

# STIX preview image archive and online tools

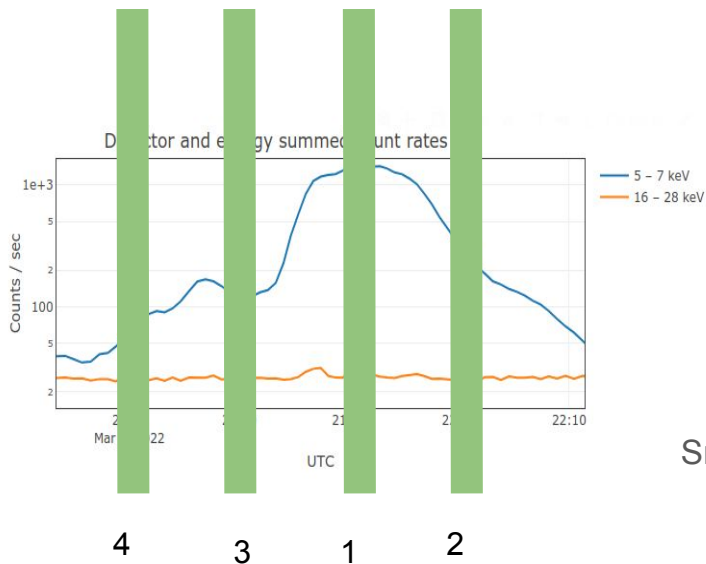
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May 6, 2022

# Flare image processing pipeline

- The pipeline uses stix imaging software in SSWIDL
- BP, BP CLEAN, EM and forward-fit algorithms used
- FITS files created by the pipeline can be plotted with sunpy.map
- Web tools for interactive image reconstruction and for developed

[https://datacenter.stix.i4ds.net/pub/misc/stix\\_imaging/](https://datacenter.stix.i4ds.net/pub/misc/stix_imaging/)

# Automated selection of time and energy ranges for image reconstruction



## Big flares

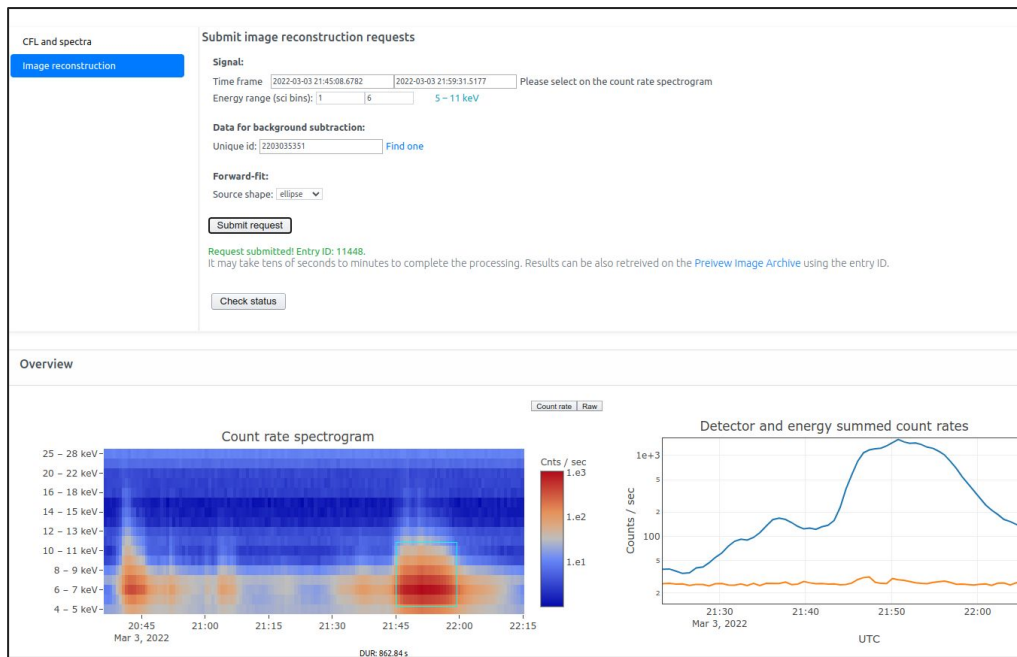
- An image with an integration time of 60 sec every 10 minutes
- Starting from the peak time, left and right
- Two energy bands 4 - 10 and 16 - 28 keV
- No image created if total counts < LIMIT (adjustable ~ 10000)

## Small flares or signal-time-bin science (not BKG) data

- One image integrated over the whole flaring time
- Two energy bands 4 - 10 and 16 - 28 keV
- No image created if total counts < LIMIT (adjustable ~ 10000)

- Data for imaging selected automatically for new received science data
- Selected time and energy ranges are stored in the NoSQL database

# Interactive image reconstruction using STIX data center web tools



On the science data browser

1. Select a science data file
2. Click the button “**interactive analysis**” then “**image reconstruction**”
3. Select time and energy ranges, and background data
4. Click “Submit”
5. After about 30 sec, click the button “check status”
6. Images will be displayed at the bottom of the page if success

<https://datacenter.stix.i4ds.net/view/list/bsd/id/9925>

Only register users are allowed to submit processing requests!

