

Accessibility and Exploitation of "Published" Extragalactic Data: Public and Private Efforts

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This is a scanned version of the 81 transparencies I prepared for the talk given on July 10, 2003, during the workshop on "AGN Surveys" at INAOE. While there was no time to show all transparencies during the talk, they are all included in this electronic version.

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Thanks to Gabriela Alvarez, Leticia Martinez for the scanning, and to Roger Coziol for the conversion to PDF.

ACCESSIBILITY and EXPLOITATION of "published" extragalactic data: public and private efforts

HEINZ ANDERNACH, Univ. Guanajuato, Mexico

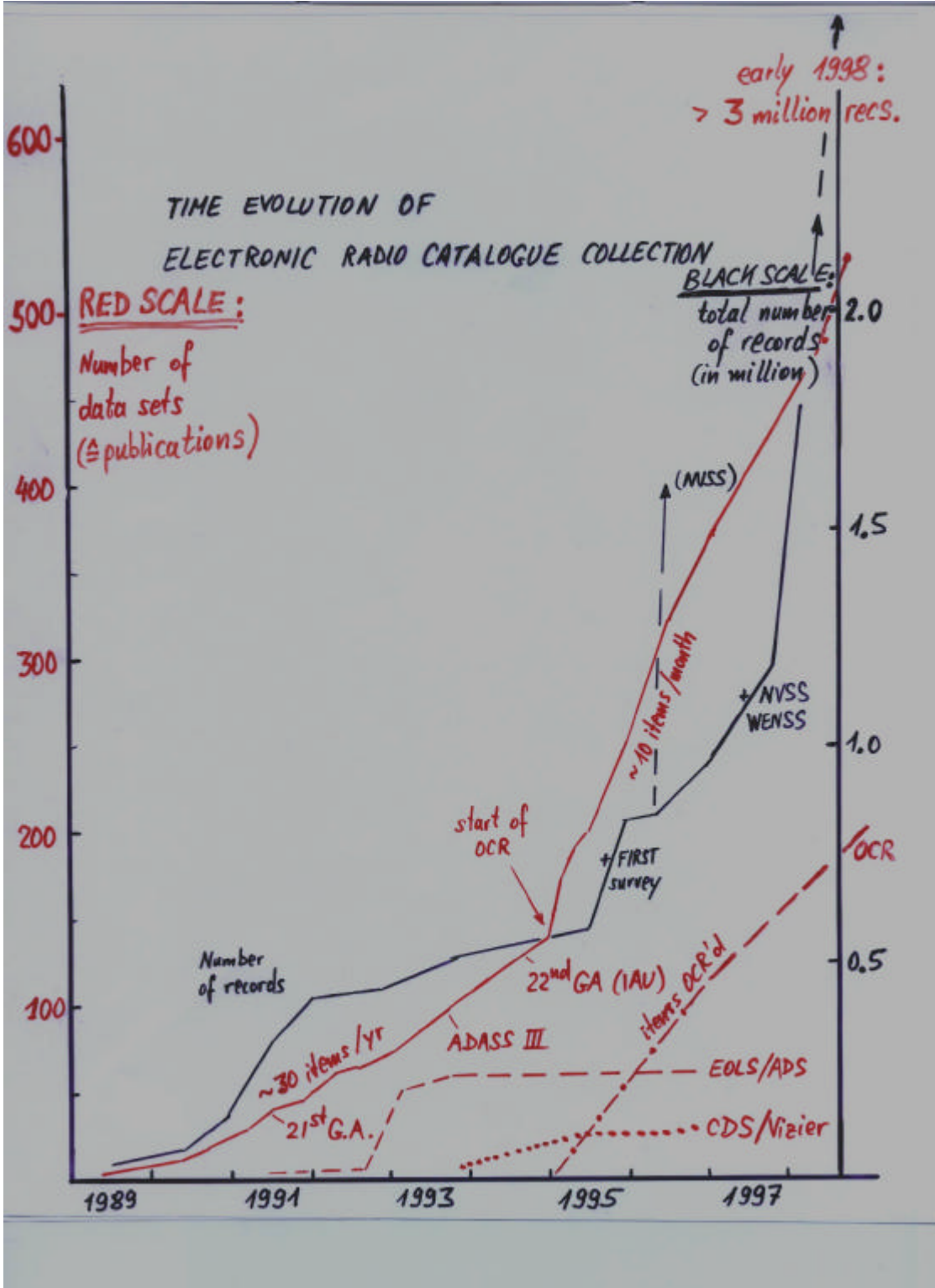
- data? catalogs, tables (mainly radio + other extragal.)
(→ most condensed form of reduced data)
not images, spectra, raw/calib. archive data ⇒ VO
- "published"? some are "published" but not accessible
and some are "public" (www) but not formally published
- Efforts? → make data accessible $\begin{cases} \text{data center(s)} \\ \text{"private" (HA)} \end{cases}$
→ exploit data (mainly HA)

OUTLINE OF TALK

- Motivation & History
- Evolution of catalog collections, data centers, databases
- Own efforts to collect more catalogs in e-form
(from authors, journals, astro-ph, OCR, ...)
- Current completeness of catalog archives / databases
- Problems with accessibility and nomenclature
- Catalogues versus Databases
- Examples of Exploitation: - ID of decametric sources
- ACO cluster redshifts

HISTORY OF ELECTRONIC SOURCE CATALOGS

- 1989 "3C", 4C were the **only** radio catalogs at ADC/CDS
but ~ 300,000 measurements published
- 1989/90 E-mail campaign (H.A.) suggesting a database
and **requesting contribution** of electr. source lists
- 1990 Results of campaign publ. in BICDS 38, 69
16 radio + 10 non-radio cats collected
- 1991 IAU GA XXI: WG "Radioastronomical Databases"
40 radio + 28 non-radio catalogs collected
- 1992 start integrating radio tables to EINLINE (C. Stern Grant)
& D. Harris
- 1993/4 50 catalogs (~500,000 records) searchable in EINLINE
~100 radio + 70 non-radio cats collected
- 1994 IAU GA XXII: WG report to Comm. 40
End of funding for EINLINE → **dead end**
- 1995 Start of scanning + "OCR" (opt. char. recognition)
of missing tabular data
- 1994/5 CATS software being developed at SAO (Russia)
- 1996 active feeding of catalogs from H.A.'s list to CATS
- 1998 > 200 source tables with ≈ 3 million entries in CATS
H.A.: ≈ 500 radio + 350 non-radio cats collected
!! only ≈ 25% of these tables at CDS or ADC !



How Complete is the Electronic Catalogue Archive at CDS in the Extragalactic Domain ?

H. ANDERNACH

Bull. Inf CDS (Sept. 1994)

- Literature Survey 1987-93 (ApJ(S), AJ, AA(S), MN)
 \Rightarrow ~ 500 papers with data on >50 objects each
 (extragalactic objects, including radio-, IR, X-ray
 with no optical ID)

Year of Publication	$N_{\text{entr}} > 50$ at CDS	$N_{\text{entr}} > 100$ at CDS
1987	4/54 = 7%	4/38 = 11%
1988	5/56 = 9%	4/41 = 10%
1989	9/72 = 13%	9/56 = 16%
1990	13/76 = 4%	13/64 = 20%
1991	22/84 = 26%	21/60 = 35%
1992	13/69 = 19%	11/56 = 20%
1993	18/89 = 20%	18/69 = 29%
1987-93	84/500 = 17%	79/374 = 21%

Jan. 1993 : agreement A&A(S) \iff CDS :

tabular material accepted for A&A(S) will
 be archived/distributed at CDS; tables
 are selected by author and/or Editors

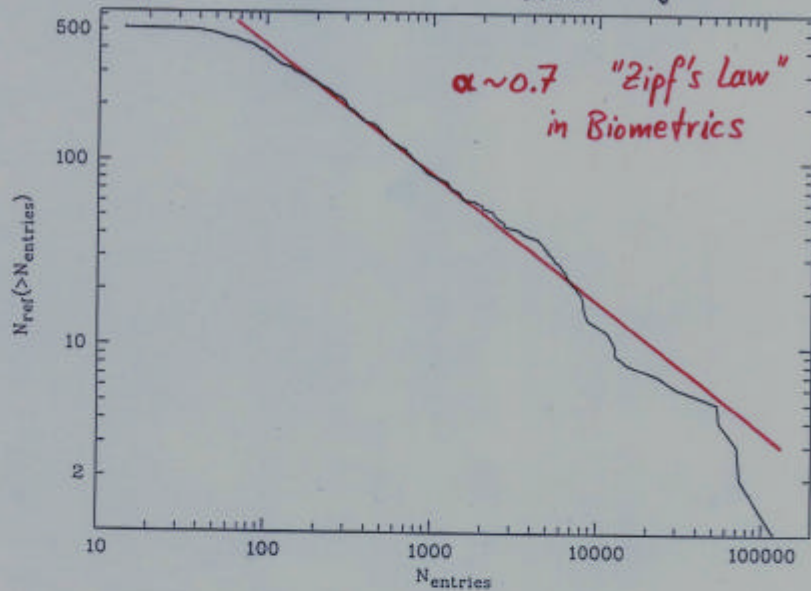
Statistics up to A&AS 105 (May 1994) :

19 papers with >50 extragal. objects

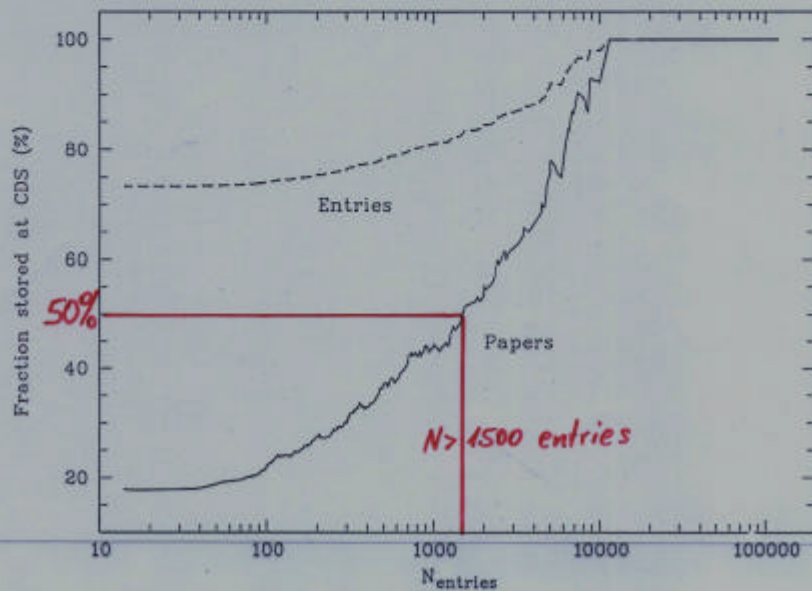
11 of these are in CDS archive (42% of data entries)

