Results of the IMO Video Meteor Network – March 2011

Sirko Molau, Abenstalstr. 13b, 84072 Seysdorf *2011/05/12*

1. Observers

Code	Name	Place	Camera	FOV [°²]	St.LM [mag]	Eff.CA [km²]	Nights	Time [h]	Tot. CA [10³km²h]	Meteors
BENOR	Benitez-S.	Las Palmas	TIMES4 (1.4/50)	2359	3.2	492	8	17.6	30.6	45
BERER	Berko	Ludanyhalaszi	HULUD1 (0.95/3)	6500	3.8	2209	24	73.0	-	182
			HULUD2 (0.75/6)	2258	4.7	1348	24	128.0	-	356
BRIBE	Brinkmann	Herne	HERMINE (0.8/6)	2374	4.2	1084	22	95.6	179.7	270
		Bergisch Gladbach	KLEMOI (0.8/6)	2386	5.4	2781	22	84.7	243.4	265
CASFL	Castellani	Monte Baldo	BMH1 (0.8/6)	2350	-	-	21	96.6		271
			BMH2 (1.5/4.5)*	4243	-	-	15	62.2		163
CRIST	Crivello	Valbrevenna	C3P8 (0.8/3.8)	5575	4.2	2525	19	126.1	151.2	267
			STG38 (0.8/3.8)	5593	4.3	2810	15	109.4	-	285
CSISZ	Csizmadia	Zalaegerszeg	HUVCSE01 (0.95/5)	2439	3.0	249	21	39.0		93
CURMA	Currie	Grove	MIC4 (0.8/6)	1471	5.2	3008	13	82.9	135.6	169
ELTMA	Eltri	Venezia	MET38 (0.8/3.8)	5620	4.3	1778	13	98.9	158.0	192
GONRU	Goncalves	Tomar	TEMPLAR1 (0.8/6)*	2188	5.3	2331	13	65.5	94.6	222
			TEMPLAR2 (0.8/6)*	2303	5.0	2397	15	68.9	194.9	213
GOVMI	Govedic	Sredisce ob Dravi	ORION2 (0.8/8)	1471	6.0	3916	24	105.4	-	269
HERCA	Hergenrother	Tucson	SALSA3 (1.2/4)*	4332	4.0	1471	30	251.0	285.6	277
HINWO	Hinz	Brannenburg	AKM2 (0.85/25)*	754	5.7	1306	18	136.5	151.2	286
IGAAN	Igaz	Baja	HUBAJ (0.8/3.8)	5600	4.3	3338	22	118.9	103.0	224
		Hodmezovasarhely	HUHOD (0.8/3.8)	5609	4.2	3031	18	74.3	75.8	115
		Budapest	HUPOL (1.2/4)	3929	3.5	1144	22	90.2	129.7	163
JONKA	Jonas	Budapest	HUSOR (0.95/4.0)	5262	3.9	1159	20	67.1	231.9	174
KACJA	Kac	Kostanjevec	METKA (0.8/8)*	1381	4.0	2246	17	88.8		189
		Ljubljana	ORION1 (0.8/8)	1420	5.3	2336	20	119.4	30.3	155
		Kamnik	REZIKA (0.8/6)	2307	5.0	2293	16	118.2	71.8	412
			STEFKA (0.8/3.8)	5540	4.2	2882	15	101.6	-	224
KERST	Kerr	Glenlee	GOCAM1 (0.8/3.8)	5238	4.2	2637	8	42.4	-	232
LUNRO	Lunsford	Chula Vista	BOCAM (1.4/50)*	1860	5.1	1719	11	72.7	-	269
MOLSI	Molau	Seysdorf	AVIS2 (1.4/50)*	1771	6.1	4182	18	162.2	426.2	995
			MINCAM1 (0.8/8)	1477	4.9	1716	23	193.2	104.0	376
		Ketzür	REMO1 (0.8/3.8)	5592	3.0	974	21	189.0	81.2	152
			REMO2 (0.8/3.8)	5635	4.3	2846	19	132.3	82.9	211
MORJO	Morvai	Fülöpszallas	HUFUL (1.4/5)	2522	3.5	532	22	132.8	53.9	160
OTTMI	Otte	Pearl City	ORIE1 (1.4/5.7)	3837	-	-	17	56.3	138.3	150
PERZS	Perko	Becsehely	HUBEC (0.8/3.8)*	5448	3.4	1500	22	166.2	391.0	343
ROTEC	Rothenberg	Berlin	ARMEFA (0.8/6)	2369	4.8	1801	16	80.9	174.6	155
SCHHA	Schremmer	Niederkrüchten	DORAEMON (0.8/3.8)	5537	3.0	846	23	51.7	160.5	139
SLAST	Slavec	Ljubljana	KAYAK1 (1.8/28)	604	6.5	1849	14	62.3	-	170
STOEN	Stomeo	Scorze	MIN38 (0.8/3.8)	5631	4.1	2407	17	115.5	202.6	416
			NOA38 (0.8/3.8)	5609	4.9	5800	15	92.2	137.8	230
			SCO38 (0.8/3.8)	5598	5.0	4416	18	134.3	236.1	449
STRJO	Strunk	Herford	MINCAM2 (0.8/6)	2357	4.7	1380	20	78.0	-	223
			MINCAM3 (0.8/12)	728	6.1	2271	22	87.1	171.6	266
			MINCAM5 (0.8/6)	2344	5.2	2535	18	111.7	-	393
TEPIS	Tepliczky	Budapest	HUMOB (0.8/6)	2375	4.9	2258	9	54.9	87.9	118
TRIMI	Triglav	Velenje	SRAKA (0.8/6)*	2222	-	-	22	64.6	-	169
YRJIL	Yrjölä	Kuusankoski	FINEXCAM (0.8/6)	2337	5.5	3574	16	75.2	190.7	184
Sum							31	4575.3		11281

