Status of the XMM-Newton Science Archive

XMM-Newton Users' Group Meeting #24

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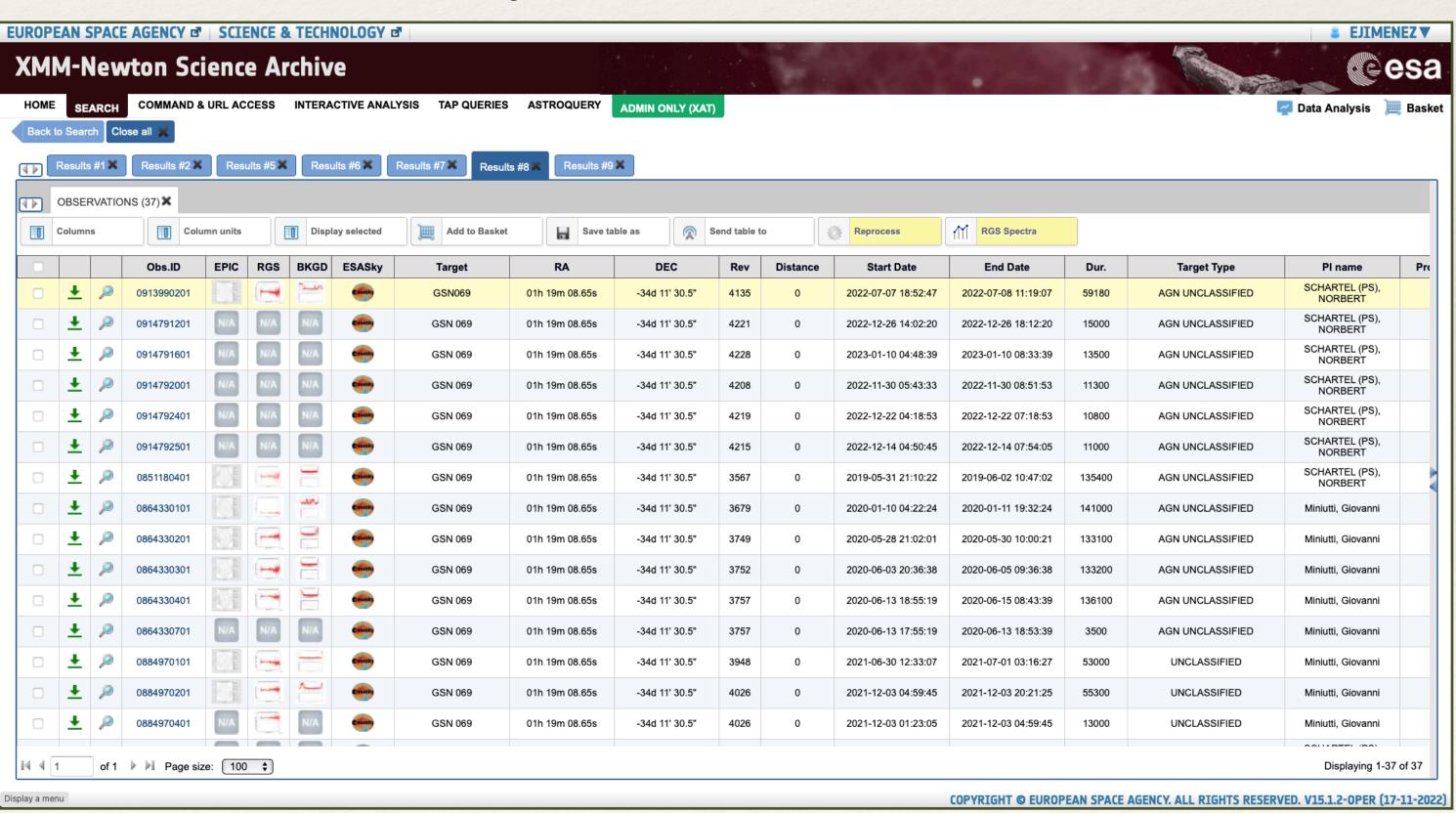# Status of XMM-Newton Science Archive

CONTENT

1. XSA in a Nutshell:

- Data in the Archive
- How to Access Data

2. XSA Current Status

3. Completed activities during last period

4. Near Future Projects

5. Other Ideas

1. THE XSA IN A NUTSHELL

1. Data Content

- XSA is massive and rich archive which stores the **XMM-Newton data**.

