

# Monday Sept. 5th - Morning

8:00 Registration

Plenary Session - Aula UNIMAIL - Chairman: Philippe Renard

8:45 Opening ceremony : Prof. F. Kessler (Vice-rector, University of Neuchâtel), Dr. C. Dufour (City of Neuchâtel)

9:00 **Keynote 1: Karst and Climate Change.**

Andy Baker (University of New South Wales, Sydney, Australia) • **Red Speaker's Corner**

9:40 **Karst Modelling Challenge.**

P.-Y. Jeannin (Swiss Institute for Speleology and Karst Studies, La Chaux-de-Fonds, Switzerland) • **Yellow Speaker's Corner**

10:00 **Characterization of groundwater dynamics in a karst aquifer through Active and Passive Fiber Optic DTS methods.**

O. Bour (Université Rennes 1, France), H. Le Lay, N. Simon, N. Lavenant, J. Bodin, N. Guihéneuf, B. Nauleau, G. Porel and T. Le Borgne • **Green Speaker's Corner**

10:20

Parallel Session - Aula UNIMAIL

**Vulnerability and groundwater protection**

Chairman: Peter Huggenberger

10:50 **Pesticides and microorganisms occurrence explained by karst hydrogeological fundamentals in conjunction with detailed agricultural land-use information.**

S. Zimmermann, M. Sinreich and R. Kozel

11:10 **Insight into origin and fate of the bacterial load in karst groundwater.**

M. Sinreich, A. Pochon and R. Kozel

11:30 **Characterization of vulnerability and turbidity origin at a karst aquifer exploited for drinking water supply by means of statistical analyses.**

M. Fournier, N. Massei, L. Duran and J.-P. Dupont

11:50 **Peru - mining in extreme environments - lessons learned 1996-2016.**

D. Evans

12:10

Parallel Session - Auditoire Louis Guillaume - 2nd floor

**Regional studies - Flow processes**

Chairman: Hakim Benabderrahmane

**Examining the functioning of a multilayer karst system. The case of Toulon springs (Dordogne, France).**

G. Lorette (\*), R. Lastennet, A. Denis and N. Peyraube

**Origin of the double-peaked breakthrough curves in the Furfooz karst system : field data, scale model and numerical modelling.**

L. Dewaide (\*), V. Hallet, A. Poulain and G. Rochez

**Seasonal and spatial organization of groundwater transfers in a karst aquifer.**

C. Delbart, D. Valdés, F. Barbecot and A. Tognelli

**Caractérisation des échanges entre karst et rivière par imagerie infrarouge thermique (IRT) aéroportée. La rivière Cèze et ses émergences karstiques au niveau du plateau de Méjannes-le-Clap (Gard, France).**

J. Ré-Bahuaud, H. Chapuis, D. Graillot, V. Lavastre, J. Jolivet, C. Le Gal La Salle

Parallel Session - Room B103 - Building B - 1st floor

**Geophysics**

Chairman: Konstantinos Chalikakis

**New laser/image processing system for non-interfering monitoring of slow flow velocities in the Ox Bel Ha karst conduit system (Quintana Roo, Mexico).**

A. Schiller

**Hydrogeophysics to monitor the vadose zone of the Rochefort karst system (Belgium).**

A. Watlet (\*), M. Van Camp, O. Francis, A. Poulain and O. Kaufmann

**Performance and first results of new superconducting gravimeter for hydrological studies.**

B. Fores, C. Champollion and N. Le Moigne

**Passive seismic methods for subsurface studies.**

J. Albaric, C. Champollion, B. Fores, D. Kühn, and A. Fort

*Coffee break*

*Lunch / Le Romarin*

# Monday Sept. 5th - Afternoon

Parallel Session - Aula UNIMAIL

**Tracer test**

Chairman: Lou Maurice

- 13:40 **An example of an accidental tracer test: the case of the Paradise Spring (Santa Croce Camerina, Ragusa , Sicily).**  
P. Forti, R. Ruggieri, [J. De Waele](#), A. Fiorucci and B. Vigna
- 14:00 **Hydrogeological definition by artificial tracing between 2 rivers of karst system.**  
[H. Chapuis \(\\*\)](#), J. Ré-Bahuaud, J. Jolivet, D. Graillot and B. Guy
- 14:20 **Particle tracing and transport dynamics in an alpine epikarst system.**  
[N. Goepfert](#) and N. Goldscheider
- 14:40 **Tracer tests in the Luxembourg Sandstone (Southern Luxembourg) as a tool for groundwater protection.**  
[P. Meus](#), T. Schaul and J. Farlin

