



3rd International Multidisciplinary Conference on Mineral
and Thermal Waters

Caserta (Italy), June 26th – 30th, 2022

CONGRESS PROGRAMME



V: Università
degli Studi
della Campania
Luigi Vanvitelli



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Teodora Szocs - IAH Vice President, Geological Institute of Hungary – Hungary

Orlando Vaselli - Università di Firenze – Italy

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Petersburg University, Centre of Geology - Russia

Tomas Vylita - Masaryk University - Czech Republic

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Topics and Sessions

The Conference intends to be an opportunity to stimulate ideas and discussion on different topics related to the world of mineral and thermal waters. Interactions of varied viewpoints will be encouraged. Topics and sessions are addressed to broaden the participation of experts and professionals in the fields of research, industry, medicine, consulting and management. A special session will be dedicated to Italian mineral and thermal waters.

Topic 1 - Hydrogeology and geochemistry of mineral and thermal waters

Hydrogeological origin and hydrogeochemistry of mineral and thermal waters – Hydrogeological conceptual models of hydrostructures – Hydrogeochemical models for mineral water prospection - Isotope geochemistry for mineral water investigation – Water/gases/rock interactions: origin and investigation of mineral aquifers – Undesirable natural solutes in mineral waters - Hydrogeology of mineral and thermal waters in islands and coastal areas.

Topic 2 – Protection and management of mineral and thermal waters

Protection of mineral and thermal water resources, risk assessment and quality protection policies – Protection areas of mineral and thermal waters - Exploitation and management of mineral and thermal waters – Sustainable yield of hydrothermal areas – Mathematical modelling of thermal and mineral hydrosystems - Maintenance of the quantity and quality of mineral and thermal waters - Environmental aspects of sustainable management with mineral and thermal waters - Legislation of mineral waters in the world.

Topic 3 - Bottled mineral waters

Challenges and opportunities of the bottled water sector - The original (pristine) purity of natural mineral waters – Tools and methods able to detect emerging contaminants - Mineral water brands and the health claims based on the recent EU legislation – Mineral waters as part of food, and legislation on health and nutrition - Safety of packaging: the issue of plastics (the safety of PET bottles) - Daily intake of mineral waters links with the definition of natural mineral waters, contents of natural minerals and its effect on health - The issue of medicinal effect of bottled mineral waters – Microbiological quality of natural mineral waters - Environmental sustainability of mineral water bottling – Bottled water in developing countries.

Topic 4 - Health issues, balneology and balneotherapy

Medical use of mineral and thermal waters in diseases of locomotion apparatus and in breathing apparatus diseases - Medical use of the sulphurous waters in skin diseases - Medical use of mineral and thermal waters in gastroenterology and dermatology diseases - Use of mineral and thermal waters in sports rehabilitation - Application of mineral and thermal waters in cosmetology – Mud therapy as a natural anti-inflammatory treatment.

Special Session: Italian Mineral and Thermal Waters, from research to sustainable management

In Italy, 322 types of mineral waters are recognized by the EU. In 2014, the production of mineral waters was of about 12 billion liters for a turnover of about 2.4 billion euros. Enterprises classified as thermal establishments are about 380. In 2012, the total revenue of the spa industry was approximately 720 million euros. Over the last five years spa tourism involved 12 to 15 million visitors per year, corresponding to approximately 4% of tourists in Italy. Despite the flourishing bottled water market and thermal tourism, the debate on sustainable management of the Italian mineral and thermal water resources among researchers, managers and policy makers does not appear to be sufficiently developed. The session is an opportunity to stimulate discussion among the different actors on these important groundwater resources via invited speaker seminars and a round table.

