SYSTÈME EURO-MEDITERRANÉEN D'INFORMATION SUR
LES SAVOIR-FAIRE DANS LE DOMAINE DE L'EAU

SEMIDE
EMWIS

EURO-MEDITERRANEAN INFORMATION SYSTEM ON
KNOW-HOW IN THE WATER SECTOR

MED-WIS project
"Definition of geographical references
for MPC countries"

DRAFT VERSION

October 2009

With the support of the European Commission
Prepared By ADASA Sistemas

adasa

Unité Technique du SEMIDE   EMWIS Technical Unit

BP 23 - 06901 SOPHIA-ANTIPOLIS - FRANCE • Tel.: +33 (0) 492 94 22 90 • Fax: +33 (0) 492 94 22 95 • Email : info@semide.org

http://www.semide.org   http://www.emwis.org

Report meta-information

Title	**Definition of geographical references for PC countries**
Creator	ADASA Sistemas
Date Issued	1-6-2009
Subject	Definition of a data specification for water for the Mediterranean to promote information exchange in the region
Publisher	SEMIDE / EMWIS
Description	
Contributor	
Format	Microsoft Word document
Audience	EMWIS Technical Unit, MPC countries, JRC, EEA
Identifier	
Language	EN
Coverage	

Revisions

Version number	Date	Modified by	Comments
Pre-draft	01-06-2009	Mª Dolores Villanueva Elena Borrell	Initial version
Draft version	25-06-2009	Eduardo García	Comments and decisions from expert workshop on metadata
Reviewed version	10-10-2009	Mª Dolores Villanueva Elena Borrell	Reviewed version

Table of contents

Disclaimer:

"This report was drawn up with the assistance of the European Commission. The contents of this document are the sole responsibility of the ADASA Sistemas mandated by EMWIS Technical Unit under the contract "Towards a Mediterranean Water Information Mechanism compatible with WISE" ref. 21.0401/2007/485730/UB/D2 and may not be deemed to be reflecting the opinion of the European Union."

EXECUTIVE SUMMARY

EMWIS Technical Unit is managing a project funded by the DG Env of the European Commission, entitled "Towards a Mediterranean Water Information Mechanism compatible with the Water Information System for Europe (WISE)".

The objective of this project is to prepare a Mediterranean information mechanism on water which is compatible with the Water Information System for Europe –WISE- and that will support the Med Joint Process between the EU Water Initiative and the Water Framework Directive. This mechanism will stream line the access to comparable data related to water in the Mediterranean Partners Country (MPC).

The project should provide among others the **technical guidelines** to make sure the interoperability between WISE, the NWIS developed by the MPC and the Med water information mechanism. These technical recommendations will be based on existing EU standards and guidelines (INSPIRE directive, WFD guidance documents, WISE architecture and SEIS principles).

Interoperability can be achieved at various levels. The technical guidelines defined for the Med WIS project should allow achieving the highest level of interoperability referred as 'semantic interoperability' between MPC countries and between MPC countries and the WISE system.

'Semantic operability' can only be obtained when the more basic interoperability requirements are also satisfied:
  - Network-protocol interoperability that allows **communication** between components
  - Standard interface specifications can enable clients to perform **procedures** on a remote system
  - **Data transfer** interoperability allows access to data, sharing of geographic data-bases and other services independent of the proprietary format
  - **Semantic interoperability** concerns an application's ability to interpret data consistent for common representation or processing

The first three levels of interoperability (network, procedures and data transfer) can be satisfied in the Mediterranean by applying the same standards defined by the European Environmental Agency for WISE interoperability with the EU Member States. Base network, procedures and data transfer interoperability requirements for WISE provide a solid, proven and reliable technical platform to develop the Mediterranean Information Mechanism since they are based on the most accepted standards and initiatives in this area (ISO 19100, INSPIRE and OGC). Those requirements have been specified in the "*Guidance on Implementing the Geographical Information System (GIS) Elements of the EU Water policy"* document released by the Water Framework Directive Common Implementation Strategy Workgroup D. In this context, a separate document will be released specifying in detail those requirements for the Mediterranean countries.

Semantic interoperability requires the definition of a precise, joint, data specification on top of network, procedures and data transfer interoperability requirements. A data specification provides a structure and a common view to

exchange information between different nodes. A data specification already exists for WISE. It has been created to comply with the 'Water Framework Directive' (WFD) compliance reporting requirements. Since WFD does not apply to MPC countries a new data specification has to be built for the Mediterranean Information Mechanism. The new Med data specification should be **compatible** with the shared data elements of WISE to ensure a seamless data transfer but should be develop according to the Mediterranean problematic and focus.

This document specifies a proposal for a 'Mediterranean Reference Dataset' that will complement WISE technical interoperability requirements to achieve semantic interoperability in the region.

I. LIST OF ACRONYMS

CUAHSI	Consortium of Universities for the Advancement of Hydrologic Science http://www.cuahsi.org/
EMWIS	Euro-Mediterranean Information System on the know-how in the Water Sector
EU	European Union http://europa.eu/
GIS	Geographical Information System
GML	Geography Markup Language http://www.opengeospatial.org/standards/gml
INSPIRE	Infrastructure for Spatial Information in Europe http://inspire.jrc.ec.europa.eu/
ISO	International Organization for Standardization
ISO 19100	Geographic information Standards
ISO 19109:2005	Geographic information - Rules for application schema http://www.iso.org/iso/catalogue_detail.htm?csnumber=39891
ISO 19115:2003	Geographic Information - Metadata. http://www.iso.org/iso/catalogue_detail.htm?csnumber=26020
MPC	The 12 Mediterranean Partner Countries of the Barcelona Process
NWIS	National Water Information System
OCL	Object Constraint Language http://www.omg.org/technology/documents/modeling_spec_catalog.htm#OCL
OGC	Open Geospatial Consortium http://www.opengeospatial.org/
ODM	Observational Data Model http://his.cuahsi.org/odmdatabases.html
SEIS	Shared Environmental Information System http://ec.europa.eu/environment/seis/
SEMIDE	Système Euro-Méditerranéen d'Information sur les savoir-faire dans le Domaine de l'Eau (in French)
UML	Unified Modeling Language http://www.uml.org/ http://www.omg.org/technology/documents/modeling_spec_catalog.htm#UML
WFD	Water Framework Directive http://europa.eu/legislation_summaries/agriculture/environment/

l28002b_en.htm

WGS84   World Geodetic System 84

http://spatialreference.org/ref/epsg/4326/

WISE   Water Information System for Europe

http://water.europa.eu/

http://www.semide.org   http://www.emwis.org

II. INTRODUCTION

A. Scope of the work

The Mediterranean Sea, connecting three different continents (Africa, Asia and Europe), includes territories with similar geo-climatic characteristics where a rich and fragile mosaic of countries and ecosystems are integrated and share a common culture and identity signs.

For the countries of the Mediterranean basin, water is a scarce, fragile and unevenly distributed resource conditioned by an extreme phenomenology. Exchange of expertise and experiences is essential to elaborate common strategies that will enable a greatest knowledge and better management of the available hydrological resources.

However, building a common strategy is not effortless and has several hurdles; the current fragmented approach to water management in different countries, the lack of coordination between institutions and the absence and dissemination of the available environmental information. That's why the definition and development of a specific Mediterranean water information system is necessary. This new information system should provide a summary of the most relevant water related information from each country referred to a common normalized framework that will enable information interoperability at regional level.

This information system has to be defined with the participation and alignment of all countries, and has to respond to their local needs as well as the regional ones. It should combine short and long term perspectives on water management. This combination of different perspectives (local / regional and short / long term) forces a modular architectural approach, that could make the extension of the system easier and the adaptation of the system needs to evolving priorities and specifications of the information.

B. Review and adaptation of existing EU guidance documents

For the accomplishment of this model are taken into consideration the revision and adaptation of:

- WFD guidance documents
- WISE technical rules
- Inspire Directive and related guidance documents

III. PURPOSE OF THE DOCUMENT

The objective of this document is to contribute to the construction of a common framework of reference for the observation of the status of the hydrologic resources in the Mediterranean. This framework will provide a common terminology and semantic data interoperability that will support a common knowledge base for the integrated water management in Mediterranean countries and at regional level. This knowledge will be assembled from the expertise of the different Mediterranean countries contributing with their national systems to the common model trough a regional interoperable infrastructure.

The main objectives of the model are:

- Allow **interchange** of information between different entities/organizations
- **Unify criteria** and standards for data set definition and management
- Assure the **availability** and access to the information
- Assure the **reliability** of the information
- Allow the **access** of the information independently of the systems and technologies
- Promote the **development** of national systems in members countries and support its development in the future
- Enable **future evolutions** of the data model ensuring the incorporation of new element/entities necessary to adjust the regional model to the changing needs of the environment and the MPC.

IV. BASIS OF THE DATA-MODEL

The data model proposed is composed by a number of **data-sets** which are **relevant** from the Mediterranean water management perspective. The data sets have been selected from an initial analysis of the Mediterranean hydrological environment and the study of the problematic associated to its management.

More over, the data sets are structured according a suggested analysis model that provides a conceptual framework for its classification and exploitation. This conceptual framework sets de basis for a common understanding of the perspectives from which look at the information, and consequently, understand the environment.

The final component of the proposal is an information model structure to organize the different data set information so that can be exploited easily by information systems and be more easily upgraded.

Before describing the data-sets in detail, these are the description of the common definitions for data to take into account.

A. General approach for definition of datasets

1. How to develop the data specifications

The Med-WISE data specifications are targeted towards meeting the needs of a wide audience and should fulfil WISE, MPC and MEDWIS requirements as well as from the GIS technical side. The specifications should be sufficiently unambiguous so when they are applied by GIS specialists throughout the region they lead to harmonised datasets which, with minimal additional effort, can be viewed and analysed in a comparable way.

INSPIRE is targeted towards providing Europe with a spatial data infrastructure. INSPIRE is developing guidance for the data specification process. The INSPIRE drafting team "Data Specifications" has issued a document "Generic Conceptual Model". The following figure from ISO 19109:2005 ("From reality to geographic data") illustrates the modelling process.
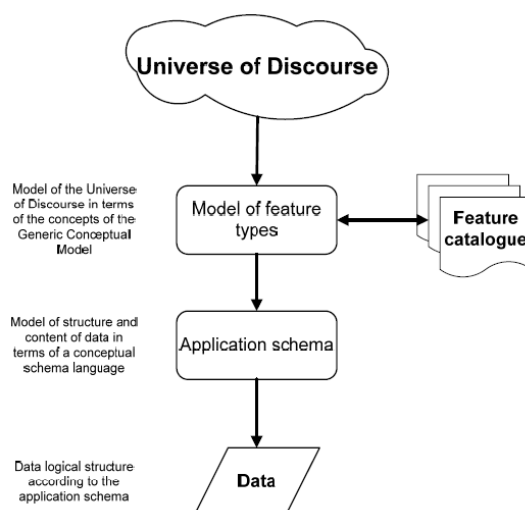
a) *Universe of Discourse*

The data modelling process originates in the concepts found in the area of interest described as the "Universe of Discourse". The concepts are found for example by text analysis of the legislation and in the case of the Mediterranean, the water management needs of the region. The wider applicability thus requires more than a simple analysis of legal texts.

b) *Conceptual model*

The conceptual model should include all the concepts (not only spatial objects) and their properties (attributes, operations and the relationships that exist among the objects). In this part of the modelling process, the focus is on common understanding and agreement of the concepts (entities) involved including the level of details needed (resolution) and the relationships between the concepts. In this phase there are no considerations about technical detail of delivery etc.

c) *Application schema*

When a common understanding of the concepts involved has been agreed, the application schema may be developed. The application schema is a rigorous description of how the Universe of Discourse should be described as data. The application schema takes the form of UML static structure diagrams (class diagrams) supported by data specifications and a data dictionary. The "INSPIRE Generic Conceptual Model" recommends to express the constraints in OCL (Object Constraint Language) and include them in the UML diagrams. Although preferable for the long term implementation in WISE data flows, the UML diagrams in this guidance do not include constraints.

d) *Reporting schemas*

The application schema may also be converted and expressed in the logical form specifying the structure for (for example) reporting the data. Geography Markup Language (GML) may be an alternative to express the reporting schemas in a vendor independent form. GML would be a requirement for compliance with INSPIRE.

.

2. Principles to be applied during data specification work

Article 8 of the INSPIRE Directive provides a set of principles (see text box below) to be applied in the INSPIRE context when defining implementing rules (data specifications) of INSPIRE Annex I and Annex II data. Furthermore, the document "INSPIRE Generic Conceptual model" recommends to apply a "keep it simple" approach to the development of rules for data specifications. Simplicity should be the focus in particular for two aspects:
- The processing and use of (INSPIRE) data should be as simple as possible for users and their software applications.
- For data providers, the transforming/harmonising of their existing data sets should be as simple as possible.

INSPIRE Article 8:

1. In the case of spatial data sets corresponding to one or more of the themes listed in Annex I or II, the implementing rules provided for in Article 7(1) shall meet the conditions laid down in paragraphs 2, 3 and 4 of this Article.

2. The implementing rules shall address the following aspects of spatial data:
(a) A common framework for the unique identification of spatial objects, to which identifiers under national systems can be mapped in order to ensure interoperability between them;
(b) The relationship between spatial objects;
(c) The key attributes and the corresponding multilingual thesauri commonly required for policies which may have an impact on the environment;
(d) Information on the temporal dimension of the data;
(e) Updates of the data."

3. The implementing rules shall be designed to ensure consistency between items of information which refer to the same location or between items of information which refer to the same object represented at different scales."

4. The implementing rules shall be designed to ensure that information derived from different spatial data sets is comparable as regards the aspects referred to in Article 7(4) and in paragraph 2 of this Article."

The "INSPIRE Generic Conceptual Model" also recognises that a major part of INSPIRE data specifications will be the result of a harmonisation process based on existing data specifications. The situation regarding Med-WIS data will, to large extent, also be based on the harmonisation of existing data.

WISE Technical Group Team has identified the key principles which help a smoother process of data specification derived from the experience of first years of WFD implementation. The principles include:

- Use UML models for communicating the relationship between concepts. The UML modelling (graphic) language is becoming a de facto standard, which is also recommended by INSPIRE guidance documents. The graphic models present the complex relationships in a simple way to an audience with a nontechnical background. The UML models help in analysing the relationships between data

- Be clear and explicit in describing the intended content. In areas where different communities apply a similar terminology and/or set of concepts, confusion may arise from the fact that the perception and interpretation of the concept may originate in different approaches. The perspective on a particular concept will be different depending on the tradition of application. The *implicit* understanding of a concept by each party may thus be different and should be made *explicit*. If ambiguity of terms is suspected the semantics should be supported with clear rules for (for example) data capture and validation;

- Clarify expected resolution and spatial properties. As a major part of the (harmonised) data in question will originate from existing data collections, the issue of data capture is very important. If only a subset of a particular feature class is expected the selection criteria should be specified.

Similarly, if the set of features is expected to have certain application properties, e.g. main rivers are expected to be connected through lakes and artificial stretches (canals) and have an outlet at the coastline;

- Be clear on how the object will be identified (primary identifier). Each object should have at least one persistent unique identifier. The identifiers should be of data type text string. Although slower in matching and indexing, the use of text string prevents problems with different numerical encoding;

- Consider the separation of the geometry and primary identifier from other attributes in reporting specifications;

- Keep the spatial feature class slim. Usually several attributes may be assigned to a specific feature class. Care should be taken that only stable attributes are included in the class. Attributes describing a state or a classification subject to a potential change should be modelled in separate tables and linked through unique identifiers. In a similar way, attributes which can be deduced from spatial relationships with other spatial objects should be avoided. During a reporting delivery cycle some redundant information may be included for verification purposes;

- Attribute names should be informative;

- Codelists for attributes should be applied to the maximum extent possible. Wherever possible attribute domains should be enumerated and explained to reduce ambiguity;

- When an attribute contains geographic names, the language as well as thecharacter set allowed should be made clear.

B. Data types

The data sets could contain 2 different types of data:

1. Alphanumerical data

Alphanumeric information is the knowledge that can be represented o supported with letters and numbers. Usually alphanumerical data is stored in relational data bases. Some common examples of alphanumeric data are, for instance, the name of a village, the postal code, the number of habitants, etc...

2. Geographical data

Hydrological management requires working with geographical and cartographical datasets. Geographical information systems (GIS) provide tools to handle and work with geo-referenced information that are vital to hydrological planning and management such as spatial analysis.

Geographical data elements are characterized by always having their 'real-world' equivalent as tangible objects (water bodies, soil use, hydrographical basins, etc). They can be called discrete or vector data (can be characterized by a point, line or polygon) for describing individual elements (for instance, a water body, a lake, or a monitoring point) or continuous as raster information (land use, rain, etc…).

The water cycle data model has to comprise all types of data: vector and raster as well as its integration with the related alphanumerical datasets.

C. Data Consistency

The data collected for each data set, should comply with the following consistency characteristics:

1. Spatial reference system

The use of a common geodetic datum (horizontal and vertical) is a first step towards the harmonization of geographic information across Mediterranean countries. The adoption of a common reference system makes possible to maintain seamless distributed spatial data set, assigned to different custodians and avoiding or simplifying the work of geometric harmonization. A common geodetic datum is particularly important for GIS users.

Due to the geographical dispersion of the Mediterranean zones, **WGS84 (World Geodetic System 1984)** should be used as the geodetic datum.

2. Consistency across levels of detail

One single real world entity may appear in different local/national data sets with different levels of detail. In this case, data providers could decide to deliver one or several spatial objects corresponding to the same real world entity in one compiled data set, or in several data sets, each one representing a certain level of detail.

This specification does not put any requirement on this issue: avoiding multiplicity of occurrences is the best way to avoid redundancies and inconsistencies; however in some situations different representations of the same spatial object may be useful to reflect different points of views. In any case, whatever the solution chosen by data providers, a special attention should be paid on consistency between levels of details. In any case, **metadata will be a key factor for data consistency and quality control**.

3. Identifier management

Each spatial object type has a mandatory identifier attribute specified and as such each spatial object needs to provide a unique identifier. The identifier must be persistent and will usually be supported by a defined lifecycle to ensure that users understand the conditions that the identifier may be created, modified (in terms of its relationship with the spatial object) and deleted.

