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Newsletter from EVDC ESA atmospheric Validation Data Centre

April 2021

<https://evdc.esa.int>

The Purpose

The main purpose of this newsletter is to provide an update on new developments and updates to the **EVDC** online platform.

Following the feedback from the users of the platform we have enhanced the Cal/Val data filtering capabilities and search performance. Users are also now able to preview and inspect the contents of the Cal/Val files before downloading. The new ECMWF forecast data extraction and plotting tool is designed to simplify the access to the ECMWF forecasts.

We are pleased to announce that our searchable satellite data archive now includes the initial set of **AEOLUS** data products and we continue to support researchers working on **AEOLUS** Cal/Val projects.

As part of continued effort to make the EVDC platform more accessible we are now providing video tutorials explaining how to work with most of the tools made available through EVDC Web Platform.

The screenshot shows the EVDC Portal Home Page. At the top, there is a navigation menu with links: Home, Search Cal/Val Data, Search Satellite Data, Upload Data, Documentation, Tools, Campaigns, Overpass Tool, and Contact Us. A 'Login' button is also visible. The main heading is 'Welcome to EVDC' with the subtitle 'Atmospheric Validation Data Centre'. Below this, there are several service cards: 'Search and download satellite data products', 'Search and download Cal/Val data files', 'Predict and visualise orbits', 'Process data in the cloud', and 'Submit correlative data to EVDC repository'. A large satellite image is featured at the bottom. On the right side, there is a 'Tweets by @evdc_team' section and a 'News and Information' section with dates ranging from 2017 to 2020.

Fig. 1 EVDC Portal Home Page

About EVDC

EVDC aims to be the main European source of access to the correlative data for validation of atmospheric composition products from satellite platforms.

The EVDC portal offers several tools supporting the user in terms of Cal/Val data query, data upload/download, format conversion (GEOMS conversion routines) and for production of ECMWF parameter's maps. The EVDC platform also provides an access to satellite data for specific missions, in particular the system supports new atmospheric composition/dynamic missions namely Sentinel-5P and Aeolus.

The portal can be easily expanded to support new campaigns and satellite missions. Data exchange with the EVDC is regulated by a protocol with the aim to ensure data ownership, to prevent re-distribution to third parties and to protect intellectual properties.

EVDC Portal Update Includes

- Access to our archive of published Aeolus products.
- Enhanced Cal/Val search capabilities.
- Cal/Val File Viewer
- ECMWF plotting and subsetting tool
- Video Tutorials

Access to Aeolus products

EVDC provides registered user with an access to daily updated archives AEOLUS data. Currently available are the products that were made public, namely L1B Preliminary Wind Product and L2B Scientific Wind Product. Users can now query the products using many advanced filters and download them or save their search results. For more information on how to query satellite data in EVDC system see our video tutorial:

<https://youtu.be/nmiHjYcUSpE>

The image shows a screenshot of the EVDC portal's search interface. On the left is the 'Satellite Search Form' with the following fields:

- Satellite:** Aeolus
- Instrument:** Aladin
- Product Type:** A dropdown menu with 'L1B preliminary wind product' selected.
- Start date:** L2B scientific wind product
- End date:** 22 / 02 / 2021
- Longitude:** -85.741254,-60.419305,-57.605755,-93.478516
- Latitude:** 35.717981,36.851501,4.530437,5.231008

At the bottom of the form is a blue 'Submit' button with a star icon. On the right is a 'Select Point or Polygon' map interface showing a world map with a blue polygon drawn over the Atlantic Ocean region. The map includes navigation controls (plus, minus, home, location, trash) and a 'Leaflet | © Mapbox © C' footer.

Fig. 2 Search for Aeolus data

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Thumbnail	File Name	Size (MB)	Created	Satellite Name	Instrument
<input type="checkbox"/>	AE_OPER_ALD_U_N_1B_20210221T224059033_005399993_014494_0001.TGZ	54	2021-02-22T00:10:59Z	Aeolus	Aladin
<input type="checkbox"/>	AE_OPER_ALD_U_N_2B_20210221T224059_20210222T001111_0001.TGZ	16	2021-02-22T00:11:10Z	Aeolus	Aladin
<input type="checkbox"/>	AE_OPER_ALD_U_N_1B_20210221T211059020_005412006_014493_0001.TGZ	58	2021-02-21T22:41:11Z	Aeolus	Aladin

Fig. 3 Aeolus data search results

Enhanced Cal/Val Search Capabilities

The Cal/Val search facility is now extended with more active filtering options and improved implementation of interactive map tool. It should be now much easier to check the availability of data for particular variable, origin, spatial coverage and time.

