An XMM-Newton Science Archive for the next decade and its integration into ESASky

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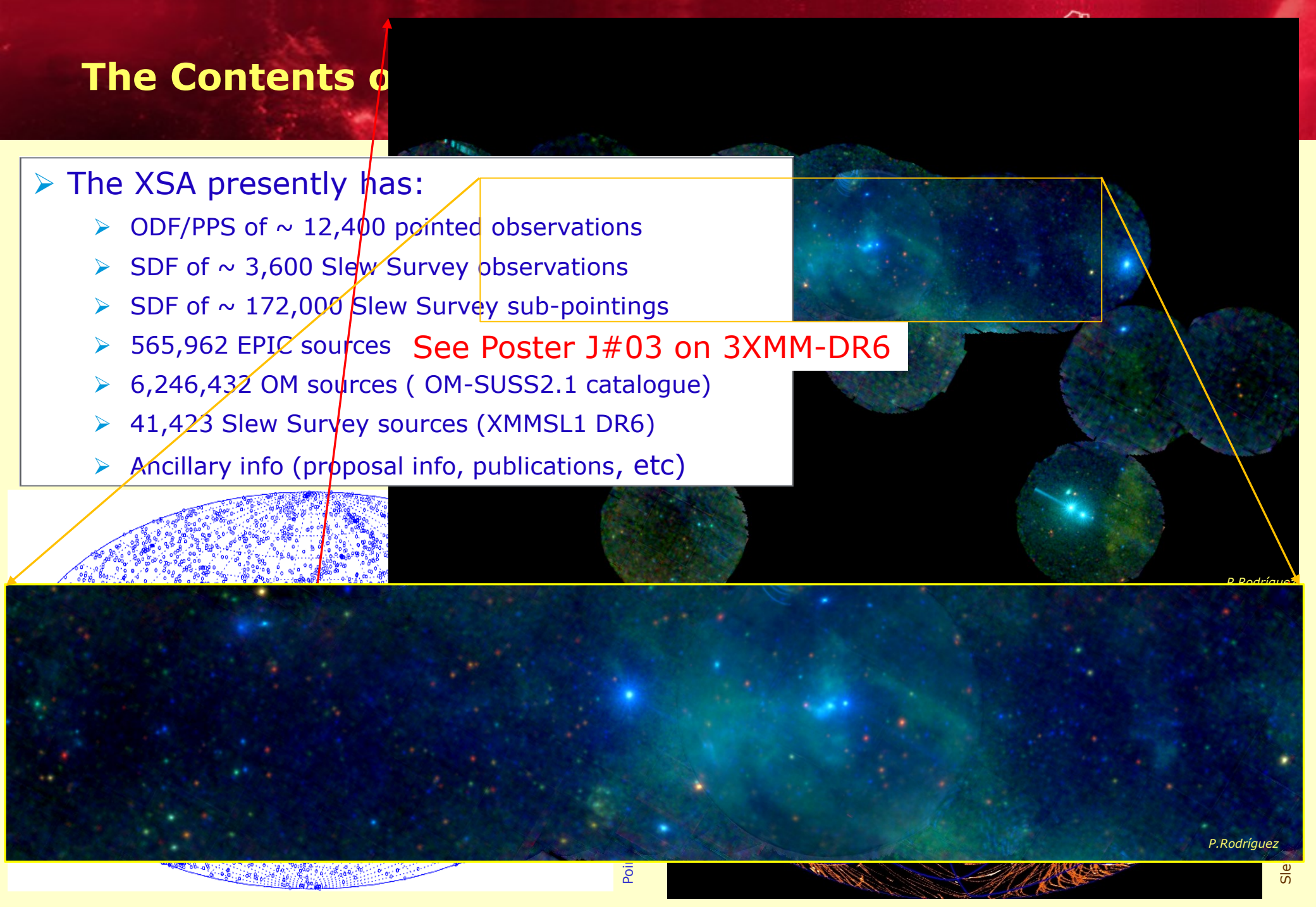
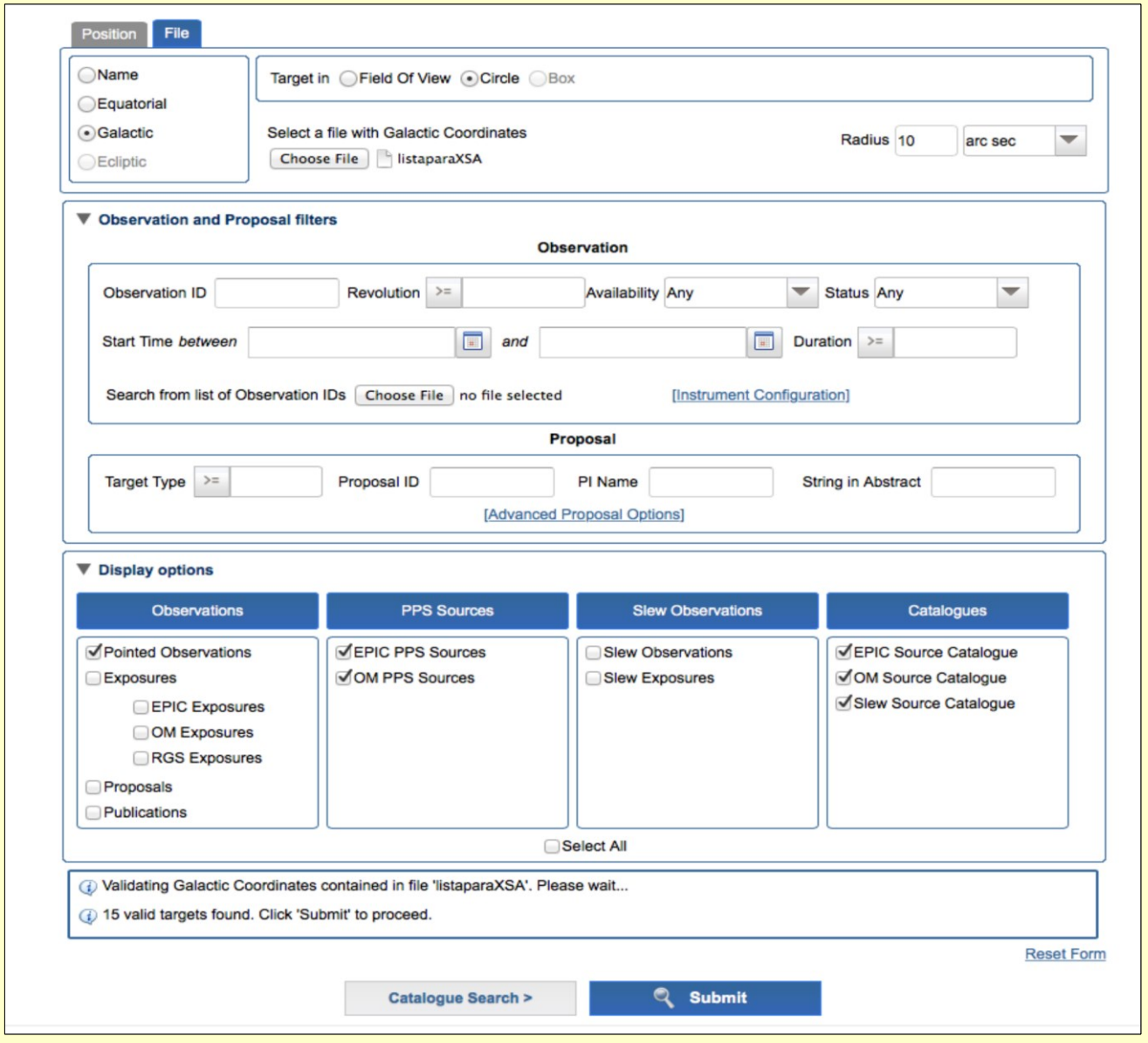
The Contents o

