

EarthCARE Status – May 2021

EVDC – ESA Atmospheric Validation Data Centre

2nd ESA EarthCARE Validation Workshop

25-28 May 2021 (online)

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Outline



About EVDC

EVDC for data submitters and users

- New functionalities
- Support systems
- Data formatting pages
- Overpass tool

The screenshot shows the EVDC website homepage. At the top, there's a navigation bar with links for Home, Search Cal/Val Data, Search Satellite Data, Upload Data, Documentation, Tools, Campaigns, Overpass Tool, and Contact Us. The main content area features a 'Welcome to EVDC' section with a sub-header 'ESA Atmospheric Validation Data Centre'. Below this, there are four main service areas: 1) 'Search and download satellite data products' with a world map icon; 2) 'Search and download Cal/Val data files' with a magnifying glass icon; 3) 'Predict and visualise orbits' with a globe icon; 4) 'Process data in the cloud' with a server rack icon. A fifth section, 'Submit correlative data to EVDC repository', is partially visible at the bottom. On the right side, there's a 'Tweets by @evdc_team' widget showing a tweet from ADAM Platform about NO2 concentrations in Europe. Below the tweets is a 'News and Information' section with a date '4th May 2021' and a link to the 'EVDC 2021 Newsletter published'. The URL 'https://evdc.esa.int' is visible in the top left corner of the browser window.



EVDC - ESA atmospheric Validation Data Centre



The ESA atmospheric Validation Data Centre is the official ESA repository for validation and campaign datasets



URL: <https://evdc.esa.int>

Cal/Val database for in-situ campaign data from **ENVISAT, Sentinel-5P, Aeolus** and **EarthCARE**

Network data from projects and monitoring programs such as **NDACC, EARLINET, PGN, TCCON, COCCON, ACTRIS**

Data provision to CAMS

The screenshot shows the EVDC website interface. At the top, there is a navigation bar with links for Home, Search Cal/Val Data, Search Satellite Data, Upload Data, Documentation, Tools, Campaigns, Overpass Tool, and Contact Us. The main content area is titled 'Welcome to EVDC' and includes a brief description of the center's purpose. Below this, there are five main service categories, each with a brief description and a small icon: 1. Search and download satellite data products, 2. Search and download Cal/Val data files, 3. Predict and visualise orbits, 4. Process data in the cloud, and 5. Submit correlative data to EVDC repository. On the right side, there is a Twitter feed showing a tweet from ADAM Platform (@PlatformAdam) about NO2 tropospheric concentrations. Below the Twitter feed is a 'News and Information' section with a date of 4th May 2021 and a link to the EVDC 2021 Newsletter.



EVDC - ESA atmospheric Validation Data Centre



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URL: <https://evdc.esa.int>

EVDC serves the needs of both data submitters (e.g. Cal/Val campaign teams) and data users (i.e. both Cal/Val campaign teams and international science community).

EarthCARE Cal/Val is considered for 'campaign use', which implies that data will only be circulated within the EarthCARE Cal/Val Team (ECVT).

The screenshot shows the EVDC website interface. At the top, there's a navigation menu with options: Home, Search Cal/Val Data, Search Satellite Data, Upload Data, Documentation, Tools, Campaigns, Overpass Tool, and Contact Us. The main heading is 'Welcome to EVDC' with the subtitle 'ESA Atmospheric Validation Data Centre'. Below this, there are several key features listed: '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 'Tweets by @evdc_team' widget is visible on the right side, showing a tweet from ADAM Platform about NO2 tropospheric concentrations. At the bottom of the page, there's a 'News and Information' section with a date '4th May 2021' and a link to 'EVDC 2021 Newsletter published'.



Support for Cal/Val Teams



Access to Satellite Data:

From front page of EVDC – Search Satellite Data



Aeolus L1B Preliminary Wind Product
and L2B Scientific Wind Product
Sentinel-1,2,3,5p

Satellite Search Form

Satellite: [dropdown menu]

Instrument: [dropdown menu with options: Sentinel-1, Sentinel-2, Sentinel-3, Aeolus, Sentinel-5p]

Timeliness: [dropdown menu]

Product Type: [dropdown menu]

Processor Version: [dropdown menu]

