SPI GCDE Survey Line Simulations

A. Strong

December 2001

GCDE 1st year : 2 cycles = $4.2\ 10^6$ sec

Simulations using ISDC OSIM+SPI issw

os_pdefgen	*define pointings*
gensky	*model sky*
spisimprep	*prepare deadtime etc*
spiback	*background model*
spiskycnv	*simulate data*
spiskymax	*imaging analysis*

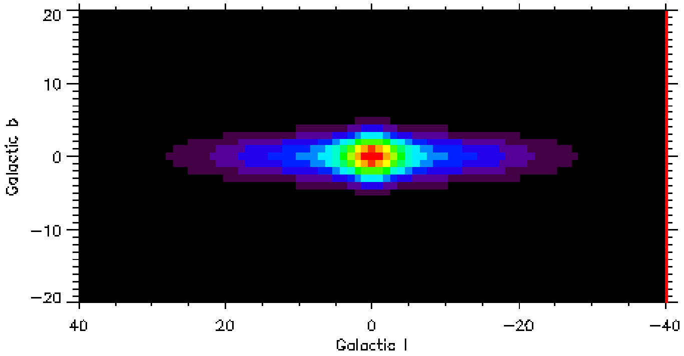
Studies of continuum done previously,
here concentrate on lines.

GCDE 1st year : 2 cycles 4.2 10^6 sec gcde.18

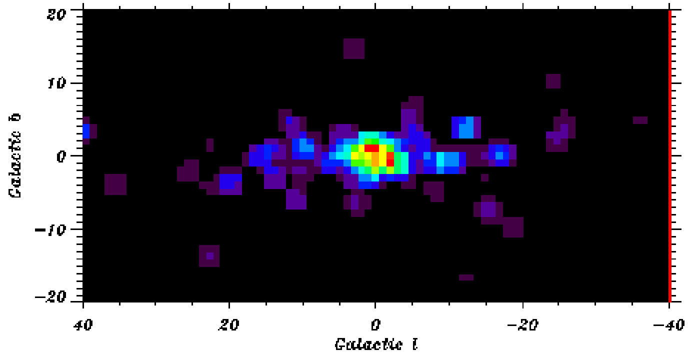
511 keV line singles only

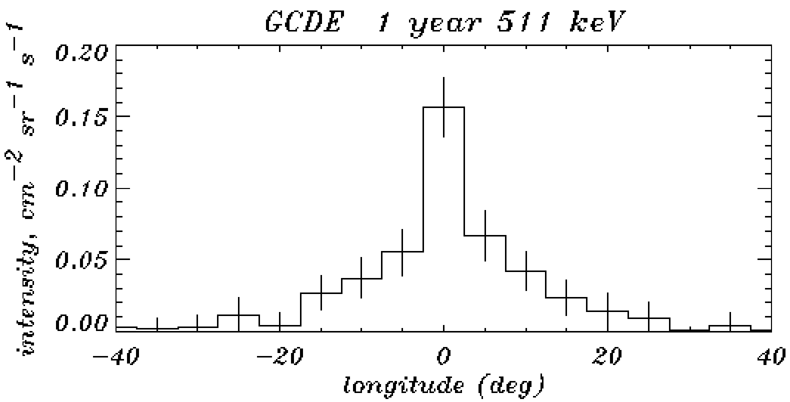
model based on Kinzer et al. (2001); background: P. Jean

