The world is how we shape it*

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Harmonized Data Access service

A unified API for DestinE Data Portfolio

CloudFerro

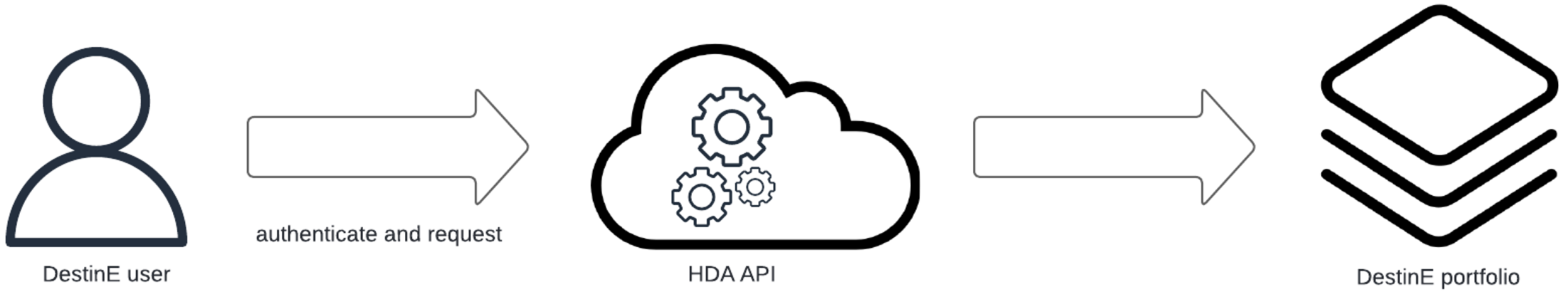
a Sopra Steria company

eodc

*Le monde est tel que nous le façonnons

A Harmonized Data Access

- **1** set of credentials
- **1** API
- More than **150** datasets



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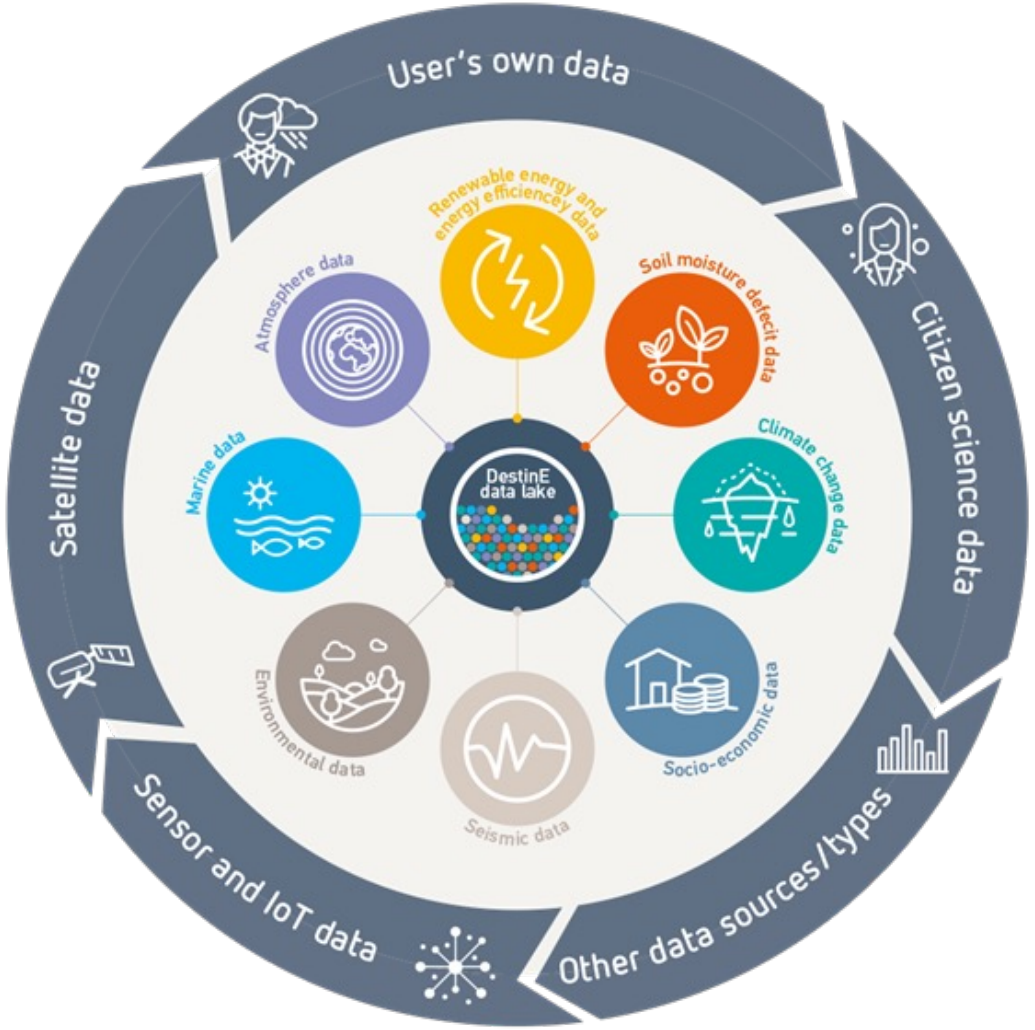
A diverse data portfolio

