

# JUDO Manual

JAXA

Center for Science satellite Operation and Data Archive (C-SODA)

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# Chapter 1: Introduction

## 1.1 What is JUDO?

JUDO (<http://darts.isas.jaxa.jp/astro/judo>) stands for "JAXA Universe Data Oriented", developed by Center for Science satellite Operation and Data Archive (C-SODA) to observe various kinds of astronomical data easily. If there are internet and standard browser, you can enjoy JUDO, only clicking mouse to turn celestial body, you will be able to see every data range whatever you want, to search Observation ID of celestial location, to check data status of public/nonpublic, to look up a feature of newly discovered astral body in external database as SIMBAD and NED. Moreover, it is possible to create overlaid image of SUZAKU, ASCA, ROSAT and IRAS at the same time.

Aim to the most effective utilization of the science satellite data of JAXA for domestic/global scientists, educators and common people, JUDO had been developed in JAXA.

Please refer help file (<http://darts.isas.jaxa.jp/astro/judo/help.html>) when needed. If you have anything opinions or requests, please send a mail to darts-admin AT ml.isas.jaxa.jp.

This manual is conform to JUDO Version 2.00 released in March 16th 2009..



# Chapter 2: How to use.

## 2.1 Basic usage

Various operations is possible with mouse handling in JUDO as follows;

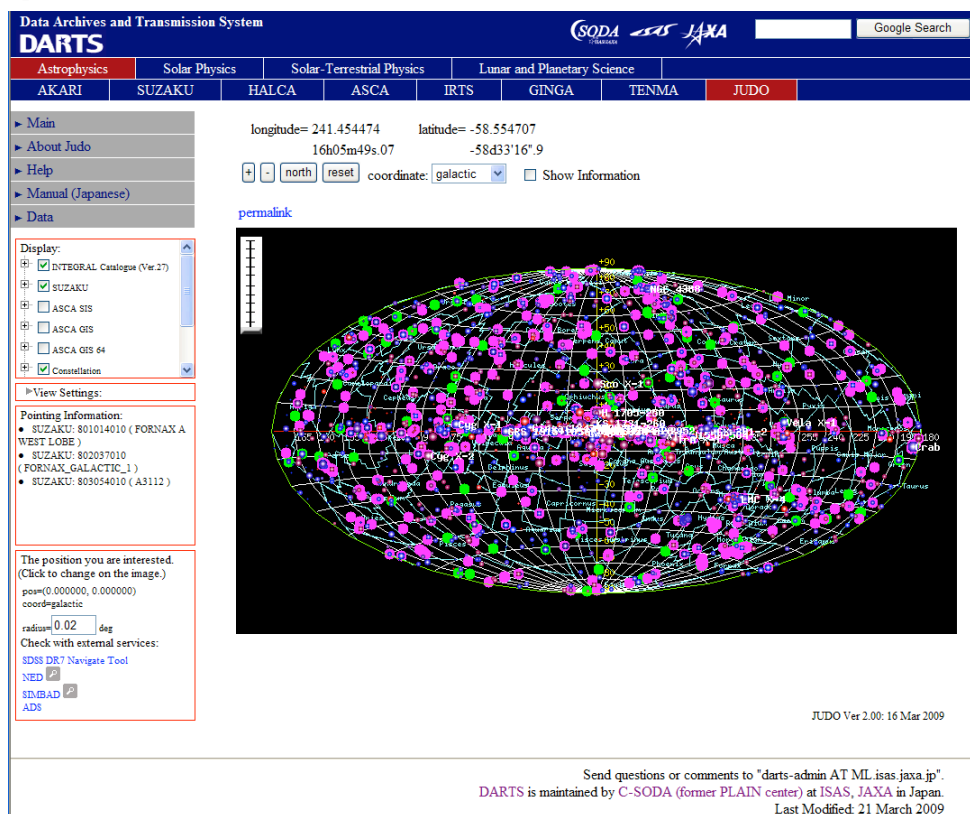


Fig 2.1: Initial screen of JUDO

You can enjoy JUDO freely with flexible handling of mouse.

