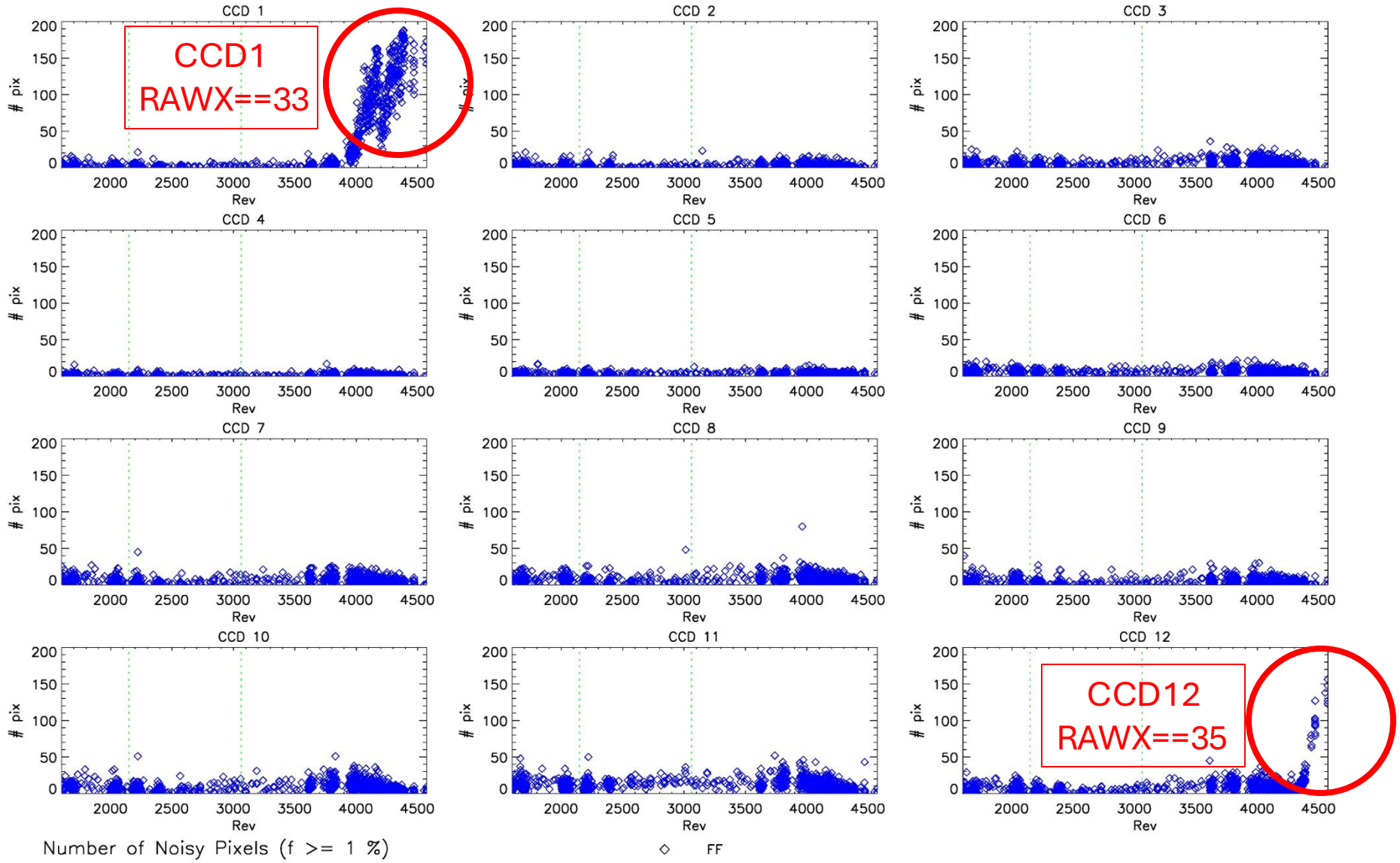
EPIC Monitoring

Michael Smith

EPIC Calibration and Operations Meeting, ESAC, 23-24 April 2025

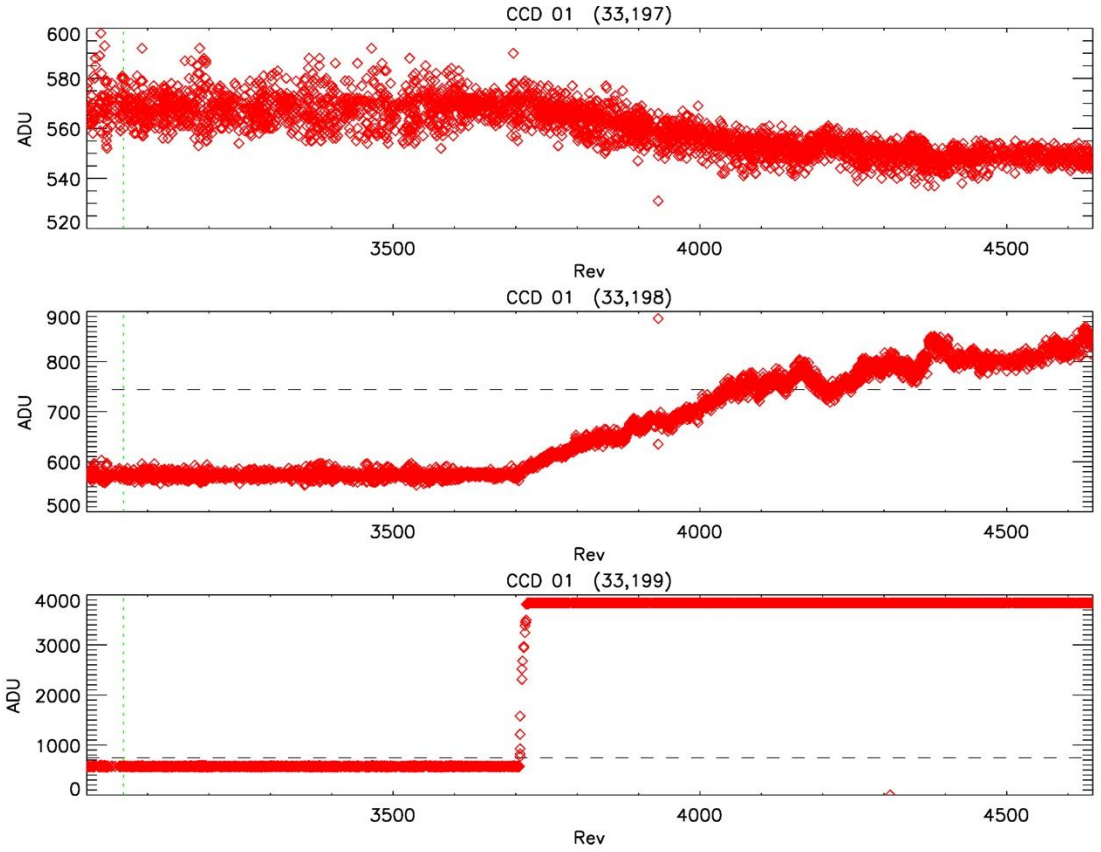
PN Noisy Pixels



PN Bad Pixels

CCD1 Column 33 Noise
(micrometeoroid event, rev ~ 3707)

Pixel offset values

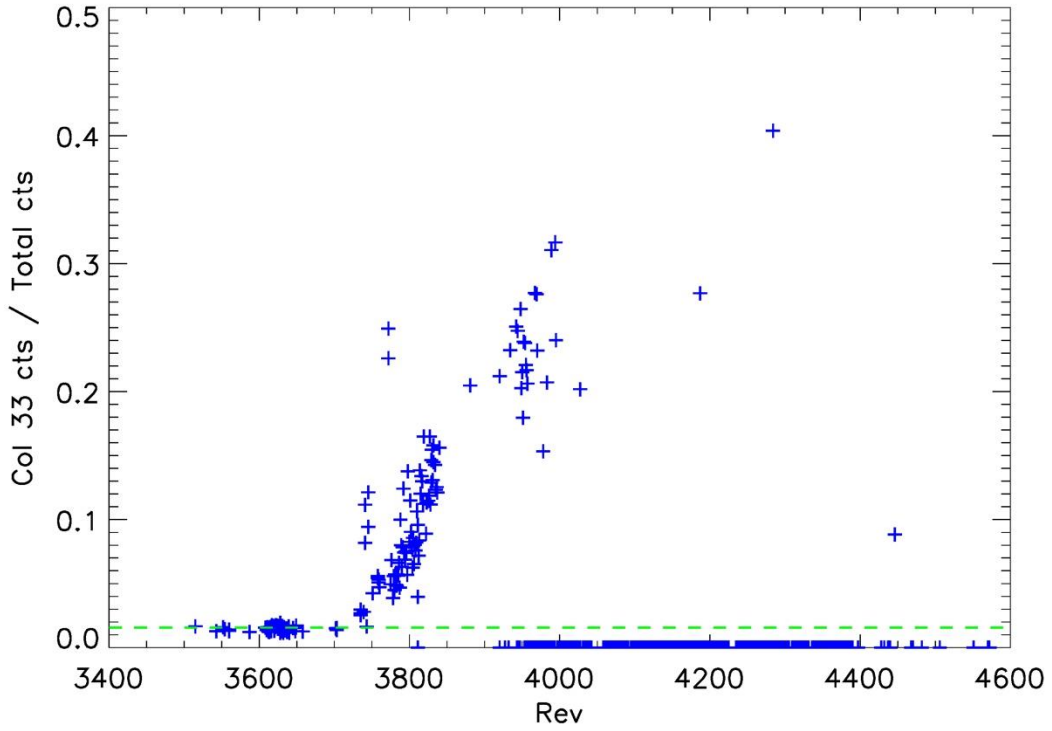


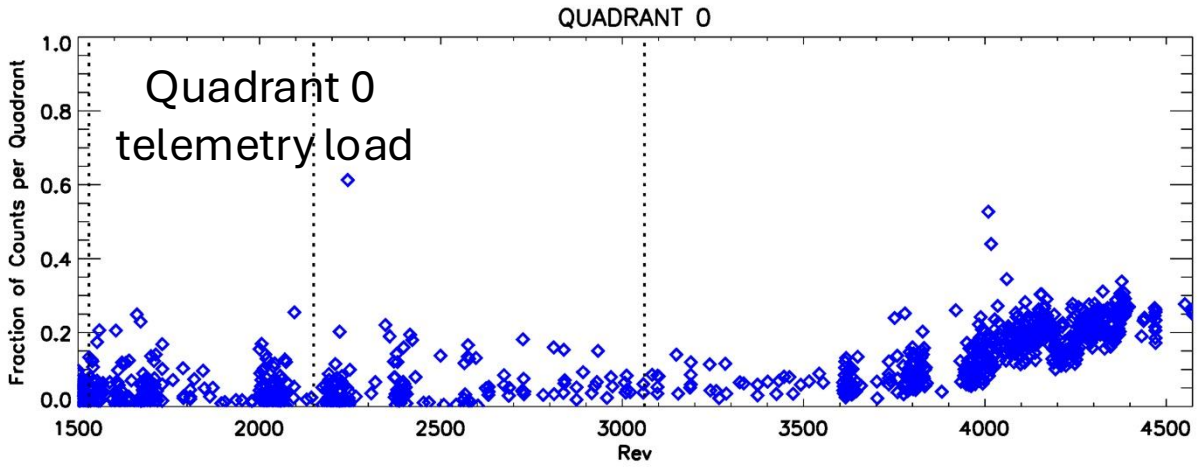
CCD01 (33,197)

CCD01 (33,198)

CCD01 (33,199)

