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What Happened to the Results?

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Abstract. The archiving process stops at the point where a Principle Investigator program or a survey that produces a catalogue has been carried out. No further contact to the actual observer(s) is kept after they have received their data. In recent years only one single archive has made an effort to scan the publications and collect references for each dataset to build a publications archive. The *International Ultraviolet Explorer* (*IUE*) database provides these links between the actual observation and the publication reference. In this paper we propose the establishment of a link between the actual observation made and the science that has been carried out with it. The merit of having such a link is obvious. The current trend has only gone into providing quality flags in mission logs giving some indication as to whether an acquisition is useful or not. If, however, a publication is linked to the actual observation, an archive user may immediately refer to a particular paper that may provide more details as to what science may have been achieved with it. This way, archives can be used more efficiently and a judgment on using data in an archive can be made on the basis of previous work carried out.

1. Introduction

Today's astronomical mission archives tend to provide data pertaining to the actual acquired observation. Object names, instrumentation used, and observation dates are typical entries found in almost all mission archives. Even future mission archives tend to concentrate more on what can be extracted out of a proposal or a Guaranteed Time Observation log than the actual extracted science out of the data itself.

The archives of today stop after the Principle Investigator has acquired the data. A year later the data is then publicly available. An archive researcher has then to go through a mass of data to find what may be useful without any indication as to what the actual observer's results were while using the data except the proposal, which in most cases is very general.

2. The Example of IUE

The *IUE* mission has one of the oldest digital archives in astronomy (Barylak 1988). The effort has not only gone into providing the *IUE* mission log, but also to scan all the publications that referred to any *IUE* data product. As a practical example, we searched the *IUE* database for all the spectra of the Andromeda galaxy using the on-line database at the VILSPA observing station and at ESIS (Giommi et al. 1994). We list in Table 1 each spectrum found and in which article it has been referenced. Scanning the on-line abstracts in the ESIS bibliographic service, we find several interesting papers that shed some light on what parameters were derived and what science was achieved with the data.

3. A Proposed Policy

The only way to achieve this connection between a satellite mission and the science it produces is to make it a mission's policy that every data product be *explicitly* referred to in a publication. It would, however, simplify matters for archivists if Principle Investigators can provide *at least one* publication for each usable observation made.

Present mission archives should invest more time in accumulating published results. A common nomenclature such as that adopted by SIMBAD (Egret et al. 1992) could be used to refer to papers. These publications can then be easily used by systems like ESIS and ADS (Eichhorn 1994) to access the abstracts and from there on the printed publication.

4. Conclusions

From the *IUE* example it is obvious what the merits are, not only archiving the actual observation, but also archiving the publications related to it. Any future investigator will have a better understanding of the data and how reliable they may be. Another side effect is the justification of usage of an ongoing mission. It is not sufficient only to provide access statistics, since casual or curious users will normally be in the majority. The true usage of an archive can only be measured by the amount of scientific output achieved.

References

Barylak, M. 1988, The VILSPA Database Users' Guide, ESA *IUE* Newsletter, No. 37

Egret, D. et al. 1992, SIMBAD User's Guide & Reference Manual

Eichhorn, G. 1994, in Astronomical Data Analysis Software and Systems III, ASP Conf. Ser., Vol. 61, eds. D. R. Crabtree, R. J. Hanisch, & J. Barnes (San Francisco, ASP), p. 18eichhorng

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R.A.	Decl.	Object	Disp.	Observation	Spectrum	Publication
00 40 30.01	+40 50 59.8	M31	L	02-SEP-80	LWR8699L	A&A Vol. 0145, pg. 0296, 1985
00 40 30.01	+40 50 59.8	M31158	L	04-OCT-80	SWP10280L	APJ Vol. 0261, pg. 0077, 1982
00 40 03.01	+40 58 59.8	NGC224	L	23-JUN-79	SWP5610L	APJ Vol. 0259, pg. 0077, 1982
00 40 03.01	+40 58 59.8	NGC224	L	23-JUN-79	LWR4853L	A&A Vol. 0106, pg. 0016, 1982
00 40 00.01	+40 59 00.2	M31	L	03-DEC-78	SWP3520L	APJ Vol. 0230, pg. L137, 1979
00 40 00.51	+40 59 04.0	NGC224	L	01-JUN-79	LWR4665L	A&A Vol. 0145, pg. 0296, 1985
00 40 00.51	+40 59 04.0	NGC224	L	10-DEC-79	LWR6343L	APJ Vol. 0259, pg. 0077, 1982
00 40 00.51	+40 59 04.0	NGC224	L	10-DEC-79	LWR6343S	APJ Vol. 0328, pg. 0440, 1988
00 40 00.51	+40 59 04.0	NGC224	L	11-DEC-79	SWP7376L	APJ Vol. 0259, pg. 0077, 1982
00 40 00.51	+40 59 04.0	NGC224	L	12-DEC-79	LWR6368L	APJ Vol. 0259, pg. 0077, 1982
00 40 00.51	+40 59 04.0	NGC224	L	12-DEC-79	LWR6368S	APJ Vol. 0328, pg. 0440, 1988
00 40 00.51	+40 59 04.0	NGC224	L	12-DEC-79	SWP7376S	APJ Vol. 0259, pg. 0077, 1982
00 40 00.51	+40 59 04.0	NGC224	L	11-JUL-80	SWP9494L	APJ Vol. 0259, pg. 0077, 1982
00 40 00.51	+40 59 04.0	NGC224	L	12-JUL-80	SWP9502L	APJ Vol. 0259, pg. 0077, 1982
00 40 00.51	+40 59 04.0	NGC224	L	13-JUL-80	LWR8236L	APJ Vol. 0259, pg. 0077, 1982
00 40 00.51	+40 59 04.0	NGC224	L	14-JUL-80	SWP9519L	APJ Vol. 0259, pg. 0077, 1982
00 40 00.51	+40 59 04.0	NGC224	L	14-JUL-80	LWR8244L	A&A Vol. 0145, pg. 0296, 1985
00 40 02.01	+40 59 59.8	M31	L	03-SEP-79	LWR5502L	A&A Vol. 0106, pg. 0016, 1982
00 40 02.01	+40 59 59.8	M31	L	03-SEP-79	SWP6378L	APJ Vol. 0259, pg. 0077, 1982

Table 1. A list of *IUE* spectra of the Andromeda galaxy derived from the VILSPA archives and the ESIS system. For each entry, the Right Ascension, declination, name, dispersion, observation date, spectrum number, and literature reference are given.