THE WG WFI PLATE DATABASE (WFPDB): PRESENT STATUS

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ABSTRACT. The present status of the work on the creation of a Wide-Field Plate Database is reported. It is planned to collect the available information for about 1.5 million plates from 187 wide-field instruments in 71 institutes/observatories. The source data are from 213 plate catalogues, 65 of them in computer-readable form. The structure and content of the Wide-Field Plate Database, now including 51 observation catalogues with more than 300,000 plates, is presented.

1. Introduction

The work on the creation of a Wide-Field Plate Database (WFPDB) started with the establishment of the Working Group on Wide-Field Imaging of the IAU Commission 9 'Instruments and Techniques' at the 21st IAU General Assembly in 1991. The creation of a computer-readable database containing the information for all astronomical plates obtained from the end of last century until now was one of the priority tasks of the new Working Group (West 1991, 1992; Tsvetkov 1992).

We consider as a beginning, a project to create a global astronomical plate archive, Hauck's (1982a, 1982b) work with the first list of existing astronomical plate archives in 36 institutes/observatories; we do not distinguish between wide-field direct plates and spectroscopic ones. However, in 1982 only 6 of these plate archives were in computer-readable form. Later, Jaschek (1986) collected information about archives of astronomical observations. From 141 replies to a questionnaire (Jaschek 1988, 1989), 68 institutes declared that they possess photographic plate archives, only 20 of them completely or partially in computer-readable form. In 1991 we started the preparation of a new, complete list of only the wide-field plate archives as a first step towards the creation of a Wide-Field Plate Database.

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H. T. MacGillivray et al. (eds.), Astronomy from Wide-Field Imaging, 359–364.

2. List of Existing Wide-Field Plate Archives

For the preparation of a list of wide-field plate archives, more than 200 astronomical institutes/observatories were queried in September 1991 and April 1992. The results were summarised in the Progress Report on the WFP Database during the WG WFI Organising Committee meeting in Baltimore in 1992 and published in the IAU Commission 9 WG WFI Newsletter No. 2 (Tsvetkov 1992). The list of wide-field plate archives was distributed during the ESO/OAT International Workshop 'Handling and Archiving Data from Ground-based Telescopes' in Trieste in April 1993 and in Potsdam during this symposium. It is available from WFPA@BGEARN.BITNET on request.

So far 71 institutes/observatories from 34 countries have reported on 187 wide-field instruments, with 213 plate catalogues containing an estimated total amount of 1.5×10^6 plates. (Because of the change of the location or other reasons more than one archive may exist for some instruments.) The list of existing wide-field plate archives will be updated and distributed at the General Assembly of the IAU in the Hague in August 1994.

3. The Wide-Field Plate Database

Up to August 1993, we have received data in computer-readable form for 307,572 plates obtained as a result of the operation of 51 wide-field instruments in 12 observatories (see Table 1).

Table 1. List of instruments and plate catalogues in the WFPDB until August 1993

Instrument Identifier	Observatory	Instrument (m)		Number of plates
ASI067	Asiago	0.67/0.92	Sch	18411
ASI040	Asiago	0.40/0.50	Sch	15267
BEI060	Beijing	0.60/0.90	Sch	1509
BUC038	Bucharest	0.38	Ast	1886
COO390	Anglo-Australian	3.90	Rfl	2361
HEI040	Heidelberg	2 x 0.40	Ast	8000
KIS105	Kiso	1.05/1.50	Sch	6728
PAL122	Palomar	1.22/1.83	Sch	1037
ROZ200	Rozhen	2.00	RCr	1995
ROZ050	Rozhen	0.50/0.70	Sch	6750
SID124	Siding Spring	1.24/1.83	Sch	12588
LAS100	ESO-La Silla	1.00/1.60	Sch	8055
SON000A	Sonneberg		Cam	48
SON000B	Sonneberg		Cam	204
SON005A	Sonneberg	0.05	Cam	2572
SON005B	Sonneberg	0.05	Cam	12066

