

Policy Advice  
Knowledge Networks  
Capacity Building

# impact

Knowledge Transfer

Advisory Boards  
Expert Panels  
Regulatory Agencies

outcome  
Technology Transfer

About the UFZ

# Helmholtz Center for Environmental Research GmbH

## Our Vision

The UFZ is one of the world's leading research centers in the field of environmental research and enjoys high social recognition. It offers ways for a sustainable use of natural resources for the benefit of humans and nature.

## Our Mission

Biodiversity, functioning ecosystems, clean water and intact soils are our natural bases of life. In light of global change, all staff at UFZ share the objective to demonstrate and promote ways in which excellent research can reconcile social development with a healthy environment. The UFZ is a reliable partner for politics, economy and civil society in the process of understanding the impacts of human activities on the environment and to develop options for social decision-making processes. Therefore, the UFZ addresses societal challenges and creates knowledge and technologies which help to identify potential conflicts between environmental and societal demands at an early stage and to develop precautionary measures.

## Our Structure

The UFZ was founded in 1991 and employs 1,100 people at its locations in Leipzig, Halle (Saale) and Magdeburg. The UFZ is a member of the Helmholtz Association of German Research Centers.



## Dear reader,

The UFZ carries out excellent research within a wide range of topics related to the environment. It generates sound knowledge and technological solutions for managing our natural resources in a sustainable way which will ultimately benefit society and environment. The transfer of knowledge and technologies to society and business is an integral part of the UFZ mission and activities.

Knowledge Transfer at the UFZ aims to provide options for citizens and decision-makers from the economy, politics and civil societies to address recent or future challenges in the relationship between societies and their environment. On the one hand, UFZ scientists provide scientific analysis and advice on specific problems of environmental politics and administration. On the other hand we are closely involved in the practical processes of environmental politics and administration and well informed about the real-life problems and complex issues to which applied research needs to be tailored.

The selected examples in this brochure will serve as a first insight into our broad range of knowledge transfer activities which include the following topics:

- UFZ Knowledge Transfer Award 2016
- UFZ Communication Award 2016
- Experts at the UFZ
- Transfer activities
- Offers and contacts

These examples clarify how the UFZ interacts with its different stakeholders and meets their various needs. They demonstrate the capability of the UFZ to support decisions in societal, economic and political domains and to implement the knowledge needed for sustainable development.

Last but not least, the examples reveal how the UFZ proceeds with regard to its transfer role as stated in the center's mission.

Interested in further activities or want to join our knowledge network? My colleagues and I will be delighted to hear from you.

Yours sincerely,

Dr. Joachim Nöller  
Head of Department  
Knowledge and Technology Transfer

P.S.: We are also looking for partners from the private sector for developing technical solutions. Would you like to join forces with us and develop our innovative approaches further into products and production processes – based on your processes and market know-how? Just read our brochure “outcome” or visit our homepage to get a first impression.

You can find further information on our website:  
[www.ufz.de/knowledgetransfer](http://www.ufz.de/knowledgetransfer)



Dr. Joachim Nöller  
Department of Knowledge and  
Technology Transfer

E-mail: [joachim.noeller@ufz.de](mailto:joachim.noeller@ufz.de)  
Phone: 0049 341 235-1033

## IMPRINT

**Editor in Chief**  
Dr. Joachim Nöller, Department Knowledge and Technology Transfer

**Publisher**  
Helmholtz Center for Environmental Research GmbH - UFZ  
Permoserstraße 15 | 04318 Leipzig  
Web: [www.ufz.de](http://www.ufz.de)

**Layout**  
Hella Nietsch, UFZ  
Susan Walter, UFZ (Title)

**Photos**  
A. Künzelmann, UFZ (4, 5, 7/1, 10, 11, 13, 14)  
S. Wiedling, UFZ (2, 3, 6, 7/2, 15)  
Graphic UFZ (8, 12)

Knowledge Transfer Award 2016

## Dr. Mi-Yong Lee, Dr. Manfred van Afferden and Prof. Dr. Roland Müller



... were honored for supporting the development and implementation of a decentralized wastewater treatment strategy in Jordan.