15:00 Poster Blitz presentation - Plenary Session - Aula UNIMAIL  
15:30

Parallel Session - Aula UNIMAIL

**Regional studies - Solute and particle transport**

Chairman: Bartolomé Andreo Navarro

- 17:00 **Hydrogeological investigations and a multitracer test in the Cansiglio-Cavallo karst area (Italian Alps).**  
M. Filippini, G. Squarzoni, M.L.V. Martina, A. Fiorucci, B. Vigna, L. Zini, B. Grillo, A. Riva, S. Rossetti, G. Casagrande, [J. De Waele](#) and A. Gargini
- 17:20 **Transport of solute and suspended matter elements during a flood event in a small karst aquifer.**  
[C. Cholet \(\\*\)](#), M. Steinmann, J.-B. Charlier and S. Denimal
- 17:40 **The influence of particulate organic matter in stream on inorganic carbon fluxes outflowing from a karst aquifer (Val d'Orléans France).**  
[S. Binet](#), J.-B. Charlier and P. Albéric

18:45 *Cocktail / lake side*

20:30 Conférence Publique - P. Malaurent et J.C. Portais - **La grotte de Lascaux de la découverte à aujourd'hui** - Aula des Jeunes Rives

Parallel Session - Auditoire Louis Guillaume - 2nd floor

**Regional studies - Flow processes**

Chairman: Didier Pennequin

- Hydraulics in the karstic system of Milandre (Jura, Switzerland).**  
[C. Vuilleumier \(\\*\)](#), P.-Y. Jeannin and P. Perrochet
- Hydraulics of Reka-Timavo system, Classical Karst, Slovenia-Italy.**  
[F. Gabrovsek](#) and B. Peric
- Managed Aquifer Recharge (MAR) to supply Libreville, a water-stressed city (Gabon).**  
[B. Collignon](#) and C. Ondo
- Origin of flash flood water of a Mediterranean river in karstic and urban environments by CTD monitoring (Las - Toulon - SE France).**  
[B. Arfib](#), C. Novaes, C. Baudement, C. Dufresne and C. Duffa

Parallel Session - Auditoire Louis Guillaume - 2nd floor

**Geological control and speleogenesis**

Chairman: Matt Covington

- Characterization of a paleokarstic oil field (Rospo Mare, Italy): sedimentologic and diagenetic outcomes, and their integration in reservoir simulation.**  
[A. Fournillon](#), G. Bellantani, A. Moccia, C. Jumeaucourt, P. Terdich, F. Siliprandi and F. Peruzzo
- Origine, caractérisation et distribution prédictive du karst sur la bordure nord-est du bassin aquitain.**  
[E. Husson](#), H. Camus, R. Couëffé, C. Lerouge, O. Cabaret and N. Pedron
- Modelling the development of karst network systems on carbonate platforms.**  
[A. Maqueda \(\\*\)](#), P. Renard and F. Cornaton

Parallel Session - Room B103 - Building B - 1st floor

**Spatial data analysis and numerical modeling**

Chairman: Pauline Collon

- Karst conduit networks simulation based on morphometric characterization of karst analogues.**  
J. Jouves, [S. Viseur](#), B. Arfib, Y. Guglielmi and H. Camus
- Geomorphometric analysis of karst terrains.**  
[E. Pardo-Iguzquiza](#), J.J. Durán, J.A. Luque-Espinar and P. A. Robledo-Ardila
- Karst groundwater resources assessment by application of the KARSYS approach - Plateau de Sault (France).**  
[V. Bailly-Comte](#), A. Malard, B. Ladouche, J.-C. Marechal, P.-Y. Jeannin, C. Allanic and L. Martel
- Geometry and topology of karstic networks: a statistical analysis.**  
[P. Collon](#), D. Bernasconi, C. Vuilleumier, and P. Renard

