

XMM-Newton CCF Release Note

XMM-CCF-REL-205

pn telescope effective area modification at high energies

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1 CCF components

Name of CCF	VALDATE	List of Blocks changed	CAL VERSION	XSCS flag
XRT3_XAREAEF_0011	2000-01-13T00:00:00	ONAXISXAREAEF	3.169	NO

2 Changes

XMM EPIC-pn observations with very high statistic show residuals at high energies above 6 keV (see Figure 2). This features can be explained by not perfect calibration of the telescope effective area.

2.1 ONAXISXAREAEF

The effective area for the EPIC-pn telescope have been changed mainly for energies between 6 and 12 keV. This will reduce residuals at high energies for data with high statistics. This has been implemented in extension "ONAXISXAREAEF" in XRT3_XAREAEF_0011.CCF.

Figure 1 shows the difference between the old XRT3_XAREAEF_0010.CCF (black) and the new XRT3_XAREAEF_0011.CCF (red).

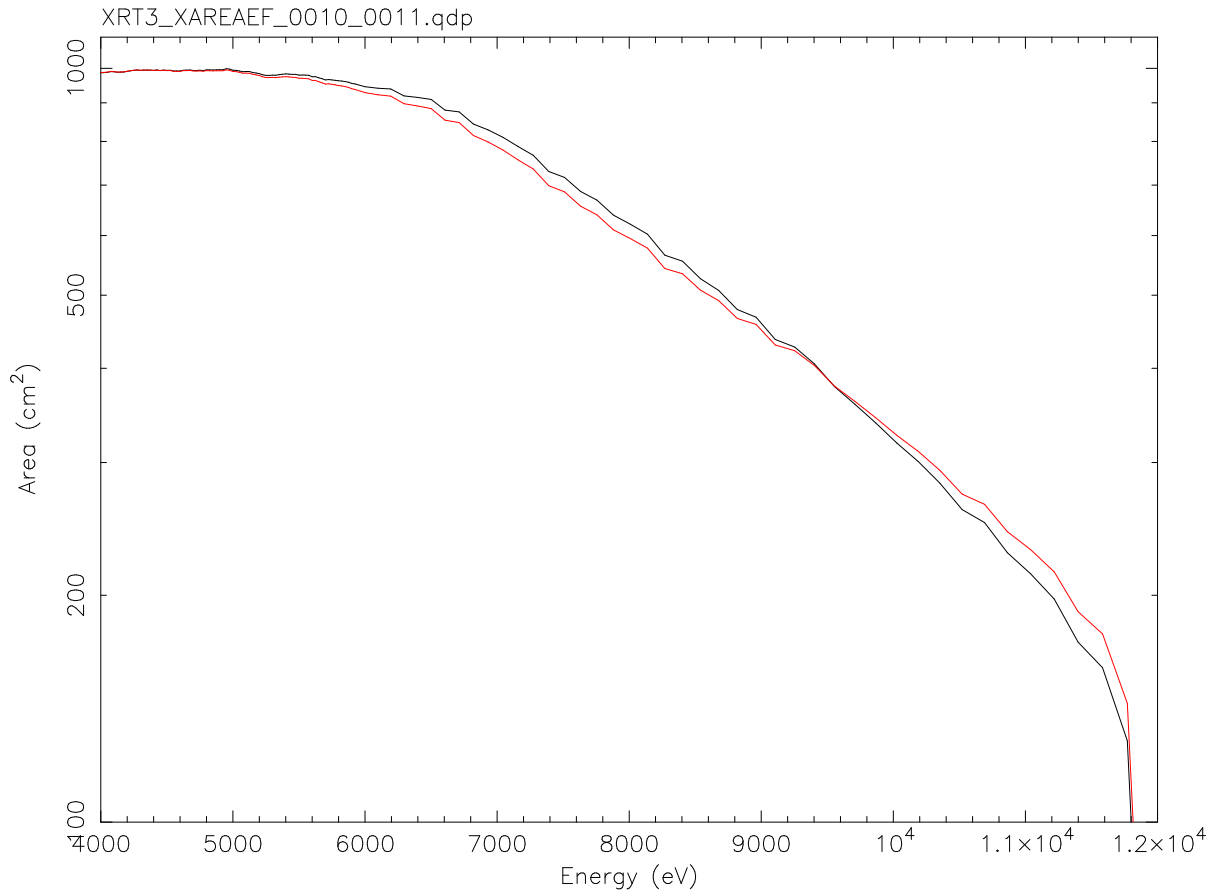
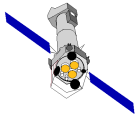


Figure 1: Effective area of the on telescope. Black: XRT3_XAREAEF_0010.CCF red: XRT3_XAREAEF_0011.CCF

3 Scientific Impact of this Update

The adjustment was derived from fits to the spectra of 3C273, PKS2155 and H1426+428. As an example plots for 3C273 are using the old XRT3_XAREAEF_0010.CCF and the new XRT3_XAREAEF_0011.CCF are shown in Figure 2.