- Pointing observation data (scientific raw data, results of the pipeline, slew observations and calibration) are well presented, **easy accesible** and with many **features and tools**.
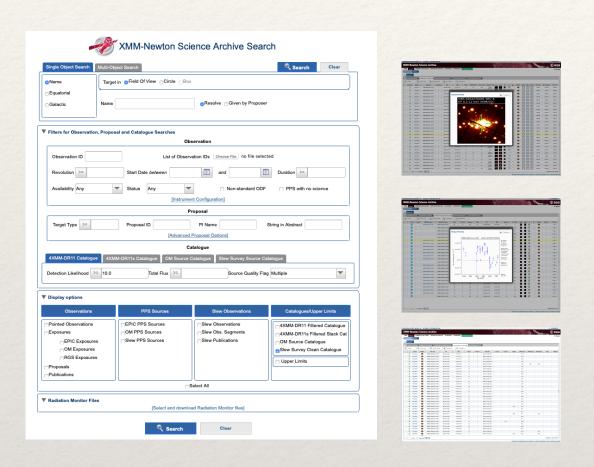
- Apart from these *standard* data, **several catalogues** based on XMM-Newton data are included in the XSA: **4XMM** XMM-Newton EPIC sources (single and stacked), OM sources catalogue, also Slew Catalogue
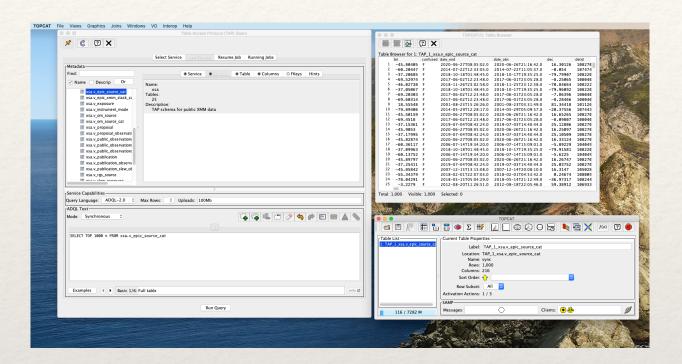
Status of XMM-Newton Science Archive

1. THE XSA IN A NUTSHELL

2. Data Access

Web Interface

TAP queries

Astroquery
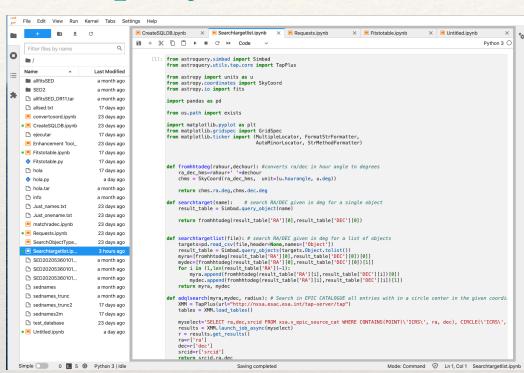
astroquery.esa.xmm_newton

Direct access

❖ User Friendly

❖ Visual

❖ Flexible

❖ Complete (but filtered) in content and features

❖ Base on ADQL Language

❖ Useful to search content information (some limits applied in the web interface are not applied here)
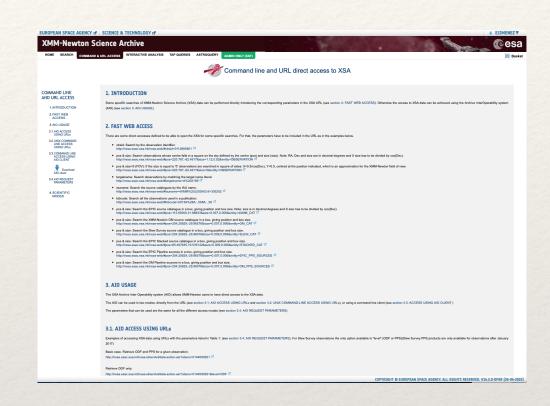
❖ NO ODF/PPS or products download

❖ Based on python

❖ In fast development although many features need to be implemented as the access to products.

