G130.7+3.0

1 Summary

- Common Name: G130.7+3.1 3C58, SN1181
- Distance: 3.2 kpc (**Roberts et al., 1993**)
- Position of Central Source (J2000): (02 05 36.9, 64 49 48.8)
- X-ray size: 6.5'x5.'
- 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)
500024	728	ACIS-567	50.0	49.1	2000-09-04	(02 05 37.0, 64 49 48.0)

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

- Subarray used.
- Most of the remnant is covered by subarray of 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	9.146e+04	1.864e+00	1.35e-11	2.70e-11	3.30e+34
(728)	0.3 - 2.1	7.115e+04	1.450e+00	4.85e-12	1.80e-11	2.20e+34
	2.1 - 10.	2.051e+04	4.179e-01	8.66e-12	9.01e-12	1.10e+34

- N_H = 0.40 ($10^{22} cm^{-2}$)
- Assumed distance: 3.2 kpc (**Roberts et al., 1993**)

1.3 Nearby Sources

Obs ID	Position (J2000)	Size	Net Count	Count rate	Note
728					
	(02 04 37.8, 64 54 22.8)	< 6.7”	59.8	1.20e-03	
	(02 05 02.7, 64 53 18.5)	< 3.9”	23.1	4.62e-04	
	(02 05 04.5, 64 50 52.2)	< 2.2”	88.7	1.78e-03	
	(02 05 05.2, 64 51 03.7)	< 3.0”	24.4	4.88e-04	
	(02 05 16.3, 64 49 53.3)	< 1.7”	61.7	1.24e-03	
	(02 05 18.1, 64 52 07.5)	< 1.9”	24.0	4.80e-04	
	(02 05 43.5, 64 51 54.2)	< 1.7”	87.4	1.75e-03	
	(02 06 12.5, 64 46 53.7)	< 5.1”	59.1	1.18e-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

- Reynolds & Aller, 1988 ApJ, 327, 845 :
- Roberts et al., 1993 A&A, 274, 427 : HI absorption

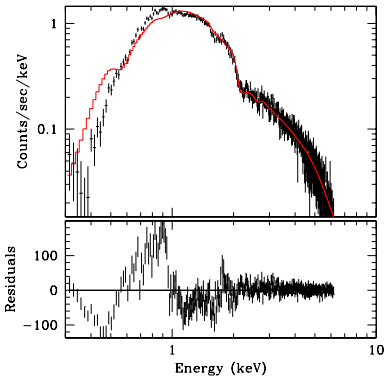
2 Fit Detail

- See spectrum page for used regions.

2.1 Total:

- Simple power-law used.

  source=(xswabs * powlaw1d)
  reduced χ^2 = 2.5001
  nh = `0.4045 10^22/cm^2`

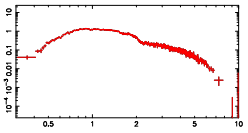


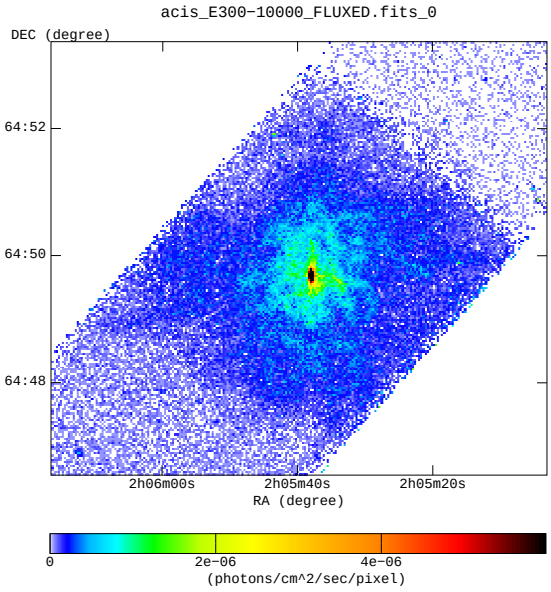
3 Chandra Images : Band Images

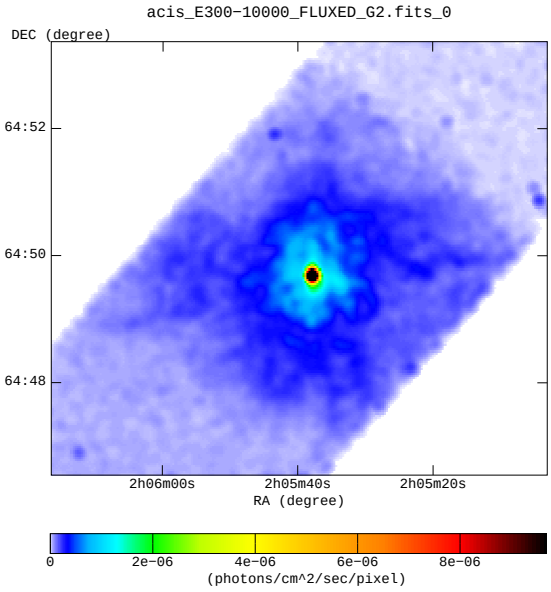
- Left : raw image, binned by 1x1 pixel
- Right : gaussian smoothed version of above (σ = 2 pixel)

