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Abstract	With the help of web-based data visualisation products new means were generated to display the diversity of experimental and environmental conditions of mesocosm experiments in Europe. The tools were launched in December 2018 and are publicly available via the AQUACOSM project website, specifically under (http://mesocosms.aquacosm.eu). The tools include data from 5 of the 19 mesocosm facilities, which are piloting for the launch of the data visualisation products. Additional data from the remaining mesocosm facilities will be uploaded in 2019. The products will be widely disseminated through a range of communication channels as more data becomes available.
Keywords	Mesocosm, data, web-based, integration, visualisation

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1. Executive summary

A suite of web-based data visualisation products has been developed and implemented into the AQUACOSM project website (http://mesocosms.aquacosm.eu). These visualisation products aim at showing the diversity of experimental and environmental conditions of mesocosm experiments within Europe. The tools were launched in December 2018 and are publicly available and accessed from the "Mesocosm Data" menu on the AQUACOSM website (https://www.aquacosm.eu).

The interactive products allow users to query data from mesocosms by facility name, parameter or location (map-based). The location of the mesocosm facility at which the data was produced is displayed on a map and time series charts are plotted.

Data from 5 of the 19 mesocosm facilities have been piloted for the launch of the data visualisation products. Eight parameters are available. These are:

- Electrical Conductivity
- Oxygen Saturation
- pH
- Practical Salinity
- Sea Temperature
- TN (Total Nitrogen)
- TP (Total Phosphorus)
- Total Chlorophyll-a

Additional data from the remaining mesocosm facilities will be uploaded early in 2019. The products will be widely disseminated through a range of communication channels as more data becomes available.

2. Introduction

Task 4.4 aims at providing a standardised environment for (online) visualisation of data from the mesocosm facilities and experiments. In order to meet this aim, a suite of web-based data visualisation products have been developed (http://mesocosms.aquacosm.eu).

The visualisation tools have been integrated into the AQUACOSM website to enable rapid and interactive visualisation of data from the mesocosm facilities and experiments (https://www.aquacosm.eu). The data and the tools are available to the public. The tools were launched in December 2018.

3. Key features of the mesocosm data visualisation products

A suite of web-based data visualisation products have been developed and implemented into the AQUACOSM project website (http://mesocosms.aquacosm.eu). The tools are publicly available and accessed from the "Mesocosm Data" menu on the AQUACOSM website (https://www.aquacosm.eu).

The products allow users to query data from mesocosms by facility name, parameter or location (map-based). The location of the data is displayed on a map and time series charts are plotted (Figure 1).

A left navigation allows users to interrogate the data by mesocosm facility or parameters of interest. Associated plots are automatically generated and the map is updated to highlight the location of selected data in real time. Users can also select to view data by location using the interactive map (Figure 1).

The plots are interactive, allowing users to adjust the date range using a slider that is located below the main plot. Data can be viewed as monthly or daily timeseries using the buttons above the map (top left). Users can also view the further information on each mesocosm facility from each plot by clicking on the "Mesocosm Information" link above the plot (top right) (Figure 1).

The maps are interactive, allowing users to zoom in and out and query data by location. A colour scheme has been implemented to highlight the location(s) of mesocosm data plotted in the charts.

A number of settings for viewing the plots are available. These include Map Styles (Google Map or Mapbox), single or double column layout for the plots generated and the option to show or hide trendlines on the plots.

4. Status of the AQUACOSM web-based data visualisation products

Data from 5 of the 19 mesocosm facilities have been piloted for the launch of the data visualisation products. These facilities are:

- Iberian Pond Network (IPN, Portugal/Spain)
- KOSMOS (Kiel Off-Shore Mesocosms for Ocean Simulations, Germany)
- MEDIMEER (MEDIterranean platform for Marine Ecosystem Experimental Research, France)
- MF-UMSC (Mesocosm Facility at Umeá Marine Sciences Center, Sweden)
- Limnotrons (NIOO-KNAW, Wageningen, the Netherlands)

Eight parameters are currently available. They were selected to display the basic characteristics of the mesocosm experiments, and show the diversity of habitats the mesocosm mimic.

These are:

- Electrical Conductivity
- Oxygen Saturation
- pH
- Practical Salinity
- Sea Temperature
- TN (Total Nitrogen)
- TP (Total Phosphorus)
- Total Chlorophyll-a

5. Future Work

The main emphasis of the future work on the data visualisation products will be to import and allow access to data and metadata from the remaining 15 mesocosm facilities.

