



HarmonIA



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

## Deliverable T2.2.1 - Prototype of GIS layers of sampling sites for contaminant monitoring

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

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## 1. Introduction

The legal framework for the environmental protection of the sea is nowadays as complex as the ocean itself. As described in 2014 by *Boyes & Elliot*, it is a “*Horrendogram*”, very difficult to follow and to comply with.

All these regulations come from diverse official sources but the pillar of the protection of the marine environment in Europe is the Marine Strategy Framework Directive (MSFD, EC, 2008). From 2008, conservation tasks have been approached on the basis of the MSFD and taking into account other important regulations in the framework of the Regional Conventions.

According to the MSFD, EU member states shall work towards the achievement of “Good Environmental Status (GES)” of all the water bodies and marine and coastal areas by 2020.

Due to MSFD and a variety of other directives and regulations, there is already a wide coastal and marine monitoring undertaken by Member States. Additionally, Regional Sea Conventions have a useful experience in monitoring and, at the same time, integrate the needs of non EU countries.

Sampling the marine environment is difficult, time-consuming and expensive. At the moment, there is quite an important number of marine data sources (public official monitoring, research, industry). The use and re-use of data would save an important sum of money every year, making all these data available for different users and stakeholders.

## 2. Objective

Visualization is a useful tool to organize and synthesize monitoring data to produce practical and understandable information for several kinds of stakeholders and decision makers (Fig. 1), and is as important as monitoring and data management.



health in a significant manner, ecosystems, biodiversity, sustainability or the economy”.

- **Reference:** Reference condition or state (sometimes referred to as background levels); concentrations of certain substances that would be expected in “pristine” or “remote” sites, based on the available monitoring data (such as Reference Areas/Stations).

### 3. Methodology

The structure and the information to be provided has been defined according to the needs and suggestions of HarmoNIA partnership and taking into account best practices adopted in the framework of Regional Sea Conventions (eg. Barcelona Convention, OSPAR, HELCOM) (Fig. 2).

A review of the instruments currently used by Regional Sea Conventions in other areas (eg. OSPAR, HELCOM) has been performed.

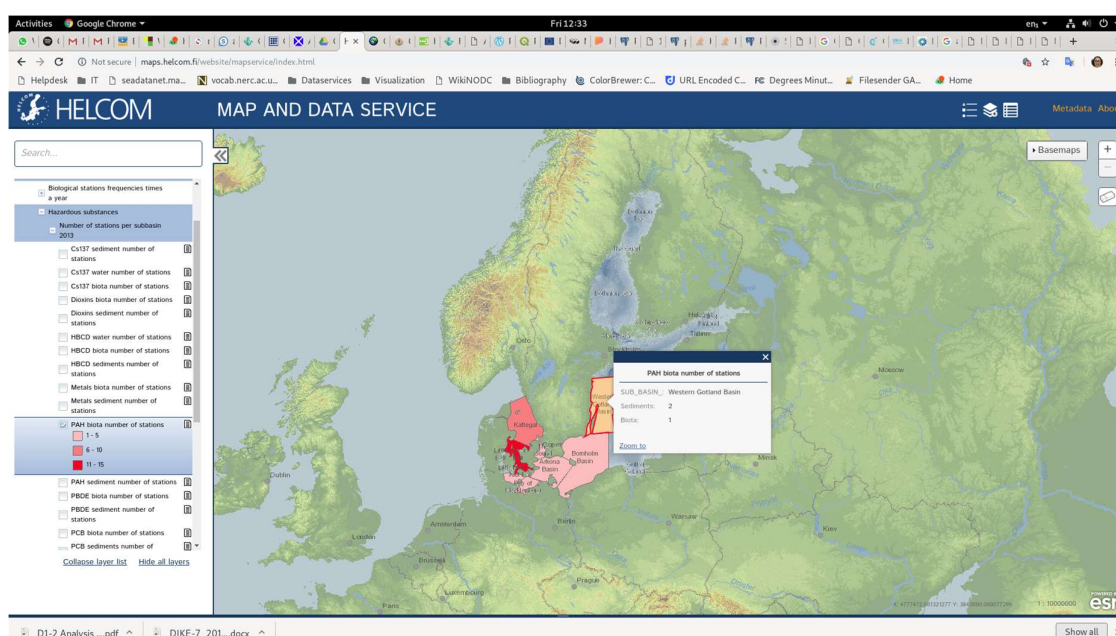


Figure 2: HELCOM map and data service. Visualizations on monitoring stations

An initial proposal was circulated within the partnership. This draft list was open, with the idea of gathering the information considered relevant about sampling stations from the partners.

