



Title: Final release of ARSINOE Collective Intelligence Data Hub

Deliverable 4.5

WP4: Environmental Intelligence Management and Services

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TABLE OF CONTENTS

EXECUTIVE SUMMARY	4
1.0 INTRODUCTION	5
2.0 ARSINOE DATA HUB COMPONENTS.....	6
1.1 Data Management Service	6
Metadata Schema	6
API	7
Available Endpoints.....	7
Request – Response Examples.....	7
1.2 Web-based Catalogue	13
Data Catalogue – Upload Datasets	13
Data Catalogue – View Datasets	15
1.3 Transformation Service	16
1.4 OAI-PMH Compliant Metadata Service	17
3.0 INTERACTION WITH OTHER SERVICES	18
4.0 CONCLUSIONS	18
REFERENCES	19

EXECUTIVE SUMMARY

This deliverable presents the final version of the ARSINOE Collective Intelligence Data Hub. It details the different available components / services that consist of the Data Hub and describes how they can be exploited and by which users.

The main objectives of the ARSINOE Data Hub were to support the Case Studies for depositing and making available their datasets independent of their nature, format and type and making those datasets available to the wider research community for further exploitation.

The final release of the Data Hub includes the following components:

- A *web Data Catalogue* accessible through a web user interface, where the users as members of a specific Case Study can login and upload their datasets, accompanied by a set of specific metadata and any guest user can view the available datasets and depending on their privacy download them.
- A web service named: *Data Management Service* supporting the machine-to-machine interaction between the Data Hub and any possible service client.
- A *Transformation Service* which allows you to transform any tabular (CSV or TSV format) dataset to a new form by performing a set of operations on top of the original dataset and creating a new file.
- An OAI-PMH compliant service supporting interoperability by exposing the metadata in standard formats, enabling integration with external repositories and data discovery platforms.

Finally, it provides information on how the Data Hub is integrated with the project's Knowledge Graph: "SustainGraph" and the Visualisation Dashboard to offer an integrated knowledge management infrastructure.

Related Deliverables / Milestones: MS16 and MS15 describing the initial versions of the Data Hub and their components. D4.7 and D4.1 detailing the SustainGraph and the Visualisation Dashboard respectively.

1.0 INTRODUCTION

During the ARSINOE project, the Case Studies have generated and/or used different datasets for accomplishing their objective and create useful outputs. To support their needs in terms of effectively hosting, managing and making available the various datasets, the ARSINOE Data Hub has been developed. It has been designed as a schema-agnostic repository, capable of accommodating datasets of any type, structure, or format thus, enabling maximum flexibility and inclusiveness. To support dataset discovery and interoperability, the Hub enforces a common metadata schema, which facilitates consistent dataset description and enhances searchability. Advanced filtering and search functionalities are built on top of this metadata layer, enabling users to easily identify relevant datasets. The architecture of the ARSINOE Data Hub consists of several key components that collectively support data lifecycle management for the Case Studies and facilitate the broader dissemination of ARSINOE datasets to the research community. A high-level overview of these components is presented in the diagram (Figure 1) below and includes:

- **Data Management Service:** This service enables the storage, retrieval, and querying of datasets. Each dataset can be assigned an access level: Public, Protected, or Private to define their accessibility and authorisation. The service exposes a RESTful API to allow programmatic access and integration with internal or external applications.
- **Web-Based Catalogue:** A publicly accessible online catalogue displays available datasets and their metadata, organized by Case Study. Access to datasets is user-dependent: authenticated users may view additional datasets not available to guests. The catalogue offers an intuitive User Interface for uploading datasets using a form-based wizard interface. This is available only to authorized contributors.
- **Transformation Service:** It supports the transformation of tabular data (e.g., csv, tsv) through a series of directives to be applied into the source file. The output is a new generated tabular file containing the filtered data.
- **OAI-PMH Compliant Metadata Service:** To support interoperability and adherence to FAIR (Findable, Accessible, Interoperable, Reusable) principles, the Data Hub offers an OAI-PMH (Open Archives Initiative Protocol for Metadata Harvesting) compliant endpoint. This service exposes metadata in standard formats, enabling integration with external repositories and data discovery platforms.