3.1 Wide Band Images

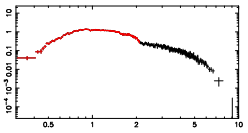
Total : 300-10000 eV

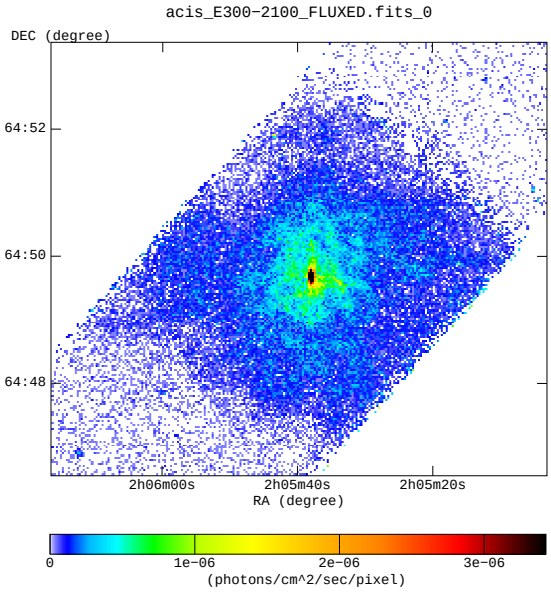


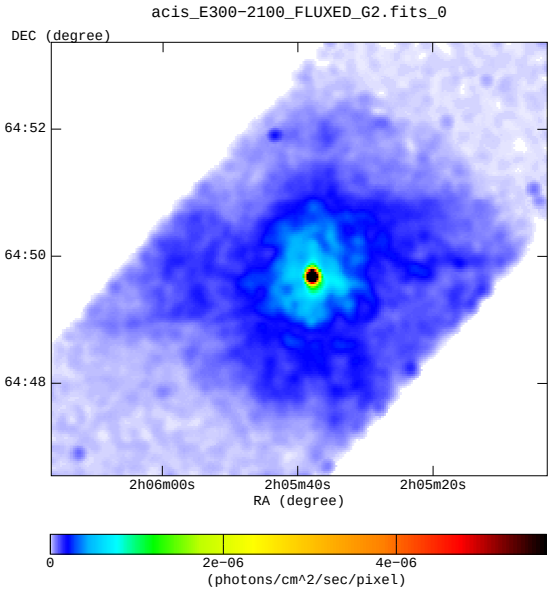




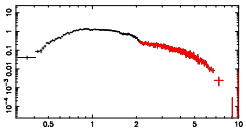
Soft Band : 300-2100 eV

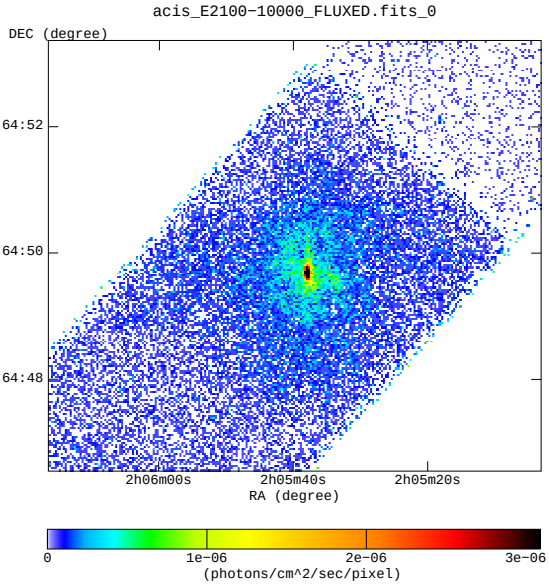


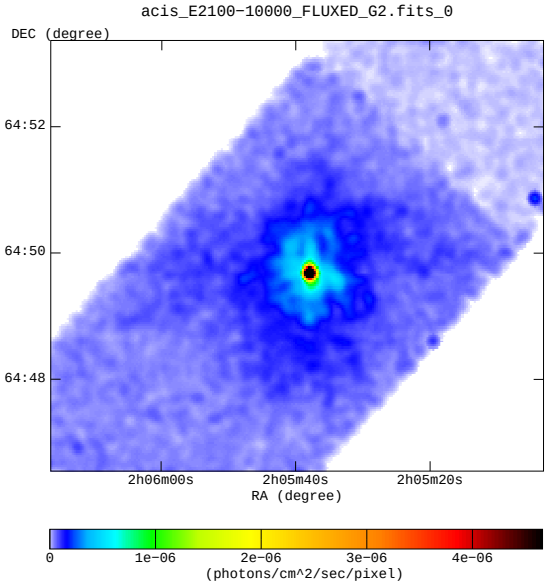




Hard Band : 2100-10000 eV

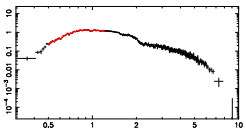


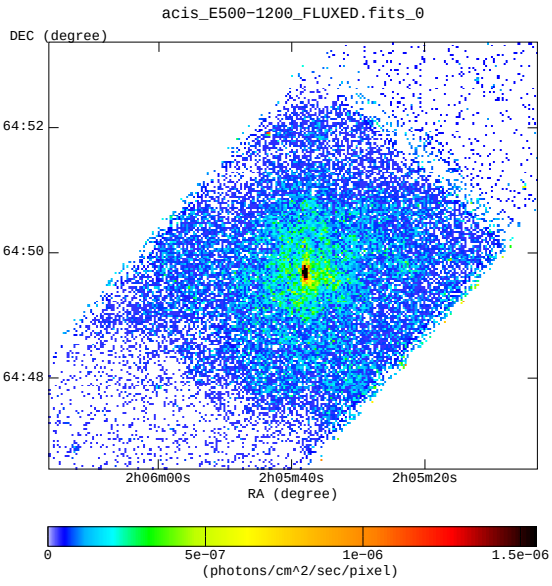