# STIX preview image archive

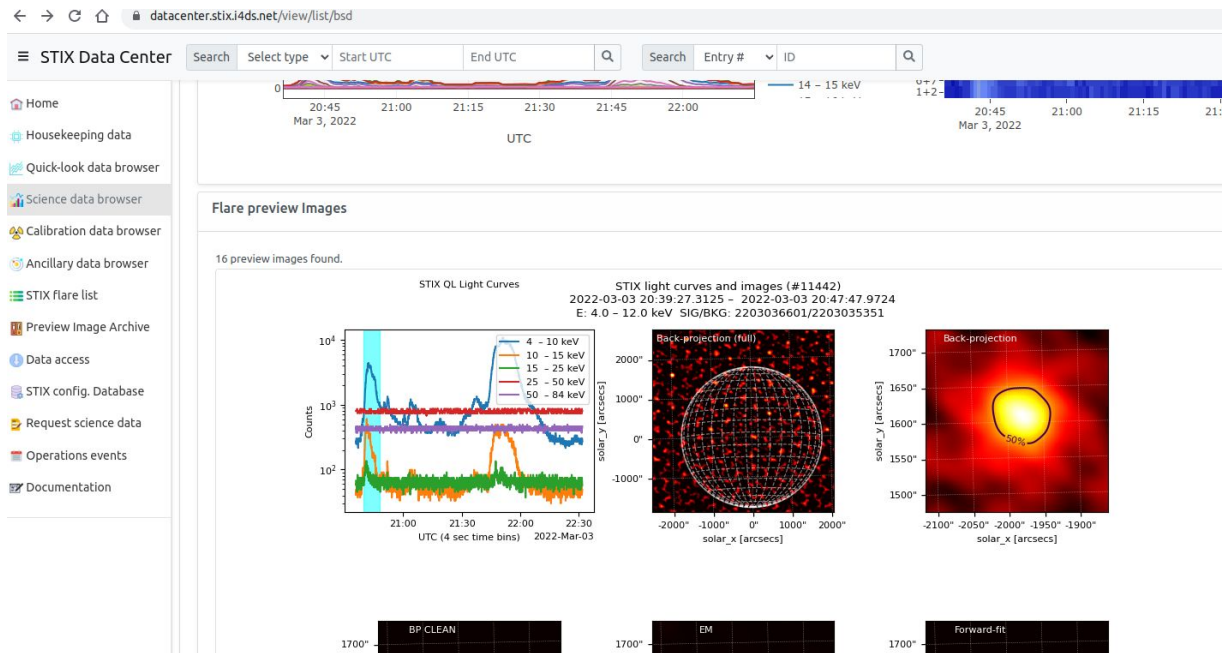
<https://datacenter.stix.i4ds.net/view/image-archive>

The screenshot displays the STIX Data Center interface. A central window titled "STIX quick preview images" is open, showing data for event #11416. The window contains several plots:

- STIX OL Light Curves:** A line plot showing counts versus UTC time (Feb-25, 2022) for five energy bins: 4-10 keV (blue), 10-15 keV (orange), 15-25 keV (green), 25-50 keV (red), and 50-84 keV (purple).
- STIX light curves and images (#11416):** Metadata including time range (2022-02-25 21:23:41.3232 - 2022-02-25 21:26:08.4369), energy range (E: 5.0 - 9.0 keV), and SIG/BKG: 2.202250820/2.02250001.
- Solar Longitude Plot:** A 2D heatmap showing solar\_x [arcsecs] vs solar\_y [arcsecs] with a bright yellow/orange source.
- Solar Longitude and Latitude Plots:** Three smaller plots showing the source position in different coordinate systems.

The background interface includes a sidebar with navigation options like "Home", "Housekeeping data", "Quick-look data browser", "Science data browser", "Calibration data browser", "Ancillary data browser", "STIX flare list", "Preview Image Archive", "Data access", "STIX config. Database", "Request science data", "Operations events", and "Documentation". A table of event IDs (11416 to 11431) is visible on the left, and a "Browse" button is highlighted in the top right of the preview window.