For more information on how to search and download Cal/Val data see the video tutorial:

<https://youtu.be/NPsGXNSFEos>

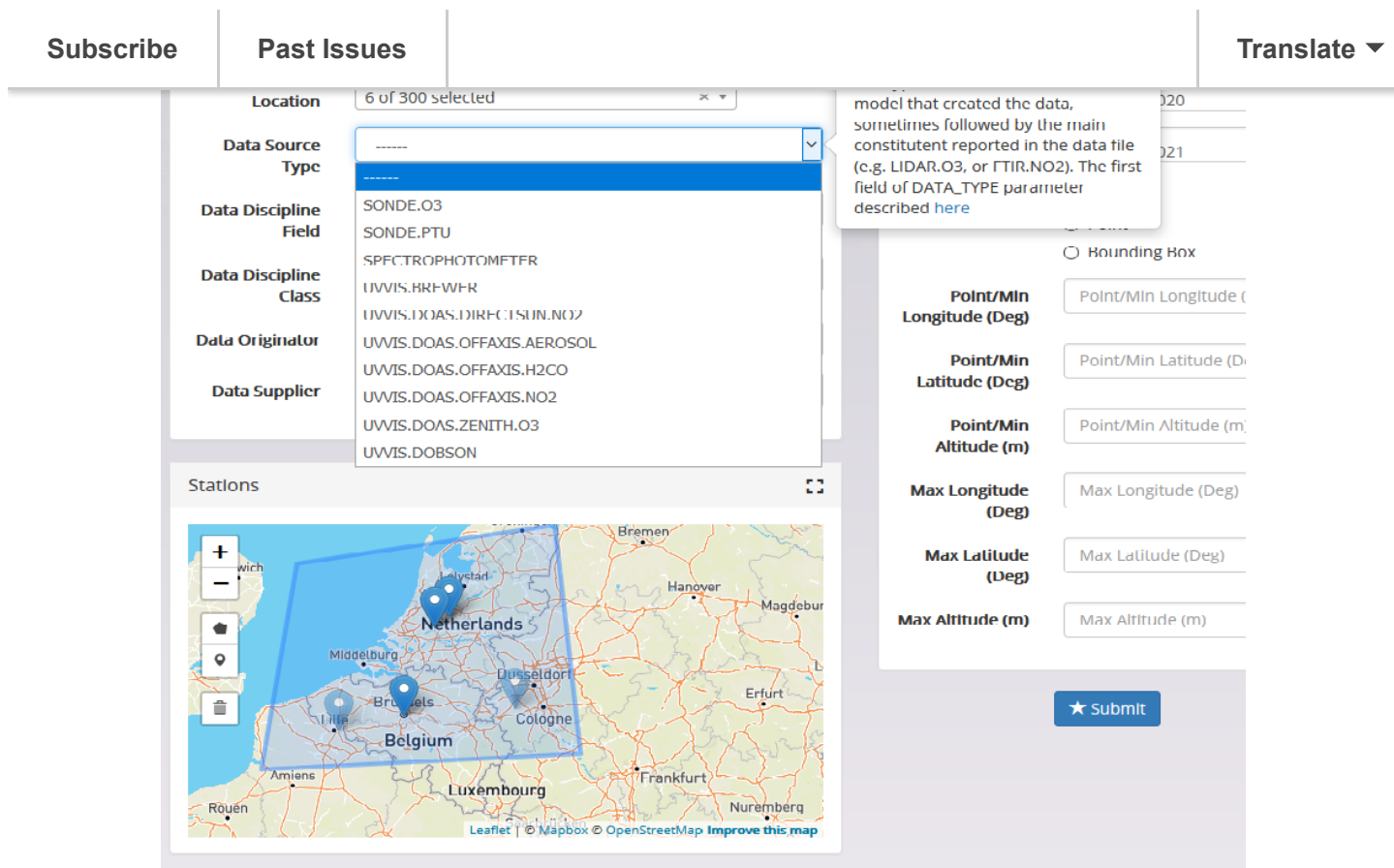


Fig. 4 Cal/Val search interface

Cal/Val File Viewer

One of the new additions to the EVDC toolset is the web viewer and inspector of Cal/Val files. Any file in the search results can be now inspected before downloading and the variables from the data file can be visualised interactively in the browser