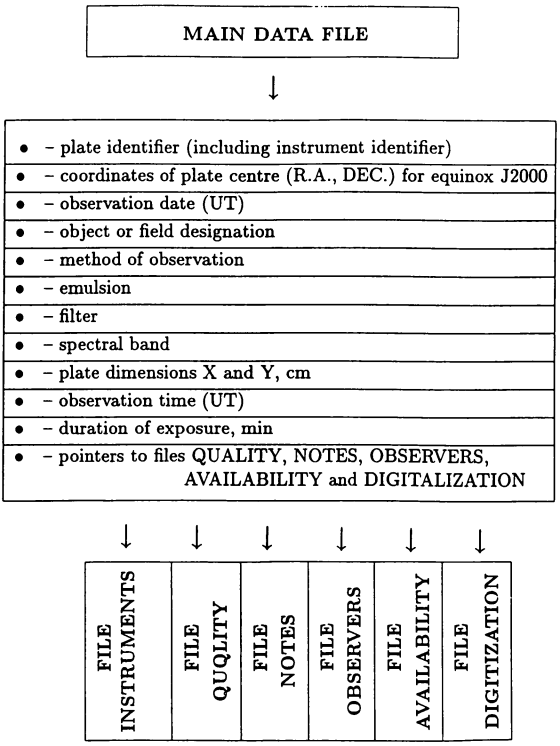
Instrument Identifier	Observatory	Instrument (m)		Number of plates
SON005C	Sonneberg	0.05	Cam	12161
SON005D	Sonneberg	0.05	Cam	12158
SON005E	Sonneberg	0.05	Cam	11055
SON005F	Sonneberg	0.05	Cam	10840
SON005G	Sonneberg	0.05	Cam	8686
SON005H	Sonneberg	0.05	Cam	8680
SON005I	Sonneberg	0.05	Cam	7913
SON005J	Sonneberg	0.05	Cam	8299
SON005K	Sonneberg	0.05	Cam	8310
SON005L	Sonneberg	0.05	Cam	8312
SON005M	Sonneberg	0.05	Cam	8431
SON006A	Sonneberg	0.06	Cam	6715
SON006B	Sonneberg	0.06	Cam	3194
SON006C	Sonneberg	0.06	Cam	2780
SON007A	Sonneberg	0.07	Cam	8972
SON007B	Sonneberg	0.07	Cam	8965
SON007C	Sonneberg	0.07	Cam	925
SON007D	Sonneberg	0.07	Cam	942
SON007E	Sonneberg	0.07	Cam	906
SON007F	Sonneberg	0.07	Cam	890
SON008A	Sonneberg	0.08	Cam	300
SON008B	Sonneberg	0.08	Cam	193
SON009	Sonneberg	0.09	Cam	682
SON010	Sonneberg	0.10	Cam	7080
SON013A	Sonneberg	0.13	Cam	11176
SON013B	Sonneberg	0.13	Cam	5256
SON013C	Sonneberg	0.13	Cam	1735
SON013D	Sonneberg	0.13	Cam	1331
SON014	Sonneberg	0.14	Cam	6248
SON017	Sonneberg	0.17	Cam	7976
SON020	Sonneberg	0.20	Sch	5322
SON040A	Sonneberg	0.40	Ast	1658
SON040B	Sonneberg	0.40	Ast	6858
SON040C	Sonneberg	0.40	Ast	10719
TAU134	Tautenburg	1.34/2.00	Sch	8239

The data from the source catalogues have first been carefully examined. Detailed descriptions of the record structure and content necessary for various reductions and restructuring of the data, as well as the data peculiarities (missing data, coded data, etc.), have been prepared for each catalogue.

Summarizing the information from the detailed descriptions of the original plate catalogues,

https://doi.org/10.1017/S0074180900047653 Published online by Cambridge University Press

we have discovered that the data for only about 10 from more than 20 possible plate attributes are presented in the majority of the catalogues. For example, most of the plate catalogues do not contain data for the plate quality, the observer, notes, etc. Taking this fact into consideration, we have adopted the following multiple file structure for the WFPDB:



We have introduced for each plate in the WFPDB an identifier which uniquely identifies the plate. The plate identifier serves as a primary key for searching and linking the information from the constituent files of the database.

The plate identifier has a composite structure, shown below:

A			B	
XXX	XXX	X	XXXXXX	X
1	2	3	4	5

It occupies a field of 14 bytes and consists of two parts: A instrument identifier and B plate number. The instrument identifier (A) is in its turn a unique identifier for each instrument in file INSTRUMENTS. It consists of 1) a unique identifier of the observatory/institute (3 bytes, usually the first 3 letters of the observatory or site name are used), followed by 2) a number (3 bytes), showing the clear aperture of the instrument in cm and 3) if necessary, a suffix (1 byte, letter A,

B, C, ..., or blank) in the case when there are two or more instruments with the same aperture in the same observatory. The plate number (Identifier B, 6 bytes) consists of 4) the original plate number from the source plate catalogue, followed by 5) a suffix (1 byte, letter A, B, C, ..., or blank), if necessary, in the case of duplicate plate numbers.

