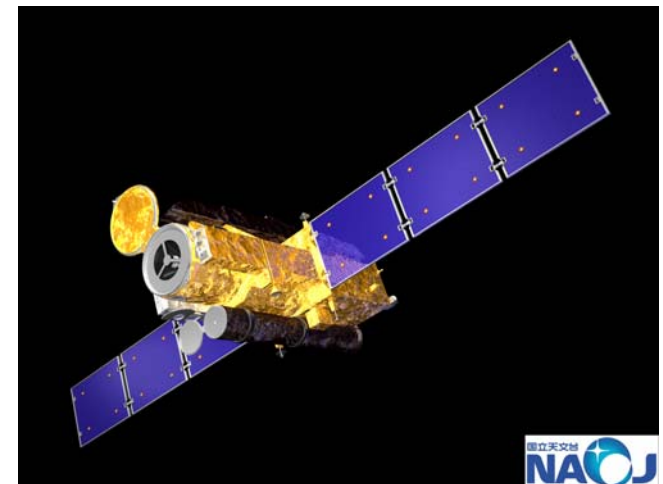


SOLAR-B data flow scheme with emphasis on SOT

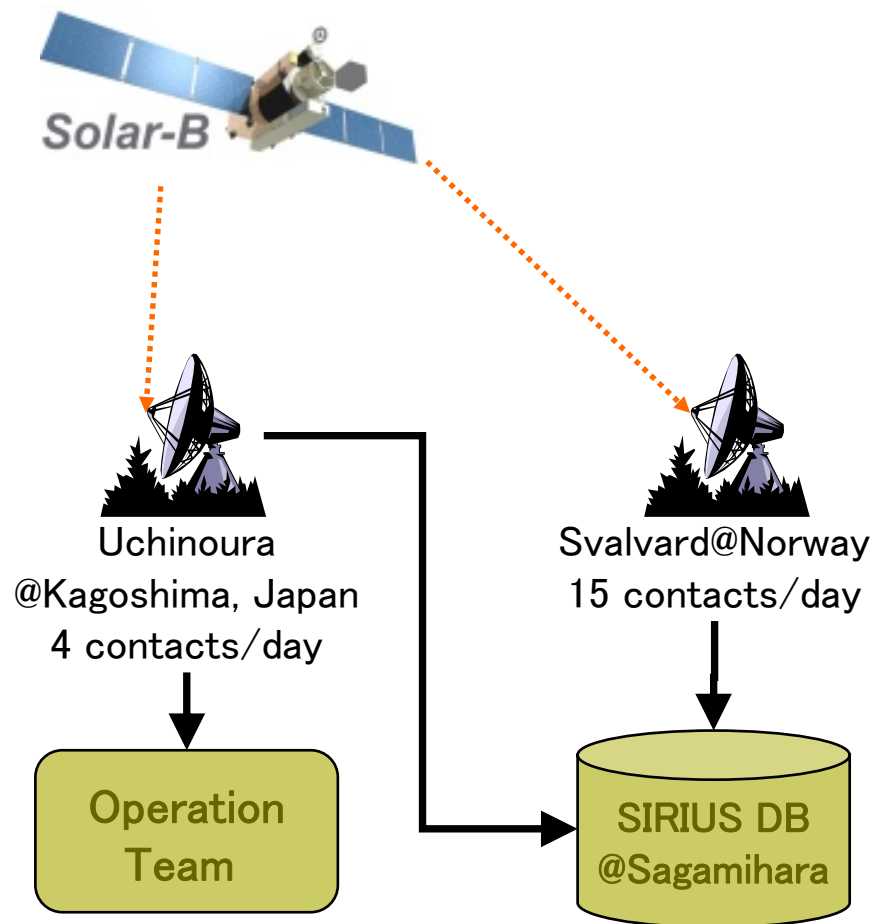
Masumi Shimojo
SOLAR-B project/NAOJ



Topics

