

## Annex B (informative)

### Use cases

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This annex describes some use cases that were used as a basis for the development of this data specification. The use-cases which are described here are supported through the information included in the high-level data specification. For each use-case there is a high-level description outlining the requirements as well as specific examples and illustrations to better explain data relationships in the AM specification and thus facilitate the comprehension and implementation of the data model.

#### B.1 Finding regulation, management and reporting area by location

Use Case Description*	
Name	Planning new management rules for water quality control
Primary actor	Spatial Planner
Goal	To introduce new restrictions and rules for river systems to protect / improve water quality by determining that they will be in line with rules which are already active in the area of interest or that they will not conflict with any valid regulation.
System under consideration	Water Quality Control System (operated by a municipal authority of hydraulic works)
Importance	High
Description	The spatial planner performs a spatial overlay analysis using the planning area of interest to select all features from AM datasets which are completely within, intersects, or are within a buffer of a certain distance.
Pre-condition	The spatial data for the planning area has been obtained / generated as a polygon coverage, as boundary lines for defining the extent, or defined as a buffer distance from the spatial object of interest (e.g. river branch). Data on protected areas (e.g. Natura2000) (according to the Protected Sites data specification) and on land use (according to the Land Use data specification) has been obtained from the relevant INSPIRE download services or adapted from local data sources.
Post-condition	Spatial data set obtained through an overlay analysis of the reservoir protection zone, mine buffer zone, Natura2000 protection sites and the planning area of interest, in company with attribute data (e.g. date protection started) about valid rules, regulations, or other legislative references acting in the area.
Flow of Events – Basic Path	

Use Case Description*	
Step 1	The spatial planner defines the spatial boundaries of the planning area.
Step 2	The spatial planner uses a desktop GIS application to connect to the INSPIRE Geo-portal catalogue service and adds all AM datasets and other datasets (PS, LU datasets, for example) onto the map of the planning region through a download service using the Web Feature Server protocol.
Step 3	Having included all data sources in the map, the spatial planner now performs a spatial overlay analysis using the planning area of interest to select all features from AM datasets which are completely within, intersects, or are within a buffer of a certain distance.
Step 4	In order to observe the regulation, management and reporting areas in the local spatial plan, the planner interprets the spatial metadata associated with the features to determine the accuracy of the delineation and whether they are absolute or if they need to be further detailed and formalized through the local spatial plan.
Step 5	The spatial planner computes the relative shares of regulated / managed / restricted areas inside the planning area (as well as similar spatial information for existing land use types) to figure out relative importance of different management and reporting regimes associated with the legally-managed areas and continuous impacts of different practices particularly applied by dominant land uses.
Step 6	The query provides the planner with the names of all regulations (laws, protocols and legally binding agreements) which are valid for each area in the result set. Furthermore, it allows learning which authority on which administrative level is responsible for managing the regulation and any associated reporting regimes which may be established for them. It is also possible to capture necessary contact information for the relevant authorities in order to obtain more detailed information.
Step 7	As it may be important in some cases to compare previous rules which are no longer active in the region with currently valid ones, the planner may also need to know which areas are historical and which are currently active. This information is visible from the attributes stating the start and end dates for the regulation itself and any associated management or reporting regime.
Flow of Events – Alternative Paths	
	NONE
<b>Data set: Planning area extent</b>	
Description	Planning area coverage showing the spatial boundaries of the planning area.
Type	input
Data provider	National/sub-national authority of hydraulic works (hwa)
Geographic scope	Country C1
Thematic scope	Planning area extent. Available as a polygon coverage or as boundary lines for defining the extent, or spatially generated as a buffer polygon around the spatial object of interest based on the defined buffer distance.
Scale, resolution	1:25.000
Delivery	Soft Copies Online
Documentation	<a href="http://data.wqcs.hwa.gov.country_c1">http://data.wqcs.hwa.gov.country_c1</a> (available from the water quality control system (wqcs) data service)
<b>Data set: River Basin Districts</b>	
Description	Spatial extent of river basin districts in Europe
Type	input
Data provider	European Environment Agency (EEA) (Data available directly from WISE – Water Information System for Europe or through the INSPIRE Geo-portal).
Geographic scope	European
Thematic scope	River basin districts
Scale, resolution	1:1.000.000
Delivery	Online
Documentation	<a href="http://www.eea.europa.eu/data-and-maps/data/wise-river-basin-districts-rbds">http://www.eea.europa.eu/data-and-maps/data/wise-river-basin-districts-rbds</a>

Use Case Description*	
Data set: Mining Permit and Control Areas	
Description	Mining Permit Area Y and buffer zone to address safety, aesthetic-disturbance, environmental, and cultural issues/impacts due to mining operations in Mining Site Y.
Type	input
Data provider	Ministry of Energy and Natural Resources of Country C1 (Data available through the INSPIRE Geo-portal).
Geographic scope	Mining Site Y
Thematic scope	Buffer zones around the Mining Site Y
Scale, resolution	1:25.000
Delivery	Online
Documentation	<a href="http://www.moenr.gov.country_c1/miningsites/siteY">http://www.moenr.gov.country_c1/miningsites/siteY</a>
Data set: Restricted areas around drinking water source	
Description	Proximate, mediate and remote protection zones around drinking water supply reservoir.
Type	input
Data provider	National/sub-national hydraulic works authority (Data available from national authorities through the INSPIRE Geo-portal).
Geographic scope	Country C1
Thematic scope	Reservoir protection zones to prevent water pollution in reservoir systems.
Scale, resolution	1:25.000
Delivery	Online
Documentation	<a href="http://www.hwa.gov.country_c1/dams">http://www.hwa.gov.country_c1/dams</a>
Data set: Land cover	
Description	Corine Land Cover (CLC) types for Europe (as proxy to land use information). Corine Land Cover 2006 seamless vector data - version 13 (02/2010) Corine Land Cover 2006 raster data - version 13 (02/2010) Corine Land Cover 2000 seamless vector data - version 13 (02/2010) Corine Land Cover 2000 raster data - version 13 (02/2010)
Type	input
Data provider	European Environment Agency (EEA)
Geographic scope	CLC2000: EU27, Albania, Bosnia and Herzegovina, Croatia, Liechtenstein, Macedonia, the former Yugoslavian Republic of, Montenegro, Norway, Serbia, Turkey CLC2006: EU27, Albania, Bosnia and Herzegovina, Croatia, Iceland, Liechtenstein, Macedonia, the former Yugoslavian Republic of, Montenegro, Norway, Serbia, Turkey
Thematic scope	Corine Land Cover classes
Scale, resolution	100m, 250m
Delivery	Online
Documentation	<a href="http://www.eea.europa.eu/data-and-maps/data">http://www.eea.europa.eu/data-and-maps/data</a>
Data set: Natura2000 sites	
Description	Natura 2000 data - the European network of protected sites
Data provider	EEA, National Authority of Protected Sites (Available from the EEA data centre or national data sources through the INSPIRE Geo-portal).
Type	input
Geographic scope	Country C1
Thematic scope	Vector polygon data for sites
Scale, resolution	1:100.000
Delivery	Online
Documentation	<a href="http://www.eea.europa.eu/data-and-maps/data/natura-1">http://www.eea.europa.eu/data-and-maps/data/natura-1</a>
Data set: Intersection of planning area, nature conservation zones, reservoir protection zones and mining site buffer zone	
Description	Intersection of the planning area with the combination of nature conservation zones, reservoir protection zones and mining site buffer zone.

