HydroEco´2009

2nd International Multidisciplinary Conference on

Hydrology and Ecology:

Ecosystems Interfacing with Groundwater and Surface Water

20–23 April 2009, Vienna, Austria

CONFERENCE PROGRAMME

The conference is jointly convened by:

- Universität für Bodenkultur Wien (BOKU), University of Natural Resources and Applied Life Sciences, Vienna
- International Commission on Groundwater (ICGW), of the International Association of Hydrological Sciences (IAHS)
- Faculty of Science, Charles University, Prague, Czech Republic

The conference was sponsored and supported by UNESCO / IHP.

The conference organizers are also grateful for the financial support received from the Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management (Lebensministerium), City of Vienna (Stadt Wien), Water supply company of Vienna (Wiener Wasserwerke), International Atomic Energy Agency (IAEA) and the Umweltbundesamt.

The following sessions are distinguished:

Session A:

Interactions between surface water, hyporheic zone, saturated and unsaturated groundwater

Session C:

Plant-groundwater interactions

Session D:

Links between hydrology and biogeochemistry in groundwater

Session E:

Modelling surface-water-groundwater systems

Session F:

Interactions between hydrology and ecology

Session G:

Management, legal and regulatory issues

Session H:

Indicators of groundwater and surface water quality

Session I:

Land use implications (including restoration and ecohydrology)

Session S:

Implementation of WFD, with particular relevance to groundwater and surface water dependent terrestrial ecosystems
(only oral session, no poster session)

HydroEco2009 Conference Programme

Overview: Monday-Thursday, 20-23 April 2009

Sun 19 Apr		16.00-20.00 Registration	
			18.00-20.00 Welcome, Get Together

Mon 20 Apr	8.30 - 9.00	9.00 - 10.00	10.00 - 10.30	10.30 - 12.30	12.30 - 14.00	14.00 - 15.30	15.30 - 16.00	16.00 - 17.00	17.00 - 18.30
	Opening	Plenary presentation	☕	Session A	🍽	Session C	☕	Session C	Plenary visit to posters Coffee, snacks-beer-wine
	Posters on display for poster sessions block 1:								

Tue 21 Apr	8.30-10.00		10.00 - 10.30	10.30 - 12.30	12.30 - 14.00	14.00 - 15.45	15.45 - 16.15	16.15-16.45	19.30 - 22.30
	Plenary presentation		☕	Session D	🍽	Session G	☕	Session G	Conference Dinner
						Session D			
	Poster session block 1: continuation till the afternoon coffee break								

Wed 22 Apr	8.30-10.00		10.00 - 10.30	10.30 - 12.30	12.30 - 14.00	14.00 - 15.30	15.30 - 16.00	16.00 - 16.45	17.00 - 18.30
	Plenary presentation		☕	Session F	🍽	Session F	☕	Session H	Plenary visit to posters Coffee, snacks-beer-wine
						Session I			
	Posters on display for poster sessions block 2:								

Thu 23 Apr	8.30-10.30	10.00 - 10.30	10.30 - 12.30	12.30 - 14.00	14.00-15.45	15.45-16.00
	Session E	☕	Session E and S	🍽	Session S	**Closure**
	Poster session block 2: continuation					

Regular oral presentations: 15 minutes (suggested **11 min** + 4 min discussion/questions)

Invited oral presentations: 30 minutes (suggested **25 min** + 5 min discussion/questions)

☕ is coffee break 🍽 is lunch

Conference Programme

Sunday, 19 April 2009

Registration at the venue (*BOKU University*, *Muthgasse 18*), 16.00-20.00 hours

Welcome, Get Together, at the *BOKU University*, 18.00-20.00 hours

Note that is required to register before **Welcome, Get Together !**

Monday, 20 April

Registration, from 7.30 hours

Posters to be installed during the morning of Monday, 20 April.

Authors of the entire day are requested to hand in their USB memory stick with oral presentation at the registration desk before 8.30 hours, or preferably Sunday afternoon. Thank you!