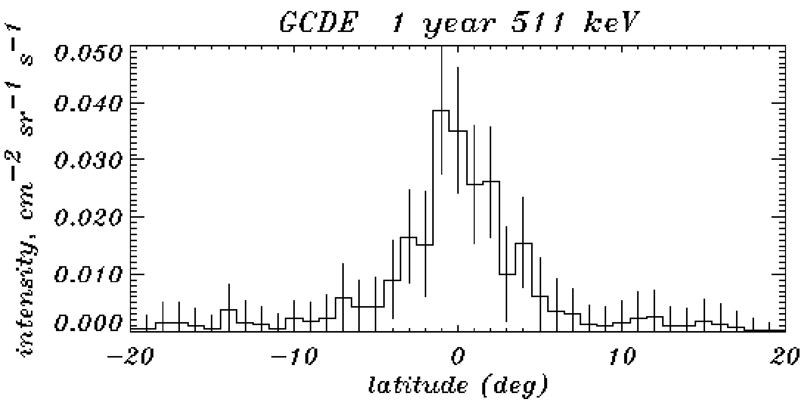
model



spiskymax image







GCDE 1st year : 2 cycles 4.2 10^6 sec

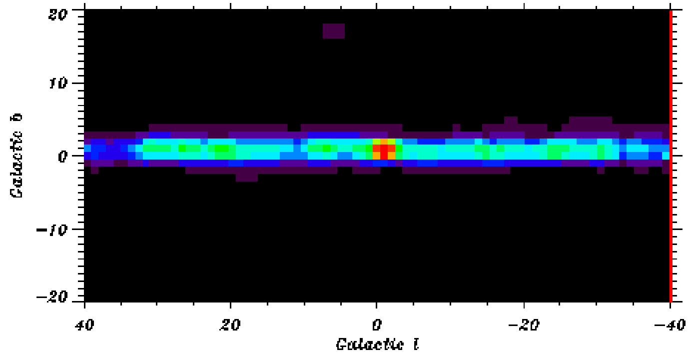
gcde.16

1809 keV line, 2.4 keV FWHM 3 keV bins singles only

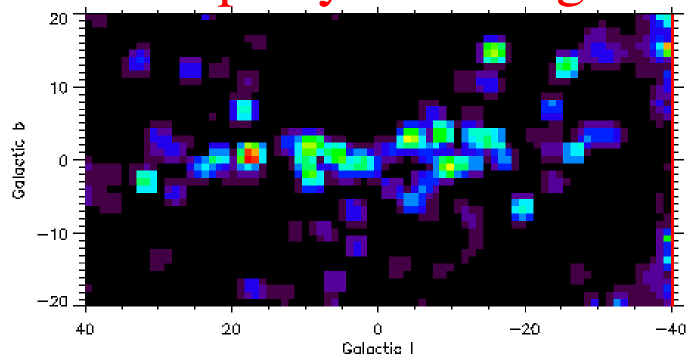
model based on 240µm emission,

scaled to COMPTEL map. Background: P.Jean

model

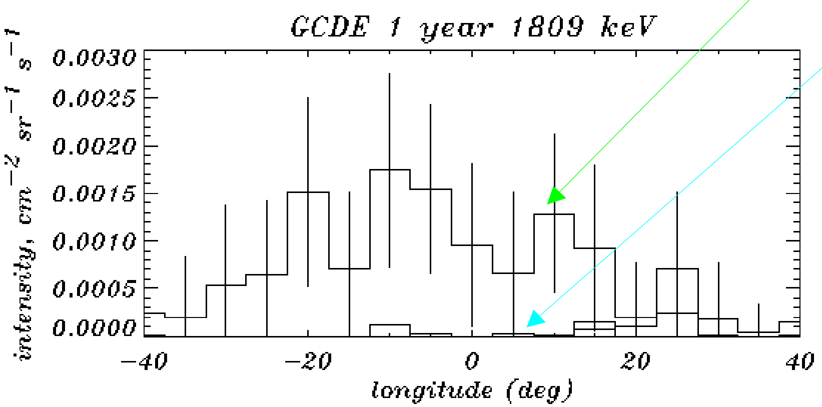


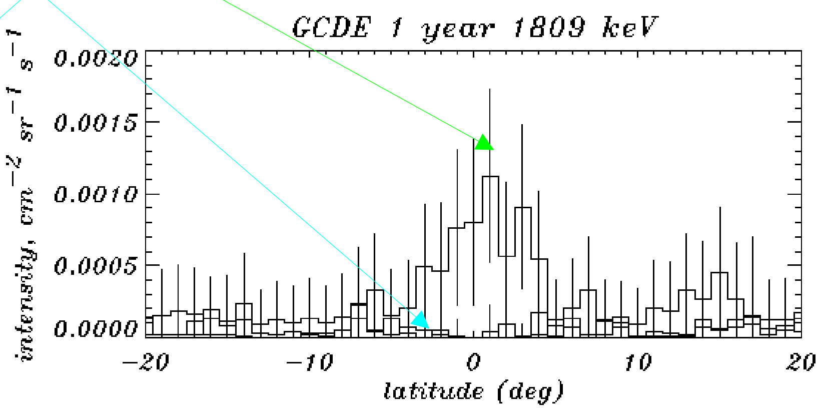
spiskymax image



Line 1807.5–1810.5 keV

1804.5–1807.5, 1810.5–1813.5





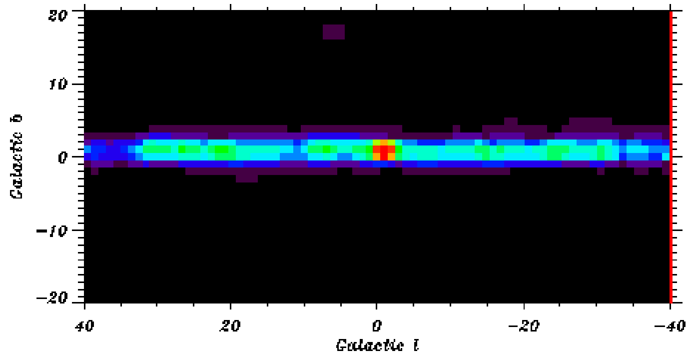
GCDE 1st year : 2 cycles 4.2 10^6 sec gcde.19

