



HarmoNIA



Harmonization and Networking for
contaminant assessment in the Ionian and
Adriatic Seas

Deliverable T2.3.2 - Data products in key areas

Work Package T2 - Data collection and definition of common data outputs focused on contamination

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1. Introduction

The assessment and the conservation of Good Environmental Status (GES) is a priority for environmental legislations valid in the ADRION region, which involves both EU and non-EU countries (namely, the EU Marine Strategy Framework Directive of the European Union - MSFD, 2008 and the Mediterranean Sea and Coast and related assessment - IMAP, 2016 of the Barcelona Convention). Within HarmonIA, data have been collected and made available on a common data access system (<http://harmonia.maris2.nl/search>) and data visualization products have been realized for the whole ADRION region, with an agreed and harmonized approach (<https://vrtlac.izor.hr/ords/harmonia/>).

Visualization is a useful tool to gather datasets and produce practical and understandable information for many stakeholders and decision makers.

2. Approach

The approach to achieve harmonized data visualization, common for the whole ADRION region and shared among the 6 countries involved in HarmonIA involved the following steps (Fig. 1):

1. Data and metadata collection from HarmonIA partners
→ **Del. 2.1.1 Collection of datasets focused on contaminants in the Adriatic - Ionian Region**
2. Data harmonization and Quality Control according to shared Guidelines defined under WP1 (Del. 1.1.3 Methodological proposal for data Quality Control procedures)
→ **Del. 2.1.2 Harmonized Quality Controlled dataset focused on contaminants**
3. Comparison of data visualization procedures adopted within HarmonIA partnership
4. Evaluation of requirements indicated by environmental legislations valid in the ADRION region, which involves both EU and non-EU countries (namely, EU - MSFD and UNEP/MAP - Barcelona Convention) as well as best practices proposed by OSPAR and HELCOM
5. Definition of Guidelines on data products implementation specific for evaluating contaminants in the marine environment



→ **Del. 2.3.1 Guidelines on common data visualization products**

6. Realization of common data visualization products for a selection of contaminants measured in seawater, sediment and biota, based on the validated and harmonized data available for the whole ADRION region

