



# 5<sup>th</sup> International Symposium on Sediment Management



Montréal, Canada  
10 – 13 July 2016.

Final program

## **WELCOME**

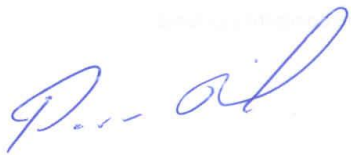
On behalf of the organizing committee, I wish you a warm welcome to i2SM 2016, the 5<sup>th</sup> edition of the International Symposium on Sediment Management. This will be an opportunity to discuss the latest developments in regard to the management, treatment and valorization of sediments.

We have set up a scientific program that will allow everyone to share his knowledge and expertise, and learn how others deal with sediments issues. The symposium is also an opportunity to expand your network and make new friends.

Enjoy Montreal unique culture, as the place where Europe and North America converge. You will find great restaurants and shops, sizzling nightlife and multiple cultural events.

I wish you a very pleasant stay in Montreal and hope you will enjoy the symposium.

Best regards,



Patrice Rivard

Chairman of i2SM 2016

	Sunday 10	Monday 11		Tuesday 12		Wednesday 13	
08:30-10:10		Registration from 8:00 to 9:00		Session 3A: Beneficial reuse & Valorization (translation)	Session 3B: Characterization and monitoring	Session 7A : Contributions from North Africa	Session 7B: Case studies
		Opening +Plenary session					
10:10-10:30		Coffee Break		Coffee Break		Coffee Break	
10:30-12:00		Keynote lectures : <i>Moving Beyond Myopic Sediment Management in the 21st Century</i> by Eric A. Stern <i>Valorization of locally available by-products in Concrete: A Sustainable Solution</i> by Arezki Tagnit-Hamou		Session 4A: Beneficial reuse & Valorization (translation)	Session 4B: Characterization and monitoring	Session 8A: Contributions from North Africa	Session 8B: Poster session
12:00-13:30		Lunch (complimentary)		Lunch (complimentary)		Lunch (complimentary)	
13:30-15:10		Session 1A: USAR project	Session 1B: Environment and Health hazards	Session 5A: Beneficial reuse & Valorization (translation)	Session 5B: Dredging, treatment and remediation	Closing session	
15:10-15:30		Coffee Break		Coffee Break			
15:30-17:10	Registration	Session 2A: Management and Decision-analysis tools	Session 2B: Environment and Health hazards	Session 6A: Dredging, treatment and remediation (translation)	Session 6B: Geotechnique and mining		
18:00-22:00	Welcome reception			Banquet (registration needed)			

## DAY 1 : Monday July 11<sup>th</sup>, 2016

### MORNING (Registration from 8:00 to 9:00)

Opening and Plenary session	
From - to	Speakers
9:00 – 10:00	Patrice Rivard, Organizing committee, Chairman of i2SM 2016 Nor-Edine Abriak, Chairman of i2SM series Mahfoud Benzerzour and Rachid Zentar, members of the permanent committee

Keynote lectures		
From - to	Speaker	Title
10:30 – 12:00	Eric A. Stern, Montclair State University, USA	Moving Beyond Myopic Sediment Management in the 21 <sup>st</sup> Century
	Arezki Tagnit-Hamou, Université de Sherbrooke, Canada	Valorization of locally available by-products in Concrete: A Sustainable Solution

### AFTERNOON

Session 1A : USAR Project special session		
<i>Chairman : Hervé Brequel</i>		
From – to	Speaker	Title
13:30 – 15:10	Mahfoud Benzerzour, École des Mines Douai (FR)	<a href="#">Operational approach of the valorization of dredged sediments: European project USAR (50)</a>
	Guido Verweij, (NETH)	<a href="#">Preventing land subsidence with waste products and sediments (114)</a>
	Simon Browning, Westcountry Rivers Trust (UK)	<a href="#">Potential to reduce sediment and contaminant loss and reuse dredging material in Devon and Cornwall (118)</a>
	Hans Quaeyhaegens, HHSK (BEL)	<a href="#">How beneficial sediment reuse contributes to improve flood defense in Flanders, Belgium (119)</a>
	William Coulet Exo Environmental (UK)	USAR Using Sediment As a Resource, use of marine dredged sediment in coastal saltmarshes as coastal defence
Session 1B : Environment and Health hazards		
<i>Chairman : Tikou Belem</i>		
From – to	Speaker	Title
13:30 – 15:10	Elena Sezenna, Politecnico di Milano, (IT)	<a href="#">Emerging contaminants in sediments: a review (51)</a>
	Mélanie Desrosiers, Centre d'expertise en analyse environnementale du Qc (CAN)	<a href="#">Ecotoxicological risk assessment of contaminated sediments in the Chaudière river after Lac-Mégantic railway accident (92)</a>
	Miguel Mejia Gonzalez, Mexican Institute of Water Technology (MEX)	<a href="#">Arsenic's association with solid phase of the Nazas river sediment (21)</a>
	Veronica Rodriguez-Saldaña, Universidad Nacional Autónoma de México (MEX)	<a href="#">Heavy metals concentration in sediments and mangroves litterfall and bioaccumulation in <i>Cardisoma Crassum</i> (12)</a>