* active field of view smaller than video frame

2. Observing Times (h)

March	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
BENOR	-	-	-	-	-	-	2.6	-	-	-	-	1.5	-	1.4	3.2
BERER	5.7	-	-	2.6	5.4	9.3	4.1	4.0	5.7	0.4	1.6	1.4	1.4	2.7	1.9
	11.3	-	-	7.1	7.1	7.6	9.9	7.5	4.1	0.8	2.5	5.5	2.6	2.1	4.8
BRIBE	3.1	5.3	5.7	2.5	0.9	9.6	7.0	7.7	3.1	-	4.5	-	-	0.8	3.5
	4.0	5.8	4.2	5.0	2.3	8.6	6.1	6.2	0.5	-	3.0	-	-	2.9	-

CASFL	1.8	-	3.3	2.1	8.9	4.5	5.0	4.9	7.1	4.1	-	-	-	-	-
	3.8	-	-	2.2	5.5	2.9	6.1	6.2	6.7	2.4	-	-	-	-	-
CRIST	-	5.0	-	5.6	2.4	8.5	9.5	7.9	7.6	-	-	-	-	-	-
	-	5.4	-	10.9	0.5	10.2	10.8	10.5	-	-	-	-	-	-	-
CSISZ	1.0	-	-	1.0	0.9	3.1	3.9	3.1	0.5	3.3	1.7	-	-	0.6	0.2
CURMA	-	-	-	5.0	-	9.0	10.9	2.0	-	10.7	-	-	10.5	-	-
ELTMA	-	-	-	6.2	9.8	-	8.3	10.8	9.5	-	-	-	-	-	-
GONRU	9.9	-	1.6	-	-	-	-	-	-	-	-	-	-	-	-
	8.9	8.6	1.6	-	-	-	-	-	-	-	-	-	-	-	4.9
GOVMI	1.3	-	-	3.4	3.1	8.5	6.8	8.6	6.8	4.1	7.4	0.3	-	4.0	1.0
HERCA	10.9	10.9	2.1	10.4	3.1	10.7	-	10.7	9.6	10.6	10.3	10.5	10.0	10.0	6.6
HINWO	-	10.6	10.6	10.4	10.5	5.6	10.3	6.1	-	5.1	10.1	-	-	8.2	1.6
IGAAN	-	-	-	11.0	11.0	2.2	10.9	10.8	5.6	4.0	10.7	2.8	1.0	1.5	3.5
	-	-	-	-	11.1	4.8	11.0	5.5	10.9	0.7	0.8	2.8	-	1.3	2.0
	3.4	-	-	2.0	5.3	10.9	5.0	10.8	2.2	1.3	2.2	0.7	-	2.3	2.1
JONKA	2.7	-	-	2.8	1.8	5.2	4.6	6.0	2.5	1.5	2.7	0.8	-	2.8	4.5
KACJA	-	-	-	3.8	3.3	-	9.7	9.7	9.9	7.2	4.0	3.4	-	2.8	-
	1.5	-	-	-	1.8	3.2	11.0	10.9	10.9	2.7	10.8	0.3	-	-	-
	-	-	-	-	-	-	9.0	8.6	7.5	6.1	10.7	-	-	-	-
	-	-	-	-	-	-	9.1	6.5	8.0	6.1	4.8	-	-	-	-
KERST	-	-	-	-	-	-	6.8	-	4.8	4.5	-	-	-	-	-
LUNRO	10.1	9.4	-	-	6.8	6.9	-	-	6.4	8.2	5.6	-	1.1	5.4	6.4
MOLSI	10.6	10.5	10.2	10.3	10.2	10.3	10.3	10.2	-	7.8	10.0	-	-	8.9	6.0
	11.3	11.0	11.1	11.1	11.1	11.0	10.9	10.9	-	5.9	10.7	-	-	10.5	3.3
	11.2	11.1	11.1	11.0	11.0	10.9	10.8	10.8	-	-	9.6	9.0	-	-	-
	-	-	5.1	-	4.1	10.8	10.7	10.7	-	-	10.5	8.1	-	-	-
MORJO	7.7	-	-	7.1	8.3	-	9.9	9.8	8.3	4.9	2.9	2.8	0.4	4.2	0.4
OTTMI	4.2	6.9	1.6	-	-	6.7	1.2	-	-	-	4.5	1.7	-	3.1	2.7
PERCZ	3.9	-	-	4.7	11.1	11.1	11.0	7.8	10.9	10.8	10.8	3.0	-	2.2	2.2
ROTEC	11.3	11.2	-	4.3	-	9.4	-	3.3	-	-	5.1	2.8	-	-	-
SCHHA	1.5	3.5	1.6	1.5	1.7	4.6	3.0	4.1	1.6	-	2.7	-	-	1.2	0.9
SLAST	-	-	-	-	6.2	3.1	9.5	8.5	6.9	2.5	2.3	-	-	-	-
STOEN	6.2	-	-	6.9	11.1	1.0	8.8	10.9	10.8	3.6	-	-	-	-	-
	6.4	-	-	3.6	8.7	-	5.9	-	-	3.9	-	-	-	-	-
	7.1	-	-	6.4	11.1	1.1	9.5	10.9	10.7	-	-	-	-	-	-
STRJO	1.4	4.1	5.9	1.1	6.4	7.5	6.3	6.6	0.7	-	1.5	-	-	-	0.1
	3.1	3.7	8.0	4.5	5.4	6.3	6.3	4.6	0.4	-	4.3	0.3	-	-	-
	3.7	7.0	6.5	3.9	6.1	8.7	8.9	6.9	-	-	4.1	-	-	-	-
TEPIS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRIMI	1.3	-	-	0.3	2.6	6.4	7.5	3.0	2.5	3.2	2.7	1.3	-	0.3	-
YRJIL	-	6.7	4.8	-	-	3.7	5.0	6.7	1.9	-	6.9	2.0	-	-	4.7
Sum	170.3	136.7	95.0	170.7	216.6	243.9	313.9	290.7	184.6	126.4	182.0	61.0	27.0	79.2	66.5

