SNR G292.0+1.8

1 Summary

- Distance: 4.8 kpc (**Saken et al., 1992**)
- Position of Central Source (J2000): (11 24 33.9, -59 15 40.4)
- X-ray size: 9.2'x8.8'
- Description:

1.1 Summary of Chandra Observations

Sequence	Obs ID	Instrument	$Exposure_{uf}$ (ks)	$Exposure_{f}$ (ks)	Date Observed	Aimpoint (J2000) (α, δ)
500013	126	ACIS-35678	43.6	43.6	2000-03-11	(11 24 40.0, -59 16 30.0)

$Exposure_{uf}$ → Exposure time of un-filtered event file
$Exposure_{f}$ → Exposure time of filtered event file

- Most of the 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	2.869e+06	6.580e+01	2.26e-10	2.09e-09	5.73e+36
(126)	0.3 - 2.1	2.778e+06	6.370e+01	1.80e-10	2.04e-09	5.60e+36
	2.1 - 10.	9.279e+04	2.128e+00	4.63e-11	4.94e-11	1.36e+35

- N_H = 0.62 ($10^{22} cm^{-2}$)
- Assumed distance: 4.8 kpc (**Saken et al., 1992**)
- nH was derived with two thermal plasma model

1.3 Nearby Sources

Obs ID	Position (J2000)	Size	Net Count	Count rate	Note
126					
	(11 23 33.1, -59 18 08.6)	< 16.7"	694.0	1.59e-02	
	(11 23 47.3, -59 18 34.5)	< 11.9"	558.0	1.28e-02	
	(11 24 16.1, -59 12 01.9)	< 6.0"	236.0	5.41e-03	
	(11 24 25.2, -59 23 19.6)	< 9.3"	279.0	6.40e-03	
	(11 24 47.1, -59 11 37.3)	< 3.8"	93.6	2.15e-03	
	(11 24 48.6, -59 11 35.1)	< 3.6"	55.0	1.26e-03	
	(11 25 00.7, -59 14 17.7)	< 1.2"	29.0	6.65e-04	
	(11 25 03.7, -59 19 24.0)	< 3.4"	63.5	1.46e-03	
	(11 25 04.4, -59 11 41.9)	< 3.7"	34.8	7.98e-04	
	(11 25 04.4, -59 17 17.8)	< 1.8"	113.0	2.59e-03	
	(11 25 05.5, -59 13 41.6)	< 2.3"	24.6	5.64e-04	
	(11 25 05.6, -59 14 21.7)	< 2.2"	24.3	5.57e-04	
	(11 25 06.8, -59 15 19.9)	< 1.3"	21.4	4.91e-04	
	(11 25 09.7, -59 14 04.2)	< 2.5"	17.8	4.08e-04	
	(11 25 11.4, -59 14 24.9)	< 3.0"	41.0	9.40e-04	
	(11 25 12.4, -59 13 54.4)	< 3.0"	22.0	5.04e-04	
	(11 25 14.2, -59 14 56.1)	< 2.1"	47.0	1.08e-03	
	(11 25 14.9, -59 13 33.5)	< 2.3"	30.2	6.92e-04	
	(11 25 18.8, -59 13 25.3)	< 3.4"	49.0	1.12e-03	
	(11 25 23.6, -59 16 31.0)	< 2.9"	39.5	9.06e-04	
	(11 25 25.3, -59 17 05.0)	< 3.4"	45.4	1.04e-03	
	(11 25 33.0, -59 17 08.5)	< 5.2"	48.1	1.10e-03	
	(11 25 35.4, -59 15 38.4)	< 5.9"	41.7	9.56e-04	
	(11 25 42.1, -59 16 49.6)	< 6.7"	40.9	9.38e-04	
	(11 25 51.7, -59 11 50.9)	< 9.3"	49.3	1.13e-03	
	(11 25 56.3, -59 12 35.1)	< 12.1"	44.9	1.03e-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

- Saken et al., 1992 ApJS, 81, 715 :

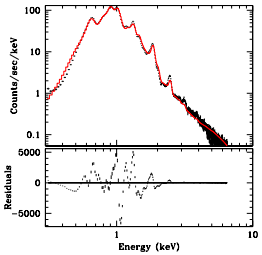
2 Fit Detail

- See spectrum page for used regions.

2.1 Total:

- Two thermal plasma model
- Abundance of O, Ne, Mg, Fe are thawed and linked.

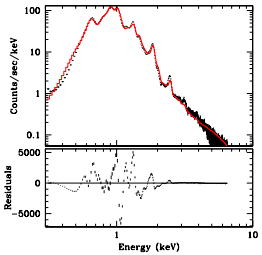
source=(xswabs * ((xsvraymond + xsvraymond) + powlaw1d))
reduced χ^2 = 56.0551
nh = `0.6156 10^22/cm^2`



2.2 Total:

- With above fitted model freezed, powe-law component was added for better estimation of hard energy flux.

source=(xswabs * ((xsvraymond + xsvraymond) + powlaw1d))
reduced χ^2 = 45.8752
nh = `0.6156 10^22/cm^2`