- Earth Observation (EO)
- Weather, Climate, Hydrology
- Survey, statistics and knowledge
  - Ground
  - Population
  - Biological
  - Socio-economic data
- Digital Twin Outputs



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A federation of data providers

- Federation first
- A local cache
- Redundancy

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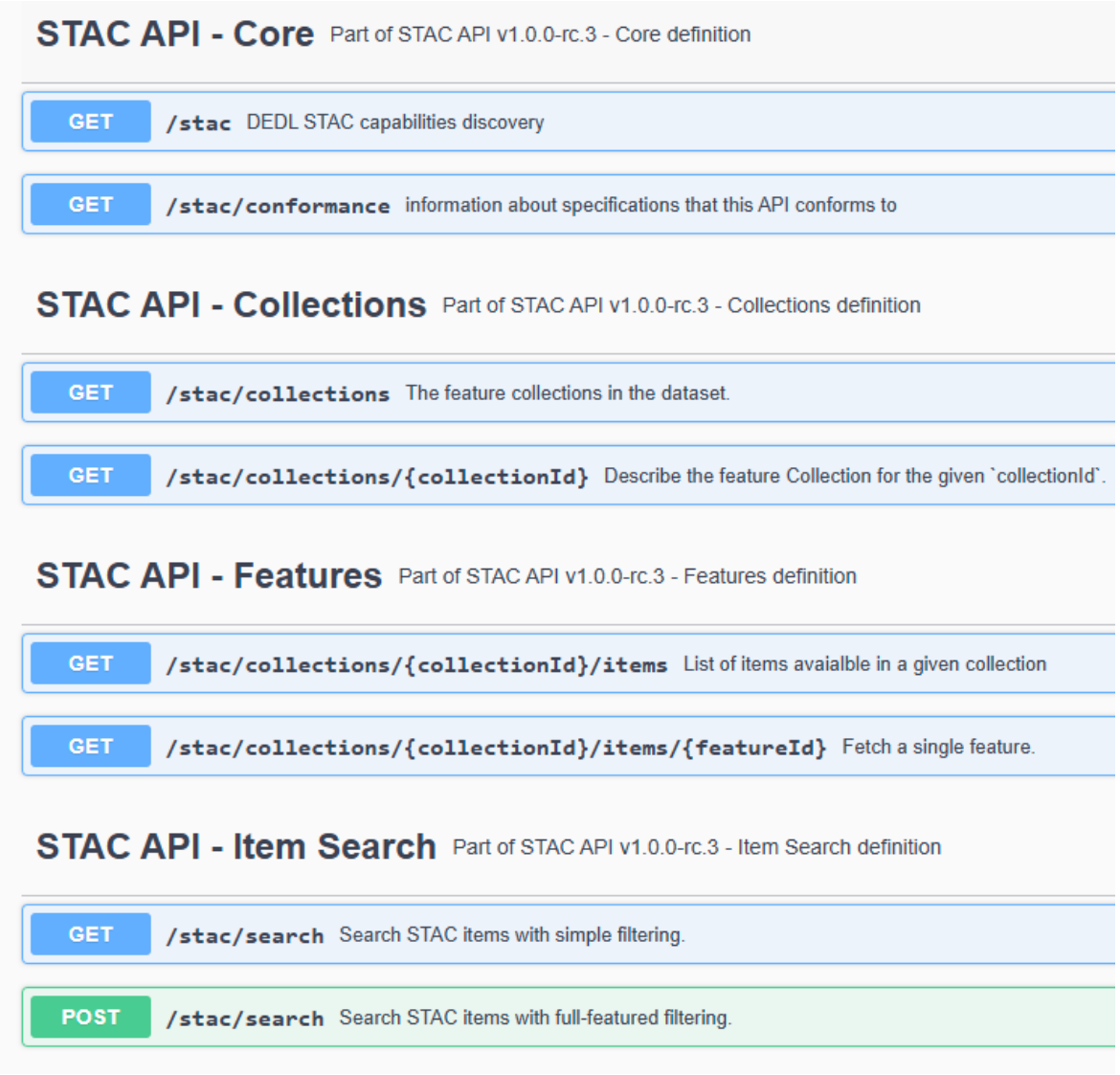
A standard interface

