

# CDDIS Data Center Summary for the 2004 IVS Annual Report

*Carey Noll*

## **Abstract**

This report summarizes activities during the year 2004 and future plans of the Crustal Dynamics Data Information System (CDDIS) with respect to the International VLBI Service for Geodesy and Astrometry (IVS). Included in this report are background information about the CDDIS, the computer architecture, staffing supporting the system, archive contents, and future plans for the CDDIS within the IVS.

## **1. Introduction**

The Crustal Dynamics Data Information System (CDDIS) has supported the archive and distribution of Very Long Baseline Interferometry (VLBI) data since its inception in 1982. The CDDIS is a central facility providing users access to raw and analyzed data to facilitate scientific investigation. A large portion of the CDDIS holdings of GPS, GLONASS, laser ranging, VLBI, and DORIS data are stored on-line for remote access. Information about the system is available via the web at the URL <http://cddis.gsfc.nasa.gov>. The current and future plans for the system's support of the IVS are discussed below.

## **2. System Description**

The CDDIS archive of VLBI data and products are accessible to the public via anonymous ftp access.

### **2.1. Computer Architecture**

The CDDIS is operational on a dedicated UNIX server which has over 540 Gbytes of on-line magnetic disk storage (470 Gbytes in RAID storage); approximately 25 Gbytes are devoted to VLBI activities. The CDDIS is located at NASA GSFC and is accessible to users 24 hours per day, seven days per week.

### **2.2. Staffing**

Currently, a staff consisting of one NASA civil service employee and 2.5 contractor employees supports all CDDIS activities (see Table 1 below).

## **3. Archive Content**

The CDDIS has supported GSFC VLBI coordination and analysis activities for the past several years through an on-line archive of schedule files, experiment logs, and data bases in several formats. This archive has been expanded for the IVS archiving requirements.

The IVS data center content and structure is shown in Table 2 below (a figure illustrating the flow of information, data, and products between the various IVS components was presented in the CDDIS submission for the 2000 IVS annual report). In brief, an incoming data area has

Table 1. CDDIS Staff

Name	Position
Ms. Carey Noll	CDDIS Manager
Dr. Maurice Dube	Head, CDDIS contractor staff and senior programmer
Ms. Ruth LaBelle	Request coordinator
Ms. Laurie Batchelor	Senior technical specialist (part-time)

been established on the CDDIS host computer, `cddisa.gsfc.nasa.gov`. Operations and analysis centers deposit data files and analyzed results using specified file names to appropriate directories within this filesystem. Automated archiving routines, developed by GSFC VLBI staff, peruse the directories and migrate any new data to the appropriate public disk area. These routines migrate the data based on the file name to the appropriate directory as described in Table 2. Index files in the main subdirectories under `ftp://cddisa.gsfc.nasa.gov/pub/vlbi` are updated to reflect data archived in the filesystem. Furthermore, mirroring software has been installed on the CDDIS host computer, as well as all other IVS data centers, to facilitate equalization of data and product holdings among these data centers. At this time, mirroring is performed between the IVS data centers located at the CDDIS, the Bundesamt fr Kartographie und Geodsie in Leipzig, and the Observatoire de Paris.

The public filesystem in Table 2 on the CDDIS computer, accessible via anonymous ftp, consists of a data area, which includes auxiliary files (e.g., experiment schedule information, session logs, etc.) and VLBI data (in both data base and NGS card image formats). A products disk area has also been established to house analysis products from the individual IVS analysis centers as well as the official combined IVS products. A documents disk area contains format, software, and other descriptive files.

#### 4. Data Access

During 2004, over 100 user organizations accessed the CDDIS on a regular basis to retrieve VLBI related files. Nearly 20K VLBI-related files were downloaded per month from the archive.

#### 5. Future Plans

The CDDIS staff will continue to work closely with the IVS Coordinating Center staff to ensure that our system is an active and successful participant in the IVS archiving effort. A new Linux server was procured in 2002; additional RAID disks and a dedicated DLT tape backup system were also purchased. The CDDIS staff plans to make this new system (`cddis.gsfc.nasa.gov`) operational for most data sets by the end of January 2005; implementation of the IVS support on this new server is scheduled for completion by mid-2005.

Table 2. IVS Data and Product Directory Structure

Directory	Description
Data Directories	
vlbi/ivsdata/db/yyyy	VLBI data base files for year <i>yyyy</i>
vlbi/ivsdata/ngs/yyyy	VLBI data files in NGS card image format for year <i>yyyy</i>
vlbi/ivsdata/aux/yyyy/sssss	Auxillary files for year <i>yyyy</i> and session <i>sssss</i> ; these files include: log files, wx files, cable files, schedule files, correlator notes
Product Directories	
vlbi/ivsproducts/crf	CRF solutions
vlbi/ivsproducts/eopi	EOP-I solutions
vlbi/ivsproducts/eops	EOP-S solutions
vlbi/ivsproducts/trf	TRF solutions
vlbi/ivsproducts/trop	Troposphere solutions
Project Directories	
vlbi/ivs-iers	IVS contributions to the IERS
vlbi/ivs-pilot2000	IVS Analysis Center pilot project (2000)
vlbi/ivs-pilot2001	IVS Analysis Center pilot project (2001)
vlbi/ivs-pilotbl	IVS Analysis Center pilot project (baseline)
vlbi/ivsproducts/ivs-pilottro	IVS Analysis Center pilot project (troposphere)
Other Directories	
vlbi/ivscontrol	IVS control files (master schedule, etc.)
vlbi/ivsdocuments	IVS document files (solution descriptions, etc.)