G43.3-0.2

1 Summary

- Common Name: W49B
- Distance: 8 kpc (**Moffett & Reynolds, 1994** and reference therein)
- Center of X-ray emission (J2000): (19 11 07.5, 09 06 27.1)
- X-ray size: 5.5'x4.4'
- Description:

1.1 Summary of Chandra Observations

Sequence	Obs ID	Instrument	$\text{Exposure}_{\text{uf}}$ (ks)	$\text{Exposure}_{\text{f}}$ (ks)	Date Observed	Aimpoint (J2000) (α, δ)
500004	117	ACIS-012367	53.9	53.3	2000-07-08	(19 11 06.6, 09 06 00.0)

$\text{Exposure}_{\text{uf}} \rightarrow$ Exposure time of un-filtered event file
$\text{Exposure}_{\text{f}} \rightarrow$ Exposure time of filtered event file

- The whole remnant is covered by chip ACIS-S3(CCD_ID=7)

1.2 Chandra Counts and Fluxes

Region	Energy Range (keV)	Signal (counts)	Rate (counts s^{-1})	F_X^{abs} (ergs cm^{-2} s^{-1})	F_X (ergs cm^{-2} s^{-1})	L_X (ergs s^{-1})
Total	0.3 - 10.0	2.222e+05	4.168e+00	6.22e-11	5.99e-09	4.57e+37
(117)	0.3 - 2.1	6.402e+04	1.201e+00	5.43e-12	5.87e-09	4.48e+37
	2.1 - 10.	1.589e+05	2.981e+00	5.69e-11	1.19e-10	9.04e+35

- N_H = 5.71 ($10^{22} cm^{-2}$)
- Assumed distance: 8 kpc (**Moffett & Reynolds, 1994** and reference therein)
- nH was derived with two thermal plasma model

1.3 Nearby Sources

Obs ID	Position (J2000)	Size	Net Count	Count rate	Note
117					
	(19 10 21.9, 09 05 02.7)	< 14.3”	822.0	1.53e-02	
	(19 10 35.3, 09 06 42.3)	< 6.3”	34.1	6.33e-04	
	(19 10 43.3, 09 22 05.3)	< 43.5”	177.0	3.29e-03	
	(19 10 58.8, 09 01 49.9)	< 3.3”	268.0	4.98e-03	
	(19 11 05.7, 09 02 33.7)	< 3.4”	78.2	1.45e-03	
	(19 11 06.1, 09 02 07.0)	< 3.5”	58.1	1.08e-03	
	(19 11 14.6, 09 03 27.7)	< 3.6”	34.2	6.35e-04	
	(19 11 21.2, 09 05 02.6)	< 4.5”	118.0	2.19e-03	
	(19 11 24.1, 09 05 10.8)	< 5.1”	70.7	1.31e-03	

(note) 1. This nearby source list is incomplete.
All the above sources are originally from the "src2.fits" file
which is distributed with standard chandra processing.
Only sources with significant count rate and which are clear to
visual inspection are included.
2. The size given above is the size of the region used in detecting
that source.
3. For each source, background was subtracted from annular region
around the source.

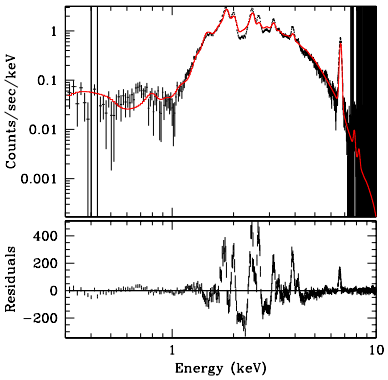
1.4 References

- Moffett & Reynolds, 1994 : VLA at 330 MHz , 1.48 GHz and 4.85 GHz

2 Fit Detail

- See spectrum page for used regions.

2.1 Total:



- Two thermal plasma model used.
- Elemental abundance of Fe was thawed and linked between two model.

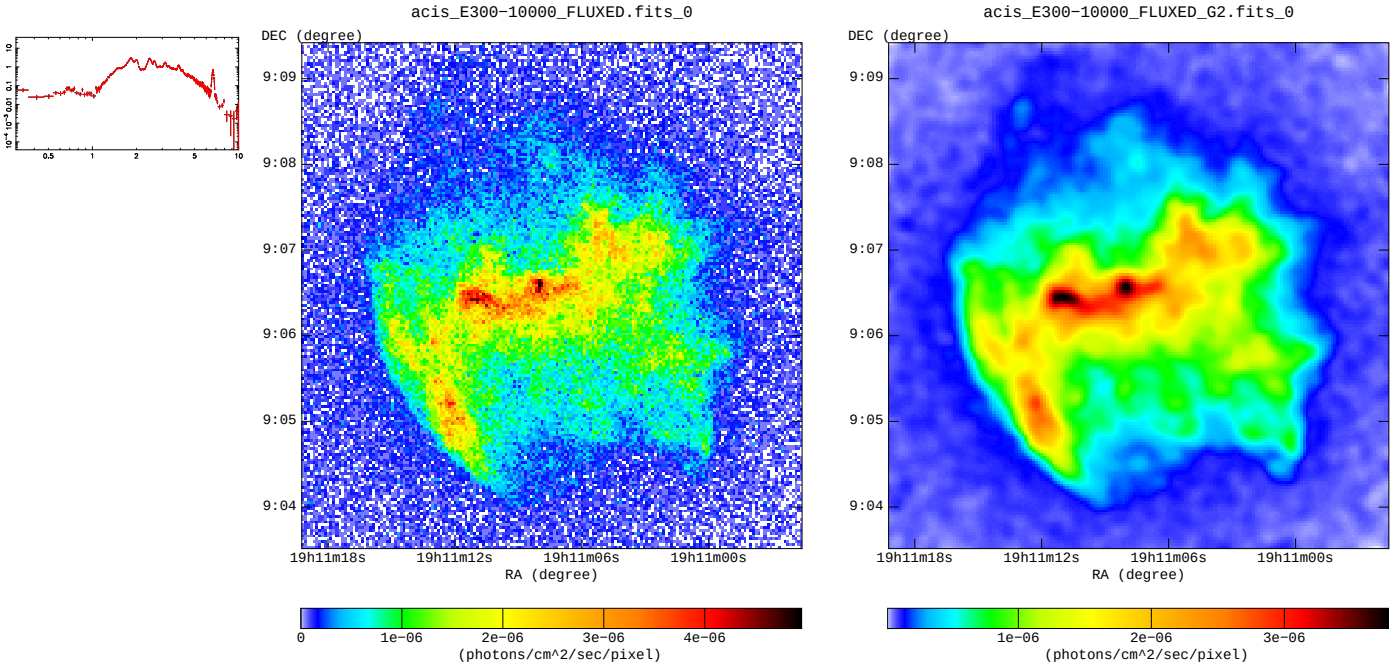
  source=(xswabs * (xsvraymond + xsvraymond))
  reduced χ^2 = 7.23762
  nh = `5.7071 10^22/cm^2`

3 Chandra Images : Band Images

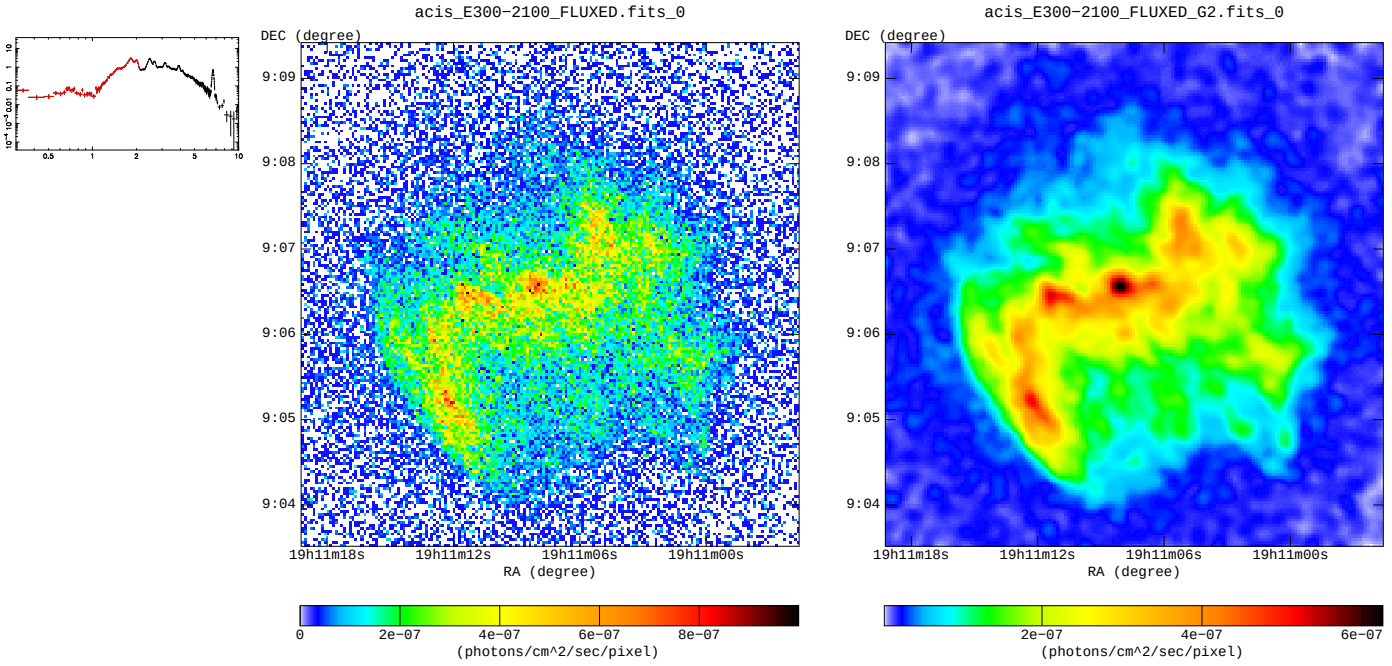
- Left : raw image, binned by 1x1 pixel
- Right : gaussian smoothed version of above (σ = 2 pixel)