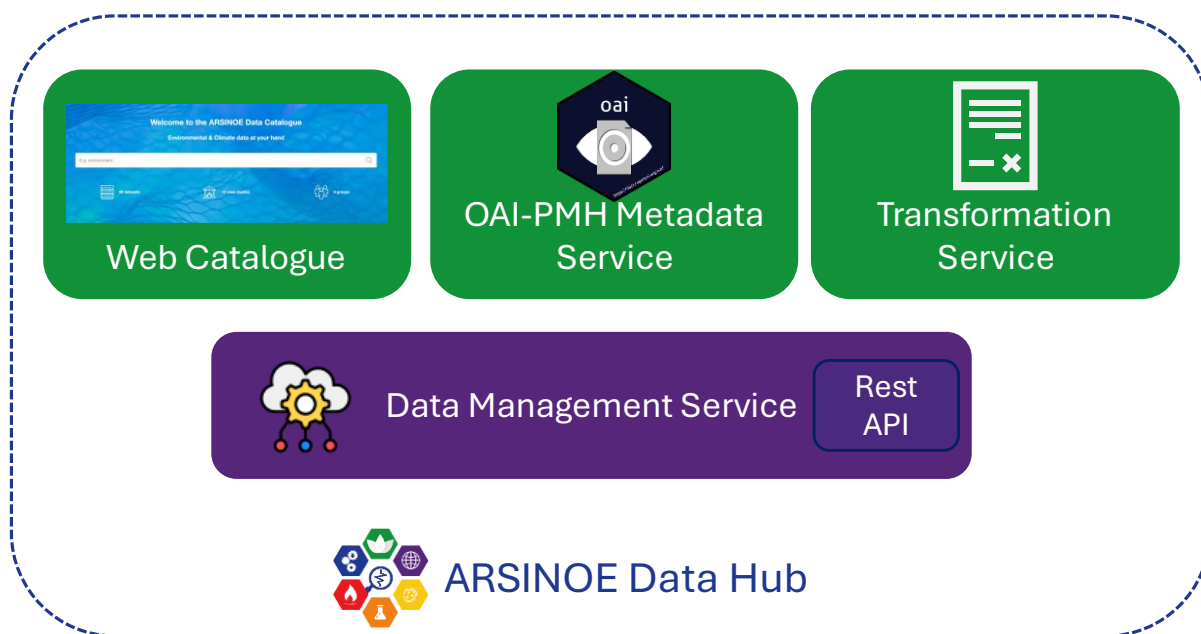


Figure 1: Data Hub components

2.0 ARSINOE DATA HUB COMPONENTS

1.1 Data Management Service

The Data Management Service aims to provide a standardised way for storing and managing datasets in the Hub. Each dataset is accompanied with its set of metadata to facilitate the identification of them from external users. It offers a RESTful API through which any potential client can store and retrieve datasets.

The main operations of the service include the upload of a new dataset, update or delete an existing dataset, list available datasets and their metadata, retrieve a dataset, and search for datasets.

Metadata Schema

Every dataset is accompanied by a set of metadata to facilitate its discovery and provide the required meta-information. A generic schema has been selected for the Hub to allow any type and kind of datasets to be described with it. The main attributes are:

- *Title: Title of the dataset
- *Description: A brief description
- *License: Dataset's license
- *Author: Author's name
- Author email: Author's email
- Maintainer: Maintainer
- Maintainer email: Maintainer's email
- DOI: Digital Object Identifier of the dataset
- *Origin: Dataset's origin
- *Resource Type: Resource's type
- *Dataset Type: Dataset's type
- Tags

API

The Application Programming Interface (API) of the Data Management Service covers all the necessary actions a client may need to do in the Hub. The API supports the listing of the available information concerning the datasets, their metadata, and the actual resources, to the management of them (including update and delete operations) and the creation of new datasets.

Detailed information on how to use the API are available through: <https://arsinoe-data-management-service.readthedocs.io/en/latest/#>

The next section lists all the available endpoints currently available.

Available Endpoints

The available endpoints for the web service are:

- List Case Studies
- List Datasets
- Search Datasets
- Retrieve Dataset Info
- Retrieve Resource Info
- Download Resource
- List Groups
- Retrieve Group Info
- List Datasets per Group
- List Licenses
- List Dataset Origins
- List Dataset Resource Types
- List Dataset Types
- Create Dataset
- Update Dataset
- Patch Dataset
- Delete Dataset
- Create Resource
- Update Resource
- Patch Resource
- Delete Resource

Request – Response Examples

1. List the available Case Studies

Request Headers:

- [Authorization](#) – API token (optional)

Example Request

```
curl --request GET '{serviceBaseURL}/list-case-studies' --header 'Authorization: token'
```

Example Response

```
[
  {
    "id": "408463d1-b4a2-40a6-bca6-5b69ee3b26a2",
    "title": "Case Study 1",
    "name": "case-study-1",
    "created": "2022-10-20T12:05:38.619616",
    "description": "A description for case study 1",
    "image_url": "https://arsinoe-project.eu/secstorage/2022/02/cs1.jpg"
  },
  {
    "id": "5fc66e62-9566-4ac7-8060-956dcf776bdc",
    "title": "Case Study 2",
    "name": "case-study-2",
    "created": "2022-10-20T13:05:38.619616",
    "description": "A description for case study 2",
    "image_url": ""
  },
]
```

2. List Datasets

GET /list-datasets

Retrieves a paginated list of the datasets in the Data Catalogue. In the case of a protected dataset on which the user does not have full view rights, the resources only include the name field.

