



NORDIC WATER 2012  
XXVII NORDIC HYDROLOGICAL CONFERENCE

# Catchment Restoration and Water Protection

13-15 AUGUST, 2012 IN OULU – FINLAND

Conference Programme

*It's all about  
Hydrology*

# BRIGHTER DAYS AHEAD FOR PRESENT AND FUTURE GENERATIONS

Fortum's operations are focused on the Nordic countries, Russia, Poland and Baltics. In the future, the further integrating European and fast-growing Asian energy markets provide additional growth opportunities.



Dear colleague!

We are delighted to see you here in the 27<sup>th</sup> Nordic Water conference. This biannual conference series is focusing on water resources, hydrology and related sciences. Providing good solutions to our water resources requires an interdisciplinary approach and in these conferences, this criterion is well fulfilled. The conference has once again brought together an extensive group of scientists, managers and decision makers to discuss recent trends in water research and water resources management.

Finding cost-effective and acceptable methods to improve the status of water bodies is an essential task for the future. Northern conditions place particular demands regarding natural environment, climate and socio-economic development. Generally, water is highly valued and good water quality is required for drinking water, watercourses and groundwater systems. This calls for high-level research and knowledge.

Nordic Water 2012 conference will present recent scientific progress from many fields of hydrology and water resources. In total over 200 abstracts were submitted from almost 40 countries, most coming from the Nordic and Baltic countries. These contributions have been set to over ten scientific sessions covering also the conference main theme on catchment restoration and water protection.

We thank all the contributors who have made this conference possible. This includes all persons in the scientific committee and organizing committee. We also thank all the authors who submitted their presentations. Special thanks are to the five keynote speakers, Cintia Bertacchi Uvo, John Doherty, Nikolai Friberg, Aaron Packman, and Per Stålnacke. The funding from all the sponsors is well acknowledged. Special thanks are to our main sponsors Finnish Ministry of Forestry and Agriculture, Federation of Finnish Learning Societies, Maa - ja vesiteknikan tuki r.y., Maj and Tor Nessling foundation, Sven Hallin Foundation, and University of Oulu.

**Bjørn Kløve**

chair of scientific committee

University of Oulu, Department of Process and Environmental Engineering, Water Resources and Environmental Engineering

**Riitta Kamula**

chair of organizing committee

University of Oulu, Thule Institute

## Organizers

The Conference is being organized by the Water Resources and Environmental Engineering Laboratory, University of Oulu in collaboration with Thule Institute, VALUE Doctoral Program, LYNET, and the Finnish Hydrological Association on behalf of the Nordic Association for Hydrology (NHF).

University of Oulu is one of the largest universities in Finland and it is known for its interdisciplinary research and academic education.



The Water Resources and Environmental Engineering Laboratory belongs to the Process and Environmental Engineering Department, University of Oulu. The focus of the Laboratory's research and education is on water and soil environmental engineering.



Thule Institute is a multidisciplinary research centre in the fields of environmental and northern issues and natural resources at the University of Oulu.



VALUE - Doctoral Program in Integrated Catchment and Water Resources Research is a nationwide program, with eight participating Finnish universities and six research institutes. The integral theme of VALUE is comprehensive analysis of watershed activities and their impacts.



LYNET is a Consortium for Research on Natural Resources and the Environment in Finland. LYNET offers joint research programmes and expertise services. LYNET aims to unify data management, environmental monitoring, joint activities and services.



The Finnish Hydrological Association is an independent scientific society. The association was founded 1997 and aims at providing connections and activities on national and international level for Finnish hydrologists.

With approximately 200 members the Nordic Association for Hydrology (NHF) is an independent association which works towards improving the understanding of hydrology and hydrological methods used within applied sciences and water planning in Northern Europe.

## Committees

### Scientific committee

**Chair:** Prof. Bjørn Kløve, University of Oulu, Finland

**Members:**

Ass. Prof. Elga Apsite, University of Latvia, Latvia

M.Sc. Johannes Deelstra, Bioforsk, Norway

Prof. Timo Huttula, Finnish Environment Institute, Jyväskylä, Finland

Dr. David Gustafsson, KTH Royal Institute of Technology, Sweden

Ass. Prof. Dr. Hrunn Ó. Andradóttir, University of Iceland, Iceland

Prof. Arvo Järvet, University of Tartu, Estonia

Dr. Riitta Kamula, University of Oulu, Finland

Dr. Diana Meilutyte-Barauskiene, Lithuanian Energy Institute, Lithuania

Dr. Lars Troldborg, Geological Survey of Denmark and Greenland, Denmark

Prof. Arvydas Povilaitis, Lithuanian University of Agriculture, Lithuania

Ass. Prof. Petteri Alho, University of Turku, Finland

Prof. Timo Muotka, SYKE - Finnish Environment Institute, University of Oulu, Finland

Dr. Katri Rankinen, SYKE - Finnish Environment Institute, Finland

Prof. Maria Viklander, Luleå University of Technology, Sweden

Prof. Cintia Bertacchi Uvo, Lund University, Sweden

Prof. Harri Koivusalo, Aalto University, Finland

Dr. Hannu Marttila, University of Oulu, Finland

Prof. Anne Tolvanen, Metla, University of Oulu, Finland

Dr. Timo Karjalainen, Thule Institute, University of Oulu, Finland

Prof. Jaakko Erkinaro, RKTL - Game and Fisheries Research, Finland

Prof. Ari Jolma, Aalto University, Finland

Dr. Jonas Olsson, SMHI - Swedish Meteorological and Hydrological Institute, Sweden

