

AdriaClim

Climate change information, monitoring and
management tools for adaptation strategies in Adriatic
coastal areas

Project ID: 10252001

D.4.4.1 Report on geoportal development

LP – ARPAE

Final version

Public document

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Table of contents

| | |
|--|-----------|
| Table of contents..... | 2 |
| Aims and content of the document | 3 |
| Status of development and technologies..... | 3 |
| Guide to the main features of the Geoportal..... | 3 |
| Homepage | 3 |
| Layers Panel..... | 4 |
| Geoportal graphs | 6 |
| Polygons Feature | 8 |
| Future improvements | 10 |
| Datasets categorization..... | 10 |
| New Types Of Graphs | 10 |

Aims and content of the document

The aim of the present document is to provide a report on the status of the development of the Adriaclim Geoportal and to document the functionalities implemented so far. The Geoportal in the current status is publicly available for evaluation at the address <https://geoportale-adriacлим.datamb.it/>.

The document is organized as follows:

- **chapter 2** describes the current status of the development of the Geoportal and the technologies that were adopted
- **chapter 3** describes how to use the capabilities implemented so far
- **chapter 4** briefly describes the improvements expected.

Status of development and technologies

The technologies used for the development of the Geoportal are:

- Django (Python Web Framework)
- Python for the backend, especially Pandas for the data analysis and manipulation
- HTML + CSS and JavaScript, with its libraries Leaflet for the map and D3 for the realization of the graphs.
- PostgreSQL, for the realization of the database
- Docker, used to “dockerize” the application i. e. packaging the application in a Docker image to run it in one or more containers.

Currently we are developing the different types of graphs through which the user can visualize trends over time (annually, daily etc.) but also the average, the minimum and maximum at each time level along all the time series of the area.

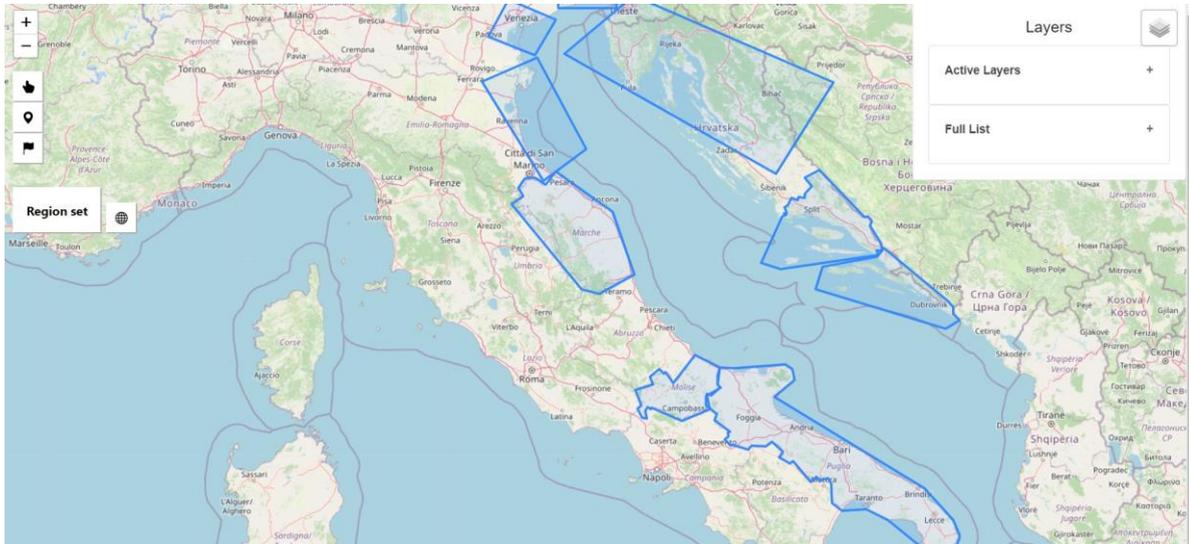
Now it is also possible to see all the different types of graphs based on the points falling in a particular polygon chosen by the user.

Guide to the main features of the Geoportal

Homepage

This is the homepage of the Geoportal. The user immediately sees the map with all the possible functionalities. The default view is the one with the pilot areas, but the user can

change it by hovering on the “region set” button and choosing one of the possible views (Adriatic View, Pilot Areas or Upload a Geojson).



Layers Panel

In the layers panel the user can see the full list of all the available datasets (categorizing them will be a future improvement of the Geoportal). They can be filtered by typing the dataset’s name or the institution’s name in the search field.

