Scientific Program

Flowpath 2025 - Torino

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Event organised by

Politecnico di Torino
Department of Environment, Land and Infrastructure Engineering

DIATI

Università di Torino

Dipartimento di Scienze della Terra

Consiglio Nazionale dei Geologi

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Wednesday 11/06/2025

Room R3 @ PoliTo (Capacity: 300 people)

Start time	End time	Duration (min)		Title	Corresponding author
8:30 AM	9:15 AM	45	Participant registration		
9:15 AM	10:00 AM	45	Opening session with institutional greetings		
10:00 AM	10:10 AM	10	Session A - part 1 **Groundwater and Climate Change: impact and opportunity** Chairs: Prof. Daniela DUCCI Dr. Davide FRONZI	A comparative study of physics-based and machine learning approaches for sustainable groundwater management in the Emilia-Romagna region (Italy)	Ilaria Delfini
10:10 AM	10:20 AM	10		Comparison of electrical resistivity tomography and frequency domain electromagnetic methods for mapping seawater intrusion in shallow aquifers	Benedetta Surian
10:20 AM	10:30 AM	10		Managed Aquifer Recharge – An opportunity for the Groundwater Environment to support Water Resilience under Climate Change	Manuel Sapiano
10:30 AM	10:40 AM	10		Suitable aquifers for MAR projects in the Emilia-Romagna Region according to current Directive and hydrogeological setting	Alessio Mainini
10:40 AM	10:50 AM	10		Feasibility of Managed Aquifer Recharge (MAR) in the Cuneo plain: experiences from the SeTe-ALCOTRA project	Alessandro Casasso
10:50 AM	11:00 AM	10		Observing a climate change adaptation solution's linkages with groundwater dependent ecosystems: a modeling and field based approach	Paolo Colombo
11:00 AM	11:20 AM	20	1-minute Poster Session A Chair: Dr. Elena EGIDIO		
11:20 AM	11:50 AM	30	Coffee break		
11:50 AM	12:20 PM	30	Keynote 1 - Susanne Benz Title: Rising Groundwater Temperatures: Risks and Rewards in Times of Global Warming and Urban Expansion		
12:20 PM	12:30 PM	10	Session A - part 2 **Groundwater and Climate Change: impact and opportunity** Chairs: Prof. Daniela DUCCI Dr. Davide FRONZI	Climate Change and Groundwater on Azores Islands	Francisco Cota Rodrigues
12:30 PM	12:40 PM	10		Groundwater levels in the Po plain: current trends and insights on future variations	Maria Filippini
12:40 PM	12:50 PM	10		The quantitative monitoring network of groundwater bodies within the Southern Apennine River Basin District. A comparison between past and present	Claudia Pensa
12:50 PM	1:00 PM	10		SentinelSpringS: Springs as Sentinels of Climate Change and Sustainability of Aquatic Ecosystems	Elena Egidio
1:00 PM	1:10 PM	10		From meteorological to groundwater drought in the tanagro river basin in the perspective of climate change	Antonia Longobardi
1:10 PM	1:20 PM	10		Assessing the effects of drought periods on the undeterred aquifer of Castelporziano Natural Reserve (Rome Italy)	Chiara Sbarbati
1:20 PM	2:50 PM	90	Lunch		