1987-1993 Literature Survey in Extragalactic Astronomy

Number of papers reporting on $>N_{\text{entries}}$ objects each



Completeness of Electronic Catalogue Archive at CDS as function of size of published tables



Experience made during Data Collection

- virtually **NO** data set received voluntarily
- young generation tends to be more generous in providing electronic tables than "veterans"
- **>>90% are TeX files** (some very complex)
→ "deTeXing" effort → **redundant with E-publishing?!?**
- monitoring SISSA preprint server is worth-while!
(watch out for refereed version!)
- ~80 different requests received for ~150 items of the collection (including two authors who had lost their files!)
MANY REQUESTS FROM CDS; but **LITTLE** in return!
- Consistency checks of table columns **absolutely recommended!**
(RA < 24 h; -90 < DEC < 90; sort by column → discover outliers!)
orig. WENSS version; precession $\delta > +90^\circ$!
- Occasionally many errors found in **fresh** publications
→ authors sometimes don't bother to respond
→ referees frequently **disregard the data section** (yet often the most "objective" heritage for future analysis)

Example: Masterlist of Radio Sources (Dixon 1981)
~86000 records in total, and sold for US \$100!

last 10 records of RA-sorted version:

NAME	H	M	S	°	'	"	v/MHz		
OZ-199	23	59	53.	-	14	20	1415	0.74	RA43 84550
MSH 23-308	23	59	54.	-	36	08	85	18.	RA42 84551
PKS 2357-616	23	59	57.0	-	61	38 50.	2700	0.32	RA43 84552
DITTO	23	59	57.0	-	61	38 50.	5000	0.10	RA43 84553
S4 0115+45	31	15	03.17	+	45	20 38.7	5000	0.356	RA43 84554
DITTO	31	15	03.17	+	45	20 38.7	10700	0.15	RA43 84555
DITTO	31	15	03.17	+	45	20 38.7	2700	0.63	RA43 84556
S4 1459+48	41	59	07.27	+	48	03 04.1	5000	0.438	RA43 84557
DITTO	41	59	07.27	+	48	03 04.1	10700	0.50	RA43 84558
DITTO	41	59	07.27	+	48	03 04.1	2700	0.45	RA43 84559

S4 catalog in Masterlist: ~30 typos (in ~400 sources)
HOW MANY ARE IN ZCAT?

My contribution to CDS : almost 100 catalogs
and corrections to many dozens of others.

Searching the "ReadMe" files for "Andernach":

Index 'readme files' contains the following 60 item(s)
relevant to 'anderenach':

No.	Score	Short Title
1.	[100]	VII/179 Catalogue of Southern Peculiar Galaxies and Associations (Aip+ 1987)
2.	[100]	VIII/29 1400-MHz Survey of 1478 Abell Clusters of Galaxies (Owen+ 1982)
3.	[80]	VII/165 Cat of Measured Redshifts of Abell Clusters of Gal (Andernach 1991)
4.	[60]	VII/176 Photometry and Spectroscopy of Elliptical Galaxies (Faber+ 1989)
5.	[60]	VII/182 Cat of High-Redshift Quasars, $z >= 2.2$, in SOP and F401 (Warren+ 1991)
6.	[60]	/A+AS/7/335 1410MHz - spectra of quasars III. (Quintana+ 1993)
7.	[60]	/MNRAS/269/151 APM cluster redshift survey (Dalton+ 1994)
8.	[60]	/MNRAS/269/301 Superclusters and voids (Eimasto+ 1994)
9.	[60]	/A/101/1561 ISOPHOTOMETRY OF 175 BRIGHTEST ELLIPTICAL GAL. IN ABELL CLUSTERS
10.	[60]	/ApJ/384/404 REDSHIFTS OF A SAMPLE OF NEARBY RICH CLUSTERS OF GALAXIES
11.	[40]	II/207 Palomar-Green catalog UV-excess stellar objects (Green+ 1986)
12.	[40]	VII/116 Southern Galaxy Catalogue (SGC) (Corwin+ 1985)
13.	[40]	VII/169 Optical Identifications of IRAS Point Sources (Wang+ 1986.87.91)
14.	[40]	VII/178 Optical Cat of Extragalactic Emission-line Obj (Hewitt+ 1991)
15.	[40]	VII/175 Edinburgh-Durham Southern Galaxy Cat. - Cluster Cat. (Lumsden+ 1992)
16.	[40]	VII/180 Gal in 3.5 Degr of Fornax Cluster, Five Nearby Groups (Ferguson+ 1990)
17.	[40]	VII/159 Catalogue of galaxies towards the Coma Supercluster (Slezak+ 1988)
18.	[40]	VII/168 Double Galaxies in SOP region (Zou+ 1989)
19.	[40]	VII/110A Rich Clusters of Galaxies (Abell+ 1989)
20.	[40]	VII/89B Compact groups of compact galaxies (Shakhbazian+ 1973-1979)
21.	[40]	VII/30 SC14/SC15/SC16 Radio Survey at 408 and 1407 MHz (Benn+ 1991)
22.	[40]	VIII/35 Radio Sources observed with Culpeper Circular Array (Slee 1995)
23.	[40]	/A+AS/103/349 An update of the optical identification status of STICKEL (1994)
24.	[40]	/A+AS/123/119 The supercluster-void network I. (Eimasto+ 1997)
25.	[40]	/ApJS/78/1 PHOTOMETRY AND SPECTROSCOPY FOR GALAXIES IN 7 CLUSTERS 0.35<z<0.55
26.	[40]	VII/168 Double Galaxies in SOP region (Zou+ 1989)
27.	[40]	/MNRAS/259/233 The cluster of galaxies SC2008-57 (A3667) (SODRE 1992)
28.	[40]	/A/104/1706 CFH TELESCOPE BLUE GREENS QUASAR CANDIDATES
29.	[40]	/ApJ/365/866 REDSHIFTS OF A SAMPLE OF DISTANT ABELL CLUSTERS OF GALAXIES
30.	[20]	II/211 K-band survey in high galactic latitude (Glazebrook+ 1994)
31.	[20]	VII/181 X-ray of active galaxies and nuclei (Della Ceca+ 1990)
32.	[20]	VII/172 First Byurakan Survey (FBS) (Markarian+ 1989)
33.	[20]	VII/56 Redshifts for Abell Clusters (Sarazin+ 1982)
34.	[20]	VII/142 Southern Redshifts Catalogue (Fairall+ 1991)
35.	[20]	VII/87A Data on 1889 Abell's clusters of galaxies (Leir+ 1977)
36.	[20]	VII/188 Quasars and Active Galactic Nuclei (7th Ed.) (Veron+ 1996)
37.	[20]	VIII/18 6C Survey of Radio Sources I (6CSRSI, Baldwin+ 1985)
38.	[20]	VIII/21 6C Survey of Radio Sources II (6CSRSII, Hales+ 1988)
39.	[20]	VIII/22 6C Survey of Radio Sources III (6CSRSIII, Hales+ 1990)
40.	[20]	VIII/23 6C Survey of Radio Sources IV (6CSRSIV, Hales+ 1991)
41.	[20]	VIII/24 6C Survey of Radio Sources V (6CSRSV, Hales+ 1993)

Experience with Scanner + Optical Character Recognition

(based on 300 dpi + OMNIPAGE PROF, vers 2.0-6.0)

- highly reliable **only** for modern, well-printed fonts
- alignment of table columns not always preserved
[?? industry has no need for this ??]
- large tables (≥ 10 pages) exceed "training" capacity of OCR software
- proof-reading is **mandatory** for a reliable result
(transparency method: brain checks up to 50-100 char/sec)
- some fonts are **hopeless** to recover with OCR:
classical line printer (broken fonts); MNRAS of 1970'ies
- blank entries in table columns confuse the OCR program
- CAUTION: CDS releases OCR'd tables with many errors!
→ MANY DOZEN TABLES "re"OCR'd @CDS → errors!
THE REAL "CHALLENGE":
- tables from microfiche (typically MNRAS, **until NOW!**)
requires microfiche copier (only "top" libraries, e.g. STScI)
- tables published in font size ≤ 6 pt
⇒ **UNRECOVERABLE DAMAGE DONE BY EDITORS/PUBLISHERS TRYING TO SAVE SPACE!**

many tables were printed in too small fonts
to be recovered with scanner + OCR

PROBLEM OF RECOVERING older tables
with "Optical Character Recognition" (OCR)

A&AS 39, 379 (1980)

1:1 reproduction !!

43

A CATALOGUE OF LINEAR POLARIZATION OF RADIO SOURCES

381

TABLE ACTUALLY RECOVERED FROM PREPRINT I HAD KEPT !

The image shows a large, multi-page table with many columns and rows of data. The text is very small and dense, typical of a scientific catalogue. The table is organized into several sections, each with its own header and sub-headers. The data appears to be organized by radio source name or identifier. The table is presented as a 1:1 reproduction of the original preprint.

TABLE I. — The Data of Linear Polarization.

