

## 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	Exposure <sub>uf</sub> (ks)	Exposure <sub>f</sub> (ks)	Date Observed	Aimpoint (J2000) ( $\alpha$ , $\delta$ )
500024	728	ACIS-567	50.0	49.1	2000-09-04	( 02 05 37.0, 64 49 48.0 )

Exposure<sub>uf</sub> → Exposure time of un-filtered event file  
 Exposure<sub>f</sub> → 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 <sup>-1</sup> )	F <sub>X</sub> <sup>ph</sup> (ergs cm <sup>-2</sup> s <sup>-1</sup> )	F <sub>X</sub> (ergs cm <sup>-2</sup> s <sup>-1</sup> )	L <sub>X</sub> (ergs s <sup>-1</sup> )
Total ( 728 )	0.3 - 10.0	9,146±04	1.864±00	1.35e-11	2.70e-11	3.30e+34
	0.3 - 2.1	7.115±04	1.450±00	4.85e-12	1.80e-11	2.20e+34
	2.1 - 10.	2.051±04	4.179e-01	8.66e-12	9.01e-12	1.10e+34

- NH = 0.40 (10<sup>22</sup> cm<sup>-2</sup>)
- 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

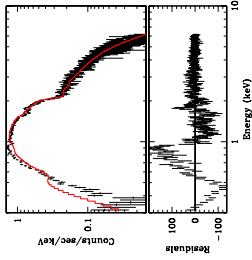
## 2 Fit Detail

- See spectrum page for used regions.

### 2.1 Total:

- Simple power-law used.

source=(xswabs \* powlaw1d)  
 reduced  $\chi^2 = 2.5001$   
 nh = 0.4045  $10^{22}/\text{cm}^2$

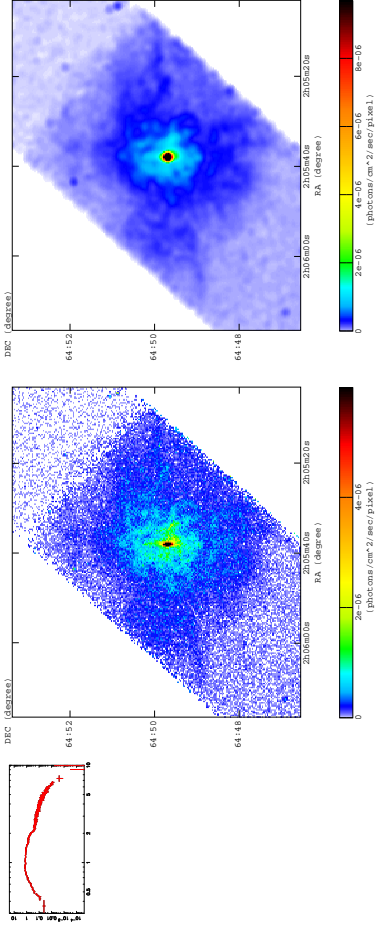


## 3 Chandra Images : Band Images

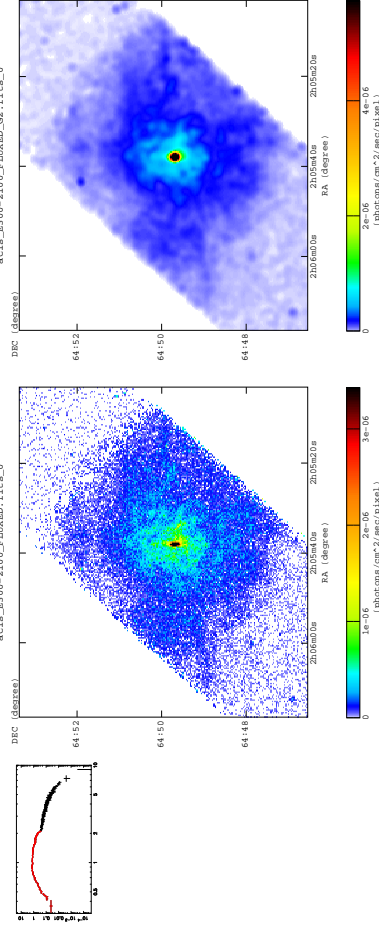
- Left : raw image, binned by 1x1 pixel
- Right : gaussian smoothed version of above ( $\sigma = 2$  pixel)