Query Parameters:

- **case_study_id** (*string*) – The id of the case study. Specifies the case study to which the datasets belong. If not provided, then all datasets in the catalogue are returned. (*optional*)
- **page** (*int*) – The page number.

Request Headers:

- [Authorization](#) – API token (*optional*)

Status Codes:

- [404 Not Found](#) – The provided *case_study_id* does not match a case study in the Data Catalogue.

Example Request

```
curl --request GET '{serviceBaseURL}/list-datasets' --header 'Authorization: token'
```

Example Response

```
{
  "results": [
    {
      "id": "6e6e41d9-c7f4-4472-87d7-acc458737a86",
      "title": "Greece Shapefile",
      "name": "greece-shapefile",
      "description": "Greece",
    }
  ]
}
```

```

"author": "EEA",
"maintainer": "",
"doi": "",
"origin": "secondary",
"tags": [],
"resources": [
  {
    "id": "333ec029-6299-4f3e-8912-953228026d33",
    "created": "2023-05-08T12:52:35.285792",
    "description": "",
    "format": "SHP",
    "name": "Greece_shapefile",
    "size": 18352169,
    "url": "{catalogueBaseURL}/dataset/6e6e41d9-c7f4-4472-87d7-acc458737a86/resource/333ec029-6299-4f3e-8912-953228026d33/download/greece_shapefile.zip",
    "last_modified": "2023-05-08T12:52:35.265641",
    "resource_type": null
  }
],
"license_id": "other-open",
"license_title": "Other (Open)",
"license_url": null,
"visibility": "public",
"zenodo_publish": false,
"case_study_id": "b022e32a-7212-4685-a923-a22b6787f20b",
"number_of_resources": 1,
"publication_date": null,
"author_email": "",
"maintainer_email": "",
"resource_type": "observational",
"dataset_type": "geospatial"
},
{
  "id": "71f3d3fc-d707-4db2-b951-020abc1418ff",
  "title": "Natura 2000 greece",
  "name": "natura-2000-greece",
  "description": "Natura 2000 greece",
  "author": "Natura",
  "maintainer": "",
  "doi": "",
  "origin": "secondary",
  "tags": [],
  "resources": [
    {
      "id": "7b32d161-6d1b-4938-a671-cb3ef302e905",
      "created": "2023-05-08T12:49:05.615586",
      "description": "Natura 200 shape file",
      "format": "SHP",

```

```

    "name": "Natura 200 shape file",
    "size": 20713988,
    "url": "{catalogueBaseURL}/dataset/71f3d3fc-d707-4db2-b951-020abc1418ff/resource/7b32d161-6d1b-4938-a671-cb3ef302e905/download/20200813_natura2000_shape-files.rar",
    "last_modified": "2023-05-08T12:49:05.584061",
    "resource_type": null
  }
],
"license_id": "other-open",
"license_title": "Other (Open)",
"license_url": null,
"visibility": "public",
"zenodo_publish": true,
"case_study_id": "b022e32a-7212-4685-a923-a22b6787f20b",
"number_of_resources": 1,
"publication_date": null,
"author_email": "",
"maintainer_email": "",
"resource_type": "observational",
"dataset_type": "geospatial"
},
{
  "id": "194e0bf4-db9d-41f3-af90-b7fecacd9d1b",
  "title": "Natura 2000 network",
  "name": "natura-2000-network",
  "description": "Natura 2000 is the key instrument to protect biodiversity in the European Union. It is an ecological network of protected areas, set up to ensure the survival of Europe's most valuable species and habitats. Natura 2000 is based on the 1979 Birds Directive and the 1992 Habitats Directive. This version covers the reporting in 2020.",
  "author": "Directorate-General for Environment (DG ENV) / European Environment Agency (EEA)",
  "maintainer": "",
  "doi": "",
  "origin": "secondary",
  "tags": [
    "tag1",
    "tag2",
    "tag3"
  ],
  "resources": [
    {
      "id": "0e74b107-b9d7-4a9b-921b-82f83dcb49e0",
      "created": "2023-04-21T08:05:38.269019",
      "description": "",
      "format": "",
      "name": "NATURA 2000",
      "size": null,
      "url": "https://www.eea.europa.eu/data-and-maps/data/natura-14",

```

```

        "last_modified": null,
        "resource_type": null
    },
    ],
    "license_id": "other-open",
    "license_title": "Other (Open)",
    "license_url": null,
    "visibility": "public",
    "zenodo_publish": null,
    "case_study_id": "b022e32a-7212-4685-a923-a22b6787f20b",
    "number_of_resources": 1,
    "publication_date": null,
    "author_email": "",
    "maintainer_email": "",
    "resource_type": "observational",
    "dataset_type": "geospatial"
}
],
"pageMetadata": {
    "size": 3,
    "totalElements": 3,
    "totalPages": 1,
    "number": 0
}
}

```

3. Download Resource

GET /download-resource

Redirects to the download url of the resource in the Data Catalogue.

