

THE NASA ADS: SEARCHING, LINKING AND MORE. D.M. Thompson, G. Eichhorn, A. Accomazzi, E. Bohlen, C. S. Grant, E. Henneken, M. Kurtz, S. Murray, *Harvard-Smithsonian Center for Astrophysics, Cambridge MA 02138, USA.*

The NASA ADS Abstract Service is a NASA-funded project which provides **FREE** World Wide Web abstract search services.

We currently have over 3.6 million references in four databases: 1)**Astronomy and Planetary Sciences**; 2)**Physics and Geophysics**; 3)**Space Instrumentation**; and 4)**Astronomy Preprints**. Our eleven mirror sites in France, Germany, Japan, Chile, Great Britain, India, Russia, Brazil, Argentina, Korea and China help to provide better global access. Each database contains abstracts from hundreds of journals, publications, colloquia, symposia, proceedings, PhD Theses, and NASA reports. All abstracts can be searched by author, title, or abstract text words.

The ADS Article Service provides free access to the full-text of over 330,000 scientific papers published in astronomical journals, conference proceedings, newsletters, bulletins and books, for a total of 2.5 million scanned pages. We have scanned most astronomy journals from their first volume and provide them for free to all users through our web site. The ADS Abstract Service provides links to the full-text of papers available as scanned documents as well as electronic articles available online from the publishers' websites.

The ADS System can be accessed through web based query forms and can be searched by author, title or text words. Most queries are done without changing the default settings on the form but there are various options that can be chosen to refine a search using the filter section at the bottom of the main search page. One can choose to limit a search to different types of publications, publication date(s) can be specified and fields can be combined (i.e. Require author AND text words.)

An ADS query returns a set of links to articles and relevant information about each returned article. These links can include full articles, online data, references and citations. There are over 9.3 million links to data, about half of these links are outside the ADS.

The ADS offers many options that allow a user to customize the returned data. One can choose a format type (e.g. AAS Tex, Icarus format, EndNote), one can show the data on the screen or have it sent by e-mail. Utilization of these options combined with the sophisticated searching capabilities of the ADS, makes the ADS an invaluable research tool for astronomers and planetary scientists.

LPSC Abstracts: Included in the Astronomy and Astrophysics database are all abstracts from this meeting, as well as the past several LPSC and DPS meetings. In addition, we include the entire LPI reference dataset. All abstracts can be searched by LPI object name. These references include links to the scanned abstract included in the Article Service.

Citations Online: The ADS Abstract Service contains over 13 million citations collected from astronomy, physics and geophysics journal reference lists. Despite the large numbers, users should be reminded that the citations contained in ADS are incomplete due to the partial coverage of journals used to

build the citation database and our inability to match 100% of references (e.g. works in press, private communications, author typos and other errors). Anyone using the citations for analysis of publishing records should keep this in mind.

Historical Literature Scans: The ADS is working with the John G. Wobach Library at the Harvard-Smithsonian Center for Astrophysics to digitize microfilms from many historical publications in astronomy, including observatory reports, bulletins, and annals. Currently this literature must be browsed in a page-by-page mode. We have designed a software interface to capture the metadata (page numbers and other bibliographic information) and are asking for help with this process from the user community. A number of volunteers have worked with this interface and have generated the data for approximately 682 volumes of 42 different titles. If you are interested in assisting with this project, please let us know.

Full-text searching: We have recently extracted the textual information from the 2.5 million scanned pages in the ADS by using optical character recognition (OCR) software. While this process does not yield a completely accurate reproduction of the text in the original papers, it has allowed us to create a searchable interface for this body of full-text. This allows ADS users to locate any page in the archive which contains a particular word or combination of words. While this interface is still under development, we encourage users to test it and give us feedback. An added benefit of the OCR process is that we are often able to automatically extract and process reference lists from the scanned papers, thus adding to the ADS citation database. All of the historical scans are included in the full text database. The Lunar and Planetary Sciences Conference abstracts are available for full-text searching as well.

Recent Geophysics Additions: With the cooperation of the American Geophysical Union, we have added all recent abstracts from the **Journal of Geophysical Research** and other AGU geophysics journals to the Astronomy and Physics databases.

With the cooperation of the European Geophysical Union, we have added abstracts from the following journals: **Annales Geophysicae; Hydrology and Earth System Sciences; Non-linear Processes in Geophysics** and **Natural Hazards and Earth System Sciences**.

Other recently added abstracts include full coverage of the following journals of interest to the Planetary community: **Annals of Glaciology, Journal of Applied Meteorology; Journal of the Atmospheric Sciences; Journal of Glaciology and Bulletin of the American Meteorological Society** (v.51 to present only.) Several new Elsevier and Wiley journals have also been added.

myADS: The ADS has recently released the myADS Update Service, a free custom notification service promoting current awareness of the recent technical literature in astronomy, geophysics and physics based on each individual subscriber's queries. It is delivered weekly to subscribers in html format

via e-mail. Each week the myADS Update Service scans the literature added to the ADS in the past seven days, and creates custom lists of recent papers for each subscriber, formatted to allow quick reading and access. This includes the latest articles citing papers by the user.

ADEC collaboration: The ADS, in close collaboration with the Astrophysics Data Centers Executive Committee (ADEC) and the American Astronomical Society (AAS), has been working on improving the linking between the literature and on-line data by allowing authors to specify data that were used in the research described in journal articles. The ADEC has agreed that all NASA data centers will use data set identifiers of the form: ADS/facility#identifier; where facility specifies the telescope that acquired the data and identifier is a data center selected identifier for a particular data set. The ADS is providing a registration service for facility names that identify data collections at the various data centers, a verification service that allows authors and editors to verify the existence of data set identifiers, and a linking service that allows journals

to use permanent URLs for links to data sets that may move between data centers.

The ADS has been fully described in a special issue of **Astronomy & Astrophysics Supplements**, volume 143, April 2000.

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