Use Case Description*	
Data provider	Municipal authority of hydraulic works
Type	output
Geographic scope	Relative shares of regulated / managed / restricted areas inside the planning area.
Thematic scope	Associated set of rules valid for the area
Scale, resolution	1:25.000
Delivery	Through password-restricted data access area of Water Quality Control System.
Documentation	<a href="https://intranet.wqcs.hwa.gov.country_c1/data_files">https://intranet.wqcs.hwa.gov.country_c1/data_files</a>

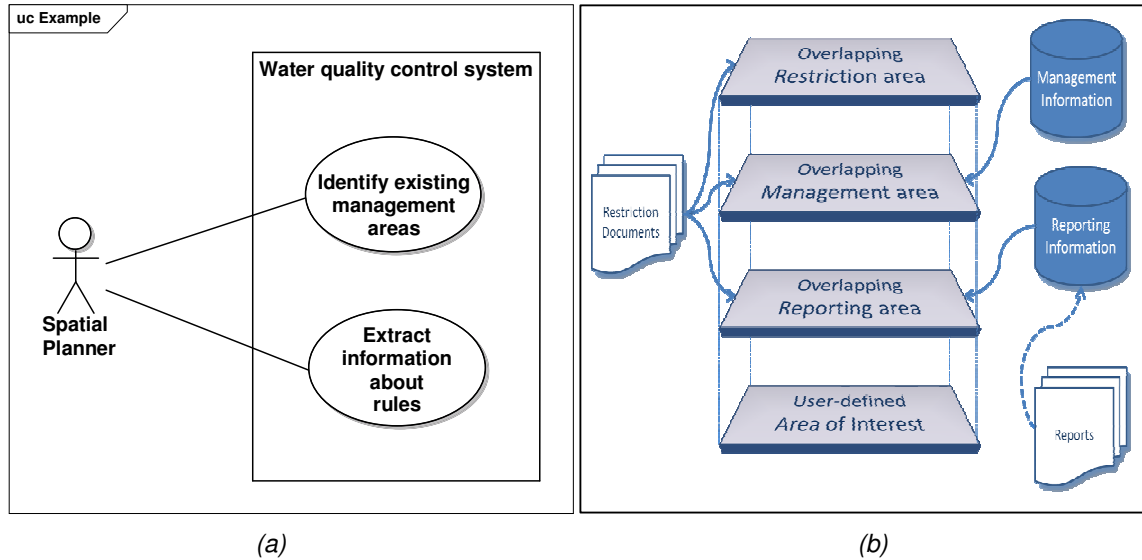


Figure B1.1 – (a) Example UML use case diagram; (b) Sample use case data flow diagram

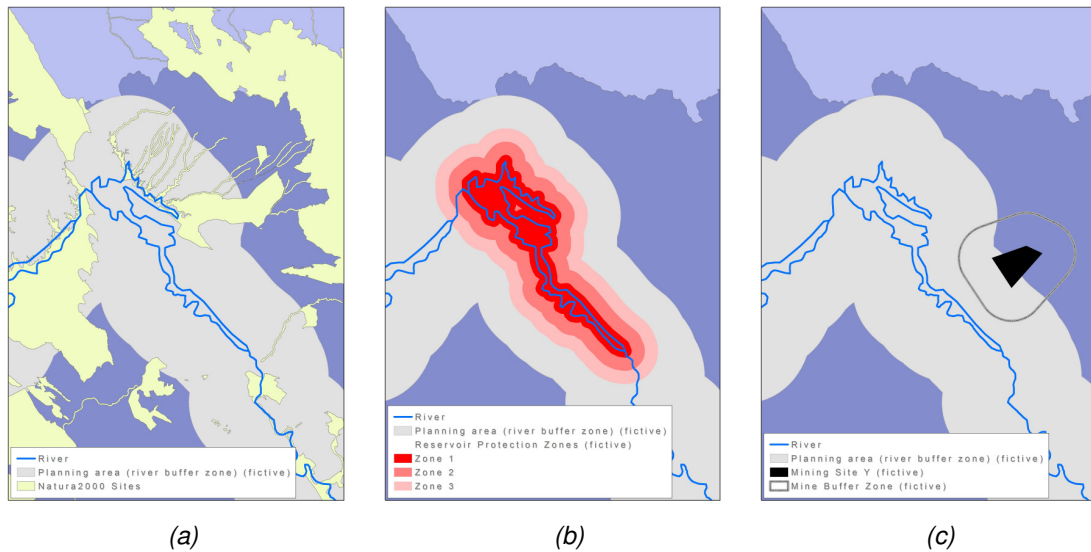


Figure B1.2 – (a) Natura2000 sites, (b) Reservoir protection zones, (c) mining site and mine-specific buffer zone overlapping the sample planning area

## B.2 Finding location of regulation, management or reporting area by identifier or name

Use Case Description*	
Name	Performing searches for regulation, management and reporting areas by name or identifier.
Primary actor	Analyst
Goal	Identifying the location of individual areas across the territory of Europe and better interpreting and contextualizing the qualitative information contained within a report.
System under consideration*	Wildlife Observation System (operated by an environmental sciences research institute)
Importance	Medium
Description	An analyst working for an environmental sciences research institute has received a report containing qualitative information about a number of reporting areas across the territory of Europe. Along with the report came a DVD with tabular data associated with different reporting areas. In the report, the reporting areas are identified as a mix between formal unique identifiers and popular names – in the accompanying tabular datasets, all records are associated with formal unique identifiers.
Pre-condition	The report received/produced by the research institute contains tabular information including or images showing the name of the area of interest and/or the unique official identifier assigned to the area.
Post-condition	
Flow of Events – Basic Path	
Step 1	The analyst retrieves PS data (nature conservation zones) from the INSPIRE Geo-portal's download services.
Step 2	The analyst performs tabular searches for regulation, management and reporting areas (nature conservation zones) by name or identifier.
Step 3	The analyst retrieves AM data (river basin districts) from the INSPIRE Geo-portal's download services.
Step 4	The analyst performs spatial queries for regulation, management and reporting areas (selected nature conservation zones and corresponding river basin districts).
Step 5	The analyst retrieves HY data (hydrographical features) from the INSPIRE Geo-portal's download services or contacts the management authority of the relevant river basin district to collect information about hydrographical features in the proximity of her/his site(s) of interest.
Step 6	In order to perform some further studies, the analyst would like to execute a correlation query between the data contained in a report and a number of case study sites. In order to achieve this, she/he adds the data from the report DVD to his desktop GIS application and "joins" the tabular data to the AM datasets using the areas unique identifier as a key.
Step 7	The analyst is now able to create geo-statistical visualizations, e.g. showing report values as graded colours on a map. She/he is also able to perform correlation analysis between her/his case study sites and the geocoded reporting data.
Flow of Events – Alternative Paths	