Counts fraction
post **`epproc`** bad pixel flagging

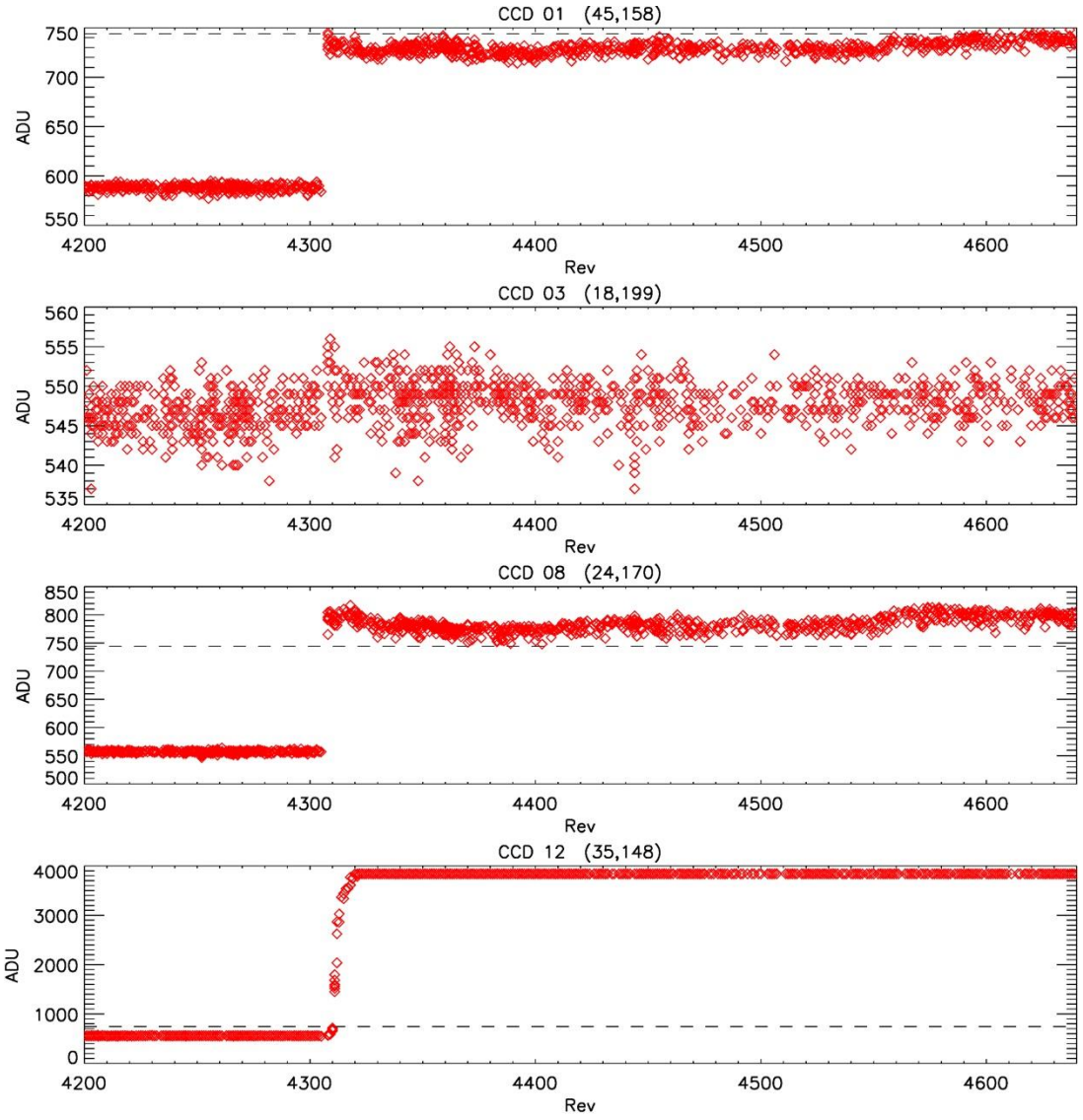




PN Bad Pixels

CCD12 Column 35 Noise
(micrometeoroid event, rev 4307)

Pixel offset values



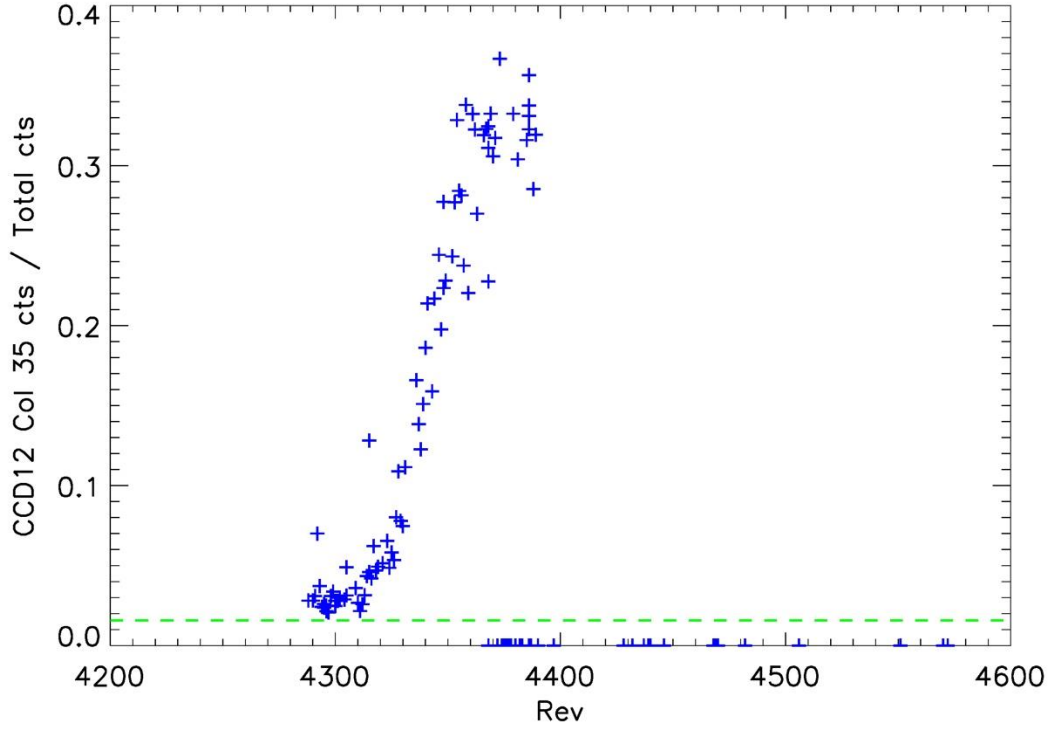
CCD01 (45,158)

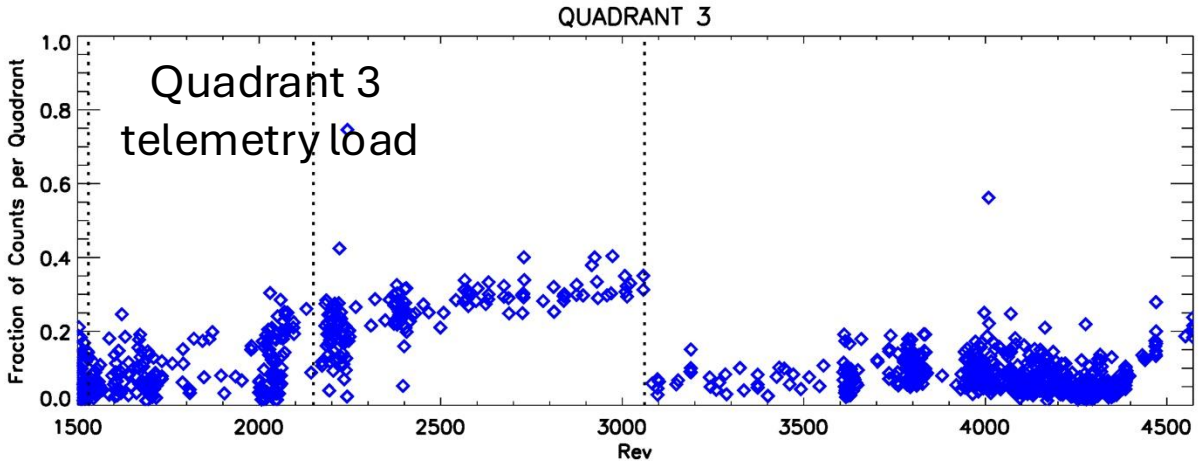
CCD03 (18,199)

CCD08 (24,170)

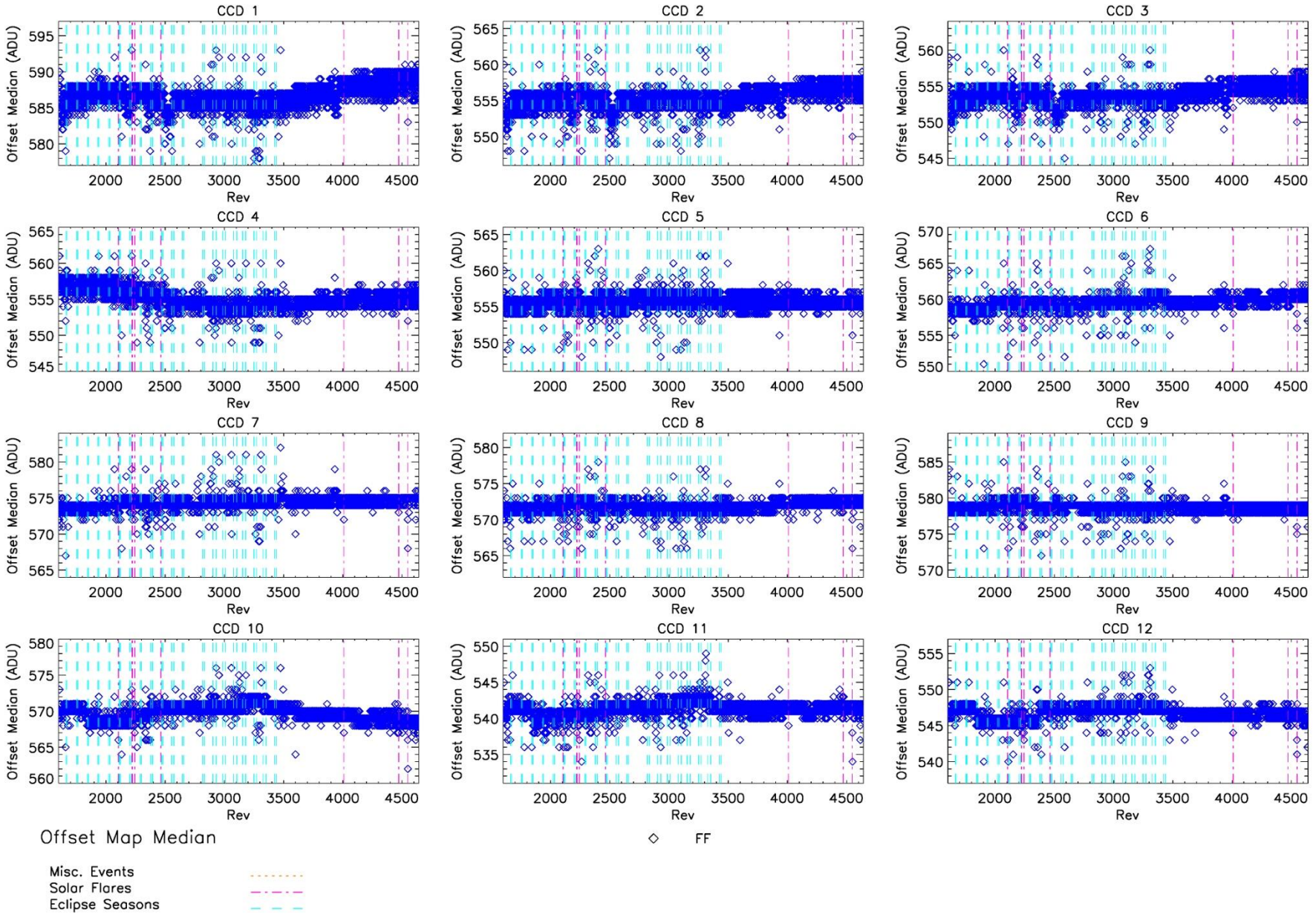
CCD12 (35,148)

