Groundwater bodies in the Water Information System for Europe (WISE)

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Outline

• Overview of WISE
  • Web entry portal
  • Water Data Centre

• SoE and WFD interactive maps
  • Surface water quality
  • Groundwater quality and quantity

• Use of spatial data
  • Reference GIS data set
WISE
- gateway to information on European water issues

The Water Information System for Europe
- or more commonly known as WISE – is your gateway to information on European water issues. It compiles a wide range of data and information collected by EU institutions to serve several stakeholders.

About WISE | Links

News
- DG ENV, 21/10/2010: Natural fertilization of eel hints at effects of geoengineering projects
- DG ENV, 21/10/2010: Deepwater drilling: Improve safety indicators to help prevent disasters
- DG ENV, 07/10/2010: Bio-monitoring of produced water from an oil field
- EEA, 29/09/2011: Environmental information network extends across Europe, Central Asia and Russian Federation
- EEA, 01/09/2011: Skin: European assessment asks: “What do we know about water and skin economy?”
- EEA, 14/07/2011: Hazardous substances in Europe’s fresh and marine waters - an overview
- EEA, 13/06/2011: Bathing water quality remains high around the EU

WISE is a partnership between the European Commission (DG Environment, Joint Research Centre and Eurostat) and the European Environment Agency, known as “the Group of Four” (G4). The main roles and responsibilities of the partners are:

- DG Environment, leads the policy and strategic aspect of WISE. It liaises with Member States, especially on official reporting requirements of EU water legislation.
  For more information: http://ec.europa.eu/environment/water/index.html

- The European Environment Agency hosts the Water Data Centre and the thematic WISE webpages.
  For more information: http://www.eea.europa.eu/themes/water/
  http://www.eea.europa.eu/themes/water/

- The Joint Research Centre conducts environmental monitoring and water resources modelling including nowcasting and forecasting services.
  For more information: http://ies.eea.europa.eu/institute/units/rural-water-and-ecosystem-resources-unit.html
  http://floods.jrc.ec.europa.eu
  http://desert.jrc.ec.europa.eu
  http://fate.jrc.ec.europa.eu

- Eurostat is collecting and disseminating water statistics, also as a part of WISE data and themes, and provides significant input in the development of the GIS part of WISE and in particular ensuring the link to INSPIRE.
  For more information: http://app.eurostat.ec.europa.eu
European institutions responsible for WISE

PARTNERS

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- **DG Environment**, leads the policy and strategic aspect of WISE. It liaises with Member States, especially on official reporting requirements of EU water legislation.
  For more information:
  http://ec.europa.eu/environment/water/index.html

- **The European Environment Agency** is the water data centre and hosts the public WISE webpage and the section on themes and data.
  For more information:
  http://themes.eea.europa.eu/Specific_media/water

- **The Joint Research Centre** (Institute for Environment and Sustainability) is responsible for data synchronisation and has developed a number of useful tools.
  For more information:
  http://agrienv.jrc.ec.europa.eu/

- **Eurostat** is collecting water statistics and provides significant input in the development of the GIS part of WISE and in particular ensuring the link to INSPIRE.
  For more information:
  http://epp.eurostat.ec.europa.eu/
EU Water directives entry point

WATER

Water is life! It is a precondition for human, animal and plant life as well as an indispensable resource for the economy. Water also plays a fundamental role in the climate regulation cycle.

Protection of water resources, of fresh and salt water ecosystems and of the water we drink and bathe in is therefore one of the cornerstones of environmental protection in Europe. The stakes are high and the issues transcend national boundaries and concerted action at the level of the EU is necessary to ensure an effective protection.

The work towards the 2012 Blueprint to Safeguard Europe's Waters is on-going!

The Blueprint to Safeguard Europe's Waters will be the EU policy response to old and emerging challenges on our water resources. It will aim to ensure good quality water in sufficient quantities for all legitimate uses. It will be based on an evaluation of the implementation and achievements of the current EU water policy, in particular a Fitness Check of EU water policy in the framework of the Commission Smart Regulation approach.

Read more about the Blueprint...

The 1st River Basin Management Plans for 2009-2015 are here!

Following extensive consultations on Water Framework Directive River Basin Management Plans should since 22.12.2009 be available in all River Basin Districts across the EU. Read more about these plans!

Follow this link to see the current status of adoption of plans in the different Member States. Links to webpages where final plans can be downloaded can be found by clicking on each Member State!

There are however serious delays in some parts of the EU, and in several countries consultations are still ongoing. You can also find out more about if consultations are still going on in your river basin district. If they are, seize the opportunity and Read more about consultations on draft River Basin Management Plans in river basin districts across the EU!
Easy access to web-based services via Water Data Centre

Data centre overview

Last modified: Nov 30, 2011

The Water Data Centre provides the European entry point for water related data as part of the Water Information System for Europe (WISE). It contains downloadable European datasets, interactive data- and map viewers and more. The data are typically reported by countries according to EU water directives or under the EEA regulation through the Eionet. The data are further compiled and used in indicators, assessments and policy developments that are accessible through the thematic links in WISE.

