

Results of astrolabe observations made at Merate observatory : time and latitude, 1983

L. Buffoni, F. Carta, F. Chlistovsky, A. Manara and F. Mazzoleni

Osservatorio Astronomico di Brera, Via Brera 28, 20121 Milano, Italy

Received April 12, accepted May 24, 1984

Summary. — Results of the observations made with the Astrolabe Danjon OPL no. 32 are given. The results are in the FK4 system.

Key words : astrolabe — astronomical time — latitude.

The results of observations made with the Astrolabe Danjon at Merate Observatory in the year 1983 are given. In the reduction provisional CLIs (corrections de lissage interne) are introduced, determined on the basis of data obtained until 1974.

These results follow those of 1982, 1981, 1980, 1979, 1978, 1977, 1976 published in this review, while those of the years 1970-1975 are given in Buffoni *et al.* (1975).

The physical time scale has been provided by a standard atomic caesium clock since March 1st, 1974.

The observational methods (Mazzoleni, 1972) and computation techniques (Buffoni *et al.*, 1975) are explained in former papers.

The astronomical constants used in observations reduction are not changed in the year 1983. For the Merit Campaign (beginning from September, 1st 1983) the new constants have been used.

The results are reported in table I, where the headings

have the following meanings :

column 1 : date in year, month, day
 column 2 : number of group observed
 column 3 : code of the observer (see below)
 column 4 : mean universal time of the group observation
 column 5 : difference UTO-UTC reported at the UTM time
 column 6 : weight of time determination
 column 7 : difference UTO-TAI reported at 24 hours
 column 8 : instantaneous latitude residual in reference to the conventional latitude of $45^{\circ} 41' 57''$
 column 9 : weight of latitude determination
 column 10 : radius of the altitude straight lines circle
 column 11 : number of stars observed in the group
 column 12 : weight of the residuals.

Codes of the observers : 2 Francesco Mazzoleni
 4 Franca Chlistovsky
 5 Alessandro Manara
 6 Letizia Buffoni
 7 Fiamma Carta

References

- BUFFONI, L., CHLISTOVSKY, F., MANARA, A. and MAZZOLENI, F. : 1977, *Astron. Astrophys. Suppl. Ser.* **30**, 193.
- BUFFONI, L., CHLISTOVSKY, F., MANARA, A. and MAZZOLENI, F. : 1979, *Astron. Astrophys. Suppl. Ser.* **35**, 345.
- BUFFONI, L., CHLISTOVSKY, F., MANARA, A. and MAZZOLENI, F. : 1980, *Astron. Astrophys. Suppl. Ser.* **42**, 177.
- BUFFONI, L., CHLISTOVSKY, F., MANARA, A. and MAZZOLENI, F. : 1981, *Astron. Astrophys. Suppl. Ser.* **44**, 97.
- BUFFONI, L., CHLISTOVSKY, F., MANARA, A. and MAZZOLENI, F. : 1981, *Astron. Astrophys. Suppl. Ser.* **46**, 179.
- BUFFONI, L., CHLISTOVSKY, F., MANARA, A. and MAZZOLENI, F. : 1981, *Astron. Astrophys. Suppl. Ser.* **49**, 509.
- BUFFONI, L., CHLISTOVSKY, F., MANARA, A. and MAZZOLENI, F. : 1983, *Astron. Astrophys. Suppl. Ser.* **53**, 43.
- BUFFONI, L., CHLISTOVSKY, F., MANARA, A. and MAZZOLENI, F. : 1974, 1975, 1976, Time Service Circular-Internal Report of Astronomical Observatory of Milano-Merate, No. 5 1974 ; Nos. 4-6, 8-10, 1975 ; No. 1, 1976.
- BUFFONI, L., CARTA, F., CHLISTOVSKY, F., MANARA, A. and MAZZOLENI, F. : 1975, *Boll. Geodesia e Scienze Affini*, anno XXXIV, No. 3, MAZZOLENI, F. : 1972, *Mem. Soc. Astron. Ital.*, vol. **XLIII**, No. 3.

