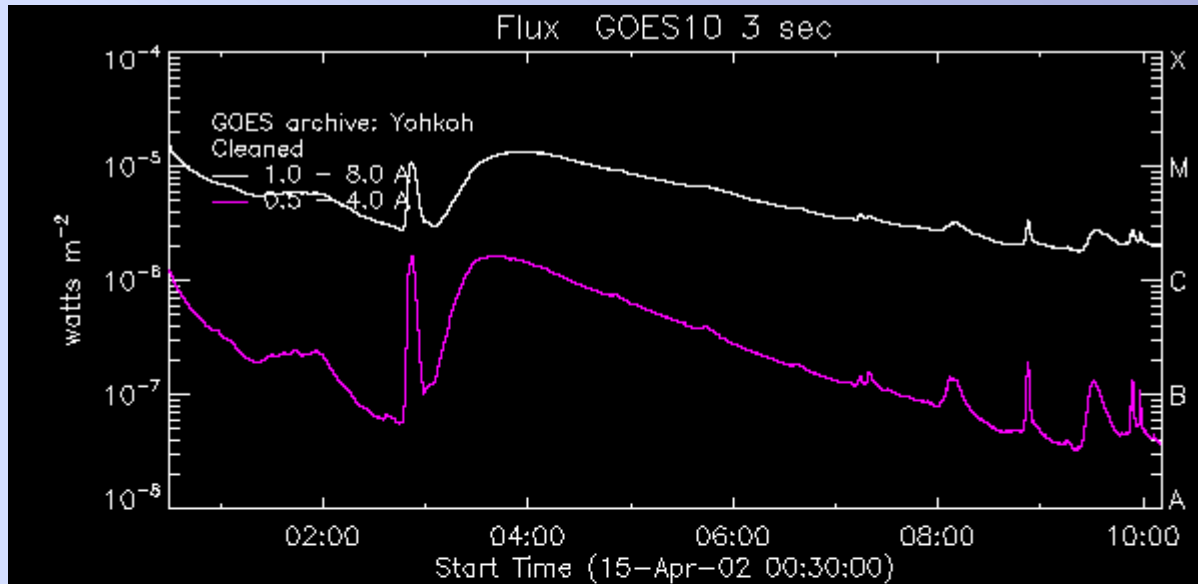


# **Flare on 2002 April 15: RHESSI observations**

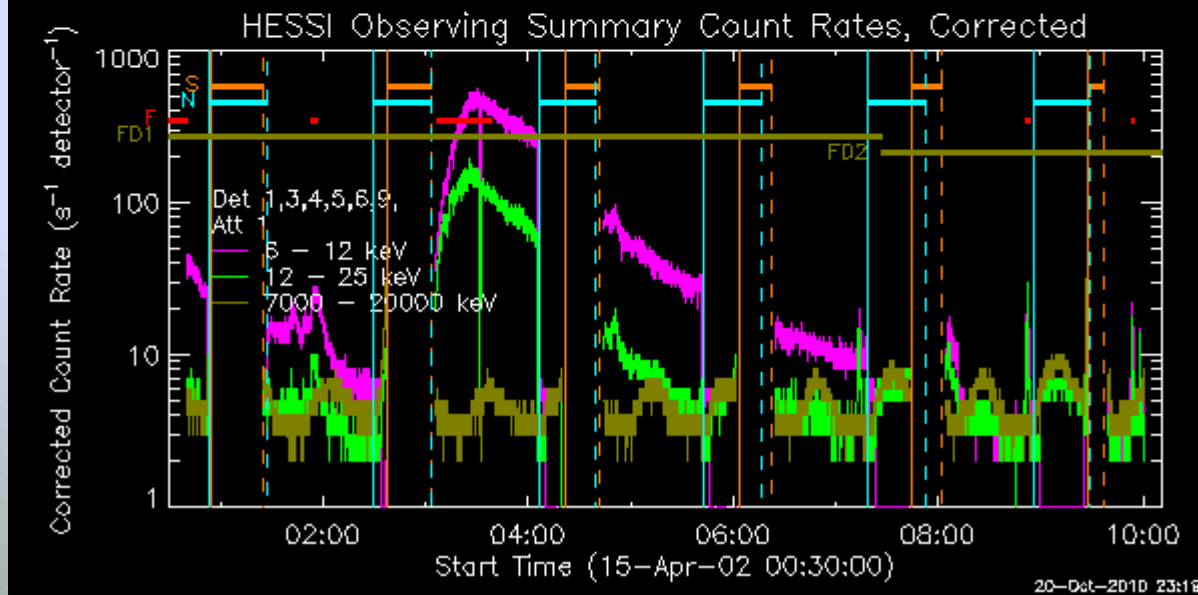
**Tomasz Mrozek  
Astronomical Institute  
University of Wrocław**