3.1 Wide Band Images

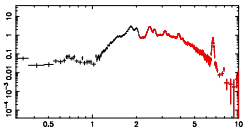
Total : 300-10000 eV

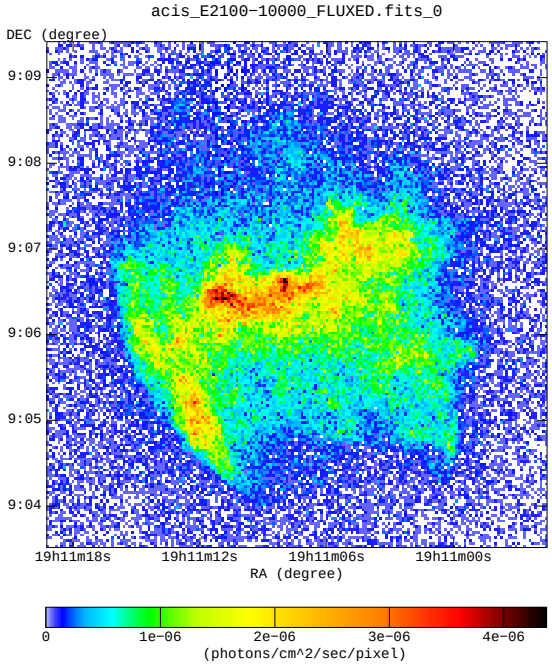


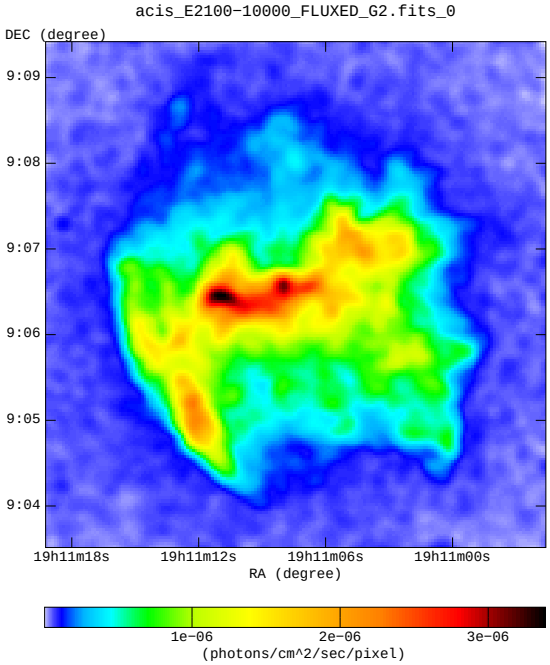
Soft Band : 300-2100 eV



Hard Band : 2100-10000 eV

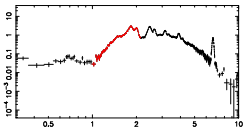


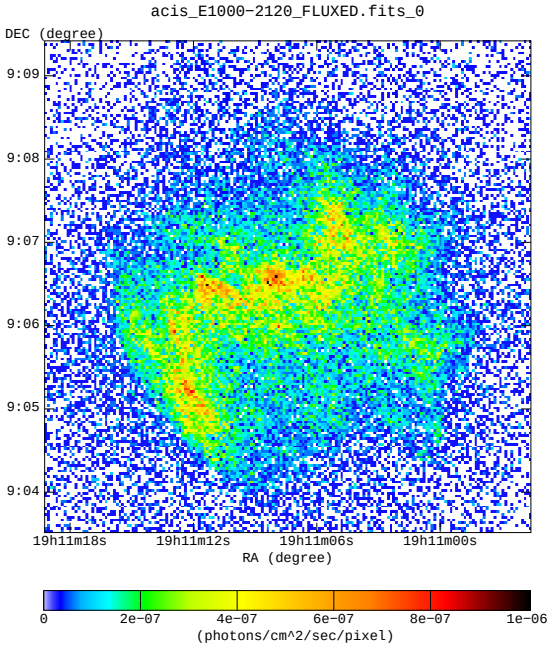


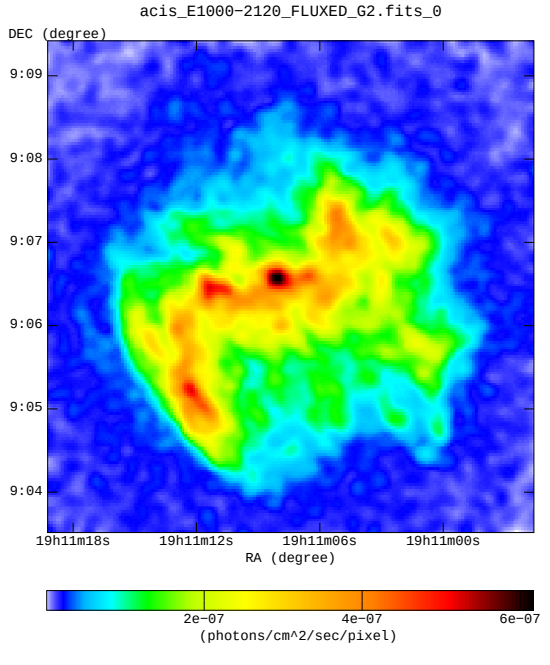


3.2 Band images used in true color image.

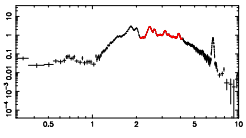
Red : 1000-2120 eV

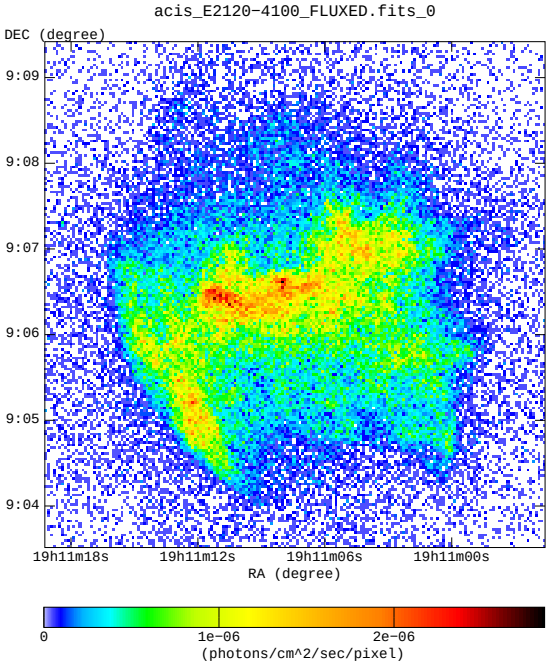


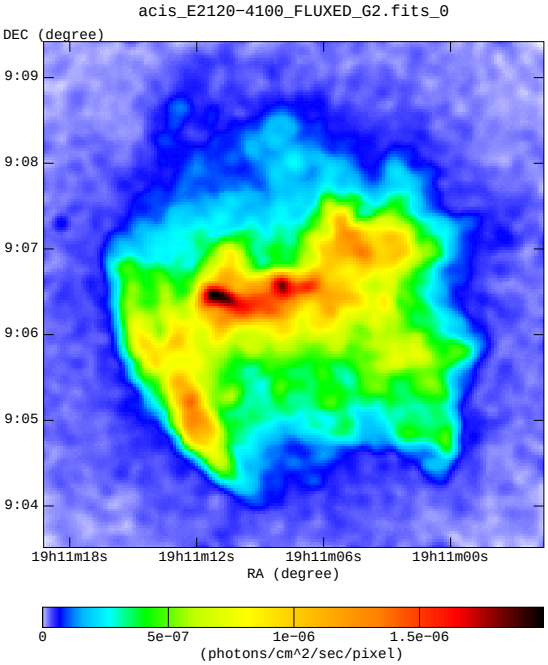




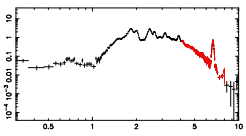
Green : 2120-4100 eV

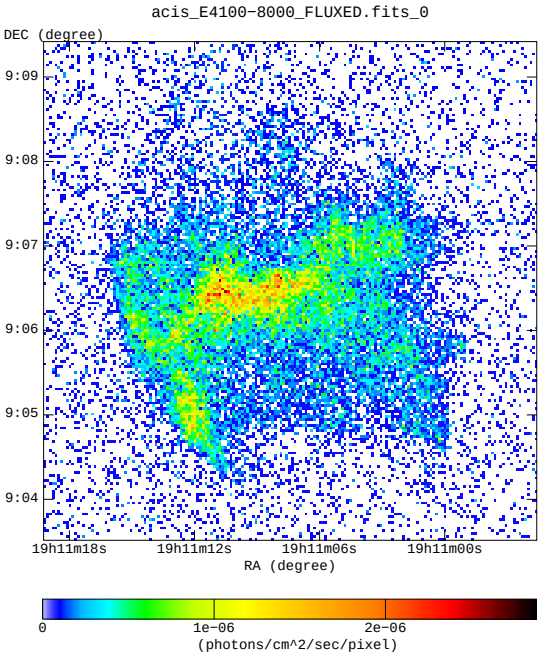


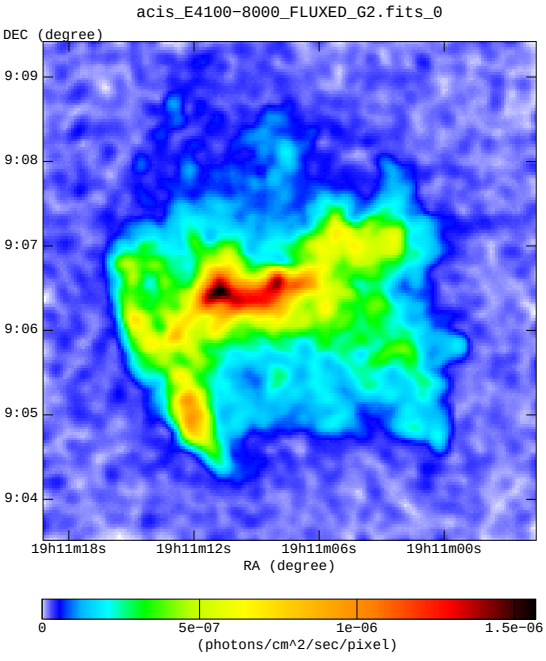




Blue : 4100-8000 eV

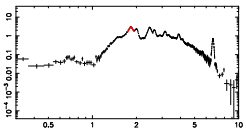


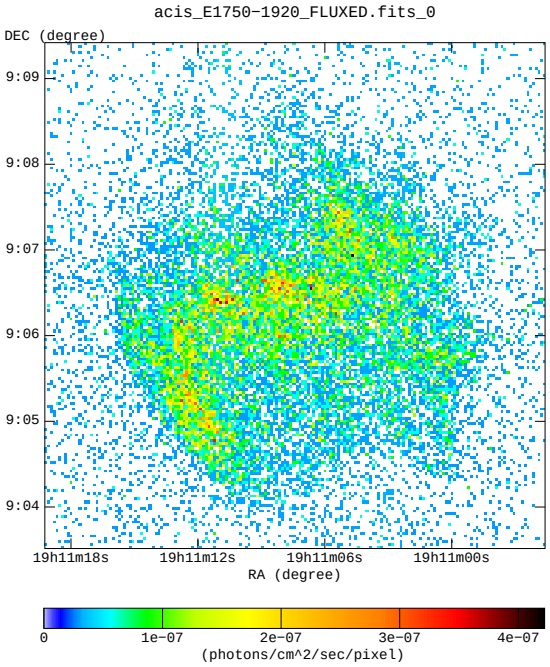


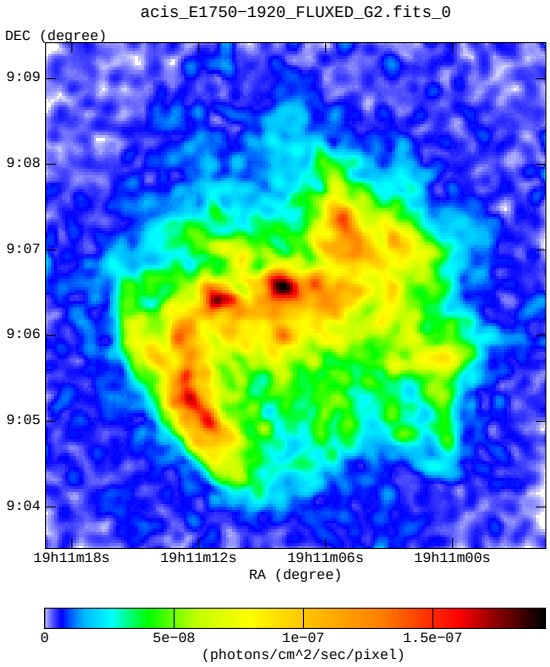


3.3 Misc.