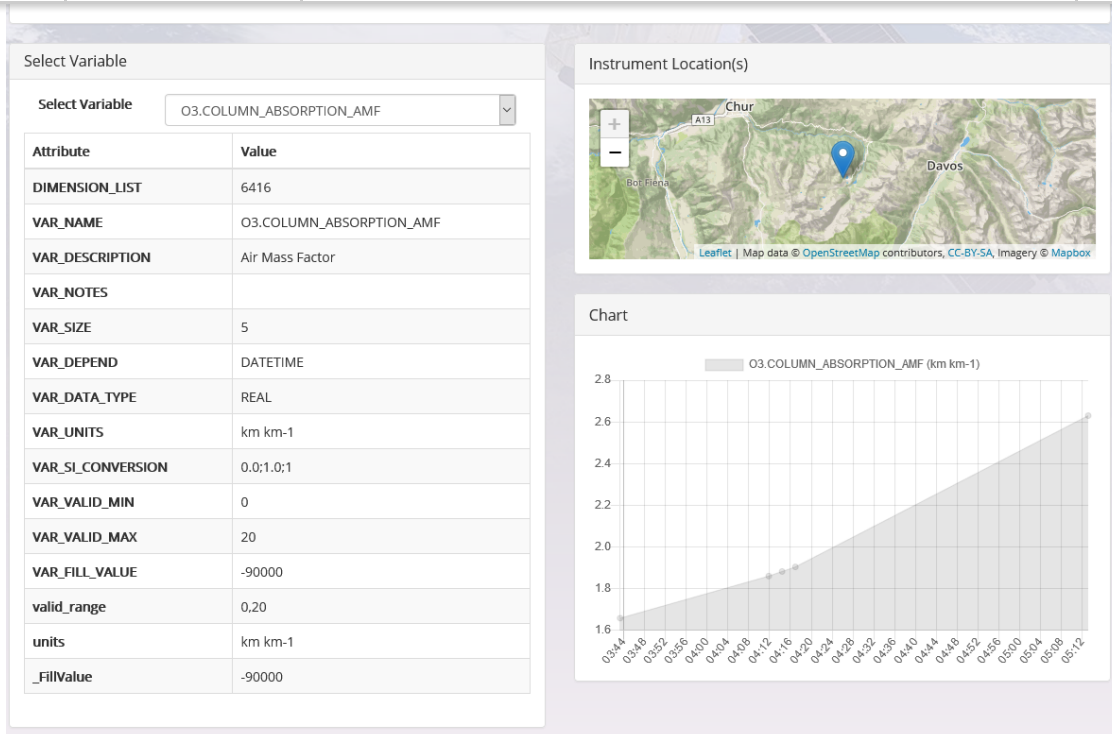


Fig. 5 Cal/Val file viewer

ECMWF Plotting and data subsetting tool

The ECMWF forecasts provide EVDC users with necessary background information that helps with planning and operating data campaigns.

Previously users had access to ready made plots of certain number of parameters. The plots were generated automatically by a scheduled task. The access was possible via the direct login into NILU server for previously registered users.

The access to the ECMWF forecast data is now possible through a tool integrated with EVDC Web Portal. Users can access a page where they can select the date of the forecast, the parameter of interest and the area of interest on the interactive map.