About 5 hours of decay in an energy range of 6-12 keV

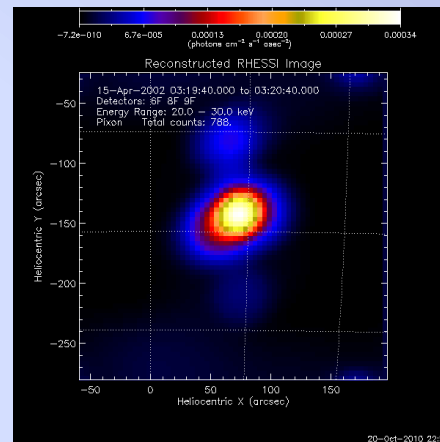
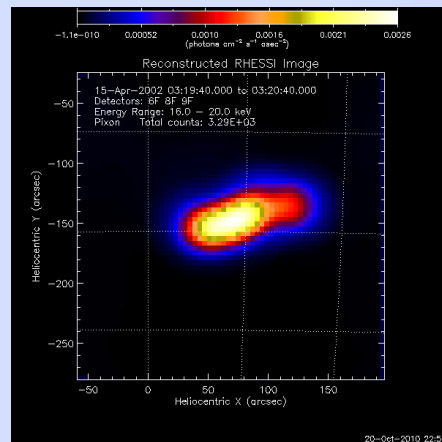
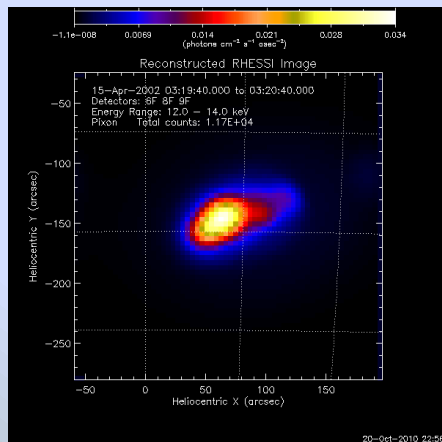
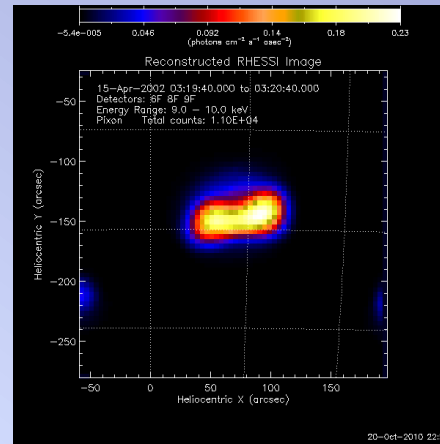
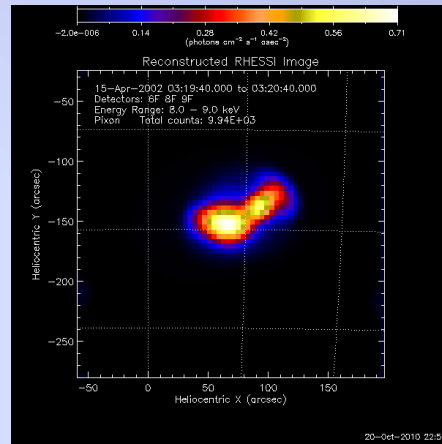
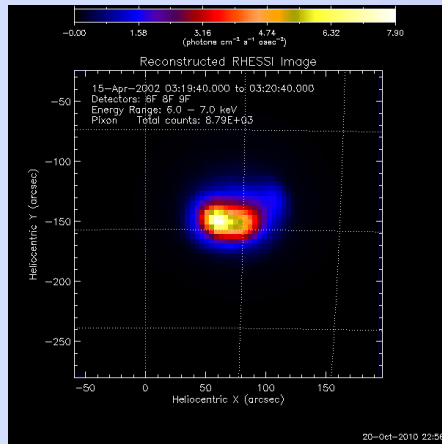
Almost entire rising phase

SAA – mostly during orbital nights



A lack of other flares in the interval 4:00-4:30. It is possible to interpolate T, EM from RHESSI fits for orbital night.

