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Newsletter - January 2012

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ISI and SedNet sustainable sediment management training course

There are as yet no examples of the fully fledged integration of sediment management into river-basin management. This was a key driver for UNESCO's International Hydrological Programme (IHP) to establish the global International Sediment Initiative ISI (www.irtces.org/isi). It was also the key driver to – independent of ISI – establish SedNet (www.sednet.org). Both ISI and SedNet promote sustainable sediment management (SSM) and via information available from their websites ample and convincing arguments are provided on the need for SSM. ISI and SedNet – each with their own, highly complementary perspectives and areas of interest – can bring together the state-of-the-art in scientific as well as practical knowledge on SSM. ISI and SedNet offer to make that knowledge available through a – to be developed – practical training course.

The Sava River Basin is a major sub-basin of the Danube River, located in South-Eastern Europe and covers an area of nearly 100.000 km². With the "Framework Agreement on the Sava River Basin" (FASRB), and the establishment of the International Sava River Basin Commission – ISRBC (www.savacommission.org) in 2005, a framework for a transboundary cooperation on the water resources management in the basin has been made. Following the provisions of the FASRB, the ISRBC has developed a draft "Protocol on sediment management to the FASRB" (short 'Protocol'). This Protocol serves as a basic legal document for future cooperation of the Parties to the FASRB in this particular field. The Protocol will oblige the Parties to cooperate on the development of the "Sediment Management Plan for the Sava River Basin".

The Protocol highlights comparable guiding principles to SSM as those endorsed by ISI and SedNet. These 'shared' principles set an excellent condition for cooperation among the Sava countries that will implement the Protocol, and ISI and SedNet to support that implementation with a practical

SSM training course and guidance, whose application can be validated on a practical case of the Sava river basin.

Therefore, the ISRBC, UNESCO IHP, UNESCO ISI and SedNet teamed up to jointly look for funding to make it possible to develop the course and to apply the practical SSM guidance – as trained in the course – in the Sava River Basin as a showcase. The Sava will be a showcase as it is expected that the experience will inspire other river basins (globally) to also apply the SSM guidance.

The seed money for the joint development of the SSM course by ISI and SedNet, and for the application of the SSM guidance in the Sava Basin, has already been secured. Parties are optimistic that they will find the remaining funding needed. Thus, it is anticipated that the course development may start in the first half of 2012. Through the SedNet e-newsletter and website you will be kept informed on further developments.

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Priority substances

Article 16 of the Water Framework Directive requires the Commission to identify priority substances among those presenting significant risk to or via the aquatic environment, and to set EU Environmental Quality Standards (EQSs) for those substances in water, sediment and/or biota.

The Technical Guidance for Deriving Environmental Quality Standards (TGD-EQS 2011) has finally been published. The guidance is available in the [CIRCA WFD public library](#)

"Not all substances require an assessment for a sediment standard. The criteria for triggering an assessment are consistent with those under REACH Regulation (EC) No 1907/2006 (ECHA, 2008, Chapter R.7b). In general, substances with an organic carbon adsorption coefficient (Koc) of $500-1000 \text{ l}\cdot\text{kg}^{-1}$ are not likely to be sorbed to sediment. Consequently, a log Koc or log Kow of ≥ 3 is used as a trigger value for sediment effects assessment. Some substances can occur in sediments even though they do not meet these criteria so, in addition, evidence of high toxicity to aquatic organisms or sediment-dwelling organisms or evidence of accumulation in sediments from monitoring, would also trigger derivation of a sediment EQS."

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The EU Blueprint to Safeguard Europe's Water - Highlighting the Critical Issues for the UK

Conference held on 11th January 2012, in London, UK, Program, presentations, background doc's available at: www.coastms.co.uk

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'AMORAS' – Antwerp Mechanical Dewatering, Recycling and Application of Silt – operational since October 2011

With the AMORAS project, there is a permanent and sustainable solution for the treatment and storage of maintenance dredging material in the Port of Antwerp. This occurs by means of a unique silt treatment system. It consists of a treatment installation for dewatering dredged spoil and purifying process water. The filter cakes left behind, which are at least 60% dry, are stored or reused as environmentally friendly material. The dewatering installation can process approximately 500,000 tonnes of dry material (after dewatering). The construction of the dewatering installation was completed at the end of September 2011. The complete system has been operational since October 1st 2011.

