SNR 0525-69.6

1 Summary

- Common Name: N 132D
- Distance: 50 kpc (distance to LMC, **Westerlund(1990)**)
- Center of X-ray emission (J2000): (05 25 03.3, -69 38 27.4)
- X-ray size: 130”x100”
- Description: irregular shell with ”break out” in NE

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)
500008	1828	ACIS-456789	74.7	72.7	2000-07-20	(05 25 02.1, -69 38 59.0)

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

- Obs ID 1828 is Grating observation. Order 0 event is used for all the data product.
- 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	2.088e+05	2.873e+00	1.10e-10	3.39e-10	1.01e+38
(1828)	0.3 - 2.1	1.984e+05	2.730e+00	1.04e-10	3.33e-10	9.92e+37
	2.1 - 10.	1.061e+04	1.460e-01	6.05e-12	6.36e-12	1.90e+36

- N_H = 0.24 ($10^{22} cm^{-2}$)
- Assumed distance: 50 kpc (distance to LMC, **Westerlund(1990)**)
- nH was derived by fitting the spectum with two thermal plsma model.

1.3 Nearby Sources

Obs ID	Position (J2000)	Size	Net Count	Count rate	Note
1828					
	(05 24 26.4, -69 36 13.3)	$<$ 3.9”	74.6	9.98e-04	
	(05 24 43.8, -69 40 25.4)	$<$ 3.0”	20.1	2.69e-04	
	(05 24 50.3, -69 34 54.8)	$<$ 4.9”	23.6	3.16e-04	
	(05 25 16.8, -69 38 38.1)	$<$ 3.0”	71.0	9.50e-04	
	(05 25 17.1, -69 43 10.7)	$<$ 4.9”	44.6	5.97e-04	
	(05 26 04.5, -69 38 22.7)	$<$ 4.9”	19.8	2.65e-04	

```
(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

- Dickel & Milne, 1995 AJ, 109, 200 : ATCA 3.5cm
- Westerlund, 1990 A&ARv, 2, 29 : Distance to LMC

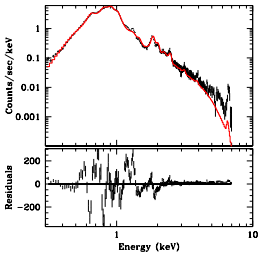
2 Fit Detail

- See spectrum page for used regions.

2.1 Total:

- Two thermal plsam model were used.
- abundace were set to 0.3 except O, Ne, Fe which were thawed and linked between two model.
- seperate fit of two particular regions gives 0.19 and 0.11 (see below)

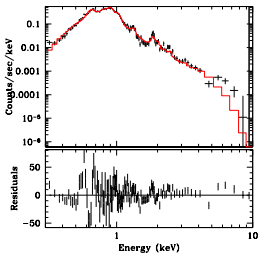
source=(xswabs * (xsvraymond + xsvraymond))
reduced χ^2 = 5.06251
nh = `0.2441 10^22/cm^2`



2.2 Clump 1:

- Region : **clump 1**
- Same method as above.

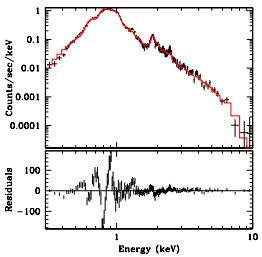
source=(xswabs * (xsvraymond + xsvraymond))
reduced χ^2 = 1.92433
nh = `0.1880 10^22/cm^2`



2.3 Clump 2:

- Region : **clump 2**
- Same method as above.

