

Polish Visual Meteor Database 1996–1998

A. Olech, M. Wiśniewski, and M. Gajos

The summary of 1996–1998 visual observations collected by the Polish *Comets and Meteors Workshop* is presented. In total, during 2328.12 effective observing hours, 14 085 meteors were seen and plotted onto gnomonic starmaps by 41 observers. The date, time, magnitude, angular velocity, and equatorial coordinates for each observed event are given. The full data for 1996–1998 in the *Polish Visual Meteor Database* (PVMDB) are accessible via Internet.

1. Introduction

Since 1994, the Polish *Comets and Meteors Workshop* (CMW) has been cooperating with the *International Meteor Organization*. During the first two years, we made mostly visual observations of major showers without plotting the meteors onto the gnomonic star maps. Over time, the experience of our observers grew and, in 1996, we decided to start visual observations with plotting.

Every year, a complete set of our observation reports was sent to the *IMO*, and our results were included in the *IMO Visual Meteor Database* (VMDB) (see, for example, [1]). However, we would like to point out that the *VMDB* contains only the information about hourly rates and magnitude distributions of the observed meteors. Thus, an error in classification of a meteor made by the observer while filling out the report form is included also in the *VMDB*.

Additionally, the *VMDB* contains only data about meteor showers from the *IMO Working List of the Meteor Showers*. Thus it is impossible to get the information about other small or poorly known streams from the *VMDB*.

The solution to the problem is to publish a full database containing all quantities describing a meteor event including its equatorial coordinates and angular velocity. Such a database can be searched for the presence of any shower at any moment of time.

The database of Polish telescopic observations made during the years 1996–1998 was already published by Olech and Jurek [2]. Following this approach, we decided to publish in the same format our visual results from the years 1996–1998. Table 1 summarizes our visual work during this period of time. In total, 14 085 meteors were seen by 41 observers during 2328^h12 effective observing hours.

Table 1 – *Polish Visual Meteor Database* (PVMDB) grand totals for 1996–1998.

Year	Observers	T_{eff}	Meteors
1996	18	247 ^h 86	1508
1997	25	849 ^h 41	5269
1998	31	1230 ^h 85	7308
Total	41	2328 ^h 12	14085

Table 2 shows a list of the *CMW* observers with their effective observing time and number of meteors plotted in each of the years 1996–1998.

Table 2 – Total effective observing time in hours (T_{eff}) and number of meteors plotted (N) per observer during the years 1996–1998.

