Assessing the status of our common seas: how to find and "see" data of contaminants for the Adriatic and Ionian Region.

Marina Lipizer and M. Eugenia Molina Jack - OGS
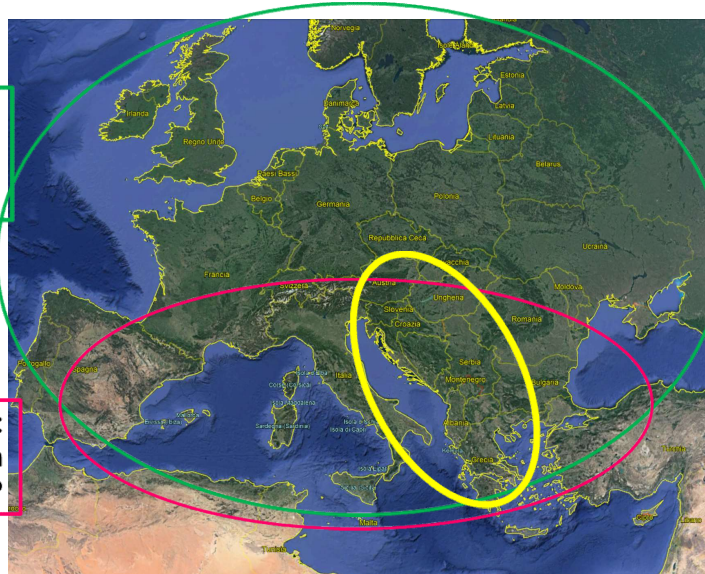
Damir Ivankovic - IOF

❖ Assessing marine pollution: legislative requirements in the ADRION region

➜ Legislative instruments indicate **how** to assess pollution (what to measure, how, where, when)
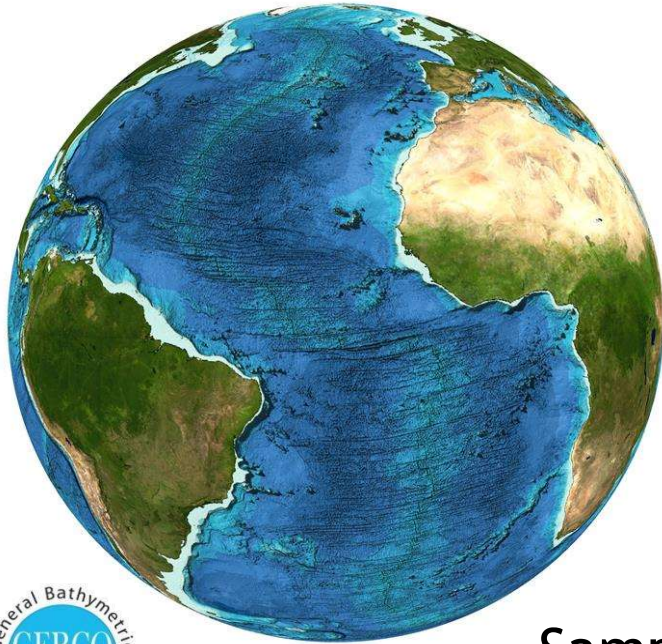
EU Marine Strategy Framework Directive (MSFD)

In the Mediterranean: Barcelona Convention – MEDPOL – UNEP-MAP

→ Harmonized assessment not so trivial!

→ First step is to obtain data

❖ **The cost of collecting data**

Sampling the marine environment is both
difficult and **expensive**

Monitoring contaminants is expensive and time consuming, therefore it is extremely necessary to **take full advantage of the existing data.** Data must contain all the relevant information and be properly prepared to be useful

Collect once and use many times philosophy would save at least €1 billion per year

HarmoNIA builds on:

❖ **EMODnet Chemistry as one of the backbones of HarmoNIA, with SeaDataNet tools**

- Standard vocabularies*
- Standard data formats*
- Standard metadata (=data about data)
- Standard Quality Control approaches and flagging
- Standard IT tools to manage data*

❖ To make data FAIR:

- Findable
- Accessible
- Interoperable
- Reusable

❖ To provide INSPIRE compliant services and specific outputs focused on contaminants relevant for main stakeholders (EEA, JRC)