Lecture hall A

Only plenary presentations during this entire day

Opening of the Conference

8.30-9.00 hours Welcome

Welcome on behalf of the BOKU University, Rector Dr. M. Gerzabek
Welcome on behalf of the Organizers, Hans-Peter Nachtnebel
Welcome on behalf of IAHS, Karel Kovar

Chairpersons: Gilles Pinay (United Kingdom), **chair**

09:00 – 09:30 **H.-P.Nachtnebel**, V.Dukhovny, A.Tuchin, A.Sorokin, Y.Roschenko, U.Uhalin, P.D.Umarov, B.Tashmukhamedov, I.Mirabdullayev, O.Vasilyev, V.Kvon **(keynote session I)** #444 The future of the Aral Sea and its ecosystem: Possible scenarios and outcomes (p. 313)

09:30 – 10:00 **S.Krause**, L.Heathwaite, A.Binley, D.Kaeser **(keynote session A)** #45 Critical scales for hyporheic nutrient transformation

10:00 – 10:30 Coffee break

Session A, Interactions between surface water, hyporheic zone, saturated and unsaturated groundwater

Chairpersons: Stefan Krause (United Kingdom), Bertel Nilsson (Denmark), **chairs 1**

10:30 – 11:00 **B.Nilsson**, P.Engesgaard, J.Kidmose, S.Karan, M.C.Looms, L.O.Boldreel **(keynote session A)** #252, Multidisciplinary approach to constrain often inaccurate estimates of groundwater fluxes to and from seepage lakes (p. 15)

11:00 – 11:15 M.Getta, A.Petruck #35 Identification and assessment of the impacts of groundwater contamination on the surface waters in the catchment of the river Emscher (p. 7)

11:15 – 11:30 J.C.Rozemeijer, Y.van der Velde, G.H.de Rooij, F.C.van Geer, H.P.Broers, M.F.P.Bierkens #85 Field scale measurements of flow route discharge contributions to a stream in a lowland catchment (p. 23)

11:30 – 11:45 G.Bertoldi, S.Dalla Chiesa, U.Tappeiner #147 Modeling the interactions between subsurface water content and the spatial distribution of evapotranspiration in Alpine catchments (p. 3)
11:45 – 12:00 A.Herrmann, S.Schumann #193 Integrated approach of surface water-groundwater relations on a small basin scale for ecohydrological status evaluation
12:00 – 12:15 A.van Loon, P.Schot #295 The influence of landscape hydrological dynamics on infiltration patterns across a managed fen area
12:15 – 12:30 A.Premrov, C.E.Coxon, R.Hackett, K.G.Richards #243 Estimating travel-time of nitrate from tillage land to shallow groundwater and towards a river using bromide tracer (p. 111)

12:30 – 14:00 Lunch

Session C, Plant-groundwater interactions
Chairpersons: Marc Bierkens (the Netherlands), Sjoerd van der Zee (the Netherlands), **chairs 2**

14:00 – 14:30 S.H.H.Shah, R.W.Vervoort, N.Dal Ferro, **S.E.A.T.M.van der Zee (keynote session C)** #88 Water and salinity interactions between groundwater, rootzone, vegetation and climate (p. 41)
14:30 – 15:00 **M.F.P.Bierkens**, R.J.Brolsma, L.P.H.van Beek, M.T.H.van Vliet **(keynote session C)** #313 The effect of climate change on groundwater dependent temperate forest ecosystems
15:00 – 15:15 K.David, K.Saflian #64 Importance of groundwater for swamp sustainability, Wingecarribee Swamp, NSW, Australia (p. 29)
15:15 – 15:30 M.C.S.Frandsen, O.Pedersen, B.Nilsson #114 How does seepage affect growth rates of submerged aquatic plants

15:30 – 16:00 Coffee break

16:00 – 16:15 D.O.Ommen, H.F.Vinther, L.Krüger, M.Flindt, F.Ø.Andersen, J.Kidmose #157 Groundwater interactions with Lobelia lakes - effects on the aquatic plant, Littorella uniflora
16:15 – 16:30 R.Froend, N.Pettit, B.Sommer #234 Phreatophytic vegetation response to climate change and groundwater drawdown on the Swan Coastal Plain of Western Australia
16:30 – 16:45 T.Tanaka, J.Kakubari, Y.Hamada, S.Iida #291 Effect of plant species on distribution of water quality in a vadose zone (p. 49)

Monday, 20 April, end afternoon

Poster Session Block 1, plenary visit to posters, 17.00-18.30 hours (+beer or wine)

Posters to be installed during the morning of Monday, 20 April.