Counts fraction
post **`epproc`** bad pixel flagging

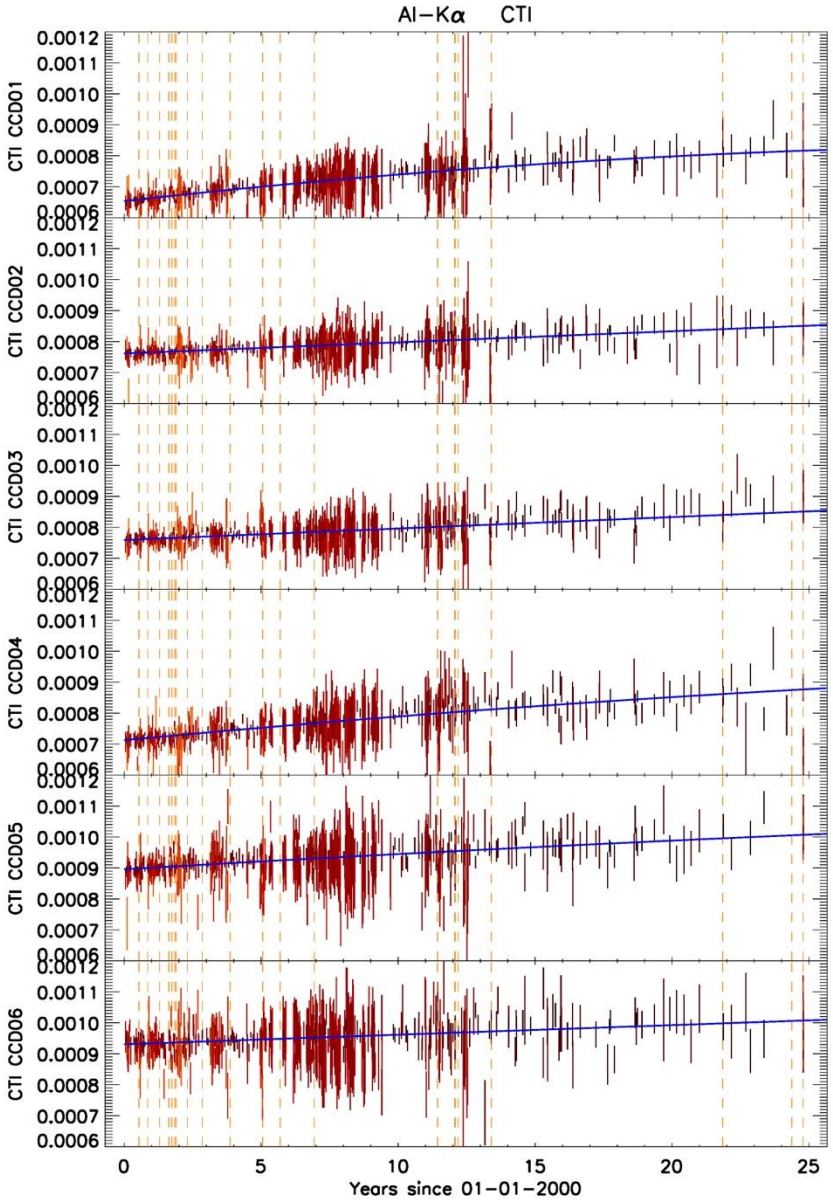


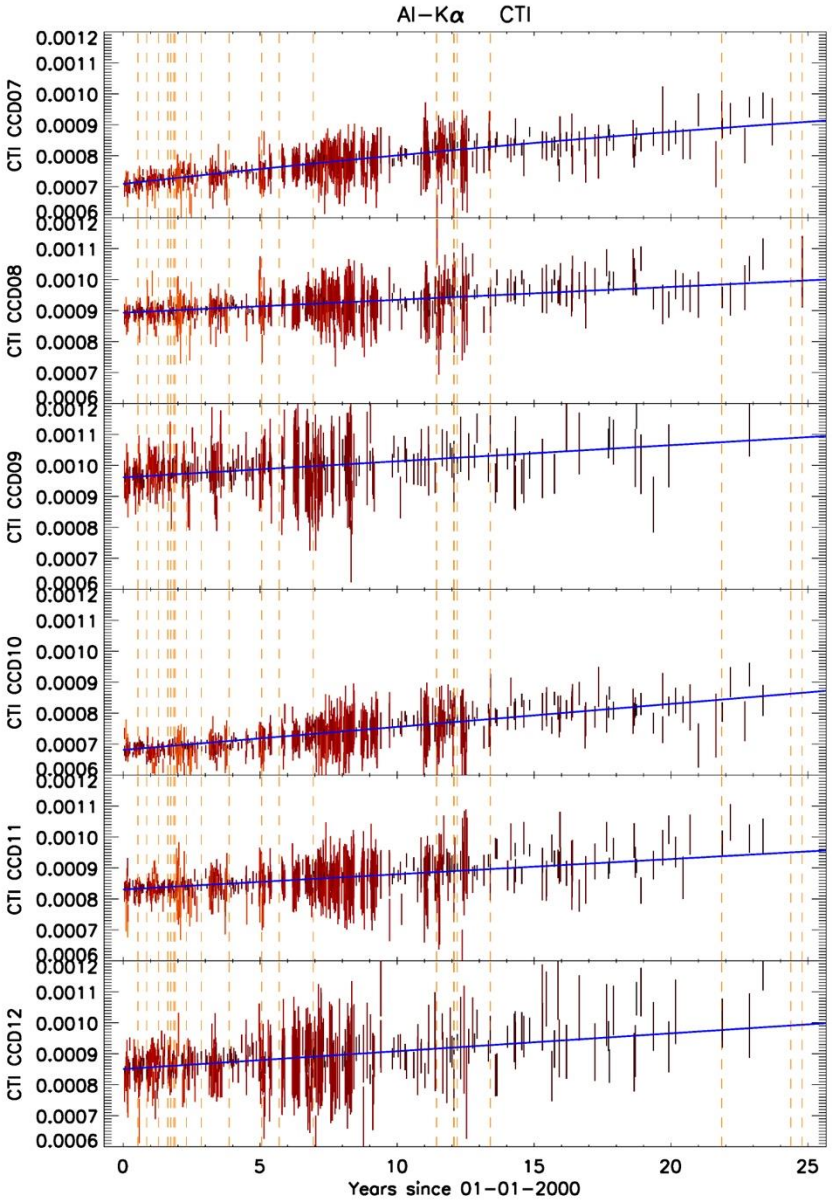


PN Offset Maps

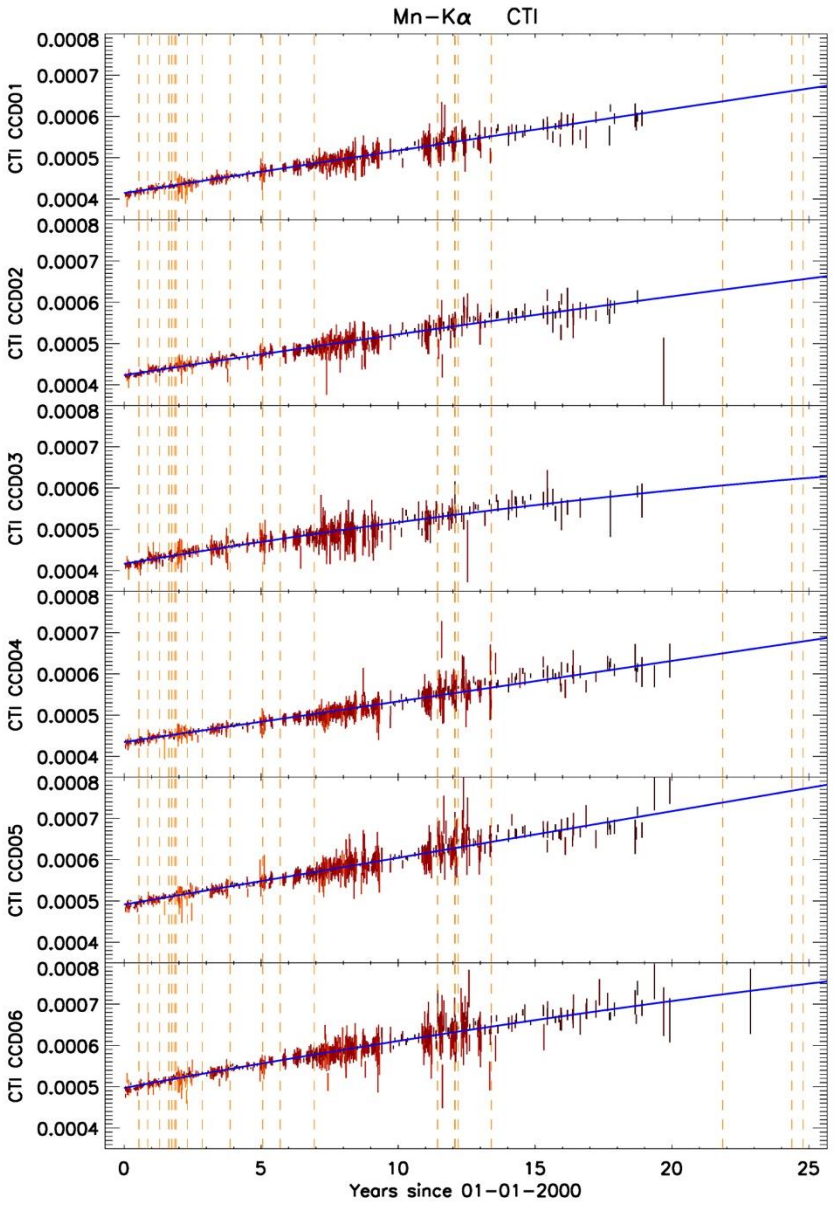


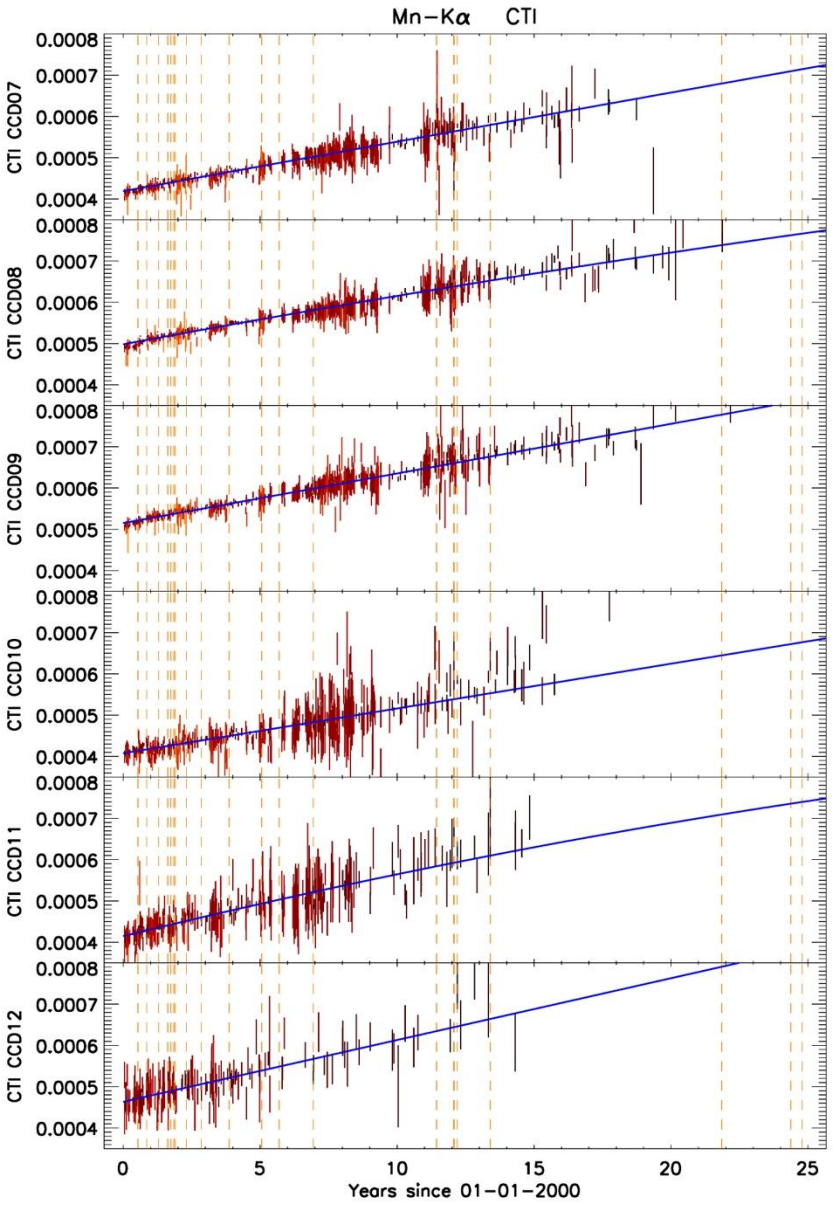
PN CTI @ Al Ka (FF mode, singles)



