[Test] February KC News

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Karst Commission

In this issue

February 2024 NEWS

Chairs: Peter Malik (Europe/Africa, 9/21 - 12/22); Avi Burg (Asia/Oceania, 1/23 - 4/24); Benjamin Tobin (Americas), 5/24 - 8/25)

Notes from the chairs

A long list of meetings is presented in this news, so the KC members and friends have many opportunities to meet others and share knowledge and experience (and good food…).

The annual meeting of the KC will take place (as usual) at the Eurokarst conference, this time in Rome. **We call our members who wish to bring up a topic for discussion at the meeting to inform the chair in charge – Avi (burg@gsi.gov.il) of the requested topic.**

KC can financially support some students who intend to participate in the Eurokarst meeting. For the eligibility criteria and rules, see:
https://karst.iah.org/funding-for-young-scientists-to-attend-conferences
We ask you to encourage your students to attend the conference and to ask for our financial support.
Hope to see as many of you as possible at the Eurokarst and the other scientific meetings.

This news file is unusual in its length, so to help you enjoy reading it we have added photos throughout the file taken by the three chairmen at their research sites in their homelands ….enjoy….

UPCOMING KC EVENTS

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The IAH World Groundwater Congress 2024

The IAH World Groundwater Congress 2024 will take place from 8 to 13 September 2024 at the renowned Davos Congress Centre, Switzerland. The conference is organized around four main themes: (1) Hydrogeological systems and processes, (2) Groundwater as a resource, (3) Groundwater and society in a changing world, and (4) Emerging field and computational approaches.
For more details about the conference see: www.iah2024davos.org

The call for abstract submission is now open. Submission will end on February 29. All sessions are arranged according to five overarching themes (see details at https://www.iah2024davos.org/parallel/). Three sessions organized by KC members and chairmen are offered, focusing on different aspects of karst studies:

- Karst hydrogeology I: Flow systems and modeling approaches (led by P.-Y. Jeannin, H. Jourde, L. Gill),
- Karst Hydrogeology II: Water supply and engineering solutions (led by Z. Stevanovic, P. Malik),
- Karst Hydrogeology III: Water quality, sustainability and ecosystems (led by A. Burg, N. Goldscheider),

Karst Hydrogeology I is listed under the topic “Hydrogeological Systems and Processes” while the other two sessions are listed under the topic “Sustainable Groundwater Resources Management”.
We invite you to submit an abstract to one of these three sessions and encourage your students and friends to do so as well.
The submission platform can be accessed directly via www.iah2024davos.org/submit. The abstract should contain a maximum of 2,000 characters (including spaces); special characters, images or graphics cannot be included.

Key dates:
- 15 Dec 2023 – 29 Feb 20.24 – Abstract submission,
- 31 May 2054 – Early bird registration closes,

The Congress team is also inviting submissions for the best hydrogeology image, which will be displayed at the congress and on the congress website. In addition, students are invited to enter the video competition - "My Thesis in 180S". Submissions to both competitions close on 30 June. For more details see: https://www.iah2024davos.org/#involved

"Man and Karst" - 24 to 29 June 2024

The third edition of "Man and Karst" will take place between June 24 and 29, 2024. The event, organized by our member - Rosario Ruggieri, will be held in Ragusa Ibla (Sicily), a magical and fascinating baroque historic town, a UNESCO World Heritage Site.
For more details look at https://cirs-ragusa.org/blog/man-and-karst-2024/ where you find the first circular with all the required details and the registration form.
Abstract submission and pre-registration close on April 30, 2024.

Eurokarst 2024

The EUROKARST 2024 will be held at the main campus of Sapienza University, central Rome, between June 10 and 14, 2024. The abstract submission is already closed. Registration for the conference will open soon.

As stated above the annual meeting of the KC will be held during this conference. Wait for the next news for details about the meeting.

For more details about the conference see: http://www.eurokarst.org

eurokarst

Rome, June 10th-14th 2024

The 31st International Karstological School

The Karst Research Institute in Postojna is organizing the 31st International Karstological School “Classical Karst” (IKS). The school offers a framework in which

both young and experienced karstologists from all over the world can present new research in the field of karstology, make contacts, and familiarise themselves with classical karst. The main theme of this year's IKS is: “Data Acquisition and Analysis in Karst Systems”. The meeting will take place between June 17 and 21, 2024 in Postojna, Slovenia, and will delve into the pivotal theme of data: its acquisition, processing, and interpretation.

We invite participants to share their experiences in characterizing karst environments, elucidate the challenges they have encountered, and present their inventive solutions

Registration will soon be possible.

For more details see: https://iks.zrc-sazu.si/en/

Resurgence Spring - Jackson County, Kentucky, USA – one of Ben Tobin’s research sites,

The 37th International Geological Congress (IGC2024)

This is a message from KC members Guanghui Jiang and Michel Bakalowicz: The 37th International Geological Congress (IGC2024) will be held in Busan, South Korea, from 25 to 31 August, 2024. A special topic on karst hydrogeology is organized at the conference (https://igc2024korea.org/content/14403):

- Session 4 (under parallel session T18-Groundwater and Hydrogeology) – “Eco-hydrological Process and its Effects in Karst Environment”.

