

## iCUPE data pilots, data and services (ver 1)

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*WP5: Data provision, interoperability and facilitation of data and services*

*Task5.5: Facilitating iCUPE data pilots, data and services towards ERA-PLANET community, GEO and Copernicus / Deliverable 5.5.1 iCUPE data pilots, data and services (ver 1)*

*Version 1*

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### Introduction

Following the FAIR data principle, the data pilot needs to provide

- an up-to-date Data Management Plan (DMP)
- data deposited into free accessible research data repositories
- ensure that third parties can freely access, mine, exploit, reproduce and disseminate the data
- provide the related information and identify (or provide) the tools needed to use the raw data to validate your research

The pilot should then apply to

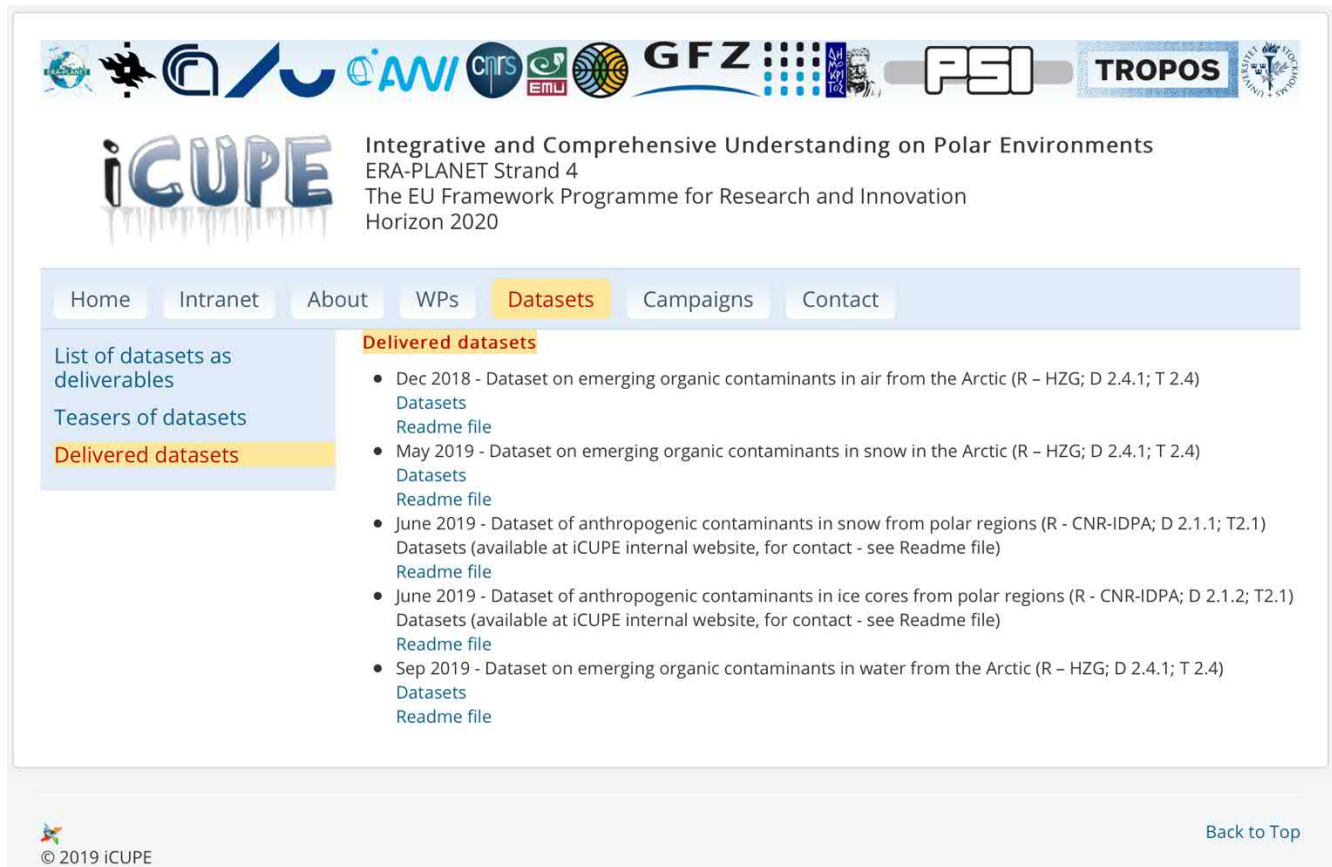
- the data (and metadata) needed to validate results in scientific publications
- other curated and/or raw data (and metadata) that are specified in the DMP

### The iCUPE Data Management Plan

The **iCUPE Data Management Plan (DMP)** has been delivered so far in version 1 in November 2017, with an appendix and in version 2 in November 2018. The updates in the DMP move forward according the planned time of delivery.