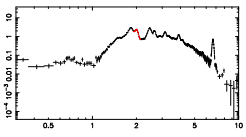
: 1750-1920 eV

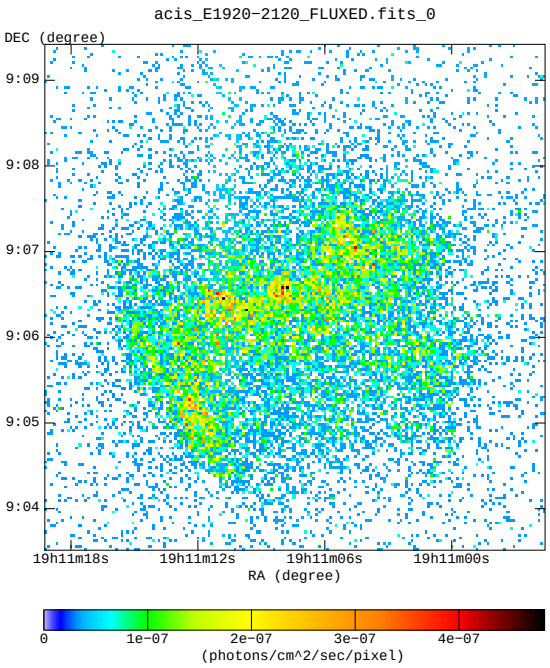


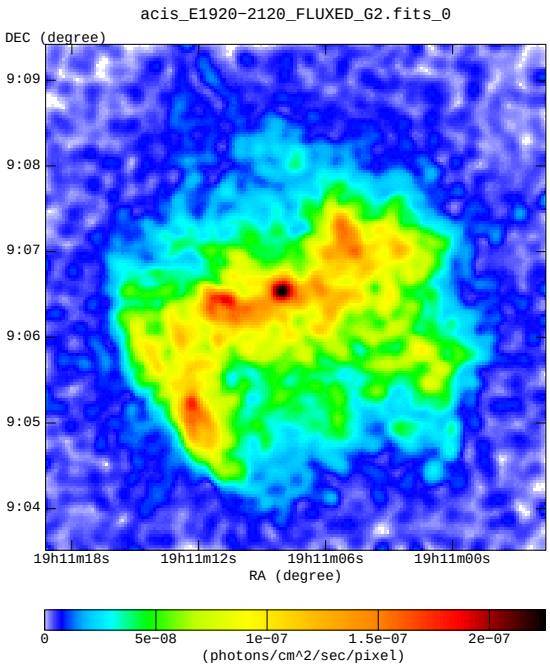




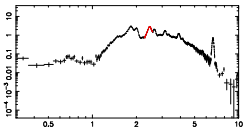
: 1920-2120 eV

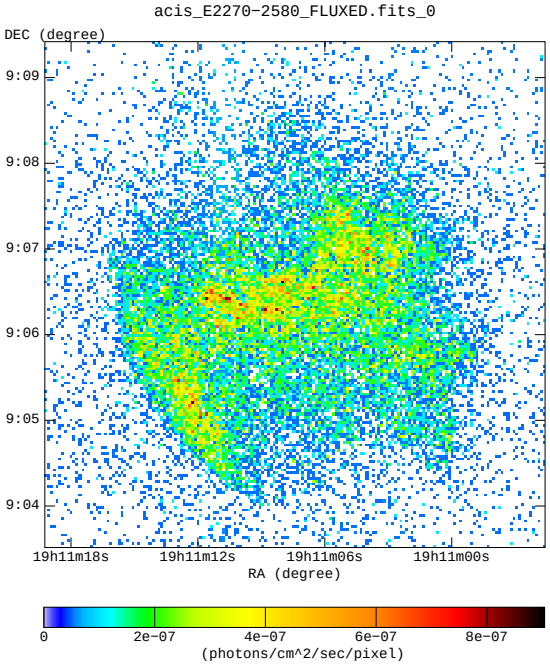


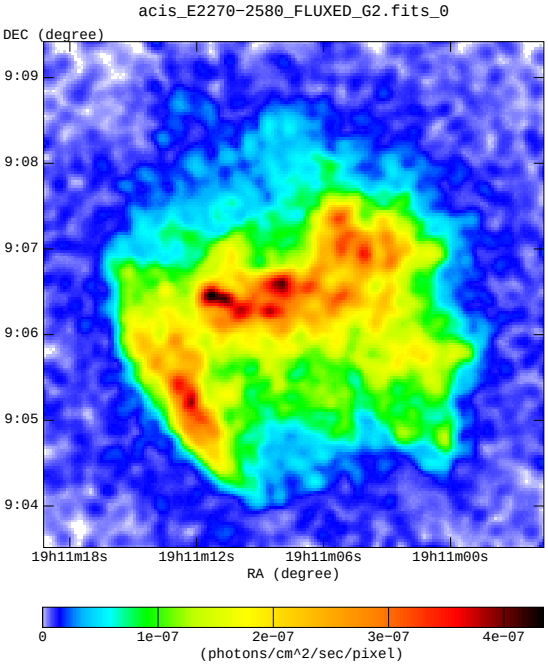




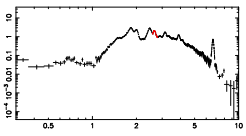
: 2270-2580 eV

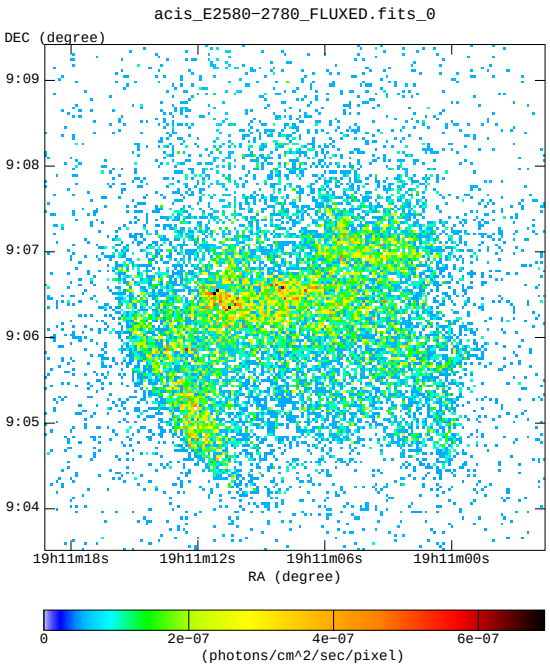


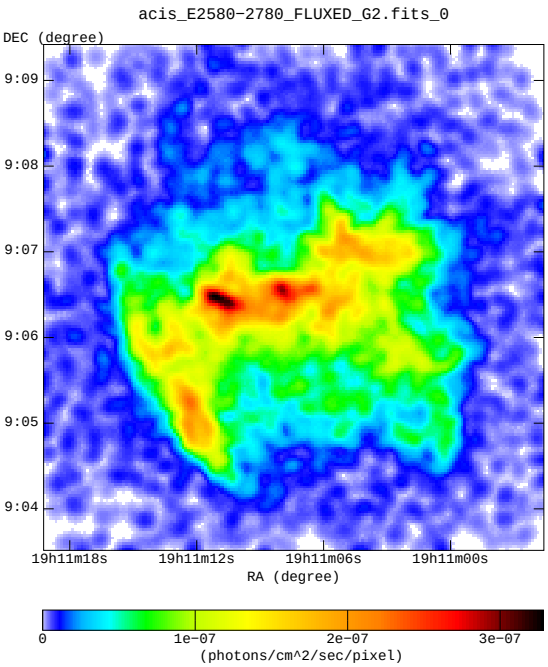




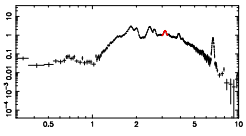
: 2580-2780 eV

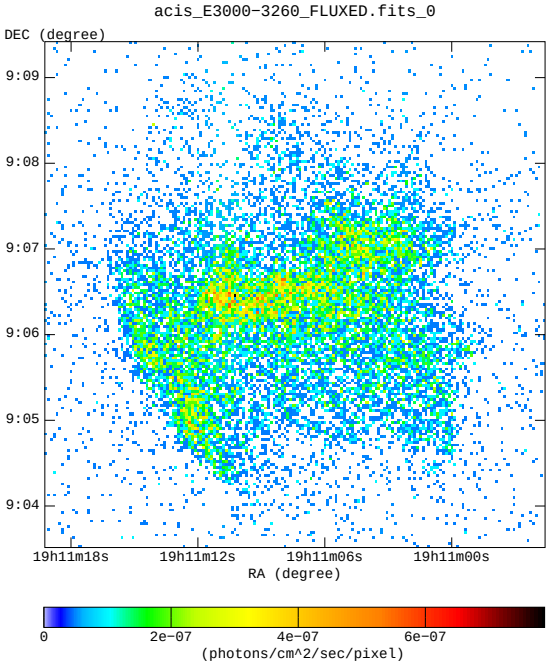


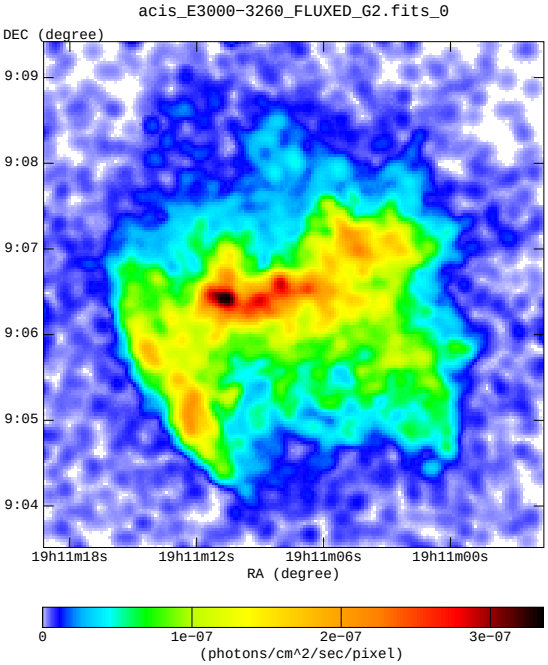




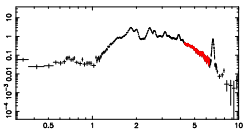
: 3000-3260 eV

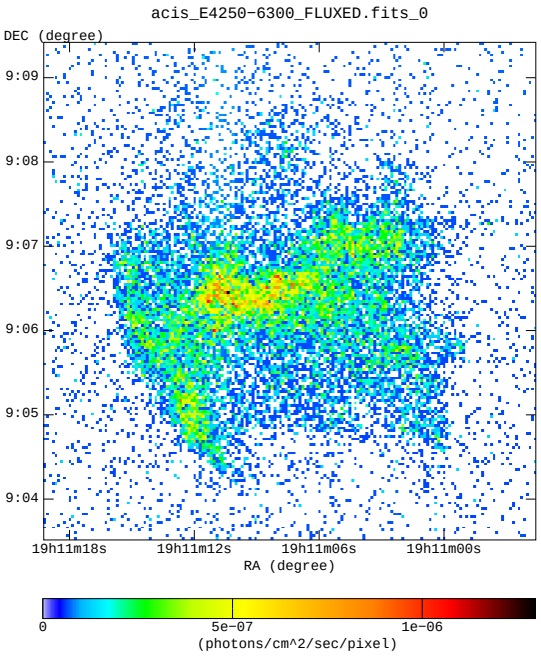


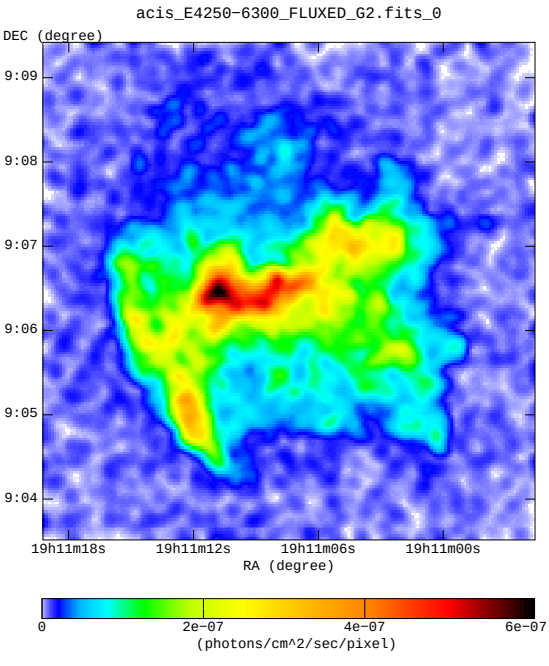




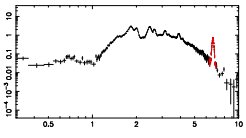
: 4250-6300 eV

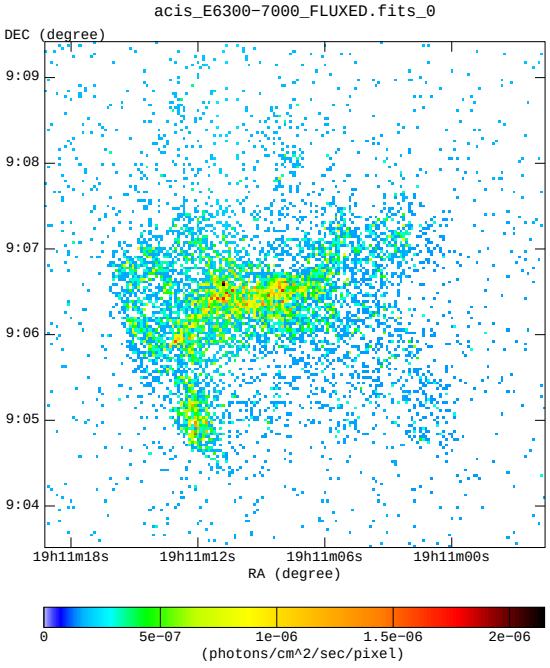


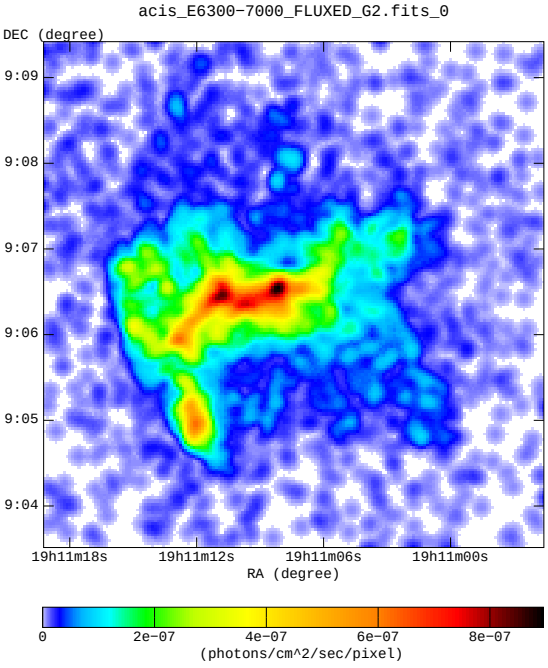




: 6300-7000 eV