TABLE I.

DATE	Gr.	Obs.	UTM	UTO-UTC	W _{IR}	UTO-TAI	W _{IR}	W _I	W _V	W _R	W _B	W _J	W _Z	
83 01 03	3	2	20.89	0.1706	1.9	-20.8297	0.451	1.1	27.176	26	1.4	83 03 22	5	2
83 01 03	4	2	23.04	0.1647	2.4	-20.8354	0.603	2.3	2.313	27	2.1	83 03 22	6	2
83 01 05	3	2	20.76	0.1699	2.1	-20.8304	0.468	1.3	2.161	26	1.5	83 03 23	5	6
83 01 05	4	2	22.88	0.1740	1.8	-20.8362	0.513	1.6	2.357	26	1.5	83 03 23	5	6
83 01 11	2	7	18.34	0.1520	3.1	-20.8486	0.707	2.6	2.380	25	2.9	83 03 31	5	6
83 01 11	3	7	20.32	0.1640	1.7	-20.8364	0.517	1.5	2.236	26	2.0	83 04 05	5	6
83 01 12	3	2	20.36	0.1519	2.6	-20.8485	0.557	1.7	2.359	26	2.2	83 04 05	6	21.50
83 01 12	4	2	22.42	0.1554	2.7	-20.8448	0.473	2.6	2.320	27	2.5	83 04 05	7	6
83 01 17	3	4	19.97	0.1470	2.5	-20.8535	0.363	1.5	1.995	25	2.0	83 04 13	6	6
83 01 17	4	4	22.10	0.1513	1.8	-20.8489	0.545	1.9	2.095	25	1.8	83 04 13	8	6
83 01 18	3	7	19.76	0.1403	0.9	-20.8602	0.395	0.5	3.152	21	0.9	83 04 14	6	6
83 01 18	4	7	22.07	0.1423	1.9	-20.8579	0.451	1.0	2.125	24	1.1	83 04 14	7	6
83 01 22	3	2	19.72	0.1240	2.9	-20.8764	0.553	1.7	2.185	25	2.3	83 04 14	8	6
83 01 22	4	2	21.77	0.1233	1.8	-20.8770	0.476	1.6	2.185	26	1.5	83 04 15	6	2
83 01 24	3	2	19.66	0.1185	1.3	-20.8820	0.640	0.8	2.651	23	1.2	83 04 15	7	2
83 01 24	4	2	21.64	0.1237	1.6	-20.8766	0.512	1.3	2.244	27	1.3	83 05 02	6	21.89
83 01 31	3	6	19.07	0.1010	1.6	-20.8956	0.316	1.0	2.560	26	1.2	83 05 02	8	6
83 01 31	4	6	20.17	0.1051	1.5	-20.8952	0.371	1.3	2.484	25	1.4	83 05 03	6	5
83 01 31	5	6	23.54	0.1110	1.4	-20.8959	0.504	1.1	2.111	26	1.2	83 05 04	7	2
83 02 02	3	5	18.92	0.1005	3.3	-20.9001	0.490	2.0	2.619	26	2.3	83 05 04	8	2
83 02 02	4	5	21.05	0.1095	1.2	-20.8908	0.462	1.1	2.675	26	1.0	83 05 04	7	23.89
83 02 03	3	6	18.88	0.0957	1.5	-20.9048	0.415	0.9	2.479	27	1.1	83 05 05	7	6
83 02 03	4	6	20.98	0.0902	1.5	-20.9101	0.477	1.3	2.309	26	1.3	83 05 06	7	2
83 02 03	5	6	23.30	0.0965	1.8	-20.9036	0.398	1.2	2.106	26	1.4	83 05 09	8	6