## The data repositories

iCUPE datasets using different data repositories. Simple datasets, mostly those in form of tabular data are depending on the size of the data file available directly on the **iCUPE website** (<https://www.atm.helsinki.fi/icupe/index.php/datasets/delivered-datasets>).



The screenshot shows the iCUPE website interface. At the top, there is a banner with logos of partner institutions: ECHA, IAP FGO, AWI, CNRS, EMLU, GFZ, PSI, and TROPOS. Below the banner is the iCUPE logo and the text: "Integrative and Comprehensive Understanding on Polar Environments, ERA-PLANET Strand 4, The EU Framework Programme for Research and Innovation, Horizon 2020". A navigation menu includes "Home", "Intranet", "About", "WPs", "Datasets" (highlighted), "Campaigns", and "Contact". On the left, a sidebar lists "List of datasets as deliverables", "Teasers of datasets", and "Delivered datasets" (highlighted). The main content area is titled "Delivered datasets" and contains a bulleted list of datasets with their respective dates and descriptions, each with links to "Datasets" and "Readme file".

- Dec 2018 - Dataset on emerging organic contaminants in air from the Arctic (R – HZG; D 2.4.1; T 2.4)  
Datasets  
Readme file
- May 2019 - Dataset on emerging organic contaminants in snow in the Arctic (R – HZG; D 2.4.1; T 2.4)  
Datasets  
Readme file
- June 2019 - Dataset of anthropogenic contaminants in snow from polar regions (R - CNR-IDPA; D 2.1.1; T2.1)  
Datasets (available at iCUPE internal website, for contact - see Readme file)  
Readme file
- June 2019 - Dataset of anthropogenic contaminants in ice cores from polar regions (R - CNR-IDPA; D 2.1.2; T2.1)  
Datasets (available at iCUPE internal website, for contact - see Readme file)  
Readme file
- Sep 2019 - Dataset on emerging organic contaminants in water from the Arctic (R – HZG; D 2.4.1; T 2.4)  
Datasets  
Readme file

At the bottom left, it says "© 2019 iCUPE" and at the bottom right, there is a "Back to Top" link.

Figure 1. iCUPE data sets accessible via direct links and metadata information in linked readme files

Beside simple data sets, iCUPE data also includes data that are stored in other repositories. Examples of such repositories are the EBAS (<http://ebas.nilu.no>) database that is hosting data related to EMEP<sup>1</sup>,

<sup>1</sup> European Monitoring and Evaluation Programme, <https://www.emep.int>

NILU<sup>2</sup>, ACTRIS<sup>3</sup>, WMO<sup>4</sup> activities and the LitDB (<http://litdb.fmi.fi>) database hosted by the Finnish Meteorological Institute (FMI) and includes ground-based in-situ data and satellite data products.

### Access to iCUPE data

The access to iCUPE data is free. In terms of simple data, they can be directly downloaded from the iCUPE website via links provided there. To the time of this delivery altogether five datasets have been made available on the website. Each dataset on the website has added a “Readme” file that contains information on the dataset, i.e. data producer, address and contact details, data format, location of measurements that contributed to the data set.

Data sets that have restrictions by the data producer are made available by personal contact to the data set producer/owner. This information is freely provided by the Readme files on the iCUPE website.