❖ Use of TAP queries

❖ Fast access

❖ Command line: scriptable

❖ Data can be download but not all products are available

2. XSA CURRENT STATUS
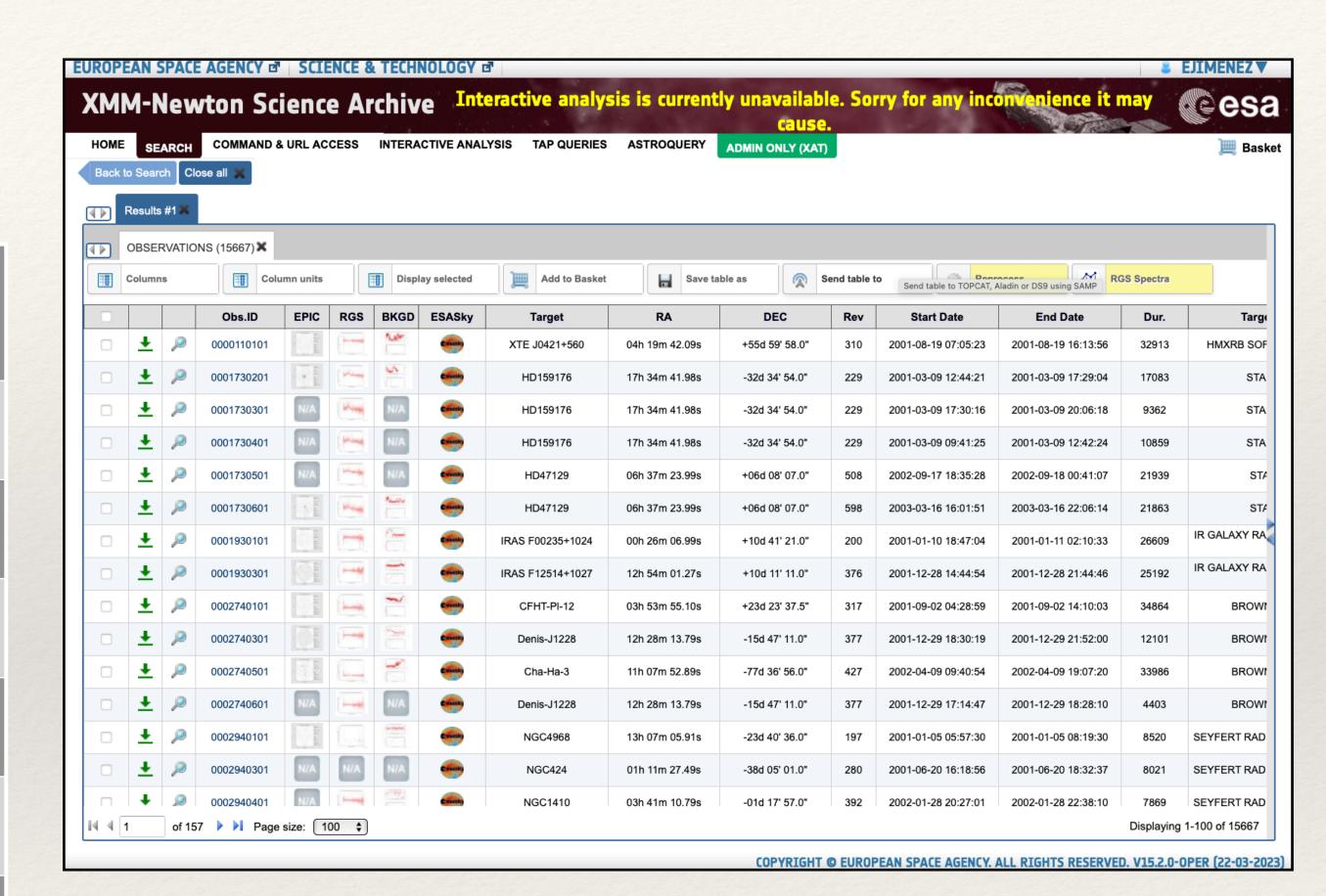
XSA-14.3
7th June 2022

XSA-15.0
4th July 2022
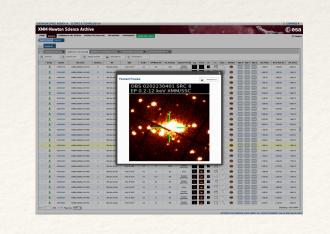
XSA-15.1
19th October 2022
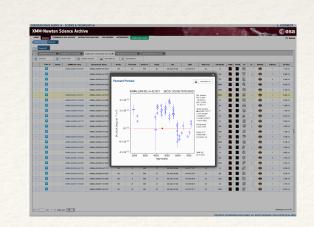
XSA-15.2
23th March 2023

	XSA-15.2 17 April 23	XSA-14.2 26 April 22
Pointed Observations	15,667	14,962
EPIC PPS sources	1,040,356	1,002,161
OM PPS Sources	13,315,633	13,033,588
Slew Survey PPS Sources	99,766	78,489
Slew Observations	5,161	4,971
Radiation Monitor Files	Up to Rev 4079	Up to Rev 3000
Proposals	4,394	4,251

2. XSA CURRENT STATUS

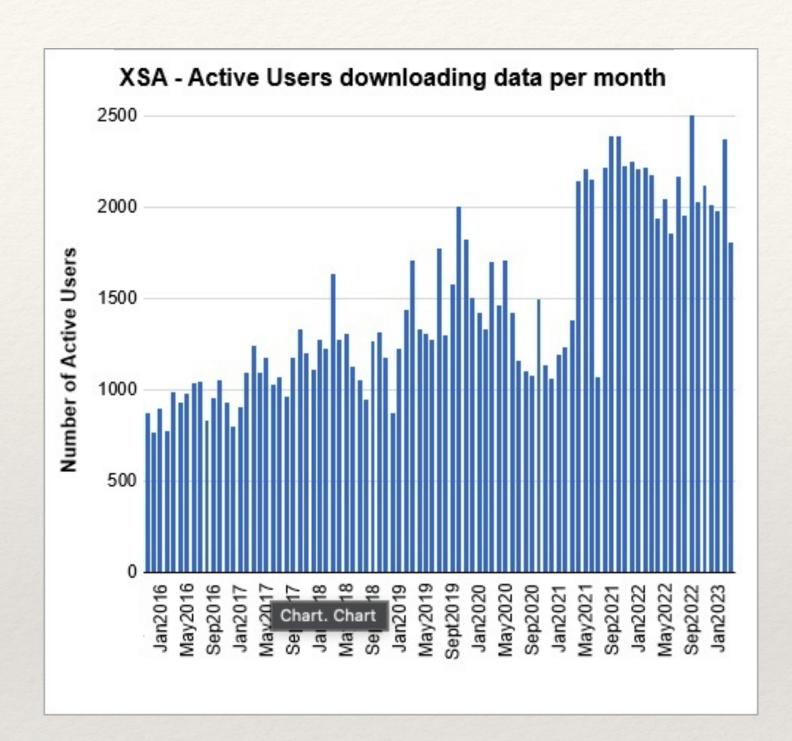|	XSA-15.2 17 April 23	XSA-14.2 26 April 22
4XMM Catalogue of Serendipitous Sources	**929,270 (681,993)**	895,415
4XMM EPIC Stacked Catalogue	**386,043(274,812)**	358,809
OM Sources Catalogue (OM-SUSS5.0)	**8,863,922**	8,863,922
Clean Slew Survey Catalogue (XMMSL2)	**72,352**	72,352