1809 keV line, 2.4 keV FWHM. 2 keV bins singles only

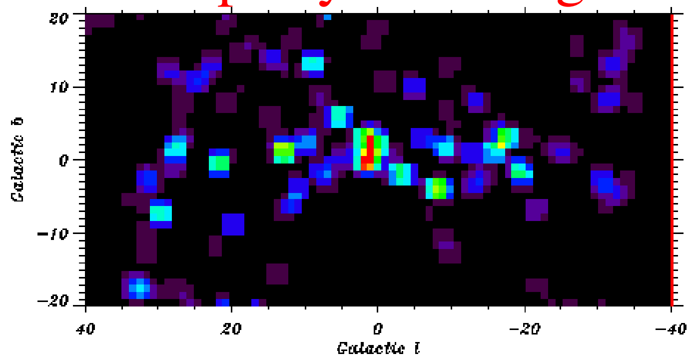
model based on 240μm emission,

scaled to COMPTEL map. Background: P.Jean

model

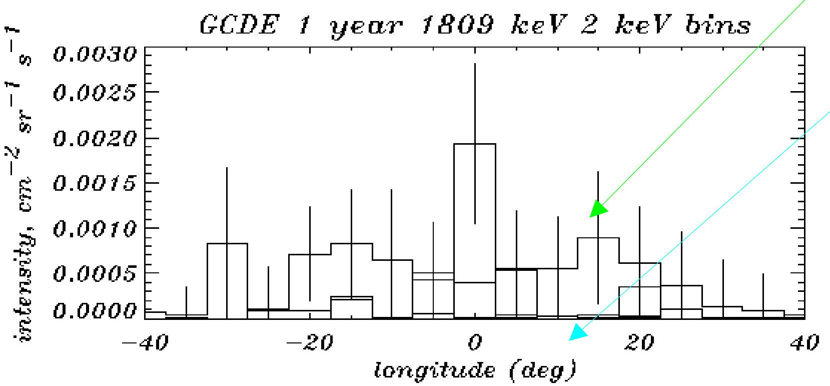


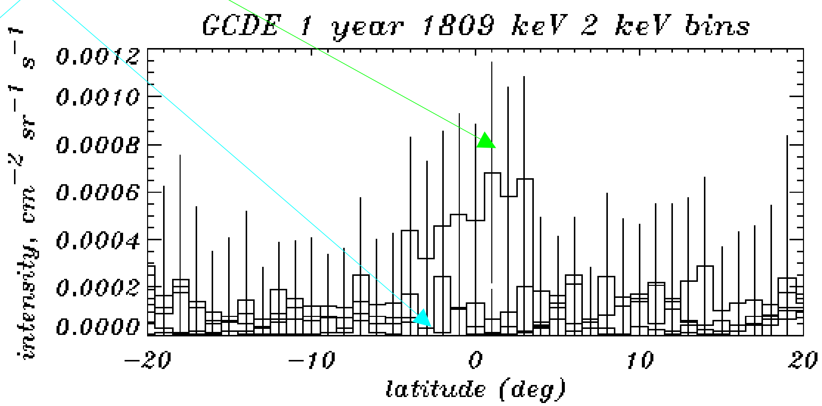
spiskymax image



Line 1808–1810 keV

1804–6–8, 1810–12–14



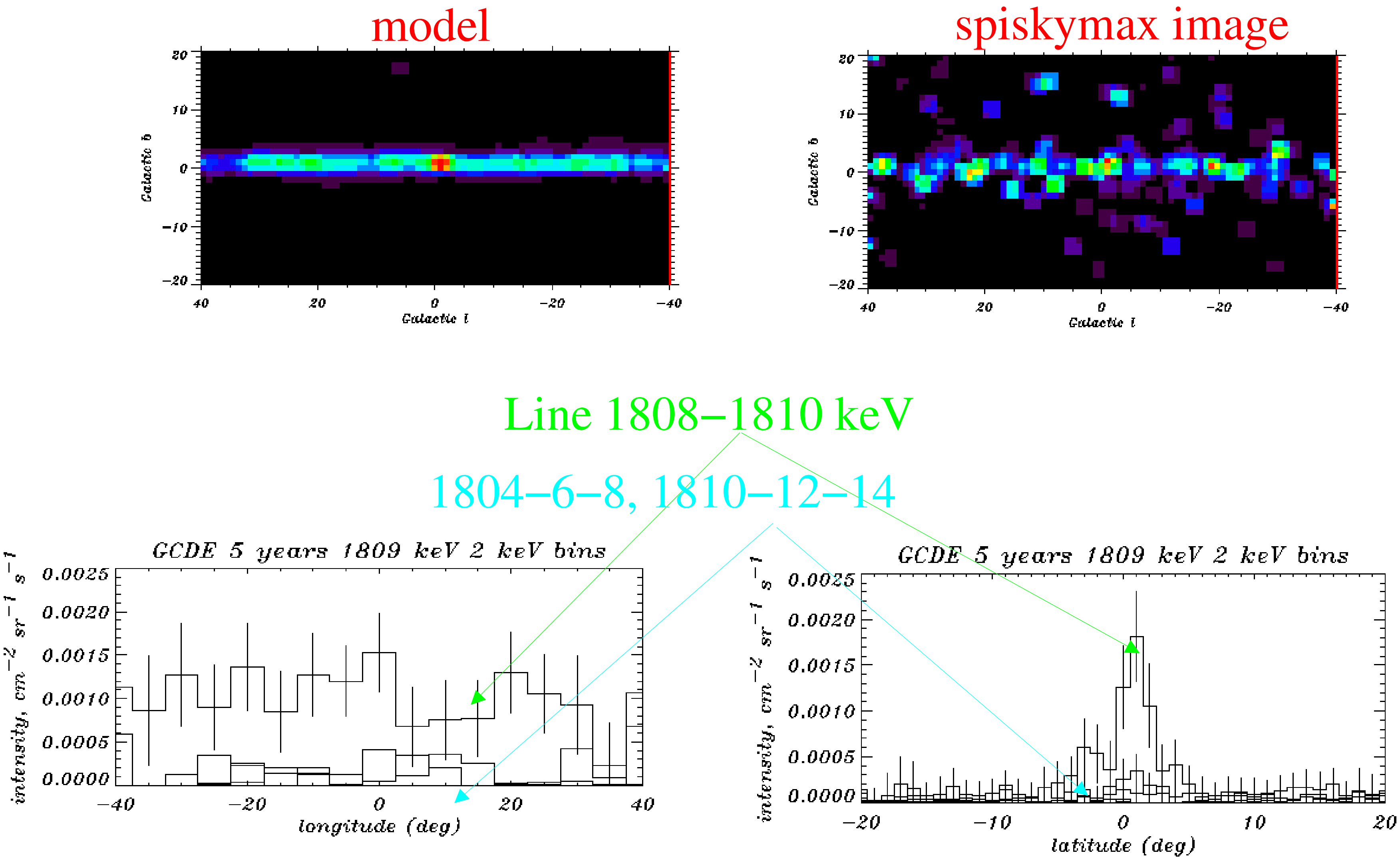


