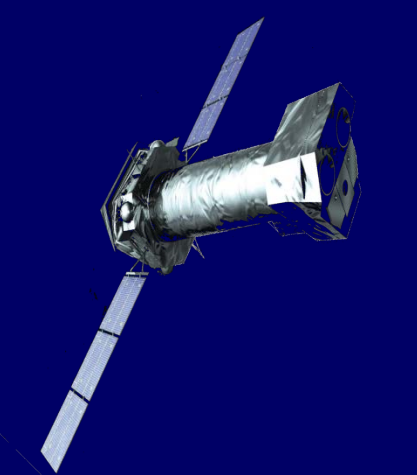




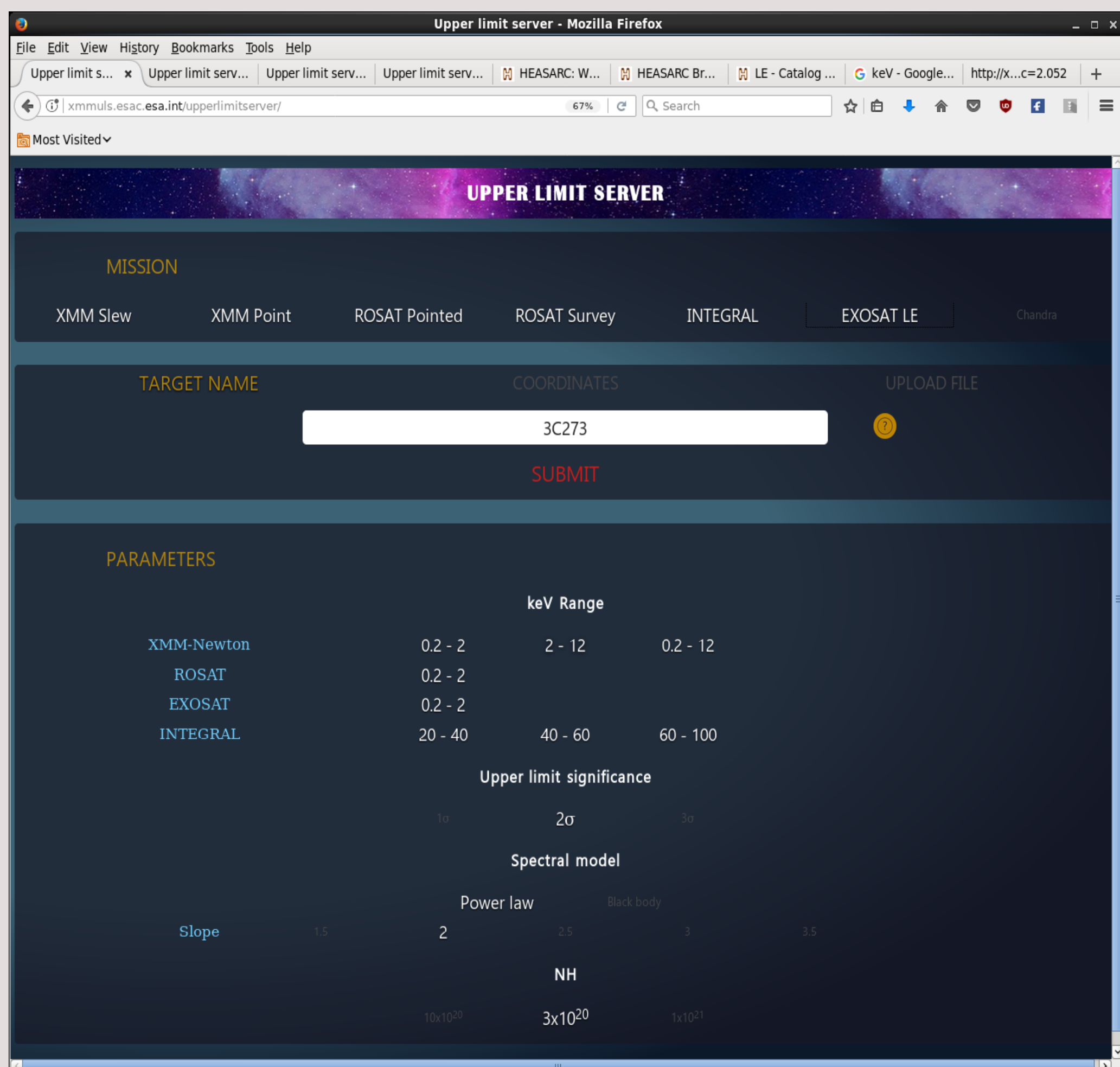
Does my source emit X-rays ?



