Bulk data download using APIs

Proyectos en ingeniería de datos e inteligencia artificial

CDSE COPERNICUS DATA SPACE ECOSYSTEM

ecmwf/**cdsapi**

Python API to access the Copernicus Climate Data Store (CDS)

What is an API

Application Programming Interface

What is an API

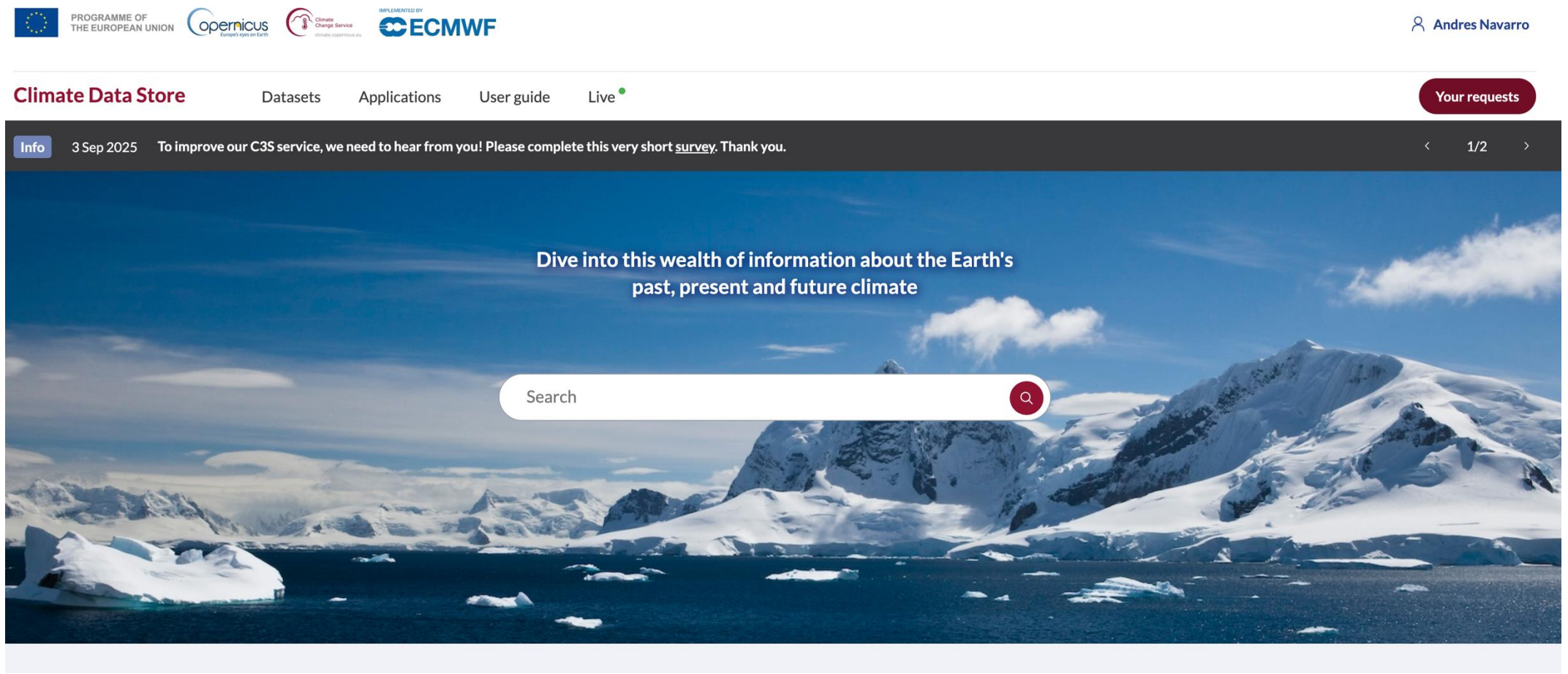
API Functionality

APIs enable communication and data exchange between different software systems seamlessly and efficiently.

What is an API

Automation and Scalability
APIs automate data retrieval processes and support scalable data processing essential for modern data science tasks.