- The XSA presently has:
  - ODF/PPS of ~ 12,400 pointed observations
  - SDF of ~ 3,600 Slew Survey observations
  - SDF of ~ 172,000 Slew Survey sub-pointings
  - 565,962 EPIC sources
  - 6,246,432 OM sources (OM-SUSS2.1 catalogue)
  - 41,423 Slew Survey sources (XMMSL1 DR6)
  - Ancillary info (proposal info, publications, etc)

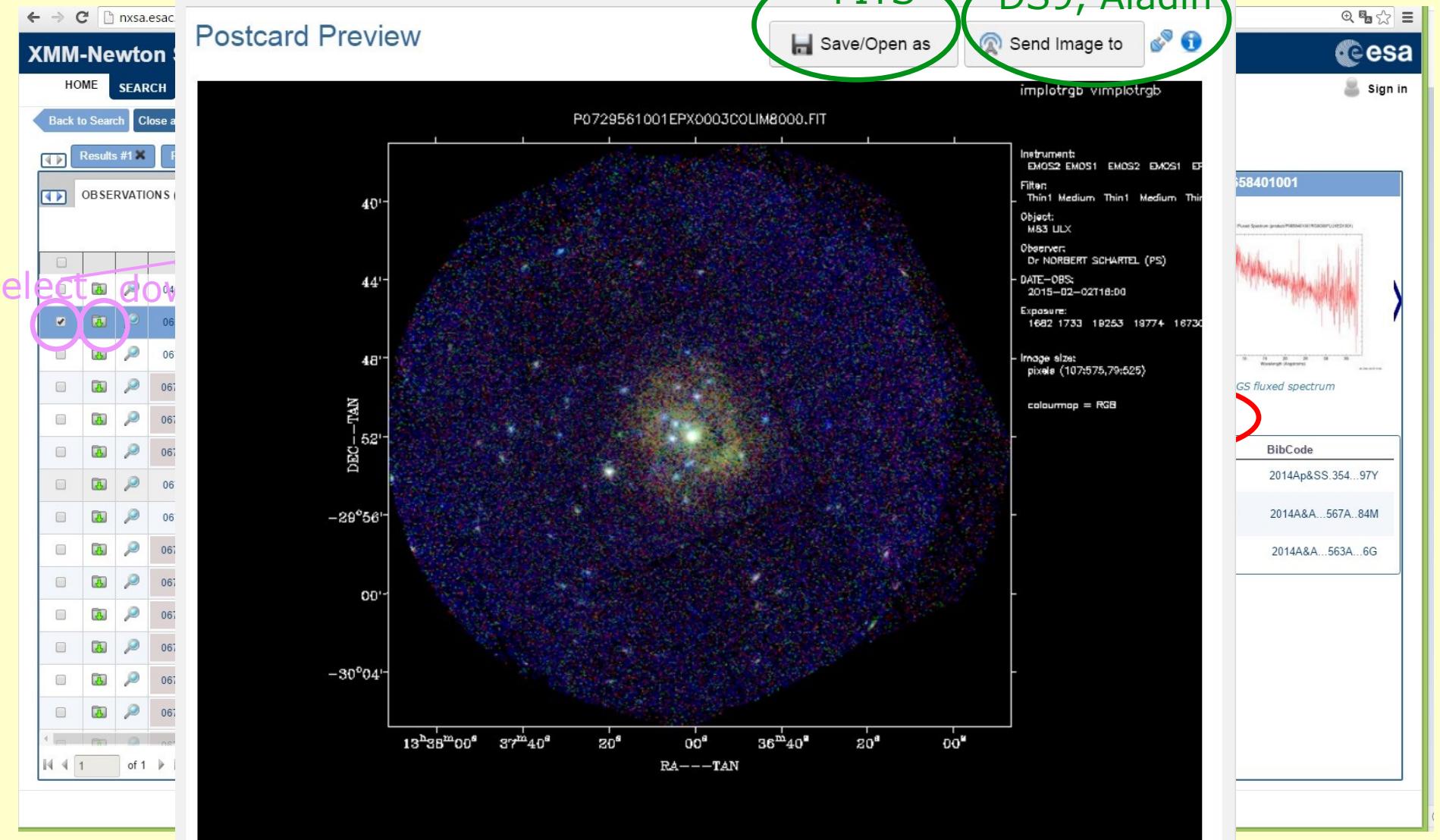
See Poster J#03 on 3XMM-DR6



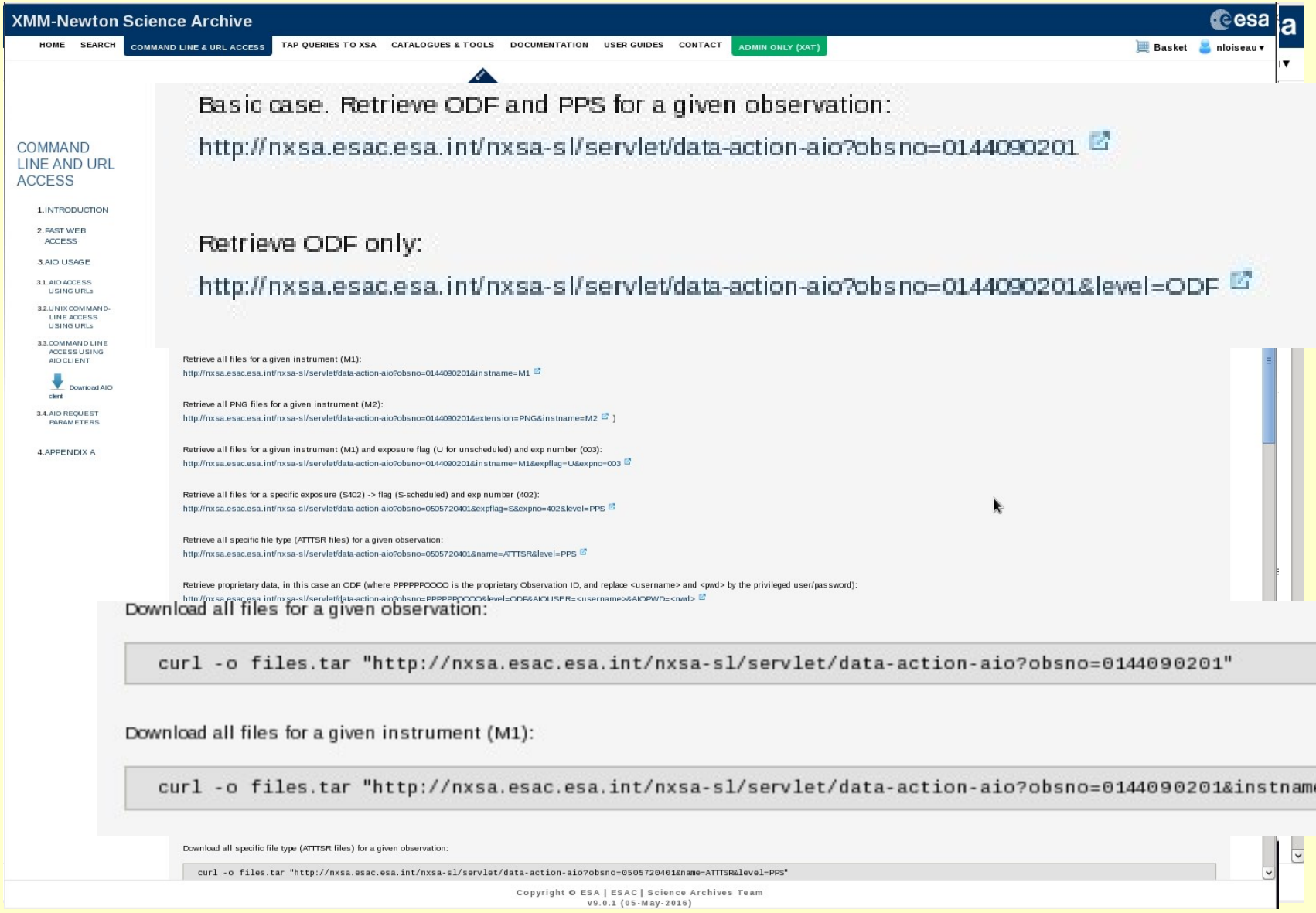
The XSA Web Interface
http://nxsa.esac.esa.int/



The Results Page



Direct data access: Command line & URL
http://nxsa.esac.esa.int/#aio



TAP queries to XSA

TAP QUERIES TO THE XSA DATABASE

1. INTRODUCTION

The XSA database content, including catalogues, can be queried via the Table Access Protocol (TAP) (see: http://www.ivoa.net/documents/TAP/).

The default query language for TAP is ADQL (Astronomical Data Query Language, (see http://www.ivoa.net/documents/latest/ADQL.html), which includes most features of SQL plus some spatial search functions.

TAP service can process synchronous (immediate) or asynchronous (batch job) queries (see: XSA User Guide).

XSA TAP can be accessed via TOPCAT or by command line.