Session 2A : Management and decision-analysis tools		
Chairman : Philip Spadaro		
From – to	Speaker	Title
15:30 – 17:10	Meredith Hayes, The Intelligence Group (USA)	<a href="#">CERCLA sediment remediation – analysis of project cost from completed and planned projects (84)</a>
	James White, Cleveland-Cuyahoga county port authority (USA)	<a href="#">Sediment choreography for commoditization of dredged sediments (98)</a>
	Hervé Bréquel, Centre technologique international de la Terre et de la Pierre (BEL)	<a href="#">On-site analyses as a decision support tool for dredging and sustainable sediment management (33)</a>
	Victor Magar, Ramboll-Environ (USA)	<a href="#">Sustainably Managing Sediments in the Face of Climate Change (19)</a>
Session 2B : Environment and Health hazards		
Chairman : Catalina Alfaro de la Torre Hansen		
From – to	Speaker	Title
15:30 – 17:10	Mohend Chaouche, CNRS/ENS-Cachan (FR)	<a href="#">Stabilization of harbor sediments contaminated with heavy metals in GGBS-based binders (86)</a>
	Axel Falcon-Rojas, Mexican Institute of Water Technology (MEX)	<a href="#">Evaluation of emerging pollutants in a Mexican river (83)</a>
	Adriana Villa-Navia, National Autonomous University of Mexico, (MEX)	<a href="#">Evaluation of polycyclic aromatic hydrocarbon contents in relation to sediment and soil properties (82)</a>
	Robert Leconte, Université de Sherbrooke (CAN)	<a href="#">Modélisation des exportations de sédiments et de nutriments dans le bassin versant de la rivière Tomifobia dans un contexte de changements climatiques (111)</a>

## DAY 2 : Tuesday July 12<sup>th</sup>, 2016

### MORNING (Registration from 8:00 to 8:30)

Session 3A : Beneficial reuse and valorization		
Chairman : Rachid Zentar		
From - to	Speaker	Title
8:30 – 10:10	Mouhamadou Amar, École des mines de Douai (FR)	<a href="#">About the formulation of mortars based on thermally treated sediments (58)</a>
	Tikou Belem, UQAT (CAN)	<a href="#">Beneficial reuse of sulphidic mine tailings as fine sand replacement in composite mortar/concrete mix for underground mine applications (117)</a>
	Agnès Zambon, Université de Bordeaux (FR)	<a href="#">Recycling of marine sediments stemming from dredging for the formulation of lightweight concrete used for embankment (102)</a>
	Pascal Grégoire, Port de Dunkerque (FR)	<a href="#">La valorisation des sédiments marins dans un contexte d'économie circulaire et d'aménagement durable (116)</a>
Session 3B : Characterization and monitoring		
Chairman : William Coulet		
From – to	Speaker	Title
8:30 – 10:10	Anne Hansen, Instituto Mexicano de Tecnología del Agua (MEX)	<a href="#">Internal phosphorus load in a Mexican reservoir, and implications for the rehabilitation strategies (56)</a>
	Victor Magar, Ramboll-Environ (USA)	<a href="#">Direct measurement of freely dissolved chemicals via passive sampling to determine bioavailability in sediments (34)</a>
	Scott Hayter, Ramboll-Environ (USA)	<a href="#">A review of characterization techniques for NAPL impacted sediment (17)</a>
	Kristin Searcy-Bell, Ramboll-Environ (USA)	<a href="#">Monitored Natural Recovery Evaluation of Cottonwood Bay/ Mountain Creek Lake Sediments (1)</a>