Query Parameters:

- **resource_id** (*string*) – The id of the resource.

Request Headers:

- [Authorization](#) – API token (*optional*)

Status Codes:

- [301 Moved Permanently](#) – The resource download url was retrieved successfully.
- [404 Not Found](#) – No resource was found with the provided id.

Example Request

```
curl --location --request GET '{serviceBaseURL}/resource-info?resource_id=dea64b6b-5bf7-4698-bb88-d095be9c4ccb' --header 'Authorization: token'
```

Note

The `--location` option instructs curl to follow redirects.

4. Upload Resource

POST /create-resource

Creates a new dataset in the Data Catalogue. (A dataset is a collection of resources)

Request Headers:

- [Authorization](#) – API token

Form Parameters:

- **file** – The resource file. (*optional*)
- **resource** – A json string containing the rest of the fields listed below:

Request JSON Object:

- **dataset_id** (*string*) – The id of the owning dataset. (Inside resource json)
- **url** (*string*) – The url to an external resource. This must be provided only if a file upload is not provided. (*optional*) (Inside resource json)
- **description** (*string*) – The description of the resource. (*optional*) (Inside resource json)
- **format** (*string*) – The format of the resource, e.g. csv, shp, html etc (*optional*) (Inside resource json)
- **name** (*string*) – The name of the resource. (Inside resource json)

Example Request

```
curl --request POST '{serviceBaseURL}/create-resource' --header 'Authorization: token' \
  --form 'file=@"path/to/file"' \
  --form 'resource="{\"dataset_id\": \"eebc4b25-da99-43f8-8221-e12a13cd9da4\", \"name\": \"Resource 10\", \"description\": \"A description\", \"format\": \"csv\"}"'
```

Example Multipart form Data for “resource”

```
{
  "dataset_id": "eebc4b25-da99-43f8-8221-e12a13cd9da4",
  "name": "Resource 10",
  "description": "A description",
  "format": "csv"
}
```

Response

Returns the newly created resource in the same format as *Resource Info*

1.2 Web-based Catalogue

The web-based catalogue is designed to serve two primary user groups: (1) The members of the ARSINOE Case Studies offering an intuitive, dedicated space for uploading, linking and retrieving datasets related to their Case Study and (2) External researchers for discovering datasets that are pertinent to climate resilience and the specific challenges addressed by the Case Studies.

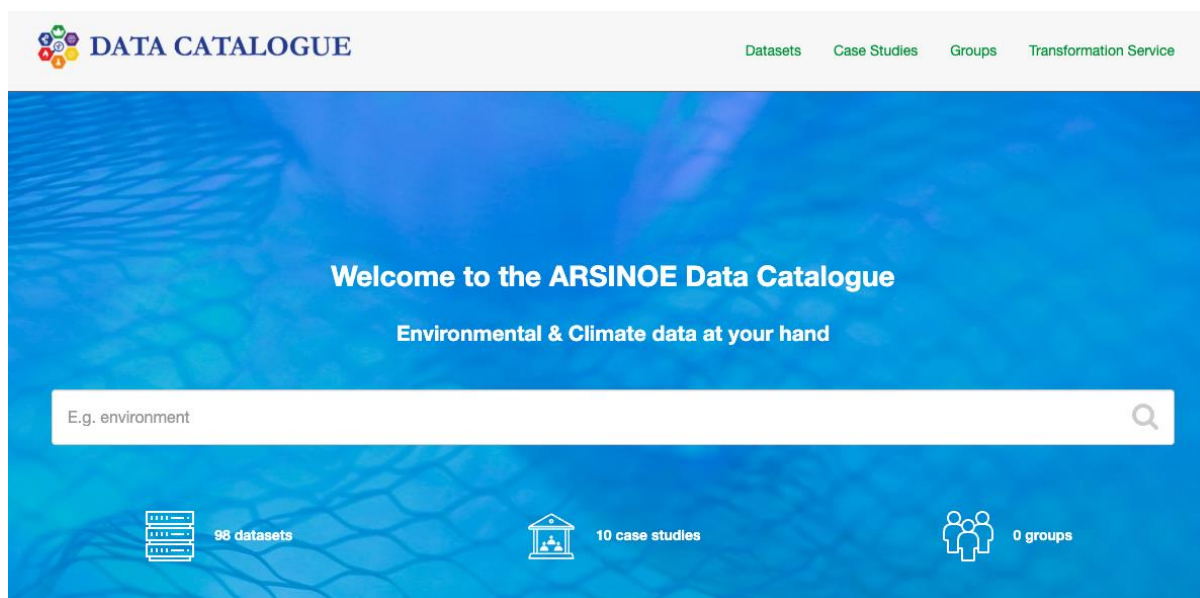


Figure 2: ARSINOE Data Catalogue landing page

The catalogue supports free text search among all the available datasets and advanced filtering options based on a standardised metadata schema. Access to the datasets is governed by permissions, which may differ per dataset. The access level is decided from the dataset owner and three options are available:

- **Public dataset:** The dataset is open and available to both registered and guest users.
- **Protected dataset:** The dataset's information is available to both registered and guest users, but only authorised users can access the actual resource.
- **Private dataset:** The dataset is available only to authorised users.