Ass. Prof. Helen Kristine French, Norwegian University of Life Sciences, Norway

Dr. Jarkko Okkonen, Geological Survey of Finland, Finland

Prof. Knut Alfredsen, NTNU - Norwegian University of Science and Technology, Norway

Dr. Anna-Kaisa Ronkanen, University of Oulu, Finland

### Local organizing committee

**Chair:** Dr. Riitta Kamula, Thule Institute, University of Oulu, Finland

**Members:**

Prof. Bjørn Kløve, University of Oulu, Finland

Prof. Seppo Hellsten, SYKE - Finnish Environment Institute, Finland

Dep. Director, Senior Researcher Riku Paavola, Oulanka Research Station, Finland

Planner Pirjo Taskinen, Thule Institute, University of Oulu, Finland

Coordinator Jouko Inkeröinen, Thule Institute, University of Oulu, Finland

PhD Student Elisangela Heiderscheidt, University of Oulu, Finland

PhD Student Pekka Rossi, University of Oulu, Finland

Researcher Hanna Arola, SYKE - Finnish Environment Institute, Finland

## General information

### VENUE

Nordic Water 2012 is held in the Environmental Sciences Building, Linnanmaa Campus of the University of Oulu, street address: Rakentajantie 3, Oulu, Finland.

### LANGUAGE

The official language of the conference is English.

### BADGES

Please wear the badge the whole conference time for entrance in the conference halls; lunches; coffee, exhibition and poster session area; welcome reception and conference dinner.

### POSTERS AND ORAL PRESENTATIONS

Please bring your posters in the reception desk during the registration hours. Posters will be stuck up by the conference assistants.

### REGISTRATION HOURS

Monday August 13, at 8:00- 16:30

Tuesday August 14, at 8:00-13:00

Wednesday August 15 at 8:30-16.30

### ACCESS TO INTERNET

Access to internet is free via open network panOULU in the city center, airport and university campuses.

### CONFERENCE SERVICES

Conference services is provided by Konffa Ltd, p. +358 10 29 26 500.

## Social programme

### WELCOME RECEPTION

*Monday August 13, 19:00-20:30, Oulu City Hall, Kirkkokatu 2a, Oulu*

Conference welcome reception will take place at the Oulu City Hall, newly renovated administration building of the city. The building was taken into use in 1886, when it served as a meeting place for high society. Nowadays, the neo-Renaissance assembly hall of the building is again in its original use as a superb venue for social receptions.

### CONFERENCE DINNER

*Tuesday August 14, 19:00 onwards, Raatti Youth Center, Raatintie 7, Oulu*

Raatti Youth Center is in the walking distance from the city centre. The original wooden building was taken into use as a restaurant in 1874. The extension, made of stone, was completed in 1934. Today the building, owned by Oulu YMCA, serves a wide variety of users, from administration of YMCA Oulu to youngsters practicing their sporting- and cultural skills to general public celebrating their big events of life.

## Conference tours

### GUIDED WALKING TOUR IN THE OULU CITY PARK

*Tuesday August 14, starting at the Restaurant Lasaretti, Kasarmintie 13, Oulu*

The guided walking tour will take conference participants into the City Park, located next to the Oulu city centre. The Park features hydrological interests such as old water powerhouses, small brooks and creeks with scenic white wooden bridges, and a fishway built not only for fish migration but also to increase detention time in the pool below. The Park is actually a part of the delta area of the River Oulujoki, providing a close look to the history of the area.

### ROKUA

*Rokua Esker Aquifer and Groundwater-Dependent Ecosystems, August 16, starting at 8:00 at the Oulu city centre in front of City Hall; return at about 21*

This excursion will pass through the Oulu river basin, ending at the Rokua esker, about 70 km east of Oulu. Rokua esker was formed during the last deglaciation and has the status of a Finnish national park. It is also the first Geopark site in Finland. The esker has several clearwater lakes that are dependent on groundwater.

During the excursion, hydrogeology, groundwater monitoring and recent research on surface-groundwater interactions in eskers will be introduced. In addition, issues such as the impacts of land use (i.e. forest drainage) and climate change on groundwater are being studied at Rokua and will be introduced during the excursion. The excursion will finish with a traditional Finnish summer evening event, with sauna and refreshments.

Cost: 85 €; includes travel from and to Oulu, meals and refreshments.

### OULANKA

*Oulanka Research Station and National Park, August 17 to 19, departure at 8:00 at the Oulu city centre in front of City Hall; return on Sunday 19 in due time*

Oulanka National Park is located in north-eastern Finland in an upland region. The area is a unique and versatile combination of northern, southern and eastern nature. In 2002, Oulanka National Park received the international PAN Parks Certificate. Oulanka Research Station was established in 1966, and in the 1990's, the environmental monitoring programs of the station were complemented by the European Monitoring and Evaluation Programme. Other important activities include phenological monitoring and analyses of water quality in streams, rivers and ponds.

The excursion will introduce the activities of the Oulanka Research Station and the main features of the area by means of short excursions and presentations. Oulanka has excellent possibilities for outdoor recreation including rafting, canoeing and hiking.

Cost 160 €; includes travels to and from Oulanka, accommodation in double room, linen, all meals, small bus tour. Extra costs from rafting, canoeing; accommodation in a single room / in separate apartment

### POST-CONFERENCE COURSE

A course on calibration and uncertainty analysis of environmental models using PEST will be held on August 16-22, 2012. The course is fully-booked.