acis_E6300−7000_FLUXED.fits_0
DEC (degree)
9:09
9:08
9:07
9:06
9:05
9:04
19h11m18s
19h11m12s
19h11m06s
19h11m00s
RA (degree)
0
5e−07
1e−06
1.5e−06
2e−06
(photons/cm^2/sec/pixel)

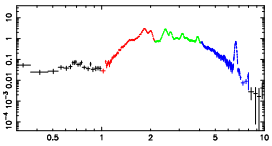

acis_E6300−7000_FLUXED_G2.fits_0
DEC (degree)
9:09
9:08
9:07
9:06
9:05
9:04
19h11m18s
19h11m12s
19h11m06s
19h11m00s
RA (degree)
0
2e−07
4e−07
6e−07
8e−07
(photons/cm^2/sec/pixel)

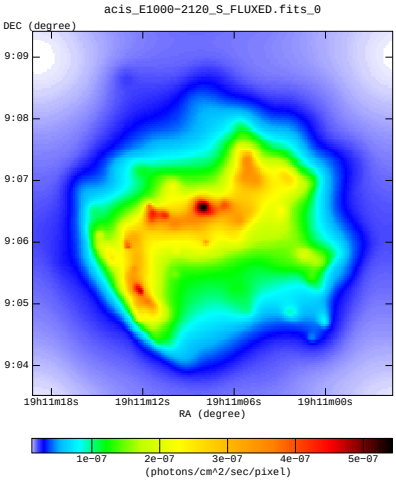
4 Chandra Images : True Color

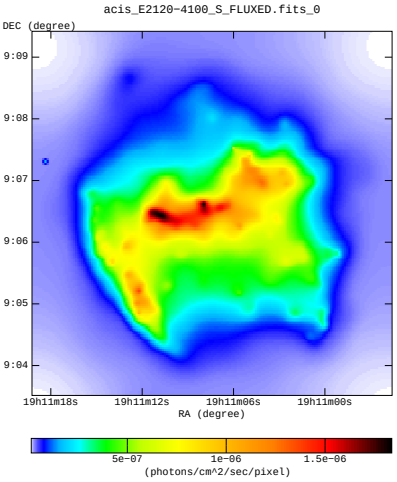
- Individual images are adaptively smoothed.
- Warning : the adaptive smoothing process sometimes produces artifacts.

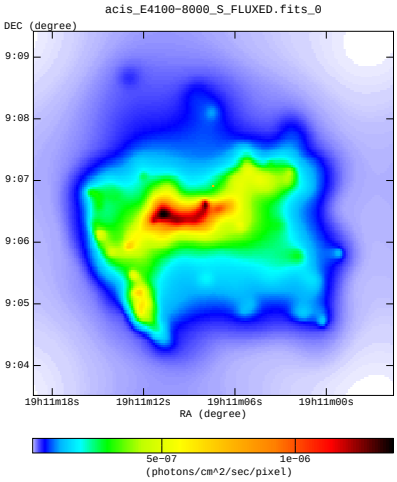
- convolution method : fft
- kernel type : gauss
- significance (min , max) : (3 , 5)

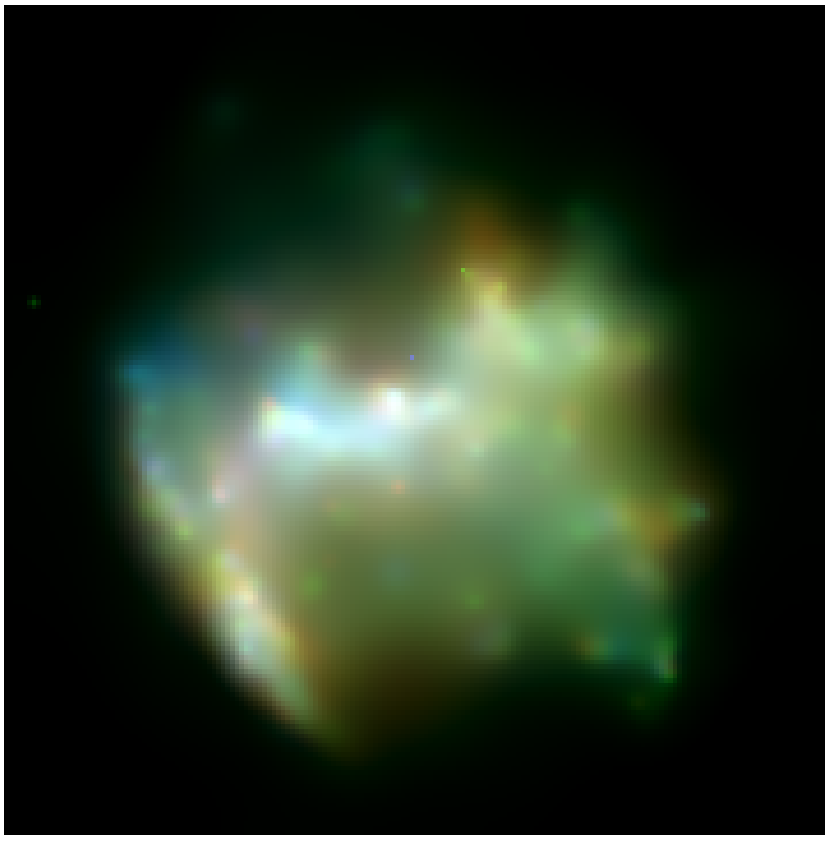
RED :	1000-2120 eV
GREEN :	2120-4100 eV
BLUE :	4100-8000 eV