March	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
BENOR	-	-	-	-	-	-	-	-	-	2.6	-	2.3	-	1.4	2.6	-
BERER	-	-	-	-	1.1	3.5	4.5	3.2	3.5	1.5	1.2	-	0.8	3.8	3.1	0.6
	-	-	-	-	4.6	6.0	8.0	3.8	8.7	2.2	2.8	-	4.5	6.7	7.6	0.2
BRIBE	-	-	-	5.3	6.3	3.1	5.0	5.0	0.9	-	2.9	4.4	4.5	4.5	-	-
	-	-	-	5.0	5.8	4.0	2.3	4.7	1.3	-	2.0	3.3	4.0	3.4	-	0.3
CASFL	-	1.7	0.9	2.7	8.6	6.1	7.4	7.1	7.7	3.7	-	-	1.5	6.1	-	1.4
	-	0.5	0.3	1.9	6.9	3.5	6.2	7.1	-	-	-	-	-	-	-	-
CRIST	-	4.0	0.5	-	10.1	8.0	5.5	9.5	8.2	3.6	-	-	6.7	6.0	9.0	8.5
	-	-	-	-	10.1	-	1.5	9.9	9.9	9.4	-	-	5.3	4.6	5.5	4.9
CSISZ	-	-	-	-	2.4	2.7	4.3	2.3	1.1	0.7	-	-	0.3	2.4	1.7	1.8
CURMA	-	-	2.4	-	0.7	-	3.8	9.8	9.6	4.5	-	-	4.0	-	-	-
ELTMA	-	-	-	-	-	8.8	7.5	9.2	9.6	3.0	-	-	-	5.3	9.2	1.7
GONRU	-	6.5	8.4	6.7	8.1	6.8	2.4	1.6	-	-	2.1	-	-	1.3	4.3	5.8
	-	7.0	5.4	6.7	6.2	3.7	2.8	0.9	-	-	1.4	-	-	2.1	4.1	4.6
GOVMI	-	0.4	-	-	2.4	7.0	4.2	6.8	8.2	6.7	-	0.3	3.1	2.3	5.2	3.5
HERCA	10.4	10.4	10.3	10.3	2.0	10.1	1.7	8.1	10.1	9.7	10.0	2.5	10.0	9.7	7.6	1.7
HINWO	0.7	-	-	-	9.6	9.5	8.1	9.4	-	-	-	-	1.1	9.0	-	-
IGAAN	-	3.8	-	-	-	1.5	3.5	10.0	9.9	3.2	-	0.2	0.2	5.2	6.4	-
	-	3.0	-	-	-	1.7	2.2	1.5	10.0	1.7	-	-	-	-	2.0	1.3
	-	-	-	-	1.0	3.0	2.6	6.3	9.9	2.3	-	-	2.8	1.8	7.6	4.7
JONKA	-	-	-	-	-	5.1	5.1	2.7	4.6	1.3	-	-	4.8	2.8	2.8	-
KACJA	-	-	-	-	3.6	-	8.1	3.2	6.0	2.2	-	-	-	9.4	0.9	1.6
	-	-	0.9	-	8.6	3.1	10.1	10.1	10.0	2.4	1.5	-	0.2	9.7	9.7	-