source=(xswabs * (xsvraymond + xsvraymond))
reduced χ^2 = 2.45162
nh = `0.1173 10^22/cm^2`

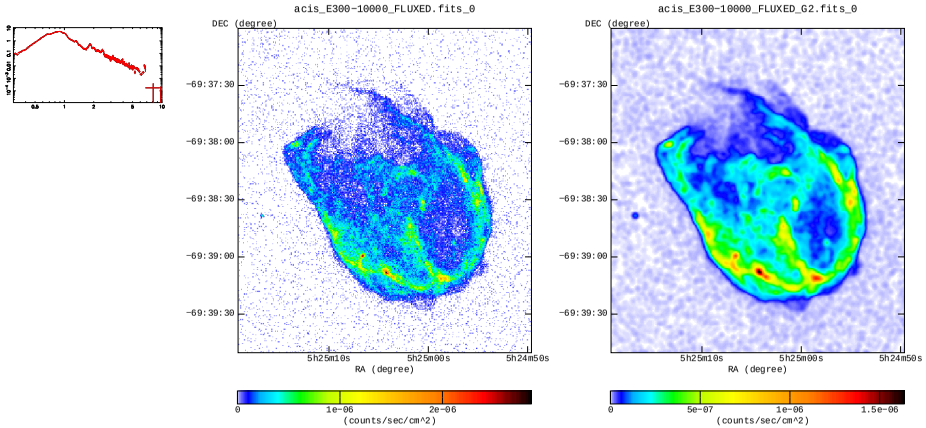


3 Chandra Images : Band Images

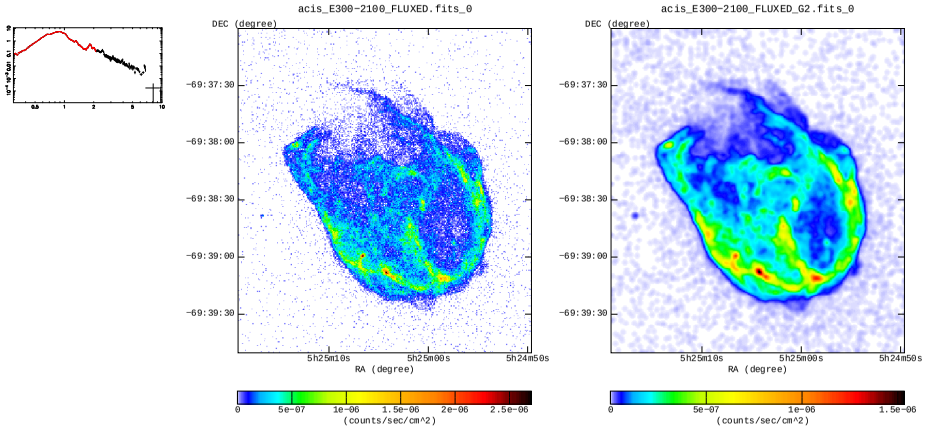
- Left : raw image, binned by 1x1 pixel
- Right : gaussian smoothed version of above (σ = 2 pixel)

3.1 Wide Band Images

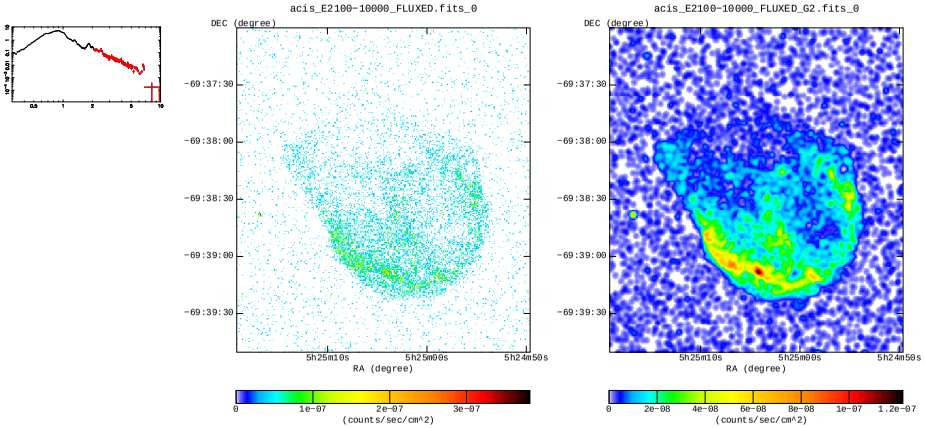
