

# ADS Services in support of the Discovery, Management and Evaluation of Science Data

*Alberto Accomazzi*

*ADS Program Manager and PI - @aaccomazzi*

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# Overview

- “Data” indexing in ADS:
  - High-level data products
  - Observing Proposals
  - Institutional and Telescope Bibliographies
  - Links to data products
- Challenges in Scholarly Publishing
  - Data citations
  - Software citations
- Upcoming Challenges in Data Management
  - Agency OA mandates
  - Identity management
  - Thought and Predictions

# What ADS Indexes

- Bibliographic metadata (authors, title, abstract) from multiple sources (arXiv and publishers) - 10M records
- Full-text documents from most Astronomy & Physics journals - 4.5M records
- High-level data products appearing in journal articles (mostly VizieR catalogs) - 10K records
- Observing proposals - 36K records
- Bibliographic groups - 330K records
- Data links - 300K records
- Software entries from the Astrophysics Source Code Library (ASCL) - 1K records

# High-level Data Products Indexed in ADS

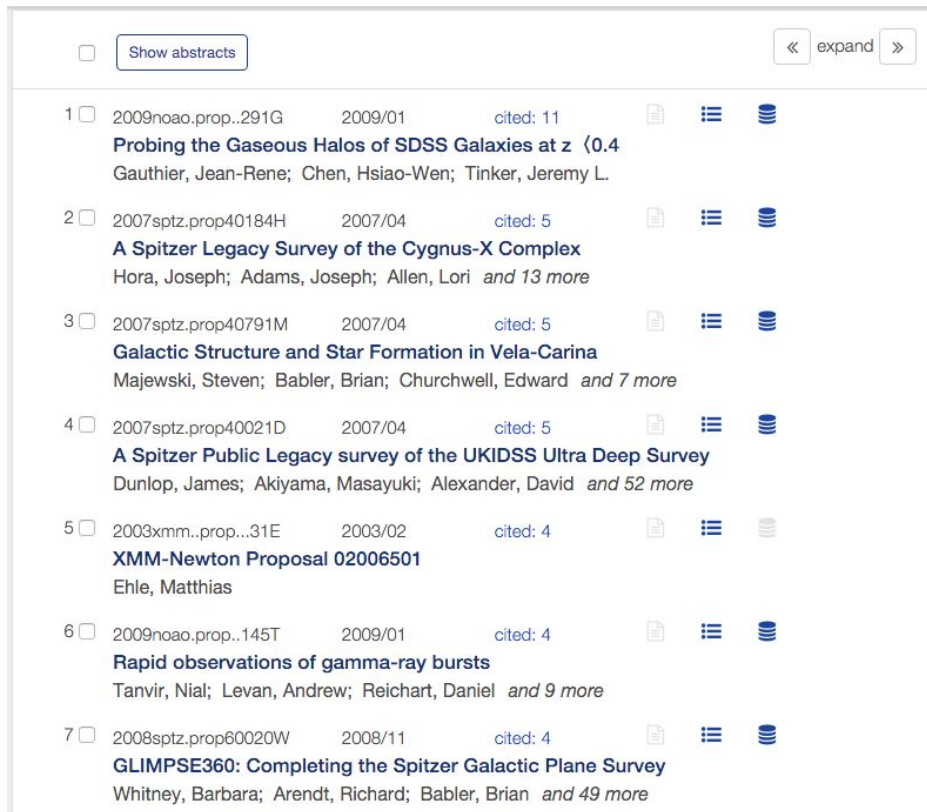
- Important datasets are often described in “data” papers
- But can also be available as electronic catalogs
- Greatest majority are from Vizier (close to 10,000 records)
- Once in ADS, they become easily discoverable, citable
- This is how our community has dealt with “data citation” all along

The screenshot shows the ADS search interface with the query 'title:2MASS'. The results are sorted by 'Citation Count'. The first three results are highlighted with red circles around their citation counts:

Rank	Record ID	Date	Citation Count	Title
1	2006AJ....131.1163S	2006/02	4,559	The Two Micron All Sky Survey (2MASS)
2	2003tmc...book....C	2003/06	1,144	2MASS All Sky Catalog of point sources
3	2003yCat.2246....0C	2003/06	573	VizieR Online Data Catalog: 2MASS All-Sky Catalog of Point Sources (Cutri+ 2003)

# Observing Proposals Indexed in ADS

- Proposals contain early descriptions of current and ongoing science activities
- They provide a direct link to existing or planned observations
- HST, IUE, CXC, NOAO, XMM, KOA, Spitzer, ATNF, Subaru, ...
- 36,000 records, 38,000 data links, 300 citations
- Ongoing ingest rate is 1,000 records/year