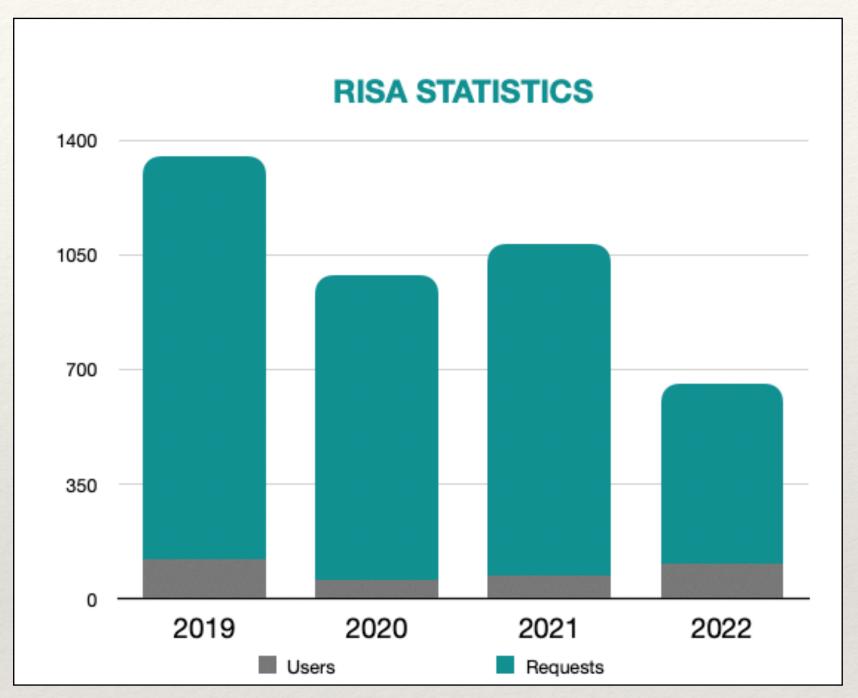### DOWNLOAD FULL XMM-NEWTON CATALOGUES AND DATASETS

Alongside all XMM-Newton scientific data products and observation-related information, high-level catalogues and a multiwavelength datasets can be accessed through the XSA or downloaded from the links below:

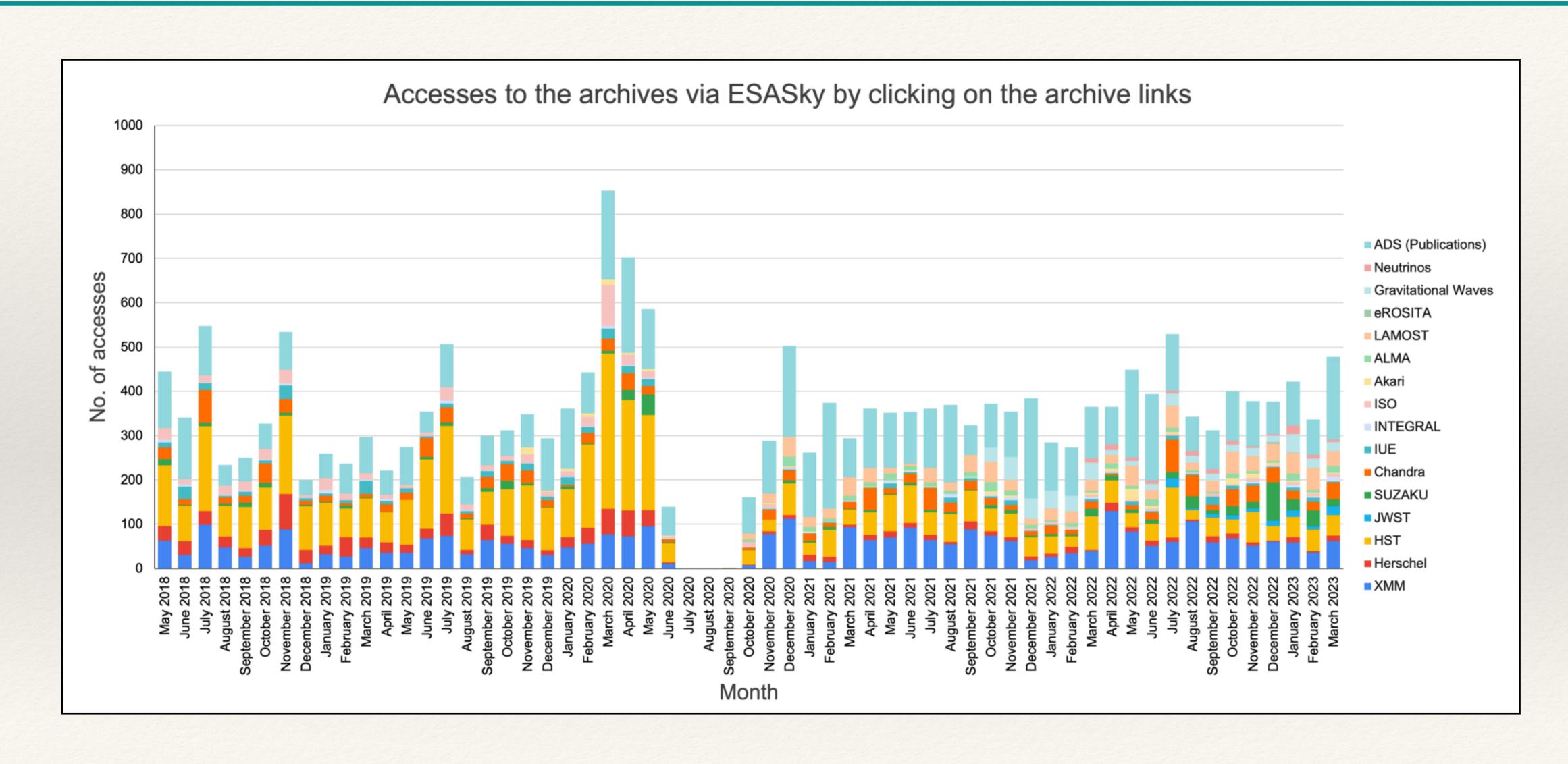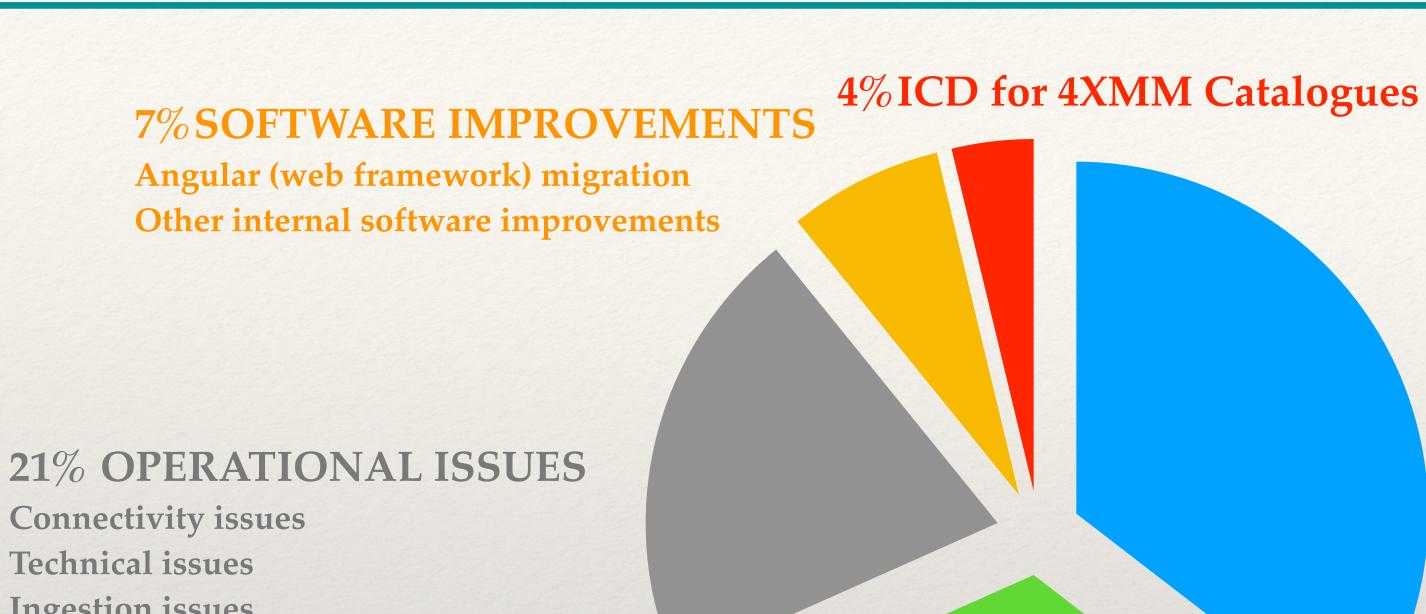|		
4XMM-DR12 XMM-Newton *New* Serendipitous Source Catalogue	Download the FITS table Download the CSV table	Documentation and watchouts (by the SSC consortium)
Slim version of the *New* **4XMM-DR12** catalogue	Download the FITS table Download the CSV table	Documentation and watchouts (by the SSC consortium)
4XMM-DR12s *New* **Stacked Catalogue**	Download the FITS table Download the stacked sources FITS table Download the stacked observations FITS table	Documentation (Maintained by the SSC consortium)
XMM-DR11 SEDs	Download all SED FITS files	Documentation: Webb et al. 2020A&A...641A.136W (sect 9.1 and Table 4)
4XMM-DR9 Multi-Object Coverage maps (MOC) Fits Files	Download MOCs for individual observations Download the whole 4XMM-DR9 field MOC	Documentation (Maintained by the SSC consortium)
The XMM-Newton **Slew Survey** **XMMSL2** Source Catalogue	Download the FITS table (FULL) Download the FITS table (CLEAN)	Documentation
XMM-OM-SUSS5 XMM-Newton Serendipitous UV Source Survey Catalogue	Download the FITS table Download the FITS table (SLIM version)	Documentation and watchouts
XMM-Newton OM Bright Sources Catalogue	Download the FITS table	Documentation
Spectral Fit Catalogues	3XMM-DR7 spectral fit catalogue XMMFITCAT 3XMM-DR6 photo Z catalogue XMMPZCAT 3XMM-DR6 spectral fit Z catalogue XMMFITCAT-Z	Documentation (Carried out by an ESA-PRODEX funded collaboration between European institutes and the SSC)