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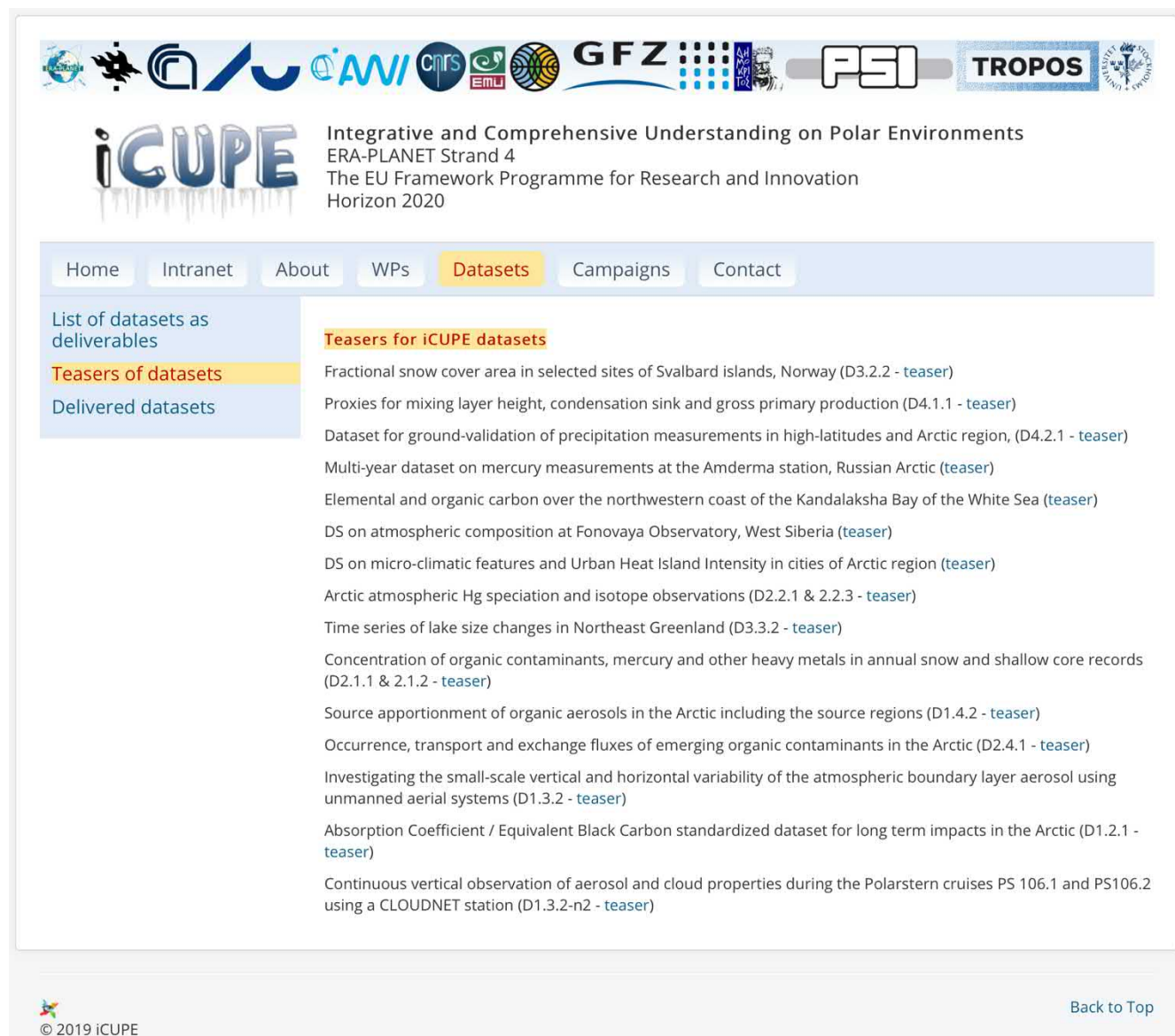
<sup>2</sup> Norwegian Institute for Air Research (Norsk institutt for luftforskning), <https://www.nilu.no/en/>

<sup>3</sup> European Research Infrastructure for the observation of Aerosol, Clouds and Trace Gases, <https://www.actris.eu>

<sup>4</sup> World Meteorological Organization, <https://public.wmo.int/en>

## Tools and services to access iCUPE data

All data sets have data teasers published on the iCUPE website<sup>5</sup>. These act, together with the data set readme files as metadata information that is right available to the users.



The screenshot shows the iCUPE website interface. At the top, there is a navigation bar with logos for various institutions: AWI, CNRS, EMLU, GFZ, PSI, and TROPOS. Below the logos, the iCUPE logo is displayed along with the text: "Integrative and Comprehensive Understanding on Polar Environments", "ERA-PLANET Strand 4", "The EU Framework Programme for Research and Innovation", and "Horizon 2020".