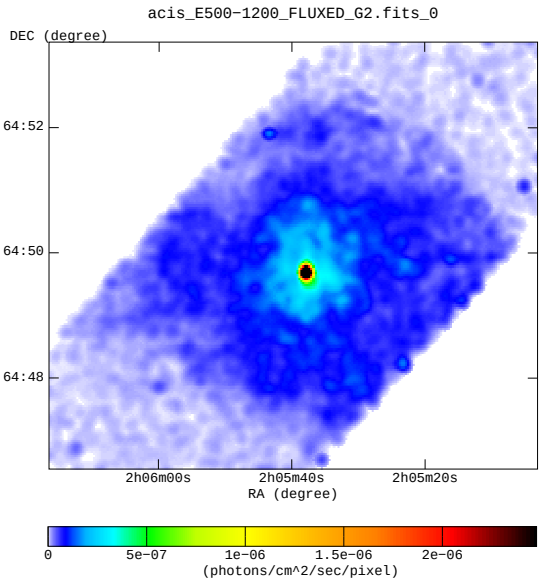


3.2 Band images used in true color image.

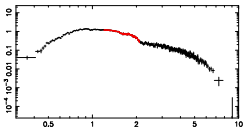
Red : 500-1200 eV

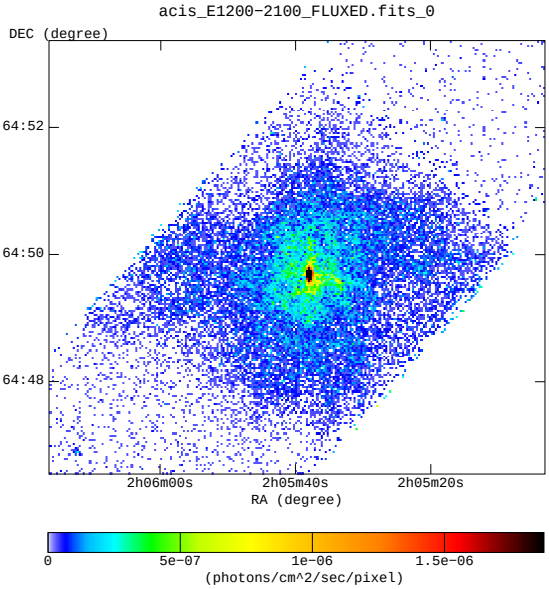


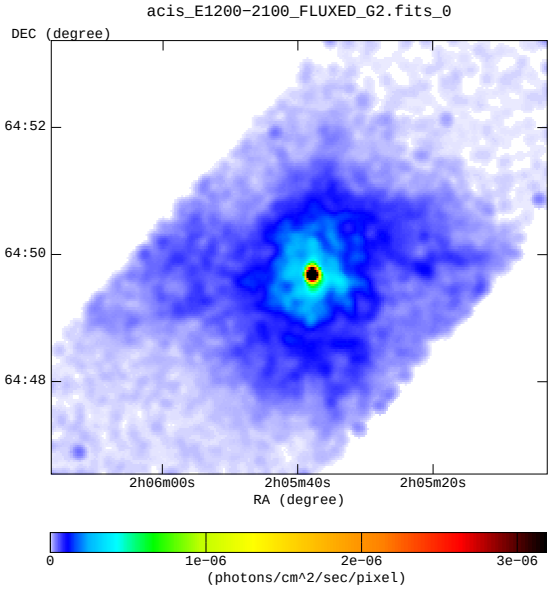




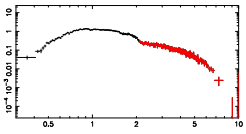
Green : 1200-2100 eV

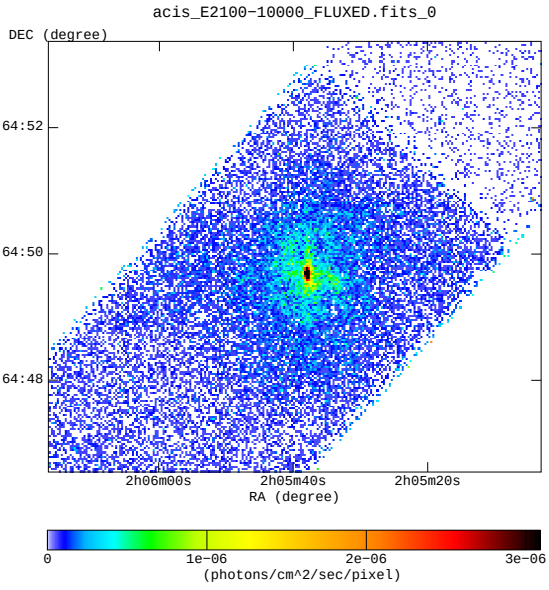


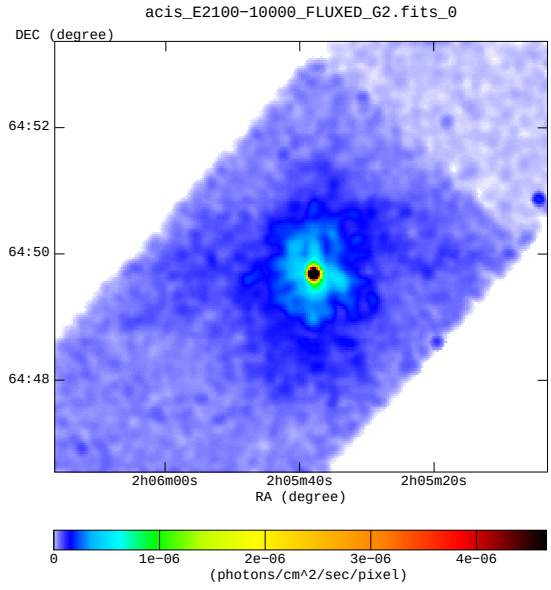




Blue : 2100-10000 eV







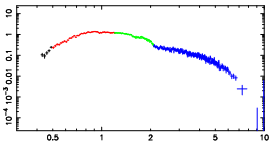
3.3 Misc.