Congress Programme

Sunday, June 26 th	
16:30-19:00	Registration
17:30-19:00	Ice Breaker
Monday, June 27 th	
9:00-10:30	Opening ceremony
10:30-11:00	Coffee break
11:00-12:45	T1 Oral session
13:00-14:30	Lunch
14:30-15:00	T1 Keynote Lecture - Chair: Dario Tedesco <i>Hydrochemical review of the Italian thermal springs: from the reservoirs to their use</i> Speaker: Orlando Vaselli (University of Florence)
15:00-16:00	T1 Oral session
16:00-17:00	Poster session (T1) with refreshment
17:30-19:00	Caserta Royal Palace Tour
19:30-21:00	Concert
Tuesday, June 28 th	
9:00-9:30	T2 Keynote Lecture – Chair: Vincenzo Piscopo Which actions and schemes to quantitatively and qualitatively protect natural mineral waters? Speaker: Patrick Lachassagne (Montpellier University)
9:30-10:30	T2 Oral session
10:30-11:00	Coffee break
11:00-13:00	T2 Oral session

13:00-14:30	Lunch
14:30-15:00	T3 Keynote Lecture - Chair: Giuseppe Dadà Natural mineral and spring waters: turning today's challenges into opportunities' Speaker: Patricia Fosselard (NMWE)
15:00-15:35	T3 Oral session
15:35-16:00	Coffee break
16:00-17:00	T3 Oral session
17:00-18:00	Poster session (T2-T3-T4)/Assembly IAH Italian Chapter
18:00-19:00	CMTW - IAH Meeting
From 20:30	Gala dinner

Wednesday, June 29th

9:00-19:00	Field Trip
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Thursday, June 30th

9:00-9:30	T4 Keynote Lecture – Chair: Alfonso Corniello The modern thermalism between tradition and innovation Speaker: Fausto Bonsignori (FEMTEC)
9:30-10:30	T4 Oral session
10:30-11:00	Coffee break
11:00-12:45	T1 Oral session
13:00-14:30	Lunch
14:30-15:45	Special Session
15:45-16:15	Coffee break
16:15-17:00	Closing ceremony

Monday, June 27th

T1 Hydrogeology and geochemistry of mineral and thermal waters

Chairs: Paula Carreira, Emilio Cuoco, Natalia Vinograd

11:00- 11:15	<p>Electrical geophysical methods for detection and understanding of CO₂-rich mineral groundwater systems - Application in the Ardennes Region, South-East of Belgium</p> <p><i>Agathe Defourny, Thomas Kremer, Arnaud Collignon, Patrick Jobé, Frédéric Nguyen, Alain Dassargues</i></p>
11:15-11:30	<p>Hydrochemical and radiometric evaluation of mineral and surface waters from Araxã City, Minas Gerais State, Brazil</p> <p><i>Daniel Marcos Bonotto</i></p>
11:30-11:45	<p>Combining geochemical and isotopic tools to explain mineral groundwaters diversity in complex geological layout (Corsica - France)</p> <p><i>Margaux Dupuy, Frédéric Huneau, Emilie Garel, Sebastien Santoni</i></p>
11:45-12:00	<p>A pair of thermal water wells within the Buda Thermal Karst System, Budapest, Hungary</p> <p><i>István Fórizs, András Kordé, Árpád Ferenc Lorberer</i></p>
12:00-12:15	<p>Geochemistry of Ree in CO₂-rich mineral waters of Krynica Zdroj Spa, Outer Carpathians, Poland.</p> <p><i>Adam Porowski, Irena Wysocka, Dorota Kaczor-Kurzawa, Anastasiia Romanova, Anna Rogowska, Przemysław Drzewicz</i></p>
12:15-12:30	<p>Geochemical and isotopic characterization of thermal waters discharged from the Campi Flegrei caldera (Italy)</p> <p><i>Francesco Capecchiacci, Emanuela Bagnato, Rosario Avino, Carmine Minopoli, Antonio Carandente, Andrea D'Alessandro, Alessandro Santi, Mauro Di Vito, Stefano Caliro</i></p>
12:30-12:45	<p>Recharge area of natural mineral water in Jingyu County, Northeast China</p> <p><i>Xiujuan Liang, Hui Tian, Changlai Xiao, Mingqian Li, Fan'ao Meng</i></p>