The unique object identifier will be modelled on the form where a country code and namespace is applied as a prefix to the existing local identifier used by the authority responsible for the data. This will both ensure that the identifier is:
- **Unique** in the Mediterranean spatial data infrastructure
- The object is **traceable** in that infrastructure

All spatial objects in this data model will have a unique object identifier – this includes those spatial objects that contain geometry and those that may not. The

pragmatic approach to making it internationally unique is to add a prefix of the Member State identifier. How member states maintain their database is up to them, as **this specification is only about exchanging data** not its management.

D. Scale, resolution and positional accuracy

When specifying the spatial data characteristics, the (recommended) scale of the visualization of data can be regarded as an indicator of the resolution (which level of detail is available for map making). In the Med-WIS context, where data mainly are based on harmonisation of existing, more accurate, national data, the traditional perspective of the scale as an indicator of positional accuracy (which is the possible difference between the true real world co-ordinates and the co-ordinates of the data) is less relevant though positional accuracy by itself is very important.

The resolution determines both the size of the smallest object in the data set and the amount of detail that might be discerned. On a large scale map (i.e. 1:250.000) a river is presented with more points than on a small scale map (i.e. 1:1.000.000), where, for example, small meanders may not be visible. While in theory a dataset at 1:1.000.000 scale might cover the same set of entities (objects) as a dataset at 1:250.000 scale, the latter can present the information in a better way (i.e. the positional accuracy is higher and the shapes of the entities are represented more accurately).

Showing a dataset intended for large scale use e.g. 1:50.000 of a meandering stream together with a dataset with an intended scale of 1:250.000 without prior generalisation will emphasise the large scale data. The large scale streams give the impression of being drawn with a broader (but uneven) line symbol. The generalisation rules may be defined as "the features should be registered by as few co-ordinate pairs as possible, though the distance between a vertex and the true position of the feature should never exceed 125 metres". The value of 125 metres can be considered as the simplification tolerance.

MPC Countries are recommended **not to simplify spatial data before submitting to Med-WIS**. The accuracy of the data should however be documented in the metadata so the simplification process performed in Med-WIS during e.g. reference data production can respect the original accuracy. **If linear or area entities are represented as points (centroids) these should be 'geometric' centroids** in the sense that the point should fall inside a polygon representation or for linear features be a point on the line. It is generally recommended not to apply centroids as the representation for features. Whether a given entity is at all represented in a data set is specified by the harmonisation component "Data Capture."

The proposed scale of presentation in Med-WIS ranges **from 1:250.000 to 1:10.000.000**. The following table shows the relationships between scale, resolution, simplification tolerance and spatial (positional) accuracy.

Scale	Resolution	Simplification Tolerance	Spatial accuracy
1:250.000	0.5 km2	125 meters	125 meters
1:1.000.000	8 km2	500 meters	500 meters
1:10.000.000	800 km2	5000 meters	5000 meters

V. STANDARDS

The use of information modelling standards has been considered in the definition of the Mediterranean datasets. The use of norms allows a higher degree of interoperability with other initiatives.

The norms and standards considered are:
- Standard ISO
  Standard ISO 19115:2003 define data scheme required to describe information and geographical services. It provides information about the identification, the extension, the quality, the spatial and temporary schema, and the distribution of geographical data in a digital way.
- Standard ODM
  Standard ODM (Observational Data Model), ODM is a data model to store and manage environmental observations and the data associated to this observations promoted by the Consortium of Universities for the Advancement of Hydrologic Science (CUAHSI)

VI. CONCEPTUAL MODEL

A. Introduction

The definition and generation of an information system, entails the analysis of the different elements and their relationship between them. Defining only a list of the data-sets is not sufficient to provide a comprehensive structure to frame environmental information. A meaningful organization of the information is necessary to provide a common view and a mutual understanding of the analysis model which is vital to ensure data comparability and thus a truly regional perspective. This organization is specified into the conceptual information model which is just a set or rules to organize and structure the different data-sets.

The information model proposed for the Med-WIS system will provide that necessary shared framework that will ensure the coherence of all the data sets. Among other benefits, the information model will provide:
- A way to **integrate** alphanumeric and geographical features
- A way to **relate** hydrological features between them
- A **flexible model** to combine information according to different needs and perspectives.
- A common **analysis framework** for hydrological planning and management
- A **common vocabula**ry to analyze and measure the environment.

The conceptual model suggested is composed by the following elements:
- **Information model specification**: defines the information management model or the building blocks and rules in which we structure the environment.
- **Analysis model specification**: proposes a conceptual analytical model on how we structure the different building blocks so that they have a meaning from the hydrological perspective. This analysis model is the source of the data-set specification since sets the universe of discourse for its definition.
- **Step approach**: presents a proposal on how to temporize the definition of the data-sets of the model in order to provide a progressive step approach towards its full implementation.
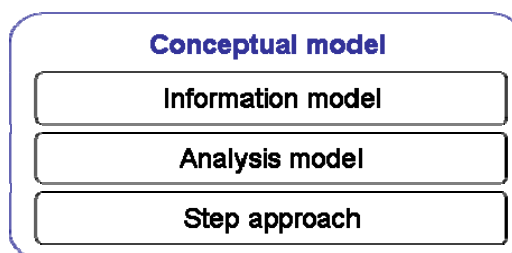
B. Information model

1. Components of the information model

The base of the information model for the Med-WIS system is the three main stereotypes provided to structure all the elements of the data sets:
- **Entities**: anything that can be represented as a tangible element of the environment and, as such, can be defined, drawn, localized, etc.
- **Variables**: anything that we can quantify from an entity. This encompasses all measures (length or flow of a river, height of a damn, water consumption of a city, population of a region) and some characterizations (pressure on a water body).
- **Attributes**: relevant aspects that define core characteristics of the entities which tend to be static or change very little in time. An entity attribute is characterized (name of a lake, name of a city, etc.) not measure. Some attributes can be relationships with other entities

As an example, if we take a sample of the environment, we could classify its elements following those main stereotypes:
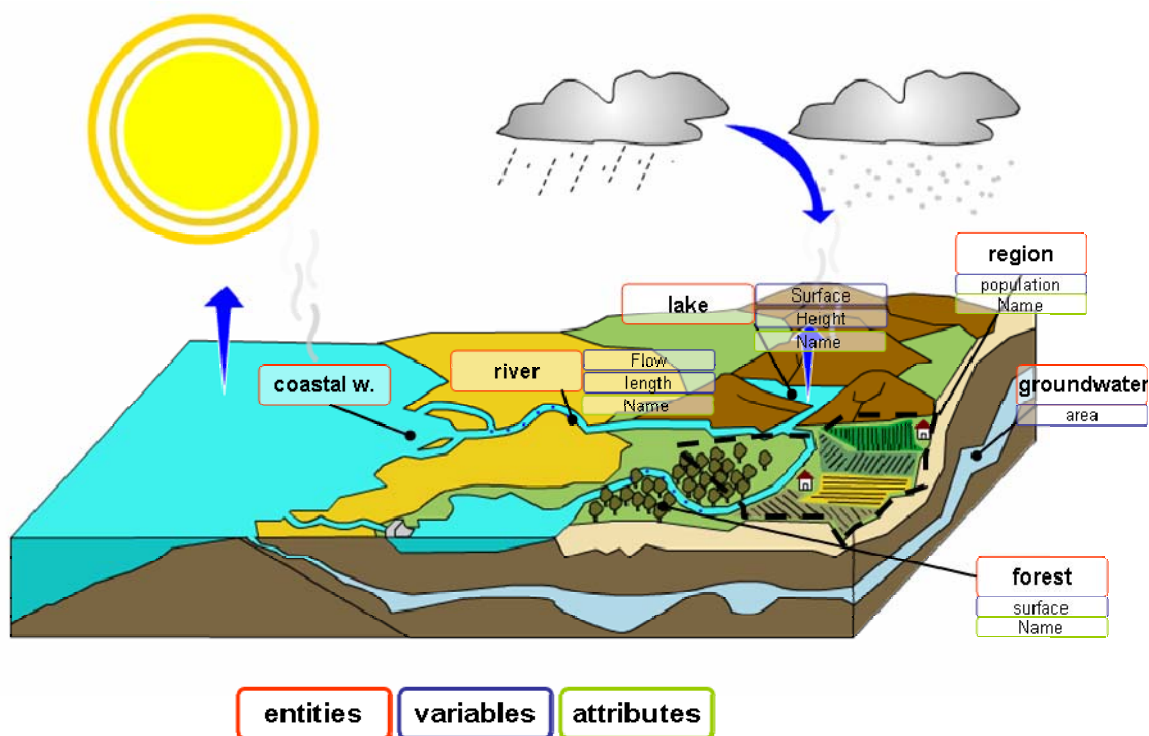
Each individual entity, variable and attribute is defined according to an entity, variable or attribute type. The definition of a type is called prototype. As such, prototypes define the core characteristics of a certain entity, variable or attribute type, its structure or pattern. Real elements of the environment are considered instances of a prototype. For instance, the river 'Loukkos' in Morocco is an instance of a prototype of an entity called river.

Med-WIS application schema will provide the data-sets for the Mediterranean Information Mechanism. The data-sets of this application schemas will be the

prototypes of the entities, variables and attributes defined that has been identified as necessary to provide a meaningful vision of the state of the water environment in the region according to the analysis model proposed (described below).
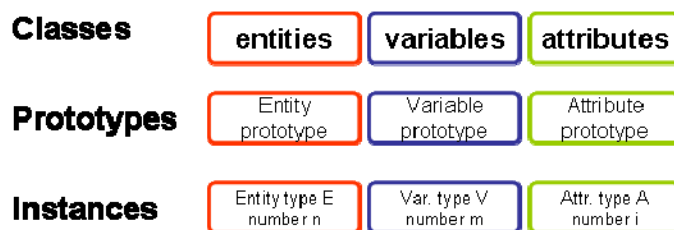
The prototype of the attributes defines also the metadata profile for the information model proposed. As described in next paragraph, metadata profile should comply with WISE metadata schema.

Some other data stereotypes are considered as part of these standards attributes to define the different elements that should be considered for the different attribute profiles to comply with INSPIRE directive such as:
-   **entityType**: is the class of an entity that describes its typology.
-   **featureType**: determines the type of an entity based on the information types supported by the model (geographical, alphanumerical, etc)
-   **dataType**: data types that can be associated to variables and attributes
-   **enumeration**: list of possible values
-   **etc**.

Last, despite analyzing the proposed entities for the region in this data model proposal, there are some elements that do not adjust 100% to the concept of entity proposed; they refer to the information associated to the environment as the elevation model, geology, edaphology… where the information is a measure over a 'virtual entity' that does not have a real 'geographical correspondence to it' nor a variable. In this case both elements, entity and variable, are included as an entity that has a special feature of the variable measured.

2. Functional model of the information

The information model also defines a functional framework in which to relate entities and variables. The proposed relational model between entities, variables and attributes is as follows:
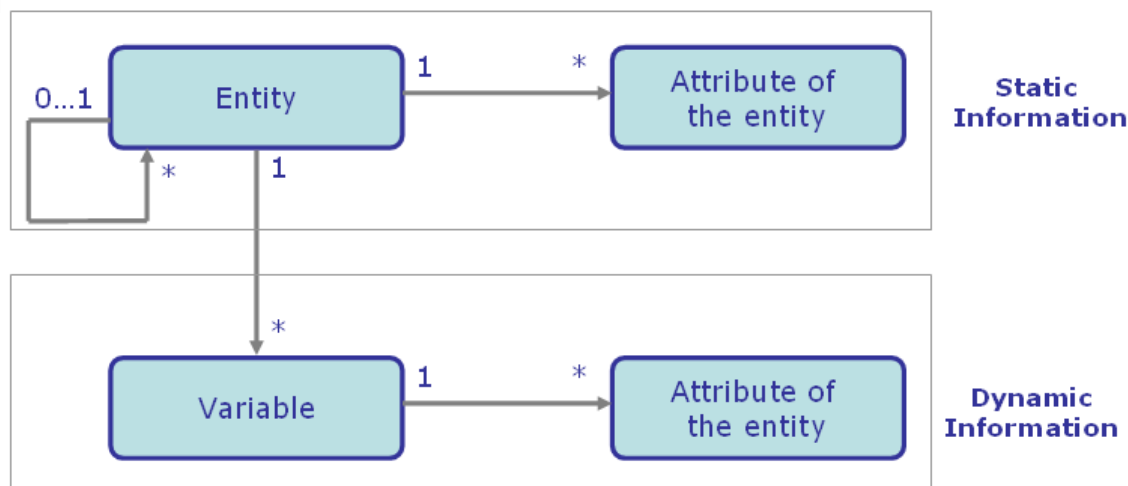
Each entity has a set of attributes. The attributes represent static information about an entity (won't change in time). Each attribute is related to the entity it belongs. Attributes can have several metadata about its data type, code lists, enumerations, etc. Attributes are defined based on classes. For instance, an attribute of a certain class called 'topological name', can have the same definition and be applied to several different entity types.

Some attributes could be defined as links to other entities. For instance, the city which provides service a waste water treatment plant is one of its attributes. Nevertheless, a city is an entity too. The attribute can be represented as a link to the entity of the city that the plant serves.

Variables are related to entities too. Some variables do have attributes too. Variables are different from attributes because they can have several values. An attribute refers to a unique information element of an entity while a variable represents a measure that can be taken regularly (hourly, daily, yearly, etc.).
For instance, a variable of 'flow' related to an entity 'river' can have an hourly measure of how many cubic meters of water go though a gauging station for many years.

Variables are defined according to stereotypes too and have attributes that define them such as data type, units of measure, precision, etc.

3. Metadata

All attributes can be considered metadata of the information. Entity attributes are indeed entity metadata as well as variable attributes.

All entities will need to comply with a core metadata profile to be identifiable and interoperable with WISE. The core metadata profile will be represented by a core set of predefined mandatory attributes. Those attributes will have to have a specific name and will have to be complemented based on a set of predefined rules. The core attributes will be mandatory to the definition of entities and variables. Complying with the proposed information model core attributes will allow complying with WISE Metadata profile requirements and will help to properly identify the information contained in an entity or a variable.

C. Analysis model for the Mediterranean

The water analysis model for the Mediterranean basins proposes a conceptual frame for the integration, alignment and utilization of the water information from different countries following a common perspective to provide an integral view of the water management processes beyond the countries border limits.

The model decomposes the water management procedures and perspectives in 4 logical groups or elements. These groups try to represent the key processes that every country analyzes for hydrological cycle management and planning.

The 4 groups identified are:
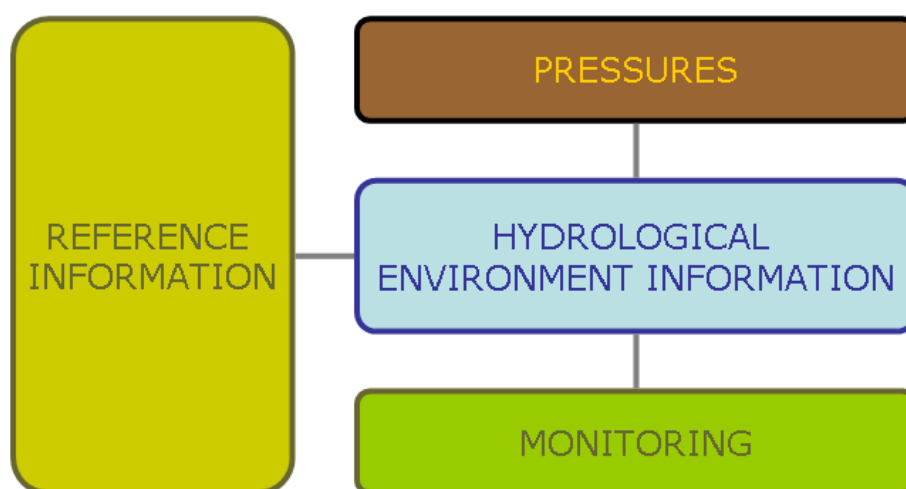
1. Hydrological Environment Information

This group comprises all water-related environmental information in a strict sense of the word, that is, for instance, information related to:
- Freshwater
- Seawater
- Transitional water
- Groundwater

Inside the group, the information can be classified based on its role in the water cycle as:
- **Reference information**: such as hydrological networks, river basins, coastal areas etc.
- **Analysis and management information**: hydrological information relevant based on the water management cycle such as water bodies, river basin districts, protected areas, etc.

HYDROLOGICAL ENVIRONMENT INFORMATION

REFERENCE NETWORK

- *River basin*
- *River*
- *Lake*
- *Transitional waters*
- *Coastal water*
- *Ground water*
- *Flood risk areas*
- *Ecoregion*

ANALYSIS AND MANAGEMENT

- *Drinking Water Protected Areas*
- *Water body*
- *River basin district*
- *Recreational waters*
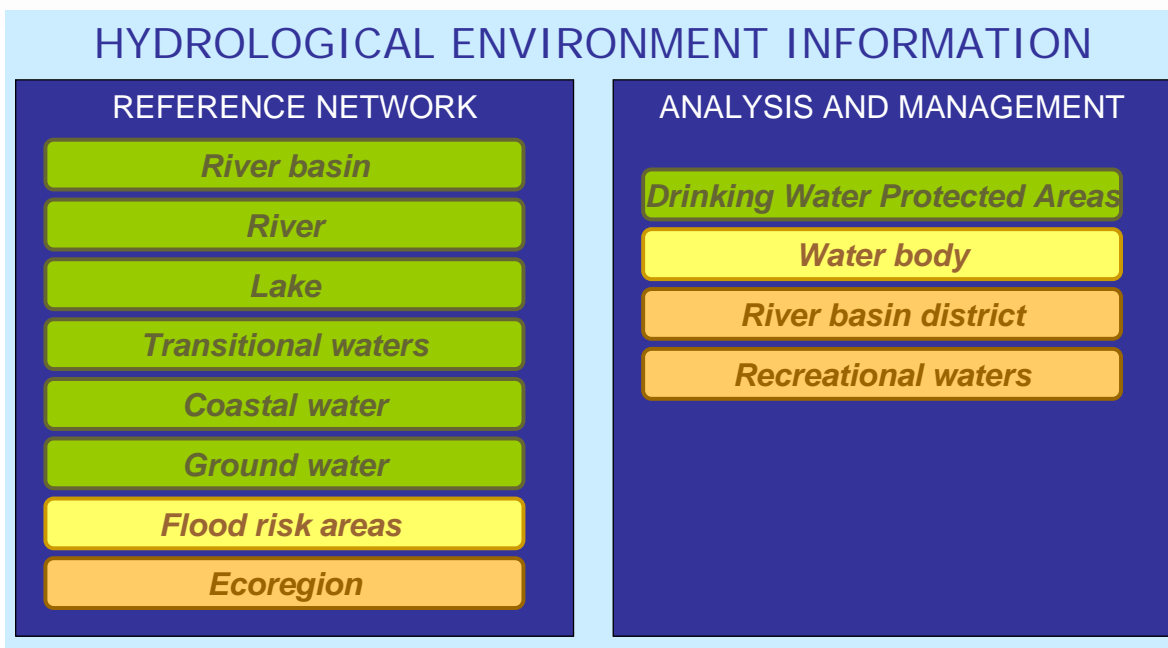
2. Pressures

The pressures group includes all the datasets that are related to any kind of anthropic activity that has an impact on the hydrological environment. Those impacts could be an influence on water quality or resource availability, etc.