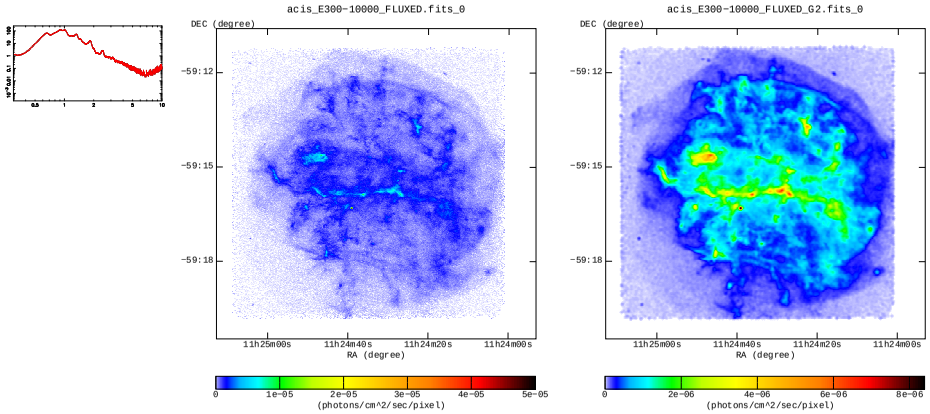


3 Chandra Images : Band Images

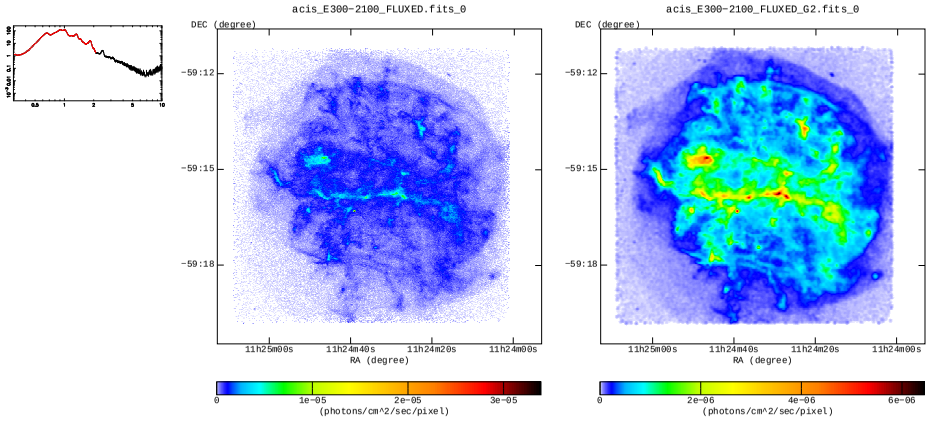
- Left : raw image, binned by 1x1 pixel
- Right : gaussian smoothed version of above (σ = 2 pixel)