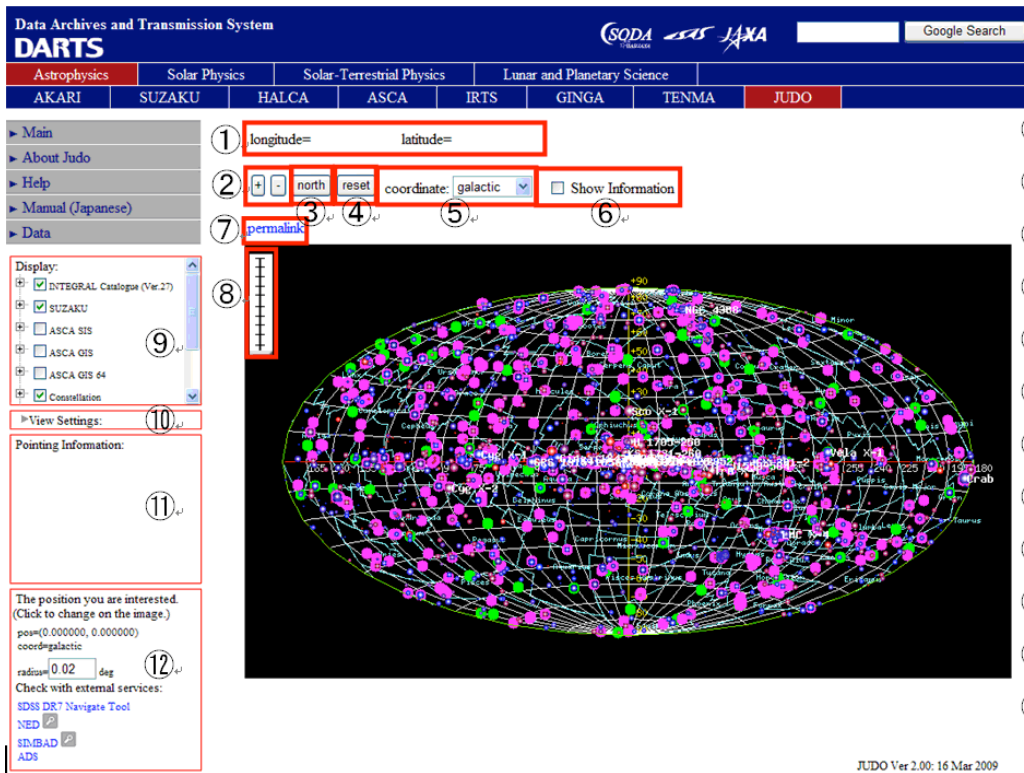
### 2.1.1 Control display

When you want to move from the center point to anywhere your arbitrary point, left-click or double-click the mouse, then the clicked point comes to be the center.

Scaling size is possible by turning mouse wheel, +/- buttons, or moving slider on left-top of the display.

"longitude" and "latitude" shows mouse pointer location (upper: degree [deg], lower: hour, minutes, second [hms]).

When click "north button", the data will be updated as north-seeking coordinates.



- ① longitude/latitude.
- ② +/- button.
- ③ north button.
- ④ reset button.
- ⑤ coordinate select button.
- ⑥ Show Information check box.
- ⑦ Permalink display.
- ⑧ Scaling slider.
- ⑨ Display item selection.
- ⑩ Display image setting.
- ⑪ Information display.
- ⑫ External site search.

Fig 2.2: Explanation of initial screen of JUDO

## 2.1.2 Initialize screen

Only click "reset button", the screen gets to be initialized. So please enjoy handling JUDO till your heart contents.

## 2.1.3 Change coordinates

At default, the screen displays galactic coordinates and you can change it as galactic, equatorial or ecliptic by "coordinate selection button".

## 2.1.4 About "Information"

When drugging inside of visible observation range (pink or green points), you can find related information in "information display box" at left-side.

"Information" section is displayed when you click "Show Information" check box on the upper part of the screen. (Figure2.3) On this section, you can see all information regarding pointing observation and when select multiple data, each information will be delimited by tab. (Figure 2.4) When drugging over observation data point, appropriate information will be high lighted in "Information" section. (Figure 2.5) On the other hand, when drugging over observation number on "Information" section,

appropriate location will be high lighted in Display Panel. (Figure 2.6)

Also, "Information" section has a search function. input a name of astral body or Observation ID and click "filter" button, then matching data will be displayed. (Figure 2.7) Click "reset" button, the result will be initialized.

Click Observation ID then redraw a new image that clicking data point gets to be the center., and detail observation data of that point will be displayed on the other window (tab). (Figure 2.8) The information is FITS image, FITS header data, abstract of observation proposal. If it is nonpublic data, only brief information and abstract will be shown.