#### Initial list:

- Station ID

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

Comments and suggestions were taken into consideration, basically depending on the feasibility using the current data and metadata management structure, based on SeaDataNet and EMODnet Chemistry. According to the feedbacks collected within the partnership, the following information was considered required to be included on the prototype:

<b>Metadata field:</b>	<b>metadata options</b>	<b>SeaDataNet vocabulary</b>
<b>ORIGINATOR OF THE DATASET (EDMO Code)</b>		
<b>Station ID</b>		
<b>Station type</b>	hotspot ( H ) reference ( R ) coastal ( C ) unknown (U)	
<b>Latitude</b>		
<b>Longitude</b>		
<b>Country</b>		
<b>StartDate</b>		
<b>EndDate</b>		
<b>Duration</b>		
<b>Sampling interval</b>	Occasional (project driven) Regular/continuous	L03 (SEADATANET MEASUREMENT PERIODICITY CATEGORIES)
<b>Bottom depth</b>		
<b>Sampling depths</b>		
<b>Matrix</b>		
<b>Species (if biota)</b>		
<b>Parameter (P02)</b>		P02

<b>Purpose of monitoring</b>	Research WFD monitoring MSFD monitoring Impact assessment specific monitoring IMAP (Integrated Monitoring and Assessment Program) Other /national monitoring	C36 (MONITORING ACTIVITY LEGISLATIVE DRIVERS)
<b>Water type</b>	transitional waters coastal waters open waters	
<b>Name of water body and ID of water body</b>		

The definition of the prototype is based on metadata collected from some partners and additional metadata were gathered from other available sources.

Some needed metadata are, at the moment, not easy to include through CDI (Common Data Index) as they are currently included in the dataset “Abstract”, which is not the most suitable field to work in an automatic way.

WFD reference layers, used to gather some of the needed information from an official source (<https://www.eea.europa.eu/data-and-maps/data/wise-wfd-spatial-1>), do not include information for non EU countries. Therefore, layers from Marine Regions database (<http://www.marineregions.org/downloads.php>) have been used in order to complete the information about water bodies in non-EU countries. More accurate spatial processing and analysis is needed to produce a layer for the whole area with the publicly available information. At the moment some information about water bodies is missing and may be not available in the future.

WFD reference layer does not always match with information given by partners. This will be checked while working on the operational layer for sampling sites.

The operational layers will include all needed information. Most of it is obtained from the data collection within HarmoNIA project (Deliverable T.2.1.1). At the moment of the preparation of the prototype data collection is not finished.

## 4. Result

To perform analysis and integration of the needed information a desktop GIS (QGIS) has been used. A series of layers in shapefile format has been produced to visualize the information related to the sampling sites, considered relevant within HarmoNIA partnership (Fig. 3):

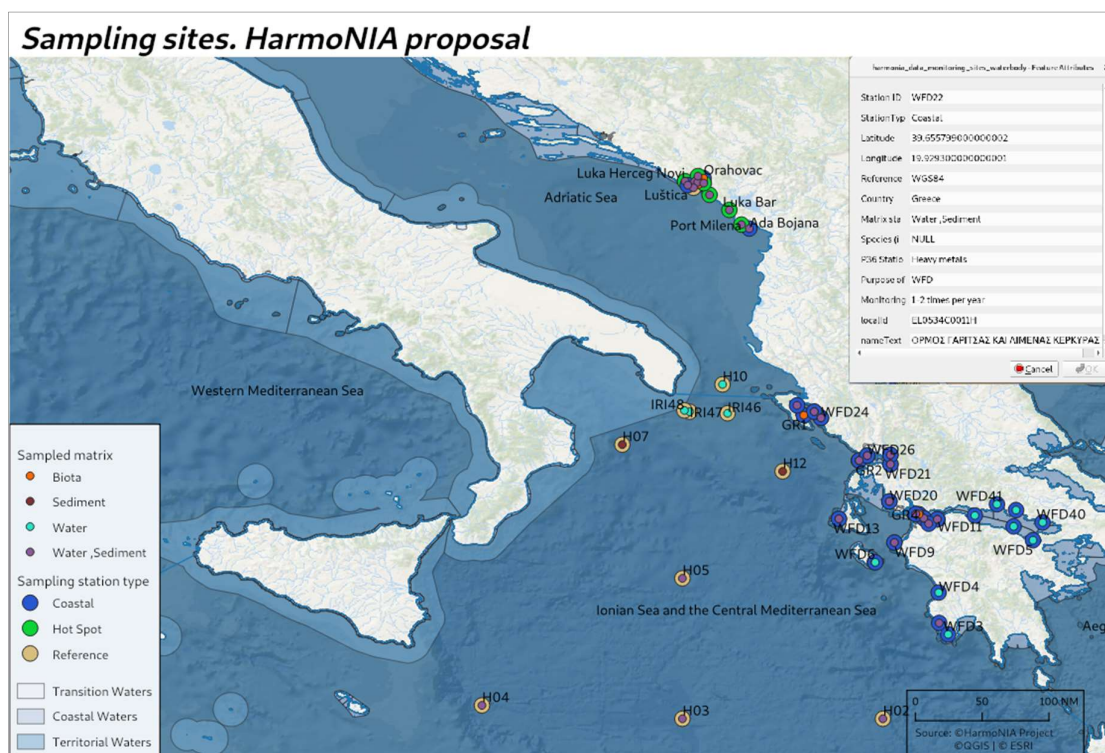


Figure 3: Prototype of GIS layers of positions of monitoring sites based on information shared within HarmoNIA.

The operational layers will be made available through WMS/WFS services, integrated into HarmoNIA geoportal and described through the relevant metadata.