

# The IGS Global Data Center at the CDDIS – An Update

Carey Noll  
NASA Goddard Space Flight Center  
Code 922  
Greenbelt, MD 20771 USA

Maurice Dube  
Raytheon Information Technology and Scientific Services  
Upper Marlboro, MD 20774 USA

## Abstract

The Crustal Dynamics Data Information System (CDDIS) has served as a global data center for the International GPS Service (IGS) since its start in June 1992, providing on-line access to data from nearly 300 sites on a daily basis. The CDDIS provides easy and ready access to a variety of data sets, products, and information about these data. The specialized nature of the CDDIS lends itself well to enhancement and thus can accommodate diverse data sets and user requirements. This poster paper will present information about the GPS and GLONASS data and products archive at the CDDIS. General information about the system, the computer architecture, archive contents, and future plans, and its support of other international space geodesy services (the ILRS, IVS, and IDS) will be discussed.

## Introduction

The Crustal Dynamics Data Information System (CDDIS) is a dedicated data center supporting the international space geodesy community since 1982, providing easy and ready access to a variety of data sets, products, and information about these data. The CDDIS serves as the NASA archive and distribution center for space geodesy data, particularly Global Positioning System (GPS), Global Navigation Satellite System (GLONASS), laser ranging, Very Long Baseline Interferometry (VLBI), and Doppler Orbitography and Radiopositioning Integrated by Satellite (DORIS) data. The specialized nature of the CDDIS lends itself well to enhancement to accommodate diverse data sets and user requirements.

The CDDIS serves as one of the primary data centers for the following International Association of Geodesy (IAG) services:

- International GPS Service (IGS)
- International Laser Ranging Service (ILRS)
- International VLBI Service for Geodesy and Astrometry (IVS)
- International Earth Rotation and Reference Systems Service (IERS)
- International DORIS Service (IDS)

Operational data centers deposit data to incoming disk areas on the CDDIS host computer. All data are processed to ensure data integrity and to extract pertinent metadata. These metadata are loaded into a relational database for data tracking and query purposes. Data are then copied to public directories and made available to the user community through anonymous ftp and the web.

## Historical perspective

The CDDIS has archived daily, 30-second GPS files in RINEX format since 1992. The archive has been expanded over the years to include hourly 30-second data and high-rate (1 Hz) data. The contents of the CDDIS GPS archived are summarized in Table 1.

Table 1. CDDIS GPS Data Archive Summary

Type of GPS Data	Time Span	File Size
Daily (30-second)	January 1992 to present In 1992: 31 sites/day, >11.1K station days/year In 2004: 275 sites/day, >100K station days/year	0.35 Mbytes/site/day
Hourly (30-second)	June 1998 to present In 1998: 20 sites/day, observation files/day, > 90K observation files/year In 2004: 135 sites/day, observation files/day, > 1.2M observation files/year	0.02 Mbytes/site/hour
High-rate (1-second)	May 2001 to present In 2001: 41 sites/day, 2,820 observation files/day, > 690K observation files/year In 2004: 60 sites/day, 4,850 observation files/day, > 1.8M observation files/year	0.45 Mbytes/site/hour
LEO satellites	January 2002 to present In 2004: data from SAC-C and CHAMP In 2004: data from SAC-C, CHAMP, and Jason	2.5 Mbytes/satellite/day

The CDDIS also has provided data archive support for many of the IGS pilot projects and working groups over the last ten years:

- Reference Frame (densification program): August 1995 to present
- Ionosphere Working Group: June 1998 to present
- Troposphere Working Group: January 1997 to present
- IGLOS Pilot Project: August 1998 to present
- TIGO Pilot Project: Mid-2001 to present

## CDDIS Archive Statistics

In 2003, over 55 million GPS-related files were downloaded from the CDDIS archive. These accesses originated from 7.1K distinct hosts in 95 countries. The volume of data downloaded in 2003 totaled nearly five Tbytes. Figure 1 illustrates the amount of GPS data, by data type, downloaded each month during 2003.

## Future Plans

A new LINUX-based computer system and backup server were purchased in 2003 to replace the current CDDIS UNIX server. The new system has been configured with nearly 3.5 Tbytes of RAID disk space. This increased disk space will permit on-line availability of daily, 30-second GPS data since 1992. A dedicated tape backup system was also procured. Plans are to have this system operational as the main CDDIS on-line server in mid-2004.