GCDE 5 years : 10 cycles 21 10^6 sec gcde.20

1809 keV line, 2.4 keV FWHM. 2 keV bins singles only

model based on 240µm emission,

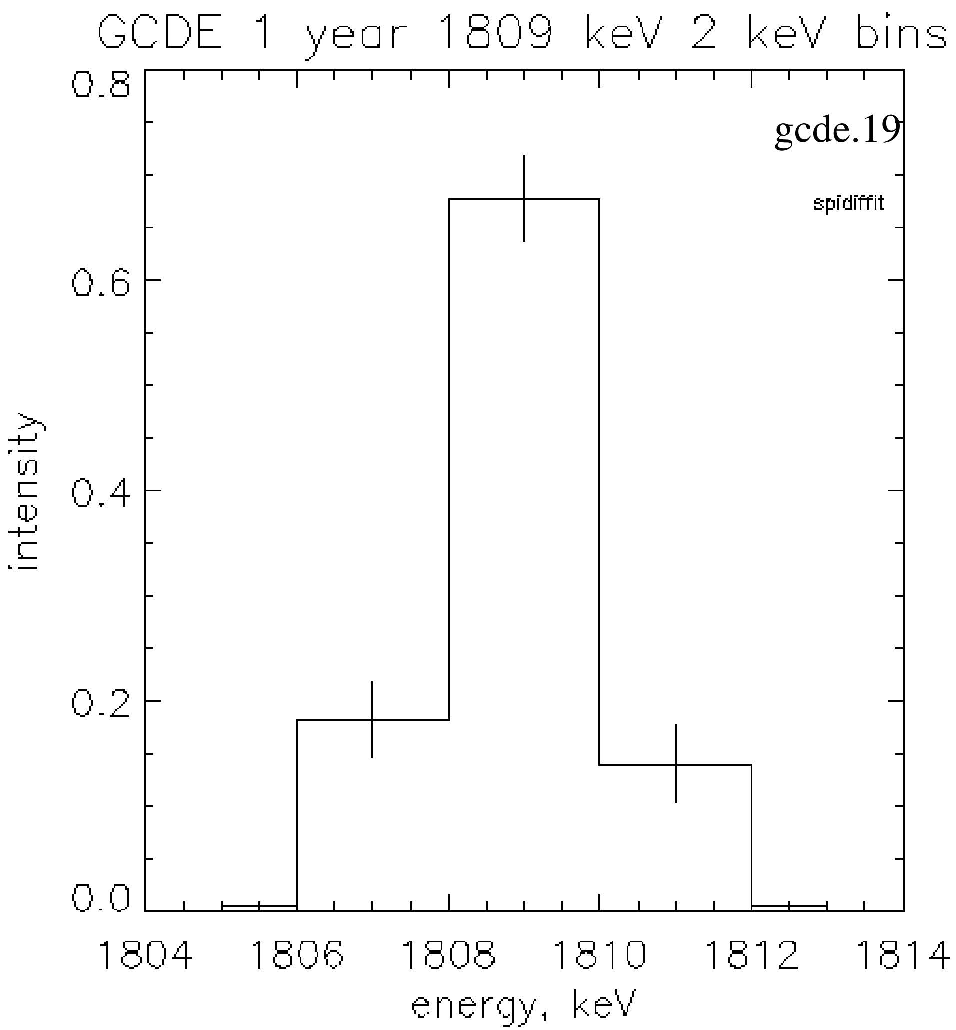
scaled to COMPTEL map. Background: P.Jean