Start date: 01.01.2021

| | | | | | |
|--|---|----|----------------------|--------|--------|
| | AE_OPER_ALD_U_N_2B_20210517T225308_20210518T002320_0001.TGZ | 16 | 2021-05-18T00:23:19Z | Aeolus | Aladin |
| | AE_OPER_ALD_U_N_2B_20210517T212308_20210517T225332_0001.TGZ | 17 | 2021-05-17T22:53:31Z | Aeolus | Aladin |
| | AE_OPER_ALD_U_N_2B_20210517T195308_20210517T212344_0001.TGZ | 17 | 2021-05-17T21:23:43Z | Aeolus | Aladin |
| | AE_OPER_ALD_U_N_2B_20210517T173032_20210517T195332_0001.TGZ | 27 | 2021-05-17T19:53:31Z | Aeolus | Aladin |

Download data, save search, access the data processing capabilities (subsetting, merging, viewing metadata).



Support for Cal/Val Teams

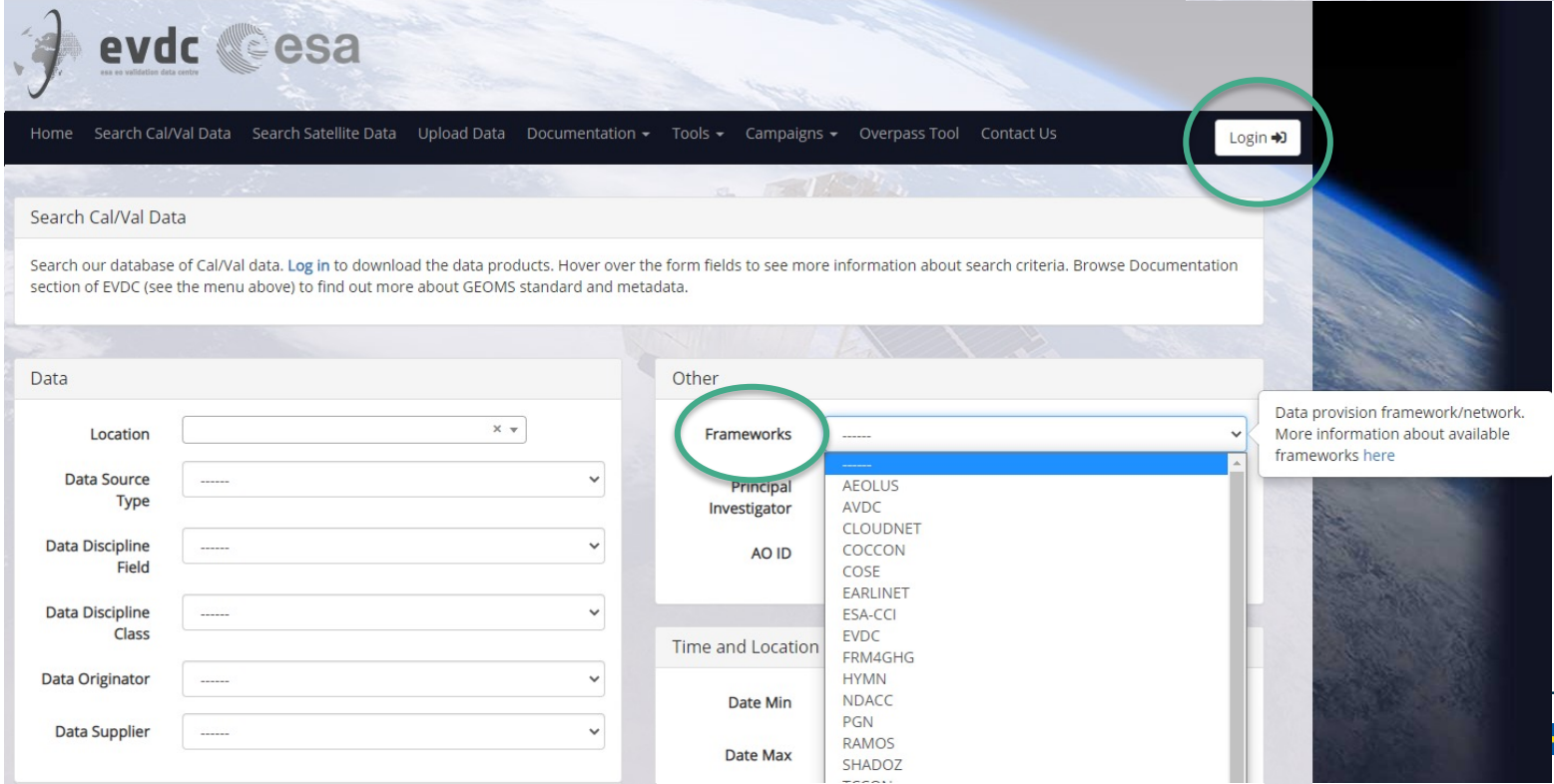


Access to Cal/Val data:

From front page of EVDC – Search Cal/Val Data

GEOMS and non-GEOMS data

from a long list of projects and campaigns



Access to «My EVDC»

Personal user space

Data access

Harp Operations

Search history

Orders



Support for Cal/Val Teams



Map functionality for publications, presentations, overview...



Search Cal/Val Data

Search our database of Cal/Val data. [Log in](#) to download the data products. Hover over the form fields to see more information about search criteria. Browse Documentation section of EVDC (see the menu above) to find out more about GEOMS standard and metadata.

Stations

Data Source Type: LIDAR.TEMPERATURE x

File viewer functionality

Search Results (35)

Search

35 Total

Select All On Page Clear Selection Download Selected Files

| <input type="checkbox"/> | File name link | File Size | Submission date | PI | Campaign |
|--------------------------|---|-----------|-------------------------|----------------------|-------------------|
| <input type="checkbox"/> | groundbased_lidar.temperature_dwd001_hohenpeissenberg_20210503t194535z_20210504t025234z_001.hdf | 219 kB | 2021-05-06 10:31:55.000 | Wolfgang Steinbrecht | AVDC, EVDC, NDACC |
| <input type="checkbox"/> | groundbased_lidar.temperature_dwd001_hohenpeissenberg_20210427t200402z_20210428t030058z_001.hdf | 208 kB | 2021-04-30 10:34:17.000 | Wolfgang Steinbrecht | AVDC, EVDC, NDACC |
| <input type="checkbox"/> | groundbased_lidar.temperature_dwd001_hohenpeissenberg_20210426t200018z_20210427t030717z_001.hdf | 211 kB | 2021-04-29 10:46:33.000 | Wolfgang Steinbrecht | AVDC, EVDC, NDACC |
| <input type="checkbox"/> | groundbased_lidar.temperature_dwd001_hohenpeissenberg_20210423t193830z_20210424t031559z_001.hdf | 217 kB | 2021-04-28 13:03:15.000 | Wolfgang Steinbrecht | AVDC, EVDC, NDACC |
| <input type="checkbox"/> | groundbased_lidar.temperature_dwd001_hohenpeissenberg_20210424t194516z_20210425t031241z_001.hdf | 208 kB | 2021-04-28 12:47:13.000 | Wolfgang Steinbrecht | AVDC, EVDC, NDACC |
| <input type="checkbox"/> | groundbased_lidar.temperature_dwd001_hohenpeissenberg_20210425t194604z_20210426t030817z_001.hdf | 209 kB | 2021-04-28 12:02:04.000 | Wolfgang Steinbrecht | AVDC, EVDC, NDACC |
| <input type="checkbox"/> | groundbased_lidar.temperature_dwd001_hohenpeissenberg_20210422t193733z_20210423t031501z_001.hdf | 219 kB | 2021-04-25 10:37:18.000 | Wolfgang Steinbrecht | AVDC, EVDC, NDACC |
| <input type="checkbox"/> | groundbased_lidar.temperature_dwd001_hohenpeissenberg_20210420t193353z_20210421t031634z_001.hdf | 221 kB | 2021-04-23 10:43:05.000 | Wolfgang Steinbrecht | AVDC, EVDC, NDACC |
| <input type="checkbox"/> | groundbased_lidar.temperature_dwd001_hohenpeissenberg_20210416t192428z_20210417t032715z_001.hdf | 220 kB | 2021-04-21 10:33:30.000 | Wolfgang Steinbrecht | AVDC, EVDC, NDACC |



Support for Cal/Val Teams



«Eye» functionality



EVDC File Viewer

File name: groundbased_lidar.temperature_dwd001_hohenpeissenberg_20210503t194535z_20210504t025234z_001.h5