In "detail information" screen, you can download data from FTP dir. Also, regarding public data, click XIS or HXD then you can find each of their image or spectrum. Click "UDON" then jump to "UDON" page and able to brief analyze light curve and spectrum. (Refer Chapter4.2)

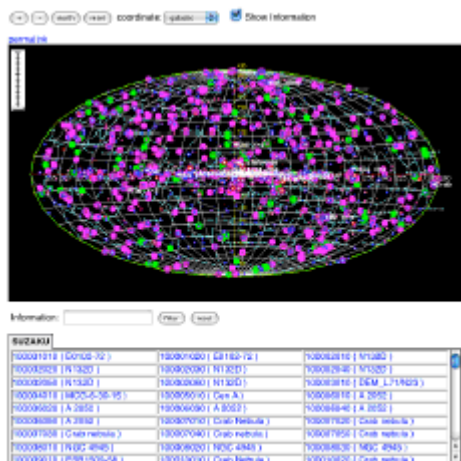


Fig2.3: Click "Show Information" button, observation ID will be shown at the lower part of the screen.

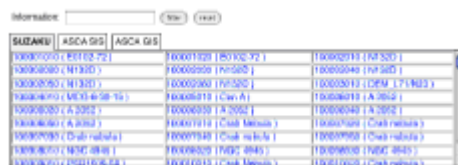


Fig2.4: When select several data, the observation ID list will be displayed different tab pages of each satellite.

## 2.2 Data type

At left side section of "display selection", you can select a data type. As of now, we have the data images of SUZAKU, ASCA, ROSAT, IRAS. Also we can provide the data from INTEGRAL catalogue, as location of astral body, border of constellation and coordinate axis.

When click the "+ button" on "Display item selection" section, you can find further detail display items. With these various selection items, you can get much easier understanding image. (Figure 2.9) Sample is as below, and please find much more detail explanation on JUDO help page (<http://darts.isas.jaxa.jp/astro/judo/help.html>)



Fig2.5: Drugging over the observation range, the case of Cyg X-1.  
 (Upper: Before drugging)  
 (Lower: After drugging over the observation range)

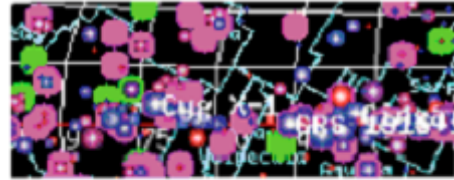


Fig2.6: Drugging over "Information", the case of Cyg X-1.  
 (Upper: Before drugging)  
 (Lower: After drugging over the observation point.)

- INTEGRAL Catalogue      display INTEGRAL celestial body
  - label                    display a name of celestial body
  - mark                     display a location of a celestial body by circle. Its' size shows hardness, its' color shows blueness of spectrum.
  
- SUZAKU                    display SUZAKU XIS information
  - public FOV             display public observation data with pink color.
  - public image            display images of public observation data.
  - proprietary FOV        display nonpublic observation data with green color.
  
- ASCA SIS                    display ASCA SIS information.
  - FOV                     display observation vision with orange color.
  - image                    display observation image.
  
- ASCA GIS                    display ASCA GIS visible image (256\*256) information.
  - FOV                     display observation data with blue.
  - image                    display observation image.
  
- ASCA GIS 64                display ASCA GIS visible image (64\*64) information.



Fig 2.7: "Information" search function. the case of searching by cyg.

- FOV display observation data with water blue.
- image display observation image.

- Constellation display border lines of constellation.
  - boundary display border lines of constellation.
  - label display name of constellation.

- Coordinates display coordinates axis.
  - label display value of coordinates.
  - grid display grid of coordinates.

ROSAT display images of X-ray survey over entire sky of ROSAT.

IRAS display image of infra-red ray survey over entire sky of IRAS.



# Chapter 3: Useful functions

## 3.1 Overlaid image

With "View Setting", it is possible to change opacity of each displayed images to provide much more clarified data. Click a triangle shaped button on the left side of "View Setting", condition items will be shown. Select any image then you are able to adjust its' opacity, hardness (linear or log), color tone (color or black-and-white). Please arrange as you want.