→ **Del. 2.3.2 Data products in key areas (and beyon)**

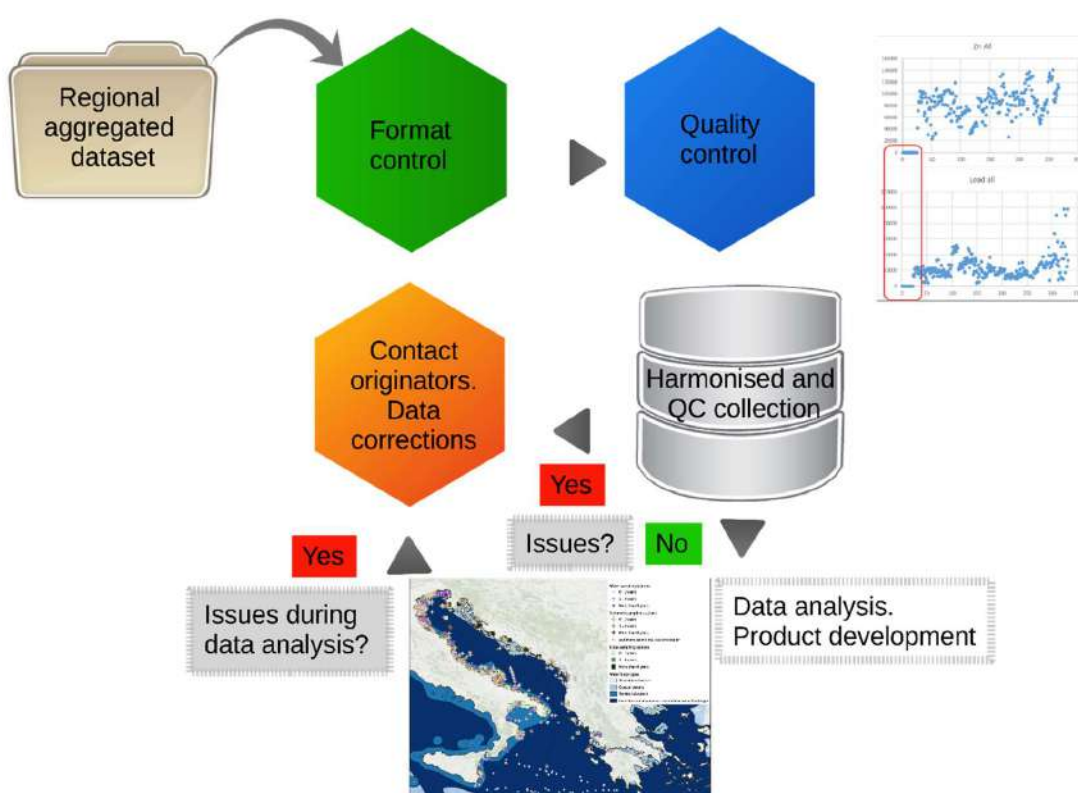


Fig. 1: Model of the Data Quality Control procedure to obtain regional validated datasets.

3. Data products examples

Data visualizations are available through HarmonIA GeoPortal - Section: Data visualization tool: <https://vrtlac.izor.hr/ords/harmonia/> (Fig. 2). The Data visualization tool consists in three windows which display: General statistics, Locations of monitoring stations and Data visualizations, allowing to visualize concentrations of contaminants in the different stations.

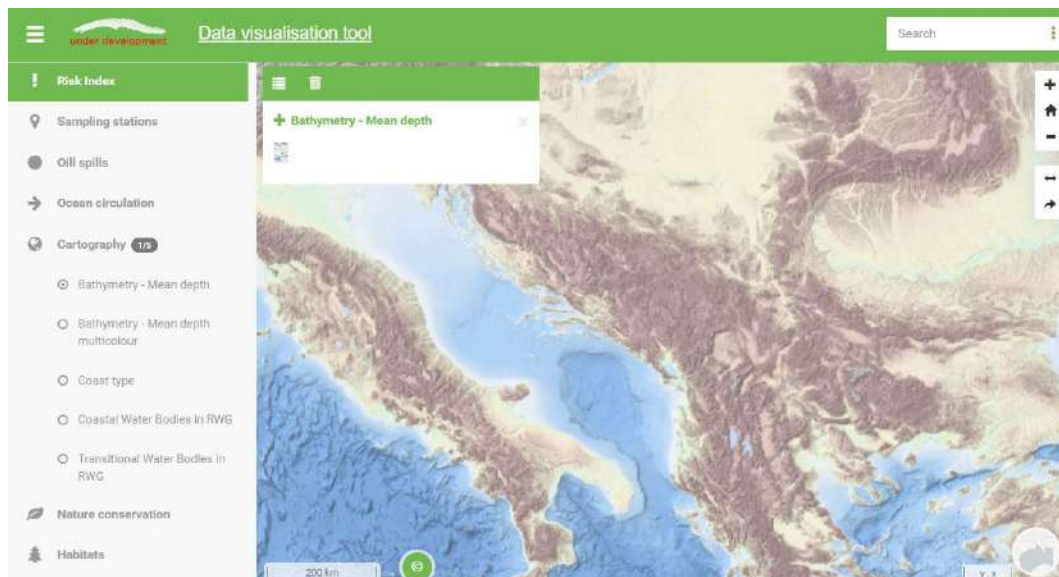


Fig. 2: Access to Data visualization tool from HarmonIA Geoportal.

The “Statistics” window provides a general view (below) which allows to see the monitoring stations geographical distribution with colours indicating the number of measurement for each station.