Search

Search data, maps, indicators...

Advanced search

Featured Indicator

Chlorophyll in transitional, coastal and marine waters (CSI 023) - Assessment published Jul 2011

In 2008, the highest summer chlorophyll-a concentrations were observed in coastal areas and estuaries where nutrient concentrations are high, namely in the Gulf of Riga, the Gulf of Finland and …

Featured Indicator

Read more

Browse catalogue

All data products  Datasets  Maps  Interactive maps  Indicators  Graphs

Overview of the origin of standards and/or methodologies for indicators used in …

Water
Experiences from ongoing or completed EU-projects: WISE-RTD (research and technical Development)
http://www.wise-rtd.info/wpis/wise.html
Search results for: groundwater

Policy implementations
- Policy implementation projects (5)
- (*) Policy projects (7)
- Policy implementation guidances (90)
- Policies (13)
- Policy implementation cases and reports (33)
- (*) Policy cases and reports (1)

RTD Projects & Results
- RTD projects (55)
- (*) RTD projects (4)
  - CLIMWAT: Assessing and managing the impact of climate change on...
  - GENESIS: Groundwater and Dependent Ecosystems: New Scientific an...
  - WATERKNOW: Integrated Water Management in Coastal Drainage Basins
  - AQUIMED: Participatory design of adaptive groundwater management...

Guidences (6)
  - NeWater: Buffering Capacity Assessment as a mean to Promote Adap...
  - DAA Synthesis report - Data availability and accessibility
  - Eurowet: Guidance on the role of wetlands in the river basin man...
  - Eurowet: Significance of wetlands in the water cycle
  - HarmoniRID: Uncertainty in geological and hydrogeological data
  - EAMN: Good Modelling Practice handbook

(*) Guidences (5)
- RTD experiences (32)
- Tools (17)

(*) information that still needs to be checked
Waterbase - Groundwater

Waterbase is the generic name given to the EEA's databases on the status and quality of Europe's rivers, lakes, groundwater bodies and transitional, coastal and marine waters, and on the quantity of Europe's water resources.

This is the latest published version. See older versions.

European data set

Waterbase - Groundwater (4 tables)
Dataset contains data selected from reporting of member and collaborating countries on chemical quality of groundwater, characteristics of groundwater bodies and sampling sites. Reported data have been assessed and processed by the ETC-Water and the EEA. Disaggregated records were annually aggregated by groundwater body, substance and year, and statistic value calculated. Results of quality assessment have been incorporated into the individual data tables.

[+] Show table definition

- Waterbase_Groundwater_v11_csv.zip (ZIP archive) 6.57 MB Download file
- Waterbase_Groundwater_v11_mdb.zip (ZIP archive) 11.72 MB Download file

Additional information

Code lists
Lists and description of codes of selected fields present in the Waterbase-Groundwater data tables. Table "Drinking water threshold" is included.

- Waterbase_Groundwater_v11_codelist.xls (Microsoft Excel spreadsheet) 162.50 KB Download file
- Waterbase_Groundwater_v11_codelist_csv.zip (ZIP archive) 19.37 KB Download file

QA documentation
Quality control documentation briefly presents ETC-ICM and EEA activities focused on quality of Waterbase-Groundwater dataset and results of these activities. In addition warning is given on the use of certain records for analytical purposes.

Dataset available for download
Example of data evaluation report

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<tr>
<th>Country Code</th>
<th>Number of records in the working DB (after processing the last delivery)</th>
<th>Note/Explanation why data were working db or EU dataset (numb reason code)</th>
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<td>as delivered</td>
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</table>
Nitrate concentrations in groundwater between 1992 and 2008 in different geographical regions of Europe.

Specific policy question: Are nitrate concentrations in our groundwater decreasing?

- Data series per region are calculated as the average of the annual mean for groundwater bodies (GWBs) in the region.

- Only complete series after inter/extrapolation are included (see indicator specification).

- The number of groundwater bodies included per geographical region is given in parentheses.