EMODnet (since 2009) a network of organisations working together to observe the sea, process the data according to international standards and make that information freely available as interoperable data layers and data products
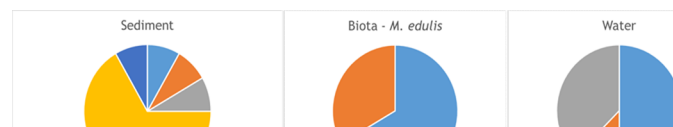
❖Contaminants data complexity

❑ According to JRC (JRC, 2017) there are more than 2700 chemical substances considered as potential contaminants

❑ The analysis of data collated **within HarmoNIA** highlights large heterogeneity:

    ❑ Different substances measured in the different countries

    ❑ Different matrixes (seawater, sediment, biota)

    ❑ Different characteristics of matrix
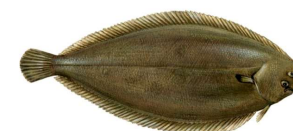
Parameters measured in the ADRION region:

Matrix heterogeneity:

→ The larger the complexity, the higher number of information is needed to allow comparison

Data management for contaminants is complex and challenging due to the big number of variables that have to be considered in the sampling, but also to the increasing number of substances that are considered as pollutants
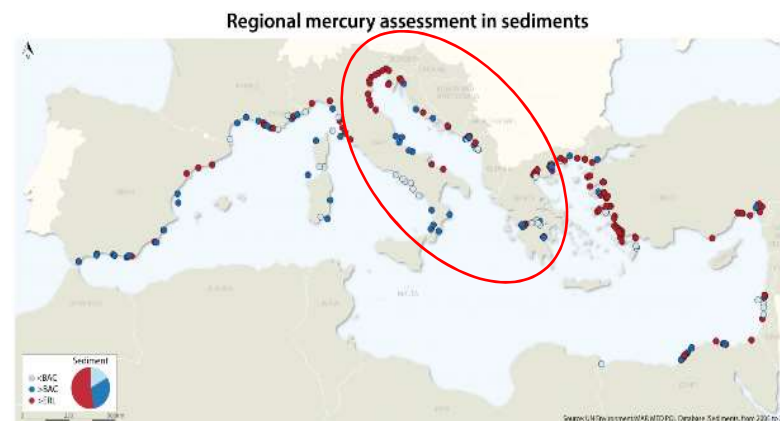
Interreg ADRION ADRIATIC-IONIAN
European Regional Development Fund – Instrument for Pre-Accession II Fund
HarmoNIA

❖HarmoNIA objective

GAP:

Data availability for GES

HarmoNIA approach:

From: 2017 Mediterranean Quality Status Report, UNEP/MAP

Regional mercury assessment in sediments

- ❑ Collect and make accessible datasets of contaminants for the Adriatic – Ionian region, using a common and already available infrastructure

- ❑ Dig into the available data collection in the Adrion Region to identify the main needs in harmonisation

- ❑ Strengthen the **network of data infrastructures** to facilitate access and re-use of marine data
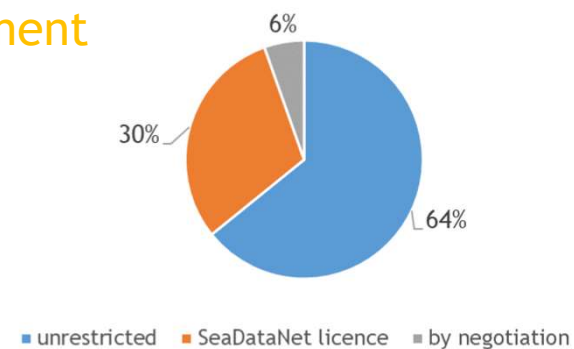
❖ **HarmoNIA contribution**