# RHESSI images

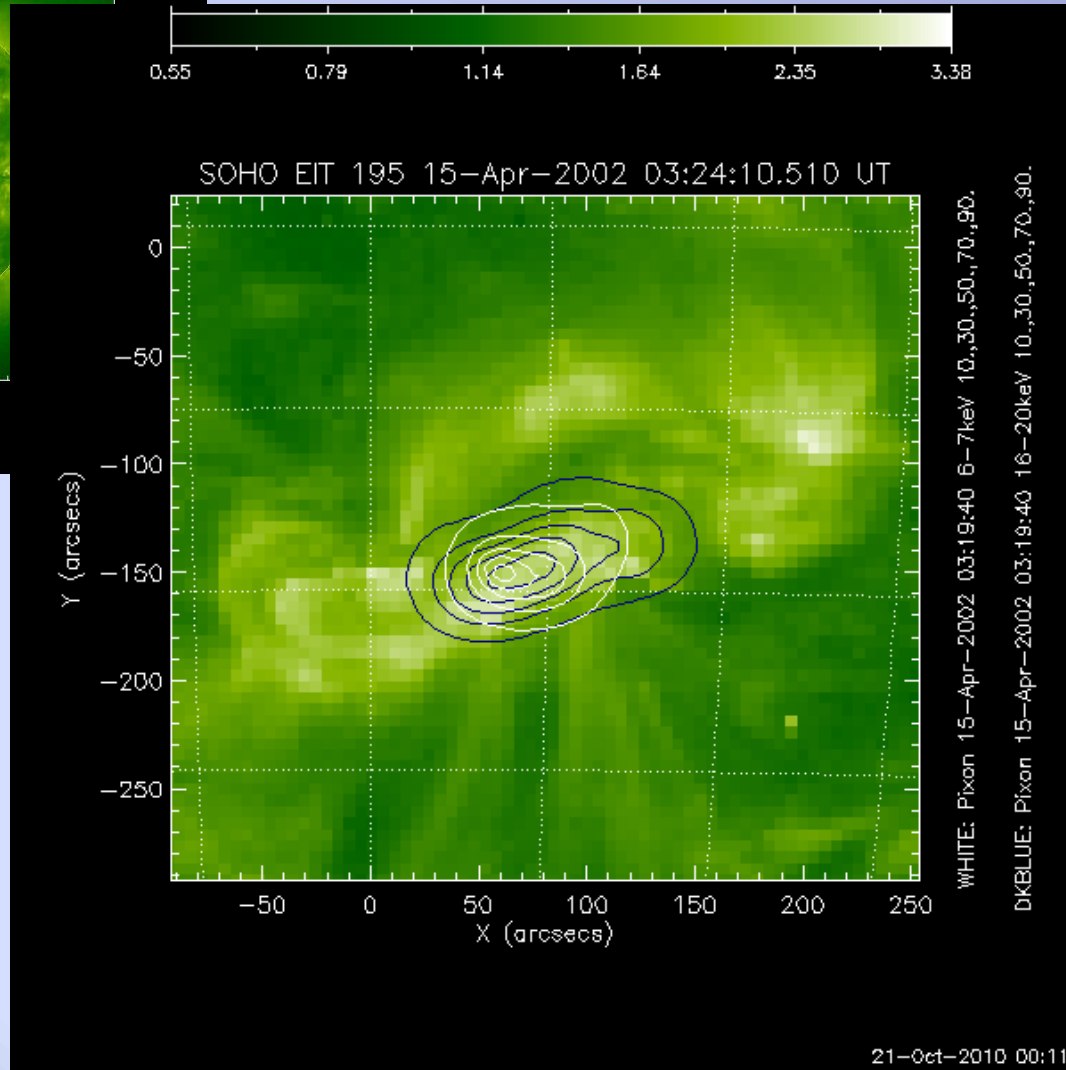
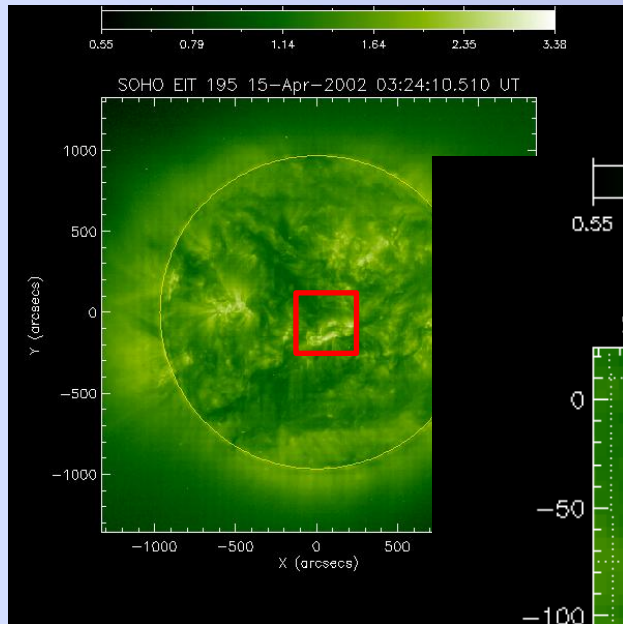