Session 4A : Beneficial reuse and valorization		
Chairman : Rachid Zentar		
From - to	Speaker	Title
10:30 – 12:00	Christophe Priez, Colas (FR)	<a href="#">La construction d'une route à base de sédiments marins en préservant les exigences qualitatives (73)</a>
	Jalil Zri, Condorcet (FR)	Nouvelle approche de formulation d'un béton de sable à base du sable de dragage: caractérisation et analyse microstructurale
	Michèle Quéneudec-t'Kint, Université de Picardie (FR)	<a href="#">Sustainability of organic matrix composites with marine sediments. Exposure to low temperatures (40)</a>
	Michèle Quéneudec-t'Kint, Université de Picardie (FR)	<a href="#">Valorisation of clayey sediments in cellular concrete: Influence of the addition of fibres on dimensional &amp; weight variations (41)</a>
Session 4B : Characterization and monitoring		
Chairman :		
From – to	Speaker	Title
10:30 – 12:00	Ali Zaoui, Polytech'Lille (FR) (invited)	<a href="#">Nanoscale analysis of the surface and interfaces between sediment and cementitious matrices (107)</a>
	John Collins, AquaBlok Ltd (USA)	<a href="#">Quality control aspects of active cap materials &amp; placement at east branch grand calumet river: evaluation of sorption characteristics of Aquagate+organoclay™ coated materials (57)</a>
	Ricardo Zarate, Universidad Nacional Autónoma de México (MEX)	<a href="#">Sediment characterization of Mexico City's collectors network in areas with different land use (44)</a>
	Catalina Alfaro-De La Torre, Facultad de Ciencias Químicas (MEX)	<a href="#">Sulphur geochemistry in the sediments of a natural tropical wetland (24)</a>



## AFTERNOON

Session 5A : Beneficial reuse and valorization <i>Chairman : Michèle Quéneudec-t'Kint</i>		
From – to	Speaker	Title
13:30 – 15:10	Nor-Edine Abriak, École des mines de Douai	<a href="#">Evaluation environnementale des bétons à base de sédiments marins (48)</a>
	Abdelfeteh Sadok, École des mines de Douai (FR)	<a href="#">Determination of water demand of dredged sediment in concrete formulations (32)</a>
	William Coulet, Exo Environmental (UK)	<a href="#">Beneficial reuse of dredged material in a breakwater of geotextile bags (11)</a>
	William Coulet, Exo Environmental (UK)	The ecological potential of geosynthetic fabrics to provide novel habitat and trap sediment (10)
Session 5B : Dredging, treatment and remediation <i>Chairman : Eric Stern</i>		
From – to	Speaker	Title
13:30 – 15:10	Jose González, Mexican Institute of Water Technology (MEX)	<a href="#">Experimental study of device for dredging dams (62)</a>
	Chuck Hornaday, TerraTherm (USA)	<a href="#">Use of In-Pile Thermal Desorption® (IPTD®) to Treat Persistent Organic Pollutants in Dredged Sediments (64)</a>
	Alan Fowler, Ramboll-Environ (USA)	<a href="#">Adaptive site management for evaluating potential source control measures at the Anniston PCB site (104)</a>
	Antoine Faure, EDF (FR)	<a href="#">Calcined fine dam sediments as innovative binders: Optimization of the thermal treatment and pozzolanic activity assessment (59)</a>

Session 6A : Dredging, treatment and remediation <i>Chairman : Zahia Adrouche</i>		
From – to	Speaker	Title
15:30 – 17:10	Catherine Gonzalez, École Mines Ales (FR)	<a href="#">Main factors driving contamination mobilization during dredging of harbor sediment: agglomeration/dispersion and/or adsorption/desorption phenomena (5)</a>
	Jean-Philippe Boudreault, Pangeos inc. (CAN)	<a href="#">Simultaneous dehydration and stabilization/solidification treatment of hydraulic dredging sludge (87)</a>
	Hervé Bréquel, Centre technologique international de la Terre et de la Pierre (BEL)	<a href="#">Benefit and limit of froth flotation technique to remove heavy metals from silt fraction of contaminated sediments – Wallonia, Belgium (63)</a>
	Christophe Gamsonré, Enutech (CAN)	<a href="#">Managing Dredged Sediments and Bio-Physical-Chemical Processes Involved (112)</a>
Session 6B : Geotechnique and mining <i>Chairman : Patrice Rivard</i>		
From – to	Speaker	Title
15:30 – 17:10	Tikou Belem, UQAT (CAN)	<a href="#">Self-weight consolidation of cemented paste backfill in 3-m high columns (115)</a>
	Rachid Zentar, École des Mines de Douai (FR)	<a href="#">Packing density of fine and sandy materials: experimental and modeling approaches (68)</a>
	Esmeralda Atarama Ticerán, Anddes Asociados (PER)	<a href="#">Modelling of erosion in watersheds and retention of sediments in mining (53)</a>
	Marie Guittonny-Larchevêque, UQAT (CAN)	<a href="#">Vegetation management on tailings impoundments reclaimed with covers with capillary barrier effects (20)</a>