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Start time	End time	Duration (min)		Title	Corresponding author
2:50 PM	3:00 PM	10	Session B - Part 1 **Groundwater modelling: development and application** Chairs: Prof. Tullia BONOMI Dr. Pietro MAZZON	Hydrogeological water balance in the high and middle venetian plain defined through a regional-scale numerical model (NE, Italy)	Davide Cappellari
3:00 PM	3:10 PM	10		Large scale groundwater modeling for drafting the groundwater budget in the Po River district	Cesare Vasini
3:10 PM	3:20 PM	10		Assessment of the Ag-MAR potential of rice flooding practices through a groundwater flow model in the Piedmontâ€“Lombardy rice basin in Northern Italy	Petra Bajàk
3:20 PM	3:30 PM	10		Cross comparison of groundwater fluxes and dissolved salts in the Volturno and Po River coastal aquifers via SEAWAT model budgets	Mattia Gaiolini
3:30 PM	3:40 PM	10		Hydrodynamic and heat transport modelling for the sustainable management of the Budapest Thermal Karst	Eva Kun
3:40 PM	3:50 PM	10		Hydrogeological conceptual model and multi-method approach for groundwater recharge estimation of the Monti Lattari karst aquifer (southern Italy)	Daniele Lepore
3:50 PM	4:30 PM	40	1-minute Poster Session B Chair: Dr. Martina GIZZI		
4:30 PM	5:00 PM	30	Coffee break		
5:00 PM	5:30 PM	30	Keynote 2 - Prof. John Molson Title: Numerical Model Development and Application to Nuclear Waste Storage: Freeze & Thaw over Glacial Time Scales		
5:30 PM	5:40 PM	10	Session B - Part 2 **Groundwater modelling: development and application** Chairs: Prof. Tullia BONOMI Dr. Pietro MAZZON	The influence of the hydrogeological setting for the definition of the optimal spacing between vertical borehole heat exchangers	Sara Barbieri
5:40 PM	5:50 PM	10		Groundwater Modelling for Open-Loop Geothermal Heat Pump Systems Management	Francesca Lotti
5:50 PM	6:00 PM	10		Design of an open-loop geothermal system for heating and cooling a cultural and university centre	Elena Cogo
6:00 PM	6:10 PM	10		Efficient history-matching of a complex groundwater model using Ensemble Space Inversion	Mattia De Caro
6:10 PM	6:20 PM	10		Predicting discharge in complex karst aquifers through the ensemble smoother with multiple data assimilation: the case of Bossea aquifer.	Ilaria Butera
6:20 PM	6:30 PM	10		Interpreting chemical and biomarker patterns with reactive transport modeling to assess chlorinated ethene biodegradation in groundwater	Diego Di Curzio
6:30 PM	6:40 PM	10		Validation of a Machine Learning tool for preliminary quantification of the hydrogeological interference risk of tunnels.	Ernesto Pugliese
6:40 PM	6:50 PM	10		Groundwater level prediction based on deep learning	Angelo Doglioni
6:50 PM	7:50 PM	60	ECHN round table		

Thursday 12/06/2025

Room R3 @ PoliTo (Capacity: 300 people)