DATE	Gr.	Obs.	UTM	UTO-UTC	W _{IR}	UTO-TAI	W _{IR}	W _I	W _V	W _R	W _B	W _J	W _Z	
83 02 04	4	2	20.92	0.0905	1.6	-20.9098	0.498	1.4	2.350	28	1.4	83 05 19	7	2
83 02 04	5	2	23.34	0.0879	3.0	-20.9121	0.608	2.2	2.097	24	2.7	83 05 19	8	2
83 02 17	4	6	20.07	0.0567	1.5	-20.9418	0.417	1.3	2.102	28	1.3	83 06 14	8	4
83 02 17	5	6	22.39	0.0612	1.6	-20.9380	0.490	1.2	2.023	27	1.3	83 06 14	9	4
83 02 17	6	6	24.55	0.0645	2.6	-20.9355	0.483	1.3	2.193	28	1.7	83 06 15	8	6
83 02 18	4	2	20.31	0.0563	1.4	-20.9441	0.440	1.6	2.260	18	2.1	83 06 15	9	6
83 02 18	5	2	22.38	0.0588	3.9	-20.9434	0.549	2.6	2.168	26	3.1	83 06 15	10	6
83 02 21	4	6	19.48	0.0540	0.8	-20.9465	0.540	0.5	2.386	11	1.8	83 06 16	8	6
83 02 23	4	6	19.66	0.0315	1.5	-20.9680	0.481	1.5	2.256	26	1.4	83 06 16	9	6
83 02 23	5	6	21.99	0.0333	2.5	-20.9689	0.470	1.8	2.352	28	1.9	83 07 12	9	7
83 02 23	6	6	24.15	0.0365	2.2	-20.9635	0.309	1.2	2.283	25	1.7	83 07 12	10	7
83 02 24	4	2	19.62	0.0251	1.9	-20.9754	0.440	1.8	2.196	25	1.9	83 07 18	9	4
83 02 24	5	2	21.92	0.0281	2.1	-20.9721	0.548	1.5	2.250	28	1.6	83 07 18	10	4
83 03 03	4	2	19.57	0.0113	2.0	-20.9892	0.291	2.1	2.339	15	3.5	83 07 21	9	5
83 03 03	5	2	21.47	0.0101	2.3	-20.9802	0.413	1.6	2.305	28	1.8	83 07 21	10	5
83 03 03	6	2	23.63	0.0116	2.1	-20.9884	0.491	1.0	2.354	28	1.4	83 07 26	10	5
83 03 04	4	2	19.08	0.0090	1.7	-20.9915	0.522	1.5	2.358	28	1.4	83 08 04	10	7
83 03 04	5	2	21.40	0.0122	2.2	-20.9881	0.377	1.6	2.321	28	1.7	83 08 04	11	7
83 03 04	6	2	23.60	0.0104	2.0	-20.9896	0.443	0.9	2.415	27	1.4	83 08 06	10	5
83 03 05	2	21.14	-0.0044	3.2	-21.0047	0.429	2.4	2.347	27	2.6	83 08 10	10	5	
83 03 05	3	2	23.32	-0.0021	2.1	-21.0021	0.461	0.9	2.281	26	1.4	83 08 10	11	7
83 03 05	4	2	21.01	-0.0316	1.5	-21.0319	1.0	2.274	28	1.1	83 08 10	11	7	
83 03 05	5	2	23.14	-0.0307	1.2	-21.0308	0.411	0.6	2.603	27	0.8	83 08 18	11	7
83 03 05	6	2	23.60	-0.0281	2.1	-21.0449	0.511	0.7	2.652	25	0.8	83 08 22	10	6
83 03 06	5	2	21.77	-0.0446	2.7	-21.0446	0.511	0.7	2.652	25	0.8	83 08 22	11	6
83 03 06	6	2	24.88	-0.0422	1.3	-21.0421	0.511	0.7	2.652	25	0.8	83 08 22	11	7

TABLE I (continued).