Layers

Active Layers +

Full List -

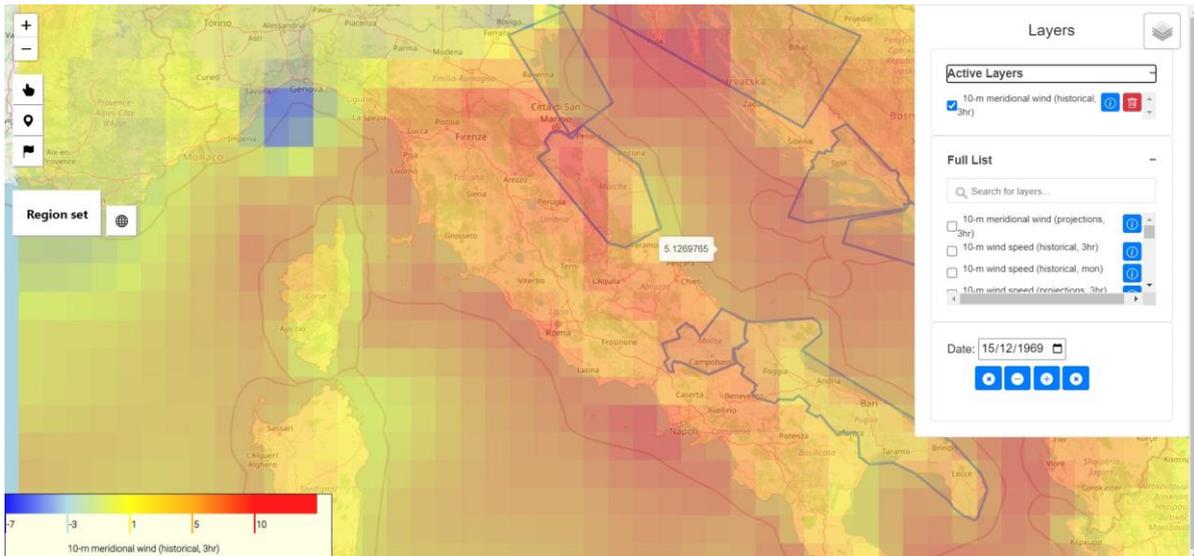
- 10-m meridional wind (historical, 3hr) 
- 10-m meridional wind (projections, 3hr) 
- 10-m wind speed (historical, 3hr) 
- 10-m wind speed (historical, mon) 

Once the user has chosen a particular dataset, its layer will be attached to the map; if the dataset hasn't its own WMS layer, a graphical layer will be created by the Geoportal that will also create a custom legend whose values can be arbitrarily changed by the user, while if the dataset has a WMS layer, the Geoportal will take it directly from Erddap and attach it to the map.

The dataset, once it is checked by the user, will move in the panel from the full list to the active layers panel's area and there the user can uncheck it (this will temporarily remove the layer and its legend from the map) or also remove it (this will also move the dataset

again to the full list area).

The user can change the date to be visualized and also the other parameters that the dataset can have.

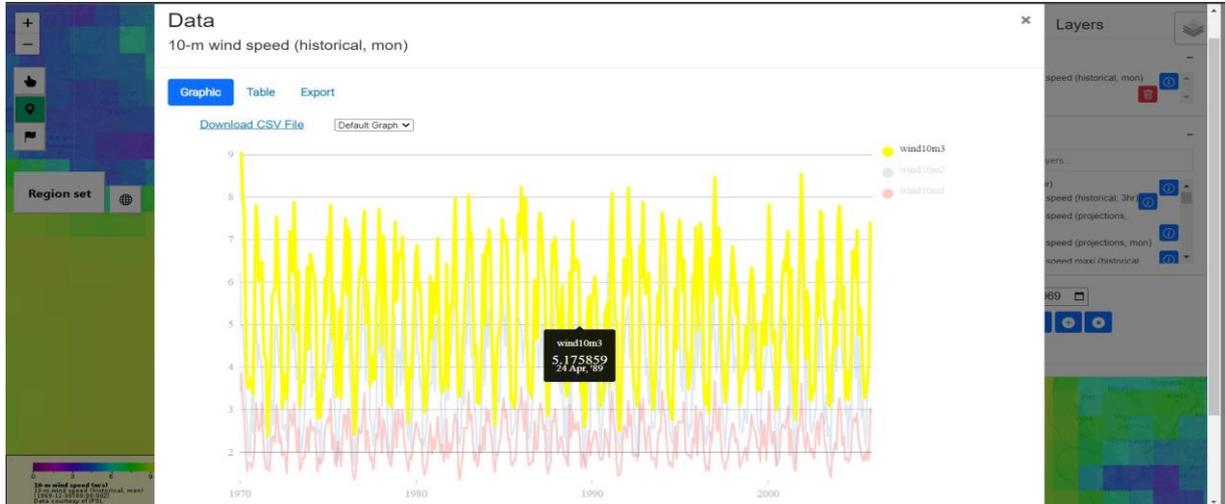


In this screenshot an example of a layer created by the Geoportal is shown.