❑ Data availability from all countries along the ADRION seas

Total number of datasets: 5.666

Dataset temporal extent: 1979 - 2018
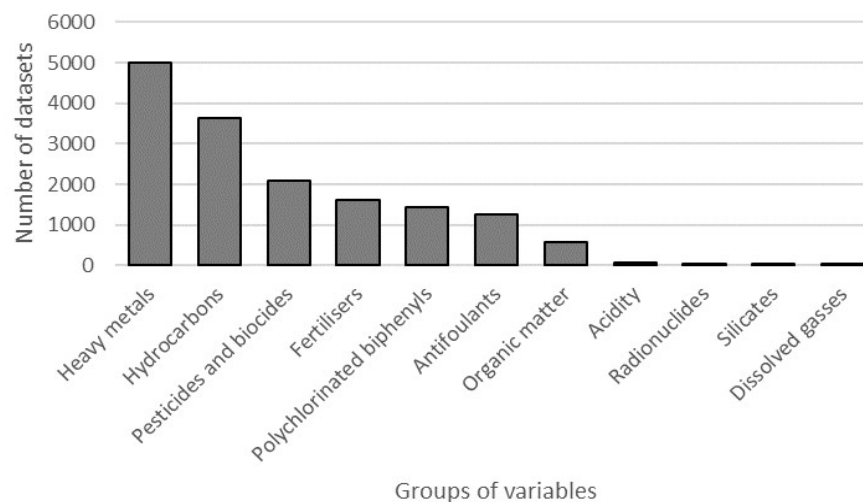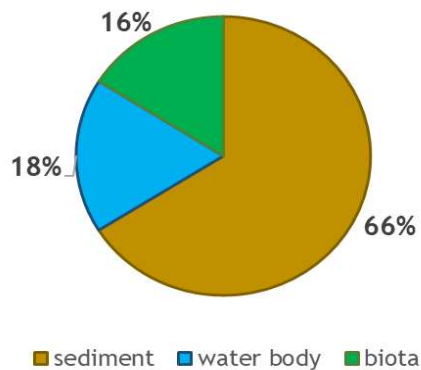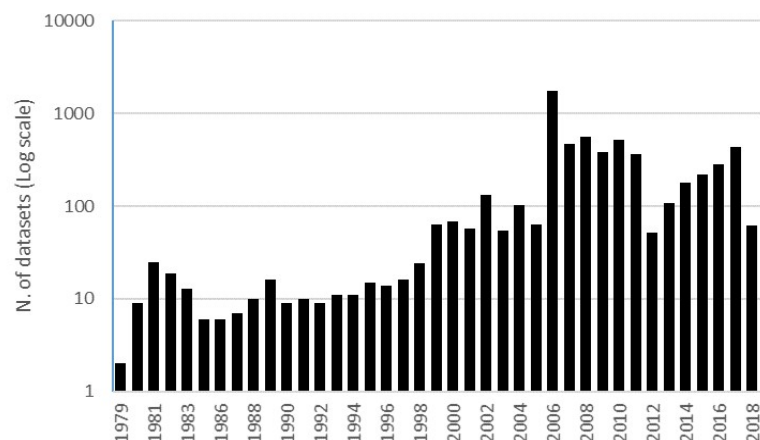
- ▪ 192 different chemical substances
- ▪ 96 measured in seawater
- ▪ 144 in Sediment
- ▪ 58 in biota

❑ Data availability

Common access system for the Adriatic-Ionian Seas of data of contaminats measured in water, sediment and biota

http://harmonia.maris2.nl/search

❖ **HarmoNIA contribution**

❑ Data acces tutorials

https://harmonia.adrioninterreg.eu/

https://harmonia.adrioninterreg.eu/library

https://www.youtube.com/watch?v=MtyGLfpkq0o

☐ Data quality

Regional aggregated dataset

Format control

Quality control

Contact originators. Data corrections

Harmonised and QC collection

Yes

Issues?

No

Yes

Issues during data analysis?

→ ADRION region harmonised Quality Controlled dataset

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ADRION ADRIATIC-IONIAN
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From data to information

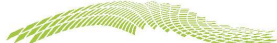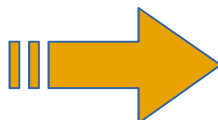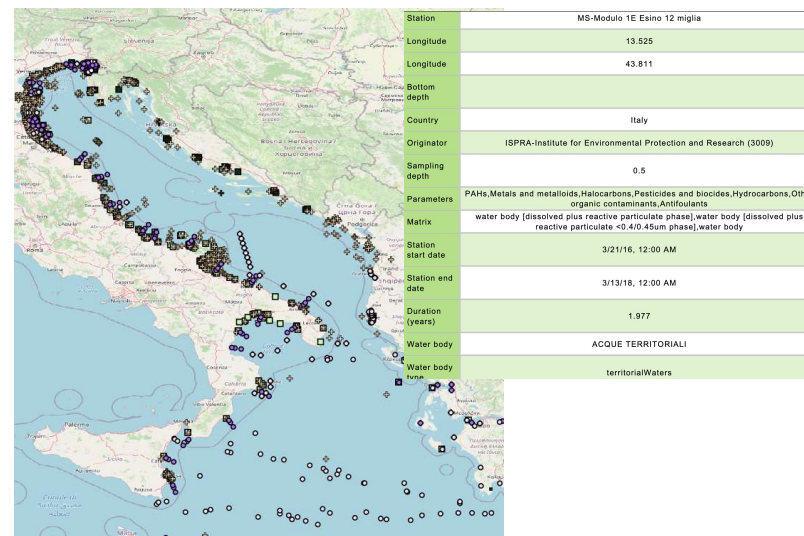| Initial list |
|---|
| Station ID |
| Station type |
| Latitude |
| Longitude |
| Country |
| Matrix |
| Species (if biota) |
| Parameters |
| Purpose of monitoring |