Observer	Code	1996		1997		1998		Total	
		T_{eff}	N	T_{eff}	N	T_{eff}	N	T_{eff}	N
Jarosław Dygos	DYGJA			44 ^h 99	181	308 ^h 98	1324	353 ^h 97	1505
Tomasz Fajfer	FAJTO	84 ^h 50	382	185 ^h 50	862	22 ^h 50	115	292 ^h 50	1359
Konrad Szaruga	SZAKO	26 ^h 14	144	108 ^h 15	659	88 ^h 35	437	222 ^h 64	1240
Krzysztof Socha	SOCKR	17 ^h 31	102	87 ^h 47	616	105 ^h 11	769	209 ^h 89	1487
Maciej Kwinta	KWIMA	4 ^h 67	19	71 ^h 24	438	68 ^h 08	540	143 ^h 99	997
Gracjan Maciejewski	MACGR			49 ^h 17	219	81 ^h 17	394	130 ^h 34	613
Marcin Konopka	KONMA			36 ^h 39	349	81 ^h 59	450	117.98	799
Arkadiusz Olech	OLEAR	20 ^h 92	248	42 ^h 88	540	49 ^h 75	463	113 ^h 55	1251
Andrzej Skoczewski	SKOAN			46 ^h 68	276	56 ^h 84	380	103 ^h 52	656
Paweł Trybus	TRYPA			2 ^h 17	8	90 ^h 55	587	92 ^h 72	595
Wojciech Jonderko	JONWO	2 ^h 20	5	22 ^h 17	137	39 ^h 12	155	63 ^h 49	297
Marcin Gajos	GAJMR	6 ^h 29	37	35 ^h 17	248	17 ^h 63	104	59 ^h 09	389
Albert Krzyśków	KRZAL			11 ^h 83	76	43 ^h 49	282	55 ^h 32	358
Aleksander Trofimowicz	TROAL					38 ^h 47	229	38 ^h 47	229
Krzysztof Wtorek	WTOKR	23 ^h 00	140	11 ^h 99	78			34 ^h 99	218
Lukasz Rauowicz	RAULU			23 ^h 62	163	6 ^h 09	41	29 ^h 71	204
Michał Jurek	JURMC	8 ^h 52	43	14 ^h 66	93	6 ^h 00	53	29 ^h 18	189
Cezary Gałan	GALCE					28 ^h 85	204	28 ^h 85	204
Lukasz Pospieszny	POSLU	20 ^h 68	158	6 ^h 91	30			27 ^h 59	188
Luiza Wojciechowska	WOJLU					25 ^h 32	168	25 ^h 32	168
Mariusz Wiśniewski	WISMA					20 ^h 86	342	20 ^h 86	342
Maciej Reszelski	RESMA	7 ^h 86	89	8 ^h 77	99			16 ^h 63	188
Paweł Brewczak	BREPA					16 ^h 52	81	16 ^h 52	81
Lukasz Sanocki	SANLU	5 ^h 77	39	4 ^h 34	40	6 ^h 17	28	16 ^h 28	107
Tomasz Ramza	RAMTO	7 ^h 00	32	5 ^h 98	19			12 ^h 98	51
Artur Szaruga	SZAAR			10 ^h 17	37	2 ^h 12	8	12 ^h 29	45
Tomasz Dziubiński	DZITO	3 ^h 50	21	8 ^h 00	42			11 ^h 50	63
Krzysztof Kamiński	KAMKR			7 ^h 60	45	1 ^h 35	8	8 ^h 95	53
Jarosław Nocoń	NOCJA					6 ^h 53	21	6 ^h 53	21
Waldemar Drozdowski	DROWA			1 ^h 00	3	5 ^h 40	19	6 ^h 40	22
Rafał Kopacki	KOPRA	5 ^h 50	30					5 ^h 50	30
Krzysztof Mularczyk	MULKR					4 ^h 00	17	4 ^h 00	17
Mariola Czubaszek	CZUMA					2 ^h 80	40	2 ^h 80	40
Adam Pisarek	PISAD					2 ^h 71	8	2 ^h 71	8
Marek Piotrowski	PIOMA			2 ^h 56	11			2 ^h 56	11
Jacek Kluczewski	KLUJA					2 ^h 00	21	2 ^h 00	21
Sylwia Chełmoniak	CHESY					1 ^h 50	11	1 ^h 50	11
Krzysztof Gdula	GDUKR	1 ^h 50	4					1 ^h 50	4
Paweł Musiański	MUSPA	1 ^h 50	11					1 ^h 50	11
Sylwia Hołowacz	HOLSY					1 ^h 00	9	1 ^h 00	9
Robert Soltys	SOLRO	1 ^h 00	4					1 ^h 00	4
Total		247 ^h 86	1508	849 ^h 41	5269	1230 ^h 85	7308	2328 ^h 12	14085

2. Coordinate files

The files `coor96.txt`, `coor97.txt`, and `coor98.txt` contain data for each observed meteor such as the date of appearance, serial number of meteor, its magnitude, its angular velocity (in scale from A to F), time of appearance, equatorial coordinates of beginning and end, IMO code of the observer and three-letter code.

Below, we show a small sample of such a file:

```

1998 01 01/02  1  4.5 C 00:47 219.20  76.42 237.00  72.38 SKOAN ABZ
1998 01 01/02  2  2.0 B 00:47 321.66  66.76 005.76  59.44 SKOAN ABZ
1998 01 01/02  3  1.5 C 00:47 216.55  52.21 236.21  56.24 SKOAN ABZ
1998 01 01/02  4  1.5 C 00:47 257.92  50.32 266.80  48.49 SKOAN ABZ
1998 01 01/02  5  4.0 D 00:47 211.86  50.55 206.85  51.73 SKOAN ABZ
1998 01 01/02  6 -2.0 B 00:47 097.50  87.00 312.50  81.00 SKOAN ABZ
1998 01 01/02  7  2.0 B 01:37 206.19  78.68 251.99  65.72 SKOAN ACA
1998 01 01/02  8  4.0 C 01:37 181.14  73.42 171.16  74.95 SKOAN ACA
1998 01 01/02 10  4.0 D 01:37 273.52  52.78 269.18  49.60 SKOAN ACA
1998 01 02/03  1  4.5 D 17:01 028.60  43.07 017.24  43.14 OLEAR ACB

```

In Table 3, we give byte-by-byte description of these files.

Table 3 – Byte-by-byte description of `coor9?.txt` files. Right ascension and declination are in degrees.