Sufficient draught for shipping traffic is essential in order to safeguard the future of the Port of Antwerp. To guarantee this draught, a large volume of maintenance dredging material must be dredged annually. As of now, however, a spatial saturation point has been reached for applying former storage techniques, such as dumping in quays on land and in overdepths

(underwater cells) in a dry dock complex. Furthermore, these techniques have become unacceptable from a social and environmental engineering standpoint. Therefore, the Government of Flanders decided 5 years ago to address the treatment and storage of dredged spoil in a new and sustainable manner with the construction of a mechanical silt dewatering installation in the Antwerp port area. The project received the name AMORAS which is an acronym for Antwerpse Mechanische Ontwatering, Recyclage en Applicatie van Slib (Antwerp Mechanical Dewatering, Recycling and Application of Silt). The project ensures in a sustainable fashion the annual treatment and storage of approximately 500,000 tonnes of dry material, namely dredged spoil dewatered by a minimum of 60%, in the Port of Antwerp.

In the middle of 2008, the significant AMORAS contract was awarded to the temporary trade association SeReAnt, a combination of Flemish dredging company Jan De Nul and Dredging International (DEME), supported by their respective environmental contractors Envisan and DEC. The awarded amount of approximately EUR 480 million incl. VAT includes construction costs, operation costs and the cost of financing. Construction represents an investment of EUR 118 million. To this end, the Government of Flanders has freed up EUR 46 million in current resources in the construction period (2008-2011). The balance of EUR 72 million is financed by the contractor and will be repaid during the operation phase. Every operation year demands an investment of EUR 29 million, 22 million of which for the actual operation and 7 million for repayment of financing.

Construction was completed on 30 September 2011. This is 6 months later than originally planned due to 2 exceptionally harsh winters (3 months arrears) and necessary changes to the underwater cell and the pipeline which emerged during the course of construction. Actual operation of the treatment installation started on 1 October 2011 and concludes, after 15 years of operation, at the end of September 2026.

More at www.sednet.org
Or go to www.amoras.be

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Screening sediments to be disposed of on land for their hazardous vs. non-hazardous character based on criteria H7, H10 and H11

The increased awareness of the need for sustainable development leads many nations to direct their transportation policies to more environmentally friendly means, like inland water transport. As a result, dredging of waterways required to increase the depth and to keep the channels navigable will gain in importance, as will the amounts of dredged sediments to be managed.

Dredged sediments are typical "mirror entries" of the European List of Wastes: they are either hazardous or non-hazardous, depending on a series of criteria, including their possible carcinogenic (H7), toxic for reproduction (H10) and mutagenic (H11) character. Hazardous wastes have to be treated or/and stored in specialised waste disposal facilities (with added cost), whereas non-hazardous wastes may be re-used (possible income).

The literature holds no paper on a methodology for applying the H7, H10 and H11 criteria in the case of sediments likely to be dredged and disposed of on land. Eventually developed, such a methodology should be applied to extensive and intensive data sets in order to assess the implications of this application in terms of management options of dredged sediments.

A study conducted by Brgm (French Geological Survey) for the French Ministry of Environment addressed the issue. The resulting full paper has recently been published in *Journal of Soils and Sediments* (2011, 11 (7), 1292-1307. DOI 10.1007/s11368-011-0404-x); the abstract is provided below.

Abstract

Purpose According to the European List of Wastes, dredged sediments are either hazardous or non hazardous waste. Our first purpose was to develop a methodology for applying the criteria H7 (Carcinogen, C), H10 (toxic for reproduction, R) and H11 (mutagenic, M) of EU Legislation to the results of Routine Sediment Monitoring Networks - RSMNs. Criteria H7, H10 and 11 are the only ones for which quantitative data are available in RSMNs. The second purpose was to apply, with a perspective of sediment management, the methodology to data sets from RSMNs.

Materials and methods The data sets held up to 4,012 inland and 1,362 marine sediments for trace elements, and up to 2,774 inland and 952 marine sediments for organic micropollutants. Based on i) the trace

elements analysed in RSMNs, ii) a literature review of aqueous solubility of the dangerous inorganic substances (EU list), and iii) a literature review of trace elements speciation in sediments, twelve inorganic dangerous substances with CRM properties were selected. For each substance, the threshold concentrations corresponding to a hazardous waste were then transformed into threshold total trace element contents. For the organic micropollutants, the list of dangerous substances considered was imposed by the content of RSMNs data bases, and the threshold values were directly taken from the waste regulation. The statistical distributions of the data set values were then compared to the threshold values.