<input type="checkbox"/>	<input type="text" value="Show abstracts"/>						
1	<input type="checkbox"/>	2009noao.prop..291G	2009/01	cited: 11			
<b>Probing the Gaseous Halos of SDSS Galaxies at <math>z &lt; 0.4</math></b> Gauthier, Jean-Rene; Chen, Hsiao-Wen; Tinker, Jeremy L.							
2	<input type="checkbox"/>	2007sptz.prop40184H	2007/04	cited: 5			
<b>A Spitzer Legacy Survey of the Cygnus-X Complex</b> Hora, Joseph; Adams, Joseph; Allen, Lori <i>and 13 more</i>							
3	<input type="checkbox"/>	2007sptz.prop40791M	2007/04	cited: 5			
<b>Galactic Structure and Star Formation in Vela-Carina</b> Majewski, Steven; Babler, Brian; Churchwell, Edward <i>and 7 more</i>							
4	<input type="checkbox"/>	2007sptz.prop40021D	2007/04	cited: 5			
<b>A Spitzer Public Legacy survey of the UKIDSS Ultra Deep Survey</b> Dunlop, James; Akiyama, Masayuki; Alexander, David <i>and 52 more</i>							
5	<input type="checkbox"/>	2003xmm..prop...31E	2003/02	cited: 4			
<b>XMM-Newton Proposal 02006501</b> Ehle, Matthias							
6	<input type="checkbox"/>	2009noao.prop..145T	2009/01	cited: 4			
<b>Rapid observations of gamma-ray bursts</b> Tanvir, Nial; Levan, Andrew; Reichart, Daniel <i>and 9 more</i>							
7	<input type="checkbox"/>	2008sptz.prop60020W	2008/11	cited: 4			
<b>GLIMPSE360: Completing the Spitzer Galactic Plane Survey</b> Whitney, Barbara; Arendt, Richard; Babler, Brian <i>and 49 more</i>							

# Bibliographies

- **Institutional** bibliographies, highlighting scientific output from research center or project
- “**Telescope**” bibliographies, identifying papers related to their data products
- About 30 bibliographic groups so far, over 330K records
- Help with scientific evaluation of projects and institutions, but also useful in disambiguation

ALMA	ISO	ROSAT
ARI	IUE	SDO
CfA	JCMT	SMA
CFHT	Keck	Spitzer
Chandra	Leiden	Subaru
ESO	LPI	Swift
Gemini	Magellan	UKIRT
Herschel	NOAO	USNO
HST	NRAO	XMM

# Data Links

- Have existed between Data Centers and ADS since 1994
- Maintained by librarians, data archivists, harvested by ADS
- Bibcode-URL pairs, linking to either individual observations or aggregates
- Often part of data center's bibliographies, used to compute metrics

The image illustrates the flow of data from a research paper to data centers. At the top, an abstract for the paper "RX J1648.7+6109: Witnessing the Formation of a Massive Group/Poor Cluster and Its Brightest Galaxy" is shown. The abstract text describes Chandra and optical spectroscopic observations of a young massive group at  $z=0.376$ . It details the group's structure, including a central string of seven bright galaxies and a central dominant brightest cluster galaxy (BCG). The text discusses the scaling relations of intermediate-redshift groups and poor clusters, comparing RX J1648 to other groups and clusters. It notes that RX J1648 appears to be in an early stage of formation, following X-ray scaling relations but with a highly elongated structure and less star formation than other group galaxies. The abstract concludes by stating that the  $L_X$ - $T_X$  relation for intermediate-redshift groups/poor clusters is very similar to the low-redshift cluster relation, and that intermediate-redshift groups/poor clusters have significantly lower velocity dispersions for their X-ray properties compared to low redshift groups/poor clusters.

Below the abstract, a sidebar on the right lists "FULL TEXT SOURCES" (arXiv e-print, Publisher Article, Publisher PDF) and "DATA PRODUCTS" (NED objects (1), SIMBAD objects (4), Archival Data (3)). A "GRAPHICS" section contains a thumbnail image of a galaxy cluster with the text "Click to view more".

Two red arrows originate from the abstract area. One arrow points to the "Chandra X-ray Center Observation Viewer" interface, which displays a search bar, a "New Search" button, and a list of observation results. The "Observation ID: 7963" is highlighted. The interface also shows a "Back to Search Results" button and a "Add to Retrieval List" button. A "Chandra X-ray Center" logo is visible in the top left corner.

The second red arrow points to the "HST Preview" interface, which displays a "Preview for U20Q0101T" image. The interface includes a "HST Preview" header, a "Back to Search Results" button, and a "Loading Search" button. The main content area shows a large, detailed image of a galaxy cluster with a grid overlay. The "HST Preview" logo is also visible in the top left corner.

# Benefits

- Search and filter by bibliography or data property:  
*“exoplanets and bibgroup:CfA”*
- Find multi-wavelength papers and access archival data:  
*“data:CXO and data:HST”*
- View paper-based metrics for people and projects

▼ Data

- CXO
- ESA
- HST
- MAST
- CDS

○ and  
○ or  
○ exclude

Do we detect the galactic feedback material in X-ray observations of nearby galaxies? - a case study of NGC 5866

Li, Jiang-Tao

3  2015MNRAS.452...32R 2015/08 cited: 2

A high-resolution wide-field radio survey of M51

Rampadarath, H.; Morgan, J. S.; Soria, R. and 4 more

- > Authors
- > Collections
- > Refereed Status
- > Keywords
- > Publications
- ▼ Bib Groups
  - Spitzer
  - Herschel
  - ESO/Telescopes
  - HST
  - CfA

more ▼

Hide highlights  Show abstracts

1  2015MNRAS.453.3375H 2015/10 cited: 2

**Observations of free-free and anomalous microwave emission from LDN 1622 with the 100 m Green Bank Telescope**  
 Harper, S. E.; Dickinson, C.; Cleary, K.