2. XSA CURRENT STATUS

Accesses to the archives via ESASky by clicking on the archive links

Status of XMM-Newton Science Archive

4% ICD for 4XMM Catalogues

7% SOFTWARE IMPROVEMENTS
Angular (web framework) migration
Other internal software improvements

35% AUTOMATISATION OF CATALOGUE INGESTION
4XMM Serendipitous Sources and Stacked Catalogues
The XMM-Newton Slew Sources Catalogue
The XMM-Newton UV Sources Catalogue

21% OPERATIONAL ISSUES
Connectivity issues
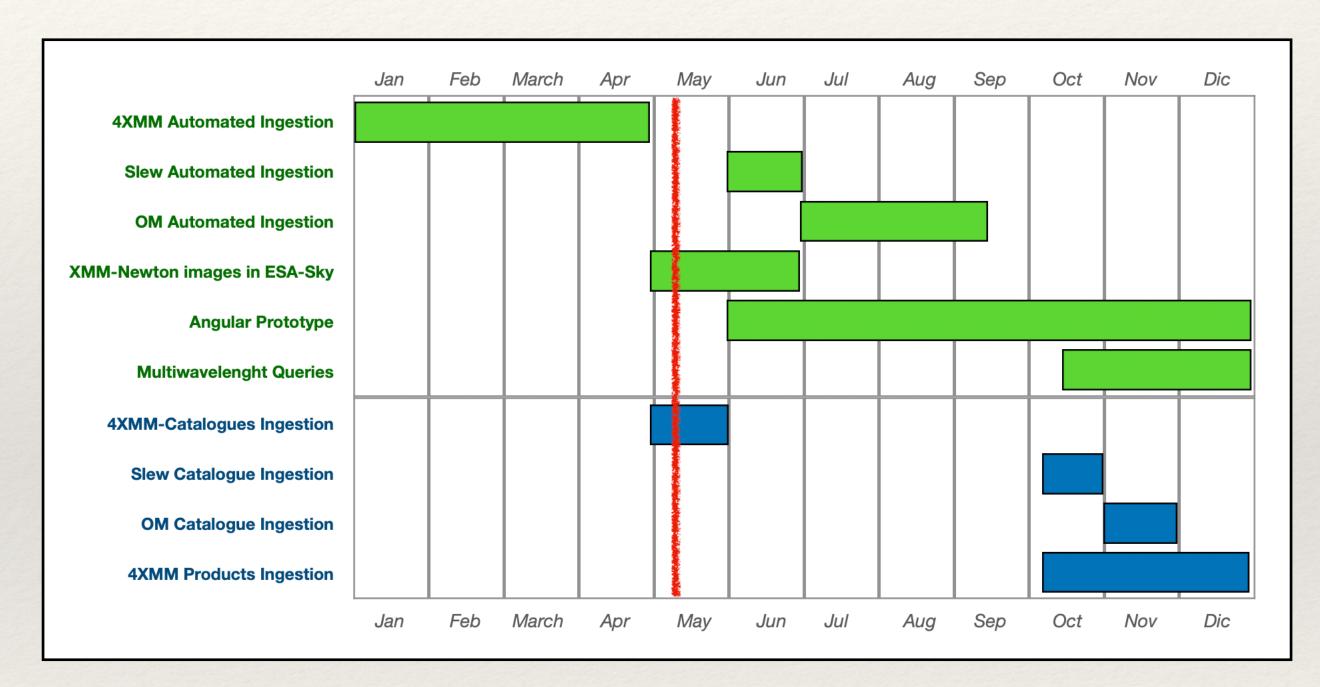Technical issues
Ingestion issues