T1 KEYNOTE LECTURE - Hydrogeology and geochemistry of mineral and thermal waters

Chair: Dario Tedesco

14:30-15:00

T1 Keynote Lecture: Hydrochemical review of the Italian thermal springs: from the reservoirs to their use

Orlando Vaselli

T1 Hydrogeology and geochemistry of mineral and thermal waters

Chairs: José Marques, Adam Porowski

15:00-15:15

Geochemistry of rare earth elements in mineral waters of the Sudetic Geothermal Region, SW Poland

Anastasiia Romanova

15:15-15:30

Development of a comprehensive hydrogeological conceptual model ascribed to CO₂-rich thermal and mineral waters worldwide

José M. Marques, Max Pisolkar, Paula M. Carreira, Manuel Antunes da Silva

15:30-15:45

Tracing groundwater circulation in a valuable mineral water basin with geochemical and isotopic tools: the taste of Ferrarelle, Riardo Basin, Southern Italy

Elisa Sacchi, Emilio Cuoco, Harald Oster, Vittorio Paolucci, Dario Tedesco

15:45-16:00

Hydrogeological conceptual model of andesitic volcanic aquifers. Insights from numerical modelling and groundwater dating. Bromo-Tengger case study, Indonesia

Alix Toulhier, Hervé Jourde, Patrick Lachassagne, Véronique de Montety, Olivier Béon, Jean Bonjour, Heru Hendrayana, M. Haris Miftakhul Fajar, Séverin Pistre, Véronique Léonardi, Muhammad Azwar Satrya

Tuesday, June 28th

T2 KEYNOTE LECTURE - Protection and management of mineral and thermal waters

Chair: Vincenzo Piscopo

9:00-9:30

T2 Keynote Lecture: Which actions and schemes to quantitatively and qualitatively protect natural mineral waters?

Patrick Lachassagne

T2 Protection and management of mineral and thermal waters

Chairs: Tamara Markovic, Stefano Viaroli

9:30-9:45

Hydrogeochemical characterization of the Matese Massif springs: water chemistry and geological implications

Francesco Rufino, Emilio Cuoco, Gianluigi Busico, Stefano Caliro, Rosario Avino, Alessandro Santi, Freano Meto, Martina Avella, Dario Tedesco

9:45-10:00

Benchmarking thermal water management practice in six countries of the Pannonian Basin

Nina Rman, Teodóra Szócs

10:00-10:15

Impact of variability of geothermal well capacity on the geothermal heating plant operation - case study from Choszczno Region, Szczecin Trough, NW part of Poland

Anna Wachowicz-Pyzik, Anna Sowizdzał, Leszek Pajqk

10:15-10:30

Renewability and sustainability evaluation of a fault-controlled geothermal system: the Euganean Geothermal Field case study (NE Italy)