Pressures enclose not only the infrastructures but also different human activities or resource use. Each pressure can affect one or several water categories (coastal, surface water, etc.).

PRESSURES

- *Urban agglomeration*
- *Wastewater treatment plant*
- *Discharge point*
- *Dams and lowhead dam*
- *Longitudinal alterations*
- *Water abstraction points*
- *Land use*
- *Animal husbandry*

- *Irrigation system*
- *Hydroelectric plants*
- *Industry*
- *Dredging*
- *Aggregates extraction*
- *Coastal morphological alterations*
- *Mining*
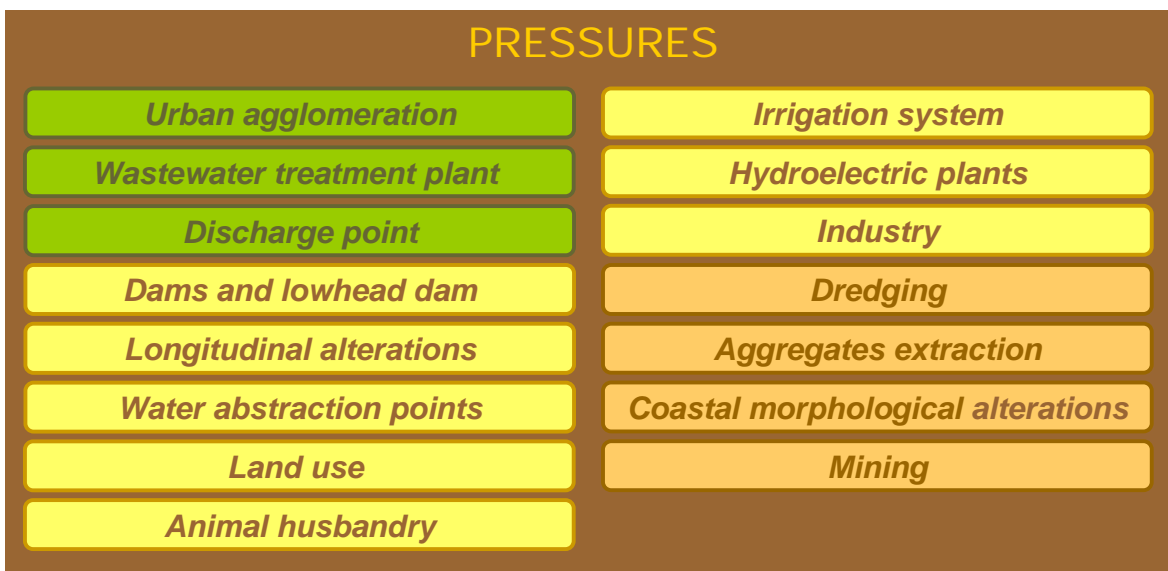
3. Monitoring

One of the fundamental tasks of the water managers of any nation are the control of its waters in order to guarantee consumer health-safety and ecosystems sustainability, while ensuring other demands for many diverse water uses.

For a long time, countries have relied on very specific monitoring networks, used by different users that did no share an integral vision of the monitoring and surveillance process. Nowadays, monitoring networks are considered to be a common process for all water management specialities; quality and quantity control networks have started to converge into a single concept of common environmental monitoring processes.

The analysis model proposes a single approach to monitoring and surveillance with a generic classification for environmental control sites. They all converge under the concept of 'monitoring site'.

Inside the monitoring group several attributes and entities could be defined to better identify the role and parameters controlled by a monitoring site.
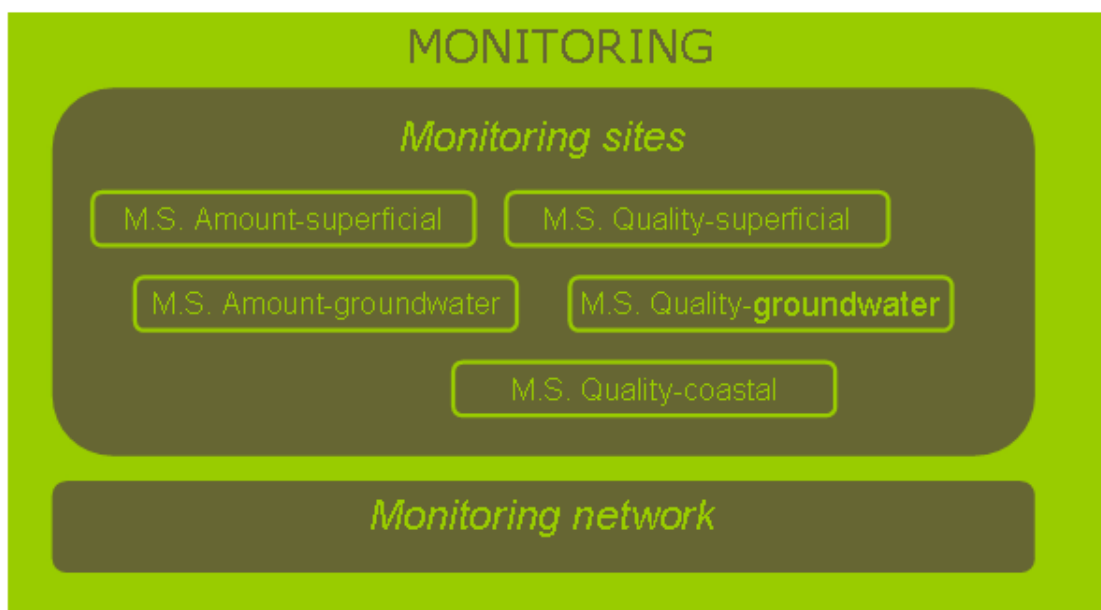
In addition, these control elements, the variable model, especially relevant for monitoring, can be structured as follows:

a) *Direct measure monitoring parameters*

Variables that can be directly measured from the environment trough a monitoring network.

b) *Derived parameters*

Variables derived from the combination of several different direct parameters captured from the environment.
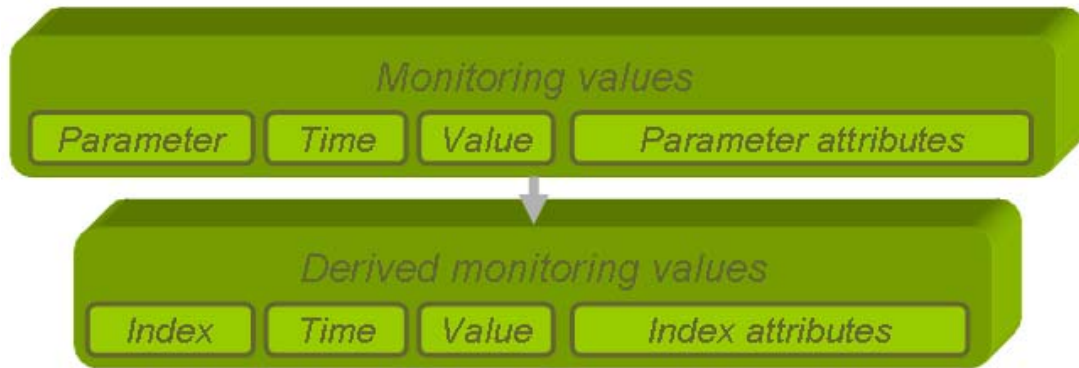
Derived parameters are a diagnosis tool for monitoring and provide a first level of abstraction. They are, for instance, the diagnosis of a chemical condition based on the aggregation of several parameters and its comparison with the reference values and limits, a drought indicator calculated from the river flow, temperature and precipitation, the state of the ecosystem, etc.

Reference information is included also in the model in order to provide the transformation rules between direct variables and derived ones.
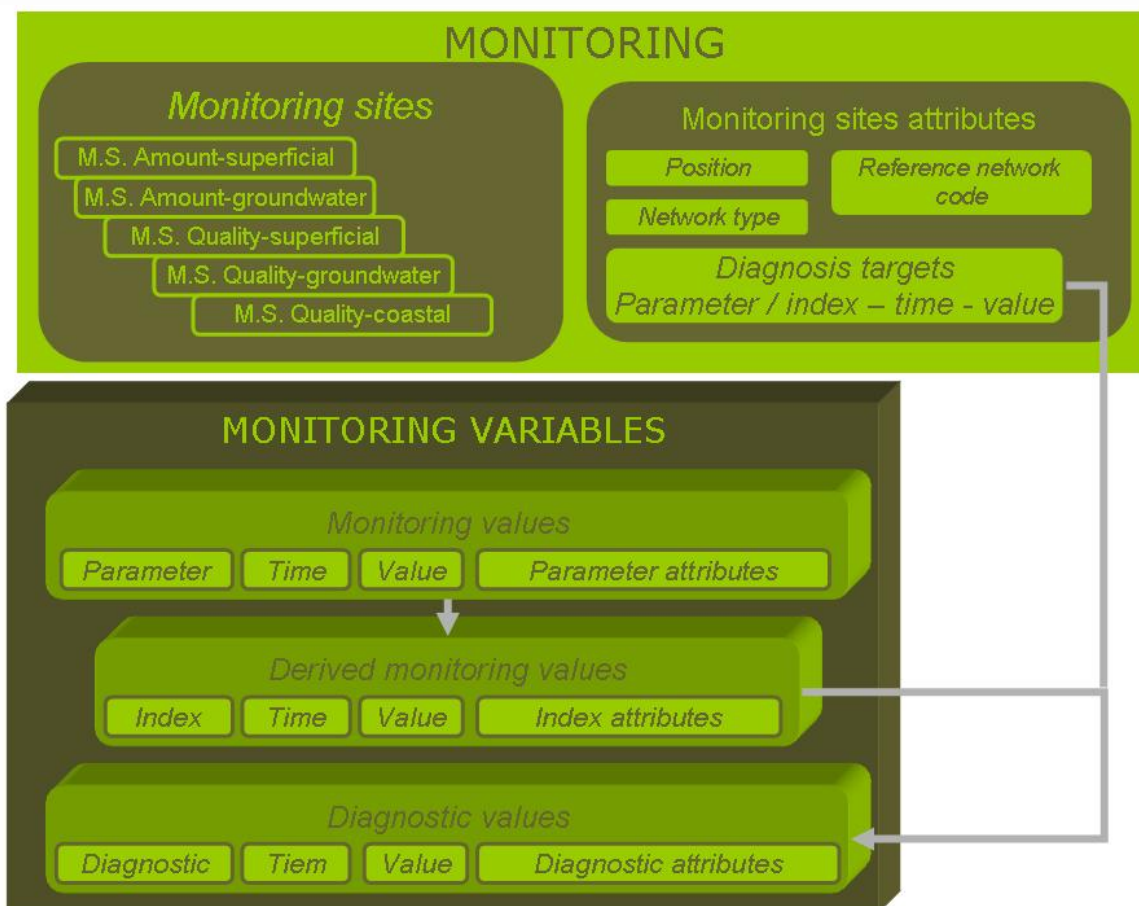
From the model perspective, all monitoring sites should be related to the hydrological element (entity) that they control (river, lake, etc.). The reference information and condition is also associated to the hydrological element and its typology.

4. Reference information

The reference information group is classified in two subgroups according to the role of the information in the management process.

a) Environment

The aim of the environment subgroup is the representation of the main features of the earth surface, and the description of its characteristics. A detailed representation of the territory constitutes the essential part of the hydrologic analysis model.

b) Management

The reference entities are integrated in the management subgroup. They provide a framework for the localization and distribution of phenomena, including the administrative reference information.
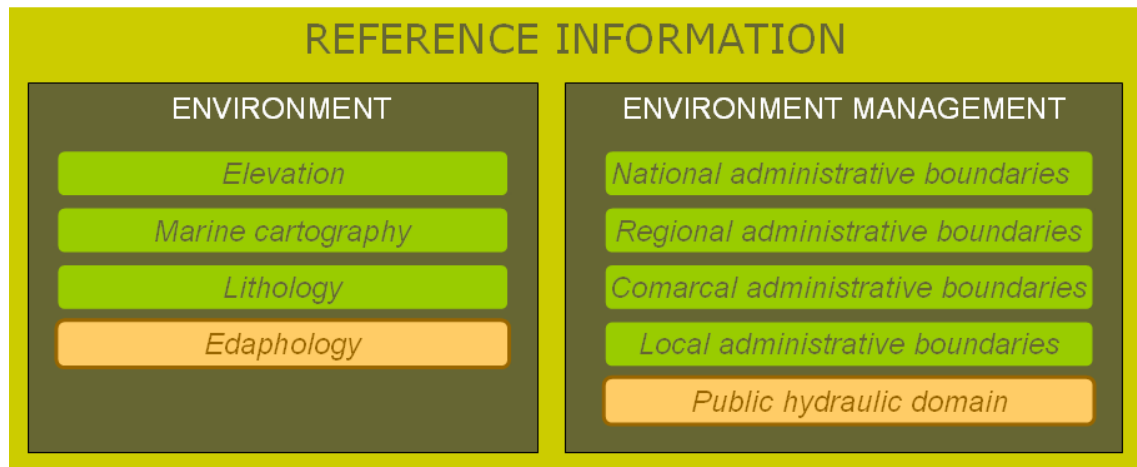
5. The proposed analysis model

The 4 identified groups, as showed before, and the complete model of the entities would be the following one:
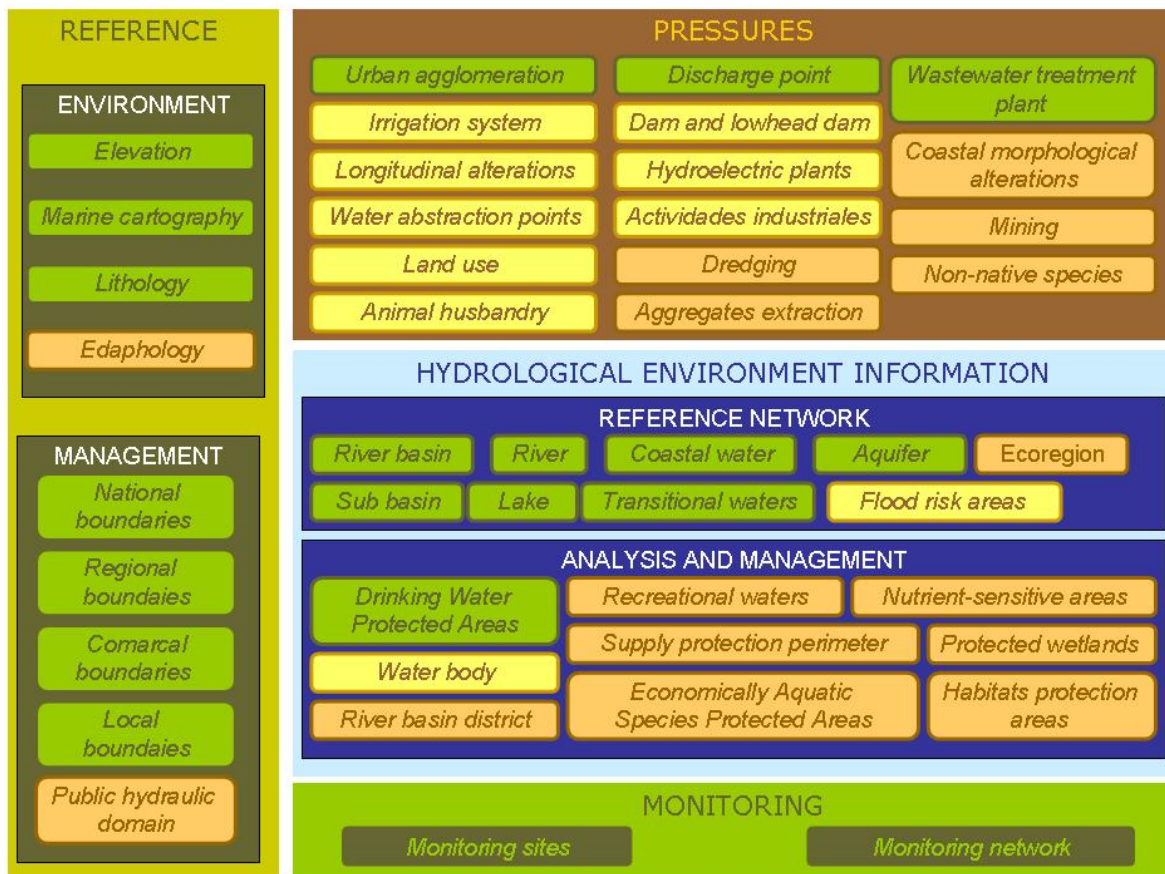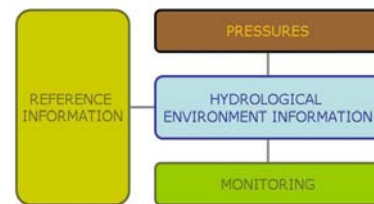
D. Step approach

Together with the analytical model, the step approach adds to the Med-WIS data model proposal the possibility to use a progressive implementation approach. The step approach defines levels of priorities that classify the different information elements and analytical groups into three categories:
- **Basic**: data-sets those are crucial to any water management process. These are the priority entities to integrate in the region to provide a meaningful vision to the state of the environment, thus there are the most important ones to be identified by MPC countries at first.
- **Intermediate**: important data-sets that can complement basic data on relevant aspects of the water management cycle in the region.
- **Advanced**: entities that complement basic and intermediate data on specialized information in different aspects of the water management processes.