02/10/08
03/10/09

copy of the original paper

Lawrence +83, ApJS : 5 GHz obs. of Arecibo sources 3420 lines

EXAMPLE for proof-reading method:
this page is a copy of the original printed table (as published)

SOURCE	R.A. (1950)	DECL. (1950)	FLUX (Jy)	SPECTRAL INDEX	ARECIBO OFFSETS	ARECIBO ERRORS	NU OBS
X2218-017	22 18 36.4 (0.4)	-2 16 27	0.106(0.011)	+0.70(0.11)	-11.0	7.8 56	
A2219-022	22 19 49.4	-1 42 32	[0.533(0.092)]			3.8 82	
A2221-017	22 21 21.9	-1 58 45(14)	[0.501(0.099)]			5.3 89	
G2225-019	22 25 41.3(0.3)	-1 15 01(27)	0.195(0.015)	+0.68(0.07)	-1.9 5	2.7 49	
G2229-012	22 29 04.2(0.8)	-2 15 12(24)	0.042(0.006)	+1.04(0.16)	0.6 6	8.9 112	
G2230-022	22 30 39.6(0.8)	-1 02 24(79)	0.041(0.006)	+1.13(0.12)	-11.2 -60	1.8 108	
G2233+010 EXT	22 33 51.7(8.6)	1 02 24(79)	0.045(0.005)	+1.36	3.4 -29	1.7 39	
G2238-011	22 38 23.0(0.4)	-1 08 53(15)	0.091(0.007)	+1.11(0.06)	7.9 40	2.4 44	
G2239+006	22 39 55.5(0.3)	0 38 03(14)	0.133(0.011)	+0.63(0.09)	-1.2 -27	5.4 59	
G2240-005 EXT	22 40 55.3(58.0)	-0 32 09(33)	0.040(0.008)	+1.28	-48.2 -76	4.5 68	
G2241+013	22 41 16.6(0.3)	1 20 46(14)	0.160(0.012)	+1.04(0.05)	0.2 -6	2.1 25	
G2242-019	22 42 17.7(0.3)	-1 58 05(14)	0.166(0.013)	+0.65(0.08)	-4.4 0	2.4 57	
G2245-022	22 45 26.9(0.2)	-2 13 34(8)	0.314(0.015)	+0.47(0.07)	1.2 -7	5.1 38	
G2246-022	22 46 20.5(0.5)	-2 13 23(20)	0.197(0.022)	+0.57(0.12)	-16.6 -41	9.6 44	
G2247-012	22 47 12.1(0.5)	-1 12 45(18)	0.063(0.006)	+0.93(0.11)	-2.5 19	6.4 70	
G2247+019	22 47 06.4(0.9)	1 54 30(33)	0.055(0.010)	+1.12(0.15)	7.7 -80	7.6 97	
G2251+006	22 51 30.8(0.3)	0 38 20(13)	0.376(0.027)	+0.25(0.08)	-5.2 6	3.4 73	
G2252-005 EXT	22 52 05.6(0.5)	-0 32 46(41)	0.044(0.010)	+1.54	-24.8 8	8.2 56	
G2252+021	22 52 21.0(0.3)	2 08 54(14)	0.190(0.014)	+0.70(0.07)	-0.7 -30	1.5 61	
G2253-005	22 53 13.2(0.3)	-0 35 28(13)	0.115(0.008)	+1.00(0.06)	-3.5 28	3.5 29	
G2253-014	22 53 20.3(0.3)	-1 24 25(21)	0.118(0.009)	+0.83(0.07)	-0.3 63	3.2 49	
A2255-000	22 55 22.5	-0 01 26	[0.464(0.136)]			6.0 166	
G2256+017	22 56 24.5(0.2)	1 47 14(13)	0.306(0.018)	+0.21(0.09)	0.6 -87	3.0 75	
G2256+032	22 56 20.0(0.4)	3 17 46(16)	0.104(0.009)	+0.69(0.10)	3.4 16	4.7 86	
G2258+015	22 58 12.7(0.4)	1 35 57(16)	0.079(0.008)	+0.84(0.08)	0.6 -22	1.3 62	
A2258+031	22 58 16.7	3 09 26	[0.736(0.115)]			2.6 84	
G2258+001	22 58 31.3(0.3)	0 11 40(12)	0.127(0.009)	+0.65(0.09)	1.2 -93	2.7 81	
A2258+022	22 58 45.2	2 12 14	[0.478(0.085)]			4.5 81	
G2300-013	23 00 16.5(0.3)	-1 20 30(11)	0.119(0.007)	+0.65(0.09)	-1.3 16	2.3 73	
G2300+014	23 00 45.1(0.4)	1 27 09(16)	0.080(0.008)	+0.73(0.12)	-0.5 -36	8.0 61	
G2302+000	23 02 07.3(0.7)	0 00 28(23)	0.080(0.007)	+0.93(0.10)	4.8 56	5.2 90	
A2302+025	23 02 52.1	2 35 24	[0.454(0.087)]			6.7 59	
A2302+026	23 02 54.7	2 41 32	[0.369(0.079)]			7.2 68	
X2303-008	23 03 12.1(0.7)	2 54 09	0.275(0.033)	+0.53(0.07)	-2.0	1.2 32	
A2303+029	23 03 27.6	2 54 09	[0.521(0.110)]			8.7 50	

X2218-017	22 18 36.4 (0.4)	-2 16 27	0.106(0.011)	+0.70(0.11)	-11.0	7.8 56	202	
A2219-022	22 19 49.4	-1 42 32	[0.533(0.092)]			3.8 82	3 ND	
A2221-017	22 21 21.9	-1 58 45 (14)	[0.501(0.099)]			5.3 89	2 ND	
G2225-019	22 25 41.3 (0.3)	-1 15 01 (27)	0.195(0.015)	+0.68(0.07)	-1.9	2.7 49	222 XR	
G2229-012	22 29 04.2 (0.8)	-2 15 13 (24)	0.042(0.006)	+1.04(0.16)	0.6	8.9 112	222 XR	
G2230-022	22 30 39.6 (0.8)	1 02 24 (79)	0.041(0.006)	+1.13(0.12)	-11.2	1.8 108	333 XR	
G2233+010	EXT 22 33 51.7 (8.6)	-1 08 53 (15)	0.045(0.005)	+1.36	3.4	1.7 39	3	
G2238-011	22 38 23.0 (0.4)	0 38 03 (14)	0.091(0.007)	+1.11(0.06)	7.9 40	2.4 44	333	
G2239+006	22 39 55.5 (0.3)	-0 32 09 (33)	0.133(0.011)	+0.63(0.09)	-1.2	5.4 59	222	
G2240-005	EXT 22 40 55.3(58.0)	1 20 46 (14)	0.040(0.008)	+1.28	-48.2	4.5 68	4	
G2241+013	22 41 16.6 (0.3)	-1 58 05 (14)	0.160(0.012)	+1.04(0.05)	0.2	2.1 25	222	
G2242-019	22 42 17.7 (0.3)	-2 13 34 (8)	0.166(0.013)	+0.65(0.08)	-4.4	2.4 57	222	
G2245-022	22 45 26.9 (0.2)	-2 13 23 (20)	0.314(0.015)	+0.47(0.07)	1.2	5.1 38	555	
G2246-022	22 46 20.5 (0.5)	-1 12 45 (18)	0.197(0.022)	+0.57(0.12)	-16.6	41	111 XR	
G2247-012	22 47 12.1 (0.5)	1 54 30 (33)	0.063(0.006)	+0.93(0.11)	-2.5	19	6.4 70	333
G2247+019	22 47 06.4 (0.9)	0 38 20 (13)	0.055(0.010)	+1.12(0.15)	7.7	-80	7.6 97	111
G2251+006	22 51 30.8 (0.3)	-0 32 46 (41)	0.376(0.027)	+0.25(0.08)	-5.2	6	3.4 73	222
G2252-005	EXT 22 52 05.6 (0.5)	2 08 56 (14)	0.044(0.010)	+1.54	-24.8	8	8.2 56	2
G2252+021	22 52 21.0 (0.3)	-0 35 28 (13)	0.190(0.014)	+0.70(0.07)	-0.7	-30	1.5 61	222
G2253-005	22 53 13.2 (0.3)	-1 24 25 (21)	0.115(0.008)	+1.00(0.06)	-3.5	28	3.5 29	333
G2253-014	22 53 20.3 (0.3)	-0 01 25	0.118(0.009)	+0.83(0.07)	-0.3	63	3.2 49	313
A2255-000	22 55 22.5	1 47 13 (13)	[0.464(0.136)]			6.0 166	3 ND	
G2256+017	22 56 24.5 (0.2)	3 17 46 (16)	0.306(0.018)	+0.21(0.09)	0.6	-87	3.0 75	333
G2256+032	22 56 30.0 (0.4)	1 35 57 (16)	0.104(0.009)	+0.69(0.10)	3.4	16	4.7 86	222
G2258+015	22 58 12.7 (0.4)	3 09 25	0.079(0.008)	+0.84(0.08)	0.6	-22	1.3 62	222
A2258+031	22 58 16.7	0 11 40 (12)	[0.736(0.115)]			2.6 84	3 ND	
G2258+001	22 58 31.3 (0.3)	2 12 19	0.127(0.009)	+0.65(0.09)	1.2	-93	2.7 81	333
A2258+022	22 58 45.2	-1 20 30 (11)	[0.478(0.085)]			4.5 81	3	
G2300-013	23 00 16.5 (0.3)	1 27 00 (16)	0.119(0.007)	+0.65(0.09)	-1.3	16	2.3 73	444 XR
G2300+014	23 00 45.1 (0.4)	0 00 21 (23)	0.080(0.008)	+0.73(0.12)	0.5	-36	8.0 61	222 XR
G2302+000	23 02 07.3 (0.7)	2 35 24	0.080(0.007)	+0.93(0.10)	4.8	56	5.2 90	313
A2302+025	23 02 52.1	2 41 32	[0.454(0.087)]			6.7 59	3 ND	
A2302+026	23 02 54.7	2 54 00	[0.369(0.079)]			7.2 68	3 ND	
X2303-008	23 03 12.1 (0.7)	2 54 00	0.275(0.033)	+0.53(0.07)	-2.0	1.2 32	202	
A2303+029	23 03 27.6		[0.521(0.110)]			8.7 50	3 ND	

edited OCR result printed in exactly the same format as original transparent overlay allows proofing!