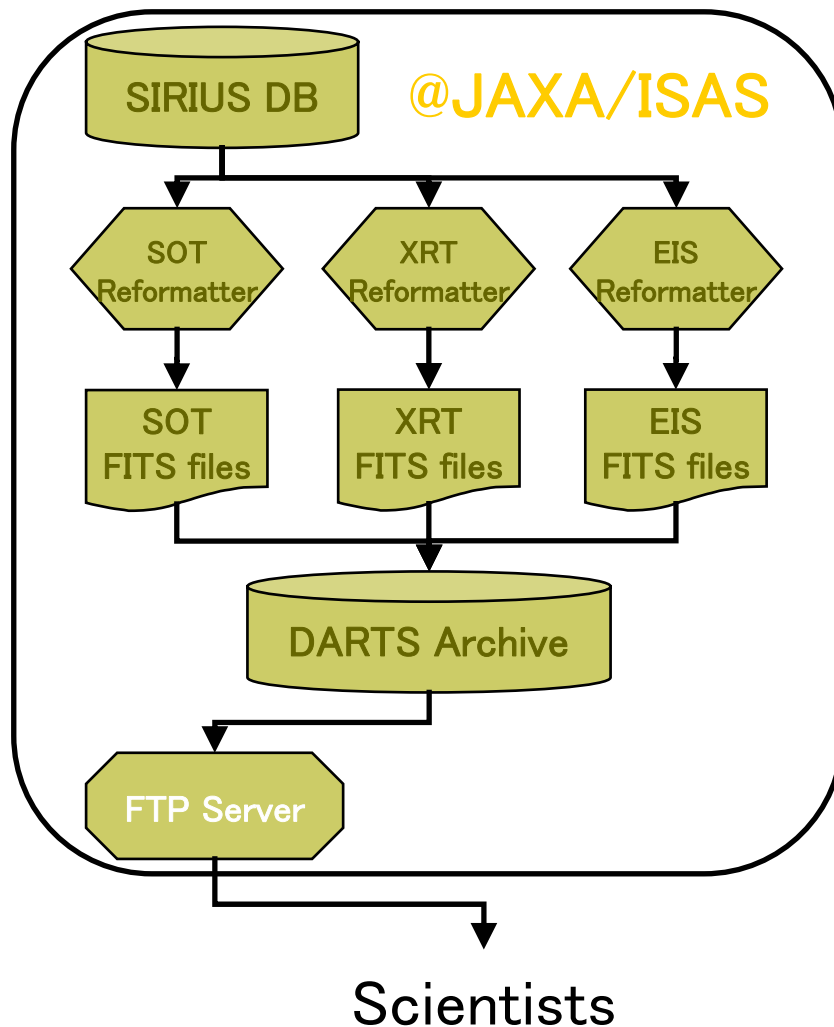
- Data Flow from SOLAR-B to Scientists
- FITS format of SOT-FG/SP
- Classification of SOLAR-B data
- SOLAR-B Database System for Scientists

