



WQeMS Platform User Guide

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0. Access to service requests and advanced functionalities

In order to request a service and access to advanced functionalities, you need an account registered on the [platform](#).

If you are interested in the service and want to get access, contact us!

The following pages will provide an overview of the main functionalities of the platform, with step-by-step instructions to familiarize with it. Some functionalities are provided freely (e.g., access to open data products), others require a registered account.

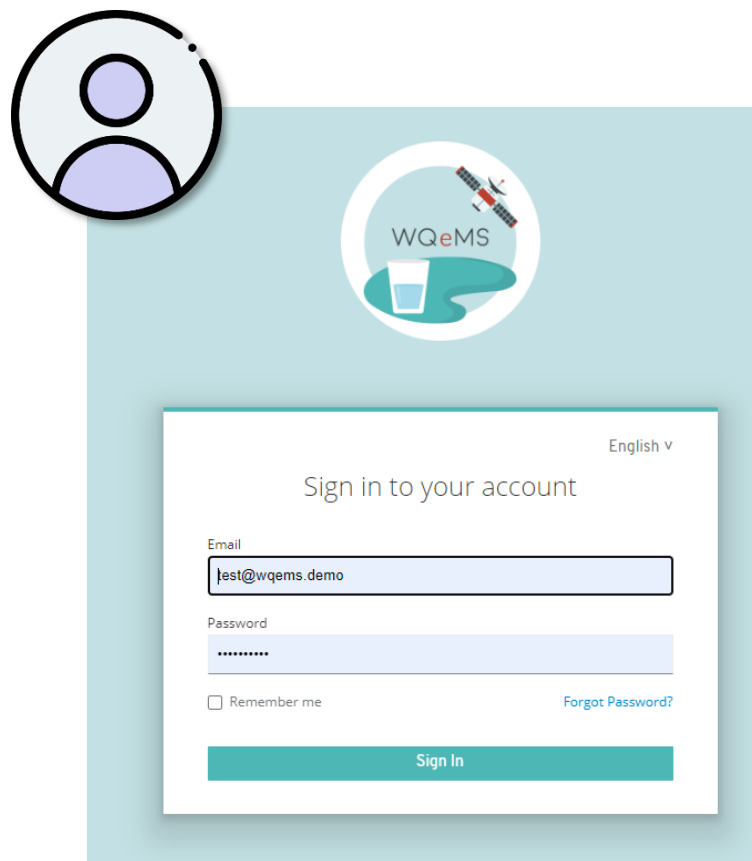



Figure 1 - Login interface

Note: functionalities with the  icon require login

1. Discover available data products on the catalogue

1. Access to the **Catalogue** through a browser on <https://catalogue-wqems.opsi.lecce.it/>
2. Search a water body and/or a service by typing it in the search bar at the top section of the screen (e.g., “*turbidity polyphytos*”). A list of suggested entities will be shown: you can click on one of it to access its detail page (skip step 3), otherwise click on the magnifier button to search for all the entities matching and visualize them in a results page.

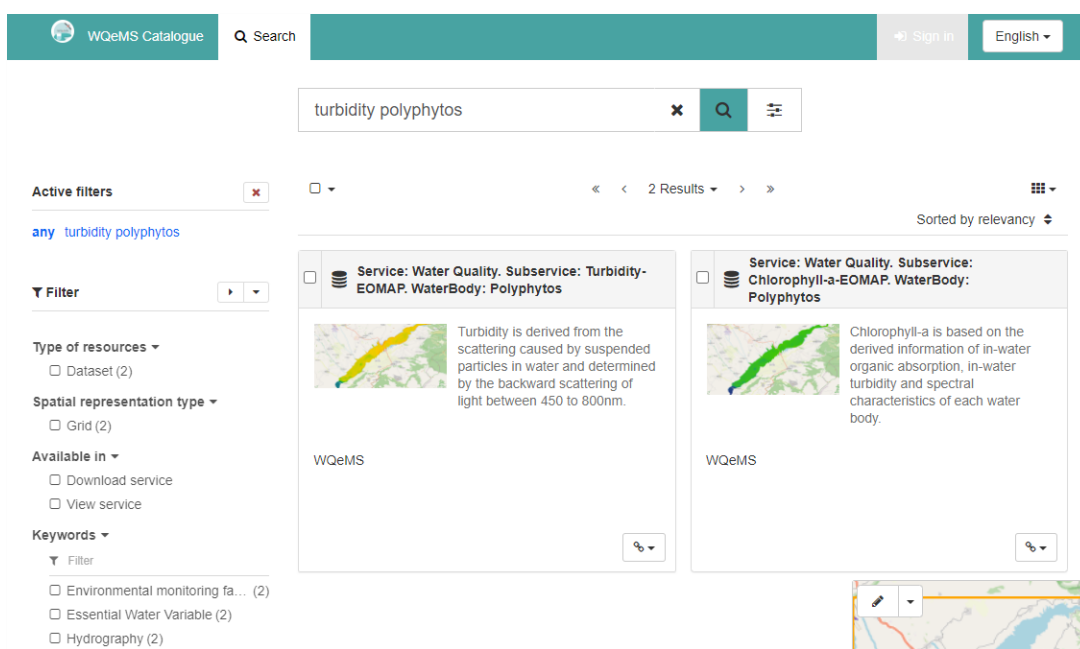


Figure 2 - Results page with suggested metadata entities

3. Click on one of the results provided in the list page to access on the related details page (e.g., “*Service: Water Quality. Subservice: Turbidity-EOMAP. WaterBody: Polyphytos*”).
4. A lot of information related to the water body and the service are provided, including an example image of how a product looks like (thumbnail on the right-upper part of the screen). The information can be exported in different formats (i.e., PDF, ZIP, XML) by clicking on the *Download* button on the upper-right part of the screen and then selecting one of the *Export* buttons.
5. Some products are provided as open data (accessible by everybody). Others are only provided for the users that requested the service. In the first case, you will find the *Open directory* link in the *Links* section, which brings you to the [open data directory](#) of WQeMS (as in the case of Water Quality – Turbidity for Polyphytos).