Total : 300-10000 eV



Soft Band : 300-2100 eV

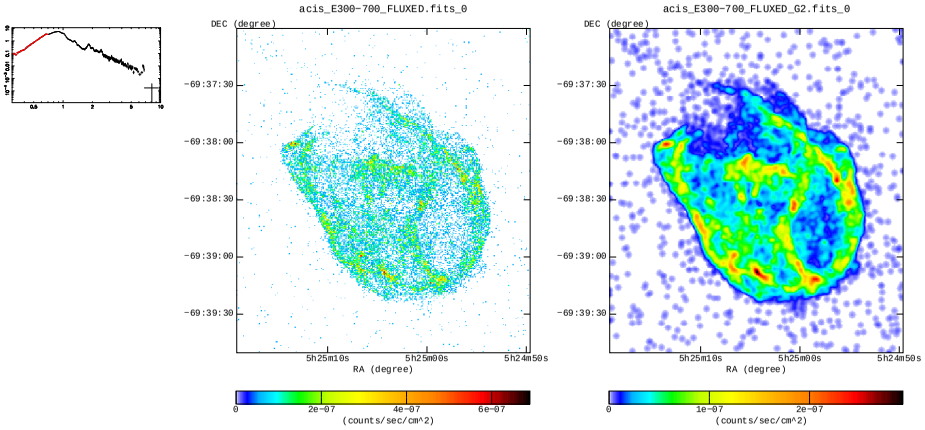


Hard Band : 2100-10000 eV

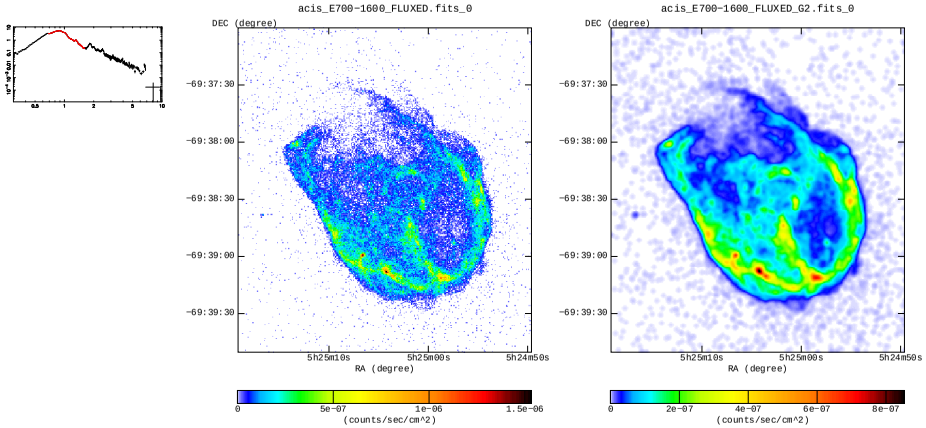


3.2 Band images used in true color image.

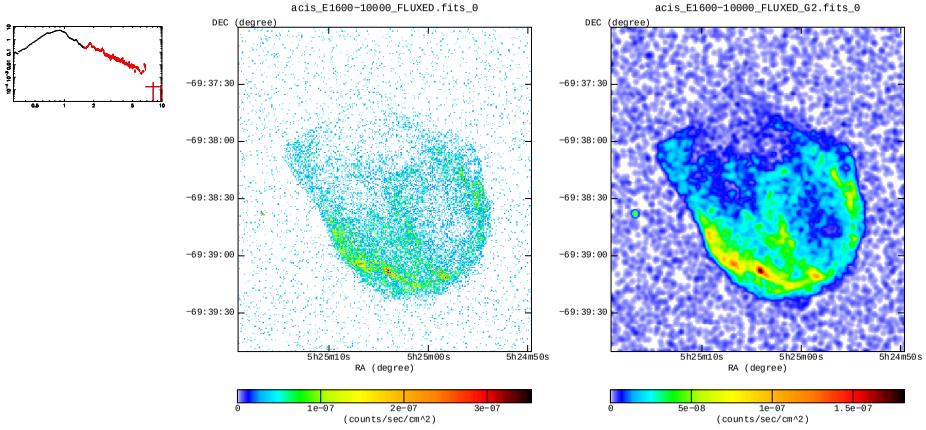
Red : 300-700 eV



Green : 700-1600 eV

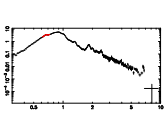


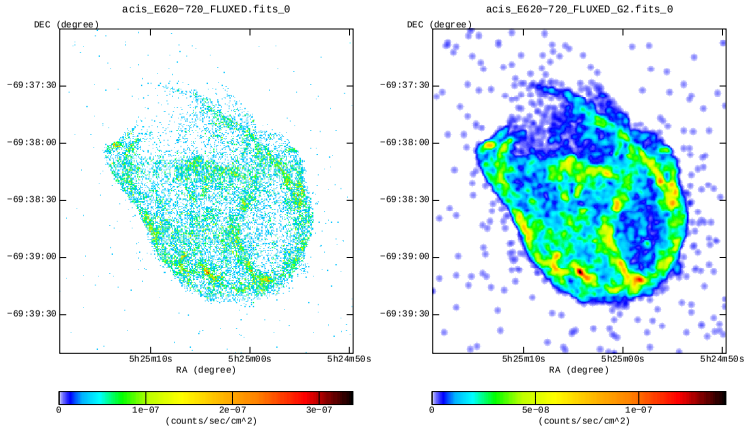
Blue : 1600-10000 eV



