CDDIS Data Center Summary for the IVS 2014 Annual Report

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Abstract This report summarizes activities during the year 2014 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, archive contents, and future plans for the CDDIS within the IVS.

1 General Information

The Crustal Dynamics Data Information System (CDDIS) has supported the archiving and distribution of Very Long Baseline Interferometry (VLBI) data since its inception in 1982. The CDDIS is a central facility providing users access to data and derived products to facilitate scientific investigation. The CDDIS archive of GNSS (GPS, GLONASS, etc.), 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. In addition to the IVS, the CDDIS actively supports other IAG services including the International GNSS Service (IGS), the International Laser Ranging Service (ILRS), and the International DORIS Service (IDS), as well as the International Earth Rotation and Reference Systems Service (IERS), and the IAGs observing system, the Global Geodetic Observing System (GGOS). The

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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 is accessible to the public through anonymous ftp (ftp://cddis.gsfc.nasa.gov) and the web (http://cddis.gsfc.nasa.gov/archive).

2.1 Computer Architecture

The CDDIS is operational on a dedicated server, cddis.gsfc.nasa.gov. The system has over 32 Tbytes of on-line disk storage; at this time, over 200 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.

3 Archive Content

The CDDIS has supported GSFC VLBI and IVS archiving requirements since 1979.

The IVS Data Center content and structure is shown in Table 1 (a figure illustrating the flow of information, data, and products between the various IVS components was presented in the CDDIS submission to the IVS 2000 Annual Report). In brief, dedicated ftp-only accounts have been established on the CDDIS incoming computer, cddisin.gsfc.nasa.gov. Using

specified filenames, Operation and Analysis Centers deposit data files and analyzed results to appropriate directories within their ftp-only accounts. Automated archiving routines, developed by GSFC VLBI staff, peruse the directories and move any new data to the appropriate public disk area. These routines migrate the data based on the filename to the appropriate directory as described in Table 1. Index files in the main sub-directories under ftp://cddis.gsfc.nasa.gov/pub/vlbi are updated to reflect data archived in the filesystem. Furthermore, mirroring software was 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 in Leipzig, and the Observatoire de Paris.

The public file system in Table 1 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 database and NGS card image formats). A products disk area was also 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.

tem is an active and successful participant in the IVS archiving effort.

In 2013, the CDDIS systems engineer assessed the requirements for the next generation computer system. The new server, storage, and network hardware were procured in 2014; staff members are installing the system in a new computer facility at GSFC to provide more reliable power and network connectivity. CDDIS operations will transition to the new system by mid-2015. These system improvements are being made to allow for growth, improve reliability, and disaster recovery. few years.

4 Data Access

During 2014, an average of 250 distinct hosts accessed the CDDIS on a monthly basis to retrieve VLBI related files. These users, which include other IVS Data Centers, downloaded over 3.6 Tbytes (1.7 M files) of data and products from the CDDIS VLBI archive last year.

Work on an update of the CDDIS website was completed in early 2014. In addition to a refresh of the appearance of the website, the content was reviewed and updated.

5 Future Plans

The CDDIS staff will continue to work closely with the IVS Coordinating Center staff to ensure that our sys-

Table 1 IVS Data and Product Directory Structure

Directory	Description
Data Directories	
vlbi/ivsdata/db/*yyyy*	VLBI database files for year *yyyy*
vlbi/ivsdata/ngs/*yyyy*	VLBI data files in NGS card image format for year *yyyy*
vlbi/ivsdata/aux/*yyyy*/*ssssss*	Auxiliary 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/daily_sinex	Daily SINEX solutions
vlbi/ivsproducts/int_sinex	Intensive SINEX solutions
vlbi/ivsproducts/trf	TRF solutions
vlbi/ivsproducts/trop	Troposphere solutions
Project Directories	
vlbi/ivs-iers	IVS contributions to the IERS
vlbi/ivs-pilotbl	IVS Analysis Center pilot project (baseline)
Other Directories	
vlbi/ivscontrol	IVS control files (master schedule, etc.)
vlbi/ivsdocuments	IVS document files (solution descriptions, etc.)
vlbi/raw	Raw VLBI data
vlbi/dserver	dserver software and incoming files