*Poster session with Coffee*

Parallel Session - Room B103- Building B - 1st floor

**Time series analysis and modeling**

Chairman: Nicolas Massei

- Karst flash flood forecasting using recurrent and non-recurrent artificial neural network model: The case of the Lez Basin (southern France).**  
T. Darras, L. Kong-A-Siou, B. Vayssade, [A. Johannet](#) and S. Pistre
- Artificial Neural Networks Modeling of a Karstic Watershed in Mount Lebanon.**  
[A. Allam \(\\*\)](#) and W. Najem
- Characterizing functioning of the Dyr karst (Tebessa - Algeria) by correlative and spectral analysis of hydro-pluviometric chronicles.**  
[M. L. Hemila](#), O. Guefaifia, L. Gouaidia and B. Djoulah

## Tuesday Sept. 6th - Morning

8:30 Registration

Plenary Session - Aula UNIMAIL - Chairman: Nico Goldscheider

9:00 **Keynote: New approaches to speleogenesis.**

[Matt Covington](#) (University of Arkansas, USA) ● **Red Speaker's Corner**

9:40 **Benefits of hydrograph analysis for the characterisation of karst aquifers.**

[Attila Kovacs](#) (Geological and Geophysical Institute of Hungary) ● **Yellow Speaker's Corner**

10:00 **Topographically driven fluid flow at the boundary of confined and unconfined sub-basins of carbonates: basic pattern and evaluation approach on the example of Buda Thermal Karst.**

[Judith Mádl-Szőnyi](#) and [Á. Tóth](#) (Eötvös Loránd University, Budapest, Hungary) ● **Green Speaker's Corner**

10:20

*Coffee break*

Parallel Session - Aula UNIMAIL

**Vulnerability, groundwater protection, and civil engineering**

Chairman: Ronald Kozel

10:50 **Hazard based water quality management of Karst springs - Combining the aquifer base gradient approach and the concept of dynamic vulnerability.**

[P. Huggenberger](#), J. Epting, R.M. Page, M. Besmer, F. Hammes and A. Auckenthaler

11:10 **Karst groundwater vulnerability: quantitative definition of a protection unit by correlating standardized tracer test results and mapping criteria.**

[A. Pochon](#) and M. Sinreich

11:30 **Representation of karst units in the Aquifer Reference System of France - BDLISA: challenges of small-scale mapping**

[J. Perrin](#), S. Schomburgk, D. Allier and J.-J. Seguin

11:50 **Barrage poids sur un karst. Cas de Hammam Grouz (Algérie).**

[M. Belkacem](#), B. Said and S. Tahar - To be confirmed

12:10

12:30

Parallel Session - Auditoire Louis Guillaume - 2nd floor

**Flow modeling**

Chairman: Jacques Bodin

**Modeling the hydrologic cycle in a Mediterranean high relief karst.**

[E. Pardo-Iguzquiza](#), J. J. Durán, J. A. Luque-Espinar, P. Robledo-Ardila and J. Heredia

**A cellular automata-based deterministic inversion algorithm for the characterization of linear structural heterogeneities.**

[P. Fischer \(\\*\)](#), A. Jardani and N. Lecoq

**Sensitivity analysis of hydrodynamics response to structure and flow parameters in a karstic reservoir.**

[L. Dal Soglio \(\\*\)](#), C. Danquigny, N. Mazzilli and G. Massonnat

**Hydro-system flow modelling for water resources management in the fractured and karstified chalk aquifer environment of Eastern Normandy**

[D. Pennequin](#) and P.-Y. David, M. Servièrre, N. Amraoui and C. Loiselet

**An integrated surface/subsurface flow model to investigate karstic aquifers: Example of the Barrois limestone aquifer system in the Meuse/Haute-Marne (France).**

