FIS Introduction (part 2)
~ Starting up with the Slow-Scan Tool ~

AKARI/FIS Data Reduction Workshop

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Setting up the Toolkit

- Download the software package:
  - The latest version: *fisdr_20070914.tar.gz*
- Extract the package:
  - At any directory. Default is under ~/ASTRO-F/.

    % tar xzf fisdr_20070914.tar.gz
  - Rename or make a symbolic link to reduction/

    % ln -s reduction_20070914 reduction
- Setting up (probably in .cshrc):

  setenv FISDR_ROOT ~/ASTRO-F/reduction/

    (or anywhere you installed it)

  alias fisdr ~/ASTRO-F/reduction/slowscan/startup/bin/fisdr
- Run fisdr:
  - % fisdr

    FISDR>

Structure of Slow-scan tools

- ## Main programs

  reduction/slowscan/pro/ss_run_ss.pro

  /ss_init_proc.pro

  /ss_make_map.pro

  /…

  /lib/…

  /doc/…

- ## Support programs

  - GreenBox(GB) modules – All-Sky Survey pipeline modules
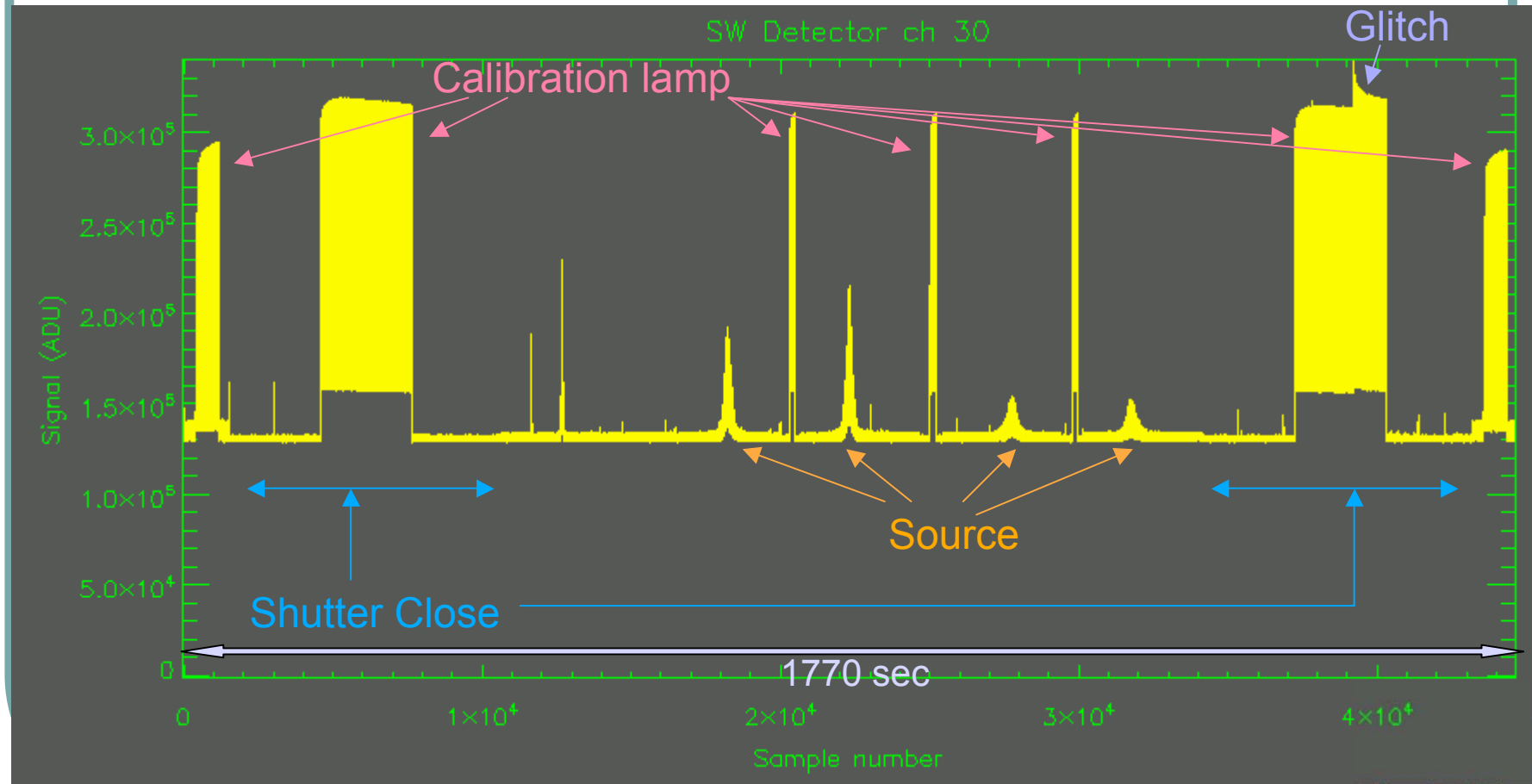 - Data browser (FISv)
  - General utilities
  - IDL Astronomical library (*do not replace it!!!*)