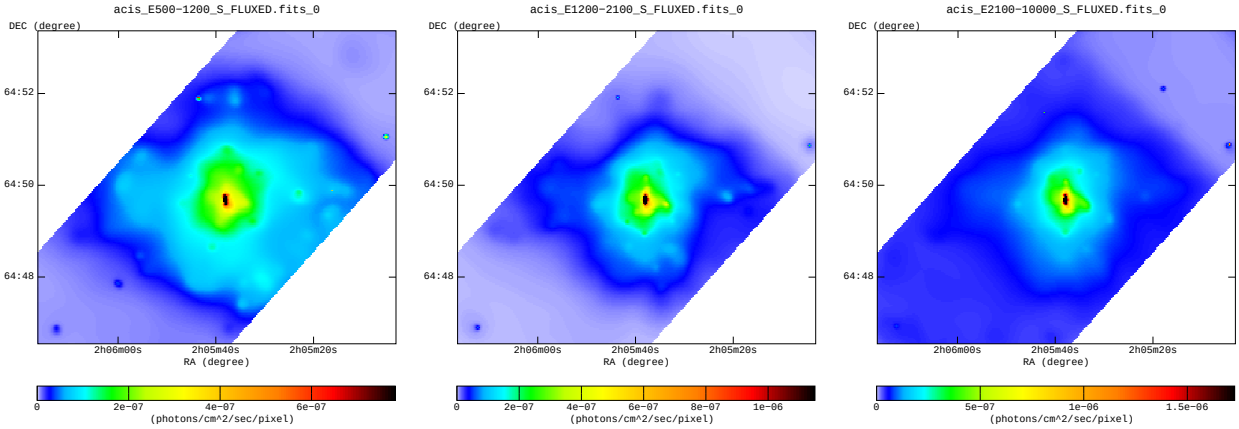
4 Chandra Images : True Color

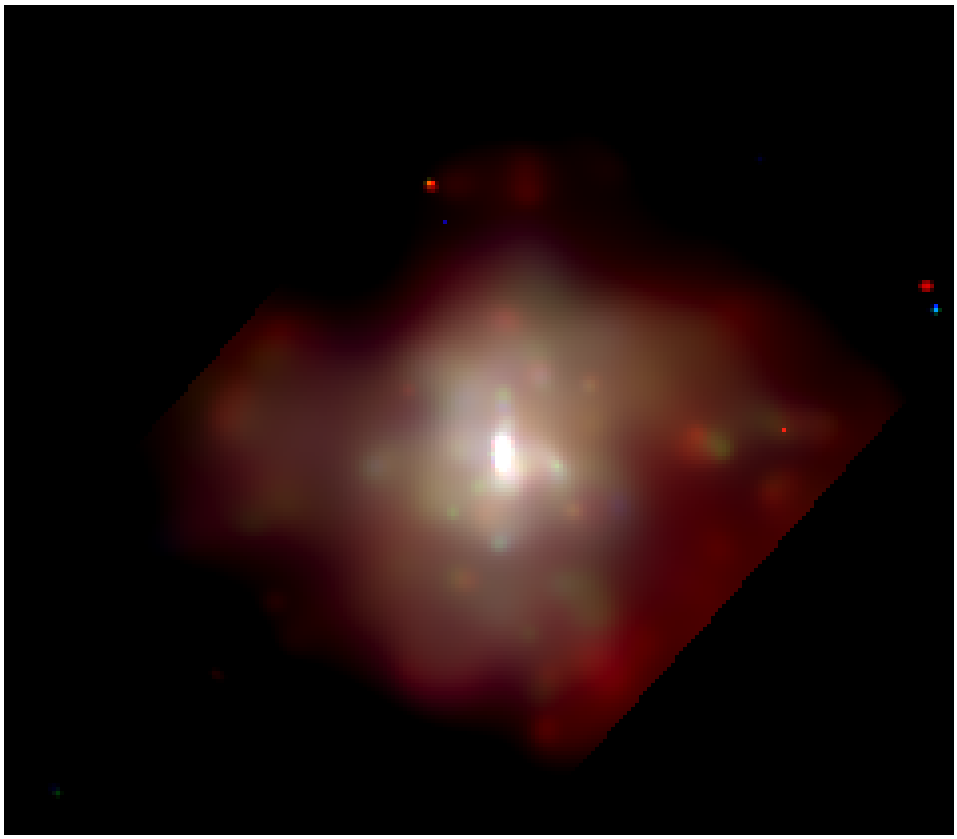
- Individual images are adaptively smoothed.
- Warning : the adaptive smoothing process sometimes produces artifacts.

