

WISER news

The WISER kick-off meeting

More than 100 scientists and water managers met during the kick-off meeting on Mallorca.

The project's kick-off meeting took place from 9 to 13 July 2009 on the beautiful Balearic Island of Mallorca. For one week more than 100 scientists, water managers and EU representatives came together to discuss the project workplan and to fix the road-map for the manifold activities of WISER.

Although WISER's meeting policy is to reduce physical meetings to a minimum to avoid the emission of hundreds of tons of carbon dioxide, the kick-off meeting was considered extremely important for two reasons. First, discussions on the extensive sampling programmes quickly involve 20 or even more people. Issues, such as sampling designs and field campaigns require in-depth discussions of manifold aspects and details. And second, the personal contact of scientists and water managers at the beginning of a project that specifically aims at involving the applied sector of water management in Europe is invaluable.

The kick-off was attended by scientists working with lakes, rivers and marine ecosystems. They are

biologists, chemists, geographers, statisticians and data managers. Biologists may be specialised on fish, macroinvertebrates, macrophytes or algae. And not to forget the "real world" of application beyond the "ivory tower": river basin and water managers, employees of environmental agencies and ministries, and EU representatives. All these people speak different languages, have different attitudes towards the management of surface waters, set different priorities and represent individual "histories" or schools. If they are to work towards a common goal, a common understanding is equally important. In general terms, this is considered one of the major problems for the implementation of the Water Framework Directive (WFD). Thus, it is impractical to replace a physical kick-off meeting by means of, for instance, video meetings and other electronic media.

But let's get back to the kick-off meeting. More than 50 sessions were organised from Monday to Friday to discuss the challenges of the overall workplan. Most sessions were dedicated to "micro-management", i.e. the details and workflow of 20 workpackages. For each workpackage (usually ten to 20 scientists working on a specific topic, e.g., the fish fauna of lakes) up to two days were provided to sort out details, solve problems

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Impressum

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Attendees of the WISER kick-off meeting on Mallorca, 9 to 13 July 2009.



and elaborate a strategy to fill gaps. Many discussions focused on sampling methods and the design of field programmes for lakes and marine waters. For example: Which environmental parameters are to be recorded for all sites? For how many sites do we sample all organism groups? Which existing data from previous projects and national monitoring initiatives do we wish to use and under which circumstances are we allowed to use them? What is the structure of the common database and how do we integrate the various data? This and many more questions urgently required answers during the Kick-off meeting.

Among the most challenging issues were the summary meetings of larger subgroups, such as the all-lake scientists session. Then, the major challenge was to harmonise the outcomes of previous smaller sessions: the list of sampling sites, plans for the field campaigns, database structures and data evaluation strategies.

Equally important was the “informal” programme. Between the sessions and after dinner, the discussions continued – often until the bar was closed. Again, it turned out that such socialising activities



Ping-pong Bingo to illustrate the uncertainty in assessment.

are invaluable to strengthen the internal network of scientists and to expand networking to the “real world” people. Knowing each other and learning from each other is extremely helpful in generating new ideas and concepts to structure them.

This was impressively exemplified during a plenary session on the issue of sampling variability: the “Uncertainty Workshop”. The workshop was introduced by an exercise called “Ping-pong Bingo”. Each WISER workpackage leader had to take an enumerated

ping-pong ball (the sample) out of a bucket (the site) to illustrate the variation of numbers on the ping-pong balls (the organisms). The balls’ numbers varied around a true mean value of 42, a tribute of the English workshop organisers to Douglas Adams.

The workshop illustrated and explained the different sources and effects of uncertainty in assessment and monitoring of freshwater and marine ecosystems. Uncertainty, for instance, does include effects of different sampling methods, their different application by field researchers, and sorting and identification errors. Every decision made on these issues will affect the uncertainty of results and, hence, the reliability of the measured ecological status.

Despite the extensive meeting programme with more than 50 sessions and the amount of work and time invested, the atmosphere of the whole meeting was fruitful and relaxed. The “fruits” have been documented in a ninety-page report with detailed minutes of the sessions, action lists and summaries of results.