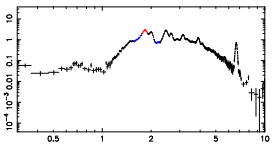


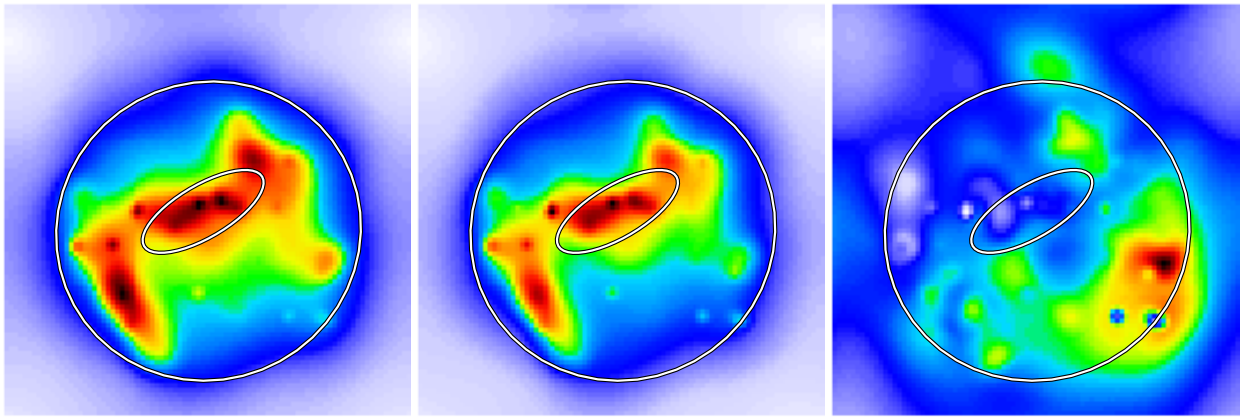
5 Chandra Images : Equivalent Width Map

5.1 Equivalent Width Images

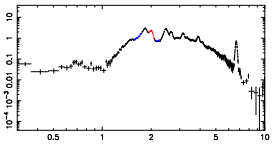
- individual images(line and two continuum) are binned by given pixel size and then adaptively smoothed.
- same scale map (from the least count images) was used for all three images.
- continuum at given line position was estimated by linear interpolation of two continuum image in pixel-by-pixel base.

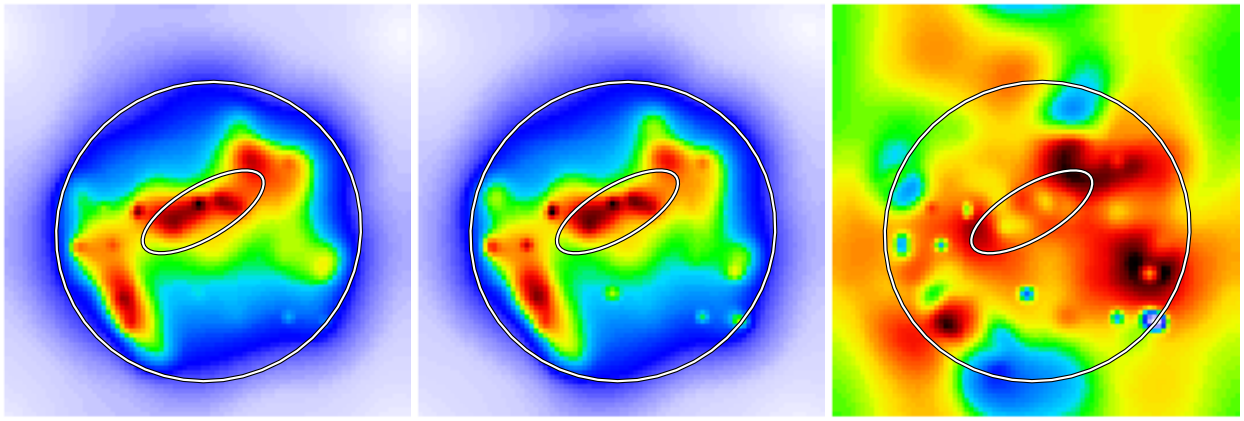
continuum : 1590-1730 eV
line : 1780-1890 eV
continuum : 2150-2260 eV



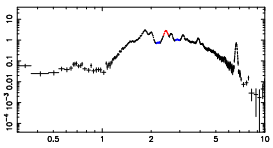


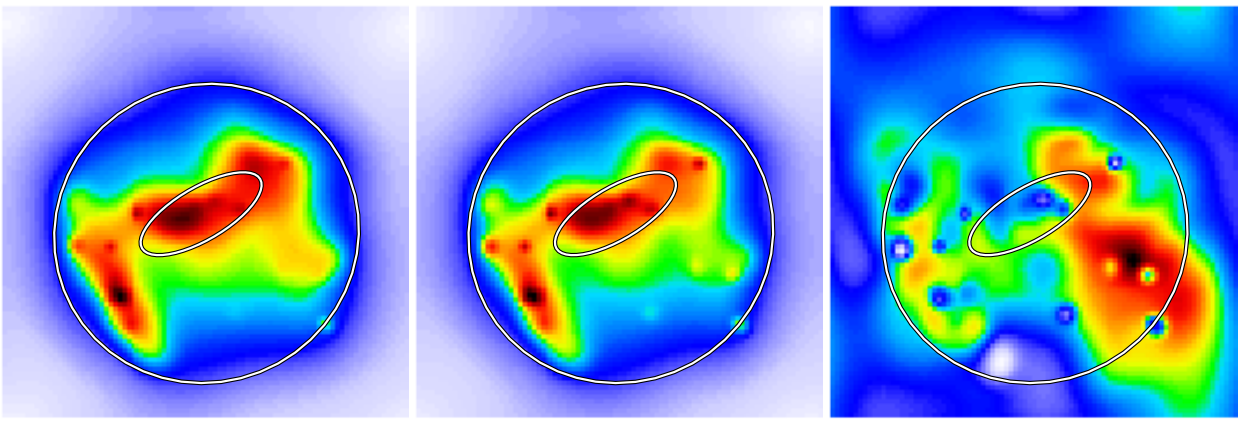
continuum : 1590-1730 eV
line : 1950-2080 eV
continuum : 2150-2260 eV



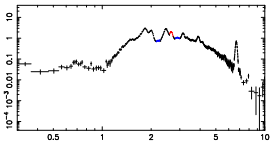


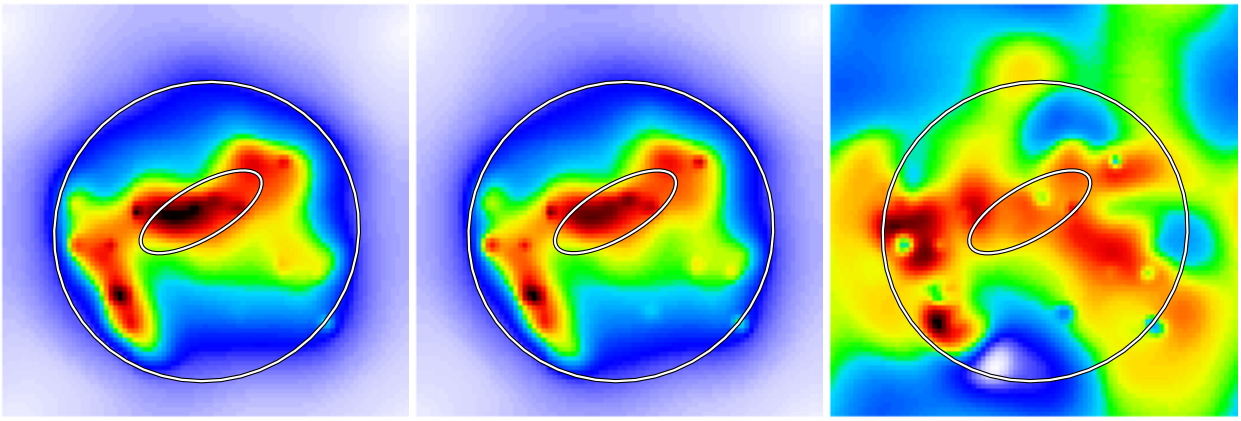
continuum : 2160-2250 eV
line : 2380-2550 eV
continuum : 2820-2980 eV