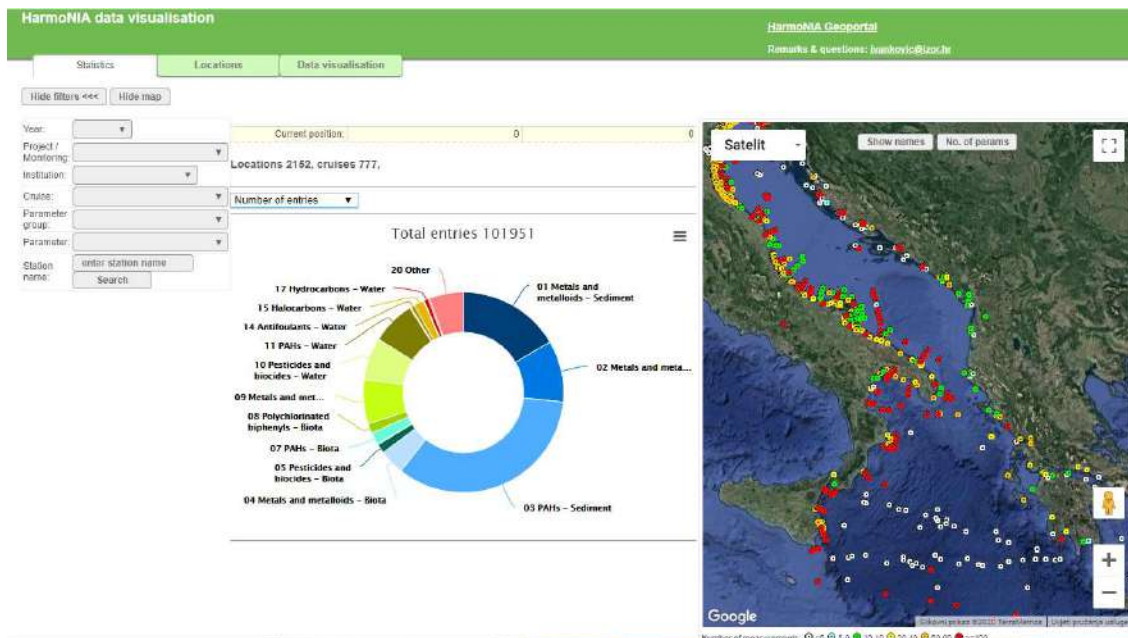


Fig. 3: Statistics window. The map at the right allows to display the number of measurements per station (with colour codes indicated at the bottom) or the number of parameters and the station names.



Several filters are available to select the stations to be visualized, according to year, project/monitoring, institution providing data, cruise, parameter group, specific parameter and station name:

HarmonIA data visualisation

Statistics **Locations**

Hide filters <<< Hide map

Year: 2017
 Project / Monitoring:
 Institution:
 Cruise:
 Parameter group:
 Parameter:
 Station name: enter station name
 Search

Fig. 4: Filtering options.

The “Location” window allows to explore basic station - related information, to filter for the selected options and to download the station list:

HarmonIA data visualisation HarmonIA Geoportal
Remarks & questions: harmonia@pbc.gov.it

Statistics **Locations** Data visualisation

Hide filters <<< Hide map


Download CSV(download) CSV instructions

Current position: 0 0

Locations 87
right click on station list map gives focus at row in table

Name	No. of measurements	No. of parameters	Depth
35	106	14	
OT30	3	3	40
OT31	3	3	94
OT32	3	3	78
OT44	3	2	23
OT52	3	3	49
OT85	3	3	26
ITHAZSED0298, 433159	26	26	
433148	14	7	29
OT48	3	3	46
OT37	3	3	52
OT46	3	3	44
OT50	3	3	60
433172	2	2	27
ITHAZSED0333, ITHAZSED0292, 433158	49	28	
433155, ITHAZSED0363, ITHAZSED0341, IT...	119	40	27

Satellite Hide names No. of measurements



Google

Fig. 5: “Location” window.