Data Flow from SOLAR-B to Scientists: 1



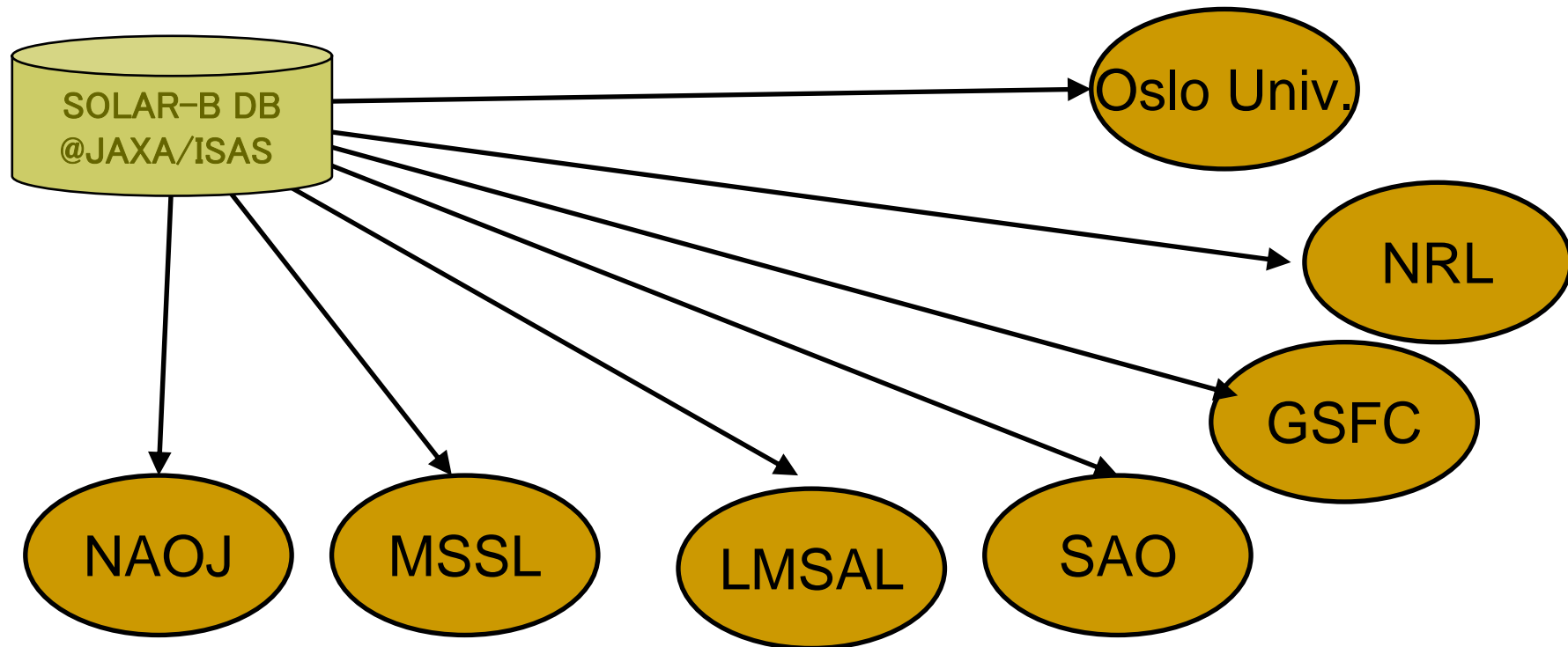
- ❑ In nominal operations, all data of SOLAR-B are downloaded at Uchinoura (Japan) and Svalvard (Norway).
- ❑ All data are transferred from USC and Svalvard to the SIRIUS database of JAXA/ISAS Sagamihara using Internet.
- ❑ The data received at Uchinoura are send to Sagamihara, the contact end 1~2 hours later.
- ❑ In order to check the status of instruments and make the operation plan, the operation team uses the data from Uchinoura.
- ❑ We predict that it takes one week to complete the transfer of SOLAR-B data from the Svalvard station

Data Flow from SOLAR-B to Scientists: 2



- ❑ After completing the transfer of all data received at USC and Svalbard, we make the FITS files for scientists.
- ❑ All scientific data are reformatted to Level-0 FITS files by each instrument team at JAXA/ISAS.
- ❑ “Level-0” means that the data are not calibrated.
- ❑ All FITS files of SOLAR-B are archived in DARTS (the Data ARchive and Transmission System) at ISAS/JAXA.
- ❑ Scientists can get the SOLAR-B data using the ftp server of DARTS.