Poster Session A, Interactions between surface water, hyporheic zone, saturated and unsaturated groundwater

Poster Session C, Plant-groundwater interactions

Poster Session D, Links between hydrology and biogeochemistry in groundwater

Poster Session G, Management, legal and regulatory issues

Tuesday, 21 April

Registration Desk open from 8.00 hours

Poster session block 1 on display till end of day

Authors of the entire day are requested to hand in their USB memory stick with oral presentation at the registration desk during Monday. Thank you!

Lecture hall A

Plenary Presentation till 12:30

Chairpersons: Gilles Pinay (United Kingdom), Mariet Hefting (the Netherlands), **chairs 3**

08:30 – 09:00 **G.Pinay**, T.P.Burt (**keynote session D**) #152 Coupling hydrology and biogeochemistry in complex landscapes
09:00 – 09:30 **M.M.Hefting**, R.N.van den Heuvel (**keynote session D**) #217 Nitrous oxide emissions from floodplains and riparian zones
09:30 – 10:00 **C.M.Heppell**, G.Warton, J.A.Cotton, M.Trimmer, I.A.Sanders (**keynote session D**) #220 The influence of vegetation on flow, sediment and biogeochemical cycling in lowland rivers

10:00 – 10:30 Coffee break

10:30 – 11:00 **C.Ch.Hoffmann**, M.L.Pedersen, M.Dahl, K.R.Rasmussen (**keynote session D**) #318 How a regional aquifer, a local aquifer and an oxbow lake impact on hydrological and biogeochemical processes in a riparian fen-meadow ecosystem (p. 59)
11:00 – 11:30 **T.Okruszko** (**keynote session G**) #294 Wetlands in a river basin – sources of water or water users?
11:30 – 12:00 **O.Batelaan**, T.Okruzsko, M.J.Wassen, A.van Loon, C.Anibas, B.Verbeiren, J.Dams,W.Opdekamp, M.El.Kahloun, K.Bal, P.Meire, L.de Doncker, P.Troch, R.Verhoeven, E.Penning (**keynote session I**) #245 Biebrza ecohydrological research experiences: embracing the science of place

Session D, Links between hydrology and biogeochemistry in groundwater
Chairpersons: Kate Heppell (United Kingdom), Carl Christian Hoffmann (Denmark), **chairs 4**

12:00 – 12:15 F.Einsiedl, M.Schwientek #39 Coupling hydrodynamic and biogeochemical processes to interpret chemical gradients in complex groundwater systems
12:15 – 12:30 B.Verhagen, M.El Kahloun, P.Meire #78 Nitrogen and phosphorus concentrations in wetlands: interpretation and applications for discussion

12:30 – 14:00 Lunch

Lecture hall B	Lecture hall A
Session D, Links between hydrology and biogeochemistry in groundwater (continuation) Chairpersons: Kate Heppell (United Kingdom), Carl Christian Hoffmann (Denmark), **chairs 4**	**Session G, Management, legal and regulatory issues** Chairpersons: Hans-Peter Nachtnebel (Austria), Tomasz Okruszko (Poland), **chairs 5**
14:00 – 14:15 S.Maassen, D.Balla #120 Phosphorus dynamics and microbial activities of running water sediments	14:00 – 14:15 Ch.Habereder, A.P.Blaschke, T.Heine, G.Haivogel, S.Hohensinner, I.Baart, S.Preiner,