Start time	End time	Duration (min)		Title	Corresponding author
8:30 AM	9:00 AM	30	Participant registration		
9:00 AM	9:10 AM	10	Session C - Part 1 **Hydrogeological Systems and Processes: from local to regional scale** Chairs: Prof. Alessandro GARGINI Dr. Delia CUSANO	A new participatory Hydrogeological Map of Italy 1:500,000 scale	Francesco La Vigna
9:10 AM	9:20 AM	10		Profiling salinity in a coastal shallow aquifer near the Venice lagoon	Luigi Alessandrino
9:20 AM	9:30 AM	10		Recharge estimation from groundwater level fluctuations in a coastal unconfined aquifer in Campania Region (southern Italy)	Elena Del Gaudio
9:30 AM	9:40 AM	10		Groundwater flow in fractured bedrock: prior information from pumping tests, RQD and Earth tides	Chiara Sbarbati
9:40 AM	9:50 AM	10		Analyses of decreasing productivity of groundwater wells in confined aquifers of the lower Po Plain (Ferrara, Italy)	Valentina Vincenzi
9:50 AM	10:00 AM	10		A Novel Approach for Unlocking the Geothermal Potential of Urban Aquifers	Alessandro Berta
10:00 AM	10:40 AM	40	1-minute Poster Session C Chair: Dr. Roberta NARCISI		
10:40 AM	11:10 AM	30	Coffee break		
11:10 AM	11:40 AM	30	Keynote 3 - Alberto Guadagnini Title: Characterizing Flow and Transport in Porous Media: Challenges of Model and Parameter Uncertainty		
11:40 AM	11:50 AM	10	Session C - Part 2 **Hydrogeological Systems and Processes: from local to regional scale** Chairs: Prof. Alessandro GARGINI Dr. Delia CUSANO	Interaction between large lakes and multilayer aquifers: a multidisciplinary study on Garda Lake	Riccardo Pinardi
11:50 AM	12:00 PM	10		Assessing Alpine and Apennine mountain-front recharge to Po Plain alluvial aquifers: the AMBRA project	Marco Rotiroti
12:00 PM	12:10 PM	10		A bird(hawk)'s eye view of Northern Apennines hydrogeology for a quantitative assessment and mapping of sedimentary and ophiolitic fractured aquifers	Elettra Cavana
12:10 PM	12:20 PM	10		Hydrogeological Dynamics and Sustainable Management of Fractured and Karstified Aquifers: The Gran Sasso Case Study (Italy)	Marco Petitta
12:20 PM	12:30 PM	10		Evaluating the snowfall influence on the hydrological balance of Apennine mountain aquifers in Central Italy	Alessia Di Giovanni
12:30 PM	12:40 PM	10		Groundwater resources diminishing in mountain areas: only climate change or also a "hidden" consumer? An example from Central Apennines (Italy)	Francesco Lampa
12:40 PM	1:40 PM	60	Lunch		

Thursday 12/06/2025

Room R3 @ PoliTo (Capacity: 300 people)

Start time	End time	Duration (min)		Title	Corresponding author
1:40 PM	1:50 PM	10	Session D - Part 1 **Groundwater quality and protection** Chairs: Prof. Vincenzo PISCOPO Dr. Francesca LOBINA	Salt migration and export via subsurface irrigation in a saline reclaimed landscape of the Po River lowland (Italy)	Mattia Gaiolini
1:50 PM	2:00 PM	10		The use of groundwater dating and isotopic analysis to characterize a coastal aquifer affected by saline intrusion	Chiara Porru
2:00 PM	2:10 PM	10		Assessment of Groundwater Vulnerability in the Muravera Coastal Aquifer (Southeast Sardinia) Using the GALDIT Method	Antonio Fabrizio Piscedda
2:10 PM	2:20 PM	10		Evaluating Emerging Contaminants in the Atlantis Aquifer's Managed Aquifer Recharge Scheme, South Africa	Reynold Chow
2:20 PM	2:30 PM	10		Forested infiltration Area (FIA) as Nature-based Solution to mitigate groundwater nitrate contamination in the Nitrate Vulnerable Zone (NVZ) of Arborea (Sardinia, Italy)	Alberto Carletti
2:30 PM	2:40 PM	10		Quantification of driving redox reactions potentially induced by managed aquifer recharge in the suburban environment of Brescia (IT)	Nicolò Colombani
2:40 PM	3:20 PM	40	1-minute Poster Session D Chair: Dr. Daniele COCCA		
3:20 PM	3:30 PM	10	Group photo		
3:30 PM	4:00 PM	30	Coffee break		
4:00 PM	4:30 PM	30	Keynote 4 - Dr. Teodóra Szőcs Title: The role of hydrogeochemistry and isotopes in understanding the karstic systems in Budapest and surroundings		
4:30 PM	4:40 PM	10	Session D - Part 2 **Groundwater quality and protection** Chairs: Prof. Vincenzo PISCOPO Dr. Francesca LOBINA	Explaining Groundwater Antibiotic Occurrence Through Seasonal Recharge Patterns	Josep Mas-Pla
4:40 PM	4:50 PM	10		Exchanges between deep and shallow aquifers in the Piedmont Po Plain (NW Italy): a hydrochemical approach with groundwater chemical trends analyses	Daniele Cocca
4:50 PM	5:00 PM	10		A machine learning model trained on data from sites under remediation to predict geogenic arsenic distribution in shallow groundwater	Laura Landi
5:00 PM	5:10 PM	10		Natural geochemical background levels in groundwater of large-scale contaminated sites	Andrea Cisternino
5:10 PM	5:20 PM	10		Practical Application of Advanced LNAPL Multi-Phase Modeling in Groundwater Remediation	Mara Meggiorin
5:20 PM	5:30 PM	10		Identification and Mapping of groundwater Potential Recharge Areas in the Dosso region (Southwestern of Niger) by using Multicriteria Analysis Method	Ibrahim Abdou Ali
5:30 PM	5:40 PM	10		Towards a European sentinel springs information platform with real-time monitoring of groundwater quantity and quality	Klaus Hinsby
5:40 PM	5:50 PM	10	The Role of Women in Hydrogeology Research in Italy (IAH Members)		Daniela Ducci
5:50 PM	6:20 PM	30	Closing session + awards		
Gala Dinner @ Esperia Restaurant					