These simple rules should help MPC countries to prioritize which data entities are most important to identify and share.
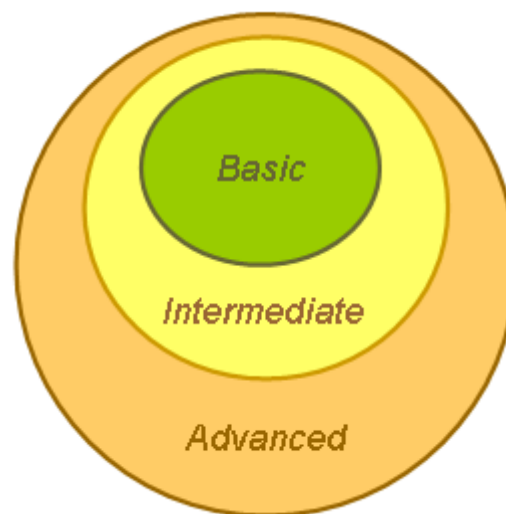
VII. APPLICATION SCHEMA

The application schema is the development of the conceptual model proposed for the Med-WIS system, on its first version. It compiles the detailed specification for the data sets proposed for the Mediterranean. This includes the definition of:
- Entity prototypes
- Variable prototypes
- Attribute prototypes

And its integration in the analytical model and step approach proposed:
- Group of the analytical model each entity prototype belongs to
- Degree of priority assigned to each entity

In this chapter a brief description of the data-sets is provided. In the annex 1 can be found a detailed specification of each prototype including its specific list of attributes.

1. Entities

Based on the proposed information model, the following entities have been identified as part of this proposal:

Entity name	Entity description	Group	Sub-group	Priority
Urban agglomeration	Area formed by the urban centre of a city and its corresponding suburban area	Pressures	Pressures	1
Discharge point	Geographical point where a pollutant is discharged into the water environment			1
Wastewater Treatment Plant	Urban or industrial waste water treatment plant. Separates the harmful elements to transform them so that they could return to be used before being spilt to the environment			1
Irrigation system	System that allows an area to be irrigated with the necessary amount of water to successfully perform agriculture.			2
Longitudinal alterations	Longitudinal infrastructures to the water bodies, mostly built to carry water or protect from floods			2
Water abstraction points	Water abstraction for any use and from any water body type			2
Land use	Use of the land			2
Animal husbandry	Economic activity derived from cattle raising			2
Dam and lowhead dam	Water store infrastructure for the electric power production, for the irrigation, industrial and domestic consumption and for the floods protection			2
Hydroelectric plants	Installation that converts mechanical energy from falling water into electricity			2
Industrial activities	Processes and activities through which raw materials are transformed into finished products			2
Dredging	Cleanup of sediments in water courses (rivers, lakes, coastal waters) in order to increase the depth for various purposes (flood prevention, navigation ,...)			3
Aggregation extractions	Extraction of granulates from the river bed			3
Coastal morphological	Longitudinal infrastructures to the coastal water bodies, mostly built to carry water or			3

Entity name	Entity description	Group	Sub-group	Priority
alterations	protect from floods			
Mining	Extraction of valuable minerals or other geological materials from the earth.mining include base metals, precious metals, iron, uranium, coal, diamonds, limestone, oil shale, rock salt and potash.			3

Entity name	Entity description	Group	Sub-group	Priority
River basin	The area of land from which all surface run-off flows through a sequence of streams, rivers and, possibly, lakes into the sea at a single river mouth, estuary or delta	Hydrological environment information	Reference network	1
River	Body of inland water flowing for the most part on the surface of the land but which may flow underground for part of its course			1
Coastal water	Surface water on the landward side of a line, every point of which is at a distance of one nautical mile on the seaward side from the nearest point of the baseline from which the breadth of territorial waters is measured, extending where appropriate up to the outer limit of transitional waters			1
Ground water	Subsurface layer or layers of rock or other geological strata of sufficient porosity and permeability to allow either a significant flow of groundwater or the abstraction of significant quantities of groundwater			1
Lake	Body of standing inland surface water			1
Transitional waters	Bodies of surface water in the vicinity of river mouths which are partly saline in character as a result of their proximity to coastal waters but which are substantially influenced by freshwater flows			1
Flood risk areas	Area susceptible to flooding because of the effects of rain or flood. Are bounded by the theoretical levels that reach the waters in the various avenues for return periods			2
Ecoregion	Geographically defined area that covers relatively large areas and have a characteristic morphology, geology, climate, soils, hydrology, flora and fauna			3
Drinking water protected areas	Areas which have been designated as requiring special protection for the abstraction of drinking water	Hydrological environment information	Analysis and management	1
Water body	A discrete and significant water element whith homogeneus characteristics that define the management unit			2
River Basin District	Area of land and sea, made up of one or more neighbouring river basins together with their associated groundwaters and coastal waters			3
Recreational waters	Recreational areas of coastal, transitional. surface water, or lakes which have been designated as requiring special protection for bath use, sailing or fishing			3

Entity name	Entity description	Group	Sub-group	Priority
Monitoring site	Monitoring sites for controlling any element of the water environment, including physical quality parameters of chemical, biological, as well as in quantity or any other.	Monitoring	Reference network	1
Monitoring network	Grouping of monitoring sites in order to aid in the programming and implementation of control tasks			1

Entity name	Entity description	Group	Sub-group	Priority
Digital Elevation Model	Representation of the earth's surface, their shapes and details, both natural and artificial	Reference	Environment	1
Marine cartography	Graphical representation of marine areas, with their shapes and details, both natural and artificial			1
Lithology	Graphical representation of the different types of geological materials that emerge at the surface, and the type of contact between them			1
Edaphology	Soil cartographic representation			2
National boundaries	State borders or geographic boundaries	Reference	Management	1
Regional boundaries	First level of borders or administrative boundaries in a country			1
Comarcal boundaries	Second level of borders or administrative boundaries in a country			1
Local boundaries	Third level of borders or administrative boundaries in a country			1
Public hydraulic domain	Group of continental water masses and territories occupied by these in the form of rivers, aquifers or water bed			2

2. Relational model between entities

Entity name	Related entities
Monitoring station	River
	Lakes
	Water bodies
	Transitional waters
	Coastal waters
	Aquifer
	River basin
	Drinking water protected areas
	Recreational areas
	Protected areas
	Waste water treatment plant
	Water extraction
	Dams and lowhead dam
	Irrigation system
	River basin district
Monitoring network	Monitoring station
River	Water bodies
	Aquifer
	River basin
	Drinking water protected areas
	Recreational areas
	Protected areas
	River basin district
River basin	Water bodies
	Aquifer
	River

Entity name	Related entities
	Drinking water protected areas
	Recreational areas
	Protected areas
	River basin district
Lakes	Water bodies
	Aquifer
	River basin
	Drinking water protected areas
	Recreational areas
	Protected areas
	River basin district
Transitional waters	Water bodies
	Aquifer
	River basin
	Drinking water protected areas
	Recreational areas
	Protected areas
	River basin district
Coastal waters	Water bodies
	Aquifer
	Drinking water protected areas
	Recreational areas
	Protected areas
	River basin district
Aquifer	Water bodies
	Drinking water protected areas
	Recreational areas
	Protected areas
	River basin district
Water body	River
	Lakes
	Transitional waters
	Coastal waters
	Aquifer
	River basin
Drinking water protected areas	River
	Lakes
	Water bodies
	Transitional waters
	Coastal waters
	Aquifer
	River basin
Recreational Waters	River
	Lakes
	Water bodies
	Transitional waters
	Coastal waters
	Aquifer
	River basin
Urban agglomeration	River
	Lakes

Entity name	Related entities
	Transitional waters
	Coastal waters
	Aquifer
	River basin
	Water body
	Drinking water protected areas
	Recreational areas
	Protected areas
	Wastewater treatment plant
	Discharge point
	Point of water abstraction
	Local administrative boundaries
Wastewater treatment plant	River
	Lakes
	Transitional waters
	Coastal waters
	Aquifer
	River basin
	Water body
	Drinking water protected areas
	Recreational areas
	Protected areas
	Urban agglomeration
	Discharge point
	Industry
	Local administrative boundaries
Discharge point	River
	Lakes
	Transitional waters
	Coastal waters
	Aquifer
	River basin
	Water body
	Drinking water protected areas
	Recreational areas
	Protected areas
	Urban agglomeration
	Wastewater treatment plant
	Industry
	Monitoring station
	Local administrative boundaries
Dams and lowhead dam	River
	Lakes
	Transitional waters
	River basin
	Water body
	Drinking water protected areas
	Recreational areas
	Protected areas
	Monitoring station
	Local administrative boundaries

Entity name	Related entities
Longitudinal alteration	River
	Lakes
	Transitional waters
	River basin
	Water body
	Drinking water protected areas
	Recreational areas
	Protected areas
	Local administrative boundaries
Point of water abstraction	River
	Lakes
	Transitional waters
	Coastal waters
	Aquifer
	River basin
	Water body
	Drinking water protected areas
	Recreational areas
	Protected areas
	Urban agglomeration
	Industry
	Animal husbandry
	Irrigation system
	Hydroelectric plants
	Monitoring station
	Local administrative boundaries
Animal husbandry	River
	Lakes
	Transitional waters
	Coastal waters
	Aquifer
	River basin
	Water body
	Drinking water protected areas
	Recreational areas
	Protected areas
	Local administrative boundaries
Irrigation system	River
	Lakes
	Transitional waters
	Coastal waters
	Aquifer
	River basin
	Water body
	Drinking water protected areas
	Recreational areas
	Protected areas
	Point of water abstraction
	Local administrative boundaries
Dredging	River
	Lakes
	Transitional waters

Entity name	Related entities
	Coastal waters
	Aquifer
	River basin
	Water body
	Drinking water protected areas
	Recreational areas
	Protected areas
	Local administrative boundaries
Aggregates extraction	River
	Lakes
	Transitional waters
	Coastal waters
	Aquifer
	River basin
	Water body
	Drinking water protected areas
	Recreational areas
	Protected areas
	Local administrative boundaries
Coastal morphological alterations	Coastal waters
	Transitional waters
	Recreational areas
	Protected areas
	Local administrative boundaries
Hydroelectric plants	River
	Lakes
	Transitional waters
	River basin
	Water body
	Drinking water protected areas
	Recreational areas
	Protected areas
	Dams and lowhead dam
	Point of water abstraction
	Longitudinal alteration
	Local administrative boundaries
Industry	River
	Lakes
	Coastal waters
	Transitional waters
	River basin
	Water body
	Drinking water protected areas
	Recreational areas
	Protected areas
	Local administrative boundaries
Mining	River
	Lakes
	Transitional waters
	Coastal waters

Entity name	Related entities
	Aquifer
	River basin
	Water body
	Drinking water protected areas
	Recreational areas
	Protected areas
	Local administrative boundaries
Regional administrative boundaries	National administrative boundaries
Comarcal administrative boundaries	National administrative boundaries
	Regional administrative boundaries
Local administrative boundaries	National administrative boundaries
	Regional administrative boundaries
	Comarcal administrative boundaries
Public hydraulic domain	National administrative boundaries
	Regional administrative boundaries
	Comarcal administrative boundaries

3. Variables

The variables identified for the Med-WIS system are:

Control variables:

Variable name	Description	Entities	Typology	Priority	Variable Attributes
Monitoring parameters	Chemical and physico - chemical quality parameters Quantity parameters Hydro morphological parameters Biological parameters	Monitoring station	Direct	1	Variable type Unit of measure First available data date Last available data date Frequency measurements Detection limit
Index	Aggregation of parameters according to a predetermined pattern to define the water status	Monitoring station	Derived	2	Variable type Unit of measure First available data date Last available data date Calculation frequency Formulation Methodology Valid untill
Aggregate monitoring indicators	Indicators of control by management unit aggregates according to different statistical functions	River Lakes Water bodies Transitional waters Coastal waters Basin Groundwater Drinking water protected areas Recreational areas Protected areas	Derived	2	Variable type Unit of measure First available data date Last available data date Calculation frequency Formulation Methodology Valid untill
State	Evaluation of the quality and quantity elements to determine the state of the entity based on the reference conditions: Global state Chemical state Ecological state Hydromorphological state Biological state Quantity state Element state	Monitoring station River Lakes Water bodies Transitional waters Coastal waters Basin	Derived	2	Variable type Unit of measure First available data date Last available data date Calculation frequency Formulation Methodology Valid untill

| Directives diagnostics | Diagnostic of accomplishment to the protected areas directives | Monitoring station

Drinking water protected areas

Recreational Waters

Other protected areas | Derived | 2 | Variable type

Unit of measure

First available data date

Last available data date

Calculation frequency

Formulation

Methodology

Valid untill |
| General state impact indicators | Evaluation of the impact on the River basin district | River basin district | Derived | 2 | Variable type

Unit of measure

First available data date

Last available data date

Calculation frequency

Formulation

Methodology

Valid untill |

Pressure analysis variables:

Variable name	Description	Entities	Typology	Priority	Variable Attributes
Quantitative pressures analysis	Evaluation of the anthropological pressures from a quantitative perspective: Regualation pressure by reservoirs. Pressure by discharge point …	River Lakes Water bodies Transitional waters Coastal waters Basin	Direct	2	Variable type Unit of measure First available data date Last available data date Formulation Methodology Valid untill
Qualitative Pressures analysis	Evaluation of the anthropological pressures over the water body from a qualitative perspective	River Lakes Water bodies Transitional waters Coastal waters Basin	Direct	3	Variable type Unit of measure First available data date Last available data date Formulation Methodology Valid untill
General state pressure indicators	Diferents indicators about the evaluation of the pressures on the River basin district: Number of Rivers with pressures problems, Number of pressures affecting the river basin district …	River basin district	Direct	3	Variable type Unit of measure First available data date Last available data date Formulation Methodology Valid untill

Administrative variables:

Variable name	Description	Entity	Typology	Priority	Variable Attributes
Population	Number of inhabitants	Urban agglomeration	Direct	1	Variable type Unit of measure First available data date Last available data date
Water consumption	Specific water consumption for urban use	Urban agglomeration	Direct	2	Variable type Unit of measure First available data date Last available data date
Density of population	Population derived by area (attribute)	Urban agglomeration	Derived	3	Variable type Unit of measure First available data date Last available data date
Population animal husbandry	Number of different types of animal husbandry	Animal husbandry	Direct	3	Variable type Unit of measure First available data date Last available data date

Management variables:

Variable name	Description	Entity	Typology	Priority	Variable Attributes
Reference values	Quality reference values for different parameters or elements Quantity reference values Biological reference values Reference values and compliance with protected areas legislation	Monitoring station River Lakes Water bodies Transitional waters Coastal waters Basin Protected areas	Direct	2	Variable type Unit of measure First available data date Last available data date Formulation Methodology
Ecological flow regime	Amount of water needed to preserve the ecosystem of the river	Monitoring station River Water bodies	Direct	2	Variable type Unit of measure First available data date Last available data date Formulation Methodology
Phosphorus, DQO & DBO authorized Reference	Reference values of phosphorus, DQO and DBO presence	Waste water treatment plant	Direct	2	Variable type Unit of measure First available data date Last available data date

Variable name	Description	Entity	Typology	Priority	Variable Attributes
					Formulation Methodology
Maximum annual authorized extraction	Cubic meters authorized for the water extraction	Water extraction	Direct	1	Variable type Unit of measure First available data date Last available data date Formulation Methodology
Maximum instantaneous authorized flow	Maximum amount of cubic meters authorized for extraction	Water extraction	Direct	2	Variable type Unit of measure First available data date Last available data date Formulation Methodology
Peak turbine granted	Maximum amount of cubic meters authorized for turbine	Hydroelectric plants	Direct		Variable type Unit of measure First available data date Last available data date Formulation Methodology
Series flow turbines		Hydroelectric plants	Direct	3	Variable type Unit of measure First available data date Last available data date Formulation Methodology

4. Attributes

The attributes identify the properties of entities and variables. Attributes for Med-WIS datasets are defined to comply with WISE. Some attribute prototypes are common to all entities and variables to comply with the metadata requirements. Some others are specific of each entity or variable prototype. Specific attributes of each type are defined in the entity or variable data sheet available in the annex 1.

a) Metadata attribute prototype

Metadata attributes for all entities and variables in the Med-WIS are an extraction of the WISE Metadata profile that is applicable to the Mediterranean data model. Those are[1]:

Attributes	WISE Metadata element name
Name	Resource Title
Analysis Model Group	
Analysis Model Subgroup	
Abstract	Resource Abstract
Emwis Code[2]	
Country Code	National Id
National Name	National Name
Definition Criteria	
Character Set	Metadata Character Set
Creation Data	Data Of Creation
Spatial Resolution	Spatial Resolution
Data Type	Resource Type
Spatial Representation Type	Spatial Representation Type
Language	Resource Language
Reference System Information	Reference System
Country	
Contact Information Name	Responsible Party
Contact Information Organization	Responsible Party
Contact Information Position	Contact Information Position
Contact Information Role	Responsible Party Role
Database Insert Date	
Keywords	Keyword Value
Extent	Geographic Bounding Box
Distribution Format	Distribution Format
Data Quality Information	Lineage
Data Quality Scope	Lineage
Data Quality Level	Lineage

---

[1] All metadata attributes that have a WISE equivalent are highlighted in blue.
[2] EMWIS Code will be unique for all entities and countries. It will provide a cross-country reference.

b) *Common attributes to all entities*

On top of metadata attributes, some attributes are defined specifically to define entity characteristics. These are:

- Entity type: alphanumeric / geographical
- Entity prototype
- Country
- EMWIS Code
- Country Code
- Analysis model group
- Analysis model sub-group
- Remarks

c) *Common attributes to all variables*

Variable specific attributes can be characterized as:
- Variable type
- Units of measure
- First available data date
- Last available data date

d) *Resolution*

In occasions, an entity can present diverse levels of detailed information and the situation with regard to the different countries of the Mediterranean will be inevitably heterogeneous. A very obvious example is the topography, which can be represented at different scales 1:25.000, 1:200.000, etc.