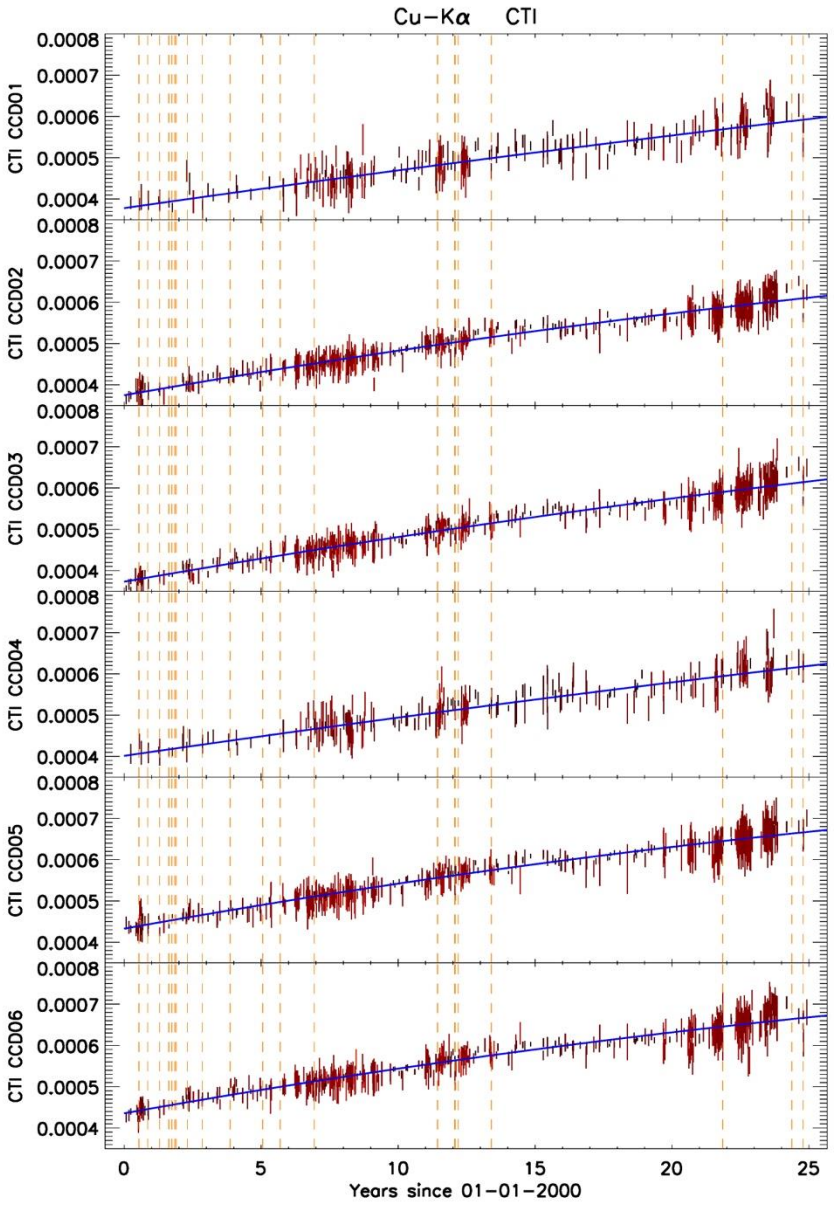


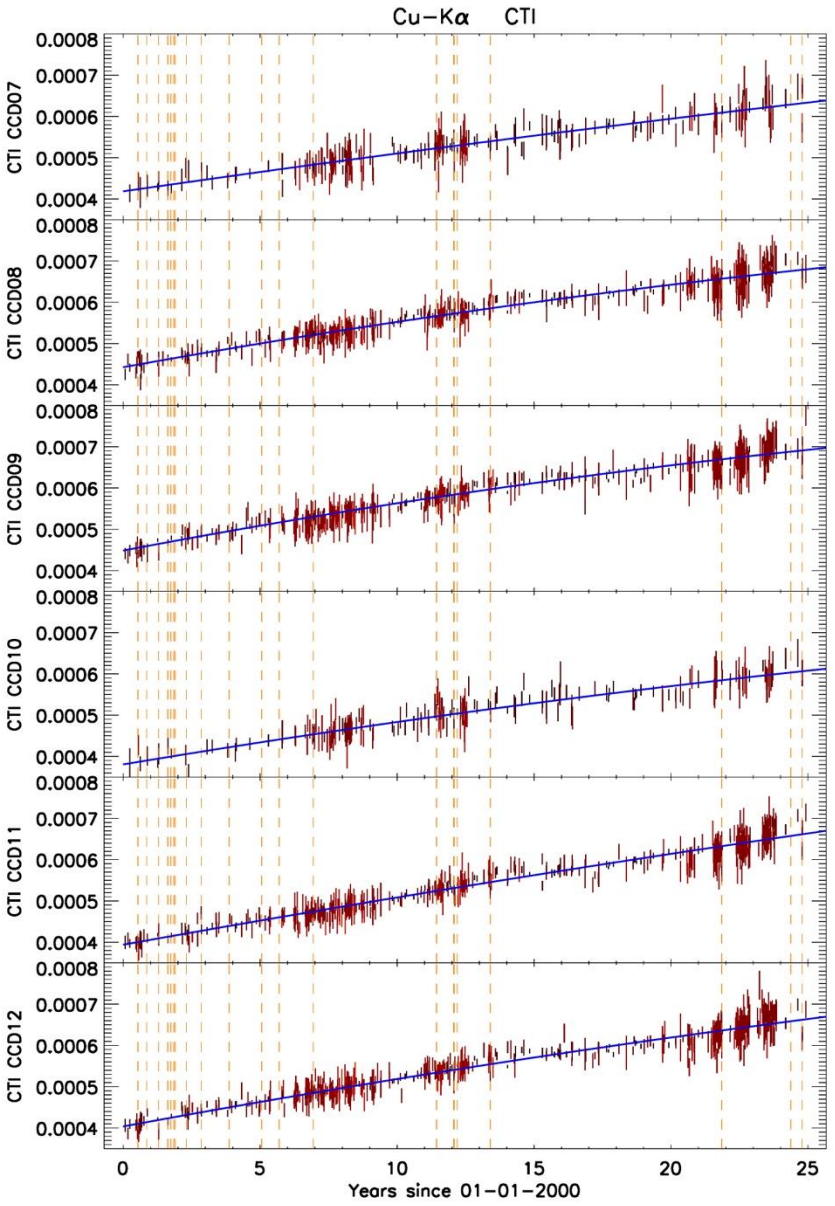
PN CTI @ Mn Ka (FF mode, singles)



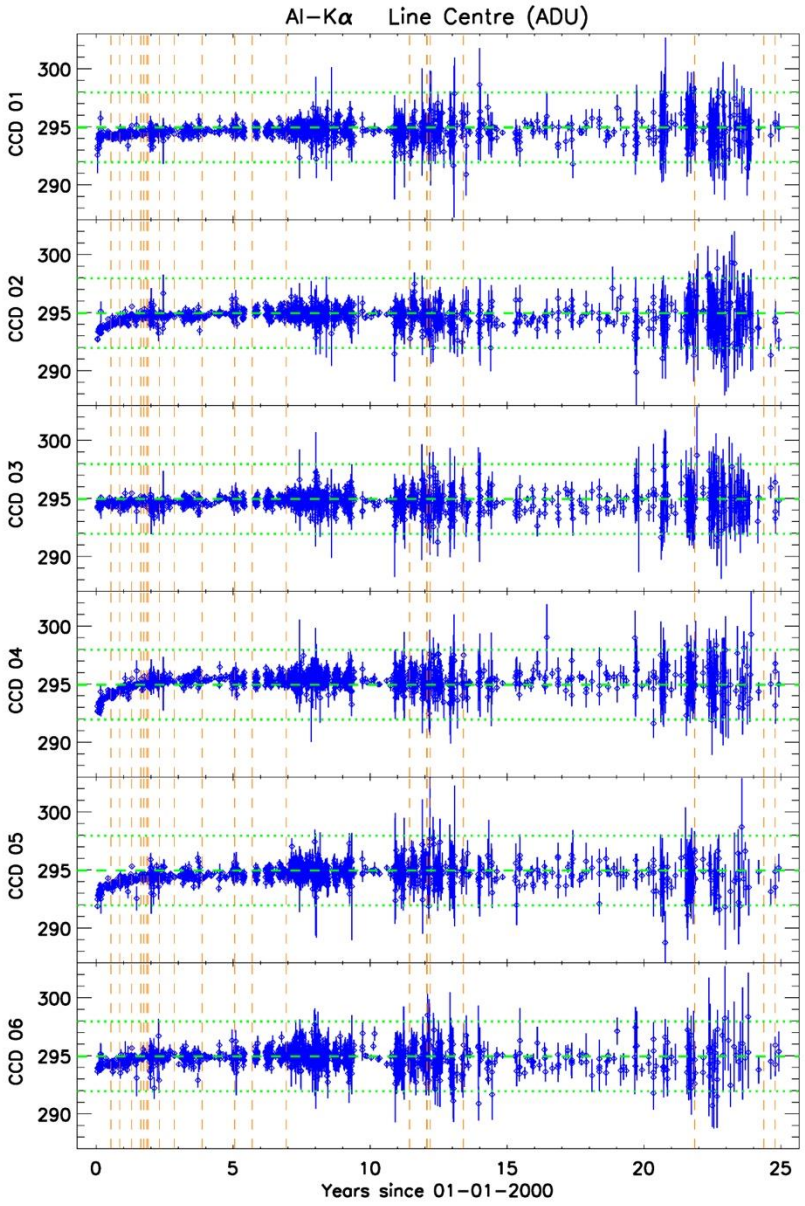


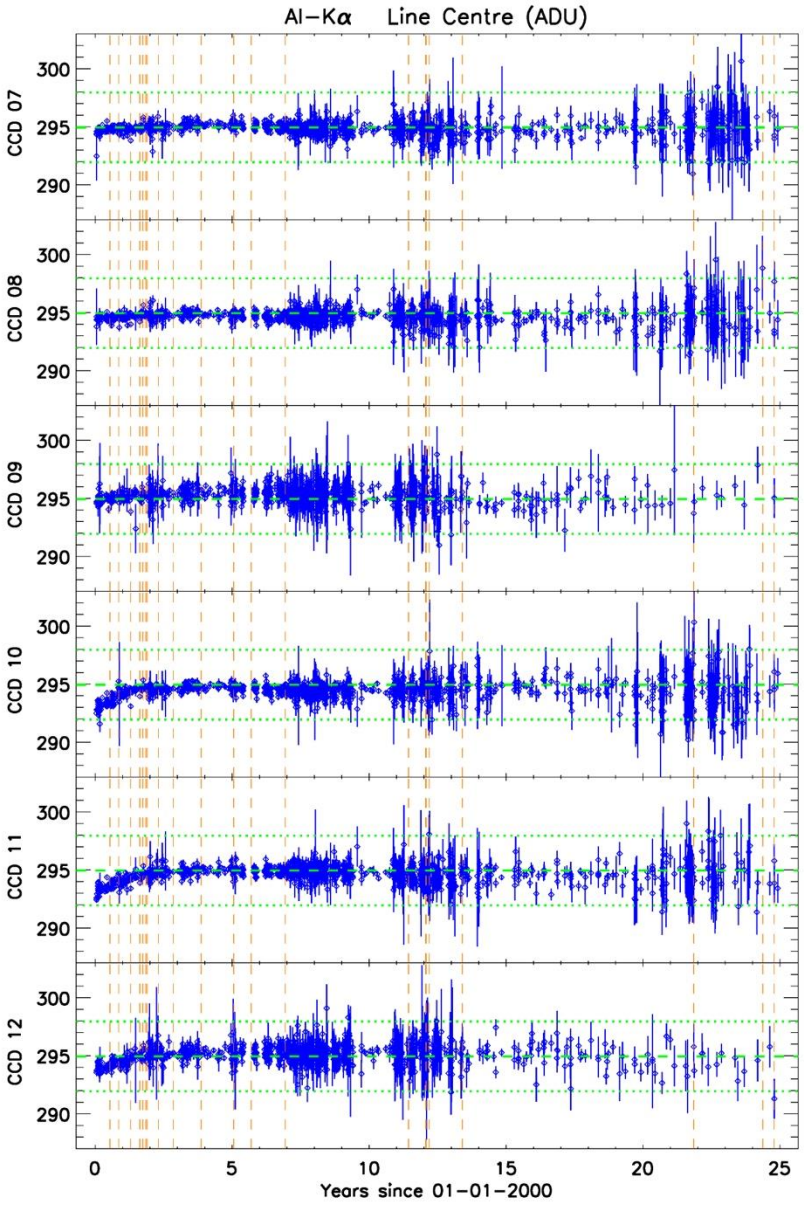
PN CTI @ Cu Ka (FF mode, singles)