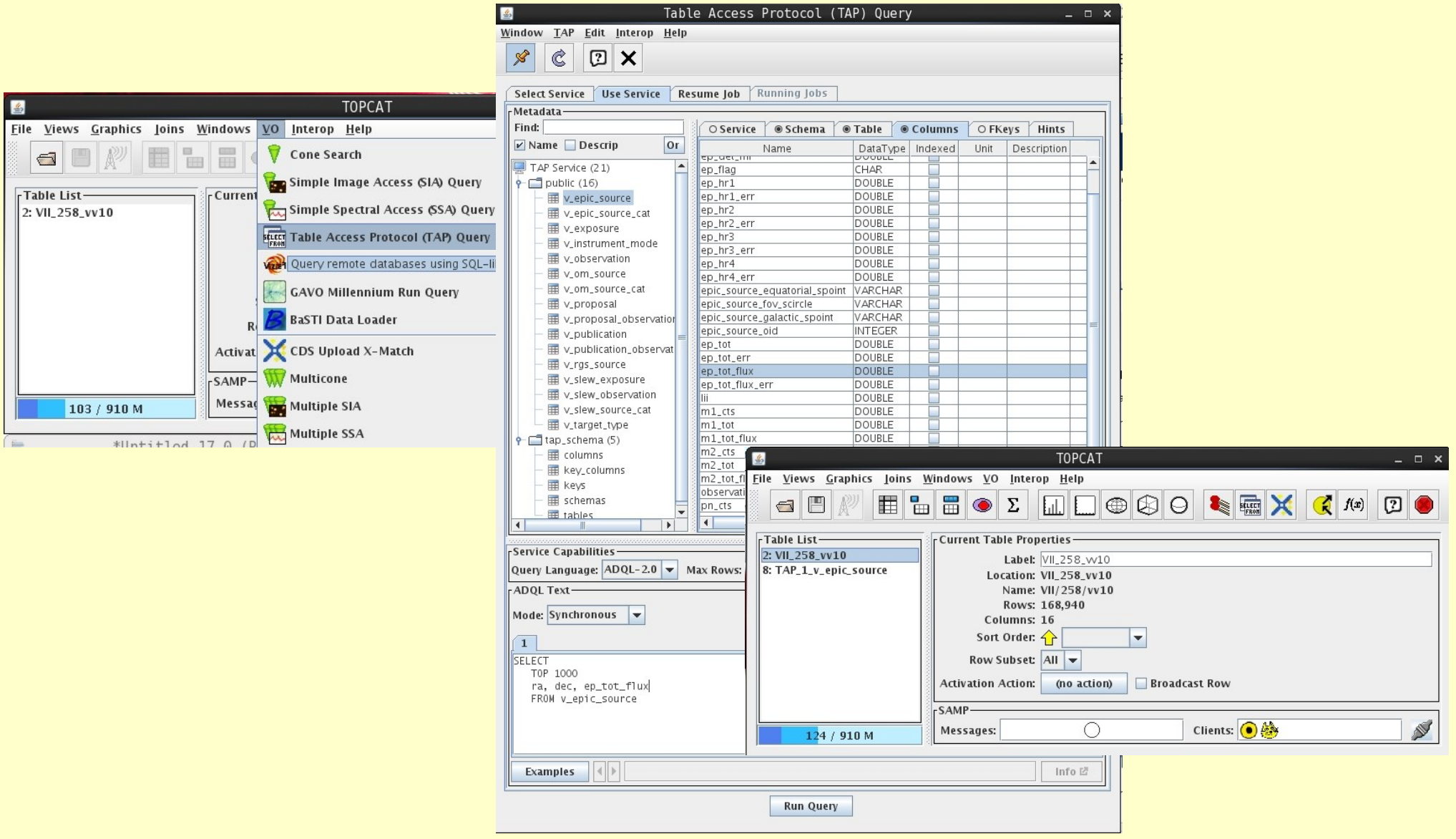
2. USING XSA TAP VIA TOPCAT

1. Run TOPCAT in your local environment. If you have Java's WebStart installed, you can install and invoke TOPCAT in one click from: http://www.star.bris.ac.uk/~mbt/topcat/topcat-full.jnlp
2. Go to the top menu of TOPCAT and select "VO" and there select "Table Access Protocol (TAP) query".
3. In "Select Service", under "TAP Parameters", introduce the following TAP URL:

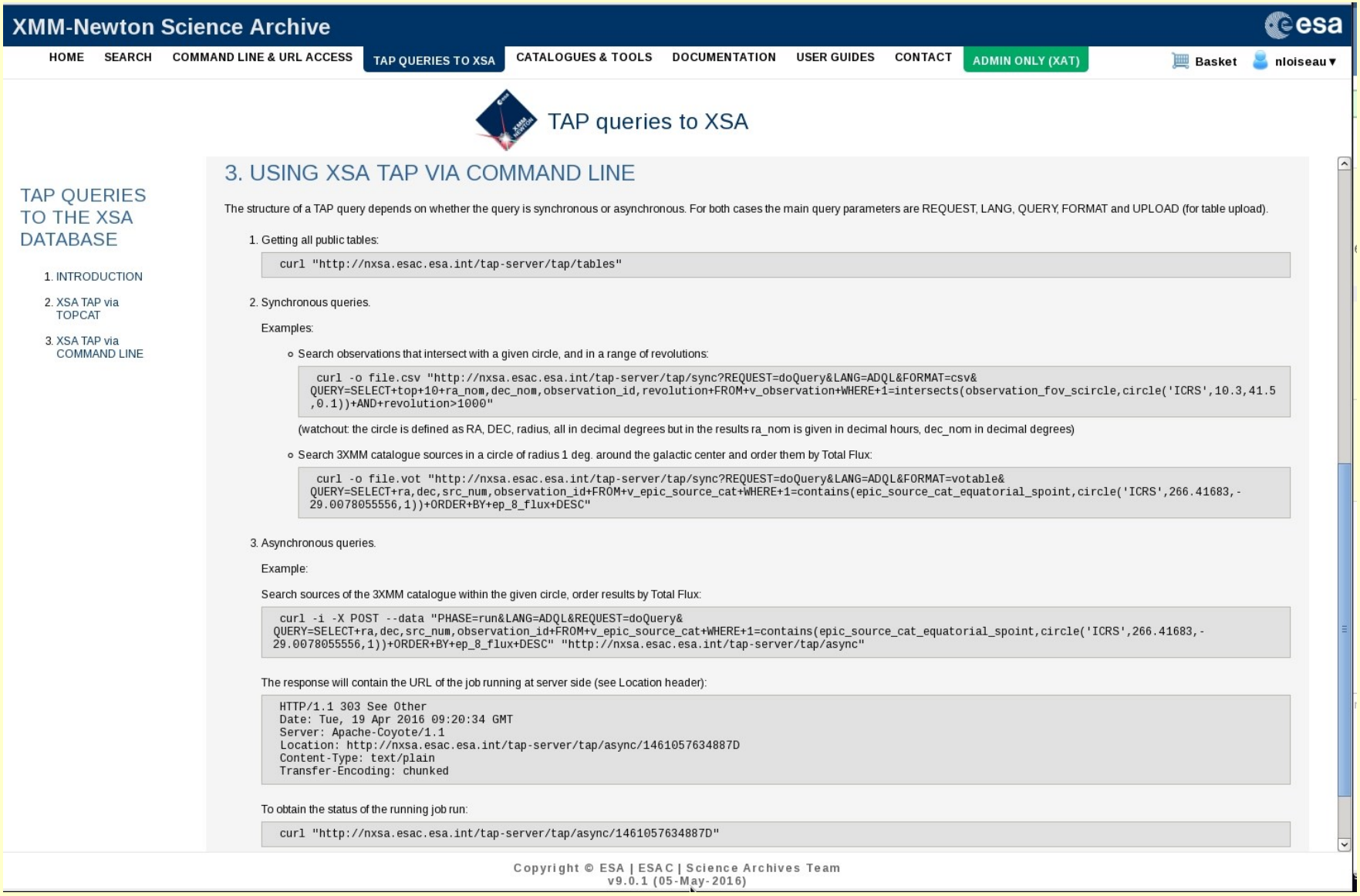
   ```
   http://nxsa.esac.esa.int/tap-server/tap
   ```

   and click on "Use Service".
4. In the left side of the Metadata panel select the Tables to be queried.
5. Once a table is selected click on "Columns" in the right side of the panel to get info on the table parameters that can be queried.
6. Introduce query commands in the ADQL Text panel below. The Examples provided can be edited.
7. When clicking on "Run Query" the selection is sent to the TOPCAT main panel.

TAP queries to the XSA database via TOPCAT
http://nxsa.esac.esa.int/#tap



TAP command line queries to the XSA database
http://nxsa.esac.esa.int/#tap



XMM-Newton Science Archive

HOME | SEARCH | COMMAND LINE & URL ACCESS | TAP QUERIES TO XSA | CATALOGUES & TOOLS | DOCUMENTATION | USER GUIDES | CONTACT | ADMIN ONLY (XAT) | Basket | nloiseau

TAP queries to XSA

TAP QUERIES TO THE XSA DATABASE

1. INTRODUCTION
2. XSA TAP via TOPCAT
3. XSA TAP via COMMAND LINE

3. USING XSA TAP VIA COMMAND LINE

The structure of a TAP query depends on whether the query is synchronous or asynchronous. For both cases the main query parameters are REQUEST, LANG, QUERY, FORMAT and UPLOAD (for table upload).

