THE USE OF MACHINE-READABLE ASTRONOMICAL CATALOGS AT SMALL OBSERVATORIES

Wayne H. Warren Jr.
Astronomical Data Center (ADC)
National Space Science Data Center, Code 633
NASA Goddard Space Flight Center
Greenbelt, Maryland 20771 U.S.A.

ABSTRACT. The development of computer controlled telescopes at small observatories has dramatically increased the demand for and potential usefulness of astronomical catalogs in machine-readable form. The compilation and storage of catalogs containing program and standard stars are obvious necessities for the operation of an automatic telescope, but to date most observers have been collecting their own data and manually entering them into microcomputer disk storage. (This is clear from the small number of machine catalogs distributed by the ADC to smaller observatories.) Astronomical data centers located in several countries around the world currently archive, maintain and disseminate a wide variety of machine catalogs in virtually every discipline of astronomy, and these facilities can provide observers with nearly any kind of data needed for controlling telescopes (positional catalogs), reducing data (catalogs of all types of photometry, spectroscopy, etc.) and providing access to fundamental quantities needed for the interpretation of observations (catalogs of binaries, variables, radial and rotational velocities, etc.). The ADC presently has approximately 450 machine catalogs in its archives and these are available to observatories upon request. Procedures for obtaining data from the ADC and policies for distribution are described in this paper, while a list of all catalogs available can be obtained by contacting the ADC.

1. USING EXISTING CATALOGS

The large collection of existing machine-readable catalogs offers small observatories the possiblility of compiling specialized lists of program objects in almost any discipline. Astrometric catalogs such as the FK4 (Fricke and Kopff 1963) can be used to extract accurate positions for the automatic acquisition of standard and program stars, while existing catalogs of variable stars (Kukarkin *et al.* 1982) can assist greatly in setting up observing programs for photometry of suspected variables.

Compilation catalogs for most photometries already exist in machine form. Most of these have been compiled by specialists at the photometric data center in Geneva and include, in addition to all individual

J. B. Hearnshaw and P. L. Cottrell (eds.), Instrumentation and Research Programmes for Small Telescopes, 321–322.

observations, files of homogeneous mean values based on weights determined by reference to system standards. Examples are the general *UBV* catalogs (Mermilliod and Nicolet 1977, Nicolet 1978, Mermilliod 1983) and *uvbyβ* compilation (Hauck and Mermilliod 1985). A complete list of available catalogs can be obtained by writing to the author. These machine-readable catalogs can also be ordered from the Centre de Données Stellaires in Strasbourg, France, the Soviet Center for Astronomical Data in Moscow, the Japanese Astronomical Data Center at the Kanazawa Institute of Technology, and the Zentralinstitut für Astrophysik in Potsdam, DDR.

2. OBTAINING CATALOGS FROM THE ADC

The ADC at NASA is a joint effort of Goddard's Laboratory for Astronomy and Solar Physics (J. M. Mead) and the NSSDC (W. H. Warren Jr.). While both groups prepare and document catalogs for distribution to the astronomical community, the latter group actually disseminates the data through NSSDC (domestic) and the World Data Center A for Rockets and Satellites (international). Although charges are sometimes assessed to cover the cost of processing a request, the Head of NSSDC and/or the Director of WDC-A-R&S may waive charges, as resources permit, for modest numbers of data when they are to be used for scientific and educational purposes. Further information and ordering materials may be obtained by contacting the ADC at the address above.

REFERENCES

Fricke, W. and Kopff, A. 1963, *Fourth Fundamental Catalogue (FK4) and Supplement, Veröff. Astron. Rechen-Inst., Heidelberg,* Nos. 10, 11.

Hauck, B. and Mermilliod, M. 1985, *Astron. Astrophys. Suppl.* 60, 61.

Høg, E. and von der Heide, J. 1976, *Perth 70, Positions of 24900 Stars, Abh. der Hamburger Sternwarte,* Band IX.

Kukarkin, B. V., Kholopov, P. N., Artiukhina, N. M., Fedorovich, V. P., Frolov, M. S., Goranskij, V. P., Gorynya, N. A., Karitskaya, E. A., Kireeva, N. N., Kukarkina, N. P., Kurochkin, N. E., Medvedeva, G. I., Perova, N. B., Ponomareva, G. A., Samus', N. N. and Shugarov, S. Yu. 1982, *New Catalogue of Suspected Variable Stars* (Moscow: Publishing House of the Academy of Sciences of the U.S.S.R.).

Mermilliod, J.-C. 1983, *Bull. Inform. Centre Données Stellaires,* No. 25, p. 79.

Mermilliod, J.-C. and Nicolet, B. 1977, *Astron. Astrophys. Suppl.* 29, 259.

Nicolet, B. 1978, *Astron. Astrophys. Suppl.* 34, 1.