3.1 Wide Band Images

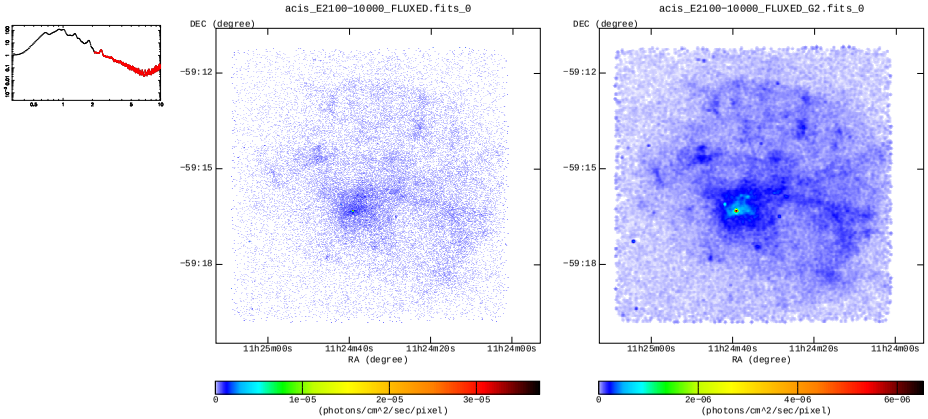
Total : 300-10000 eV



Soft Band : 300-2100 eV

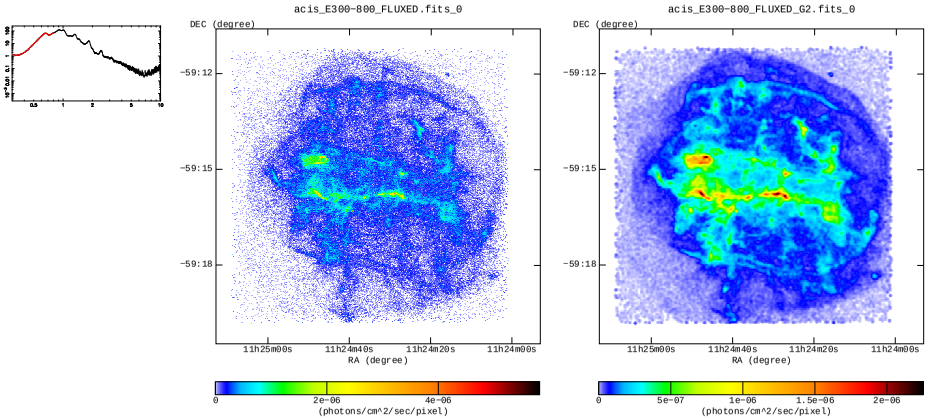


Hard Band : 2100-10000 eV

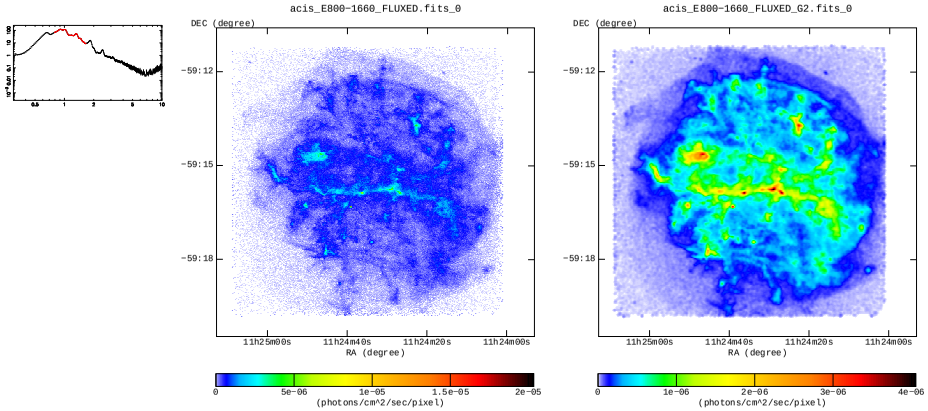


3.2 Band images used in true color image.

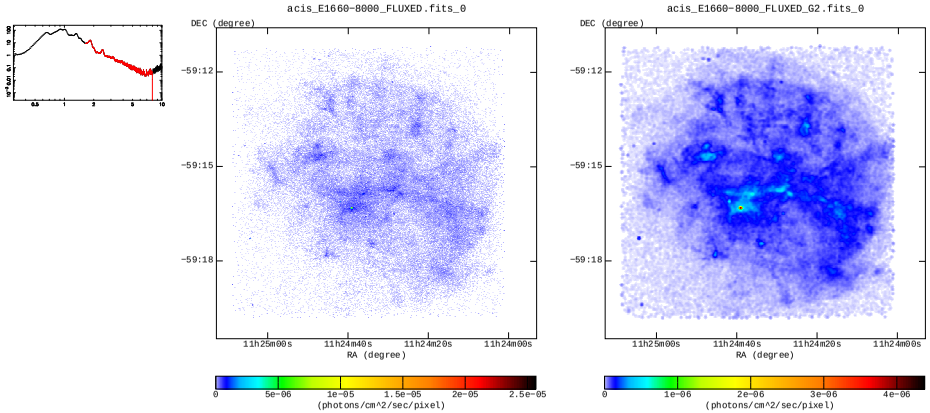
Red : 300-800 eV



Green : 800-1660 eV

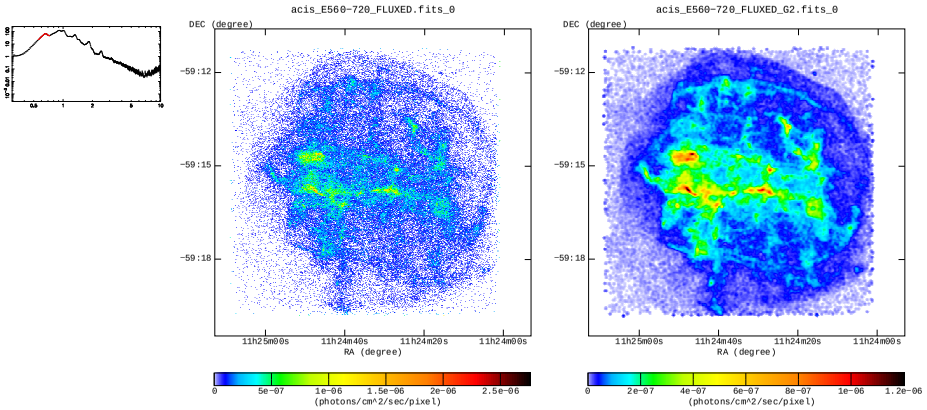


Blue : 1660-8000 eV

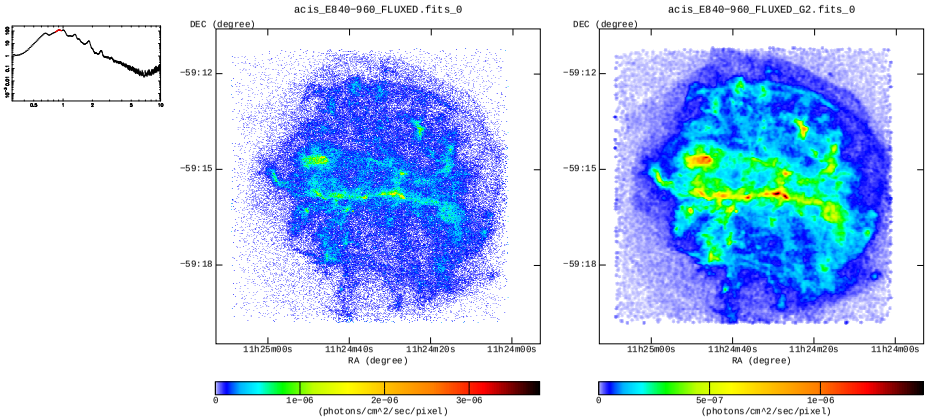


3.3 Misc.

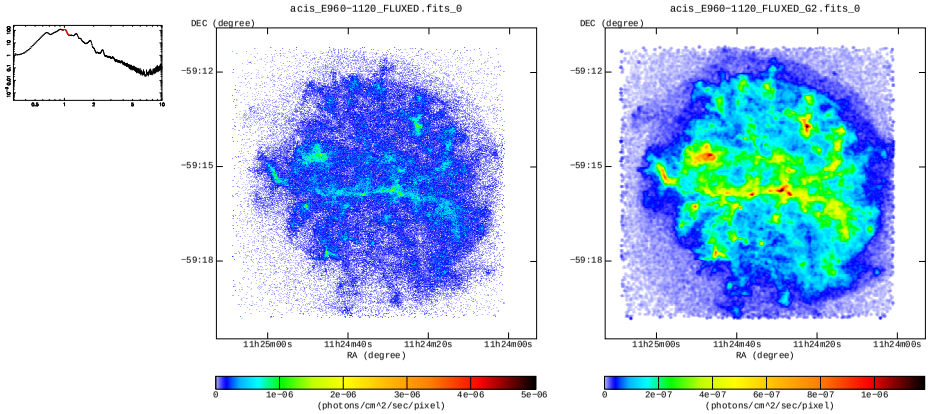
: 560-720 eV



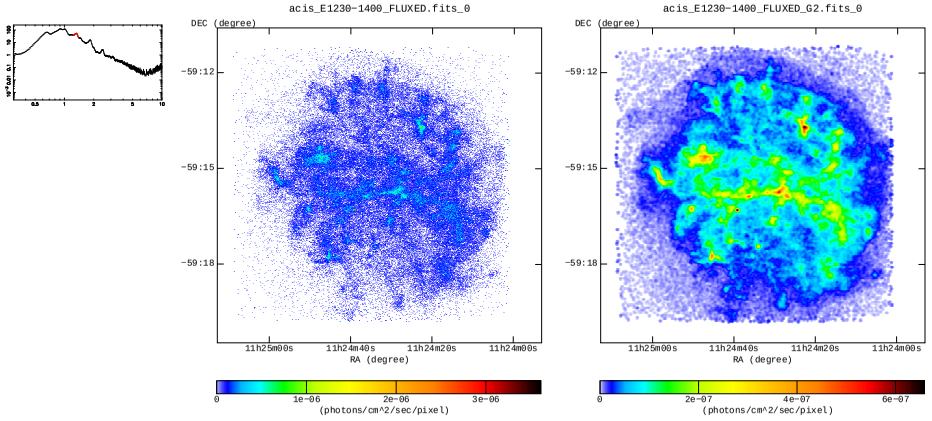