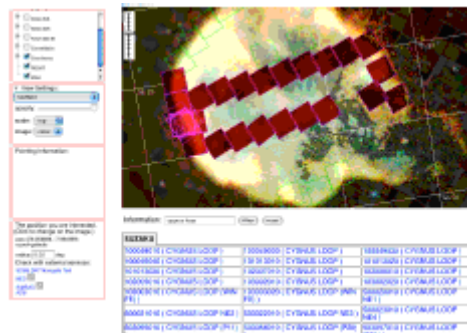
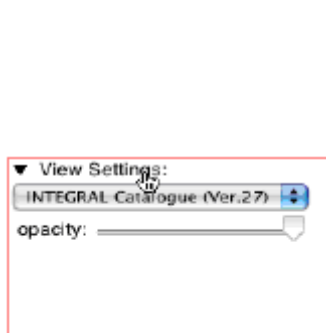


Fig3.1: "View Setting" section to set conditions of display image.

Fig3.2: Figure 3.2: Example, select SUZAKU, ROSAT, IRAS for Cygnus loop.

## 3.2 Permalink

When click "Permalink", URL (Permalink) of currently displayed web page or URL of currently displayed image. (Figure 3.3) "page link" will show actual current page, "image" will show currently displayed image only. It is useful when you exchange data with somebody and when you want to save the images.

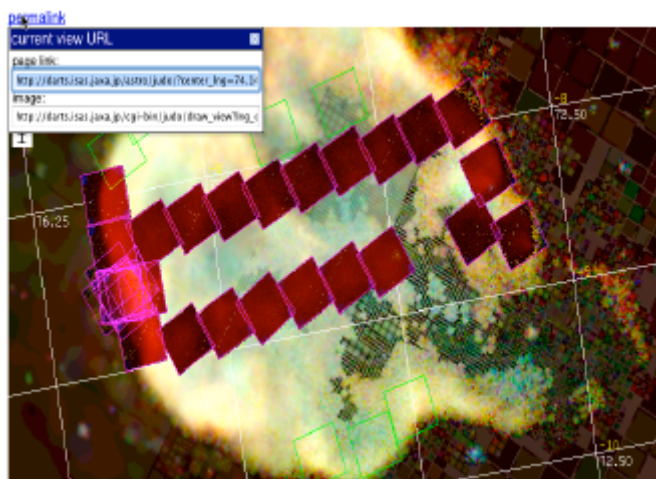


Figure 3.3: Example of Permalink, URL (Permalink) is shown as above.

### 3.2.1 Permalink with WebAPI

It is possible to get data of celestial body from JUDO. Input parameter after

URL "[http://darts.isas.jaxa.jp/cgi-bin/judo/draw\\_view?](http://darts.isas.jaxa.jp/cgi-bin/judo/draw_view?)", to create customized image. If you want to set several conditions at the same time, please insert "&" between parameters. For example, to display Figure 3.3, you need to input as footnote1. If you set each value of clip\_width, clip\_height, clip\_org\_x and clip\_org\_y, you can get partial image. Please refer printed URL on Permalink images as URL template.

Available parameters are as follows, and if you need more further information, please check JUDO help page.

### 3.3 Link to external database

Parameter	Explanation	Available range	Default Value
lng_center	center position of image	-180 - 360	0
lat_center	center position of image	-90 -90	0
pa	position degree [deg]	-180 - 180	0
extent	display range of image [pixel]	0 - 9999	360
width	width of image [pixel]	0 - 9999	100
height	height of image [pixel]	0 - 9999	100
clip_width	width of clipping image [pixel]	1 - width value	width value
clip_height	height of clipping image [pixel]	1 - height value	height value
clip_org_x	original point of clipping image [pixel]	0 - width value	0
clip_org_y	original point of clipping image [pixel]	0 - height value	0
coord	coordinates value	equatorial, galactic, ecliptic	equatorial
scale	scale of creating image	log, linear	log
image	color of creating image	color, gray	color
selectedLayer	layer number of target image	-	none
layerN	N is a number. Specify display condition by number for each layer.	-	none
img_fmt	type of creating image	png, jpeg	png

### 3.3 Link to external database

When click any point over an image where you are interested in, POS coordinates value which is displayed at left lower position "Database link", gets to be changed at left lower position. Select radius value (0.02 at default) and then click SDSS, NED, SIMBAD, ADS, you can search then at external database with set conditions.

Click a square button (hand glass mark), all registered celestial bodies to NED or SIMBAD catalogue are plotted on Display Panel.