Use Case Description*	
	NONE
<b>Data set: Natura2000 sites</b>	
Description	Natura 2000 data - the European network of protected sites.
Data provider	EEA, National Authority of Protected Sites (in accordance with the "Protected Sites" data specification, available from the relevant INSPIRE download service, EEA data centre or national data sources).
Type	input
Geographic scope	Country C2
Thematic scope	Vector polygon data for sites
Scale, resolution	1:100.000
Delivery	Online
Documentation	<a href="http://www.eea.europa.eu/data-and-maps/data/natura-1">http://www.eea.europa.eu/data-and-maps/data/natura-1</a>
<b>Data set: River Basin Districts</b>	
Description	Spatial extent of river basin districts in Europe.
Type	input
Data provider	European Environment Agency (EEA) (Data available directly from WISE – Water Information System for Europe or via the INSPIRE Geo-portal's download services).
Geographic scope	European
Thematic scope	River basin districts
Scale, resolution	1:1.000.000
Delivery	Online
Documentation	<a href="http://www.eea.europa.eu/data-and-maps/data/wise-river-basin-districts-rbds">http://www.eea.europa.eu/data-and-maps/data/wise-river-basin-districts-rbds</a>
<b>Data set: Inland water bodies</b>	
Description	Natural or artificial stretches of water and/or water courses serving as water drainage channels.
Data provider	National Hydrography Institute (Available from national data sources through the the INSPIRE Geo-portal according to the "HY" data specification).
Type	input
Geographic scope	Country C2
Thematic scope	Vector polygon data for hydrographical features
Scale, resolution	1:100.000
Delivery	Online
Documentation	<a href="http://www.nhi.gov.country_c2/rivers_and_lakes">http://www.nhi.gov.country_c2/rivers_and_lakes</a>
<b>Data set: Proximate water resources</b>	
Description	Water resources in the proximity of the conservation area of interest.
Data provider	Environmental sciences research institute of Country C2.
Type	output
Geographic scope	The conservation area of interest and its proximity.
Thematic scope	Quantity and quality of water available for environmental purposes.
Scale, resolution	1:100.000
Delivery	Accessible from soft-/hard-copies of assessment report.
Documentation	<a href="http://www.esri.org.country_c2/publications/report_no_1.pdf">http://www.esri.org.country_c2/publications/report_no_1.pdf</a>

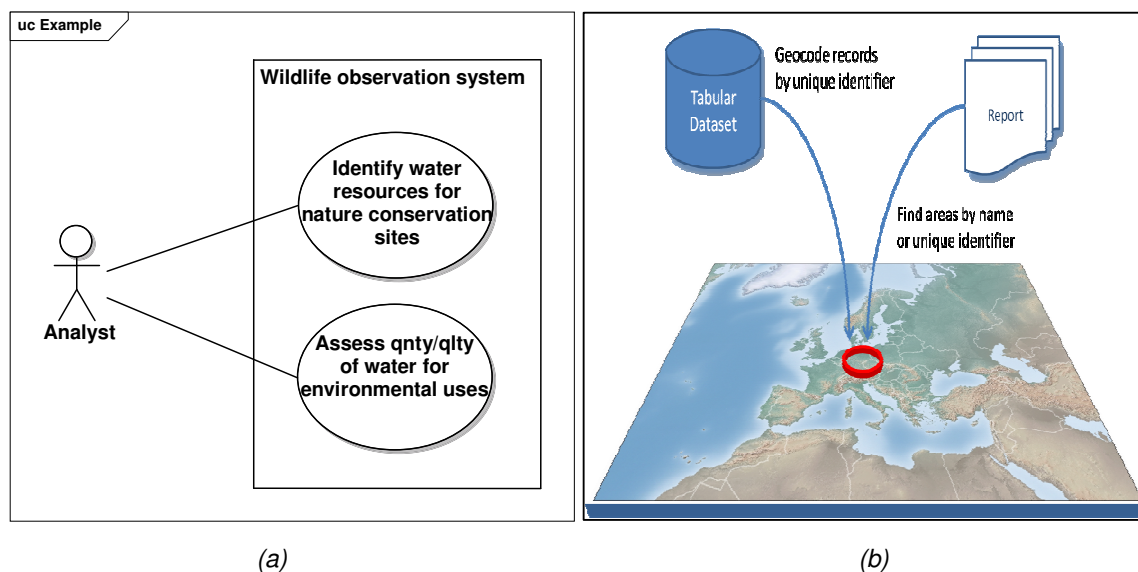


Figure B2.1 – (a) Example UML use case diagram; (b) Sample use case data flow diagram

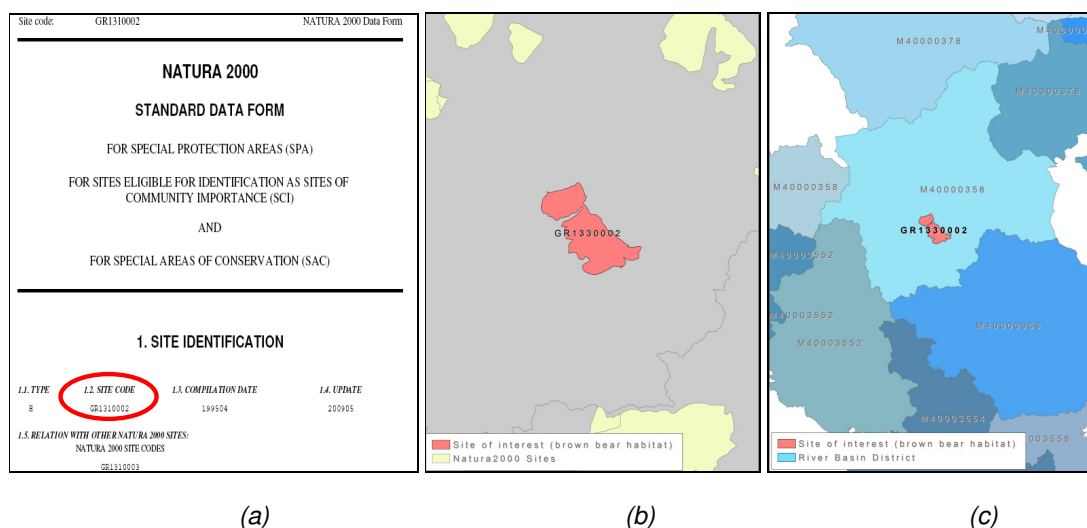


Figure B2.2 – (a) Reporting information with site code, (b) site location within the Natura2000 network, and (c) river basin district containing the site of interest