Results and discussion Exceedances of the threshold values were observed for all trace elements and were examined more closely by taking into account i) the relative contribution of the carbonates or sulphides fractions and ii) for the dangerous substances containing 2 trace elements (Pb & As, Pb & Cr, Zn & Cr), the observed ratios of the concentrations of the 2 elements compared to the ratios that would be observed if the trace element(s) was(were) present solely as the dangerous substances considered. Overall, only 0.08% of the samples may pose a CRM hazard due to their content in Ni, 0.2% for Cd, 0.26% for Cr, and 0.09% for Zn. The highest concentration of organic contaminant with CRM properties (62 mg/kg, benzo(a)pyrene) remains 16 times below the corresponding threshold value.

Conclusions No CRM hazard results from the organic dangerous substances analysed in RSMNs. For the dangerous inorganic substances holding trace elements analysed in RSMNs, the possibility of CRM hazard exists at most for 0.6% of the samples considered. Taking into account the H7, H10 and H11 criteria in the assessment of the possible hazard caused by dredged sediments analysed in RSMNs will not influence the possible management options for 99.4% of these materials.

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Sediment Data Request

As part of an ongoing review, Environment Canada's Disposal at Sea Programme hosted the Contaminated Dredged Material Management Decisions Workshop in Montreal, Quebec, Canada, on 28–30 November 2006. The major outcomes of the workshop included a strong recommendation to develop a national dredging or sediment management strategy, a potential decision-making framework for the assessment of dredged materials and comparative risk assessment of disposal options, and the expansion of minimum sediment characterization requirements for non-routine disposal permit applications.

Since the workshop, EC has sought advice externally and carried out work internally to address a range of issues in support of framework revisions. These studies provide EC with broad-ranging advice and options. Now, there is the need to critically assess and integrate study results in order to develop and validate a decision framework that consistently, effectively and transparently implements EC's objectives, statutory requirements and policies on dredged material disposal in a manner which does not pose undue burdens on project proponents.

In support of that, we are seeking to identify sediment chemistry (and, ideally, biological, e.g. toxicological, benthic community, biomarker, etc) datasets that are available, and subject them to a series of tier 1 decision approaches recommended in the studies to determine whether different approaches "classify" sediments differently in the context of the DM regulatory framework.

While the disposal at sea program holds a large amount of sediment data, most of it has been collected within the context of the current regulatory framework, and thus that data have the potential to be biased, as data collection was generally "triggered" in the context of the current decision rules. To test whether different approaches would classify sediments differently, an ideal approach would be to test the results using data collected independently of such regulatory triggers – ideally data collected in regional assessment programs, with data from sediments with a range of characteristics, contaminant levels, combinations and sources.

We are seeking data for sediments with data on a suite of metals, (Cd and Hg at a minimum, but also As, Cr, Ni, Pb, Cu, Zn and possibly others), polycyclic aromatic hydrocarbons (PAHs) and polychlorinated biphenyls (PCBs), and, if possible, other organics. If available, data on co-located

biological (e.g. toxicological, benthic community, biomarker, etc) tests will allow for a more critical assessment.

Datasets do not have to be current. In fact, older, and potentially obsolete, datasets might be preferable, so that there is no risk that our assessment could be interpreted as relevant to current decisions. Although there will be a need to archive data sources so that any conclusions can be rigorously reviewed for relevance, we are happy, if it is desired, to present the data in any publications without reference to their source or location.

If you have or know of any appropriate datasets, please either contact us or forward this letter to someone who might. The more extensive and diverse the dataset we use, the more meaningful our conclusions will be. We would be happy to talk to you about any questions or concerns, and appreciate your time and help. Of course, we are more than happy to share results with you and to acknowledge your contribution (if desired) !

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A new book about Chemical Marine Monitoring

The book **Chemical Marine Monitoring: Policy Framework and Analytical Trends** was recently published by P. Quevauvillier, P. Roose and G. Verreest*. The book is the tenth and last volume of the Water Quality Measurement series launched in the year 2000. It has been written by policy-makers and scientific experts in issues related to chemical marine monitoring as required by the international conventions and the EU Marine Strategy Directive. SedNet was invited to contribute to the research and development part. A group of authors from Poland, Germany and Spain lead by Prof. Grazyna Kowalewska from the Institute of Oceanology of the Polish Academy of Sciences prepared a section on **The Role of Sediments in Coastal Monitoring**. The authors would be happy about responses from the SedNet community both generally to the book and to this specific input.

