VSOP Data Archive System

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Abstract

We present the new VSOP data archive system installed on the Data ARchive and Transmission System (DARTS) at ISAS. The current test archive for VSOP visibility data started in June 2002, and about 50 datasets are available now (http://www.darts.isas.ac.jp).

1 Introduction

The VLBI Space Observatory Programme (VSOP) led by ISAS is the first space VLBI mission (e.g. Hirabayashi et al. 2000). VSOP has carried out more than 700 observations since the HALCA spacecraft was launched in February 1997. Until now, because correlation of VSOP data was accomplished by three different correlators, VSOP data were distributed and administered at three different sites (table 1).

In order to make it possible to search and display the status of any VSOP observation, we have developed a VSOP data archive system and installed it on DARTS (e.g. Miura et al. 2000) at ISAS. It also opens the way to retrieve the observational data (typically about 1 Gbyte) via ftp after development of high-performance network.

Correlator	Institute	Format
Mitaka	NAO, Japan	VSOP
Socorro	NRAO, USA	VLBA/MkIV
Penticton	DRAO, Canada	S2

Table 1: Three correlators used for VSOP

2 VSOP data query and status display

2.1 DARTS system

DARTS is a scientific database to provide access for general researchers to observational data obtained by the scientific satellites of ISAS. DARTS has a WWW interface, and users can access the Astrophysics query form from the top page of DARTS (figure 1). Now, the interface for Astrophysics data selection are shared by the VSOP data, and X-ray data from two satellites, ASCA and Italian BeppoSAX.

Figure 1: The top page of DARTS. VSOP data is categorized as "HALCA data" in Astrophysics data selection on the page. (http://www.darts.isas.ac.jp)

2.2 The query form

The query form allows the users to access and search the master list of observations by object name and coordinate (figure 2). Additionally, observation date, PI's name and observation category can be used as searching items. VSOP has three observation categories, General Observing Time (GOT), Survey and Test. GOT program means proposal-based observations. The survey program involves mission-led observations of AGNs, many of which are not in GOT proposals. Test observations is for checking all elements of the VSOP system.

Figure 2: Astrophysics query form. Further searches are also available, clicking the bottom-left box "FURTHER SEARCH",

2.3 Search result

After the search is finished, a list of datasets which match the given conditions is displayed for each satellite in a tabular format. Users might find several VSOP datasets with same observation code in the list (figure 3), because VSOP data are created by a correlation process in which various segments of the observation may be correlated separately.

Clicking the right most column in the table in figure 3, allows detailed information for the observation to be seen (figure 4). Users can transfer the data to their local devices or to the analysis server. All VSOP data are provided in the FITS format required by reduction softwares like the NRAO AIPS package (e.g. Fomalont 1981) and Difmap (e.g. Shepherd et al. 1994).

3 Information for data reduction

We provide useful infomation for users who are not familiar with data reduction of VLBI. Our web page, *VSOP Data Reduction* (http://www.vsop.isas.ac.jp/obs/Reduction.html) shows information, including documentations of the NRAO AIPS and Difmap, calibration data for each VLBI station, and correction data for the Penticton correlator at DRAO.

4 Future work

Currently, all VSOP archive data available are visibilities in FITS format without any calibration or fringe-fitting. In the future, we are planning to archive images and visibilities after the calibration and fringe-fitting have been carried out. This makes it possible to implement effective and efficient support to users, especially those with little experience. Also, this would make the size of the archive data much smaller (1–100

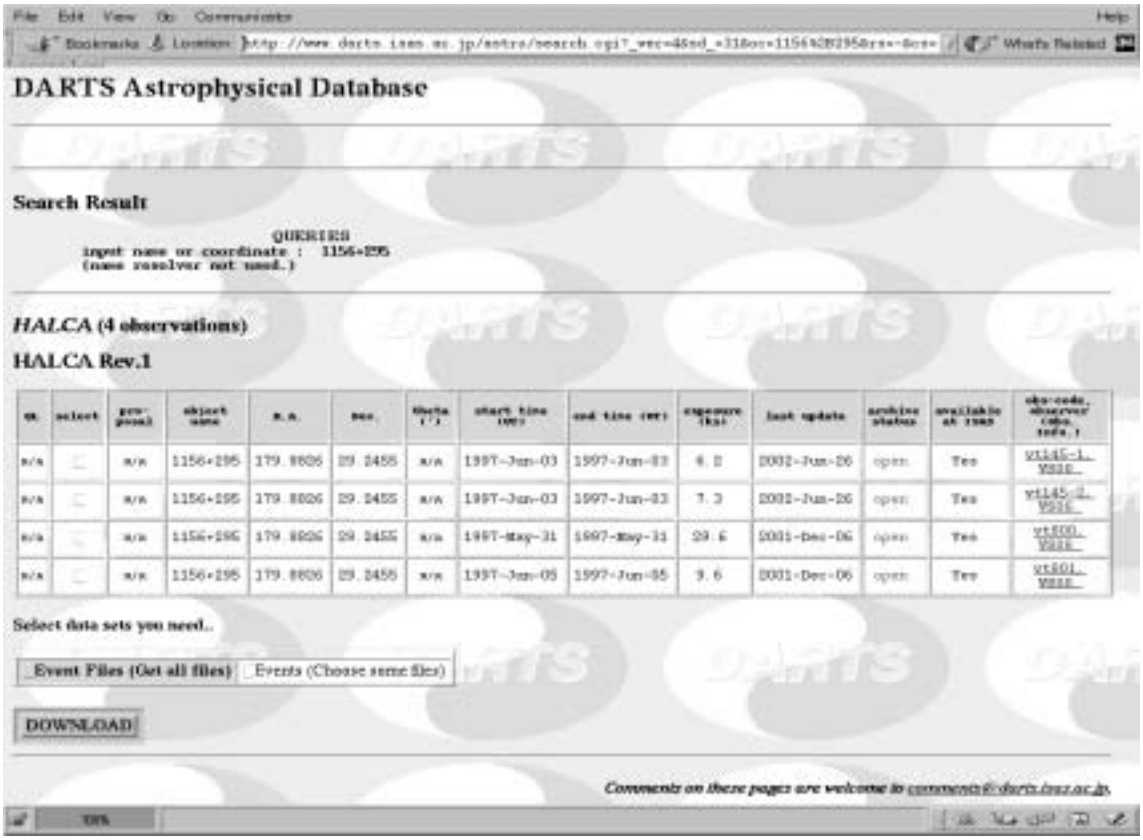

Figure 3: Searching result. The datasets "vt145-1" and "vt145-2" are obtained from the same single observation "vt145", but made by different correlation procceses.

Mbyte), which makes it easy to retrieve data using an on-line archive system.

Figure 4: Observation information for each observation. In the table, "grt" means Ground Radio Telescope (GRT), and GRTs are listed using GRT codes. Explanation of GRT codes is available in http://www.vsop.isas.ac.jp/obs/GRTcal.html

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