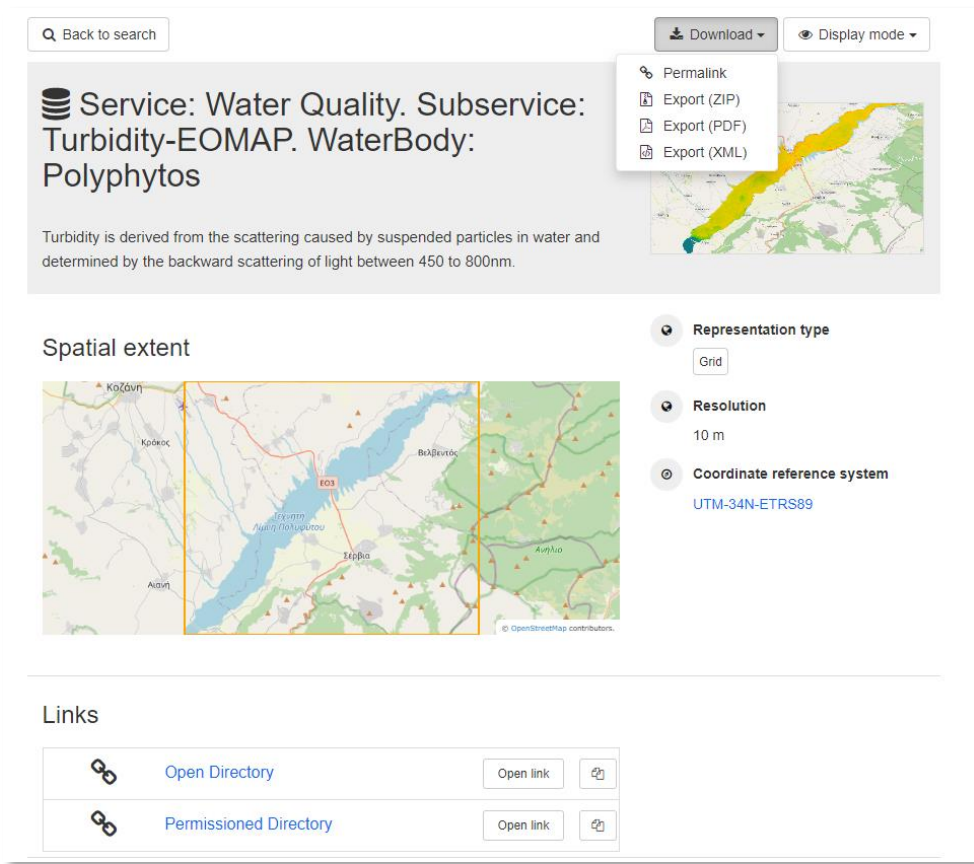


Figure 3 - Detail page of an entity

- Click on one link in the *Links* section to reach the *File Server* directory (permissioned or open data). Then, navigate in the directory and download the files of interest (i.e., tif and xml files). Tif files contains actual values (float or integer numbers) of one parameter over all the area of interest. XML files are the metadata related to the Tif files with the same name.

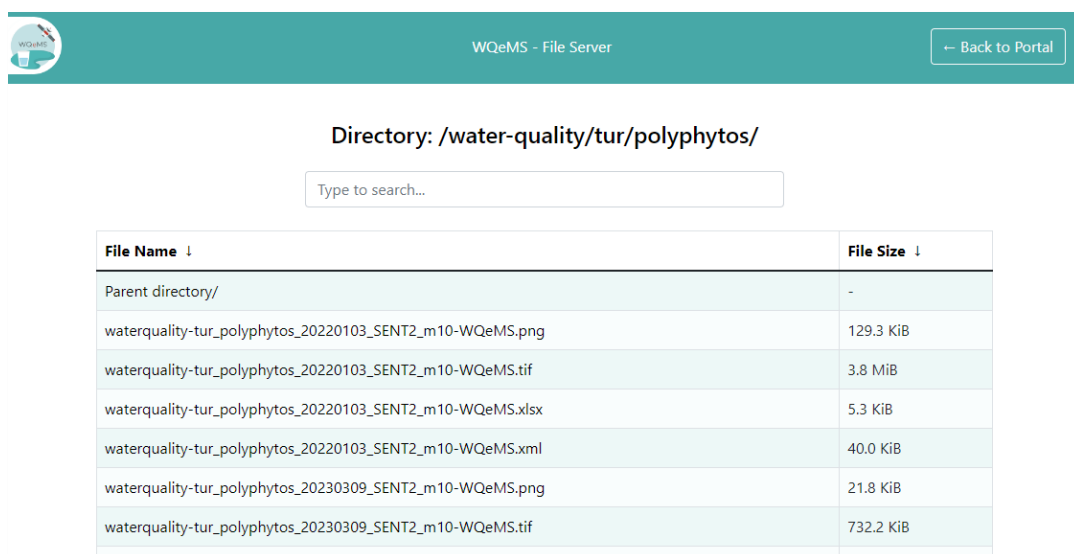
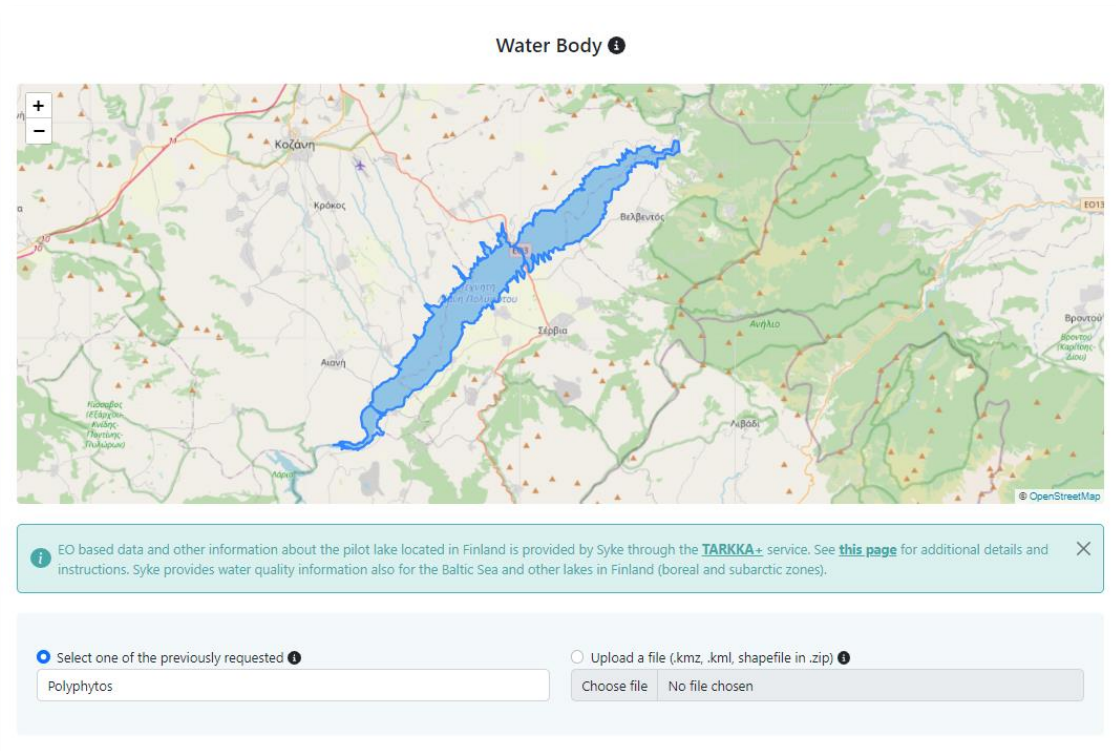


Figure 4 - Open Data file server

2. Request a service



1. Access to the **Web Portal** through a browser on <https://portal-wqems.opsi.lecce.it/>
2. Scroll down at the bottom of the page and click on the “Request a Service” red button and login with provided credentials.
3. Select one of the water bodies already requested in the past or upload a new one (supported formats: zipped Shapefile, .KMZ o .KML).