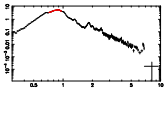
3.3 Misc.

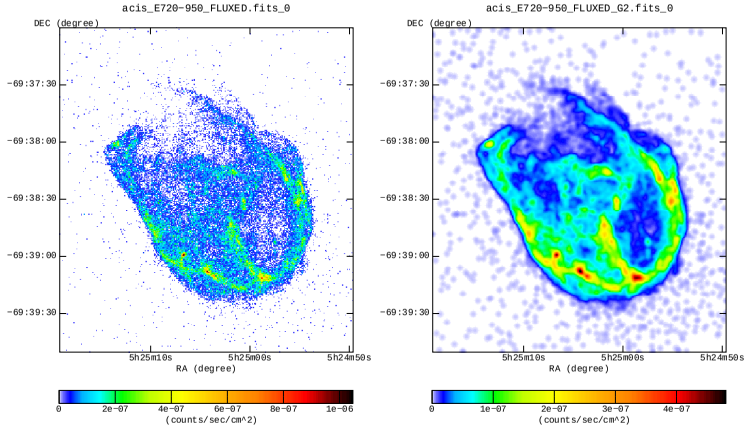
: 620-720 eV



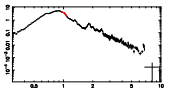


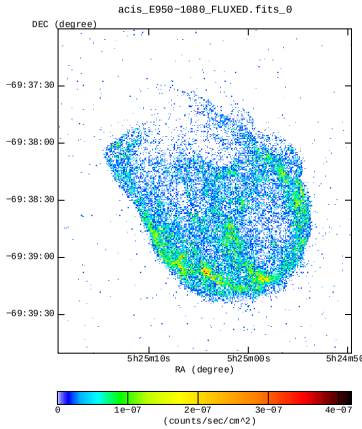
: 720-950 eV

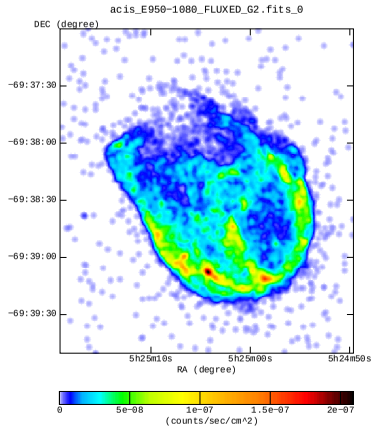




: 950-1080 eV





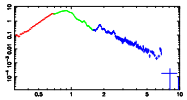


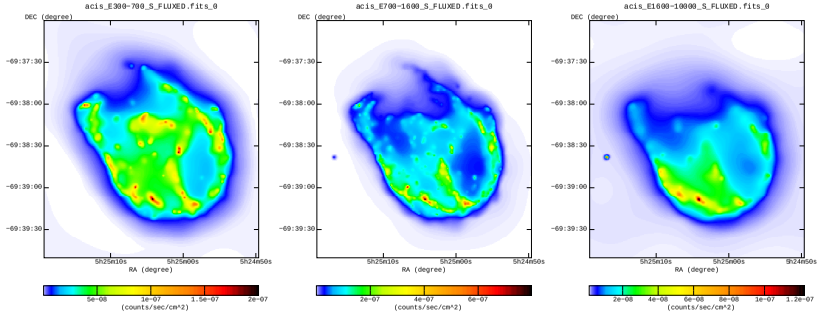
4 Chandra Images : True Color

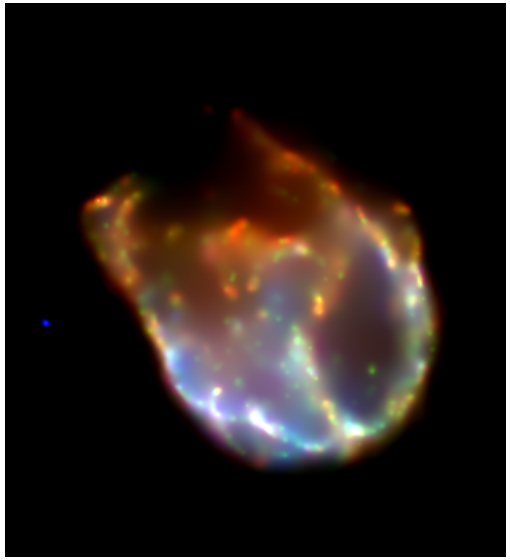
- Individual images are adaptively smoothed.
- Warning : the adaptive smoothing process sometimes produces artifacts.

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

RED :	300-700 eV