Select Variable

Select Variable

- ALTIITUDE
- ALTIITUDE.INSTRUMENT
- ALTIITUDE_INDEPENDENT_INITIALIZATION
- ALTIITUDE_INDEPENDENT_NORMALIZATION
- DATETIME
- DATETIME.START
- DATETIME.STOP
- INTEGRATION.TIME
- LATITUDE.INSTRUMENT
- LONGITUDE.INSTRUMENT
- NUMBER.DENSITY_BACKSCATTER
- NUMBER.DENSITY_BACKSCATTER_UNCERTAINTY.COMBINED.STANDARD
- NUMBER.DENSITY_BACKSCATTER_UNCERTAINTY.RANDOM.STANDARD
- NUMBER.DENSITY_BACKSCATTER_UNCERTAINTY.SYSTEMATIC.STANDARD
- NUMBER.DENSITY_INDEPENDENT
- NUMBER.DENSITY_INDEPENDENT_SOURCE
- PRESSURE_INDEPENDENT
- PRESSURE_INDEPENDENT_SOURCE
- TEMPERATURE_BACKSCATTER

Instrument Location(s)

Select Variable

Select Variable: NO2.COLUMN_ABSORPTION.SOLAR

| Attribute | Value |
|-------------------|---|
| VAR_VALID_MIN | 0.12135999649763107 |
| VAR_VALID_MAX | 0.2324800044298172 |
| VAR_DATA_TYPE | REAL |
| VAR_NAME | NO2.COLUMN_ABSORPTION.SOLAR |
| VAR_SIZE | 120 |
| VAR_FILL_VALUE | -90000 |
| VAR_DEPEND | DATETIME |
| VAR_DESCRIPTION | Total vertical column of target gas retrieved from Direct Sun DOAS measurements |
| VAR_NOTES | |
| VAR_SI_CONVERSION | 0.0;4.4614E-4;mol m-2 |
| VAR_UNITS | DU |

Instrument Location(s)

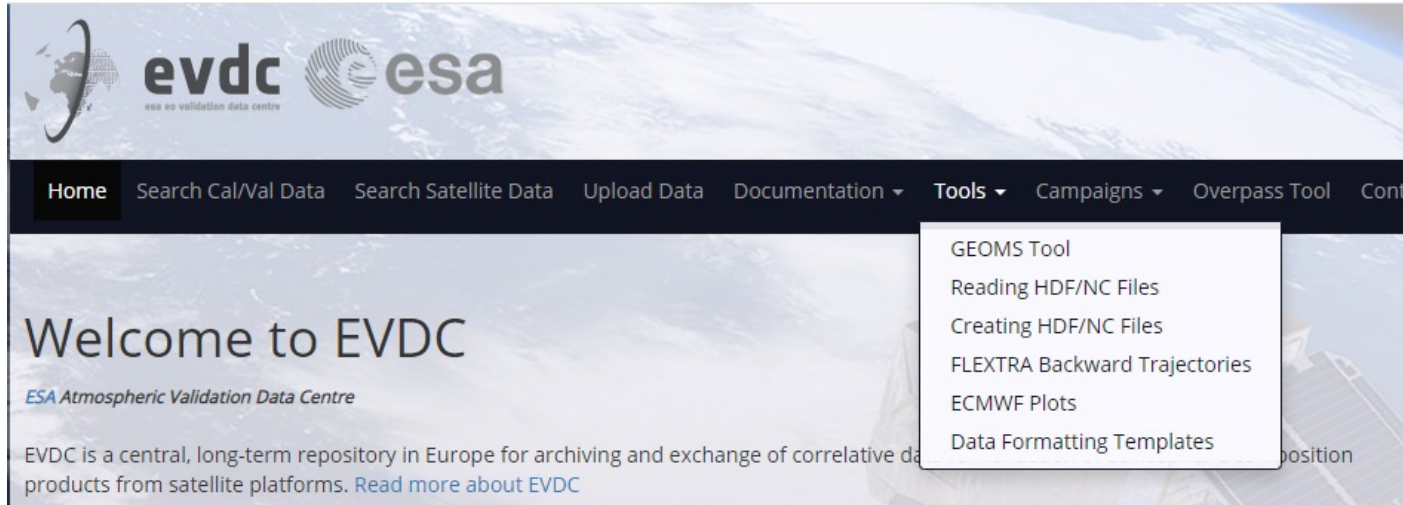
Chart



Support for Cal/Val Teams



GEOMS Tool and Data Formatting Templates



**Data hosted in EVDC
or linked from primary
archive; support for GEOMS
data formatting and upload**

The **GEOMS Tool** is a set of functionalities to support data submitters with the data upload to EVDC, hereunder