Water Body ⓘ

EO based data and other information about the pilot lake located in Finland is provided by Syke through the [TARKKA+](#) service. See [this page](#) for additional details and instructions. Syke provides water quality information also for the Baltic Sea and other lakes in Finland (boreal and subarctic zones).

Select one of the previously requested ⓘ
 Polyphytos

Upload a file (.kmz, .kml, shapefile in .zip) ⓘ
 Choose file No file chosen

Figure 5 - Water body selection

4. Select the services you are interested in (e.g., Turbidity, Chlorophyll-a, Harmful Algae Bloom, etc.).
5. For each selected service, select the preferred modality of execution (*On-demand* or *continuous monitoring*). If *on-demand* is selected, provide a date interval to consider for the generation of the geospatial maps. For *Land Water Transition Zone Change Detection* service, it is mandatory to select the service mode (i.e., multispectral data; radar data; multispectral + radar data).

Services i

Details

Water Quality Features Changes

<input checked="" type="checkbox"/> Turbidity	<input checked="" type="checkbox"/> Continuous Monitoring <input type="checkbox"/> On-demand	Start Date	End Date
		<input type="text" value="mm/dd/yyyy"/>	<input type="text" value="mm/dd/yyyy"/>
<input checked="" type="checkbox"/> Chlorophyll-a	<input type="checkbox"/> Continuous Monitoring <input checked="" type="checkbox"/> On-demand	Start Date	End Date
		<input type="text" value="05/01/2022"/> 📅	<input type="text" value="05/15/2022"/> 📅
<input type="checkbox"/> Sea Surface Temperature	<input type="checkbox"/> Continuous Monitoring <input type="checkbox"/> On-demand	Start Date	End Date
		<input type="text" value="mm/dd/yyyy"/>	<input type="text" value="mm/dd/yyyy"/>
<input type="checkbox"/> Secchi Disk Depth	<input type="checkbox"/> Continuous Monitoring <input type="checkbox"/> On-demand	Start Date	End Date
		<input type="text" value="mm/dd/yyyy"/>	<input type="text" value="mm/dd/yyyy"/>
<input checked="" type="checkbox"/> Coloured Dissolved Organic Matter	<input type="checkbox"/> Continuous Monitoring <input checked="" type="checkbox"/> On-demand	Start Date	End Date
		<input type="text" value="05/01/2022"/> 📅	<input type="text" value="05/01/2022"/> 📅

Details

Land-Water Transition Zone Change Detection

<input checked="" type="checkbox"/> Hydroperiod	<input checked="" type="checkbox"/> On-demand	Start Date	<input type="text" value="05/01/2022"/> 📅
		End Date	<input type="text" value="05/15/2023"/> 📅
		Start Date	<input type="text" value="mm/dd/yyyy"/> 📅

Multispectral Data i
 Multispectral + Radar Data i

Figure 6 - Services selection

6. Click on *“Submit Request”* and the request will be sent to the WQeMS staff for evaluation.
7. Check in the list of user requests the one just created, visualizing the details by clicking on the *“Details”* button.

Request			Status
12/5/2023 ⬆			<div style="width: 15px; height: 15px; background-color: #ffc107; border-radius: 50%; margin: 0 auto;"></div>
#	Area of Interest (AOI)	Actions	
1	Polyphytos	🔍 Details	

Figure 7 - Request submitted

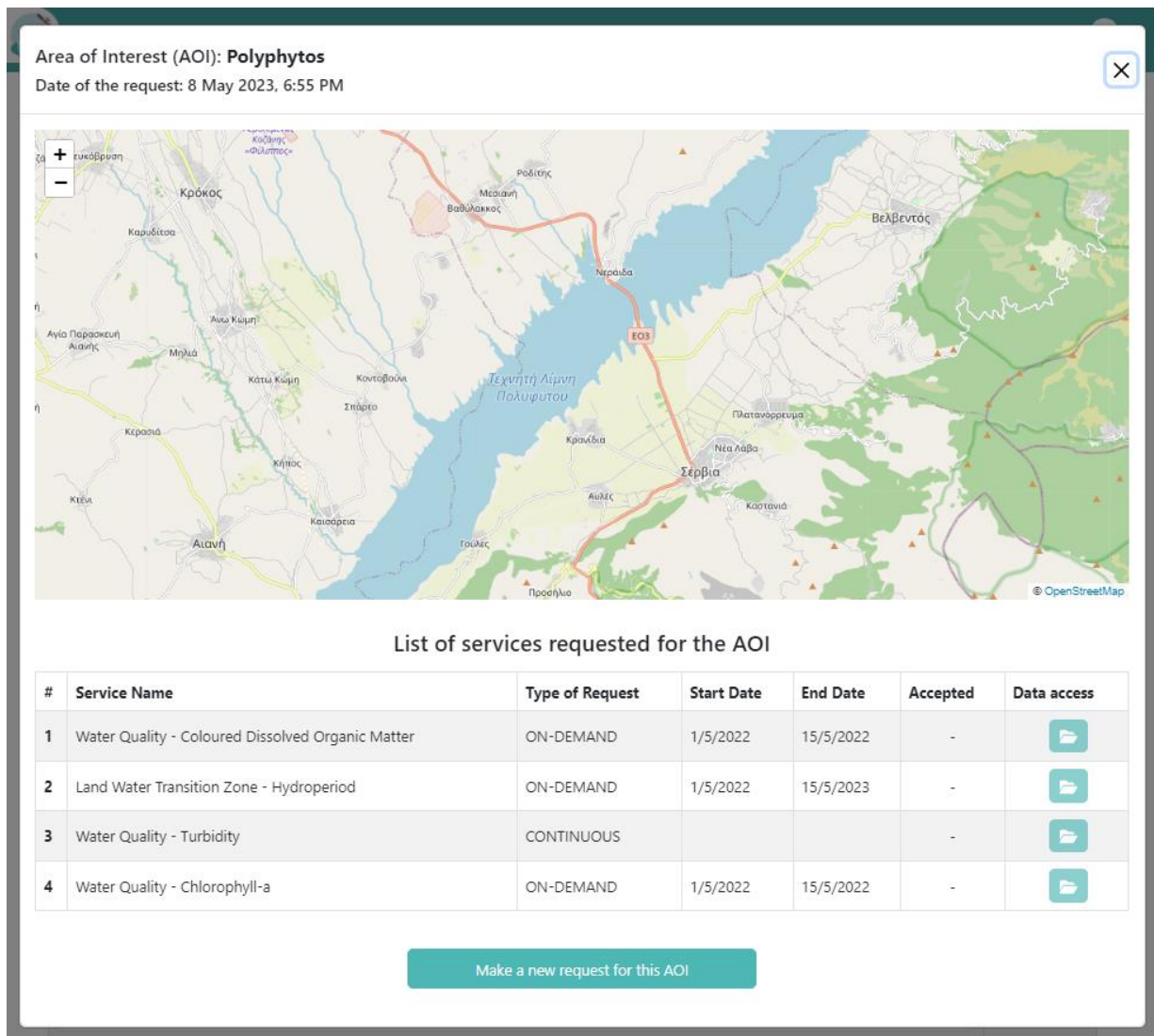


Figure 8 - Details of the submitted request

3. Visualize generated data products on map



1. Access to the **Map and Data Navigator** through a browser on <https://www.ogc3.grumets.cat/wqems/> (if not already logged-in, login providing the test account credentials).
2. Select *Go to “Pilot Use Case”* on the upper part of the screen and then select a water body from the list (e.g., “Go to Pilot Use Case of Carlsfeld”).