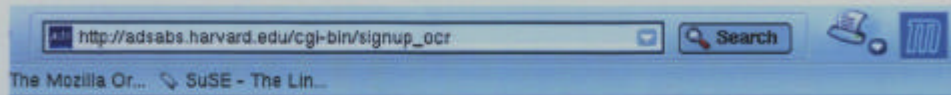
202 ?

"ANCIENT" HISTORY :
*Examples of articles with data published in MNRAS
 on MICROFICHE (even until 1997 !)*

The following microfiches will have to be copied in amplified form on paper to be OCR'd thereafter:
 (pages counted as 2 per microfiche image)

1979MNRAS.188..579Bucknell	Galaxies in clusters	15 pages
1980MNRAS.190..307Carter	Photometry of 0004.8-3450 cluster	24
1980MNRAS.190..903Laing & Peacock	Multifrequency flux compilation of 3C sources	18 pages done
1980MNRAS.191..607Porcas	Radio positions * optIDs for 966MHz sources	40
1980MNRAS.192..635Pfleiderer+	Radio continuum of galaxies at 11cm	36
1981MNRAS.195..261Laing	40 radio galaxies	preprint with H.A.
1981MNRAS.196..669Wilkinson+	opt. * radio properties of 4C radio galaxies	33
1981MNRAS.196..695Schuch	UMA Supercluster: opt. field and 5C10 survey	60 <== 5C10 already in e-form in #2199 Wandker
1982MNRAS.198..321Purton+	Radio emission of stars	30 pp
1982MNRAS.200..733Godwin & Peach	Photometry of A1367	32 pp
1983MNRAS.202..813Conway	Multifrequency obs of 94 3CR sources	12 pp
1983MNRAS.204..365Clowes & Savage	Optically-selected quasar candis near SGP N=210	
1984MNRAS.206..475Grueff	5C12 magnitudes and colors	
1984MNRAS.207..393Savage	opt-sel. QSO candis in B0112-35	
1984MNRAS.207..445Sparks	Properties of radio ellipticals	14 pp
1984MNRAS.209..697Lloyd, C.	Opt monitoring of radio sources	20
1985MNRAS.213..485Savage	Spectra of QSO candidates	36 pp
1986MNRAS.222..673Pew & Madore	Ring Galaxies	14
1986MNRAS.226..747Jedrzejewski	CCD surf. photometry of ellipticals	7
1988MNRAS.188..598Savage & Bolton	Optically selected QSO's...	6 pages
1988MNRAS.188..599Savage & Bolton	opt-sel. QSOs in 2x25 sq. d. 0200-500/2204-189	6 pp
1989MNRAS.239..459Dixon+	The clusters of galaxies A2197+A2199 6925 gals	75 pages
1990MNRAS.243..159Green, Godwin, Peach	3 southern cD clusters	28
1991MNRAS.248..483Sutherland	Finding Charts for south. IRAS galaxies	200
1992MNRAS.254..589Bower, Lucey, Ellis	Precision photom. of E-gals in Coma & Virgo	40

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The status of the Markarian galaxy catalog in 1986

A CATALOG OF MARKARIAN GALAXIES

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ABSTRACT

A catalog of Markarian galaxies is presented which tabulates redshifts, spectral and morphological classifications, magnitudes, infrared and radio flux densities, and over 600 references to available data published before 1986 January 1. Redshifts are now available for 1228 objects with strong ultraviolet continua, and follow-up spectroscopic and photometric observations of Markarian galaxies have provided classifications of 115 Seyfert 1, 43 Seyfert 2, and 137 starburst and H II-type galaxies.

The 1500 objects in the completed 15 lists of the Markarian survey (First Byurakan Spectral Sky Survey) currently provide the largest sample of active galaxies with $z \leq 0.1$ which have been discovered in a reasonably systematic and uniform fashion. The purpose of this work is to facilitate the use of Markarian galaxies in future studies that involve the difficult task of establishing the characteristics and origins of the wide range of activity observed in active galactic nuclei. After a description of the Markarian survey and the current catalog, a summary of the general results obtained from the data is presented. A preliminary study of the infrared properties of Markarian galaxies as measured by *IRAS* reveals a number of interesting results, including the existence of a sample of elliptical and lenticular galaxies with appreciable infrared emission. Studies of the spatial distribution of the Markarian objects and the role of interactions in stimulating active phenomena in galaxies, as determined from the data in the catalog, will be published in future papers.

Subject headings: galaxies: redshifts — galaxies: Seyfert — galaxies: structure — infrared: sources — stars: formation

TABLE 1
CATALOG OF MARRKIAN GALAXIES

Mrk#	z	Ref. Class	Ref. Type	I	Ref. Field	m	Ref. UVB	M	S ₈₀₀ (Jy)	Spectra	S ² (MHz ² /y)	Ref. Radio	HI	Notes				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
0001	0.0160	426	Sy2	*	074 701	15.2 ^f	631 702	-19.4	2.28	703	S ₂₇₀₀ = 0.027	075 704	705	U1601, not M440				
0002	0.0182	426	Sy2	*	450 706	14.2	631 707	-20.7	5.47	708	S ₁₄₁₀ = 0.011	073 073.075	713	U1485				
0003	0.0137	426	Sy2	*	140 709	13.8	631 710	-20.6	3.88	711	S ₅₀₀₀ = 0.244	075 712	091	U1495				
0004	0.0160	426	Sy2	*	450 714	15.0	631 711	-19.7	2.35	149,602	S ₅₀₀₀ = 0.018	075 075	091	U1469				
0005	0.0029	426	HI1	*	234 715	15.8	631 716	-15.4	1.11	720	S ₅₀₀₀ < 0.100	075 075	723	U1494				
0006	0.0187	426	Sy1.5	*	080 718	14.8	631 719	-20.2	0.59	725	S ₅₀₀₀ < 0.020	065 726	732	U1494				
0007	0.0108	426	Sy1	*	334 723	13.9	631 720	-20.1	0.36	730	S ₂₇₀₀ = 0.021	328 731	732	U1494				
0008	0.0118	426	Sy1	*	030 728	15.8	631 721	-20.1	0.36	731	S ₁₄₁₅ < 0.004	134 735	371	U1494				
0009	0.0599	426	Sy1	*	149 733	15.2	631 722	-21.3	0.84	732	S ₁₄₁₅ < 0.004	363 130,134	220	U4013				
0010	0.0290	426	Sy1	*	234 737	14.0 ^f	631 723	-21.8	0.84	733	S ₅₀₀₀ = 0.351	075 743	742	U4014				
0011	0.0120	234	Sy1	*	234 740	14.4	631 741	-19.7	1.18	088,234,504	S ₁₀₃₅ < 1	062 052	727	U4028, VV438				
0012	0.0133	234	Sy1	*	234 744	13.7	631 745	-21.5	0.48	746	S ₅₀₀₀ < 0.018	075 073.075	727	U2200, U4093				
0013	0.0045	426	Sy1	*	234 747	14.4	631 748	-17.4	1.07	751	S ₅₀₀₀ < 0.018	075 073.075	329	U4242				
0014	0.0105	426	Sy1	*	534 059,234	17.1	330 750	-18.2	0.59L	145,493,504	S ₂₇₀₀ < 0.018	073 073.075						
0015	0.0082	426	Sy1	*	483	17.1	330 751	-18.2	0.50	752	S ₂₇₀₀ < 0.018	073 073.075						
0016	0.0082	426	Sy1	*	483	17.1	330 752	-18.5	0.50	753	S ₂₇₀₀ < 0.018	073 073.075						
0017	0.0028	426	Sy1	*	354 234,204	14.3	631 753	-18.2	2.07	145,234,504	S ₂₇₀₀ = 0.027	073 073.075						
0018	0.0108	426	HI1	*	339 754	15.5	631 754	-18.5	0.56	756	S ₂₇₀₀ = 0.027	073 073.075						
0019	0.0141	426	HI1	*	339 756	14.7	631 755	-19.2	0.68	757	S ₂₇₀₀ = 0.027	073 073.075						
0020	0.0121	426	HI1	*	339 756	14.7	631 756	-19.2	0.68	757	S ₂₇₀₀ = 0.027	073 073.075						
0021	0.0055	426	Sy1	*	450 758	15.1	631 757	-17.9	0.83	060,504,598	S ₂₇₀₀ < 0.015	073 073	091	U3543				
0022	0.0050	426	Sy1	*	339 759	15.7	631 758	-19.2	0.83	149,234,003	S ₂₇₀₀ < 0.015	073 073	091	U3543				
0023	0.0005	426	Sy1	*	030 577,631	17.1	330 759	-19.2	1.30	604	S ₂₇₀₀ < 0.015	073 073	091	U3543				
0024	0.0454	426	Sy1	*	631 760	14.2	631 761	-19.2	1.30	107,149,234	S ₂₇₀₀ < 0.015	073 073	091	U3543				
0025	0.0100	230	Sy1	*	234 763	15.3	631 762	-20.3	1.30	149,234,504	S ₂₇₀₀ < 0.015	073 073	091	U3543				
0026	0.0305	426	Sy1	*	149 602,577	16.8	330 763	-19.9	1.30	234,504	S ₂₇₀₀ < 0.015	073 073	091	U3543				
0027	0.0072	426	Sy1	*	257,577	17.1	330 764	-19.9	1.30	234,504	S ₂₇₀₀ < 0.015	073 073	091	U3543				
0028	0.0310	426	Sy1	*	257,577	17.1	330 764	-19.9	1.30	234,504	S ₂₇₀₀ < 0.015	073 073	091	U3543				
0029	0.0307	426	Sy1	*	257,577	17.1	330 764	-19.9	1.30	234,504	S ₂₇₀₀ < 0.015	073 073	091	U3543				
0030	0.0267	234	Sy1	*	257,577	17.1	330 764	-19.9	1.30	234,504	S ₂₇₀₀ < 0.015	073 073	091	U3543				
0031	0.0263	426	Sy1	*	234 765	14.7	631 765	-20.7	0.50	107,234,603	S ₂₇₀₀ < 0.015	073 073	220	U1610, VV144				
0032	0.0028	426	HI1	*	062,234	16.4	631 766	-20.7	0.50	107,234,603	S ₂₇₀₀ < 0.015	073 073	220	U1610, VV144				
0033	0.0045	236	HI1	*	234 768	13.2	631 767	-18.6	4.73	770	S ₅₀₀₀ = 0.031	075 771	091	U5720, Arp233				
0034	0.0515	426	Sy2	*	008 772	15.8	631 768	-21.3	0.95	774	S ₅₀₀₀ = 0.008	075 775	220	U5720, Arp233				
0035	0.0032	236	Sy2	*	234 777	12.9	631 769	-18.0	5.13	779	S ₅₀₀₀ < 0.020	075 073.357	186	N3353, U5869				
0036	0.0081	426	HI1	*	023 023,234	15.8	631 770	-19.9	0.50 ^f	234,504	S ₅₀₀₀ < 0.020	073 567,358	186	Hea4				
0037	0.0572	426	HI1	*	642,577	15.2	631 771	-19.9	0.50 ^f	234,504	S ₅₀₀₀ < 0.020	073 567,358	186	Hea4				
0038	0.0360	234	Sy1	*	450 782	15.2	631 772	-20.9	0.50 ^f	504	S ₁₄₁₅ = 0.001	363 787	220	U6318, VV402				
0039	0.0360	234	Sy1	*	257 783	15.2	631 773	-20.9	0.50 ^f	504	S ₁₄₁₅ = 0.001	363 787	220	U6318, VV402				
0040	0.0310	426	Sy1	*	149 784	16.8	630 785	-18.1	0.50	786	S ₁₄₁₅ = 0.001	363 787	220	U6318, VV402				
0041	0.0193	426	Sy1	*	257 788	15.0	631 789	-19.7	0.50	107,234,603	S ₂₇₀₀ < 0.015	073 073	220	U6318, VV402				
0042	0.0240	426	Sy1	*	008 791	15.2	631 792	-20.9	0.50	107,234,603	S ₂₇₀₀ < 0.015	073 073	220	U6318, VV402				
0043	0.0204	426	Sy1	*	234 792,234	16.1	631 793	-18.7	0.50	149,234,504	S ₂₇₀₀ < 0.015	073 073	220	U6318, VV402				
0044	0.0230	426	Sy1	*	631 795	15.3	631 796	-19.9	0.50	149,234,504	S ₂₇₀₀ < 0.015	073 073	220	U6318, VV402				
0045	0.0139	426	Sy1	*	631 795,234	15.6	631 797	-18.4	0.50	149,234,504	S ₂₇₀₀ < 0.015	073 073	220	U6318, VV402				
0046	0.0124	426	Sy1	*	234 797,234	16.0	631 798	-19.9	0.50	149,234,504	S ₂₇₀₀ < 0.015	073 073	220	U6318, VV402				
0047	0.0195	426	Sy1	*	234 797,234	16.0	631 799	-19.9	0.50	149,234,504	S ₂₇₀₀ < 0.015	073 073	220	U6318, VV402				
0048	0.0155	426	Sy1	*	149 799	15.8	631 799	-19.9	0.50	149,234,504	S ₂₇₀₀ < 0.015	073 073	220	U6318, VV402				
0049	0.0053	236	HI1	*	008 801	15.7	581 802	-17.2	0.74	803	S ₁₄₁₅ = 0.021	073 075.557	205	*comps.(244)				
0050	0.0234	426	Sy1	*	008 801	15.7	581 802	-17.2	0.74	803	S ₁₄₁₅ = 0.021	073 075.557	205	*comps.(244)				