- **S**patio**T**emporal **A**sset **C**atalog (STAC)

- Filter by
  - Temporal extent
  - Spatial extent
  - Sort
  - Custom properties



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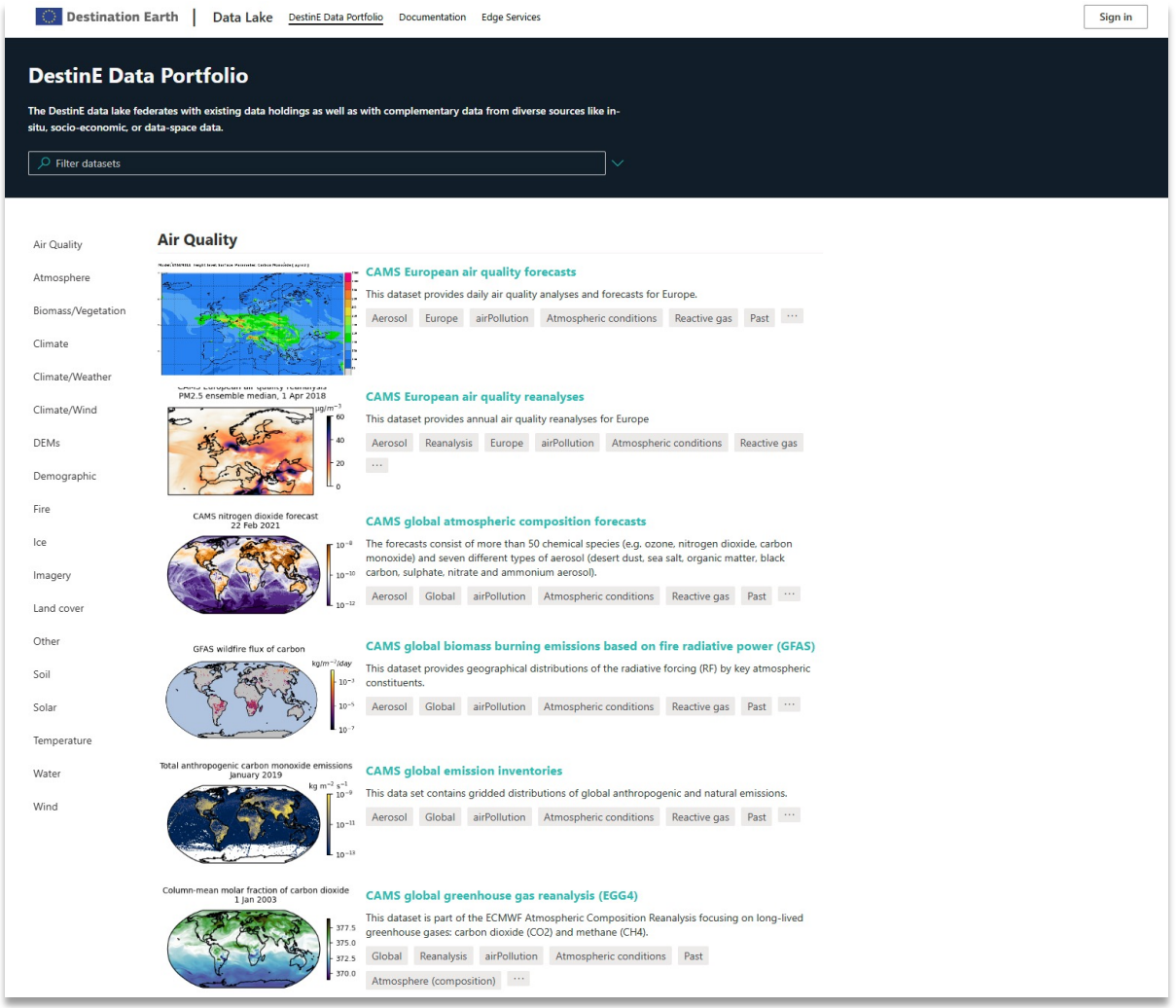
Discover datasets that matter