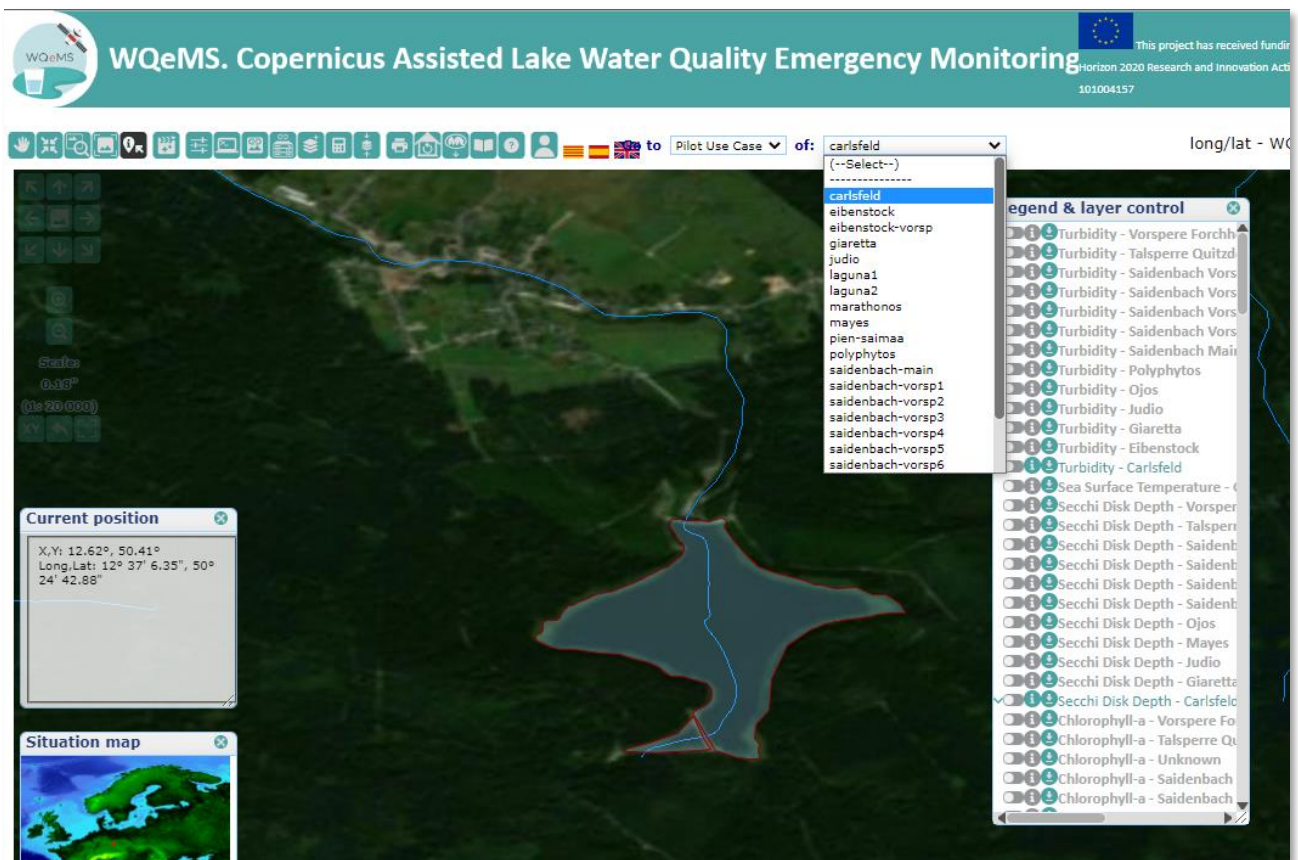


Figure 9 - Water body selection

3. The list of available data products appears in the *Legend & Layer control* window on the right of the screen. The available layers are the ones in green/blue. Use the switch near the name of the layer to hide/show it on the map (e.g., enable Harmful Algae Bloom – Carlsfeld layer).
4. If more than one date is available for the product and lake, then you are able to select it from the “GRANULE” list, under the layer name.