The UFZ model region of Jordan is one of the most arid regions in the world. Efficient handling of scarce water resources, particularly of groundwater, is essential for economic development of the country and is also of great importance with regard to a more peaceful coexistence with neighboring countries.

Initiated by the Jordanian Ministry of Water and Irrigation (MWI), UFZ scientists set up an office in the MWI that prepares and coordinates both the dialog and measures for the implementation of viable sewage scenarios. This joint Jordanian-German initiative aims to integrate the relevant institutions and technologies into the current political strategy of Jordan while also giving consideration to the socio-economic environment, and to study the conditions required for successful implementation.

MWI and UFZ pursue their goal by using the so-called participatory approach, which is new in many ways. A National Implementation Committee (NICE) was created that develops the implementation strategy, in which the interests of all major stakeholders in Jordan shall be represented. The NICE activities are organized by the Project Head Dr. Manfred van Afferden, Office and Program Director Dr. Mi-Yong Lee and

NICE member Prof. Dr. Roland Müller. They were now honored with the UFZ Knowledge Transfer Price because, with this project, they are building a bridge between research, development, water resource policy and implementation in a transdisciplinary way.

Experts from the regional sections and corresponding networks are involved to help create the fundamental conditions required for decentralized wastewater treatment systems. Special workshops and consultations (capacity development) were implemented. It must be emphasized that rather than serving as a substitute for centralized disposal plants, decentralized wastewater structures should be put into place where they can achieve greater economic profit as opposed to centralized solutions. The most suitable locations were identified by ways of a GIS-based analysis developed at the UFZ and designed to evaluate and visualize economic, ecological, demographic and physical factors for decision-making. This approach allows for indicating locations that pose a particularly high risk to groundwater resources.

In the process, new markets were opened up, also in other countries where water is scarce since the procedures and methods developed will be transferable so that other regions may apply them efficiently as well.

The project, which was jointly financed by MWI, BMBF (Federal Ministry of Education and Research) and UFZ, is a major step forward, combining environmental research and knowledge transfer with the core elements of international co-operation.

Prof. Dr. Roland Müller  
Center for Environmental Biotechnology  
E-mail: [roland.mueller@ufz.de](mailto:roland.mueller@ufz.de)  
Phone: 0049 341 235-1275

Communication Award 2016

## Prof. Dr. Matthias Liess



... was honored with the Communication Award 2016 for outstanding popular science communication of his excellent research on application, impact and risks of pesticides

The UFZ Communication Award was granted to Prof. Dr. Matthias Liess in 2016. Since 2006, he has been Head of the Department of System Ecotoxicology.

Prof. Dr. Liess is holding a professorship at the RWTH Aachen, Germany. He published more than 140 ISI papers, cited over 4600 times (h 41) and has been appointed by several governmental bodies to provide scientific advice.

He is responsible for the [SPEAR](#) Project that utilizes (governmental) monitoring data to indicate toxic pressure of pesticides. This existing data can be turned into informative maps.

This project was started, because of a knowledge gap between the relationship of causes and effects from aquatic pesticide contamination and the extent to which it translates into ecosystem effects. The identification of this relationship was highly challenging, because many environmental stressors confounded the effects of toxicants. The transfer relationships tied in a complex ecological framework with laboratory, field and GIS investigations were identified. In develop-

ping this applied approach, UFZ identified a multitude of fundamental ecotoxicological mechanisms.

A program Indicate® was developed that can be downloaded for free. It runs on a PC or MAC computer and calculates the toxic pressure within a stream where invertebrate monitoring data are available. This information can be used for hot-spot identification and to support management strategies. The approach is included into the German [NAP](#) (National Action Plan Pesticides) and is applied by governmental institutions and researchers in Germany, the USA (The United States Geological Survey), Australia, Sweden and Denmark.

