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Newsletter - May 2014

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Developments membership SedNet Steering Group

The SedNet Steering Group is pleased to announce that recently BOKU joined the SG:

BOKU – University of Vienna

The Institute of Water Management, Hydrology and Hydraulic Engineering of BOKU University Vienna, especially the working group of Prof. Habersack has a leading position in science in the field of river monitoring, physical and numerical modelling and river engineering. One central focus of the research is the determination, improvement of process understanding, modelling and management of sediments (suspended sediments and bedload), where integrated sediment monitoring methods and new numerical models have been developed. This is also reflected by the Christian Doppler Laboratory on Advanced Methods in River Monitoring, Modelling and Engineering, led by Prof. Habersack. By coordinating many national but also EU projects within this field insights in local sediment transport processes and on the river basin scale sediment regime were gained.

Due to the interdisciplinary structure of SedNet – including science, policy making, industry – the participation in this network provides insights into a more holistic approach to the topic sediment and sediment management. The cooperation between SedNet and BOKU enhances the exchange of knowledge and gained experiences and encourages defining future cross-border actions and projects.

The SedNet Steering Group is sad to inform that this spring we also lost a member: Sue White of Cranfield University. Susanne Heise wrote, on behalf of the SedNet Steering Group, an In Memoriam.

In Memoriam Sue White

On March 14 this year, we lost a dear colleague and a valued member of the SedNet Steering Group: Sue White. I've had the privilege of working frequently with Sue in recent years, beginning when she volunteered to join two SedNet work groups, "Sediment management on river basin scale", led by Phil Owens, and "Sediment risk management and communication", which I led at that time. There she was: A small, English,



soft-speaking woman with a passion for science, soil and sediment, who was a professor of Integrated Catchment Management and would soon become head of Cranfield University's Integrated Environmental Systems Institute.



Between 2002 and 2004, within the SedNet project, the SedNet working groups held a number of workshops, lots of discussions, and wrote several books. You could always rely on Sue for new views, well elaborated concepts, strategic thinking, and a strong will to get the message across – preferably in English English as opposed to American English or European English.

Sue started her career by becoming a civil engineer at the University of Liverpool. She did her MSc in Water Resources Technology at the University of Birmingham, her PhD at the University in Exeter. Sue worked in many countries on soil erosion, soil conservation and sediment management such as the US, Nepal, India, Philippines, Malawi, Zimbabwe, Botswana, Tanzania. However, it was her 3 years in Saragossa, Spain, which she told me about frequently, and where she maintained strong friendships.

Sue became member of the SedNet Steering group in 2006 and impressed us all with her quick wit, her polite but clear way to state her point and stand her ground, and her delightful English humor. It was on the night of March 27th, 2006, during the SEDYMO conference in Hamburg, when a tornado caused blackouts that Sue told me by candlelight that she considered her research and her publications as her legacy to the coming generations of sediment and soil researchers. She was only partly right. Another legacy is our memory of Sue White, the person, the colleague, the friend.

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Integrated sediment management concept adopted for the Elbe basin

For the first time, a comprehensive sediment management concept was developed in support of the management planning in a large international river basin. The concept is highly inspired by the work of SedNet since 2002.

The Elbe stands for a transboundary European Region with a long and intensive industrial and mining tradition. Around 56% of the entire catchment area is used intensively for agriculture. Dynamic developments took place since the political changes in the late 1980s. Despite having been, and in some respects still is, a heavily polluted river, the Elbe stands out among large central European rivers for its natural resources, e.g. for its wetland and floodplain forest habitats.

The first Elbe management plan prepared under the EU Water Framework Directive (WFD) highlights contamination and insufficient hydromorphological conditions as two of the most important supra-regional issues in water resources management. The plan underlines that contaminated sediments and unbalanced sediment conditions are among the main reasons for the failure to meet the WFD management objectives. As a consequence, the states cooperating in the International Commission for the Protection of the Elbe River (ICPER) decided to develop a sediment management concept in preparation for the second management cycle, and a Czech-German expert group was established in late 2009. Working structures were formed under the responsibility of the Czech Ministry of the Environment and the German River Basin Community Elbe on the Czech and German sides, respectively. With these working structures it was possible not only to integrate all relevant environmental and management perspectives but also to activate a broad scientific and technical expertise. For example, in Germany more than 30 experts from different fields of knowledge contributed to the working process at different stages.