Daniel Hering, UDE

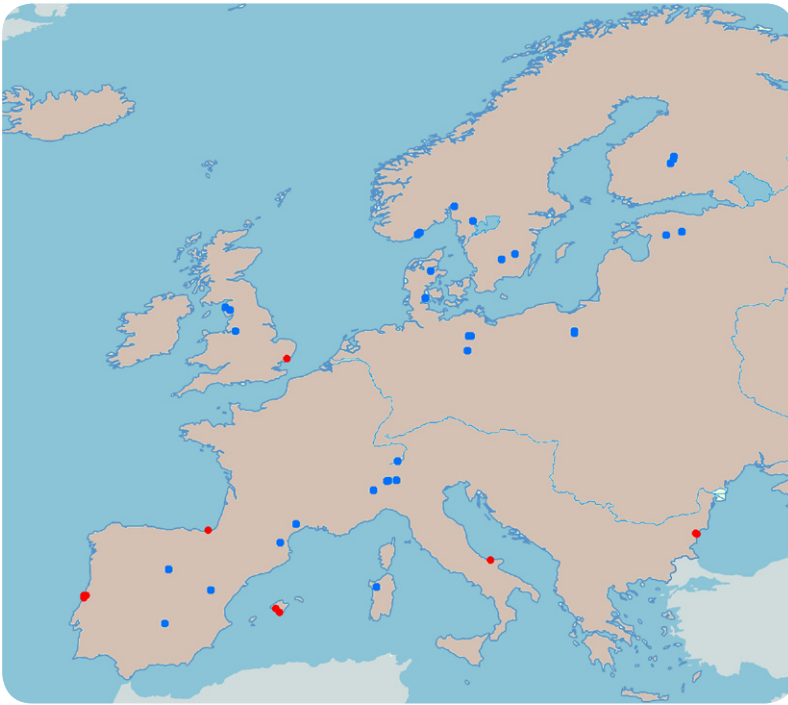
The WISER field campaign

33 lakes and 8 marine waters will be sampled during the field campaigns 2009 and 2010.

The WISER field campaign has already started in late spring 2009. Before, project scientists and technicians from all over Europe met at several sampling workshops and technical meetings to develop and harmonise sampling methods and protocols in-line with existing CEN/ISO standards. Another important

objective of these meetings was to agree on the final set of sampling sites, which now encompasses 33 lakes and eight coastal waters in three European climatic regions: North-East Atlantic, Central-Baltic and Mediterranean (see map). WISER will gather data on fish, macroinvertebrate, macrophyte and plankton communities at these sites together with a series of environmental pressure data, such as nutrient enrichment and hydromorphological modifications. Pressure data will be recorded for all waters, while biological samples cover at least

two organism groups per site. At 20 lakes and seven marine waters, however, all organism groups will be sampled. “This is a fantastic opportunity to generate the data that is urgently needed by Geographical Intercalibration Groups (GIGs)”, Wouter van de Bund says. He is a representative of the European Commission’s Joint Research Centre (JRC, Ispra/Italy) in the WISER consortium. “One of WISER’s objectives is to aid the Intercalibration Groups in Europe and we are eager to generate the data therefore”, he adds. “The challenge will be to deliver the results before the Intercalibration



Map of 33 lake (blue) and 8 estuarine and coastal water (red) sites to be sampled for WISER.

example, the natural variability at two slightly different locations at one site or the researcher-dependent variation due to different habits and skills in using a sampling device. As the target is to assess the ecological status of waters, this variability is considered as uncertainty, which needs to be quantified and separated from the community's response to environmental stress. The extensive uncertainty sampling programme of WISER will help to make assessment schemes in lakes and marine waters more reliable. If we detect change, we need to be sure that the signal observed is a result of degradation or of recovery – and not the results of spatial variability or the investigator's experience.

Christian K. Feld, UDE

will be finished in summer 2011”.

But WISER will produce more than new data on the sites' ecological status. The sampling design includes replicate sampling, i.e. two or more samples per organism group will be taken from a site (see replicate scheme).

Either the same person, or two or more different researchers will take the samples. Replication will cover spatial variability, sample processing, identification and other important steps of the workflow. The replicate programme will enable WISER to detect and quantify different sources of variation, for

The WISER meta database

More than 80 external data sources will complement the project's new field data.

Like many other research projects, WISER will largely rely on the quality and quantity of field data. Thus, new field campaigns in lakes and marine waters will help to generate the data needed for the workplan. But WISER will go a step further and will also make use of data that has been compiled through numerous European research and monitoring projects. Keeping in mind that tens or even hundreds of millions of Euro have been spent to produce and compile all this data, the databases of previous research projects provide an invaluable source of information. Especially if gathered during the past five years, the data is often of considerable quality and provides methodological and other criteria necessary to fulfil the high quality standards.