*such as Wide-field Infrared Sky Explorer (WISE), Spitzer and Herschel, it should be possible to determine*

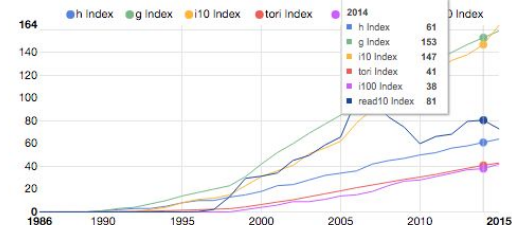
2  2015MNRAS.453.2326B 2015/10

**Radio Galaxy Zoo: host galaxies and radio morphologies derived from visual inspection**  
 Banfield, J. K.; Wong, O. I.; Willett, K. W. and 33 more

*.4 μm from the Wide-field Infrared Survey Explorer (WISE) and at 3.6 μm from the*

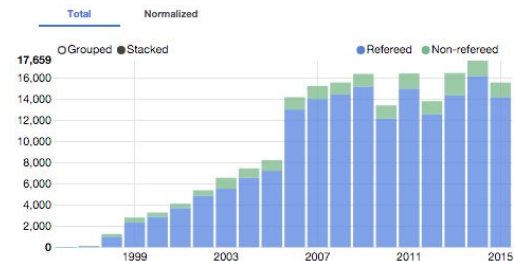
## Indices

	Totals	Refereed
H Index	65	65
m-index	2.2	2.2
g-index	159	158
i10-index	164	147
i100-index	42	41
tori index	43.0	39.7
riq index	218	210
read10-index	728.5	568.4



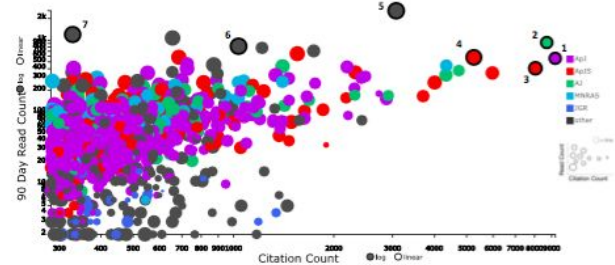
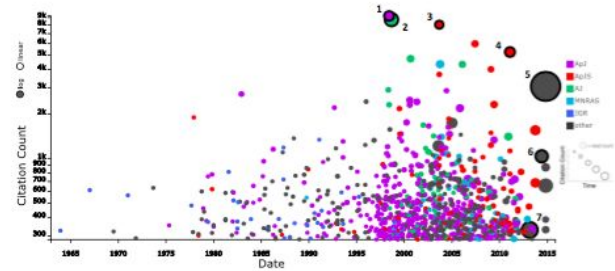
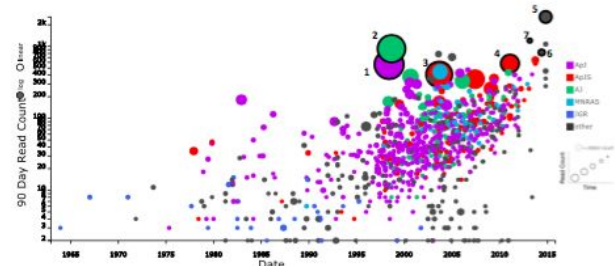
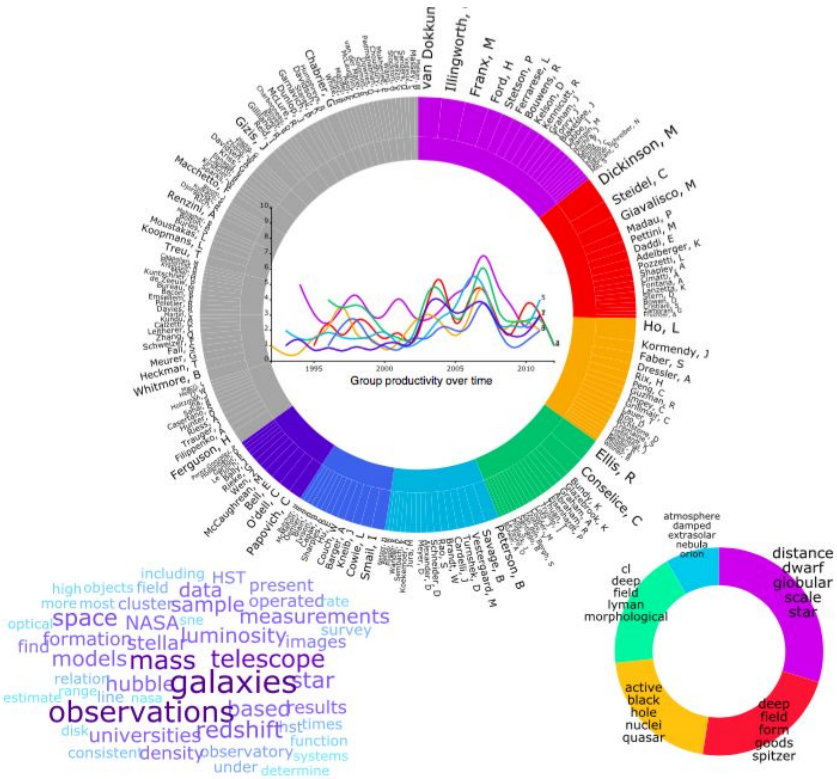
## Reads