Energy ranges [keV]:  
6-7, 8-9, 9-10, 12-14  
16-20, 20-30

1 minute of integration

PIXON algorithm with:

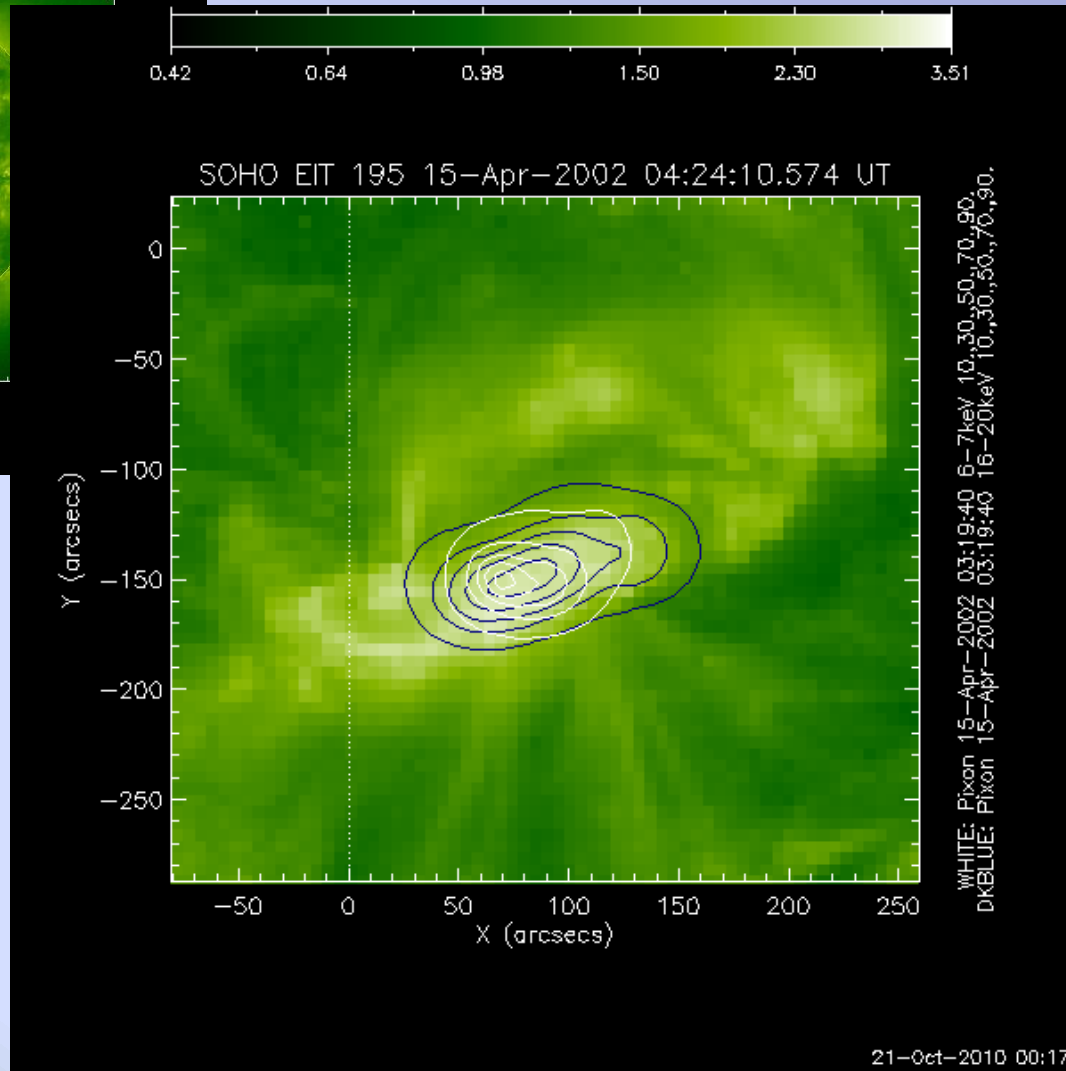