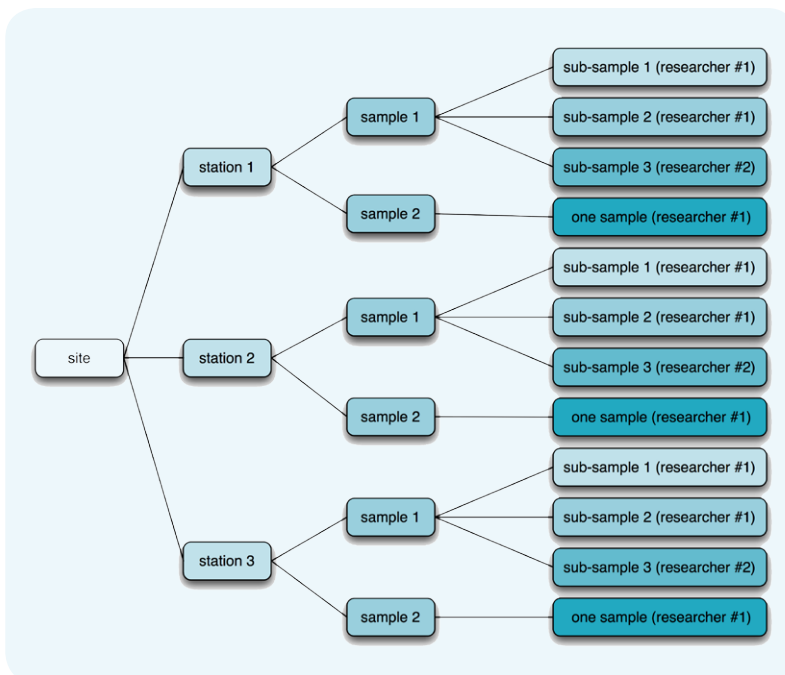


Illustration of the replicate scheme to detect and quantify natural and researcher-dependent variability and to finally estimate the level of uncertainty linked with different steps of the workflow.

To supplement the WISER field data, general characteristics have been gathered for about 80 databases of previous research and monitoring initiatives at both the European and the national Member State's level. The information is stored in a so-called meta database in order to help identify the right data for the analysis of different organism groups, environmental pressures or water categories. Simple queries enable WISER partners to quickly identify the data potentially useful for their workplan in WISER.

The establishment of the meta database started right at the beginning of WISER in March 2009. The early start turned out to be advantageous, as the really important step comes afterwards: the acquisition of the respective

data. Several obstacles may occur during acquisition, such as different data formats, data gaps or intellectual property rights. This often renders data acquisition a long-lasting process.

The aim of the meta database is to give WISER partners an overview on:

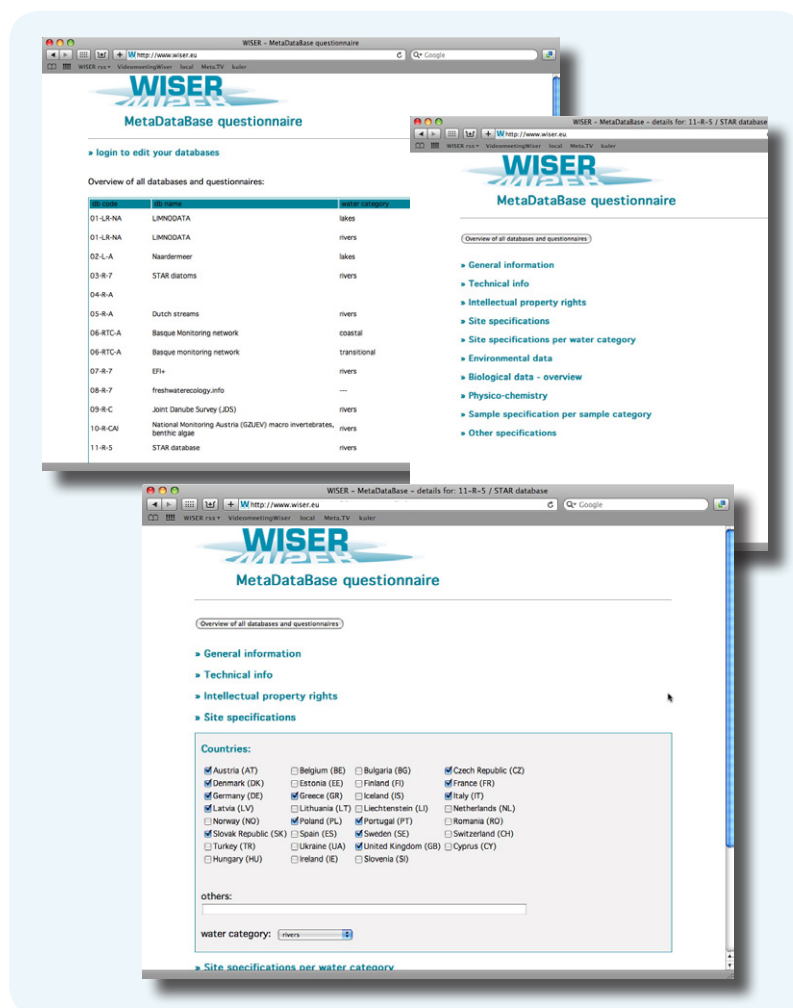
- the general data availability; this includes sites/samples per water category, GIG, biological quality element, as well as environmental, chemical and physical data
- data precision (identification level and taxonomic resolution)
- usability/accessability of data and other intellectual property rights