Bytes	Format	Explanations
1– 4	I4	Year
6– 7	I2	Month
9–13	A5	Day/Day
15–17	I3	Number of meteor in report
19–21	F5.1	Meteor magnitude
25	I1	Velocity in scale from <i>A</i> to <i>F</i>
27–31	A5	Time of meteor (UT)
33–38	F6.2	RA of beginning of meteor (J2000)
40–45	F6.2	Decl. of beginning of meteor (J2000)
47–52	F6.2	RA of end of meteor (J2000)
54–59	F6.2	Decl. of end of meteor (J2000)
61–65	A5	<i>IMO</i> code of observer
67–69	A3	Three-letter code

The three-letter code shown in the last column of `coor9?.txt` file is used for connecting each meteor with the information about the observation stored in the `head9?.txt` file. The time of appearance of a meteor, when it is not given exactly in the report form, is assumed as the middle time of each observing period. All equatorial coordinates were entered using the COOREADER software [3].

3. Header files

The files `head96.txt`, `head97.txt`, and `head98.txt` contain information about each observing run, such as three-letter code allowing to connect each observation with data on meteors presented in coordinate files, *IMO* code of observer, longitude and latitude of place of observation, date, UT time of begin and end of observation, solar longitude (J2000) of middle time of each run, equatorial coordinates of observed field, effective time of observation, cloud correction factor *F*, stellar limiting magnitude estimated by the naked eye and the *IMO* code of the place of observation.

Below we show a small sample of such a file:

```

ABZ SKOAN 21.0 E 50.0 N 02 01 98 0016 0118 281.444 210 75 1.00 1.00 5.80 34029
ACA SKOAN 21.0 E 50.0 N 02 01 98 0118 0156 281.479 210 75 0.60 1.00 5.72 34029
ACB OLEAR 23.5 E 51.1 N 02 01 98 1630 1732 282.133 000 70 1.00 1.00 5.42 34012
ACC OLEAR 23.5 E 51.1 N 02 01 98 2026 2134 282.302 000 70 1.00 1.00 5.70 34012
ACD OLEAR 23.5 E 51.1 N 03 01 98 0005 0108 282.456 000 70 1.00 1.00 6.18 34012
ACE OLEAR 23.5 E 51.1 N 03 01 98 0110 0214 282.502 000 70 1.00 1.00 6.13 34012
ACF OLEAR 23.5 E 51.1 N 03 01 98 0214 0305 282.543 000 70 0.75 1.00 6.15 34012
ACG SZAKO 23.2 E 50.5 N 02 01 98 2003 2124 282.291 181 53 1.30 1.00 6.40 34040

```

Table 4 gives a byte-by-byte description of the header files.

Table 4 – Byte-by-byte description of `head9?.txt` files. Solar longitude, right ascension, and declination are in degrees; effective observing time in hours.

Bytes	Format	Explanations
1– 3	A3	Three-letter code
5– 9	A5	<i>IMO</i> Code of observer
11–15	F5.1	Longitude of observing site
17	A1	Hemisphere designation
19–22	F4.1	Latitude of observing site
24	A1	Hemisphere designation
26–27	I2	Day
29–30	I2	Month
32–33	I2	Year
35–38	I4	Begin time of observation (UT)
40–43	I4	End time of observation (UT)
45–51	F7.3	Solar longitude of middle time of observation (J2000)
53–55	I3	RA of center of field of view (J2000)
57–59	I3	Decl. of center of field of view (J2000)
61–64	F4.2	Effective observing time
66–69	F4.2	Cloud correction factor F
71–74	F4.2	Limiting magnitude estimated in field of view
76–80	I5	<i>IMO</i> code of observing site

4. Summary

We have presented the summary of the 1996–1998 visual observations made by the Polish *Comets and Meteors Workshop*. In total, 14 085 meteors were observed during 2328^h12 effective observing hours collected by 41 observers. The date, time, magnitude, angular velocity, and equatorial coordinates for each observed event is given. The full 1996–1998 *Polish Visual Meteor Database* (PVMDB) is accessible via Internet at <http://www.astro.uw.edu.pl/~olech/VIS/>.

The 1999–2000 data are still under review, but they will be available to the astronomical community as soon as possible.

Acknowledgments

We would like to thank to all observers who sent us their observations. This work was supported by KBN grant 5 P03D 026 20. A. Olech also acknowledges support from Fundacja na Rzecz Nauki Polskiej.

References

- [1] R. Arlt, “1999 Visual Meteor Observations”, *WGN Report Series* 12, 2000.
- [2] A. Olech, M. Jurek, *WGN* 28, 2000, p. 226.
- [3] M. Samujłło, A. Olech, in *Proc. 1999 International Meteor Conference*, Stárá Lesná, Slovakia, R. Arlt, A. Knoefel, eds., IMO, 2000, p. 65.

Author’s addresses

A. Olech, Nicolaus Copernicus Astronomical Center, Ul. Bartycka 18, PL-00-716 Warszawa, Poland, olech@astro.uw.edu.pl.

M. Wiśniewski and M. Gajos, Warsaw University Observatory, Al. Ujazdowskie 4, Pl-00-478 Warszawa, Poland.