1. Getting all public tables:

```
curl "http://nxsa.esac.esa.int/tap-server/tap/tables"
```

2. Synchronous queries.

Examples:

- Search observations that intersect with a given circle, and in a range of revolutions:

```
curl -o file.csv "http://nxsa.esac.esa.int/tap-server/tap/sync?REQUEST=doQuery&LANG=ADQL&FORMAT=csv&
QUERY=SELECT+top+10+ra_nom,dec_nom,observation_id,revolution+FROM+v_observation+WHERE+1=intersects(observation_fov_scircle,circle('ICRS',10.3,41.5
,0.1))+AND+revolution>1000"
```

(watchout: the circle is defined as RA, DEC, radius, all in decimal degrees but in the results ra_nom is given in decimal hours, dec_nom in decimal degrees)

- Search 3XMM catalogue sources in a circle of radius 1 deg. around the galactic center and order them by Total Flux:

```
curl -o file.vot "http://nxsa.esac.esa.int/tap-server/tap/sync?REQUEST=doQuery&LANG=ADQL&FORMAT=votable&
QUERY=SELECT+ra,dec,src_num,observation_id+FROM+v_epic_source_cat+WHERE+1=contains(epic_source_cat_equatorial_spoint,circle('ICRS',266.41683,-
29.0078055556,1))+ORDER+BY+ep_8_flux+DESC"
```

3. Asynchronous queries.

Example:

Search sources of the 3XMM catalogue within the given circle, order results by Total Flux:

```
curl -i -X POST --data "PHASE=run&LANG=ADQL&REQUEST=doQuery&
QUERY=SELECT+ra,dec,src_num,observation_id+FROM+v_epic_source_cat+WHERE+1=contains(epic_source_cat_equatorial_spoint,circle('ICRS',266.41683,-
29.0078055556,1))+ORDER+BY+ep_8_flux+DESC" "http://nxsa.esac.esa.int/tap-server/tap/async"
```

The response will contain the URL of the job running at server side (see Location header):

```
HTTP/1.1 303 See Other
Date: Tue, 19 Apr 2016 09:20:34 GMT
Server: Apache-Coyote/1.1
Location: http://nxsa.esac.esa.int/tap-server/tap/async/14610576348870
Content-Type: text/plain
Transfer-Encoding: chunked
```

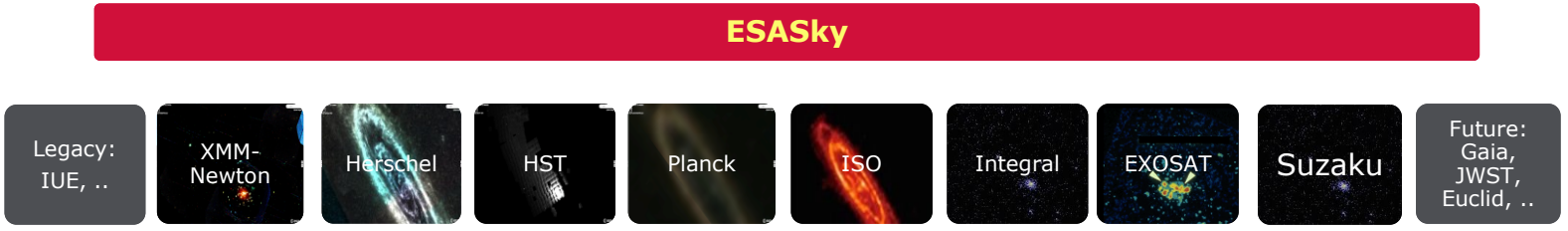
To obtain the status of the running job run:

```
curl "http://nxsa.esac.esa.int/tap-server/tap/async/14610576348870"
```