Filippo Torresan, Leonardo Piccinini, Paolo Fabbri, Dario Zampieri

T2 Protection and management of mineral and thermal waters

Chairs: Daniel M. Bonotto, Giovanni Forte, Nina Rman

11:00-11:15	<p>A hydrogeological and geochemical approach of a simulation study of the cretaceous geothermal reservoir for Aquifer Thermal Energy Storage</p> <p><i>Elżbieta Hałaj, Leszek Pajqk, Bartosz Papiernik</i></p>
11:15-11:30	<p>Hydrogeological studies. Delimitation of the protection perimeter of the Caldas das Murtas mineral aquifer (Amarante, Portugal)</p> <p><i>Ana Stigliano, Joaquim Góis, Renata Santos, António Guerner, Vanessa Machado</i></p>
11:30-11:45	<p>Game-theoretical model for the sustainable use of thermal water resources: the case of Ischia volcanic island (Italy)</p> <p><i>Richard Kicsiny, Vincenzo Piscopo, Antonino Scarelli, Zoltán Varga</i></p>
11:45-12:00	<p>Characterization of lower Jurassic aquifer in Szczecin-Mogilno-Łódź Trough for geothermal water utilization purposes with application of seismic methods</p> <p><i>Anna Sowizdżał, Tomasz Maćkowski, Anna Wachowicz-Pyzik, Michał Stefaniuk</i></p>
12:00-12:15	<p>Geothermal utilization effects on mineral water spring in Alaşehir (Manisa) geothermal area</p> <p><i>Ali Bülbül</i></p>
12:15-12:30	<p>Characteristics and utilization of geothermal aquifers of Bjelovar Subdepression</p> <p><i>Tamara Marković, Željka Sladović, Igor Karlović, Dragutin Domitrović, Ozren Larva</i></p>
12:30-12:45	<p>Application of electromagnetic methods in geothermal and mineral water prospection based on examples from Poland</p> <p><i>Michał Stefaniuk, Adam Cygal, Jakub Ważny</i></p>
12:45-13:00	<p>Hydrogeology and geochemistry characterization of a mineral and thermal spring water in Central Mexico</p> <p><i>Selene Olea-Olea, Oscar Escolero, Jürgen Mahlkecht, Jorge Alejandro Montiel-Mona, Laura Beramendi-Orosco</i></p>

T3 KEYNOTE LECTURE - Bottled mineral waters

Chair: Giuseppe Dadà

14:30-15:00

T3 Keynote Lecture: Natural mineral and spring waters: turning today's challenges into opportunities'

Patricia Fosselard

T3 Bottled mineral waters

Chairs: Patricia Fosselard, Giuseppe Dadà

15:00-15:20

Microplastics: what we know today

Rachid Dris

15:20-15:35

The recast of EU Drinking Water Directive: analysis and impact on spring waters

Annick Moreau

T3 Bottled mineral waters

Chairs: Joseph Molas Pages, Vittorio Paolucci

16:00-16:15

Perception of bottled water in Central Europe through time

Mihael Brencic

16:15-16:30	Determination of the emerging contaminants in mineral waters by combination of Seafast-Pico preconcentration system and ICP-MS: Rare Earth Elements as a case study <i>Irena A. Wysocka, Dorota Kaczor-Kurzawa, Adam Porowski</i>
16:30-16:45	Manufacturing process of natural mineral waters <i>Josep Molas Pages</i>
16:45-17:00	Sartorius filtration solution to improve the quality of water <i>Franco Golin, Valerio Ferone</i>

Thursday, June 30th

T4 Health issues, balneology and balneotherapy

Chair: Alfonso Corniello

9:00-9:30	T4 Keynote Lecture: The modern thermalism between tradition and innovation <i>Fausto Bonsignori</i>
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T4 Health issues, balneology and balneotherapy

Chairs: Fausto Bonsignori, Fabio Tateo

9:30-9:45	Therapeutic muds: chlorophyll a variation over two years and relationships with mineralogy and geochemistry in the Euganean Thermal District (ETD), NW Italy <i>Andrea Calderan, Anna Carraro, Claudia Honisch, Alberto Lalli, Paolo Ruzza, Fabio Tateo</i>
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9:45-10:00	<p>Bactericidal peloid and ointment based on kaolin and thermal mineral water to be used in the treatment of infectious skin wounds</p> <p><i>Celso Figueiredo Gomes, Jorge Hamilton Gomes, Eduardo Ferreira da Silva</i></p>
10:00-10:15	<p>The therapeutic properties of the mineral groundwaters of the Essentyki spa</p> <p><i>Ekaterina Baranovskaya, Natalia Kharitonova, Elena Fillimonova, Anna Korzun, Alexey Maslov, Elena Maximova</i></p>
10:15-10:30	<p>The loss of S(-II) on a thermal water</p> <p><i>Alexandre Vasconcelos, Joaquim Góis, Renata Santos, Dulce Silva</i></p>