GREEN :	700-1600 eV
BLUE :	1600-10000 eV





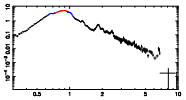


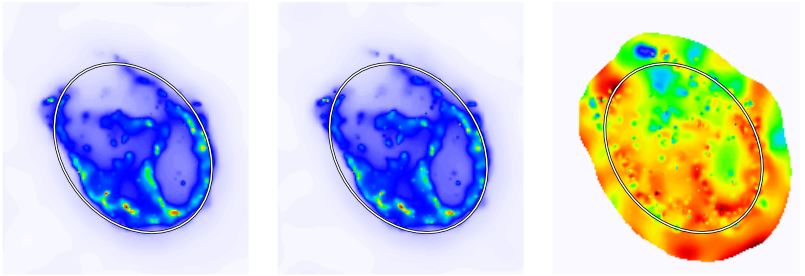
5 Chandra Images : Equivalent Width Map

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 :	620-720 eV
line :	720-950 eV
continuum :	950-1080 eV





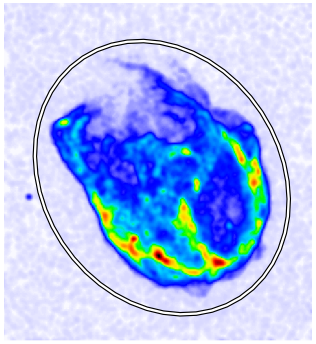
6 Chandra Spectrum

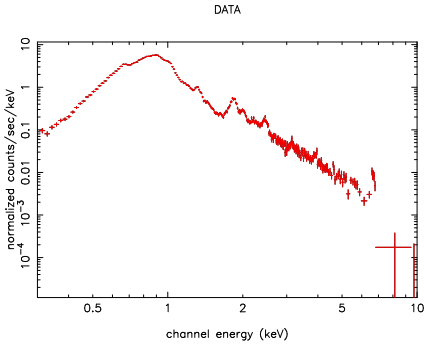
- Images show Regions used to extract spectra
- Regions with red strikes are excluded

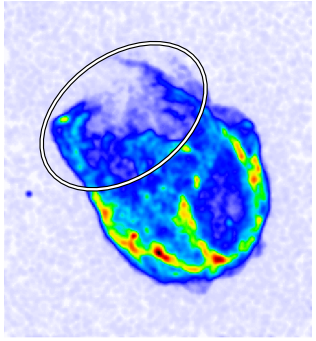
6.1 ObsID 1828

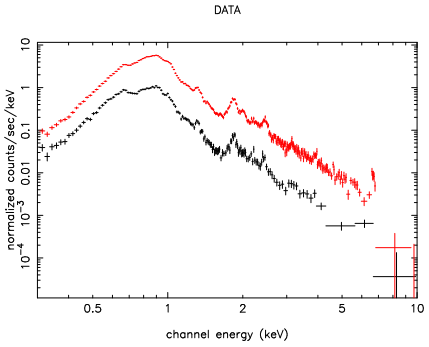
- Background was subtracted from the region around the SNR.