	Totals	Refereed
Total number of reads	194320	175730
Average number of reads	308.4	944.8
Median number of reads	37	660.5
Total number of downloads	89773	84832
Average number of downloads	142.5	456.1
Median number of downloads	8	8



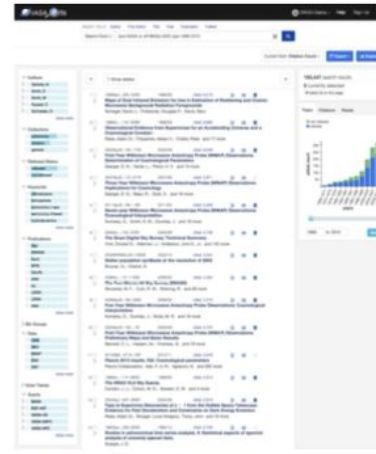


# Metrics & Analytics



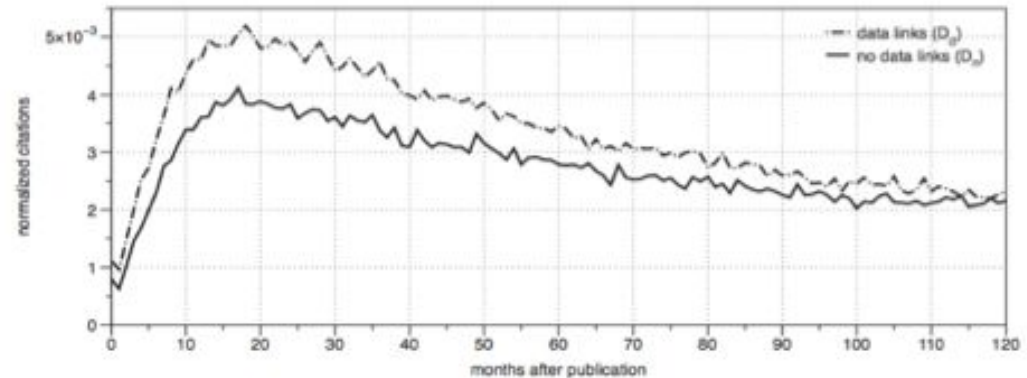
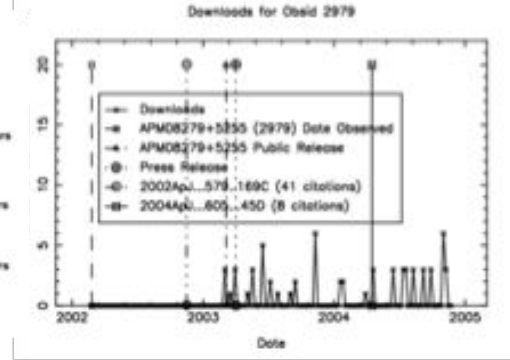
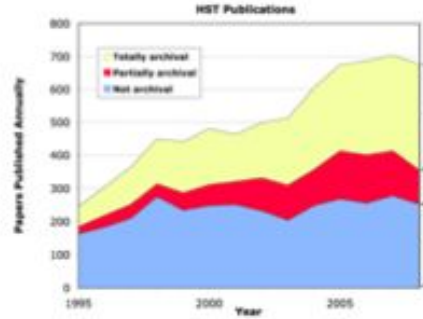
A sample of the 1,000 top-cited papers in ADS acknowledging NASA funding or affiliation.

1. Maps of Dust Infrared Emission for Use in Estimation of Reddening and Cosmic Microwave Background Radiation Foregrounds  
Schlegel et al, 1998Apr...500..525S  
Citations: 9216, Reads: 559
2. Observational Evidence from Supernovae for an Accelerating Universe and a Cosmological Constant  
Riess et al, 1998BAJ...116.1009R  
Citations: 8693, Reads: 928
3. First-Year Wilkinson Microwave Anisotropy Probe (WMAP) Observations: Determination of Cosmological Parameters  
Spergel et al, 2003AprS...148..175S  
Citations: 8048, Reads: 487
4. Seven-year Wilkinson Microwave Anisotropy Probe (WMAP) Observations: Cosmological Interpretation  
Kumatsu et al, 2011AprS...152..18K  
Citations: 5253, Reads: 577
5. Planck 2013 results. XVII. Cosmological parameters  
Planck Collaboration, 2014BAJ...571A..16P  
Citations: 3075, Reads: 2569
6. Detection of B-Mode Polarization at Degree Angular Scales by BICEP2  
Bicep2 Collaboration, 2014PhRvL.112x1101A  
Citations: 1035, Reads: 824
7. emcee: The MCMC Hammer  
Foreman-Mackey et al, 2013PASP...125..306F  
Citations: 329, Reads: 1290



# Benefits to Archives: Linked Data Advantage

- Well-archived, well-linked data is often shared, re-used (White et al, 2009)
- Data usage increases upon publication of papers (Winkelman et al, 2006)
- Well-linked papers receive more citations (Henneken & Accomazzi, 2012; Dorch et al, 2015)



# <https://ui.adsabs.harvard.edu>

INSERT FIELD: Author First Author Abstract Year Fulltext Reviews(...) Citations(...)