: 840-960 eV



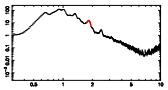
: 960-1120 eV

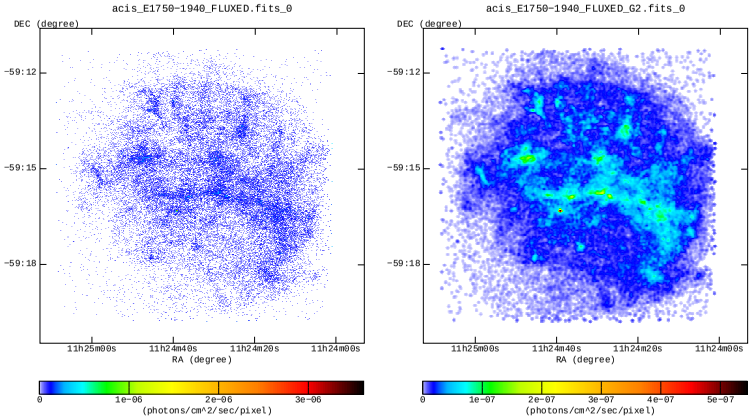


: 1230-1400 eV

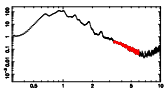


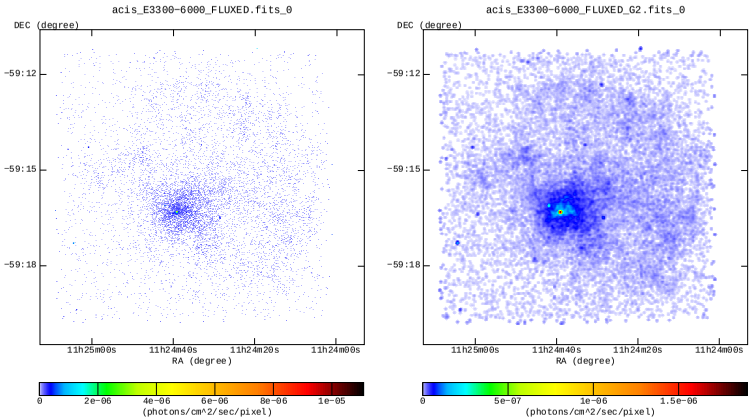
: 1750-1940 eV





: 3300-6000 eV



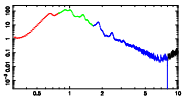


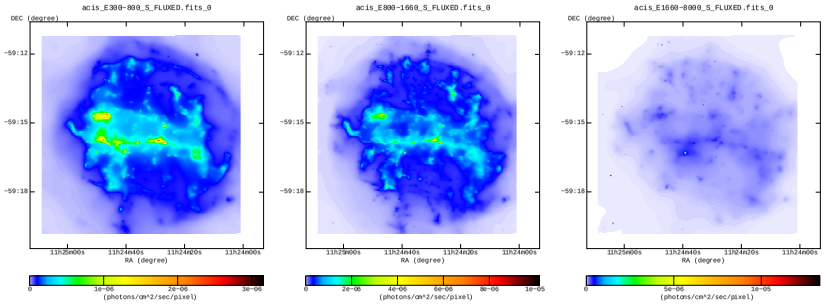
4 Chandra Images : True Color

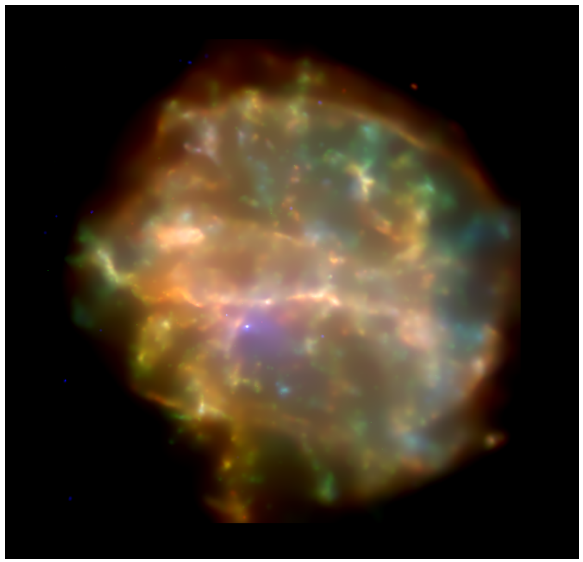
- Individual images are adaptively smoothed.
- Warning : the adaptive smoothing process sometimes produces artifacts.

