**EUMETSAT Data Store
Historic and Near Real Time Data access**

European Weather Cloud User Workshop

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European Weather Cloud User Workshop, *10-11 Nov.2021*

Outlines
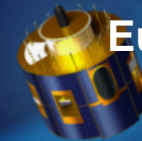
Updates on the Eumetsat Data Store service which forms part of a wider portfolio of new online data access service from EUMETSAT

Context

EUMETSAT is reshaping its data services portfolio by:

- Leveraging big data and on-premises cloud computing technologies.
- Phasing in **new Data Services** to facilitate near real-time data access, data visualisation, data transformation and customisation and cloud processing adjacent to the archive.
- Introducing new web user interfaces (Web UIs) and application programming interfaces (APIs) to support for flexibility of use and incorporation into automated processing.
- Separate the Long term data preservation from the data services function and devise plan to phase out legacy services

Long Term Preservation

EUMETCast Data Centre

Future Data Services Roadmap and pathfinders

WEkEO

EUMETView Data Store Data Tailor operations

Pilot Services

Multi-channel data access and collaboration

EWC/Hosted Processing

Including SAFs in CDOP4

3

EUMETSAT

Eumetsat Data Services ecosystem

New data services

Existing services

← PULL SERVICES | PUSH SERVICES | SHARED SERVICES

ECMWF

Viewing your data…

Improving data access…

Customising your data…

Near-real time data delivery via <u>terrestrial networks.</u>

Hosted data processing…

EUMETView

EUMETSAT Data store

Data Tailor

EUMETCast Terrestrial

European Weather Cloud

EUMETCast Satellite

Data Centre

CODA

WEkEO

GTS

Direct Dissem.

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Operational since 26th of October 2021

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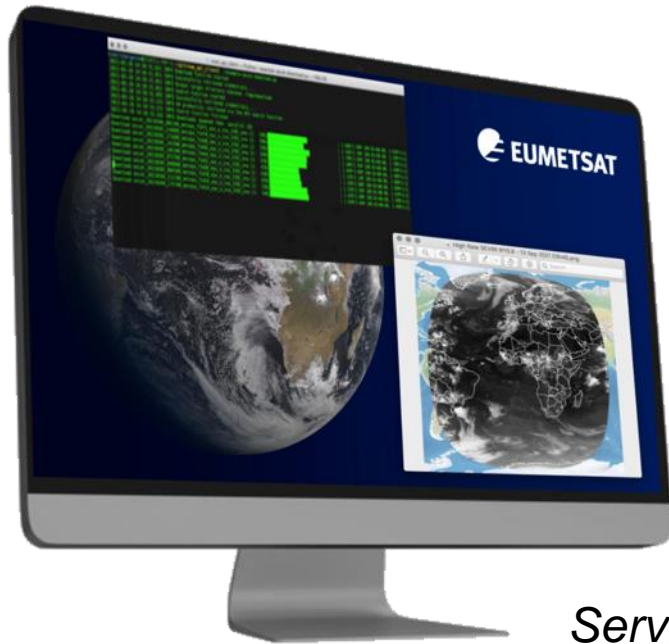EUMETSAT

Those Online Data Services for European Weather Cloud

- Data transfer initiated by the user

- Based on **Internet** connectivity at user and EUMETSAT sites

- **APIs** (Application Programming Interfaces) are available to users to automate download via scripts or to embed them in user's application

- Integrated use is possible with other data services, like WMS, Product Customisation Tools and Hosted Processing, to limit the volume of data to be transferred to the user site – It implements paradigm of "**bringing user to the data**"