### 3.1 Wide Band Images

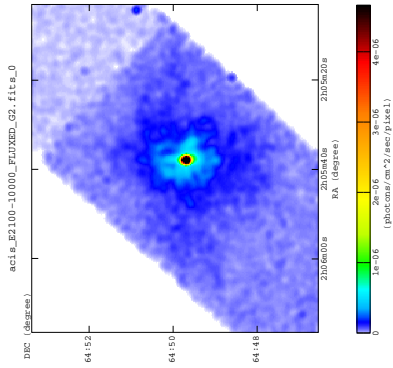
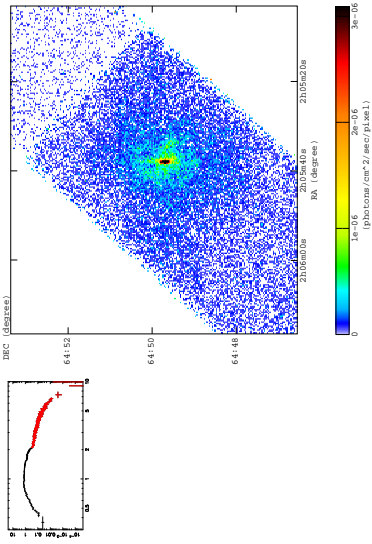
Total : 300-10000 eV



Soft Band : 300-2100 eV

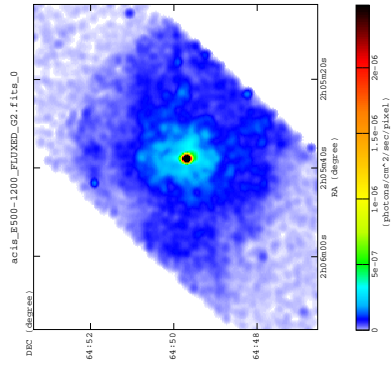
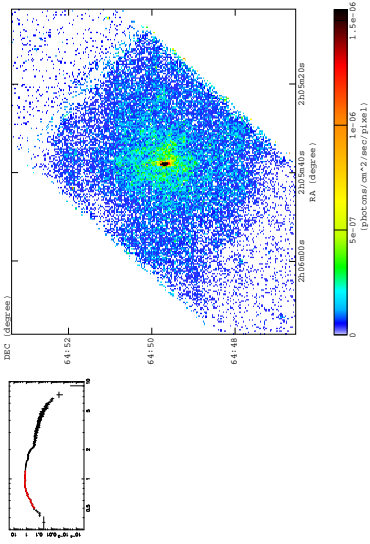


**Hard Band : 2100-10000 eV**

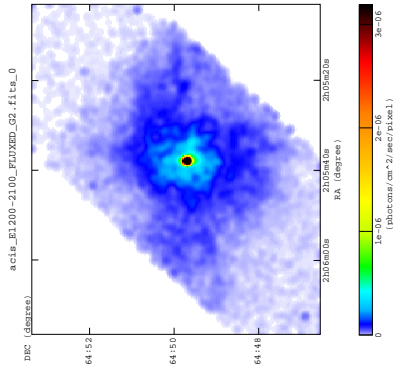
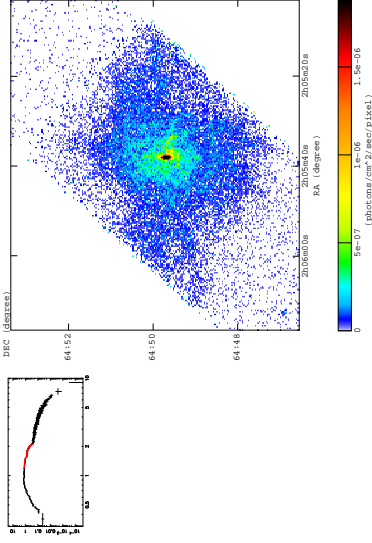