Slow-scan data example in TSD file

AOT : FIS01

Displayed by FISv (TSD file viewer)

Main processes of Slow-scan tools

- Discrimination of AOT (sequence pattern)
- Data (unit) conversion
- Integrated ramp curve correction   ss_init_proc
- Fitting of integration ramps
- Detection and removal of glitches
- Responsivity correction
- Flat fielding
- Dark subtraction
- Mapping (binning) in a celestial coordinate
- Creation of image FITS   ss_make_map

Files

Input

TSD file (*.fits.gz)

ex)
    FIS_SW_20070705213613_1770.fits.gz
    FIS_LW_20070705213613_1770.fits.gz

Intermediate files *IDL save* files (*.sav) [and text (*.txt)]

FIS_SW(LW)_*_pr.sav, FIS_SW(LW)_*_ar.sav,
FIS_SW(LW)_*_ cal.sav, FIS_SW(LW)_*_ dark.sav ,
FIS_SW(LW)_*_ flat.sav[, and …]

Output *Image FITS* files, *IDL save* files, and *JPEG* files
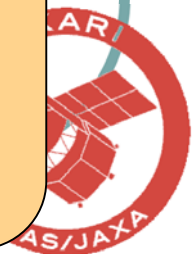
FIS_SW(LW)_*_img_w(n).fits   : Intensity map
FIS_SW(LW)_*_err_w(n).fits   : error map
FIS_SW(LW)_*_num_w(n).fits   : sample density map
FIS_SW(LW)_*_img.jpg   : map image for QL
FIS_SW(LW)_*_img.sav   : IDL save file

Running ss_run_ss.pro

- Without argument to display usage
- Running by default
  - >ss_run_ss, 'target_directory_name'
    - ex1) `FISDR>ss_run_ss, 'AKARI_FIS_5110085_001'`
    - ex2) `FISDR>ss_run_ss, '.'`
      ; target_dir is the current directory
- Many useful options are available
  - Control processing of the slow-scan tools
 - Change data treating methods

