D8.11
Portfolio of subdomain web-processing services

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Deliverable abstract

The report presents the portfolio of Atmospheric subdomain web-processing services
which have been developed for the ENVRI-FAIR catalogue of services.

DELIVERY SLIP

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DELIVERY LOG

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DOCUMENT AMENDMENT PROCEDURE

Amendments, comments and suggestions should be sent to the Project Manager at
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GLOSSARY

A relevant project glossary is included in Appendix A. The latest version of the master list of the glossary
is available at http://doi.org/10.5281/zenodo.4471374.

PROJECT SUMMARY

ENVRI-FAIR is the connection of the ESFRI Cluster of Environmental Research Infrastructures
(ENVRI) to the European Open Science Cloud (EOSC). Participating research infrastructures (RI) of the
environmental domain cover the subdomains Atmosphere, Marine, Solid Earth and Biodiversity /
Ecosystems and thus the Earth system in its full complexity.

The overarching goal is that at the end of the proposed project, all participating RIs have built a set of
FAIR data services which enhances the efficiency and productivity of researchers, supports innovation,
enables data- and knowledge-based decisions and connects the ENVRI Cluster to the EOSC.

This goal is reached by: (1) well defined community policies and standards on all steps of the data life
cycle, aligned with the wider European policies, as well as with international developments; (2) each
participating RI will have sustainable, transparent and auditable data services, for each step of data life
cycle, compliant to the FAIR principles. (3) the focus of the proposed work is put on the implementation
of prototypes for testing pre-production services at each RI; the catalogue of prepared services is defined
for each RI independently, depending on the maturity of the involved RIs; (4) the complete set of
thematic data services and tools provided by the ENVRI cluster is exposed under the EOSC catalogue of
services.

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1. Introduction

The ENVRI-FAIR project's objective is to implement "FAIRness" for data produced in the European Research Infrastructures (RIs) organised in the Environmental Research Infrastructures (ENVRI) community, having FAIR data also helps RIs connecting to the European Open Science Cloud (EOSC). In this context, "FAIR" is an acronym comprising the aspects of "Findable", "Accessible", "Interoperable", and "Reusable" as specified by the FORCE11 community.

ENVRI-FAIR WP8 organises and conducts this implementation work for the community of ENVRI RIs in the atmospheric subdomain, comprising the RIs ACTRIS, EISCAT-3D, IAGOS, ICOS, and SIOS.

This deliverable constitutes a list of web-processing services implemented by Atmosphere RIs. The services we considered offer interaction with the users and are triggered on request: an action of the user on an interactive interface; or a user request for the implementation of an automated service (e.g. operational data provision for Copernicus). Services can then be used through machine-to-machine interfaces (eg. Web API, Desktop API) or human interfaces (Web GUI, VRE, Desktop GUI).

This list of services has been compiled in the frame of the Task 8.5 for demonstration of interoperability within the Atmosphere subdomain and will be used to help describe the services in the ENVRI catalogue and the EOSC Marketplace.

2. Portfolio

For each RI a table presents the list of web-processing services with descriptions and a link to access them. The status of implementation of the services are also described as some aren't in an operational phase yet. Some services are developed but need some support before deployment.

2.1. Cross-RIs services

Name of the service	Description	Scope	Status O= in operation S=support needed P=planned	Link
Colocation service	Given a list of ground stations and satellites of interest, the colocation service aims at identifying the satellite observations that match the colocation criteria specified by the user.	display, download	O	https://www.icare.univ-lille.fr/asd-content/colocation/ https://www.icare.univ-lille.fr/asd-content/colocation/ui

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2.2. ACTRIS

Name of the service	Description	Variables	Scope	Status O= in operation S=support needed P=planned	Link
ACTRIS Data portal	Access to all ACTRIS data	ca 120 atmospheric variables	Data access	O	https://actris.nilu.no
Machine-to-Machine access to ACTRIS (meta)data	ACTRIS metadata catalogue REST API	All ACTRIS data and metadata	Data and metadata access	O	https://prod-actris-md.nilu.no/
ACTRIS vocabulary	This server documents the vocabulary and controlled lists of terms used by the Aerosol, Clouds and Trace Gases Research Infrastructure (ACTRIS), as a community standard. A grammar for observed variables takes into use the InteroperAble Descriptions of Observable Property Terminology (I-ADOPT) concept for atomizing the variable names into parts of themselves controlled lists of terms. The vocabulary refers to links to external vocabularies wherever			O	https://vocabulary.actris.nilu.no/skosmos/actris_vocab/

Name of the service	Description	Variables	Scope	Status O= in operation S=support needed P=planned	Link
	possible.				
EARLINET Single Calculus Chain (SCC)	The EARLINET Single Calculus Chain (SCC) is a tool for the automatic data processing and analysis of aerosol lidar measurements.			O	https://www.earlinet.org/index.php?id=281
EBAS Data Submission Tool	A tool for data submissions to EBAS, ACTRIS in situ data centre. This tool checks the file format, rich metadata consistency and value ranges. The tool is open for all users that need data arching of in-situ data.			O	https://ebas-submit-tool.nilu.no

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2.3. EISCAT-3D

Name of the service	Description	Variables	Scope	Status O= in operation S=support needed P=planned	Link	Comment
Madrigal	L3 data browser	Data products and derivations	Browse, download, derive, plot	O	portal.eiscat.se/madrigal	Voluntary affiliation/email, API examples
RTG	Level 1/2 visualisation		Display low level data	O	portal.eiscat.se/schedule	Recent data embargoed
GUISDAP	Reanalysis		Using non-default constraints	O	portal.eiscat.se/schedule	