The CDDIS web site will also be redesigned in 2004 to reflect the “NASA Look-and Feel”. A prototype of the home page for the new web site is shown in Figure 2.

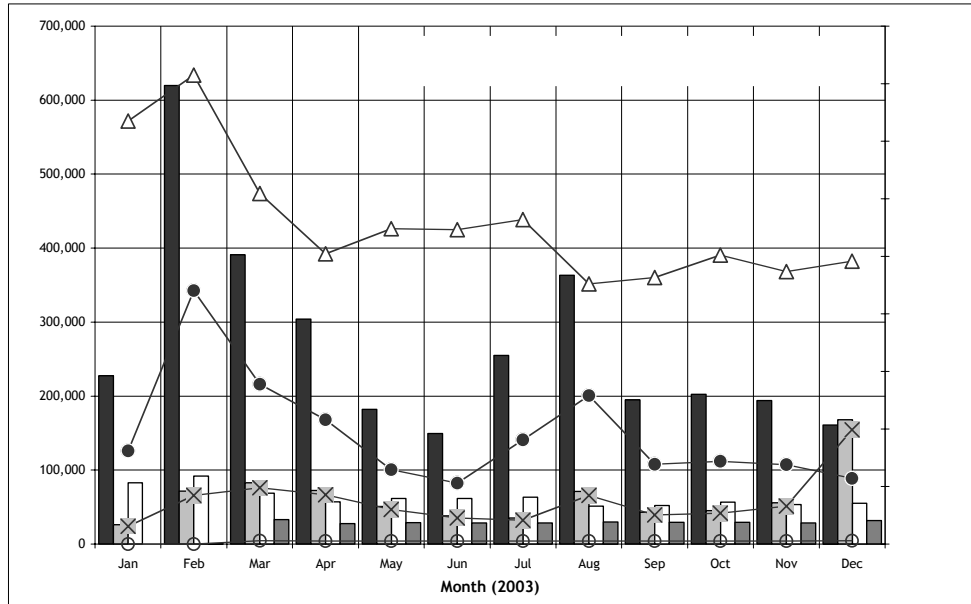


Figure 1. Monthly GPS data downloads from the CDDIS for 2003.

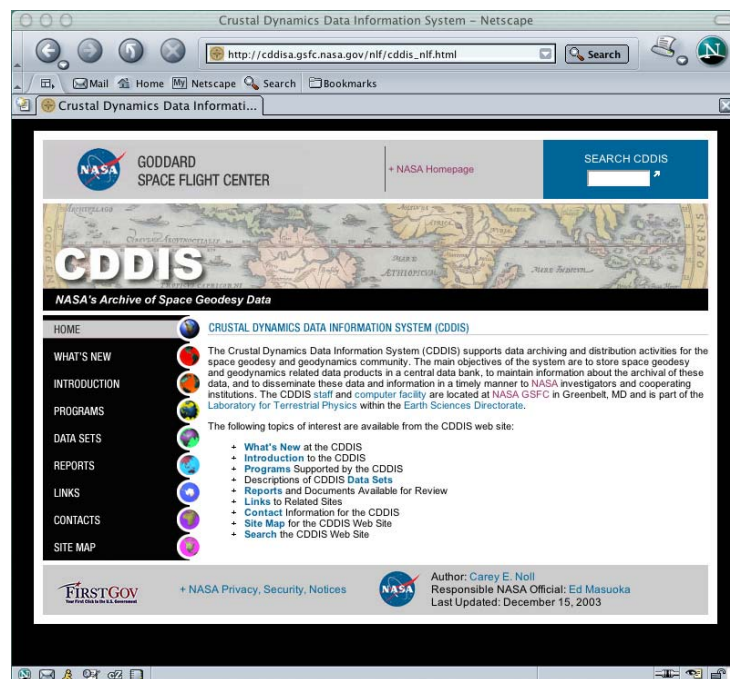


Figure 2. Mock-up of new CDDIS home page.

## For Further Information

Carey Noll, CDDIS Manager  
 NASA GSFC  
 Greenbelt, MD 20771 USA  
 Carey.Noll@nasa.gov

Maurice Dube  
 Raytheon ITSS  
 Upper Marlboro, MD 20774 USA  
 mdube@pop900.gsfc.nasa.gov

CDDIS Web Site: <http://cddis.nasa.gov> or <http://cddisa.gsfc.nasa.gov>