	-	-	-	-	5.1	10.2	10.1	10.0	10.0	7.4	1.1	-	4.6	7.6	9.7	0.5
	-	-	-	-	4.1	10.2	5.3	9.3	10.0	4.7	1.3	-	2.8	9.7	9.7	-
KERST	-	-	-	-	-	3.3	5.3	10.4	3.1	-	4.2	-	-	-	-	-
LUNRO	6.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MOLSI	-	-	-	-	7.5	9.4	2.6	9.2	9.1	9.1	-	-	-	-	-	-
	1.6	-	-	6.2	3.0	10.0	9.2	10.0	9.9	9.8	-	-	1.6	9.6	3.5	-
	-	-	1.1	5.2	9.8	9.8	8.3	6.9	6.6	-	6.6	9.5	9.4	9.3	-	-
	-	-	-	2.0	2.9	9.8	7.7	9.7	6.8	-	2.3	9.4	9.4	9.3	2.6	0.4
MORJO	-	2.1	-	-	-	7.2	6.3	8.8	8.3	4.2	-	-	3.8	8.4	7.4	9.6
OTTMI	3.5	3.3	4.4	4.5	-	-	-	-	-	0.3	4.0	-	3.4	0.3	-	-
PERCZ	-	-	-	-	0.4	10.2	10.1	10.1	10.0	10.0	-	-	3.0	9.8	9.7	3.4
ROTEC	-	-	0.3	1.4	-	4.3	6.7	-	-	-	-	7.5	7.6	4.0	1.0	0.7
SCHHA	-	-	-	1.1	2.1	2.8	2.4	4.0	1.1	1.5	0.3	2.2	1.8	4.5	-	-
SLAST	-	-	-	-	2.3	3.2	3.5	-	5.2	1.1	-	-	-	4.9	3.1	-
STOEN	-	-	-	3.3	-	6.9	7.2	7.8	5.0	5.0	-	-	-	9.8	9.7	1.5
	-	-	0.3	2.5	-	9.5	6.2	10.1	9.4	5.3	-	-	-	9.8	9.6	1.0
	-	-	1.4	3.9	10.3	10.2	6.2	10.1	10.0	5.0	-	-	-	9.6	9.7	1.1
STRJO	-	-	-	-	5.7	3.1	5.2	5.5	0.3	-	5.3	3.6	3.9	3.8	-	-
	-	-	0.7	3.4	6.4	4.8	3.4	4.4	0.1	-	4.7	4.9	4.3	3.1	-	-
	-	-	-	-	5.1	6.2	3.5	8.8	4.0	-	6.2	8.1	7.4	6.6	-	-
TEPIS	-	-	-	-	-	2.2	8.8	7.2	7.1	1.3	-	-	5.0	9.0	9.3	5.0
TRIMI	-	-	-	2.3	4.2	2.5	3.0	3.0	4.6	3.2	-	-	2.5	5.4	2.3	0.5
YRJIL	7.1	0.7	3.2	-	-	-	-	-	-	-	5.3	-	6.6	-	6.5	3.4
Sum	29.7	43.4	40.5	74.4	167.0	233.0	227.8	277.5	249.8	128.6	65.2	58.2	130.9	232.0	183.1	69.7