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

RED : 300-800 eV
GREEN : 800-1660 eV
BLUE : 1660-8000 eV





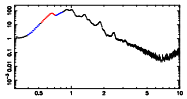


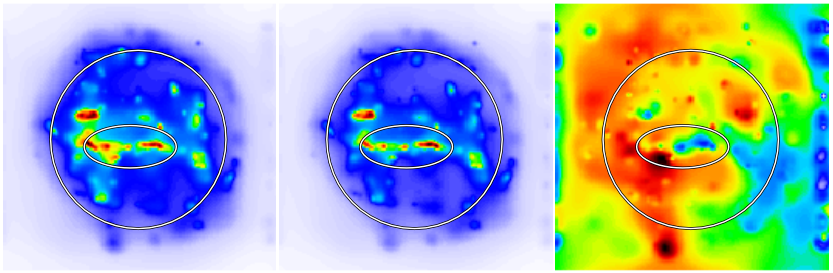
5 Chandra Images : Equivalent Width Map

5.1 Equivalent Width Images

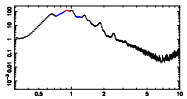
- individual images(line and two continuum) are binned by given pixel size and then adaptively smoothed.
- same scale map (from the least count images) was used for all three images.
- continuum at given line position was estimated by linear interpolation of two continuum image in pixel-by-pixel base.

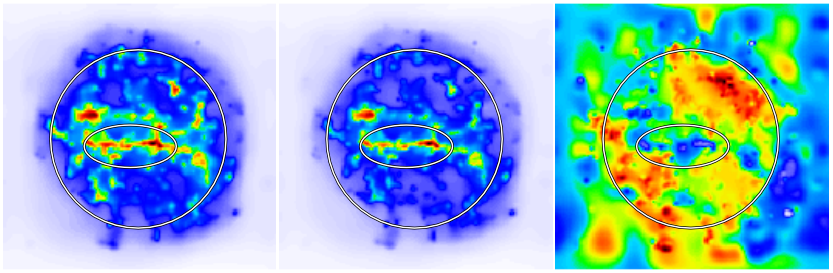
continuum : 400-510 eV
line : 530-710 eV
continuum : 730-820 eV



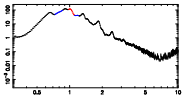


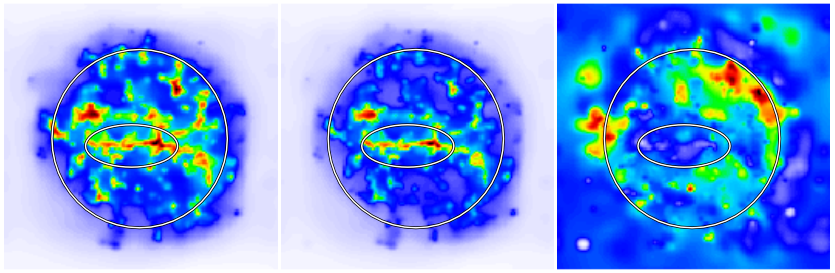
continuum : 740-850 eV
line : 870-960 eV
continuum : 1120-1200 eV





continuum : 740-850 eV
line : 980-1100 eV
continuum : 1120-1200 eV





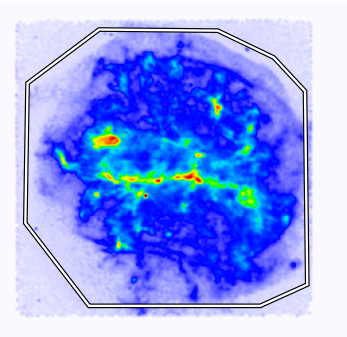
6 Chandra Spectrum

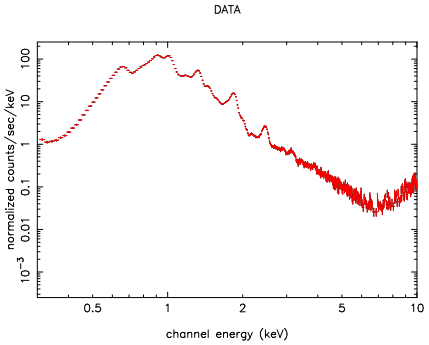
- Images show Regions used to extract spectra
- Regions with red strikes are excluded

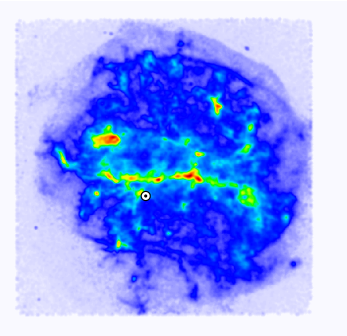
6.1 ObsID 126

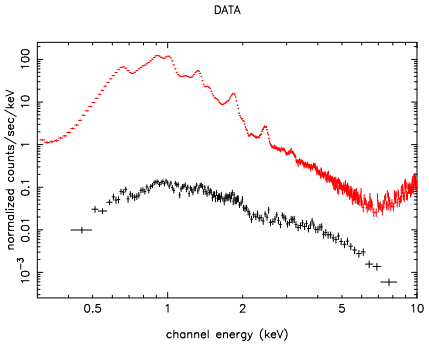
- Background was subtracted from the region around the SNR.

