

Final HESPE Meeting

Genoa, October 28, 2013

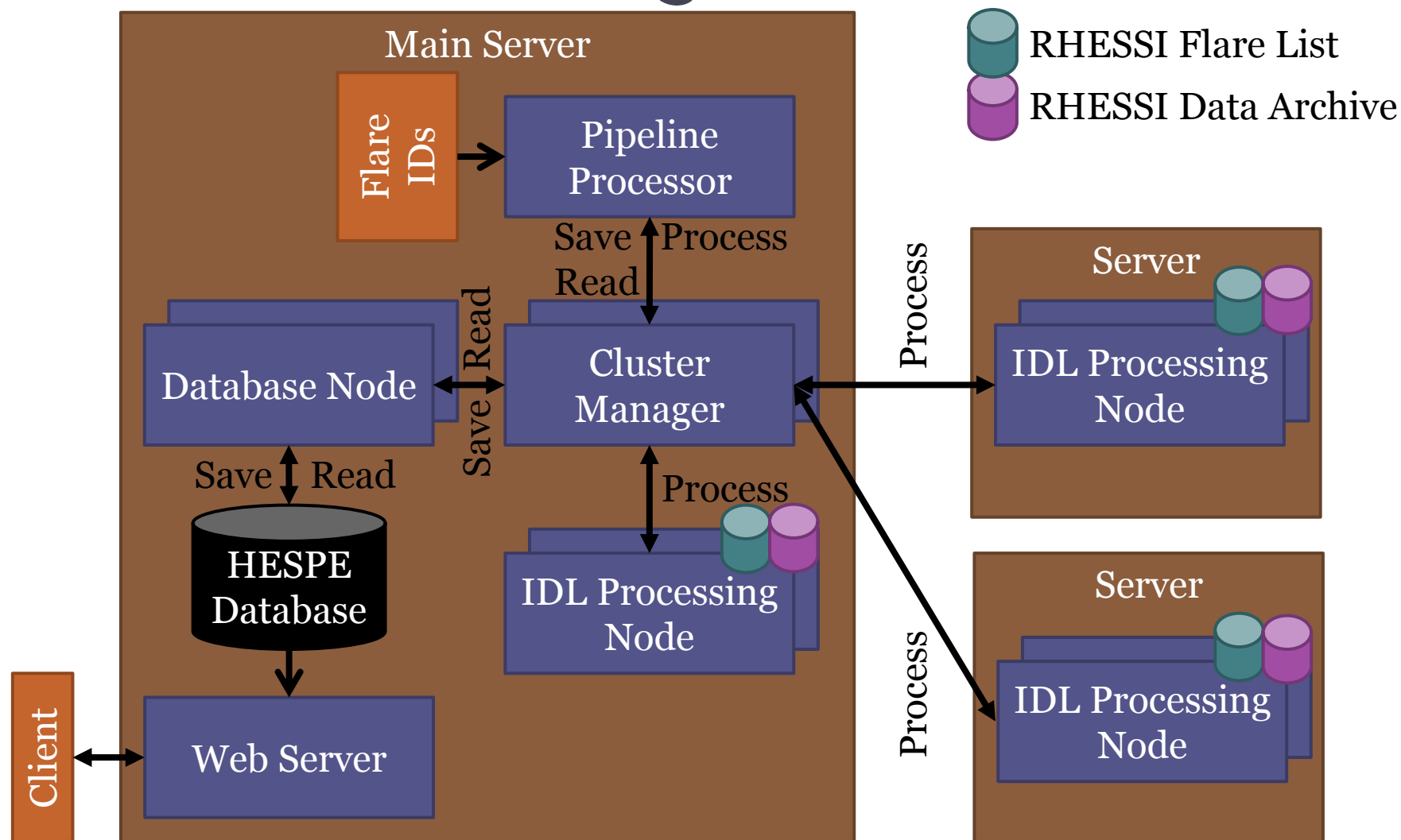
Work Package Technology

Agenda

- Review Technology
 - HESPE Processing Architecture
 - Flare Data Processing
 - Data Flow (Example)
 - Data Management
 - Web Interface
 - Capabilities
- Discussion Technology
 - Continuation
- Review Science Database
 - Recap: Interval Selection
 - Available Science Data Products
 - Web Interface
- Discussion Science Product Database
 - Perspectives and Exploitation