R. Saxton, M. Descalzo, G. Belanger, A. Ibarra, M. Sarmiento, E. Colomo, A. Agrafojo, D. Gonzalez, P. Kretschmar, C. Gabriel

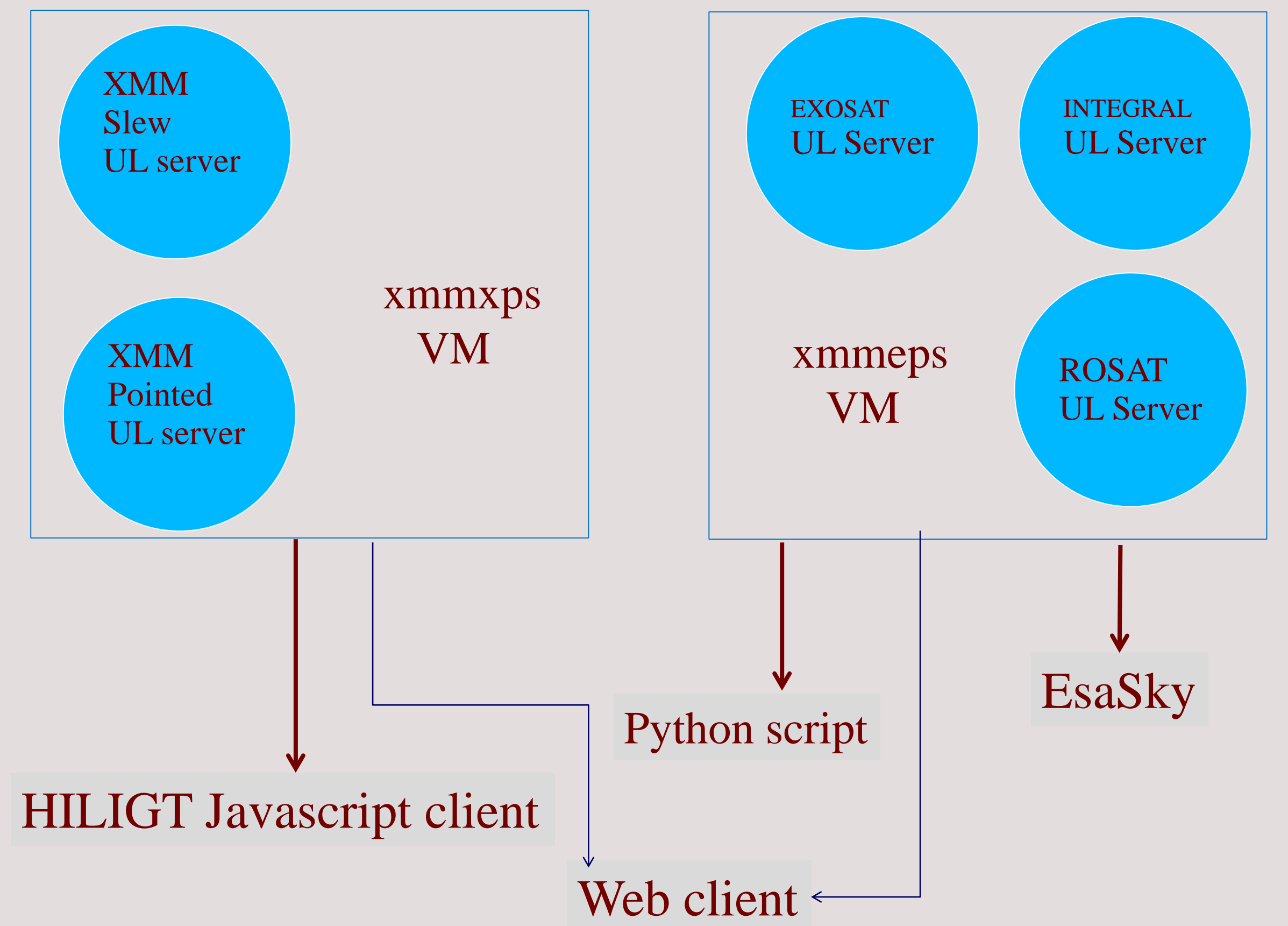
Imagine that you have just discovered an amazing new galaxy in an HST observation and you want to know if it emits X-rays. First you look in the catalogues but find nothing. Then you want to know if it has ever been looked at with a decent X-ray detector. How do you find out? Where is the information? Help will soon be at hand in the form of **HILIGT**, a system which interrogates all the X-ray observatories which ever existed, finds which ones passed their cameras over your galaxy and gives you the flux or upper limit from each of these observations. Then it produces a latex table of observations, which can be easily be inserted into a paper, and plots the historical light-curve in a way which will please and impress your collaborators.

HILIGT



- Choose missions
- Select coordinates, a target name or a list of positions
- Select energy bands
- Select upper limit statistic
- Select a spectral model to convert count rate into flux