in a German wetland depending on hydrodynamics (ex- and infiltration) (p. 71) 14:15 – 14:30 H.Kim, Y.Hyun, K.-K.Lee, D.Y.Shin #129 Natural attenuation potential of nitrate via microbial activity in hyporheic zones 14:30 – 14:45 N.J.S.DeSmet, P.Seutjens, K.Buis, P.Meire #155 Heterogeneity in nutrient cycling and exchange processes in the hyporheic zone of rivers due plant growth 14:45 – 15:00 F.Sgouridis, C.Heppell, M.Trimmer, G.Wharton #159 Dissimilatory Nitrate Reduction to Ammonium (DNRA) potential in the re-connected floodplain of the River Cole (Oxfordshire, UK) 15:00 – 15:15 K.B.Mfundisi #164 Effects of flood duration and extent on biogeochemistry of the hyporheic zone in riparian vegetation of islands in the Okavango Delta (p. 79) 15:15 – 15:30 J.Lewandowski, G.Lischeid, G.Nützmann #229 Hydrological and biogeochemical processes involved in groundwater-surface water exchange at a lowland river (p. 63) 15:30 – 15:45 P.Wachniew, M.Bodziony, P.Mazur #260 Subsurface biogeochemical processes influence chemistry of an Arctic proglacial stream End of session D 15:45 – 16:15 Coffee break	W.Reckendorfer, K.Reiter, G.Weigelhofer, B.Schuh, G.Stanzer #44 Compromise solutions for the management of an urban floodplain embedded in conflicts of ecological and socio-economic interests 14:15 – 14:30 A.W.Brooks, M.W.Grout #97 Balancing hydro-ecological needs with sustainable groundwater abstraction: Environment Agency (Anglian Region) Framework for Managing Groundwater Resources 14:30 – 14:45 M.C.Zijp, A.C.M.de Nijs, W.Verweij #105 Using the exemptions of the WFD; Two cases in the Netherlands (p. 231) 14:45 – 15:00 S.Hennenberg, U.Kuhn, P.Kreins, H.Gomann, H.Behrend, U.Hirt, F.Wendland, R.Kunkel, B.Tetzlaff #113 Model Project AGRUM Weser: "Analyses of Agricultural and Environmental Measures in Agricultural Water Protection in the Weser River Basin against the Background of the EU Water Framework Directive" (p. 197) 15:00 – 15:15 K.Martens, M.van Camp, K.Walraevens #205 An integrated classification of groundwater dynamics to support nature development programmes 15:15 – 15:30 M.Evers #249 Coherence of European legal and structural conditions in water, wetland and flood risk management (p. 185) 15:30 – 15:45 R.Hoogeveen, B.Putters #268 The hydrogeological system of the Natura 2000 site Bunder and Elsloërbos and its connection to the designated water dependent habitat types 15:45 – 16:15 Coffee break 16:15 – 16:30 R.Zorza, P Bonfanti, G.Mattasi #273 Analysis of the high natural areas in the upper basin of Tagliamento River (p. 235) 16:30 – 16:45 E.Kubin, J.Krecek #344 Forest practices and water resources recharge, quantity and quality

19.30-22.30 Conference Dinner (for more information see next page)

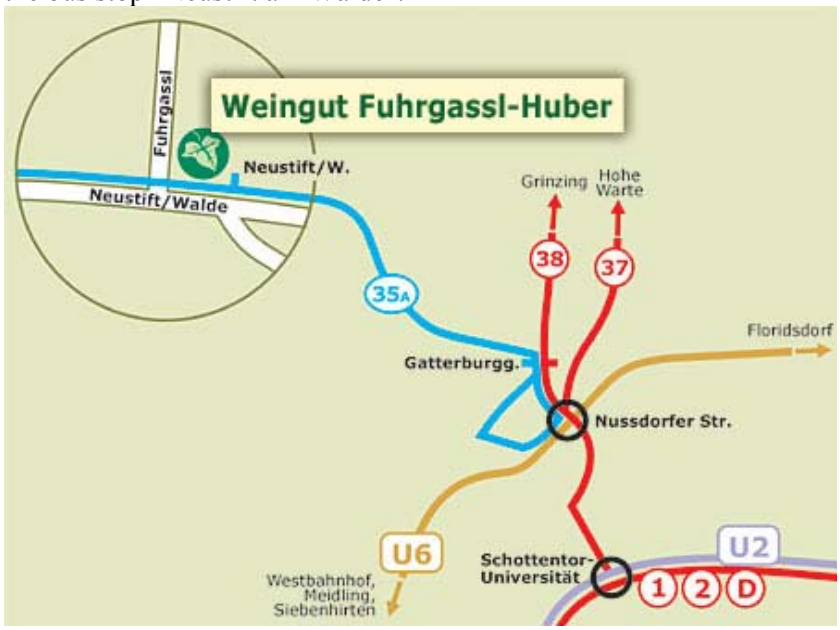
19.30-22.30 Conference Dinner

The dinner starts at 19:30 and will end at about 22:30 hours.

