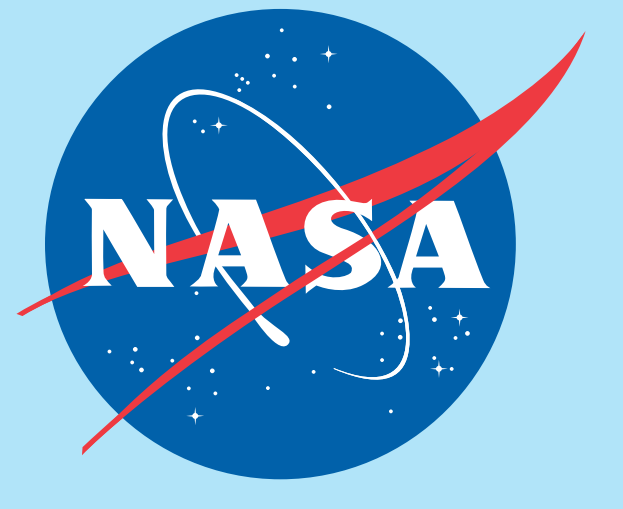# NASA CDDIS: Important Changes to User Access

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Abstract: The Crustal Dynamics Data Information System (CDDIS) supports data archiving and distribution activities for the space geodesy and geodynamics community. The main objectives of the system are to make space geodesy and geodynamics related data and derived products available in a central archive, to maintain information about the archival of these data, to disseminate these data and information in a timely manner to a global scientific research community, and to provide user based tools for the exploration and use of the archive. Since its inception, the user community has utilized anonymous ftp for accessing and downloading files from the CDDIS archive. Although this protocol allows users to easily automate file downloads, many organizations, data systems, and users have already migrated from ftp or are actively pursuing a move away from the protocol due to problems from a system and security standpoint. Furthermore, U.S. Government agencies have become increasingly concerned about this legacy protocol and ensuring data integrity for the user community have begun recently to disallow the use of the ftp protocol. The CDDIS, operated by NASA GSFC, must therefore address these concerns and provide alternative methods for access to its archive for continued easy and automated download of its contents. This poster will discuss the upcoming changes at CDDIS and provide examples on transitioning from anonymous ftp.

Overview

Background
- CDDIS has a large international user community: 235K unique hosts accessed the system in 2017
- Users currently access the CDDIS archive through anonymous ftp
- ftp allows users to easily automate file downloads but has problems from a system and security standpoint
- CDDIS must begin to move users away from reliance on anonymous ftp
- CDDIS is committed to ensuring continued, easy, open access to its archive
- Outreach materials (this poster) aim to educate and assist users in transitioning to new access protocols

New access methods: https and ftp-ssl
- CDDIS will implement access to its full archive through alternate means as systems and users continue to move away from using ftp
- Current directory structure of CDDIS archive does not change
- New access protocols: https (browser and command line) and ftp-ssl (command line)
- New access protocols will require users to update existing scripts used for accessing CDDIS archive

Getting started

Procedure: first steps
- Enter URL in your browser: https://cddis.nasa.gov/archive2/
- You will be redirected to the Earthdata login page to input your username and password
- If you have an Earthdata login account, enter your username and password
- If you do not have an Earthdata Login account, you will be prompted to establish an account
- Follow the instructions to create an account