The main content area features a navigation menu with "Home", "Intranet", "About", "WPs", "Datasets" (highlighted), "Campaigns", and "Contact". On the left, there is a sidebar with "List of datasets as deliverables", "Teasers of datasets" (highlighted), and "Delivered datasets".

The "Teasers for iCUPE datasets" section lists the following items:

- Fractional snow cover area in selected sites of Svalbard islands, Norway (D3.2.2 - [teaser](#))
- Proxies for mixing layer height, condensation sink and gross primary production (D4.1.1 - [teaser](#))
- Dataset for ground-validation of precipitation measurements in high-latitudes and Arctic region, (D4.2.1 - [teaser](#))
- Multi-year dataset on mercury measurements at the Amderma station, Russian Arctic ([teaser](#))
- Elemental and organic carbon over the northwestern coast of the Kandalaksha Bay of the White Sea ([teaser](#))
- DS on atmospheric composition at Fonovaya Observatory, West Siberia ([teaser](#))
- DS on micro-climatic features and Urban Heat Island Intensity in cities of Arctic region ([teaser](#))
- Arctic atmospheric Hg speciation and isotope observations (D2.2.1 & 2.2.3 - [teaser](#))
- Time series of lake size changes in Northeast Greenland (D3.3.2 - [teaser](#))
- Concentration of organic contaminants, mercury and other heavy metals in annual snow and shallow core records (D2.1.1 & 2.1.2 - [teaser](#))
- Source apportionment of organic aerosols in the Arctic including the source regions (D1.4.2 - [teaser](#))
- Occurrence, transport and exchange fluxes of emerging organic contaminants in the Arctic (D2.4.1 - [teaser](#))
- Investigating the small-scale vertical and horizontal variability of the atmospheric boundary layer aerosol using unmanned aerial systems (D1.3.2 - [teaser](#))
- Absorption Coefficient / Equivalent Black Carbon standardized dataset for long term impacts in the Arctic (D1.2.1 - [teaser](#))
- Continuous vertical observation of aerosol and cloud properties during the Polarstern cruises PS 106.1 and PS106.2 using a CLOUDNET station (D1.3.2-n2 - [teaser](#))

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Figure 2. iCUPE data set teasers

<sup>5</sup> <https://www.atm.helsinki.fi/icupe/index.php/datasets/submitted-datasets>

iCUPE is further using VLAB<sup>6</sup>, a virtual laboratory platform, that allows the generation of workflows to access data and to provide tools to that allow the use of the data to facilitate evidence-based decision-making. VLAB needs to get a set of models provided that operate on the data accessible in open repositories.

The dataset providing a snow cover assessment in Svalbard has a VLAB application utilizing satellite and in-situ data to produce visual results.

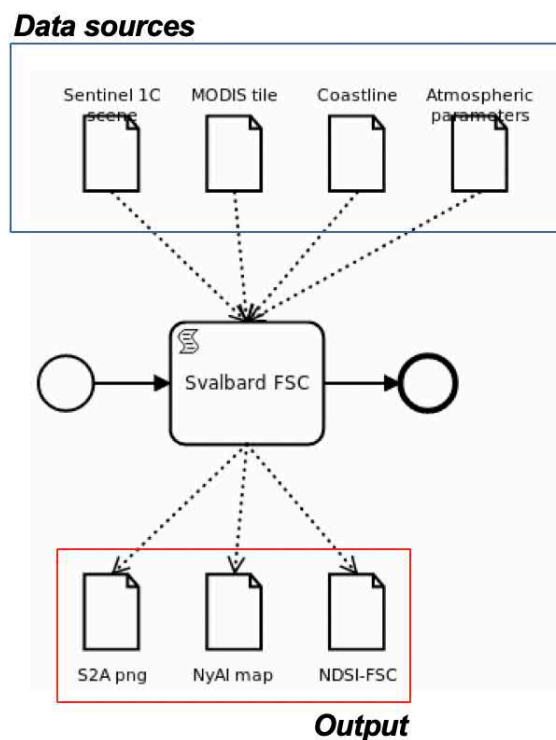


Figure 3. VLAB model workflow to generate a snow cover assessment utilizing iCUPE data and linking atmospheric parameters with satellite data products

<sup>6</sup> <https://vlab.geodab.org>