## Keynote speakers



### John Doherty (Australia)

“Environmental modeling - encapsulating what we know and quantifying what we don't”

Dr. John Doherty works primarily as a private consultant. He also works in a part-time capacity at the National Centre for Groundwater Research and Training at Flinders University, Australia. There is a considerable overlap between his research and consulting interests. These focus mainly on the following topics, all of which attempt to serve the greater purpose of maximising the use of environmental modelling in the decision-making context:

- Solution of the inverse problem of model calibration in ways that are numerically efficient but that allow maximum usage of both field data and expert knowledge
- Quantification of the uncertainty associated with model predictions of management interest
- Development of a theoretical understanding of the benefits and costs of simplicity vs. complexity in environmental models
- Appropriate use of models in the environmental decision-making process.

### Cintia Bertacchi Uvo (Sweden)

“The interacting system of climate and hydrology”

Cintia Bertacchi Uvo is a Professor at the Department of Water Resources Engineering, Lund University. Her research interests lie on how climate and hydrology affect, interact and relate to each other in different time and space scales, typically from monthly to decadal. Prof. Uvo's work is essentially interdisciplinary and dedicated to understanding of processes that are then statistically modelled and applied. In the latest years, the development of seasonal hydrological forecast based on climate variability has included a large part of her research. Her work is very collaborative and international. Applications of her work have been made in many parts of the world and in collaboration with diverse institutions worldwide.

Prof. Uvo is also very active in education of doctoral students and has created several international courses with the objective of stimulating young researcher to comfortably walk on the bridge that connects climate and hydrology.



### Per Gustav Stålnacke (Norway)

“How slow can it be? Spatial and temporal considerations on nutrient retention from source to river mouth”

Dr. Per Stålnacke is the head of the Department of Water Quality and Hydrology at Bioforsk Soil and Environment, Norway, and is also vice-President of IAHS ICWQ. His research interests lie in integrated water resources management and the policy-science interface. In addition, he has considerable experience in assessment of nutrient fluxes at river basin scale. According to Dr. Stålnacke, there is a huge research need to accurately quantify hydrological pathways and develop better tools to assess and improve the understanding of how long it may take before we can observe improved water quality due to mitigation measures implemented. These are the apparent needs in relation to the WFD and the HELCOM BSAP. At Nordic Water 2012, Dr. Stålnacke will present and discuss some very recent results on nutrient retention in the Baltic Sea drainage area and time trends in selected rivers in the Baltic Sea countries and Europe.

## Keynote speakers



### Aaron Packman (USA)

“Overview of surface-groundwater interactions in the context of river degradation, water quality and ecosystem processes”

Aaron Packman is a Professor at the Department of Civil and Environmental Engineering, McCormick School of Engineering and Applied Sciences, Northwestern University. His research focuses on environmental and microbial transport processes, with particular emphasis on understanding the basic processes that control interfacial transport in aquatic systems and the coupling of physical transport processes with biological and biogeochemical processes in dynamic natural environments such as rivers. Prof. Packman's work is highly collaborative and encompasses basic fluid mechanics, particle transport and morphodynamics, microbiology, and aquatic and surface chemistry. Important applications include contaminant transport and water quality, microbial habitat conditions and benthic microbial ecology, nutrient and carbon cycling, ecosystem degradation and restoration, control of biofilm-based infections, and the transmission of waterborne disease.

Prof. Packman has received several awards for his work, including Career awards from the U.S. National Science Foundation and National Institute of Health, and the Huber Research Prize from the American Society of Civil Engineers. He is currently associate editor of the leading aquatic sciences journal *Limnology and Oceanography* – Fluids and Environments, and is vice-President of the International Association for Sediment Water Science. He is also very active on technical committees and panels addressing sediment contamination, hydrological synthesis and waterborne disease transmission.

### Nikolai Friberg (Denmark)

“Restoring stream ecosystems in a changing climate:

Dr. Nikolai Friberg is Deputy Head of the Department of Bioscience at Aarhus University. He has more than 20 years of research experience in the field of freshwater ecology, working both in Denmark and abroad. The main focus of his research is on applied issues and how anthropogenic disturbance affects freshwater communities. His scientific work in the past has evolved around community ecology and centred on three overall themes:

- The influence of habitats and anthropogenic stressors (organic pollution, pesticides, etc.) on stream biota and ecosystem processes
- The influence of riparian areas and catchment land use on stream communities and biological structure, including effects of restoration measures
- The effects of climate change on stream ecosystem structure and functioning, including food web architecture.

His main research interest at present relates to the interactions between organisms across levels of organisation and how this influences ecosystem processes, including recently how food webs change in relation to climate. He is currently involved as Work Package leader in a new EU FP 7 project, REFORM, on detecting habitat degradation and developing evidence-based ways of restoring rivers. He is currently President of NORBS (Nordic Benthological Society) and is the Danish representative in CHIN and Euraqua.



