XMM-Newton CCF Release Note

XMM-CCF-REL-142

RGS smoothed cross-dispersion PSFs

A. M. T. Pollock

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1   CCF components

CCF component	VALDATE	EVALDATE	Blocks changed	XSCS flag
RGS1_CROSSPSF_0004	2000-01-01T00:00:00		CROSSPSF	NO
RGS2_CROSSPSF_0004	2000-01-01T00:00:00		CROSSPSF	NO

2   Changes

Pollock and Gonzalez [1] pointed out that the source selection regions calculated by the SAS on the basis of RGS1_CROSSPSF_0003 and RGS2_CROSSPSF_0003 have a spurious variation with dispersion angle. Subsequently, John Peterson of Columbia University provided a smoothed set of cross-dispersion PSF parameters.

3   Scientific Impact of this Update

The irregularities of the earlier cross-dispersion selection regions were most obvious for extended sources when using the SAS standard method of specifying an equivalent point-source fraction. Even then, the effects on the final spectrum of strong sources was at the very few percent level, within the statistical noise.

4   Estimated Scientific Quality

New background spectra do not show the same irregularities although the robustness of these corrections is still doubtful because of contamination by the source itself. The CCF itself is now fine. Its use by SAS may be in question.

5   Expected Updates

None.

6   Test procedures

- Use `fv` to look at the new files and ensure that the XDSP parameters are correct.

- Run `cifbuild` to check that the new files are correctly selected.

- Process a variety of data taken throughout the mission.

7   Summary of the test results

- `fv` shows the correct cross-dispersion PSF parameters.

- The `ccf.cif` files made by `cifbuild` index the correct files.

- Selection regions based on the new XDSP PSFs are much smoother as shown in Figures 1 and 2.

References

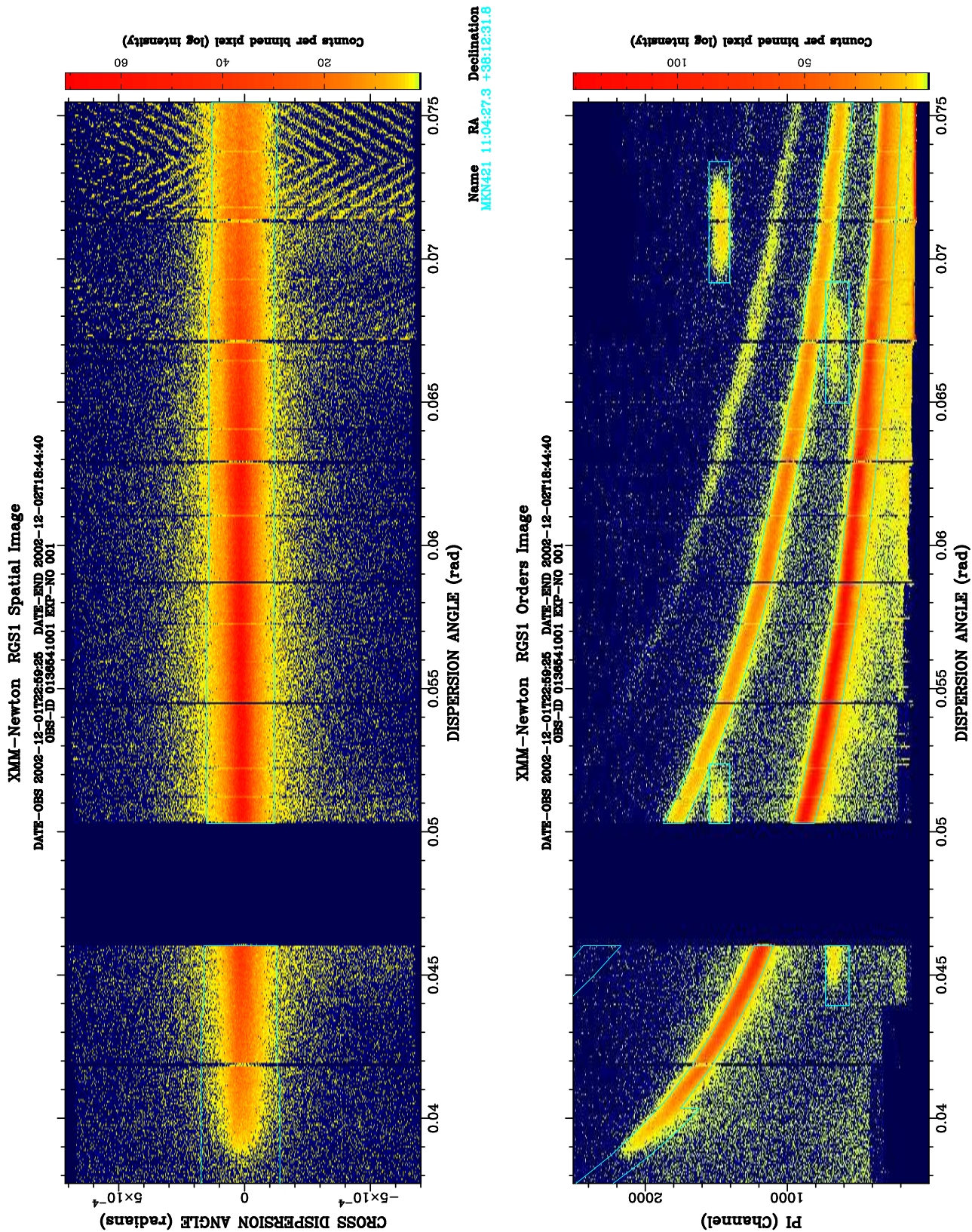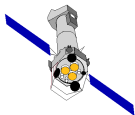[1] RGS Cross-Dispersion Selection Regions after SAS v5.3, XMM-SOC-CAL-TN-0028