3. Results (Meteors)

March	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
BENOR	-	-	-	-	-	-	7	-	-	-	-	3	-	3	10
BERER	14	-	-	4	11	24	10	16	10	1	4	4	4	6	5
	31	-	-	18	20	22	33	34	13	1	7	13	7	3	8
BRIBE	10	12	19	5	4	24	26	18	9	-	7	-	-	2	9
	15	16	17	15	10	21	20	17	2	-	5	-	-	10	-
CASFL	7	-	14	7	26	5	12	15	24	14	-	-	-	-	-
	11	-	-	2	15	5	14	18	17	10	-	-	-	-	-
CRIST	-	12	-	9	5	26	20	18	14	-	-	-	-	-	-
	-	16	-	18	1	23	25	34	-	-	-	-	-	-	-
CSISZ	3	-	-	3	3	7	7	10	2	7	4	-	-	2	1
CURMA	-	-	-	11	-	31	21	4	-	13	-	-	29	-	-
ELTMA	-	-	-	15	22	-	14	24	17	-	-	-	-	-	-
GONRU	36	-	4	-	-	-	-	-	-	-	-	-	-	-	-
	30	25	3	-	-	-	-	-	-	-	-	-	-	-	18
GOVMI	4	-	-	8	8	28	21	25	12	11	18	1	-	5	2
HERCA	10	19	5	10	10	10	-	7	12	16	10	9	8	12	9
HINWO	-	27	20	19	19	17	23	21	-	8	22	-	-	22	5
IGAAN	-	-	-	25	7	10	12	20	15	13	13	7	5	4	7
	-	-	-	-	8	10	4	14	10	3	3	10	-	4	6
	9	-	-	3	15	5	13	17	5	3	7	2	-	7	7
JONKA	9	-	-	6	7	17	12	19	7	6	5	3	-	12	9
KACJA	-	-	-	13	7	-	11	18	17	16	10	9	-	8	-
	5	-	-	-	5	14	15	18	7	4	5	1	-	-	-
	-	-	-	-	-	-	36	41	31	24	34	-	-	-	-
	-	-	-	-	-	-	33	20	19	17	13	-	-	-	-
KERST	-	-	-	-	-	-	36	-	24	14	-	-	-	-	-
LUNRO	41	34	-	-	23	20	-	-	24	29	23	-	4	21	27
MOLSI	92	81	82	54	61	86	108	65	-	46	70	-	-	50	18
	29	26	21	23	15	27	22	12	-	24	16	-	-	14	6
	6	12	8	7	12	14	9	6	-	-	7	8	-	-	-
	-	-	11	-	8	22	18	17	-	-	13	11	-	-	-
MORJO	7	-	-	8	11	-	12	16	8	7	7	5	1	11	1
OTTMI	11	18	2	-	-	19	4	-	-	-	12	6	-	4	5
PERCZ	9	-	-	23	23	31	30	26	21	23	12	7	-	6	7
ROTEC	16	24	-	6	-	20	-	6	-	-	8	6	-	-	-
SCHHA	6	9	4	5	7	12	8	9	4	-	5	-	-	3	3
SLAST	-	-	-	-	11	12	31	21	22	4	5	-	-	-	-
STOEN	26	-	-	27	45	1	40	48	20	14	-	-	-	-	-

	15	-	-	17	36	-	16	-	-	6	-	-	-	-	-
	19	-	-	26	36	1	39	40	29	-	-	-	-	-	-
STRJO	4	12	18	4	20	23	23	20	2	-	5	-	-	-	1
	9	10	25	13	23	21	16	17	2	-	10	1	-	-	-
	11	23	31	11	21	34	45	27	-	-	13	-	-	-	-
TEPIS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRIMI	4	-	-	2	7	18	17	6	7	9	6	4	-	1	-
YRJIL	-	15	11	-	-	9	14	19	2	-	17	6	-	-	11
Sum	499	391	295	417	562	669	877	783	408	343	396	116	58	210	175