### B.3 Finding regulation, management or reporting areas by regulation

Use Case Description*	
Name	Locating regulation, management or reporting areas mentioned in a legal/official document.
Primary actor	Analyst, Contractor

Use Case Description*	
Goal	Identifying areas which are covered by certain laws or regulations and assessing corresponding implications.
System under consideration*	Construction Auditing System (operated by the Ministry of Public Works of Country C3).
Importance	High
Description	An analyst from a central authority has the task of planning construction and performing an EIA for a port area project. From the relevant obligations, she/he basically knows about the rules and measures for protecting bathing water quality, but is not sure about the name of the coastal water authorities who will co-approve the construction permits, and their responsibility areas. The contractor, on the other hand, needs to organize a list of the quality stations from which he would need to report information to the administration during the entire construction period as explicitly stated in the tender specification. For this specific purpose, they will need to perform a spatial query to learn about the coastal authorities responsible for activities in the coastal water area and then an overlay operation to get the list of stations from which they will collect/report the periodical data.
Pre-condition	The analyst has necessary geo-referenced drawings or spatial layers of the project area, which will also be provided to the contractor winning the tender.
Post-condition	Bathing water quality stations as part of the port area project are addressed as well as the competent authorities.
Flow of Events – Basic Path	
Step 1	By using the geographic extent of the project area (obtained from local data repositories) and the layer of WISE coastal waters (accessed through INSPIRE Geo-portal), the analyst performs a spatial overlay operation to identify coastal water regions under potential impact of the project and relevant bathing water authorities.
Step 2	The analyst determines the reporting obligations specifically asked by coastal water authorities and places them in the tender specifications as special conditions.
Step 3	The contractor collects the project area extent from the authority and the spatial layer of bathing water stations through the INSPIRE Geo-portals data access and download services.
Step 4	The contractor performs an overlay operation to select a list of quality stations (based on their locations) from which she/he will need to compile data and fulfil reporting requirements asked in the tender specifications document.
Flow of Events – Alternative Paths	
	NONE
<b>Data set: Project area coverage</b>	
Description	Spatial boundaries of the construction site for the port construction project.
Data provider	Ministry of Public Works of Country C3 (Analyst's organization)
Type	input
Geographic scope	Port project area (CAD drawings, GIS layer, etc.).
Thematic scope	As part of planning for port construction project.
Scale, resolution	1:1.000
Delivery	For official use only
Documentation	Provided in annexes of the tender specification document.
<b>Data set: WISE coastal waters</b>	



Use Case Description*	
Description	Coastal waters are defined as one nautical mile from the coastline and extending, where appropriate, up to the outer limit of transitional waters. Coastal waters are included in RBDs, but this is not consistently reported by Member States.
Type	input
Data provider	National authorities in Member States, European Environment Agency (EEA) (Data available directly from WISE – Water Information System for Europe or via the INSPIRE Geo-portal's download services).
Geographic scope	EU27, Norway, Switzerland
Thematic scope	River basin districts are defined as the area of land and sea, made up of one or more neighbouring river basins together with their associated groundwaters and coastal waters, which is identified under Article 3(1) as the main unit for management of river basins.
Scale, resolution	1:1.000.000
Delivery	Online
Documentation	<a href="http://www.eea.europa.eu/data-and-maps/data/wise-river-basin-districts-rbds">http://www.eea.europa.eu/data-and-maps/data/wise-river-basin-districts-rbds</a>
Data set: Bathing water stations	
Description	Bathing water stations dataset presents the latest information as reported by the Member States (EU27) for the 2009 bathing season, as well as some historical data since 1990.
Data provider	National responsible authorities of Member States, European Environment Agency (EEA).
Type	input
Geographic scope	EU27, Croatia, Switzerland
Thematic scope	The EU Bathing Waters Directive 76/160/EEC requires Member States to identify popular bathing places in fresh and coastal waters and monitor them for indicators of microbiological pollution (and other substances) throughout the bathing season which runs from May to September.
Scale, resolution	Unknown
Delivery	Online
Documentation	<a href="http://www.eea.europa.eu/data-and-maps/data/bathing-water-directive-status-of-bathing-water-2">http://www.eea.europa.eu/data-and-maps/data/bathing-water-directive-status-of-bathing-water-2</a>
Data set: Special reporting obligations dataset	
Description	List and locations of spatially selected monitoring stations for periodically reporting water quality measurements to the contracting authority.
Data provider	Contractor and analyst's organization.
Type	output
Geographic scope	Port project area
Thematic scope	Tender specifications document.
Scale, resolution	1:1.000
Delivery	For official use only
Documentation	Periodical reports to the contracting authority.

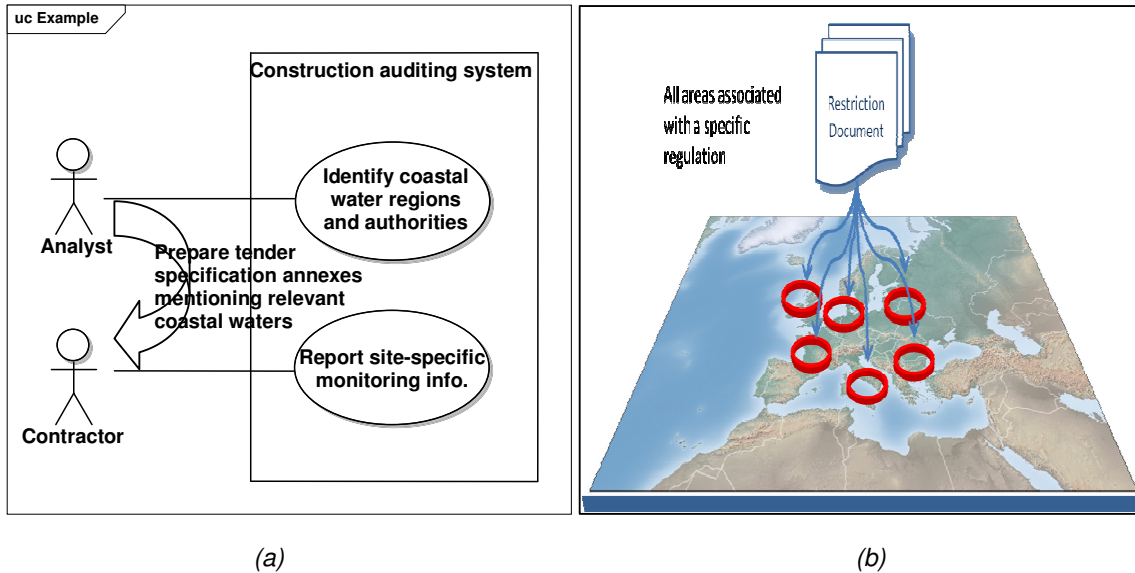


Figure B3.1 – (a) Example UML use case diagram; (b) Sample use case data flow diagram