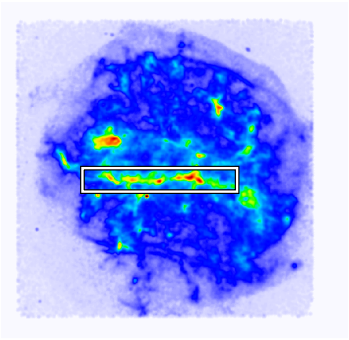
Total

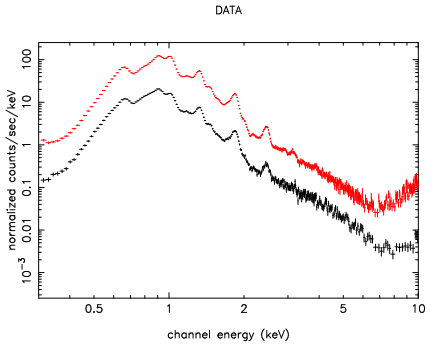


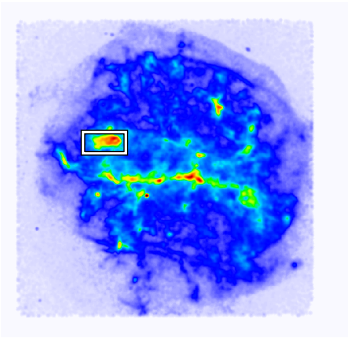


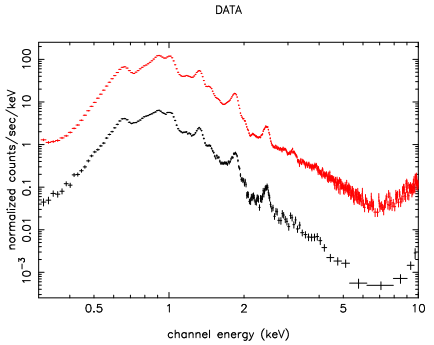


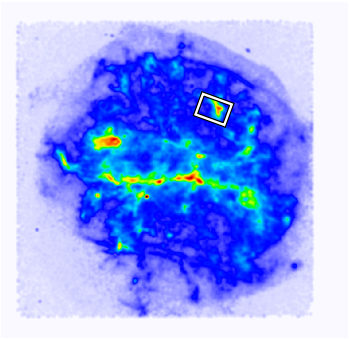


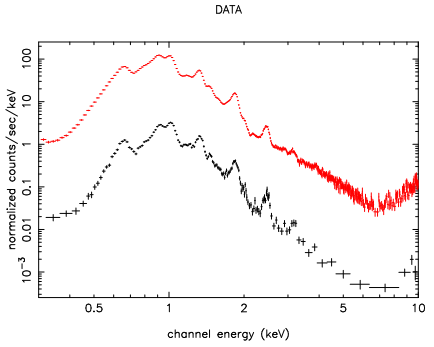


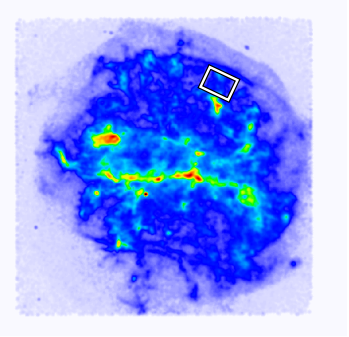


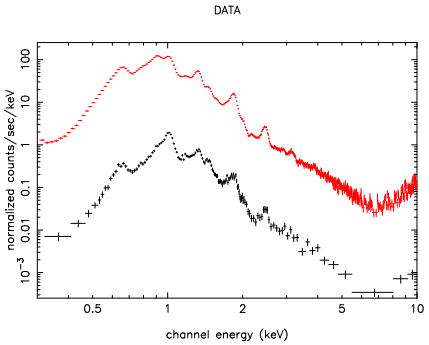


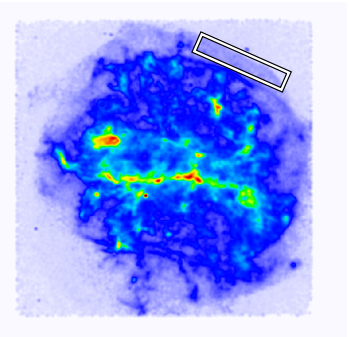


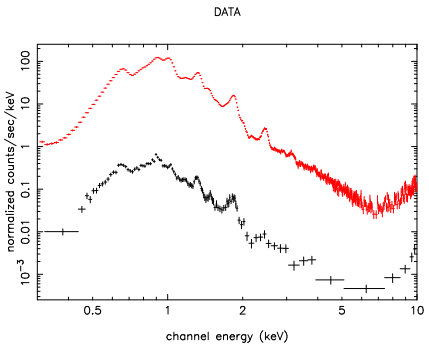


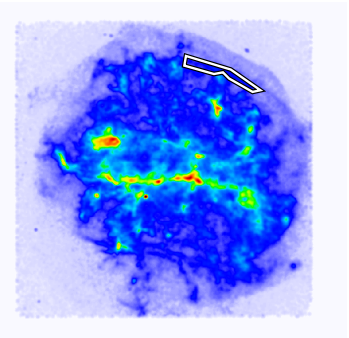


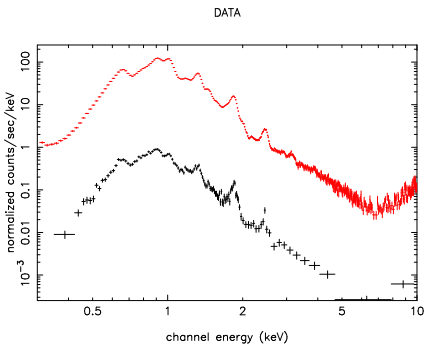


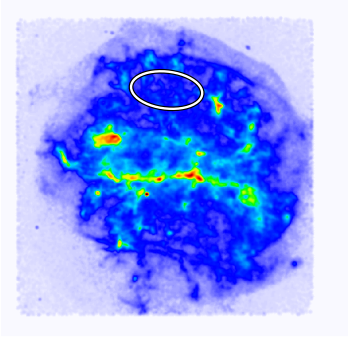

DATA
normalized counts/sec/keV
channel energy (keV)

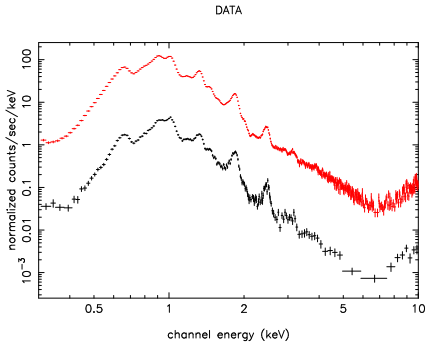


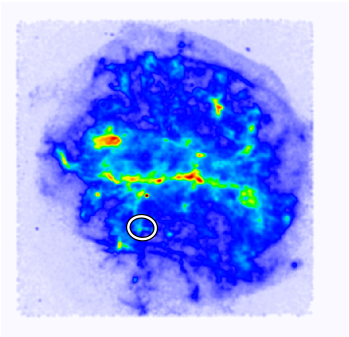

DATA
normalized counts/sec/keV
channel energy (keV)