## DAY 3 : Wednesday 13<sup>th</sup>, 2016

### MORNING

Session 7A : Contributions from North Africa		
Chairman: Mahfoud Benzerzour		
From – to	Speaker	Title
8:30 – 10:10	Belataris Bouabdellah, Laboratory of technical control (ALG)	<a href="#">Study of Sediment from one soil the penetrating section project in Mascara, Algeria (108)</a>
	Abdelaziz. Semcha, Université d'Adrar (ALG)	<a href="#">Utilisation des propriétés pouzzolaniques des sédiments de barrage pour leur valorisation (9)</a>
	Belkacem Mekerta, Université d'Adrar (ALG)	<a href="#">Moyens de lutte pour la prédiction l'envasement des retenues de barrages d'Quizert, Bouhanifia et Fergoug (39)</a>
	Hassan Moulay Omar, Université d'Adrar (ALG)	<a href="#">Étude du contexte géologique des gisements d'argiles d'Adrar dans des applications en génie civil (76)</a>
Session 7B : Case studies		
Chairman: Nor-Edine Abriak		
From – to	Speaker	Title
8:30 – 10:10	William Coulet, Exo Environmental (UK)	<a href="#">Applying Working with Nature to Navigation Infrastructure Projects (8)</a>
	Thomas Kryzak, Air & Earth LLC (USA)	<a href="#">Improvements to Sediment Remediation and Zebra Mussel Removal Technology Results from a Confined Space Project at Knolls Atomic Power Laboratory (KAPL) (103)</a>
	Elodie Bouhoulle, Institut Scientifique de Service Public (BEL)	<a href="#">Valsolindus, a demonstration project of sediment valorisation (97)</a>
	Elvia Raquel Blanco, Universidad Autónoma de San Luis Potosi (MEX)	<a href="#">Hydrologic and geospatial study of the hydrodynamics of the current conditions of the water in the San José dam (85)</a>

Session 8A : Contributions from North Africa		
Chairman : Mahfoud Benzerzour		
From – to	Speaker	Title
10:30 – 12:20	Mohamed Abbou, Université d'Adrar (ALG)	<a href="#">Conception d'éco-matériaux locaux à base de sédiments fluviaux (15)</a>
	Messaouda Debieche, USTHB (ALG)	<a href="#">Characterization of two Algerian bentonites for use in the technical landfills site "TLS" (23)</a>
	Djamila Benyerou, Université Des Sciences et Technologie Oran (ALG)	<a href="#">Étude comparative sur les caractéristiques physico-chimiques des sédiments marins et de barrages (25)</a>
	Hamdache Miloud, National Polytechnic School Oran (ALG)	<a href="#">Technique of control subsidence in the port of Djen Djen to Jijel in Algeria (28)</a>
	Mohamed Mahmoudi, Université Mohamed Ben Ahmed (ALG)	<a href="#">Stocks of natural sand between benefits and harms (45)</a>



