G31B-0675 Important Changes to User Access at the NASA CDDIS

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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.

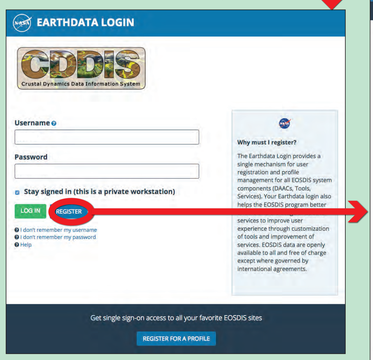
Overview

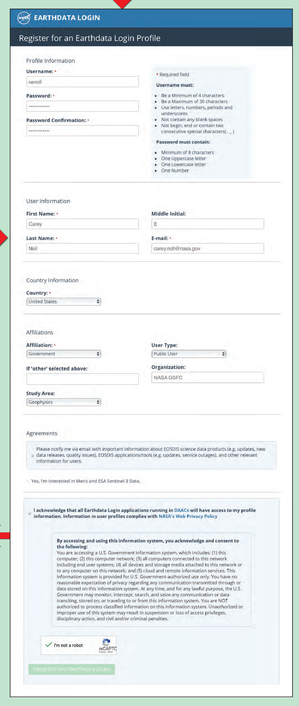
- **Background**
  - CDDIS has a large international user community: 325K unique hosts accessed the system in FY2018
  - Users currently access the CDDIS archive through anonymous ftp
  - ftp allows users to easily automate file downloads but has problems from a system/security standpoint
  - CDDIS must 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 transition 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

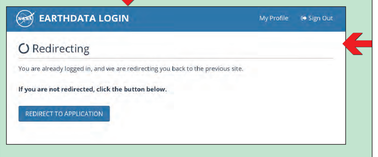
Procedure: first steps

- Enter URL in your browser: https://cddis.nasa.gov/archive/
- 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 or through a command line interface



Command line interface: https

Prerequisites:

- 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**

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 files in a directory matching a pattern
   (SLR site log files updated in 2018)

```
>
> curl -c .edl_cookie_file -n -L
  "https://cddis.nasa.gov/archive/slr/slrlog/*_2018*.log?list"
arel_20180119.log      28288
borl_20180615.log      32773
chal_20180929.log      28987
godl_20180723.log      33466
glsl_20180608.log      19741
grzl_20181015.log      24852
ha4t_20180504.log      30380
:
sisl_20180327.log      34325
sjul_20180929.log      15658
thtl_20180723.log      23578
urol_20180420.log      18295
yarl_20181019.log      47889
ziml_20181001.log      48244
# Total number of files = 18
# Total file size = 562836
>
>
> curl -c .edl_cookie_file -b .edl_cookie_file -n -L
  "https://cddis.nasa.gov/archive/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
>
>
> curl -c .edl_cookie_file -b .edl_cookie_file -n -L
  "https://cddis.nasa.gov/archive/gnss/data/daily/2018/260/18n/brdc2600.18n.Z" -O
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
100 85503  100 85503    0     0  15028      0  0:00:05  0:00:05 --:--:-- 15028
>
> ls -l b*
-rw-r--r--  1 user    usergroup  85503 Oct 10 10:10 brdc2600.18n.Z
>
```

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)

3. Download a single file
   (GNSS combined RINEX V2 broadcast ephemeris file for day 2018260)

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/archive/doris/data/cs2/2017/cs2rx1700[1-9].001.Z" -O

[1/9]: https://cddis.nasa.gov/archive/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/archive/doris/data/cs2/2017/cs2rx17002.001.Z -->
cs2rx17002.001.Z
--_curl_--https://cddis.nasa.gov/archive/doris/data/cs2/2017/cs2rx17002.001.Z
100 1670k  100 1670k    0     0  6445k      0 --:--:-- --:--:-- --:--:-- 11.0M
:
:
[9/9]: https://cddis.nasa.gov/archive/doris/data/cs2/2017/cs2rx17009.001.Z -->
cs2rx17009.001.Z
--_curl_--https://cddis.nasa.gov/archive/doris/data/cs2/2017/cs2rx17009.001.Z
100 1626k  100 1626k    0     0  6408k      0 --:--:-- --:--:-- --:--:-- 6408k
> ls -l c*Z
-rw-r--r--  1 cenoll  staff  1597475 Dec  4 14:43 cs2rx17001.001.Z
-rw-r--r--  1 cenoll  staff  1710715 Dec  4 14:43 cs2rx17002.001.Z
:
:
-rw-r--r--  1 cenoll  staff  1665687 Dec  4 14:43 cs2rx17009.001.Z
>
```

5. Download a group of files to a tar archive
   (All GNSS ultra-rapid products for Monday of GPS week 2020, hour 18)

```
> curl -c .urs_cookies -n -L
  "https://cddis.nasa.gov/archive/gnss/products/2020/igu20201_18*" -o iguFiles.tar
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
  0   437    0     0    0     0      0      0 --:--:-- --:--:-- --:--:--     0
100   261    0   261    0     0    956      0 --:--:-- --:--:-- --:--:--   956
  0   245    0     0    0     0      0      0 --:--:-- --:--:-- --:--:--     0
  0     0    0     0    0     0      0      0 --:--:-- --:--:-- --:--:--     0
100  198k    0  198k    0     0   216k      0 --:--:-- --:--:-- --:--:-- 1214k
curl: (18) transfer closed with outstanding read data remaining
> ls -l *tar
-rw-r--r--  1 user    usergroup  202752 Dec  4 14:12 iguFiles.tar
> tar vfx iguFiles.tar
x igu20201_18.sum.Z
x igu20201_18.sp3.Z
x igu20201_18.erp.Z
x igu20201_18_cmp.sum.Z
> ls igu*.Z
igu20201_18.erp.Z  igu20201_18.sp3.Z  igu20201_18.sum.Z  igu20201_18_cmp.sum.Z
>
```

✦✦✦ BOTTOM LINE!!! ✦✦✦

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

UPDATE YOUR SCRIPTS NOW!!!

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

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

Future plans and closing remarks

- CDDIS https access now available! Users are encouraged to start testing
- CDDIS also implementing ftp:ssl for accessing CDDIS archive; 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*

✦ **CONCLUSION:** Changes are coming to CDDIS that are beyond our control and you MUST implement scripts to use https or ftp:ssl protocols

- 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) or Pat Michael (Patrick.Michael@nasa.gov).

CDDIS
Crustal Dynamics Data Information System

IGS INTERNATIONAL GNSS SERVICE | International Laser Ranging Service | IVS | IDS | EPS | AGOS | ICSU WORLD DATA SYSTEM

EOSDIS

CEN 12/07/2018