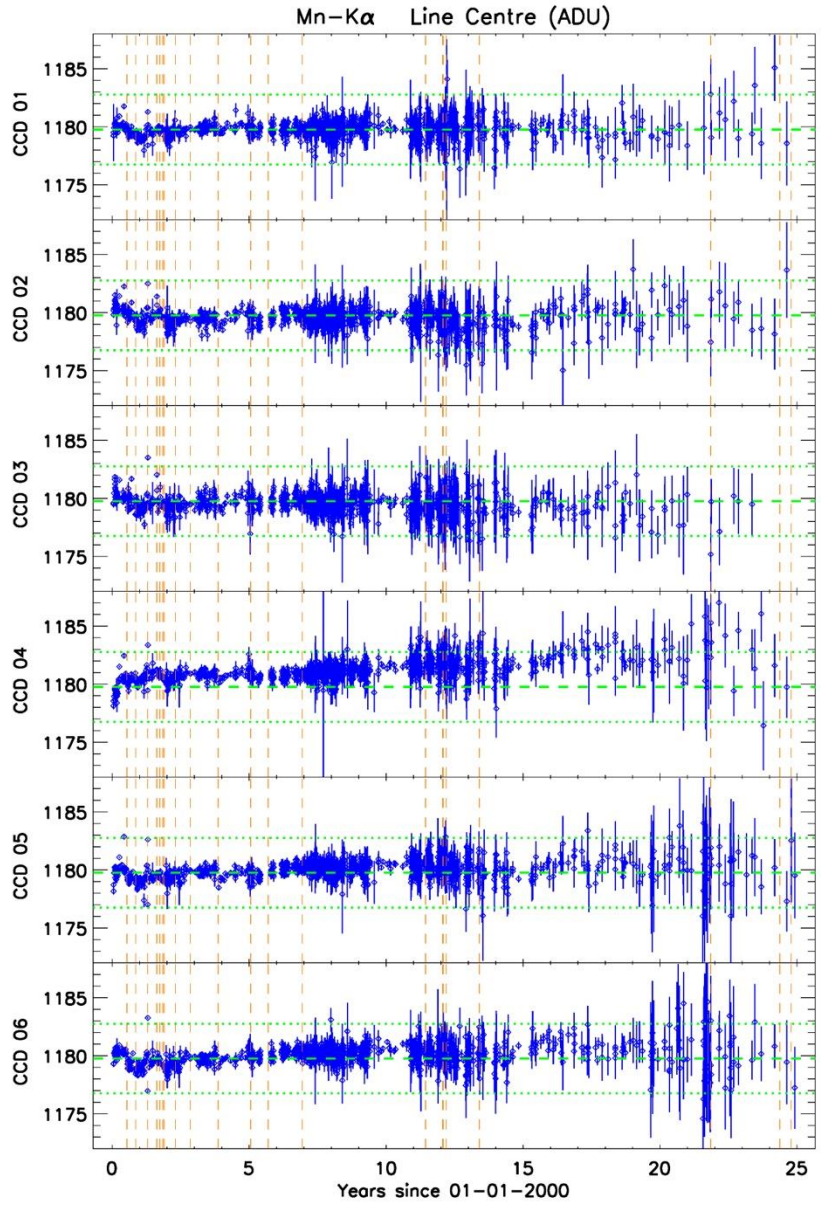


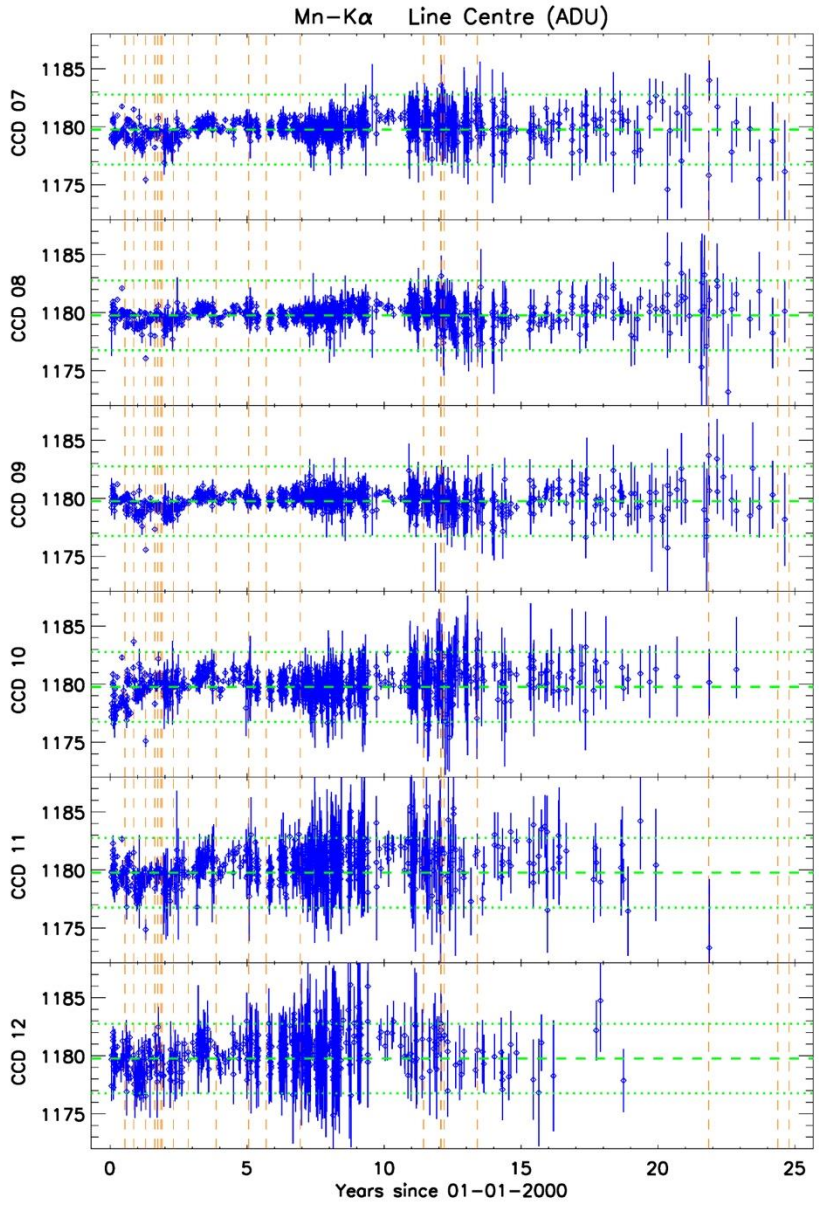
PN Reconstructed Energy @ Al Ka (FF mode, singles)