It will be interesting to identify the possible levels of detailed information and to classify them depending on its importance and priority inside the object of this system.

RESOLUTION	1:25.000
	1:50.000
	1:200.000

VIII. CONCLUSION

The definition of a common set of geographical references for MPC countries should provide a starting point to begin building a shared water information infrastructure in the region.

In the past, the absence of a common perspective and the lack of a shared proposal on how to structure and organize water information has made impossible for MPC countries to compile a group of water-related datasets that could be easily shared, compared and summarized for the region.

This new specification should facilitate countries' efforts of building national water information systems. It shall provide a reference data model and guidelines to ensure those systems are based in a comprehensive, well organized and standardized data structure. More over, the model proposed will make from the start those systems compatible and aligned with INSPIRE and WISE guidelines enabling an easier technical and semantically integration and facilitating the collaboration with the institutions that are behind those efforts.

IX. ANNEX I – FIRST LEVEL ENTITIES

		Name: River WISE name: Main Rivers	
		Entity prototipe attributes	Instante entity attributes
METADATA ATTRIBUTES	ANALYSIS MODEL GROUP	Environment	
	ANALYSIS MODEL SUBGROUP	Reference Network	
	ABSTRACT	Body of inland water flowing for the most part on the surface of the land but which may flow underground for part of its course and that meets X specifications or definition criteria	
	EMWIS CODE		Y
	NATIONAL CODE		Y
	NATIONAL NAME		Y
	DEFINITION CRITERIA	Almost watershed > 10km2	
		Almost discharge> 100 l/s	
		Almost 75% of the months discharge > 0	
	CHARACTER SET	Y	Y
	CREATION DATA	Y	
	SPATIAL RESOLUTION	1:25.000	
		1:50.000	
		1:250.000	
	DATA TYPE	[Alphanumeric; Cartografic]	
	SPATIAL REPRESENTATION TYPE	Y	
	LANGUAGE	Y	Y
	REFERENCE SYSTEM INFORMATION	Y	
	COUNTRY	Y	Y
	CONTACT INFORMATION NAME	Y	
	CONTACT INFORMATION ORGANIZATION	Y	
	CONTACT INFORMATION POSITION	Y	
	CONTACT INFORMATION ROLE	Y	
	DATABASE INSERT DATE	Y	
	KEYWORDS	Y	
	EXTENT	Y	
	DISTRIBUTION FORMAT	Y	
	DATA QUALITY INFORMATION -	Y	
	DATA QUALITY SCOPE	Y	
	DATA QUALITY LEVEL	Y	
SPECIFIC ATTRIBUTES	SUB-TYPE		River
	STATUS		natual / artificial / very modified
	LONGITUDE OF THE CENTROID		Y
	LATITUDE OF THE CENTROID		Y
	WATER BODY CODE RELATED		Y
	OTHER AFECTED REFERENCE NETWORK CODE		Y
	RIVER BASIN DISTRICT		Y
	PROTECTED AREAS RELATED CODE		Y
	STREAM MAX HEIGHT		Y
	STREAM MIN HEIGHT		Y
	LENGTH OF THE CHANNEL		Y
	SLOPE OF THE STREAM		Y
	WATERSHED AREA		Y
	ANNUAL MEAN DISCHARGE		Y
	REMARKS	Y	Y

| | | Name: River Basin WISE name: River Basin & sub Basins | |
		Entity prototipe attributes	Entity instance attributes
METADATA ATTRIBUTES	ANALYSIS MODEL GROUP	Environment	
	ANALYSIS MODEL SUBGROUP	Reference Network	
	ABSTRACT	The area of land from which all surface run-off flows through a sequence of streams, rivers and, possibly, lakes into the sea at a single river mouth, estuary or delta	
	DEFINITION CRITERIA	Y	
	CHARACTER SET	Y	Y
	EMWIS CODE	Y	Y
	NATIONAL CODE	Y	Y
	NATIONAL NAME		Y
	CREATION DATA	Y	
	SPATIAL RESOLUTION	1:25.000	
		1:50.000	
		1:200.000	
	DATA TYPE	[Alphanumeric; Cartografic]	
	SPATIAL REPRESENTATION TYPE	Y	
	LANGUAGE	Y	Y
	REFERENCE SYSTEM INFORMATION	Y	
	COUNTRY	Y	Y
	CONTACT INFORMATION NAME	Y	
	CONTACT INFORMATION ORG	Y	
	CONTACT INFORMATION POSITION	Y	
	CONTACT INFORMATION ROLE	Y	
	DATABASE INSERT DATE	Y	
	KEYWORDS	Y	
	EXTENT	Y	
	DISTRIBUTION INFORMATION	Y	
	DISTRIBUTION FORMAT	Y	
	DATA QUALITY INFORMATION	Y	
	DATA QUALITY SCOPE	Y	
	DATA QUALITY LEVEL	Y	
SPECIFIC ATTRIBUTES	SUB-TYPE		River
	STATUS		natual / artificial / very modified
	LONGITUDE OF THE CENTROID		Y
	LATITUDE OF THE CENTROID		Y
	WATER BODY RELATED CODE		Y
	OTHER AFECTED REFERENCE NETWORK CODE		Y
	RIVER BASIN DISTRICT		Y
	PROTECTED AREAS RELATED CODE		Y
	RIVER BASIN MAX HEIGHT		Y
	RIVER BASIN MIN HEIGHT		Y
	LENGTH OF THE CHANNEL		Y
	SLOPE OF THE STREAM		Y
	WATERSHED AREA		Y
	ANNUAL MEAN DISCHARGE		Y
	REMARKS	Y	Y

		Name: Lake WISE name: Main lakes	
		Entity prototipe attributes	Entity instance attributes
METADATA ATTRIBUTES	ANALYSIS MODEL GROUP	Environment	
	ANALYSIS MODEL SUBGROUP	Reference Network	
	ABSTRACT	Body of standing inland surface water that meets X specifications or definition criteria	
	DEFINITION CRITERIA	Area > 3 ha	
		Depth > 3m	
	CHARACTER SET	Y	Y
	EMWIS CODE	Y	Y
	NATIONAL CODE		Y
	NATIONAL NAME		Y
	CREATION DATA	Y	
	SPATIAL RESOLUTION	1:50.000	
		1:250.000	
	DATA TYPE	[Alphanumeric; Cartografic]	
	SPATIAL REPRESENTATION TYPE	Y	
	LANGUAGE	Y	Y
	REFERENCE SYSTEM INFORMATION	Y	
	COUNTRY	Y	Y
	CONTACT INFORMATION NAME	Y	
	CONTACT INFORMATION ORG	Y	
	CONTACT INFORMATION POSITION	Y	
	CONTACT INFORMATION ROLE	Y	
	DATABASE INSERT DATE	Y	
	KEYWORDS	Y	
	EXTENT	Y	
	DISTRIBUTION INFORMATION	Y	
	DISTRIBUTION FORMAT	Y	
	DATA QUALITY INFORMATION	Y	
	DATA QUALITY SCOPE	Y	
	DATA QUALITY LEVEL	Y	
SPECIFIC ATTRIBUTES	SUB-TYPE		lake / Humedal
	STATUS		natual/artificial/very modified
	LONGITUDE OF THE CENTROID		Y
	LATITUDE OF THE CENTROID		Y
	WATER BODY RELATED CODE		Y
	OTHER AFECTED REFERENCE NETWORK CODE		Y
	RIVER BASIN DISTRICT		Y
	PROTECTED AREAS RELATED CODE		Y
	ALTITUDE		Y
	AREA		Y
	MAX DEPTH		Y
	GEOLOGY		Y
	SALINITY		Y
	ORIGIN		(karstic, glaciar,…)
	MIXING SYSTEM		Y
	PERMANENCE TIME		Y
	REMARKS	Y	Y

		Name: Transitional Waters WISE name: Transitional Waters	
		Entity prototipe attributes	Entity instance attributes
METADATA ATTRIBUTES	ANALYSIS MODEL GROUP	Environment	
	ANALYSIS MODEL SUBGROUP	Reference Network	
	ABSTRACT	Bodies of surface water in the vicinity of river mouths which are partly saline in character as a result of their proximity to coastal waters but which are substantially influenced by freshwater flows	
	DEFINITION CRITERIA	Y	
	CHARACTER SET	Y	Y
	EMWIS CODE	Y	Y
	NATIONAL CODE	Y	Y
	NATIONAL NAME		Y
	CREATION DATA	Y	
	SPATIAL RESOLUTION	1:25.000	
		1:50.000	
		1:200.000	
	DATA TYPE	[Alphanumeric; Cartografic]	
	SPATIAL REPRESENTATION TYPE	Y	
	LANGUAGE	Y	Y
	REFERENCE SYSTEM INFORMATION	Y	
	COUNTRY	Y	Y
	CONTACT INFORMATION NAME	Y	
	CONTACT INFORMATION ORGANIZ	Y	
	CONTACT INFORMATION POSITION	Y	
	CONTACT INFORMATION ROLE	Y	
	DATABASE INSERT DATE	Y	
	KEYWORDS	Y	
	EXTENT	Y	
	DISTRIBUTION INFORMATION	Y	
	DISTRIBUTION FORMAT	Y	
	DATA QUALITY INFORMATION	Y	
	DATA QUALITY SCOPE	Y	
	DATA QUALITY LEVEL	Y	
SPECIFIC ATTRIBUTES	SUBTYPE		Transitional
	STATUS		natual/artificial/verymodified
	WATER BODY RELATED CODE		Y
	OTHER AFECTED REFERENCE NETWORK CODE		Y
	RIVER BASIN DISTRICT		Y
	PROTECTED AREAS RELATED		Y
	DEPTH		Y
	STREAM VELOCITY		Y
	WAVES EXPOSURE		Y
	SLOPE OF THE STREAM		Y
	WATERSHED AREA		Y
	ANNUAL MEAN DISCHARGE		Y
	SALINITY		Y
	TIDE AMPLITUDE		Y
	PERMANENCE TIME		Y
	MEAN TEMPERATURE WATER		Y

	Name: Transitional Waters WISE name: Transitional Waters	
	Entity prototipe attributes	Entity instance attributes
TURBIDITY		Y
MEAN COMPOSITION SUBSTRATE		Y
REMARKS	Y	Y

		Name: Coastal water WISE name: Coastal water	
		Entity prototipe attributes	Entity instance attributes
METADATA ATTRIBUTES	ANALYSIS MODEL GROUP	Environment	
	ANALYSIS MODEL SUBGROUP	Reference Network	
	ABSTRACT	Surface water on the landward side of a line, every point of which is at a distance of one nautical mile on the seaward side from the nearest point of the baseline from which the breadth of territorial waters is measured, extending where appropriate up to the outer limit of transitional waters	
	DEFINITION CRITERIA	Y	
	CHARACTER SET	Y	Y
	EMWIS CODE	Y	Y
	NATIONAL CODE	Y	Y
	NATIONAL NAME		Y
	CREATION DATA	Y	
	SPATIAL RESOLUTION	1:25.000	
		1:50.000	
		1:200.000	
	DATA TYPE	[Alphanumeric; Cartografic]	
	SPATIAL REPRESENTATION TYPE	Y	
	LANGUAGE	Y	Y
	REFERENCE SYSTEM INFORMATION	Y	
	COUNTRY	Y	Y
	CONTACT INFORMATION NAME	Y	
	CONTACT INFORMATION ORGANIZATION	Y	
	CONTACT INFORMATION POSITION	Y	
	CONTACT INFORMATION ROLE	Y	
	DATABASE INSERT DATE	Y	
	KEYWORDS	Y	
	EXTENT	Y	
	DISTRIBUTION INFORMATION	Y	
	DISTRIBUTION FORMAT	Y	
	DATA QUALITY INFORMATION	Y	
	DATA QUALITY SCOPE	Y	
	DATA QUALITY LEVEL	Y	
SPECIFIC ATTRIBUTES	SUB-TYPE		Coastal
	STATUS		natual/artificial/verymodified
	LONGITUDE OF THE CENTROID		Y
	LATITUDE OF THE CENTROID		Y
	WATER BODY RELATED CODE		Y
	OTHER AFECTED REFERENCE NETWORK C.		Y
	RIVER BASIN DISTRICT		Y
	PROTECTED AREAS RELATED CODE		Y
	SALINITY		Y
	ALTITUDE		Y
	DEPTH		Y
	TIDE AMPLITUDE		Y
	STREAM VELOCITY		Y
	MEAN TEMPERATURE WATER		Y
	TURBIDITY		Y
	REMARKS	Y	Y

		Name: Ground Water — WISE name: Ground Water	
		Entity prototipe attributes	**Entity instance attributes**
METADATA ATTRIBUTES	ANALYSIS MODEL GROUP	Environment	
	ANALYSIS MODEL SUBGROUP	Reference Network	
	ABSTRACT	Subsurface layer or layers of rock or other geological strata of sufficient porosity and permeability to allow either a significant flow of groundwater or the abstraction of significant quantities of groundwater	
	DEFINITION CRITERIA	Y	
	CHARACTER SET	Y	Y
	EMWIS CODE	Y	Y
	NATIONAL CODE	Y	Y
	NATIONAL NAME		Y
	CREATION DATA	Y	
	SPATIAL RESOLUTION	1:25.000	
		1:50.000	
	DATA TYPE	[Alphanumeric; Cartografic]	
	SPATIAL REPRESENTATION TYPE	Y	
	LANGUAGE	Y	Y
	REFERENCE SYSTEM INFORMATION	Y	
	COUNTRY	Y	Y
	CONTACT INFORMATION NAME	Y	
	CONTACT INFORMATION ORGANIZ	Y	
	CONTACT INFORMATION POSITION	Y	
	CONTACT INFORMATION ROLE	Y	
	DATABASE INSERT DATE	Y	
	KEYWORDS	Y	
	EXTENT	Y	
	DISTRIBUTION INFORMATION	Y	
	DISTRIBUTION FORMAT	Y	
	DATA QUALITY INFORMATION	Y	
	DATA QUALITY SCOPE	Y	
	DATA QUALITY LEVEL	Y	
SPECIFIC ATTRIBUTES	SUB-TYPE		Groundwater
	LONGITUDE OF THE CENTROID		Y
	LATITUDE OF THE CENTROID		Y
	WATER BODY RELATED CODE		Y
	OTHER AFECTED REFERENCE NETWORK CODE		Y
	RIVER BASIN DISTRICT		Y
	PROTECTED AREAS RELATED CODE		Y
	LITHOLOGY		[carbonate, detritics, mixed,…]
	PREDOMINANT HYDRODYNAMIC		[free, confinated,…]
	COMPOSITION		[simple, multilayer, free, mixed,…]
	MEAN THICKNESS		Y
	HYDRAULIC PARAMETERS		Y
	DEPENDENCY ON AQUATIC ECOSYSTEMS		[YES / NO]
	MEAN RECHARGE		Y
	TOTAL AREA		Y
	PERMEABLE SURFACE		Y
	REMARKS	Y	Y

		Name: Drinking water protected areas WISE name: Drinking water protected areas	
		Entity prototipe attributes	Entity instance attributes
METADATA ATTRIBUTES	ANALYSIS MODEL GROUP	Environment	
	ANALYSIS MODEL SUBGROUP	Analysis and management	
	ABSTRACT	Areas which have been designated as requiring special protection for the abstraction of drinking water	
	DEFINITION CRITERIA	Drinking water areas if:	
		- Water abstraction mean volumen at least 10m3	
		- Abstraction for at least 50 persons	
		- Supply protection perimeter	
	CHARACTER SET	Y	Y
	EMWIS CODE	Y	Y
	NATIONAL CODE	Y	Y
	NATIONAL NAME		Y
	CREATION DATA	Y	
	SPATIAL RESOLUTION		
	DATA TYPE	[Alphanumeric; Cartografic]	
	SPATIAL REPRESENTATION TYPE	Y	
	LANGUAGE	Y	Y
	REFERENCE SYSTEM INFORMATION	Y	
	COUNTRY		Y
	CONTACT INFORMATION NAME	Y	
	CONTACT INFORMATION ORGANIZATION	Y	
	CONTACT INFORMATION POSITION	Y	
	CONTACT INFORMATION ROLE	Y	
	DATABASE INSERT DATE	Y	
	KEYWORDS	Y	
	EXTENT	Y	
	DISTRIBUTION INFORMATION	Y	
	DISTRIBUTION FORMAT	Y	
	DATA QUALITY INFORMATION	Y	
	DATA QUALITY SCOPE	Y	
	DATA QUALITY LEVEL	Y	
SPECIFIC ATTRIBUTES	CODE OF THE AFECTED REFERENCE NETWORK		Y
	CODE OF THE AFECTED WATER BODY		Y
	PROTECTED BY: LAW		Y
	REMARKS	Y	Y

		Name: Monitoring sites **WISE name: Operacional monitoring sites & Surveillance monitoring sites & Investigative monitoring sites & Reference monitoring sites**	
		Entity prototipe attributes	**Entity instance attributes**
METADATA ATTRIBUTES	ANALYSIS MODEL GROUP	Environment control	
	ANALYSIS MODEL SUBGROUP	Basic Reference Network	
	ABSTRACT	Monitoring sites for controlling any element of the water environment, including physical quality parameters of chemical, biological, as well as in quantity or any other.	
	DEFINITION CRITERIA	All	
	CHARACTER SET	Y	Y
	EMWIS CODE	Y	Y
	NATIONAL CODE	Y	Y
	NATIONAL NAME		Y
	CREATION DATA	Y	
	SPATIAL RESOLUTION	Y	
	DATA TYPE	[Alphanumeric; Cartografic]	
	SPATIAL REPRESENTATION TYPE	Y	
	LANGUAGE	Y	Y
	REFERENCE SYSTEM INFORMATION	Y	
	COUNTRY	Y	Y
	CONTACT INFORMATION NAME	Y	
	CONTACT INFORMATION ORGANIZATION	Y	
	CONTACT INFORMATION POSITION	Y	
	CONTACT INFORMATION ROLE	Y	
	DATABASE INSERT DATE	Y	
	KEYWORDS	Y	
	EXTENT	Y	
	DISTRIBUTION INFORMATION	Y	
	DISTRIBUTION FORMAT	Y	
	DATA QUALITY INFORMATION	Y	
	DATA QUALITY SCOPE	Y	
	DATA QUALITY LEVEL	Y	
SPECIFIC ATTRIBUTES	RIVER BASIN DISCTRIT	Y	
	LONGITUDE		Y
	LATITUDE		Y
	CODE OF THE AFECTED REFERENCE NETWORK		Y
	CATEGORY OF THE AFECTED REFERENCE NETWORK		[river, lake, coastal, transitional, groundwater]
	AFECTED WATER BODY CODE		
	CONTROL DATA TYPE		[quality / quantity]
	NETWORK DATA TYPE		Y
	CONTROLED WASTE WATER TREATMENT PLANT CODE		Y
	CONTROLED EXTRACTION WATER CODE		Y
	CONTROLED DAM CODE		Y
	CONTROLED IRRIGATION SYSTEM CODE		Y
	REMARKS	Y	Y

