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Newsletter - October 2013

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Previous issues: www.sednet.org

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8th International SedNet conference Lisbon, Portugal, 6-9 November 2013 Hosted and co-organised by LNEC "Innovative Sediment Management: How to do more with less"

Just a couple of weeks and then the SedNet Conference will start.
For the preliminary conference program we refer to www.sednet.org.
The final program is in preparation and will become available on the website in the course of October.
You can still register, both for the conference and the exhibition!

Conference registration
A registration form can be found on www.sednet.org.
The conference fee is € 400 (for students € 100) excluding VAT.
Upon registration participants will receive an invoice for the conference fee.
Conference fees need to be received by SedNet before the start of the event.

Exhibition
A number of display spaces is available to institutions, administrations and companies interested in presenting themselves or their products to the conference participants. Companies that are interested in participating in the exhibition can contact the organising secretarial staff at LNEC: Mr José Anacleto - e-mail sednetlisbon@lnec.pt - for information, subscription and payment. Costs for exhibiting are € 1230 inclusive of VAT. Deadline for subscription to the exhibition is **11 October 2013**.

Contact: SedNet Secretariat: marjan.euser@deltares.nl

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Joint Danube Survey 3

The Joint Danube Survey 3 (**JDS3**) is the world's biggest river research

expedition in 2013. Its main goal is to produce highly comparable and reliable information on water quality and pollution for the entire Danube River and its major tributaries and to raise awareness about the importance of the Danube and sustainable water management. The International Commission for the Protection of the Danube River (ICPDR) coordinates the implementation of **JDS3**. Launched on August 14, 2013 from Regensburg, Germany, the boats of the **JDS3** travel 2,375 km downstream the Danube River, through 10 countries, to the Danube Delta in Romania and Ukraine until 26 September.

The specific objectives of **JDS3** include:

- Support to the revision of Danube River Basin District Management Plan by 2015;
- Investigation of invasive alien species;
- Assessment of methods for large rivers;
- Harmonization of sampling methods for WFD biological quality elements;
- Monitoring of new candidate priority substances;
- Identification and prioritization of Danube River Basin District specific substances;
- Trend analysis for Danube River Basin District relevant substances;
- Investigation of quality of sediments;
- Highlight the link between surface water and groundwater pollution;
- Improvement of hydromorphological assessment with the view of developing a harmonized approach for the Danube;
- Interlinking hydromorphology- biology (habitat quality);
- Interlinking chemistry – biology – microbiology;
- Support to future Intercalibration Exercise in Danube River Basin District;
- Specific investigations (zooplankton, microbial, isotopes, ecotoxicology, bioassays);
- Testing new methods;
- Training/learning by doing;
- Public awareness raising.

Three vessels support the expedition. Serbia's Argus, the laboratory ship, Romania's Istros providing accommodation for the scientific staff and storage facilities and the Austrian ship Wien used by the fish experts for their monitoring program.

A total of 68 sites are being sampled. Each sampling site takes about four hours. A wide range of parameters is being monitored an special screening methods are being used for the analysis of hazardous substances. This includes:

- On-site and laboratory analysis of biological quality elements
  - o Macrozoobenthos
  - o Phytoplankton
  - o Phytobenthos
  - o Macrophytes
  - o Fish
  - o Zooplankton
- Microbiological investigations
- Analysis of priority and other substances in water, suspended particulate matter, sediments and biota
- Monitoring of physico-chemical quality elements

- Ecotoxicological analyses and target/non-target screening of organic pollutants (this includes large volume sampling and Effect Directed Analysis (EDA))
- Isotope analysis
- Hydromorphological analysis
  - o Continuous longitudinal survey of 10 km stretches
  - o Detailed hydromorphological characterizations of each JDS3 site.
  - o Sediment characterisation, by collecting river bed material at each sampling site.
  - o Flow velocity and discharge measurements at selected sites.
  - o Suspended sediment measurements.
  - o Water level slope and fluctuation data.