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(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
0334	000035.5	214053	0977	011335.1	384722	1164	013810.8	323825	1622	020711.1	-102256	1051	023740.8	350500
0936	000135.7	-121546	0978	011451.0	085422	1005	013812.9	-045417	1923	020720.4	-806106	1182	023745.9	183059
0544	000215.0	-014635	0979	011522.7	115037	1055	014005.4	275810	1025	020732.1	-990247	0595	023855.8	065827
0335	000345.1	185537	0980	011827.1	343546	1072	014105.3	154446	1024	020733.2	-075133	1323	023951.4	282145
0336	000526.4	324730	0981	011828.4	046940	0980	014113.9	164847	1026	020735.2	-075133	0596	024013.0	072307
0345	000718.0	233542	0982	011833.9	061139	0574	014122.7	020554	0587	020809.4	053807	0592	024253.2	004216
0927	000736.5	-045919	0983	011840.2	117230	0574	014202.1	117230	0588	020836.2	033249	0597	024311.9	103824
0928	000833.5	-122308	0984	011844.3	041855	0581	014204.1	105126	0590	020839.5	184654	1184	024325.4	-050659
0337	000907.9	209147	0985	011844.3	320810	0986	014204.1	320810	0591	020840.9	105100	1053	024342.8	-002845
0929	001141.3	479104	0986	011844.3	121109	0982	014207.7	232447	1175	021002.8	105100	1054	024342.8	-002845
0940	001146.9	335523	0985	011706.8	375336	0575	014552.8	122151	0589	021108.7	035208	1185	024404.6	153432
0546	001201.8	-014943	0986	011839.5	-109850	1097	014604.5	101535	1027	021128.8	045263	1054	024426.3	154312
1136	001203.2	080005	0987	011849.3	084733	1156	014626.6	125046	0590	021200.5	-025957	1186	024501.1	154346
0941	001225.4	243100	0987	011949.3	341037	0576	014633.8	052327	1028	021408.8	312806	0509	024511.4	025729
1139	001329.6	210824	0988	011955.0	235623	0577	014640.6	121640	1029	021425.8	050341	0371	024515.8	-010747
1140	001341.3	243047	0989	011956.0	333948	0988	014746.9	332836	0591	021437.9	012530	1187	024537.3	134339
0942	001347.5	003039	0990	011957.2	293020	1099	014748.8	360213	1030	021439.1	291726	1055	024551.9	-091005
0943	001408.8	-104949	0991	011957.2	293020	0536	014801.7	214500	1031	021620.3	-031816	1056	024607.9	250740
1141	001513.8	221206	0992	012001.7	013746	0993	014803.7	070132	0592	021707.5	-002908	1401	024614.1	-001000
0547	001753.5	001320	0993	012041.0	341820	0579	014903.8	070132	1400	021734.5	075585	0972	024626.9	130554
1142	001807.2	214118	0989	012050.2	-070404	0580	015021.4	064252	1032	021753.1	232258	1057	024635.0	234057
0548	001828.2	060907	0990	012110.5	343030	0581	015056.6	062540	1033	021920.5	-101564	1058	024641.9	344654
0549	001920.0	-015321	0991	012156.5	315420	1002	015155.7	354020	1034	022020.0	315743	1059	024706.9	-091231
0338	002112.5	142437	0992	012159.2	315150	1010	015201.7	351032	1035	022104.2	331866	0900	024827.3	041450
0944	002154.9	-040769	1164	012212.3	-014935	1011	015201.7	351032	1036	022133.9	-044038	1000	024902.4	435149
0339	002207.4	142943	0983	012242.7	315235	1167	015356.6	312736	1037	022205.8	363338	1061	024915.2	363152
0945	002221.9	-034150	1165	012322.9	340644	1012	015427.0	-053848	1038	022253.9	005611	1062	025148.2	-084055
0946	002424.7	020949	0984	012348.1	312112	0984	015468.6	237220	0099	022334.9	116044	1402	025156.5	021004
0550	002454.7	013079	0985	012412.1	084411	1166	015468.6	091396	1176	022447.3	414704	1063	025206.0	-101346
0947	002442.7	-023024	0984	012419.8	-044459	1169	015500.9	021626	1177	022446.3	-192077	0691	025401.1	-025821
0948	002520.7	065111	0350	012450.1	135507	1170	015500.9	372006	1178	022446.3	-132134	1064	025447.0	-103256
0549	002555.1	305240	0995	012450.2	-034845	0342	015531.2	025040	1039	022505.2	-023221	1065	025448.0	-144015
0949	002580.7	-115502	0996	012450.2	-034845	0583	015531.2	025040	1040	022514.5	310523	1066	025448.0	363718
0551	002586.7	301653	0997	012628.7	195222	1013	015708.9	-074543	1043	022558.0	-102423	0602	025714.1	022424
0950	002718.5	323704	1166	012913.8	325519	1014	015718.9	000910	1041	022555.7	356859	1067	025842.8	422320
0951	002736.8	-101346	0998	013062.1	-022012	0584	015751.1	022549	1042	022700.1	-032602	1068	025842.8	020000
0952	002838.4	-004058	0999	013011.7	-121758	1171	015812.1	312828	1044	022738.2	-601311	1403	030027.9	-013411
0552	002843.9	081159	1000	013058.8	132752	1015	015848.1	-013289	1045	022904.3	602135	1188	030126.7	-010522
0553	003050.6	025434	1167	013058.8	332445	1016	015917.4	-013415	1046	022948.3	202646	1189	030246.3	-022303
0341	003413.5	231234	1001	013102.0	112623	1017	020018.2	-021416	0388	023001.4	202527	1190	030438.3	-021814
0953	003431.9	253742	1168	013207.2	344703	0585	020055.2	021825	1047	023013.4	062720	1069	030557.5	-140585
0954	003438.0	-094354	1169	013226.5	384742	0586	020126.0	292597	1179	023027.0	274304	0903	030626.3	-030881
0955	003502.1	000021	0571	013325.9	028422	1172	020307.0	062422	0594	023037.6	071320	1070	030946.6	-000153
0342	003543.5	131530	1002	013444.1	037283	1018	020342.6	-003147	1048	023210.1	-090014	1071	030966.3	-104202
0344	003548.8	144558	1169	013527.8	345732	0587	020344.4	022632	1049	023345.3	-142691	1404	031016.9	-074534
0345	003553.8	232012	1029	013556.7	282200	1168	020510.9	200708	1080	023348.4	330538	0604	031021.4	-052719
0956	003644.8	-071431	1174	020556.0	-024456	1174	020556.0	-024456	1060	023407.7	241257	1072	031051.2	410622
0957	003750.6	104148	1003	013700.2	305900	1003	013700.2	305900	0686	023432.3	035528	1073	031142.9	415103
0958	003750.6	104148	1004	013735.4	-051937	1004	013735.4	-051937	0370	023740.3	190580	1074	031421.3	-001331