The “Data visualization” window allows to select parameters, years, monitoring/project activities, institutions providing data, and visualize concentrations of selected parameters (based on SeaDataNet P01 parameter vocabulary

[http://seadatanet.maris2.nl/v_bodc_vocab_v2/browse.asp?order=conceptid&formname=search&screen=0&lib=p01&v0_0=&v1_0=conceptid%2Cpreflabel%2Caltlabel%2Cdefinition%2Cmodified&v2_0=0&v0_4=&v1_4=modified&v2_4=9&v0_5=&v1_5=modified&v2_5=10&x=15&y=13&v1_6=&v2_6=&v1_7=&v2_7=\).](http://seadatanet.maris2.nl/v_bodc_vocab_v2/browse.asp?order=conceptid&formname=search&screen=0&lib=p01&v0_0=&v1_0=conceptid%2Cpreflabel%2Caltlabel%2Cdefinition%2Cmodified&v2_0=0&v0_4=&v1_4=modified&v2_4=9&v0_5=&v1_5=modified&v2_5=10&x=15&y=13&v1_6=&v2_6=&v1_7=&v2_7=).)

The standard approach and the harmonized data management system allow to easily compare concentrations of contaminants measured by different countries. When several data are available for a selected monitoring station, the bar represents the median value. The overall statistics of all data displayed in the window is available on the top-central part.

The visualization system is interactive and allows to easily filter and visualize desired information. Comparison of a specific contaminant concentration among all monitoring stations is available for all data available in the system (Fig. 6), as well as for a selected year (Fig. 7 - 9). Temporal trend of contaminant concentrations are available for several stations and are accessible by clicking on a selected bar, corresponding to a specific station (Fig. 10). For some stations, data are available along the water columns and the vertical profile can be visualized (Fig. 11).

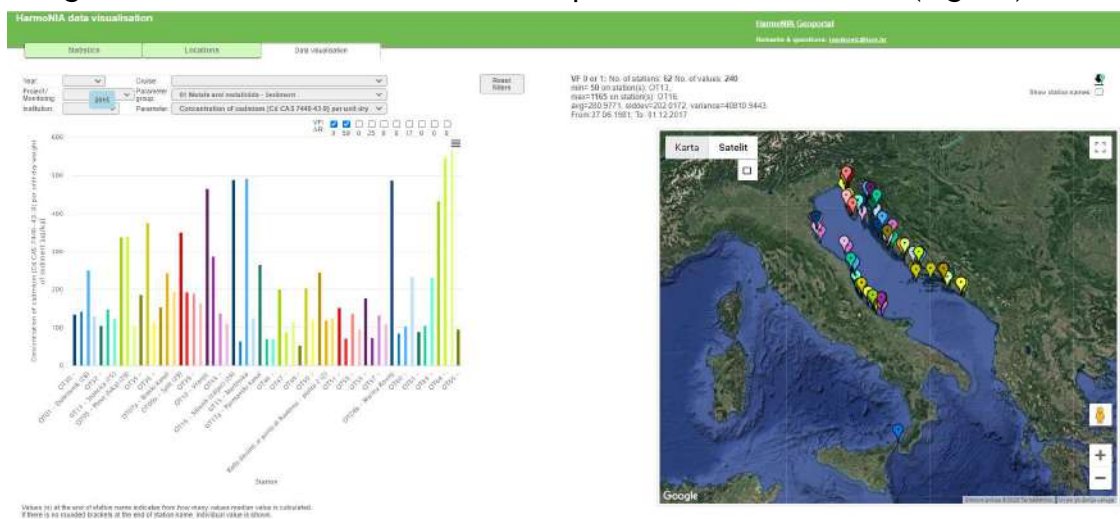


Fig. 6: “Data visualization” window. Example: Concentration of Cadmium in the sediment (left panel) and monitoring station positions (right panel). General statistics are indicated in the top centre. It is possible to filter also for Quality Flag (VF = Validation factor) and for data Access Restriction (AR).