[Application Indicate](#) (in German)

Prof. Dr. Matthias Liess  
Department of System Ecotoxicology  
E-mail: [matthias.liess@ufz.de](mailto:matthias.liess@ufz.de)  
Phone: 0049 341 235-1263

Our Experts

**Dr. Mi-Yong Becker (née M.-Y. Lee)**

Department of Environmental Biotechnology

As the leader of the working group “Steering and Innovation” at the Environmental Biotechnology Center (UBZ) she is engaged in designing many transfer processes. During the three-year period that she managed the UFZ Office in the Ministry of Water and Irrigation in Amman, Jordan, Mi-Yong Lee had the opportunity to absorb the internal logics of politics and ministerial administration under conditions of crisis, i.e. Arab Spring and the refugee influx from Syria.

From 2007 to 2011, she coordinated the research project “The Concept of Stocks as Decision Support for Sustainability Politics” at the Department of Economics at the UFZ. Furthermore, she worked as a work package leader for the stakeholder dialogue for implementing the EU Water Framework Directive in the South Tisza Basin (Hungary, Romania, Serbia). Both projects were funded by the German Federal Ministry of Education and Research (BMBF).

Her research topics and transfer areas comprise decision-support and policy advice, including development of frameworks and policies, in the fields of environmental biotechnology and integrated wastewater management; sustainable bio-economy in particular life-cycle sustainability assessment; management of R&D; facilitation and mediation of political round tables in the field of environmental decision-making.

Personal website of [Dr. Mi-Young Becker](#) (née M.-Y. Lee)



Dr. Mi-Yong Becker (née M.-Y. Lee)  
Center for Environmental Biotechnology

E-mail: [mi-yong.becker@ufz.de](mailto:mi-yong.becker@ufz.de)  
Phone: 0049 341 235-1740

**Prof. Dr. Josef Settele**

Department of Community Ecology

Josef Settele is Deputy Head of the Department of Community Ecology and Group Leader of “Animal ecology and social-ecological systems”. He is Professor of Ecology (apl.) at the Martin-Luther-University of Halle-Wittenberg and has a PhD in Agriculture from the University of Hohenheim.

Josef Settele is Co-Chair of the Global Assessment of [IPBES](#) (Intergovernmental Platform of Biodiversity and Ecosystem Services). His research topics include agroecology, land use & climate change with a focus on ecosystem functioning, biodiversity conservation and intergovernmental assessments (IPCC and IPBES – presently co-chair of the Global Assessment of IPBES).

Personal website of [Prof. Josef Settele](#)



Prof. Dr. Josef Settele  
Department of Community Ecology

E-mail: [josef.settele@ufz.de](mailto:josef.settele@ufz.de)  
Phone: 0049 345 558-5302

Our Experts

**Prof. Dr. Bernd Hansjürgens**

Department of Economics

Bernd Hansjürgens is an environmental economist and, jointly with Professor Dr. Erik Gawel, Head of the Department of Economics at the UFZ in Leipzig.

He holds the chair of Economics, with a focus on environmental economics, at the Martin Luther University in Halle-Wittenberg. His current research includes the economic evaluation of ecosystem services (project entitled [TEEB DE](#) – Natural Capital Germany) and the management of environmental resources with environmental policy instruments. From 2004 to 2013, he was spokesperson of the Helmholtz “Terrestrial Environment” research program with a particular interest in the integration of natural and social sciences at the UFZ. Bernd Hansjürgens is chairman of the Federal Environment Agency’s Soil Protection Commission (KBU) to which he was appointed in 2015. The Commission supports the work of the Agency in the fields of soil status and soil monitoring.

Bernd Hansjürgens lead a working group in the Helmholtz Association that laid the basis for the Helmholtz Knowledge Transfer concept, which shall be approved by the Helmholtz bodies and subsequently will be implemented in Helmholtz through the establishment of a permanent working group.