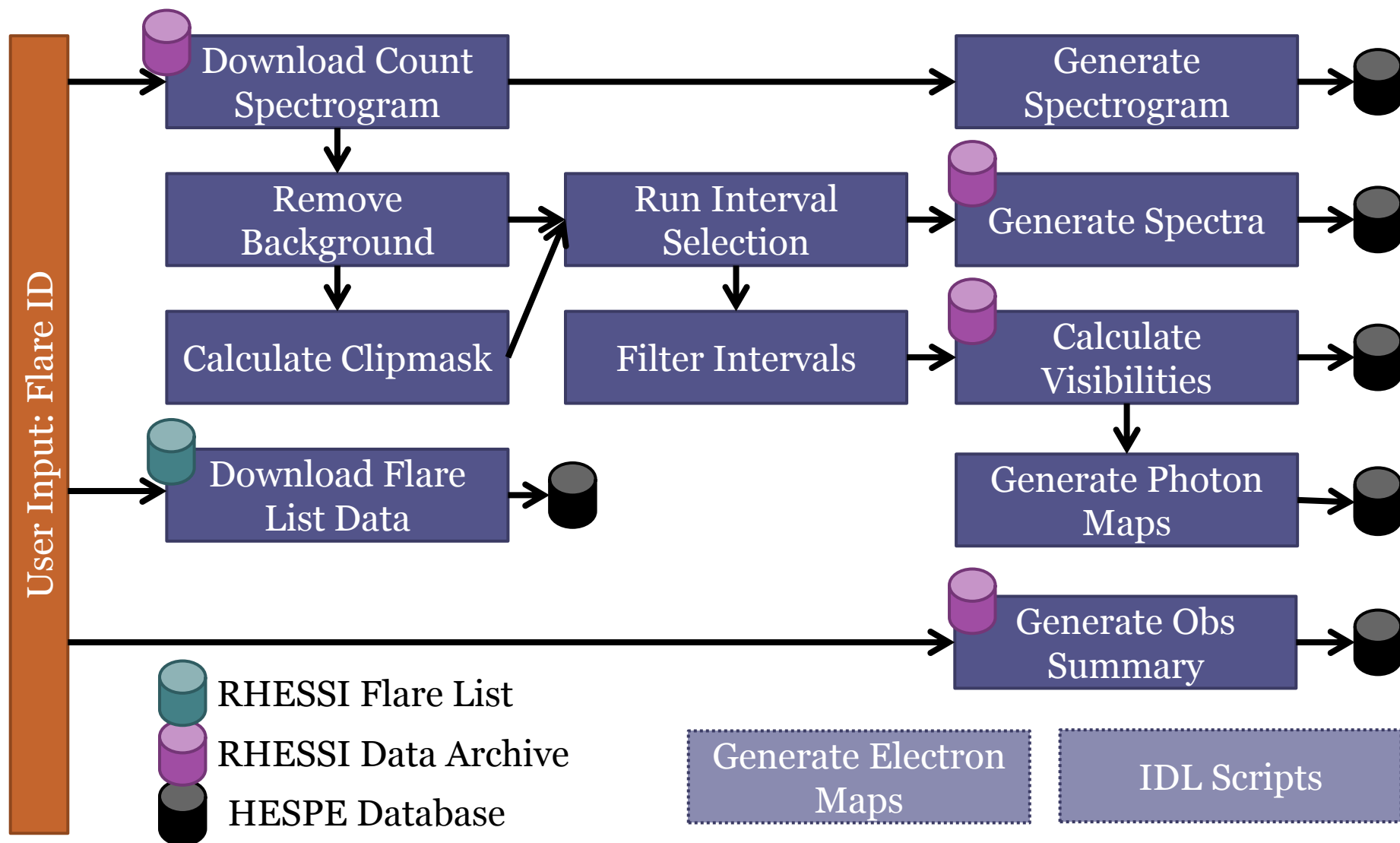
Review Technology

HESPE Processing Architectures

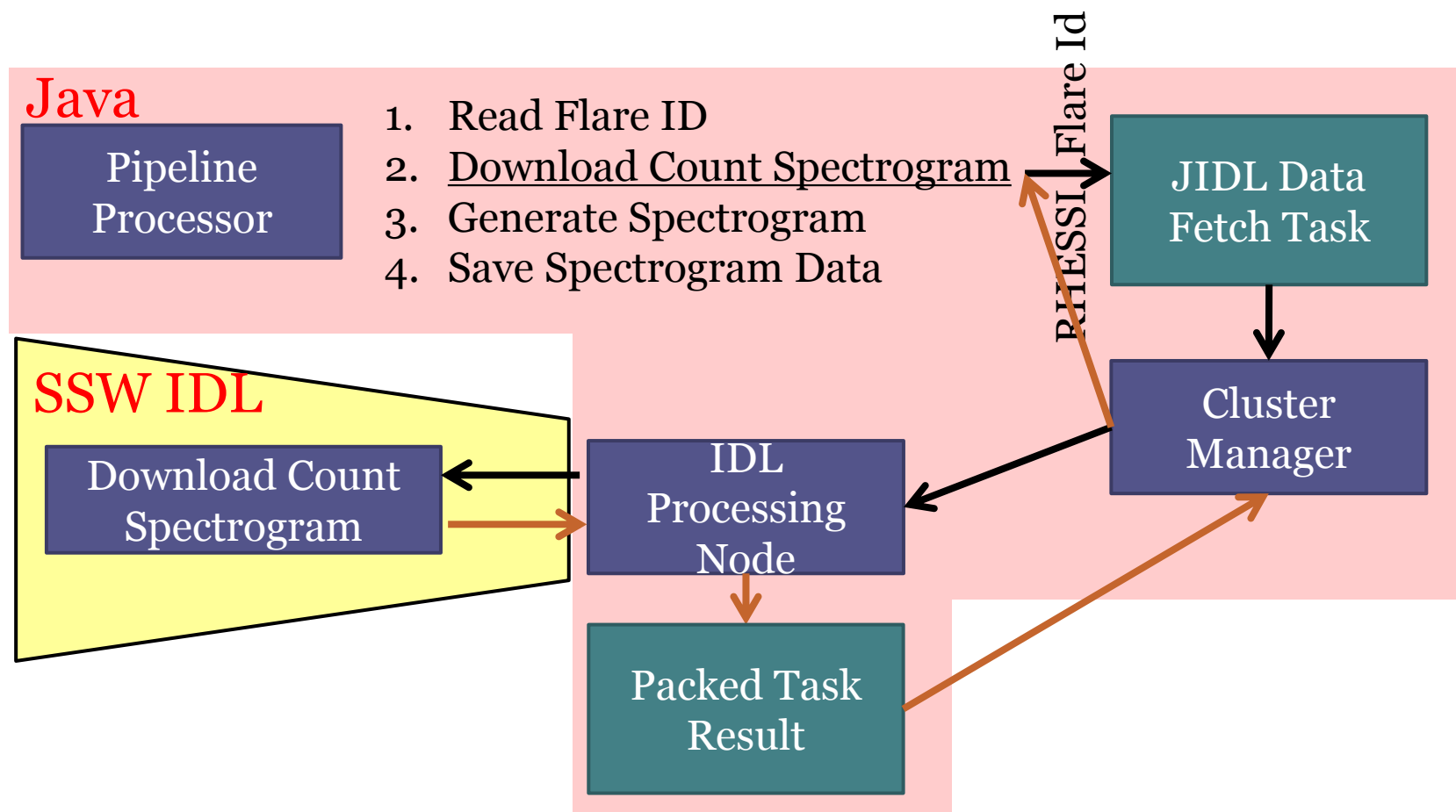
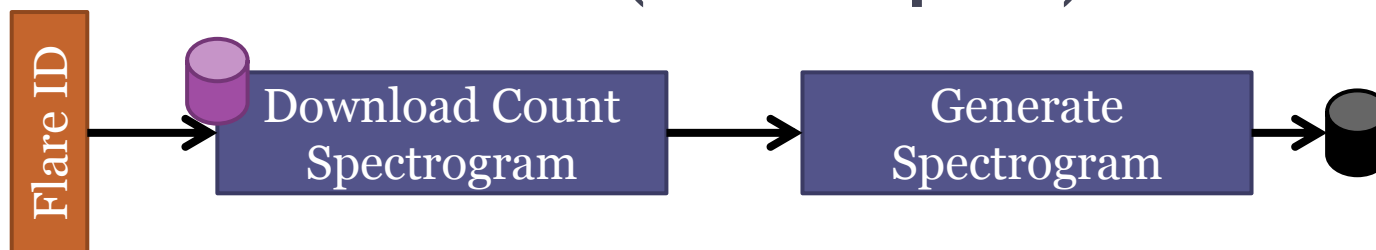


Flare Data Processing

SSW IDL

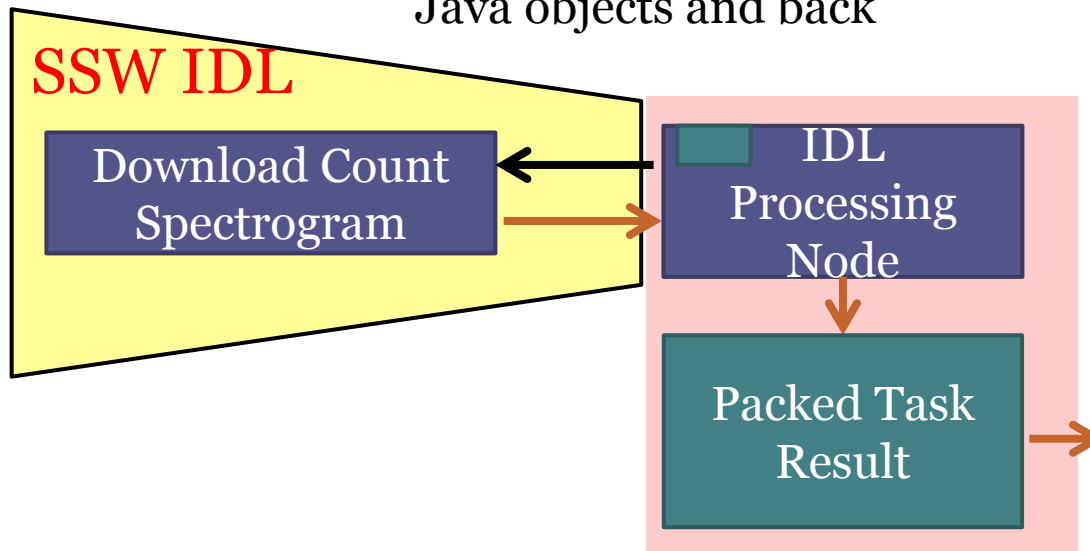


Data Flow (Example)



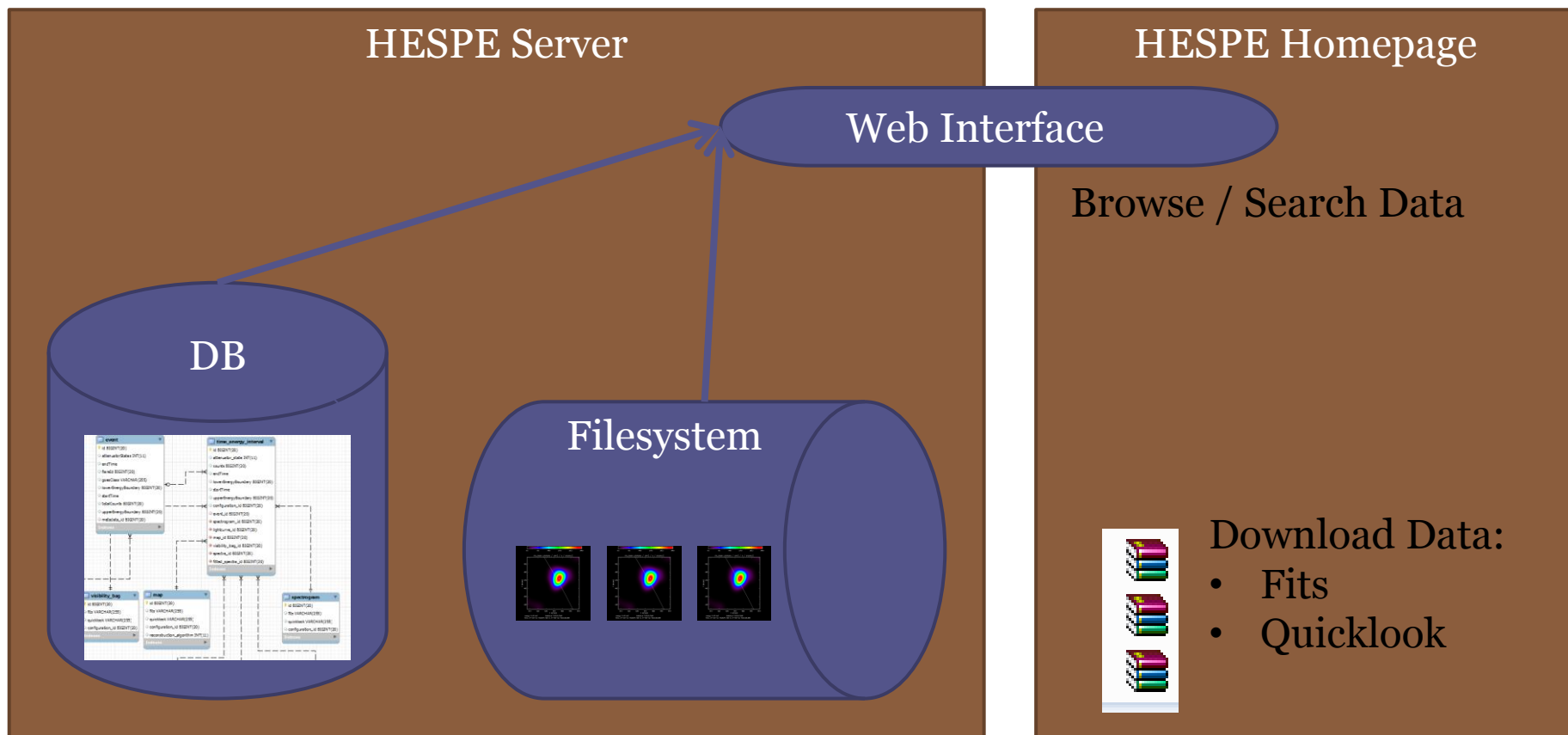
Data Flow II (Example)