T1 Hydrogeology and geochemistry of mineral and thermal waters

Chairs: Daniela Ducci, Istvan Forizs, Giacomo Medici

11:00-11:15	<p>Isotopic signature of the nitric thermal groundwaters from Kuldur Spa</p> <p><i>Larisa Lyamina, Natalia Kharitonova, Georgy Chelnokov, Ivan Bragin, Aleksandr Karabzov, Elena Zippa</i></p>
11:15-11:30	<p>The Mauritius mineral spring in St. Moritz (Upper Engadine Valley, SE-Switzerland) from Paracelsus to today an overview of its chemical composition over more than two centuries</p> <p><i>Enrico Piatti, Balderer Werner</i></p>
11:30-11:45	<p>Major ion and stable isotope compositions of thermal and mineral waters in eastern Turkey</p> <p><i>Halim Mutlu, Harun Aydın, Hüseyin Karakuş</i></p>
11:45-12:00	<p>Hydrochemical analyses and modelling to detect driving forces of karstification; the case study of the UK Magnesian Limestone Group (Spen Farm, NE England)</p> <p><i>Giacomo Medici, Landis Jared West, Pippa Joanne Chapman, Steven Allan Banwart</i></p>

12:00-12:15	<p>Investigation of mineral water origin using hydrochemical and isotopic criteria (on the case study of two platform mineral water occurrences)</p> <p><i>Natalia Vinograd, Adam Porowski, Igor Tokarev</i></p>
12:15-12:30	<p>Assessing the sustainable yield of a hydrothermal system: the case of the Viterbo area (Italy)</p> <p><i>Francesca Lotti, Vincenzo Piscopo</i></p>
12:30-12:45	<p>Hydrothermal basal aquifer of Angra Do Heroismo (Terceira Island, Azores): chemical, isotopic and hydraulic characterization</p> <p><i>Maria do Rosario Carvalho, Henrique Sá, Ana Freitas, João C. Nunes, Paula M. Carreira, José M. Marques, José M. Carvalho</i></p>

Special Session: Italian mineral and thermal waters, from research to sustainable management

Chair: Vincenzo Piscopo

14:30-15:45	<p>The session includes speeches by representatives of associations, administrators and managers involved in the world of mineral and thermal waters:</p> <p><i>Ruggero Bartocci, Regione Campania</i> <i>Carlo Pontecorvo, Ferrarelle spa</i> <i>Ettore Fortuna, Mineracqua</i> <i>Costanzo Jannotti Pecci, Federterme</i> <i>Maria Costantino, FIRS Thermae</i></p> <p>Afterwards, the discussion on the sustainable management of the Italian mineral and thermal waters will be stimulated with the contribution of researchers participating in the session. The session will be in Italian with simultaneous translation into English.</p>
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The posters will be then visible until the end of the Conference

Poster Session

Chairs: Elzbieta Halaj, Elisa Sacchi, Gyorgy Toth

Monday, June 27th 16:00-17:00

T1 Hydrogeology and geochemistry of mineral and thermal waters

T1_003	<p>Hydrogeochemistry and chemical geothermometry studies of a low temperature Savcili-Büyükoba (Kirsehir) geothermal system, Central Anatolia</p> <p><i>Cansu Yurteri</i></p>
T1_010	<p>Multiparameter hydrogeochemical approach in regional groundwater flow systems (stable isotopes, noble gases, $^{87}\text{Sr}/^{86}\text{Sr}$ and $\delta^{11}\text{B}$)</p> <p><i>Nina Rman, Peter Junež, Laszlo Palcsu, Andrej Lapanje, Luka Serianz</i></p>
T1_013	<p>Isotopic and geochemical approaches to update the conceptual model of thermal waters from Graciosa Island - Azores, Portugal</p> <p><i>Paula M. Carreira, Maria do Rosário Carvalho, José M. Marques, Fausto Grassa, Giorgio Capasso, João Carlos Nunes</i></p>
T1_016	<p>Geochemistry of the thermomineral waters of Greece</p> <p><i>Lorenza Li Vigni, Kyriaki Daskalopoulou, Sergio Calabrese, Konstantinos Kyriakopoulos, Filippo Brugnone, Walter D'Alessandro</i></p>
T1_018	<p>Multidisciplinary approach to assess the alluvial aquifer hydrodynamic role in Connate mineral groundwater upwelling (Vomano Valley, Central Italy)</p> <p><i>Diego Di Curzio, Sergio Rusi</i></p>
T1_019	<p>Conceptual model of the Euganean geothermal system (NE Italy)</p> <p><i>Paolo Fabbri, Leonardo Piccinini, Filippo Torresan, Dario Zampieri</i></p>