Sediment analysis
Both sediment quality and quantity is investigated during the survey.
The bottom and suspended sediments from all sites will be analyzed for selected priority substances from the Directive 2008/105/EC as well as from the proposal for new priority substances based on COM(2011) 876.
In the frame of the hydromorphological monitoring the river bed material will be collected at each sampling locality covering the main river channel, tributary area and channel bars supposing they occurred in the site (e.g. point bar, lateral bar, mid-channel bar, etc.). Physical characteristics of the river bed material and grain size distribution will be analyzed along the Danube (including evaluation of downstream fining and tributaries impact) and used for detailed morphological assessment of the sampling sites. The data will form a basis for understanding and clarification of the river channel behaviour in relation to its biotic colonisation.

External cooperation
A substantial part of the laboratory services for **JDS3** will be secured as in-kind contributions by the ICPDR Contracting Parties. Leading national hydro-analytical laboratories from Germany, Austria, the Czech Republic and Slovakia as well as the European Commission's Joint Research Centre in Ispra, Italy will carry out the chemical analyses. Laboratory biological analyses will be performed by the Core Team members and their respective institutions after the monitoring survey. Additional in-kind contributions were provided by TZW Karlsruhe (DE) / IAWD, BOKU Vienna (AT) and from the partner laboratories of the NORMAN network.

A strong element of the **JDS3** will be a close cooperation with the new 7th EU RTD Framework Programme project SOLUTIONS (Solutions for present and future emerging pollutants in land and water resources management) managed by the Helmholtz Centre for Environmental Research in Leipzig (Germany).

Final report of the third Joint Danube Survey will be published in autumn 2014.

Find more on: http://danubesurvey.org

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A state of the art overview of sediment quality monitoring in Switzerland

In Switzerland, sediments are considered to be part of the surface waters. According to the Swiss Water Protection Ordinance 24.1.1991, sediments must not accumulate persistent pollutants in order to ensure the protection of aquatic life. However, there is no formal demand in terms of sediment quality and no recommendations are in place. The Water Protection Ordinance is based on the concept of comprehensive protection. To effectively fulfil their numerous functions as habitats for plants and animals and as objects of use for man, surface waters (i.e. lakes, rivers, streams, etc.) must be protected not only from pollutants, but also from all other negative influences. In accordance with this goal, it is intended to carry out an assessment of these functions and of the various pollutant sources in the form of general surveys for cantons and regions, and, in more depth, for individual rivers and streams or complete river basins. The requirements for these surveys can be met by a modular monitoring procedure.

Monitoring programmes are not implemented on a national level, the cantonal services are in charge of applying the Swiss Water Protection Ordinance and to implement the Modular Stepwise System (MSK, www.modul-stufen-

konzept.ch), a multidisciplinary approach thought to provide an integrated assessment of surface waters. The MSK foresees three intensity levels for investigations (regional, water course, and section level) and three types of information or modules: hydrology and morphology, biology (banks and surrounding vegetation, higher water and marsh plants, algae, makrozoobenthos, fish), and water quality (water chemistry and ecotoxicology). Each module can be used independently, and the final articulation of each study will depend on the needs, the objectives, and the time and means available. The methodologies for each individual module are harmonised to ensure that the obtained information from each one is complementary and the results comparable. The methodological guidelines have been published or are on their way, but sediment quality assessment has not been addressed so far.

In 2009, a questionnaire submitted to the cantonal services by the Swiss Centre for Applied Ecotoxicology to explore the level of implementation and the capacities for sediment quality assessment in Switzerland showed that half of the 26 cantons have carried out chemical analyses more or less regularly for monitoring purposes. Some cantons have full monitoring programmes whereas other cantons have only carried out specific studies, if they are doing any sediment assessments at all. This preliminary exercise focused on questions related to the type of study and the characterisation performed (fraction of sediment analysed, analytical methodology), the prioritisation of compounds, and the use of quality criteria among others. The exercise also provided a rank of activities for advancing in the domain of sediment quality assessment according to the interest and needs expressed by cantonal environmental services. The harmonisation of quality criteria for sediments and the definition of quality classes, and the harmonisation of sampling and monitoring strategies were ranked top priorities.

An informal group of experts from the academia, the cantonal services, and other interested parties dealing with sediment quality issues in Switzerland such as contracting laboratories has been meeting periodically to discuss questions and needs as they arise. The aim is to provide recommendations and facilitate the effective implementation of monitoring programmes for the sediment compartment in the confederation.