**3.2 Band images used in true color image.**

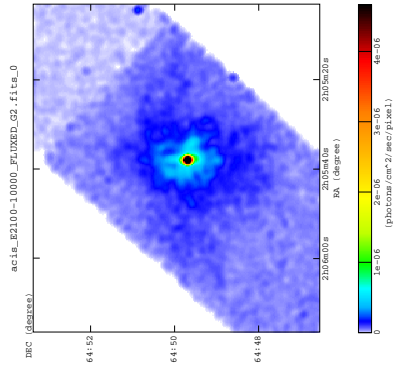
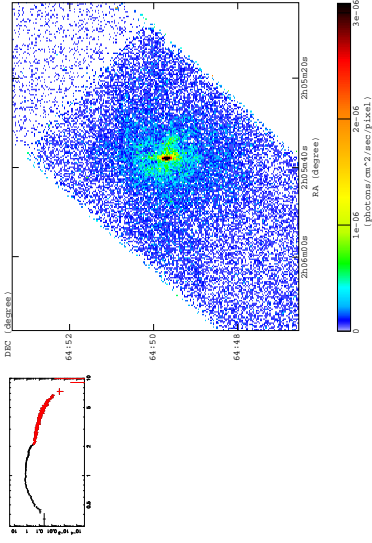
**Red : 500-1200 eV**



**Green : 1200-2100 eV**



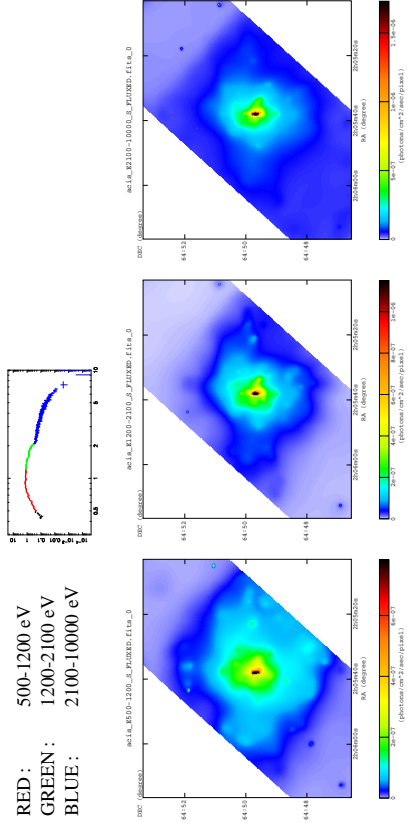
**Blue : 2100-10000 eV**



#### 4 Chandra Images : True Color

- Individual images are adaptively smoothed.
- Warning : the adaptive smoothing process sometimes produces artifacts.
- convolution method : fit
- kernel type : gauss
- significance ( min , max ) : ( 3 , 5 )

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



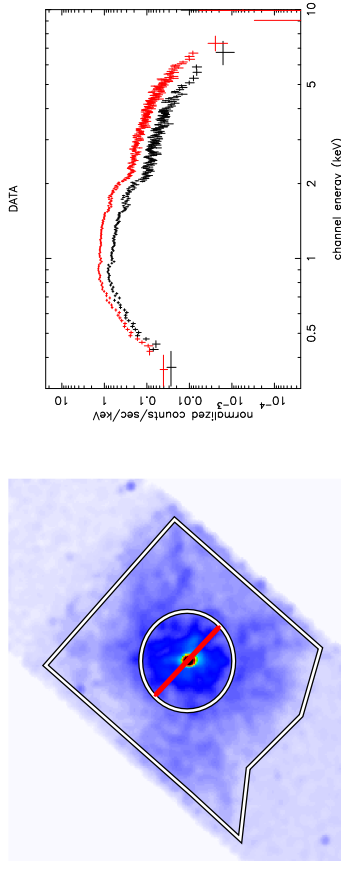
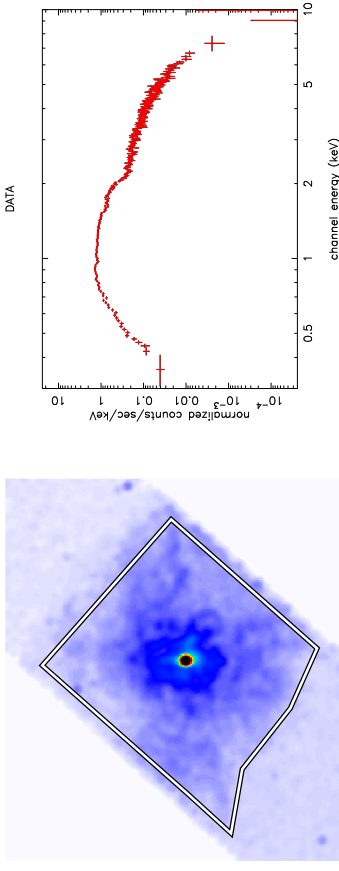
#### 5 Chandra Spectrum