- **Create GEOMS compliant files from a set of ascii metadata and data**
- **Create new metadata templates for their specific measurement principles**

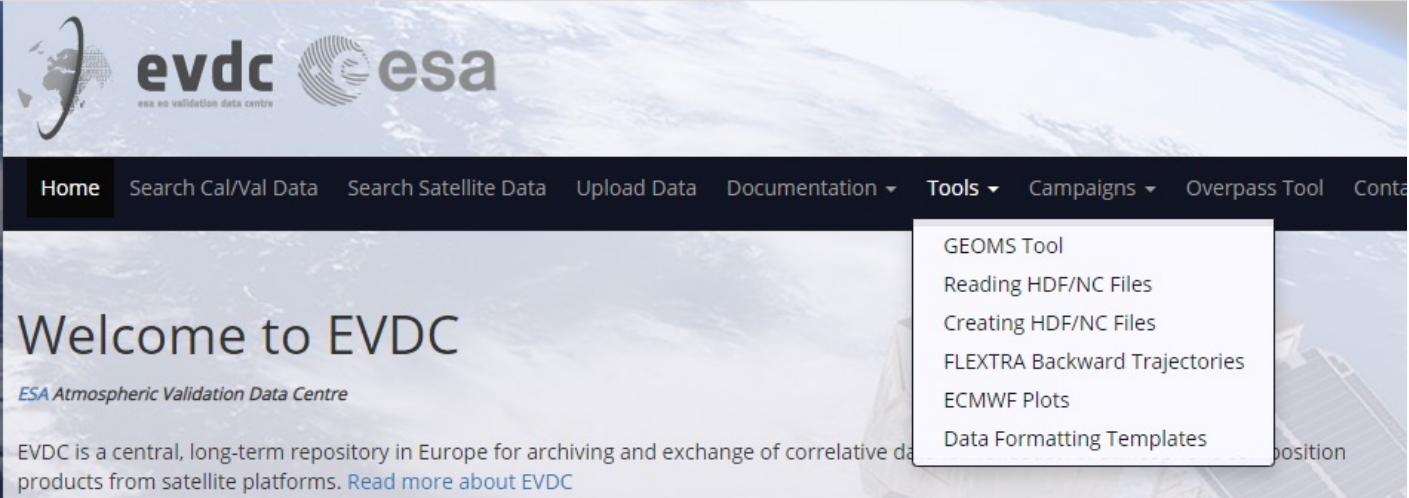
The tool automatically generates the GEOMS headers and files and makes them available for upload and download in EVDC.



Support for Cal/Val Teams



GEOMS Tool and Data Formatting Templates



- 2011-10-03 GEOMS-TE-BOUY-001.csv
- 2020-06-15 GEOMS-TE-CLOUD-RADAR-001.csv
- 2018-05-28 GEOMS-TE-FTIR-002.csv
- 2020-09-01 GEOMS-TE-FTIR-COCCON-001.csv
- 2019-11-21 GEOMS-TE-FTIR-FRM4GHG-001.csv
- 2015-12-23 GEOMS-TE-FTIR-ISO-001.csv
- 2019-02-20 GEOMS-TE-FTIR-TCCON-005.csv
- 2016-07-21 GEOMS-TE-FUV-003.csv
- 2019-11-21 GEOMS-TE-LHR-FRM4GHG-001.csv
- 2020-07-22 GEOMS-TE-LIDAR-AEROSOL-005.csv
- 2017-10-28 GEOMS-TE-LIDAR-H2O-005.csv
- 2017-10-28 GEOMS-TE-LIDAR-O3-005.csv
- 2017-10-28 GEOMS-TE-LIDAR-TEMPERATURE-005.csv
- 2014-02-18 GEOMS-TE-MWR-003.csv
- 2018-02-02 GEOMS-TE-MWR-WIND-001.csv
- 2018-05-20 GEOMS-TE-PANDORA-DIRECTSUN-GAS-002.csv
- 2016-12-01 GEOMS-TE-RO-001.csv
- 2020-02-28 GEOMS-TE-SODAR-001.csv
- 2013-07-19 GEOMS-TE-SONDE-002.csv
- 2018-04-26 GEOMS-TE-UUVIS-DOAS-DIRECTSUN-GAS-007.csv
- 2018-04-26 GEOMS-TE-UUVIS-DOAS-OFFAXIS-AEROSOL-007.csv
- 2018-04-25 GEOMS-TE-UUVIS-DOAS-OFFAXIS-GAS-007.csv
- 2018-04-25 GEOMS-TE-UUVIS-DOAS-ZENITH-GAS-007.csv
- 2018-11-01 GEOMS-TE-UUVIS-DOBSON-TOTALCOL-001.csv