Personal website of [Prof. Bernd Hansjürgens](#)



Prof. Dr. Bernd Hansjürgens  
Department of Economics

E-mail: [bernd.hansjuergens@ufz.de](mailto:bernd.hansjuergens@ufz.de)  
Phone: 0049 341 235-1233

**Prof. Dr. Matthias Liess**

Department of System Ecotoxicology

Matthias Liess is an ecologist heading the Department of System-Ecotoxicology at the UFZ in Leipzig and holds a professorship at the RWTH Aachen, Germany. His research focuses on assessing long-term effects of multiple stress from low toxicants doses and adverse environmental conditions in aquatic ecosystems. Based on the understanding of mechanisms, his department forecasts the effects of stressors on structure and function of biological systems.

It developed the bioindicator [SPEAR](#) that assesses toxicant exposure and related effects on aquatic ecosystems. The results obtained are used to provide advice for regulatory risk assessment and landscape management of toxicants.

Personal website of [Prof. Matthias Liess](#)



Prof. Dr. Matthias Liess  
Department of System Ecotoxicology

E-mail: [matthias.liess@ufz.de](mailto:matthias.liess@ufz.de)  
Phone: 0049 341 235-1578

Transfer Activities

## The Climate Office for Central Germany at the UFZ

### Adaptation to Climate Change ...

The impacts of climate change vary from region to region. Therefore, adaptation to climate change must be designed specifically for each region. In order to take the right actions, decision-makers, businesses and citizens must be provided with reliable and up-to-date information about the climate change in their province.

### Establishment of an Office to Support Regional Stakeholders ...

The [Climate Office for Central Germany](#) at the UFZ was established in 2009 in the Department of Computational Hydrosystems by Dr. Andreas Marx. It offers dialog-oriented processes with decision-makers among others from politics, public authorities and the private sector in order to exchange information from different domains. The Climate Office primarily represents the relevant scientific UFZ expertise. It provides information about the impacts of climate change on the environment, land use and society, as well as support for adaptation strategies. The bundling, preparation and dissemination of this information with a regional focus on the federal states of Saxony, Thuringia and Saxony-Anhalt is a central objective of the Climate Office. Within the dialog, knowledge from the management and policy domain is transferred to the science domain. A regional knowledge pool is built up for joint solution strategies and the research priorities can be oriented more strongly to stakeholder needs and aligned accordingly.

### What is offered?

- Support of events from the private sector, associations or NGOs
- Capacity building for private and public decision-makers as well as in schools and universities
- Support of sub-national adaptation processes
- Statements in the political process (climate protection laws in Thuringia and Saxony Anhalt)
- Product development such as the **German Drought Monitor**

### Background...

The UFZ Climate Office is embedded in a network of four regional Helmholtz Climate Offices. In addition to the Climate Office for Central Germany at the Helmholtz Center for Environmental Research UFZ in Leipzig, these include the North German Climate Office at the Helmholtz Center Geesthacht, the South German Climate Office at the Karlsruhe Institute for Technology and the Climate Office for Polar Regions and Sea Level Rise at the Alfred Wegener Institute in Bremerhaven.



Transfer Activities

## The EKLIPSE Project

### Transfer Knowledge in the Right Way and Right Format...

The knowledge for safeguarding biodiversity and the sustainable use of ecosystem services in Europe is great, yet highly diverse (in terms of disciplines) and distributed (across knowledge holders). Current approaches at the science-policy interface can only capture part of this knowledge easily and/or synthesis activities are not well tailored to the actual needs, as the earlier projects that the UFZ was involved in have shown (e.g., SPIRAL, Biodiversity Knowledge).

### Developing the Science-Policy Interface by new Level of Participation and Using a Diversity of Synthesis Methods

[EKLIPSE](#) pilots a new kind of science-policy-society interface to address this challenge. The approach is strongly supported by the European Commission which funds the pilot phase via a H2020 coordination action. EKLIPSE's role is to facilitate this process by framing requests, selecting expert working groups and supporting them to use a broad set of synthesis and participation methods, tailored to each specific request. The UFZ has been a key partner in designing the approach. Dr. Heidi Wittmer (Department of Environmental Politics) and Dr. Marie Vandewalle (Department of Conservation Biology) are now leading the work package that implements the new knowledge synthesis mechanism with an interdisciplinary "knowledge coordination body" and specifically selected expert working groups.