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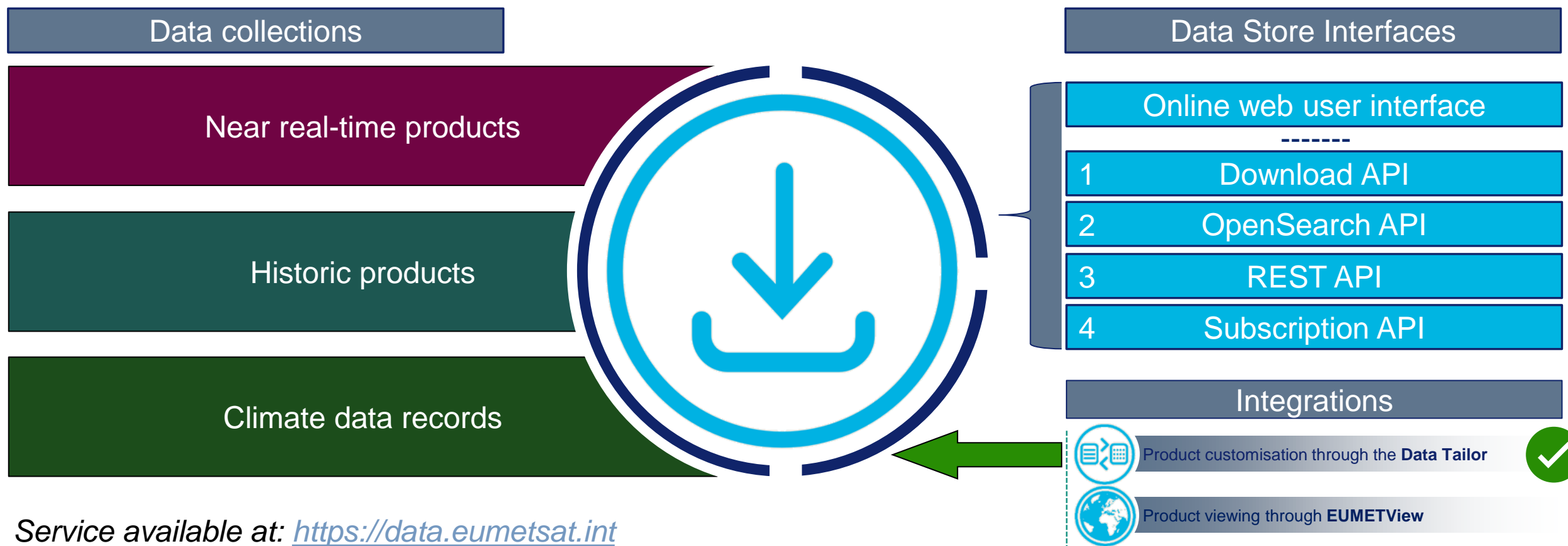# Online Data Services: Eumetsat Data Store

The **EUMETSAT Data Store** provides users with a download and [linked data tailoring service](#) for online data; providing access through an online web user interface and via a suite of APIs.

Service available at: https://data.eumetsat.int

Online Data Services: Eumetsat Data Store

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Data collections

- Near real-time products
- Historic products
- Climate data records

Data Store Interfaces

	Online web user interface

1	Download API
2	OpenSearch API
3	REST API
4	Subscription API

Integrations

Product customisation through the **Data Tailor** ✅

Product viewing through **EUMETView**

Service available at: https://data.eumetsat.int

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Online Data Services: Eumetsat Data Store

Online web user interface

Direct download

Command line

Cart

>> Interface with APIs

Data Tailor integration
>> product customisation

Online Data Services: Eumetsat Data Store

1	Download API
2	OpenSearch API
3	REST API
4	Subscription API (coming soon)

Python and Jupyter notebook examples snippets available for each API

1	Download data using URL, command line and Python based options using ID or collection and sensing time
2	Search Data Store at product and collection levels. Filter selections by time, ROI, satellite, timeliness
3	Navigate/Browse products and collections by date and spatial coverage / footprint
4	Notification service for new product availability

Discovery

POST	/csw/record/_search
OPTIONS	/csw/record/_search
GET	/csw/record/_search
GET	/csw/_search
POST	/csw/_search
GET	/csw/record/*

An dedicated API client will come soon

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Online Data Services: Eumetsat Data Store

NRT & Historic Data	Mission	Current Duration	Number of Collections
0° SEVIRI Level 1.5 Image Data	MSG	2004 to now	1
0° Meteosat Meteorological Products	MSG	2004 to now	1
41.5° E IODC SEVIRI Level 1.5 Image Data	MSG	2017 to now	1
41.5° E IODC Meteosat Meteorological Products	MSG	2017 to now	1
9.5° E RSS Meteosat Meteorological Products	MSG	2008 to now	1
9.5° E RSS SEVIRI Level 1.5 Image Data	MSG	2008 to now	1
AVHRR Level 1	Metop	2007 to now	1
IASI Level 1	Metop	2013 to now	2
IASI Sounding Products	Metop	2007 to now	1
ASCAT Soil Moisture	Metop	2007 to now	2

NRT & Historic Data	Mission	Current Duration	Number of Collections
MVIRI Level 1.5 Climate Data Record Release 1 - MFG - 0 degree	MFG	1981 to 2006	1
MVIRI Level 1.5 Climate Data Record Release 1 - MFG - 57 degree	MFG	2006 to 2017	1
MVIRI Level 1.5 Climate Data Record Release 1 - MFG - 63 degree	MFG	1998 to 2006	1
OSI SAF Products	Metop	2007 to now	4