* 2011 John Wiley and Sons Ltd. (ISBN 978-0-470-74765-0)

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International Congress GESeD 10-12 April 2012, Caen, France

The ERPCB (Team for Research in Physical Chemistry and Biotechnology) of the University of Caen Basse-Normandie (UCBN) and the ESITC Caen (School of Engineering and Construction Works) are jointly organizing an International Congress GESeD, as part of the SETARMS project, from 10th to 12th April 2013, in Caen.
The main focus of this event will be the environmental management of dredged sediments.

The principal topics tackled will be the geochemical and geotechnical characterizations of dredging sediments, the development of alternative strategies for the valorization of dredging sediments in civil engineering operations (in particular road construction) and environmental impact.

The first announcement and call for papers also includes more information about the SETARMS project and the Congress and can be found on www.setarms.org

Deadline for abstract submission is 1st April 2012

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EGU session Sediments, and ecosystem and human health, Vienna, Austria - 22-27 April 2012

Session HS9.1/GM7.7 - Sediments, and ecosystem and human health
Conveners: Phil Owens and Ian Droppo

Session details:

In recent years there has been considerable interest in how the quantity and quality of sediment impacts ecosystems and human health. Examples of such impacts include excessive fine-grained sediment on aquatic habitats (such as salmonid spawning gravels), detrimental impacts of contaminated sediment on animal and human health (e.g. pathogens in coastal beaches, mercury in Arctic food-chains), and the role of airborne fine particulates (e.g. PM2.5) on respiratory problems in urban areas. This session welcomes contributions that address these concerns from a variety of different perspectives, including process studies, experimental work, and research that focuses on management needs.

More about this session on <http://meetingorganizer.copernicus.org/>

Deadline for the submission of abstracts was Tuesday 17th January 2012.

For details on the EGU and abstract submission see: www.egu2012.eu

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50th ECSA Conference in Venice – 3-7 June 2012

The Estuarine & Coastal Sciences Association - ECSA is an international organization dedicated to the promotion and advancement of multidisciplinary research into all aspects of estuaries and coasts, and the application of science and technology for their sustainable environmental management, in and outside Europe.

ECSA is the successor to the Estuarine and Brackish-Water Sciences Association which was founded in 1971.

Two of the main goals of the Association are the promotion of the production and dissemination of scientific knowledge and understanding concerning estuaries and other coastal and brackish waters in order to assist in the prevention of environmental deterioration and the encouragement of resource management for the public benefit thereto; and the holding of meetings symposia conferences or other gatherings on subjects relating to estuaries and other brackish and coastal waters. ECSA has been involved in the organization of nearly 50 conferences to date, averaging one or more major events each year. Conferences have been held worldwide with future events planned for South Africa, China and various locations across Europe.

Following its tradition, ECSA will organize in the period 3-7 June in Venice the 50th ECSA conference (www.estuarinecoastalconference.com) in friendship with its associated international journal Estuarine and Coastal Shelf Science (Elsevier). CORILA is participating in the Scientific Committee.

Main themes of the 50th ECSA Conference: Today's science for tomorrow's Management, will consider fundamental natural and social sciences for estuaries, coasts and marine areas putting an emphasis on an integrated and sustainable management of these areas, considering the heavy risks of coastal and transitional environments in a changing climate.

In particular, the themes will cover ecosystem structure and functioning; systems analysis (considering physics, chemistry and biology; biotic and abiotic links, nutrient fluxes and eutrophication in coastal systems, trophic webs in coastal systems); tools for coastal management response, suggesting solutions, indicators; challenging techniques for assessment and for the restoration of systems; ecosystem services and societal benefits.

Considering that the higher percentage of the worldwide population live in the coastal areas also the cultural and economic aspects, links to societal benefits resulting from ecosystem services, will be considered together with the ecosystem science.

Moreover, the 'Future-proofing the science' will be taken into account, climate change scenarios, changing environments including repercussions of temperature changes, freshwater balance and sea level rise (including sinking areas), impact on coastal zones; acidification, in a management vision, pondering disaster management in coastal systems – techniques and approaches for dealing with climate change, and challenging techniques.