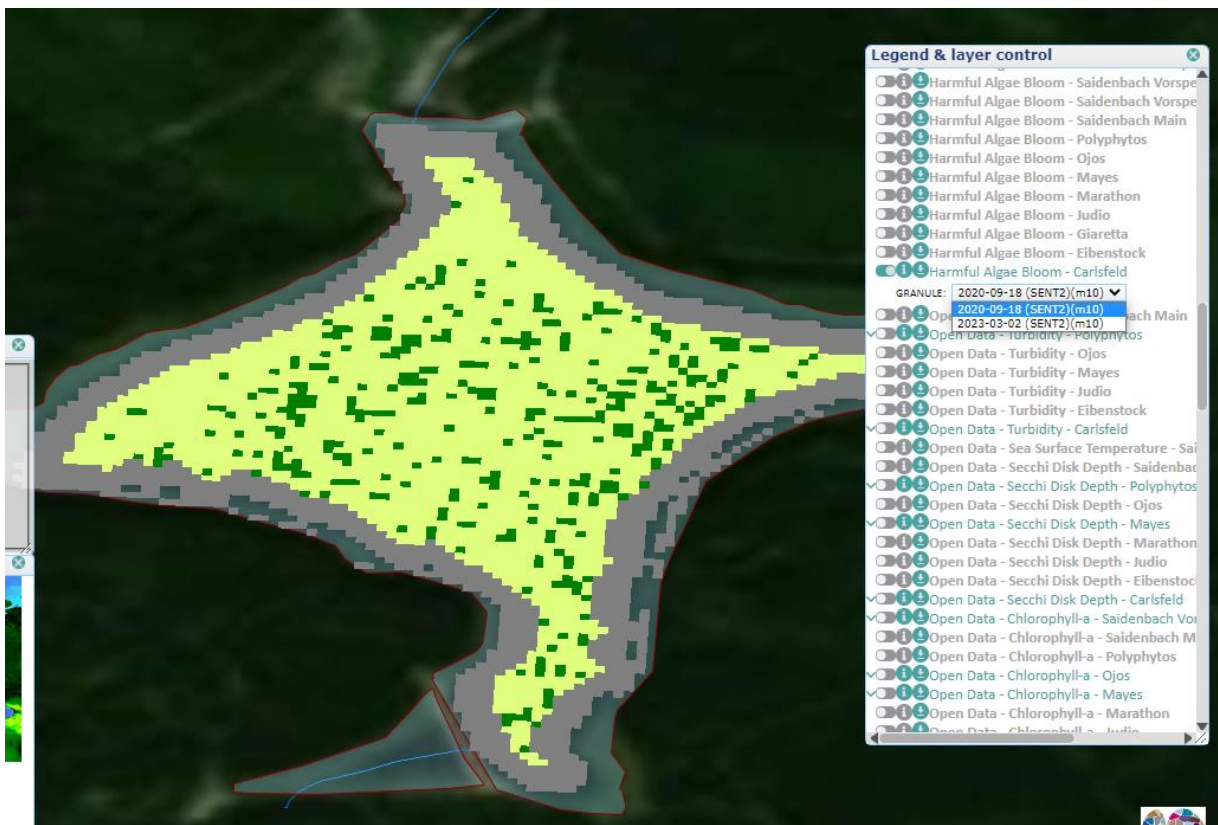



Figure 10 - Layers selection and visualization of a specific date

5. Click on the layer name in the *Legend & Layer control window* to open a menu. Select “*Edit style*” and choose the palette to change the style. Minimum and maximum values can also be changed if needed.
6. Click on the “*Query by location*” button  on the upper-left part of the screen and then click on a pixel of the water body, to get all the available information of the products generated for the water body.
7. Click on the layer name in the *Legend & Layer control window* to open a menu. If the product contains discrete values, you will find and select “*Pie Chart*” to open a diagram showing the distribution of the values included in the product (e.g., probability distribution of Harmful Algae Blooms on Carlsfeld). If the product contains continues values, instead, you’ll find and select “*Histogram*” (e.g., Chlorophyll-a values distribution on Carlsfeld).

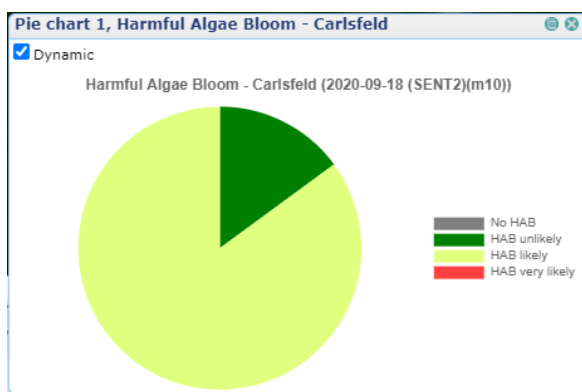


Figure 11 - Pie chart showing probability distribution of HAB on Carlsfeld

- Visualize metadata of the product by clicking on the layer's name and then on "Metadata". This action will open a window showing the XML metadata file.

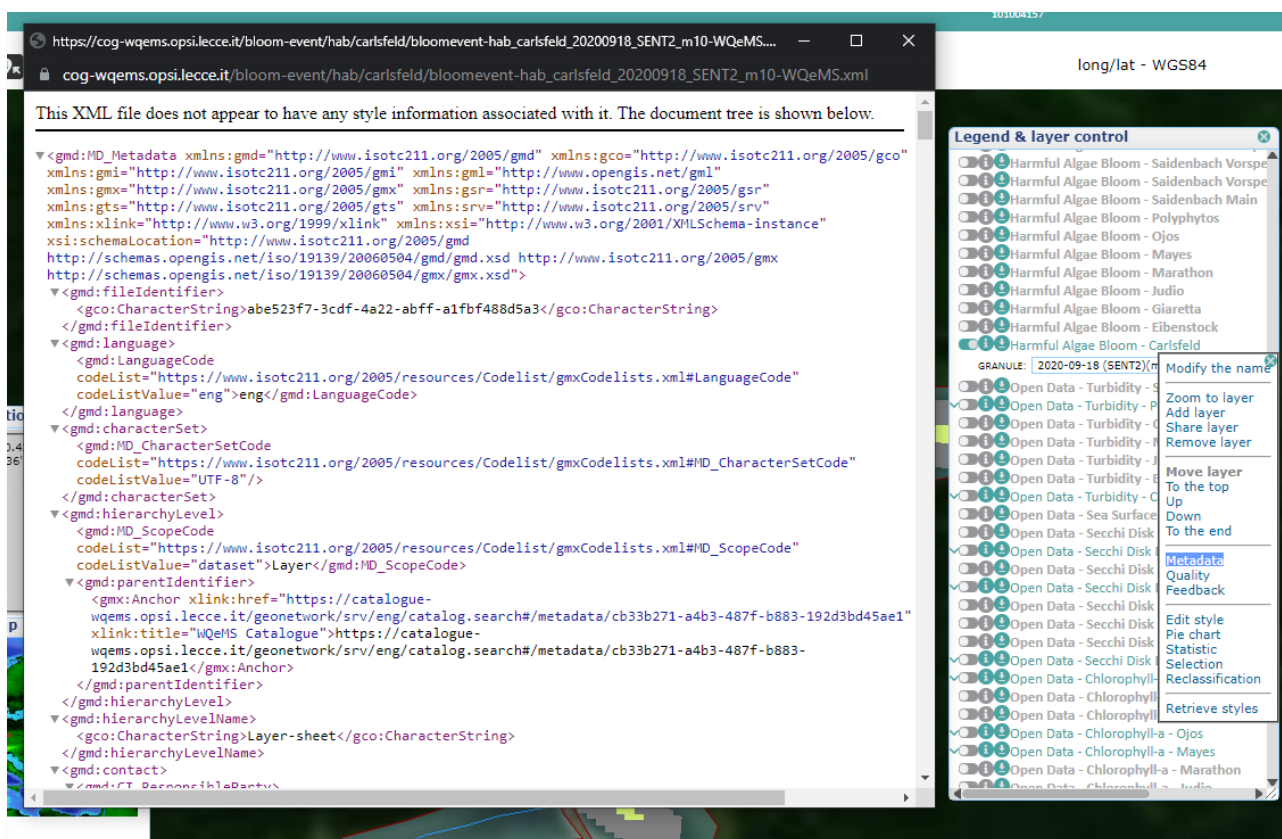


Figure 12 - Metadata visualization

- Download the specific product by clicking on the arrow on the left of the layer's name and then clicking on the GeoTIFF link in the opened window.

4. Provide feedback on generated data products



1. Access to the **Map and Data Navigator** through a browser on <https://www.ogc3.grumets.cat/wqems/> (if not already logged-in, login providing the test account credentials).
2. Select *Go to "Pilot Use Case"* on the upper part of the screen and then select a water body from the list (e.g., *"Go to Pilot Use Case of Marathonos"*).
3. In the *Legend & Layer control* window on the right of the screen, click on the layer to which you want provide feedback and then select *"Feedback"* from the menu. From the window that will appear, click on the *"Add a user feedback"* button.