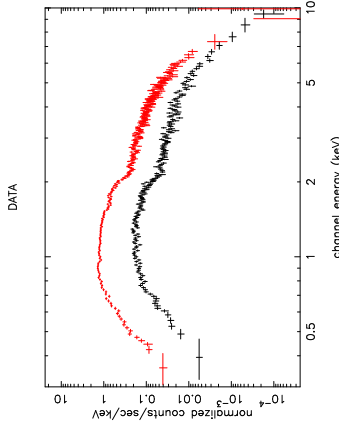
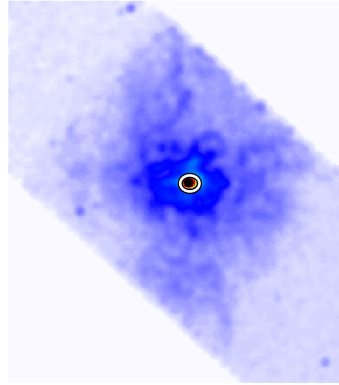
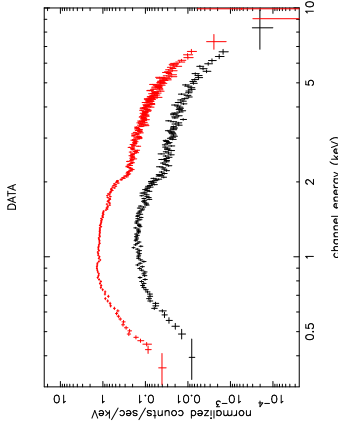
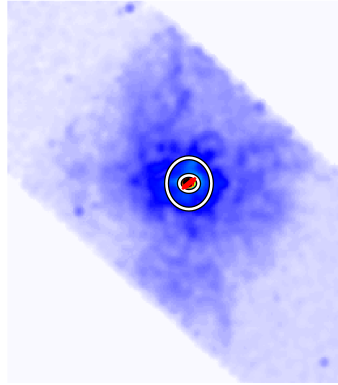
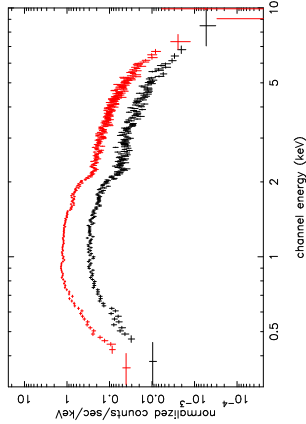
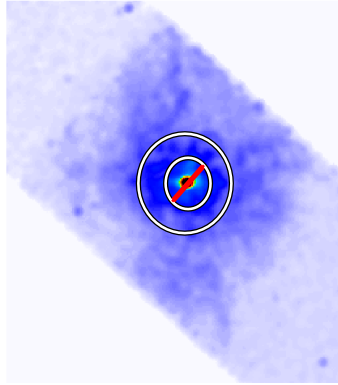
- Images show Regions used to extract spectra
- Regions with red strikes are excluded

##### 5.1 ObsID 728

- Background was subtracted from the region around the SNR.

Total



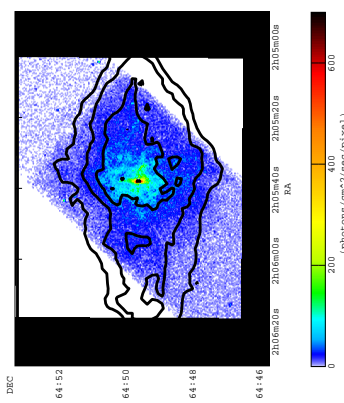
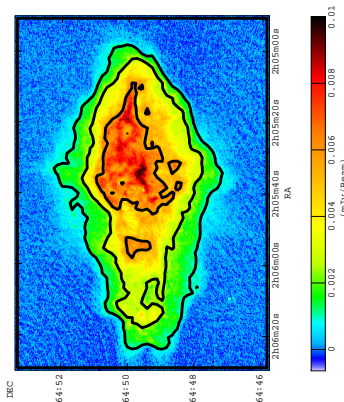


### 6 Radio Image

- 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)