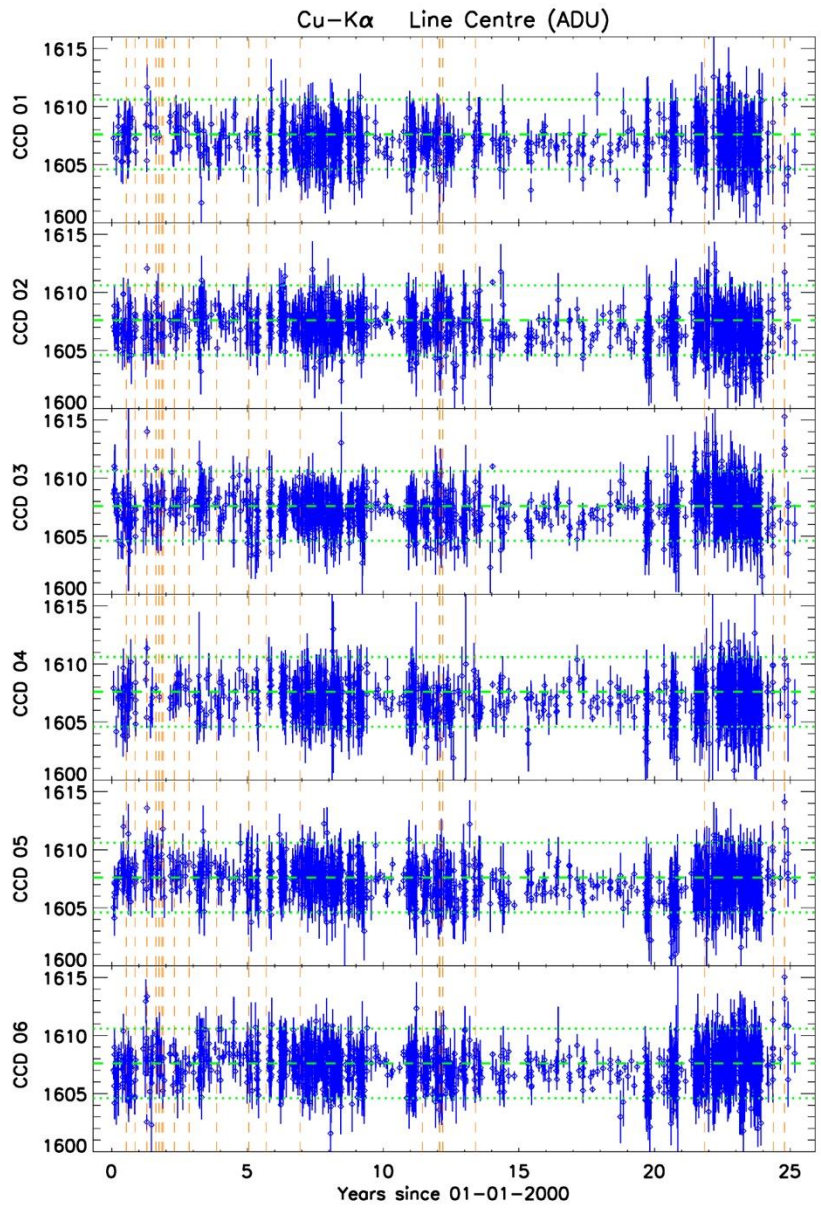


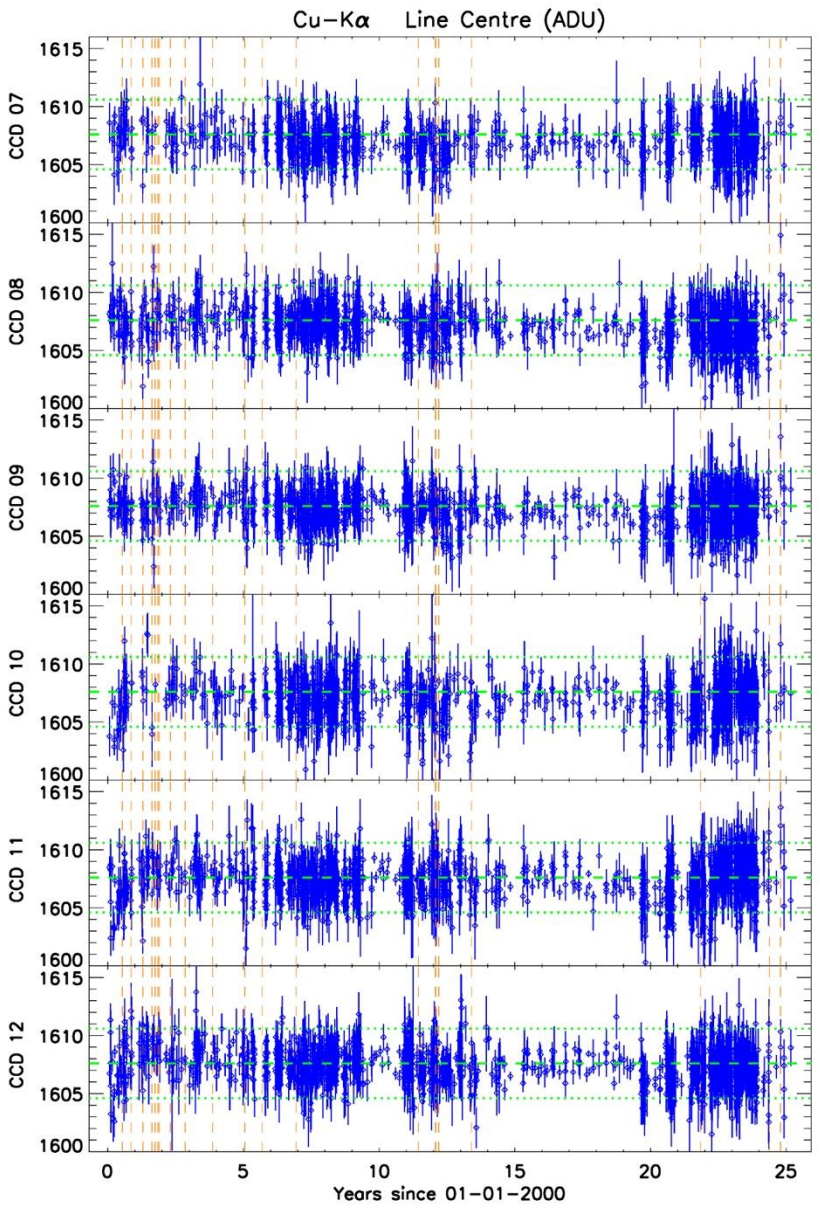
PN Reconstructed Energy @ Mn Ka (FF mode, singles)





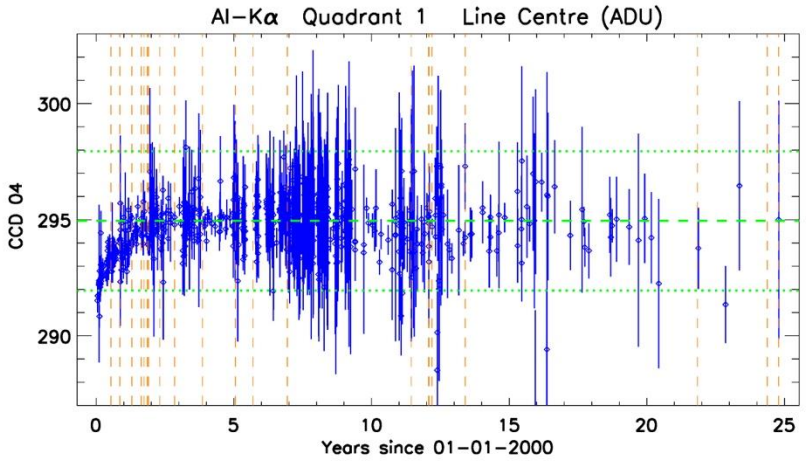
PN Reconstructed Energy @ Cu Ka (FF mode, singles)

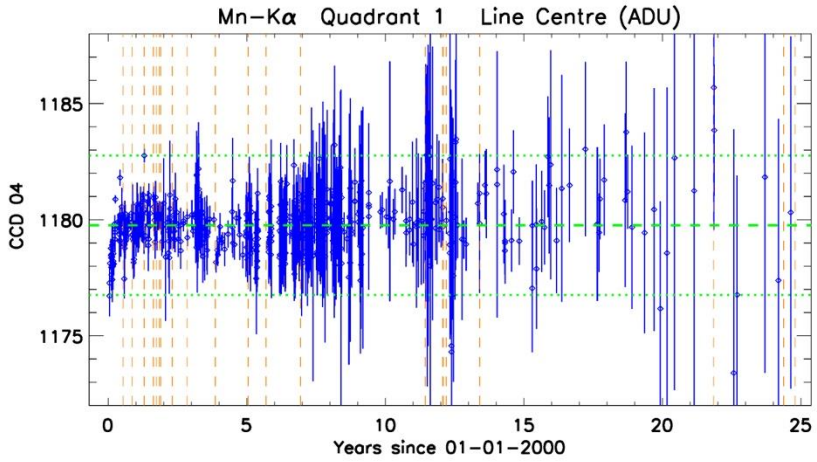




PN Reconstructed Energy at Boresight (singles)

FF mode

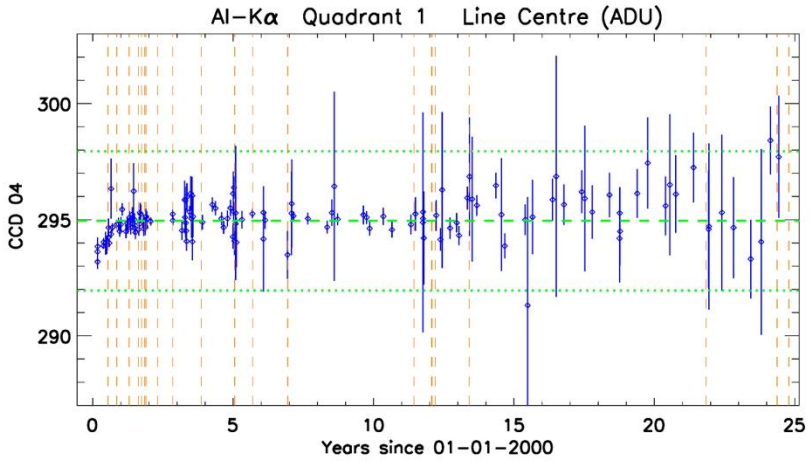


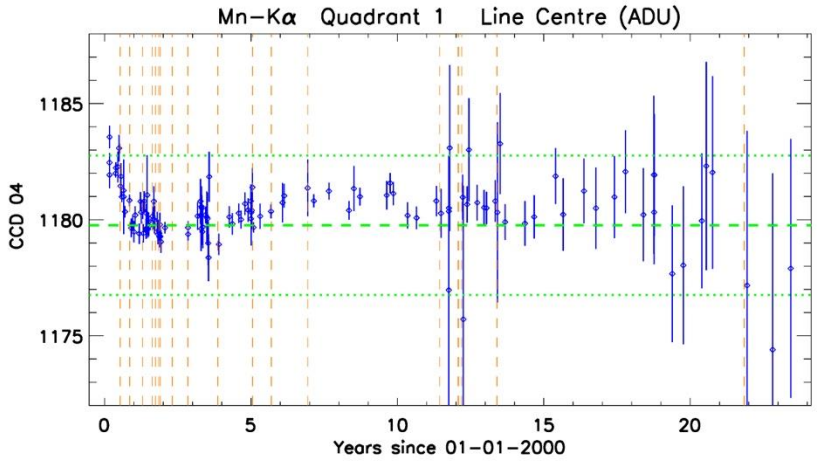


Al Ka

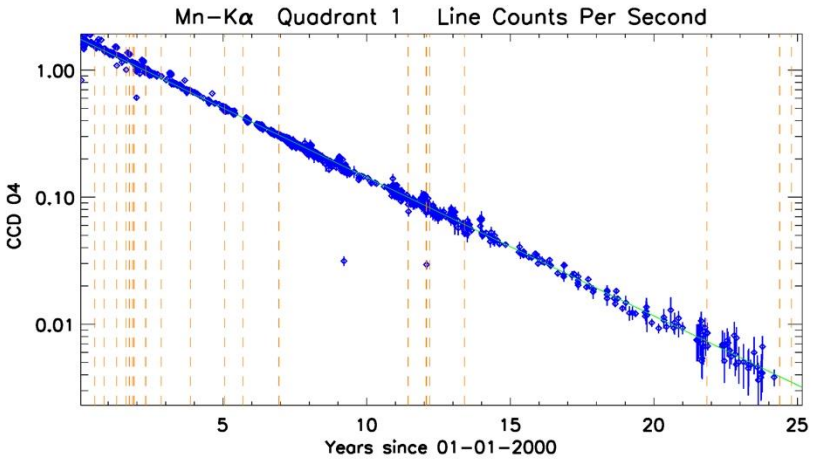
Mn Ka

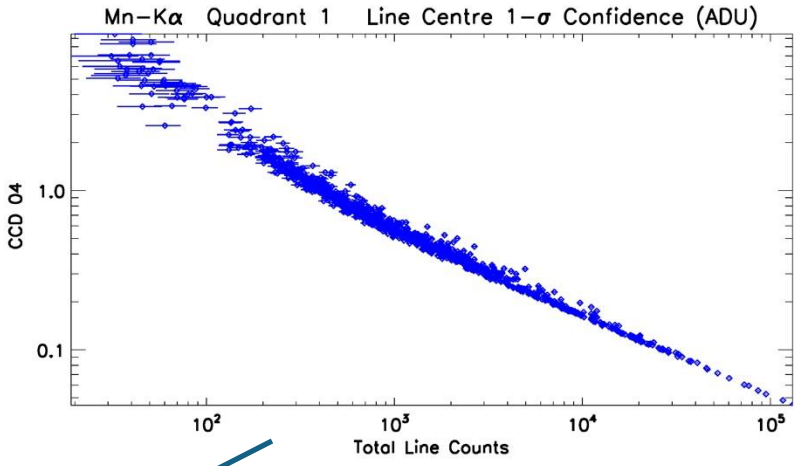
EFF mode



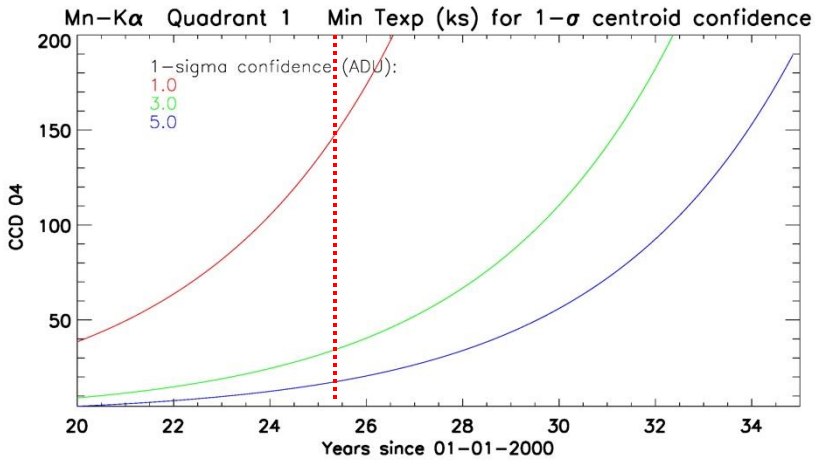


Required CalClosed Exposure Times @ Mn Ka (FF mode, singles)