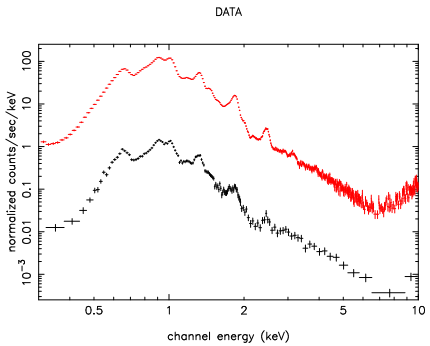


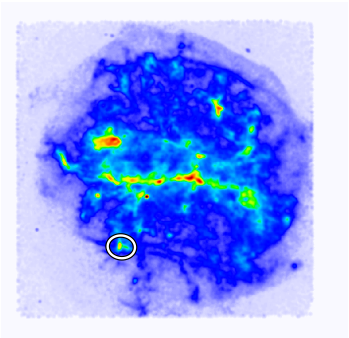

DATA
normalized counts/sec/keV
channel energy (keV)

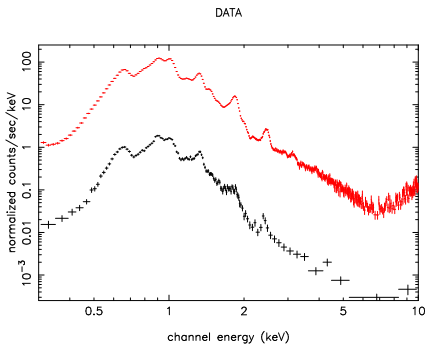


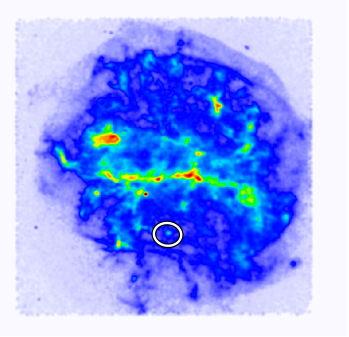

DATA
normalized counts/sec/keV
channel energy (keV)

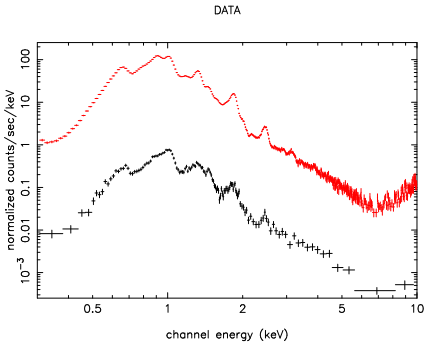


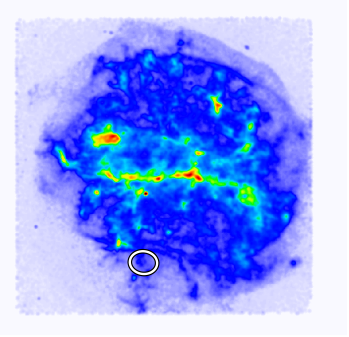

DATA
normalized counts/sec/keV
channel energy (keV)

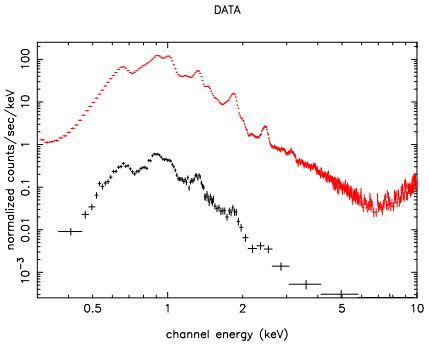


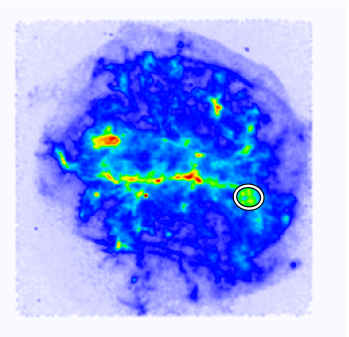

DATA
normalized counts/sec/keV
channel energy (keV)

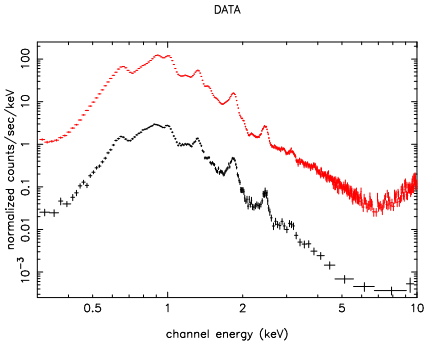


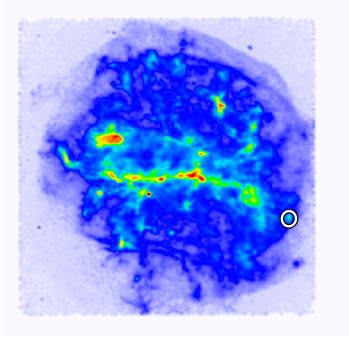

DATA
normalized counts/sec/keV
channel energy (keV)