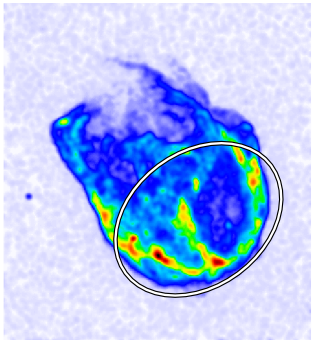
total

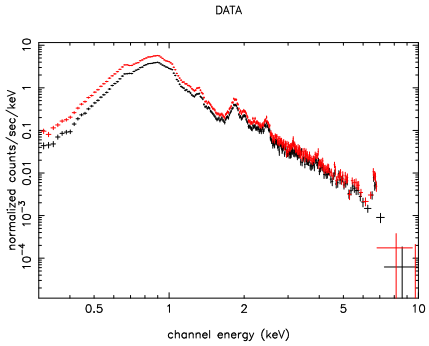


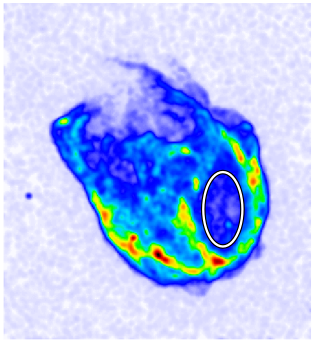


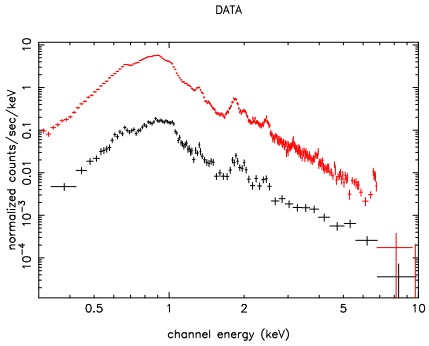


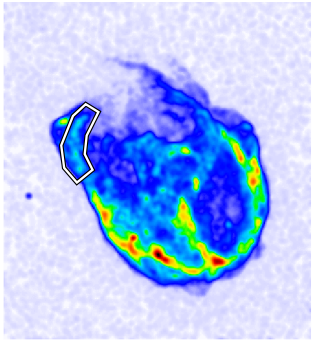


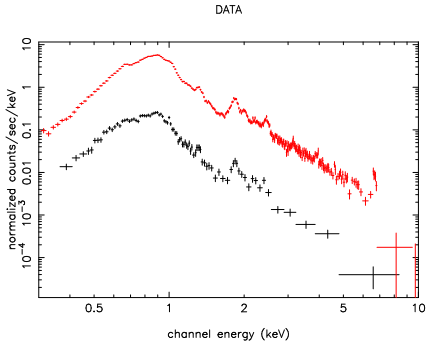


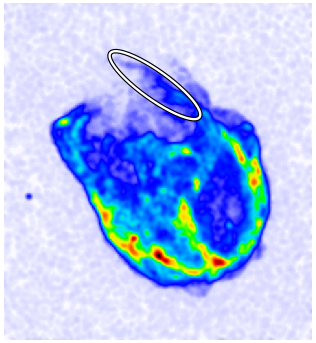


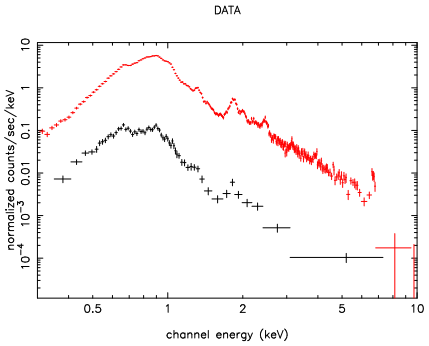




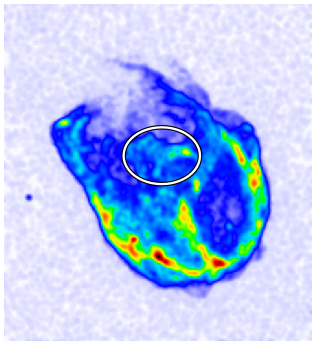


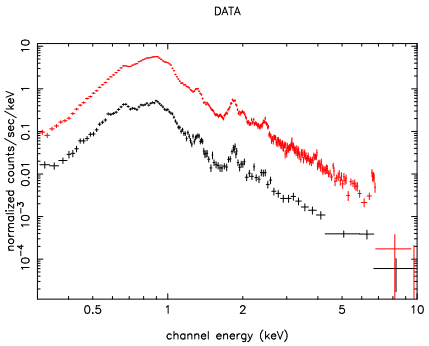




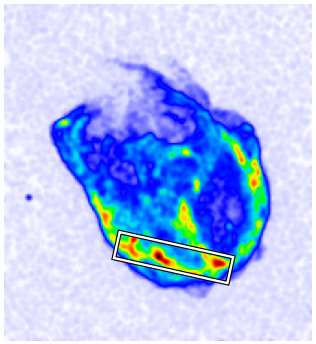


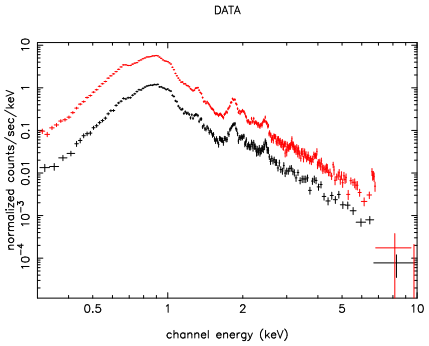
clump 1

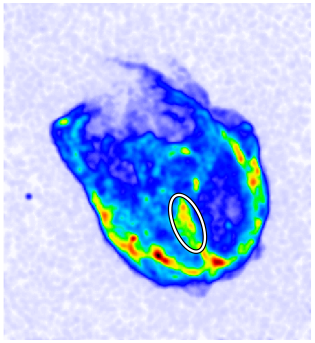