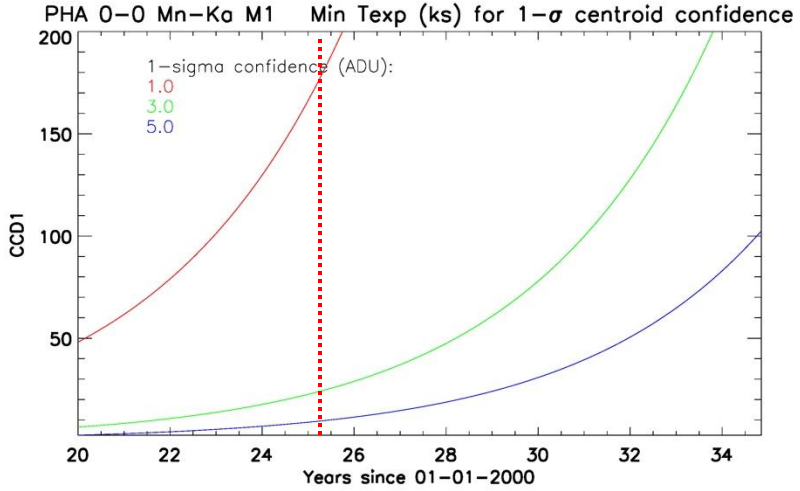




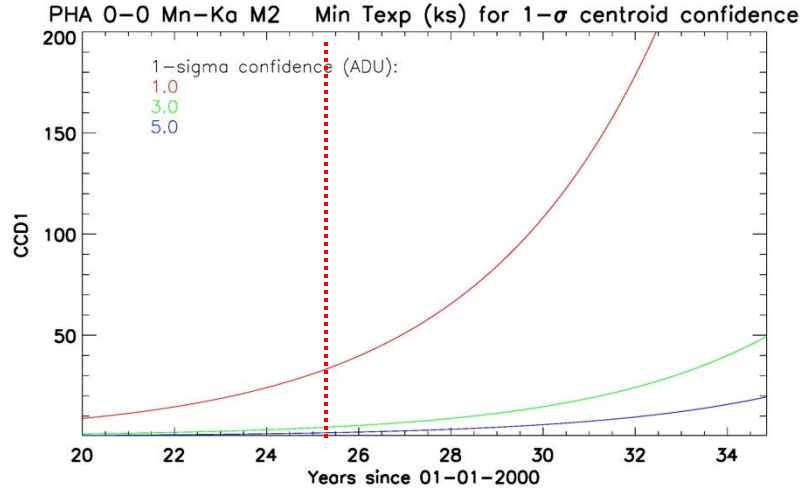
PN



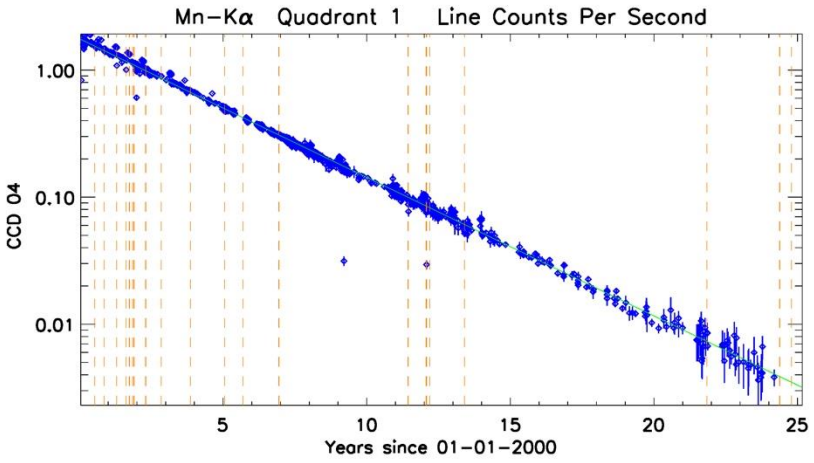
MOS1

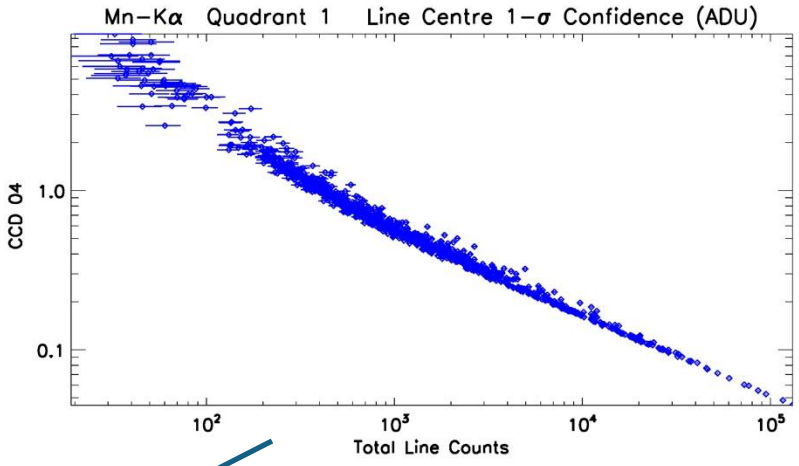


MOS2



Required CalClosed Exposure Times @ Mn Ka (FF mode, singles)

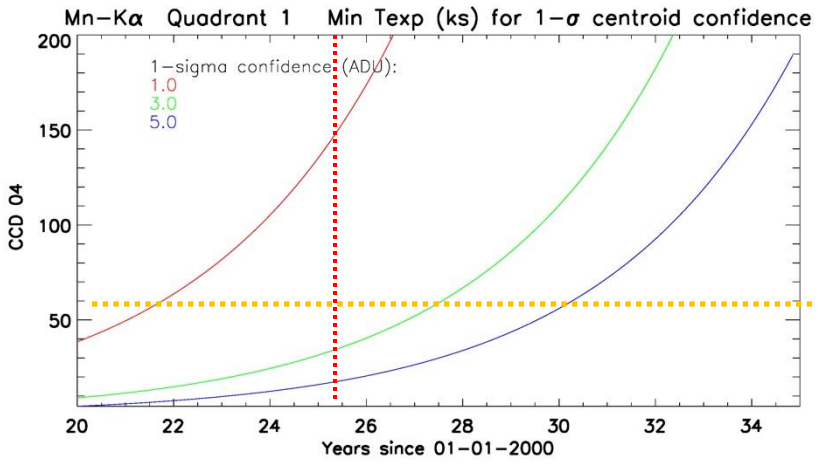




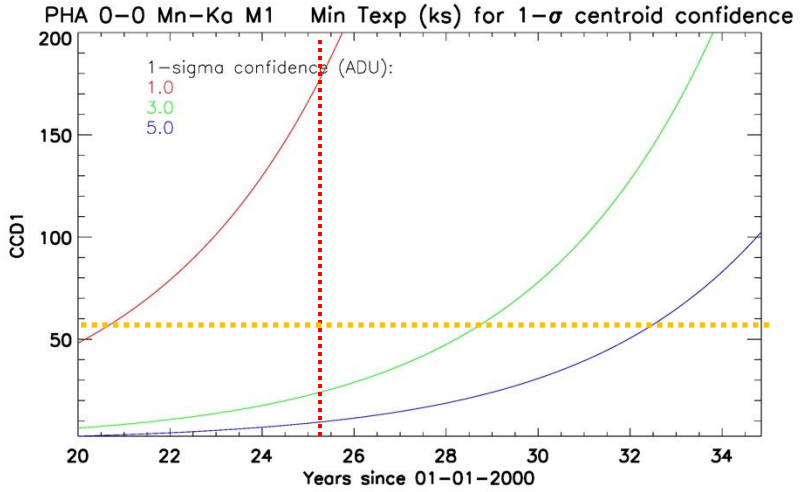
For full CCD averages:

60 ks: ->
1-σ uncertainty of < 5 ADU
until ~2028

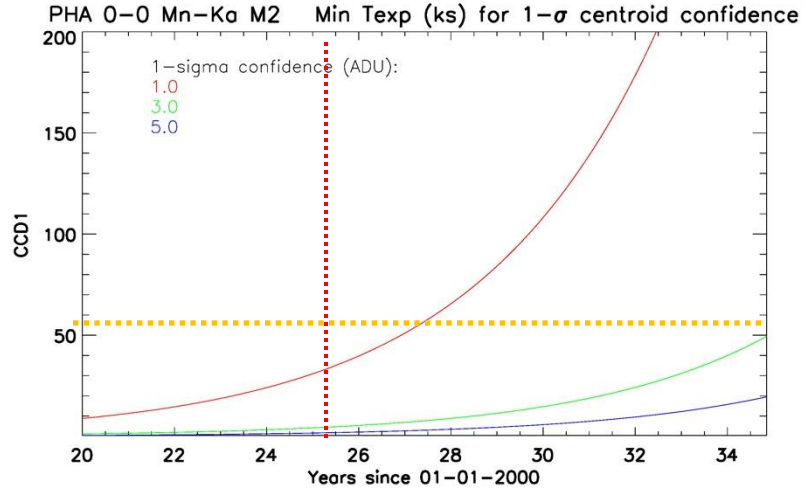
PN



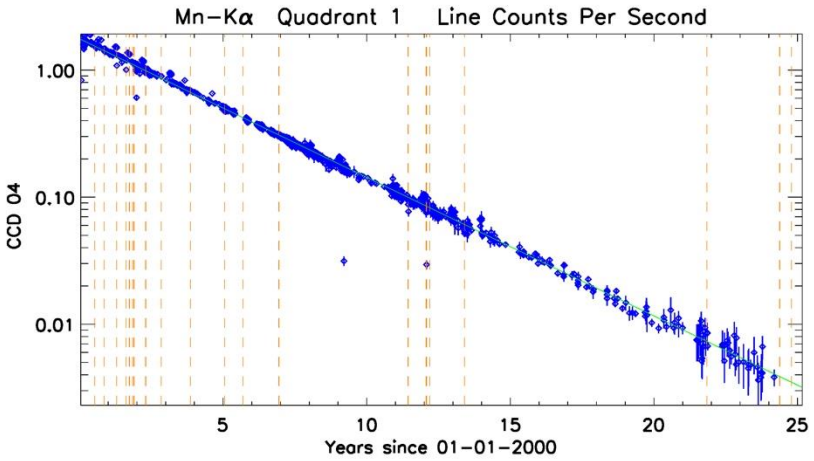
MOS1

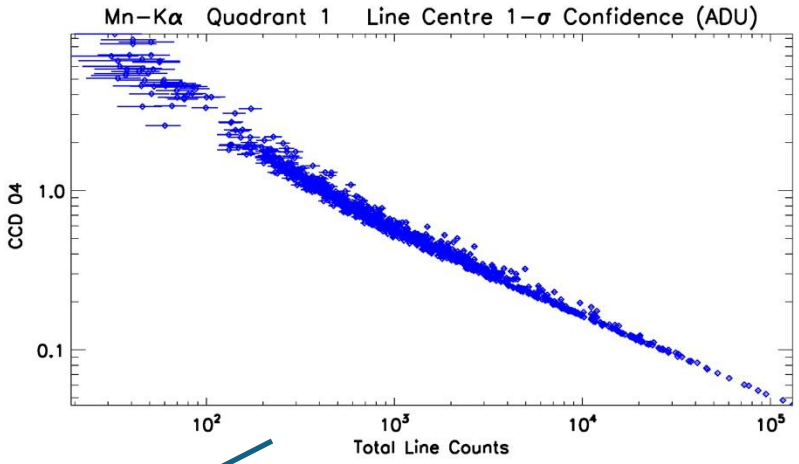


MOS2



Required CalClosed Exposure Times @ Mn Ka (FF mode, singles)

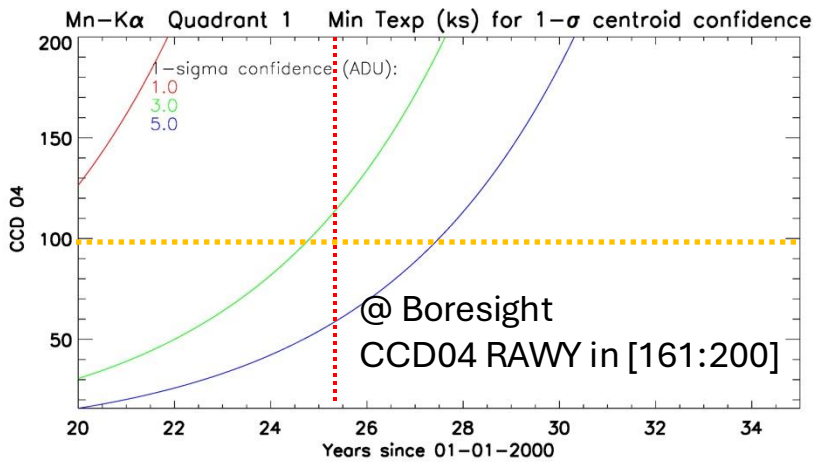




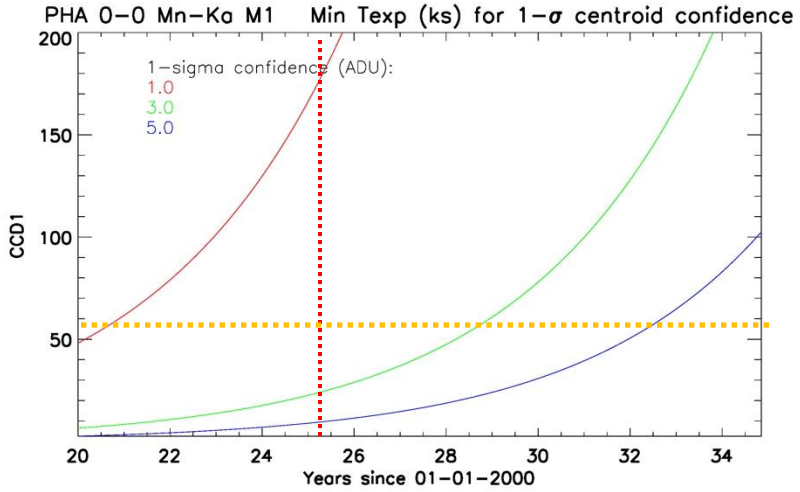
For PN B/S (RAWY in [161:200]):

