

# The XMM-Newton Science Archive (XSA)





## Content of the XSA:

- > 10900 pointed observations
- > 3100 slew observations
- > > 143000 Slew Survey sub-exposures
- 531,261 EPIC sources (3XMMi-ØR4 cata
- 5,595,331 OM sources (OM-SUSS2 cata
- 41.423 Slew Survev sources (XMMSL1 I









#### 14th SAS Workshop

2 – 6 June 2014 XMM-Newton Science Operations Centre European Space Astronomy Centre, Madrid, Spain





XMM-Newton Science Archive (XSA)





## XSA usage cases

- Search for observations of a given target or list of targets to download ODFs, to analyse them with SAS and extract sources, and get their total flux, spectra and light curves.
- Quick look view of the associated information for a given observation: exposures modes/filters, postcard images, related publications, quality reports.
- First look at the list of results: save list, open list with TOPCAT, or open image with ds9 or Aladin.
- Search for specific type of data, i.e. timing exposures for binary stars.
- Search catalogues.
- Direct download data using AIO.







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#### XMM-NEWTON

eesa

14th SAS Workshop 2 – 6 June 2014 XMM-Newton Science Operations Centre European Space Astronomy Centre, Madrid, Spain

#### List of results

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Resu	ilts #1	×																
OBS	ERVA	10NS (164) 🗙	EXPOSURE	(1788) <b>)</b>	EPIC EXPOSURES	(442) 🕷 🕺 OM EXPOS	URES (1049) 🕷 🗍 RG	S EXPOSURE	S (297) 🗙	EPIC PPS SOURCES	(6301) 🗙 🗍 OM PPS S	OURCES (36	8992) 🕷 📔 EPIC SOURCE CAT (	(5113) 🗙 🕺 OM SOURCE (	CAT (33830) 🕷 🛛 SLE	EW SOURCE CAT (56	₀× SL	EW OBSERVATIO
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R	8 1	0007421	01	in a get	Galactic Plane 10	13h 57m 21.99s	-61d 01' 22.8'	115.4	213	2001-02-06 23:31:36	2001-02-07 03:10:11	13115	EXTENDED GALACTIC OR EXTRAGALACTIC	Parmar, Arvind	GO	Public data	003	00000004_04_cat9
	8	0024940	01		WR110	18h 07m 55.96s	-19d 23' 95.9'	90.9	235	2001-03-22 01:40:28	2001-03-22 08:52:10	25902	WOLF RAYET STAR WNS	Skinner, Stephen	GO	Public data	003	00000004_04_caf
Q		0040140	01		WR114	18h 23m 16.29s	-13d 43' 26.0'	87.8	419	2002-03-23 13 51 51	2002-03-23 18:44:00	17529	WOLF RAYET STAR WC5	Ignace, Richard	GO	Public data	004	00000004_04_caf9
0		0040140	01	-	WR1	00h 43m 28.39s	+64d 45 35.4*	40.1	494	2002-06-21 00:08:23	2002-08-21 02:46:31	9488	WOLF RAYET STAR WN5	Ignace, Richard	GO	Public data	005	00000004_04_cat
R	4	0040140	01 NA		WR114	18h 23m 16.29s	-13d 43' 26.0'	87.8	419	2002-03-25 00 30 36	2002-03-25 02:27:34	7018	WOLF RAYET STAR WC5	Ignace, Richard	GO	Public data	004	12.09_20130826
0	8 1	0040140	01	NA	WR114	18h 23m 16.29s	-13d 43' 26.0'	87.8	419	2002-03-23 12:33:15	2002-03-23 13 45.08	4313	WOLF RAYET STAR WCS	Ignace, Richard	GO	Public data	004	00000004_04_cat
Q		0090030	01	1	HD 113904	13h 08m 07.18s	-65d 18 22 8°	290.9	845	2004-07-20 11:21:43	2004-07-21 20:36:35	119692	WOLF RAYET STAR WCS	Maeda, Yoshitomo	GO	Public data	004	00000004_04_cat
Q		0092790	01			06h 54m 12.97s	-23d 55 42.0°	112.7	346	2001-10-29 21 28 52	2001-10-30 01:03:16	12864	UNDEFINED	Skinner, Stephen	GO	Public data	004	00000004_04_cat
		0093670	01	0-	RX J1713.7-3941	17h 11m 53.01s	-39d 55 59.0*	274.4	320	2001-09-07 23 55 07	2001-09-08 04 25 21	16214	SNR SHELL TYPE II	Decourchelle, Anne	GO	Public data	004	00000004_04_ca#
Q		0093670	01	-	RX J1713.7-3941	17h 13m 28.02s	-396 49 44.0"	93.6	225	2001-03-02 17:39:37	2001-03-02 21:45:35	14758	SNR SHELL TYPE II	Decourchelle, Anne	GO	Public data	003	0000004_04_cat
		0103262	601	$\square$	PSR 80136+57	01h 39m 19.77s	+58d 14 31.9"	255	569	2003-01-16 19:28:19	2003-01-16 21:48:58	8439	RADIO PULSAR	Jansen XMM-Newton PS. Fred	GO	Public data	004	00000004_04_cat
Q		0109110	01	( Hereight	WR45	12h 05m 18.99s	-624 03 08.0'	141.7	397	2002-02-08 02 05 52	2002-02-08 23 22:57	76625	WOLF RAYET STAR WN3	Mason, Keith	GO	Public data	005	00000004_04_cat
2		0109280	01		WR40	11h 06m 16.99s	-65d 30' 35.0°	170.5	405	2002-02-23 23 48 14	2002-02-24 06:36:48	24514	WOLF RAYET STAR WNB	Mason, Keith	GO	Public data	005	0000004_04_cat
Q	8	0109470	01	-	WR 22	10h 41m 17.98s	-59d 40' 37' 0'	308.9	287	2001-07-04 15:10:56	2001-07-04 18:50:15	13159	WOLF RAYET STAR WN7	Mason, Keith	GO	Public data	003	00000004_04_cat
R		0109470	01		WR 22	10h 41m 17.98s	-59d 40' 37.0'	317.1	291	2001-07-11 10:08:56	2001-07-11 13:47:25	13109	WOLF RAYET STAR WN7	Mason, Keith	GO	Public data	003	00000004_04_ca8
0	8	0109470	01	-	WR 22	10h 41m 17.98s	-596 40' 37.0'	333.6	301	2001-07-31 04:38:44	2001-07-31 08:17:06	13102	WOLF RAYET STAR WN7	Mason, Keith	GO	Public data	005	00000004_04_cat
2		0109470	01	-	WR 22	10h 41m 17.98s	-596 40' 37.0'	338.6	304	2001-08-06 04:08:50	2001-08-06 07 48:40	13190	WOLF RAYET STAR WN7	Mason, Keith	GO	Public data	004	00000004_04_cat
Q		0109470	01		WR 22	10h 41m 17.98s	-50d 40' 37.0'	2.2	307	2001-08-13 11:59:31	2001-08-13 15 14:06	11675	WOLF RAYET STAR WN7	Mason, Keith	GO	Public data	004	00000004_04_ca
		0109470	01	(	WR 22	10h 41m 17.98s	-59d 40' 37.0'	122.4	375	2001-12-26 22 53 00	2001-12-27 02:33:11	13211	WOLF RAYET STAR WN7	Mason, Keith	GO	Public data	005	00000004_04_cat
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#### Quick look at the results found