Programme – Monday, August 13

8:00	<b>Registration</b>				8:00
9:00	<b>Welcome session 9:00-9:45, Lecture Hall IT116</b> Rector Lauri Lajunen, University of Oulu Prof. Björn Klöve, Chair of NHC2012 Scientific Committee, University of Oulu DTEch Riitta Kamula, Chair of NHF, Thule Institute Prof., Head of Unit Timo Huttula, Finnish Environment Institute				9:00 9:15 9:30
9:45	<b>Keynote Session 9:45-10:30, Lecture Hall IT116</b> Aaron Packman Overview of surface-groundwater interactions in the context of river degradation, water quality, and ecosystem processes				9:45 10:00
10:30	<b>10:30-11:00 COFFEE, Lobby, Environmental Sciences Building</b>				11:00
	<b>GROUNDWATER</b> Lecture Hall IT116	<b>SEDIMENT FLUXES</b> Lecture Hall IT115	<b>CLIMATE AND HYDROLOGY</b> Lecture Room IT113	<b>FLOODS AND DROUGHTS</b> Lecture Room IT112	
11:00	Methods to identify groundwater interaction with river water in the catchment of the River Vantaa, southern Finland; Anna-Liisa Kivimäki, Kirsti Korkka-Niemi, Anne Rautio, Kirsti Lahti, Veli-Pekka Salonen and Heli Vahtera	Analysis of water balance and subsurface drainage methods in a clayey agricultural field; Mika Turunen, Lassi Warsta, Harri Koivusalo, Jyrki Nurminen, Maija Paasonen-Kivekäs, Helena Äijö, Merja Mylly, Laura Alakukku and Markku Puustinen	Climate Change in a Part of Northern Europe in the Context of the Spatial Differences of the Contemporary Climate; Daiga Cepite-Frišfelde, Tija Šile, Uldis Bethers, Juris Senņikovs and Andrejs Timuhins	A comparison of different approaches for forecasting spring floods in Sweden and the feasibility of a multi-model forecast system; K Foster, J Olsson, C B Uvo, W Yang and J Södling	11:00
11:15	Investigation of stream temperature response to nonuniform groundwater discharge in a Danish lowland stream; Karthikeyan Matheswaran, Morten Blemmer, Paul Thorn, Dan Rosbjerg and Eva Boegh	Modelling water flow and soil erosion in clayey, subsurface drained agricultural fields with FLUSH model; Lassi Warsta, Tuomo Karvonen, Harri Koivusalo, Maija Paasonen-Kivekäs, Antti Taskinen and Pertti Vakkilainen	Evaluation of Long-term Discharge in Swedish Rivers - In search for Decadal Oscillations and the Relation to Known Climate Patterns; Angelica Lidén, Karin Persson, Kean Foster and Cintia B. Uvo	Flash floods trend detection in Lithuanian rivers; Diana Meilutytė-Barauskienė and Diana Šarauskienė	11:15
11:30	Occurrence and water properties of groundwater outflows from porous deposits on Polish Plain, western Poland; Anna Szczucinska	Estimation of vegetative flow resistance in environmental channels: Experimental investigations with natural vegetation; Kaisa Västilä and Juha Järvelä	Long term variability of Swedish river runoff as represented by EC-EARTH in past and future climates; K Foster, O Siergieieva, D Correl and Cintia B. Uvo	Land use as a factor affecting flood characteristics in small catchments; Vaclav David and Tereza Dvorakova	11:30
11:45	Effect of groundwater availability on riparian vegetation; Lenka Kuglerova and Roland Jansson	Empirical models for sediment transport from hillslopes in hydrological watersheds; Hafzullah Aksoy and Ebru Eris	Changes in hydrological regime of the lakes in Latvia; Elga Apsite, Andrejs Zubanics, Didzis Elfer and Inese Latkovska	Flood risk modelling for basin of the Daugava River; Juris Senņikovs, Aigars Valainis and Anita Piliksere	11:45
12:00	Regional groundwater flow modelling of aquifer-peatland interactions. A case study from the Lanoraie Peatland complex Quebec, Canada; Bourgault Marc-André, Larocque Marie and Martin Roy	Modelling long-term patterns in suspended sediment in a mixed land use Swedish catchment; Martyn Futter, Stefan Hellgren and Faruk Djodjic	On climate prediction: performance evaluation of RCMs; Arun Rana, Shilpy Madan and Lars Bengtsson	High-resolution multi-temporal contiguous mapping of river bed and flood-plain by combining laser scanning with UAV-photogrammetry based bathymetry; Claude Flener, Antero Kukko, Anttoni Jaakkola, Anssi Krooks, Matti Vaaja, Elina Kasvi, Harri Kaartinen, Hannu Hyyppä, Juha Hyyppä and Petteri Alho	12:00
12:15	Solution of a pumping cost minimization problem for the Tahtali watershed (Izmir-Turkey) using linked simulation-optimization models; M. Tamer Ayvaz and Alper Elçi	Geomorphological-ANN Based Modeling for Estimation of Suspended Sediment Load; Vahid Nourani, Aida Hosseini Baghanam and Elnaz Sharghi	Ground frost variation in Finland; Mirjam Orvomaa and Risto Mäkinen	Multivariate analysis of the relationship between volume and time duration of the flood waves; Veronika Bačová Mitková, Dana Halmsová and Pavla Pekárová	12:15
12:30	<b>10:30-11:00 LUNCH, Restaurant Discus, Linnanmaa Campus</b>				12:30
	<b>GROUNDWATER</b> Lecture Hall IT116	<b>PRECIPITATION &amp; WATER BALANCE</b> Lecture Hall IT115	<b>PEATLANDS &amp; FOREST</b> Lecture Room IT113	<b>RIVER PROCESSES AND CLIMATE CHANGE</b> Lecture Room IT112	
13:30	Mathematical estimation of shallow groundwater fluctuations under different aquifer characteristics; Artūrs Veinbergs, Didzis Lauva, Valdis Virčavs, Kaspars Abramenko, Zane Dimanta, Ilva Vītola and Agnese Gailuma	A regionalized spatial-temporal point process model of rainfall; Paul Cowpertwait	Can temporal detention of runoff water be used as water protection method in peatland forestry? Hannu Marttila, Kari-Matti Vuori, Hannu Hökkä, Juha Jämsen and Björn Klöve	Fluvial processes and their future magnitudes: combined field observation and simulation approaches; Eliisa Lotsari	13:30
13:45	Isotopic tracers and microbial life at an artificial recharge plant in Southern Finland; Paula Niinikoski, Johanna Ojala, Nina Kortelainen and Juha Karhu	Two-way coupled atmospheric-hydrological model and its application in Rio Grande basin, Brazil; Fábio F. Pereira and Cintia B. Uvo	The effect of water table rising on DOC, N, P, and Fe release from restored peatland forests; Mika Nieminen, Annu Kaila, Sakari Sarkkola, Zaki Asam, Liwen Xiao, Ari Laurén and Hannu Hökkä	Comparison of river plume models – Case study of Rhone river; Akiko Mano and Ninni Liukko	13:45
14:00	The effect of soil type and geochemical properties on pathogen transport in an esker aquifer – A column study; Backnäs, S., Kauppinen, A., Hyvärinen, N., Pitkänen, T., Hokajärvi, A-M. and Miettinen, I.T.	Improving the accuracy of a grid-based distributed hydrological model using sub-grid scale parameterization of elevation data; Hannu Lauri, Timo Räsänen and Matti Kummu	Impact of hydrological mire restoration on spring invertebrate communities; Jari Ilmonen, Risto Virtanen, Lauri Paasivirta and Timo Muotka	Stream flow forecast and operation of Dautieng reservoir for adaption on climate change – a case study in Vietnam; T.H. Hoang and K. Miegel	14:00
14:15	Orivesi permeable reactive barrier – Remediation of contaminated groundwater in Nordic conditions; Sirku Tuominen and Taina Nystén	Frequency analysis of the daily precipitation series on Hurbanovo station (Slovakia) during 1872–2011; Dana Halmsova, Pavla Pekarova, Juraj Olbrimek and Pavol Miklanek	Sustainability of land-use on peatlands; Anne Tolvanen	Surface water - groundwater interaction: Hyporheic processes of a regulated river; Dmytro Siergieiev, Anders Widerlund and Angela Lundberg	14:15

