	-	2	7	2	2	-	3	4	9	-
	-	-	1	-	1	4	1	2	-	4	4	7	-
KACJA	33	-	-	15	6	-	-	-	-	33	4	-	-
	8	-	-	7	5	1	1	4	2	14	8	12	-
	4	-	-	1	5	1	-	-	-	2	3	1	-
	64	-	-	21	16	-	-	-	-	54	2	2	-
	26	-	-	4	5	-	-	-	-	16	-	-	-
KOSDE	-	-	-	-	-	-	-	-	-	40	38	42	49
	-	-	-	-	-	-	57	-	-	39	53	54	42
	-	-	-	-	-	-	53	-	-	62	61	51	47
LOJTO	14	-	-	-	-	2	-	-	-	-	-	13	-
LOPAL	13	1	4	7	4	4	2	1	8	-	1	2	3
MACMA	10	-	-	11	-	6	3	2	2	7	-	3	5
	9	-	-	4	-	4	-	-	3	9	-	4	4
	5	-	-	3	-	2	-	-	3	3	-	5	3
	14	-	-	10	-	8	-	-	6	13	-	8	9
MARRU	22	34	18	15	6	14	4	1	-	-	4	2	8
	11	16	9	19	2	9	2	6	14	-	-	-	-
MASMI	-	-	-	-	-	-	-	-	-	-	-	-	-
MOLSI	18	-	17	1	-	-	4	5	83	16	96	42	10
	5	-	9	-	-	-	4	-	26	10	45	12	-
	6	-	12	-	-	-	6	2	38	12	52	18	-
	2	-	8	-	1	8	12	3	43	-	1	4	6
	1	-	15	-	3	15	19	5	54	-	2	4	16
	5	-	7	-	2	11	4	4	18	-	-	1	5
	-	-	17	-	4	16	8	5	55	-	3	4	15
MORJO	-	-	-	-	4	10	2	3	-	4	2	13	-
OTTMI	9	15	14	1	-	2	12	-	-	1	7	2	-
PERZS	15	-	23	14	10	5	1	4	3	21	5	30	1
ROTEC	-	-	1	-	-	2	3	2	9	-	-	-	-
SARAN	17	18	8	11	3	6	3	3	15	-	5	3	2
	12	23	14	15	6	4	1	1	18	-	3	2	5
	7	21	14	26	7	6	1	4	20	-	6	6	3
	8	9	5	14	1	1	1	-	4	-	3	2	1
	13	11	9	12	-	2	-	1	6	-	1	2	1
SCALE	1	4	4	-	-	-	-	-	1	18	4	-	1
SCHHA	6	-	23	-	-	-	-	9	17	-	-	6	-
SLAST	-	-	-	-	-	-	-	-	-	22	6	-	-
	-	-	-	-	-	-	-	-	-	4	1	-	-
STOEN	3	12	15	4	-	-	-	-	22	31	13	-	7
	6	17	9	-	4	-	-	-	21	38	14	-	4
	6	19	-	2	6	-	-	-	34	43	18	-	2
STRJO	4	-	19	-	-	2	-	-	36	-	-	7	-
	2	-	2	-	-	1	-	-	12	-	1	4	1
	1	-	14	-	-	2	-	-	15	-	-	3	-
	4	-	8	-	-	1	-	-	18	-	-	1	1
TEPIS	-	-	7	2	1	6	3	-	-	-	-	-	-
	-	-	3	-	2	12	1	-	4	13	17	19	-
WEGWA	1	-	-	7	-	6	-	2	8	-	2	10	-
YRJIL	-	-	-	-	-	12	-	3	10	14	-	-	-
Sum	679	445	617	469	271	351	279	126	868	814	628	526	437