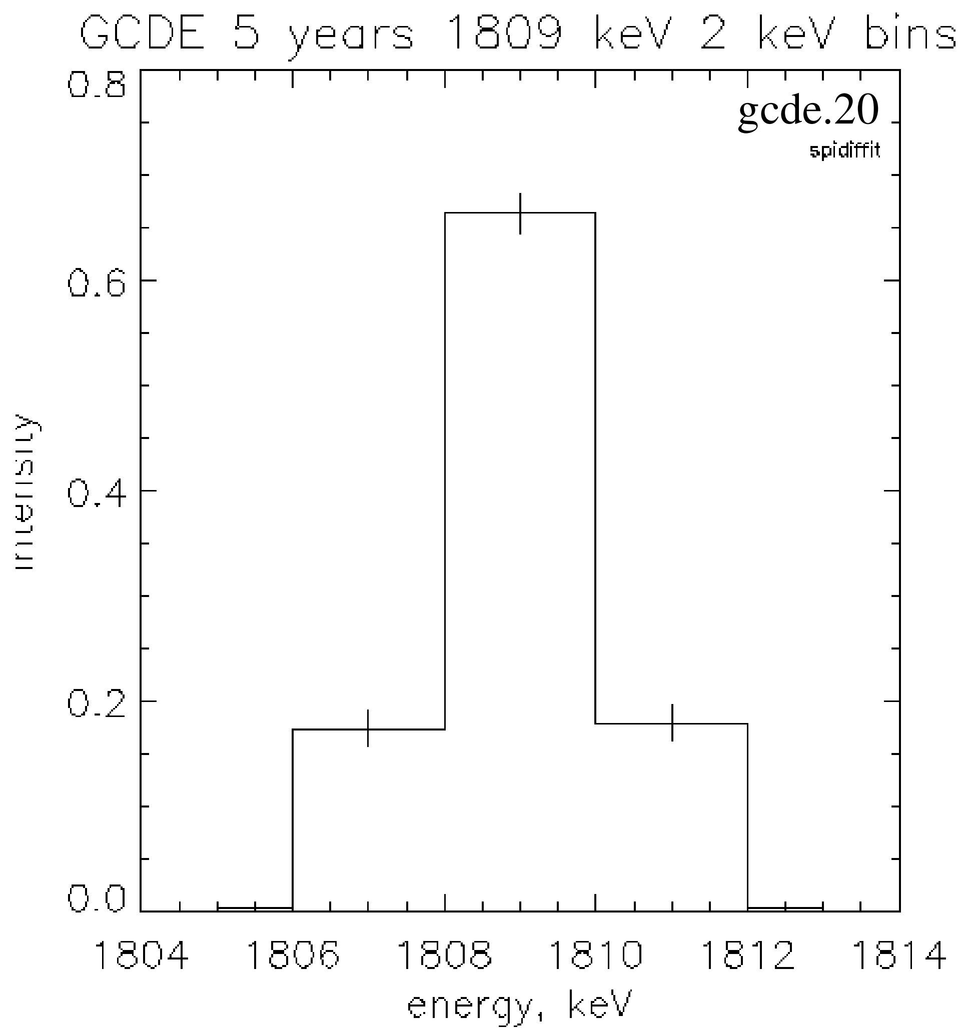
1809 keV 2.4 FWHM 240μm model scaled to COMPTEL maps