Programme – Monday, August 13

14:30	<b>14:30-15:00</b>		<b>COFFEE, Lobby, Environmental Sciences Building</b>		14:30
	<b>NUTRIENT FLUXES &amp; WATER PROTECTION</b> Lecture Hall IT116	<b>COLD CLIMATE HYDROLOGY</b> Lecture Hall IT115	<b>PEATLANDS AND FORESTS</b> Lecture Room IT113	<b>HYDROPOWER &amp; ENVIRONMENT</b> Lecture Room IT112	
15:00	Analysis of nutrients' point sources of pollution in the lowland river catchment and river self-purification potential in river continuum; Edyta Kiedrzyńska, Magdalena Urbaniak, Marcin Kiedrzyński and Maciej Zalewski	Snow water monitoring with stationary radar; Pekka Hänninen, Juha Majaniemi and Raimo Sutinen	Trends in DOC export from Finnish rivers to the Baltic Sea between 1975 and 2010; Antti Räike, Pirkko Kortelainen, Tuuja Mattsson, and David N. Thomas	Impact of climate change on water availability and hydropower production in the Swiss Alps; Manfred Stähli, Mélanie Raymond-Pralong, Massimiliano Zappa, Frank Paul, Thomas Bosshard and Christian Dupraz	15:00
15:15	Removing phosphorus from ditch water with Ca-Fe oxide granules; Egle Saaremäe, Martin Liira, Morten Poolakese and Toomas Tamm	Long-term changes in discharge and ice regime in Latvian river basins and regional peculiarities; Inese Latkovska, Elga Apsīte, Didzis Elferts, Līga Kurpniece and Elza Žumbure	Assessing the origin of the acidity in a humic boreal river draining peatlands and sulfide-bearing soil materials; Saukkoriipi, J., Martinmäki, K., Marttila, H., Heikkinen, K., Tammela, S., Tertsunen, J., Tolkkinen, M., Ihme, R. and Klöve, B.	Hydrologic regime restoration in the Dovinė river basin, Lithuania: modelling scenario approach; Arvydas Povilaitis	15:15
15:30	Flow design of phosphorus filters; Inga Herrmann, Amir Jourak, Staffan Lundström, Annelie Hedström and Maria Viklander	On the near-bottom lake water temperatures in Finland in 1981-2010; Johanna Korhonen	Intensive biomass harvesting - leaching of nutrients and hydrological processes; Eero Kubin, Tanja Murto and Jiri Kremsa	Calculation methods of environmental flow for Estonian rivers; Alvina Reihan Elina Neemre and Rain Elken	15:30
15:45	Development of catchment scale inorganic N loading model WSFS-VEMALA-N; Inese Huttunen, Markus Huttunen, Bertel Vehviläinen and Ahti Lepistö	Lake ice time series and climate variations; Matti Leppäranta	Modelling of the nitrogen leaching from drained peat soils on the watershed scale; Anatoli Vassiljev	Impact of small hydropower plant on biotic environment; Saulius Vaikasas, Virginija Pliuraite and Nijole Bastiene	15:45
16:00	Ecological recycling agriculture can reduce nitrogen losses – model results from two Finnish catchments; Kirsti Granlund, Katri Rankinen, Randall Etheridge and Pentti Seuri	Current and future ice conditions and implications for infrastructure in rivers and lakes; Solomon B. Gebre and Knut T. Alfredsen	The effect of clear-cutting and energy wood harvesting on the nitrate leaching from two spruce stands in southern Finland; Antti-Jussi Lindroos, Pekka Tamminen and Hannu Ilvesniemi	Atlantic salmon passage in the regulated River Oulujoki, northern Baltic Sea; Panu Orell, Aki Mäki-Petäys, Jaakko Erkinaro and Petri Karppinen	16:00
16:15	Valuation of nitrogen retention as an ecosystem service at catchment scale; Katri Rankinen, Kirsti Granlund, Randall Etheridge and Pentti Seuri		The use of stable isotopes (d13C and d15N) in discriminating different forms of peatland use and estimating ecological impacts in stream communities; Mika L. Nieminen, Emmanuela Daza Secco and Kristian Meissner	Effects of hydropeaking on young Atlantic salmon and competition between young Atlantic salmon and brown trout under peaking flows; Teppo Vehanen, Ari Huusko, Ole Berg, Michael Puffer and Aki Mäki-Petäys	16:15
16:30	<b>16:30-18:00</b>		<b>POSTER SESSION, Lobby, Environmental Sciences Building</b>		16:30
19:00	<b>WELCOME RECEPTION, Oulu City Hall</b>				19:00