The sediment management concept of the Elbe, approved now by the member states of the ICPER, considers the deficits of the sediment regime in terms of both chemical and ecological status and with regard to supra-regional management objectives. The sediment management challenges in the Elbe catchment relate to both quality and quantity. Therefore, one of the basic decisions of the ICPER was to integrate all aspects of the sediment regime into a single concept. Using significant indicators, river basin-oriented risk analyses are performed in terms of sediment quality, sediment quantity, hydromorphology and navigation. The last represents a group of sediment-dependent uses with high economic relevance. Based on the results of these risk analyses, management options to overcome the identified deficits are suggested in a priority order. Priorities are set based both on general and

aspect-specific criteria. Furthermore, the relative order of management priority depends on the character and the intensity of possible interrelations between the different aspects.

The concept will be published in German and Czech languages (www.ikse-mkol.org). An extended English summary will be available in the second half of 2014.

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Results of the research programme KLIWAS

The research programme KLIWAS, initiated by the German Federal Ministry of Transport, Building and Urban Development (BMVBS), assessed climate-induced impacts on waterways in the mid- and late 21st century in quantitative and qualitative regards. The ultimate objective was to identify ecologically and economically practical options for adaptation to possible future climatic conditions.

KLIWAS considered the rivers Rhine, Elbe, Danube, Weser, and Ems as well as the German coastal waters and the North Sea. Ensembles of several global and regional climate models were established, combined with several cause-effect models, and model outputs were evaluated.

Core efforts of KLIWAS research were to identify uncertainties in available models and to show the spans over which the results of the projections which were computed within KLIWAS are spreading for the purpose of providing well-founded consultation to political decision makers in the ministries of transport and of the environment. In this context, the achieved methodological and scientific advances were described, and key statements were formulated. These statements refer to the periods 2021–2050 (near future) and 2071–2100 (distant future). As far as possible the results are related to a reference period, mostly the time from 1961 to 1990. Moreover, there were cases when regional differences were highlighted. Then an assessment of the vulnerability of the system “navigable waterway” against climate change followed. Special attention was paid to the intensity of climate variations, their relevance for the operational routine of the Federal Waterways and Shipping Administration in Germany (WSV) and – derived therefrom – to options for adaptation and recommendations for practical applications.

For instance, projections of the influencing factors „river discharge“ and „sea-level rise“ were examined for influences of climate-induced changes on the sediment budgets of the North-Sea estuaries. The projections of the river discharge of the River Elbe in the distant future indicate a slight, but not significant trend towards more frequent occurrences of phases of persistent low river discharges. In view of this finding and in combination with a sea-level rise, it cannot be ruled out that the upstream directed transport of sediment will intensify in the distant future, e.g. in the Elbe estuary, so that increasing volumes will have to be dredged. Recommended adaptation options for river-engineering and sediment management to the projected future conditions were the creation of additional flood plains and an optimised dredged-material management strategy that is better fitted to the upstream river discharge situations and that is additionally supported by the creation of sediment traps. Regarding the quality of the sediments that will be dredged in the future, only the most unfavourable out of five projections suggests deterioration.

The consequences for dredged-material management were also examined in terms of climate-induced changes in the water quality at the coasts and in inland waterways with the associated health risks. Moreover, subjects of studies were the environmental behaviour of construction materials in hydraulic engineering as a possible source of sediment pollution and climate-related modified patterns of organic contaminants in consideration of changing sources of pollution. KLIWAS had a project life from March 2009 to December 2013. The Federal Institute of Hydrology (BfG), the Deutscher Wetterdienst – DWD (Germany’s national weather service), the Federal Maritime and Hydrographic Agency (BSH), and the Federal Waterways Engineering and Research Institute (BAW) cooperated in 30 closely linked projects.

The final reports about the projects will be available at the end of June 2014 via: www.kliwas.de
Some results have already been published in a [List of Products](#).

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Danube River Research And Management (DREAM)

There is an urgent need to integrate use and protection of the Danube River in a sustainable way. Research is of fundamental importance to derive monitoring strategies, modelling and engineering solutions to improve measures suited to reach a win-win situation between economic use and environmental protection of the Danube River. This will be strongly related to the Danube River Basin Management Plan.

An important aim of DREAM is to enable research of hydrodynamic, sediment transport, morphodynamic and ecological processes by means of adequate hydraulic laboratories, that provide a significant discharge (up to 10 m³/s without pumping) and space (large scale models).