33% ROUTINE OPERATIONS
4XMM Catalogue Ingestion
Radiation Monitor Files Ingestion
Releases

4. NEAR FUTURE PROJECTS

Projects for next period

- **Finalised Automatisation of the Catalogue Ingestion**

- **Ingestion of the 4XMM Catalogues**

- **Ingestion of the XMM-Newton Slew Catalogue**

- **Ingestion the OM-SUSS-6.0 Catalogue**

- **Web Framework Migration: Angular**

- **Include XMM-Newton Images & footprints in ESA-Sky**

- **Multiwavelength Searches**: *The UG recommends that the XSA enables queries that make use of the multi-wavelength information included in the catalogue (2021-06-10/07)*
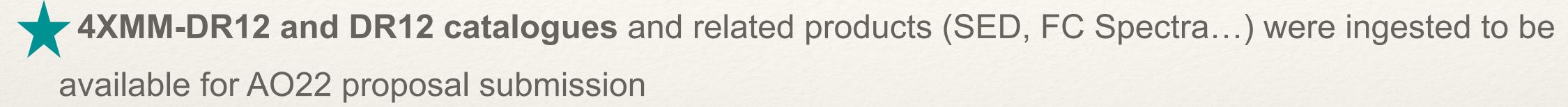
Tentative Plan for 2023

5. Other Ideas

- Include XMM-Newton Gallery and Outreach pictures in XSA (suggested by PS)

- Anonymous download of multiple observations (suggested by PS)

- Further develop XMM-Newton astroquery module

- Visual display of selected products: EPIC-spectra, OM …

- Advanced ADQL searches in the web XSA.

- Link to other ESA missions observations of the same field or object

- **Other suggestion by Users's Group**

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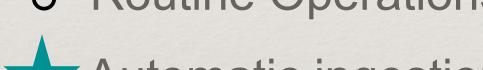
SUMMARY

Current period

o **Operations** have run smoothly

★ **4XMM-DR12 and DR12 catalogues** and related products (SED, FC Spectra…) were ingested to be available for AO22 proposal submission

o Main goals of the period were related to **automatisation** of internal processes. Extended to next period
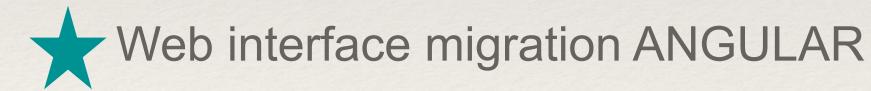
For next period

o Routine Operations

★ Automatic ingestion of 4XMM-DR13 and 4XMM-DR13s catalogues and products

o Automatic ingestion of the OM-SUSS-6.0

o Automatic ingestion of XMM-Newton Slew Catalogue

★ Web interface migration ANGULAR

o Implement multiwavelength searches

o New XMM-Newton images and footprints sent to ESA-Sky

o Other suggestion by Users's Group