Search Form chandra AND obsid

Your search returned 2,476 results

Sort: Publication Date

Export

Explore

Authors

- Jones, C
- Forman, W
- Murray, S
- Kraft, R
- Miller, J

more

Collections

- astronomy
- physics
- general

Refereed Status

- refereed
- not-refereed

Keywords

Hide highlights Show abstracts

expand

1 2015MNRAS.454.1358C 2015/11 cited: 1

### Multi-wavelength observations of the binary system PSR B1259-63/LS 2883 around the 2014 periastron passage

Chernyakova, M.; Neronov, A.; van Soelen, B. and 16 more

observed in radio. The general stability of the X-ray light curve allows us to use [Chandra](#) 2007 data

2 2015MNRAS.454.1525P 2015/11

### Fifteen years of XMM-Newton and Chandra monitoring of Sgr A\*: evidence for a recent increase in the bright flaring rate

Ponti, G.; De Marco, B.; Morris, M. R. and 13 more

Fifteen years of XMM-Newton and [Chandra](#) monitoring of Sgr A<SUP>★</SUP>: evidence for a recent and [Chandra](#) observations pointed at the Milky Way centre over the last 15 years. This includes the latest XMM during an ~23 ks [Chandra](#) observation ([obsID](#): 13854) when four weak flares were

