CDDIS Data Center Report

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Abstract

This report summarizes activities for the year 2000 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 current and future plans for the system's support of the International VLBI Service for Geodesy and Astrometry are discussed below.

2. Background

The CDDIS has been operational since September 1982, serving the international space geodesy and geodynamics community. This data archive was initially conceived to support NASA's Crustal Dynamics Project; since the end of this successful program in 1991, the CDDIS has continued to support the science community through the Solid Earth and Natural Hazards activity within NASA's Earth Science Enterprise. The main objectives of the CDDIS are to store all geodetic data products acquired by NASA programs in a central data bank, to maintain information about the archival of these data, and to disseminate these data and information in a timely manner to authorized investigators and cooperating institutions. Furthermore, science support groups analyzing these data submit their resulting data sets to the CDDIS on a regular basis. Thus, 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 WWW at the URL *http://cddisa.gsfc.nasa.gov/cddis_welcome.html*.

The CDDIS successfully responded to the 1998 Call for Participation in the International VLBI Service for Geodesy and Astrometry (IVS). This response stated that the CDDIS would support data center activities by providing access to an archive of schedule files, log files, data bases, data products, and other auxiliary files.

3. System Description

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

3.1. Computer Architecture

The CDDIS is operational on a dedicated Compaq AlphaServer 4000 running the UNIX operating system. This facility currently has over 300 Gbytes of on-line magnetic disk storage; approximately 25 Gbytes will be devoted to VLBI activities. The CDDIS is located at NASA GSFC and is accessible to users 24 hours per day, seven days per week.

3.2. Staffing

Currently, a staff consisting of one NASA civil service employee and three contractor employees supports all CDDIS activities:

Table 1. CDDIS Staff

Name	Position
Ms. Carey Noll	CDDIS Manager
Dr. Maurice Dube	Head, CDDIS contractor staff and senior programmer
Ms. Ruth Kennard	Request coordinator and programmer
Ms. Laurie Batchelor	Data technician

4. 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. In brief, an incoming data area has 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 für Kartographie und Geodäsie (BKG) in Leipzig, and the Observatoire de Paris. Figure 1 illustrates the flow of information, data, and products between the various IVS components.

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.
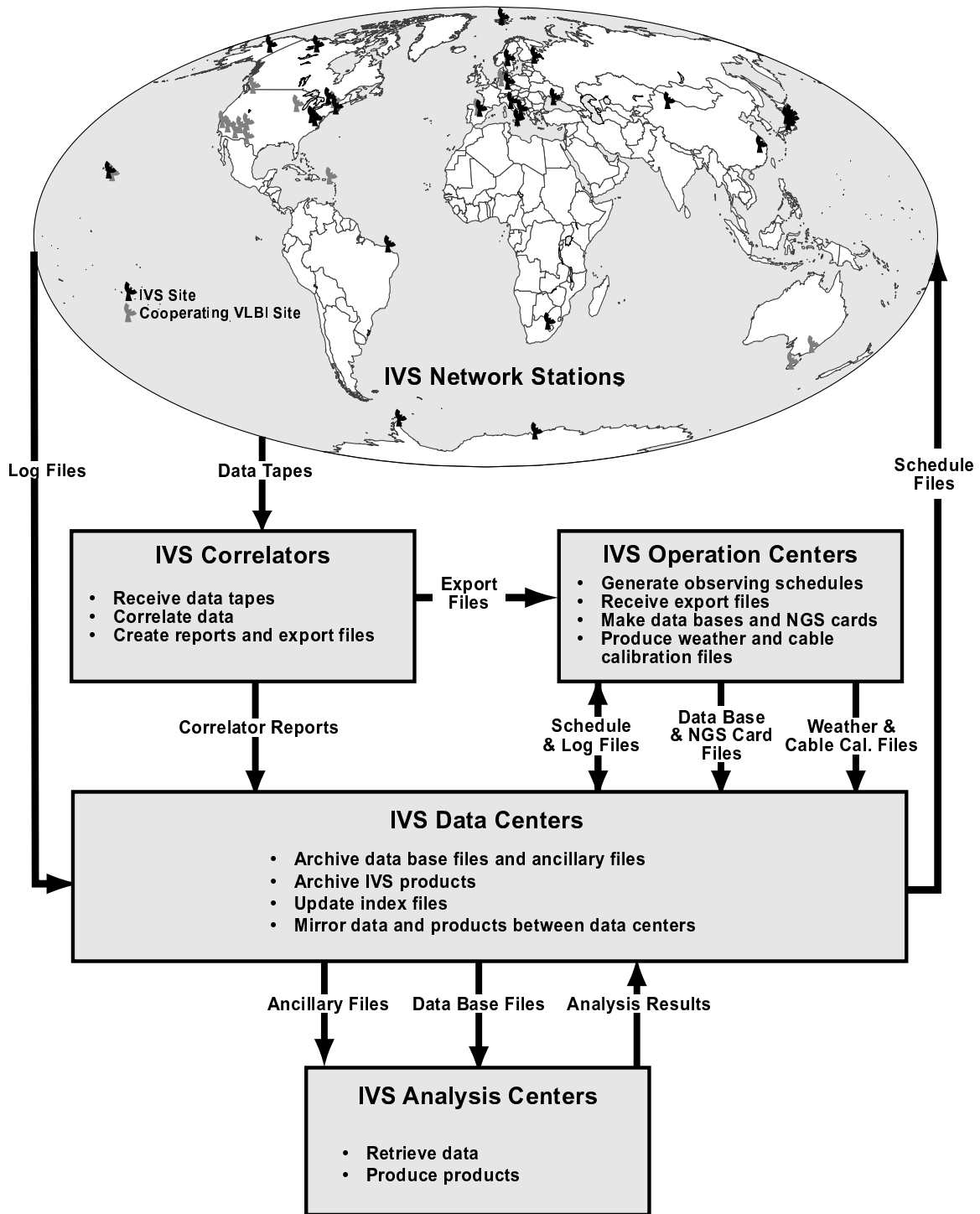
Figure 1. The flow of data, product, and log files from various IVS components to the IVS data centers.

Table 2. IVS Data and Product Directory Structure

Directory	Description
Data Directories	
vlbi/ivsdata/db/*yyyy*	VLBI data base files for year *yyyy*
vlbi/ivsdata/ngs/*yyyy*	VLBI data files in NGS card image format for year *yyyy*
vlbi/ivsdata/sinex/*yyyy*	VLBI data files in SINEX format (future) for year *yyyy*
vlbi/ivsdata/aux/*yyyy*/*ssssss*	Auxillary files for year *yyyy* and session *ssssss*; 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/ivs-iers	IVS contributions to the IERS
vlbi/ivs-pilot2000	IVS Analysis Center pilot project (2000)
Other Directories	
vlbi/ivscontrol	IVS control files (master schedule, IVS on-line directory and file information, etc.)
vlbi/ivsdocuments	IVS document files (analysis documentation, etc.)

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. The staff hopes to secure funding for some computer system enhancements, including a large RAID disk system.