How to access ERA5 data through CDS

Continuum 3 Tutorials

Tutorial Summary:

This tutorial explains how to configure access to ERA5 reanalysis data through the Copernicus Climate Data Store (CDS) API on a Windows computer. Complete the one-time account, credential, and Python setup before requesting ERA5 data through Continuum.

Before You Begin

- A Copernicus Climate Data Store (CDS) account. If you already have an account, use it; you do not need to register again.
- Python 3 and pip installed on your computer.
- An internet connection.

1. Create or Access Your CDS Account

The CDS account is used to access the Climate Data Store and configure programmatic data downloads.

a) Go to the Copernicus Climate Data Store.

b) Select Login / Register and sign in, or complete the registration process if you are a new user.

c) After signing in, open the CDS API setup page: CDS API setup.

2. Configure Your CDS API Credentials

The textfile .cdsapirc holds your credentials used by the CDS API to request data downloads.

The CDS API uses a personal access token to authenticate programmatic data requests. The credentials are stored in a text file named .cdsapirc in your Windows user directory.

a) On the CDS API setup page, locate the section titled **Set up the CDS API personal access token**. Make sure you are signed in.

b) Copy the two-line configuration displayed in the setup section. It will have this general format:

```
url: https://cds.climate.copernicus.eu/api
key: YOUR-PERSONAL-ACCESS-TOKEN
```

c) Open Notepad. Paste the two lines exactly as provided by CDS. Do not type the example token shown in this tutorial; use your own token.

d) In Notepad, select File → Save As. Browse to your Windows user folder, normally **C:\Users\USERNAME**.

e) Set the file name to **".cdsapirc"** (include the quotation marks when entering the name in the Save As dialog) and set Save as type to **All files**. Save the file.

The completed file should be located here: %USERPROFILE%\.cdsapirc

> **Windows file-name check**

> Make sure Windows has not added a .txt extension. The file must be named .cdsapirc, not .cdsapirc.txt. In File Explorer, enable View → Show → File name extensions if you need to check.

> **Keep your token private**
>
> Your .cdsapirc file contains a personal access token. Do not upload it to GitHub, include it in a Continuum project folder, or share it with other users. Each user should configure their own CDS credentials.

3. Install or Upgrade the CDS API Python Package

The CDS API client is a Python package called cdsapi. Continuum uses this package to request ERA5 data. The existing cdsapi package remains supported; users do not need to migrate to the newer advanced ECMWF data-store client.

a) Open a Windows Command Prompt or PowerShell window.

b) Run the following command to install or upgrade cdsapi:

```
python -m pip install --upgrade "cdsapi>=0.7.7"
```

c) Wait for the installation to complete. If the command reports that Python cannot be found, verify that Python 3 is installed and available from the command line. On some Windows installations, the Python launcher command may be used instead:

```
py -m pip install --upgrade "cdsapi>=0.7.7"
```

d) To confirm that the package is installed, run:

```
python -m pip show cdsapi
```

> **Note**
>
> Use the Python environment that Continuum relies on for its ERA5 download workflow. If more than one Python installation is present, installing cdsapi into a different environment may not update the environment used by Continuum.

4. Accept the ERA5 Dataset Terms of Use

CDS requires users to accept the Terms of Use for each dataset before downloading data from it. This is a one-time step for each dataset on the user's CDS account.

a) Open the ERA5 hourly data on single levels from 1940 to present dataset.

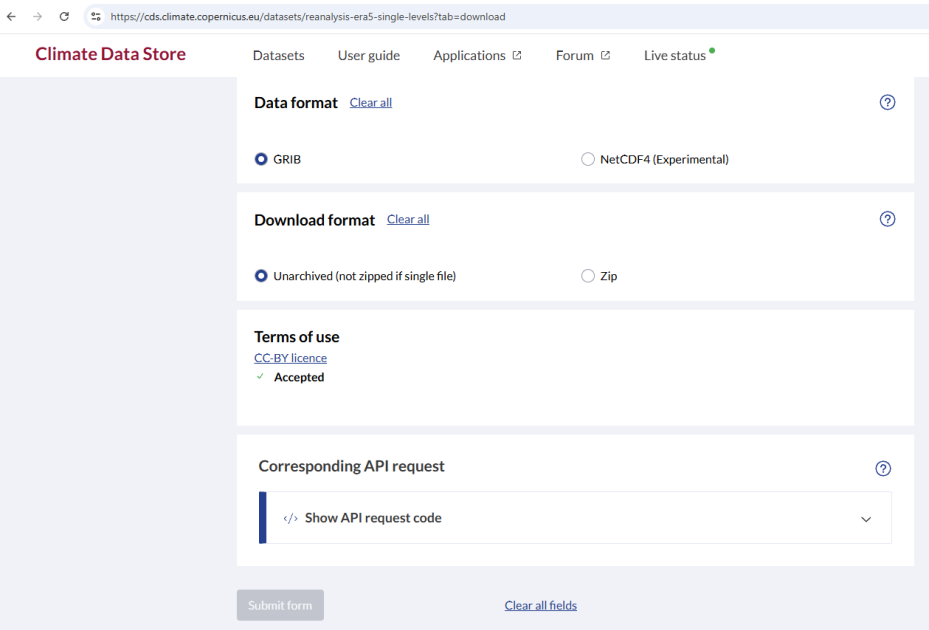
b) Sign in to CDS if prompted.

c) Open the dataset download form and review the Terms of Use near the bottom of the form.

d) Accept the terms. If you intend to access additional ERA5 datasets, such as pressure-level data, visit each dataset page and accept its terms separately.

Important

Accepting the general CDS account terms does not replace accepting the Terms of Use for each individual dataset. The dataset terms must be accepted manually on the relevant dataset page.



Troubleshooting

CDS authentication or API-key error: Check that the personal access token was copied correctly and that the .cdsapirc file is saved in %USERPROFILE% with the exact file name .cdsapirc.

Dataset terms or permission error: Open the relevant ERA5 dataset page while signed in and confirm that you have accepted its Terms of Use.

cdsapi is not found: Run the installation command using the same Python interpreter/environment used by the Continuum ERA5 workflow. Try py -m pip if python is not recognized.

Connection or download failure: Check your internet connection and any institutional proxy or firewall settings. Consult the CDS documentation and service status for current service information.