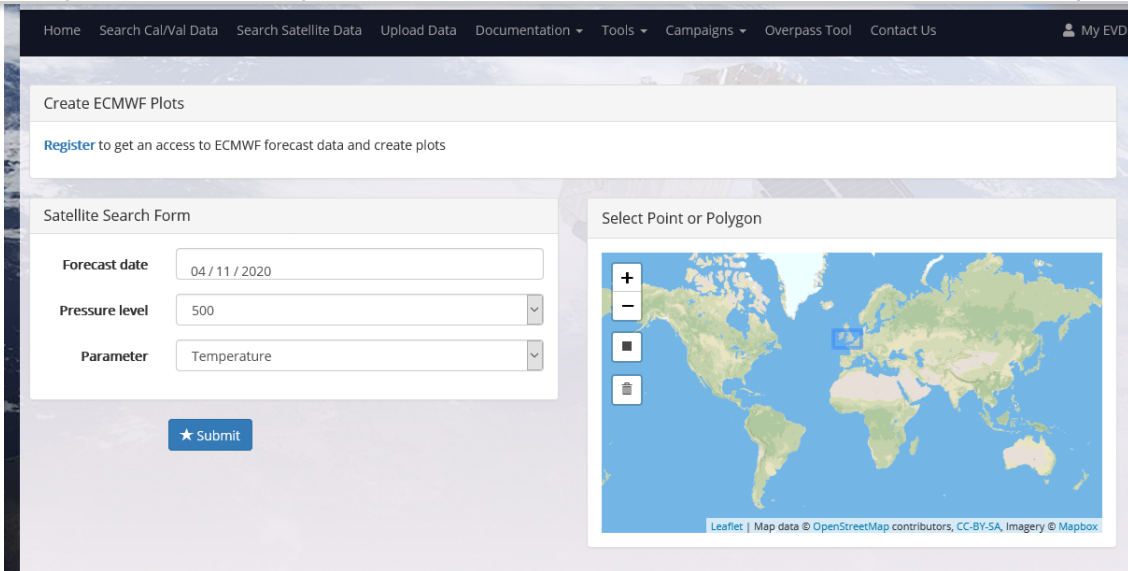


Fig. 6 ECMWF plot generator

After submitting a query, the relevant file is downloaded from the NILU servers and processed by the backend system to generate the plot based on provided parameters. Both plot and the subset data in the NetCDF format can be subsequently downloaded by users.