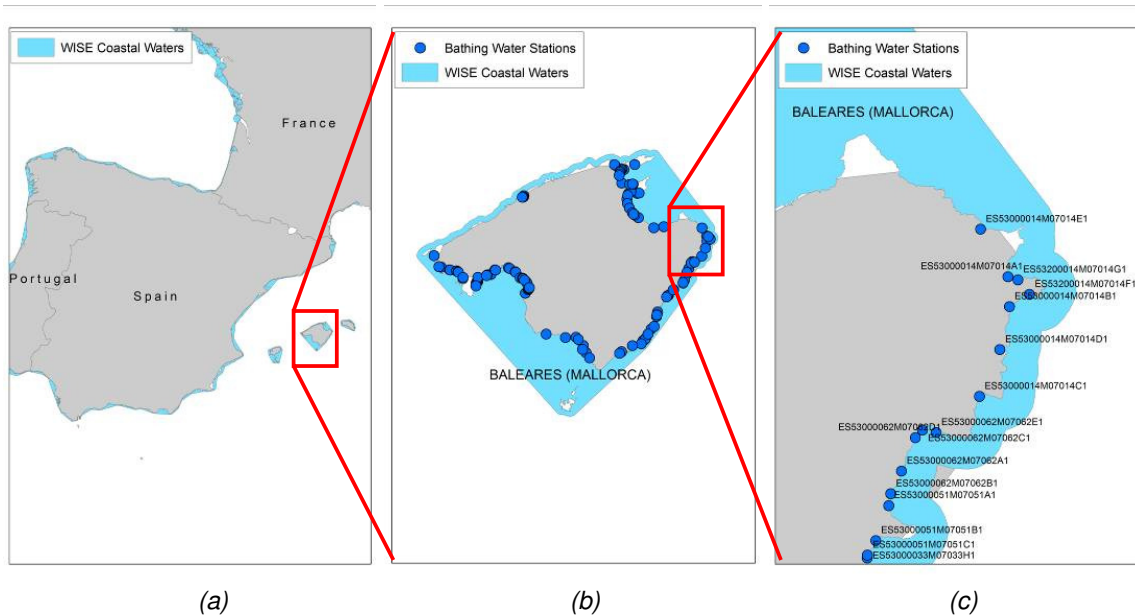


Figure B3.2 – (a) WISE coastal waters, (b) bathing water quality monitoring stations, and (c) site codes of monitoring stations

## B.4 Considering temporal variability in management / regulation / reporting rules and/or datasets

Use Case Description*	
Name	Performing an assessment on spatial objects dynamically changing due to their nature and/or questioning previous versions of spatial information.
Primary actor	Researcher

Use Case Description*	
Goal	Generating temporal statistics. Temporal variability of spatial information may also need to be considered in the AM data model as the historical information on the managed, regulated, restricted and/or reported areas becomes more important in some cases for performing time-span (or periodical) assessments or settling disputes that may arise due to changes in an area. Such changes may result from timely-varying orientations in administrative definitions or legislation or from the dynamic nature of the phenomenon itself that characterizes the area (e.g. land cover). Any change in time could change the borders of the area or just the nature of restriction (through different restriction rules and preventive measures).
System under consideration	Not available
Importance	High
Description	A researcher performing a graduate study on integrated coastal zone management needs to integrate data on urban morphological zones (UMZs) into her/his analyses. However, she/he is only interested in the spatial statistics and observed changes within an inside buffer of 10 km from the coastline. For performing such an assessment, she/he does not have enough experience to perform spatial operations by using the original land cover data in GIS software, thus would like to import some CAD data about the changes in UMZs from the relevant databases in the AM data model, overlay it onto her/his own study area (i.e. the buffer area of 10km) again in CAD environment, and produce desired maps or generate statistics.
Pre-condition	The study is focussed on a certain coastal region bordered within a buffer zone of 10 km from the coastline.
Post-condition	Spatial display of UMZ changes in coastal region and associated statistics (i.e. the share of increases in the region).
Flow of Events – Basic Path	
Step 1	Researcher collects spatial data on coastal buffers from 0 to 10 km by NUTS3 through INSPIRE Geo-portal.
Step 2	She/he then downloads UMZ data for changes between the available years 1990, 2000 and 2006, again by using INSPIRE Geo-portal, and displays them onto the coastal region.
Step 3	Finally she/he computes a set of spatial statistics (e.g. total amount of increases and/or decreases inside the region, the rates of changes to the total area, etc.).
Flow of Events – Alternative Paths	
Step 1a	Researcher collects spatial data on coastlines through INSPIRE Geo-portal.
Step 1b	She/he isolates the coastal area of her/his interest and generates a 10km inside buffer zone to define the coastal region.
Step 2a	She/he downloads UMZ data for the years 1990, 2000 and 2006 from the web pages of data-provider by using INSPIRE Geo-dataportal's download services.
Step 2b	Researcher spatially computes UMZ changes in the periods 1990-2000, 2000-2006 and 1990-2006 on her/his own desktop GIS application.
Data set: Europe's coastal buffer of 10km by NUTS3	
Description	Coastal zones
Data provider	European Environment Agency (EEA)
Type	input
Geographic scope	Europe
Thematic scope	Coastal zone assessments