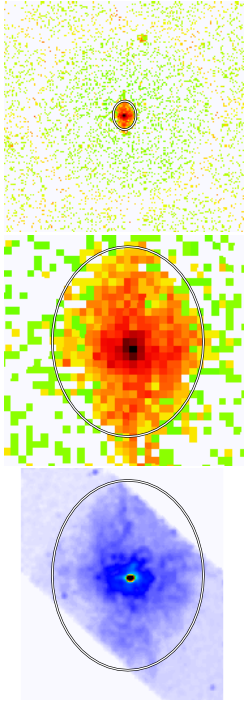
#### Summary of Observation

Telescope	.....	VLA
Date	.....	1984 Jan, Apr, Aug, Dec
Frequency	....	1.446 GHz
Beam size	....	2"
1 sigma noise	..	0.05 mJy beam <sup>-1</sup>

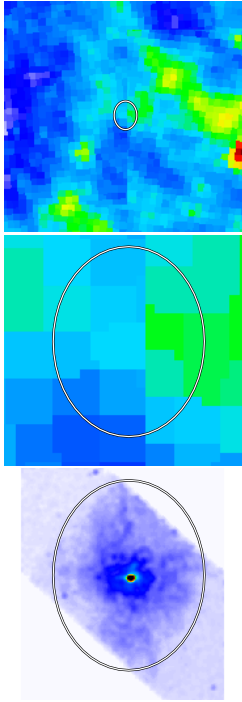
**7 Images from Survey Missions**

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

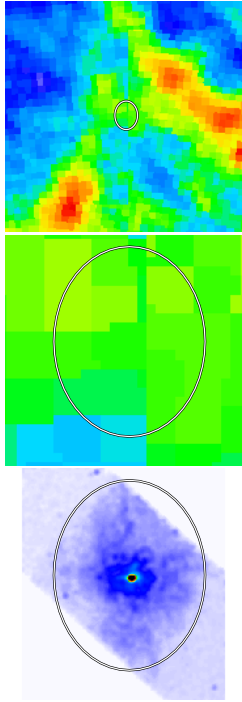
**ROSAT PSPC (2.0 deg): X-ray (0.1-2.4 keV)**



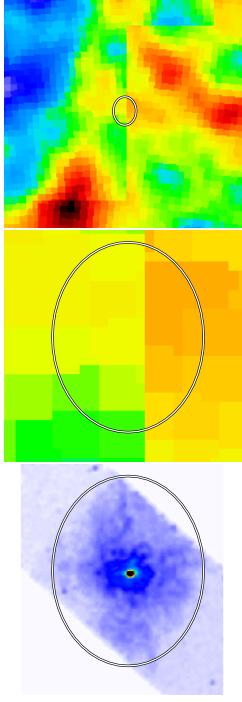
**IRAS 12 micron: Infrared (12 micron)**



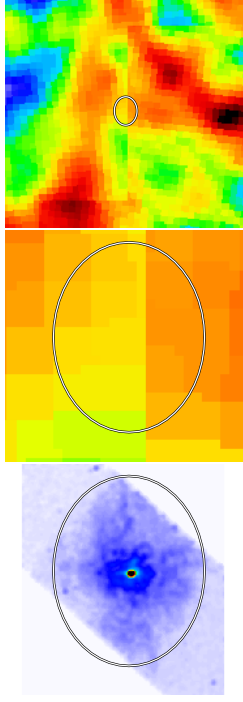
**IRAS 25 micron: Infrared (25 micron)**



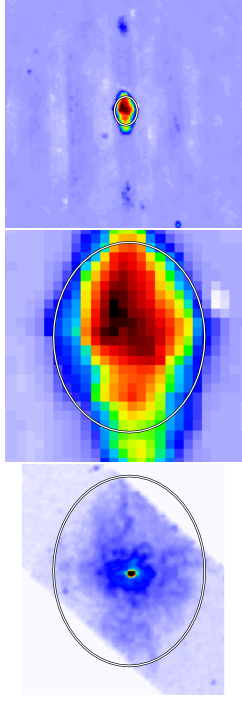
**IRAS 60 micron: Infrared (60 micron)**



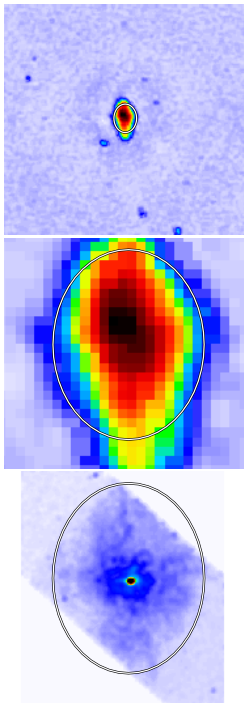
**IRAS 100 micron: Infrared (100 micron)**



**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)