4 Estimated Scientific Quality

χ^2 values and χ^2_{red} improves in all three target cases as shown in the table below:

	3C273	H1426	PKS2155
CCF	χ^2 (χ^2_{red})	χ^2 (χ^2_{red})	χ^2 (χ^2_{red})
XRT3_XAREAEF_0010	4748 (1.202)	3448 (1.207)	5194 (1.159)
XRT3_XAREAEF_0011	4494 (1.138)	3398 (1.186)	5137 (1.146)

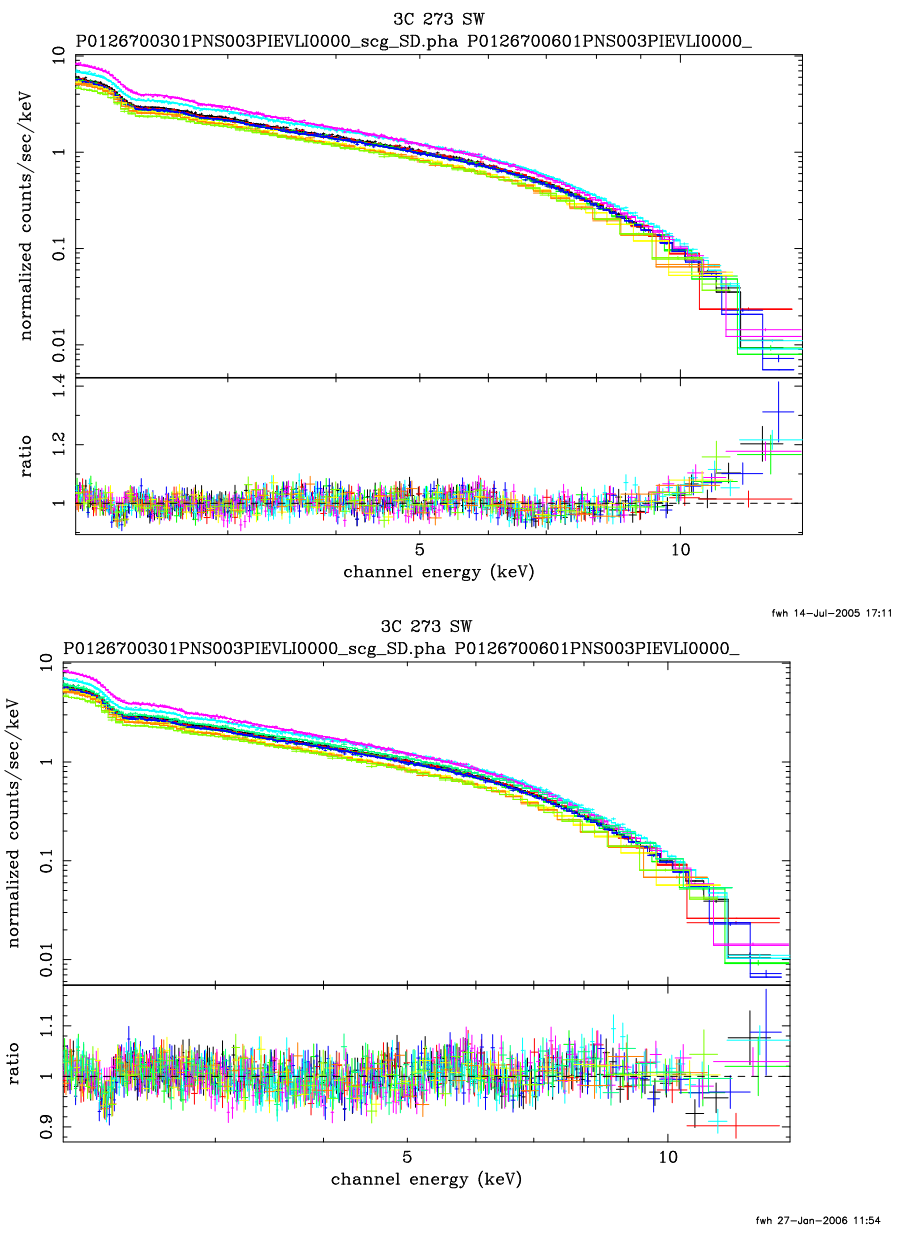
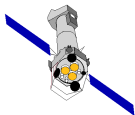
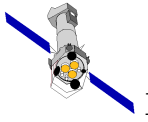


Figure 2: 3C273: upper with XRT3_XAREAEF_0010.CCF lower: with XRT3_XAREAEF_0011.CCF

5 Test procedures & results

The CCF has been tested on 3C273, PKS2155 and H1426+428 data.



6 Expected Updates

none