Automatic conversion of
named and anonymous
structures in IDL to
Java objects and back

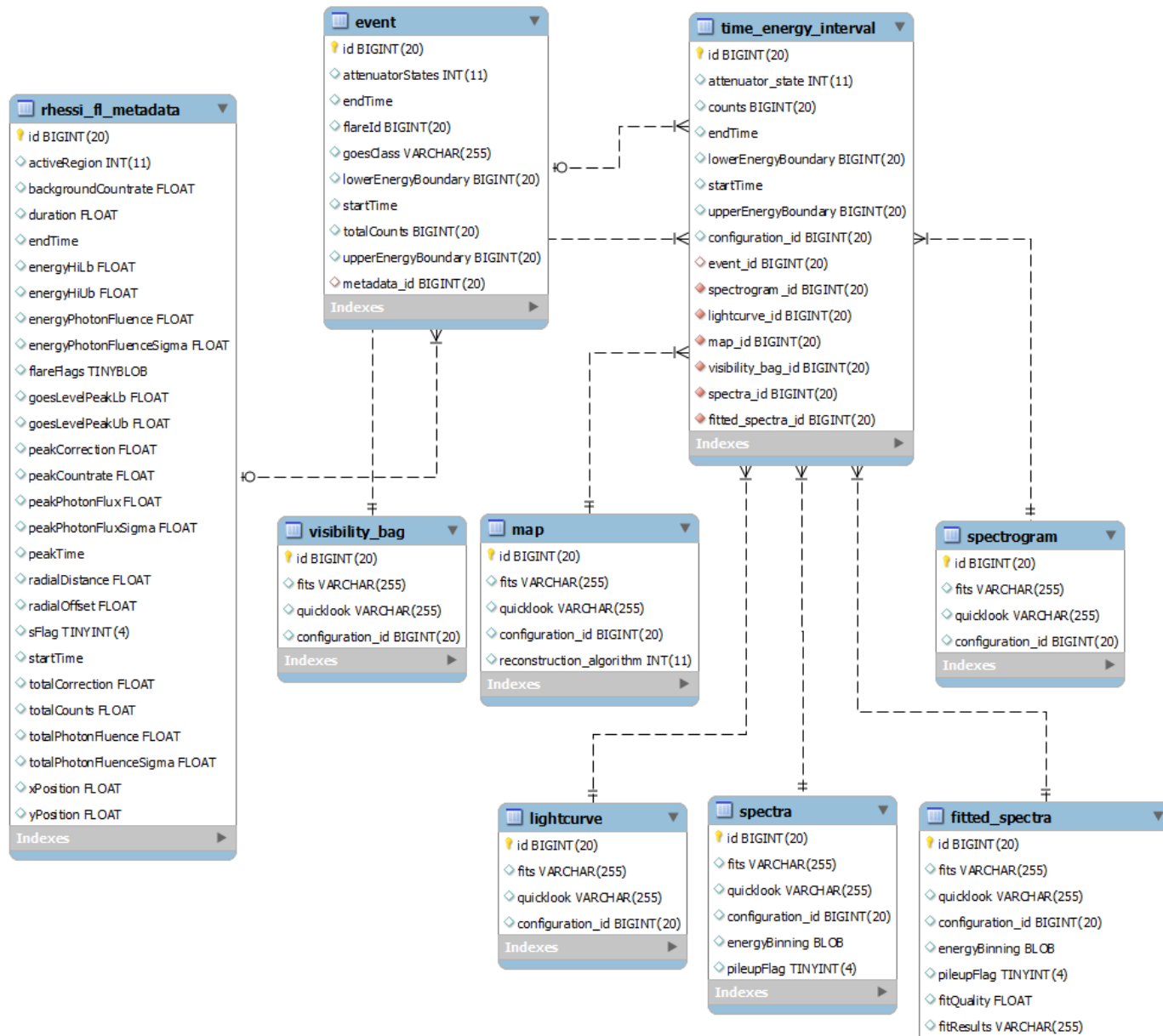


Contains data result (structures,
arrays, numbers, strings, etc.) and
complete binary data files (png, fits,
etc.)

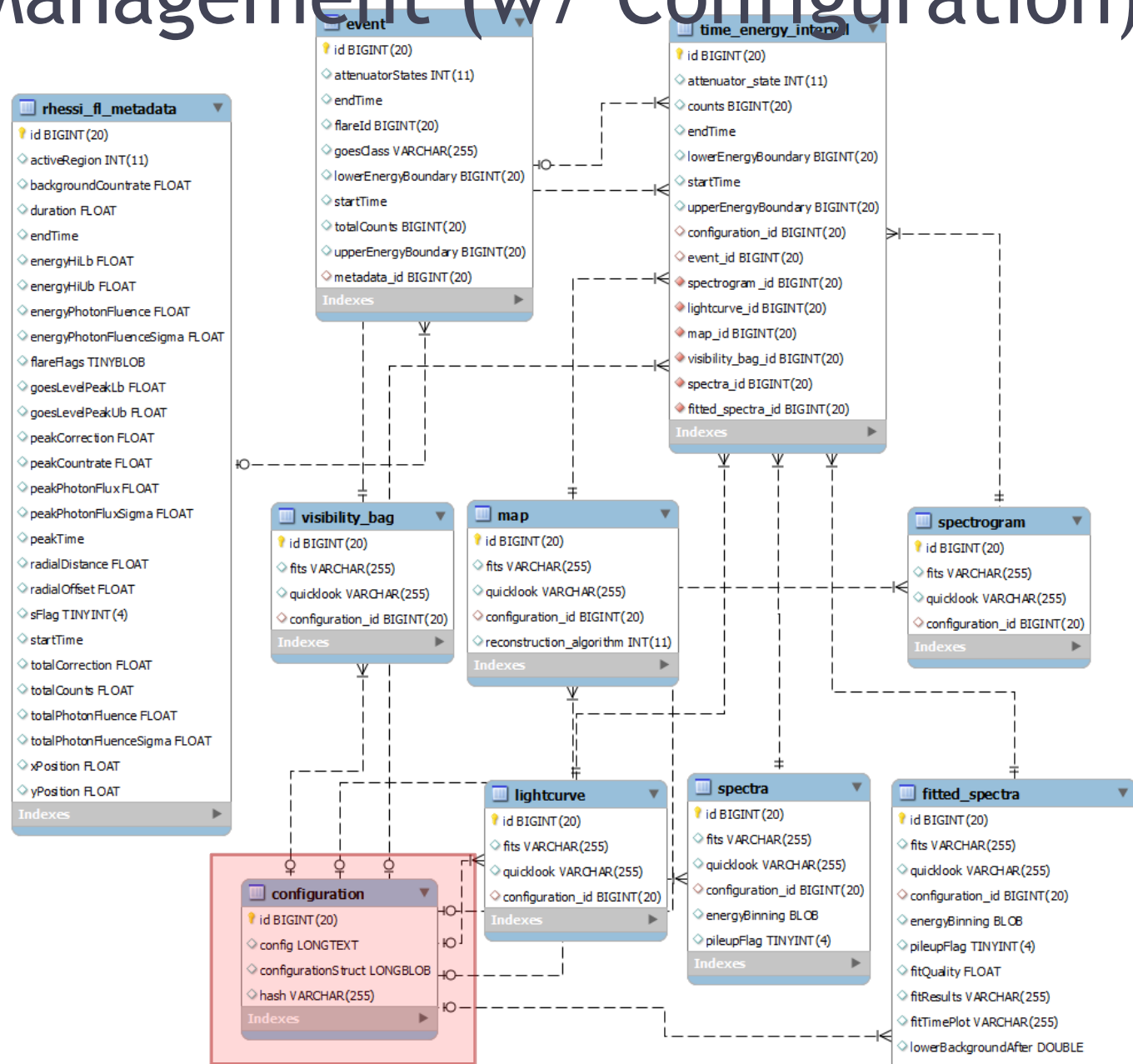
Data Management (User View)