The first request came from the European Commission and was on nature-based solutions in cities. The established Expert Working Group initiated a "Call for Expertise". In cooperation with the other experts who applied for the call, the group suggested sources of information on nature-based solutions to promote climate resilience in urban areas and highlighted gaps in our current knowledge. Furthermore, it reviewed the outputs of the expert group, took part in online discussions on nature-based solutions and other topics and finally released a report and peer-reviewed article in 2017. EKLIPSE is committed to ensure the usability of all its products and had therefore organized an open

review process of this draft report engaging a range of stakeholders. The Expert Working Group is now integrating all relevant comments received. A table with all received comments and their respective responses will soon be published.

Currently, another Expert Working Group is synthesizing knowledge on why Member States and farmers pick up so few of the greening measures that have been identified to be effective for biodiversity to feed into the negotiations of the next round of Common Agricultural Policy later in 2018.

Highlights have been so far:

- One high quality, peer-reviewed knowledge synthesis report is completed, three others are currently being developed on topics requested by policy and societal stakeholders, for example impact of components of nature on mental health, innovative approaches for regulators to support the food and drink industry to better conserve biodiversity. Further topics are in the scoping stage.
- A mechanism that delivers knowledge synthesis on a new level of participation, using a diversity of synthesis methods. ([www.eklipse-mechanism.eu/eklipse\\_outputs](http://www.eklipse-mechanism.eu/eklipse_outputs))
- A possibility for scientists and practitioners to contribute their knowledge in a targeted and accessible manner.



Transfer Activities

## Drinking Water Provision in Arid Regions

### Facing a Series of Challenges...

The UFZ model region of Jordan is one of the most arid regions in the world. The water infrastructure in Jordan has to deal with new problems on a daily basis. A huge number of refugees from Syria and extreme weather conditions have challenged the water management system of the country. A functioning wastewater system has a big influence on the economic growth of a country. The UFZ works in different aspects in cooperation with the Jordanian Government as described in the following example.

### ...Development of a Hydro-Economic Model to Meet the Needs

A team of UFZ researchers around Prof. Dr. Bernd Klauer from the Department of Economics together with their colleagues from the University of Stanford and six more universities have been part of the Jordan Water Project ([JWP](#); 2014-2017), which was funded by the Belmont G7 Forum. They have created an innovative and unique global water management modeling tool for the entire country of Jordan. The JWP model is able to evaluate the future consequences of investments in infrastructure, water management decisions and regulatory policy.

### About the JWP Model and its Implementation

The JWP Model is state-of-the-art science on integrated water resource management for sustainability and resilience. It explicitly represents all relevant institutions in the Jordan Water Sector and is capable to reproduce hydrological, economic, environmental and social impacts over longer periods. As one of the first models of its kind, it permits a high temporal and spatial resolution of short-term supply and long-term sustainability strategies. The UFZ scientists are responsible for the social science modules of the model.

The demand for water is simulated by agent-based modules with 1,912 representative agents from the water sector representing the behavior of households, farmers, and refugees, commercial and industrial enterprises at the level of all 89 sub-districts in the country.

The JWP model meets the urgent need of the Ministry of Water and Irrigation for a strategic planning tool and is strongly appreciated by the Minister of Water. At his suggestion, the UFZ successfully applied for the JORDANCAP Capacity Building Project as part of an "export initiative for (environmental) infrastructure" by the German Federal Ministry of Environment, Nature Conservation, Building and Nuclear Safety (BMUB).

During the following two years, eight experts from the Jordanian water authority will be trained to keep the model's data self-sufficiently up-to-date, to analyze new options for action and scenarios, and to include the JWP model in the decision process of the Ministry.