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

RED : 500-1200 eV
GREEN : 1200-2100 eV
BLUE : 2100-10000 eV







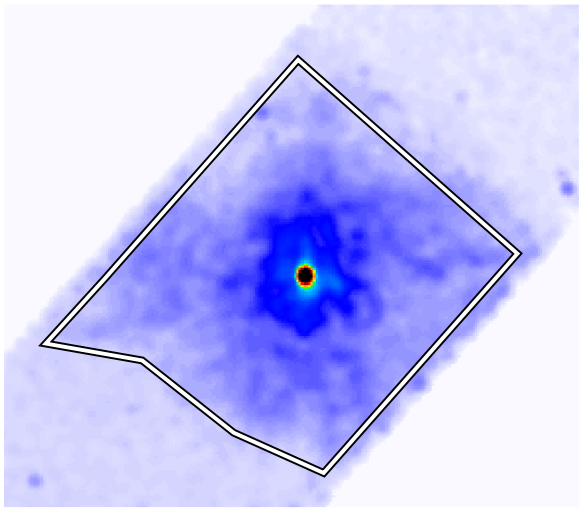
5 Chandra Spectrum

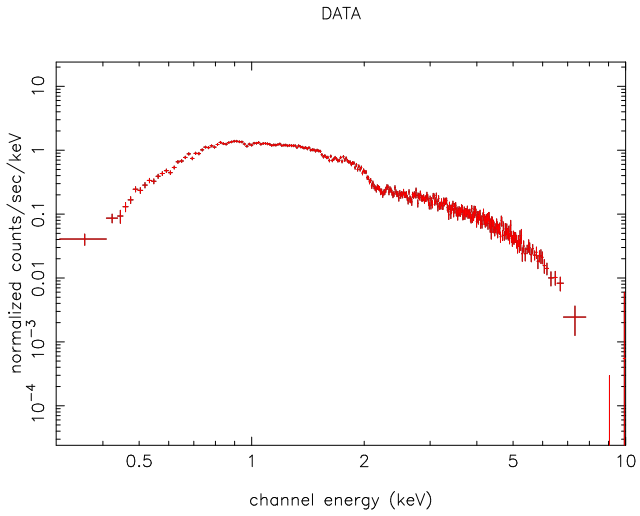
- Images show Regions used to extract spectra
- Regions with red strikes are excluded

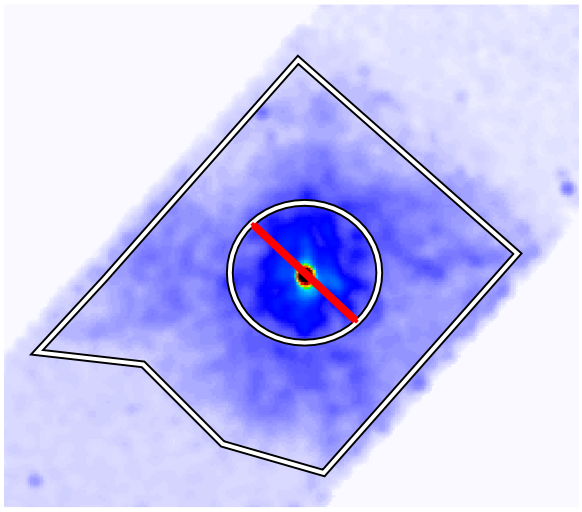
5.1 ObsID 728

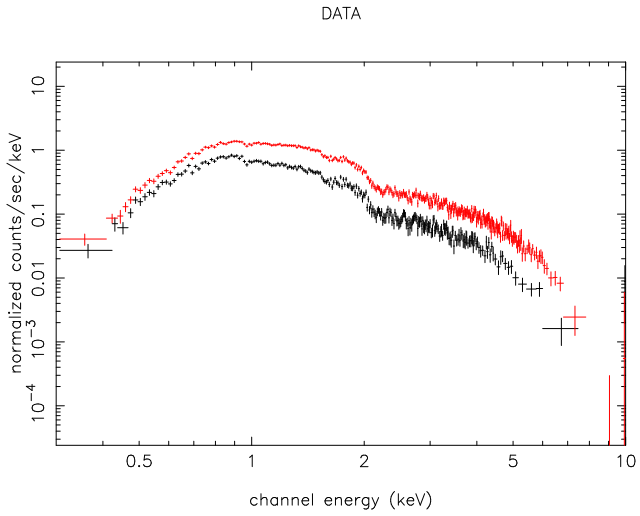
- Background was subtracted from the region around the SNR.