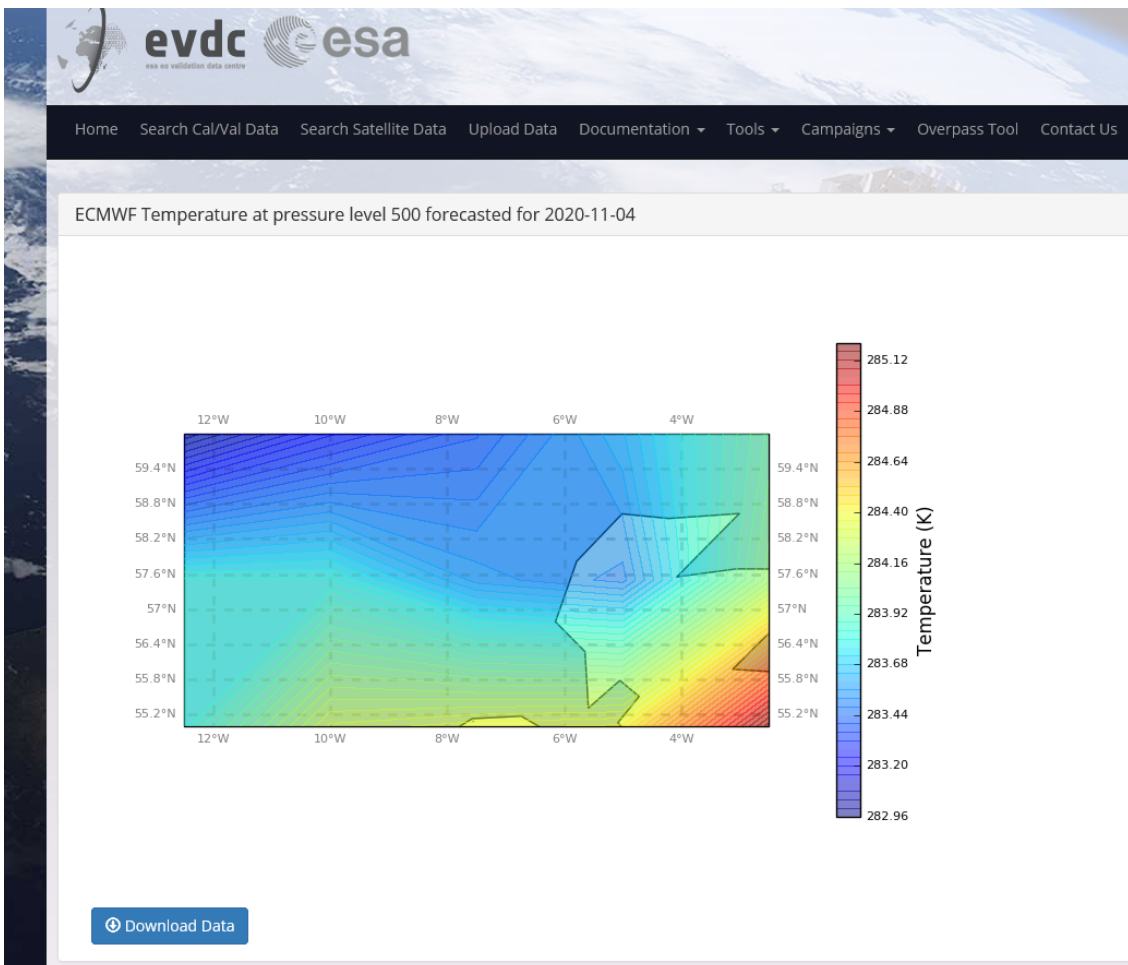


Fig. 7 Generated ECMWF Plot

Video Tutorials

The set of new video tutorials cover most important functionalities and workflows in the EVDC platform:

- [EVDC Platform overview](#)
- [How to search for Cal/Val data?](#)
- [How to search and process the satellite data?](#)
- [How to use Orbit Prediction Tool?](#)
- [How to format Cal/Val Data?](#)

Tutorials on using orbit tool and satellite data search based on real-life scenarios:

- [Exploring Sentinel 5P and Aeolus data covering US west coast wildfires in 2020.](#)
- [Exploring Sentinel 5P SO2 data for Fuego volcano eruption](#)

Metadata harvesting and sharing

The OAI-PMH instances for both GEOMS and non-GEOMS part of EVDC are set up:

GEOMS:

<https://dcio.evdc.nilu.no/oaicat>

Non-GEOMS:

<https://dcio-ng.evdc.nilu.no/oaicat/>

Atmospheric EO and Cal/Val data are available from multiple sources and data archives across the world, there is no so-called "one-stop-shop" for search of data. In order to facilitate simpler and faster search methods for the users, EVDC has set up harvesting methods for sharing metadata between data archives from a number of national and international projects and programs.

The OAI-PMH is not a database but rather a metadata search instance.

Example workflow:

1. **oai-pmh client:** «give me all your metadata about your database» -- >
2. *server sends all metadata.*

next time around...

2. server sends all metadata created, updated or deleted from the last visit

(this is what "from" and "until" parameters are used for)

An example search:

<https://dcio.evdc.nilu.no/oaicat/OAIHandler?verb=ListRecords&metadataPrefix=eocdcio&set=dcio&from=2021-02-02T10:10:05Z&until=2021-02-02T10:10:31Z>

There is a growing interest in using Cal/Val data, particularly in connection with the new Sentinel missions and other upcoming satellites, as well as in Copernicus and related initiatives. Through metadata sharing, EVDC aims to encourage cooperation between the various data archives, promote open data policy and strengthen collaboration throughout EO disciplines in the best possible way.

Metadata sharing leads to:

- Data available to more users
- Larger contribution rate in publications
- Proper acknowledgements and more visibility
- Data can be understood and interpreted by any user

More information about the metadata sharing , the OAI-PMH technique and "behind-the-scenes" information can be found here: (<http://evdc.esa.int/documentation/oai-pmh/>)

DOIs and landing pages

DOIs can be issued from EVDC. Until now, landing pages for data in EVDC have been created manually, but since many groups now are adding a lot of content and data to EVDC, the data centre is setting up an API in order to get the creation of landing pages done automatically. Landing pages and coining the DOIs are based on input xml.

To register your archive in the DCIO initiative, to get a DOI and to set up the required protocols, please contact the EVDC team (nadirteam@nilu.no). Our database management team will help you getting started and provides front line

Support

EVDC team provides support to all currently registered users as well as new users interested in the data and functionalities offered by EVDC portal and tools.

We encourage users to **contact us via Support tab on the left hand side in the EVDC portal** (see screenshot below) with any questions, issues, bug reports and suggestions of improvements. One of the main goals of the EVDC project is to continue the development of the tools and functionalities according to the feedback from users.



The Team Behind

NILU

Ann Mari Fjaeraa, Project leader of the NADIR/EVDC system.

Main responsibilities: Cal/Val data, Metadata harvesting, GEOMS tools

Contact: nadirteam@nilu.no

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