Selected datasets converted to GEOMS:

53% of PIs find a reporting template

→ Create new templates

50% of datasets not stored in a primary archive

EVDC offers provision of DOIs

Data reporting templates are used as an additional guidance to file formatting for specific instrument types.

This can be useful to make sure all measurements from similar instruments, e.g. a LIDAR, within a monitoring network report the same mandatory data variables.

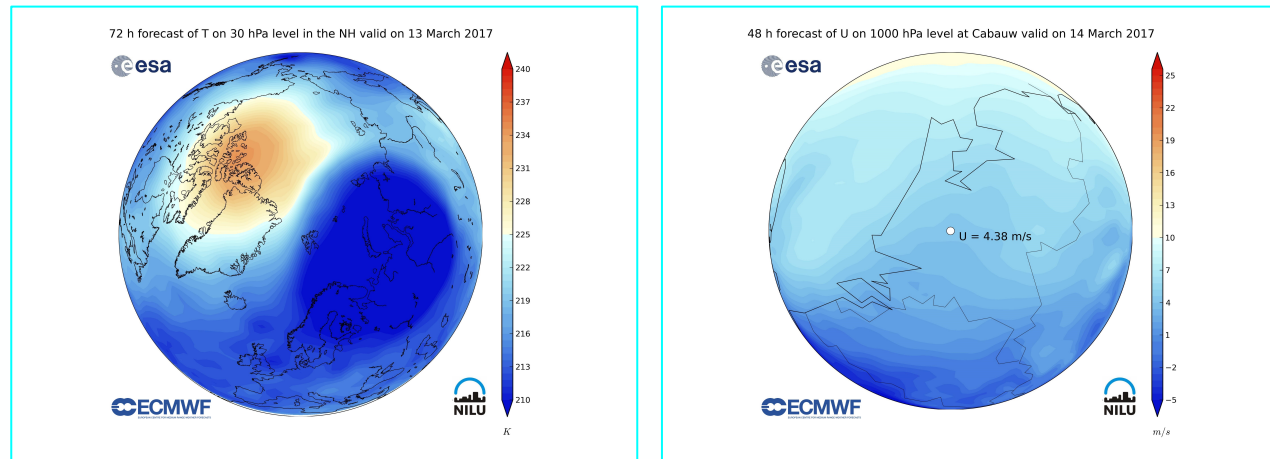


Web portal – Available services

ECMWF service

<https://evdc.esa.int/ecmwf/>

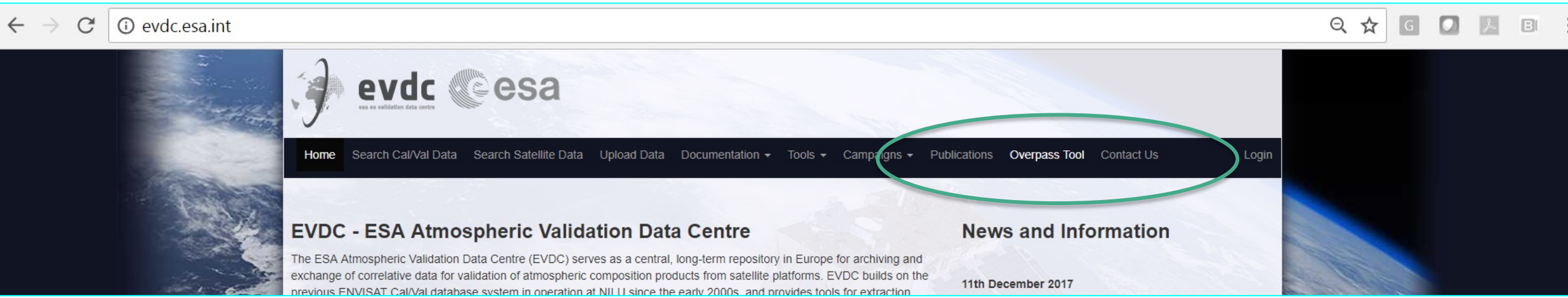
Through collaboration with the ECMWF, EVDC is providing access to **daily updated analyses and forecast data** files of global gridded meteorological parameters, such as temperature, geopotential height, zonal wind and meridional wind. Analysis and **forecast up to 240 hours** for levels are updated on a daily basis. Data for both the Northern hemisphere and the Southern hemisphere are available.