## SESSION 8B : POSTERS

1	Fabienne BARAUD (FR)	<a href="#">Accumulation of metals in harbor sediments (14)</a>
2	Lydia LELEYTER (FR)	<a href="#">Environmental impact of Al-contamination sediments (18)</a>
3	Zengfeng ZHAO	<a href="#">About a possible use of dredged marine sediments in partial substitution of cement in the manufacture of mortars (31)</a>
4	Elvia RAQUEL (MEX)	<a href="#">Hydrologic and geospatial study of the hydrodynamics of the current conditions of the water in the San José dam (85)</a>
5	Christophe DEBOFFE (FR)	Conception d'un micro-simulateur de pluie pour l'évaluation environnementale de matériaux de construction incorporant des sous-produits (80)
6	Hassane AZRAR (FR)	<a href="#">The effect of curing time and temperature on the strength of road material made of sediments (2)</a>
7	Walid MAHERZI (FR)	<a href="#">Study of the physical and mechanical properties of road gravel reconstituted from dredged marine sediment and sand (49)</a>
8	Vincent DUBOIS	<a href="#">Backfilling grout including a major part of fine sediments (60)</a>
9	Kharroubi OUISSEM (FR)	<a href="#">Evaluation of a micro-portable rainfall simulator for hydrological and environmental studies (61)</a>
10	Fawzi HAMOUCHE (FR)	<a href="#">Impacts of organic matter on physical properties and the mechanical behavior of dredged sediments (69)</a>
11	Edouard PATAULT (FR)	<a href="#">Suspended sediment transport and sediment fingerprinting in the watershed of the Canche (Nord-Pas-de-Calais, France): a multi-parameter approach (16)</a>
12	Mishel MELENDEZ (PER)	<a href="#">Modelling of erosion in watersheds and retention of sediments in mining (53)</a>
13	Driss DJAFARI (ALG)	<a href="#">Characterization and sludge valorization in cement industry (7)</a>

## Keynote Speakers

### Eric A. Stern



Eric A. Stern is the Principal (Integrated Sediment Management) of Environmental Adaptive Strategies, LLC (EAS, LLC). Prior to the launch of EAS, LLC in April 2014, Eric was a Research Leader in Sediment Management for Battelle Memorial Institute (Energy and Environment Business Global Business Unit/Environmental Solutions Services). Eric led the development and implementation of their Integrated Sediment Management (ISM) Practice and growth strategy with a focus on sustainable innovative cross-program applications. Eric was the Co-Chair of the Battelle 7th Int. Conference on the Remediation of Contaminated in 2013 (Dallas, USA). Eric also held the position as Program Director for Environmental Resource Management (ERM) in their Sediment and Watershed integrated Management (SWiM) Practice. His specialization is in contaminated sediments and dredged material assessment/management, integrated sediment decontamination innovative technology (treatment train) development, beneficial use of sediments, and Regional (Urban) Sediment Management as it applies to sustainable practices in complex watershed systems and applications of regional sediment processing facilities.

Eric has a appointment at Montclair State University, Montclair, NJ as a Research Associate in the School of Science and Mathematics and works closely within the Graduate Department of Earth and Environmental Studies, and the Doctoral Program in Environmental Management. He is Co-Chair of the Passaic River Institute Steering Committee. His research and applied interests includes integrated contaminated sediment management, urban and Regional Sediment Management, beneficial use applications of dredged material and post-treated contaminated sediments, sediment sustainability, development of integrated system approaches to managing contaminated sediments, innovative decontamination treatment technologies (ex and in-situ), multi-media waste to energy technologies with beneficial use applications and implementation of commercial scale regional sediment processing facilities.

### Arezki Tagnit-Hamou



Arezki Tagnit - Hamou is a professor in the Civil Engineering Department at the University of Sherbrooke (Canada), and Fellow of the American Concrete Institute (ACI). He is the director of the Centre for Research on the Concrete Infrastructure of UdeS (CRIB-US) and the Laboratory of Cementitious Materials at UdeS. He is the director of the international associated laboratory (LIA), UdeS / IFSTTAR ECOMAT "Eco Materials for infrastructure and buildings". He is also the head of the Industrial Research Chair on Valorization of Glass in Concrete.

His expertise is internationally recognized in the areas of the microstructure and physical chemistry of silicates and concrete, green concrete and recycling of industrial by-products. He used his expertise to conduct technology transfer in areas such as quaternary cement; glass powder and fly ash from biomass in concretes. He is also a member of the Strategic Development Consul (SDC/ACI) whose role is to make technology transfer in concrete industry in North America. He received the prestigious JC. Roumain Award for Innovation in Concrete (ACI) and twice recipient of the ADRIQ/NSERC University-Business Partnership Award. He is author and co-author of several papers in international journals and conferences and patents. He is also president or vice president and member of several technical committees and international standards (ASTM, CSA, RILEM, ACI).

## **I2SM Permanent Committee**

Pr Nor-Edine Abriak (France)    Chairman of i2sm series

Pr Mahfoud Benzerzour (France)

Pr Rachid Zentar (France)

## **I2SM 2016 Organizing Committee**

Pr Patrice Rivard                      Chairman of i2sm 2016

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