This model will be provided as an open-source program to the Water Minister and other interested parties. The targeted training of local staff will provide the model with immediate access to the Ministry's decision-making routines, whereby a knowledge exchange with the users takes place. The use of this model in water policy decisions can relieve the environment, in particular with regard to Jordan's role as a pilot country for monitoring UN Sustainable Development Goal 6 ("Water"), thereby making a tangible contribution to sustainable development in Jordan.



Irrigation Systems in Jordan

Transfer Activities

## Capacity Building Citizen Science for Germany

### In the Spirit of Open Research and Knowledge Exchange...

Citizen Science's potential of innovation for science, society and policy is gaining increasing appreciation. It bridges a gap between science and society through engagement of academic and volunteer scientists, NGOs, natural history societies, scientific clubs and interested members of the public in scientific processes. At the European level, citizen science has already gained track in several H2020 calls in research and innovation.

The UFZ has a long tradition of engaging citizens in long term biodiversity research. Already in 2005, even before citizen science "arrived" in Germany, the national German Butterfly Monitoring Scheme was established. Over 500 participants support the scheme and observe, collect and share their information about the presence and abundance of butterflies throughout Germany.

### Initiating and Coordinating a Project...

To unravel the manifold potentials of Citizen Science the national capacity building program "[GEWISS](#)" (BürGER schaffen WISSen, or "Citizens create knowledge") funded by the German Federal Ministry of Education and Research (BMBF) was led by the UFZ in cooperation with members of the Helmholtz and the Leibniz Associations, universities and other organizations in partnership with the Museum für Naturkunde Berlin (Natural History Museum). The program aimed to build a strong German citizen science community network, to assess the current state and needs of citizen science in Germany and - building on this - develop a corresponding Citizen Science strategy.

### Developing a Funding Program and Guides up to Founding a European Citizen Science Association

One major policy output of the program was the development of the "Citizen Science Strategy 2020 for Germany" lead by Dr. Anett Richter (UFZ Department of Ecosystem Services). The strategy was developed in collaboration with more than 700 participants from 350 organizations through a series of dialog forums and

an online consultation with over 1,000 website visitors, 400 comments and 53 formal position papers submitted on the draft strategy paper. Furthermore, citizen science guides, video clips and training workshops were developed to strengthen citizen science capacities. Founding of the European Citizen Science Association ([ECSA](#)) and organization of the first European Citizen Science conference in Berlin in May 2016, with more than 360 participants from 30 countries, globally extended the approach to an international level.

One example is the First Indo-German Symposium on Science Communication "Bringing Science to People" in Delhi and in Chandigarh (India). Here Dr. Anett Richter together the other panelists discussed with over 200 students, scientists and practitioners from India opportunities and challenges of science communication and citizen science.

Recently, at the 3th National Forum Citizen Science, the launch of a new funding scheme for citizen science in 2019 was announced, also following the recommendations formulated in the Citizen Science Strategy 2020.



A Citizen Science project at the UFZ: Butterfly Monitoring

Transfer Activities

## The German Drought Monitor

### What is it about...

Droughts such as the 2003 event in Europe have major implications on many societal sectors, including energy production, health care, forestry and agriculture. The reduced availability of water accompanied by high temperatures led to substantial economic losses of about 1.5 billion Euros in agriculture alone.

### Combining Hydrological Model Development and Stakeholder Dialog ...

The German Drought Monitor is an online information and data platform. Monitoring of soil drought in near real-time and at high-resolution, i.e., 4 × 4 km<sup>2</sup>, enables stakeholders in agriculture and water managers to mitigate the impact of these extreme events. The simulated soil moisture is published on an own website.