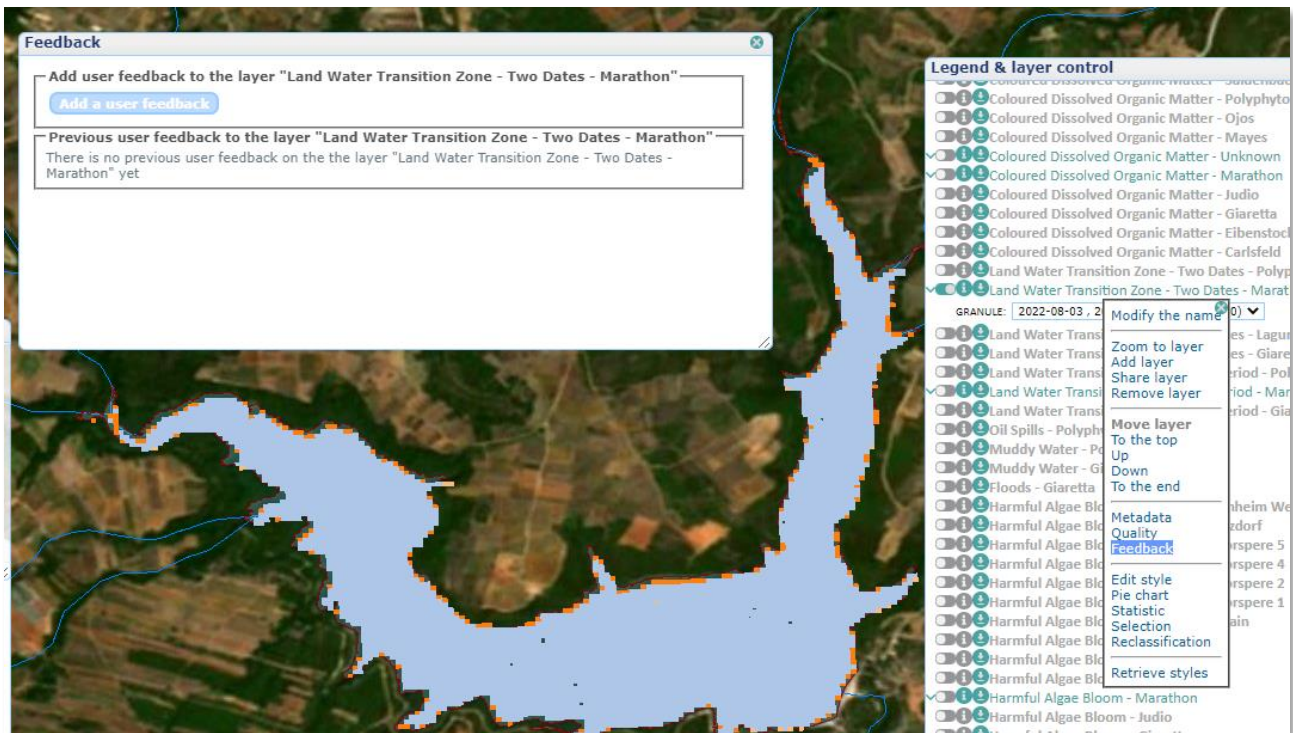


Figure 13 - Add a user feedback selecting a layer

4. A new window will open and, after a few seconds, you will be redirected to a feedback form. Fill in the available fields: abstract, purpose, user role, rating, comment, comment motivation and usage fields. Select the *"Share to everyone"* checkbox if you want to let all users visualize the comment on the Map and Data Navigator. Then click on *"Create"* to submit the feedback.
5. Re-opening the feedback window on the layer, the feedback will appear.

5. Notify the system and the users of a water-related issues

Only for Android smartphones

1. Download and install the **Crowdsourcing Mobile App** on your Android smartphone from this link: http://m4d-apps.iti.gr/WQeMS_crowdsourcing_app_v1.0.apk
2. Open the app and allow it to access the device location. Then, select the preferred language by clicking on the icon on the upper-right part of the app.
3. Select a category of issue to report selecting it from the *Category* dropdown list (i.e., water quality, water extent, algae bloom, possible hydrocarbon pollution, uncommon turbidity, other). Some categories will require the selection of a *Subcategory* (optional).
4. Write a description of the issue in the field *Description*, so that users will be able to understand what is going on.
5. Specify the location by writing the name in the *Location* field or provide it from the map by clicking on the map icon: select the current location or search it on the location search field.
6. Select the *Date & Time* of the detected event (optional).
7. Attach an image of the issue by selecting it from the gallery of the smartphone or taking a photo with the camera, through the *Upload Image* button (optional).
8. Press the “*Submit*” button. This action will send the report to the system and provide you a summary of the information provided.



Note: for detailed instructions, download the [Crowdsourcing Mobile App User Manual](#).

6. Visualize water-related issue collected by social networks and crowdsourcing

1. Access the **Crowdsourcing Alerts Dashboard** on the browser clicking on <http://m4d-apps.iti.gr:8007/>
2. Enable the visualization of one or multiple type of alerts from the *Filter options* section on the left-side (i.e., *Twitter alerts* for issue automatically detected from user tweets; *Mobile alerts* for complaints sent through the Crowdsourcing Mobile App; *CitObs alerts* for complaints sent by Finnish citizens through the CitObs system).
3. From the *Filter options* section, filter the alerts by: i) time period; ii) event type; iii) language of the tweet.
4. Alerts are visualized on the map. Click on the markers on the map in order to read the details of it (i.e., text, date and time of publication, event type).