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		۵	0693540401	69		23591+2312	00h 01m 41.91s	+23d 29' 45.0"	240.1	2398	2013-01-12 04:56:54	2013-01-12 09:55:31	17917	Summary Exposures Publications	
	3	P	0655300101	20		2PIGG_1520	00h 01m 54.00s	-34d 47' 43.8"	54.8	1914	2010-05-22 22:33:42	2010-05-23 07:25:37	31915	Title	BibCode
		P	0204790101			WLM	00h 01m 57.90s	-15d 27' 50.0*	247.6	740	2003-12-23 23:05:47	2003-12-24 02:24:35	11928	XMM-Newton observations of three poor clusters: Similarity in dark matter and entropy profiles down to low mass	2005A&A429791P
		۵	0041750101	100		BLANCO1	00h 02m 47.99s	-30d 00' 00.0"	66.4	461	2002-06-15 19:38:36	2002-06-16 10:09:46	52270	The structural and scaling properties of nearby galaxy clusters. I. The universal mass profile	2005A&A4351P
		ø	0016140101	5		RX J0002+6246	00h 02m 55.50s	+62d 46' 17.2"	30.5	312	2001-08-22 16:40:33	2001-08-23 02:30:38	35405	Chandra Temperature Profiles for a Sample of Nearby Relaxed Galaxy Clusters	2005ApJ628655V
		ø	0653290101	1		CIG 1 north	00h 03m 05.60s	-01d 48' 50.0"	245.7	2012	2010-12-04 05:58:44	2010-12-04 12:29:00	23416	Structure and scaling of the entropy in nearby galaxy clusters	2006A&A446429P
		P	0653290201	183		CIG 1 south	00h 03m 05.60s	-02d 00' 50.0"	245.6	2012	2010-12-04 16:48:36	2010-12-05 00:00:30	25914	Modelling the formation of galaxy clusters in	2006MNRAS.366969N
		P	0652010401		(married	RXCJ0003.1-0605	00h 03m 11.63s	-06d 05' 31.2"	66.4	1929	2010-06-21 19:27:21	2010-06-22 05:49:14	37313	Galaxy cluster masses without non-baryonic dark	2006MNRAS.367527B
		P	0145020201		Hint	A 2717	00h 03m 12.89s	-35d 56' 12.3"	252.7	558	2002-12-26 13:13:38	2002-12-27 04:17:56	54258	Calibration of the galaxy cluster M{500}-Y{X}	2007A&A474L37A
		P	0103060301			Q0000-263	00h 03m 22.89s	-26d 03' 16.8"	70	466	2002-06-25 08:05:06	2002-06-25 22:07:23	50537	A catalog of galaxy clusters observed by XMM-	2008A&A478615S
	3	P	0103060501	N/A		Q0000-263	00h 03m 22.89s	-26d 03' 16.8"	70	466	2002-06-25 07:11:02	2002-06-25 07:46:23	2121	Intracluster Medium Entropy Profiles for a	2009ApJS., 182., 12C
	3	P	0602830101			G 266-33	00h 03m 41.47s	-28d 23' 46.3"	244.3	1833	2009-12-11 19:47:21	2009-12-11 22:35:59	10118	Changra Archival Sample of Galaxy Clusters The X-ray/SZ view of the virial region. I.	2013A&A551A22E
	3	P	0201900101	(2)		RXCJ0003.8+0203	00h 03m 50.56s	+02d 03' 48.2"	66.3	832	2004-06-24 15:19:45	2004-06-24 22:48:19	26914	I nermodynamic properties	
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	3	ø	0556210201	60		SDSS000524.83-084502	00h 05m 24.82s	-08d 45' 02.9"	64	1554	2008-06-03 19:03:33	2008-06-03 22:22:09	11916		
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#### Quick look at the images/spectra of the target searched