100 ks: ->
1-σ uncertainty of < 5 ADU
until ~2028

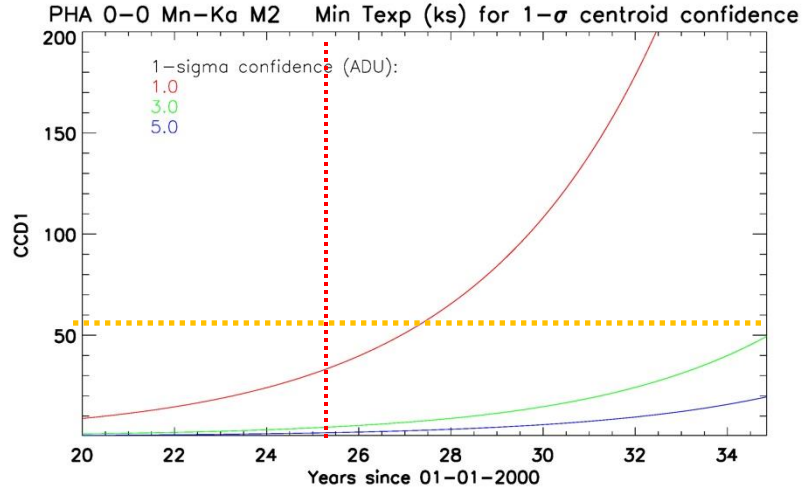
PN



MOS1



MOS2

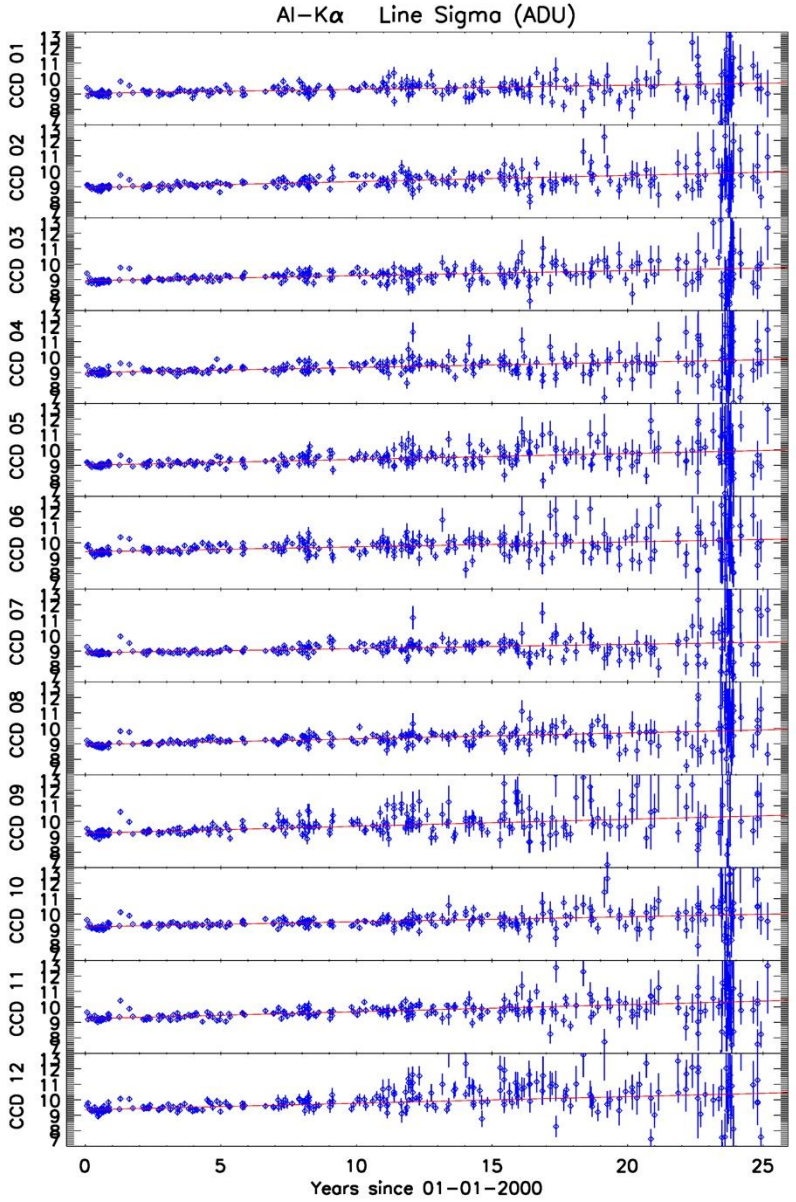


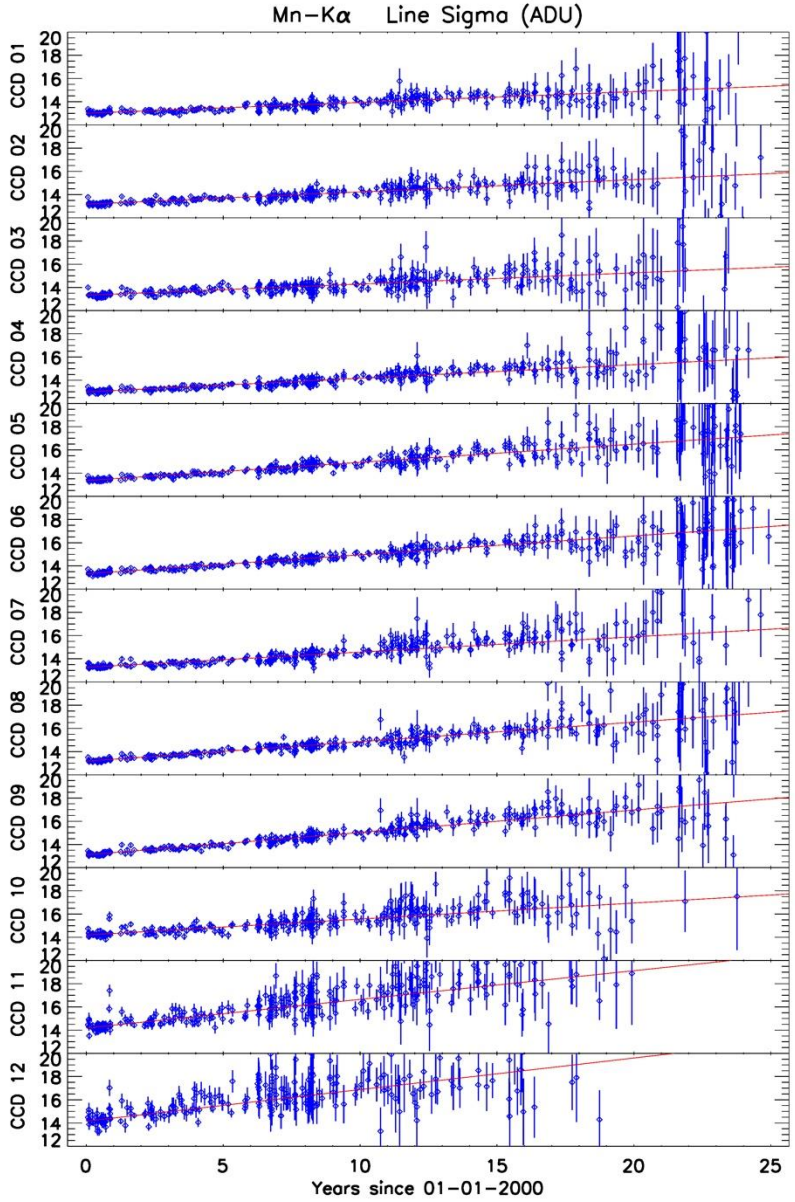
Required CalClosed Exposure Times @ Mn Ka (FF mode, singles)

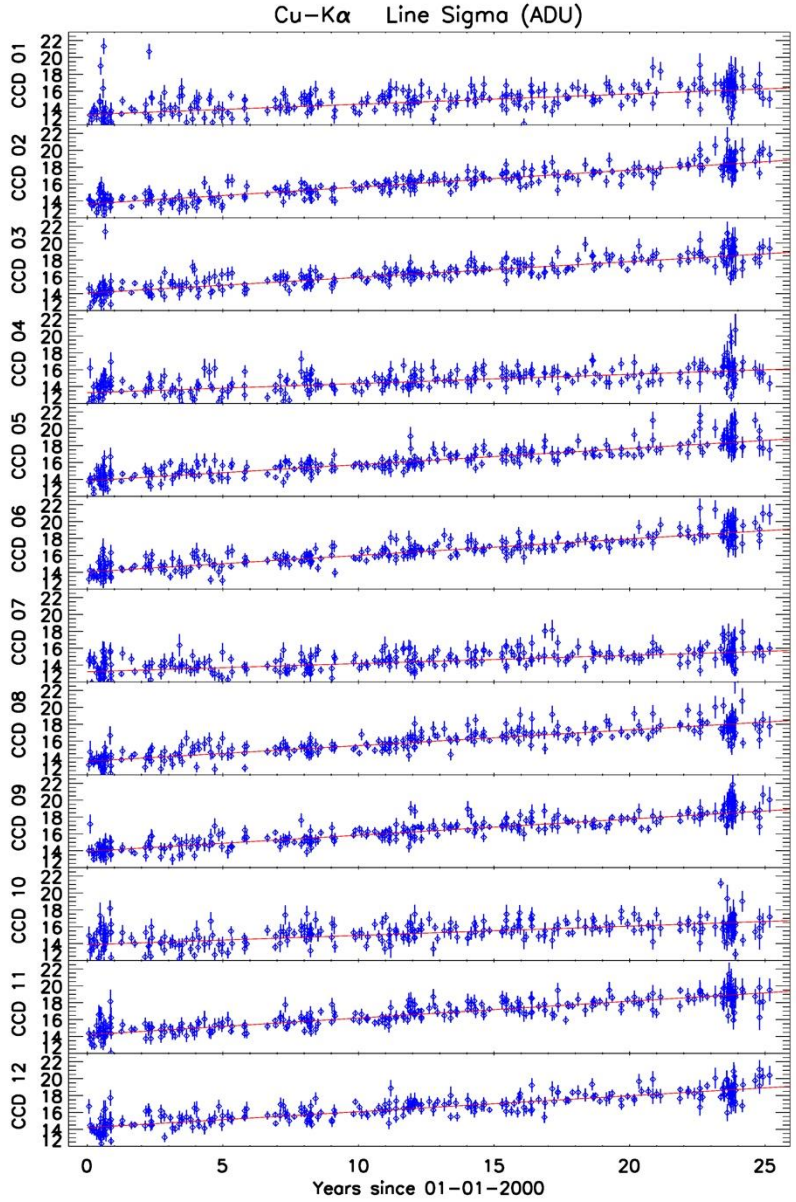
Routine Cal Plan: “Parasitic” EPIC CalClosed exposure times (ks)

	MOS (FF)	PN (FF)	PN (EFF)	PN (LW)
AB Dor (RGS)	40		44	
HR 1099 (RGS)	40*	40*		
PSR B0833-45 (RGS)	89.5		37.5	
Mkn 421(RGS)	2 x 60	2 x 60		
BPM 16274 (OM)	2 x 7	7		7
GD 153 (OM)	15		15	
HZ 2 (OM)	15	15		
SA 95-42 (OM)	35	35		
Total (ks)	**330 - 370**	**180 - 220**	**100**	**7**

PN Energy Resolution (FF mode, singles)







Slope: **Al Ka**: ~0.03-0.05 ADU/year

Mn Ka: ~0.1-0.2 ADU/year

Cu Ka: ~0.1-0.2 ADU/year