T1_020	<p>Trace elements in the thermomineral waters of Greece</p> <p><i>Lorenza Li Vigni, Kyriaki Daskalopoulou, Sergio Calabrese, Konstantinos Kyriakopoulos, Lorenzo Brusca, Sergio Bellomo, Filippo Brugnone, Walter D’Alessandro</i></p>
T1_021	<p>Hydrochemical characteristics of natural mineral water in Fusong and Jingyu County, Jilin Province</p> <p><i>Mingjun Liu, Changlai Xiao, Xiujuan Liang</i></p>
T1_022	<p>Groundwater dynamics and hydrochemistry of the Acque Albule hydrothermal basin: a comprehensive review</p> <p><i>Chiara Sbarbati, Francesco La Vigna, Roberto Mazza, Marco Petitta</i></p>
T1_026	<p>Combined geochemical and microbiological approach for groundwater quality control and management</p> <p><i>Francesco Rufino, Emilio Cuoco, Lidia Muscariello, Gianluigi Busico, Dario Tedesco</i></p>
T1_027	<p>Geochemical self-removal dynamics of Fe and As in mineral waters: evidences from analytical data of the Ferrarelle groundwater system</p> <p><i>Emilio Cuoco, Stefano Viaroli, Vittorio Paolucci, Roberto Mazza, Dario Tedesco</i></p>
T1_028	<p>Natural and anthropogenic groundwater mineralization processes in a volcanic-sedimentary coastal aquifer in the archaeological site of Cumae (Phlegraean Fields, Southern Italy)</p> <p><i>Luisa Stellato, Michele Arienzo, Silvio Coda, Pantaleone De Vita, Brunella Di Rienzo, A. D’Onofrio, Luciano Ferrara, Fabio Marzaioli, Marco Trifuoggi, Vincenzo Allocca</i></p>
T1_029	<p>Hydrochemical characteristics and spatial distribution of natural mineral water in the south of Yanbian City, China</p> <p><i>Fanao Meng, Xiujuan Liang, Changlai Xiao</i></p>
T1_032	<p>Primary sources and secondary processes regulating water and gas chemistry of thermal fluids from Porretta (Italy)</p> <p><i>Franco Tassi, Filippo Turchetti, Francesco Capecchiacci, Orlando Vaselli, Jacopo Cabassi, Stefania Venturi, Stefano Vannini</i></p>
T1_035	<p>The geological survey of Italy contribution to thermal-mineral water resource inventory within the H2020 Geoera Hover Project</p> <p><i>Barbara Dessì, Rossella Maria Gafà, Lucio Martarelli, Gennaro Maria Monti, Angelantonio Silvi</i></p>