Source: CSI-020
Chemicals in groundwater - examples

Heavy metals - cadmium, mercury, lead

Organic chemicals - triazine
Groundwater status – Germany

UBA 2010: Water resource management in Germany, part 2 water quality

Chemical status

Quantitative status
Chemical status (no. of GRW) by RBD
Quantitative status by GWB in different horizons
Detailed zoom view on interactive map (monitoring stations)

Pop-up windows give some details on individual stations.
Groundwater (by area)
Source: Ongoing assessment of RBMPs – preliminary results

Chemical status

Quantitative status
European GWB map based on WFD submissions
Some definitions

  - **INSPIRE**: Spatial objects that are used to provide location information in object referencing
  - Synonym: Geospatial reference data
  - Characteristics
    - It provides an unambiguous location for a user’s information. It is used as a common base to which thematic data may be referenced.
  - Examples: river system, transport networks, addresses, elevation, geographical names

- **Reference versions of thematic data** (early INSPIRE)
  - Specific spatial data sets that are used as basis to which other data could be referenced within individual thematic area = thematic subset of reference data
  - Terminology in WISE: Reference GIS dataset (CIS guidance doc. 22)
  - Terminology used in EEA: GIS reference layer
  - Examples: RBD, groundwater bodies for reporting at EU level
Use of spatial data
(Reference GIS dataset)

• General guidance in CIS guidance document 22 on Implementing the GIS elements of the EU Water Policy

• Special emphasis on groundwater in appendix 13.3

Link

Slide modified during workshop
WFD reporting of Groundwater bodies (GWB)

Guidance docs at Reportnet – [link](#)

- Following spatial datasets submitted by MS are related to GWBs:
  - River basin districts (RBD) / sub-units
  - GW monitoring stations
  - Protected areas

- **Logical consistency:**
  - GWBs must be assigned to only one RBD (even if they have parts outside the respective RBD)
  - Associated monitoring stations must be located within the boundaries of the respective GWB

- **Topological consistency:**
  - GWB need not to cover the entire territory of a country
  - GWB can overlay one another (if at different depth ranges)
  - Overlapping GWBs must not intersect if GWB laying upon each other are delivered within one file
    (but it is recommended to provide overlapping GWBs in separate files)

....
Different pathways leading to production of reference GIS dataset

• Via MS reporters to EU directives (DG ENV)
• Via Eionet State of the Environment (SoE) reporting to EEA
• Via other data sources

Requirements related to reference GIS datasets:
  • In-line with INSPIRE Directive
Data flows and web services in WISE

Other data sources

- Public participation
  - Cityzen science
- Professionals
  - Near real-time data
  - GMES
  - Utilities
  - Industries

European Monitoring campaigns

- Modelling
  - Now casting
  - Forecasting
  - Scenarios
  - Data gap filling

Monitoring data in MS datasets

- Reporting by countries
  - SoE
  - EU Directives
  - Water statistics

Spatial datasets

- QA/QC

Monitoring data in MS datasets

Monitoring data in MS datasets

Web services

Map services

- Map layers & platforms
- Model systems

Modelling services

- Pre-defined query functions
- Interactive maps

DataViewer

MapView

WaterBase

Indicators

European thematic datasets

Reference GIS datasets

Static maps and graphs

CSI xx
Proposed data specification document for reference GIS datasets

Basis: INSPIRE data specifications document

• Scope and overview
  • Scope and definition
  • Informal description of the dataset to be produced [max ½ page]
  • Definition of the terms being used in the document when relevant.
  • Normative references used when relevant (e.g. Inspire data specification)
  • Symbols and abbreviations

• Data product identification table (for metadata)
• Data content and structure (including conceptual rules)
• Reference systems (spatial and temporal (if applic.))
• Data quality at the dataset level
  • (derived from ISO19113)
  • Completeness, logical consistency, ...

• Metadata – according to online specifications
• Delivery – format, medium (ftp, Circa, Forum, ...)

European Environment Agency
**EEA-SDI Levels of Metadata Catalogue**

- **All spatial data sets used in EEA**
- **Internal metadata catalogue** (full metadata records)
- **Public metadata catalogue**
  - **INSPIRE spatial datasets**
  - **INSPIRE related spatial data sets** (conformant in the future)

- **Catalogue harvesting**

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[European Environment Agency](https://www.eea.europa.eu)
Comments forwarded in INSPIRE consultation on Annex II & III data specifications (Oct. 2011)

- Attributes reported with the groundwater bodies for implementing WFD should be fully considered in INSPIRE.
  - Therefore 18 attributes have to be added.
  - Data specifications have to follow WFD reporting specifications.

- Following attributes have to be added to the Type WFD_GroundWaterBody:
  - Area; Layered; Geological Formation; Scale; Link Surface-Water Bodies; Link Terrestrial-Ecosystems; Depth Range Code; Average Thickness; Average Depth; Vertical Orientation;
Questions for this workshop:

Can consensus be reached on:

- Selection and definition of attributes?  
  - maybe dependant on geological regions

- Provision of the data from national sources to the European level?  
  - EuroGeoSurvey as data provider?

- How to proceed in alignment with reporting to EU-directives (via CIS Working Group C on groundwater)?
Thank you for your attention

Time for questions ...?

EEA contacts on:
- WISE: bo.jacobsen@eea.europa.eu