2.4.IAGOS

Name of the service	Description	Scope	Status O= in operation S=support needed P=planned	Link
IAGOS data and metadata access (Observational L2 data)	Machine-to-machine access to final quality controlled Observational Data (Level 2) and associated metadata	download	O	https://services.iagos-data.fr/prod/swagger-ui/index.html
IAGOS data and metadata access (L3 and L4 data)	Machine-to-machine access to added-value products (Level 3 and Level4) and associated metadata	download	O	https://iagos.aeris-data.fr/catalogue/
IAGOS data portal	Graphical interface for access to all IAGOS data products and associated metadata	download, plot	O	https://doi.org/10.25326/20

2.5.ICOS

Name of the service	Description	Status O= in operation S=support needed P=planned	Link
STILT Footprint Tool	STILT on demand calculator and viewer. An online tool to analyse the potential impact of natural and human-caused emissions on the atmospheric carbon dioxide at a selection of ICOS atmosphere stations.	O	https://www.icos-cp.eu/data-services/tools/stilt-footprint
Jupyter Notebook	Virtual Research Environment (VRE). A Virtual Research Environment incorporating a collection of tools for interactive computing and sharing of computational ideas.	O	https://www.icos-cp.eu/data-services/tools/jupyter-notebook
Carbon Portal DOI minting service	We utilise Digital Object Identifiers (DOIs) to attach the data ownership to the data.	O	https://doi.icos-cp.eu/
Data statistics	Statistics about data object downloads from the ICOS Carbon Portal.	O	https://data.icos-cp.eu/stats/
Ancillary data upload tool	Upload graphical interface, http API, and dedicated upload API for raw ecosystem data directly from data loggers	O	https://www.icos-cp.eu/data-services/tools/upload-data
DataPortal	Search greenhouse gas data on Data Portal.	O	https://data.icos-cp.eu/

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2.6.SIOS

Name of the service	Description	Scope	Status O= in operation S=support needed P=planned	Link	Comment
WMS visualization tool	Interactive visualization of WMS services. The tool allows for selection of layers, time, elevation and style. Overlaying of multiple getCapabilities is also supported.	Visualization of gridded data on a map.	O	https://bokeh.metsis-api.met.no/GISPY	This service is embedded in the basket service of the data catalogue. It requieres a WMS getCapability document to plot a layer (e.g. https://bokeh.metsis-api.met.no/GISPY?url=https://nbswms.met.no/thredds/wms_ql/NBS/S1A/2022/12/07/EW/S1A_EW_GRDM_1SDH_20221207T175706_20221207T175755_046229_05891F_6DE3.nc?SERVICE=WMS&REQUEST=GetCapabilities)

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Name of the service	Description	Scope	Status O= in operation S=support needed P=planned	Link	Comment
Interactive plotting tool	Interactive visualization of time series, time series profiles and profile data. The service provides variable selection, time resampling, data export as csv or netCDF of raw data as well as subsetting of visualized data.	On-the-fly building of interactive dashboards for plotting and processing of i) time series, ii) time series profiles, iii) profiles datasets via OPeNDAP urls	O	https://bokeh.metsis-api.met.no/TS-Plot	This service is embedded in the data catalogue, providing on the fly plotting for selected data. The API requires an OPeNDAP url to provide a plot (e.g. https://bokeh.metsis-api.met.no/TS-Plot?url=https://thredds.met.no/thredds/dodsC/met.no/observations/stations/SN99938.nc)
Observation Facility Catalogue	This catalogue has been developed to provide an overview of the observation facilities which collect SIOS data. An observation facility can be one instrument or a collection of instruments, e.g. a weather station, and is a term used by the World Meteorological Organization	Providing an overview of the Observation facilities collecting SIOS data.	O	https://sios-svalbard.org/sios-ri-catalogue	This service is not providing processing of data, but just exposing a metadata catalogue

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Name of the service	Description	Scope	Status O= in operation S=support needed P=planned	Link	Comment
	(WMO). The annotation is standardised following the WMO standards as far as possible, in order to make entries unambiguous and interoperable internationally. A REST API is also provided at https://sios-svalbard.org/sios-ri-catalogue/rest/sios-ri-catalogue.json				
Dataset validation service	The tools provides on-the-fly validation of CF and ACDD compliance for netCDF files. The tool is based on the IOOS compliance checker.	Help data provider to deliver CF and/or ACDD compliant data	O	https://sios-svalbard.org/dataset_validation/form/	This tool requires login to be used.
Mosaic tool	This tool provides visualization of the latest Sentinel-1 and Sentinel-2 products on a map.	Provide a quick view of the available Sentinel products over the Svalbard region during	O	https://sios-svalbard.org/services/mosaic	This tool is not providing any processing, but only visualization and metadata information.

Name of the service	Description	Scope	Status O= in operation S=support needed P=planned	Link	Comment
		the last week.			
Sentinel-2 products comparison	This tool provides visual comparison of two Sentinel-2 products for a selected tile. Users can select tiles, cloud coverage, time and composite.	Compare Sentinel-2 products for different composites on a selected tile	O	https://sios-svalbard.org/services/comparison	This tool is not providing any processing, but only interactive visualization
Sentinel acquisition plans	The KML files available on this page are retrieved from the ESA website and filtered to provide detailed information about the planned Sentinel-2 acquisitions within the Norwegian area of interest. Each KML file usually covers a period of 10-15 days.	Show future acquisition plans for Sentinel passages over Svalbard region	O	https://sios-svalbard.org/services/acquisition	This tool is not providing any processing, but only interactive visualization

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