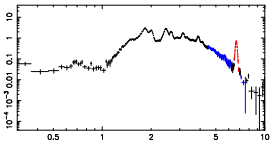


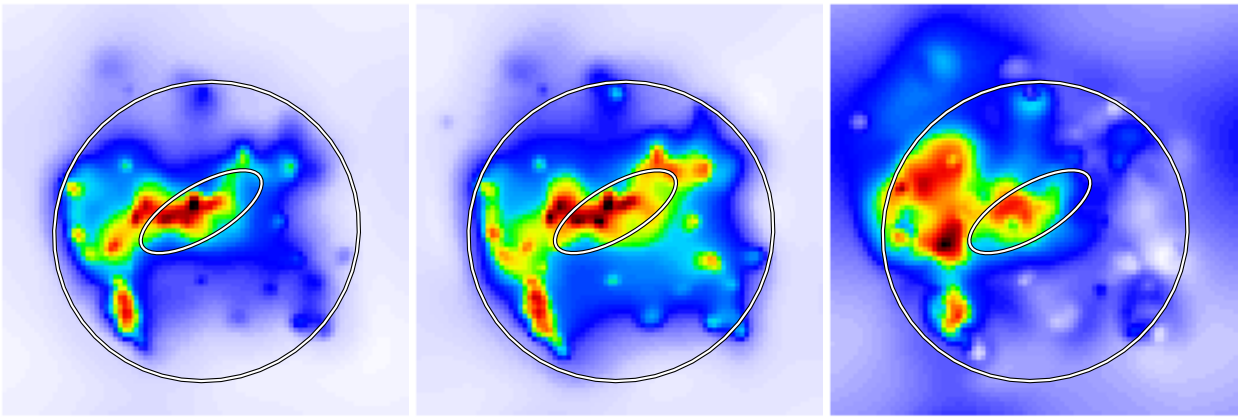
continuum : 2160-2250 eV
line : 2610-2730 eV
continuum : 2820-2980 eV





continuum :	4500-6200 eV
line :	6500-6900 eV
continuum :	7100-7600 eV





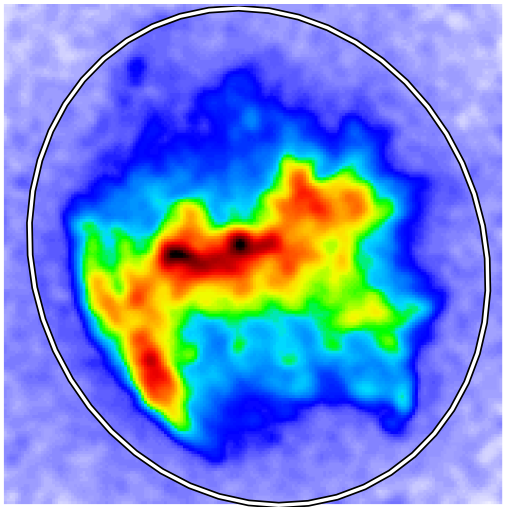
6 Chandra Spectrum

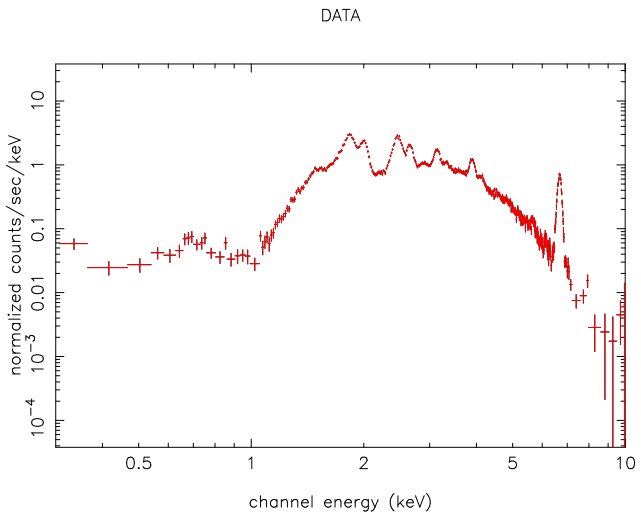
- Images show Regions used to extract spectra
- Regions with red strikes are excluded

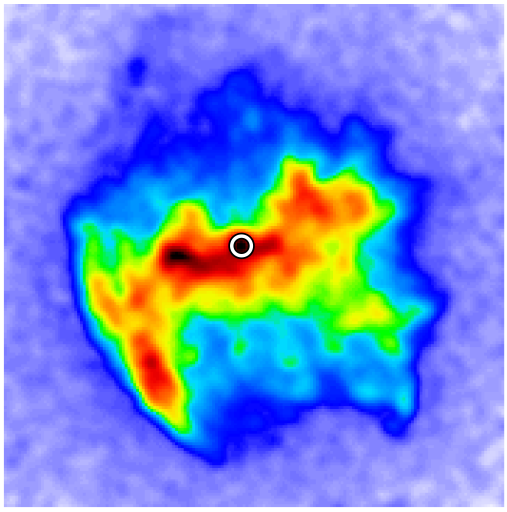
6.1 ObsID 117

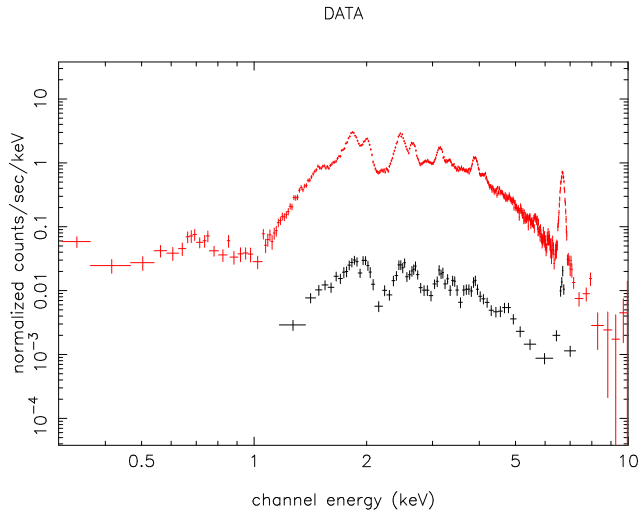
- Background was subtracted from the region around the SNR.

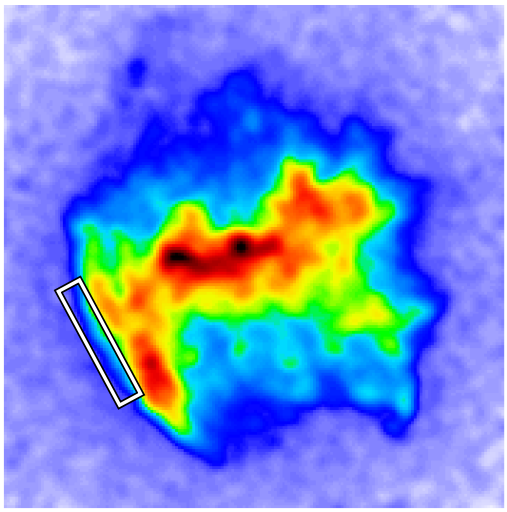
Total

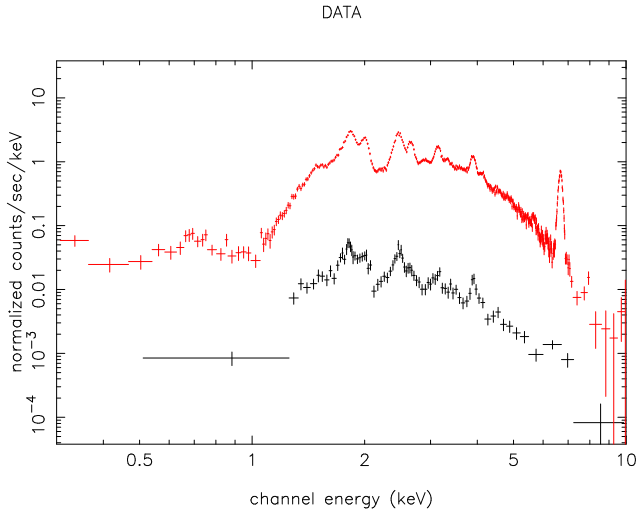


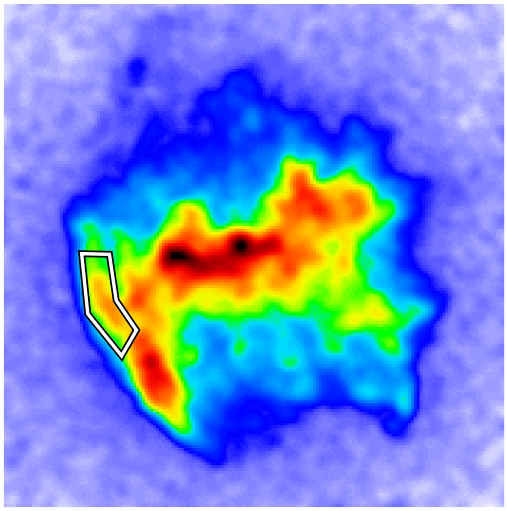


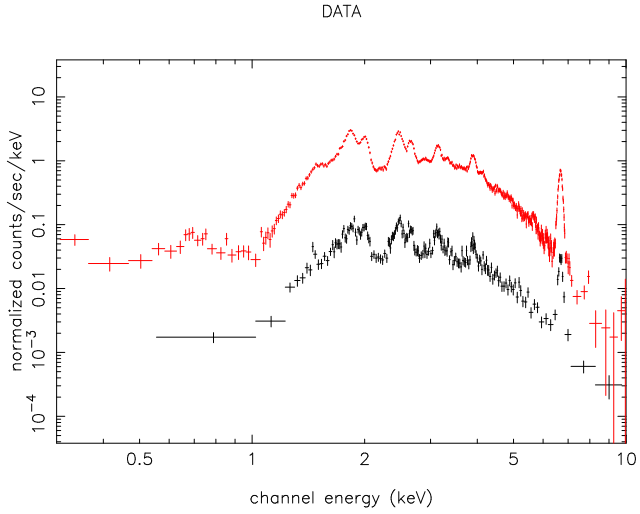


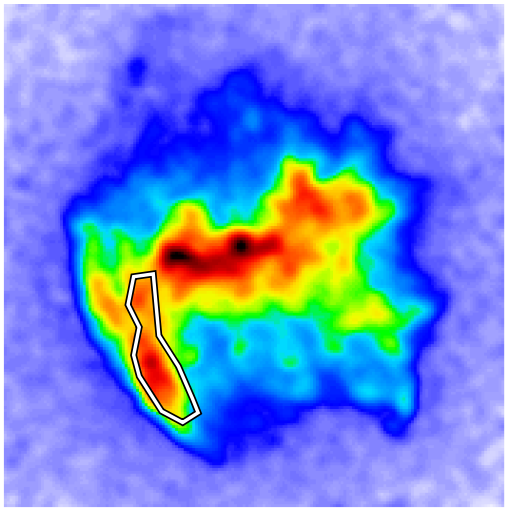


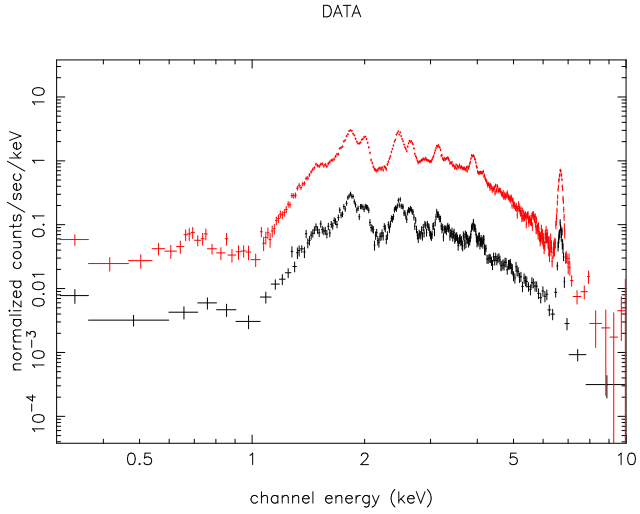


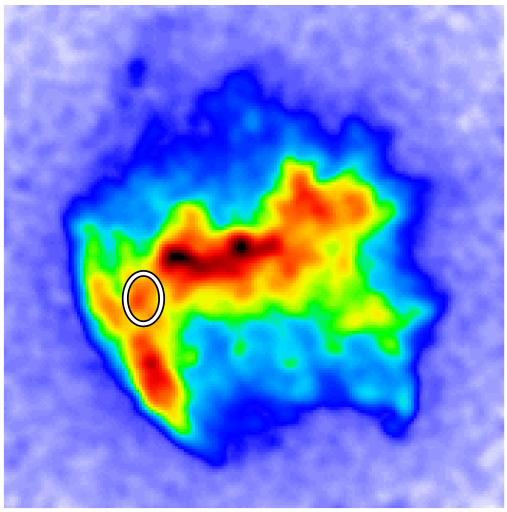

DATA
normalized counts/sec/keV
channel energy (keV)