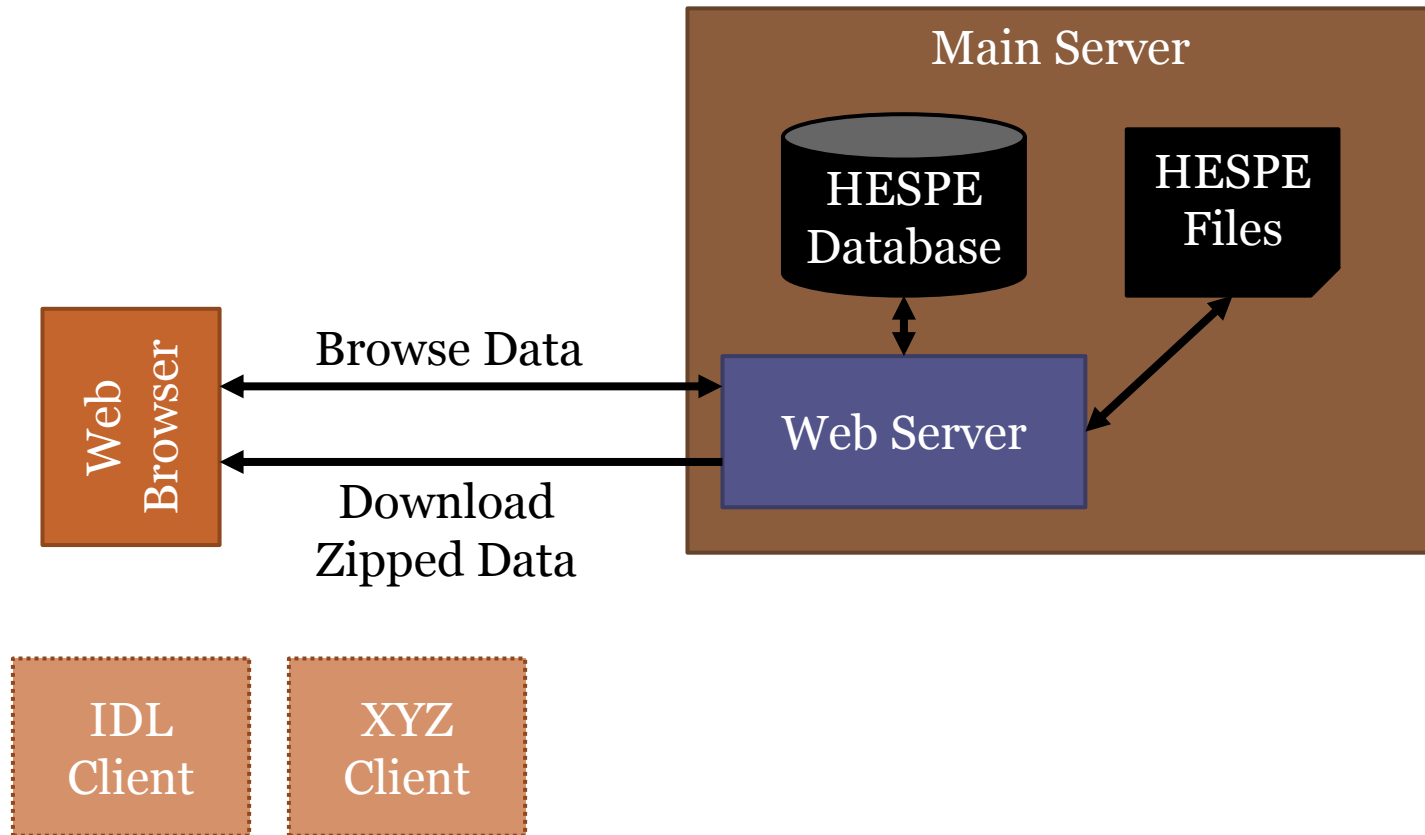
Data Management (Database Schema)



Data Management (w/ Configuration)



Web Interface



Capabilities

- Distributed parallel processing of RHESSI flares
- GOES class based flare processing configuration
- Simplified reprocessing of data (new)
- Simplified extension of new science data products (new)

Discussion Technology

Continuation

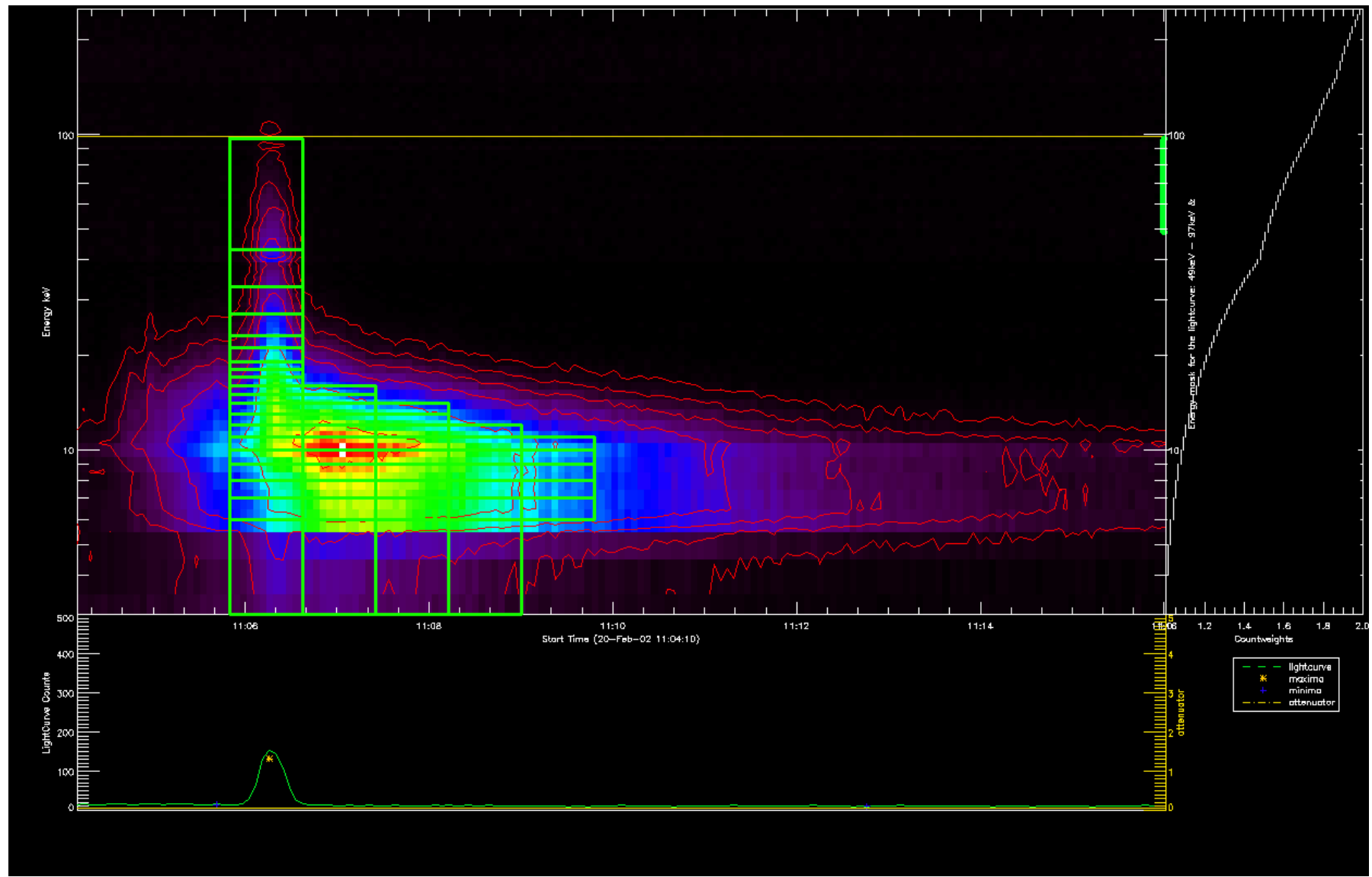
- Changes / improvements
- Processing of flares
- Quality review
- Maintenance
- Etc.