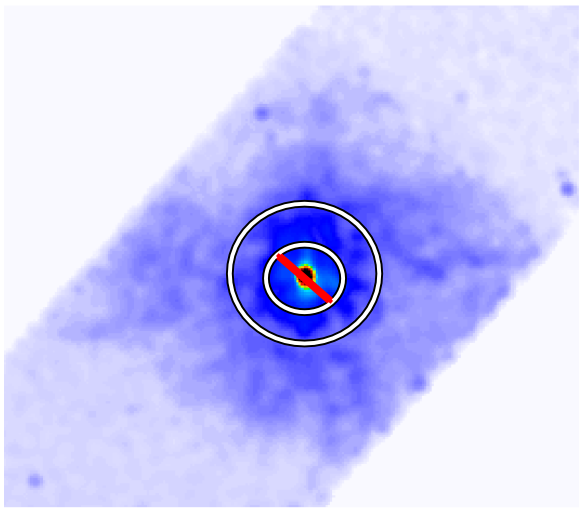
Total

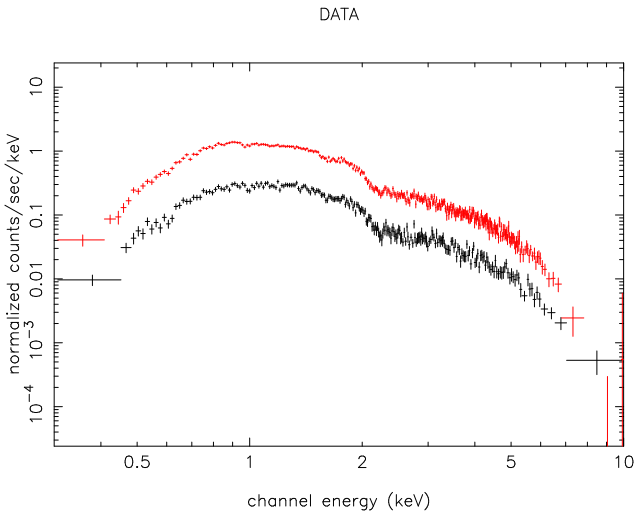


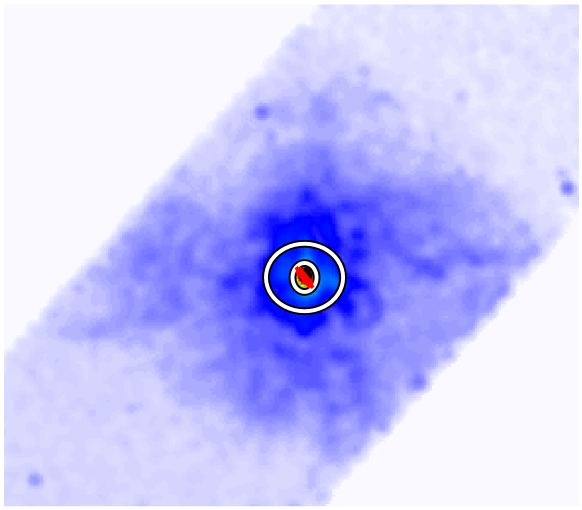


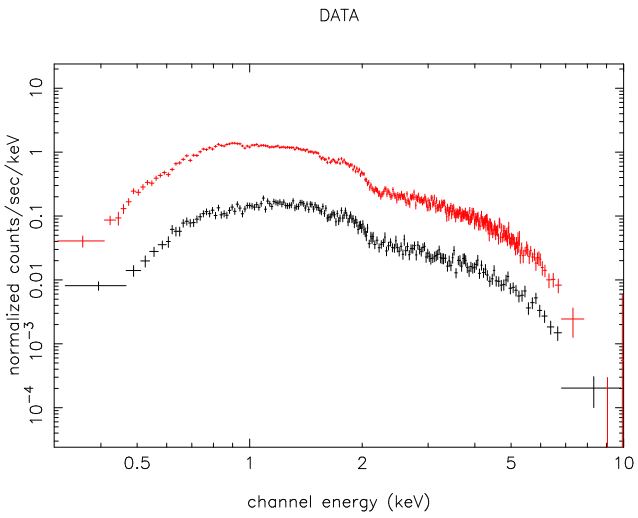


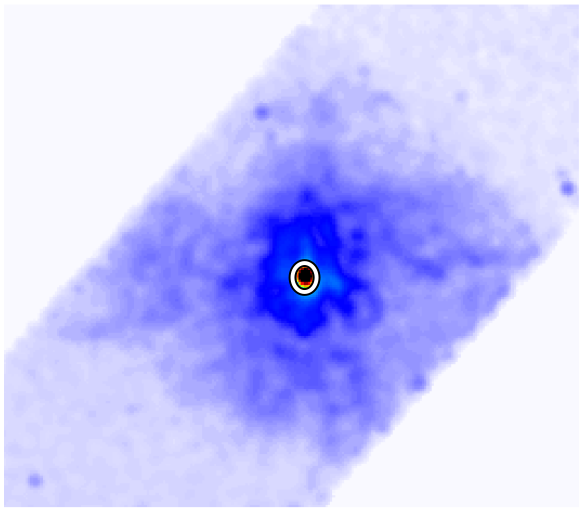


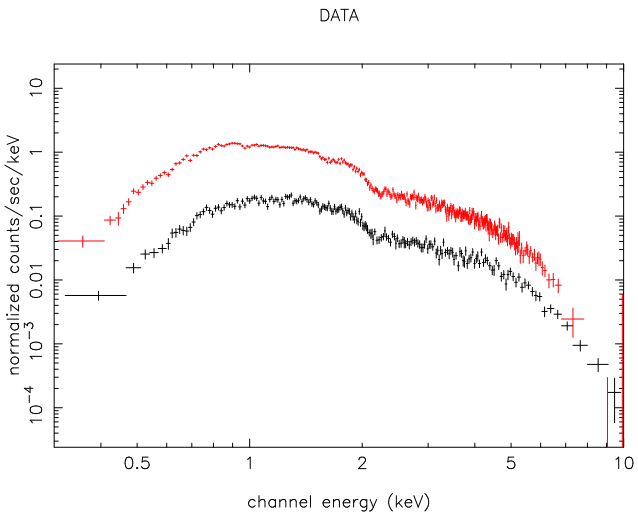



DATA
normalized counts/sec/keV
channel energy (keV)