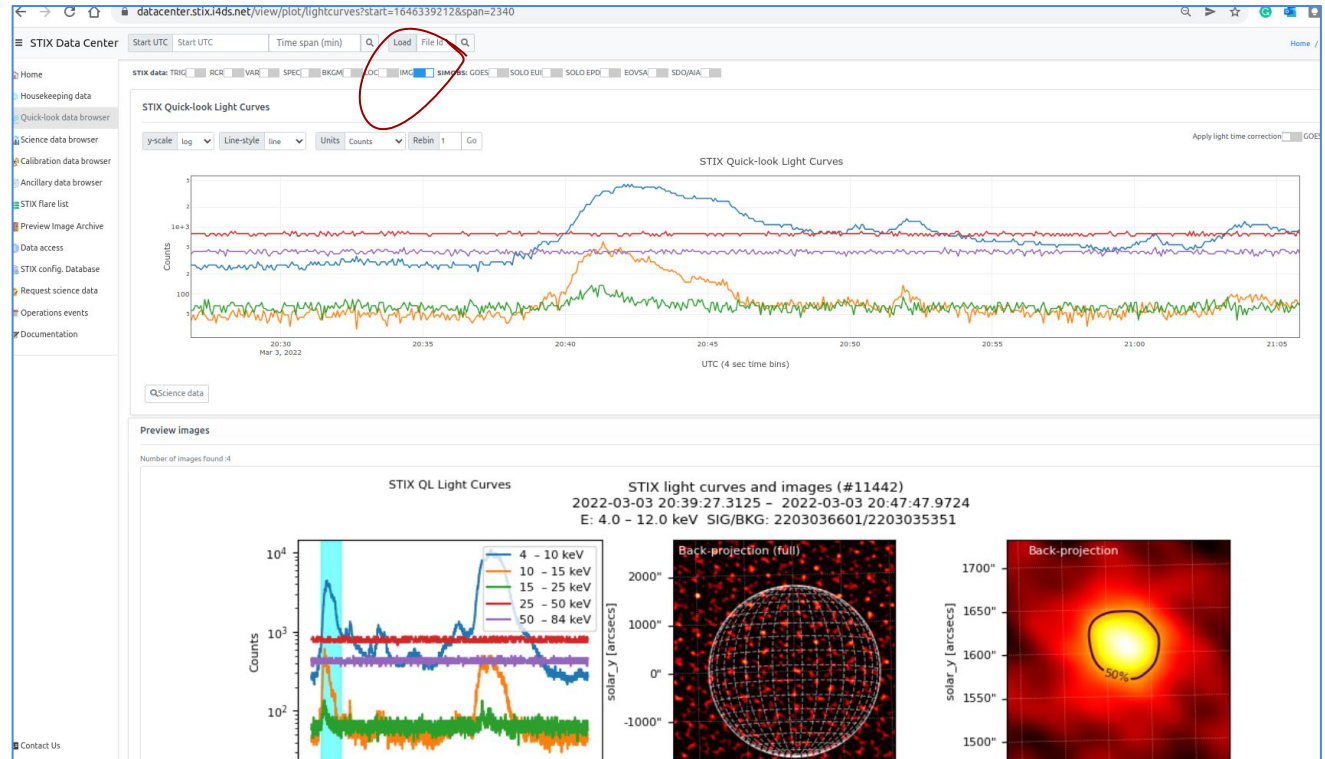
# Browse preview images on the science data browser



Available preview images for the current loaded science data are also displayed at the bottom of the “preview” tab on the science data browser