Use Case Description*	
Scale, resolution	1:1.000.000
Delivery	Online
Documentation	<a href="http://www.eea.europa.eu/data-and-maps">http://www.eea.europa.eu/data-and-maps</a>
Data set: Urban morphological zones / changes (UMZ)	
Description	Urban morphological zones (UMZ) are defined by Corine Land Cover classes considered to contribute to the urban tissue and function.
Data provider	European Environment Agency (EEA)
Type	input
Geographic scope	UMZ1990: Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain UMZ2000: EU27, Albania, Bosnia and Herzegovina, Croatia, Iceland, Macedonia, the former Yugoslavian Republic of, Montenegro, Norway, Serbia, Turkey UMZ2006: EU27, Albania, Bosnia and Herzegovina, Croatia, Iceland, Macedonia, the former Yugoslavian Republic of, Montenegro, Norway, Serbia, Turkey
Thematic scope	Urbanization
Scale, resolution	1:100.000
Delivery	Online
Documentation	<a href="http://www.eea.europa.eu/data-and-maps/data/urban-morphological-zones-changes-2000">http://www.eea.europa.eu/data-and-maps/data/urban-morphological-zones-changes-2000</a> <a href="http://www.eea.europa.eu/data-and-maps/data/urban-morphological-zones-changes-1990-2000-umz1990-2000-f1v0-1">http://www.eea.europa.eu/data-and-maps/data/urban-morphological-zones-changes-1990-2000-umz1990-2000-f1v0-1</a> <a href="http://www.eea.europa.eu/data-and-maps/data/urban-morphological-zones-2006-umz2006-f3v0">http://www.eea.europa.eu/data-and-maps/data/urban-morphological-zones-2006-umz2006-f3v0</a> <a href="http://www.eea.europa.eu/data-and-maps/data/urban-morphological-zones-2000-umz2000-f1v0-1">http://www.eea.europa.eu/data-and-maps/data/urban-morphological-zones-2000-umz2000-f1v0-1</a> <a href="http://www.eea.europa.eu/data-and-maps/data/urban-morphological-zones-1990-umz1990-f2v0-1">http://www.eea.europa.eu/data-and-maps/data/urban-morphological-zones-1990-umz1990-f2v0-1</a>
Data set: UMZ dynamics within the coastal zone of interest	
Description	UMZ coverage and shares to generate spatial statistics for the coastal zone of interest.
Data provider	Researcher's institute/university.
Type	output
Geographic scope	Study area
Thematic scope	Integrated coastal zone management.
Scale, resolution	1:100.000
Delivery	For private use
Documentation	Research report

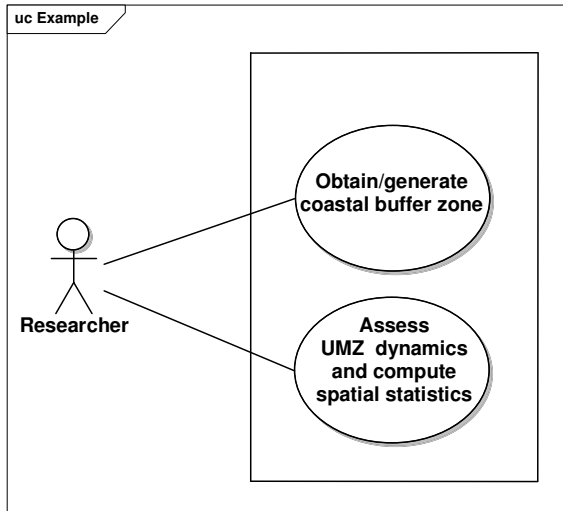


Figure B4.1 – Example UML use case diagram

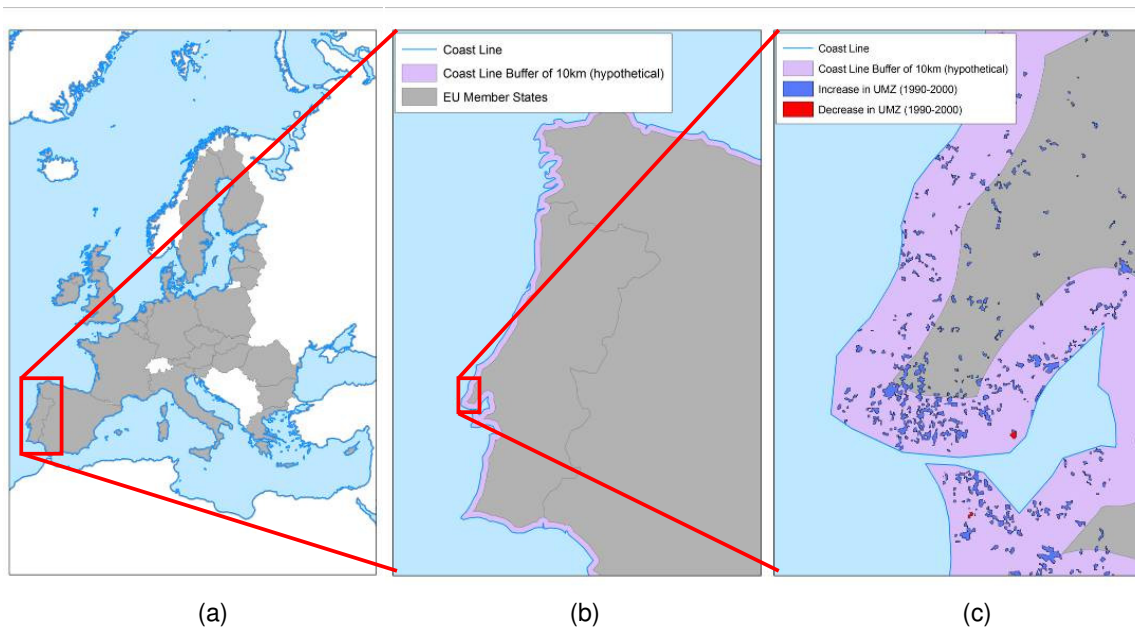


Figure B4.2 – (a) Europe's territories and coastline, (b) coastal buffer zone of 10km, and (c) UMZ changes inside the coastal zone of interest

## B.5 State of the environment assessment: Air Quality

Use Case Description	
Name	Air quality: Ambient air quality assessment.
Primary actor	Policy Analyst from the Commission Services / European Environment Agency
Goal	Assessment of the state of EU-wide air quality to support re-defining measures to improve air quality for areas with concentrations above EU air quality thresholds.
System under consideration	AirBase: public air quality database.