- Intuitive data discovery
- Filter by
  - Temporal extent
  - Title, description, keywords
  - Categories
- A web portal

https://hda.data.destination-earth/ui



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Identify available filters

- Queryables API

GET `/stac/queryables` Get the JSON Schema defining the list of variable terms that can be used in C

GET `/stac/collections/{collectionId}/queryables` Get the JSON Schema defining the li

Chosen collection: EO.ECMWF.DAT.CAMS_SOLAR_RADIATION_TIMESERIES

Fetch queryables

sky_type: clear

time_refere...: true_solar_time

format:

Properties fetched successfully.

Applicable filters

Description	Type	enum	value
sky_type	"string"	clear , observed_cloud	"clear"
time_reference	"string"	true_solar_time , universal_time	"true_solar_time"
format	"string"	csv , netcdf	"csv"


```
{
  "$schema": "https://json-schema.org/draft/2019-09/schema",
  "$id": "http://localhost:8088/collections/DT_CLIMATE_ADAPTATION/queryables",
  "type": "object",
  "title": "Queryables for DestinE Data Lake STAC API",
  "description": "Queryable names for the DestinE Data Lake STAC API Item Search
  "properties": {
    },
    "ecmwf:type": {
      "const": "fc",
      "default": "fc",
      "title": "type"
    },
    "ecmwf:model": {
      "const": "IFS-NEMO",
      "default": "IFS-NEMO",
      "title": "model"
    },
    "ecmwf:resolution": {
      "default": "high",
      "enum": [
        "high",
        "standard"
      ],
      "title": "resolution",
      "type": "string"
    },
    "ecmwf:param": {
      "default": "134/165/166",
      "enum": [
        "134",
        "137",
        "141",
        "144",
        "146",
        "147",
        "148",
        "151",
        "159",
        "164",
        "165",
        "166",
        "167",
        "168",
```


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Privileged access with EODAG[1]

- Command line tool
- Plugin-oriented Python framework
- Available on Github (Apache 2.0)

- Extensions (eodag cube, JupyterLab…)
- Each data provider is a plugin
  - Ease to extend with tutorials and documentation

1. https://github.com/CS-SI/eodag

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Privileged access with EODAG – Usage examples

- **Python**

```python
from eodag import EODataAccessGateway

dag = EODataAccessGateway()

search_results, total_count = dag.search(
    productType="S2_MSI_L1C",
    start="2021-03-01", end="2021-03-31",
    geom={"lonmin": 1, "latmin": 43, "lonmax": 2, "latmax": 44}
)
product_paths = dag.download_all(search_results)
```

- **CLI**

```
eodag search --productType S2_MSI_L1C --box 1 43 2 44 --start 2021-03-01 --end 2021-03-31
eodag download  --search-results search_results.geojson
```