Basic options of ss_run_ss

- **/INIT, /MAP**
  : Do only ss_init_proc or ss_make_map process
- **/SW, /LW** : Process only for SW or LW
- **/AOCU** : Use AOCU position information instead of G-ADS
- **/GALACTIC, /ECLIPTIC** ▶
  : Select coordinate system; Equatorial by default
- **LON(LAT)_CENTER, LON(LAT)_SIZE, GRID_SW(LW)**
  : Specify mapping region and grid size
- **/NO_DISPLAY**
  : Suppress plot display during processes
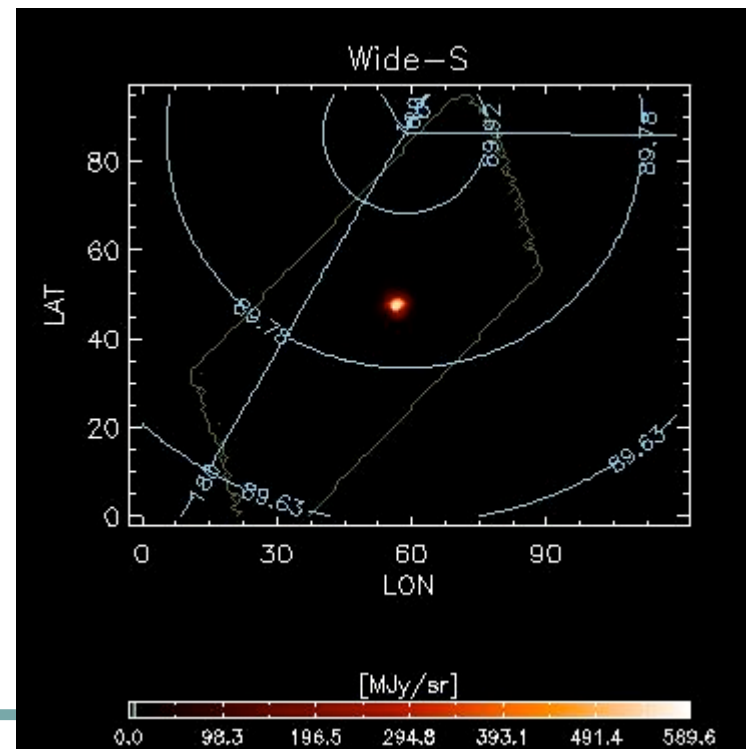- **/CUBE_FITS** : Generates FITS as data cube ▶

Projection Coordinates

- New in version 20070914
- Equatorial coordinates by default
- /GALACTIC, /ECLIPTIC options are available

in Equatorial coordinates (default)
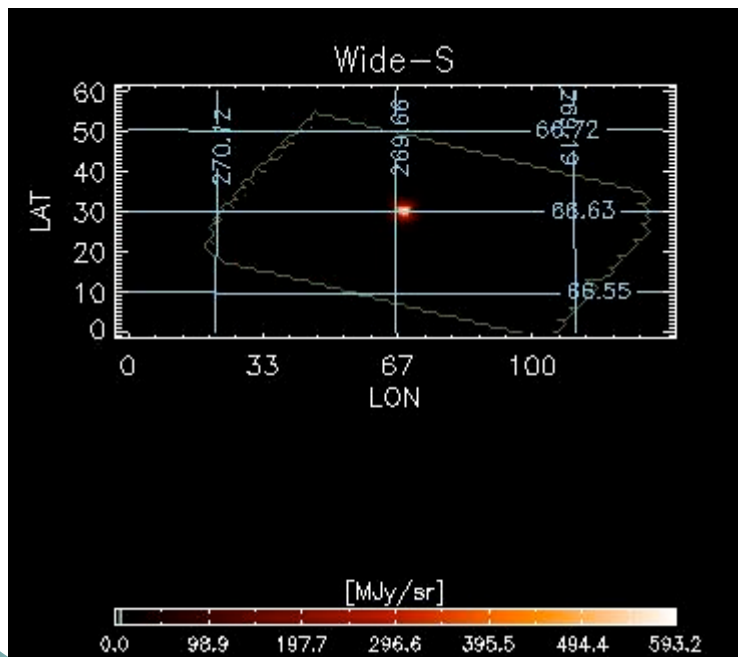
in Ecliptic coordinates

Option for output FITS format

- Three FITS image files (_img, _err, _num) are generated for each band by default.
- Creates one *_cube FITS file instead of three files by /CUBE_FITS option.

- Data cube contains three image maps.
- 'ds9' can deal with data cube FITS.