Welcome by Dr. Sailer, representative of Wiener Wasserwerke (water supply company of Vienna)

The Conference Dinner will be held at the Ernst and Gerti Huber's Winery at the village Neustift am Walde, at the northern part of Vienna. Quoting from the website: "Located in the heart of Neustift am Walde between vineyards and the Vienna Woods, Ernst and Gerti Huber's Winery with its cosy parlours and romantic patio has been a popular wine tavern for almost 30 years. The architect for the house was Professor Walter von Hoesslin, the stage designer of the Vienna Opera House."

You can reach the Winery by public transport, namely by **bus 35A**. The bus starts at the **stop "Nussdorfer Straße" of the metro line U6**, as is shown in the adjoining sketch. You have to get off at the bus stop "Neustift am Walde".



By public transport, depending on the location of your hotel, you will need about 30 to 40 minutes to reach the Ernst and Gerti Huber's Winery. It takes 20 minutes by **bus 35A** from the stop "Nussdorfer Straße" to the stop "Neustift am Walde".

Alternatively, you can travel by taxi (about 15 minutes), which will cost you about 15-20 euro, depending on the location of your hotel.

Wednesday, 22 April

Registration Desk open from 8.00 hours

Posters to be installed during the morning of Wednesday, 22 April.

Authors of the entire day are requested to hand in their USB memory stick with oral presentation at the registration desk during Tuesday. Thank you!

Lecture hall A

Plenary Presentation till 12:30

Chairpersons: Peter Horchler (Germany), Ron Harvey (USA), **chairs 6**

08:30 – 09:00 **T.Tsujimoto** (**keynote session F)** #68 River ecosystem supported by small-scale landscape units driven by surface and subsurface flow – Habitat and material cycle to support ecosystem in a sandy river with alternate bars
09:00 – 09:30 **P.J.Horchler** (**keynote session F**) #203 Modelling the suitability of floodplains as habitats for plant species: some experiences from large German rivers
09:30 – 10:00 **R.Harvey**, R.Ford, D.Metge, M.Wang, A.Toepfer, S.B.McGowan (**keynote session F**) #226 Quantifying bacterial chemotaxis in a groundwater ecosystem: The tactics of chemotactic bacteria

10:00 – 10:30 Coffee break

10:30 – 11:00 **B.D.Newman** (**keynote session H**) #48 Isotope methods for examining hydro-ecological connections
11:00 – 11:30 **Ch.Griebler**, H.Stein, H.J.Hahn, Ch.Steube, A.Fuchs, C.Kellermann, S.Richter (**keynote session H**) #139 Concept for the development of an ecological assessment scheme for groundwater ecosystems (p. 249)
11:30 – 12:00 **J.Krecek**, Z.Horicka, J.Novakova (**keynote session H**) #293 Ellenberg's indicator values and water resources recharge (p. 257)

Session F, Interactions between hydrology and ecology
Chairpersons: Christian Griebler (Germany), Brent Newman (Austria), **chairs 7**

12:00 – 12:15 A.Lazar, A.J.Wade, P.G.Whitehead #5 Modelling fixed plant and algal dynamics in short- and long-retention time rivers
12:15 – 12:30 J.-P.M.Witte, R.P.Bartholomeus, D.G.Cirkel #330 Eco-hydrological effects of climate change on the coastal dunes of the Netherlands

12:30 – 14:00 Lunch

Lecture hall B	Lecture hall A
Session I, Land use implications (including restoration and ecohydrology) Chairpersons: Okke Batelaan (Belgium), Andrej Šoltész (Slovakia), **chairs 8** 14:00 – 14:15 A.Hope, R.Bart, D.Fitch, D.Hawtree, D.Stow, N.Albers #38 Effects of land-cover variability on river flows in	**Session F, Interactions between hydrology and ecology (continuation)** Chairpersons: Christian Griebler (Germany), Brent Newman (Austria), **chairs 7** 14:00 – 14:15 B.Aubroeck, J.Patyn #83 The use of hydro-ecological models for environmental impact assessment –