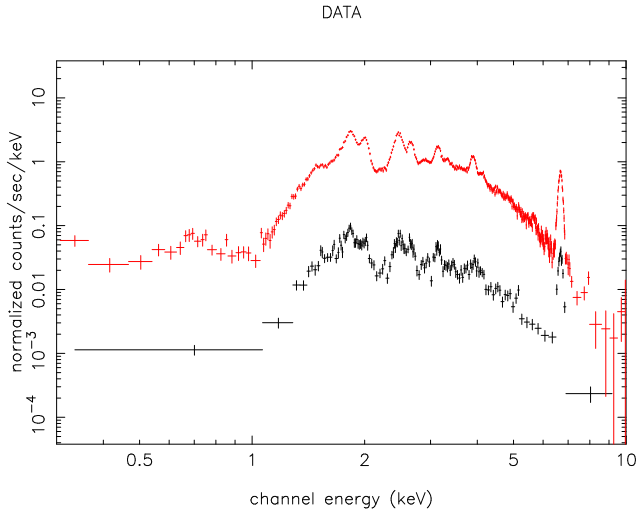


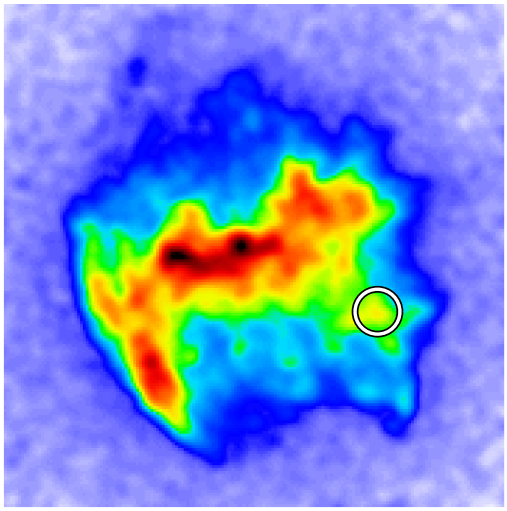

DATA
normalized counts/sec/keV
channel energy (keV)

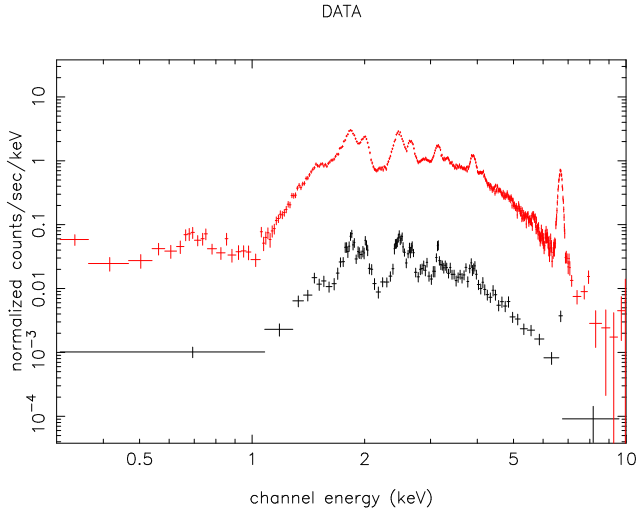


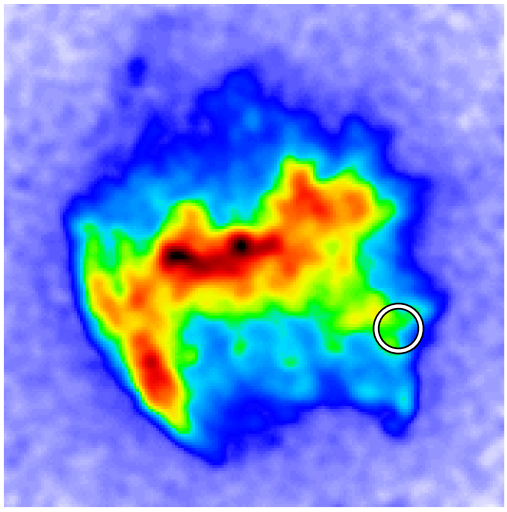

DATA
normalized counts/sec/keV
channel energy (keV)

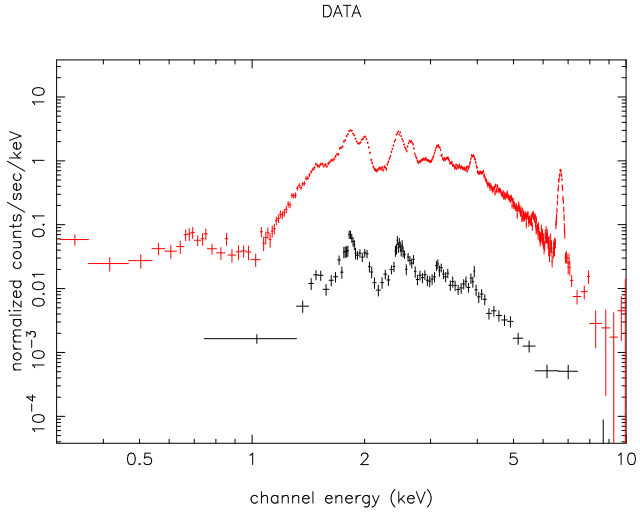


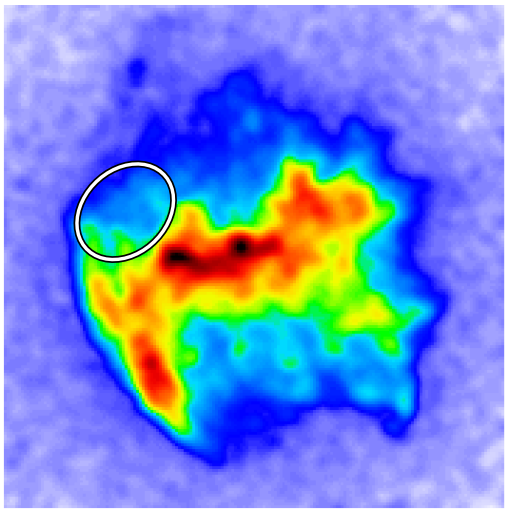

DATA
normalized counts/sec/keV
channel energy (keV)

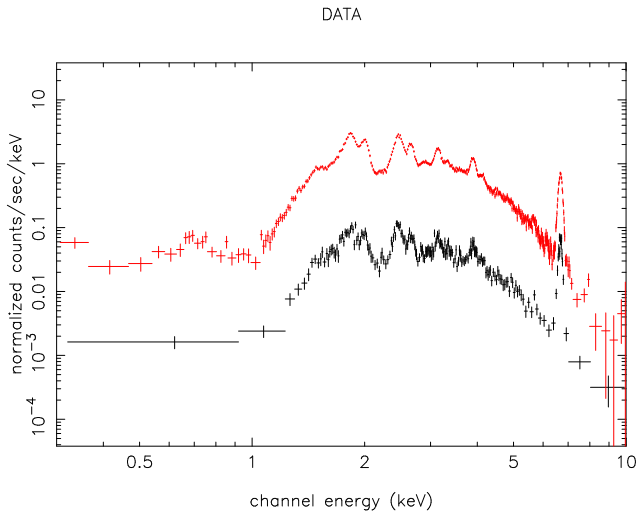


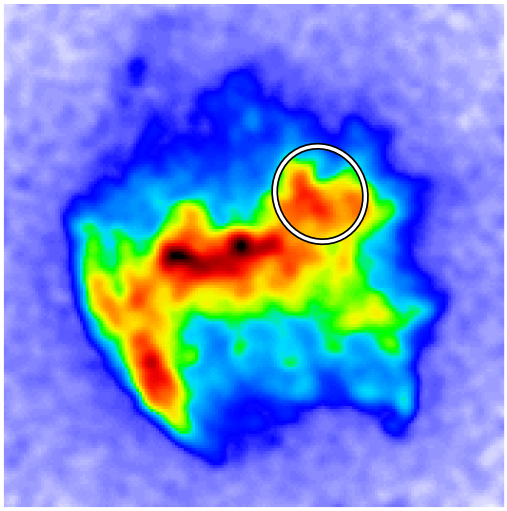

DATA
normalized counts/sec/keV
channel energy (keV)

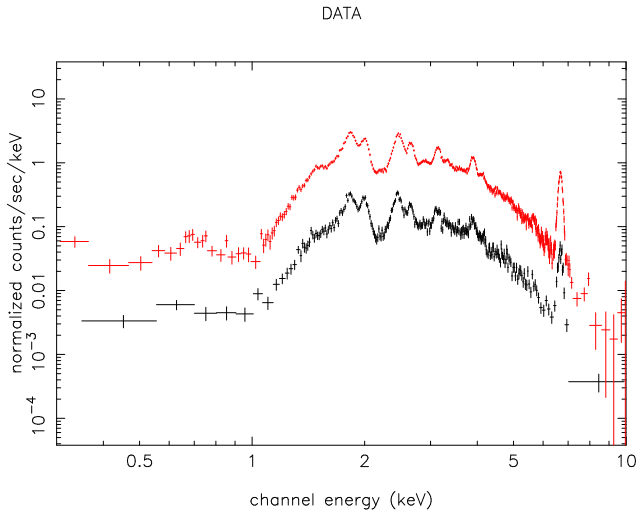


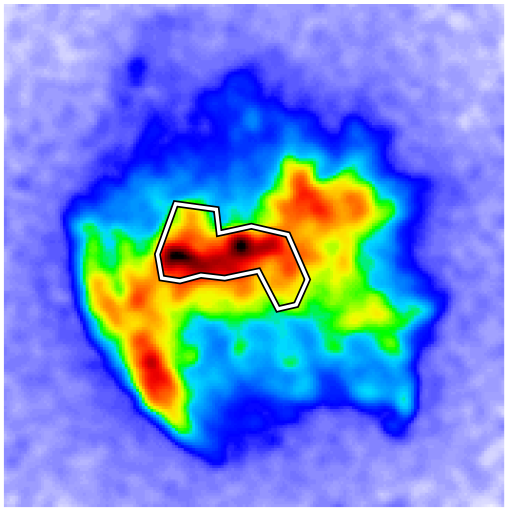

DATA
normalized counts/sec/keV
channel energy (keV)