March	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
BENOR	-	-	-	-	-	-	-	-	-	8	-	7	-	4	3	-
BERER	-	-	-	-	2	9	14	12	7	4	3	-	2	7	8	1
	-	-	-	-	14	14	16	15	25	5	6	-	9	21	20	1
BRIBE	-	-	-	15	28	11	14	14	3	-	9	12	6	13	-	-
	-	-	-	17	22	13	7	12	5	-	6	10	8	16	-	1
CASFL	-	4	3	15	22	14	22	17	20	11	-	-	4	13	-	2
	-	2	1	7	20	8	16	17	-	-	-	-	-	-	-	-
CRIST	-	5	1	-	16	24	11	18	28	10	-	-	9	14	14	13
	-	-	-	-	19	-	3	27	39	24	-	-	17	11	16	12
CSISZ	-	-	-	-	5	6	7	5	4	2	-	-	1	5	5	4
CURMA	-	-	4	-	1	-	4	18	22	6	-	-	5	-	-	-
ELTMA	-	-	-	-	-	19	16	20	12	5	-	-	-	7	18	3
GONRU	-	27	30	26	32	20	3	3	-	-	3	-	-	2	14	22
	-	22	15	20	19	11	9	5	-	-	8	-	-	2	9	17
GOVMI	-	1	-	-	6	18	15	14	23	10	-	1	8	6	16	8
HERCA	10	5	6	14	5	7	3	8	9	11	11	7	11	11	7	5
HINWO	1	-	-	-	5	12	20	24	-	-	-	-	3	18	-	-
IGAAN	-	6	-	-	-	6	11	10	17	7	-	1	1	13	14	-
	-	6	-	-	-	4	4	7	9	5	-	-	-	-	4	4
	-	-	-	-	2	5	6	11	10	7	-	-	7	6	15	1
JONKA	-	-	-	-	-	9	10	8	10	3	-	-	10	6	6	-
KACJA	-	-	-	-	12	-	15	10	16	7	-	-	-	15	3	2
	-	-	2	-	13	13	8	7	12	5	1	-	1	10	9	-
	-	-	-	-	24	30	44	26	36	11	1	-	17	32	22	3
	-	-	-	-	15	21	17	14	15	6	1	-	7	10	16	-
KERST	-	-	-	-	-	20	32	59	11	-	36	-	-	-	-	-
LUNRO	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MOLSI	-	-	-	-	17	29	9.0	43	27	57	-	-	-	-	-	-
	1	-	-	19	8	14	26	12	22	9	-	-	4	15	11	-
	-	-	2	4	7	5	9	6	1	-	4	9	9	7	-	-
	-	-	-	7	5	17	16	11	11	-	4	11	14	11	3	1
MORJO	-	4	-	-	-	5	7	6	11	5	-	-	5	8	10	5
OTTMI	10	10	7	17	-	-	-	-	-	1	11	-	12	1	-	-
PERCZ	-	-	-	-	1	18	14	12	12	14	-	-	13	14	19	8
ROTEC	-	-	1	5	-	11	12	-	-	-	-	10	17	10	1	2
SCHHA	-	-	-	4	5	10	4	13	3	3	1	7	5	9	-	-
SLAST	-	-	-	-	6	9	11	-	10	4	-	-	-	16	8	-
STOEN	-	-	-	22	-	32	23	25	16	14	-	-	-	31	28	4
	-	-	1	10	-	22	28	22	14	5	-	-	-	14	21	3
	-	-	3	11	41	35	29	46	19	11	-	-	-	30	31	3
STRJO	-	-	-	-	16	7	14	13	1	-	13	8	9	10	-	-
	-	-	5	13	18	12	10	17	1	-	13	14	9	7	-	-
	-	-	-	-	17	18	19	23	7	-	20	35	22	16	-	-
TEPIS	-	-	-	-	-	9	28	17	15	5	-	-	8	12	18	6
TRIMI	-	-	-	5	8	9	10	7	11	6	-	-	7	15	8	2
YRJIL	17	2	10	-	-	-	-	-	-	-	15	-	15	-	15	6
Sum	62	94	91	231	431	556	587	654	514	281	166	132	275	468	392	139

March 2011 was an unusual month. For the first time in a long while, the more northern observers were privileged again. Whereas cameras in southern Europe obtained about 15 observing nights under normal conditions, it was often 20 and more nights for the more northern stations. In the US, Carl Hergenrother enjoyed again perfect conditions and missed only a single night (by the end of the first quarter of 2011, Carl gave already a competitive edge of 14 nights

to his two chasers known from the previous year), whereas the weather "down under" was rather poor.
It's no surprise that we clearly surpassed the previously best March totals. With more than 4,500 hours of effective observing time in the otherwise rather modest spring month, we achieved the third best monthly result of the IMO network ever. With respect to the meteor number, March cannot cope with August or October, of course, as it's the time of the year with the lowest hourly meteor counts. Still, more than 11,000 meteors in 2011 is more than twice of the best March outcome to date.

With Karoly Jonas from Hungary, we won another observer for the IMO network. Karoly is living in Budapest and underlines once more, that Watec and Mintron do even in light polluted cities a good turn.

In March, the administrators of the IMO network tested a new version of the MetRec software. It goes beyond the calculation of shower-independent effective collection areas by providing flux density measures of meteor showers. As presented at the 2010 IMC, MetRec computes at first pixel-wise the size of the field of view in square degrees. Based on that figure and the observing direction of the camera, the atmospheric surface (at an altitude of 100 km) monitored by the camera is computed next. If the camera is pointing lower to the horizon, the surface is increasing dramatically, but also the distance to the meteors grows so that they are getting fainter at the same time. This loss in brightness compared to a standard distance of 100 km (absolute meteor magnitude) is accounted for by proportionally reducing the collection area. The population index is assumed to be 3.0.

As MetRec is computing the limiting magnitude once per minute, also the difference between the observed and the standard limiting magnitude of 6.5 mag can be converted into a reduction of the collection area. Finally, the normalized area is multiplied with the effective observing time, which is also determined every minute, and is accumulated to obtain the effective collection area for the night.