Mediterranean-type ecosystems

14:15 – 14:30 D.E.Pelster, J.M.Burke, E.E.Prepas #149 Nitrogen retention patterns and processes in small reference watersheds on the Canadian Boreal Plain

14:30 – 14:45 J.F.Sykes, M.H.Brouwers, P.J.O'Neill #167 Characterizing spatially and temporally dependent water balance and nutrient inputs at the watershed scale and the impact of climate change

14:45 – 15:00 C.A.G.Cunha, M.C.Calijuri #186 Absence of riparian vegetation effects in the water quality of Jacupiranga river, Ribeira of Iguape Valley, São Paulo, Brazil (p. 287)

15:00 – 15:15 A.Šoltész, D.Baroková #346 Restoration of wetland ecosystems by means of controlled discharge and water level regime in channel system in lowland area

15:15 – 15:30 W.Hao, W.Mingna, Q.Dayong, L.Chuiyu, L.Yunpeng #386 Anthropogenic impacts on a wetland and its influence on regional hydrological process – Qindianwa Depression Case study (p. 319)

15:30 – 16:00 Coffee break

case studies

14:15 – 14:30 S.Arnon, A.Packman, K.Gray #101 Coupling between flow conditions, microbial community structure, and nitrogen utilization in benthic biofilms

14:30 – 14:45 J.B.Dybkjær #111 Spatial patterns of riparian plant communities in an ecohydrological context

14:45 – 15:00 W.Mertens, W.Huybrechts, J.van Gils, F.Saey #57 Integrating hydrologic and ecologic models in floodplain restoration, the case of the Drie Beken, Flanders, Belgium (p. 309)

15:00 – 15:15 R.L.MacDonald #180 Response of riparian understory vegetation in Canadian Boreal Plain watersheds to experimental harvest with and without a streamside buffer

15:15 – 15:30 J.F.Rex, E.L.Petticrew #185 Pacific salmon – flocculation feedback loop: implications for streambed nitrogen delivery and retention

15:30 – 16:00 Coffee break

Session H, Indicators of groundwater and surface water quality

Chairpersons: Josef Krecek (Czech Republic), Tetsuro Tsujimoto (Japan), **chairs 9**

16:00 – 16:15 M.Kralik, W.Papesch, F.Humer, J.Grath #198 Hydrological exchange characteristics between Danube (New- and Old Danube) and groundwater East of Vienna: Conclusions from environmental isotope records

16:15 – 16:30 T.Tsuchihara, S.Yoshimoto, S.Ishida, T.Masumoto, M.Imaizumi #104 Interaction between groundwater and stream water in paddy area of an alluvial fan evaluated using environmental isotope (p. 269)

16:30 – 16:45 B.Anneser, H.Prommer, M.Rolle, F.Einsiedl, Ch.Griebler #143 Model-based evaluation of biodegradation in a hydrocarbon contaminant plume based on small-scale biogeochemical gradients and stable isotope fractionation

Wednesday, 22 April, end afternoon

Poster Session Block 2, plenary visit to posters, 17.00-18.30 hours (+beer or wine)
Posters to be installed during the morning of Wednesday, 22 April.

Poster Session E, Modelling surface-water-groundwater systems

Poster Session F, Interactions between hydrology and ecology

Poster Session H, Indicators of groundwater and surface water quality

Poster Session I, Land use implications (including restoration and ecohydrology)

Thursday, 23 April

Registration Desk open from 8.00 hours

Poster session block 2 on display till end of day

Authors of the entire day are requested to hand in their USB memory stick with oral presentation at the registration desk during Wednesday. Thank you!

Lecture hall A

Only plenary presentations during this entire day

Session E, Modelling surface-water-groundwater systems
Chairpersons: Ed Sudicky (Canada), Paul Schot (the Netherlands), **chairs 10**