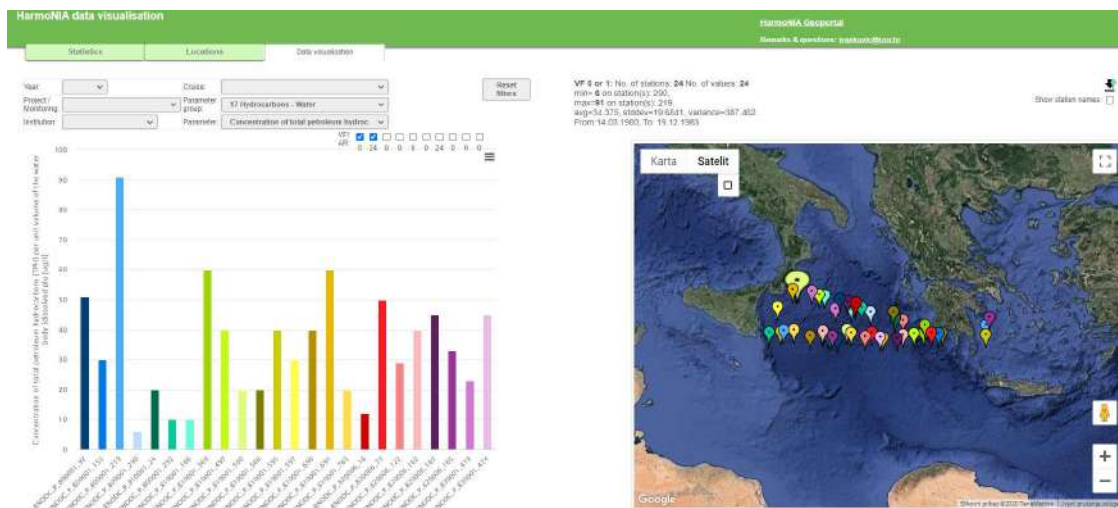


Fig. 7: Example: Concentration of total petroleum hydrocabons in seawater, measeured from 14.03.1980 to 19.12.1983.

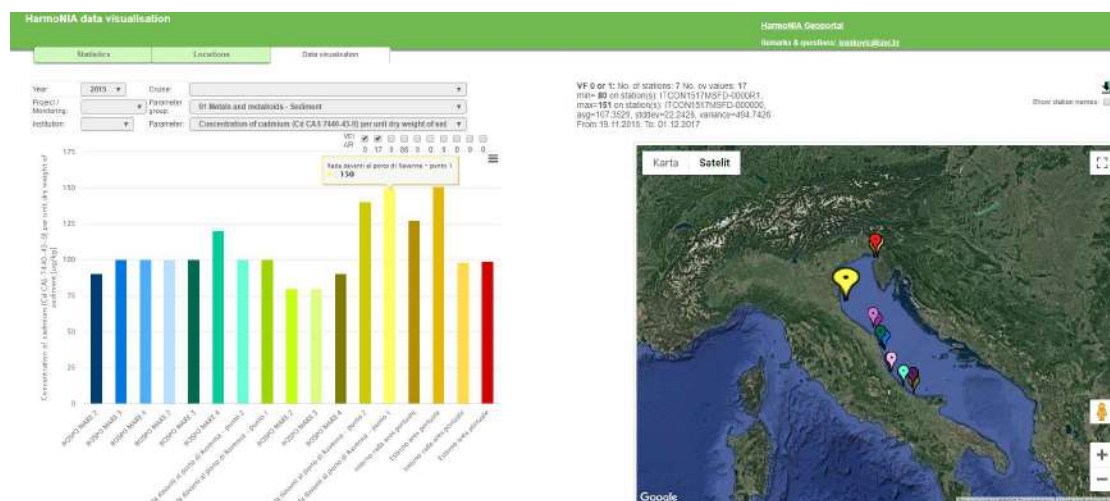


Fig. 8: Example: Concentration of Cadmium in the sediment from 2015 data.