This mechanism ensures both openness and data protection, aligning with the FAIR data management principles.

Finally, with the aim to support the Open Science movement and facilitate the assignment of persistent Digital Object Identifier (DOI) for a new dataset, the catalogue supports the automatic deposition of a selected dataset to the Zenodo repository and the update of the DOI identifier back to the ARSINOE catalogue. This mechanism also supports the update of the dataset on Zenodo through the creation of new versions.

Data Catalogue – Upload Datasets

Users with the permission to upload a new dataset can simply navigate to the specific Case Study, click on the “Add Dataset” button and follow the form wizard for uploading a new dataset. The mandatory metadata fields are clearly indicated, while the optional ones can be left blank if needed.

[Home](#) / [Dataset](#) / **Create Dataset**

What are datasets?

A Dataset is a collection of data resources (such as files), together with a description and other metadata at a fixed URL. Datasets are what users see when searching for data. Datasets can be either private and public and should always belong to a specific Case Study.

1 Create dataset
2 Add data

*** Title:**

*** URL:** catalogue.arsinoe-project.eu/dataset/<dataset> [Edit](#)

*** Description:**

You can use [Markdown formatting](#) here

*** License:**

License definitions and additional information can be found at <https://creativecommons.org/licenses/by/4.0/>

Publication Date:

*** Author:**

Author Email:

Maintainer:

Maintainer Email:

DOI:

*** Origin:**

*** Resource Type:**

*** Dataset Type:**

Tags:

*** Case Study:**

*** Visibility:**

*** Publish to Zenodo:**

☐ Yes
☐ No

For more information regarding publishing to Zenodo click [here](#)

