The Chandra Data Archive (CDA) has been tracking publications that are based on Chandra observations in journals and on-line conference proceedings since early in the mission. In recent years the CDA has developed a number of metrics to provide a means for measuring the science impact of Chandra data. Figure 1 is a picture of how Chandra data, as it ages, have been published in the refereed literature. A summary of the scientific impact of Chandra data is summarized below. The conclusion is that publication history associated with the Chandra mission is healthy and vigorous and data from the entire life of the mission remain relevant.

**Speed of Publication:** The median time, $\tau_p$, to first publication of data in a refereed journal is 2.4 years.

**Percentage of Data Published:** 94% of Chandra data is published after $10\tau_p$.

**Archival Usage:**
- 78% of exposure time is published more than twice at $5\tau_p$.
- The amount of unique exposure time published annually, as a percentage of exposure time available in the archive is 42%

**Journals:** Chandra science results have been published in over 50 refereed journals with more than 90% of the papers being published in ApJ and ApJL (56.2%), A&A (17.2 %), MNRAS (14.2 %) and AJ (3.8%).

**Citation of Results:** In any given year, there are as many refereed journal articles that cite Chandra observations or results derived from them as there are that present Chandra science.

---

### New Research Tools

**Finding papers connected to Chandra proposals**

The proposal paper search tool shown in Figure 2 allows users to search for accepted proposals. Starting in Cycle 17, it will also provide a list of articles from the Chandra bibliography which have been flagged as presenting Chandra science as a result of the proposal and is associated with the PI team in some way. The list of articles may not be complete, so please email CDO with any additions that you feel should be made to the bibliography.

**Chandra proposal abstracts on ADS**

For many years the CDA has been publishing to ADS the abstracts of accepted Chandra observing proposals. We now publish all accepted proposal abstracts including those for theory and archive proposals.

**Retrieving Chandra data with CIAO Tools**

The CIAO tools find/chandra_obsid and download/chandra_obsid will find and download data for a given Chandra Observation Id (ObsId) from the public archive. CIAO now provides a macro, list_dataset_id, which will examine the headers of a set of files and provide a list of LaTeX dataset identifier macros to insert into your AAS manuscripts. The tool has been upgraded to fetch data from mirrors of the CDA provided those mirrors are also ftp sites.

**Scrape FITS Headers for Data Acknowledgment**

CIAO now provides a macro, list_dataset_id, which will examine the headers of a set of files and provide a list of LaTeX dataset identifier macros to insert into your AAS manuscripts. This macro will scrape all FITS files in a directory and provide a list of unique dataset identifiers found in the files. See the CIAO documentation for full details.

---

### Future Plans

**Creating Private Mirrors of the CDA**

To aid users in maintaining private mirrors, we are developing recipes and tools to help users create and maintain customized archives using a minimum of CDA resources.

**RSS feeds**

The CDA will be publishing customized RSS 2.0 feeds to provide announcements related to sets of observations selected by location in the sky; objects; lists of observations; instrument configuration; and more.

**FITS Dictionary**

We are collecting the complete body of FITS keywords, as used in Chandra data products, into a dictionary database that provides easy access to their use and meaning. The dictionary interface (Figure 3) will allow users to:

- search the dictionary by keyword, including perform wildcard searches.
- browse the dictionary by specific filetype.
- generate a schematic FITS header for a selected filetype.

---

### Acknowledgments

We thank the ADS for providing opportunities to increase our outreach to the astronomical community. We also thank all past and present bibliography classifiers. Without their efforts there would be no bibliography. This work is supported by NASA contract NAG8-03060.