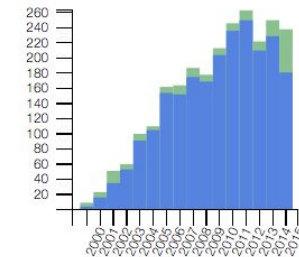
0 selected papers

Years

Citations

Recent Reads

non-refereed  
refereed

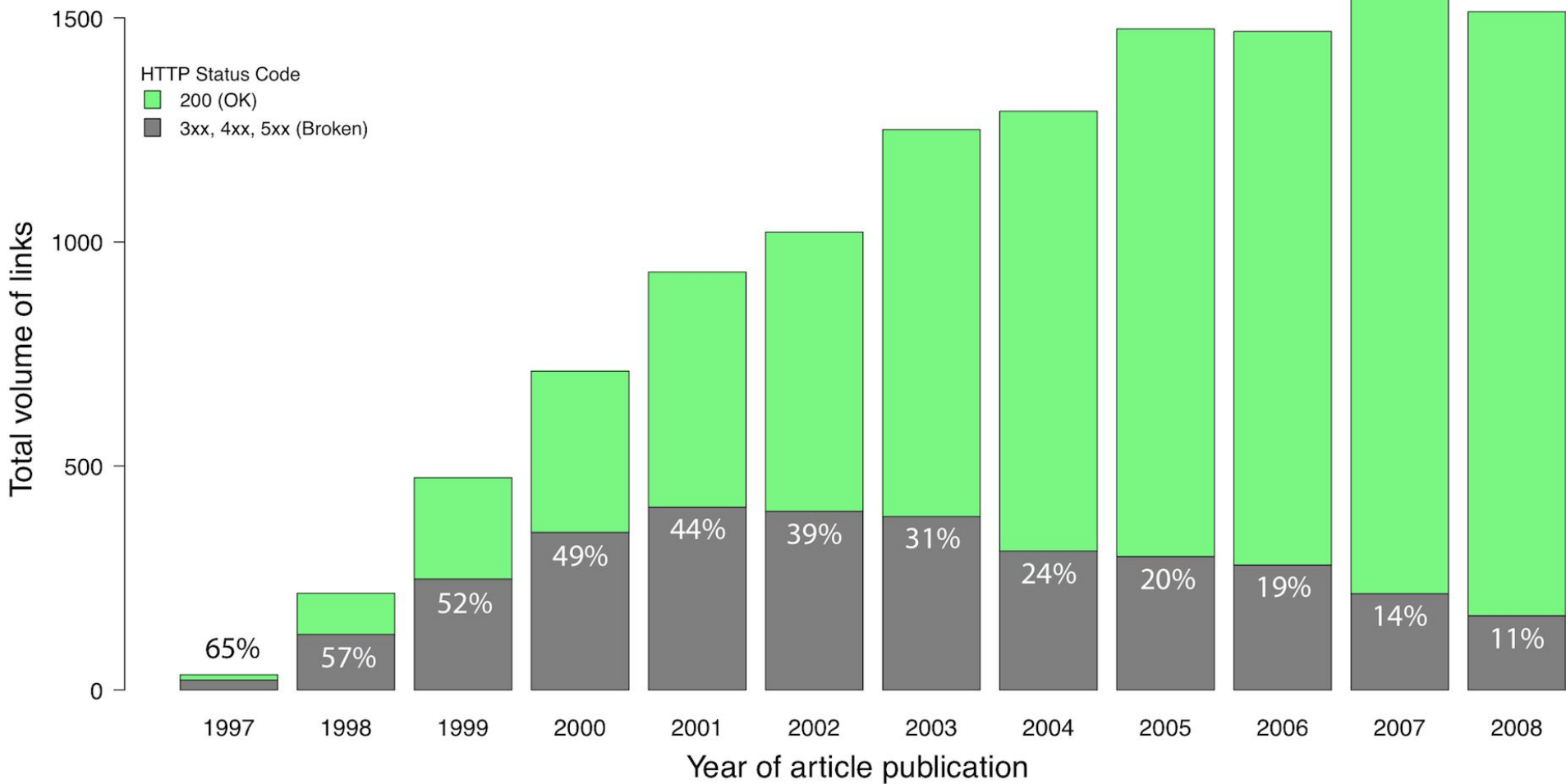


# <https://github.com/adsabs/adsabs-dev-api>

# Data Citation

- In the IVOA we have been talking about “data publication,” a necessary step towards the goal of enabling **data citation**, which is the practice of providing a formal reference to a data product the way we currently do for papers.
- In Astronomy, this has not been a pressing need for a number of reasons:
  - High-value data has been curated and made available from a number of well-managed archives
  - Joint curation efforts have made it possible to create and maintain paper/data links
  - We have had a well-established practice of using papers as a proxy for citing important datasets
  - We have a history of pre- and post-publication curation efforts which alleviate the need for this
- But some needs are going unmet and some problems remain unresolved
  - When citing via data paper impossible, fragile solutions such as URL in footnote are used which lead to “link rot:” <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0104798>
  - Not having a robust way to capture citations/links to data upfront leads to far more work for curators, librarians post-publication (“what data was used?”)

# Broken links in AAS journals (Pepe et al, 2014)



# Joint Declaration of Data Citation Principles (2014)

1. **Importance** - “data is first class citizen in scholarly discourse”
2. **Credit and Attribution** - “provide scholarly credit to contributors”
3. **Evidence** - “whenever a claim relies upon data, the data should be cited”
4. **Unique Identification** - “citation should include a unique identifier to data”
5. **Access** - “data citation should facilitate access to data and metadata”
6. **Persistence** - “identifiers, metadata, and data disposition should persist”
7. **Specificity and Verifiability** - citation should facilitate identification of, access to, and verification of the specific data that support a claim”
8. **Interoperability and Flexibility** - “citation methods should be flexible enough to accommodate different practices, but still provide technical interoperability”

# Required Effort

The main reasons why we are talking about this is to enable [repeatability](#) (scientific goal) while also providing [proper credit and attribution](#) (data management requirement). Both of these are worthy goals but don't come for free. In order to find out whether your data is cited we need the following things:

- A [persistence layer](#) over your data products, with the capability to deposit and update the corresponding metadata with a registration authority
- [Buy-in from publishers](#) allowing data products to be listed as references so that there is a consistent community standard for data citations
- A [discovery](#) system which identifies these citations and publishes their information (ADS does this for papers and [high-level data products](#) so far)

# What data products should be citable?

- **High level data products associated with a paper** (e.g. VizieR catalogs):  
Straightforward (authorship, metadata inherited from paper)
- **Data Catalogs** (e.g. 2MASS, Wise, etc) as a “whole:”  
Pretty straightforward, need to figure out proper authorship rules
- **Individual data catalog tables, specific releases:**  
Possibly useful, but maybe not strictly necessary
- **Data collections** (e.g. all observations from an archive analyzed in a paper or series of papers, currently an ongoing MAST prototype project):  
Useful, although requires infrastructure to capture collection and metadata
- **Individual ObsIds** (pointed observations): Useful, also requires infrastructure



# Software Citation

- Similar to the “data citation” issue, although we are seeing publishers adopt consistent practices based on ASCL ids
- With the indexing in ADS of the ASCL, citing software is as easy as cutting and pasting a bibtex entry
- However, a number of issues still exist:
  - Acceptance: ensuring that publishers will allow the submissions of software references
  - Versioning: how do capture citation to specific software versions in support of repeatability
  - Preservation: how to ensure that the software is properly stored and available in the future
  - Attribution: since software changes in time, the author list will also change
- If we can solve the data citation issue, we will be well posed to solve the software citation issue as well

1,146 results

Search Form ▾ bibstem:"ascl" X Q

- ▼ AUTHORS
  - Jenness, T
  - Bertin, E
  - Berry, D
  - Gammie, C
  - Portegies Zwart, S
- more ▾
- ▼ COLLECTIONS
  - astronomy
- ▼ REFEREED
  - refereed
  - not-refereed
- > KEYWORDS
- > PUBLICATIONS
- > BIB GROUPS
- > DATA
- > VIZIER TABLES
- > GRANTS

Show abstracts

<input type="checkbox"/>	2012ascl.soft03003C	2012/03	cited: 41			
	<b>spec2d: DEEP2 DEIMOS Spectral Pipeline</b> Cooper, Michael C.; Newman, Jeffrey A.; Davis, Marc <i>and 2 more</i>					
<input type="checkbox"/>	2012ascl.soft08004S	2012/08	cited: 28			
	<b>PyKE: Reduction and analysis of Kepler Simple Aperture Photometry data</b> Still, Martin; Barclay, Tom					
<input type="checkbox"/>	2013ascl.soft05002P	2013/05	cited: 23			
	<b>pynbody: N-Body/SPH analysis for python</b> Pontzen, Andrew; Roškar, Rok; Stinson, Greg <i>and 1 more</i>					
<input type="checkbox"/>	2011ascl.soft05003C	2011/05	cited: 23			
	<b>The DTFE public software: The Delaunay Tessellation Field Estimator code</b> Cautun, Marius C.; van de Weygaert, Rien					
<input type="checkbox"/>	2012ascl.soft05004P	2012/05	cited: 19			
	<b>Turbospectrum: Code for spectral synthesis</b> Plez, B.					
<input type="checkbox"/>	2010ascl.soft10068B	2010/10	cited: 16			
	<b>SWarp: Resampling and Co-adding FITS Images Together</b> Bertin, Emmanuel					
<input type="checkbox"/>	2011ascl.soft09022H	2011/09	cited: 9			
	<b>Synspec: General Spectrum Synthesis Program</b> Hubeny, Ivan; Lanz, Thierry					