Some examples of plate identifiers are: HAROO4A023968, SON013C001425, ROZ200 001823B.

Up to the present, the data from all 51 plate catalogues in Table 1 have been processed, as described above, and incorporated into the main data file of the WFPDB. All data manipulation functions connected with the preparation of the source data and the creation of the database have been executed on an IBM/4381 mainframe computer at the Computer Centre of Physics of the Bulgarian Academy of Sciences, using the facilities of the operational system VM/SP Rel. 4. Just forthcoming, as a next step, is the installation, maintenance and further enlargement of the WFPDB on a TELMAT TR 5000 computer at the Centre of Informatics in Sofia, with the help of the commercial relational database management system ORACLE and application of the SQL query language.

Although the completeness of the WFPDB is still inadequate (about 20% of all plates), we have carried out some preliminary statistical processing of the data. One of the results, the distribution of the number of plates versus time (year), is shown in Fig. 1. The distribution reaches its maximum in 1964; this is due primarily to the extremely active observational work at the Sonneberg Observatory at that time.

4. Future Developments

At present the most serious obstacle for the further development of the WFPDB is that many observatories/institutes have no plans or funds to convert their archives to computer-readable form. This is a general problem which must be stressed during the IAU General Assembly in the

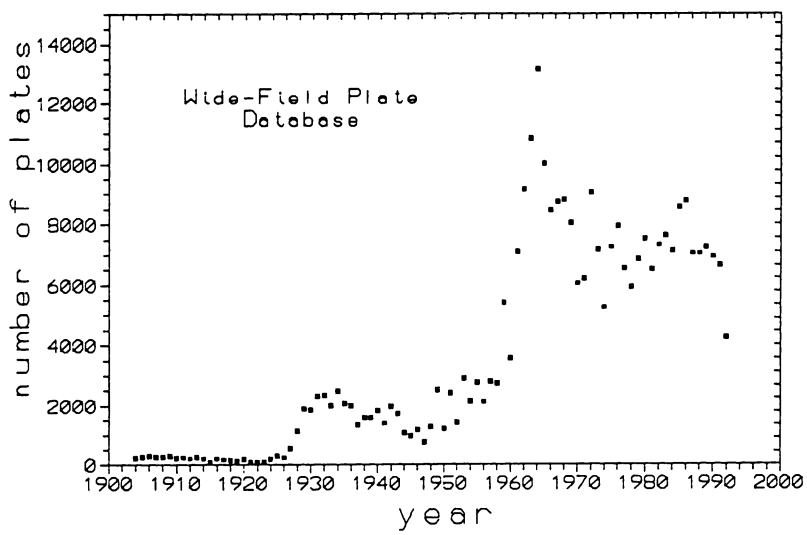


Figure 1.

https://doi.org/10.1017/S0074180900047653 Published online by Cambridge University Press

Hague in 1994.

We hope that in the future an on-line access to the WFPDB will be possible by incorporating it in the ESIS and ADS systems.

We have started to collect information about the digitized plates in different institutes and observatories. Up to now the list of the digitised plates contains data from the wide-field plate collections of STScI (1518 plates, Lasker et al. 1990) and of the Münster Astronomical Institute (MRSP/ROSAT and Flare Star Projects, 620 SERC + 200 GPO plates, Naumann et al. 1993). According to Irwin (1992) there are 600 (6.2 x 6.2 deg.) digitised glass copies of POSS-I O and E plates from the APM Northern Sky Catalogue in the Royal Greenwich Observatory. One can expect increasing in the number of digitised plates from the Royal Observatory Edinburgh (COSMOS), Paris Observatory (MAMA), Kiso Observatory, etc. We intend to copy from the files of the digitised plates only the information in the headers (in FITS format or another) and to produce a separate file with them. We also note the Sonneberg initiative to use a CCD line scanner for digitisation of the Sonneberg plate archive in the future (Brauer & Kroll 1992).

The collaboration and exchange of information via networks with SIMBAD, STARCAT, NSSDC, Goddard Space Flight Centre Database, etc., is of great importance for the development of the WFPDB. A list of E-mail addresses (respectively FAX numbers) of the persons responsible for the plate archives in the different observatories will be prepared and distributed in order to facilitate the communication and exchange of information.

Acknowledgements

We would like to express our deep thanks to all astronomers who have sent us information and data files for their WF plate archives. This work was supported by the Commission 9 of the International Astronomical Union, the Münster Astronomical Institute and the European Southern Observatory. M.K.T. acknowledges support from the Alexander von Humboldt Foundation.

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