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



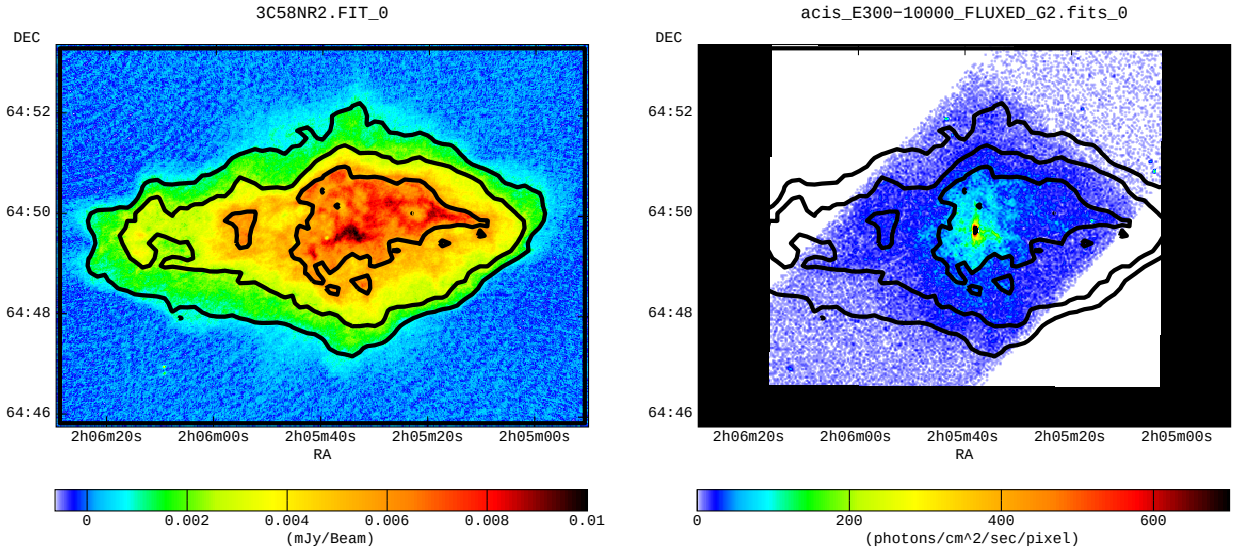

DATA
normalized counts/sec/keV
channel energy (keV)

6 Radio Image

- left : radio image
- right : chandra x-ray image with radio contour lines

21-cm

-. Image from **Reynolds & Aller(1988)**
-. 1 GHz flux density: 33Jy (Green 2001)

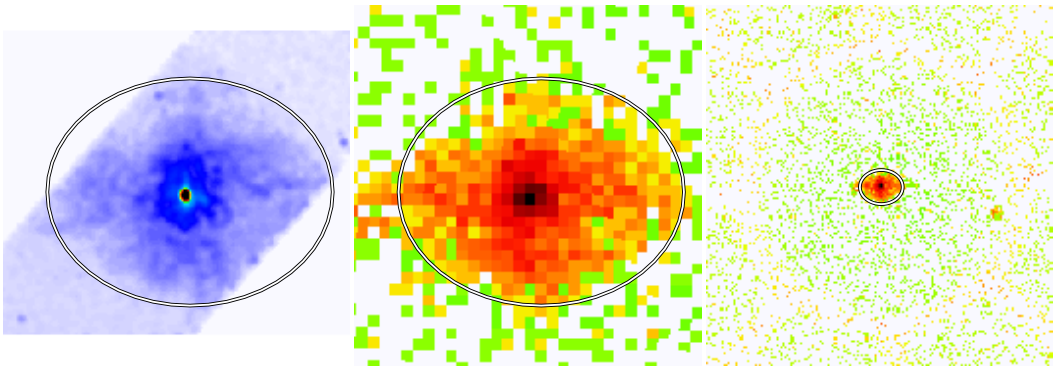


Summary of Observation	
Telescope	VLA
Date	1984 Jan, Apr, Aug, Dec
Frequency	1.446 GHz
Beam size	2”
1 sigma noise ..	0.05 mJy beam-1

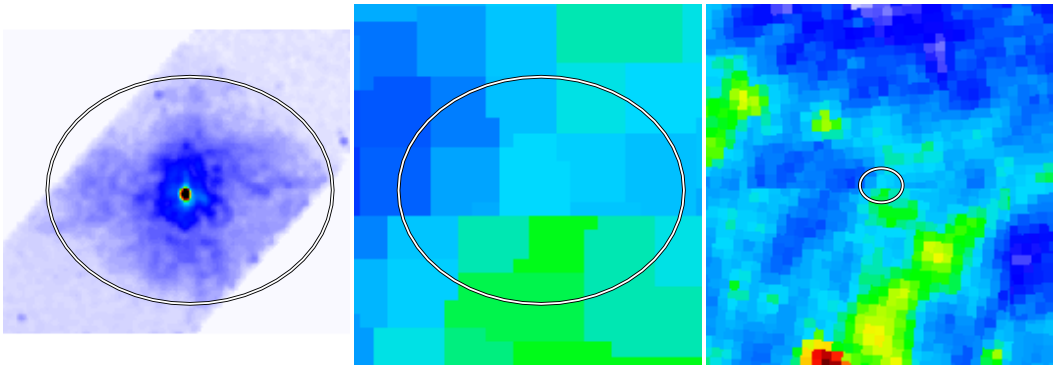
7 Images from Survey Missions

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

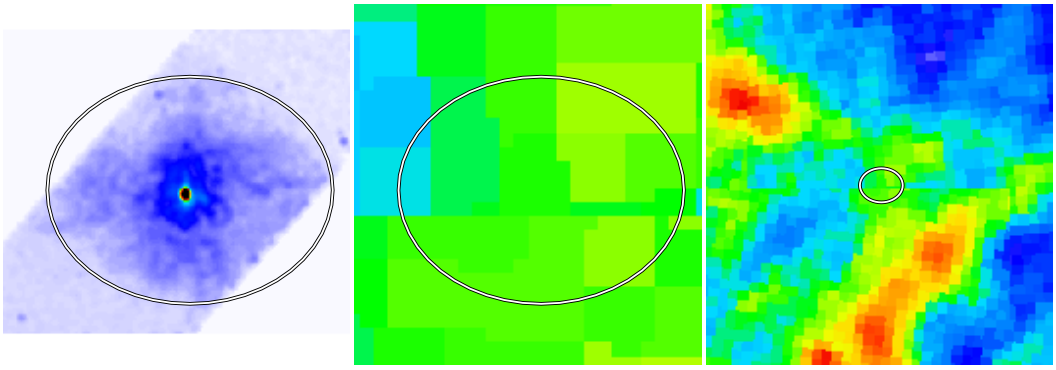
ROSAT PSPC (2.0 deg): X-ray (0.1-2.4 keV)