spidiffit, singles only

GCDE 1 year

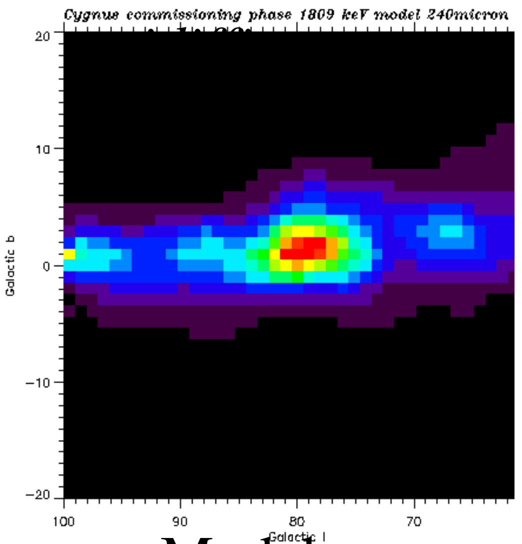


GCDE 5 years

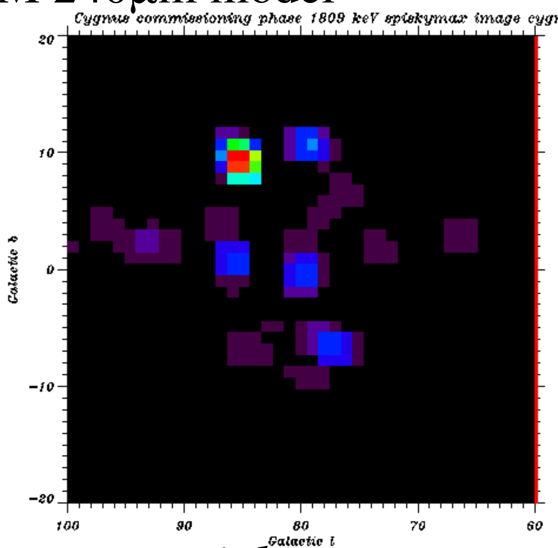


<u>Commissioning phase</u> = 0.9 Ms staring+3*0.27 Ms 5X5 +0.2 hex Ms

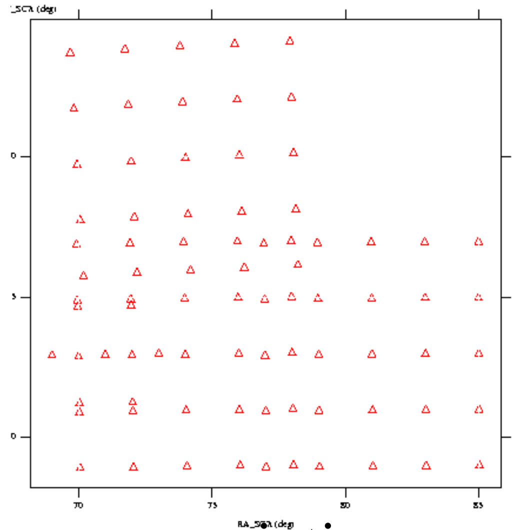
1809 keV 2.4 keV FWHM 240μm model



Model

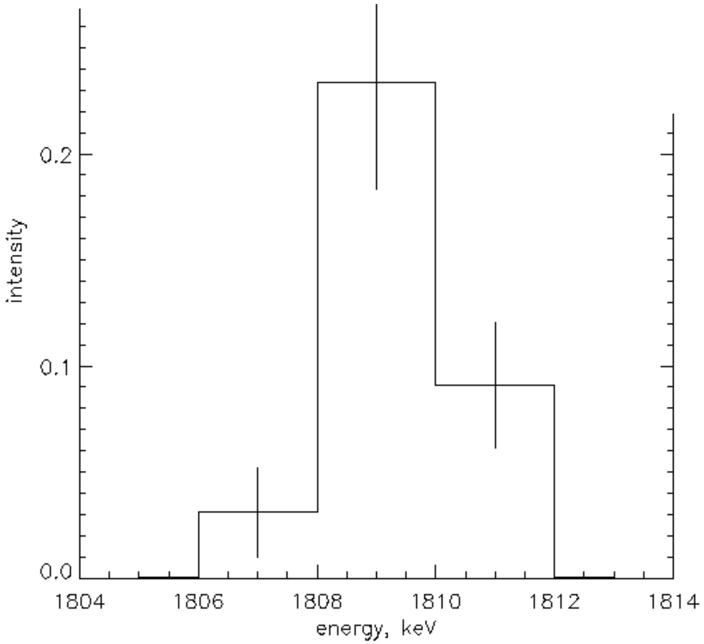


spiskymax



pointings

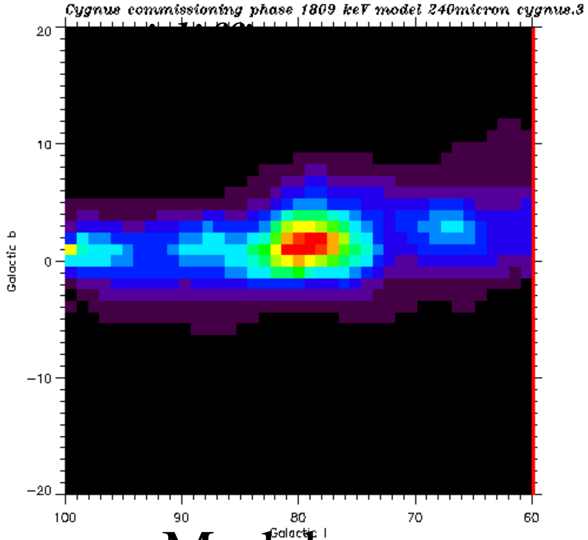
Exposure
insufficient
to generate
significant
map, but line can
be detected
at 4σ using model