DATE	Gr.	Obs.	UTM	UTG-UTG	W DF	UTG-UTI	ΔΥ	Υ₂	Η	Μ	Υ₁	DATE	Gr.	Obs.	UTM	UTG-UTG	W DF	UTG-UTI	ΔΥ	Υ₂	Η	Μ	Υ₁	
83 09 05 10	6	20.13	0.5871	1.5	-21.4034	0.949	1.2	2.452	20	1.0	1.2	83 10 24	11	6	19.61	0.4746	1.5	-21.3260	0.357	0.9	2.449	28	1.1	
83 09 05 11	6	22.26	0.5882	1.2	-21.4320	1.045	0.8	2.477	24	1.0	1.0	83 10 24	1	6	21.20	0.4741	1.7	-21.3262	0.930	1.0	2.447	27	1.3	
83 09 05 1	6	24.38	0.5762	2.5	-21.4238	1.299	1.4	2.494	26	1.9	1.9	83 10 24	2	6	23.36	0.4906	1.6	-21.5095	1.160	1.9	2.468	26	1.3	
83 09 05 10	6	20.07	0.5655	1.2	-21.4369	1.147	1.0	2.609	28	1.0	1.0	83 10 25	11	6	18.95	0.4656	1.9	-21.5348	1.024	1.2	2.419	28	1.4	
83 09 07 10	6	20.05	0.5784	1.8	-21.4221	1.304	1.3	2.571	24	1.6	1.6	83 10 25	1	6	21.16	0.4886	1.5	-21.5415	1.249	0.9	2.358	27	1.1	
83 09 08 10	6	19.94	0.5814	1.3	-21.4191	1.037	1.1	2.422	26	1.1	1.1	83 10 25	2	6	23.37	0.4337	1.7	-21.5163	0.379	1.2	2.297	27	1.4	
83 09 09 12	10	2	19.62	0.5865	1.7	-21.4310	1.041	1.4	2.444	26	1.5	1.5	83 10 26	1	7	21.07	0.4640	2.7	-21.5356	0.962	1.9	2.115	25	2.3
83 09 12 11	2	21.82	0.5869	2.5	-21.4313	1.141	1.6	2.542	26	2.0	2.0	83 10 26	2	7	23.24	0.4933	1.3	-21.5306	1.006	2.0	2.377	26	1.6	
83 09 12 1	2	23.39	0.5718	1.4	-21.4226	1.153	0.8	2.410	25	1.1	1.0	83 10 26	2	7	23.24	0.4568	0.939	-21.5468	0.939	0.9	2.415	25	1.1	
83 09 13 10	6	19.59	0.5594	1.5	-21.4411	1.245	1.3	2.642	25	1.4	1.4	83 10 27	11	4	18.80	0.4526	2.2	-21.5680	1.066	1.5	2.028	25	1.9	
83 09 13 11	5	21.33	0.5658	3.3	-21.4345	1.273	1.9	2.822	22	3.0	3.0	83 10 27	1	4	20.98	0.4865	3.4	-21.4348	0.805	2.1	1.998	26	2.7	
83 09 13 19	1	6	23.55	0.5728	3.4	-21.4273	0.931	2.1	2.500	26	2.7	2.7	83 10 27	1	4	23.26	0.4519	2.5	-21.5482	0.733	1.9	2.021	27	2.1
83 09 14 10	7	19.53	0.5649	2.1	-21.4356	1.123	1.6	2.413	24	1.9	1.9	83 10 28	1	2	20.97	0.4570	2.5	-21.5433	0.876	1.4	2.424	26	1.6	