Data Flow from SOLAR-B to Scientists: 3



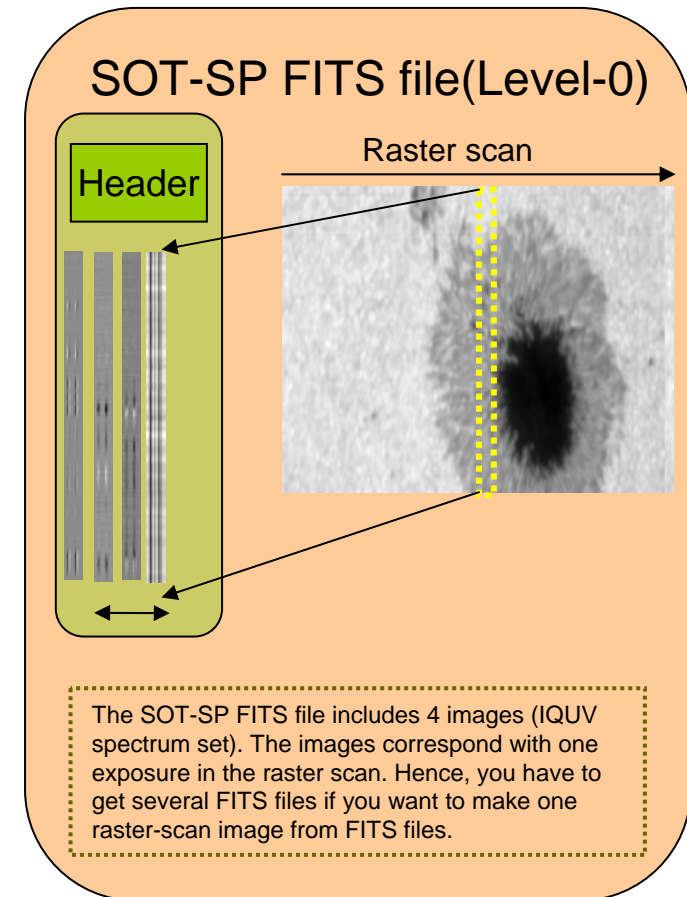
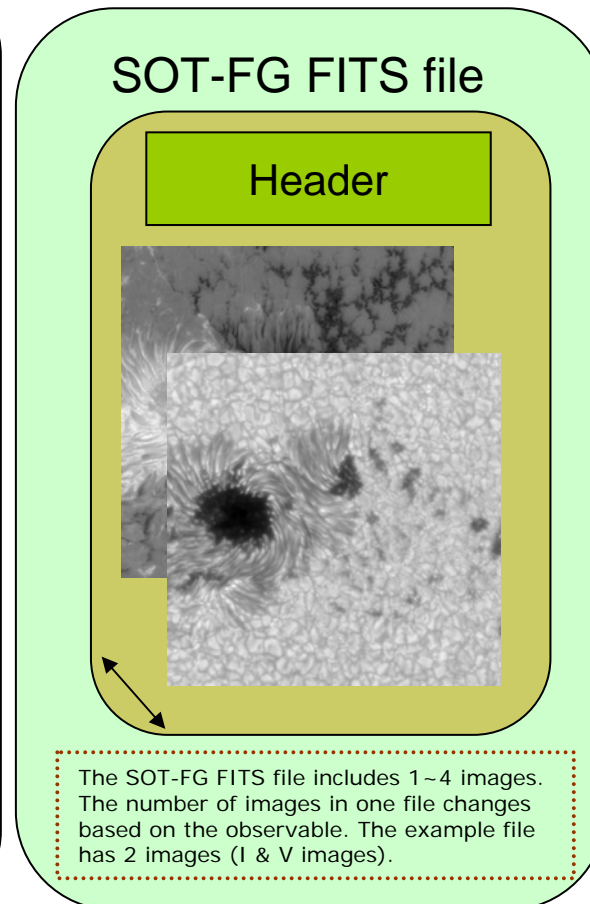
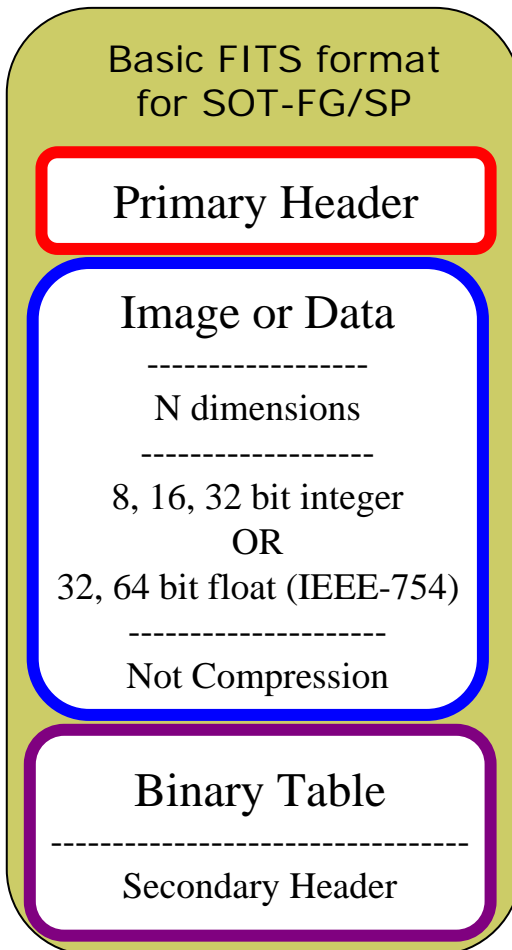
- ❑ The SOLAR-B FITS files are mirrored by the SOLAR-B project teams around the world.
- ❑ Scientists may get the SOLAR-B FITS files from these sites.