O. Besson, [A. Benabderrahmane](#), J. Kerrou, L. Tacher and P. Perrochet

Parallel Session - Room B103 - Building B - 1st floor

**Heat and Geothermal systems**

Chairman: Olivier Bour

**Numerical simulation of fluid flow and heat transport evolution over geological time scales for the Buda Thermal Karst, Hungary.**

[T. Havril \(\\*\)](#), J. Molson and J. Mádl-Szőnyi

**Heat as a tracer for understanding transport processes in fractured media.**

[M.V. Klepikova](#), T. Le Borgne, O. Bour, M. Dentz, R. Hochreutener and N. Lavenant.

**In-situ experimental study of the development of biogeochemical precipitate in the discharge area of thermal waters, Buda Thermal Karst, Hungary.**

[P. Bodor \(\\*\)](#) and J. Mádl-Szőnyi

**The Santa Cesarea Terme cave system: thermal sulphur springs in the Apulian foreland (southern Italy).**

I. M. D'Angeli, J. De Waele, [M. Parise](#) and M. Vattano

**Geothermal potential assessment of carbonates based on spring characterization and numerical simulation, example of Transdanubian Range, Hungary.**

[A. Tóth \(\\*\)](#) and J. Mádl-Szőnyi

*Lunch / Le Romarin*

## Tuesday Sept. 6th - Afternoon

### Parallel Session - Aula UNIMAIL

#### Regional studies

Chairman: Juan José Durán

- 14:00 **Hydrogeological characterization of a geologically complex karst aquifer using natural responses. An example from Andalusia, southern Spain.**  
B. De La Torre Martínez, M. Mudarra Martínez, B. Andreo Navarro and C. Bertrand
- 14:20 **Hydrochemical and hydrodynamic behavior of the epikarst at the Lascaux cave (Montignac, France).**  
N. Houillon, R. Lastennet, A. Denis and P. Malaurent
- 14:40 **Analysis of natural responses and hydrochemical data by statistical approaches to characterize the hydrogeological functioning of a highly karstified evaporitic system in South Spain.**  
J.M. Gil-Márquez, M. Mudarra and B. Andreo Navarro
- 15:00 **Multidisciplinary approach to assess hydrology of karst vadose zone: from Han-sur-Lesse cave to the Rochefort Laboratory Cave (Belgium).**  
A. Poulain (\*), A. Watlet, O. Kaufmann, M. Van Camp, G. Rochez, K. De Bondt, P. Claeys and V. Hallet

15:20 [Poster Blitz presentation - Plenary Session - Aula UNIMAIL](#)

15:50

### Plenary Session - Aula UNIMAIL - Chairman: Catherine Bertrand

- 17:10 **Keynote: A petroleum engineering perspective on karst**  
Gérard Massonnat (Total SA, Pau, France) ● **Red Speaker's Corner**
- 17:50 **Evolution of conduit networks in transition from pressurised to free surface flow.**  
Franci Gabrovšek (Karst Research Institute, Slovenia), M. Perne and M. Covington ● **Yellow Speaker's Corner**
- 18:10 **Drip flow and gravity driven simulations of water transfer in vadose dolomite karst.**  
Cédric Champollion (Université de Montpellier, France), H. Jourde, A. Meauxsoone, J. Chéry and S. Deville ● **Green Speaker's Corner**

19:30

### Parallel Session - Auditoire Louis Guillaume - 2nd floor

#### Climate and Water Management

Chairman: Andreas Hartmann

- What is the relative impact of climate and land use changes on groundwater recharge given subsurface heterogeneity?**  
F. Sarrazin (\*), A. Hartmann, F. Pianosi and T. Wagener
- A simple but robust assessment of present and future karst systems recharge. To what extent does it help water managers for future water management?**  
Y. Caballero, L. Zerouali, S. Lanini, J.-B. Charlier, E. Lucas, L. Cadilhac and C. Pagé
- Seasonal trends in continuous physico-chemical spring data from karstified and fissured rocks in Switzerland**  
M. Schürch and R. Kozel
- What drives the long-term evolution of water quality in the Jura Mountains? A combined analysis of global change impacts.**  
J.-B. Charlier, Y. Caballero, J. Lions, B. Ladouche and E. Lucas