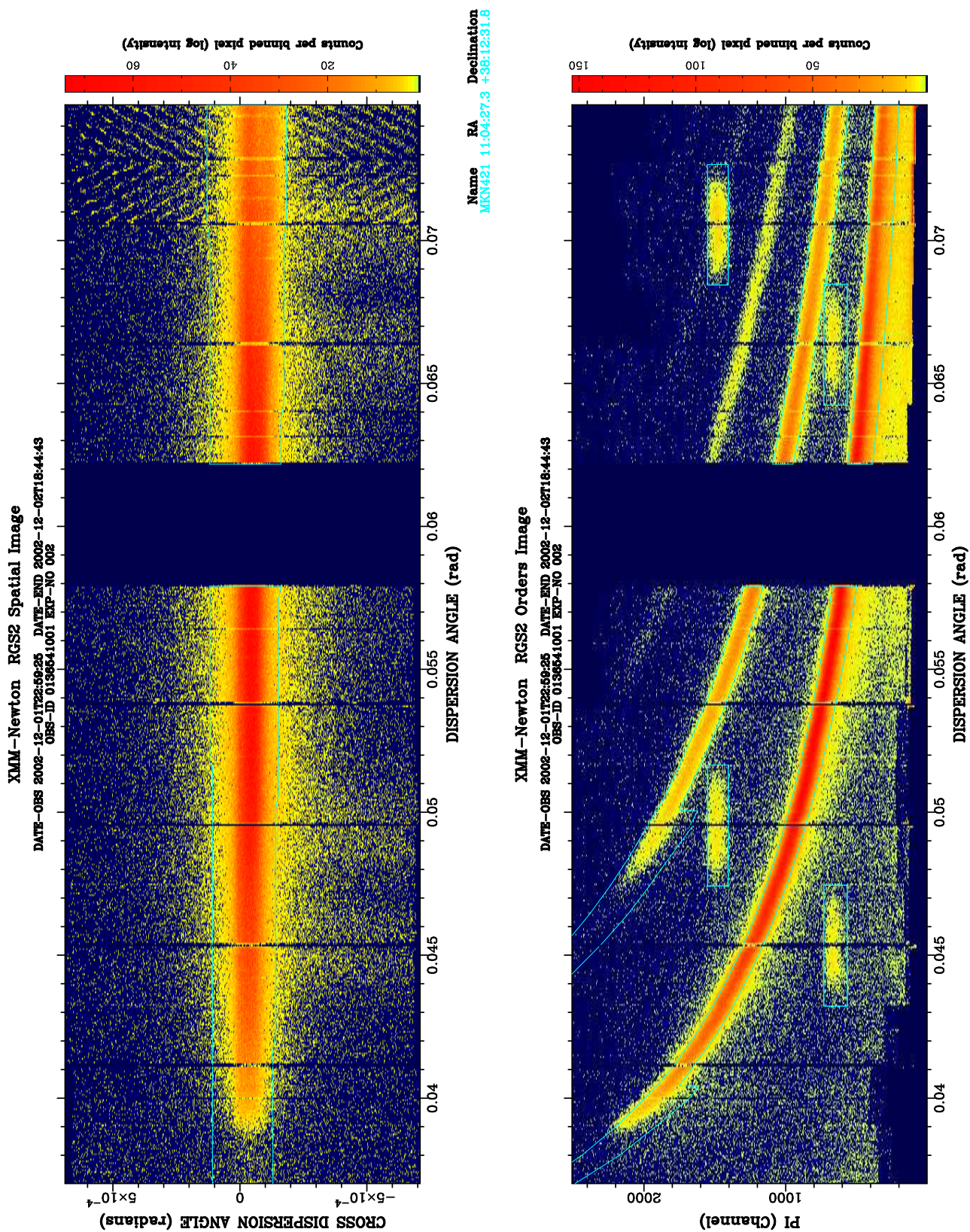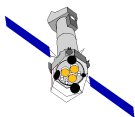Figure 1: Mkn421 0546 0136541001 RGS1 selection regions.

Figure 2: Mkn421 0546 0136541001 RGS2 selection regions.