

# DARTS Database

## Support Tools & Services for Data Analysis

**★JMAISON** (Java-based Multi-wavelength Astronomical Image Service ON-line)  
 "JMAISON" is a web server which works as an agent for separate remote astronomical image servers that provide FITS images through the internet. Upon a user's request the "JMAISON" server collectively retrieves, processes, and displays the FITS images archived on the separate servers. The images can be displayed either individually or in a composite manner using gray or false-color and contour map expressions (See Fig. 2). In order for the remote servers to be affiliated with the "JMAISON" server, it is only required that the archived FITS images should be provided with a minimal World Coordinate System (WCS) information in their headers.

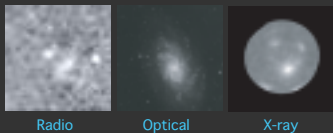


Fig. 1: An example of variety of images in different wavelengths

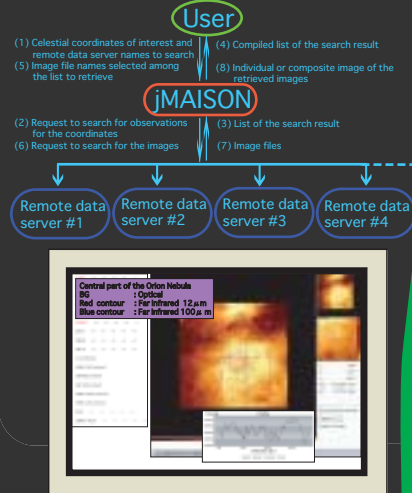


Fig. 2: An example of "JMAISON" output.



## ★Visualization Tool

We have developed a visualization tool for the Geotail wave and plasma data. One can freely get the following images through internet:  
 (1) Plot of Frequency -Time (FT) diagram for arbitrary specified time interval  
 (2) 3D plasma distribution functions observed by Geotail for arbitrary sliced 2D spaces specified by users  
 The users can also get an ASCII-dumped raw data file via internet. These tools will become available to use other satellites data in future.

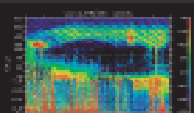


Fig. 3 (Left): A sample of Frequency-Time diagram of the wave power spectra observed by PWI/Geotail

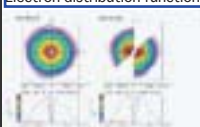


Fig. 4 (Below): A sample plot of the plasma velocity distribution function obtained by LEP/Geotail

Ion distribution function



Electron distribution function



## Mirror Services of Oversea Database



Fig. 5: ROSAT All Sky Survey mirror site

## ★CDAWeb

The CDAWeb data service directly supports graphics, digital listings and simultaneous multi-mission, multi-instrument selection and comparison of science data among a wide range of current space missions. CDAWeb also supports data from geosynchronous satellites from ground-based facilities and from older space missions. The original site is in HEASARC (NASA/GSFC).

## ★ROSAT All Sky Survey Data

ROSAT conducted the first all-sky survey in X-rays with an imaging telescope leading to a major increase in sensitivity and source location accuracy. The data were released to public on March 11, 2000 and the ISAS mirror site was released on February 13, 2001 (See Fig. 5).

## ★Beppo SAX Data

The Italian-Dutch X-ray astronomy satellite, Beppo SAX was launched in 1996. The archive data distributed in DARTS is originally produced by the BeppoSAX Science Data Center (SAX SDC), and rearranged by HEASARC (NASA/GSFC).

## ★NASA/HEASARC/W3 Browse

Browse (formerly called W3Browse) provides access to the catalogs and astronomical archives of HEASARC (NASA/GSFC). Catalogs include data from all astronomical regimes, but the emphasis of the archive is the data from high-energy astrophysics satellites.

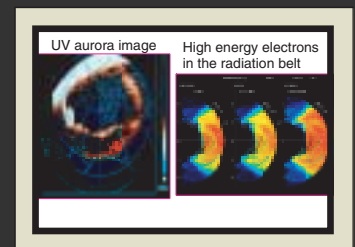


Fig. 6 Left: a sample of the UV aurora image taken by Akebono. Right: One year averaged energy flux of the high energy electrons in the radiation belt

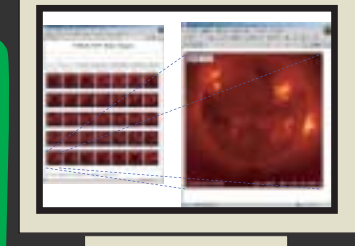


Fig. 7: Yohkoh/SXT Daily images (An example of Yohkoh data archive site)



Fig. 8: ASCA Quick Look page (An example of ASCA data archive site)

## Observational Database of Scientific Satellites

### ★Geotail

The Geotail satellite was launched on July 24, 1992. The primary purpose of Geotail is to study the structure and dynamics of the tail region of the magnetosphere. The data are included magnetic field vector (3 sec), plasma moments (12 sec) and interactively downloadable through Web browsers.

### ★Akebono

Akebono is an aurora observation satellite and was launched on February 22, 1989. DARTS/Akebono provides orbital and instrumental information and the data sets such as Low energy particle (LEP), Thermal Electron Energy Distribution (TED), Suprathermal Ion Mass Spectrum, Radiation Monitor (RDM), Suprathermal Mass Spectrometer (SMS), and Auroral image (ATV).

### ★Yohkoh

Yohkoh, the 2th Japanese solar satellite launched at the solar maximum in 1991, has been observing the Sun. It provides the soft and hard X-ray image for almost one solar cycle. The Yohkoh archive consists of data set for every observation. Each data set includes

- (1) science files from all instruments aboard the Yohkoh satellite,
- (2) housekeeping (HK) files,

### ★ASCA

ASCA, the 4th Japanese X-ray astronomy satellite launched in 1993, has observed various kinds of X-ray emitting objects, such as blackhole candidates, neutron stars, supernova remnants, active galaxies, and clusters of galaxies. The ASCA archive consists of dataset for every observation. Each dataset includes the (1) telemetry files, (2) standard data products, including event files, images, energy spectra, light curves, and (3) calibration files. The data products of FITS format are reproduced by NASA/GSFC in cooperation with ISAS.

### ★SFU/IRTS

The Infrared Telescope in Space (IRTS) on board the SFU (Space Flyer Unit) is the first Japanese orbiting telescope dedicated to infrared astronomy, launched in 1995. It surveyed approximately 7% of the sky with a relatively wide beam during its 28-days mission. Four focal plane instruments made simultaneous observations of the sky at wavelengths from 1 to 1000 micron. The IRTS data archive consists of the survey image data and near- and mid-infrared point source catalogs. The image data were obtained in multiple channels for 88 sub-areas dividing the entire surveyed area. Each of the image has 13 degree-square field-of-view. The catalogs include spectral data obtained in 56 channels in the wavelength range between 1.4 to 11.7 microns. These data may be queried either by using a list of objects, an object name, or celestial coordinates.

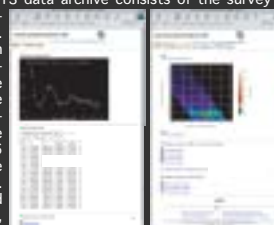


Fig. 9: IRTS Data Archive site