# Update of the XIS makepi files

July 31, 2009 The XIS team

- New makepi files: ae_xi[0-3]_makepi_20090615.fits
  - For the full-window mode with the SCI, the CTI tables are updated.
  - For the 1/4 window mode, the energy scale is improved, if these makepi files are used combined with the latest "xispi" tool updated in heasoft 6.6.2 (April 1, 2009).

Full-window SCI-on

- The CTI tables for the SCI-on mode are updated based on the calibration data until February 2009.
  - The previous makepi files were based on the data until February 2008.
- For the XIS1 data, there is a systematic deviation of $\leq$5eV at 6 keV. There is also a systematic deviation of ~+15 eV at 0.6 keV since 2009 (see figures in the next page).
- The RMF parameter tables will be updated soon based on these new makepi files.
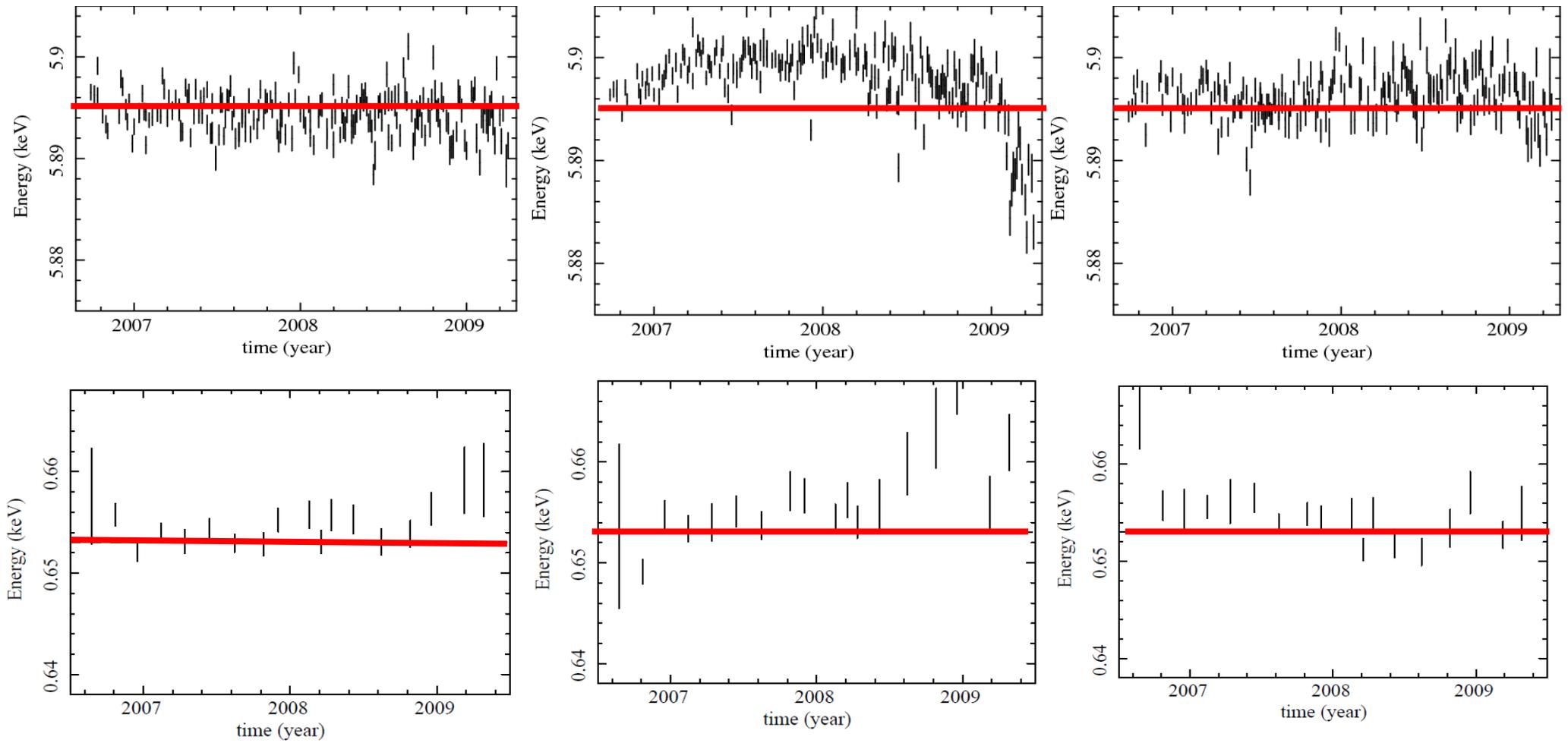
The center energies of the Mn I Kα (55Fe cal. source) and O VIII Kα (SNR E0102) lines determined with ae_xi[0-3]_makepi20090615.fits. The red lines show the theoretical values.