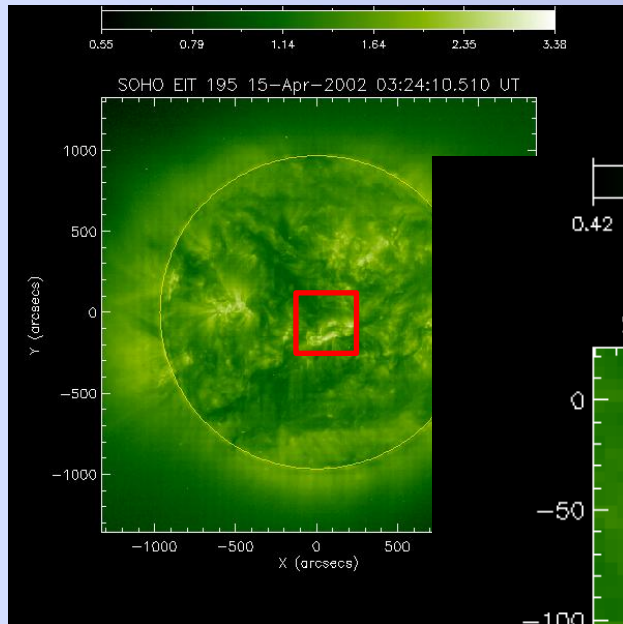
- phase stacker
- background model
- natural weighting
- grids Nos. 6,8,9
- pixel size: 4 arcsec