83 09 14 11	7	21.64	0.5727	2.6	-21.4275	0.972	1.7	2.412	28	1.9	1.9	83 10 28	2	2	23.18	0.4514	1.5	-21.5468	0.759	1.3	2.220	23	1.6	
83 09 19 10	6	19.32	0.5647	1.7	-21.4359	1.277	1.3	2.567	27	1.7	1.7	83 11 04	1	2	20.59	0.4460	1.8	-21.5644	1.030	1.3	2.221	20	1.9	
83 09 19 11	6	21.31	0.5723	2.0	-21.4280	1.072	0.6	2.428	28	0.7	0.7	83 11 04	2	2	22.77	0.4857	1.6	-21.5516	0.857	1.5	2.174	26	1.6	
83 09 19 19	1	6	23.55	0.5728	3.4	-21.4273	0.931	2.1	2.500	26	2.7	2.7	83 11 04	1	4	20.25	0.4304	2.1	-21.5700	0.979	1.3	2.431	26	1.5
83 09 20 10	6	19.14	0.5541	2.3	-21.4466	1.024	1.8	2.585	27	1.9	1.9	83 11 08	1	7	22.44	0.4047	1.7	-21.5595	0.335	1.2	2.344	27	1.4	
83 09 20 11	6	21.27	0.5593	2.6	-21.4410	1.098	1.6	2.723	27	2.0	2.0	83 11 08	2	7	21.07	0.4570	2.5	-21.5433	1.035	1.2	2.424	26	1.6	
83 09 20 1	6	23.43	0.5654	1.8	-21.4346	1.146	1.0	2.693	27	1.3	1.3	83 11 09	1	5	20.18	0.4371	1.8	-21.5634	0.964	1.1	2.439	26	1.3	
83 09 21 10	2	18.79	0.5595	2.0	-21.4421	1.071	1.5	2.305	18	2.5	2.5	83 11 09	2	5	22.41	0.4515	1.6	-21.5487	0.957	1.3	2.400	27	1.4	
83 09 22 10	6	19.01	0.5530	2.0	-21.4475	1.002	1.6	2.277	27	1.7	1.7	83 11 10	1	4	20.15	0.4209	2.6	-21.5795	0.859	1.8	2.018	26	2.2	
83 09 22 11	6	21.12	0.5511	2.1	-21.4492	1.004	1.3	2.592	27	1.6	1.6	83 11 10	3	4	24.49	0.4401	2.0	-21.5599	0.638	1.4	1.816	24	1.8	
83 09 22 1	6	23.32	0.5529	1.5	-21.4477	1.029	0.7	2.380	23	1.2	1.2	83 11 10	3	4	24.49	0.4401	2.0	-21.5872	0.933	1.4	2.543	26	1.8	
83 09 23 10	2	18.95	0.5585	2.2	-21.4440	0.993	1.8	2.410	28	1.8	1.8	83 11 11	2	2	20.05	0.4432	2.2	-21.5750	0.908	0.9	2.466	26	1.0	
83 09 23 11	2	21.05	0.5520	1.9	-21.4483	1.048	1.2	2.458	28	1.4	1.4	83 11 11	2	2	22.24	0.4252	1.2	-21.5750	0.908	0.9	2.466	26	1.0	
83 09 23 1	2	23.21	0.5461	1.7	-21.4540	0.930	0.9	2.484	24	1.4	1.4	83 11 11	2	2	22.24	0.4252	1.2	-21.5750	0.908	0.9	2.466	26	1.0	