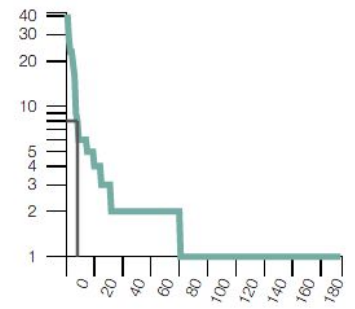
0 selected

Add papers to library ▾

Years Citations Recent Reads

total number of citations : 481

H-Index for results: 8  
Y-axis: linear  log



Limit to top 1146 most cited Apply

# Big Data management vs. big Data Management

- We are all excited about Big Data, and are preparing for its management
- But are we ready for the increasing demands being imposed on us by funding agencies, government mandates, technological advances?
  - Example: in US, OSTP mandate requires agencies to implement OA for publications and data. 24 agencies, a dozen different plans to comply with, whose problem is it?
  - Data management plans required by NASA and NSF still largely “fuzzy,” although moving in right direction. Data management plans for ground-based data in US lag behind.
  - Institutions, research agencies, countries are requiring scientists to report research output using systems like ORCID as a way to automate evaluation
  - Journals such as PLOS ONE require the specification of Contributor Roles in papers ([http://dictionary.casrai.org/Contributor\\_Roles](http://dictionary.casrai.org/Contributor_Roles)); how should this affect evaluation?
- ADS offers *some* help...

# ORCiD Integration in ADS

- ORCiD (Open Researcher and Contributor ID) aims to tackle the problem of author disambiguation by assigning unique ids to contributors (<http://orcid.org>)
- ADS users can now “claim” papers, i.e. create their bibliography.  
This exists already but the UI will be updated based on early feedback.
- ADS is indexing ORCiDs collected when authors submit papers to publishers.  
This covers journals that send this information to ADS (e.g. AAS)
- ADS now allows users to find people by searching for their ORCiDs.  
Search for publisher-provided ORCiD works, but limited in coverage; searching of user claims available shortly.
- ADS will allow users to discriminate ORCiD-paper associations.  
Differentiate between user claims and authoritative mappings.

INSERT FIELD: Author First Author Abstract Year Fulltext Reviews(...) Citations(...)

Search Form

Your search returned **184** results

Sort: **Publication Date**

Export

Explore

AUTHORS

- Accomazzi, A
- Kurtz, M
- Grant, C
- Murray, S
- Eichhorn, G

more

COLLECTIONS

- astronomy
- general
- physics












REFEREED

- refereed
- not-refereed

KEYWORDS

PUBLICATIONS

Show abstracts

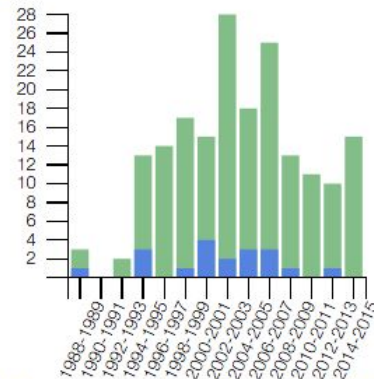
- |                            |  |  |
|----------------------------|--|--|
| 1 <input type="checkbox"/> | 2015ASPC..495..401C 2015/09  |       |
|                            | <b>ADS 2.0: New Architecture, API and Services</b>                       |  |
|                            | Chyla, R.; Accomazzi, A.; Holachek, A. <i>and 7 more</i>                 |  |
| 2 <input type="checkbox"/> | 2015IAUGA..2257768A 2015/08  |       |
|                            | <b>The NASA Astrophysics Data System joins the Revolution</b>            |  |
|                            | Accomazzi, Alberto; Kurtz, Michael J.; Henneken, Edwin <i>and 7 more</i> |  |
| 3 <input type="checkbox"/> | 2015IAUGA..2257639R 2015/08  |       |
|                            | <b>Bibliographies and Data Archives: a Rich Data Mining Tool</b>         |  |
|                            | Rots, Arnold H.; Winkelman, Sherry; Accomazzi, Alberto                   |  |
| 4 <input type="checkbox"/> | 2015IAUGA..2257982A 2015/08  |       |
|                            | <b>Curation and integration of observational metadata in ADS</b>         |  |
|                            | Accomazzi, Alberto   |  |
| 5 <input type="checkbox"/> | 2015ASPC..492..208G 2015/04 <span style="float: right;">cited: 2</span>  |    |
|                            | <b>Enabling Meaningful Affiliation Searches in the ADS</b>               |  |
|                            | Grant, C. S.; Thompson, D. M.; Chyla, R. <i>and 6 more</i>               |  |

0 selected

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Years Citations Recent Reads

■ refereed



INSERT FIELD: Author First Author Abstract Year Fulltext Reviews(...)