More at www.estuarinecoastalconference.com

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Magdeburger Water Protection Seminar 2012 10-11 October 2012, Hamburg, Germany

Conference languages Czech and German
More info at <https://conference.ufz.de/MGS2012>

The first and since then biannual Magdeburger Water Protection Seminar took place even before 1989. Its focus was and still is on all aquatic protection issues relating to the Elbe basin, covering both Germany and the Czech Republic. The focus of this year's seminar will be on sediment issues. It is planned to organize the third SedNet Round Table discussion prior to the seminar, where then results will be reported.

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2012 RiverSymposium Call for Abstracts

The call for abstracts has now opened for the 15th International RiverSymposium, to be held in Melbourne, Australia on 8-11 October 2012. The overall theme for 2012 is '*Rivers in a Rapidly Urbanising World*', and the program will explore six key themes which are then divided in to sub-themes for the purpose of abstract submission. More information on these sub-themes is available on the RiverSymposium website. **Submissions close on 27 February 2012**, and there will be no extension to this date. Please note that all presenting authors must register to attend at least one day of Riversymposium by the earlybird deadline of 11 July 2012. To submit your abstract, visit this link: [RiverSymposium - Call for Abstracts](#)

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Water Framework CIS process

In the context of the Water Framework CIS process a workshop was organized together with DG Environment. Its title was Workshop on Water Management, Water Framework Directive and Hydropower and it was held 13-14 September 2011, Brussels. The presentations can be found on www.ecologic-events.de
A presentation from Italy deals with The role of sediment dynamics in river management legislation (pdf): www.ecologic-events.de

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Managing Sediments in the Watershed

In 2006 US EPA organized a conference "Conference on Managing Sediments in the Watershed - Bringing Dredged Material and Watershed Managers Together"

"Open communication among dredged material, sediment, and watershed managers is essential at all stages of planning and implementation for effective resource management. The conference was designed as a forum to promote communication and to support future coordination. The program highlighted the range of perspectives present and sought to identify actions to encourage further collaboration, particularly at the regional and watershed levels."

Agenda and Presentations can be found on <http://water.epa.gov/>

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Upcoming events

2012:

12-17 March 2012: 6th World Water Forum, Marseille, France.
More info: www.worldwaterforum6.org

20-22 March 2012: 3rd International Symposium on Sediment Management (I2SM), organised by AEACI and Ecole des Mines de Douai. [More info here \(pdf\)](#).

26-29 March 2012: Planet under Pressure conference, London, UK. Session: Managing river corridors under the prospect of climate change; a challenge considering conflicting ecosystem services. [More info here \(pdf\)](#).

20-24 May 2012: 6th SETAC World Congress - Berlin, Germany. [More info here](#).

21-23 May 2012: Global Conference on Oceans Climate and Security, Boston, USA. Organised by The Collaborative Institute for Oceans, Climate and Security at the University of Massachusetts Boston and co-presented by Battelle Memorial Institute. See: www.gcocs.org

23-25 May 2012: Fifth International Symposium on Contaminated Sediments: Restoration of Aquatic Environment. Location: Concordia University Montreal, QC. www.astm.org

28 May-2 June 2012: BALWOIS 2012, 5th International Scientific Conference, Ohrid, Republic of Macedonia. More info: www.balwois.com

3-7 June 2012: 50th ECSA Conference - Today's science for tomorrow's Management, Venice, Italy. More info: www.estuarinecoastalconference.com

26-28 June 2012: IS.Rivers 2012 - 1st International Conference on integrative sciences and sustainable development of rivers, 26-28 June 2012, Lyon, France. [More info here](#).

19-20 September 2012: NORDROCS 2012, 4th Joint Nordic Meeting on Remediation of Contaminated Sites, Oslo, Norway. Abstracts due January 31st, 2012. More info: www.nordrocs.org

23-27 September 2012: ECSA 51, Klaipeda, Lithuania. Research and management of transitional waters. Organiser: Arturas Razinkovas, Coastal Research and Planning Institute, Vilnius, Lithuania, art@corpi.ku.lt. Information: www.corpi.ku.lt and www.ecsa-news.org

8-12 October 2012: 15th International Riversymposium "Rivers in a Rapidly Urbanising World", Melbourne, Australia. Call for abstracts closes on 27 February 2012. More info: www.riverfoundation.org.au

2013:

10-12 April 2013: GESeD - Environmental Management of Dredged Sediments in the framework of the SETARMS project, Caen France. Call for papers is open, deadline for submission 1 October 2012. More info: www.setarms.org

3-7 June 2013: WODCON XX – World Dredging Congress, Brussels, Belgium
www.cedaconferences.org/wodcon

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