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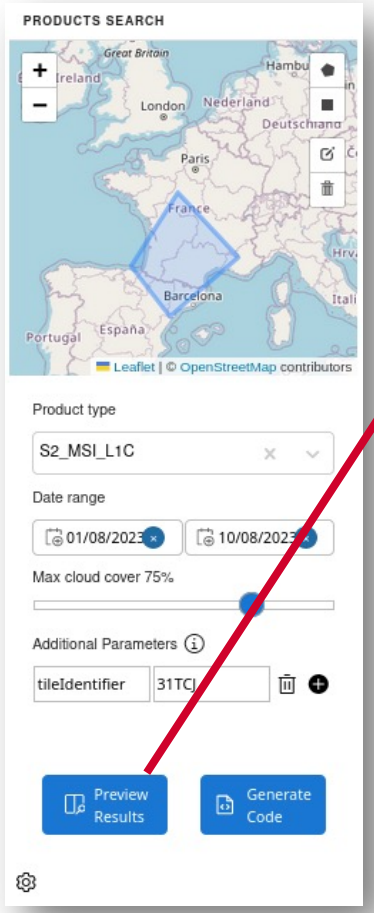
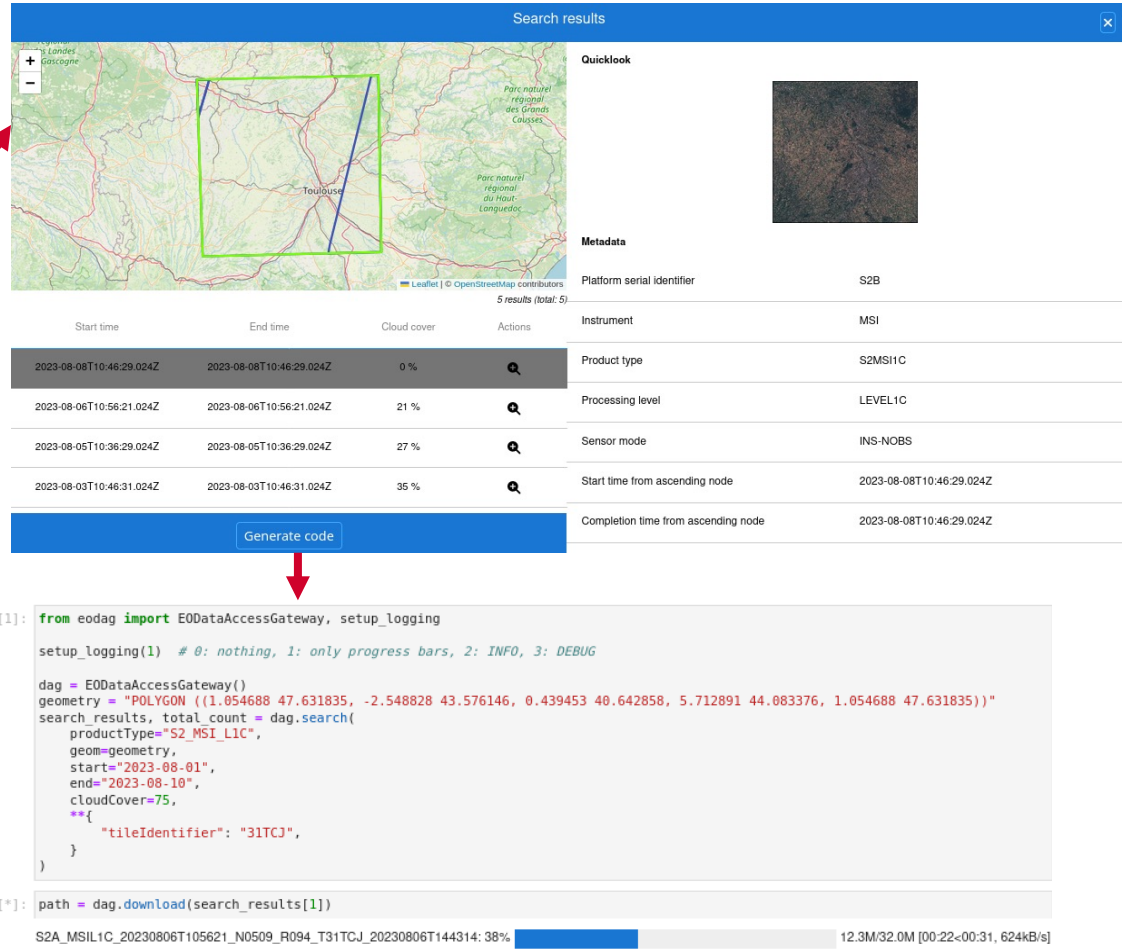
Privileged access with EODAG - labextension





