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Publications and Observational Data in the Archive of Konkoly Observatory

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Abstract. We present the status of ongoing digital preservation projects at Konkoly Observatory. The electronic *IBVS*, the *Communications/Mitteilungen* series and observational data digitization are discussed, with some open questions.

Konkoly Observatory

Konkoly Observatory was founded by Nicholas Konkoly-Thege, a physicist, astronomer and wealthy landowner, and became a state institution in 1899. Konkoly came to the decision to donate his observatory to the state after seeing other small private observatories perish – small observatories which came into being in Hungary under his influence. Konkoly Observatory inherited book collections and observational material from these small observatories. After the First World War, the Observatory was relocated to Budapest. Later the solar branch moved to Debrecen (now it is known abroad as Debrecen Heliophysical Observatory) and observing stations were set up at Piskéstető and Gyula. A large amount of observational data was collected as a result of patrol-type projects (like the supernova- and flare-programs at Piskéstető, or the photoheliographic program which took over the Greenwich catalogue work at Debrecen). Other projects, especially the variable star observing project, collected extensive photographic material too. Now stellar astrophysicists use CCDs, and solar physicists, while still using photographic film, scan their data for processing.

Publications and Data

The photographic material (together with an important collection of old patrol-type drawings of the sun, from 1880–1919), could amount to 10–15 TB when scanned with resolution appropriate for scientific purposes. Ongoing observational projects yield 1–2 TB data yearly.

Konkoly Observatory has been publishing the *Mitteilungen/Communications* series for 70 years. The pace of publication has slowed considerably in the past decade, but there are plans to continue it. There are other, smaller publication series of the Observatory, and there are other publications, whose preservation and conversion to digital form might be of historical interest.

Konkoly Observatory publishes the *Information Bulletin on Variable Stars (IBVS)* for Commissions 27 and 42 of the IAU. This small journal is already available entirely digitally (from the first issue published in 1961).

The Digital Archive Project

All of the material mentioned above calls for the establishment of a digital archive. The first step is to set up policies – this is especially important in the case of observational data. The second step is to make an inventory of the information stored in various forms. Then meta-information should be made available in electronic form. Finally, facilities should be created to store large amounts of digital data, and parts of the photographic data should be scanned. In reality, these processes are being carried out more or less in parallel.

Konkoly Observatory has a plate collection of the 60/90 Schmidt telescope (mostly direct plates, some of which are multiple exposure, and some objective prism plates). There are smaller plate collections as well, containing a few thousand plates made with a small astrograph, the 24-inch telescope and the 1m RCC telescope.

Meta-information on the largest plate collection, that of the Schmidt telescope, exists electronically, and is available through WFPDB (Tsvetkov et al. 2005). Meta-information for the other plate collection is available only in the form of hand-written logbooks. Most of the plates in these other collections are not considered suitable for a public archive. The plates were made for specific projects, have a relatively small field of view, and some of these plates were made with a multiple-exposure method for studying stellar variability. Smaller parts of the plate collection contain still unpublished data which, after publication, might be suitable for general access. Certain sets of plates had been scanned already in the past, but lacking storage facilities, the scans were discarded after the photometric measurements were made. Emulsion degradation of some parts of the plate collections calls for preservation.

CCD frames made in the past decade with the Schmidt and RCC telescopes at Pizskéstető and the 24-inch Cassegrain telescope at Budapest are stored on various media: CD-ROMs, DVDs, HDDs, project-by-project, observer-by-observer. Central archives do not exist, nor a central database of meta-information. We are considering setting up a database to store telescope time allocation, observing logs, and maybe FITS headers of the CCD frames. Storage facilities will be set up, which allow central storage of the frames. We are presently looking for software appropriate for the task of providing database functionality with VO compatibility – one possibility is using SAADA developed at Strasbourg Observatory (Michel, Nguyen & Motch 2005).

IBVS and the *Communications/Mitteilungen* are already available in digital form, although further work remains to be done. For *IBVS*, we are still scanning and OCR-ing data files associated with papers published in the *Bulletin*. Processing of these data files and some tables – collecting material from the IAU C27 Archive too – is under way. Most of the remaining task is to provide meta-information for the figures and data files, creating database-like functionality which would allow searching of these entities.

The *Communications* series is still not fully available in a convenient electronic form. We do OCR on the files, and add more meta-information. We have chosen the policy of correcting minor errors in the electronic version, while making the original available in image format. Future issues will have their data tables in electronic form (too). Metadata creation and maintenance is a further task in this case also.

Information on the ongoing catalogue projects at the Debrecen Heliophysical Observatory can be found in Gyóri et al. (2005) and Mező & Baranyi (2005). Information on the digitization of the historical drawings of the solar disc is provided by Tóth, Mező & Gerlei (2002).

We are considering setting up an OAI repository, and we are studying the applicability of eprints or other OAI software for our publication and data archive purposes, including the use of these (in parallel with the existing software) for *IBVS* and the *Communications/Mitteilungen*.

Table 1. Plate collections at Konkoly Observatory.

Telescope d/(d)/f [cm]	No. of plates ¹ (completeness)	Plate size [cm]	Years	FOV [deg]
60/90/180 Schmidt ^P	13179 (85–90%)	16×16	1962–1997	5 ²
100/1350 RCC ^P	1131 (100%)	16×16	1975–1993	0.75×0.75
60/360 Newtonian ^S	4916 (90–95%)	9×12 ³	1933–1966	1.5×2 ³
16/220 Astrograph ^S	3807 (90%)	12×18 ³	1934–1958	3.27×5 ³

^P Piskéztető; ^S Svábhegy (Budapest);

¹ estimated completeness: existing plates vs. number in the logbook; ² circular field; ³ maximum size

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