Recap: Interval Selection

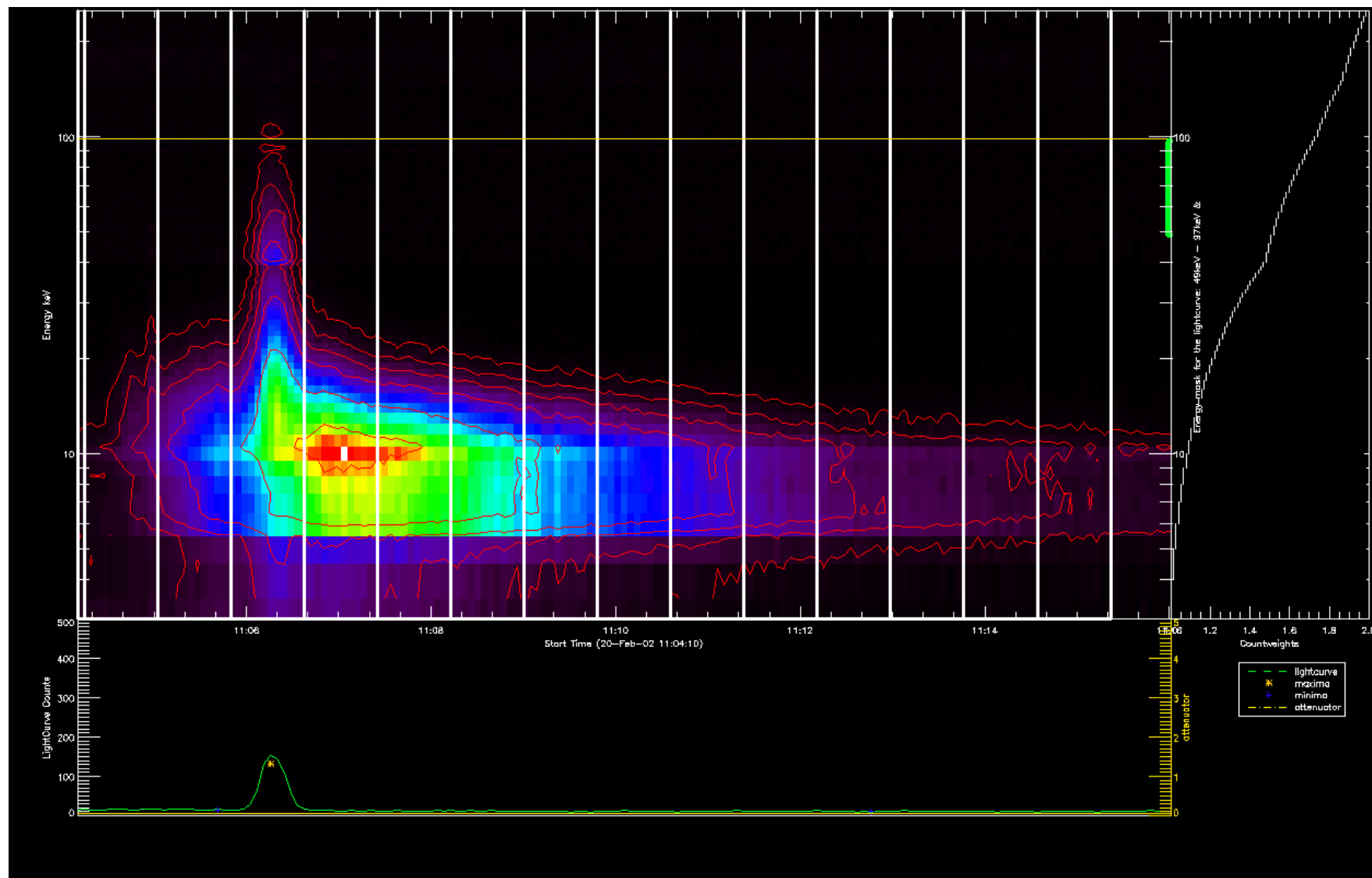
- For imaging and spectroscopy
- Find a time energy grid
 - with uniform time bins
 - and contiguous energy bins
- maximize the number of time/energy bins with enough counts
- try not to split points of interest
- treat attenuator states separate
- derive a aligned time binning for spectroscopy

Review Science Product Database

C-Flare: 20. Feb. 2002 Imaging



C-Flare: 20. Feb. 2002 Spectroscopy

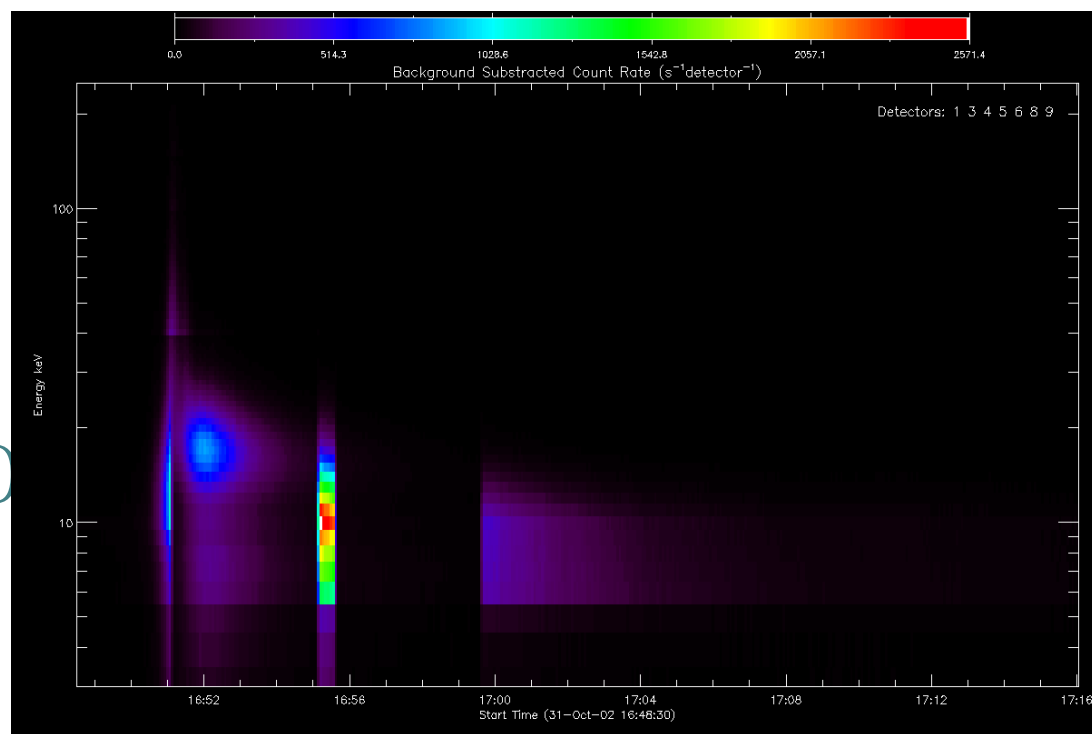


Available Science Data Products

- Spectrogram plot [PNG]
- Visibilities [FITS]
- Photon Maps (Back projection, uv_smooth, mem_njit, vis_clean) [PNG, FITS]
- Spectra [PNG, FITS]
- Fitted Spectra [PNG, FITS]
- Observing Summary [PNG]
- (Electron Maps, open)

Spectrogram

- **Units:** Count Rate (/s /detector)
- **Detectors:** 1,3,4,5,6,8,9
- **Filter:**
 - Background removed
constbacksub.pro
- **Energy binning:**
 - 14: 4-250keV
- **Time:**
 - uniform avg(roll_period)
from hsi_obs_summary

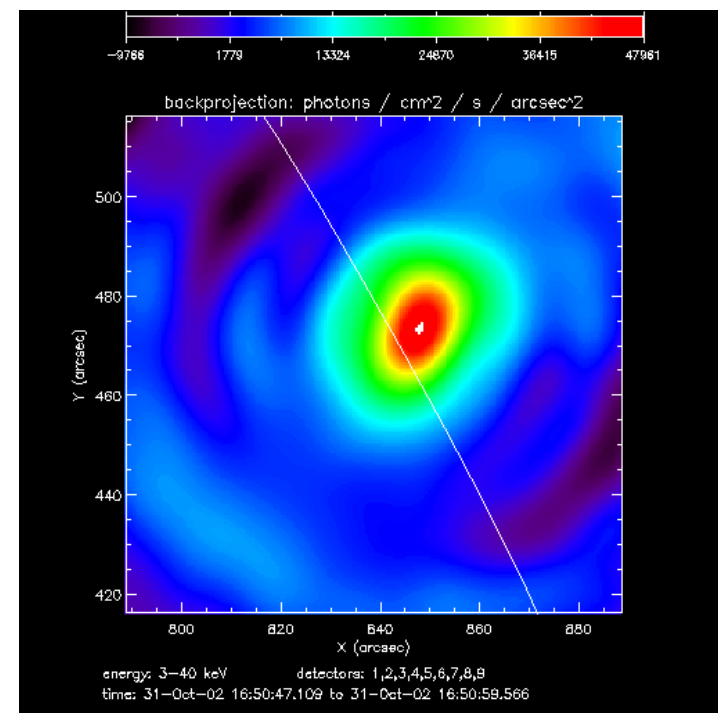


Photon-Maps

- Input
 - Visibilities based on IVS
- Imaging Algorithm
 - Back projection
 - uv_smooth
 - mem njit
 - vis_clean
- Output
 - Quicklook: png
 - Fits-File: ssw map struct