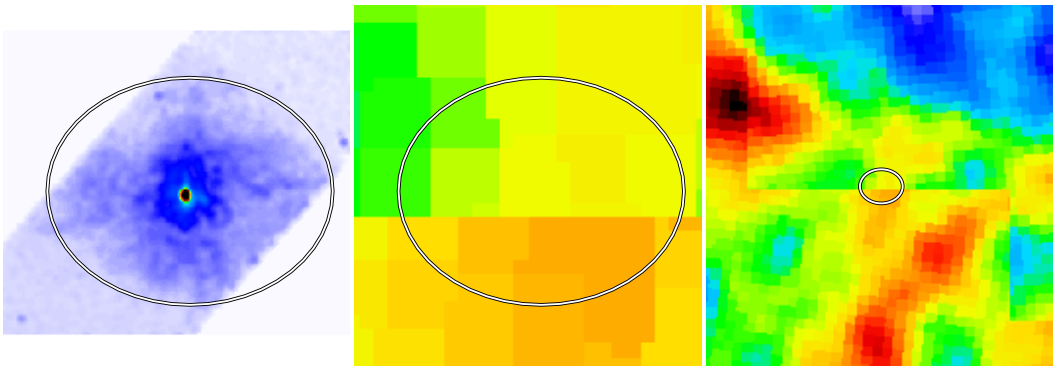
IRAS 12 micron: Infrared (12 micron)



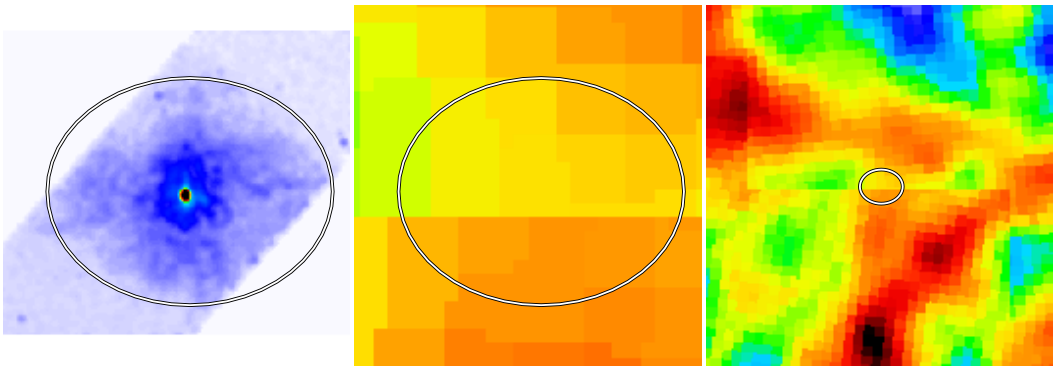
IRAS 25 micron: Infrared (25 micron)



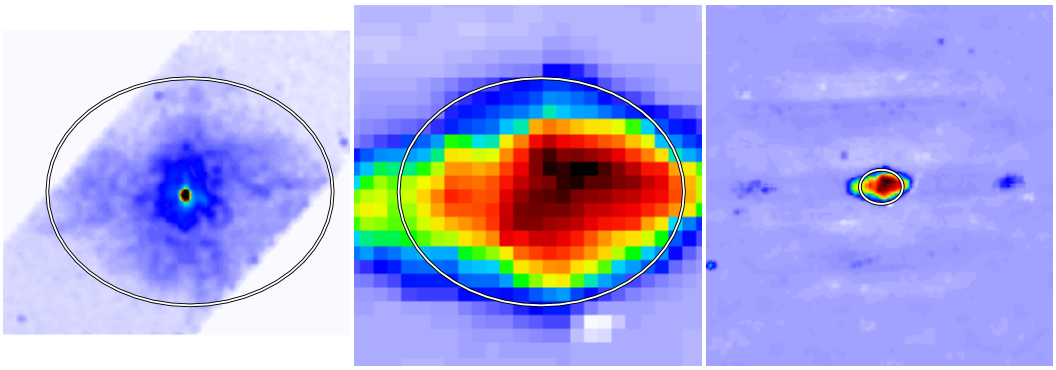
IRAS 60 micron: **Infrared (60 micron)**



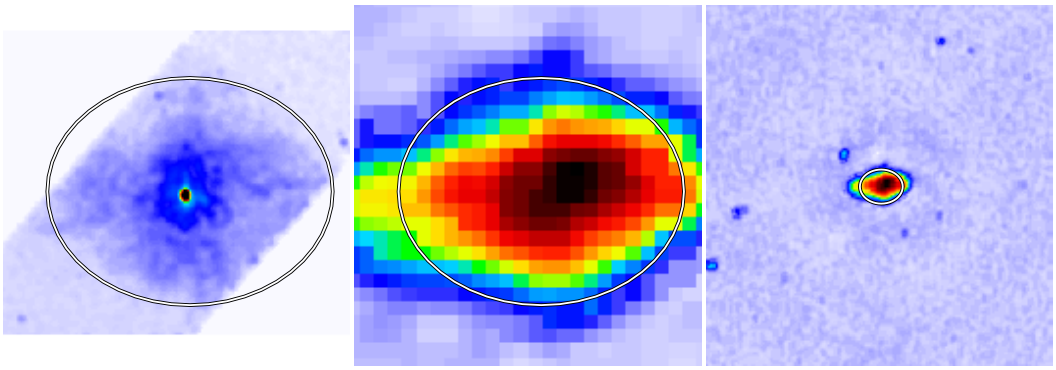
IRAS 100 micron: **Infrared (100 micron)**



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



Westerbork Northern Sky Survey (WENSS): Radio (325 MHz Continuum)



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