To perform innovative research on sediment transport, the following research is relevant:

- Basic research on bed load and suspended load transport in rivers and inundation areas as well as in impounded Danube river sections
- Development and optimisation measures to improve sediment regime and sediment transport (reservoir management, sediment continuum) at dams and impoundments
- Development measures to stop river bed degradation in free flowing section of the Danube river

Further aims of DREAM are to establish commonly agreed field study sites and stations along the Danube River to calibrate and validate physical and computer based models as well as to develop and test advanced river engineering measures under 1:1 conditions, the construction of a research vessel and the establishment of a network of Danube river research institutions

The cooperation of research institutions along the Danube River is intended to improve scientific progress and to stimulate the transfer from Basic Research to the Knowledge Society.

DREAM leads to a basic improvement of research infrastructure and cooperation between research institutions in the Danube basin. The two new laboratories combined with existing ones will offer a unique possibility for large scale physical laboratory investigation allowing fundamental and applied research.

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Marker Wadden restoration project

Markermeer (Lake Marken, 70,000 ha), situated in the centre of the Netherlands, is one of Europe's largest fresh water lakes and a true paradise for (migratory) aquatic birds. Due to the construction of the Lelystad to Enkhuizen dike road in 1976, Lake Marken became separated from Lake IJssel.

Originally it was planned to

reclaim Lake Marken as the last polder in the IJssel area, but this idea was abandoned in 2003 in favor of nature development and fresh water storage. In the following decades the ecological quality in Lake Marken continuously deteriorated, as a consequence of high concentrations of suspended solids that were generated by erosion of silty sediments at the the bottom of the lake. creating anaerobic and dark conditions.



Funds (50 M€) have now been raised by the national and provincial governments as well as a grant from a national lottery, enabling an innovative restoration project aiming to create



"Wadden Sea" like islands by 'building with sediments'. A 10,000 ha archipelago of artificial islands and sandbanks will

be developed, creating diverse habitats (e.g. mud flats, reed marshes and marsh forests) for fish and aquatic bird life. Silt layers that have destroyed mussel banks by smothering will be removed and used as a building material. A 'sediment engine' will be created by dredging channels that are several metres deep, that will trap sediments and improve water quality. This ambitious restoration project is expected to start in 2016.

A short video (in Dutch) is available on the [Marker Wadden restoration project](#).

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Meeting Belgium and Dutch Ecosystem Services communities

On April 22nd 2014 the members of the BEelgium Ecosystem Services (BEES) community and of the Netherlands Community of Practice on Ecosystem Services (CoP-ESD) – met in Antwerp, Belgium.

The aim of the meeting was to get to know each other better and explore if and where BEES and CoP-ESD can share ecosystem services experiences as neighbours. As European member states Belgium and the Netherlands both share the commitment to implement action 5 of the Biodiversity Strategy, which, amongst others, requires to assess and map the status and economic value of ecosystems and their services in our national territories.

At the meeting BEES and CoP-ESD discussed how to make the outcome of this shared activity of use to local and national policy practices, e.g. in support of sustainable, regional development. This resulted in a few concrete recommendations.

To enable the use in local and national policy practices of information on assessed and mapped ecosystems, their services and their economic value, BEES and CoP-ESD recommend:

- The member states that perform national ecosystem assessments to provide inspiring examples that show the opportunities and benefits of using ecosystem services at different scales, thus demonstrating the potential of ecosystem services in practice to increase human well-being;
- The European Commission and national governments to explicitly promote the incorporation of ecosystem services in relevant policies and legislation;
- The European Commission and national governments to use the process of mapping and assessing of ecosystems and their services to trigger an open dialogue on various values of ecosystem services at local, regional and higher scale levels, taking into account who benefits and who faces the drawbacks;
- All working in this field to stimulate the use of a common language, thus facilitating the communication with those involved in local and national policy practices as well as facilitating the assessment and mapping.

Regarding the assessment and mapping BEES and CoP-ESD recommend the member states:

- Not to restrict the assessment and gathering of information to data that can be mapped, but also to use other data available such as text, tables, graphs, etc.;
- To do the assessment and to develop, use and improve the maps interactively, i.e. together with end-users and other stakeholders. This will increase transparency and legitimacy;
- To take into account different ways of valuation (including non-monetary) and different approaches by different stakeholders, without translating them into only one (monetary) unit;
- To produce maps in a way that they are: (1) cross-validated; (2) clear about the conditions of use (purpose, limitations); (3) adaptable to user-needs without re-engineering, thus being modularly built and providing the possibility to scale-up, zoom, make overlays, add and extract data; and (4) easily accessible and useable, also by those who were not directly involved in the production;
- To present the biophysical information both on the current situation and on the potential for sustainable use of ecosystem services under different management regimes and land-use options.