Table 7 as published (RA, DEC of all Mkn's)

TABLE 7
ACCURATE COORDINATES IN ORDER OF RIGHT ASCENSION

Mrk# a(1950) 6(1950)
(1) (2) (3)

Mrk# a(1950) 6(1950)
(1) (2) (3)

Mrk# a(1950) 8(1950)
(1) (2) (3)

Mrk# a(1950) -(1950)
(1) (2) (3)

M-k# a(1950) 6(1950)
(1) (2) (3)

Mrk# G(1950) 5(1950)
(1) (2) (3)

0334
0936
0544
0335
0336
0545
0937
0938
0337
0939

000035.5
000135.7
000215.0
000345.1
000326.4
000718.6
000736.5
000833.5
000907.9
001141.3

214053
-121546
-014635
195527
324730
253842
-045919
-122308
204147
475154

0940
0566
1138
0941
1139
1140
0942
0543
1141
0547

001146.0
001201.6
001202.2
001225.4
001339.6
001341.3
001347.5
001408.6
001531.8
001703.5

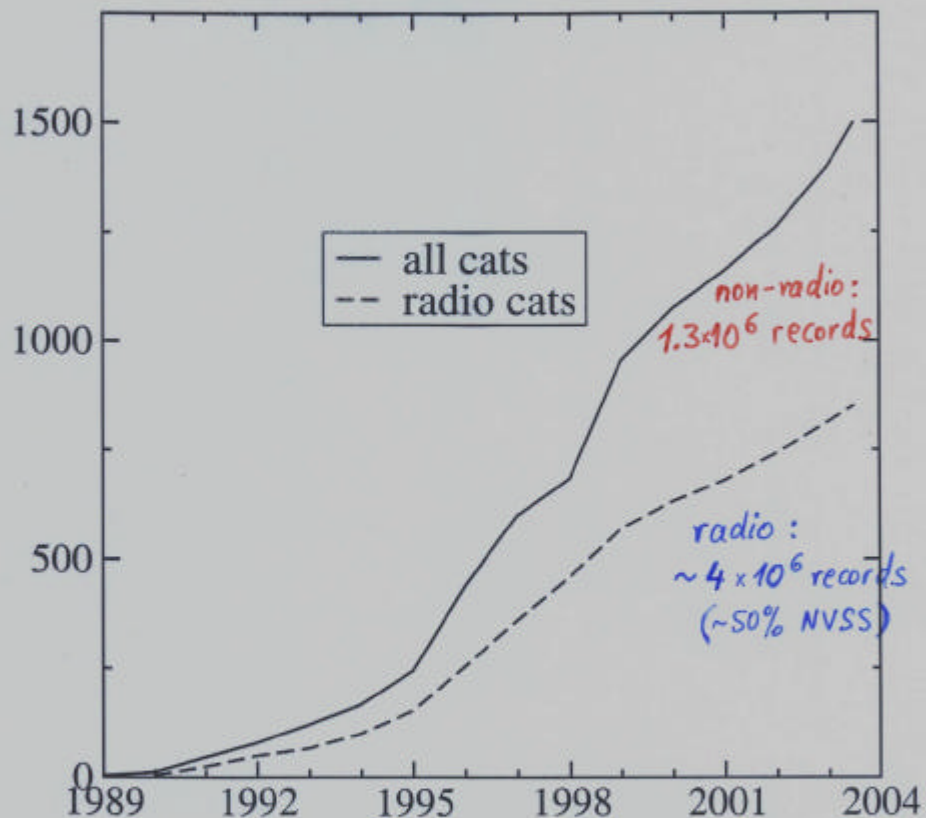
335523
-014943
080006
343150
210824
243047
003039
-104943
221206
003320

raw OCR Result for
Mazzarella & B's 1986
Table 7 :
perfect recognition, but
requires reformatting!

SO WHAT'S THE SITUATION NOW?
Didn't the electronic journals make all
my collection efforts redundant?

Number of catalogs in HA collection

Status 1 July 2003



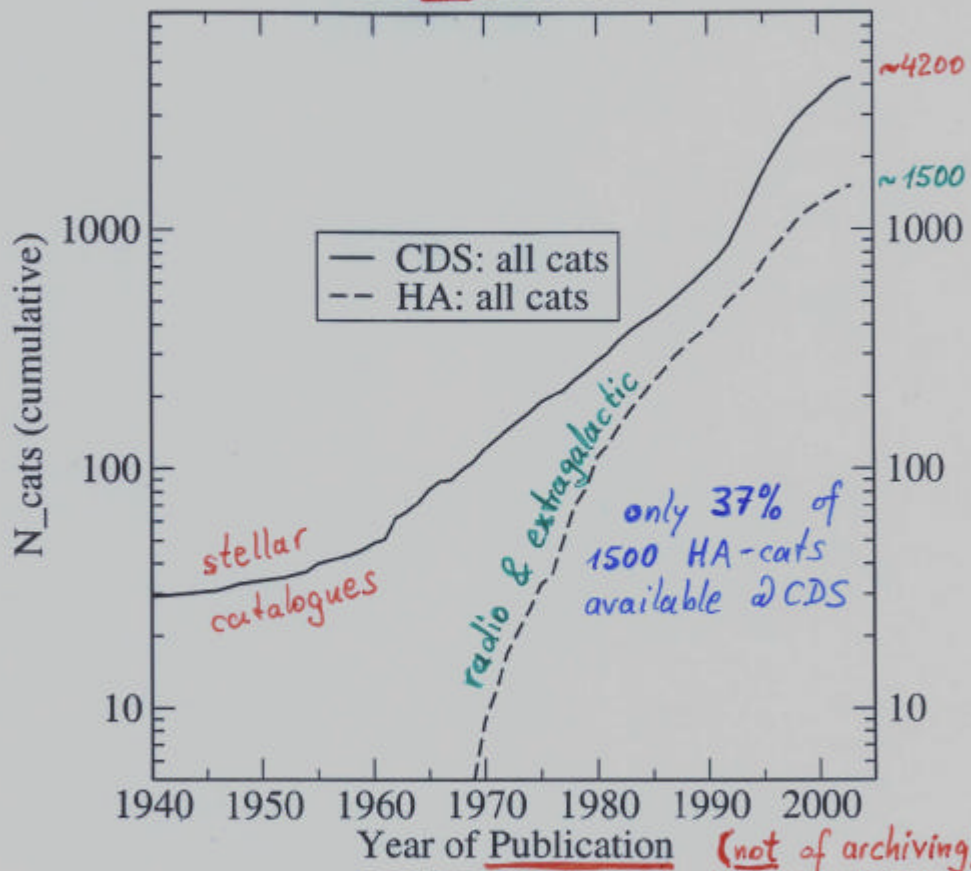
Strategy: collect everything that is "unlikely" to
be included in CDS soon (\sim all except A&A)

- many ($\sim 30\%$) of "my" tables/catalogs appear
in CDS within \sim months to \sim years...

Number of Electronic Catalogs:

CDS and HA collections

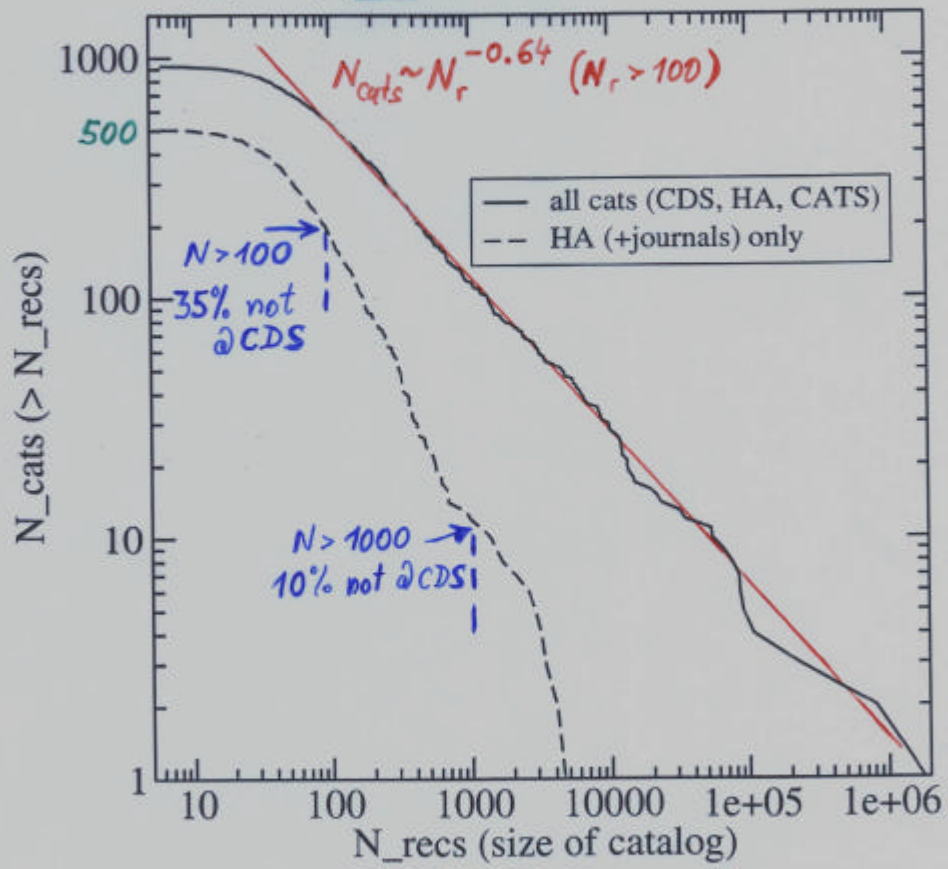
June
2003:



NOTE: y axis is log N : straight line is exponential increase
constant increase (N/yr) \Leftrightarrow declining slope