In the new software version, this effective collection area is determined individually for each shower, whereby a number of shower-specific parameters are introduced:

- The population index, which is used to correct for the limiting magnitude and meteor distance, is not fixed at 3.0 but taken from the average value for each shower given in the IMO working list.
- The mean meteor altitude is not fixed at 100 km, but computed for each shower based on the meteor shower velocity and the radiant altitude.
- Instead of the limiting magnitude for stars, MetRec uses the limiting magnitude for meteors. At first, the distance of the radiant from the field of view, and from that the angular meteor velocity in °/s is computed. Together with the size of the field of view and the integration time, that velocity is converted to pixel per video frame. From this figure, the loss in limiting magnitude by the meteor motion is derived. Pixels with a meteor velocity of less than 2 °/s are fully omitted from the collection area, as the software filters out such slow meteors (and satellites).
- Last but not least, the radiant altitude is taken into account as one of the key parameters for the flux density. The zenith distance of the radiant is transformed once more into a reduction of the collection area.

The value of some parameters is given as an example in figure 1 and 2, obtained for MINCAM1 and the Antihelion source on March 8/9, 2011. Figure 1 shows the radiant altitude, the average distance of the radiant from the field of view, and the meteor layer altitude. The radiant raises in the evening hours and culminates close to midnight UT. The meteor layer altitude is slowly decreasing by a few kilometers, and later increasing again. The average radiant distance from the field of view is getting smaller until about 21:30 UT and growing continuously thereafter.

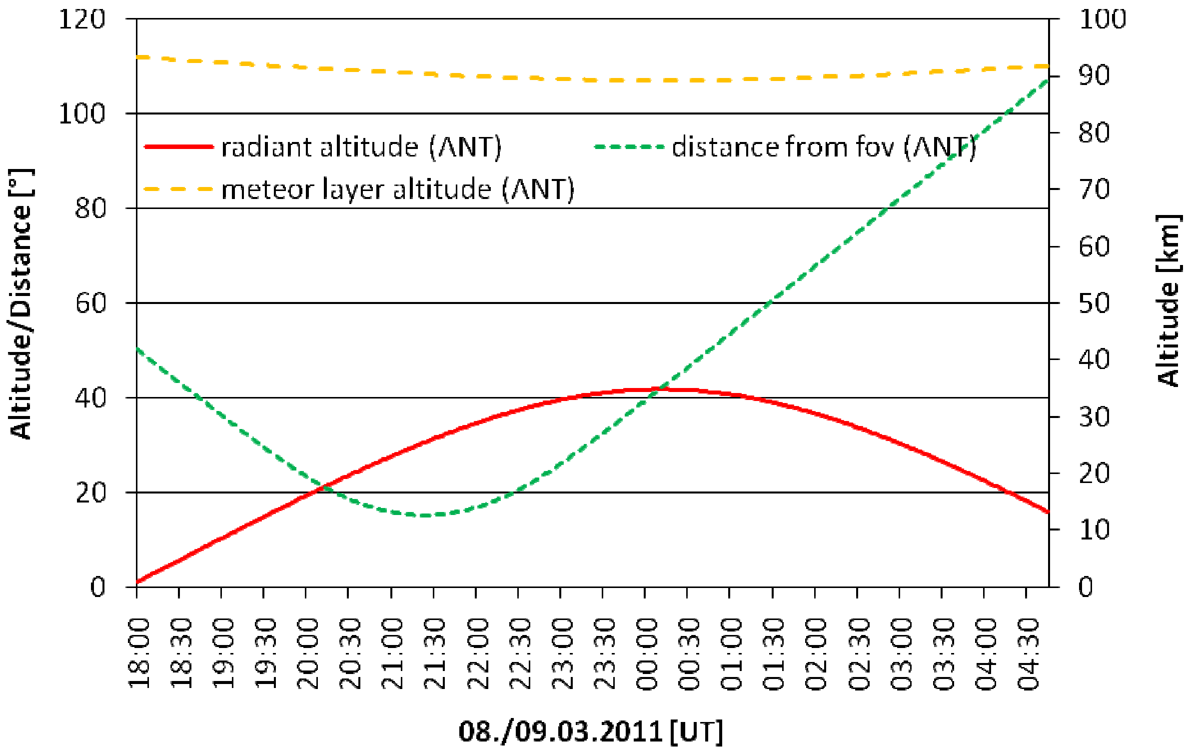

Figure 1: *Distance from the field of view, radiant altitude and meteor layer altitude of the Antihelion source, calculated for MINCAM1 on March 8/9, 2011..*

Figure 2 depict the average angular velocity of Antihelion meteors, which is as expected lowest when the radiant is near the field of view, and increasing up to a maximum when the radiant is 90 degrees away. Furthermore, the stellar limiting magnitude determined by MetRec and the corresponding limiting magnitude for Antihelion meteors is given. When the angular velocity is small, both values hardly differ from each other, but at a distance of 90 degrees the loss amounts to more than half a magnitude.