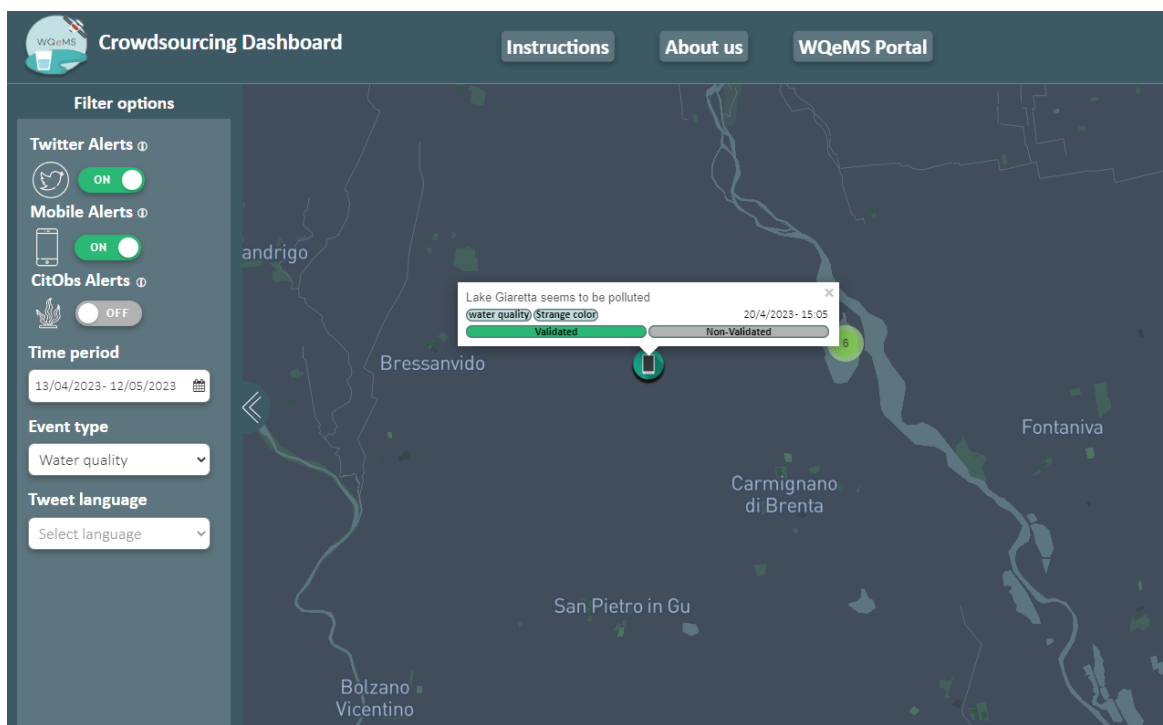


Figure 14 – Crowdsourcing Alerts Dashboard interface

Note: for detailed instructions, download the [Crowdsourcing Alert Dashboard User Manual](#).

7. Get alerted for water-related issues - Visualize list of alerts

1. Access to the **Web Portal** through a browser on <https://portal-wqems.opsi.lecce.it/> and login by clicking on the “*Log In*” button on the upper-right part of the screen.
2. After login, click on the user icon on the upper-right side of the screen and then click on the “*Alerts*” button.
3. In this page you will visualize the list of alerts generated and sent by the system, with the details regarding the relevant water body, the source where the issue was detected (i.e., EO measurement or Crowdsourcing), the date and time of the detection and the reason for the alert (e.g., a flood happened; turbidity values exceed threshold; etc.).

My Alerts

On this page you can view the list of alerts generated by the platform based on your configurations.

Create a new alert configuration →

Date	Water Body	Caused By	Reasons
6/10/2022, 3:38 PM	Carlsfeld	EO Measurement	The condition you set has happened. The measured value of Mean Spatial Value of Turbidity is 2 Nephelometric Turbidity Unit greater than 1.4262 Nephelometric Turbidity Unit.
30/11/2022, 4:52 PM	Carlsfeld	EO Measurement	The condition you set has happened. The measured value of Mean Spatial Value of Turbidity is 2 Nephelometric Turbidity Unit greater than 1.7617 Nephelometric Turbidity Unit.
6/10/2022, 12:43 PM	Carlsfeld	EO Measurement	The condition you set has happened. The measured value of Mean Spatial Value of Turbidity is 2 Nephelometric Turbidity Unit greater than 1.7617 Nephelometric Turbidity Unit.
6/10/2022, 12:43 PM	Carlsfeld	EO Measurement	The condition you set has happened. The measured value of Nephelometric Turbidity Unit is 2 Number of Transfer Units greater than 1.4262 Number of Transfer Units.
6/10/2022, 3:37 PM	Carlsfeld	EO Measurement	The condition you set has happened. The measured value of Mean Spatial Value of Turbidity is 2 Nephelometric Turbidity Unit greater than 1.7617 Nephelometric Turbidity Unit.
26/4/2023, 5:20 PM	Carlsfeld	Crowdsourcing	uncommon_turbidity

Figure 15 - List of alerts received (both from crowdsourcing and thresholds)

8. Get alerted for water-related issues - Configure alerts



1. Access to the **Web Portal** through a browser on <https://portal-wqems.opsi.lecce.it/> and login by clicking on the “Log In” button on the upper-right part of the screen. After login, click on the user icon on the upper-right side of the screen and then click on the “Alert Configurations” button.
2. In this page you will visualize the list of alert configurations created, with the details showed in a dedicated window after clicking on the “Details” button. Click on “Create a new alert configuration” to reach the creation page.

Alerts

On this page you can view, manage and delete your alert configurations. Each configuration refers to a single AOI and one or multiple parameters monitored.

[Create a new alert configuration →](#)

#	Name	Creation Date	Details	Actions
6	Water quality monitoring on Eibenstock	29/9/2022, 12:00 AM	Q Details	Delete
7	Polyphytos Alert Configuration	28/9/2022, 12:00 AM	Q Details	Delete

Figure 16 - List of alert configurations

3. Provide a name for the configuration, in the “Configuration Name” field (it will be used only as a reference). Then select a water body from the list of available (these are the water bodies which the system is continuously monitoring as requested by you).
4. Add one or multiple Rules by clicking on the “Add Rule +” button and specifying: i) phenomena (i.e., one of the available products requested); ii) statistical measure (e.g., quantiles, min, max, median, mean, std, occurrence, etc.); iii) relationship (i.e., less than, greater than, between); iv) value limits (i.e. lower, upper or both).
5. Select one or multiple categories of events detected by the *crowdsourcing* module (i.e., detection on Twitter, reports sent through the Crowdsourcing Mobile App, CitOBS Finnish portal).
6. Add one or multiple notifications channels by clicking on the “Add Notification Method +” button. Select the desired channel by clicking on the list: email (to receive alerts on the specified email) or HTTP POST request (to send alerts to external systems, e.g., DSS).