Geoportal graphs

Once the user selects a dataset, and successively toggles on the location button at the left side of the page, clicking a point in the map will open the modal window that shows the

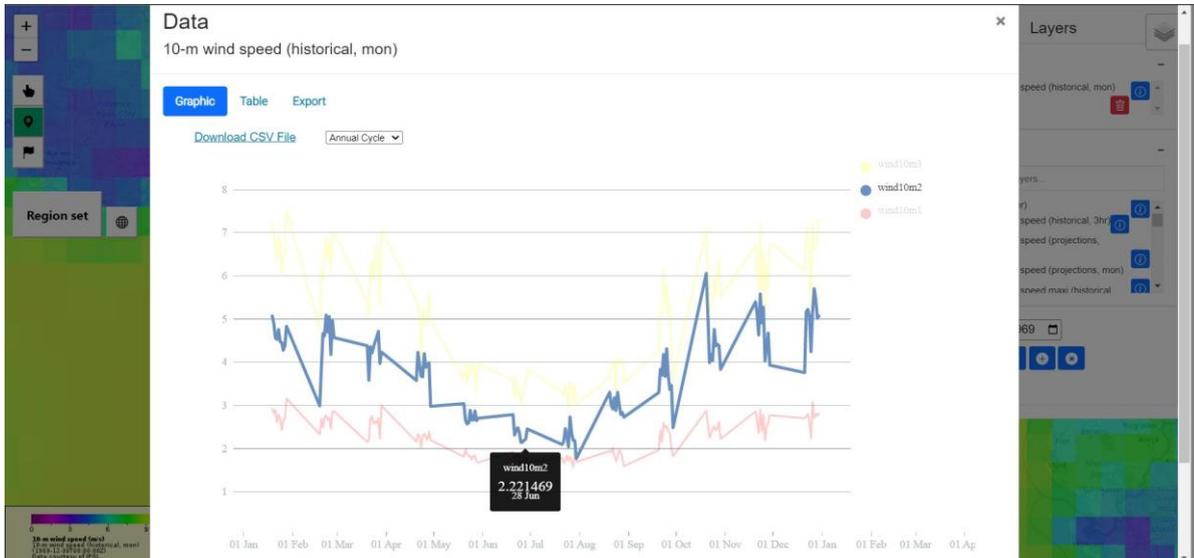
graphs.



In this screenshot it is shown the default graph (time series) of the specific point (the one clicked and two points near it) of the dataset chosen by the user.

It is also possible to download the CSV file where all the data shown on the graph can be viewed and processed by the user.

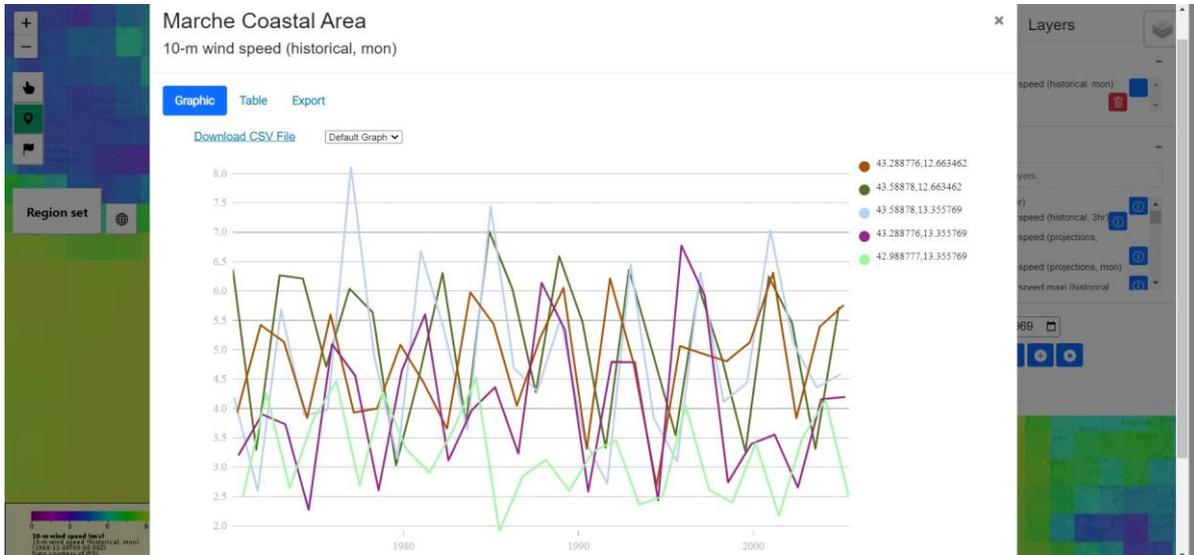
Using the dropdown menu, it is possible to choose between the different types of graphs that now are “default graph” and “annual cycle” (adding more types of graphs is a future improvement).