- Once you have an account, you will be permitted to access the CDDIS archive via your browser
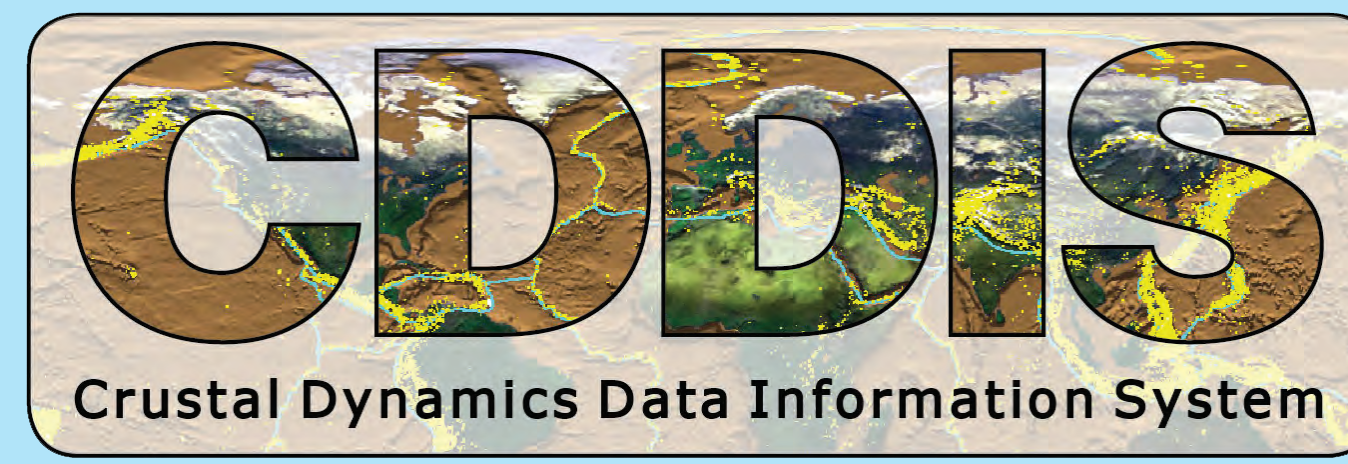

Web interface

- After successful registration and Earthdata Login, you have access to the CDDIS archive using the https protocol
- You can use the web interface or command line interface to retrieve files from the CDDIS archive
- Use web interface to click through directory structure and retrieve files

OR

- Use command line interface, e.g., cURL, Wget to script and automate file retrieval

Command line interface

- The following examples assume you have a valid Earthdata Login account.
- Command line access requires two files in users local account; examples:
  .netrc: login and initialization information used by the auto-login process
  cookie file: edl_cookie_file
- User credentials for these examples:
  Earthdata Login username: **edluser**
  Earthdata Login password: **edlpword**
  Earthdata Login cookie file: **edl_cookie_file**

Using cURL: first steps

Note: This example shows commands for a Linux/UNIX-based system.

1. Ensure cURL is installed on your system
2. Create a text file named .netrc and add a line for Earthdata Login validation
3. Set permissions to user read-only (no one can read your credentials)
4. Create a cookie file

```
> curl
curl: try 'curl --help' or 'curl --manual' for more information
> touch .netrc
> echo "machine urs.earthdata.nasa.gov login edluser password edlpword" > .netrc
> chmod 0600 .netrc
> ls -l .netrc
-rw-------  1 user usergroup  66 Jun 19 14:36 .netrc
> touch .edl_cookie_file
```

Using cURL: examples

1. Get a list of all files in a directory (*DORIS data RINEX format from CryoSat-2 in 2018*)

```
> curl -c .edl_cookie_file -n -L
  "https://cddis.nasa.gov/archive2/doris/data/cs2/2018/*?list"
cs2rx18001.001.Z    1658405
cs2rx18002.001.Z    1662537
cs2rx18003.001.Z    1707043
:
cs2rx18168.001.Z    1690964
cs2rx18169.001.Z    1645181
# Total number of files = 171
# Total file size = 283223525
```

2. Get a list of files in a directory matching a pattern (*DORIS data RINEX format from CryoSat-2 for first 9 days of 2017*)

```
> curl -c .edl_cookie_file -b .edl_cookie_file -n -L
  "https://cddis.nasa.gov/archive2/doris/data/cs2/2017/cs2rx1700*.001.Z?list"
cs2rx17001.001.Z    1597475
cs2rx17002.001.Z    1710715
cs2rx17003.001.Z    1649195
cs2rx17004.001.Z    1716190
cs2rx17005.001.Z    1640610
cs2rx17006.001.Z    1726173
cs2rx17007.001.Z    1645541
cs2rx17008.001.Z    1717177
cs2rx17009.001.Z    1665687
# Total number of files = 9
# Total file size = 15068763
```