08:30 – 09:00 **E.A.Sudicky**, A.E.Brookfield, Y.-J.Park (**keynote session E**) #327 Analysis of factors affecting the spatio-temporal patterns of thermal exchange fluxes between streams and groundwater
09:00 – 09:15 D.Peyrard, S.Sauvage, F.Oelher, A.Iribar, F.Garabetian, M.Quintard, P.J.M.Sanchez, P.Vervier #20 A vertically-integrated coupled model to describe lateral exchanges of water and nitrogen between surface and hyporheic zone in large alluvial floodplains
09:15 – 09:30 P.P.Schot #71 Modelling rainwater lens development in fens as a function of dynamic groundwater - surface water interactions (p. 121)
09:30 – 09:45 J.Schmidt, D.Rupp, S.Larned #123 A low-dimensional model for simulating river intermittence, surface water - groundwater interactions, groundwater levels and discharges in alluvial plain river systems *(presented by Dr Ross Woods)*
09:45 – 10:00 K.Buis, P.Troch, O.Batelaan, L.DeDoncker, C.Anibas, N.DeSmet, S.van Belleghem, R.Verhoeven, P.Meire #140 An integrated model study on the role of lateral connections and process interactions in retention of matter in streams

10:00 – 10:30 Coffee break

10:30 – 10:45 O.M.Johansen, J.B.Jensen, M.L.Pedersen #144 Hydrological modelling of small scale processes in a wetland habitat (p. 95)

10:45 – 11:00 J.Hoogewoud, R.van Ek #145 A large scale high resolution groundwater model for ecohydrological application: improvement and validation of the phreatic level
11:00 – 11:15 H.Ceranski , M.Müller, S.Chmieleski, F.Brückner, H.Mansel, B.Pfützner, S.Mey #160 Coupled groundwater /surface water modelling in mining and post-mining areas in Central Germany (p. 85)
11:15 – 11:30 A.I.Stamou, K.Nanou-Giannarou, K.Spanoudaki #161 Development and application of an integrated surface-groundwater model for the implementation of the WFD

Session S, Implementation of WFD, with particular relevance to groundwater and surface water dependent ecosystems
Chairpersons: Johan Schutten (United Kingdom), Johannes Grath (Austria), **chairs 11**

11:30 – 11:45 A.Scheidleder, J.Grath #60 Legal aspects of the Water Framework Directive and the Groundwater Directive regarding groundwater dependent ecosystems (p. 333)
11:45 – 12:00 D.-I.Müller-Wohlfeil, G.Larsen, T.Hansen, L.Møkkerhøj, E.F.Nielsen, E.Schmidt, C.Schneider #235 Towards common methods for quantitative groundwater body assessment in Denmark (p. 325)
12:00 – 12:15 A.Kjellin, C.Lindeberg, P.Ohrstrom #200 Characterization of wetlands in the WFD in Sweden
12:15 – 12:30 B.Klöve #222 GENESIS - Groundwater and dependent ecosystems: Scientific and technical basis for assessing climate change and land-use impacts on groundwater systems

12:30 – 14:00 Lunch

Session S, Implementation of WFD, with particular relevance to groundwater and surface water dependent ecosystems (continuation)
Chairpersons: Johan Schutten (United Kingdom), Johannes Grath (Austria), **chairs 11**

14:00 – 14:15 M.I.Whiteman, A.Skinner #67 Determining significant damage to groundwater dependent terrestrial ecosystems for use in WFD classification of groundwater status and to inform the Programme of Measures (p. 337)
14:15 – 14:30 E.Lode #888 Wetlands and Water Framework Directive in Estonia
14:30 – 14:45 T.de Nijs, M.Zijp, W.Verweij #100 Experiences in the assessment of groundwater status given the objectives for terrestrial and aquatic ecosystems in the Netherlands
14:45 – 15:00 R.Low, P.Jones, M.Whiteman #156 Assessing the nature and degree of the groundwater dependence of an internationally recognised fen wetland – Cors Bodeilio, Anglesey, Wales, UK
15:00 – 15:15 J.Prestor, D.Vrček, P.Meglič, K.Gabrovšek #258 Setting the Programme of Measures for good status of groundwater (GW) and groundwater dependent terrestrial ecosystems (GWDTE) of the Ljubljansko Barje (p. 329)
15:15 – 15:45 **J.Schutten** (**keynote session S**) #75 Making wetland science work; How countries across Europe have used wetland science to characterise and classify ground and surface water dependent wetlands for Water Framework Directive implementation

15:45 – 16:00 Closure of conference

Poster sessions

Session A: Interactions between surface water, hyporheic zone, saturated and unsaturated groundwater