Programme – Tuesday, August 14

8:00	<b>Registration</b>		8:00
9:00	<b>Keynote Session 9:00-10:30, Lecture Hall IT116</b>		
	9:00-9:30	Cintia Bertacchi Uvo The interacting system of climate and hydrology	
	9:30-10:00	Per Gustav Stålnacke How slow can it be? Spatial and temporal considerations on nutrient retention from source to river mouth	
	10:00-10:30	Nikolai Friberg Restoring stream ecosystems in a changing climate	
10:30	<b>10:30-11:00 COFFEE, Lobby, Environmental Sciences Building</b>		10:30
	<b>GROUNDWATER</b> Lecture Hall IT116	<b>SEDIMENT AND NUTRIENT FLUXES</b> Lecture Hall IT115	<b>URBAN HYDROLOGY</b> Lecture Room IT113
11:00	Impacts of climate change on groundwater resources in Hanko coastal aquifer, south Finland; Samrit Luoma, Birgitta Backman and Johannes Klein	Demonstration of web based map service to integrate data and models for participatory river basin management; Olli Malve, Anita Etholen, Sanna Helttunen, Tuomo Kauranne, Matti Lindholm, Heikki Mäkinen, Timo Pyhälähti, Pasari Roti, Matti Silvennoinen, Vincent Westberg and Sari Väisänen	New heavy rain distributions and climate change modelling in urban areas; J. Silander, J. Aaltonen and J. Koistinen
11:15	Effect of climate change on recharge and water budget in Rokua esker aquifer, Finland; Pertti Ala-aho and Bjørn Kløve	Sediment deposition in the floodplain areas of the Nemunas watershed and its influence on the sedimentation in the Curonian Lagoon; Saulius Vaikasas and Alfonsas Rimkus	Impact of historical and current land use on vegetation of urban river valley in a perspective of its rehabilitation plan; Marcin Kiedrzyński, Edyta Kiedrzyńska, Piotr Witosłowski and Józef K. Kurowski
11:30	Traditional and non-traditional isotope tracers in monitoring artificial groundwater recharge: Virttaankangas aquifer in SW Finland; Nina Kortelainen, Yann Lahaye and Hugh O'Brien	Impact of variable climate conditions on nutrient flux and erosion - five years' on-line measurements in a small agricultural river; Valkama Pasi, Lahti Kirsti and Särkelä Asko	A strategy for addressing the impacts of climate change and urbanization on storm water quality in northern Sweden; Matthias Borris, Maria Viklander, Camilla Westerlund, and Anna-Maria Gustafsson
11:45	Climate change impacts and the adaptation measures in the Finnish water industry; Jari Rintala, Sanna Vienonen and Mirjam Orvomaa	Modeling toxic metal remediation capacity in bioretention cells; Nils-Otto Kitterød, Kim Aleksander Haukeland Paus and Bertil Nistad	Stormwater Modelling of Pollutants Wash-off from Urban Area Subcatchments; Tiit Koppel, Madis Maddison, Anatoli Vassiljev, Janek Laanearu and Raido Puust
12:00	An interactive decision analysis framework for the support of groundwater management – a case study of a Finnish esker; Timo P. Karjalainen, Pekka Rossi, Pertti Ala-aho, Riku Eskelinen, Kalle Reinikainen and Bjørn Kløve	Implementation of the Water Framework Directive 2000/60/EC (WFD) in Lithuania: how does it work? Loreta Steponėnaitė	Source based estimation of pollutant flushes in mixed urban catchments; Helen Galfi, Camilla Westerlund, Gilbert Svensson and Maria Viklander
12:15	Managed aquifer recharge in community water supply: International and Finnish experiences; Vuokko Kurki and Tapio S. Katko	Baseflow contribution and diurnal variation in discharge; an example for a small agricultural catchment in Norway; Johannes Deelstra	Factors affecting the long-term performance of permeable concrete grid pavements; Ahmed Mohammed Al-Rubaei, Maria Viklander and Godecke-Tobias Blecken
12:30	<b>Transfer to Restaurant Lasaretti</b>		12:30
13:00	<b>13:00 LUNCH, Restaurant Lasaretti, Hupisaarentie, Oulu</b>		
14:00	<b>14:00-16:30 GUIDED WALKING TOUR IN THE CITY OF OULU PARK</b>		14:00
19.00	<b>CONFERENCE DINNER, Raatti Youth Center</b>		19.00

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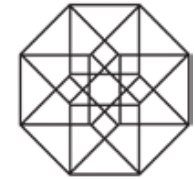