Poster sessions

Session A	
Title	**Corresponding author**
Systematic literature review on the role of groundwater in the Water-Energy-Food-Ecosystem NEXUS	Xinyuan Yue
Sustainable groundwater management in a local transboundary karst aquifer using a multiscale approach	Paola Petrone
Long-Term Trend Analysis on the Bagnara Spring Flow Rates (Umbria-Marche Apennines Italy): The Impact of Climate Change	Adolfo Mottola
Assessing groundwater recharge events through natural springs under extreme climatic conditions	Mireia Jiménez Llobet
Assessing groundwater depletion in a changing climate through the vadose zone monitoring and a novel extreme rainfall index	Giorgio Mattioli
Hydrogeological Monitoring for Assessing Spring Discharge Variability: Case Studies from the Aosta Valley	Martina Gizzi
Analysing the effects of meteorological and hydrological droughts on Mediterranean coastal lagoons	Mireia Jiménez Llobet
Assessing water resources availability using the water balance in four basins of the Southwestern Alps (Italy)	Federico Emanuel Franco
Surface-groundwater investigations to support ex-ante evaluations of water withdrawals	Vittorio Fancello
Estimating low-enthalpy geothermal potential of alluvial-pyroclastic aquifers of the Phlaegraean Fields area (Campania southern Italy)	Francesca Coccia
Density-dependent groundwater numerical modelling to meet Sustainable Development Goal 6 in a coastal area of north-western Egypt	Giacomo Vescovo

Session B	
Title	**Corresponding author**
Investigating the Sustainability of Groundwater Resources in the Friuli High Plain: A Modeling Approach	Lisa Della Bella
Numerical groundwater flow model in a data-scarce coastal area in western Sicily.	Rachele Evangelista
Modeling Groundwater Flow in Intensive Agricultural Area: The Case of El Carracillo aquifer, Spain	Rachele Evangelista
Unravelling the Hidden Lifeline of the Verlorenvlei Estuarine Lake: Groundwater Modelling of the Verlorenvlei Catchment	Ezelna Germeshuisen
Flow model of a drainage trench used for irrigation	Alessia Amendola
Numerical modelling for sustainable mine water management	Roberto Tonucci
Sensitivity Analysis of Reaction and Transport Modelling Using Different Mesh Structures	Marino Vetuschi Zuccolini
Reconstruction of the hydrogeological structure of the Po river basin for modeling purposes	Simone Bruno
Spatiotemporal analysis and quantification of groundwater withdrawals in the Po basin: methodology and data homogenization within the â€œMidAS-Poâ€ project	Riccardo Pinardi
Defining boundary conditions and sink/source terms for the groundwater flow model of the Po River district (MidAS-PO project)	Rudy Rossetto
Interference between geothermal systems in urban areas: a numerically based tool for sustainable city-scale development	Alberto Previati
Estimating Geothermal Exchange Efficiency: Enhancing Geothermal Energy Extraction through Laboratory and Numerical Modeling	Valerio SIlvestri
Modelling of hydrodynamic behaviour in the Bossea aquifer system through natural radon concentrations: results and applications.	Luca Biamino
Investigating the north-eastern Adriatic basin and coastal plain, through hydrogeological modeling: insights on potential offshore freshwater aquifers.	Cristina Corradin