### Parallel Session - Room B103 - Building B - 1st floor

#### Flow processes

Chairman: Judit Mádl-Szonyi

- New insight on the dynamic of the Fontaine de Vaucluse karst hydrosystem from tilt measurements.**  
N. Lesparre, F. Boudin, J. Chéry, C. Champollion, C. Danquigny, K. Chalikakis and L. Longuevergne
- Influence of a carbonate series geodynamical evolution on the characterization of the actual karst reserves: Example from the Toulon area (SE, France).**  
C. Baudement (\*), Y. Guglielmi, B. Arfib, P. Léonide and J. Lamarche
- Comparison of mine drainage / karst springs discharge recession curves.**  
P. Malík and P. Bajtoš
- Vers une méthodologie pour un diagnostic pluridisciplinaire des échanges entre eaux superficielles (rivière) et eaux souterraines en domaine karstique. Exemple de la Cèze au niveau du plateau de Méjannes-le-Clap (Gard, France).**  
J. Ré-Bahuaud, H. Chapuis, D. Graillot, B. Guy, F. Paran, V. Wawrzyniak, H. Piegay, P. Marmonier, J. Jolivet, A. Johannet, D. Salze, V. Lavastre, A. Mayer and O. Radakovitch

*Poster session with Coffee*

*Conference dinner*

# Wednesday Sept. 7th - Morning

8:30 Registration

Plenary Session - Aula UNIMAIL - Chairman: Pierre-Yves Jeannin

9:00

**Keynote: Craters above salt caverns.**

Pierre Berest (Laboratoire de Mécanique des Solides (LMS), Ecole Polytechnique, Palaiseau, France) ● **Red Speaker's Corner**

9:40 **Challenges in managing karst aquifers in which caves are rare.**

Lou Maurice (British Geological Survey) ● **Yellow Speaker's Corner**

10:00 **The World Karst Aquifer Map (WOKAM).**

Nico Goldscheider (Karlsruhe Institute of Technology, Germany), Z. Chen and the WOKAM Team ● **Green Speaker's Corner**

10:20

*Coffee break*

Parallel Session - Aula UNIMAIL

**Groundwater contamination**

Chairman: Neven Kresic

10:50 **Integrative passive samplers to detect chlorinated hydrocarbons contamination in karst**

H. Demougeot-Renard, A. Bapst, C. Trunz, L. Fischer, and P. Renard

11:10 **Online measurements of enzymatic activity as an indicator for microbiological contamination in a highly vulnerable karst system in Northern Vietnam.**

A. Ender (\*), F. Grimmeisen, N. Goepfert and N. Goldscheider

11:30 **Radon production and migration in a karst system (Fourbanne site, French Jura mountains): preliminary results.**

G. Ielsch, Z. Saâdi, C. Bertrand, S. Denimal, G. Alcalde, E. Barker, C. Debayle and E. Manach

11:50 **Complex pollutant transfer in fractured and karstified chalk aquifer systems in two valleys of Normandy, France.**

D. Pennequin and P.-Y. David

12:10

*Lunch / Le Romarin*

Parallel Session - Auditoire Louis Guillaume - 2nd floor

**Civil engineering in karstic environments**

Chairman: Mario Parise

**The impact of water-conveyance tunnel on the groundwater conditions – a case study of Pirot area, southeastern Serbia.**

I. Jemcov, J. Radosavljević, A. Mladenović, J. Šišović, B. Trivić and R. Pavlović

**Subsurface flow and sulphate dissolution response to the construction and restoration of the River Weir in Hessigheim, Germany.**