DATE	Gr.	Obs.	UTM	UTG-UTG	W DF	UTG-UTI	ΔΥ	Υ₂	Η	Μ	Υ₁	DATE	Gr.	Obs.	UTM	UTG-UTG	W DF	UTG-UTI	ΔΥ	Υ₂	Η	Μ	Υ₁
83 09 25 11	4	20.82	0.5398	1.9	-21.4605	1.071	1.2	2.434	27	1.5	1.5	83 11 18	1	2	19.93	0.4302	1.4	-21.5702	0.970	1.3	2.399	18	1.9
83 09 26 1	4	23.11	0.5317	2.8	-21.4684	1.031	1.8	2.075	26	2.2	2.2	83 11 18	2	2	21.85	0.4106	1.5	-21.5817	0.754	1.2	2.333	26	1.3
83 09 27 11	7	20.88	0.5274	1.9	-21.4730	1.040	1.5	2.471	25	1.5	1.5	83 11 28	1	6	18.91	0.4164	1.8	-21.5842	0.721	1.0	2.221	27	1.3
83 09 27 1	7	23.01	0.5279	2.3	-21.4723	1.092	1.5	2.648	26	1.9	1.9	83 11 28	1	6	21.09	0.4424	2.2	-21.5679	0.621	1.5	2.430	27	1.7
83 09 28 11	7	20.72	0.5264	2.0	-21.4740	1.015	1.3	2.766	28	1.5	1.5	83 11 28	3	6	23.26	0.4516	2.8	-21.5644	0.597	1.8	2.458	27	2.2
83 09 29 1	6	22.90	0.5252	1.4	-21.4749	1.016	0.8	2.560	27	1.0	1.0	83 11 29	1	4	21.09	0.4195	2.8	-21.5810	0.565	1.8	1.941	26	2.1
83 09 28 2	6	25.12	0.5360	1.4	-21.4639	0.960	1.0	2.536	28	1.1	1.1	83 11 29	2	4	21.09	0.4090	2.0	-21.5913	0.543	1.6	2.117	26	1.6
83 10 03 11	6	20.39	0.5301	1.7	-21.4703	1.070	1.1	2.712	28	1.2	1.2	83 11 29	3	4	23.20	0.4289	2.2	-21.5712	0.555	1.3	2.104	26	1.6
83 10 03 1	6	22.61	0.5332	2.3	-21.4669	1.074	1.2	2.653	28	1.6	1.6	83 11 30	1	7	18.83	0.4214	2.1	-21.5792	0.971	1.4	2.755	25	1.6
83 10 03 2	6	24.80	0.5213	1.6	-21.4787	0.994	1.2	2.587	28	1.2	1.2	83 11 30	2	7	21.06	0.4274	1.7	-21.5729	0.581	1.4	2.621	24	1.6
83 10 04 11	5	20.49	0.5283	1.4	-21.4711	1.061	0.7	2.852	20	1.4	1.4	83 11 30	3	7	23.13	0.4167	2.0	-21.5834	0.593	0.6	2.567	28	0.7
83 10 04 1	5	22.65	0.5384	2.0	-21.4618	1.107	0.7	2.596	15	1.6	1.6	83 12 01	1	6	18.71	0.3921	2.4	-21.6085	0.982	1.4	2.732	27	1.8
83 10 12 11	6	19.82	0.5011	1.4	-21.4989	0.991	0.9	2.862	27	1.1	1.1	83 12 01	2	6	20.93	0.4459	2.3	-21.6844	0.892	1.7	2.565	28	1.8
83 10 12 1	6	22.03	0.5022	2.1	-21.4976	1.036	1.3	2.686	27	1.6	1.6	83 12 01	3	6	23.07	0.4483	2.1	-21.5618	0.787	0.6	2.697	28	0.8
83 10 12 2	6	24.21	0.5003	1.9	-21.4996	0.948	1.4	2.622	28	1.5	1.5	83 12 02	2	2	20.86	0.4086	1.7	-21.5918	0.946	1.3	2.704	27	1.4
83 10 13 11	6	20.11	0.4986	1.5	-21.5019	0.819	0.8	2.358	17	1.8	1.8	83 12 02	3	2	23.00	0.4053	1.3	-21.5948	0.645	0.8	2.492	28	1.0
83 10 13 1	6	22.95	0.5075	3.5	-21.4927	1.002	2.2	2.424	28	2.6	2.6	83 12 02	1	4	18.50	0.3759	3.3	-21.6247	0.975	2.2	1.733	27	2.6
83 10 13 2	2	24.21	0.5041	2.1	-21.4959	0.975	1.7	2.317	26	1.9	1.9	83 12 05	3	4	20.74	0.3707	2.5	-21.6296	0.534	1.8</			