Topics

- ❑ Data Flow from SOLAR-B to Scientists
- ❑ FITS format of SOT-FG/SP
- ❑ Classification of SOLAR-B data
- ❑ SOLAR-B Database System for Scientists

FITS file of SOT-FG and SP

- ❑ The format of the SOT FITS file is the standard FITS with Binary Table Extension.
- ❑ We can view the SOT image from the FITS files using the standard FITS viewer.



Topics

- ❑ Data Flow from SOLAR-B to Scientists
- ❑ FITS format of SOT-FG/SP
- ❑ Classification of SOLAR-B data
- ❑ SOLAR-B Database System for Scientists

Definition of the Level-0

□ Level-0 data

- Non-calibrated data
 - SOT case
 - The counts of images include the effect of the dark current, the response flatness of CCD, and etc.
 - Stokes spectrums include the effect of the instruments and etc.
- The format of the data is FITS format.
- The files are made from telemetry data at JAXA/ISAS.
- All SOLAR-B FITS files will be provided by JAXA/ISAS.
- The file is the start point of scientific analysis.

Level-1/2 data of SOT-FG/SP

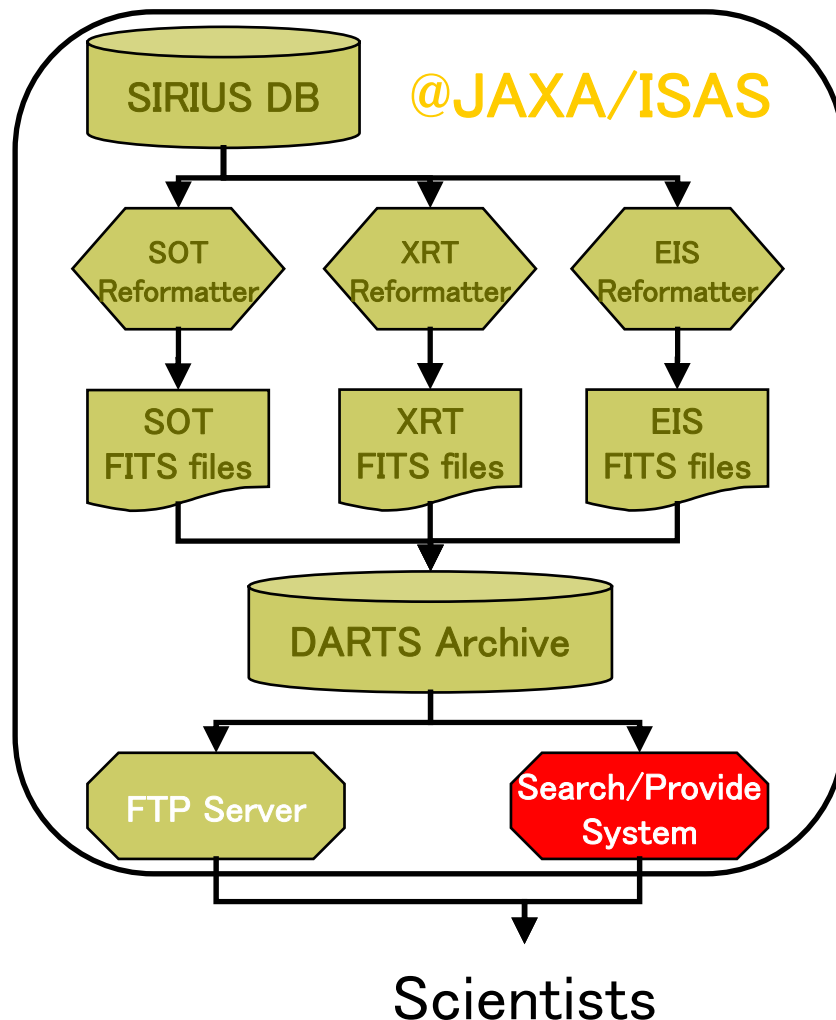
- Level-1 data
 - Calibrated data (counts, polarization, etc.)
 - The format of Level-1 data is the same as that of Level-0 data.
 - The data are not provided from JAXA/ISAS and PI. On the other hand, PI will provide the software (based on IDL+SSW) and the data for calibration.

- Level-2 data
 - Level-2 data are made from Level-0,1 data.
 - One category of Level-2 data is the data in physical units.
 - SOT
 - Vector Magnetogram made from SOT-SP data
 - The other category of Level-2 is movie files
 - Basically, Level-2 data does not provide from PI. PI will provide the software for Level-2 processing.