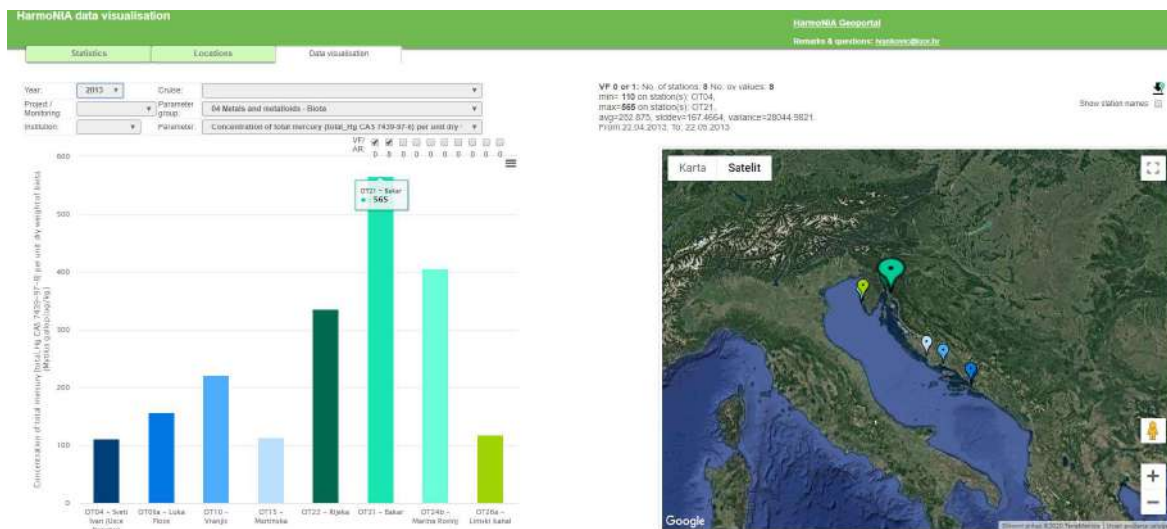


Fig. 9: Example: Concentration of Cadmium in biota from 2013 data.

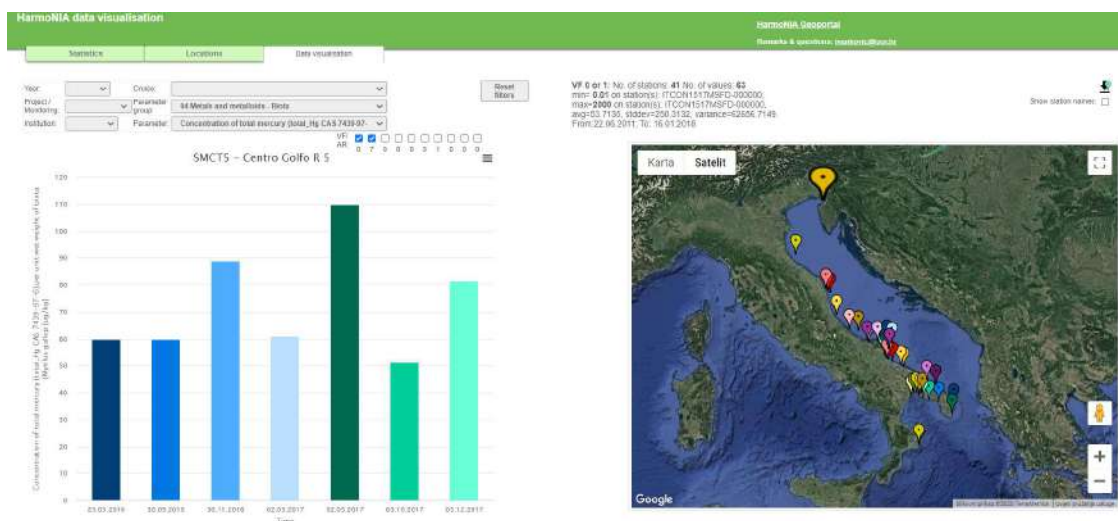


Fig. 10: Example: Temporal trend of total mercury concentration in biota from Station SMCTS - Centro Golfo R S (larger size, orange).