As an example, a case of XSS J12270-4859 as below;

1. Click any point of celestial body that you are interested.

2. POS coordinates values get to be changed automatically and then you should set search range at radius section.
3. When click SDSS, NED, SIMBAD, ADS buttons, at each external database, you can get search result by your specified conditions at previous step.
4. Click grey-square button (hand glass mark) after NED and SIMBAD, all names and locations of celestial bodies will be plotted on JUDO display with the result of external database search.

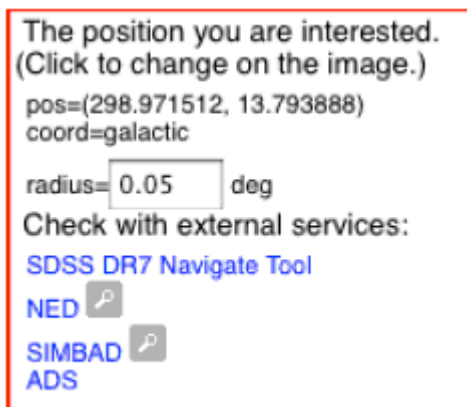
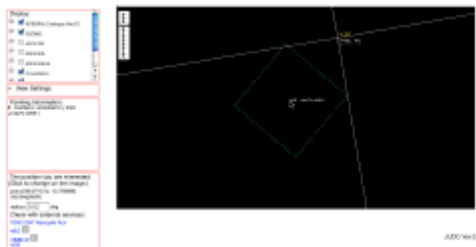


Fig3.4: External link, Step1: Click a position you are interested.

Fig3.5: External link, Step2: Confirm radius value displayed in external database link section.



Fig3.6: External link, Step3: Sample of a result of external database link.  
Left=SDSS, Center=NED, Right=SIMBAD

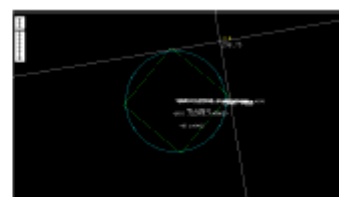
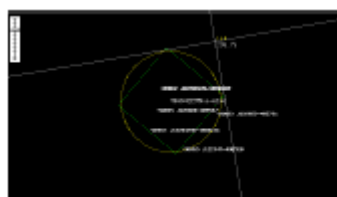


Fig3.7: External link, Step4: Sample of a result of external database link.  
Left=Click "hand glass mark".,  
Center=Plot a search result of NED.,  
Right=Plot a search result of SIMBAD.

# Chapter 4: Functions of SUZAKU

## 4.1 Public data / Nonpublic data

On the initial screen, the public data are plotted by pink color and nonpublic data are green color (Fig4.1 Left). When zooming up the screen, you can see each visual flame as pink or green (Fig4.1 Center). If it gets to be a public data, you can see its image (Fig 4.1 Right), but if not, the image is not prepared.

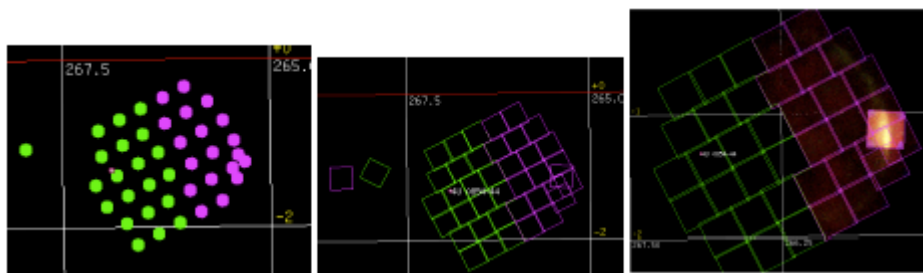


Fig4.1: Sample of a public data (pink color) and a non-public data (green color), (Vela-X range)

JUDO is linked with SUZAKU database therefore when a non-public data changes to be a public one, the color also changes from green to pink at same timing and its image data will get to be published.

Regarding each detail of observation data, the case of non-public data is limited data only, but when it changes to public, the detail data will be published.

## 4.2 Link with UDON

UDON (<http://darts.isas.jaxa.jp/astro/suzaku/udon.html>) is linked from each web page of detail information of observation. With UDON, you can select arbitrary XIS range to filter the spectrum and light curve.

