

NASA/CDDIS Realtime Differential Global Positioning System

National Aeronautics and
Space Administration



Differential GPS / NTRIP

Differential Global Positioning Systems (DGPS) supplement and enhance the positional data available from global navigation satellite systems (GNSSs). A user seeking higher precision location data at a given time would combine the GNSS signal with a correction coming from a ground station at a known location (see diagram below). NTRIP is a network protocol for streaming DGPS data via the internet.

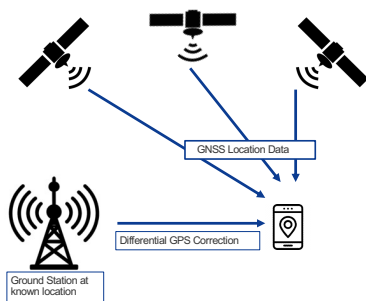


Figure 1. Diagram of user combining GPS signal with correction data

CDDIS NTRIP Implementation

CDDIS has deployed an NTRIP Caster server that makes over 350 correction streams available to any registered user. These mountpoints are geographically diverse supporting users seeking applications in a variety of locations. See map below. To maintain a robust system, CDDIS has implemented a cluster of servers behind a load balancer to maintain system availability during times of high usage.

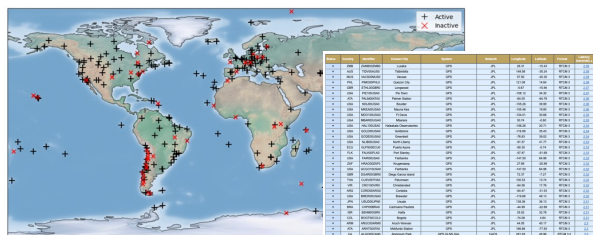


Figure 2: Real time map and table showing mountpoint availability



The CDDIS was established in 1982 as a dedicated data bank to archive and distribute space geodesy related data sets. CDDIS is located at NASA's Goddard Space Flight Center and supports the archive and distribution of GNSS, SLR, DORIS and VLBI data.



NTRIP System Access / Usage

Access to the NASA CDDIS NTRIP System requires these steps:

1. Users to create a NASA Earthdata Login (EDL) user account (<https://www.earthdata.nasa.gov/data/earthdata-login>).
2. Fill out the CDDIS new user registration (https://cddis.nasa.gov/Data_and_Derived_Products/Data_Caster_Registrarion_Form.html)

Once these steps are complete, CDDIS staff will add the user to the system configuration, users will receive a message when they are added to the CDDIS-NTRIP mailing list

Figure 3: System registration and client software documentation

Real-time data streams from the CDDIS-NTRIP system can be accessed from a variety of clients, including ready-to-use graphic user interfaces, command-line applications and user-built custom software. Documentation can be found at:

https://cddis.nasa.gov/Data_and_Derived_Products/GNSS/real-time_clients.html

Performance Monitoring

To maintain system availability CDDIS has implemented a variety of system availability and performance monitoring. These included real time maps of stream latency, as well as time series and distribution plots for the previous 24 hours. These are available to all users at: https://cddis.nasa.gov/Data_and_Derived_Products/GNSS/NTRIP_Caster_Streams_Status.html

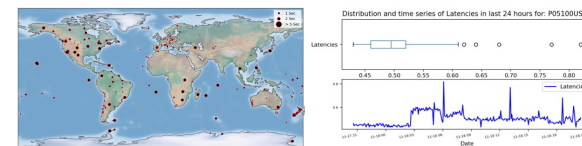
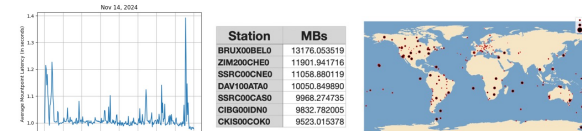


Figure 4. Maps and plots of real time mountpoint latencies, along with daily averages shown below



System Utilization

The NASA CDDIS NTRIP system currently has over 1000 registered users and averages over 400 GBs of daily usage. Approximately 350 mountpoints are accessed every day. The number of registered uses continues to climb, while daily volume has variation that requires a robust system to maintain system availability

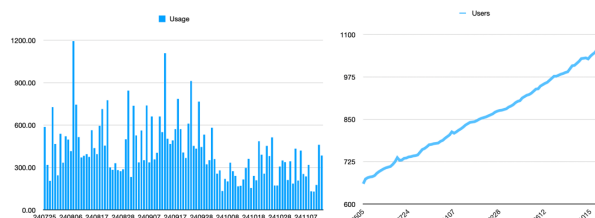


Figure 5. Daily data usage and registered users by date

Need Help?

Please send an email to gsfc-edi-cddis-help-ntrip@mail.nasa.gov.



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Scan the QR code to [NASA/CDDIS NTRIP Caster Information]:
https://cddis.nasa.gov/Data_and_Derived_Products/GNSS/real-time_data.html



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