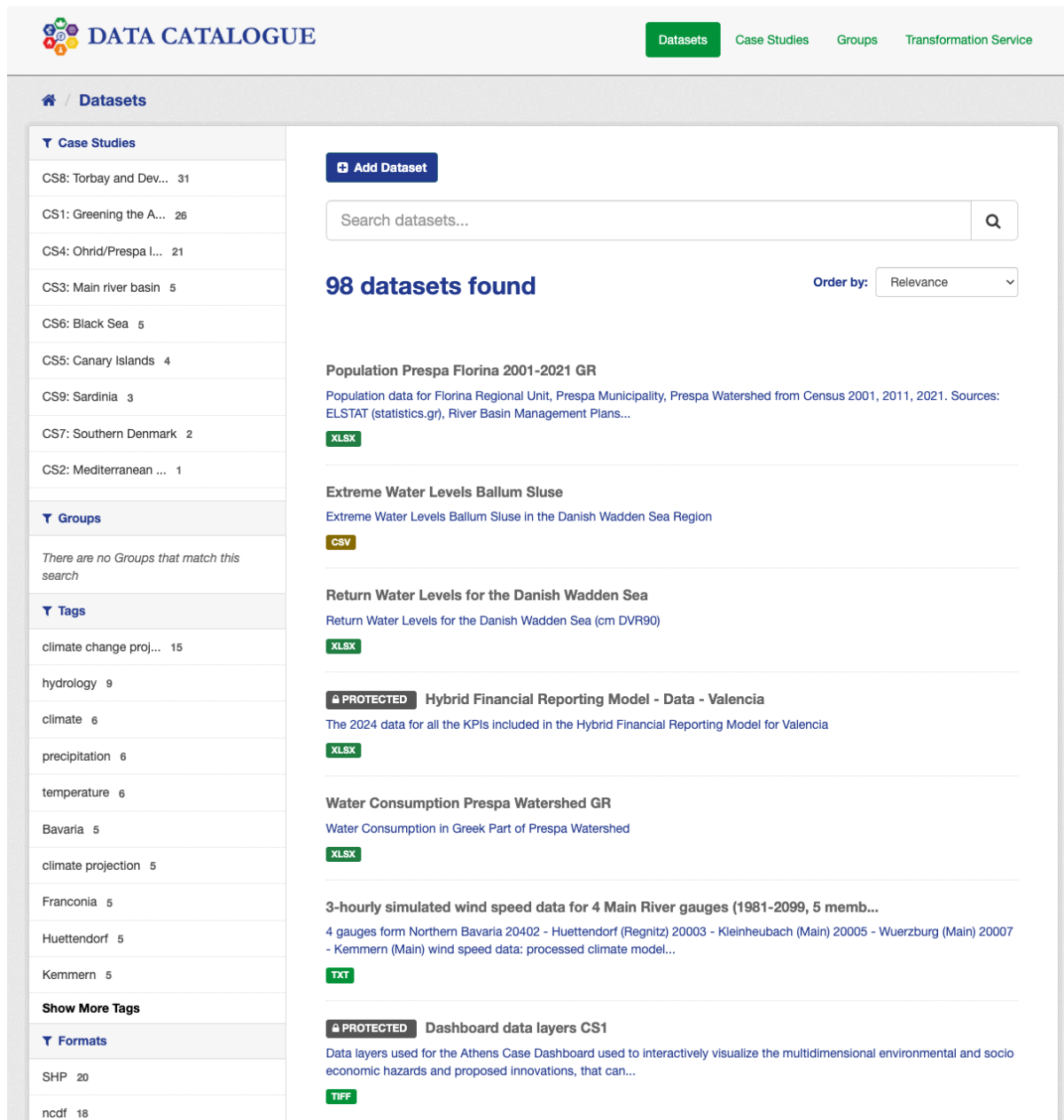
* Required field

[Next: Add Data](#)

Figure 3: ARSINOE Data Catalogue - Upload dataset

Data Catalogue – View Datasets

The exploration of the available datasets is straightforward, offering multiple filtering options on the left side of the screen as presented below.



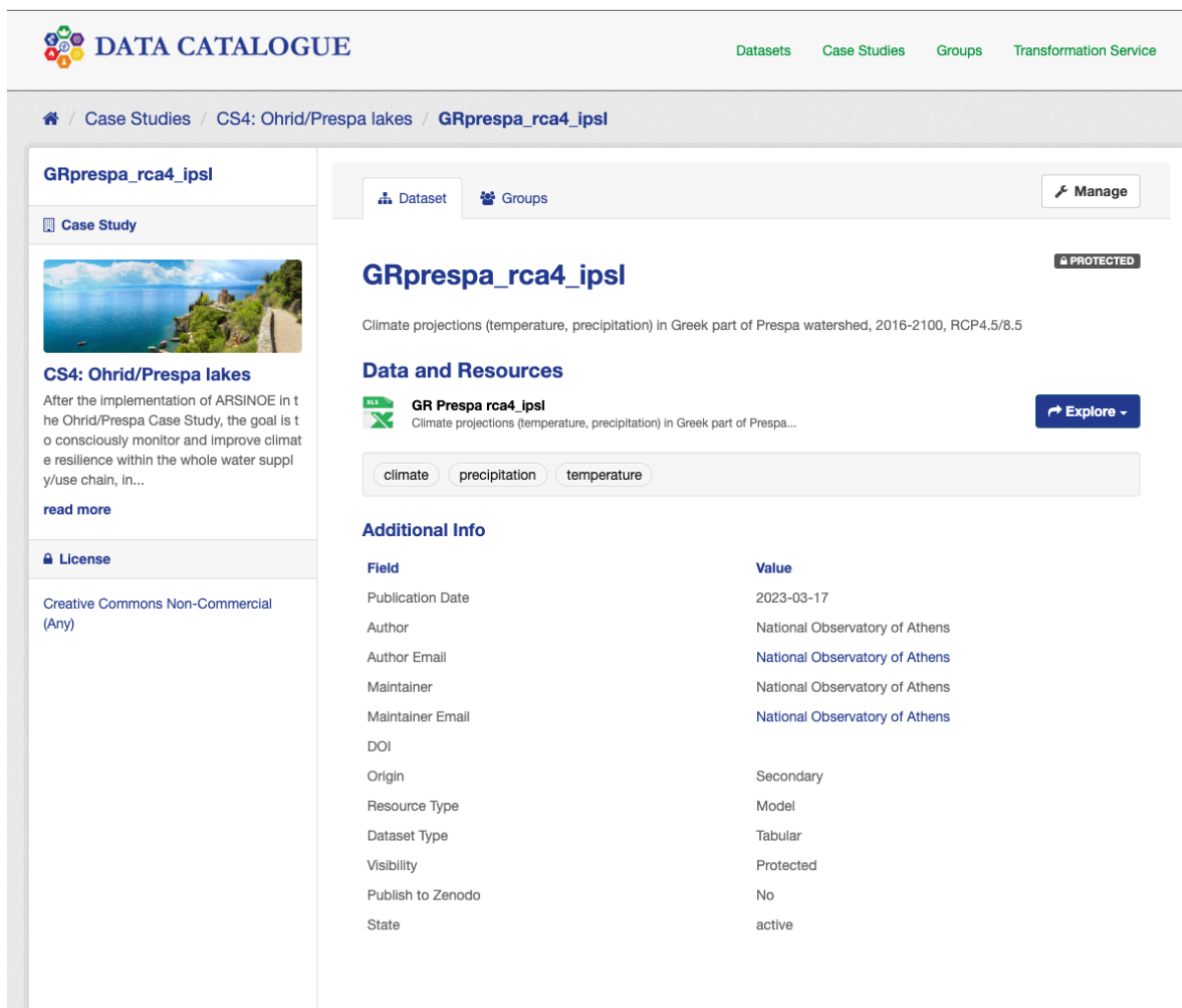
The screenshot displays the ARSINOE Data Catalogue interface. On the left, a sidebar contains navigation links for 'Case Studies', 'Groups', and 'Tags'. The 'Case Studies' section lists various studies with their counts, such as 'CS8: Torbay and Dev...' (31) and 'CS1: Greening the A...' (26). The 'Groups' section shows 'There are no Groups that match this search'. The 'Tags' section lists various environmental and climate-related tags like 'climate change proj...' (15), 'hydrology' (9), 'climate' (6), 'precipitation' (6), 'temperature' (6), 'Bavaria' (5), 'climate projection' (5), 'Franconia' (5), 'Huetendorf' (5), and 'Kemmern' (5). Below the tags is a 'Show More Tags' link and a 'Formats' section listing 'SHP' (20) and 'ncdf' (18).