The step of handling UDON from JUDO is as follows; (as example, the case of MCG-6-30-15)

1. Click your interested observation data on JUDO information section (Fig 4.2).
2. Then, the detail information of observation will come up the screen.  
Click the link to UDON, displayed in observation detail information section (Fig 4.3).
3. Selected observation data will be displayed by UDON (Fig 4.4).
4. Handling UDON as you want (Fig 4.5). Select your interested range and click "Submit" button, the spectrum will be shown.  
Please refer <http://darts.usas.jaxa.jp/udon/suzaku.XISql/usage.html> for further information.
5. You can enjoy UDON with the spectrum and light curve (Fig 4.6).



Fig4.2: Link with UDON, Step 1: Click your interested observation data.



Fig4.3: Link with UDON, Step 2: Click the link to UDON, displayed in observation detail information section

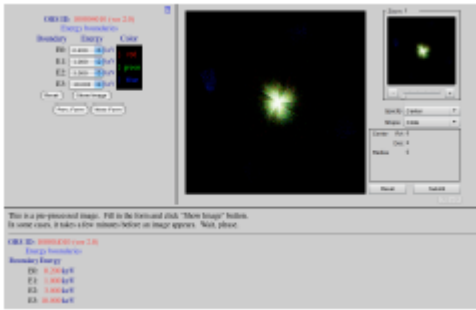


Fig4.4: Link with UDON, Step3: Selected observation data will be displayed by UDON.

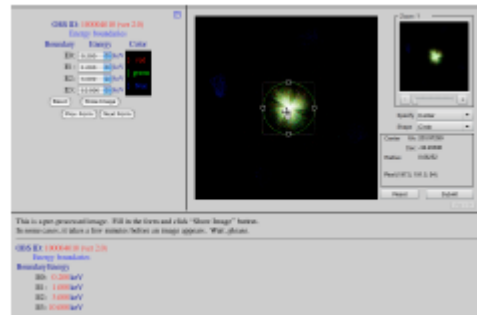


Fig4.5: Link with UDON, Step4 : Handling UDON as you want.

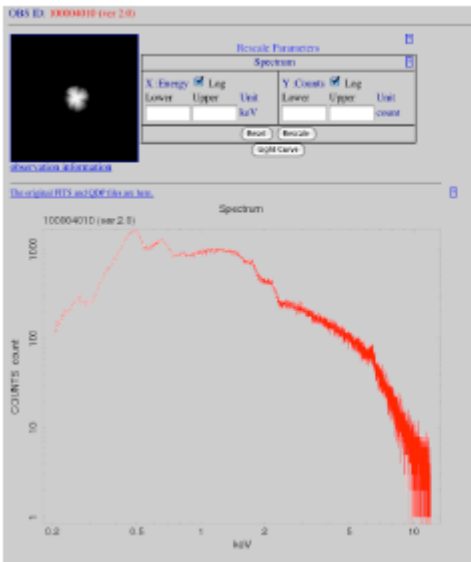


Fig4.6: Link with UDON, Step5: A spectrum (left chart) and a light curve (right chart) obtained from UDON. Click the light curve over the spectrum chart, the screen will change to the screen of the light curve.

# Appendix : Useful link

For effective utilization, useful links are as follows;

## A.1 JUDO

JUDO <http://darts.isas.jaxa.jp/astro/judo/index.html>  
JUDO help <http://darts.isas.jaxa.jp/astro/judo/help.html>

## A.2 UDON

UDON <http://darts.isas.jaxa.jp/astro/suzaku/udon.html>  
UDON help <http://darts.isas.jaxa.jp/udon/suzaku/XISql/usage.html.en>  
UDON quick guide [http://darts.isas.jaxa.jp/astro/suzaku/udon\\_quick.html.en](http://darts.isas.jaxa.jp/astro/suzaku/udon_quick.html.en)

## A.3 Science satellite

SUZAKU <http://darts.isas.jaxa.jp/astro/suzaku/>  
ASCA <http://darts.isas.jaxa.jp/astro/asca/>  
ROSAT <http://hea-www.harvard.edu/rosat/rsdc.html>  
IRAS <http://irsa.ipac.caltech.edu/IRASdocs/iras.html>  
INTEGRAL <http://isdc.unige.ch/>

## A.4 Data base

SDSS <http://cas.sdss.org/dr7/en/>  
NED <http://nedwww.ipac.caltech.edu/>  
SIMBAD <http://simbad.u-strasbg.fr/simbad/>  
ADS <http://adsabs.harvard.edu/>