- Questionnaire to gather information considered relevant about sampling stations
- Analysis of UNEP/MAP requirements

Station	MS-Modulo 1E Esino 12 miglia
Longitude	13.525
Longitude	43.811
Bottom depth	
Country	Italy
Originator	ISPRA-Institute for Environmental Protection and Research (3009)
Sampling depth	0.5
Parameters	PAHs,Metals and metalloids,Halocarbons,Pesticides and biocides,Hydrocarbons,Other organic contaminants,Antifoulants
Matrix	water body [dissolved plus reactive particulate phase],water body [dissolved plus reactive particulate <0.4/0.45um phase],water body
Station start date	3/21/16, 12:00 AM
Station end date	3/13/18, 12:00 AM
Duration (years)	1.977
Water body	ACQUE TERRITORIALI
Water body type	territorialWaters

https://nodc.inogs.it/geoserver/HarmoNIA/wms?
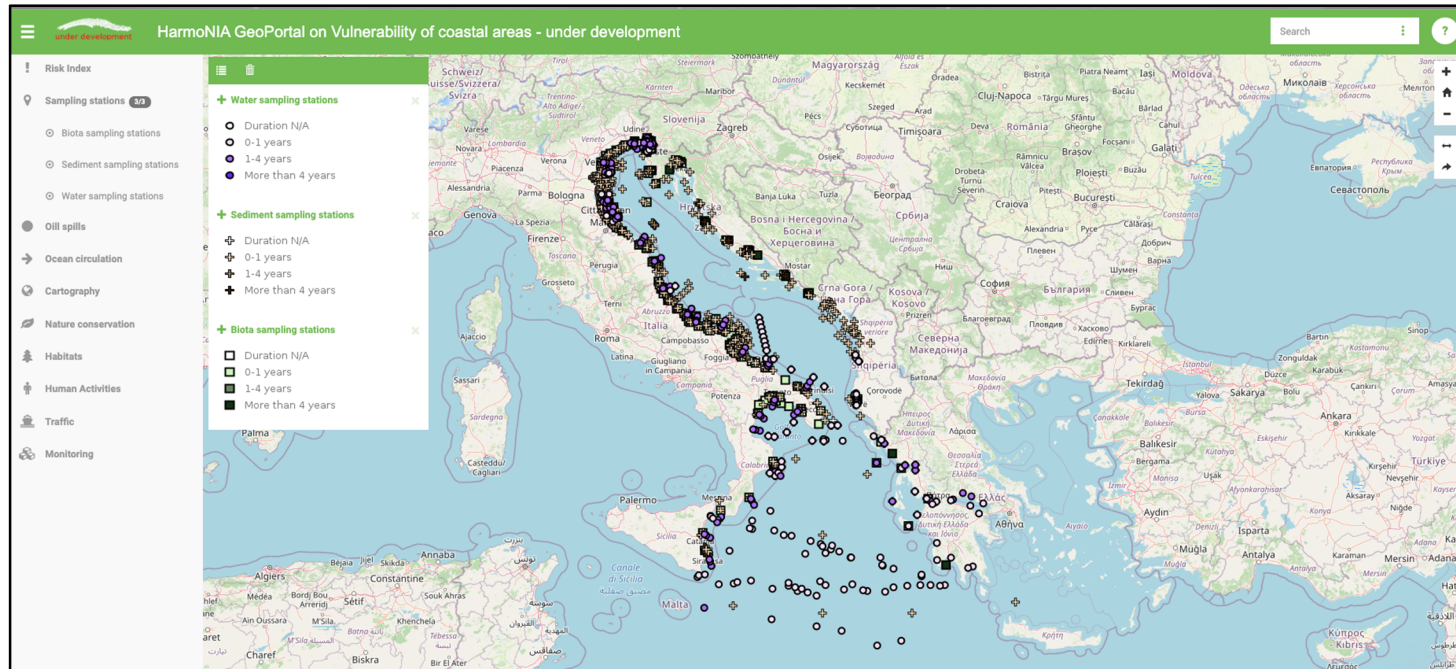
- Relevant information about **sampling stations** were gathered from the validated regional data collection and additional data sources.
- The **visualisation of information** related to the stations is an easy way to see where and how sampling efforts are distributed.