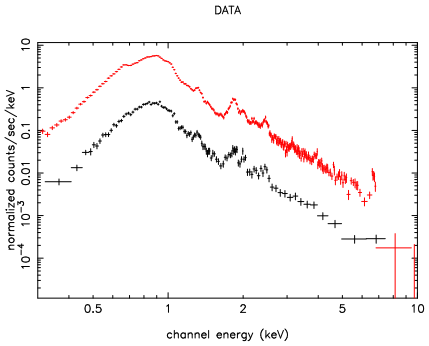


clump 2







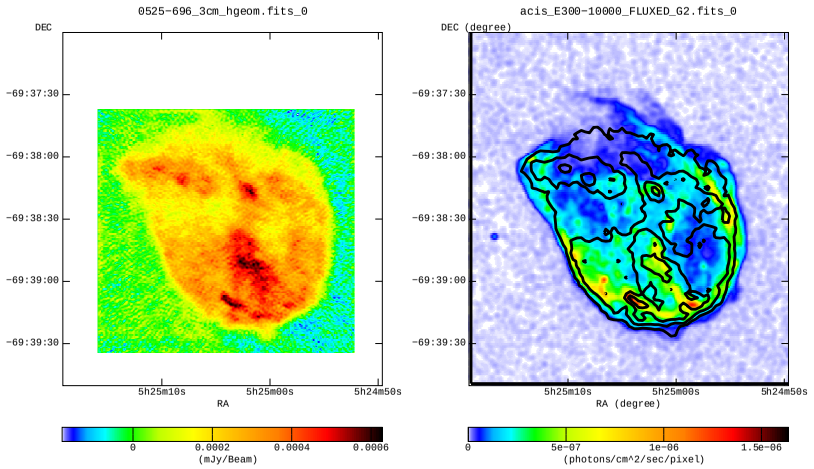


7 Radio Image

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

3.5-cm

-. Image from **Dickel & Milne(1995)**
-. 3.5-cm flux density: 1.20 Jy

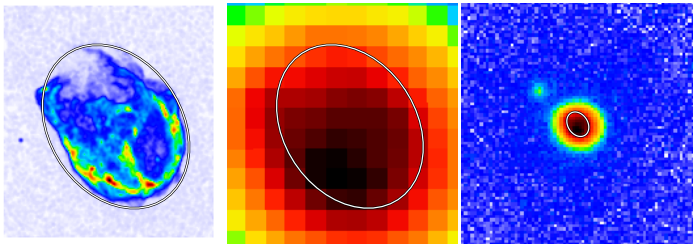


Summary of Observation	
Telescope	Australia Telescope Compact Array
Date	1990 June 26, July 1 and 29, 91 July 4, 93 January 27, March 16
Frequency	8.6 GHz (90, 91), 8.3 and 9.0 GHz (93)
Beam size	1.2"x1.2"
1 sigma noise ..	0.04 mJy beam-1

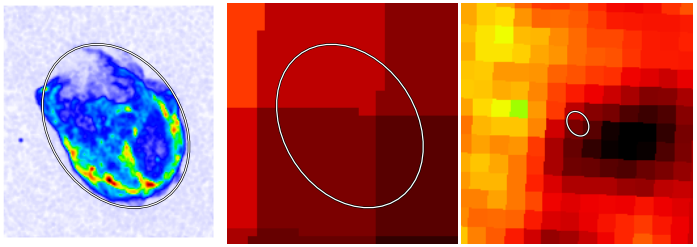