More information: www.centreecotox.ch

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Mercury contamination on Italian marine coastal areas due to past industrial and mining activities

In Italy several coastal marine areas are identified as National Relevance Contaminated Sites due to past and present anthropogenic pressures and industrial activities. The Institute for Environmental Research and Protection (ISPRA) has been assigned to performing an environmental characterization of these marine coastal areas in order to identify the possible need of remediation action. So, several coastal marine areas were investigated for chemical, physical and ecotoxicological features with specific attention to sediments and organisms because they represent the final fate of contaminants, due to sorption/desorption processes onto suspended particulate matter, and may represent a contamination source in the trophic chain with adverse effects for marine organisms.

Some of this sites showed high concentration of Hg, due to natural and anthropogenic input, strictly correlated to past industrial and mining activities: the Grado Marano lagoon, in the North-East of Italy, and Orbetello lagoon, in the Central area, are affected by considerable levels of mercury due to both anthropogenic (industrial and mining activity) and natural (erosion of hydrothermal mineralization) contribution. The third one is Augusta harbour, in the south of Italy, where important industrial activities were carried out.

The Grado Marano lagoon is a wet area of natural interest, included in the Community Interest Site list, characterized by shallow-water zones separated by several waterways. The main sediment supply is given by the Isonzo river, located on the eastern side in the Trieste Gulf. The Isonzo river drains Hg-enriched sediments derived from the past activity of Idrija cinnabar

mine (Slovenia), and the littoral currents dispersed them along the coast south-westward until Grado Marano lagoon. They enter the lagoon mainly through the East tidal inlet, influencing the outer eastern sector. The start of mining of cinnabar ore dates back to 1490 and continued until 1995, with a production of 107,700 tons of liquid mercury. The second input of Hg in the lagoon is due to Torviscosa chlor-alkaly plant has worked from 1950 until the early '90s with a mercury cell technology, determining also a Hg contamination for soil and groundwater, through Aussa river which is, together with Corno river, the main fresh-water contributors for the lagoon. In particular, Aussa river collected the wastes of the chlor-alkali plant and flowed them into the lagoon, where they had been distributed especially in the inner western sector of the lagoon.
The environmental characterization of the lagoon determined Hg concentrations in the surface sediments up to 55 mg/kg d.w., with the highest values in the eastern sector, the area under the influence of Isonzo river. The presence of bioavailable Hg was demonstrated by its bioaccumulation in the marine organisms. Generally, higher Hg levels were recorded in the muscles of bivalves collected in the Grado area (eastern lagoon) and as regards the fishes, an higher level of bioaccumulation was recorded in the liver, in comparison with muscle.

Also the Orbetello lagoon is an area of natural interest and it's included in the Community Interest Site list. It's used for aquaculture plants and fishing, but it is also affected by anthropogenic impact which may be the source of environmental contamination, like as a disused mine. The Terrarossa site, located on the southern side of the lagoon, was the most important mining site of the area. The extraction was active from 1873 until 1958, when it stopped for the depletion of minerals. The extraction method of iron-manganese minerals determined an high production of residual waste containing several metals, also including Hg, which were discharged directly into the lagoon. Also geological features of the hydrographic basin (Mt. Amiata mineralization) play an important role on the sediment geochemistry of the lagoon determining Hg enrichment.
The environmental characterization determined high concentration of Hg (up to 20 mg/kg d.w.) in lagoonal sediments, mainly in the Eastern basin, both superficial than sub-superficial levels. In order to identify the extent of anthropogenic contribution of Hg in the area, it has been necessary to determine local background values by studying Hg profiles in sediment cores dated by means of ^{137}Cs and ^{210}Pb methodology. The resulting value determined is 0.8 mg/kg d.w. that's one order of magnitude larger than the mean Hg concentration in the upper crust. Also in this case, Hg bioavailability was testified by considerable Hg content in fish muscles, especially in basses.

The coast near the Augusta harbour is affected by high anthropogenic impact due to the strong, past and present, activity of the largest petrochemical centre in Europe, is a natural bay closed by artificial dams in the early '60s which hosts most plants of the petrochemical and where the intense port activity is functional to the industries. The environmental status of marine area is highly influenced by a clor-alkali plant, which was active from 1958 to 2003. Over 500 tonn of Hg were directly discharged in the sea from 1958 to 1979, before the start up of a demercurization plant. In 2003 the plant was closed and in 2005 mercury cells were removed.