XSA integration into the ESASky

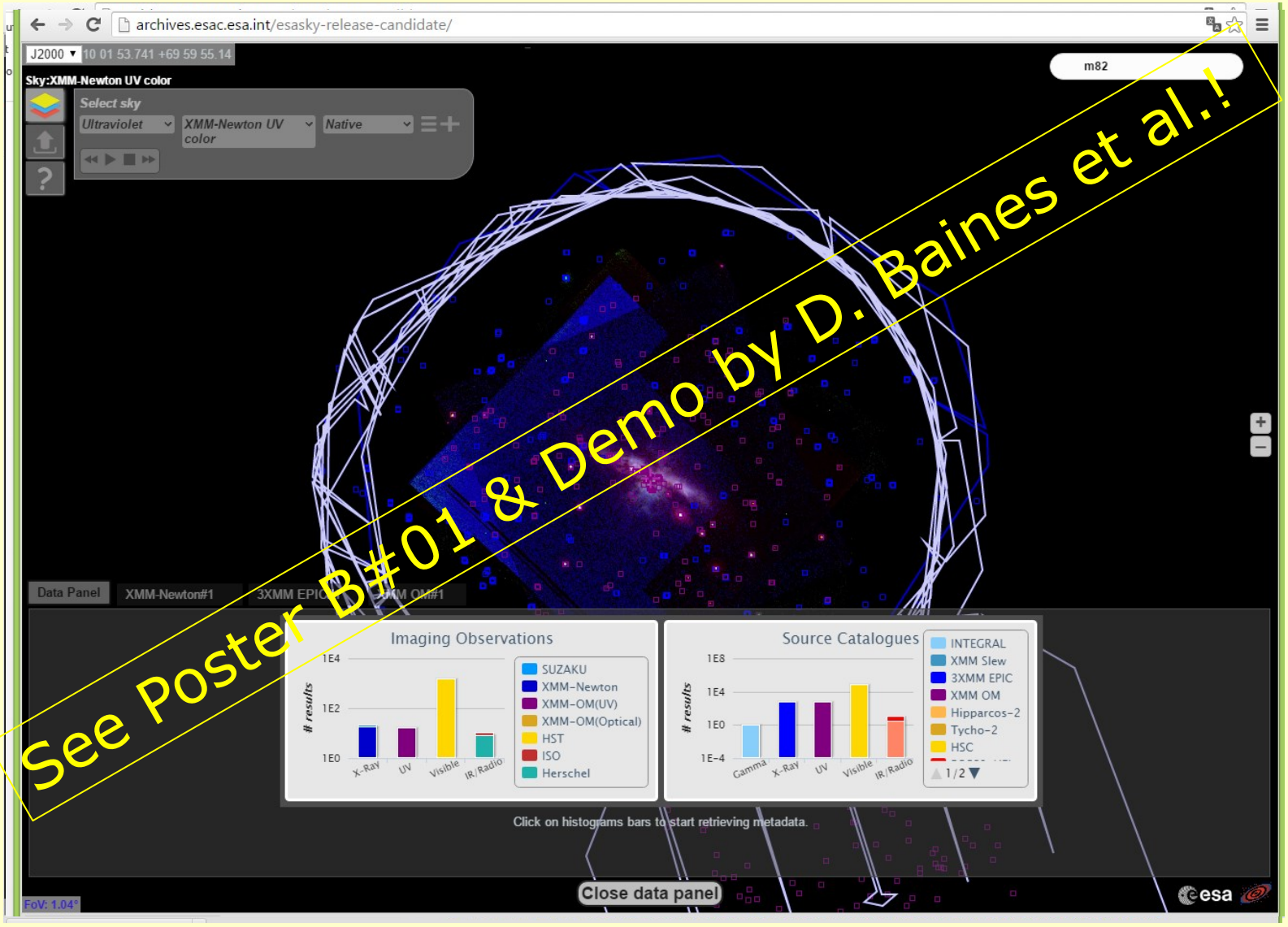
- **ESASky**: is a service and a visual interface for multi-wavelength data access:
  - Developed at ESAC with local (footprints, etc) and CDS (HIPS, Aladin-Lite) technology, and in collaboration with missions scientists.
  - Provides visually driven access to science-ready data for HST, Herschel, Planck, etc.
  - Has detailed footprints for the missions integrated.
  - Provides direct access to each mission archive for detailed queries and data download.

- **XMM-Newton data** were the first to be included in **ESASky**, followed by other ESA and non-ESA missions data.



- **ESASky v1.0** released this week for this conference → **http://sky.esa.int**
- **ESASky v2.0** (early 2017): **Spectral** hips (XMM-Newton, IUE, radio)
- **ESASky v3.0** (early 2018): **Time** domain for multi-wavelength variability studies

XSA integrated into ESASky



XSA - The Next Decade

Short term plan

- For a list of targets searched, identify the results corresponding to each of them (**next release!**).
- On-the fly data analysis.
- Integration of the Upper limit tool into XSA.
- EPIC and RGS spectra visualizer. Integration of BiRD in XSA.
- Flag observations simultaneous with other missions/observatories.

Long term plan

- Source identifications in images from list (PPS sources, catalogue, etc).
- Queries "a la google" (full text).
- Search/display moving (solar) objects observations (via ESASky).
- *Access from the XSA interface to new external applications and tools.*

---→ **FEEDBACK/SUGGESTIONS?**

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