		Name: Monitoring network WISE name: Groundwater monitoring Network & Operacional monitoring Network & Surveillance monitoring Network Chemical& Investigative monitoring Network Chemical	
		Entity prototipe attribute	Instante entity attribute
METADATA ATTRIBUTES	ANALYSIS MODEL GROUP	Environment control	
	ANALYSIS MODEL SUBGROUP	Basic Reference Network	
	ABSTRACT	Grouping of monitoring sites in order to aid in the programming and implementation of control tasks	
	DEFINITION CRITERIA	Criteria for group definition	
	CHARACTER SET	Y	Y
	EMWIS CODE	Y	Y
	NATIONAL CODE	Y	Y
	NATIONAL NAME		Y
	CREATION DATA	Y	
	SPATIAL RESOLUTION		
	DATA TYPE	[Alphanumeric; Cartografic]	
	SPATIAL REPRESENTATION TYPE	Y	
	LANGUAGE	Y	Y
	REFERENCE SYSTEM INFORMATION	Y	
	COUNTRY	Y	Y
	CONTACT INFORMATION NAME	Y	
	CONTACT INFORMATION ORGANIZATION	Y	
	CONTACT INFORMATION POSITION	Y	
	CONTACT INFORMATION ROLE	Y	
	DATABASE INSERT DATE	Y	
	KEYWORDS	Y	
	EXTENT	Y	
	DISTRIBUTION INFORMATION	Y	
	DISTRIBUTION FORMAT	Y	
	DATA QUALITY INFORMATION	Y	
	DATA QUALITY SCOPE	Y	
	DATA QUALITY LEVEL	Y	
SPECIFIC ATTRIBUTES	CODE OF THE AFECTED MONITORING SITES		Y
	CATEGORY OF THE AFECTED REFERENCE NETWORK		[river, lake, coastal, transitional, groundwater]
	REMARKS	Y	Y

		Name: Urban agglomeration WISE name: Aglomerations	
		Entity prototipe attributes	Entity instance attributes
METADATA ATTRIBUTES	ANALYSIS MODEL GROUP	Pressures	
	ANALYSIS MODEL SUBGROUP	Basic Reference Network	
	ABSTRACT	Area formed by the urban center of a city and its corresponding suburban area	
	DEFINITION CRITERIA (options)	Population <2.000 Inhabitants	
		Population > 2.000 Inhabitants	
		Population > 5.000 Inhabitants	
		Population > 10.000 Inhabitants	
		Population > 15.000 Inhabitants	
		Population > 20.000 Inhabitants	
	CHARACTER SET	Y	Y
	EMWIS CODE	Y	Y
	NATIONAL CODE	Y	Y
	NATIONAL NAME		Y
	CREATION DATA	Y	
	SPATIAL RESOLUTION	Y	
	DATA TYPE	[Alphanumeric; Cartografic]	
	SPATIAL REPRESENTATION TYPE	Y	
	LANGUAGE	Y	Y
	REFERENCE SYSTEM INFORMATION	Y	
	COUNTRY	Y	Y
	CONTACT INFORMATION NAME	Y	
	CONTACT INFORMATION ORGANIZATION	Y	
	CONTACT INFORMATION POSITION	Y	
	CONTACT INFORMATION ROLE	Y	
	DATABASE INSERT DATE	Y	
	KEYWORDS	Y	
	EXTENT	Y	
	DISTRIBUTION INFORMATION	Y	
	DISTRIBUTION FORMAT	Y	
	DATA QUALITY INFORMATION	Y	
	DATA QUALITY SCOPE	Y	
	DATA QUALITY LEVEL	Y	
SPECIFIC ATTRIBUTES	CODE OF THE AFECTED REFERENCE NETWORK		Y
	CENTROIDE LONGITUDE		Y
	CENTROIDE LATITUDE		Y
	WATER BODY AFECTED CODE		Y
	RIVER BASIN DISTRICT		Y
	PROTECTED AREAS AFECTED CODE		Y
	ASOCIATED WASTEWATER TREATMENT PLANT		Y
	ASOCIATED DISCHARGE POINT		Y
	ASOCIATED POINT OF WATER ABSTRACTION		Y
	LOCAL ADMINISTRATIVE BOUNDARIES		Y
	KIND OF PRESSURE		Y
	REMARKS	Y	Y

		Name: Wastewater treatment plant WISE name: Urban wastewater treatment plant	
		Entity prototipe attributes	Entity instance attributes
METADATA ATTRIBUTES	ANALYSIS MODEL GROUP	Pressures	
	ANALYSIS MODEL SUBGROUP		
	ABSTRACT	Installation destined for the purification of the waste water, urban or industrial, with the purpose of separating the harmful elements or to transform them so that they could return to be in use before being spilt to to the environment	
	DEFINITION CRITERIA (Options)	Installations with treatment: Pre-treatment Primary Primary and secondary Primary and secondary and tertiary	
	CHARACTER SET	Y	Y
	EMWIS CODE	Y	Y
	NATIONAL CODE	Y	Y
	NATIONAL NAME		Y
	CREATION DATA	Y	
	SPATIAL RESOLUTION	Y	
	DATA TYPE	[Alphanumeric; Cartografic]	
	SPATIAL REPRESENTATION TYPE	Y	
	LANGUAGE	Y	Y
	REFERENCE SYSTEM INFORMATION	Y	
	COUNTRY	Y	Y
	CONTACT INFORMATION NAME	Y	
	CONTACT INFORMATION ORGANIZATION	Y	
	CONTACT INFORMATION POSITION	Y	
	CONTACT INFORMATION ROLE	Y	
	DATABASE INSERT DATE	Y	
	KEYWORDS	Y	
	EXTENT	Y	
	DISTRIBUTION INFORMATION	Y	
	DISTRIBUTION FORMAT	Y	
	DATA QUALITY INFORMATION	Y	
	DATA QUALITY SCOPE	Y	
	DATA QUALITY LEVEL	Y	
SPECIFIC ATTRIBUTES	DISCHARGE POINT CODE		Y
	CENTROIDE LONGITUDE		Y
	CENTROIDE LATITUDE		Y
	LOCATION		Y
	COMPETENT ORGANISATIONS		Y
	CATEGORY		river, lake, coastal, transitional, groundwater
	LATITUDE OF THE DISCHARGE POINT		Y
	LONGITUDE OF THE DISCHARGE POINT		Y
	LATITUDE OF THE INCOMING POINT		Y
	LONGITUDE OF THE INCOMING POINT		Y
	CODE OF THE AFECTED REFERENCE NETWORK		Y
	PROTECTED AREAS AFECTED CODE		Y
	RIVER BASIN DISTRICT		Y

| | Name: Wastewater treatment plant WISE name: Urban wastewater treatment plant | |
	Entity prototipe attributes	Entity instance attributes
WATER BODY AFECTED CODE		Y
ASOCIATED DISCHARGE POINT		Y
ASOCIATED INDUSTRY		Y
LOCAL ADMINISTRATIVE BOUNDARIES		Y
KIND OF PRESSURE		Y
NATURE OF THE DISCHARGE:		Y
EQUIVALENT INHABITANTS OF DESIGN		urban or assimilated/manufacturer
CONNECTED AGLOMERATIONS		Y
RELATED PROCESSES OF AUTHORIZATION		Y
REMARKS		Y
RELATED PROCESSES OF AUTHORIZATION		Y
REMARKS		Y

| | | Name: Discharge point
WISE name: Discharge point | |
		Entity prototipe attributes	Entity instance attributes
METADATA ATTRIBUTES	ANALYSIS MODEL GROUP	Pressures	
	ANALYSIS MODEL SUBGROUP		
	ABSTRACT	Geographical point where takes place the discharge of a pollutant fluid to the water	
	DEFINITION CRITERIA	> 500 Equivalent inhabitants	
		All the manufacturers who are not considered to be biodegradable	
		Fish farms with authorized discharge > 20l/s	
		Dwarf of mines with authorized discharge > 20l/s	
		Thermal with authorized discharge > 50l/s	
		Storm overflow pipe with design discharge > 100 m3/hour	
		Desalination plant with brute tried discharge > 50l/s	
	CHARACTER SET	Y	Y
	EMWIS CODE	Y	Y
	NATIONAL CODE	Y	Y
	NATIONAL NAME		Y
	CREATION DATA	Y	
	SPATIAL RESOLUTION	Y	
	DATA TYPE	[Alphanumeric; Cartografic]	
	SPATIAL REPRESENTATION TYPE	Y	
	LANGUAGE	Y	Y
	REFERENCE SYSTEM INFORMATION	Y	
	COUNTRY	Y	Y
	CONTACT INFORMATION NAME	Y	
	CONTACT INFORMATION ORGANIZATION	Y	
	CONTACT INFORMATION POSITION	Y	
	CONTACT INFORMATION ROLE	Y	
	DATABASE INSERT DATE	Y	
	KEYWORDS	Y	
	EXTENT	Y	
	DISTRIBUTION INFORMATION	Y	
	DISTRIBUTION FORMAT	Y	
	DATA QUALITY INFORMATION	Y	
	DATA QUALITY SCOPE	Y	
	DATA QUALITY LEVEL	Y	
SPECIFIC ATTRIBUTES	CODE OF THE AFECTED REFERENCE NETWORK		Y
	PROTECTED AREAS AFECTED CODE		Y
	RIVER BASIN DISTRICT		Y
	WATER BODY AFECTED CODE		Y
	ASOCIATED WASTEWATER TREATMENT PLANT		Y
	ASOCIATED INDUSTRY		Y
	LOCAL ADMINISTRATIVE BOUNDARIES		Y
	KIND OF PRESSURE		Y

	Name: Discharge point WISE name: Discharge point	
	Entity prototipe attributes	**Entity instance attributes**
MONITORING STATION ASOCIATED		Y
CATEGORY		river, lake, coastal, transitional, groundwater
INFORMATION OF RELATED ACTIVITY		Y
TREATMENT TYPE		wihtout treatment, pre-treatment, primary, secondary, tertiary
NATURE OF THE DISCHARGE		urban or assimilated / manufacturer
REMARKS		Y

<table>
<tr><td colspan="3" align="center">Name: Elevation</td></tr>
<tr><td colspan="3" align="center">RASTER</td></tr>
<tr><td rowspan="28">METADATA ATTRIBUTES</td><td>ANALYSIS MODEL GROUP</td><td>Environment</td></tr>
<tr><td>ANALYSIS MODEL SUBGROUP</td><td></td></tr>
<tr><td>ABSTRACT</td><td>Graphical representation of the earth's surface, their shapes and details, both natural and artificial</td></tr>
<tr><td>DEFINITION CRITERIA</td><td align="center">Y</td></tr>
<tr><td>CHARACTER SET</td><td align="center">Y</td></tr>
<tr><td>EMWIS CODE</td><td align="center">Y</td></tr>
<tr><td>NATIONAL CODE</td><td align="center">Y</td></tr>
<tr><td>NATIONAL NAME</td><td></td></tr>
<tr><td>CREATION DATA</td><td align="center">Y</td></tr>
<tr><td>SPATIAL RESOLUTION</td><td align="center">Y</td></tr>
<tr><td>DATA TYPE</td><td>[Alphanumeric; Cartografic]</td></tr>
<tr><td>SPATIAL REPRESENTATION TYPE</td><td align="center">Y</td></tr>
<tr><td>LANGUAGE</td><td align="center">Y</td></tr>
<tr><td>REFERENCE SYSTEM INFORMATION</td><td align="center">Y</td></tr>
<tr><td>COUNTRY</td><td></td></tr>
<tr><td>CONTACT INFORMATION NAME</td><td align="center">Y</td></tr>
<tr><td>CONTACT INFORMATION ORGANIZATION</td><td align="center">Y</td></tr>
<tr><td>CONTACT INFORMATION POSITION</td><td align="center">Y</td></tr>
<tr><td>CONTACT INFORMATION ROLE</td><td align="center">Y</td></tr>
<tr><td>DATABASE INSERT DATE</td><td align="center">Y</td></tr>
<tr><td>KEYWORDS</td><td align="center">Y</td></tr>
<tr><td>EXTENT</td><td align="center">Y</td></tr>
<tr><td>DISTRIBUTION INFORMATION</td><td align="center">Y</td></tr>
<tr><td>DISTRIBUTION FORMAT</td><td align="center">Y</td></tr>
<tr><td>DATA QUALITY INFORMATION</td><td align="center">Y</td></tr>
<tr><td>DATA QUALITY SCOPE</td><td align="center">Y</td></tr>
<tr><td>DATA QUALITY LEVEL</td><td align="center">Y</td></tr>
<tr><td colspan="2" align="center">VARIABLE</td><td>Elevation</td></tr>
</table>

		Name: Marine cartography	
		RASTER	
METADATA ATTRIBUTES	ANALYSIS MODEL GROUP	Environment	
	ANALYSIS MODEL SUBGROUP		
	ABSTRACT	Graphical representation of marine surface, with their shapes and details, both natural and artificial	
	DEFINITION CRITERIA	Y	
	CHARACTER SET	Y	
	EMWIS CODE	Y	
	NATIONAL CODE	Y	
	NATIONAL NAME		
	CREATION DATA	Y	
	SPATIAL RESOLUTION	Y	
	DATA TYPE	[Alphanumeric; Cartografic]	
	SPATIAL REPRESENTATION TYPE	Y	
	LANGUAGE	Y	
	REFERENCE SYSTEM INFORMATION	Y	
	COUNTRY		
	CONTACT INFORMATION NAME	Y	
	CONTACT INFORMATION ORGANIZATION	Y	
	CONTACT INFORMATION POSITION	Y	
	CONTACT INFORMATION ROLE	Y	
	DATABASE INSERT DATE	Y	
	KEYWORDS	Y	
	EXTENT	Y	
	DISTRIBUTION INFORMATION	Y	
	DISTRIBUTION FORMAT	Y	
	DATA QUALITY INFORMATION	Y	
	DATA QUALITY SCOPE	Y	
	DATA QUALITY LEVEL	Y	
VARIABLE		Sea floor elevation	

		Name: Lithology
		RASTER
METADATA ATTRIBUTES	ANALYSIS MODEL GROUP	Environment
	ANALYSIS MODEL SUBGROUP	
	ABSTRACT	Graphical representation of the different types of geological materials that emerge at the surface, and the type of contact between them
	DEFINITION CRITERIA	
	CHARACTER SET	Y
	EMWIS CODE	Y
	NATIONAL CODE	Y
	NATIONAL NAME	
	CREATION DATA	Y
	SPATIAL RESOLUTION	1:50.000
		1:100.000
		1:200.000
		1:500.000
	DATA TYPE	[Alphanumeric; Cartografic]
	SPATIAL REPRESENTATION TYPE	Y
	LANGUAGE	Y
	REFERENCE SYSTEM INFORMATION	Y
	COUNTRY	
	CONTACT INFORMATION NAME	Y
	CONTACT INFORMATION ORGANIZATION	Y
	CONTACT INFORMATION POSITION	Y
	CONTACT INFORMATION ROLE	Y
	DATABASE INSERT DATE	Y
	KEYWORDS	Y
	EXTENT	Y
	DISTRIBUTION INFORMATION	Y
	DISTRIBUTION FORMAT	Y
	DATA QUALITY INFORMATION	Y
	DATA QUALITY SCOPE	Y
	DATA QUALITY LEVEL	Y
VARIABLE		Geological material

		Name: National administrative boundaries
		Entity prototipe attributes
METADATA ATTRIBUTES	ANALYSIS MODEL GROUP	Environment management
	ANALYSIS MODEL SUBGROUP	
	ABSTRACT	State borders or geographic boundaries.
	DEFINITION CRITERIA	
	CHARACTER SET	Y
	EMWIS CODE	Y
	NATIONAL CODE	Y
	NATIONAL NAME	
	CREATION DATA	Y
	SPATIAL RESOLUTION	1:50.000
		1:100.000
		1:200.000
		1:500.000
	DATA TYPE	[Alphanumeric; Cartografic]
	SPATIAL REPRESENTATION TYPE	Y
	LANGUAGE	Y
	REFERENCE SYSTEM INFORMATION	Y
	COUNTRY	Y
	CONTACT INFORMATION NAME	Y
	CONTACT INFORMATION ORGANIZATION	Y
	CONTACT INFORMATION POSITION	Y
	CONTACT INFORMATION ROLE	Y
	DATABASE INSERT DATE	Y
	KEYWORDS	Y
	EXTENT	Y
	DISTRIBUTION INFORMATION	Y
	DISTRIBUTION FORMAT	Y
	DATA QUALITY INFORMATION	Y
	DATA QUALITY SCOPE	Y
	DATA QUALITY LEVEL	Y

http://www.semide.org   http://www.emwis.org

		Name: Regional administrative boundaries
		Entity prototipe attributes
METADATA ATTRIBUTES	ANALYSIS MODEL GROUP	Environment management
	ANALYSIS MODEL SUBGROUP	
	ABSTRACT	First level of borders or administrative boundaries in a country
	DEFINITION CRITERIA	
	CHARACTER SET	Y
	EMWIS CODE	Y
	NATIONAL CODE	Y
	NATIONAL NAME	
	CREATION DATA	Y
	SPATIAL RESOLUTION	1:50.000
		1:100.000
		1:200.000
		1:500.000
	DATA TYPE	[Alphanumeric; Cartografic]
	SPATIAL REPRESENTATION TYPE	Y
	LANGUAGE	Y
	REFERENCE SYSTEM INFORMATION	Y
	COUNTRY	Y
	CONTACT INFORMATION NAME	Y
	CONTACT INFORMATION ORGANIZATION	Y
	CONTACT INFORMATION POSITION	Y
	CONTACT INFORMATION ROLE	Y
	DATABASE INSERT DATE	Y
	KEYWORDS	Y
	EXTENT	Y
	DISTRIBUTION INFORMATION	Y
	DISTRIBUTION FORMAT	Y
	DATA QUALITY INFORMATION	Y
	DATA QUALITY SCOPE	Y
	DATA QUALITY LEVEL	Y