# Browse preview images on QL light curve page

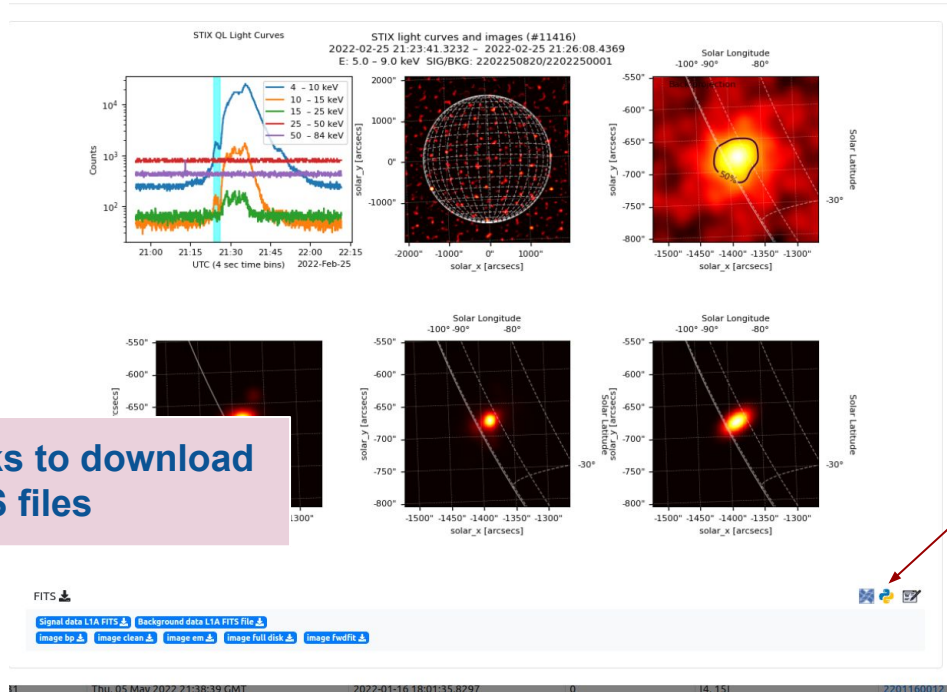
Preview images for the current time frame will be loaded after clicking the button **“IMG”** on the top



# Reproduce STIX preview images

- Download image FITS files and plot the images
- Download signal & background science data, then reconstruction images using stix sw in sswidl

STIX quick preview images



Links to download FITS files

IDL and python scripts can be created using the helper tools



# Flare image animation

On flare image archive page

- Select images in the table
- Click the button “ create animation ...”
- Save the python template to you local disk
- Run the script

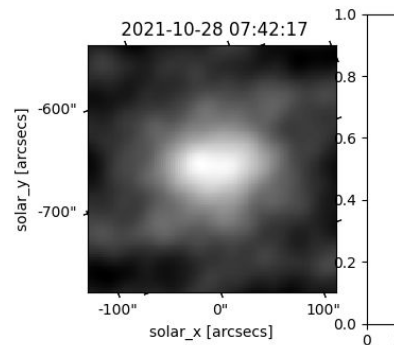
STIX Preview Image Archive

Preview images are automatically generated and it is not recommended to use them in publications.

Number of selected entries: 4

Create animations from selected images

<input type="checkbox"/>	Entry ID	Creation Time	Obs. Start Time	Duration (s)	Energy range (keV)	Science data UID
<input checked="" type="checkbox"/>	11424	Thu, 05 May 2022 21:38:39 GMT	2022-03-03 22:48:50.739	155	[8, 13]	2203037027
<input checked="" type="checkbox"/>	11425	Thu, 05 May 2022 21:38:39 GMT	2022-03-03 22:48:46.8993	177	[4, 10]	2203037027
<input checked="" type="checkbox"/>	11426	Thu, 05 May 2022 21:38:39 GMT	2022-03-03 21:32:22.9227	542	[5, 9]	2203036601
<input checked="" type="checkbox"/>	11427	Thu, 05 May 2022 21:38:39 GMT	2022-03-03 21:43:16.3324	974	[10, 15]	2203036601
<input type="checkbox"/>	11428	Thu, 05 May 2022 21:38:39 GMT	2022-03-03 23:42:05.125	450	[5, 10]	2203039074
<input type="checkbox"/>	11429	Thu, 05 May 2022 21:38:39 GMT	2022-02-25 21:26:59.2581	703	[4, 12]	2202250820
<input type="checkbox"/>	11430	Thu, 05 May 2022 21:38:39 GMT	2022-02-25 21:27:01.9329	698	[14, 25]	2202250820
<input type="checkbox"/>	11431	Thu, 05 May 2022 21:38:39 GMT	2022-01-16 18:01:35.8297	0	[4, 15]	2201160012
<input type="checkbox"/>	11432	Thu, 05 May 2022 21:38:39 GMT	2022-01-16 18:01:35.8297	0	[4, 15]	2201160012
<input type="checkbox"/>	11433	Thu, 05 May 2022 21:38:39 GMT	2022-01-16 18:01:35.8297	0	[4, 15]	2201160012
<input type="checkbox"/>	11437	Thu, 05 May 2022 21:38:39 GMT	2022-03-03 21:47:22.9021	752	[5, 10]	2203036601



> 11.6

<https://datacenter.stix.i4ds.net/view/image-archive>