From data to information

- OGC compliant webservices provide access to information about sampling stations
- The use of interoperable services allow to have the information about stations on hand through multiple tools and platforms to promote its usability by different stakeholders
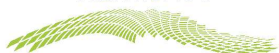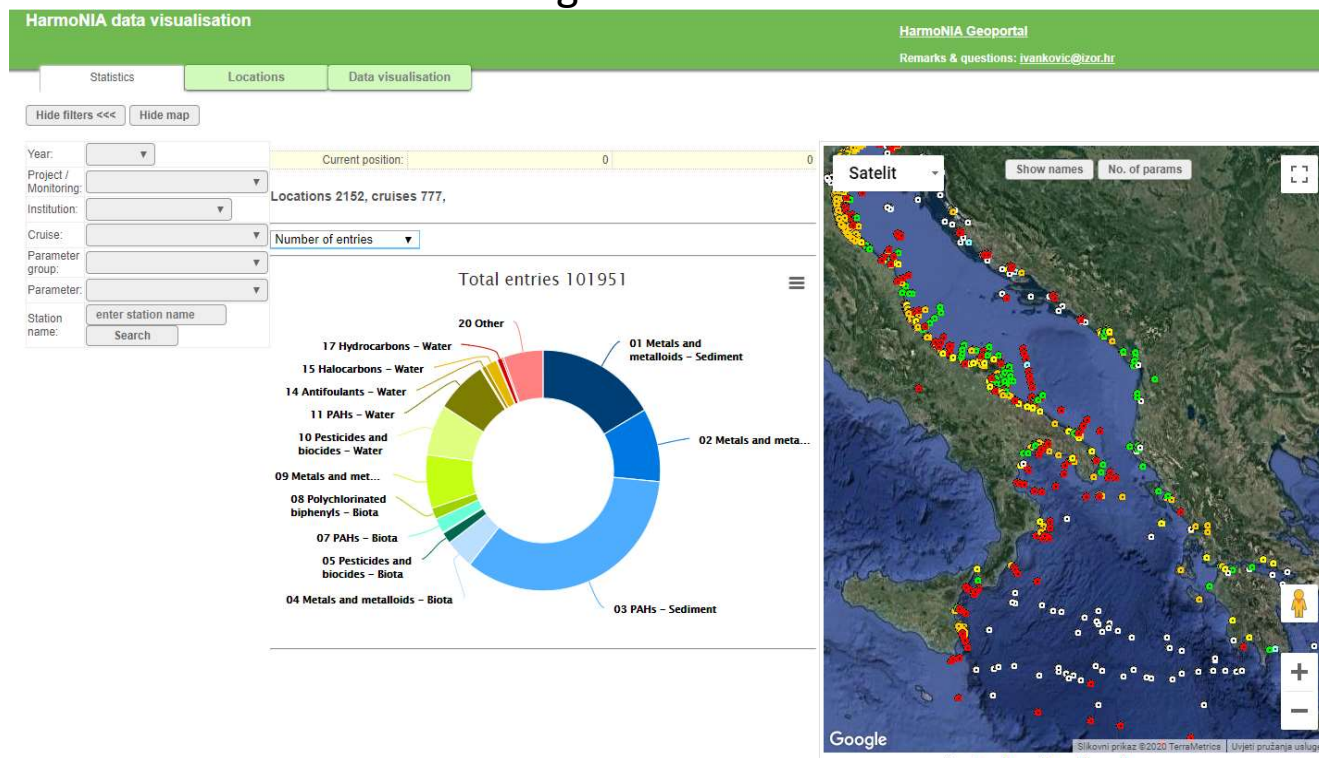
«See» data

HarmoNIA Data visualization tool: https://vrtlac.izor.hr/ords/harmonia/

Allows to:
- ❑ discover where-what-how many data are available
- ❑ Discover information related to monitoring stations
- ❑ visualize concentrations of selected parameters with the same approach and system for the whole ADRION region

❖ «See» data

"**Data visualization**" window allows to **select** parameters, years, monitoring/project activities, institutions providing data, and visualize **concentrations** of selected parameters

General statistics

Filter for Quality Flag (VF = Validation factor) and Access Restriction (AR).