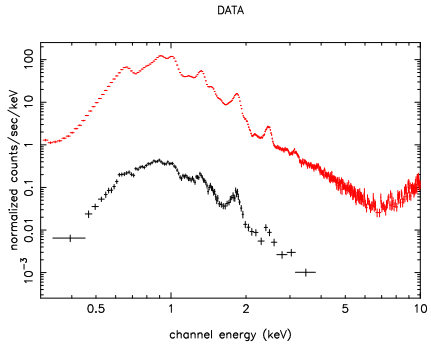


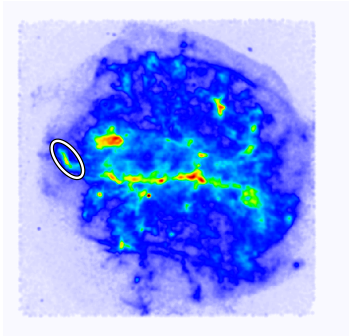

DATA
normalized counts/sec/keV
channel energy (keV)

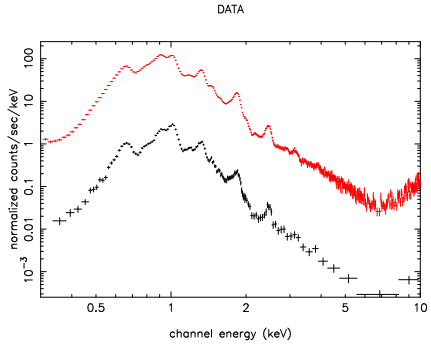



DATA
normalized counts/sec/keV
channel energy (keV)




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

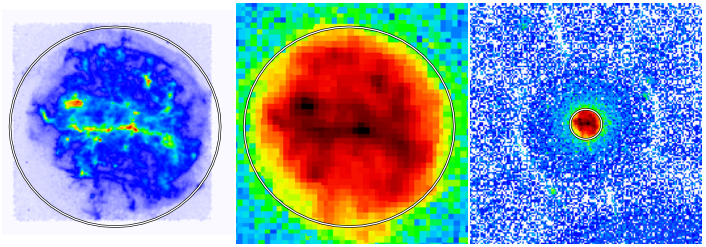



DATA
normalized counts/sec/keV
channel energy (keV)

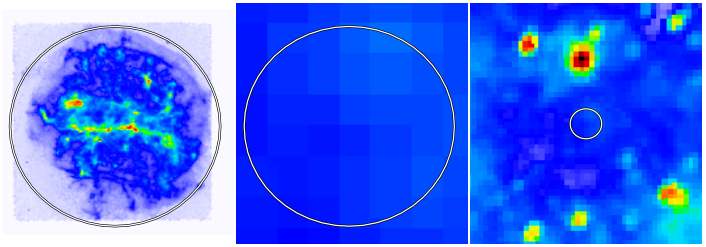
7 Images from Survey Missions

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

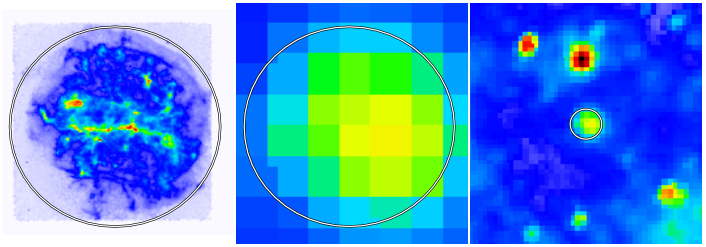
ROSAT PSPC (2.0 deg): **X-ray (0.1-2.4 keV)**



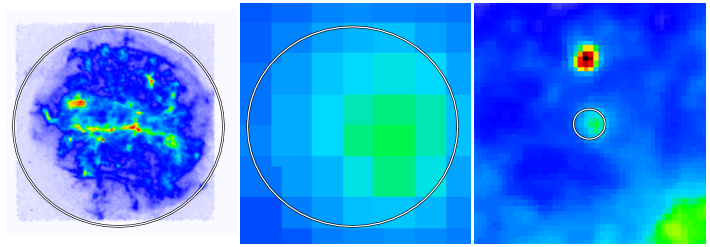
IRAS 12 micron: **Infrared (12 micron)**



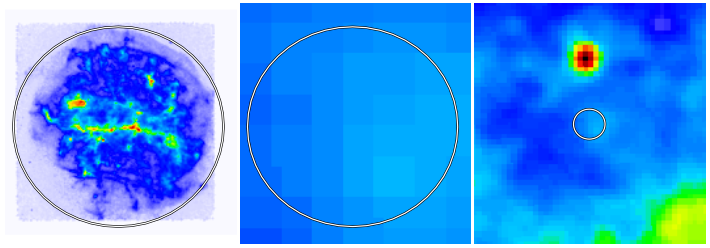
IRAS 25 micron: **Infrared (25 micron)**



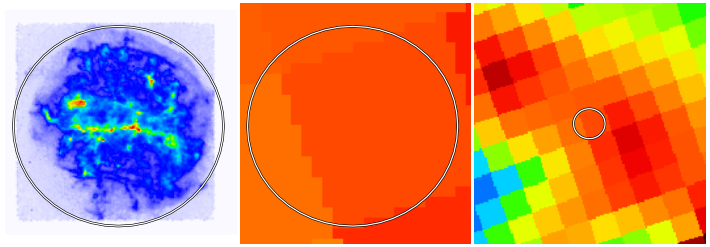
IRAS 60 micron: **Infrared (60 micron)**



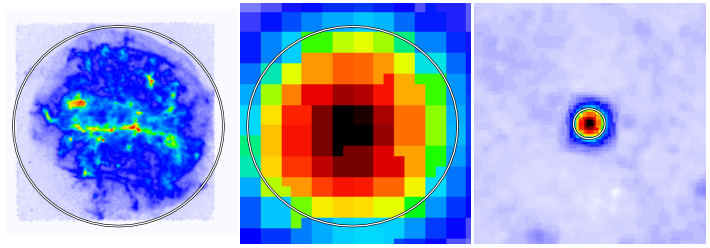
IRAS 100 micron: **Infrared (100 micron)**



CO survey: **Radio (115 GHz)**



4850 MHz: **Radio (4850 MHz continuum)**



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