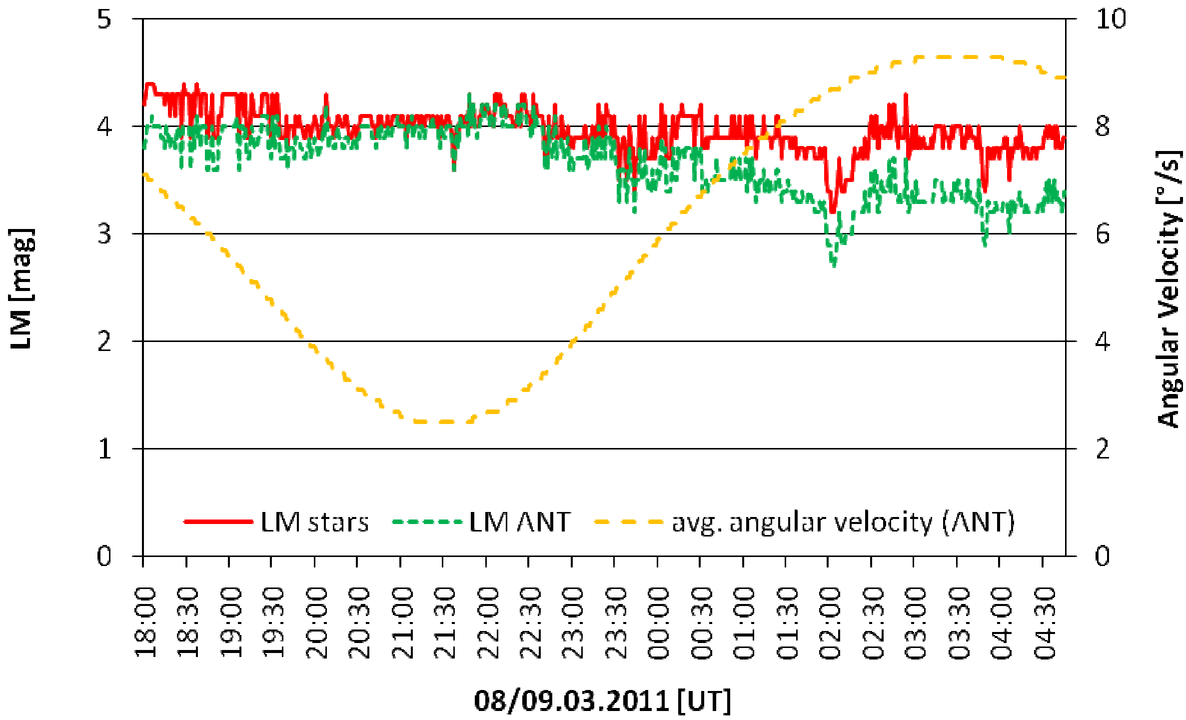

Figure 2: *Angular velocity of Antihelion meteors, as well as the stellar and the Antihelion limiting magnitude for MINCAM1 on March 8/9, 2011.*

By taking all these parameters into consideration, a meteor-shower dependent effective collection area normalized to a limiting magnitude of 6.5 mag and radiant position at zenith is obtained. In the end, the number of recorded shower meteors is divided by this figure to derive the flux density.

Of course, there are still certain approximations in the algorithm. It is unlikely, for example, that the software will have a meteor detection probability of 100% down to the limiting magnitude of the camera. Similar to human observers, the detection probability will deteriorate towards fainter meteors, even though the effects will be smaller than for human observers.
The loss in meteor limiting magnitude derived from the angular velocity is new terrain as well, as we are using a formula that is hitherto unknown and which is further investigated by Pete Gural.
The real population index, last but not least, will actually differ from the average value used for each shower. Only time will tell whether the corrections are still good enough to combine data from completely different video meteor cameras into a meaningful flux density profile (without normalization by the number of sporadic meteors).

Unfortunately, there was no stronger meteor shower in March, so we could only check for the sporadic flux density in the software testing phase. That is particularly challenging, as there is no defined sporadic radiant with a fixed velocity. This is why MetRec assumes an average angular velocity of 14 °/s (which is the long-term average over all sporadic meteors) and a constant radiant altitude of 30 degrees (which is the average altitude over all possible radiant points above the horizon). Some effects like the increase is sporadic activity towards dawn cannot be modeled this way, but at least the sporadic flux density is then better comparable to flux densities of meteor showers.

Finally the software was augmented by a function to automatically upload the flux density data to the central VMO server after the observation was checked with PostProc.

The results obtained in the testing phase were encouraging. After some bugs were fixed, the software was released to all observers by the end of March. The aim was to obtain during the 2011 Lyrids the first flux density profile of a meteor shower in near real-time based on video data. If and how we reached that goal will be presented in the next monthly report.