Search Form

Your search returned **184** results

Signed in to ORCID as **Alberto Accomazzi**

ORCID Mode  on

[View my ORCID papers in ADS](#)

[View my ORCID profile](#)

[Log out from ORCID in ADS](#)

AUTHORS

- Accomazzi, A
- Kurtz, M
- Grant, C
- Murray, S
- Eichhorn, G

more

COLLECTIONS

- astronomy
- general
- physics

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- not-refereed

KEYWORDS

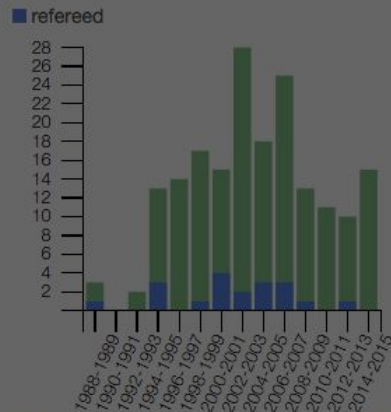
PUBLICATIONS

Show abstracts

1	<input type="checkbox"/>	2015ASPC..495..401C	2015/09			
<b>ADS 2.0: New Architecture, API and Services</b>						
Chyla, R.; Accomazzi, A.; Holachek, A. <i>and 7 more</i>						
2	<input type="checkbox"/>	2015IAUGA..2257768A	2015/08			
<b>The NASA Astrophysics Data System joins the Revolution</b>						
Accomazzi, Alberto; Kurtz, Michael J.; Henneken, Edwin <i>and 7 more</i>						
3	<input type="checkbox"/>	2015IAUGA..2257639R	2015/08			
<b>Bibliographies and Data Archives: a Rich Data Mining Tool</b>						
Rots, Arnold H.; Winkelman, Sherry; Accomazzi, Alberto						
4	<input type="checkbox"/>	2015IAUGA..2257982A	2015/08			
<b>Curation and integration of observational metadata in ADS</b>						
Accomazzi, Alberto						
5	<input type="checkbox"/>	2015ASPC..492..208G	2015/04	cited: 2		
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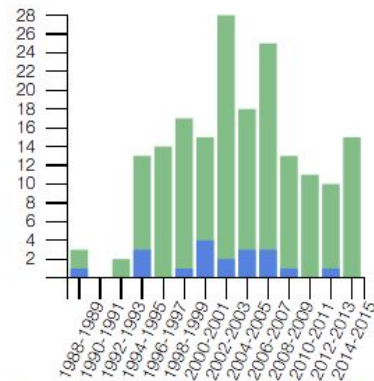
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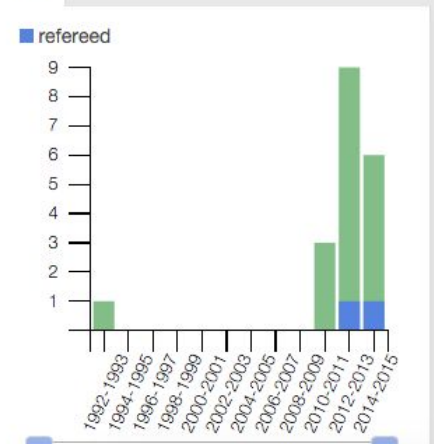
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# The Bigger Picture

- Increasingly we are asked to identify things in a unique, unambiguous, machine-readable way:
  - Publications (bibcodes, DOIs)
  - People (ORCiDs) - ready for launch Q1 2016
  - Institutions (Ringgold IDs, ISNIs) - working on affiliation normalization
  - Funding sources (FundRef) - extracted some grant ids via text mining
  - Datasets, software (DataCite DOIs) - working with publishers on policies, funding opportunities
  - Facilities ...
- And we need to keep track of how it is all linked together
- The only way to achieve this is to publish, aggregate, and share this information. It's good for science and it's good for management.

# Final Thoughts and Predictions

- Discipline-specific solutions will allow us to move faster but won't take us as far. We should pay attention to initiatives within RDA.
- Mandates will force us to provide global solutions to what once were local problems, but as a discipline we are well positioned to deal with this
- The need to quantify and evaluate will drive us further into the collection and publishing of metrics and analytics (cf. "altmetrics")
- The issues of software and data citation will take a little while to sort out, but we will get there by the end of the decade
- New forms of publications such as blogs might enter the scholarly discourse; ultimately the community will decide what belongs in scientific publications

# Thanks!

- ADS “bumblebee” UI: <https://ui.adsabs.harvard.edu>
- ADS API: <https://github.com/adsabs/adsabs-dev-api>
- ADS Blog: <https://adsabs.github.io/blog/>
- IVOA Intro to DOIs: [https://docs.google.com/a/cfa.harvard.edu/presentation/d/1yo9kJz01umlwkE\\_uGeSnBjbbWniFCx8tBXeD9AWDpys/edit?usp=sharing](https://docs.google.com/a/cfa.harvard.edu/presentation/d/1yo9kJz01umlwkE_uGeSnBjbbWniFCx8tBXeD9AWDpys/edit?usp=sharing)
- ADS/ORCID integration plan: <https://docs.google.com/presentation/d/1g1zhyOJkQb5XspDSI1rMOCafYLI6EFIDKWU8PcLznQ4/edit?usp=sharing>