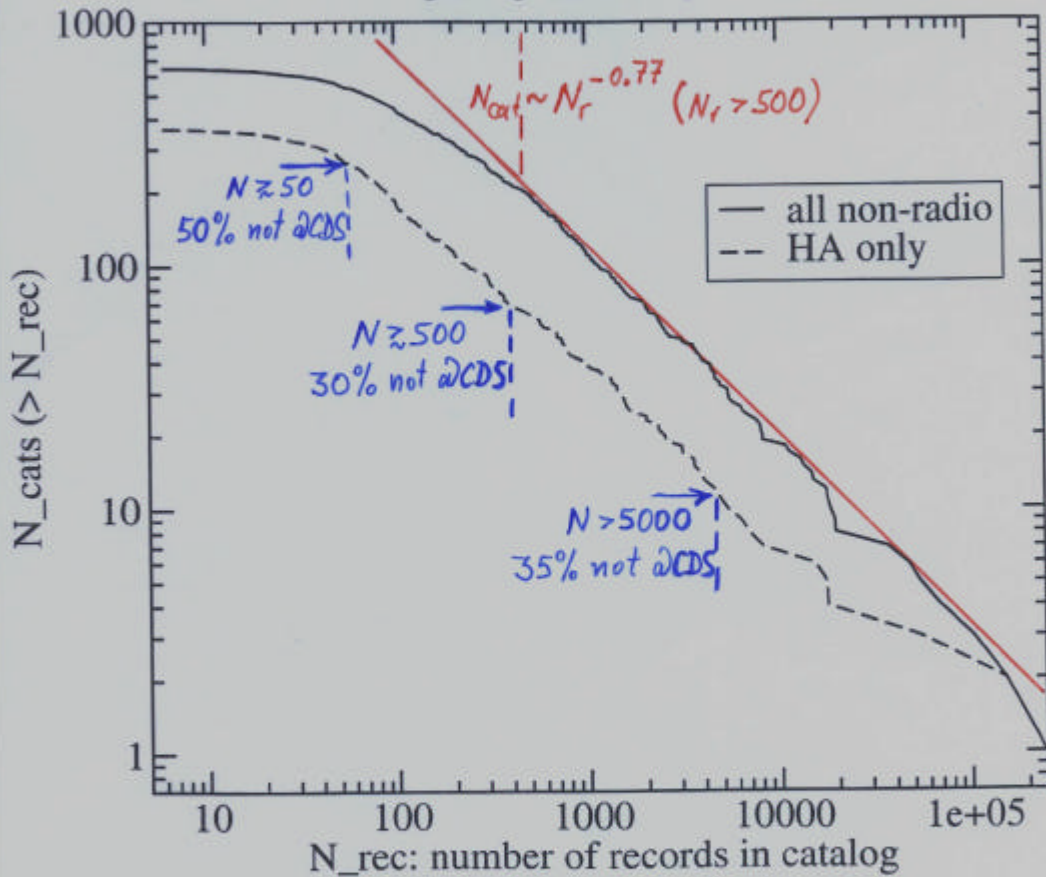
Size distribution of 927 radio source catalogs

(logN - logS) 500 in HA collection only (1 July 2003)



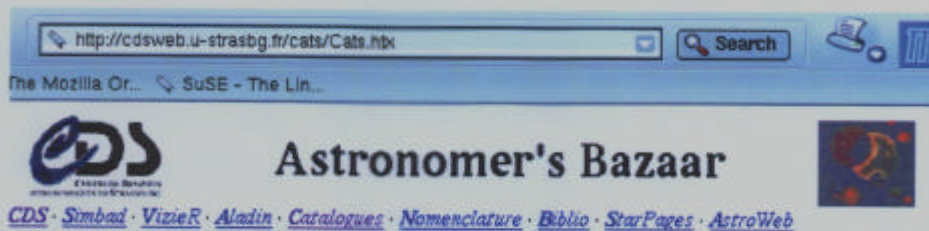
Size distribution of non-radio cats in HA collection

logN - logSize (1 July 2003)



steeper slope for "non-radio" catalogues:
HA collection is biased by interest,
often excludes large data sets

The CDS catalogue collection : ... only a Bazaar ?



http://cdsweb.u-strasbg.fr/cats/Cats.htm

The Mozilla Or... SuSE - The Lin...

CDS Astronomer's Bazaar

[CDS](#) · [Simbad](#) · [VizieR](#) · [Aladin](#) · [Catalogues](#) · [Nomenclature](#) · [Biblio](#) · [StarPages](#) · [AstroWeb](#)

The CDS Service for astronomical Catalogues

The [Strasbourg astronomical Data Center](#) (CDS) collects and distributes astronomical data catalogues, related to observations of stars and galaxies, and other galactic and extragalactic objects. Catalogues about the solar system bodies and atomic data are also included.

The catalogues and tables managed by CDS can be summarized as follows:

- 4981 Catalogues available from CDS ...
 - ... of which 4155 are available on-line (as full ASCII or FITS files) ... *~ 430 cat's "IN PREP"*
 - ... of which 3837 are also available through the VizieR browser.
- SEARCHABLE IN ONE GO*

1 Accessing the catalogues

The present interface gives access to the three categories and directs the user to the best way to retrieve the catalogued data:

1. Query the list of catalogues:

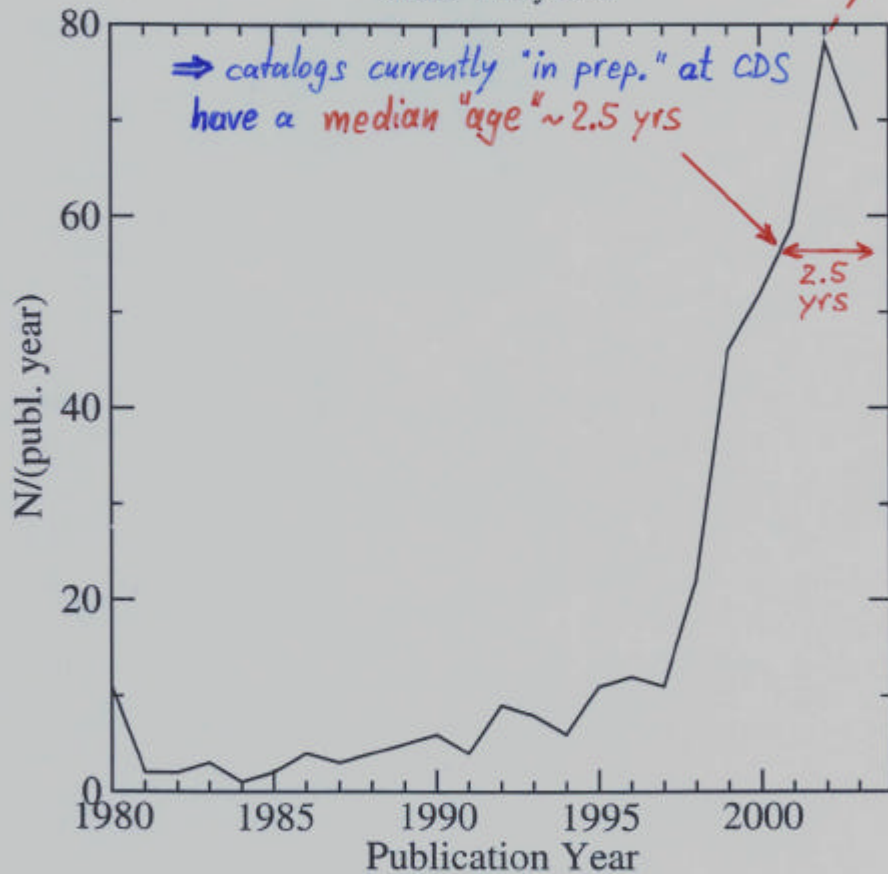
Enter keywords, author names, or catalogue number and get access to the summary descriptions of the matching catalogues:

2. [Browse the list of catalogues](#), ordered by decreasing catalogue number, and get access to summary descriptions of each individual catalogue.
3. [VizieR](#), the CDS/ESRIN service for astronomical catalogues, is the result of a joint effort of [CDS](#) (Centre de Données astronomiques de Strasbourg) and [ESA-ESRIN](#) (Information Systems Division) in order to provide the astronomical community with a dedicated tool for retrieving astronomical data listed in published catalogues and tables, by the means of a relational database management system. When the catalogue is available under the VizieR system, the result pages include an anchor to the system.

THIS GRAPH IS
MEANT TO LOOK LIKE A HISTOGRAM!

426 CDS catalogs listed as "INPREP" ?

Status 1 July 2003



\Rightarrow CDS needs more staff to deal with papers
and/or journals + authors NEED TO COLLABORATE

THE LARGEST RADIO SOURCE CATALOGUES NOT AT CDS (1-Jul-2003)