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Online Data Services: Eumetsat Data Store
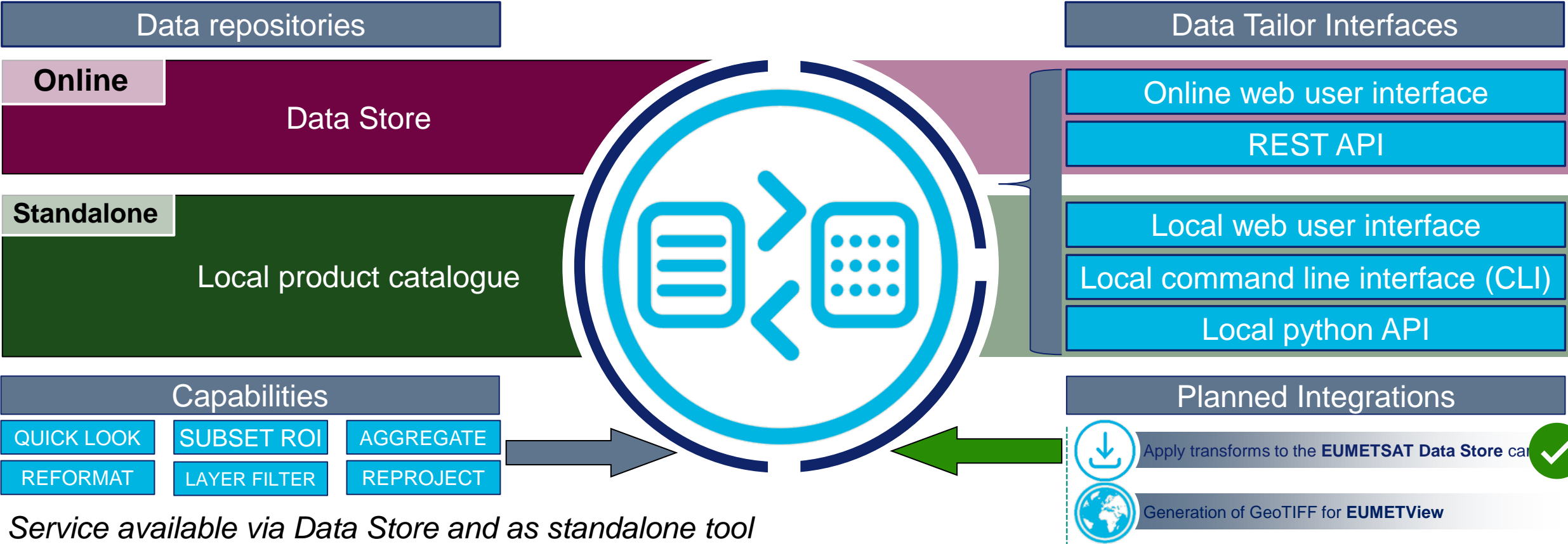
- ## What will come soon (2022):
  - ### Sentinel 3 products (migration from CODA and CODA REP)
  - ### Some SAF products (NRT, CDRs | under discussion)
  - Increased available online data pool (e.g. complete Archive history)…
  - Preparing for S6…
  - Preparing for MTG…
  - …

Continuous improvement

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Online Data Services: Eumetsat Data Tailor

The **EUMETSAT Data Tailor** allows users to subset and aggregate our data products in space and time, filter layers, generate quicklooks, re-project, and reformat into common GIS formats (netCDF, GeoTIFF, etc.). It offers a uniform way to transform both historical and near real-time satellite data provided by EUMETSAT.
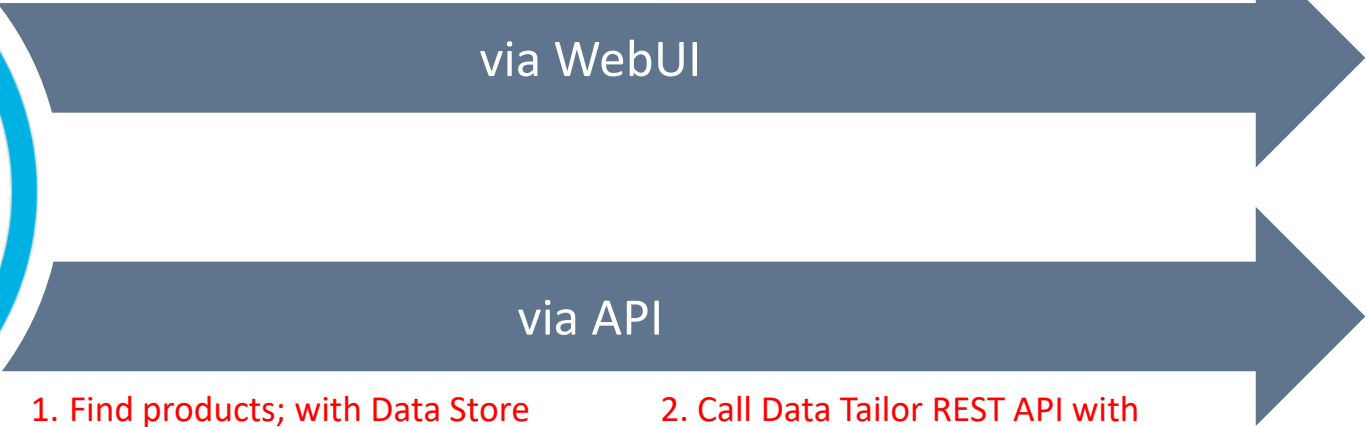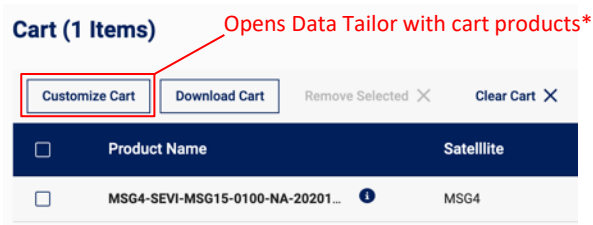
Data repositories	Data Tailor Interfaces
Online Data Store	Online web user interface
	REST API
Standalone Local product catalogue	Local web user interface
	Local command line interface (CLI)
	Local python API