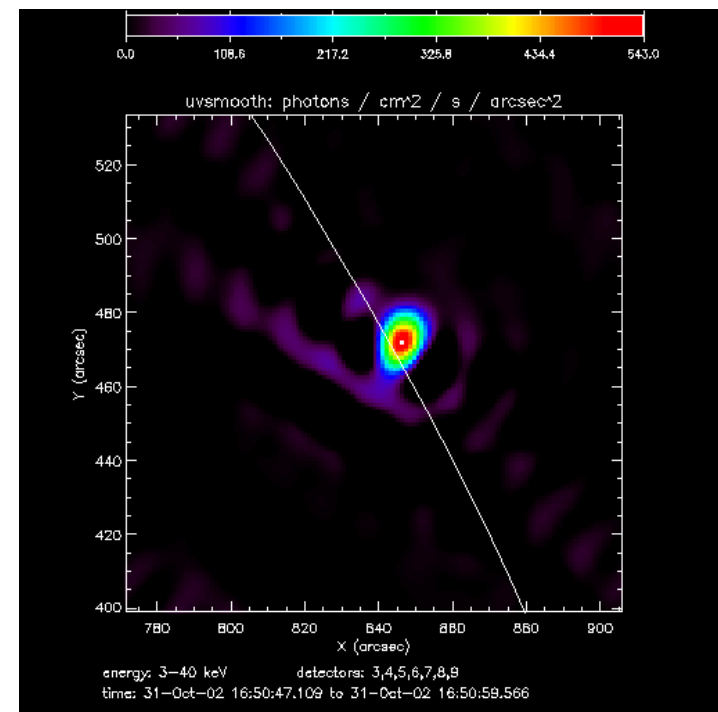
Photon-Maps - vis_bpmap

- **Units:** photons / cm² / s / arcsec²
- **Detectors:** 1,2,3,4,5,6,7,8,9
- **Vis.-Filter:**
 - hsi_vis_edit
 - hsi_vis_combine(/conj)
- **Res / fow**
 - pixel_size=0.4
 - im_dim=80



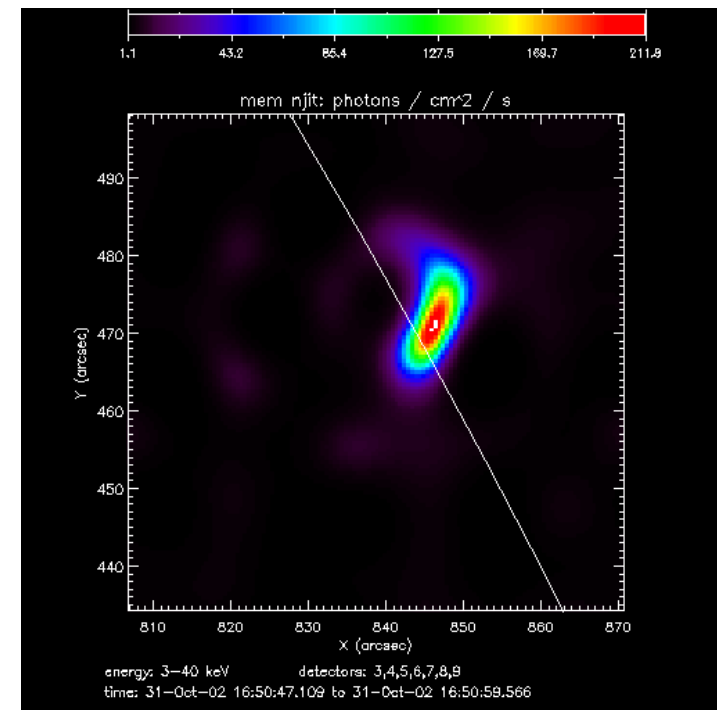
Photon-Maps - uv_smooth

- **Units:** photons / cm² / s / arcsec²
- **Detectors:** 3,4,5,6,7,8,9
- **Vis.-Filter:**
 - hsi_vis_edit
 - hsi_vis_combine(/conj)
 - hsi_vis_duplicate
- **Res / fow**
 - pixel_size=**0.5**
 - im_dim=**128**



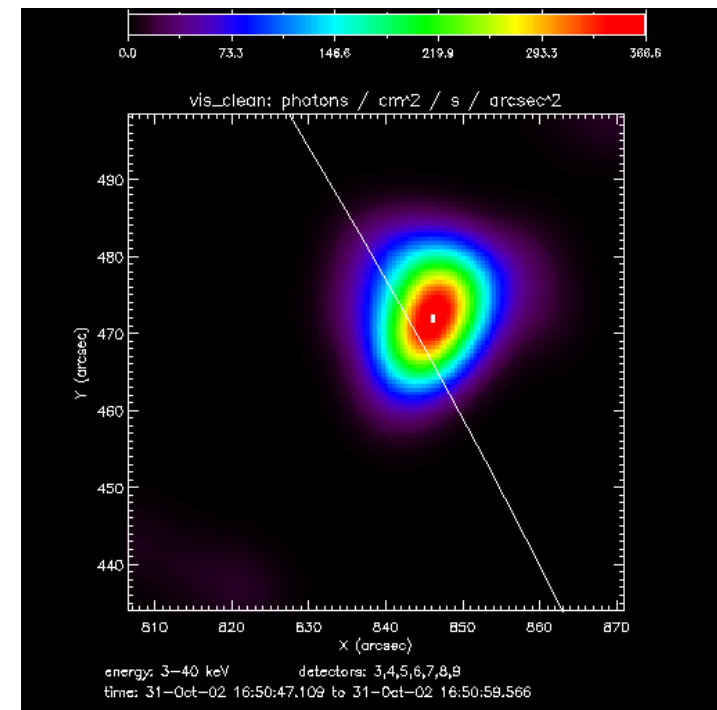
Photon-Maps - mem_map

- **Units:** photons / cm² / s
- **Detectors:** 3,4,5,6,7,8,9
- **Vis.-Filter:**
 - hsi_vis_edit
 - hsi_vis_combine(/conj)
- **Res / fow**
 - pixel_size=**0.5**
 - im_dim=**128**



Photon-Maps - vis_clean

- **Units:** photons / cm² / s / arcsec²
- **Detectors:** 3,4,5,6,7,8,9
- **Vis.-Filter:**
 - hsi_vis_edit
 - hsi_vis_combine(/conj)
 - hsi_vis_duplicate
- **Res / fow**
 - pixel_size=0.5
 - im_dim=128



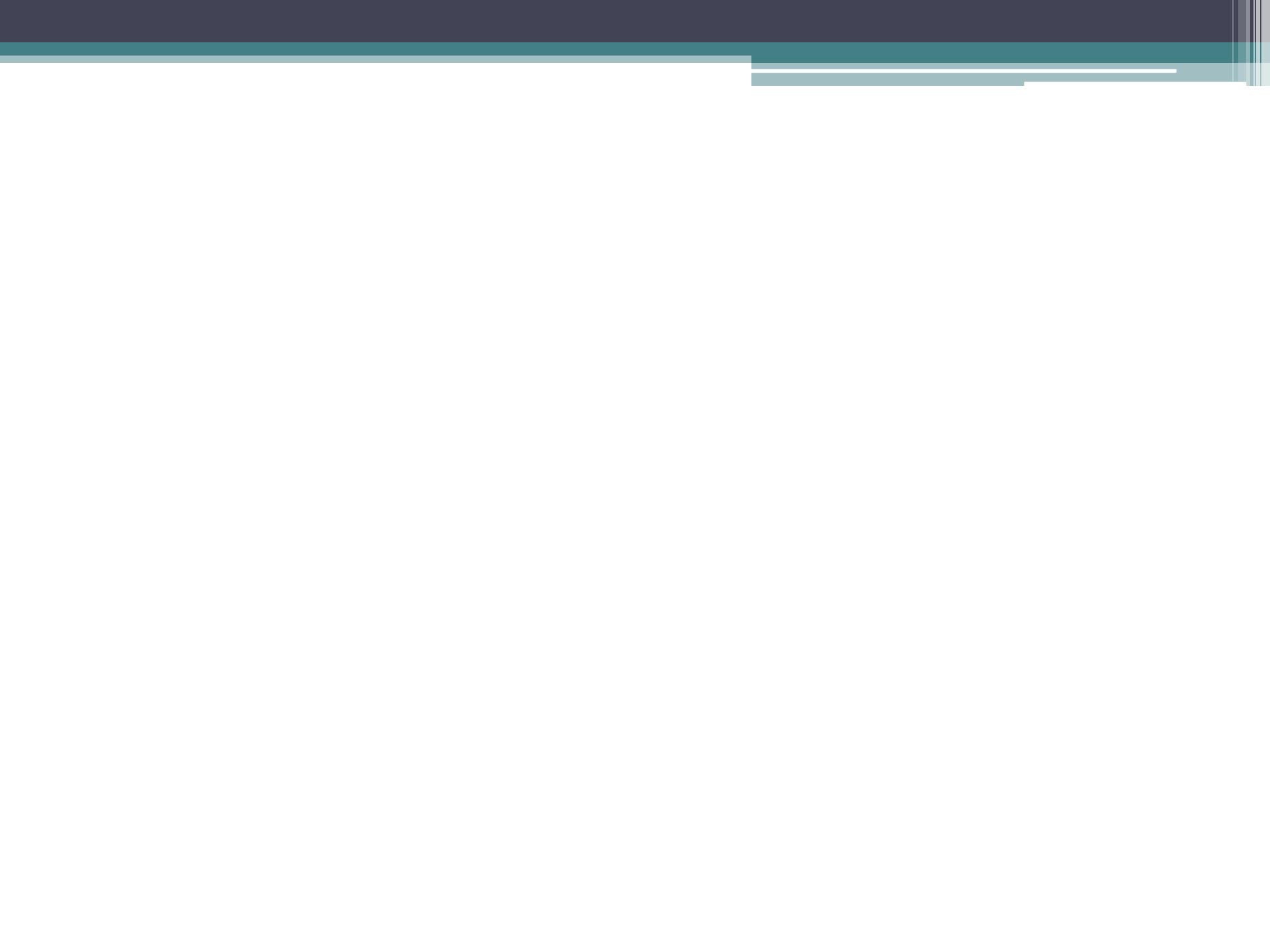
Web Interface

- <http://hsp.cs.technik.fhnw.ch/browser/>
- Demo

Discussion Science Product Database

Perspectives and Exploitation

- Extensions to the database
- Integration with other tools and services
- Publication
- Etc.