H. Montenegro, R. Kauther, D. Strasser, T. Liesch and N. Goldscheider

**Karst Development under Technogenic Impact Conditions in the Western Urals.**

N.G. Maksimovich and O.Y. Meshcheryakova

**Development of karst in the Marunll Dam Site, Zagros Region, Iran.**

Z. Mohammadi and M. Karimi

Parallel Session - Room B103 - Building B - 1st floor

**Spatial data analysis and numerical modeling**

Chairman: Sophie Viseur

**Physical model of a coastal aquifer based on stratigraphic and thermal field reconstruction.**

E. Barca, D.E. Bruno, M.D. Fidelibus, G. Passarella and D. Sollitto

**KARSYS, for a better management of karst groundwater in Switzerland.**

A. Malard, P.-Y. Jeannin, J. Vouillamoz, E. Weber and D. Rickerl

**Karst simulation with Lindenmayer-systems and ODSIM.**

P. Collon, G. Rongier, P. Anquez and P. Mourlanette

**Application of the KARSYS modelling technique to lowland karst catchments in Ireland.**

T. McCormack, J. Vouillamoz, A. Malard, P.-Y. Jeannin, L.W. Gill

# Wednesday Sept. 7th - Afternoon

Parallel Session - Aula UNIMAIL

**Sinkholes and their formation**

Chairman: Jo de Waele

14:00 **Distribution and features of natural and anthropogenic sinkholes in Apulia.**

M. Parise and C. Vennari

14:20 **An integrated approach for investigations of ground-subsidence phenomena in the Ovaro village (NE Italy).**

C. Calligaris, S. Devoto, L. Zini and F. Cucchi

14:40 **Investigating physical processes leading to sinkhole occurrence in Val d'Orléans (France)**

J. Perrin, S. Pasquier, A. Gutierrez, D. Salquèbre, E.

Vandoudheusden, E. Joigneaux, C. Château, A. Guirimand-

Dufour, N. Jozja, C. Défarge and S. Binet

15:00

Plenary Session - Aula UNIMAIL - Chairman: Daniel Hunkeler

15:30 **Keynote: Groundwater contamination and remediation in karst.**

Neven Kresic (Amec Foster Wheeler, Kennesaw, USA)

16:10 **Use of rare earth elements and yttrium to quantify autogenic and allogenic inputs into turloughs in a lowland karst network.**

Laurence Gill (Trinity College Dublin, Ireland), C. Murphy, T. McCormack, M. Babechuk and B. Kamber

16:30 **Subsurface heterogeneity at Europe's karst regions enhances present day recharge and future climate sensitivity.**

Andreas Hartmann (University of Freiburg, Germany), T. Gleeson, Y. Wada and T. Wagener

16:50 **Closing ceremony - Delivering of the Young Karst Research Prize by the IAHR Karst Commission and Eurokarst Best Poster Prizes by the organizers**

Parallel Session - Auditoire Louis Guillaume - 2nd floor

**Geological control and speleogenesis**

Chairman: Franci Gabrovsek

**Statistical physics based models to study karst network geometry and topology in the area of Tulum.**

M. Hendrick (\*) and P. Renard

**Control of wormhole geometry on final dissolution patterns.**

Y. Cabeza (\*), J. Carrera and J.J. Hidalgo

**A particular case of karstification in dolostones (Waulsort Formation, Belgium).**

L. Dewaide (\*), V. Hallet and J.-M. Baele

Parallel Session - Room B103 - Building B - 1st floor

**CO<sub>2</sub> and hydrochemical variations in karst**

Chairman: Jacques Mudry

**Decomposition of CO<sub>2</sub> signal in Lascaux Cave.**

N. Peyraube, R. Lastennet, P. Malaurent, J.D. Villanueva and A. Denis,

**Effect of cave ventilation on karst water chemographs.**

P.-Y. Jeannin, A. Malard, P. Häuselmann and P.-X. Meury

**Comparison of flow processes in drains and low permeability volumes of a karst system in the French Jura Mountains. High-resolution hydrochemical characterization during a flood event.**

S. Denimal, C. Bertrand, M. Steinmann and N. Carry

*Coffee break*