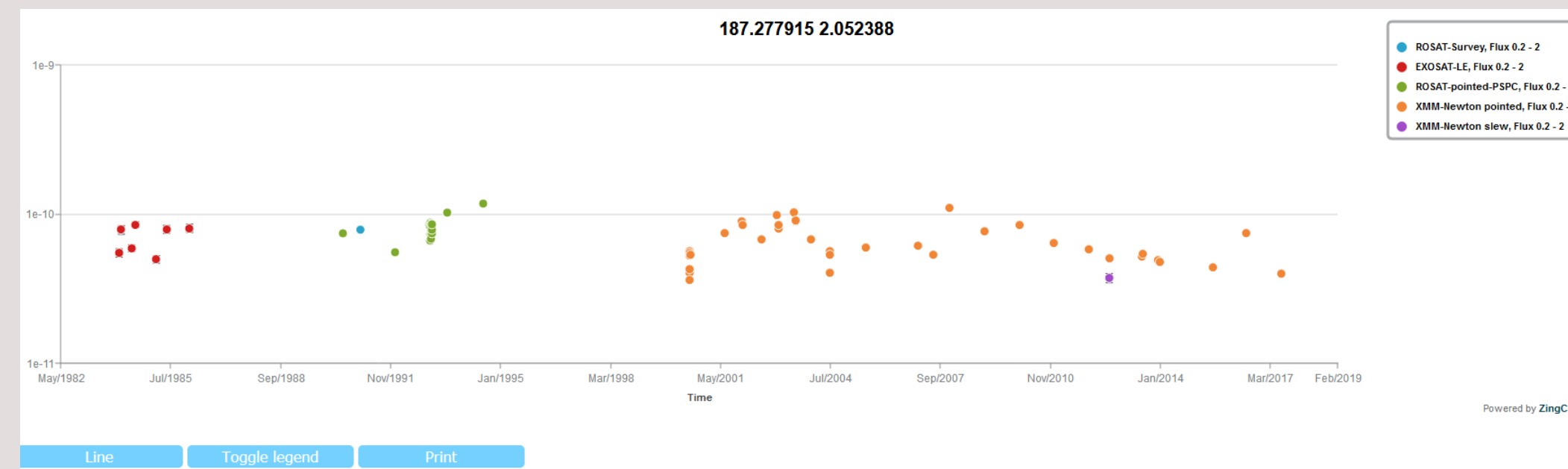
A set of individual servers that can be called from anywhere



Output

Returns the count rate and flux for each energy band selected for each X-ray camera.

Observation Date	Count rate 0.2 - 2	Count rate 2 - 12	Exp. (seconds)	Flux 0.2 - 2	Flux 2 - 12
20031104 18:02:49	<0.8610	<0.8610	<0.7800	0.0033	<0.3050e-12
20070611 08:36:09	<1.5782	<1.7685	<1.5122	0.0037	<0.4075e-12
20080619 06:21:12	2.1078 ± 0.5495	<0.7654	2.6887 ± 0.5987	0.0153	(3.1568 ± 0.7890) × 10 ⁻¹²
20081126 01:39:09	<0.8729	<0.5373	<0.7625	0.5068	<0.6022e-12



The long-term (0.-2 keV) light curve of 3C 273

```

\begin{center}
\begin{table}
\caption{X-ray observation log of MK231 194.059308 56.873677}
\label{tab:xobs}
\begin{tbl_struct}
\begin{tbl_header}
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Mission & Date & Exp time & Flux(0)S & Flux(1)S & Flux(2)S & Flux(3)S & Flux(4)S & Flux(5)S & Flux(6)S \\ |

\end{tbl_struct}\begin{table}
| Mission & Date & Exp time & Flux(0)S & Flux(1)S & Flux(2)S & Flux(3)S & Flux(4)S & Flux(5)S & Flux(6)S \\ |
| --- |
| ROSAT-Survey | 1990-11-02 | 436.8 | 5±0.43865 | 5S | 5S | 5S | 5S | 5S | 5S |
| ROSAT-pointed-PSPC | 1991-06-07 | 23333.0 | 30.1437 | 1.009045 | 5S | 5S | 5S | 5S | 5S |
| Integral | 2003-05-20 | 17000.0 | 6.55 | 5S | 5S | 5S | 5S | 5S | 5S |
| XMM-Newton slew | 2003-06-30 | 1.0 | 5±4.92875 | 5±71.3895 | 5±21.1565 | 5S | 5S | 5S | 5S |
| XMM-Newton slew | 2004-05-27 | 5.3 | 5±2.05325 | 5±0.19795 | 5±5.26535 | 5S | 5S | 5S | 5S |
| XMM-Newton slew | 2015-04-25 | 9.7 | 5±0.53535 | 5±4.37295 | 5±1.34475 | 5S | 5S | 5S | 5S |
| XMM-Newton slew | 2015-05-29 | 9.9 | 5±0.52605 | 5±4.28845 | 5±1.31795 | 5S | 5S | 5S | 5S |


```

Example latex table output



Save the results as a text file, CSV file or a latex table

How do the upper limit servers work ?

Find any catalogue entries

- Search in TAP-enabled catalogues for any entries for this sky position

GET CATALOGUE VALUES

Future Plans

- Public release of HILIGT
- Include EXOSAT ME, Chandra,, Swift, Ariel-V etc. data
- Include UV space cameras, XMM-OM, Swift-UVOT, GALEX
- Move XMM serves from On-the-fly to Database (make them faster)

Database Method



- Pre-calculate flux / upper limit at each position
- Store the results in database table(s)
- Search on celestial position

On-the-fly calculation

- Find images containing the position from a database / TAP call
- Calculate source counts from a circle in an image
- Calculate background counts from annulus
- Find exposure time from map
- Correct for fraction of counts falling outside circle



Not so fast



FIND UPPER LIMIT