Use Case Description	
Importance	High
Description	The Clean Air for Europe Directive (2008/50/EC) requires Member States (MS) to divide their territory into air quality management zones. Within these zones, Member States should annually assess ambient air quality levels against air quality objectives for the protection of human health and the environment. Air Quality Management Zones may be delimited to define measures for different pollutants to optimize management of air quality due to differences in source and abatement strategies. Where levels are elevated, Member States should prepare an air quality management plan or action programme to ensure compliance with the regulatory objectives (e.g. exceedance of limit or threshold values) before the date when they enter into force. Once established, regular assessment shall be undertaken to identify whether MS are attaining the environmental objectives set within individual zones and whether the air quality management plan or action programme needs to be revised.
Pre-condition	<ul style="list-style-type: none"> <li>- A competent authority that is responsible for the management of air quality must be in place (2008/EC/50 Art. 3).</li> <li>- Inventory of relevant monitoring stations and relevant metadata must be in place.</li> <li>- Inventory of models if used must be in place.</li> <li>- Information on population must be in place in order to establish whether the zone should be identified as an agglomeration.</li> </ul>
Post-condition	Air quality data viewer, air quality maps, air quality statistics at reporting stations, spatial display of the zones in relation to EU air quality thresholds.
Flow of Events – Basic Path	
Step 1	<p>Defining management zones: (For health, the entire territory must be covered (no gaps allowed; lakes included, seas excluded); while for environment/ecosystems, no continuity required)</p> <p>MS have to deliver the boundaries of the management zones. MS are allowed to provide either GIS files, or a set of administrative units that form the zones. Current reporting LAU2 is the requested level (in order to avoid problems with overlaps, donut-structures, etc.). MS are allowed to have different zones for different objectives.</p>
Step 2	<p>Considering resident population: MS need to provide population figures and relevant reference year for each zone as well as marking if the zone is an agglomeration (&gt;250k inh. or &lt;250k inh., but with a given (high) population density, to be decided upon by the MS) or non-agglomeration.</p>
Step 3	<p>Defining the assessment regime within the zones (5-yearly cycle): MS have to establish the assessment regime: investigate off-line air quality in order to know if additional measurement stations are needed, or if modelling is a valid approach, or expert judgement (indicative monitoring). The Directive sets out the rules for establishing the number and density of sampling points which must be in operation in order to provide the data for the assessment. Art 6, 7 and 8. If there is a lack of stations, MS need to set up additional stations.</p>
Step 4	<p>Making available preliminary information to EC (2011/850/EU): All information of steps 1 – 3 is to be transmitted to the EC, including the list of stations. This has to be done before the actual monitoring starts (different as compared to the current situation in which info can be provided afterwards).</p>
Step 5	<p>Starting the monitoring: The up to date data for the appropriate pollutants is made available as quickly as possible. The data is preliminary as it has not yet undergone the full national QA. Exceedances (as defined by the Directive) are made available as a warning to the public (min. point data, potentially extrapolated to zone data).</p>

Use Case Description	
Step 6	Validation of the monitored data (yearly basis): MS have to validate their data according to the data quality objectives as set out by the Directive. Statistics are to be calculated and compared with the environmental objectives set out in the Directive. Effects from natural events and winter sanding are allowed to be deducted from the statistics before comparison with the environmental objectives for specified pollutants: without these, the objectives might not have been met. Accounting of the values per pollutant, per limit value and per zone is to be made.
Step 7	Making available final information to EC: The accounting is reported to the EC, together with all the relevant primary data (by way of evidence underpinning the accounting). Explicit linkage of the data-series with zone, station, pollutant, instrument, etc. has to be included. This information is required not more than nine months after the end of the calendar year in which the monitoring took place (2011/850/EC).
Step 8	Analysis and Planning: Analysis and planning is undertaken to identify new measures or revisions to existing measures that will cause pollutant values to fall below regulatory maximum limits. These must be reported within 24 months of the failure to meet an environmental objective. The report must link back to the original data.  Remark: the Directive foresees time extensions for certain pollutants in certain zones under specific conditions. The EC grants these extensions, which then feed back into the system (steps 1 to 6). However, the time extensions are linked to the definition of the zones; so re-arranging zones entails that historic zoning needs to be traceable, since linked with the time extensions on the pollutant values.
Flow of Events – Alternative Paths	
	NONE
<b>Data set: Management Zones</b>	
Description	Management zones/units (administrative boundaries (GISCO + MS-data)) defined by Member States.
Data provider	MS and GISCO
Type	input
Geographic scope	Europe
Thematic scope	Administrative boundaries
Scale, resolution	1:1.000.000
Delivery	Online
Documentation	<a href="http://www.eea.europa.eu/data-and-maps">http://www.eea.europa.eu/data-and-maps</a>
<b>Data set: Population densities</b>	
Description	Population densities computed within the management zones.
Data provider	MS and/or Eurostat
Type	input
Geographic scope	Europe
Thematic scope	Population densities
Scale, resolution	1:1.000.000
Delivery	For official use
Documentation	<a href="#">Census statistics in MS/Eurostat.</a>
<b>Data set: Air quality monitoring network</b>	
Description	Localisation of the monitoring stations (fixed).
Data provider	MS
Type	Input
Geographic scope	MS
Thematic scope	Monitoring of air pollutants.
Scale, resolution	1:1.000.000
Delivery	Online
Documentation	<a href="http://www.eea.europa.eu/themes/air/airbase/map-stations">http://www.eea.europa.eu/themes/air/airbase/map-stations</a>

Use Case Description	
Data set: Zones in relation to EU air quality thresholds	
Description	Annual assessment of air quality in comparison to EU air quality thresholds.
Data provider	MS
Type	Output
Geographic scope	Europe
Thematic scope	Assessment of air quality management zones w.r.t. air pollutants and EU air quality thresholds.
Scale, resolution	1:1.000.000
Delivery	Online
Documentation	<a href="http://www.eea.europa.eu/data-and-maps/data/ds_resolveuid/ECC31C64-9A21-46D0-AC9B-CE8D049491FE">http://www.eea.europa.eu/data-and-maps/data/ds_resolveuid/ECC31C64-9A21-46D0-AC9B-CE8D049491FE</a>