Evaluation of the meta database

To give WISER partners an overview of the data background first results and analyses of the meta database were presented at the kick-off meeting including the number of databases and sites per water category, the sites per Geographical Intercalibration Group (GIG), the covered ecoregions, the availability of WFD criteria data, stressor types and intensity, hydromorphological/physical/chemical data, and the identification level and taxonomic resolution respectively.

After some clarifications and discussions at the kick-off meeting, the number of available data has increased and can be summarised as follows (due date 1 July 2009):

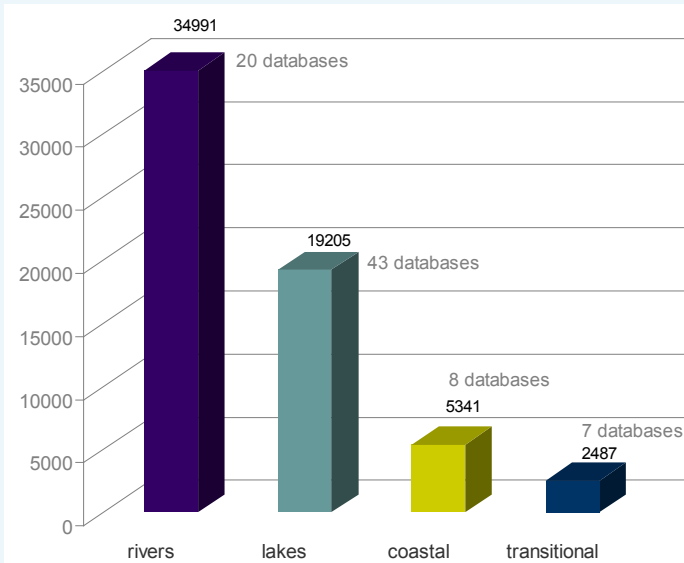
- total: 78 databases
- therefore: 90 % information available
- 62,024 sites and 430,294 samples



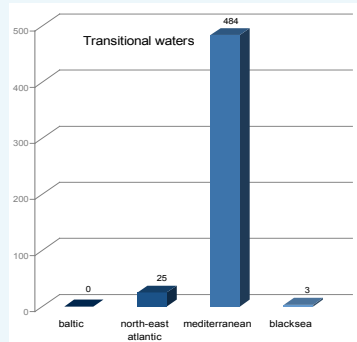
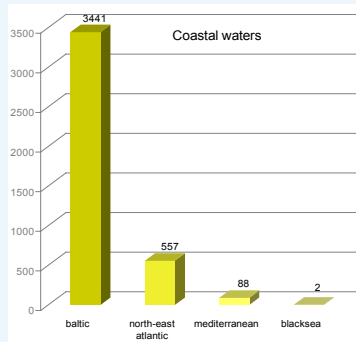
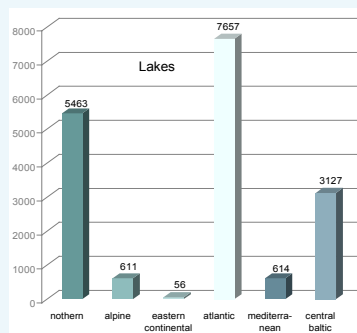
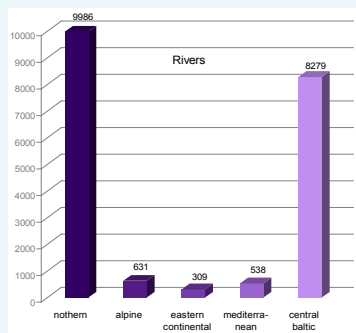
Screenshots of the WISER meta database: overview of all available databases (top), chapters within each database (middle), easy to use check-boxes and selection-lists (bottom).