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2014 Riverprize

The International RiverFoundation is accepting applications for the 2014 [Australian Riverprize](#), [IRF European Riverprize](#) and [Thiess International Riverprize](#) awards.

Riverprize is the world's most prestigious environmental award, giving recognition, reward and support to those who have developed and implemented outstanding, visionary and sustainable programs in river management.

Applications can be submitted online , and any organisation involved in river, wetland, lake, or estuary restoration or protection is encouraged to apply for a Riverprize.

Applications will be judged by a panel of experts on criteria including the integration of programs, collaborative approaches and demonstrated achievements.

[Click here for further information](#)

[Click here to apply now](#)

The Thiess International Riverprize and Australian Riverprize applications closed on 9 May, whilst the European Riverprize applications close on 30 May.

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CAP sediments: a new tool for a sustainable management of marine sediment

How to manage dredged marine sediments, polluted by trace contaminants, once stocked out of water?

The local authority (Conseil Général du Var) was pioneer on this topic, proposing the SEDIMARD83 project a few years ago. This project led to the setting up of a pilot treatment site in the Toulon Bay. More than sixty treatment combinations were successively tested to decontaminate the sediments and try to increase their value.

Now, the follow up of this project, which ended in 2009, is the building up of a marine sediments treatment center.

Another outcome of this project is the implementation of a digital library « CAP Sédiments », which aims to capitalize, to share, and popularize all the researches and works done on this topic since the beginning of the 2000's in relation to Mediterranean sediments.

« CAP Sédiments » is a national scale French project, co-directed by INSA of Lyon (National Institute of Applied Sciences) and Insavalor Provadense ; supported by institutional partners, such as French Ministry of Ecology, Sustainable Development and Energy.

A dedicated website has been launched in the end of 2013. Currently in French, its content will be soon extended to all the Mediterranean area and translated into English (« CAP Sédiments MED »).

For further information: www.cap-sediments.fr

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New Contaminated Sediment Guidance Documents Published

Two new good practice guidance documents have been developed to assist contaminated sediment practitioners in Europe. The two documents are aimed at complementing existing publications in use globally, including SedNet publication Contaminated sediments in European river basins (2004). The first publication, Guidance on Characterising, Assessing and Managing Risks Associated with Potentially Contaminated Sediments: Report E1001 (Energy Institute and CONCAWE, 2013), draws together experience and learning from more than twenty years of investigation, assessment and remediation of sediment sites affected by contamination from across the globe, with a focus on the EU. It provides information and advice on the legislative and regulatory frameworks governing the assessment of sediment sites affected by contamination, an overview of a tiered assessment process which can be adopted, design of investigation strategies including selection of investigation tools, risk assessment tools and remediation solutions. A review of global experience in the risk management of contaminated sediment sites is also incorporated, with case studies and key points of learning from each example. The second, complementary publication, Supplementary Guidance for the Investigation and Risk-Assessment of Potentially Contaminated Sediments: A Companion Volume to Energy Institute / CONCAWE report E1001 (CONCAWE and Energy Institute, 2013) further investigates the techniques and solutions which can help reduce

uncertainty in the assessment of potentially contaminated sediments. The publication promotes the use of an iterative process of Conceptual Site Model (CSM) development, data collection, data evaluation and CSM refinement. To aid development of the CSM, a detailed overview of the theory relating to contaminant sources, fate and transport and receptor exposure in the sediment environment is provided, alongside practical examples of data collection and analysis techniques to help draw meaningful conclusions. Risk-based assessment is described throughout the publication, entailing four tiers of assessment, which progress from a qualitative assessment (Tier 0) through to a detailed cause-attribution assessment (Tier 3). The publication also discusses the real challenge in quantifying actual risk – whether to humans or other living organisms – from contaminants in the sediment environment.