As regards Hg contamination, sediments of the southern sector showed the highest concentrations, up to 600 mg/kg in surface sediments, with values reaching 800 mg/kg d.w. in deeper sediments, but also high concentration of Ba, PCBs and HCB were recorded, correlating them to Hg concentration. The correlation of Hg and Ba to contaminants of anthropogenic origin indicates their industrial source. The strong correlation among these contaminants and their decreasing trend - from South to North - suggest a possible common "pollution source" in the southern harbour, where the chlor-alkali plant is present. Thickness of contaminated sediments is very variable in the harbour, indicating different sedimentation rate. However, the highest Hg concentrations in deeper sediments are referable to past years, when remediation facilities to mitigate the effects of industrial wastes were not active. In spite of a detectable environmental improvement, industrial pollution is still very strong to present day. Both native and transplanted mussels from stations close to the industrial piers registered very high Hg concentrations. Also analyses on muscle and liver of fishes pointed out the capacity of accumulation of Hg.
The Augusta Bay may be considered a considerable contributor for Hg contamination at basin scale, due to the outflow of bottom waters that intercept surface meso-scale ocean circulation, with potential widespread

contaminant distribution effects. The narrow continental margin off the Augusta coast, associated to steep slope and several gullies, creates preferential transfer routes for polluted sediments from the internal Augusta basin. So, the potential release of HgT from contaminated sediments could certainly influence the HgT content of the Levantine Intermediate Waters with an effective mechanism of large-scale contamination of the entire Mediterranean basin.

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Improving coastal knowledge transfer between researchers and managers

The coastal zone is a complex and dynamic environment; beaches and estuaries, in particular, are some of the most mutable environments in the world. Shorelines' strong variability in both time and space conflicts with its intense use or static occupation. Thus, it's well recognized that the scientific knowledge on coastal dynamics should contribute to coastal zone management. However, so far, most of the scientific advances on coastal processes have been conducted almost exclusively by the research community; the data sets and results are made available in ways that suit that community, but frequently preclude direct application in coastal management. Moreover, there is a plethora of site-specific information that is frequently detained by coastal manager which is often overlooked by the research community. The above stresses the importance of developing mechanisms to improve coastal knowledge transfer between managers and researchers in a two-way communication approach, aiming at improving the incorporation of scientific outcomes in management instruments. In this sequence, a survey concerning coastal knowledge transfer between researchers and managers, in being conducted in order to identify the advantages and constrains in this communication process as well as to identified the most adequate tools to improve knowledge transfer between this two parties.

This study relies on the contribution of both coastal managers and researchers.
The SedNet community is invited to participate in this study by answering a short questionnaire (5 minutes) available on-line. If your activities focus coastal management please access to www.surveymonkey.com/s/NDTN6S5; if your activities focus coastal research please access to www.surveymonkey.com/s/LXTLDX5.
The author warmly welcomes your participation and thanks you in advance!

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River Rhine wins the first IRF European Riverprize

The International RiverFoundation has awarded the inaugural IRF European Riverprize to the River Rhine.

The award was presented at the Riverprize Gala Dinner in Vienna on Thursday 12 September. The IRF European Riverprize is worth €40,000 and is sponsored by Coca-Cola Europe.

The River Rhine received the award for remarkable achievements in integrated river basin management following a 50 year legacy of river degradation and a devastating chemical accident in 1986. The International Commission for the Protection of the Rhine (ICPR), and other stakeholders in the basin have successfully implemented urban wastewater management strategies and dramatically improved the water quality of the Rhine. Additionally, in the past 15 years, the adoption of new, integrated policies has resulted in the restoration of a substantial area of floodplains in the densely populated Rhine delta.

The European Riverprize Judging Panel, comprised of an all-European panel of experts, selected the River Rhine as the winner as they were able to clearly demonstrate leadership, sophistication and an integrated, complex approach to river basin management whilst overcoming a range of challenges and achieving real on-ground outcomes for river and species health.