 - The vector magnetogram made from SOT-SP data will be provide from SOT team because we need huge computer resource for making vector magnetogram from SOT-SP data.

Topics

- ❑ Data Flow from SOLAR-B to Scientists
- ❑ FITS format of SOT-FG/SP
- ❑ Classification of SOLAR-B data
- ❑ SOLAR-B Database System for Scientists

SOLAR-B DB System for Scientists



- ❑ The number of the FITS file of SOLAR-B is huge and it is difficult to look for the FITS files manually.
- ❑ JAXA/ISAS and NAOJ are developing the data search/provide system (SOLAR-B/DARTS) for the SOLAR-B data.
- ❑ The beta version of the system has been released.



The demo of SOLAR-B/DARTS

<http://darts.isas.jaxa.jp/solarb/top.do>

Example of GUI interface :1



SOLAR-B Data Center

Start Time [2007/05/02 12 : 23 : 00](UT)
 End Time [2007/05/02 14 : 30 : 00](UT)
 Target Position X(arcsec) [+130] Y(arcsec) [-120]
 Instruments : SOT-FG, XRT, EIS

Back

SOT-FG

Binning 1x1 2x2 4x4

Wavelength H α CaK G-Ban

Image Size X > [] Y > []

⋮

RESET

XRT

Binning 1x1 2x2 4x4

⋮

RESET

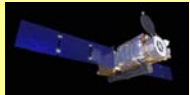
EIS

⋮

RESET

Search

Example of GUI interface :2



SOLAR-B Data Center

Start Time [2007/05/02 12 : 23 : 00](UT)
 End Time [2007/05/02 14 : 30 : 00](UT)
 Target Position X(arcsec) [+130] Y(arcsec) [-120]
 Instruments : SOT-FG, XRT, EIS

SOT-FG

Result The number of hits: 200
 Total Size of data : 120MB

Show list

Get all Data

XRT

Result The number of hits: 300
 Total Size of data : 500MB

Show list

Get all Data

EIS

Result The number of hits: 20
 Total Size of data : 50MB

Show list

Get all Data

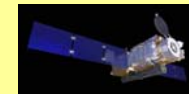
Display the FOV

Get data of all insts.