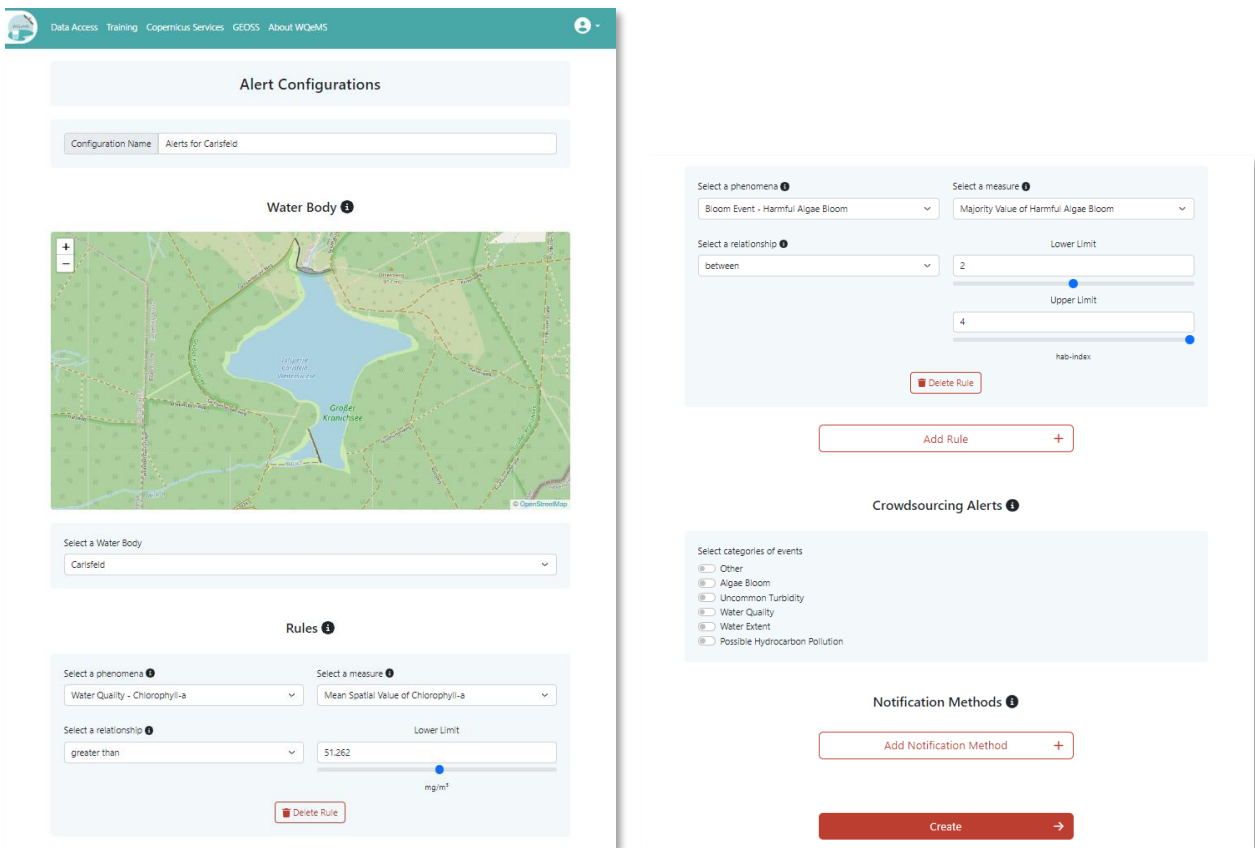
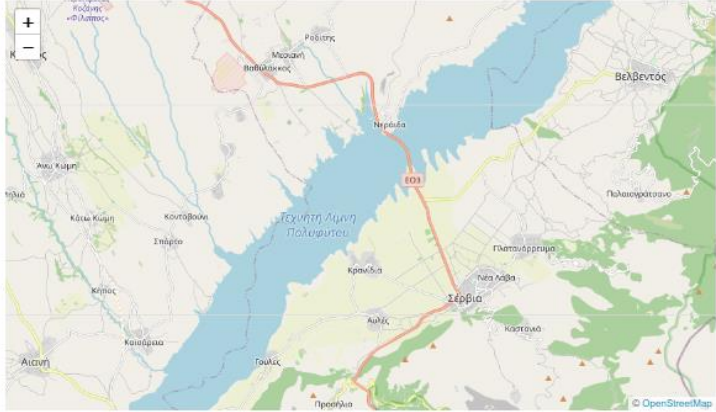


Figure 17 - Alert configuration page

- Submit the configuration by clicking on the “Create” red button. The configuration just created can be visualized in the list of configurations. From now on, when a new geospatial map is generated or a new event from social and crowdsources is detected, the system will match the rules in the active configurations and will notify you if at least one rule matches.

Alert configuration for: **Polyphytos**



Rules

#	Measure	Condition
1	Mean Spatial Value of Turbidity	Greater than 1.4262 ntu
2	Max Value of Chlorophyll-a	Greater than 2.6007 mg/m ³

Notification Methods

#	Method	Address
1	email	test@email.com

[Delete](#)

Figure 18 - Details of an alert configuration

9. Generate reports summarizing water quality parameters



1. Access to the **Web Portal** through a browser on <https://portal-wqems.opsi.lecce.it/> and login by clicking on the “*Log In*” button on the upper-right part of the screen. After login, click on the user icon on the upper-right side of the screen and then click on the “*Reports*” button.
2. Select a water body from the list of available (these are the water bodies which the system monitored for you).
3. Select all the parameters of interest that you wish to include in the report.
4. Select start and end date for the information to be included in the report (i.e., all values of selected parameters included in the specified period will be reported).
5. Specify your email address in order to receive the report.

Figure 19 - Report generation page

6. Click on the “*Create*” red button. After a few minutes you will receive the information aggregated in a PDF report on the email address you specified.

Aggregated values

Land Water Transition Zone - Two Dates

Measure Name	Unit of Measure	Aggregation Type	Value
clc-ltw-coniferous-forest	Percentage	Average	73.88
clc-ltw-land-principally-occupied-by-agriculture-with-significant-areas-of-natural-vegetation	Percentage	Average	5.28
clc-ltw-mixed-forest	Percentage	Average	13.7
clc-ltw-transitional-woodland-shrub	Percentage	Average	3.12
clc-ltw-water-bodies	Percentage	Average	37.16
clc-ltw-water-courses	Percentage	Average	62.84
clc-wtl-broad-leaved-forest	Percentage	Average	3.73
clc-wtl-complex-cultivation-patterns	Percentage	Average	7.98
clc-wtl-coniferous-forest	Percentage	Average	3.7
clc-wtl-discontinuous-urban-fabric	Percentage	Average	3.3
clc-wtl-inland-marshes	Percentage	Average	4.38
clc-wtl-land-principally-occupied-by-agriculture-with-significant-areas-of-natural-vegetation	Percentage	Average	7.49
clc-wtl-mixed-forest	Percentage	Average	10.24
clc-wtl-natural-grasslands	Percentage	Average	16.29
clc-wtl-non-irrigated-arable-land	Percentage	Average	8.22
clc-wtl-sclerophyllous-vegetation	Percentage	Average	4.99
clc-wtl-transitional-woodland-shrub	Percentage	Average	17.09
clc-wtl-vineyards	Percentage	Average	5.05
clc-wtl-water-bodies	Percentage	Average	40.44

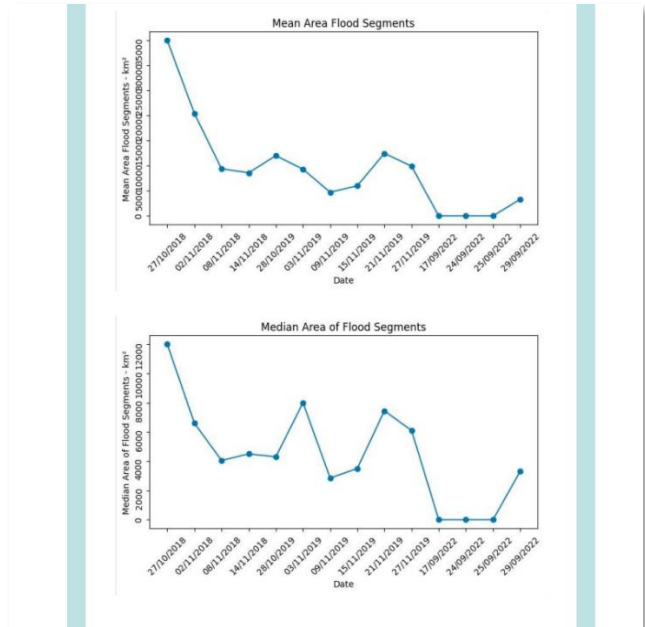


Figure 20 - Example of a report generated