8 Images from Survey Missions

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

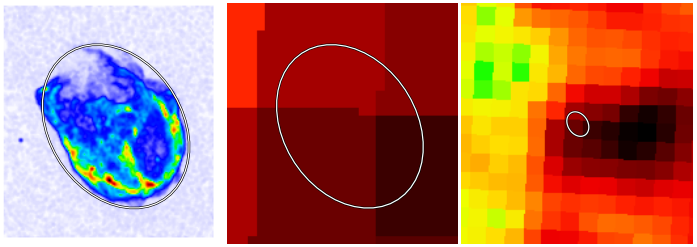
ROSAT PSPC (1.0 deg): X-ray (0.1-2.4 keV)



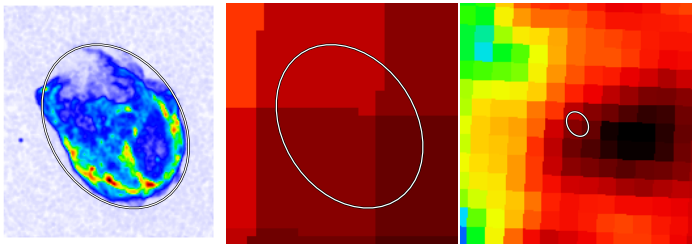
IRAS 12 micron: Infrared (12 micron)



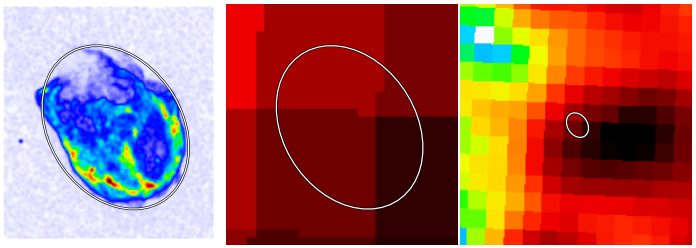
IRAS 25 micron: Infrared (25 micron)



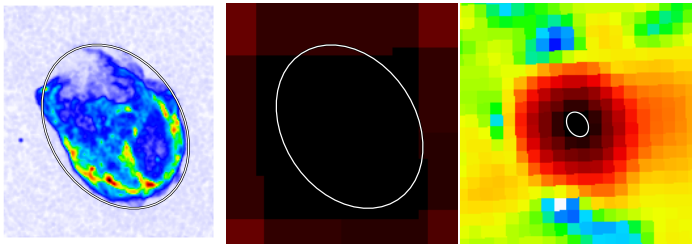
IRAS 60 micron: **Infrared (60 micron)**



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



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



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