Bart Fokkens, Chairman of the European Centre for River Restoration and Chairman of the European Riverprize Judging Panel, said “The Rhine excelled in developing innovative concepts like integrating policies and developing strategies, and were highly successful in their implementation. The Rhine is a European leader in the development of the environmental directives of the European Union and an example for other river basins in Europe and all over the world.”

The ICPR also now has the opportunity to develop a ‘Twinning’ programme – a chance to share their award-winning knowledge in a peer-to-peer relationship with another river basin management organisation. The Twinning programme will receive support from the International RiverFoundation and Global Environment Fund under the IW Learn initiative.

The other finalists in the 2013 IRF European Riverprize were the Órbigo River, the Upper Drau, and the Mura-Drava-Danube.

Full article see: www.riverfoundation.org.au

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SCARCE - Assessing and predicting the effects on water quantity and quality in Iberian rivers caused by global change

For the latest SCARCE Newsletter see: www.scarceconsolider.es

Articles:
- Presentation of the Scarce project in the Ebro Hydrographic Confederation
- Jornadas Internacionales de Sistemas Soporte a la Decisión para la Planificación y Gestión de Recusos Hídricos
- Increasing Pesticide concentrations during drought periods in the Spanish River Basins
- Endocrine disrupting compounds can alter reproduction of freshwater snails
- Assessing environmental services with stakeholders
- Visualizing how biomass growth and extracellular polymeric substances (EPS) alter the infiltration path in variable saturated soils

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Risk-Informed Management of European River Basins

The book with this title was recently published by Springer and contains several contributions of SedNet members. In fact there is also a lot of attention for sediment and its management in the book.

What is the book about?
The growing impacts of economic activities and climate change on the conditions of rivers throughout the world, require a new, integrated approach towards river basin management, an approach that can also cope with an uncertain future. In this volume, leading European scientists and representatives of major stakeholder groups present risk-informed management as this new approach, as developed in the European Commission funded project RISKBASE. It aims to improve the ecological quality of river basins and thus to sustain the goods and services they provide for the benefit of society. Risk-informed management involves the integrated application of three key-principles:
• Being well informed
• Managing adaptively
• Pursuing a participatory approach

The authors explain and underpin these principles in detail, offer inspiring examples from practice and connect them to the implementation of the European Water Framework Directive (WFD).
This book is intended for scientists, consultants and practitioners concerned about river basins, world-wide, as well as the drafters and implementers of the WFD River Basin Management Plans.

More info: www.springer.com, or contact Jos Brils (jos.brils@deltares.nl).

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Upcoming events

2013

13-17 October 2013: ECSA conference Estuaries and coastal areas in times of intense change, Shanghai, China.
www.estuarinecoastalconference.com

4-8 November 2013: International Water Week, Amsterdam, the Netherlands. www.internationalwaterweek.com

6-9 November 2013: 8th International SedNet conference on innovative sediment management, Lisbon, Portugal. www.sednet.org

13-16 November 2013: 11th International Conference "EUROPE-INBO 2013" on the implementation of the Water Framework Directive, Plovdiv, Bulgaria. Organised by the European Group of Basin Organizations EUROPE-INBO.
For abstract submission and registration see www.inbo-news.org .

20-21 November 2013: Second European Symposium on Water Technology and Management, Leuven, Belgium. More info at www.vito.be/vitoevent

25-26 November 2013: 4th SCARCE International Conference: Towards a better understanding of the links between stressors, hazard assessment and ecosystem services under water scarcity, Cádiz, Spain. You can submit abstracts until 15th of October. More info at www.scarceconsolider.es

2014

18-20 March 2014: Intersol 2014 – International Conference and Exhibition on Soils, Sediments and Water, Lille, France. Theme: emerging and persistent organic pollutants (POPs) and associated risks.
Call for papers/posters; deadline for submission **31 October 2013**.
www.intersol.fr

10-11 April 2014: South Baltic Conference on Dredged Materials in Dike Construction in Rostock, Germany / Hohe Düne. organised in the framework of the INTERREG project DredgDikes. project website: www.dredgdikes.eu

3-5 September 2014: River Flow 2014 - International Conference on Fluvial Hydraulics, Lausanne, Switzerland. The Local Organizing Committee invites you to submit an abstract to be presented at the conference. Abstract submission deadline is **1st October 2013**. http://riverflow2014.epfl.ch

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

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