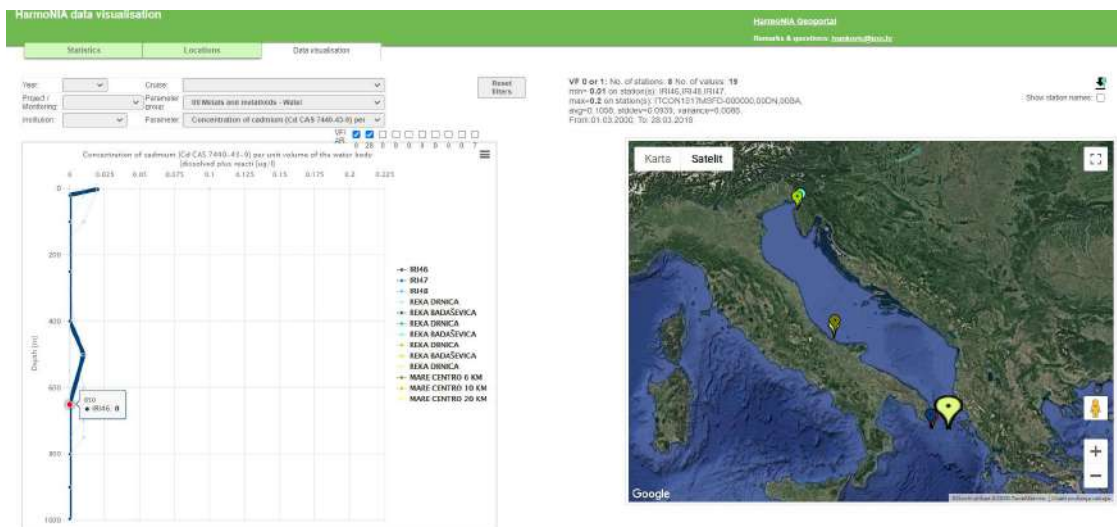


Fig. 11: Example of vertical profile of concentration of Cadmium in seawater.

4. How to find information

A video tutorial to learn how to select specific substances, specific monitoring periods and programs, as well as sampling area and, finally, to help find the data visualization of interest, has been realized and is available at: <https://www.youtube.com/watch?v=IBsnO71eKu4&>.

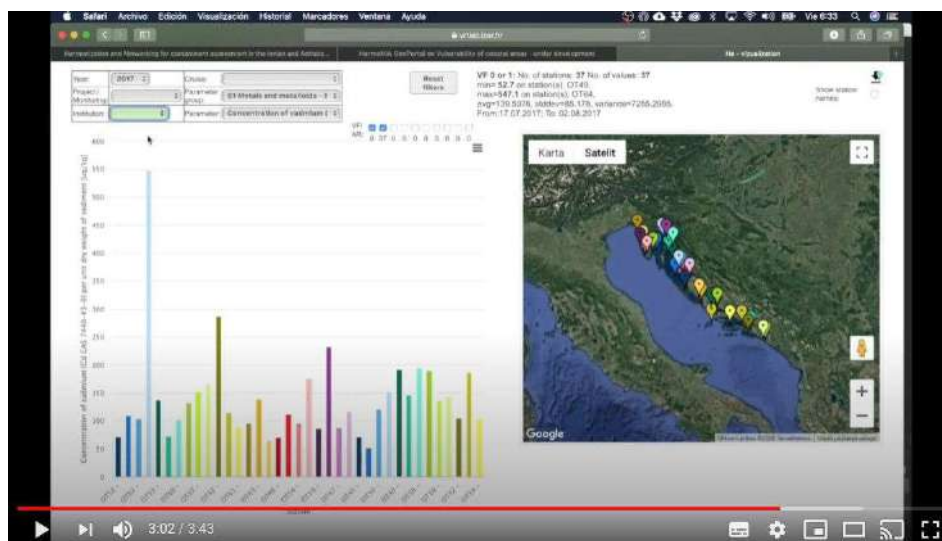


Fig. 12: Video tutorial on the HarmoNIA Data visualization tool