white: 6-7 keV

blue: 16-20 keV

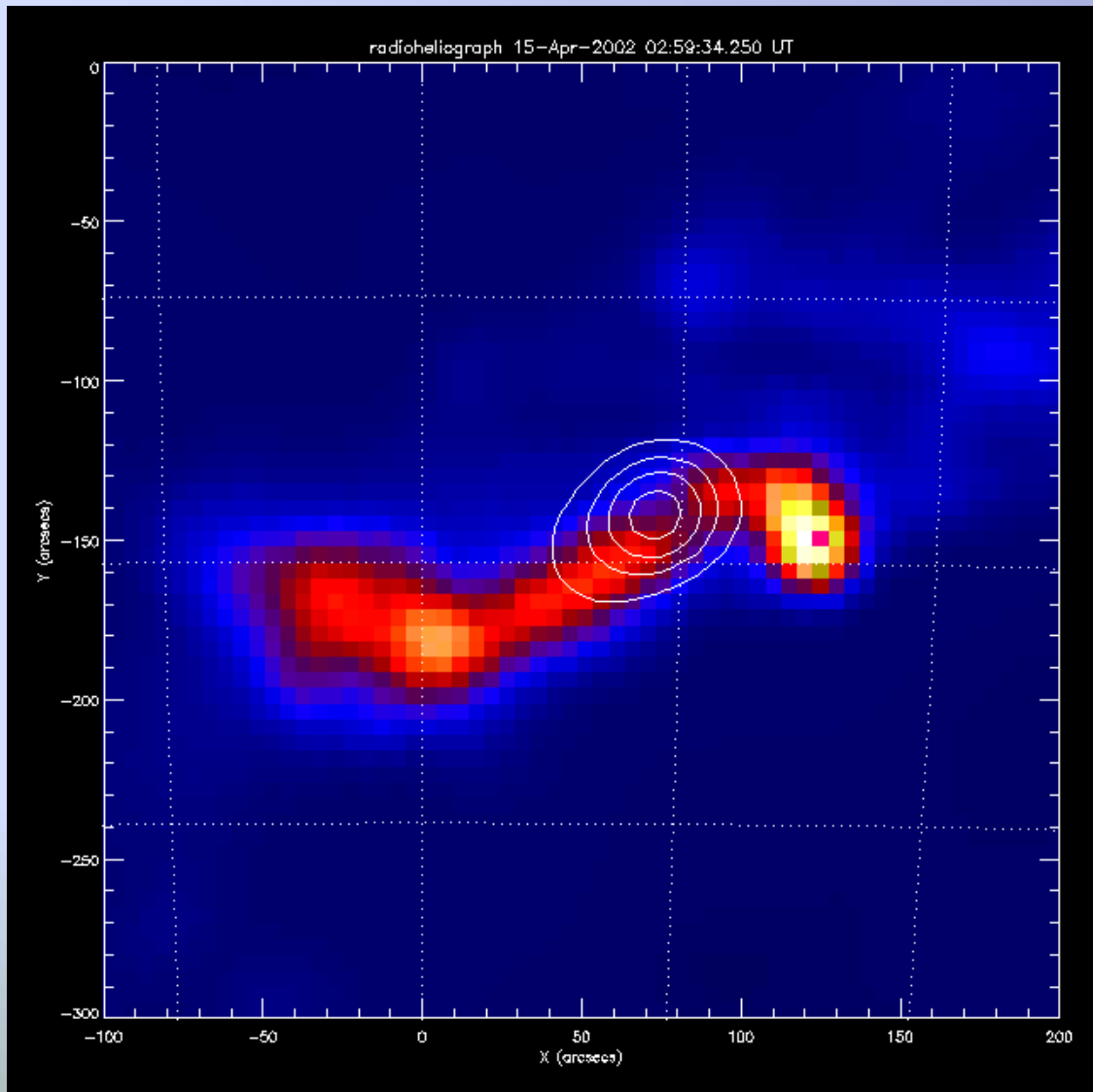
eit: 4 minutes  
after RHESSI



white: 6-7 keV

blue: 16-20 keV

eit: 64 minutes  
after RHESSI



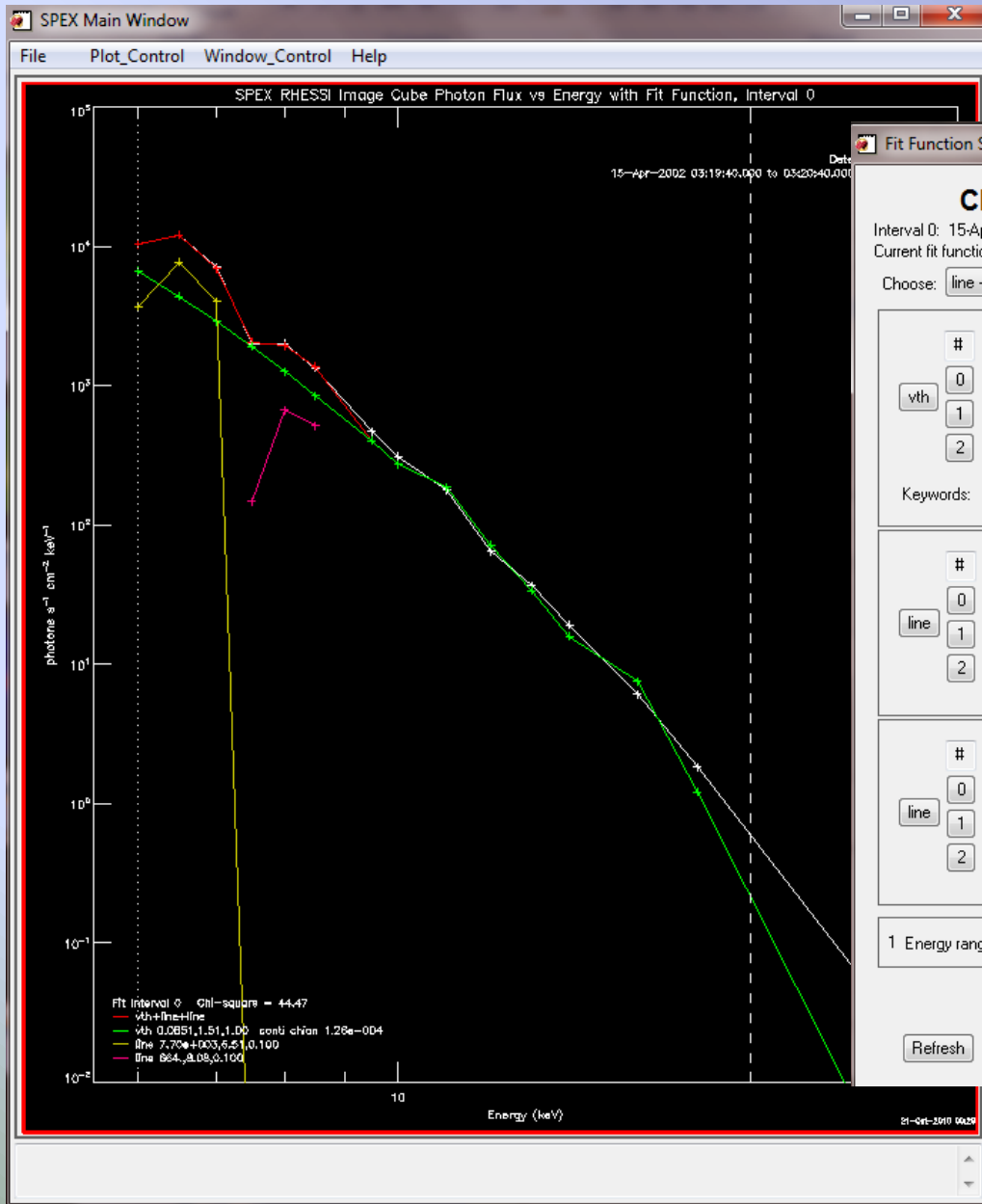
Nobeyama: 17 GHz

RHESSI: 20-30 keV

contours: 30, 50, 70, 90 %  
of maximum

No HXR footpoints during  
impulsive phase

# RHESSI image spectroscopy



Fit Function Setup

### Choose Fit Function Components and Set Parameters

Interval 0: 15-Apr-2002 03:19:40.000 to 03:20:40.000  
Current fit function: vth+line+line

Choose:

#	Value	Minimum	Maximum	Free (green)	Reset ->	
vth	0	0.0850759	1E-020	1E+020	<input checked="" type="checkbox"/>	<input type="button" value="Reset -&gt;"/>
	1	1.50781	0.5	8	<input checked="" type="checkbox"/>	<input type="button" value="Delete comp"/>
	2	1	0.01	10	<input type="checkbox"/>	<input type="button" value="Plot comp"/>

Keywords:

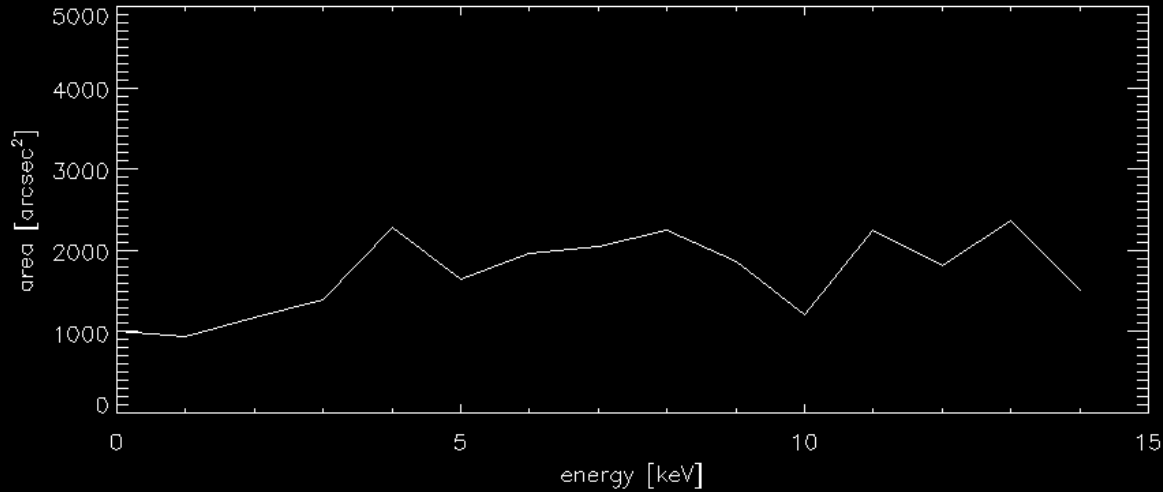
#	Value	Minimum	Maximum	Free (green)	Reset ->	
line	0	7701.52	1E-020	1E+020	<input type="checkbox"/>	<input type="button" value="Reset -&gt;"/>
	1	6.50549	6.4	7	<input checked="" type="checkbox"/>	<input type="button" value="Delete comp"/>
	2	0.1	0.01	1E+006	<input type="checkbox"/>	<input type="button" value="Plot comp"/>

#	Value	Minimum	Maximum	Free (green)	Reset ->	
line	0	664.358	1E-020	1E+020	<input type="checkbox"/>	<input type="button" value="Reset -&gt;"/>
	1	8.07662	7.7	8.3	<input checked="" type="checkbox"/>	<input type="button" value="Delete comp"/>
	2	0.1	0.01	1E+006	<input type="checkbox"/>	<input type="button" value="Plot comp"/>

1 Energy range(s) to fit:    Auto-set Max  # Iter: 10

Auto Plot Plot Units:   Photons  Background  Residuals

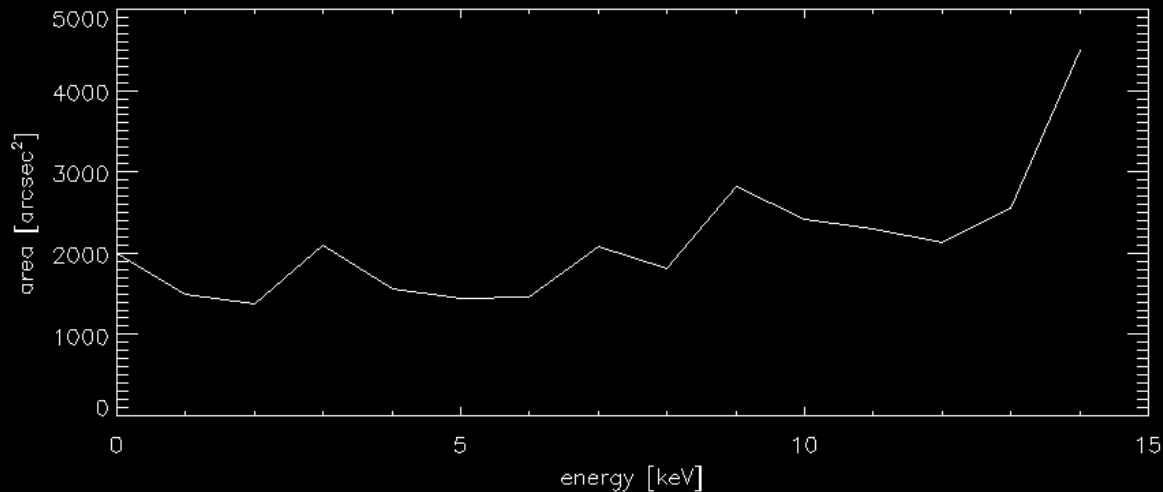
## *RHESSI source size*



Estimated size of HXR  
source with energy

upper: 50% of maximum

bottom: 50% of total flux



Large size (1000-2000 arcsec<sup>2</sup>)  
is typical for LDE loop-top  
sources