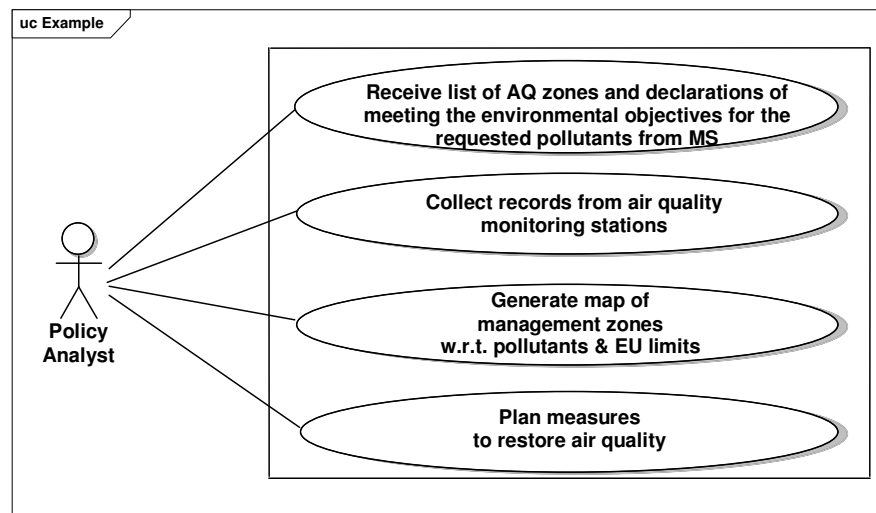


Figure B5.1 – Example UML use case diagram

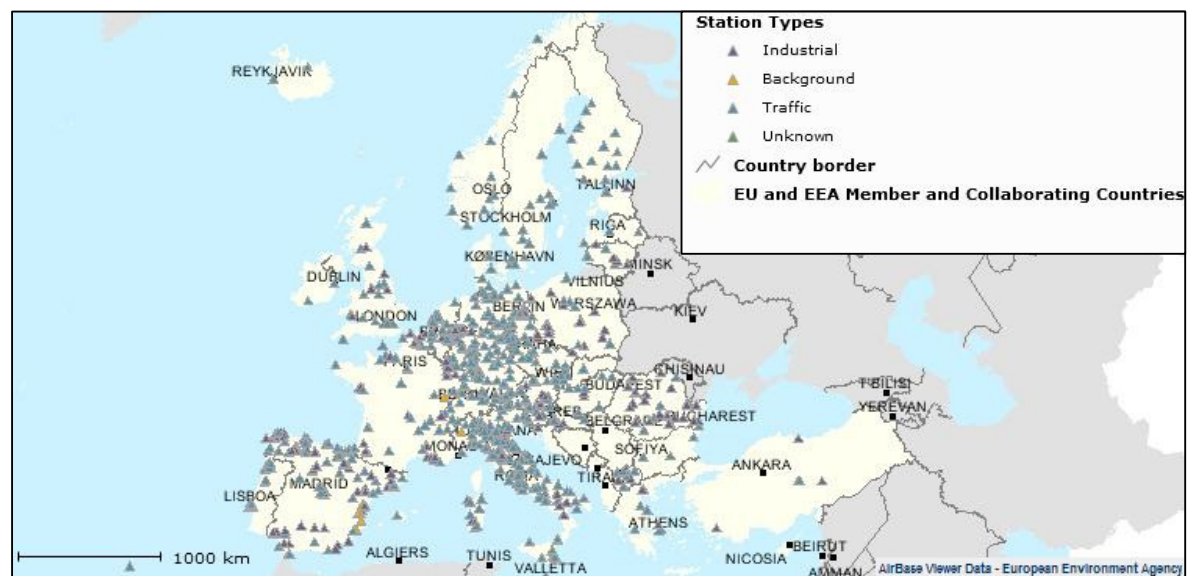


Figure B5.2 – Air quality reporting stations in EU and EEA Member & Collaborating Countries



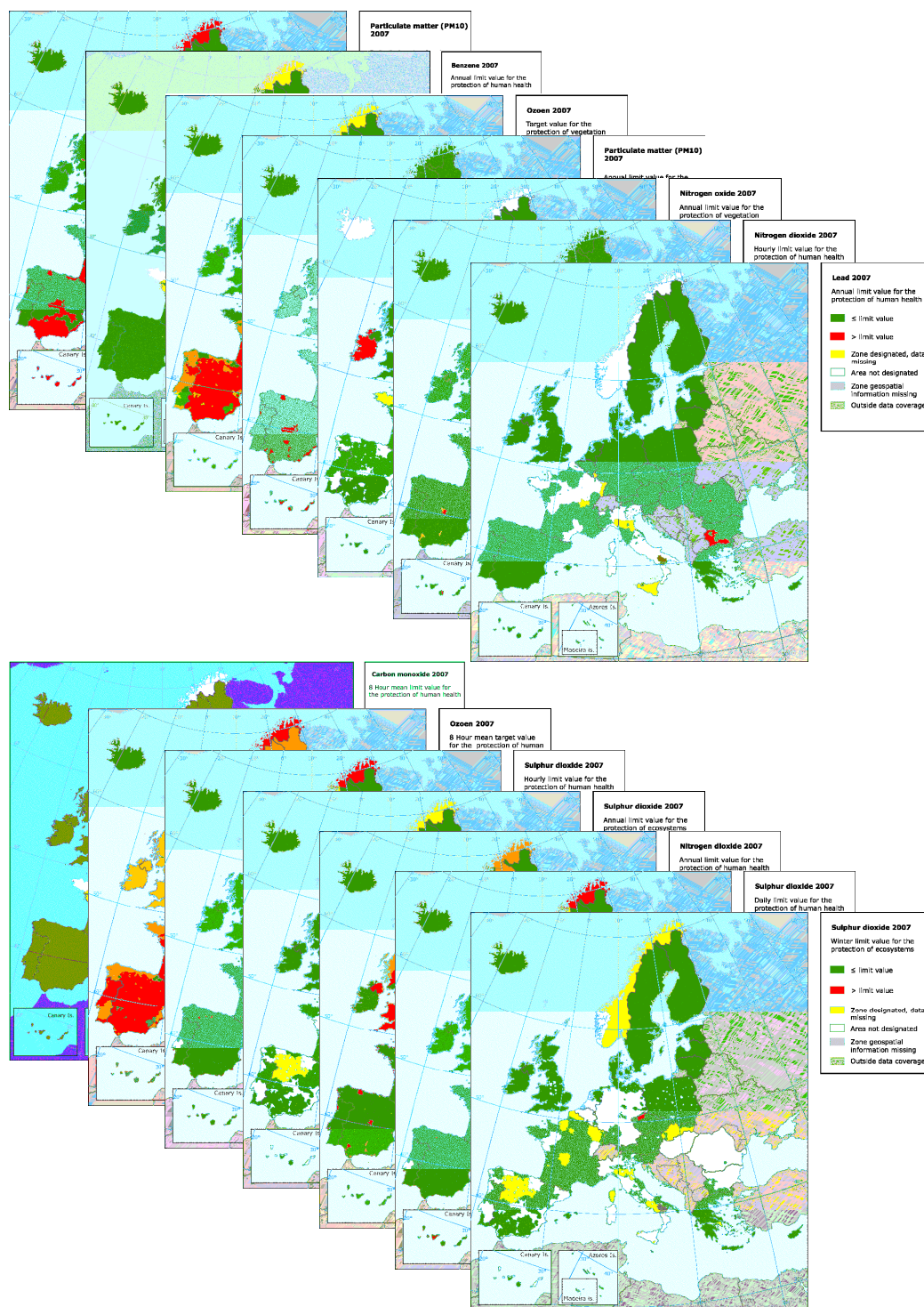


Figure B5.3 – EU-wide mapping of management/reporting zones with respect to air pollution levels (PM10, lead, etc.) as of the year 2007 against EU air quality thresholds.