3. Download a single file (*DORIS data RINEX format from CryoSat-2 for day 001 of 2017*)

```
> curl -c .edl_cookie_file -b .edl_cookie_file -n -L
  "https://cddis.nasa.gov/archive2/doris/data/cs2/2017/cs2rx17001.001.Z" -O
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
100 1560k  100 1560k    0     0  6683k      0 --:--:-- --:--:-- --:--:-- 6695k
```

4. Download a group of files within a range (*DORIS data RINEX format from CryoSat-2 for first 9 days of 2017*)

```
> curl -c .edl_cookie_file -b .edl_cookie_file -n -L
  "https://cddis.nasa.gov/archive2/doris/data/cs2/2017/cs2rx1700[1-9].001.Z" -O
[1/9]: https://cddis.nasa.gov/archive2/doris/data/cs2/2017/cs2rx17001.001.Z -->
cs2rx17001.001.Z
--_curl_--https://cddis.nasa.gov/archive2/doris/data/cs2/2017/cs2rx17001.001.Z
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
100 1560k  100 1560k    0     0  5752k      0 --:--:-- --:--:-- --:--:-- 5756k

[2/9]: https://cddis.nasa.gov/archive2/doris/data/cs2/2017/cs2rx17002.001.Z -->
cs2rx17002.001.Z
--_curl_--https://cddis.nasa.gov/archive2/doris/data/cs2/2017/cs2rx17002.001.Z
100 1670k  100 1670k    0     0  6445k      0 --:--:-- --:--:-- --:--:-- 11.0M
:
[9/9]: https://cddis.nasa.gov/archive2/doris/data/cs2/2017/cs2rx17009.001.Z -->
cs2rx17009.001.Z
--_curl_--https://cddis.nasa.gov/archive2/doris/data/cs2/2017/cs2rx17009.001.Z
100 1626k  100 1626k    0     0  6408k      0 --:--:-- --:--:-- --:--:-- 6408k
>
```

Note: URL https://cddis.nasa.gov/archive2 is temporary address for testing purposes.

Future plans and closing remarks

- Completion of implementation of ftp:ssl for accessing CDDIS archive
  - ftp:ssl will satisfy U.S. Government/NASA requirements for encryption
  - ftp:ssl is another option for users (i.e., alternative to https protocol) and is the option most similar to standard "anonymous" ftp
- Staff testing implementation of WebDAV (Web Distributed Authoring and Versioning) interface to provide another method for accessing CDDIS archive
  - If feasible for CDDIS, interface would allow users to securely connect to CDDIS archive as if it were a local drive on their computer
- Additional examples using cURL and Wget coming soon to CDDIS website
  - See documentation on CDDIS website: https://cddis.nasa.gov/About/CDDIS_File_Download_Documentation.html
  - See forthcoming updates to this "CDDIS Access" poster for upcoming workshops: https://cddis.nasa.gov/Publications/Presentations.html
- **CONCLUSION:** Changes are coming to CDDIS that are beyond our control and you MUST implement scripts to use https or ftp:ssl protocols

For more information

- Data and products are acquired as part of NASA's Earth Science Data Systems and archived and distributed by the Crustal Dynamics Data Information System (CDDIS): C. Noll, The Crustal Dynamics Data Information System: A resource to support scientific analysis using space geodesy, Advances in Space Research, Volume 45, Issue 12, 15 June 2010, Pages 1421-1440, ISSN 0273-1177, DOI: 10.1016/j.asr.2010.01.018.
- The staff welcomes feedback on the CDDIS and in particular the ideas expressed in this poster; contact Carey Noll (Carey.Noll@nasa.gov).

CDDIS — Crustal Dynamics Data Information System

✦✦✦ BOTTOM LINE!!! ✦✦✦

In the near future, CDDIS WILL NO LONGER SUPPORT non-encrypted anonymous ftp access to our archive.

UPDATE YOUR SCRIPTS NOW!!!

For help contact: support-cddis@earthdata.nasa.gov