Web Interface



HIGH ENERGY SOLAR PHYSICS DATA IN EUROPE

Quick Navigation

Event Selection
Interval Selection
Preview
Download

Event Selection

GOES Curve

List

Flare ID	GOES Class	Total Counts	Start Time	End Time	Lower Energy	Upper Energy
2021423		null	14-Feb-2002 22:22:36	14-Feb-2002 22:26:20	6	12
3101922	X1.1	null	19-Nov-2003 17:38:04	19-Nov-2003 18:09:16	6	12
2080327	X1.0	null	3-Aug-2002 19:56:20	3-Aug-2002 20:42:52	6	12
3102333	X1.1	null	23-Nov-2003 20:56:32	23-Nov-2003 21:36:04	6	12
5091020	X1.1	null	10-Sep-2005 17:41:28	10-Sep-2005 18:14:24	6	12
12030505	X1.1*	null	5-Mar-2012 02:41:48	5-Mar-2012 02:56:28	6	12
12030509	X1.1*	null	5-Mar-2012 03:12:20	5-Mar-2012 03:16:28	6	12
12030510	X1.1*	null	5-Mar-2012 03:16:28	5-Mar-2012 03:22:28	6	12
12030506	X1.1*	null	5-Mar-2012 03:56:04	5-Mar-2012 04:01:00	6	12
2103120	X1.2	null	31-Nov-2002 16:48:28	31-Nov-2002 17:16:08	6	12
4022686	X1.1	null	26-Feb-2004 01:49:08	26-Feb-2004 02:33:20	6	12
5090967	X1.1	null	9-Sep-2005 02:28:56	9-Sep-2005 04:22:24	6	12

Event Filter

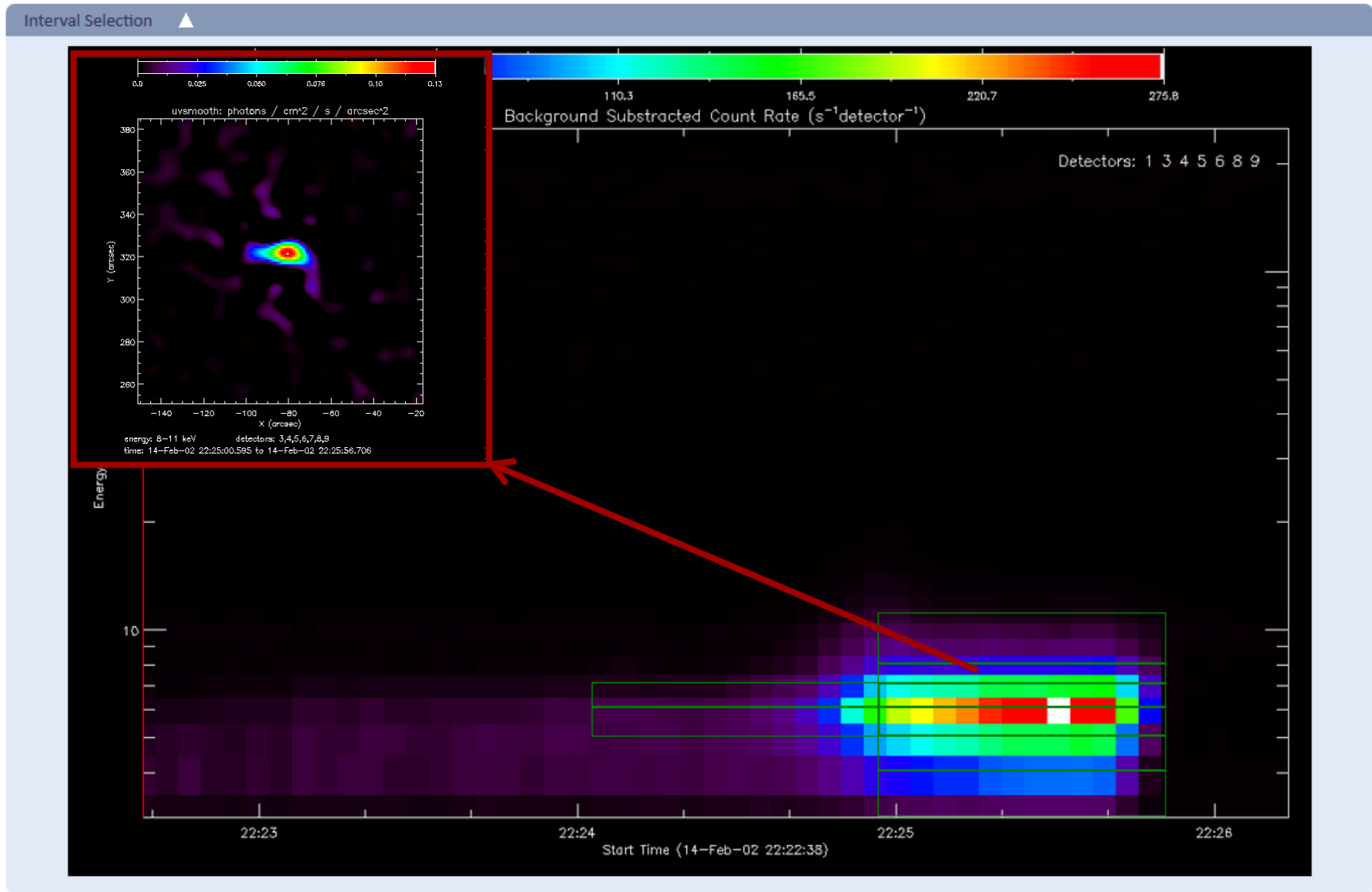
Time/Date:

GOES Class:

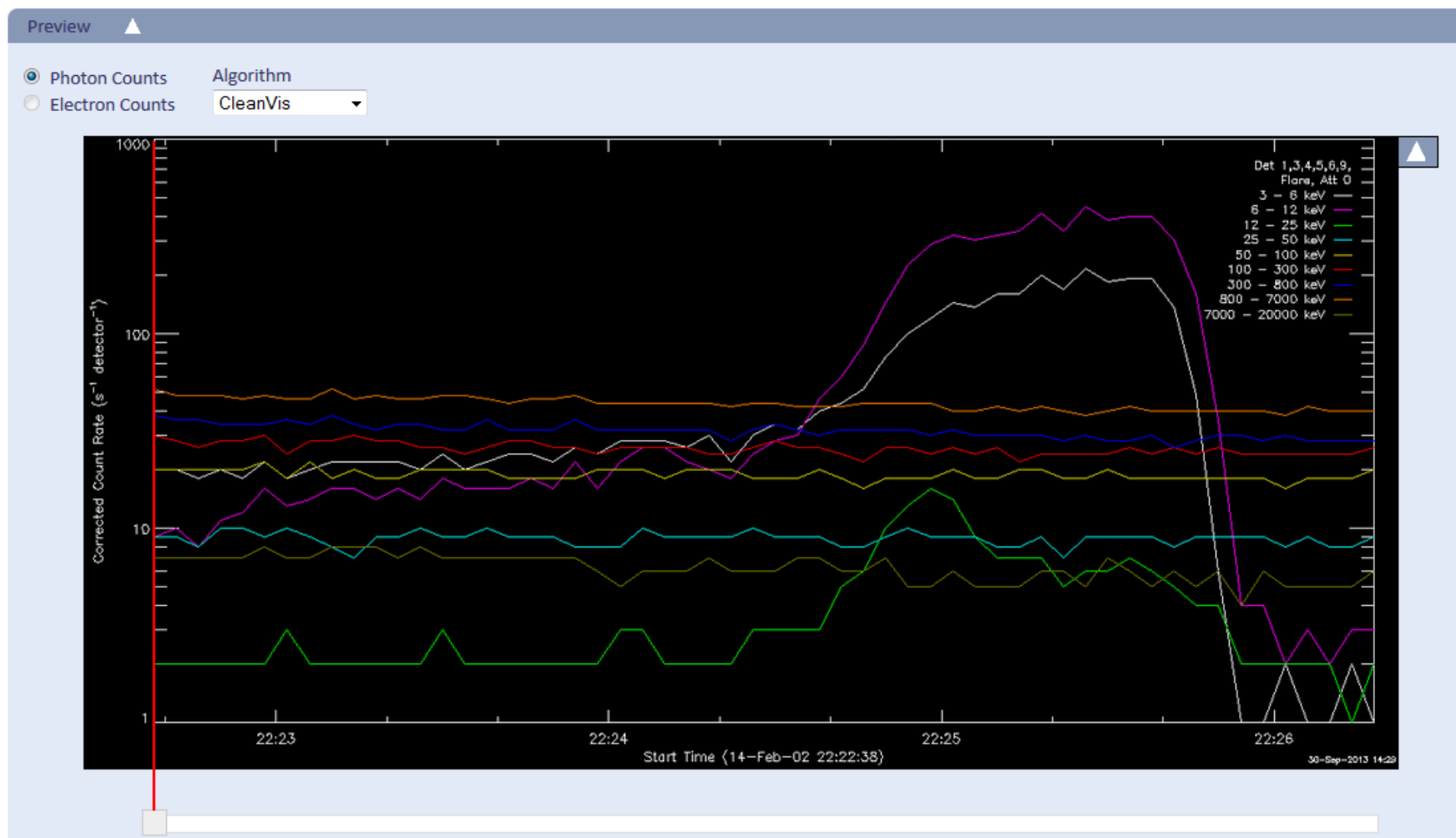
Duration:

Flare ID:

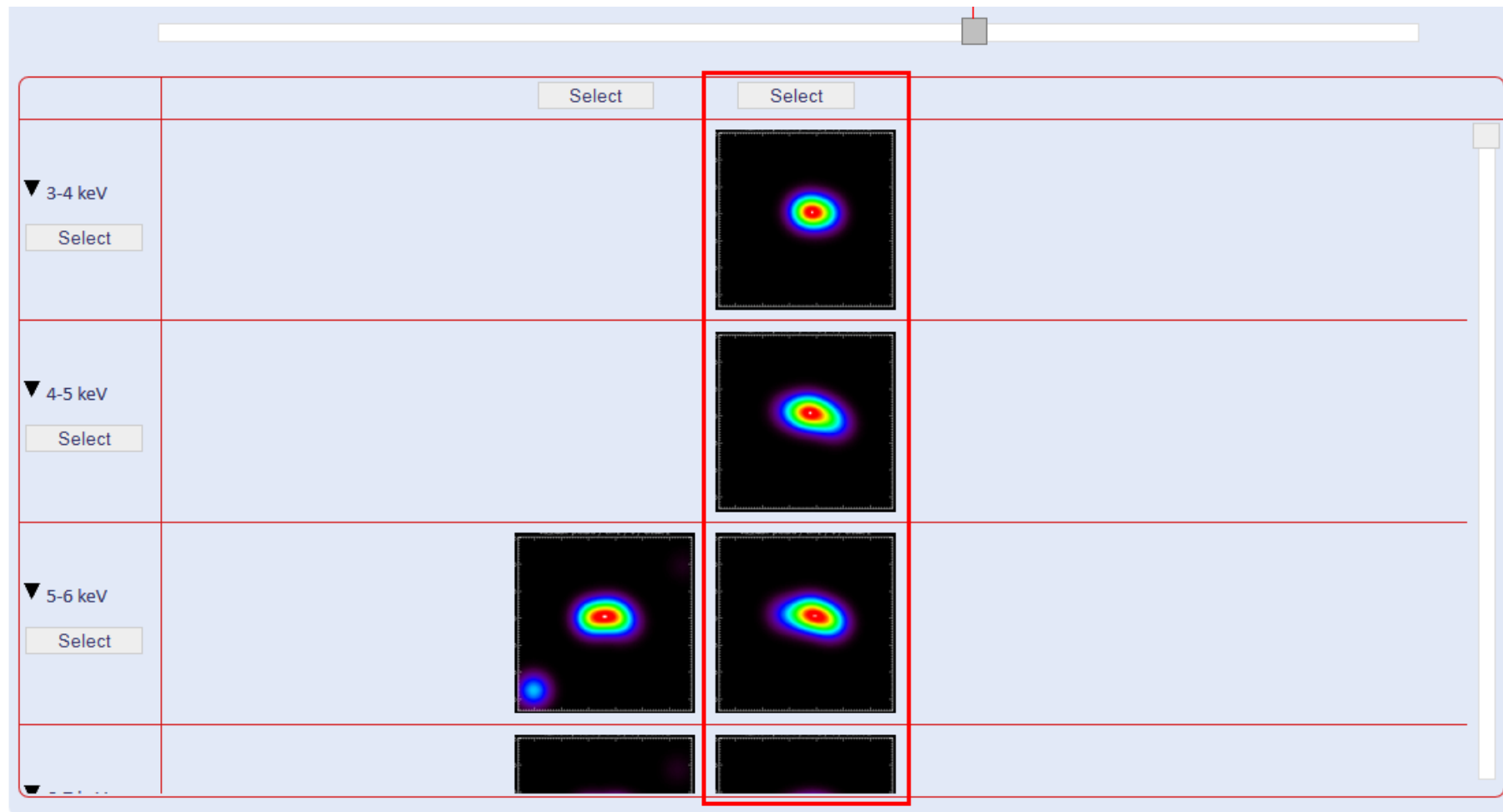
Web Interface



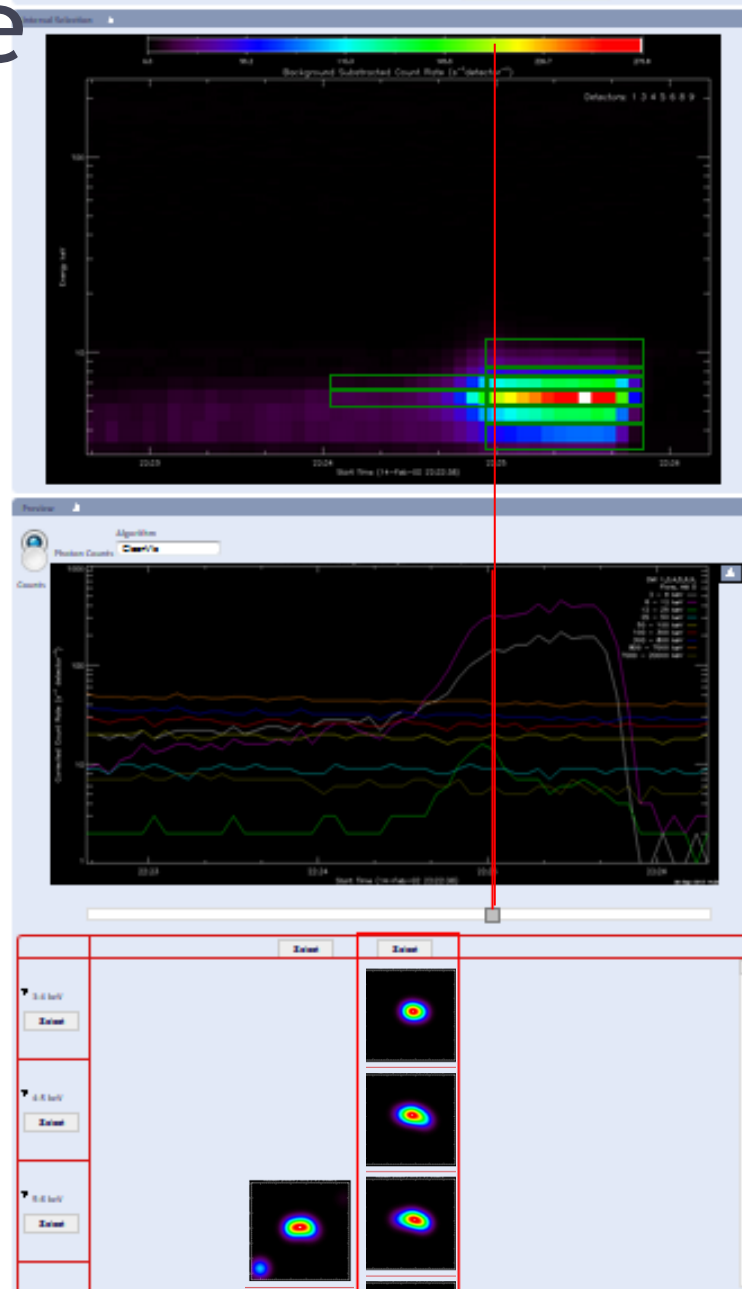
Web Interface



Web Interface



Web Interface



Web Interface

Download ▲

Download Options

Data Volume

- ☐ Current Selection
☐ Entire Event

Data Products

Photon

- ☐ Visibilities
☐ Maps

☐ UV Smooth
☐ MEM_NJIT
☐ CleanVis
☐ Bayes

Electron

- ☐ Visibilities
☐ Maps

☐ UV Smooth
☐ MEM_NJIT
☐ CleanVis
☐ Bayes

Misc

- ☐ Scripts

Download