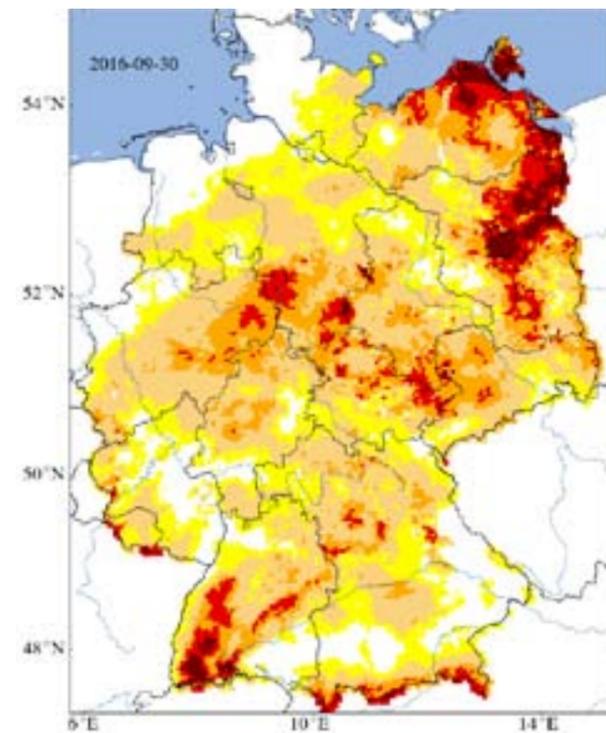
The results can be easily understood because the numerical information is translated into 5 drought classes. The visualization of the data has helped in showing the illustrations and information in print media as well as on television, and the data was presented to a wide audience in Germany. Other users of this information are medium-sized private companies and farmers. Data from the drought monitor is freely available and mainly used in federal state agencies and scientific institutions.

### From Science to Practice and Back ....

Since measured data is not available for a long time period, the soil moisture content is simulated daily with the Hydrological Model mHM at the UFZ. This is possible because of the continuous model development which started in 2005 in the Department of Computational Hydrosystems (CHS). The regional dialog on climate-related topics has been shaped in the Climate Office for Central Germany at the UFZ since 2009. During this exchange process, stakeholders from water management and agriculture expressed their need for information regarding soil moisture. Consequently, the combination of competences at the UFZ resulted in the first version of the Drought Monitor published online in 2014 by Dr. Andreas Marx and coworkers. Since then, the drought

monitor has been adapted based on stakeholder feedback. Furthermore, follow-up research activities at UFZ German Drought Monitor in September 2016 have developed, for example a crop yield model for maize based on Drought Monitor data, which may in the future be transferred into a stakeholder service or support economic assessments.

### [German Drought Monitor](#)



German Drought Monitor in September 2016

Transfer Activities

## Managing an European Topic Center

### European Topic Centers...

Are consortia of institutions across European Environmental Agency (EEA) member countries dealing with a specific environmental topic and contracted by the EEA to perform specific activities as defined in the EEA Strategy and the Annual Management Plan.

### Delivering targeted, relevant and reliable Information to Policy-Makers ...

Since January 1st, 2014, Dr. Anita Künitzer from the Department of Aquatic Ecosystem Analysis of the UFZ has been managing the European Topic Center on Inland Waters, Coastal and Marine (ETC-ICM). This makes the UFZ an important strategic partner in a network which develops application concepts oriented at national, European and international water politics.

The ETC-ICM is a consortium of 18 European partners. The European Commission, the European Environmental Agency (EEA) and Eionet (39 EEA member countries) are stakeholders of the project.

The intention is to establish a seamless environmental information system to assist the European Commission and EEA member countries in their attempts to improve the environment, move towards sustainability and integrate environmental policies with other sectors such as economic, social, transport, industry, energy and agriculture. The following two examples illustrate our work.

### European Water Policies and Human Health – Combining Reported Environmental Information

Society depends on the satisfactory and sustainable management of water. This report considers three pieces of EU water legislation targeted at particular sectors: the Bathing Water Directive, the Drinking Water Directive and the Urban Waste Water Treatment Directive, and takes a look at common issues in the context of the Water Framework Directive. A review of the implementation of each of the sectoral directives is provided.

Significant challenges continue when dealing with point source pollution from storm water overflows,

and with diffuse pollution through surface run-off from urban and agricultural land. Diffuse sources are likely to become more significant over time as point sources are tackled.

Moreover, emerging risks include micropollutants, microplastics and antimicrobial resistance, where potential risks for both the environment and human health have been identified, but their significance is as yet unclear.