Programme – Wednesday, August 15

8:30	<b>Registration</b>		8:30
9:00	<b>9:00-10:30 Room IT138</b> <b>NHF general assembly</b> (with coffee serving)		9:00
10:30	<b>Keynote Session, IT11610:30-11:00</b> John Doherty Environmental modeling - encapsulating what we know and quantifying what we don't		10:30
	<b>GROUNDWATER</b> Lecture Hall IT116	<b>WATER PROTECTION</b> Lecture Hall IT115	<b>COLD CLIMATE HYDROLOGY</b> Lecture Room IT113
11:00	Impact of the climate changes to shallow groundwater in Baltic artesian basin; Didzis Lauva, Peteris Bethers, Andrejs Timuhins and Juris Sennikovs	Where in a river catchment are restoration efforts most effective? Anna L. Dietrich, C Nilsson and Roland Jansson	Impacts of climate variability and change on snow accumulation and melt in Kajaani, Finland; Masoud Irannezhad, Anna-Kaisa Ronkanen and Björn Klöve
11:15	Agricultural impact on groundwater quality in south west Latvia; Valdis Vircavs, Artūrs Veinbergs, Didzis Lauva, Kaspars Abramenko, Zane Dimanta, Ilva Vītola and Agnese Gailuma	Riparian vegetation functioning in zones with low anthropogenic nutrient input; Jaime Cuevas, Christian Little, César Leiva, Leandro Paulino and José Dörner	Deriving snow cover related model parameters from land surface information; Ulrich Haberl and Hans-Peter Nachtnebel
11:30	Modelling of soil water conditions as an indicator for predicting landslides in Norway; Søren Boje, Stein Beldring and Chong-Yu Xu	Wetland restoration in small river catchments: Activities, results and experience; Zenonas Gulbinas	Snowmelt Modelling in Urban Areas - Sensitivity Analysis of the Energy and Mass Balance Method; Shahab Moghadas, Camilla Westerlund, Anna-Maria Gustafsson and Maria Viklander
11:45	Sustainable use and protection of groundwater resources in delta areas: the fresh maker and fresh keeper; Klaasjan J. Raat, Gertjan Zwolsman, Ate T. Oosterhof and Jan Willem Kooiman	Active wetlands: Assessments of nutrient loading and cost-effectiveness of constructed wetlands and chemical amendments; Jari Koskiahho, Markku Puustinen and Kauko Koikkalainen	Results from Filefjell and Anestølen snow research stations; Elise Trondsen and Heidi Bache Stranden
12:00	Uncertainties in estimation of water balance of the Curonian Lagoon; Jurate Kriauciuniene and Darius Jakimavicius	Explaining the recent changes in agricultural nutrient loading in Finland; Katri Rankinen Ekholm, Hannu Rita, Heidi Sjöblom, Ljudmila Vesikko	Challenges for hydrological research in cold, semi-arid environments: case study Northern Mongolia; Lucas Menzel, Benjamin Kopp and Stefanie Minderlein
12:15		Effect of water purification at artificial agricultural drainage in dairy farming watershed; Tadao Yamamoto, Takashi Inoue and Tetuaki Nagasawa	Effect of down-dwelling ice on lake littoral of Finnish lakes – environmental factors and ecological evidences; Seppo Hellsten, Teemu Ulvi, Mika Visuri and Antton Keto
12:30	<b>12:30-13:30 LUNCH, Restaurant Discus, Linnanmaa Campus</b>		12:30
	<b>PRECIPITATION &amp; WATER BALANCE</b> Lecture Hall IT116	<b>WATER QUALITY MONITORING</b> Lecture Hall IT115	<b>FLOODS &amp; DROUGHTS</b> Lecture Room IT113
13:30	Comparison of the trends and multi-time scale precipitation variability in Indian region derived from TRMM, WFD and rain gauge dataset; Lu Li, Chong-Yu Xu and Zengxin Zhang	Experiencing community-based environmental monitoring using modern data collection systems; J. Silander, T. Toivanen and M. Lindholm	Preventive flood protection: Land use impact on the water harvest - using a modified physical based model at a catchment scale; M. Abubashim, H. Lilienthal and E. Schnug
13:45	Climate change scenarios of precipitation extremes in RCM simulations over Europe evaluated by the region-of-influence method; Jan Kysely, Ladislav Gaal and Romana Beranova	Twenty years of water quality monitoring Norwegian rivers – trends, patterns and lessons learned; Eva Skarbøvik, Per Stålnacke, Øyvind Kaste and Kari Austnes	Multiple flood impact on engineering structures in river flow; B.Gjunsburgs and S.Vaikasas
14:00	Evaluation of short-term precipitation in high-resolution RCM simulations over Sweden; Jonas Olsson, Anna-Maria Gustafsson and Magnus Persson	PERSiST: The Pan European Runoff Simulation Solute Transport; Martyn Futter, Dan Butterfield, Øyvind Kaste, Jostein Starrfelt, Martin Erlandsson and Andrew Wade	Drought and aridity challenge in arid and semi arid climates due to land and water use pressures; Pouyan Keshtkaran, Ali Torabi Haghighi and Björn Klöve
14:15	Simulating the hydrological effects of changes in the precipitation regime in the Jordan River region; Tobias Törnros and Lucas Menzel	The impact of point pollution sources on the transport of micropollutants along the river continuum; Magdalena Urbaniak, Edyta Kiedrzyńska and Maciej Zalewski	Hydrological modelling of Lake Engure catchment; Līga Kurpniece, Inese Latkovska and Elga Apsite