		Name: Comarcal administrative boundaries
		Entity prototipe attributes
METADATA ATTRIBUTES	ANALYSIS MODEL GROUP	Environment management
	ANALYSIS MODEL SUBGROUP	
	ABSTRACT	Second level of borders or administrative boundaries in a country
	DEFINITION CRITERIA	Y
	CHARACTER SET	Y
	EMWIS CODE	Y
	NATIONAL CODE	Y
	NATIONAL NAME	
	CREATION DATA	Y
	SPATIAL RESOLUTION	1:50.000
		1:100.000
		1:200.000
		1:500.000
	DATA TYPE	[Alphanumeric; Cartografic]
	SPATIAL REPRESENTATION TYPE	Y
	LANGUAGE	Y
	REFERENCE SYSTEM INFORMATION	Y
	COUNTRY	Y
	CONTACT INFORMATION NAME	Y
	CONTACT INFORMATION ORGANIZATION	Y
	CONTACT INFORMATION POSITION	Y
	CONTACT INFORMATION ROLE	Y
	DATABASE INSERT DATE	Y
	KEYWORDS	Y
	EXTENT	Y
	DISTRIBUTION INFORMATION	Y
	DISTRIBUTION FORMAT	Y
	DATA QUALITY INFORMATION	Y
	DATA QUALITY SCOPE	Y
	DATA QUALITY LEVEL	Y

X. ANNEX II– SECOND LEVEL ENTITIES

		Name: Water body **WISE name: River water bodies** **Lake water bodies** **Transitional water bodies** **Coastal water bodies** **Groundwatwr water bodies**	
		Entity prototipe attributes	**Entity instance attributes**
METADATA ATTRIBUTES	ANALYSIS MODEL GROUP	Environment	
	ANALYSIS MODEL SUBGROUP	Analysis and management	
	ABSTRACT	A discrete and significant water element whith homogeneus characteristics that define the management unit	
	DEFINITION CRITERIA	Almost watershed > 10km2	
		Almost discharge> 100 l/s	
		Almost 75% of the months discharge > 0	
	CHARACTER SET	Y	Y
	EMWIS CODE	Y	Y
	NATIONAL CODE	Y	Y
	NATIONAL NAME		Y
	CREATION DATA	Y	
	SPATIAL RESOLUTION	1:25.000	
		1:50.000	
		1:200.000	
	DATA TYPE	[Alphanumeric; Cartografic]	
	SPATIAL REPRESENTATION TYPE	Y	
	LANGUAGE	Y	Y
	REFERENCE SYSTEM INFORMATION	Y	
	COUNTRY	Y	Y
	CONTACT INFORMATION NAME	Y	
	CONTACT INFORMATION ORGANIZA	Y	
	CONTACT INFORMATION POSITION	Y	
	CONTACT INFORMATION ROLE	Y	
	DATABASE INSERT DATE	Y	
	KEYWORDS	Y	
	EXTENT	Y	
	DISTRIBUTION INFORMATION	Y	
	DISTRIBUTION FORMAT	Y	
	DATA QUALITY INFORMATION	Y	
	DATA QUALITY SCOPE	Y	
	DATA QUALITY LEVEL	Y	
SPECIFIC ATTRIBUTES	SUB-TYPE		River
	STATUS		natual/artificial/verymodified
	LONGITUDE OF THE CENTROID		Y
	LATITUDE OF THE CENTROID		Y
	CODE OF THE RELATED NETWORK		Y
	PROTECTED AREAS RELATED CODE		Y
	RIVER BASIN DISTRICT		Y
	STREAM MAX HEIGHT		Y
	STREAM MIN HEIGHT		Y
	LENGTH		Y
	SLOPE OF THE STREAM		Y
	WATERSHED AREA		Y
	ANNUAL MEAN DISCHARGE L/S		Y
	TIPOLOGY		Y
	CATEGORY		[river, lake, coastal, transitional, groundwater]

	Name: Water body **WISE name: River water bodies** **Lake water bodies** **Transitional water bodies** **Coastal water bodies** **Groundwatwr water bodies**	
	Entity prototipe attributes	**Entity instance attributes**
MODIFICABLE BY		Y
REMARKS	Y	Y

		Name: Flood risk areas	
		Entity prototipe attributes	**Entity instance attributes**
METADATA ATTRIBUTES	ANALYSIS MODEL GROUP	Environment	
	ANALYSIS MODEL SUBGROUP	Reference Network	
	ABSTRACT	Area susceptible to be inundated because of the effects of rain or flood. These areas are bounded by the theoretical levels that reach the waters in the various avenues for return floods periods	
	DEFINITION CRITERIA	Y	
	CHARACTER SET	Y	Y
	EMWIS CODE	Y	Y
	NATIONAL CODE	Y	Y
	NATIONAL NAME		Y
	CREATION DATA	Y	
	SPATIAL RESOLUTION	10-year return flood	
		25-year return flood	
		50-year return flood	
		100-year return flood	
		500-year return flood	
	DATA TYPE	[Alphanumeric; Cartografic]	
	SPATIAL REPRESENTATION TYPE	Y	
	LANGUAGE	Y	Y
	REFERENCE SYSTEM INFORMATION	Y	
	COUNTRY	Y	Y
	CONTACT INFORMATION NAME	Y	
	CONTACT INFORMATION ORGANIZATION	Y	
	CONTACT INFORMATION POSITION	Y	
	CONTACT INFORMATION ROLE	Y	
	DATABASE INSERT DATE	Y	
	KEYWORDS	Y	
	EXTENT	Y	
	DISTRIBUTION INFORMATION	Y	
	DISTRIBUTION FORMAT	Y	
	DATA QUALITY INFORMATION	Y	
	DATA QUALITY SCOPE	Y	
	DATA QUALITY LEVEL	Y	

		Name: Irrigation system	
		Entity prototipe attributes	**Entity instance attributes**
METADATA ATTRIBUTES	ANALYSIS MODEL GROUP	Pressures	
	ANALYSIS MODEL SUBGROUP		
	ABSTRACT	A system of man-made structures and equipment for supplying water to land to allow plants to grow	
	DEFINITION CRITERIA	Y	
	CHARACTER SET	Y	Y
	EMWIS CODE	Y	Y
	NATIONAL CODE	Y	Y
	NATIONAL NAME		Y
	CREATION DATA	Y	
	SPATIAL RESOLUTION	1:50.000	
		1:100.000	
		1:200.000	
	DATA TYPE	[Alphanumeric; Cartografic]	
	SPATIAL REPRESENTATION TYPE		
	LANGUAGE	Y	Y
	REFERENCE SYSTEM INFORMATION	Y	
	COUNTRY		
	CONTACT INFORMATION NAME	Y	
	CONTACT INFORMATION ORGANIZ	Y	
	CONTACT INFORMATION POSITION	Y	
	CONTACT INFORMATION ROLE	Y	
	DATABASE INSERT DATE	Y	
	KEYWORDS	Y	
	EXTENT	Y	
	DISTRIBUTION INFORMATION	Y	
	DISTRIBUTION FORMAT	Y	
	DATA QUALITY INFORMATION	Y	
	DATA QUALITY SCOPE	Y	
	DATA QUALITY LEVEL	Y	
SPECIFIC ATTRIBUTES	LONGITUDE OF THE EXTRACTION POINT		Y
	LATITUDE OF THE EXTRACTION POINT		Y
	CODE OF THE AFECTED REFERENCE NETWORK		Y
	PROTECTED AREAS AFECTED CODE		Y
	RIVER BASIN DISTRICT		Y
	WATER BODY AFECTED CODE		Y
	ASOCIATED POINT ABSTACTION		Y
	ASOCIATED INDUSTRY		Y
	LOCAL ADMINISTRATIVE BOUNDARIES		Y
	KIND OF PRESSURE		Y
	MONITORING STATION ASOCIATED		Y
	REFERENCE NETWORK AFECTED CODE		Y
	ANNUAL MAXIMUM ALLOWED		Y
	INSTANTANEOUS FLOW GIVEN		Y
	REMARKS	Y	Y

		Name: Longitudinal alteration	
		Entity prototipe attributes	Entity instance attributes
METADATA ATTRIBUTES	ANALYSIS MODEL GROUP	Pressures	
	ANALYSIS MODEL SUBGROUP		
	ABSTRACT	Longitudinal infrastructures to the water bodies, mostly built to carry water or protect from floods	
	DEFINITION CRITERIA	Longitudinal alteration length> 100m	
	CHARACTER SET	Y	Y
	EMWIS CODE	Y	Y
	NATIONAL CODE	Y	Y
	NATIONAL NAME		Y
	CREATION DATA	Y	
	SPATIAL RESOLUTION	Y	
	DATA TYPE	[Alphanumeric; Cartografic]	
	SPATIAL REPRESENTATION TYPE	Y	
	LANGUAGE	Y	Y
	REFERENCE SYSTEM INFORMATION	Y	
	COUNTRY	Y	Y
	CONTACT INFORMATION NAME	Y	
	CONTACT INFORMATION ORGANIZATION	Y	
	CONTACT INFORMATION POSITION	Y	
	CONTACT INFORMATION ROLE	Y	
	DATABASE INSERT DATE	Y	
	KEYWORDS	Y	
	EXTENT	Y	
	DISTRIBUTION INFORMATION	Y	
	DISTRIBUTION FORMAT	Y	
	DATA QUALITY INFORMATION	Y	
	DATA QUALITY SCOPE	Y	
	DATA QUALITY LEVEL	Y	
SPECIFIC ATTRIBUTES	INITIAL LONGITUDE		Y
	INITIAL LATITUDE		Y
	FINAL LONGITUDE		Y
	FINAL LATITUDE		Y
	REFERENCE NETWORK AFECTED CODE		Y
	PROTECTED AREAS AFECTED CODE		Y
	RIVER BASIN DISTRICT		Y
	WATER BODY AFECTED CODE		Y
	LOCAL ADMINISTRATIVE BOUNDARIES		Y
	KIND OF PRESSURE		Y
	PRESSURE DESTINATION		river, lake, coastal, transitional, groundwater
	ALTERATION TYPE		channel, protection, cover,…
	CONSTRUCTIVE TYPE		Y
	CONSTRUCCTION LENGTH		Y
	AFFECTED AREA LENGTH		Y
	BUILDING MATERIALS		Y
	OBJETIVE		Y
	WATER USES		
	REMARKS	Y	Y

		Name: Point of water abstraction	
		Entity prototipe attributes	**Entity instance attributes**
METADATA ATTRIBUTES	ANALYSIS MODEL GROUP	Pressures	
	ANALYSIS MODEL SUBGROUP		
	ABSTRACT	Extraction of water from any source (River, lake, well, sea) for a particular use	
	DEFINITION CRITERIA	Flow rate supplied > 600.000 m3/y	
	CHARACTER SET	Y	Y
	EMWIS CODE	Y	Y
	NATIONAL CODE	Y	Y
	NATIONAL NAME		Y
	CREATION DATA	Y	
	SPATIAL RESOLUTION	Y	
	DATA TYPE	[Alphanumeric; Cartografic]	
	SPATIAL REPRESENTATION TYPE	Y	
	LANGUAGE	Y	Y
	REFERENCE SYSTEM INFORMATION	Y	
	COUNTRY	Y	Y
	CONTACT INFORMATION NAME	Y	
	CONTACT INFORMATION ORGANIZATION	Y	
	CONTACT INFORMATION POSITION	Y	
	CONTACT INFORMATION ROLE	Y	
	DATABASE INSERT DATE	Y	
	KEYWORDS	Y	
	EXTENT	Y	
	DISTRIBUTION INFORMATION	Y	
	DISTRIBUTION FORMAT	Y	
	DATA QUALITY INFORMATION	Y	
	DATA QUALITY SCOPE	Y	
	DATA QUALITY LEVEL	Y	
SPECIFIC ATTRIBUTES	LONGITUDE OF THE EXTRACTION POINT		Y
	LATITUDE OF THE EXTRACTION POINT		Y
	REFERENCE NETWORK AFECTED CODE		Y
	PROTECTED AREAS AFECTED CODE		Y
	RIVER BASIN DISTRICT		Y
	WATER BODY AFECTED CODE		Y
	LOCAL ADMINISTRATIVE BOUNDARIES		Y
	KIND OF PRESSURE		Y
	URBAN AGGLOMERATIN ASOCIATED		Y
	ASOCIATED INDUSTRY		Y
	ASOCIATED ANIMAL HUSBANDRY		Y
	ASOCIATEDIRRIGATION SYSTEM		Y
	ASOCIATED HYDROELECTRIC PLANTS		Y
	MONITORING STATION		Y
	PRESSURE DESTINATION		river, lake, coastal, transitional, groundwater
	ASOCIATED ALTERATION TYPE ASOCIATED		Dam, channel, protection, cover,…
	REMARKS	Y	Y

		Name: Occupation or land use
		RASTER
METADATA ATTRIBUTES	ANALYSIS MODEL GROUP	Pressures
	ANALYSIS MODEL SUBGROUP	
	ABSTRACT	Identification and description of all human activities on the land and the way in wich the land surface is adapted to serve human needs
	DEFINITION CRITERIA	Y
	CHARACTER SET	Y
	EMWIS CODE	Y
	NATIONAL CODE	Y
	NATIONAL NAME	
	CREATION DATA	Y
	SPATIAL RESOLUTION	1:50.000 1:50.000 1:200.000
	DATA TYPE	[Alphanumeric; Cartografic]
	SPATIAL REPRESENTATION TYPE	Y
	LANGUAGE	Y
	REFERENCE SYSTEM INFORMATION	Y
	COUNTRY	
	CONTACT INFORMATION NAME	Y
	CONTACT INFORMATION ORGANIZATION	Y
	CONTACT INFORMATION POSITION	Y
	CONTACT INFORMATION ROLE	Y
	DATABASE INSERT DATE	Y
	KEYWORDS	Y
	EXTENT	Y
	DISTRIBUTION INFORMATION	Y
	DISTRIBUTION FORMAT	Y
	DATA QUALITY INFORMATION	Y
	DATA QUALITY SCOPE	Y
	DATA QUALITY LEVEL	Y
VARIABLE		Land use

		Name: Animal husbandry	
		Entity prototipe attributes	Entity instance attributes
METADATA ATTRIBUTES	ANALYSIS MODEL GROUP	Pressures	
	ANALYSIS MODEL SUBGROUP		
	ABSTRACT	Economic activity derived from cattle raising	
	DEFINITION CRITERIA	Puntual Municipal	
	CHARACTER SET	Y	Y
	EMWIS CODE	Y	Y
	NATIONAL CODE	Y	Y
	NATIONAL NAME		Y
	CREATION DATA	Y	
	SPATIAL RESOLUTION	Y	
	DATA TYPE	[Alphanumeric; Cartografic]	
	SPATIAL REPRESENTATION TYPE	Y	
	LANGUAGE	Y	Y
	REFERENCE SYSTEM INFORMATION	Y	
	COUNTRY		
	CONTACT INFORMATION NAME	Y	
	CONTACT INFORMATION ORGANIZATION	Y	
	CONTACT INFORMATION POSITION	Y	
	CONTACT INFORMATION ROLE	Y	
	DATABASE INSERT DATE	Y	
	KEYWORDS	Y	
	EXTENT	Y	
	DISTRIBUTION INFORMATION	Y	
	DISTRIBUTION FORMAT	Y	
	DATA QUALITY INFORMATION	Y	
	DATA QUALITY SCOPE	Y	
	DATA QUALITY LEVEL	Y	
SPECIFIC ATTRIBUTES	LONGITUDE OF THE CENTROID OR OF THE POINT		Y
	LATITUDE OF THE CENTROID OR OF THE POINT		Y
	REFERENCE NETWORK AFECTED CODE		Y
	PROTECTED AREAS AFECTED CODE		Y
	RIVER BASIN DISTRICT		Y
	WATER BODY AFECTED CODE		Y
	LOCAL ADMINISTRATIVE BOUNDARIES		Y
	KIND OF PRESSURE		Y
	REMARKS	Y	Y

		Name: Dams and lowhead dam	
		Entity prototipe attributes	**Entity instance attributes**
METADATA ATTRIBUTES	ANALYSIS MODEL GROUP	Pressures	
	ANALYSIS MODEL SUBGROUP		
	ABSTRACT	Water store infrastructure for the electric power production, for the irrigation, industrial and domestic consumption and for the floods protection	
	DEFINITION CRITERIA	Y	
	CHARACTER SET	Y	Y
	EMWIS CODE	Y	Y
	NATIONAL CODE	Y	Y
	NATIONAL NAME		Y
	CREATION DATA	Y	
	SPATIAL RESOLUTION	>2m	
	DATA TYPE	[Alphanumeric; Cartografic]	
	SPATIAL REPRESENTATION TYPE	Y	
	LANGUAGE	Y	Y
	REFERENCE SYSTEM INFORMATION	Y	
	COUNTRY	Y	Y
	CONTACT INFORMATION NAME	Y	
	CONTACT INFORMATION ORGANIZAT.	Y	
	CONTACT INFORMATION POSITION	Y	
	CONTACT INFORMATION ROLE	Y	
	DATABASE INSERT DATE	Y	
	KEYWORDS	Y	
	EXTENT	Y	
	DISTRIBUTION INFORMATION	Y	
	DISTRIBUTION FORMAT	Y	
	DATA QUALITY INFORMATION	Y	
	DATA QUALITY SCOPE	Y	
	DATA QUALITY LEVEL	Y	
SPECIFIC ATTRIBUTES	LONGITUDE		Y
	LATITUDE		Y
	REFERENCE NETWORK AFECTED CODE		Y
	PROTECTED AREAS AFECTED CODE		Y
	RIVER BASIN DISTRICT		Y
	WATER BODY AFECTED CODE		Y
	LOCAL ADMINISTRATIVE BOUNDARIES		Y
	KIND OF PRESSURE		Y
	MONITORING STATION		Y
	TITULAR		Y
	CATEGORY		Y
	CONSTRUCTIVE TYPE		river, lake, coastal, transitional,
	NORMAL HIGHEST LEVEL		Y
	CROWN LEVEL		Y
	MAXIMUM VOLUME OF RESERVOIR AT NORMAL LEVEL		Y
	SURFACE AT NORMAL HIGHEST LEVEL		Y
	LENGTH CORONATION		Y
	WATER USES		urban, agricultural, industrial, recreational, ports, flood control
	REMARKS	Y	Y