### European Assessment of Eutrophication Abatement Measures across Land-based Sources, Inland, Coastal and Marine Waters

This report provides an overview of measurements to reduce nutrient pollution from point and diffuse sources. In order to exemplify different eutrophication abatement strategies, eight case study regions were selected for a detailed analysis: Denmark, Finland, the Po river basin, the Ebro river basin, the Rhine river basin, Lake Constance, the Danube river basin and the Baltic Sea.

Eutrophication was a significant problem in these regions and they illustrate how the responsible authorities approached the pollution problem, and how they developed and implemented eutrophication control programmes.



Transfer Activities

Our Contacts

## World Water Quality Assessment (WWQA)

### An Old Problem ...

Water is fundamental to life on our planet, but this precious resource is increasingly in demand and under threat. Our knowledge of the worldwide freshwater quality and its consequences on human and aquatic ecosystem health, as well as food security water environments is second-to-none.

### Coordinating a Worldwide Assessment ...

In order to address this problem, the UN-Water board initiated a preparatory study in 2013, which was coordinated by the UFZ scientist Dr. Ilona Bärlund from the Department of Aquatic Ecosystem Analysis. The center made use of versatile knowledge about water, ranging from aquatic ecosystems to water use and statistical data analysis, an ability to link freshwater quality to impact analysis and used a knowledge network of 13 external partners (e.g. UN Environment (former UNEP), German Federal Institute of Hydrology (BfG), GHI-Group, National Water Agency of Brazil) for the study.

The aim of WWQA pre-study was to develop and demonstrate a data and model driven methodology to identify current "hotspots" of deteriorating freshwater quality including

- types, intensity and sources of water pollution,
- potential impacts relating to human health and food security (freshwater fishery),
- main water quality data and information gaps, and
- strategies for future monitoring.

The results of this study were used in the UN report, UN-Water Analytical Brief, for networking purposes and other follow-up activities. This study was directed at regional water managers (e.g. National Water Agency of Brazil), UN organizations focusing on water (e.g. through UN-Water) and national environmental authorities in charge of SDG (sustainable development goals) implementation (e.g. German Federal Minister for the Environment, Nature Conservation, Building and Nuclear Safety).

On August 30th, 2016, the UN Environment's report "Snapshot of the World's Water Quality: Towards a global assessment" was launched during the International World Water Week in Stockholm. The report was launched through a global press release, distributed in English, French, Arabic and Spanish.

It quoted Jaqueline McGlade, Chief Scientist of UN Environment, raising three main points:

- Pathogen and organic pollution rises in more than 50% of river stretches in Africa, Asia and Latin America
- Asia hit hardest by rise in severe pathogen pollution with up to a half of all river stretches affected;
- Up to 323 million people on three continents at risk of infection from diseases caused by pathogens.

Both reports and other dissemination material can be downloaded from the website [WWQA](#)



Dr. Joachim Nöller  
Head of Department

E-mail: [joachim.noeller@ufz.de](mailto:joachim.noeller@ufz.de)  
Phone: 0049 341 235-1033



Karen Görner  
Business Development

E-mail: [karen.goerner@ufz.de](mailto:karen.goerner@ufz.de)  
Phone: 0049 341 235-4784



Dr. Lydia Woiterski  
Technology Scouting/Screening

E-mail: [lydia.woiterski@ufz.de](mailto:lydia.woiterski@ufz.de)  
Phone: 0049 341 235-4778

### Reply coupon

#### Your contact:

First name .....  
 Name .....  
 Title .....  
 Company .....  
 Address .....  
 Country .....  
 Phone .....  
 E-mail .....

#### Request information on:

- Research contacts at UFZ
- Science-based advice and concepts
- Collaboration

#### Thematic areas at UFZ:

- Environmental Engineering and Biotechnology
- Ecosystems of the Future
- Water Resources and Environment
- Chemicals in the Environment
- Smart Models and Monitoring
- Environment and Society