87 N.W.Kim, I.M.Chung, J.Lee, S.Y.Yoo : A Study on the spatial-temporal variation of the surface-groundwater interaction

122 S.Schmidt, M.Toll, T.Geyer, J.Guttman, A.Marei, M.Sauter : Reverse Hydraulics: the use of high resolution multi parameter spring discharge data sets to estimate travel times through thick vadose zones in a semi-arid area

141 E.Mendes, L.M.Ferreira Gomes: Contribution for the estimation of groundwater recharge in the Granitic Massif of Serra da Gardunha (Portugal)

148 S.Karan, J.K.Jensen, P.Engesgaard, M.Looms : Characterization of aquifer-stream interaction: Temperature measurements as a tool for identifying groundwater discharge and rates

170 L.Lafayette, G.Thiago, L.Franylenna, S.Pollyanna : Seepage and piezometric assessment – understanding surface-groundwater interactions in a tropical river-lagoons system

265 M.Radfar, M.van Camp, K.Martens, K.Walraevens : Eco-hydrological risk assesment by piezometric level trend analysis in a semi-arid agricultural basin in Iran

289 K.Bohne, B.Bohne & I.Storchenegger : Simplified approach to complete irregular observations of groundwater level

290 J.Schneider : Observation of clogging processes at a physical model

299 A.Lajczak : Vertical differentiation of spring discharge on highly elevated monoclinal flysch range in Western Carpathians, hydrological and ecological consequences (p. 11)

319 V.P.Pandey, S.K.Chapagain, F.Kazama : Groundwater Environment of Kathmandu Valley in Central Nepal: DPSIR Analysis (p. 19)

366 O.Dahan : Vadose-zone monitoring as a key to groundwater protection

555 N.-W.Kim, I.-M.Chung, J.Kim, J.Lee, S.-Y.Yoo : A study on the spatial-temporal variation of the surface-groundwater interaction

Session C: Plant-groundwater interactions

9 T.Dovbysheva : The condition of heavy metals and radionuclides in the wetland and their accumulation by plants

23 U.C.Sharma, V.Sharma : Ecology-evapotranspiration-groundwater recharge interrelationship in the northeastern region of India

61 R.Stangl, F.Florineth, W.Loiskandl : Water balance of Alnus ssp. planted for landslide stabilisation and some soil bioengineering implications

79 L.Liu, Z.Liu : Hydrological scenario projection and uncertainty estimation for the Yellow River Basin in the 21st century (p. 107)

108 Z.Gribovszki, P.Kalicz, J.Szilígyi : Estimation of groundwater evapotranspiration from diurnal patterns of groundwater level and streamflow rates

138 Y.Fujimura, H.Fujita, M.Takada, T.Inoue : Factors inducing expansion of dwarf bamboo in Sarobetsu mire, northern Japan, following outward drainage of water on the margin of the mire (p. 33)

163 S.F.Benassi, A.B.Mendes, A.M.V.Lisboa, R.A.R.Filho, A.A.Jung, J.N.Maciel : Variability analysis of the trophic state in reservoirs according to its water level : A case study on the Itaipu reservoir

231 Z.Osadowski, A.Strelczak, O.Lopatovskaya : Influence of iron and manganese contents in groundwater outflows on vegetation diversity in spring ecosystems of the Middle Pomerania (Northern Poland)

266 J.N.Callow, N.A.Coles, T.Pope, B.Cohen : Using engineering concepts to manage ecohydrologic processes driving vegetation decline due to increased surface water discharge in low-gradient dryland catchments

301 A.Lajczak : Change in the peat bog water storage due to human activity. Case study of the Orawsko-Podhalanskie Peatlands, Western Carpathians (p. 37)

329 R.P.Bartholomeus, J.-P.M.Witte, P.M.van Bodegom, J.C.van Dam, R.Aerts : Climate-proof relationships between water, oxygen and vegetation

Session D: Links between hydrology and biogeochemistry in groundwater

Session E: Modelling surface-water-groundwater systems

Session F: Interactions between hydrology and ecology

Session G: Management, legal and regulatory issues

Session H: Indicators of groundwater and surface water quality

Session I: Land use implications (including restoration and ecohydrology)