T1_036	<p>Deep fluid source contribution to groundwater in Central Apennine: from regional to local scale</p> <p><i>Marino Domenico Barberio, Maurizio Barbieri, Andrea Billi, Tiziano Boschetti, Antonio Caracausi, Carlo Doglioni, Stefania Franchini, Francesca Gori, Marco Petitta</i></p>
T1_038	<p>The thermomineral waters identity of Caldas de Carlão Spa - NE Portugal</p> <p><i>Sara Pereira, Alcino Oliveira, Paula Carreira</i></p>
T1_039	<p>Hydrochemistry and origin of mineral waters from Mukhen spa (Far East of Russia)</p> <p><i>Natalia Kharitonova, Georgy Chelnokov, Ivan Bragin, Anna Korzun</i></p>
T1_041	<p>Thermomineral springs in Caldas da Rainha thermal hospital (Portugal): a hydrodynamic and biogeochemical characterization</p> <p><i>Rita Carvalho, Marina Paiva, Maria do Rosário Carvalho, Carlos Costa Almeida, Ricardo Dias</i></p>
T1_042	<p>Hydrochemical and isotopic features of the Na-Cl and Ca-SO₄ groundwaters of Salice Terme (northern Apennines - Italy)</p> <p><i>Franco Cavanna, Paola Guado, Giancarlo Guado, Giorgio Pilla, Elisa Sacchi</i></p>
T1_043	<p>Geochemistry of thermo- and mineral waters from the Republic of Moldova: implications about their use for potable and balneological purposes</p> <p><i>Barbara Nisi, Oleg Bogdevich, Orlando Vaselli, Igor Nicoara, Franco Tassi, Elena Culighin, Cristina Mogorici, Victor Jeleapov, Mario Mussi</i></p>
T1_044	<p>Characteristics of regional conditions of medicinal and thermal water occurrence in the Central Sudetes (SW Poland)</p> <p><i>Barbara Kielczawa, Elzbieta Liber-Makowska</i></p>
T1_045	<p>Sources of heat in low-enthalpy mineral waters from Essentuki region (Russia, Caucasian mineral water area)</p> <p><i>Natalia Kharitonova, Elena Fillimonova, Vasiliy Lavrushin, Alexey Maslov, Ekaterina Baranovskaya, Anna Korzun, Elena Maksimova, Natalia Muromets</i></p>
T1_047	<p>An isotopic study on the origin of sulphates in the Boario Terme groundwaters (Southern Alps - Italy)</p> <p><i>Giorgio Pilla, Elisa Sacchi, Vittorio Paolucci, Gian Maria Zuppi</i></p>

T1_051	<p>Hydrochemical, isotopic and bacteriological characteristics of the mineral waters of Telese (Southern Italy) <i>Alfonso Corniello, Marco Guida, Luisa Stellato, Marco Trifuoggi, Elena Del Gaudio</i></p>
T1_052	<p>Mineral waters and dolomites weathering: a case study in the Salerno area (Southern Italy) <i>Paolo Budetta, Alfonso Corniello, Daniela Ducci, Giovanni Forte</i></p>
T1_053	<p>Geochemical and isotopic anomalies in groundwater as precursory signs for earthquakes: the case of Ischia Island <i>Daniela Ducci, Elena Del Gaudio, Mariangela Sellerino, Giuseppe Onorati</i></p>
T1_054	<p>Condition and processes of precipitation of iron compounds upon discharge of high-mineralized artesian water from artesian borehole R-30, Starooryahovo, Bulgaria <i>Aleksey Benderev, Mila Trayanova, Mihail Tarassov</i></p>
T1_055	<p>Conceptual gas and geochemical model of genesis of carbonic mineral waters of the Borjomi group of deposits <i>Vladimir Abramov, Boris Borevsky, Vadim Altaev, Levan Bagdavadze, Teimuraz Koroshinadze</i></p>

Tuesday, June 28th 17:00-18:00

T2 Protection and management of mineral and thermal waters

T2_004	<p>Research on the exploitation and utilization degree of mineral water based on ecological base flow in the Changbai Mountain basalt area, Northeast China <i>Ge Wang, Changlai Xiao, Zhiwei Qi, Xiujuan Liang</i></p>
T2_007	<p>Protection of mineral and thermal waters in Italy: some considerations on how to bridge the gap between regulatory and hydrogeological aspects <i>Vincenzo Piscopo, Fulvio Formica, Luigi Lana, Luigi Pianese</i></p>
T2_009	<p>Protection of natural mineral water in mountains, Northeast China <i>Changlai Xiao, Yajie Yuan, Xiujuan Liang, Zhiwei Qi, Ge Wang</i></p>

