XMM-Newton CCF Release Note

XMM-CCF-REL-179

RGS Background Spectra Templates

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1   CCF components

| Name of CCF	VALDATE	EVALDATE	Blocks changed	XSCS flag
RGS1_TEMPLATEBCKGND_0001	2000-01-01T00:00:00	−	−	NO
RGS2_TEMPLATEBCKGND_0001	2000-01-01T00:00:00	−	−	NO

2   Changes

This is the first release of the RGS background spectra templates CCFs. These calibration files contain each 16 extensions for first and 16 extensions for second order background spectra. They correspond to the first and second order spectra derived from RGS blank fields within each of the 16 defined levels of background. The levels are measured by the count rate in a defined offset region of CCD 9. The whole method is explained in XMM-SOC-CAL-TN-0058 by Rosario González, who developed this alternative for RGS background derivation.

3   Scientific Impact of this Update

The use of the background spectra templates is an alternative to the conventional analysis, in which the background is derived from the offset region in the spatial image. This new method of determining the background is especially important for analysing:

- extended objects leaving less or no background regions in the RGS spatial image,

- weak sources, by which an improvement of the signal to noise ratio could be essential.
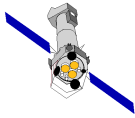
4   Estimated Scientific Quality

With the exception of pathological cases (less than a few percent) the establishment of the overall background spectrum in an observation using the background spectra templates (as done by the SAS task "rgsbkgmodel") works very well, constituting a valid alternative for ANY observation, and the ONLY one for largely extended sources. A very good reproduction of the background obtained with the conventional analysis could be achieved in all the control cases tested so far, using different types of objects with different levels of background.

5   Expected Updates

The derivation of the background spectra was performed using all the data available from the first 700 XMM-Newton orbits. No significant updates can be therefore expected before several years.

6   Test procedures

General checks:

- use FV (or another fits viewer) for file inspection. It should contain 32 binary extensions

- use the SAS task cifbuild to see if the CAL digests and creates correctly the calibration index file.

# 7   Summary of the test results

Initial quality check:

Tests were run on ca. 1500 observations, comparing the results obtained using the new SAS task rgsbkgmodel (which uses this set of CCFs) versus the results obtained with the prototyped IDL procedures. The results were identical, within the rounding accuracies.

A full description of the method and results obtained, also using even these CCF files with the new SAS task rgsbkgmodel (to be released with SAS 6.1) is given in the Calibration Technical Note XMM-SOC-CAL-TN-0058 "Templates for the RGS Background" [1].

General checks:

The fits viewer fv was used to inspect the two CCF files, wrt their structure and validity dates. Everything OK.
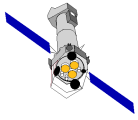
The SAS task cifbuild was run succesfully in order to check the ingestion of the files into the calibration index file.

References

[1] "Templates for the RGS Background", R. González-Riestra, XMM-SOC-CAL-TN-0058, October 2004