Registration



https://cds.climate.copernicus.eu/

The .cdsapirc file

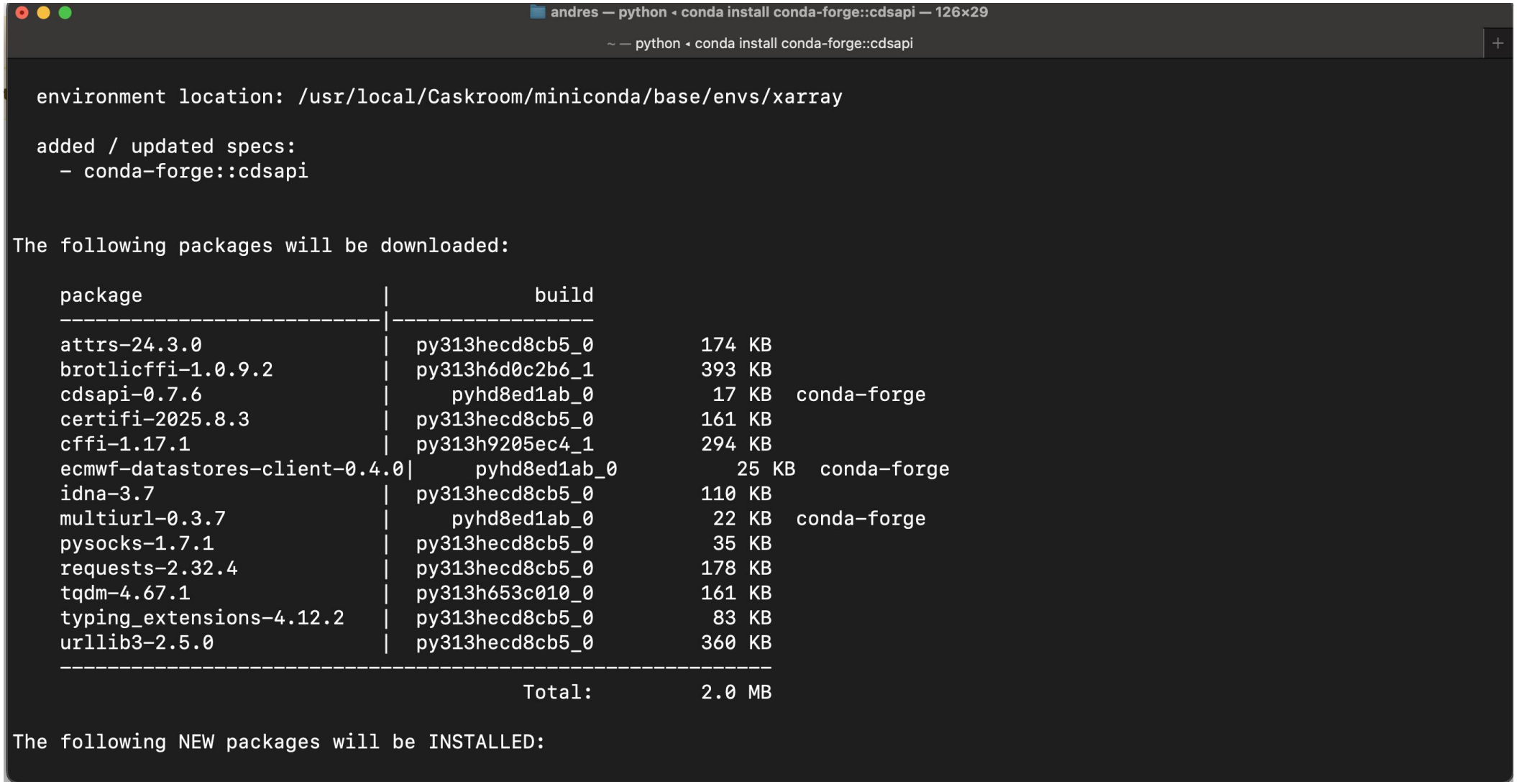
1. Setup the CDS API personal access token

Here is how to setup the CDS API personal access token:

1. If you do not have an account yet, please register
2. If you are not logged in, please login
3. Once logged in, copy the code displayed below to the file **$HOME/.cdsapirc** (in your Unix/Linux environment)

```
url: https://cds.climate.copernicus.eu/api
key: 1d70d144-5623-4d9c-8ab9-b517c2b2f316
```

https://cds.climate.copernicus.eu/how-to-api



conda install conda-forge::cdsapi

Example.py

```
import cdsapi

client = cdsapi.Client()

dataset = 'reanalysis-era5-pressure-levels'
request = {
  'product_type': ['reanalysis'],
  'variable': ['geopotential'],
  'year': ['2024'],
  'month': ['03'],
  'day': ['01'],
  'time': ['13:00'],
  'pressure_level': ['1000'],
  'data_format': 'grib',
}
target = 'download.grib'

client.retrieve(dataset, request, target)
```

Product codes

Código del producto	Descripción
`reanalysis-era5-pressure-levels`	Datos de ERA5 en niveles de presión
`reanalysis-era5-single-levels`	Datos de ERA5 en niveles únicos (superficie)
`seasonal-original-single-levels`	Predicciones estacionales en niveles únicos
`sis-agriculture-indicators`	Indicadores agroclimáticos
`satellite-sea-surface-temperature`	Temperatura superficial del mar por satélite

Var names

- Temperatura y viento:
  - 2m_temperature
  - 10m_u_component_of_wind
  - 10m_v_component_of_wind
  - surface_pressure
- Precipitación y humedad:
  - total_precipitation
  - 2m_dewpoint_temperature
- Radiación y energía:
  - surface_solar_radiation_downwards
  - net_surface_solar_radiation
- Océano y olas:
  - sea_surface_temperature
  - significant_height_of_combined_wind_waves_and_swell
- Nieve y suelo:
  - snow_depth
  - volumetric_soil_water_layer_1

Assignment

Download data from Copernicus Climate Data Store

- ERA5_T2M_SINGLE-LEVEL_DAILY-2024
  - Compute Monthly mean with cdo