T2_010	<p>The ecological and hydrogeological services for health tourism of the Hévíz thermal lake and engineering solutions for their sustainability</p> <p><i>Gyorgy Toth, Gyorgy Nemeth</i></p>
T2_012	<p>Temperature and discharge variations in natural mineral water springs due to climate variability: a case study in Piedmont (NW Italy)</p> <p><i>Leone Bastiancich, Manuela Lasagna, Mauro Falco, Susanna Mancini, Domenico Antonio De Luca</i></p>
T2_013	<p>Groundwater flow processes in the active volcanic system of Ischia Island (Italy)</p> <p><i>Silvia Fabbrocino, Antonio Giardino, Lucia Marino, Sandro de Vita, Mauro A. Di Vito, Enrica Marotta, Rosario Avino, Antonio Carandente, Pasquale Belviso, Fabio Todisco</i></p>
T2_015	<p>Specific vulnerability assessment to nitrate for mineral waters (Riardo Plain, Southern Italy)</p> <p><i>Stefano Viaroli, Emilio Cuoco, Vittorio Paolucci, Dario Tedesco, Elisa Sacchi, Roberto Mazza</i></p>
T2_016	<p>Sustainable exploitation of vulnerable coastal aquifers: the case studies of Fano and Ravenna (central-eastern Italy)</p> <p><i>Barbara Nisi, Marco Doveri, Matia Menichini, Serena Botteghi, Orlando Vaselli, Brunella Raco</i></p>

T3 Bottled mineral waters

T3_005	<p>Perla Moldovei - an exceptional combination of pH (8,8) and alkalinity (250 mg/L)</p> <p><i>Dragoş-Marcel Vespan, Alina-Mihaela Ion</i></p>
T3_007	<p>Mineral water bottling in Bulgaria</p> <p><i>Vladimir Hristov, Radostina Atanassova, Aleksey Benderev</i></p>

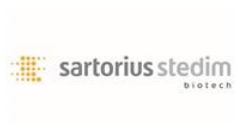
T4 Health issues, balneology and balneotherapy

T4_002	<p>The therapeutic effect of Värška mud and Värška mineral water baths on the overuse pain and muscle tension syndromes in working age population</p> <p><i>Varje-Riin Tuulik, Monika Kumm, Viiv Tuulik</i></p>
T4_003	<p>The therapeutic volcanic waters of Ischia, Italy</p> <p><i>Ann C. Pizzorusso</i></p>
T4_004	<p>Thermal water healing practices in the ancient Greek world: a philosophical approach</p> <p><i>Maria Ntoumani, Konstantina Gongaki, Helen Soultanakis</i></p>
T4_006	<p>Methodologies adopted in the preparation of peloids based on mineral thermal water privileging sanitary safety</p> <p><i>Jorge Gomes, Celso Gomes, Jorge Saraiva, Eduardo Silva, João Silva</i></p>
T4_010	<p>Oxidative stress and natural spa mineral waters: data of literature</p> <p><i>Maria Costantino, Valeria Conti, Gianluca Napolano, Francesco Marongiu, Mario Farroni, Amelia Filippelli</i></p>

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Field trip MinWat 2020

Terme di Telese (Telese - BN) e Stabilimento Ferrarelle (Riardo - CE)

Programma

- Trasferimento in pullman Caserta-Telese: 08.30 - 09.30
- Visita tecnica Terme di Telese: 09.30 - 11.30
- Trasferimento da Telese a Riardo: 11.30 - 12.30
- Visita tecnica captazioni Ferrarelle: 12.30 - 13.30
- Pranzo: 13.30 - 14.30
- Visita tecnica stabilimento imbottigliamento: 14.30 - 17.00
- Trasferimento Riardo – Caserta: 17.00 - 18.00