fitting



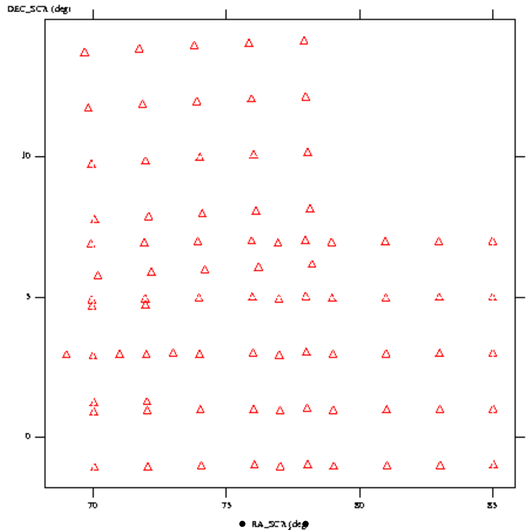
spidiffit

Commissioning phase = 0.9 Ms staring+3*0.27 Ms 5X5 +0.2 hex Ms

1809 keV 2.4 keV FWHM 240μm model

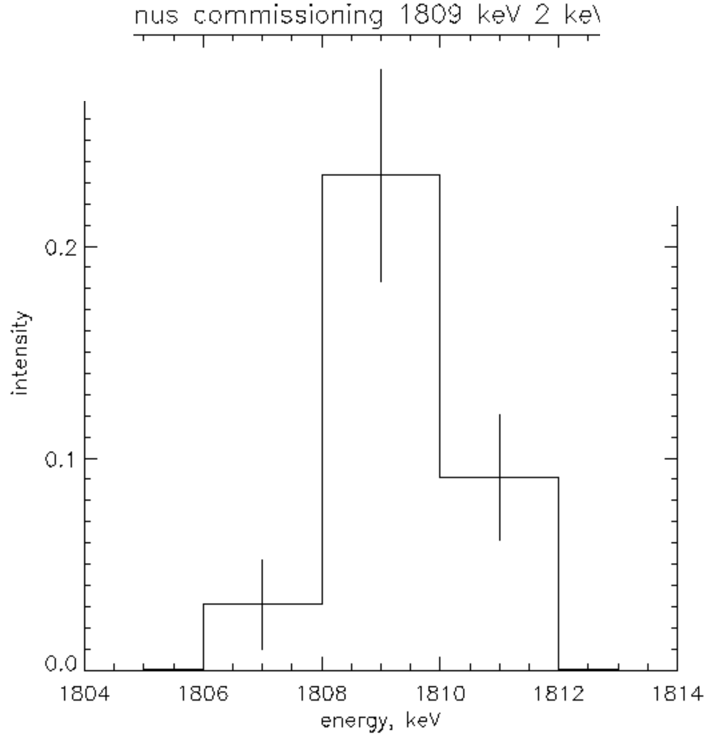


Model



pointings

Exposure insufficient to generate significant map, but line can be detected at 4σ using model fitting



spidiffit

Next steps

consider combining GCDE with GPS & open time data
these will increase 1st year data by factor 5 over GCDE
(although not concentrated in same region)