Merging hydrogeological and geophysical integrated approaches to optimal detection of submarine groundwater outflow	Jaswant Singh
Open source tools for collecting, managing and processing hydrogeological data: Python libraries and predictive algorithms for data analysis	Daniele Bonaposta
Groundwater droughts in Piedmont region	Edoardo Ducco
Assessing Groundwater Vulnerability to Nitrate Pollution and Chloride Salinization using Gaussian Simulation in the Campania Region, Italy	Mojgan Bordbar
Groundwater Vulnerability to Salinization and Agricultural Leaching A Systematic Review of DRASTIC and GALDIT Applications	Efthymia Zavridou
Groundwater Flow Dynamics in Seismically Perturbed Aquifers: Insights from the 2016 Mw 6.5 Norcia Earthquake	Enrica Zullo
Terzaghi's Effective Stress Principle and Hydrological Deformation of Matese Karst Aquifers detected by GNSS and inSar	Francesco Fiorillo

Session C	
Title	**Corresponding author**
Rare Earth Elements as tracers of hydrogeochemical processes in Los Azufres geothermal field, Mexico	Abraham Omar Rodríguez González
Groundwater salinization processes and reversibility of seawater intrusion in coastal industrial	Marta Bongiovanni
Strengthening the hydrogeological conceptual model of a small karst island of Vis (Croatia) by combined groundwater and precipitation hydrochemical research	Staša Borović
Integrated approach to evaluate the ecological flow: results from the experimentation in a river fed by carbonate aquifer in Central Italy	Sofia Ortenzi
Hydrogeological Assessment of an Aggregate Mining Area in the Danube Alluvial Plain, Hungary	Zsóka Szabó
Multiscale and multidisciplinary approaches to assess groundwater vulnerability to agrochemicals of alluvial aquifers	Pasquale Allocca
Insights on the near-field effects of the 2016-2017 Central Italy seismic sequence on groundwater resources within the High Valley of Tenna River (Sibillini Mts. Range, Central Italy	Lucio Martarelli
Flow and reactive transport modeling of a sandy aquifer subjected to agriculture in Eastern Netherland	Sathish Sadhasivam
Spatially-varying anisotropy allows the realistic interpolation of groundwater levels in complex settings	Marianna Bonfanti
Hydrochemical and isotopic study of recharge area of an alpine spring: the Montellina Spring case study (Piedmont, NW Italy)	Giovanni Pigozzi
The CARG thematic hydrogeological sheet n. 374 – Rome, and its innovation.	Francesco La Vigna
Hydrogeological characterization of the complex hydrogeological system of the Brescia metropolitan area (N Italy) in the framework of Water Safety Plan	Agnese Redaelli
Factors controlling the distribution and dynamics of high-altitude springs in the karst system of Asiago plateau (NE Italy)	Emma Petrella
Natural and anthropogenic factors affecting the hydrogeological variations of the Somma-Vesuvius volcanic aquifer (Southern Italy) in the last decades	Sara Saviano