Currently 78 databases are available within the meta database: 20 databases on rivers, 43 on lakes and 15 on marine waters (estuaries and the coastlines). A total of 62,024 sites are disposable: 34,991 sites are available for rivers, 19,205 for lakes, 5,341 for coastal and 2,487 for transitional waters (see figure). That means the incredible number of 430,294 samples offer a wide choice for different kind of analyses: 176,081 fish, 60,267 macro invertebrate, 53,339 macrophyte/macroalgae, 116,902 benthic diatoms/phyto-benthos and 23,705 phytoplankton samples.

As one of the main goals of WISER is to assist the intercalibration exercise, the available sites per intercalibration group (GIG) and water category were recorded in the meta database (see figure). Most of the sites (more



Availability of data within the WISER meta database: number of databases and sites per water category.



Availability of data within the different Geographical Intercalibration Groups (GIGs) for the different water categories.

than 3,000) for rivers and lakes are disposable for the Northern, the Atlantic and the Central Baltic GIG, whereas data on the Eastern Continental region seem to be scarce. About 500 sites per water category are available for the Alpine and the Mediterranean areas. This situation clearly reflects the focus of previous EU-funded projects.

Regarding coastal and transitional waters much fewer data is available. Most of the sites belong to the Baltic, the North-East Atlantic and the Mediterranean GIG.

Astrid Schmidt-Kloiber, BOKU
Christian K. Feld, UDE

Interview with Ursula Schmedtje (EC)

The member of the Advisory Board, Dr. Ursula Schmedtje from the EC, tells us her views on the implementation of the WFD and how the WISER project might help to fill existing gaps.

Dr. Ursula Schmedtje joined DG Environment (European Commission, Brussels) in September 2008. She has been working on the Water Framework Directive (WFD) since about 10 years and was already involved in commenting draft versions of the Directive. Dr. Schmedtje is an expert in the field of ecological status assessment, but also has experience on the implementation of the Directive as a whole at the national and international level.

Christian Feld: Dr. Schmedtje, the implementation of the WFD started almost 10 years ago. Are you happy with the achievements?

Ursula Schmedtje: Yes. I think we have made great progress. The systematic approach of the WFD has led to a very comprehensive overview of the pressures and impacts that are exerted on European waters, which we did not have before. We have learned that eutrophication and hydromorphological alterations are the most important pressures at the European scale. In some regions, particularly in Eastern Europe, many settlements are still without adequate wastewater treatment, but also pollution of priority substances can be quite significant in different locations all over Europe.

Where do you see important gaps or drawbacks with respect to the timely implementation of the WFD?

One of the most important gaps is that the intercalibration is incomplete. Only few biological quality elements have been intercalibrated. In many Member States the assessment methods are still not fully developed. Hopefully, in the second round of intercalibration (2008-2011) we will make considerable progress. There are also other gaps, for example, related to the economic analysis, which has been handled very much as a side-aspect, and the designation of heavily modified water bodies is far from being comparable across the Member States, to name just a few.

Where do you see major strengths and weaknesses of the WFD?

As for the strengths, the WFD integrates existing EU water legislation into one European water policy. Furthermore, the river basin approach allows for an integrated management of upstream and downstream water problems putting ecological status at the centre of attention. And also the involvement of stakeholders and NGOs through public participation is a great step forward as this allows achieving a



Dr. Ursula Schmedtje (European Commission, DG Environment, Brussels)

broad consensus on the aims and measures needed to reach the important balance between water protection and sustainable use of water. Concerning the weaknesses, I would mention the text of the directive itself. It is too lengthy and detailed in some parts and the interpretation is not always easy. Therefore, the European Commission has set up the 'Common Implementation Strategy', an informal consultation platform consisting of the European Commission, Member States, NGOs and stakeholders to discuss the implications of the directive and

to develop a common understanding of its implementation.

Dr. Schmedtje, what do you expect from the WISER project?

I hope that the WISER project will help us fill some of the gaps in intercalibration, in particular for lakes and coastal/transitional waters. Intercalibration of WFD-compliant assessment methods of biological quality elements is a highly complex and sophisticated task and we need the support from research to sharpen our intercalibration tools. Also, from the workpackages on restoration we expect to get a clearer picture on which measures work the best and why and on the timelines that we need to consider for the measures to actually show the positive effects on the biota.

Thank you very much for the interview.

The interview was held electronically on 9 July 2009. Interviewer: Dr. Christian Feld, WISER project coordinator (UDE).