For further information, including copies of the publications, please contact the [Energy Institute](#), [CONCAWE](#), author Katy Baker (katy.baker@arcadis-uk.com) or technical advisor Jürgen Thomas (j.thomas@arcadis.de)

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Upcoming events

11-15 May 2014: 24th Annual Meeting of SETAC, Basel, Switzerland, with sessions on “Sorption and bioavailability of organic chemicals: mechanisms and applications in innovative remediation”, “Effects of multiple stressors and salinization on aquatic ecosystems under water scarcity”

www.basel.setac.eu

19-22 May 2014: Battelle Conference on Remediation of Chlorinated and Recalcitrant Compounds (Monterey, California)

www.battelle.org

5-6 June 2014: South Baltic Conference on New Technologies and Recent Developments in Flood Protection, Gdańsk, Poland

www.dredgdikes.eu

1-5 September 2014: 15th World Lake Conference (WLC15), Perugia, Italy: “The Mirrors of the Earth – Balancing Ecosystem Integrity and Human Wellbeing”, organised by ILEC and USMA.

[Call for Abstracts](#) open until 31st March 2014.

3-5 September 2014: River Flow 2014 - International Conference on Fluvial Hydraulics, Lausanne, Switzerland.

<http://riverflow2014.epfl.ch>

9-10 September 2014: Workshop BEST – Durability of geo-constructions containing stabilised/solidified contaminated soils or sediments, Stockholm, Sweden.

Organised by the Swedish Geotechnical Institute (SGI) and Luleå University of Technology (LTU). Please register any eventual interest in enrolling by returning this e-mail at your earliest convenience, however no later than the 5th of June 2014, to Josef Mácsik, LTU/Ecoloop, josef.macsik@ecoloop.se

15-18 September 2014: The 17th International Riversymposium has an overarching theme of ‘Large River Basins’. There is hardly a better location to hold this conference than in Canberra in the Murray-Darling Basin – where much of Australia’s A\$13 billion water reform implementation and large basin planning has occurred since 2007.

<http://www.riversymposium.com>

17-19 September 2014: 4th International Symposium on Sediment Management (I2SM), Ferrara, Italy

<http://i2sm.remtechexpo.com>

17-19 September 2014: 3th International Conference on Sustainable Remediation 2014, Ferrara, Italy

www.sustrem2014.com

22-26 September 2014: Littoral 2014 - Facing present and future coastal challenges.

Jointly organized by the Coastal Research & Planning Institute of Klaipeda University Marine Science & Technology Center, the Baltic States Office of EUCC – Coastal and Marine Union and Association Baltic Valley, Lithuania.

<http://balticlagoons.net/littoral2014>

14-15 October 2014: ESETAC Europe Special Science Symposium (SESSS) on the Bioavailability of organic chemicals: linking science to risk assessment and regulation.

Symposium will be held in Brussels. Programme available at <http://sesss10.setac.eu>

20-21 October 2014: Final SCARCE International Conference: River Conservation under Water Scarcity: Integration of water quantity and quality in Iberian Rivers under global change, to be held in Tarragona, Spain. All information and online inscription can be found at the SCARCE web site: www.scarceconsolider.es

11-14 December 2014: IAHS/ICCE 2014 international symposium – Sediment Dynamics: From the Summit to the Sea, New Orleans, USA. www.rnr.lsu.edu

12-15 January 2015: Battelle 8th International Conference on Remediation and Management of Contaminated Sediments, New Orleans, Louisiana USA. www.battelle.org/sedimentscon

8-13 March 2015: ContaSed - International scientific conference on Contaminated Sediments: Environmental Chemistry, Ecotoxicology and Engineering, Switzerland.
ContaSed is co-organised by the Division of Chemistry and the Environment of the European Association for Chemical and Molecular Sciences (EuCheMS) and by Eawag: Swiss Federal Institute of Aquatic Science and Technology. The conference venue will be at Monte Verità the meeting platform of the Swiss Federal Institute of Technology of Zurich (ETH Zurich) near Ascona in Southern Switzerland: www.csf.ethz.ch
www.contased.org

9-12 June 2015: 13th International AquaConSoil Conference on sustainable use and management of soil, sediment and (ground)water resources, Copenhagen, Denmark
AquaConSoil is organized by Helmholtz Centre for Environmental Research – UFZ and Deltares. Local co-organizer of the event is a consortium consisting of Danish scientists, policy makers, planners and practitioners, headed by the ATV Foundation of Soil and Groundwater.
www.aquaconsoil.org / [LinkedIn Group AquaConSoil](#)

6-9 September 2015: ECSA 55 – Unbounded boundaries and shifting baselines: Estuaries and coastal seas in a rapidly changing world, London, UK
More info will soon be announced at www.estuarinecoastalconference.com

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