Integrating Field, Meteorological Data and GIS for Hydrogeological Mapping of Carbonate Aquifers in Central Apennines	Alessia Di Giovanni
Investigating groundwater-surface interactions and constraining the water budget in a carbonate hydrogeological system of Central Italy	Sofia Ortenzi
EExperimental investigations of the effect of biofilm growth on heat transport in fractured media	Nicola Pastore
Hydrogeological aspects of the water supply of Benevento town	Francesco Fiorillo
Assessing groundwater storage in the plain area of Metropolitan City of Turin (NW Italy) to evaluate water supply resilience	Giovanni Pigozzi
Hydrogeology of Skydra volcano-sedimentary multi-aquifer system (northern Greece)	Dimitra Rapti
Evaluating transmission loss between surface water and groundwater within the Cornia Alluvial River plain	Tolossa Dabi
The contribution of river infiltration to the recharge of the Northern-Apennine alluvial fan aquifers: the pilot case of the Reno, Savena, and Idice Rivers	Erica Tamagnini
Multidisciplinary hydrogeological reconstruction of carbonate thermal aquifer (Daruvar, Croatia)	Marco Pola
Drinking water for villages with solar energy - Simple Actions with Excellent Results in Rural Conditions and with Limited Resources	Carlo Daniele Leoni

Session D	
Title	**Corresponding author**
Education and Capacity building for Groundwater Management in Developing Countries	Lotti Francesca
The Simplified Separation Pumping Technique: a cost-effective system for multilevel groundwater sampling in fully screened monitoring wells	Sartirana Davide
Comparative assessment of groundwater recharge rates and transit time through the unsaturated zone for groundwater protection	Lobina Francesca
Groundwater-surface water interaction in the Farfa River Valley (Central Italy): implications for the assessment of ecological flow and water quality	De Filippi Francesco Maria
Surface mountain-front recharge promotes nitrate transfer from streams to groundwater in the Franciacorta area (N Italy)	Palazzi Alice
Evaluation of recharge sources and nitrates origin in a karst spring: a case study from the F.na Nurighe spring (NW Sardinia, Italy)	Calia Mara
Application and comparison of traditional and modified DRASTIC methods for assessing nitrate groundwater vulnerability in the Arborea coastal plain (Sardinia, Italy)	Sessini Antonio Maria
Testing different fertigation water types performance in two different soils via batch experiments	Osorio Aahilyn
DRASTIC application with open data	Ez-zaouy Yassine
Impact of past mining activities on water quality: the case of the Pestarena and Crocette gold mines (Piedmont, Italy)	Zaniboni Linda
Microplastics as the new emerging pollutant in the karstic environments. The case study of Kalamos karstic springs in the N-E Attica, Greece.	Vasileiou Eleni
Karst aquifers vulnerability assessment in the Friuli Venezia Giulia region (NE Italy): an update of the Slovene Approach to the COP Method	Quaia Tullio
Influence of stratigraphic-structural setting on the yield of perched carbonate aquifers: Insights from the Monti Lattari Range, southern Italy.	Paoletti Matteo
Assessment of Groundwater Quality for Drinking Purposes Using a Water Quality Index (WQI) and Multivariate Statistical Analysis: A Case Study in Seriana Region, Batna Province, Algeria	Stevenazzi Stefania

SUITED: A Novel GIS Framework for Soil and Irrigation Suitability Assessment Under Salinization Risk	Danise Tiziana
Geochemical and Isotopic Characterization of the Quality of Groundwater in the Jeffara Coastal Aquifer, Tunisia	Ben Hamouda Mohamed Fethi
Hydrogeochemical assessment of groundwater resources under a growing urbanization in Douala Cameroon	Emvoutou Huguette Christiane
Isotopic composition of bottled mineral waters in the Mediterranean area	Rapti Dimitra
Hydrochemistry statistical analysis as support for the correct setup of hydrogeological model: A case study of the lower Magra Valley	Mainini Alessio
Groundwater Monitoring and the POA Acquacentro Project - State of the Art and Future Perspectives in Lazio	Ceccarini Roberto
Occurrence of pharmaceuticals products in induced riverbank filtration: a systematic literature review.”	Dalla Battista Marco
Hydrogeological reconstruction of Baranja region (NE Croatia) as a key input for sustainable water management	Urumović Kosta
DATASET: social and communication strategies	Giuditta Elisabetta
Data from Law 464/84 as support for groundwater management	Pascarella Fabio