Concentration of Cadmium in the sediment and monitoring stations

❖ «See» data

Temporal trends:

Total mercury concentration in **biota** from Station SMCTS (orange)
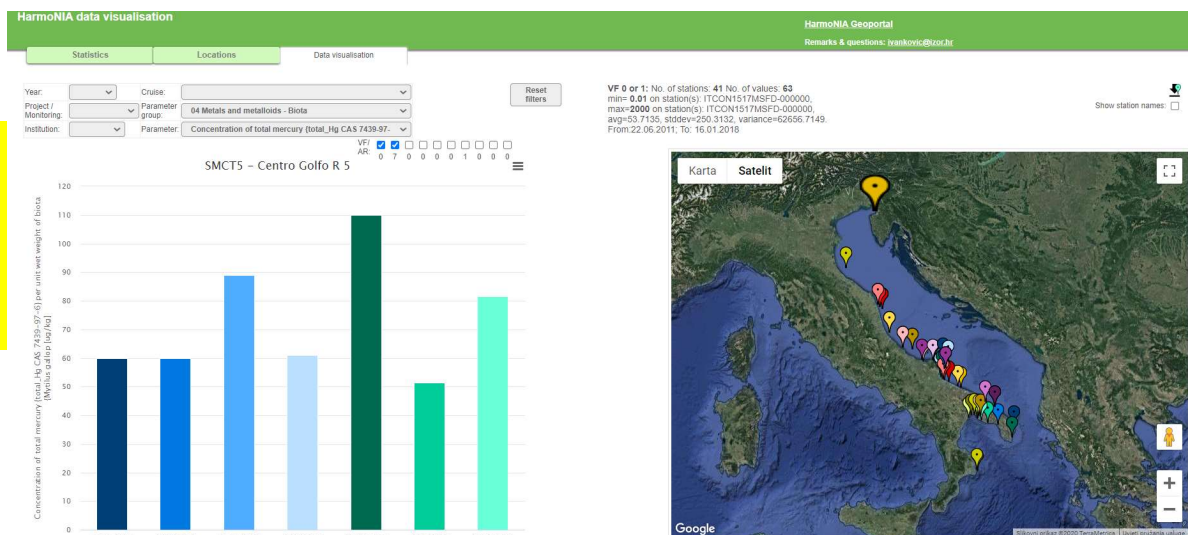
Vertical profiles:

Cadmium concentration in seawater
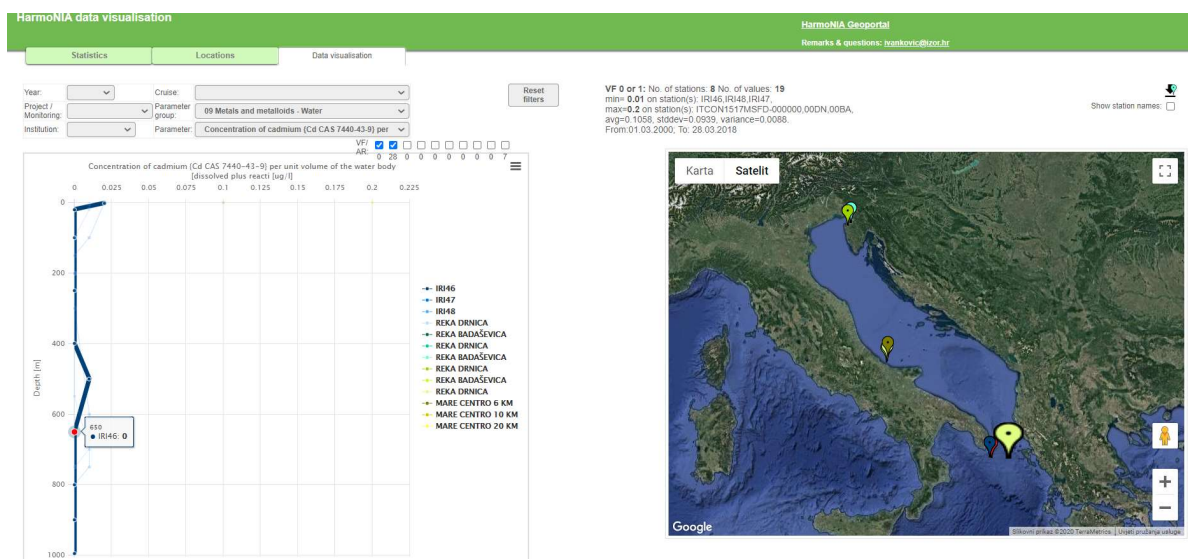
Monitoring information:
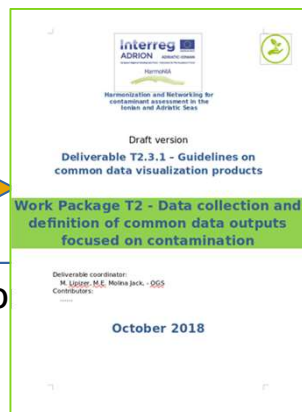
❖ «See» data