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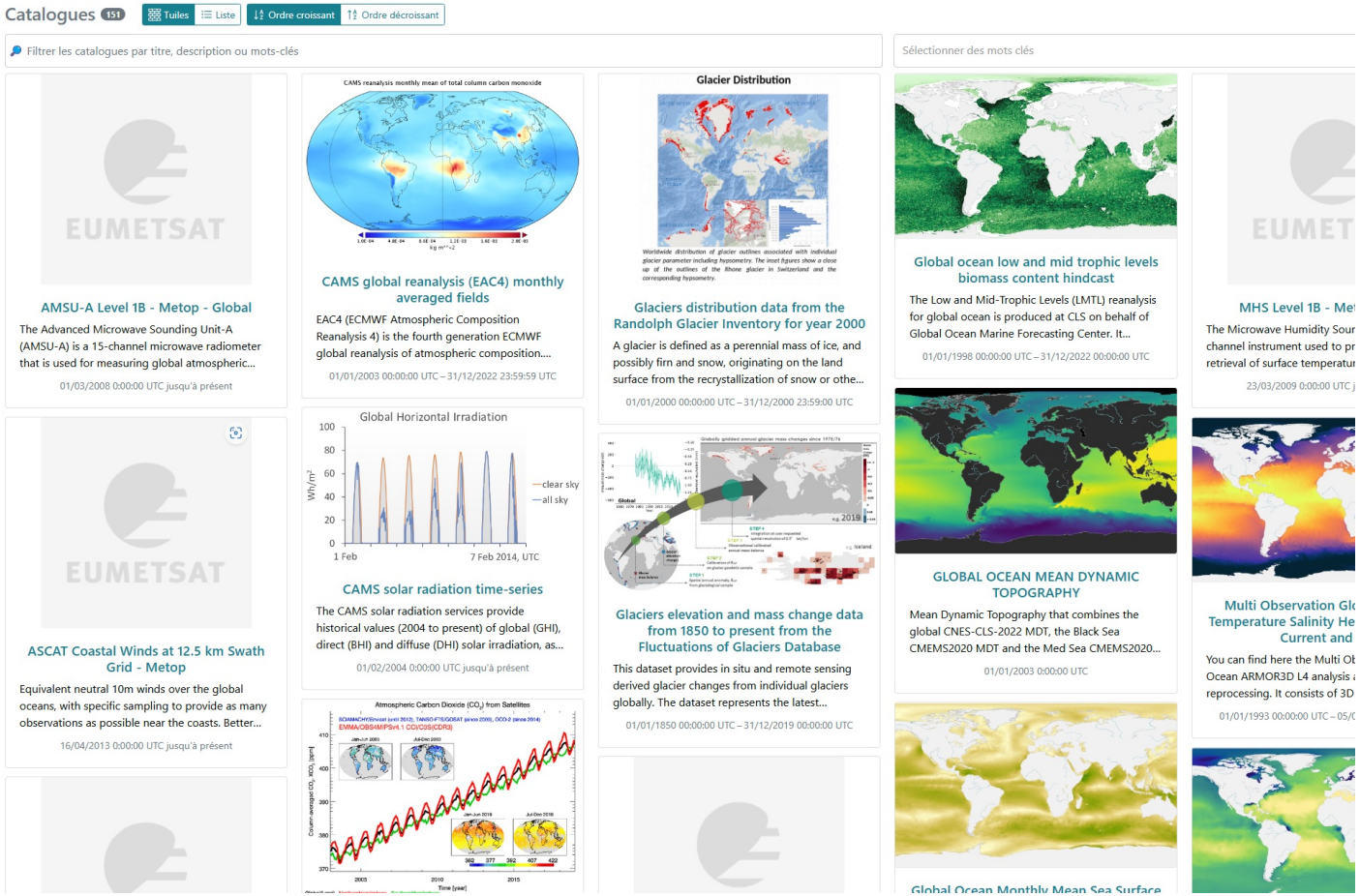
Native integration with all STAC tools

- STAC browser[1]
- The python library PySTAC[2]
- QGIS STAC API Browser[3]



https://radiantearth.github.io/stac-browser/#/external/hda.data.destination-earth.eu/stac

1. https://github.com/radiantearth/stac-browser
2. https://github.com/stac-utils/pystac
3. https://github.com/stac-utils/qgis-stac-plugin

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Key takeaways

- Interface between users and the DestinE Data Lake portfolio
- Harmonized data access API
- Federation of providers
- STAC compliant
- EODAG library, CLI and JupyterLab extension

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Thank you!

Q&A

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API

https://hda.data.destination-earth.eu

Python tutorials

https://github.com/destination-earth/DestinE-DataLake-Lab

Web portal

https://hda.data.destination-earth.eu/ui

Documentation

https://destine-data-lake-docs.data.destination-earth.eu

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