Energy scale of the 1/4 window mode

- We update a ftools "xispi" in heasoft 6.6.2 and a CALDB file "makepi" version from 20090805 to 20090615.

- This update improves the energy scale of XIS data taken with a 1/4 window mode. The energy scale has been monitored by measuring the central energy of the Fe line from the Perseus Cluster as shown below.

- The difference between the 1/4 window mode and the full-window mode is less than 10 eV.

XIS0

Line E (ev)

6600, 6580, 6560, 6540, 6520, 6500

day: 500 600 700 800 900 1000 1100 1200 1300 1400

XIS1

Line E (eV)

6600, 6580, 6560, 6540, 6520, 6500

day: 500 600 700 800 900 1000 1100 1200 1300 1400

XIS3

Line E (ev)

6600, 6580, 6560, 6540, 6520, 6500

day: 500 600 700 800 900 1000 1100 1200 1300 1400
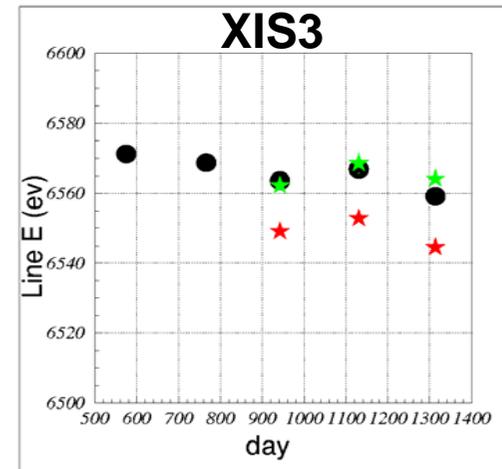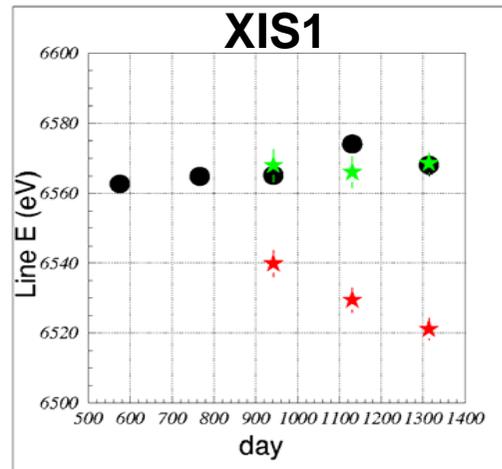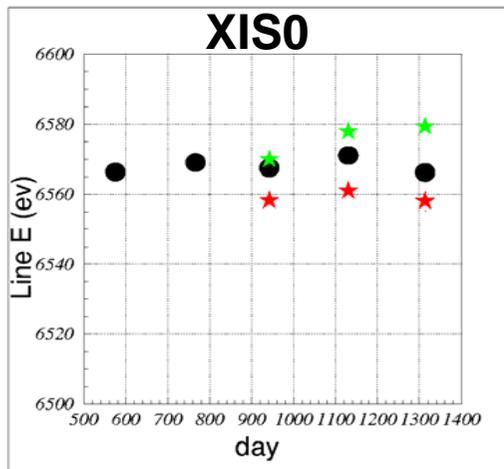
X：elapsed day since the launch

Y: mesured central energy of the Fe line

● ・・・ data taken with a full window mode (this value should be a reference for comparison)

★ ・・・ data taken with a 1/4 window mode processed with xispi in heasoft 6.6.1 or before & makepi_20080825

★ ・・・ data taken with a 1/4 window mode processed with xispi in heasoft 6.6.2 or after & makepi_20090615