In this screenshot, it is shown the annual cycle of the data, obtained by putting together all the values of the “januaries”, “februaries”, etc obtaining a time series of 12 elements.

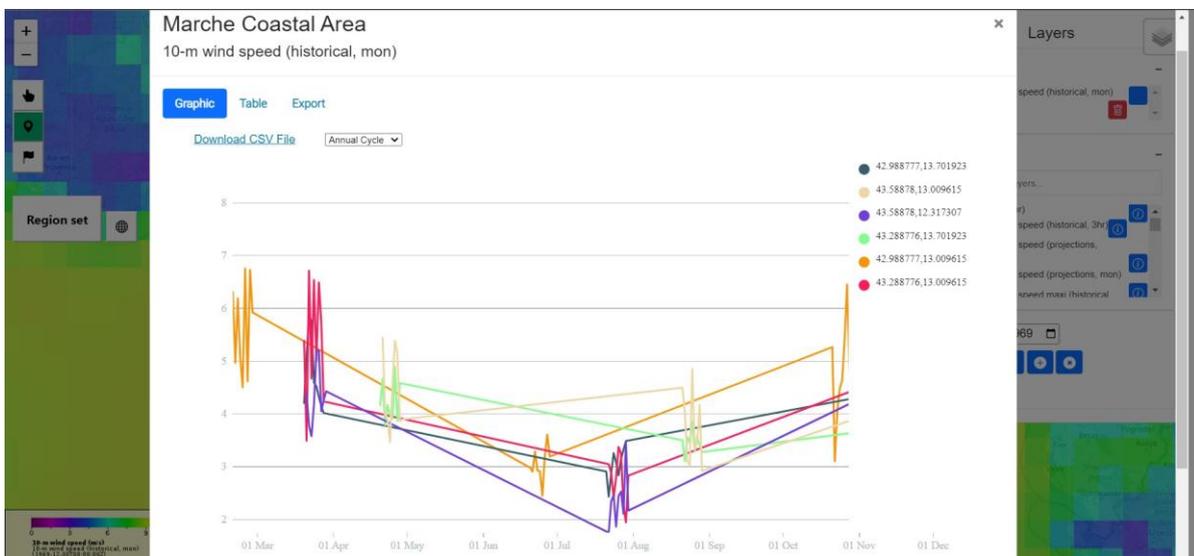
Polygons Feature

If the user clicks (with the location button toggled on) inside one of the polygons, either a user-uploaded or a default polygon, the Geoportal will open a modal window where it will show the polygon’s graphs, containing the data trend of all the points inside the clicked polygon.



Here the user clicked the Marche Coastal Area polygon

Here too the user can choose between the different types of graphs.



Annual Cycle of the 10-m wind speed (historical, mon) dataset of the Marche Coastal Area polygon.

Future improvements

Datasets categorization

The actual selection of the datasets by name or institution is not satisfactory. There's the need to categorize the datasets. This will be done by adding specific metadata at the ERDDAP repository level, collaborating with task 4.2 and using these metadata in the Geoportal in order to dispose the datasets in a tree structure similar to the following one:

- Modelling
 1. Large scale
 - X Model
 - Y Model
 - Z Model
 - ...
 2. Local
- Observational
- Indicators
 1. Based on large-scale models
 - Trend (without the temporal dimension)
 - Time series
 2. Based on local models
 - Trend (without the temporal dimension)
 - Time series
 3. Based on observations (?)

On one hand, this will allow the Geoportal to associate to each dataset only the actions that are meaningful for that kind of data, while, on the other hand, this will allow different categories of end-users to quickly identify the data they need for their activity and compress the lists of datasets that are not of common use.

This will also allow to completely hide some dataset categories to some specific user categories, if that will be desired at a project management level for any reason.

New Types Of Graphs

Currently only two types of graphs are available: "Default Graph" (full time series) and "Annual Cycle". Other types of graphs will be added, namely:

- Average, Maximum, Minimum time level by time level between all the time series of the area
- Median, Minimum, 10th percentile, 90th percentile, maximum of the distribution of all the time levels of all the time series of the area.

The time series will be aggregated, depending on the dataset, on years, seasons or months.