Monitoring station - related information
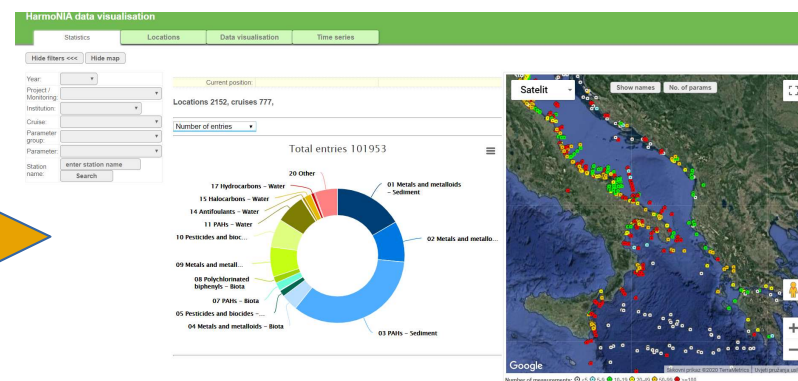
From data to information

Questionnaire to collect information and experience needed to define best practices for visualization of data on contaminants
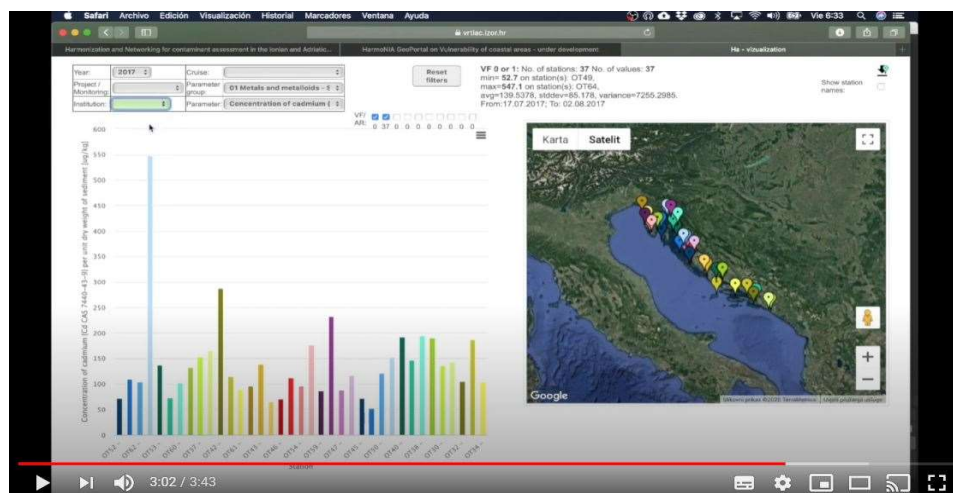
Definition of Guidelines
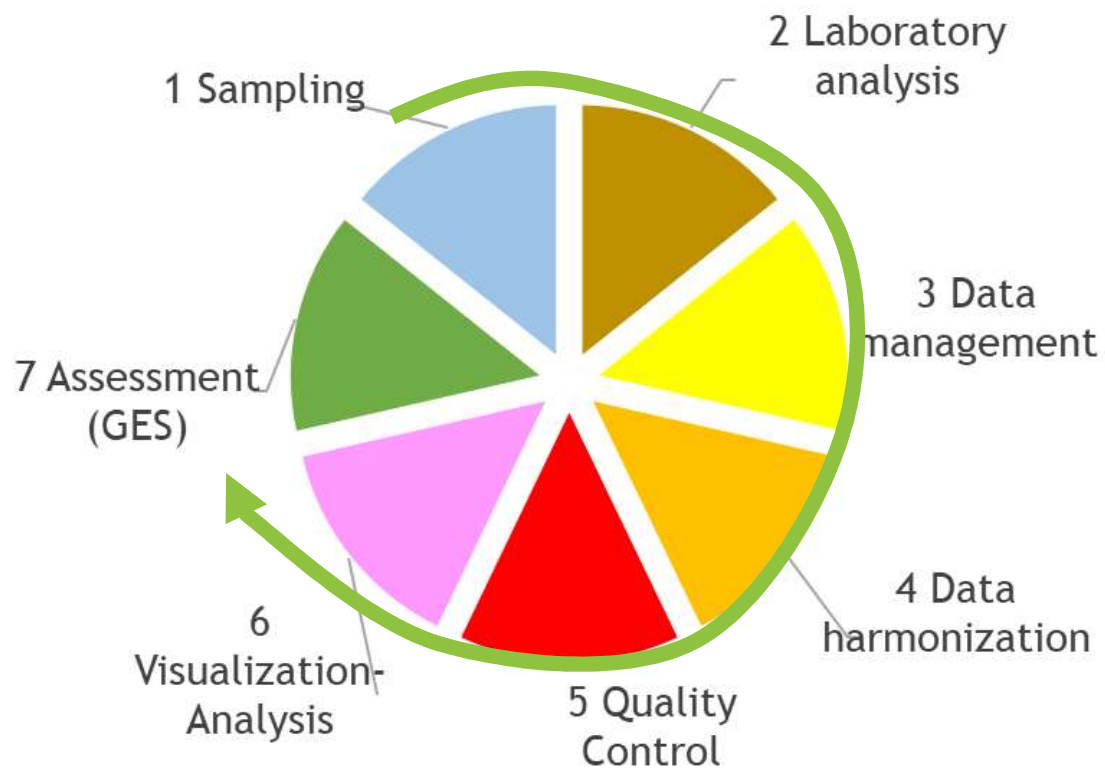
Implementation of harmonized products

Video tutorial on the HarmoNIA Data visualization tool

From **good monitoring** data to **good decision** making

To proceed after HarmoNIA conclusion....

Objective:

❖ share experience within the network to improve harmonization in data acquisition, management, processing and visualization

❖ promote the use of common tools for the harmonization and validation data

❖ make easy access to marine chemical data

❖ promote the use of common tool for displaying data across the entire region

Commitments of the members:

In accordance with the capacity and its legal framework of competence,... the members agree to...

- ❑ Share information on **methodological procedures** for monitoring contaminants in the marine environment
- ❑ Share information on approaches for environmental status **assessment**
- ❑ Share **needs** in monitoring and assessment of marine contaminants
- ❑ Share **best practices** to improve the common approach to monitor and assess marine pollution
- ❑ Share **data** on contaminants in the marine environment
- ❑ Share and possibly adopt **Guidelines and Strategies** proposed by HarmoNIA project

Application form

Transnational network of institutions sharing expertise and information towards harmonization of monitoring of contaminants in the marine environment, data management and visualization

In my role of _____ (type of institution/body) I request to join HarmoNIA Network to share expertise and information in order to improve harmonization of monitoring of contaminants in the marine environment. I have read and I declare to accept the cooperation agreement.

We invite all interested entities to join!

Thanks for your attention!

More information available on:
https://harmonia.adrioninterreg.eu/
HarmoNIA video:
https://www.youtube.com/watch?v=FNOwRyXn9Ps

HarmoNIA on facebook:
https://www.facebook.com/HarmoNIA-project-2034499366872633/?ref=aymt_homepage_panel&eid=ARDaeoqtGoJRY__IHhbG1QgGwTgOEPxFhj9df64METOaHk8KDEwwI2XE6NfrkgEx85fJRsqgq4TnDrCW