Capabilities	Planned Integrations
QUICK LOOK SUBSET ROI AGGREGATE	Apply transforms to the **EUMETSAT Data Store** ca...
REFORMAT LAYER FILTER REPROJECT	Generation of GeoTIFF for **EUMETVIew**

Service available via Data Store and as standalone tool

Online Data Services: Data Store to Data Tailor

*this works ONLY if the cart contains one TYPE of product

1. Add product to Cart

- Select all in page — Add selected to Cart
- ☐ 2020-12-17 (13:30) - 2020-12-17 (13:42) MSG4 ⓘ 180.04 MB 🛒
- ☐ 2020-12-17 (13:15) - 2020-12-17 (13:27) MSG4 ⓘ 180.99 MB 🛒
- ☐ 2020-12-17 (13:00) - 2020-12-17 (13:12) MSG4 ⓘ 181.73 MB 🛒

2. 'Customise' Cart

Opens Data Tailor with cart products*

Cart (1 Items)

Customize Cart | Download Cart | Remove Selected ✕ | Clear Cart ✕

☐	Product Name	Satellite
☐	MSG4-SEVI-MSG15-0100-NA-20201... ⓘ	MSG4

via WebUI

via API

1. Find products; with Data Store OpenSearch API >> remote product URL

2. Call Data Tailor REST API with remote product URL from OpenSearch

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Online Data Services: Eumetsat Data Tailor

Using the WebUI

Available as standalone **and** online versions (interface with the Data Store)

1

> Supports a wide array of products (Data Store and local)

2

> Customisable processing chains; full save and recall.

3

> Customisable output formats

4

> Process queuing and logging information.

Online Data Services: Eumetsat Data Tailor

- The standalone Data Tailor can also be run using a **command line interface** (CLI) or a Python **application programming interface** (API);
  - Allowing for use without GUI
  - Supports more complex processing chains (e.g. with PyTroll)

The Web REST API (remote)

- Provides a REST web interface than can be invoked from other applications

Python and Jupyter notebook examples snippets available for each API

```
1   epct run-chain \
2       -f test-customisation.yaml \
3       AVHR_xxx_1B_M01_20180120003103Z_20180120003403Z_N_0_20180120004248Z \
4       --target-dir
```

```
1   from epct import api
2
3   INPUT_FILENAME = 'AVHR_xxx_1B_M01_20180120003103Z_20180120003403Z_N_0_20180120004248Z'
4   chain_config = {'product': 'AVHRRL1', 'format': 'netcdf4'}
5
6   output_files = api.run_chain(
7       [INPUT_FILENAME],
8       chain_config=chain_config,
9       target_dir='results'
10  )
```

GET	/customisations
POST	/customisations
GET	/customisations/{customisationId}
PUT	/customisations/{customisationId}
GET	/customisations/{customisationId}/log
GET	/products

Eumetsat Data Store benefits examples

For NRT users

- Download of products for a temporary time to cover local outages (file recovery service)
- …

For non-NRT users with temporary short term NRT needs

- Download of NRT products without implementation of a NRT reception system
- …

For Long Term Archive users

- Download data as provided (time series)
  - No need to wait for order completion
  - Historic and NRT data is kept online
  - Most popular data
- **Automation (scripting) by using i.e. REST APIs**
- …

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What is new since the last User workshop?

- **The evolution is mainly based upon users and stakeholders feedback, for all services**

- **Operational since 26th of October 2021**
  Enhanced Service capabilities:
    - Implement full Monitoring and Control of Services (24/7)
    - Fully define SLA and implement KPI measuring and reporting
    - Increased performance

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THANK YOU

http://data.eumetsat.int