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14:30	<b>14:30-15:00 COFFEE, Lobby, Environmental Sciences Building</b>		14:30
	<b>PRECIPITATION &amp; WATER BALANCE</b> Lecture Hall IT116	<b>WATER QUALITY MONITORING</b> Lecture Hall IT115	
15:00	Extreme rainfall events: Evaluation with different instruments and measurement reliability; Helmi Saidi, Marzia Ciampittello, Claudia Dresti and Laura Turconi	Pesticide losses in a small Finnish agricultural catchment; Katri Siimes and Harri Koivusalo	15:00
15:15	Prediction of Concentration Time in Kasilian Watersheds by Using Geomorphologic Method; Reza Mohammadpour, Touraj Sabzevar and Ali Torabi Haghighi	Arsenic cycling in catchments with sulphidic metasediments, N. Sweden; Gunnar Jacks, Magnus Mörtz, Zdenka Slejkovec and Elin Nilsson	15:15
15:30	Rainfall intensity analysis in Central Finland; Ali Torabi Haghighi, Meseret Menberu, Hannu Marttila and Bjørn Kløve	Speciation of Small Aluminium Silicate Clusters in Aqueous Environment; Giorgio Lanzani, Tiina Leiviskä, Ari P. Seitsonen, Carole A. Morrison, Jaakko Rämö, Kari Laasonen and Simo O. Pehkonen	15:30
15:50	<b>15:50-16:30 CLOSING SESSION, Room IT116</b>		15:50

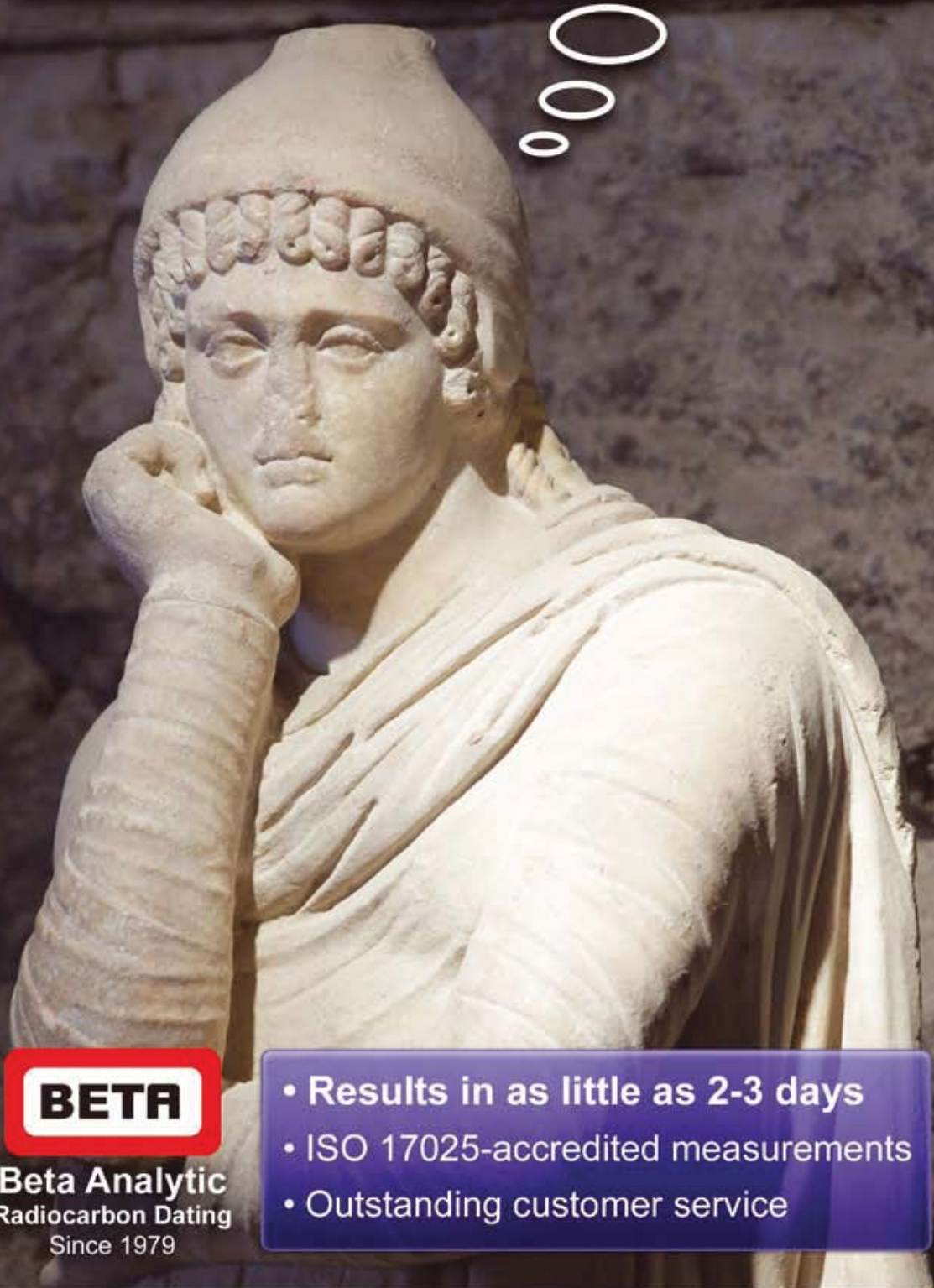
	<b>FLOODS &amp; DROUGHTS</b> Lecture Room IT113	
	Balancing water for humans and nature through 3 weirs in Geum river in South Korea; Jaekyoung Noh, Jaenam Lee and Young Dae Cho	15:00
	Integrating a Typhoon Event Database with an Optimal Flood Operation Model on the Real-Time Flood Control of the Tseng-Wen Reservoir; Yu-Wen Chen and Liang-Cheng Chang	15:15
	Flood risk reduction benefit of water retention basins; J. Silander	15:30



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