Ser###	N_records	refcode	Description
C 030	84559	1981MSL.....	1Dixon: Master Source List (MSL), vers43 (1981) (1970A
C 754	21486	2003MNRAS.341....	1Myers S.T.+ Cosmic Lens All-Sky Survey (CLASS)
C 220	12288	1979MPIFR..55....	1Kuehr et al; A Catalogue of Radio Sources
C 638	10950	1999UNPUB.....	1Altieri+ The B3.3 source catalogue at 408MHz
C 452	6603	1997UNPUB.....	1Wright A.E.+ Acc. Positions, fluxes & struct. of PMN
C 628	5517	1999A&A...350..	368Pedani & Grueff: The 408 MHz B3.2 Survey
758	4583	2002AJ...124..	675Condon, Cotton, Broderick: Radio Sources and Star
721	4075	2002MNRAS.330..	241Magliocchetti & Maddox: OptIDs of at 1-mJy FIRST sour
C 834	3565	2003AJ...125..	2411Condon+ SIRTF first-look survey I. VLA image & source
715	3399	2001PASP...113..	362Condon & Yin: Offset Pointing Calibrators
j 739	3172	2002AJ...123..	1784deVries+ Deep Westerbork 1.4 GHz Imaging of Bootes
059-	2882	1991UNPUB.....	1Kotanyi C.:Catalogue of radio galaxy structure
215	2576	1993VLBI.....	1Venturi+ Catalog of radio sources obs. in VLBI 1980-1
C 448	2448	1996MIT...T00L...	1Herold, Lori: IDs of Radio Sources in MG-VLA Survey
C 265	2095	1978ApJS...36...	53Dressel & Condon: The Arecibo 2380 MHz Survey of
777	2090	2003AJ...125..	465Hopkins+ Phoenix Deep Survey: 1.4-GHz mJy catalog
623	1682	1999ApJS..UNPUB..	1Winn+ Positions and 8.4 GHz Fluxes of 1862 South.Sour
C 070	1615	2003VLAC.....	1Taylor: Very Large Array Calibrator Source List; Jan.
833	1521	2003AJ...125..	2299Frail+ Catalog of radio afterglows; first 5 years
C 438	1492	1974MNRAS...78....	1Readhead & Hewish: 81.5MHz Structure in Radio Sources
C 329	1398	1985AJ...90..	1599Preston+ A VLBI survey at 2.29 GHz
344	1397	1996UNPUB.....	1Bychkova, Gurvits & Tsarevsky: VLBI bibliography (259
C 004	1357	1986ApJS...61..	105Lawrence+ The MIT-GBI VLA Survey I (Dec--2 to 20d)
C 253	1351	1971CornU.T00A...	1Niell, A.E.; Fluxes and spectra of extragal. sources
C 133	1274	1986AJ...92..	371Gregory & Taylor: 4.79GHz Patrol of Northern Milky Wa
283	1194	1977A&AS...28..	313Pfleiderer: Radio Survey of Optically Bright
C 827	1054	2003A&A...403..	857Bondi+ VLA-VIRMOS Deep Field I. probing mJy sources
j 811	994	1984Uleid.T00R.150	1Windhort & Oppe: The 608.5 MHz catalogue,
742	912	2002MNRAS.329..	227Sadler+ Radio sources in the 2dF Galaxy Redshift Surv
C 197	799	1984PASAu...5..	290White; 408-MHz MDS2 survey near DEC--20d
553	696	1980AJ...85..	1010Adams+ A continuum radio survey of isolated galaxies
C 293	688	1985A&AS...61..	517Katgert-Merkelijn+ WSRT survey of Einstein deep areas
094	682	1993USydn.T00A...	1Unewisse: MOST 843MHz survey of southern ACO clusters
C 144	681	1986USydn.T00J...	1Reynolds J.E.: Radio Emission from Galaxies in Cluste
C 119	678	1991A&AS...87..	425Richter & Huchtmeier: HI of galaxies in nearby Zw clu
099-	674	1988Ap&SS.141..	303Broten, MacLeod & Vallee: RMS of Extragal. Sources
C 521	669	1988MNRAS.233...	87Singal: Cosmic Evolution of the physical sizes of
427	612	1984BFEUU...35....	1Kato+ Statistics of Radio Spectra of Extragal. Source
517	608	1998AJ...116..	516Ma+ International Celestial Ref.Frame as realized by
424	563	1993ApJS...88..	383Lu+ HI obs. and I-band CCD phot. of Virgo+antip. spir
j 724	557	2002MNRAS.333..	100Magliocchetti+ The 2dF Galaxy Redshift Survey: The
C 440	555	1981ApJS...45...	97Simard-Normandin+ Faraday RMS of Extragal. Radio Sour
C 632	550	1977AJ...82...	21Bridle+ 2.7GHz Variability of e-gal. sources II.
444	546	1982AJ...87..	517Morabito+ Arcsec Positions for mas VLBI nuclei
303	534	1990ApJS...72..	761Braun: 20cm VLA survey of continuum emission

N=45 199621 records

- most of the largest are unpublished
- many older ones recovered via OCR by HA
- large fraction available from CATS (SAO, Russia)

biggest non-radio catalogs of HA collection INPREP at CDS:

stat ###	Nrcs	BibCode	Author	Description
243	17711	1991MNRAS.253..485	Rowan-Robinson+	The QMW IRAS Galaxy Catalogue
452	15000?	1998A&AS...127..145	Bade+	The Hamburg/RASS Catalogue of optical identific
706	8155	2003AJ...125.2064	Gal, deCarvalho+	Northern Sky Optical Cluster Survey
567	2522	1997MNRAS.285..613	Heyl+	Autofib Redshift Survey (ARS) II. also 1994MNRAS
539	1572	1999ApJS...125...35	Struble & Rood;	A Compilation of Redshifts and Veloci
391	1491?	1997ApJS...110..227	deMello+	Catalog of Faint Interacting Galaxies in Pal
416	1421	1997ApJ...485..447	Dantas+	Evidence of substructure in the cluster of ga
735	1332	2003AJ...125.2307	Alonso+	Redshift-Distance Survey of Early-Type Galaxi
668	1034	1990ApJS...72..715	Teague, Carter & Gray;	Dynamics and structure of rich
557	919	2000MNRAS.313..469	Smith R.+	Streaming motions of galaxy clusters (919 o
656	795	2002ApJ...579...93	Postman+	The KPNO/Deerprange Distant Cluster Survey I.
617	772	2002ApJ...566..744	Lewis+	New X-ray Clusters in the EMSS I:
527	737	1999ApJ...520..491	Batuski+	Discovery of Extreme Examples of Supercluste
363	695	1992AJ...104..495	Malumuth+	Dynamics of Galaxy Clusters with Central Do
211	> 569	1994ApJS...94..551	Fichtel et al.	First EGRET Source Catalog
210	563	1992A&AS...96..389	deGrijs+	Warm IRAS sources II. Optical spectroscopy o
642	513	2002AJ...123.3018	Miller+	Redshifts for a Sample of Radio-Selected Poor

biggest non-radio catalogs of HA collection not at all at CDS:

2dF
SDSS
EDR

30-Jun-2003

747	245591	2003MNRAS.3xx..yyy	Colless+	2dFGRS Galaxy Redshift Survey: Final Data Re
736	152674	2003AJ...12x..yyy	Abazajian+	First Data Release of the Sloan Digital Sk
638	54008	2002AJ...123..485	Stoughton+	Sloan Digital Sky Survey: Early Data Relea
700	17438	2002A&ONL.101...16	Read+	6dF Galaxy Survey Early Data Release (6dFGS)
346	6925	1989MNRAS.239..459	Dixon+	The clusters of galaxies A2197 and A2199
223	6299	1986Antok...21...31	Yamagata, Tomihiko;	Photometry of 18 clusters of Gala
738	5341	2003AJ...4xx..yyy	Zickgraf+	The Hamburg/RASS Catalogue of optical ident
196	4903	1994MNRAS.267..431	Metcalfe+	Multicolor Photometry of the Shapley 8 clus
131	4600	1991MNRAS.248..483	Sutherland+	Optical IDs for southern IRAS galaxies
282	3892	1989MNRAS.237..799	Colless;	The dynamics of rich clusters II. Luminosity
116	3578	1983GCFMG.C.....0	Longo & GeVaucouleurs;	General Catalogue of Photoelec
707	3555	2003PASJ...xx..yyy	Goto+	Hdelta-Selected Galaxies in the SDSS I: The Cat
C 563	3113	2000ApJS...131..335	Rutledge+	XID: Cross-Association of ROSAT/Bright Sour
383	3084	1997ApJS...111...18	Small+ Norris	Survey of Corona Borealis Supercluster
107	2545	1991ApJS...75...935	DaCosta+	The O.N. Southern Sky Redshift Survey (SSRS)
710	2357	2003ApJ...5xx..yyy	Muno+	Deep Chandra Catalog of X-ray Point Sources tow
132	2326	1992UNPUB.....	Lebedev & Lebedeva;	Compilation of Redshifts of Galax
739	2014	2001A&AT...20..717	Vorontsov-Velyaminov+	Catalogue of Interacting Galaxi
320	1683	1996Natur.381..759	Lanzetta+	Star-forming galaxies at very high redshift
157	1600?	1993UNPUB.....	Dickey+	Catalog of Galaxies in the Hercules (A2151) C
677	1542	2002AJ...124.1918	Miller+	The MX Northern Abell Cluster Survey II:
187	1529	1976UToro.T00A....	Leir;	Notes on 1529 Abell clusters; MSc U.Toronto
269	1422	1985ApJS...57..665	Butcher & Oemler;	Evolution of Cluster Galaxies IV. P
732	1327	2000BSAO...50...5	Karachentsev+	List of peculiar velocities of RPOC gal
250	1298	1995ApJS...98..441	Gardner+	The IR faint galaxy survey
672	1185	1990ApJS...72..433	Huchra+	CIA redshift survey: Data for NGP+30 zone
663	1138	2002AJ...124.1266	Rines+	Mass profile of the infall region of the A2199
624	995	2001RMxAA...37..115	Kimeswenger;	Optical Coordinates of southern planetar
450	991	1989AJ...97...786	Hughes V.A. & MacLeod;	The use of IRAS data to define
127	862	1991UNPUB.....	Drinkwater;	Quasar candidates from 6 UKST plates (see
364	819	1992ApJS...80..257	Elvis+	The EINSTEIN Slew Survey
731	799	2003ApJS...14x..yyy	Sahcall N.+	Merged Catalog of Clusters of Galaxies fr
109	777	1991MNRAS.248..528	Allen+	Redshifts of Southern IRAS galaxies
164	743	1989AJ...97.1319	Calvani+	Optical and Radio Properties of E and S0 gal
175	738	1986AJ...91..478	Koo+ List of	Galaxies in the Cluster II Zw 1305.4+294
C 451	698	1974Ap&SS...27...3	Marsalkova;	A comparison catalogue of HII regions
206	697	1994UNPUB.....	Remillard;	HEAO-1 MC-LASS Catalog of identified, hard
640	640	2002AJ...123.2990	Bernardi+	Redshift-Distance Survey of Early-type Gala
221	637	1991MNRAS.249..662	Pliconis, Barrow, Franck;	Projected and intrinsic shape
681	591	1998BAAS...30..864	Lavery & Henry;	Velocity Dispersion & X-Ray Structure
179	584	1991AJ...102.1581	Beers+	Redshift survey of 12 Abell clusters of Galaxi
715	570	1986MNRAS.220..679	Dickens+	The Centaurus Cluster of Galaxies II. The da
671	524	1986MNRAS.221..233	Peterson+	A complete galaxy redshift sample III. Meth
213	504	1993UMuni.T00A....	Ebeling;	Bright ACO clusters in the ROSAT All-Sky

2001