Contact: nadirteam@nilu.no or amf@nilu.no



Web portal – Available services



Overpass Predictor and Orbit Tool

Search for overpass based on instrument

Display more than one overpass

Search for overpasses between satellites

EarthCARE is included

DEMO VIDEO!



Newsletter and contact




EVDC Newsletter

E-mail: nadirteam@nilu.no

Twitter: [@evdc_team](https://twitter.com/evdc_team)

[Subscription to e-mailing list](#)
[\(contact nadirteam for info\)](#)

Thank you!



Newsletter from EVDC August 2017

EVDC - ESA Atmospheric Validation Data Centre

The ESA Atmospheric Validation Data Centre (EVDC) is the official ESA repository for validation and campaign datasets.

EVDC is built to assist the scientific community with the archival and exchange of correlative data for validation of satellite instrument atmospheric composition products and provides the final archive for the data. EVDC builds on the previous ENVISAT Cal/Val database system in operation at NILU since the early 2000s, and includes tools for extraction, conversion and archival of a large amount of EO data.

The objective of the current ESA funded project lead by Skytek [1] with the partnership of NILU [2] and ICHEC [3], is to provide an online information system that supports users in managing and exploiting campaign datasets for Earth Observation missions and applications. The EVDC will provide access to satellite data subsets for specific missions over user-defined areas; in particular the system is in preparation for the upcoming atmospheric composition/dynamic missions Sentinel-5P and ADM-Aeolus. (http://www.esa.int/Our_Activities/Observing_the_Earth/Copernicus/Sentinel-5P) (http://www.esa.int/Our_Activities/Observing_the_Earth/Aeolus/Introducing_Aeolus) Having both Cal/Val data and satellite products in a centralized system will greatly increase the possibility of validating missions over long time series and will improve understanding of the behavior of sensors during the entire mission.

The EVDC database helps as a tool to monitor the quality and availability of the data provided and it aims to support field campaigns over various seasons and locations. The portal can be easily expanded to support new campaigns and satellite missions. EVDC offers easy access to a wide range of user support and advice to data managers on how to archive data and what variables they should store.


The New EVDC Portal

EVDC has recently been upgraded, and is available at: <http://evdc.esa.int/>

The new EVDC portal is built on the previous versions of EVDC, a database which many of our users are familiar with. New features are introduced in the portal and old systems are upgraded and improved, in order to make it more user friendly and to meet the needs for newly required functionality.

The new EVDC web portal is based on a high scalable Django web application deployed on Amazon Web Service AWS [6]. The main upgrades with respect to the previous portal consist of an improved data access and query performance for the Cal/Val database, the new Search Satellite Data page for accessing the Satellite Archive, and the inclusion of a new feature: the Orbit Predictor and Overpass Tool (OPOT).

Read more below to explore the portals services and tools.



New feature in EVDC: Orbit Predictor and Overpass Tool

The OPOT is a new tool that allows users to specify an area of the Earth's surface and a time window, select a list of satellites, and apply a query to verify if and when the satellite will perform observations in this region, matching, for example, specific ground based measurement observations.

The OPOT takes input for satellite's orbit in the form of TLEs (Two-Line Element set) and exploits the Simplified General Perturbation Model (SGP4)[8] to predict and store the future orbits.

An overpass occurs when the field of view of a satellite's instrument passes over an area of interest (AOI). Users can search for overpasses by satellite or instrument, as well as for joint overpasses between two satellites. They can then download the data for further analysis or upload previous queries. The tool also allows the planning of campaigns for future missions, by simulating the TLEs for satellites not yet launched.

The OPOT interface allows the user to specify query parameters such as satellites, instruments, date and time, while the 3D globe viewer can be used to specify the location (single point or a polygonal AOI) and to display the resulting overpasses

Test it out on <http://evdc.esa.int/orbit/>