		Name: Hydroelectric plants	
		Entity prototipe attributes	Entity instance attributes
METADATA ATTRIBUTES	ANALYSIS MODEL GROUP	Pressures	
	ANALYSIS MODEL SUBGROUP		
	ABSTRACT	Plant that convert mechanical energy from falling water into electricity	
	DEFINITION CRITERIA	>600.000 m3/year	
	CHARACTER SET	Y	Y
	EMWIS CODE	Y	Y
	NATIONAL CODE	Y	Y
	NATIONAL NAME		Y
	CREATION DATA	Y	
	SPATIAL RESOLUTION	Y	
	DATA TYPE	[Alphanumeric; Cartografic]	
	SPATIAL REPRESENTATION TYPE	Y	
	LANGUAGE	Y	Y
	REFERENCE SYSTEM INFORMATION	Y	
	COUNTRY	Y	Y
	CONTACT INFORMATION NAME	Y	
	CONTACT INFORMATION ORGANIZATION	Y	
	CONTACT INFORMATION POSITION	Y	
	CONTACT INFORMATION ROLE	Y	
	DATABASE INSERT DATE	Y	
	KEYWORDS	Y	
	EXTENT	Y	
	DISTRIBUTION INFORMATION	Y	
	DISTRIBUTION FORMAT	Y	
	DATA QUALITY INFORMATION	Y	
	DATA QUALITY SCOPE	Y	
	DATA QUALITY LEVEL	Y	
SPECIFIC ATTRIBUTES	INITIAL LONGITUDE		Y
	INITIAL LATITUDE		Y
	END LONGITUDE		Y
	END LATITUDE		Y
	REFERENCE NETWORK AFECTED CODE		Y
	PROTECTED AREAS AFECTED CODE		Y
	RIVER BASIN DISTRICT		Y
	WATER BODY AFECTED CODE		Y
	LOCAL ADMINISTRATIVE BOUNDARIES		Y
	KIND OF PRESSURE		Y
	MONITORING STATION		Y
	DAMS AND LOWHEAD DAM		Y
	POINT OF WATER ABSTRACTION		Y
	LONGITUDINAL ALTERATION		Y
	PRESSURE DESTINATION		(river, growndwater, lake, coastal, transitional)
	POWER KW		Y
	FLOW DISCHARGE M3/S		Y
	PRODUCTION CWH/YEAR		Y
	REMARKS	Y	Y

		Name: Edaphology
		RASTER
METADATA ATTRIBUTES	ANALYSIS MODEL GROUP	Environment
	ANALYSIS MODEL SUBGROUP	
	ABSTRACT	Soil cartographic representatión
	DEFINITION CRITERIA	Y
	CHARACTER SET	Y
	EMWIS CODE	
	NATIONAL CODE	
	NATIONAL NAME	
	CREATION DATA	Y
	SPATIAL RESOLUTION	1:50.000
		1:100.000
		1:200.000
		1:500.000
	DATA TYPE	[Alphanumeric; Cartografic]
	SPATIAL REPRESENTATION TYPE	Y
	LANGUAGE	
	REFERENCE SYSTEM INFORMATION	Y
	COUNTRY	
	CONTACT INFORMATION NAME	Y
	CONTACT INFORMATION ORGANIZATION	Y
	CONTACT INFORMATION POSITION	Y
	CONTACT INFORMATION ROLE	Y
	DATABASE INSERT DATE	Y
	KEYWORDS	Y
	EXTENT	Y
	DISTRIBUTION INFORMATION	Y
	DISTRIBUTION FORMAT	Y
	DATA QUALITY INFORMATION	Y
	DATA QUALITY SCOPE	Y
	DATA QUALITY EVEL	Y
	VARIABLE	Soil

METADATA ATTRIBUTES		Name: Public hydraulic domain	
		Entity prototipe attributes	**Entity instance attributes**
	ANALYSIS MODEL GROUP	Environment management	
	ANALYSIS MODEL SUBGROUP		
	ABSTRACT	Group of continental water masses and territories occupied by these in the form of rivers, aquifers or water bed	
	DEFINITION CRITERIA	Y	
	CHARACTER SET	Y	Y
	EMWIS CODE	Y	Y
	NATIONAL CODE	Y	Y
	NATIONAL NAME		Y
	CREATION DATA	Y	
	SPATIAL RESOLUTION	1:50.000	
		1:100.000	
		1:200.000	
		1:500.000	
	DATA TYPE	[Alphanumeric; Cartografic]	
	SPATIAL REPRESENTATION TYPE	Y	
	LANGUAGE	Y	Y
	REFERENCE SYSTEM INFORMATION	Y	
	COUNTRY	Y	Y
	CONTACT INFORMATION NAME	Y	
	CONTACT INFORMATION ORGANIZATION	Y	
	CONTACT INFORMATION POSITION	Y	
	CONTACT INFORMATION ROLE	Y	
	DATABASE INSERT DATE	Y	
	KEYWORDS	Y	
	EXTENT	Y	
	DISTRIBUTION INFORMATION	Y	
	DISTRIBUTION FORMAT	Y	
	DATA QUALITY INFORMATION	Y	
	DATA QUALITY SCOPE	Y	
	DATA QUALITY LEVEL	Y	

XI. ANNEX III– THIRD LEVEL ENTITIES

		Name: Ecoregion WISE name: Ecoregion	
		Entity prototipe attributes	**Entity instance attributes**
METADATA ATTRIBUTES	ANALYSIS MODEL GROUP	Environment	
	ANALYSIS MODEL SUBGROUP	Reference Network	
	ABSTRACT	Geographically defined area that covers relatively large areas and have a characteristic morphology, geology, climate, soils, hydrology, flora and fauna	
	DEFINITION CRITERIA	Y	
	CHARACTER SET	Y	Y
	EMWIS CODE	Y	Y
	NATIONAL CODE	Y	Y
	NATIONAL NAME		Y
	CREATION DATA	Y	
	SPATIAL RESOLUTION	1:200.000	
	DATA TYPE	[Alphanumeric; Cartografic]	
	SPATIAL REPRESENTATION TYPE	Y	
	LANGUAGE	Y	Y
	REFERENCE SYSTEM INFORMATION	Y	
	COUNTRY	Y	Y
	CONTACT INFORMATION NAME	Y	
	CONTACT INFORMATION ORGANIZATION	Y	
	CONTACT INFORMATION POSITION	Y	
	CONTACT INFORMATION ROLE	Y	
	DATABASE INSERT DATE	Y	
	KEYWORDS	Y	
	EXTENT	Y	
	DISTRIBUTION INFORMATION	Y	
	DISTRIBUTION FORMAT	Y	
	DATA QUALITY INFORMATION	Y	
	DATA QUALITY SCOPE	Y	
	DATA QUALITY LEVEL	Y	
SPECIFIC ATTRIBUTES	ECOZONE		Y
	ECOREGION		Y
	REMARKS	Y	Y

http://www.semide.org

http://www.emwis.org

		Name: River basin district WISE name: River basin district	
		Entity prototipe attributes	Entity instance attributes
METADATA ATTRIBUTES	ANALYSIS MODEL GROUP	Environment	
	ANALYSIS MODEL SUBGROUP	Analysis and management	
	ABSTRACT	Area of land and sea, made up of one or more neighbouring river basins together with their associated groundwaters and coastal waters	
	DEFINITION CRITERIA	Y	
	CHARACTER SET	Y	Y
	EMWIS CODE	Y	Y
	NATIONAL CODE	Y	Y
	NATIONAL NAME		Y
	CREATION DATA	Y	
	SPATIAL RESOLUTION	1:25.000	
		1:50.000	
		1:200.000	
	DATA TYPE	[Alphanumeric; Cartografic]	
	SPATIAL REPRESENTATION TYPE	Y	
	LANGUAGE	Y	Y
	REFERENCE SYSTEM INFORMATION	Y	
	COUNTRY	Y	Y
	CONTACT INFORMATION NAME	Y	
	CONTACT INFORMATION ORGANIZATION	Y	
	CONTACT INFORMATION POSITION	Y	
	CONTACT INFORMATION ROLE	Y	
	DATABASE INSERT DATE	Y	
	KEYWORDS	Y	
	EXTENT	Y	
	DISTRIBUTION INFORMATION	Y	
	DISTRIBUTION FORMAT	Y	
	DATA QUALITY INFORMATION	Y	
	DATA QUALITY SCOPE	Y	
	DATA QUALITY LEVEL	Y	
SPECIFIC ATTRIBUTES	LONGITUDE OF THE CENTROID		Y
	LATITUDE OF THE CENTROID		Y
	AREA		Y
	REMARKS	Y	Y

		Name: Recreational Waters WISE name: Recreational Waters Protectes areas	
		Entity prototipe attributes	Entity instance attributes
METADATA ATTRIBUTES	ANALYSIS MODEL GROUP	Environment	
	ANALYSIS MODEL SUBGROUP	Analysis and management	
	ABSTRACT	Recreational areas of coastal, transitional, surface water, or lakes which have been designated as requiring special protection for bath use, sailing or fishing	
	DEFINITION CRITERIA	Y	
	CHARACTER SET	Y	Y
	EMWIS CODE	Y	Y
	NATIONAL CODE	Y	Y
	NATIONAL NAME		Y
	CREATION DATA	Y	
	SPATIAL RESOLUTION	Y	
	DATA TYPE	[Alphanumeric; Cartografic]	
	SPATIAL REPRESENTATION TYPE	Y	
	LANGUAGE	Y	Y
	REFERENCE SYSTEM INFORMATION	Y	
	COUNTRY	Y	Y
	CONTACT INFORMATION NAME	Y	
	CONTACT INFORMATION ORGANIZATION	Y	
	CONTACT INFORMATION POSITION	Y	
	CONTACT INFORMATION ROLE	Y	
	DATABASE INSERT DATE	Y	
	KEYWORDS	Y	
	EXTENT	Y	
	DISTRIBUTION INFORMATION	Y	
	DISTRIBUTION FORMAT	Y	
	DATA QUALITY INFORMATION	Y	
	DATA QUALITY SCOPE	Y	
	DATA QUALITY LEVEL	Y	
SPECIFIC ATTRIBUTES	CODE OF THE AFECTED REFERENCE NETWORK		Y
	PROTECTED BY: LAW		Y
	REMARKS	Y	Y

		Name: Coastal morphological alterations	
		Entity prototipe attributes	**Entity instance attributes**
METADATA ATTRIBUTES	ANALYSIS MODEL GROUP	Pressures	
	ANALYSIS MODEL SUBGROUP		
	ABSTRACT	Longitudinal infrastructures to the coastal water bodies, mostly built to carry water or protect from floods	
	DEFINITION CRITERIA		
	CHARACTER SET	Y	Y
	EMWIS CODE	Y	Y
	NATIONAL CODE	Y	Y
	NATIONAL NAME		Y
	CREATION DATA	Y	
	SPATIAL RESOLUTION	Y	
	DATA TYPE	[Alphanumeric; Cartografic]	
	SPATIAL REPRESENTATION TYPE	Y	
	LANGUAGE	Y	Y
	REFERENCE SYSTEM INFORMATION	Y	
	COUNTRY	Y	Y
	CONTACT INFORMATION NAME	Y	
	CONTACT INFORMATION ORGANIZAT	Y	
	CONTACT INFORMATION POSITION	Y	
	CONTACT INFORMATION ROLE	Y	
	DATABASE INSERT DATE	Y	
	KEYWORDS	Y	
	EXTENT	Y	
	DISTRIBUTION INFORMATION	Y	
	DISTRIBUTION FORMAT	Y	
	DATA QUALITY INFORMATION	Y	
	DATA QUALITY SCOPE	Y	
	DATA QUALITY LEVEL	Y	
SPECIFIC ATTRIBUTES	INITIAL LONGITUDE		Y
	INITIAL LATITUDE		Y
	END LONGITUDE		Y
	END LATITUDE		Y
	DATABASE INSERT DATE		Y
	REFERENCE NETWORK AFECTED CODE		Y
	PROTECTED AREAS AFECTED CODE		Y
	RIVER BASIN DISTRICT		Y
	WATER BODY AFECTED CODE		Y
	LOCAL ADMINISTRATIVE BOUNDARIES		Y
	KIND OF PRESSURE		Y
	PRESSURE DESTINATION		[river, growndwater, lake, coastal, transicional]
	ALTERATION TYPE		[dams docks, ports, jetties ...]
	CONSTRUCTION TYPOLOGY		Y
	ALTERATION LENGTH		Y
	ILLNESS LENGTH		Y
	MATERIAL		Y

	Name: Coastal morphological alterations	
	Entity prototipe attributes	**Entity instance attributes**
STRUCTURE ELEVATION		Y
TARGET STRUCTURE		Y
WHICH THEY ARE USED		[urban, agricultural, industrial, recreational, ports, flood control]
REMARKS	Y	Y

Name: Mining

		Entity prototipe attributes	Entity instance attributes
METADATA ATTRIBUTES	ANALYSIS MODEL GROUP	Pressures	
	ANALYSIS MODEL SUBGROUP		
	ABSTRACT	Extraction of valuable minerals or other geological materials from the earth. Mining include base metals, precious metals, iron, uranium, coal, diamonds, limestone, oil shale, rock salt and potash.	
	DEFINITION CRITERIA	Y	
	CHARACTER SET	Y	Y
	EMWIS CODE	Y	Y
	NATIONAL CODE	Y	Y
	NATIONAL NAME		Y
	CREATION DATA	Y	
	SPATIAL RESOLUTION		
	DATA TYPE	[Alphanumeric; Cartografic]	
	SPATIAL REPRESENTATION TYPE	Y	
	LANGUAGE	Y	Y
	REFERENCE SYSTEM INFORMATION	Y	
	COUNTRY	Y	Y
	CONTACT INFORMATION NAME	Y	
	CONTACT INFORMATION ORGANIZA	Y	
	CONTACT INFORMATION POSITION	Y	
	CONTACT INFORMATION ROLE	Y	
	DATABASE INSERT DATE	Y	
	KEYWORDS	Y	
	EXTENT	Y	
	DISTRIBUTION INFORMATION	Y	
	DISTRIBUTION FORMAT	Y	
	DATA QUALITY INFORMATION	Y	
	DATA QUALITY SCOPE	Y	
	DATA QUALITY LEVEL	Y	
SPECIFIC ATTRIBUTES	LONGITUDE OF THE CENTROID		Y
	LATITUDE OF THE CENTROID		Y
	REFERENCE NETWORK AFECTED CODE		Y
	PROTECTED AREAS AFECTED CODE		Y
	RIVER BASIN DISTRICT		Y
	WATER BODY AFECTED CODE		Y
	LOCAL ADMINISTRATIVE BOUNDARIES		Y
	KIND OF PRESSURE		Y
	PRESSURE DESTINATION		river, growndwater, lake, coastal, transitional
	EXCAVATION TYPES:		Surface Mining And Sub-Surface (Underground) Mining
	MATERIAL TYPE:		Metallic / Nonmetallic / Hydrocarbon ...
	MATERIAL		Y
	OPERATING AREA		Y
	EXPLOITATION DEPTH		Y

OPERATING VOLUME		Y
REMARKS	Y	Y

| | | Name: Dredging | |
		Entity prototipe attributes	**Entity instance attributes**
METADATA ATTRIBUTES	ANALYSIS MODEL GROUP	Pressures	
	ANALYSIS MODEL SUBGROUP		
	ABSTRACT	Cleanup of sediments in water courses (rivers, lakes, coastal waters) in order to increase the depth for various purposes (flood prevention, navigation ,...)	
	DEFINITION CRITERIA	Y	
	CHARACTER SET	Y	Y
	EMWIS CODE	Y	Y
	NATIONAL CODE	Y	Y
	NATIONAL NAME		Y
	CREATION DATA	Y	
	SPATIAL RESOLUTION	1:50.000	
		1:100.000	
		1:200.000	
	DATA TYPE	[Alphanumeric; Cartografic]	
	SPATIAL REPRESENTATION TYPE	Y	
	LANGUAGE	Y	Y
	REFERENCE SYSTEM INFORMATION	Y	
	COUNTRY		
	CONTACT INFORMATION NAME	Y	
	CONTACT INFORMATION ORGANIZATION	Y	
	CONTACT INFORMATION POSITION	Y	
	CONTACT INFORMATION ROLE	Y	
	DATABASE INSERT DATE	Y	
	KEYWORDS	Y	
	EXTENT	Y	
	DISTRIBUTION INFORMATION	Y	
	DISTRIBUTION FORMAT	Y	
	DATA QUALITY INFORMATION	Y	
	DATA QUALITY SCOPE	Y	
	DATA QUALITY LEVEL	Y	
SPECIFIC ATTRIBUTES	LONGITUDE OF THE EXTRACTION POINT		Y
	LATITUDE OF THE EXTRACTION POINT		Y
	REFERENCE NETWORK AFECTED CODE		Y
	PROTECTED AREAS AFECTED CODE		Y
	RIVER BASIN DISTRICT		Y
	WATER BODY AFECTED CODE		Y
	LOCAL ADMINISTRATIVE BOUNDARIES		Y
	KIND OF PRESSURE		Y
	TITULAR		Y
	PRESSURE DESTINATION		(river, underground, lake, coastal, transition)
	REMARKS		Y