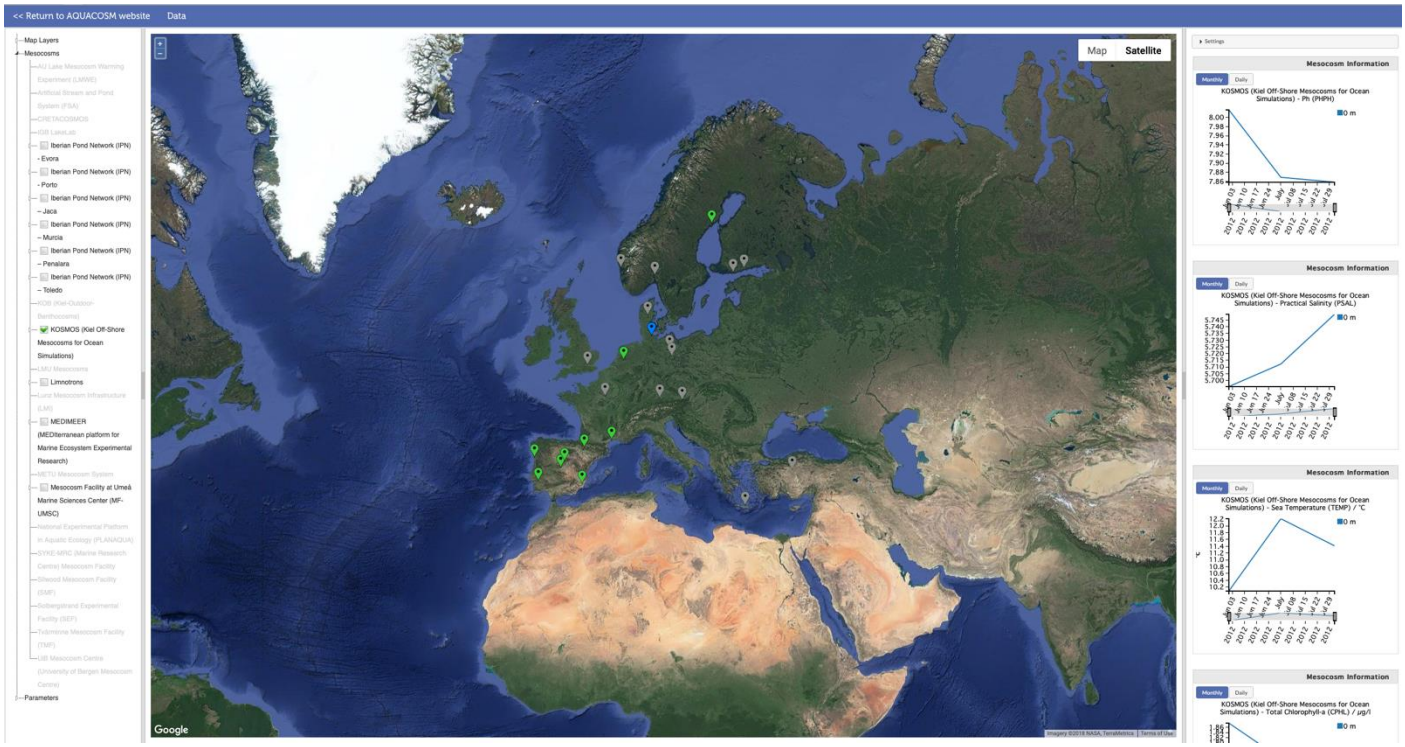

***Figure 1**. Screen shot of the mesocosm data visualisation products. Left navigation show each of the 19 mesocosm facilities. Facilities with no data are indicated in light grey. Map displays the location of all 19 mesocosm facilities. Facilities with data currently available are depicted in green. The blue marker displays the location of the KOSMOS mesocosm facility that has been selected in the left navigation. The data from this facility are automatically plotted by parameter and displayed to the right of the map. Each time series plot has links to further mesocosm information (top right of plots), options to view time series as monthly or daily means (top left of plot), plot title (indicating the facility and parameter plotted), the time series plot and a date range selector slider (bottom of plot). The settings option for adding trendlines, viewing plot in single or double column layout and change the map styles are located above the plots. Uses can also visualise data by parameter type by opening the "parameters" menu located in the left navigation. They can also select parameters by mesocosm facility by opening the drop-down menu associated with each facility in the left navigation (http://mesocosms.aquacosm.eu).*

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6. Dissemination activities related with the Deliverable

The web-based data visualisation products were launched in December 2018. Mesocosm data from 5 of the 19 facilities are available at the time of writing this report. Efforts will be made in the early part of 2019 to upload and make available data from the remaining 14 mesocosm facilities. As more data becomes available, efforts will be made to disseminate the available of the products and data to the wider mesocosm communities and beyond. Communication channels will include Social Media, the AQUACOSM project website, project newsletters, international conferences and events as well as dissemination through the AQUCOSM community and their wider networks.