The main content area on the right shows a search bar with the text 'Search datasets...' and a magnifying glass icon. Below the search bar, it states '98 datasets found' and an 'Order by: Relevance' dropdown menu. The list of datasets includes:

- Population Prespa Florina 2001-2021 GR**: Population data for Florina Regional Unit, Prespa Municipality, Prespa Watershed from Census 2001, 2011, 2021. Sources: ELSTAT (statistics.gr), River Basin Management Plans... (XLSX)
- Extreme Water Levels Ballum Sluse**: Extreme Water Levels Ballum Sluse in the Danish Wadden Sea Region (CSV)
- Return Water Levels for the Danish Wadden Sea**: Return Water Levels for the Danish Wadden Sea (cm DVR90) (XLSX)
- PROTECTED Hybrid Financial Reporting Model - Data - Valencia**: The 2024 data for all the KPIs included in the Hybrid Financial Reporting Model for Valencia (XLSX)
- Water Consumption Prespa Watershed GR**: Water Consumption in Greek Part of Prespa Watershed (XLSX)
- 3-hourly simulated wind speed data for 4 Main River gauges (1981-2009, 5 memb...**: 4 gauges from Northern Bavaria 20402 - Huetendorf (Regnitz) 20003 - Kleinheubach (Main) 20005 - Wuerzburg (Main) 20007 - Kemmern (Main) wind speed data: processed climate model... (TXT)
- PROTECTED Dashboard data layers CS1**: Data layers used for the Athens Case Dashboard used to interactively visualize the multidimensional environmental and socio economic hazards and proposed innovations, that can... (TIFF)

Figure 4: ARSINOE Data Catalogue - View datasets

Each dataset indicates the level of access (Public (no sign), Protected or Private) to inform users about the potential options. By clicking on any of the datasets the users are provided with the metadata information and links to the actual resources as shown below.



DATA CATALOGUE

[Datasets](#) [Case Studies](#) [Groups](#) [Transformation Service](#)

[Home](#) / [Case Studies](#) / [CS4: Ohrid/Prespa lakes](#) / [GRprespa_rca4_ipsl](#)

GRprespa_rca4_ipsl

Case Study



CS4: Ohrid/Prespa lakes

After the implementation of ARSINOE in the Ohrid/Prespa Case Study, the goal is to consciously monitor and improve climate resilience within the whole water supply/use chain, in...

[read more](#)

License

Creative Commons Non-Commercial (Any)

Dataset **Groups** **Manage**

GRprespa_rca4_ipsl **PROTECTED**

Climate projections (temperature, precipitation) in Greek part of Prespa watershed, 2016-2100, RCP4.5/8.5

Data and Resources

 **GR Prespa rca4_ipsl**
Climate projections (temperature, precipitation) in Greek part of Prespa...

[Explore](#)

[climate](#) [precipitation](#) [temperature](#)

Additional Info

Field	Value
Publication Date	2023-03-17
Author	National Observatory of Athens
Author Email	National Observatory of Athens
Maintainer	National Observatory of Athens
Maintainer Email	National Observatory of Athens
DOI	
Origin	Secondary
Resource Type	Model
Dataset Type	Tabular
Visibility	Protected
Publish to Zenodo	No
State	active

Figure 5: ARSINOE Data Catalogue - Explore dataset

1.3 Transformation Service

The tabular data transformation service provides a convenient way to transform, cleanup and manipulate tabular datasets (e.g. csv or tsv) before they are uploaded to the Hub. It offers a set of standard operations and directives that can be applied in a pipeline order. The result of the service is a new transformed dataset. Basic operations include columns' drop, filtering, renaming and mapping and it also supports numeric operations.

To facilitate the exploitation of this service, a User Interface has been developed, and it is integrated within the data catalogue. In addition, a RESTful API is available to be consumed by third-party services to support their automation workflows in data transformation. A Swagger documentation is available through: <https://catalogue.arsinoe-project.eu/dts-service/apidocs/>.