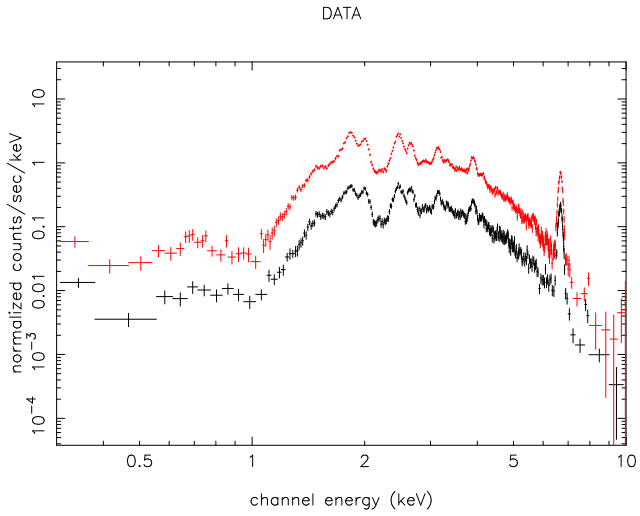



DATA
normalized counts/sec/keV
channel energy (keV)




DATA
normalized counts/sec/keV
channel energy (keV)

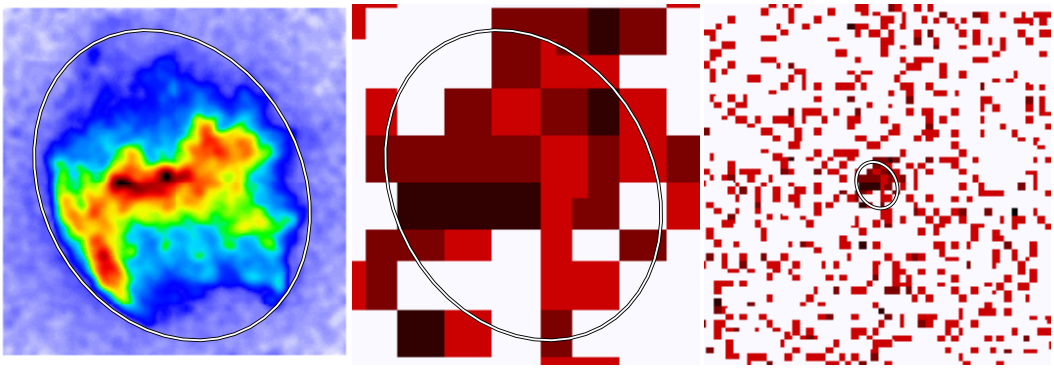



DATA
normalized counts/sec/keV
channel energy (keV)

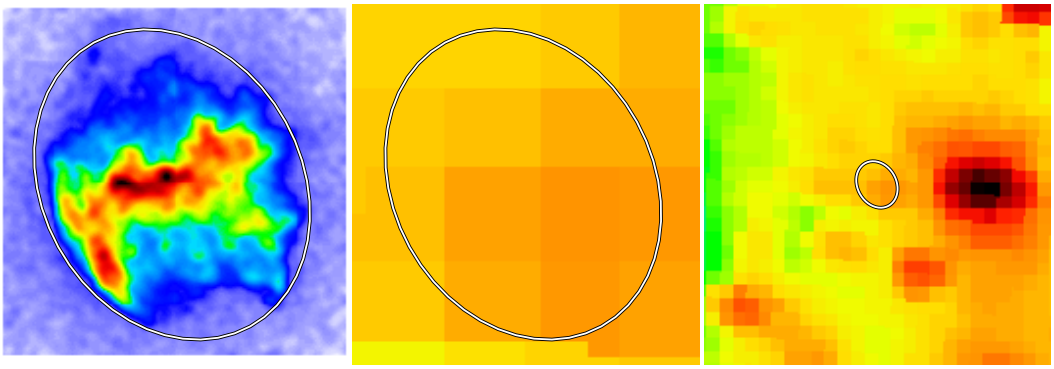
7 Images from Survey Missions

- Left : Chandra Image (0.3-10. keV)
- Center : Images from *SkyView* with the **same** scale
- right : Images from *SkyView* with a **reduced** scale

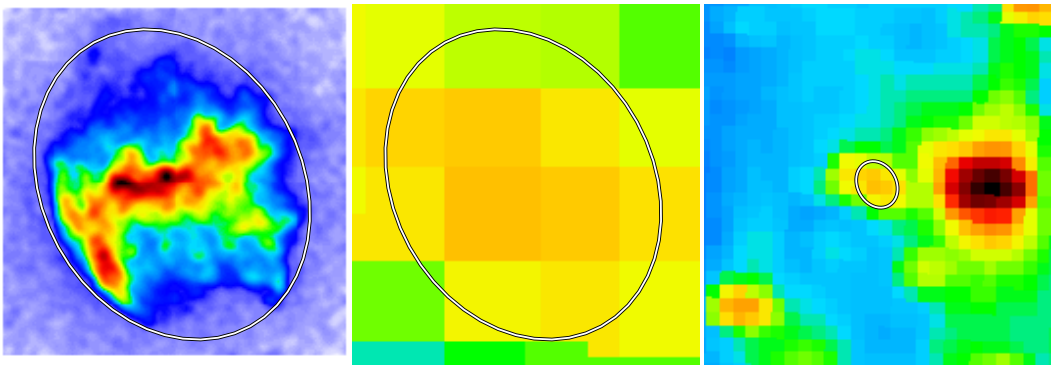
ROSAT All Sky Survey (Broad Band): X-ray (0.1-2.4 keV)



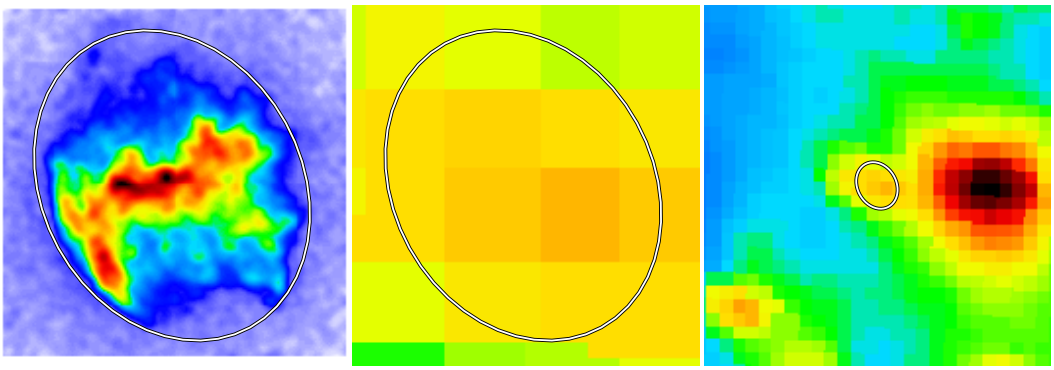
IRAS 12 micron: Infrared (12 micron)



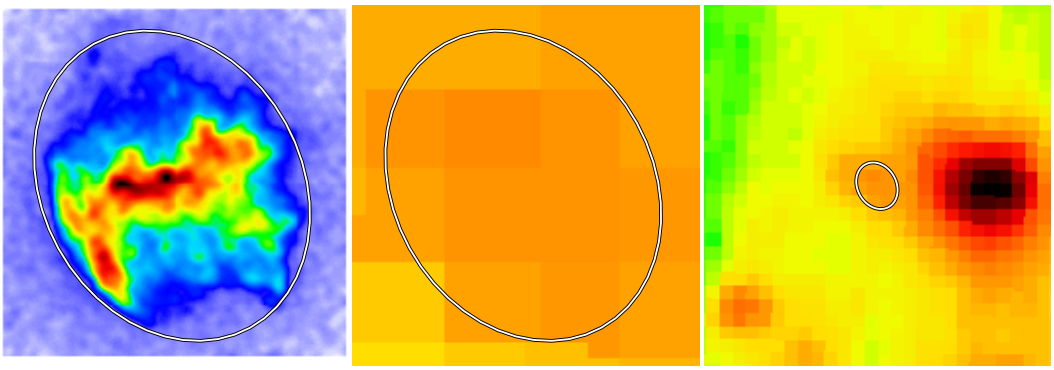
IRAS 25 micron: Infrared (25 micron)



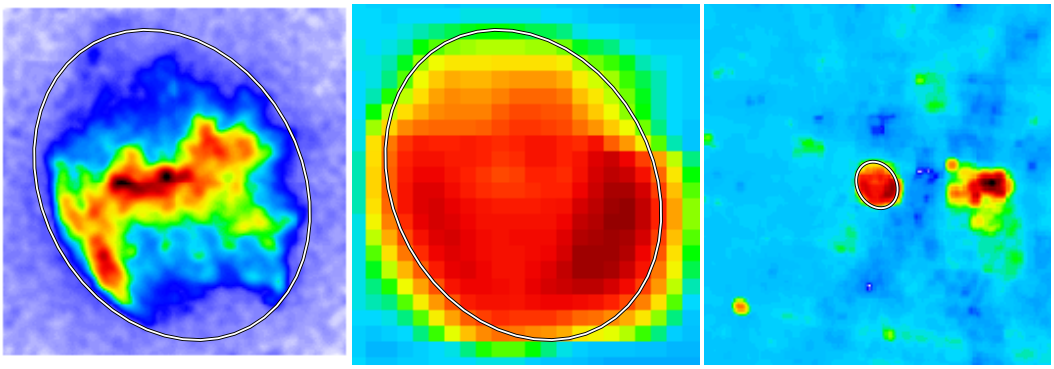
IRAS 60 micron: **Infrared (60 micron)**



IRAS 100 micron: **Infrared (100 micron)**



NRAO VLA Sky Survey (NVSS): **Radio (1.4 GHz Continuum)**



Digitized Sky Survey: **Optical (J or E band images with a few exceptions)**