Display the time res.

Back

If push "Show list" button of SOT-FG,



SOLAR-B Data Center

Start Time [2007/05/02 12 : 23 : 00](UT)
 End Time [2007/05/02 14 : 30 : 00](UT)
 Target Position X(arcsec) [+130] Y(arcsec) [-120]
 Instruments : SOT-FG, XRT, EIS

SOT-FG

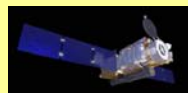
Get	Date	Pos(X)	Pos(Y)	wave
■	<u>2005/05/02 12:25:20</u>	128	-100	H α
■	<u>2005/05/02 12:26:16</u>	128	-100	H α
■	<u>2005/05/02 12:27:19</u>	128	-100	H α
■	<u>2005/05/02 12:28:22</u>	128	-100	H α

Get data

Delete the Window

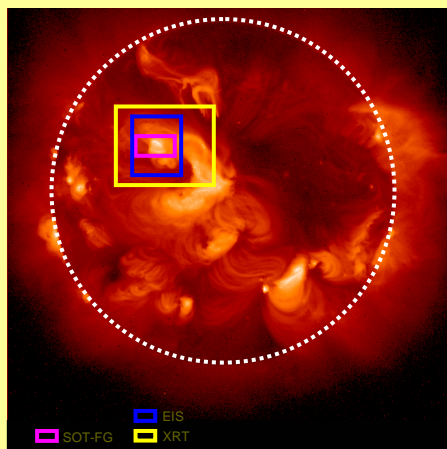
Example of GUI interface :3

Click the "Display the FOV" button.



SOLAR-B Data Center

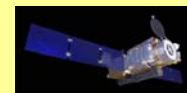
Start Time [2007/05/02 12 : 23 : 00](UT)
 End Time [2007/05/02 14 : 30 : 00](UT)
 Target Position X(arcsec) [+130] Y(arcsec) [-120]
 Instruments : SOT-FG, XRT, EIS



- ▶ 1
- ▶ 5
- ▶ 10
- ▶ 50
- ▶ 100
- ▶ 500

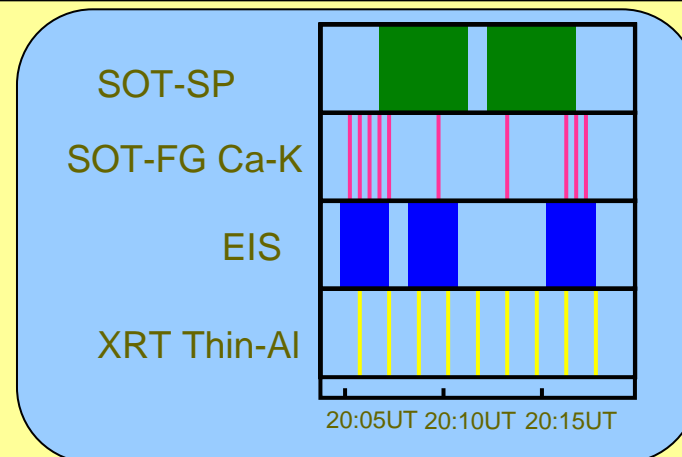
Delete the window

Click he "Display the time res.



SOLAR-B Data Center

Start Time [2007/05/02 12 : 23 : 00](UT)
 End Time [2007/05/02 14 : 30 : 00](UT)
 Target Position X(arcsec) [+130] Y(arcsec) [-120]
 Instruments : SOT-FG, XRT, EIS



Delete the window

Request to SOT, XRT, EIS team

- We plan to test of the SOLAR-B/DARTS system using the data of the Final System test.
- Please provide us the Level-0 FITS reformatter of each instrument.
 - We will install the software to the computer of JAXA/ISAS.