[Back to Home Page](#)

Delimiter Choose file

Loaded file sample [^](#)

DATAFLOW	LAST UPDATE	freq	unit	hhtyp	incgrp	sex	age	geo	TIME_PERIOD	OI
ESTAT:SDG_06_10(1.0)	09/09/22 11:00:00	A	PC	TOTAL	A_MD60	T	TOTAL	AL	2017	2.
ESTAT:SDG_06_10(1.0)	09/09/22 11:00:00	A	PC	TOTAL	A_MD60	T	TOTAL	AL	2018	3.
ESTAT:SDG_06_10(1.0)	09/09/22 11:00:00	A	PC	TOTAL	A_MD60	T	TOTAL	AL	2019	2.

Figure 6: Transformation Service - Loaded tabular dataset

- DROP
- RENAME

freq

geo
- FILTER

> Greater than numeric

TIME_PERIOD

Figure 7: Transformation Service - Pipeline operations

1.4 OAI-PMH Compliant Metadata Service

The OAI-PMH service is based on the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH), enabling structured access and exchange of metadata between systems. The service allows external platforms to automatically retrieve datasets in a standardized XML format. It supports common OAI-PMH operations such as identifying the service, listing available records, and retrieving

metadata. This ensures easy integration and interoperability with research repositories, digital libraries, and data aggregators.

The main URL of the service is available through: <https://catalogue.arsinoe-project.eu/oai-pmh/?verb=Identify> and the main operations of the service are:

- List Records
- List Sets
- List Metadata Formats
- List Identifiers

For more information about the OAI-PMH protocol you can visit: <https://www.openarchives.org/pmh/>

3.0 INTERACTION WITH OTHER SERVICES

The Data Hub is the core component of the ARSINOE knowledge management framework and supports the management of the generated and linked datasets. The Visualisation Dashboard retrieved the needed datasets per Case Study by directly interacting with the API of the Data Management Service.

In addition, the SustainGraph exploits the same API for retrieving the needed datasets and inset them into the knowledge graph, while in some cases it exploits the Transformation service for transforming external datasets into a ready-to-ingest format, suitable with its schema.

4.0 CONCLUSIONS

This deliverable presented the final version of the ARSINOE Data Hub which is used as the core component for data management for all the Case Studies. Due to the generic and schema / format agnostic design, the Data Hub was able to accommodate the data needs of all Case Studies and facilitate their retrieval and processing. Through the Data Catalogue, it managed to provide a single point of access for both the Case Study members and the research community to facilitate the retrieval of datasets and their further exploitation by external researchers, highlighting the ARSINOE's work on climate resilience and the address of specific challenges.

As the project reaches its end, the Data Hub will remain active and continue to disseminate this work to other researchers and projects working on relevant fields.

References

Koltsida P., Toli E., (2023), First release of ARSINOE Collective Intelligence Data Hub, MS16, H2020 grant no. 101037424

Koltsida P. (2024), Workflow and connection with ARSINOE Data Hub for risk-based early warning, MS15, H2020 grant no. 101037424

Ioanna Mandilara et al. (2024) Machine Learning Models for KG data analytics. ARSINOE Deliverable 4.7, H2020 grant no. 101037424

Lewis G. (2024), D4.1 Visualisation Dashboard for co-designing Solutions

Toli, E. & Koltsida, P., (2025) Data Management Plan 4. ARSINOE Deliverable 1.6, H2020 grant no. 101037424

OAI-PMH: <https://www.openarchives.org/pmh/>

Zenodo: <https://zenodo.org/>

Systems Innovation Approach (SIA) addresses the growing complexity, interdependencies and interconnectedness of modern societies and economies, focusing on the functions of the cross-sectoral system as a whole and on the variety of actors. The Climate Innovation Window (CIW) is the EU reference innovations marketplace for climate adaptation technologies. ARSINOE shapes the pathways to resilience by bringing together SIA and CIW, to build an ecosystem for climate change adaptation solutions. Within the ARSINOE ecosystem, pathways to solutions are co-created and co-designed by stakeholders, who can then select either existing CIW technologies, or technologies by new providers (or a combination) to form an innovation package. This package may be designed for implementation to a specific region, but its building blocks are transferable and re-usable; they can be re-adapted and updated. In this way, the user (region) gets an innovation package consisting of validated technologies (expanding the market for CIW); new technologies implemented in the specific local innovation package get the opportunity to be validated and become CIW members, while the society (citizens, stakeholders) benefits as a whole. ARSINOE applies a three-tier, approach: (a) using SIA it integrates multi-faceted technological, digital, business, governance and environmental aspects with social innovation for the development of adaptation pathways to climate change for specific regions; (b) it links with CIW to form innovation packages by matching innovators with end-users/regions; (c) it fosters the ecosystem sustainability and growth with cross-fertilization and replication across regions and scales, at European level and beyond, using specific business models, exploitation and outreach actions. The ARSINOE approach is show-cased in nine widely varied demonstrators, as a proof-of-concept with regards to its applicability, replicability, potential and efficacy.



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