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#### **Advanced search**

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#### AIO system for direct data download

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	3. ACCESS US	ING URL's										
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xmm-newton Nora Loiseau





#### Direct data download via URL

 Retrieve ODF and PPS for a given observation: http://nxsa.esac.esa.int/nxsa-sl/servlet/data-action-aio?obsno=0144090201

Retrieve ODF only:

http://nxsa.esac.esa.int/nxsa-sl/servlet/data-action-aio?obsno=0144090201&level=ODF

 Retrieve PPS only: http://nxsa.esac.esa.int/nxsa-sl/servlet/data-action-aio?obsno=0144090201&level=PPS

Retrieve all files for a given instrument (MOS1):
 http://nxsa.esac.esa.int/nxsa-sl/servlet/data-action-aio?obsno=0144090201&instname=M1

Retrieve all fits PPS files for a given instrument (MOS2): http://nxsa.esac.esa.int/nxsa-sl/servlet/data-action-aio?obsno=0144090201&extension=FTZ&instname=M2&level=PPS

- Retrieve all files for a specific exposure (S402) -> flag (S-scheduled) and exp number (402): http://nxsa.esac.esa.int/nxsa-sl/servlet/data-action-aio?obsno=0505720401&expflag=S&expno=402&level=PPS
- Retrieve all specific file type (IMAGE\_ files) for a given observation: http://nxsa.esac.esa.int/nxsa-sl/servlet/data-action-aio?obsno=0505720401&name=IMAGE\_&level=PPS
- Retrieve proprietary data, in this case an ODF (where PPPPPOOOO is the proprietary Observation ID, and replace <username> and <pwd> by the privileged user/password):

http://nxsa.esac.esa.int/nxsa-sl/servlet/data-action-aio?obsno=PPPPPPOOOO&level=ODF&AIOUSER=<username>&AIOPWD=<pwd>

Retrieve FTZ spectra files for source number is 001: http://nxsa.esac.esa.int/nxsa-sl/servlet/data-action-aio?obsno=0505720401&sourceno=001&name=SRSPEC&extension=FTZ







#### **Command line data download**

- Download and untar aioclient files from <a href="http://nxsa.esac.esa.int/nxsa-web/#aio">http://nxsa.esac.esa.int/nxsa-web/#aio</a>
   tar -xvf aioclient.tar
- Go to the directory where the AIO client has been extracted:
   > cd nxsa-cl-aioclient-8.2/
- Add execute permission to "aioclient" :
  - > chmod u+x aioclient
- The parameters accepted are the same as the ones of the direct URL access. The command line form is:
- > ./aioclient -L "GET obsno=<obsId> [<param1>=<value1>] ... [<paramN>=<valueN>]" [-O <output DIR>][-prop]
- Examples:
  - > ./aioclient -L "GET obsno=0701381101 level=PPS"
  - > ./aioclient -L "GET obsno=0112570401 instname=M1 name=IMAGE\_ extension=PNG"
- For proprietary data one has to previously define the login parameters:
- For C shell: > setenv AIOUSER your\_xsa\_user
  - > setenv AIOPWD your\_xsa\_pwd
- For bash: > export AIOUSER=your\_xsa\_user
  - > export AIOPWD=your\_xsa\_pwd

> ./aioclient -L "GET obsno=0741330101 level=PPS" -prop





#### **ODF** data for hands-on sessions - Three options:

#### 1. Use your own data

#### 2. Download your favorite data from the XSA Archive

http://xmm.esac.esa.int/xsa/

a) Using XSA interface:

http://nxsa.esac.esa.int/nxsa-web/#search

b) Direct download:

i) via URL:

http://xsa.esac.esa.int:8080/aio/jsp/product.jsp?obsno=0112570401&level=ODF

ii) via aioclient commands:

./aioclient -L "GET obsno=0701381101 level=ODF"

3. Use provided ODFs (by E. Ojero)