Convener: Guanghui Jiang (Guangxi University),
Co-Convener: Xuan Yu (Sun YAT-SEN University), Jason Polk (Western Kentucky University),
Keynote speaker: Hongsong Chen (Institute of Subtropical Agriculture, Chinese Academy of Sciences),
Introduction to the session: Karst water is a vital global freshwater resource, supporting drinking water for around 25% of the world's population and sustaining diverse ecosystems, agriculture, and food security. The IAH Karst Commission and the IGCP715 project, along with many karst research groups, are leading an initiative to investigate the relationship between forest changes and hydrological dynamics under extreme weather. This topic aims to explore diverse cases in various geological and climate conditions, analyze vegetation water usage sources, assess the impact of forest modifications on hydrological trends, and understand the long-

term relationship between hydrological changes and forests. Additionally, the topic would like to examine forest management responses to droughts and floods, seeking effective ecological measures to reduce hydrological impacts and comprehend the evolving trends of karst environments in the context of climate change.
Abstract submission closed on February 16, 2024.
For more details about the conference see: https://igc2024korea.org/

Water In Sensitive and Protected Areas (WSPA2024) - Pula, Croatia, April 10 - 13, 2024

The 4th International Conference WATER IN SENSITIVE AND PROTECTED AREAS (WSPA2024 Conference) will be held in Pula, Croatia on April 10-13, 2024.
On the conference website www.wspa2024.org, a SECOND NOTICE about the conference has been published, which provides potential authors and conference participants with relevant information about the conference, including information about: the conference program; thematic areas and conference topics; invited speakers by topic; preparation and submission of abstracts and full papers; opportunities for publication of full papers in international IWA journals (in English) as well as in the journal Hrvatske vode (in Croatian); workshop and round tables that will take place during the conference and post conference tours (excursions).
Submission of Abstracts has already ended!
For more details see: www.wspa2024.org.

Trace experiments on the top of Silická planina karstic plateau, Zedem site, Slovakia - one of Peter Malik's research sites,

Characterization and Engineering of Karst Aquifers – CEKA

The international course “Characterization and Engineering of Karst Aquifers – CEKA” will be held in Trebinje, Bosnia and Herzegovina from May 26 to June 1, 2024.

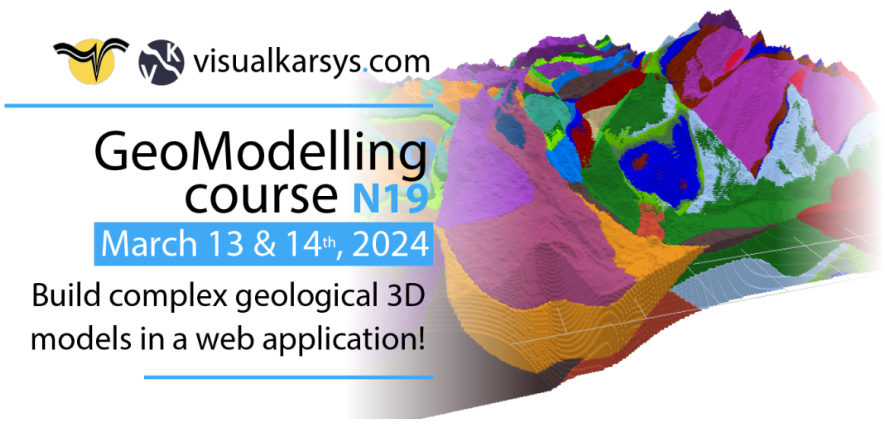
This international course includes theoretical lectures on the basic concepts of karst hydrogeology and a few practical demonstrations and field trips within the territories of the Dinaric karst. The course will be organized by The Centre for Karst Hydrogeology of the University of Belgrade, supported by UNESCO-IHP and several other institutions. The course is open to all but is especially devoted to younger and talented karst researchers. Attendance is free of charge.

For more details and the Preliminary application form for CEKA 2024 see.
https://www.karst.edu.rs/en/

On line Visual KARSYS GeoModelling N19: 13-14 March 2024

The next GeoModelling course will be organized in 2 sessions of 3 hours each.
Tuesday, March 13th, 2024 - from 1 PM to 4 PM*
Wednesday, March 14th, 2024 - from 1 PM to 4 PM*
*(GMT+00:00 Time zone)

This course is dedicated to learning the construction of 3D geological models using the implicit approach. It is intended for geologists and hydrogeologists working in complex environments. Attendees will receive a brief introduction to the theoretical aspects of 3D geoModelling and will be guided through the construction of a 3D geological model in a folded/eroded/thrusted environment using different geological data (maps, cross-sections, drill holes, galleries, faults, etc.).
Course fee: employees CHF 180 / students CHF 130
Contact for registration/questions: info@visualkarsys.com
For the program of the course go to: https://www.visualkarsys.com/courses



Interactive map of events and activities

The IAH has published an interactive map showing upcoming hydrogeology-related events around the world. For the map see: https://iah-activities.org/events-map/

The Dan River – the biggest karst spring in the Middle East, Israel - one of Avi Burg's research sites (with partners)

Recommended publications

We would like to draw your attention to this new book:

- *Landscapes and landforms of Poland, 2024, Piotr Migoń and Kacper Jancewicz (eds.). Cham: Springer International Publishing, 754 p.*

This book is another one in the international book series of monographs that present and explain physical landscapes across the globe ("World Geomorphological Landscapes"), focusing on both representative and uniquely spectacular examples. Each book contains details on the geomorphology of a particular country (such as France, Italy, or India) or a geographically coherent region. The "World Geomorphological Landscapes" series is produced under the scientific patronage of the International Association of Geomorphologists.
Some of the chapters in the present book describe karst landscapes in Poland: Chapter 15 by Jacek Szczygieł – "The Tatra Mountains-Host of the Deepest Caves in the Carpathians"; Chapter 22 by Andrzej Tyc – "Kraków-Częstochowa Upland-Monadnocks and Relic Caves in the Karst Landscape"; Chapter 24 by Jan Urban, Anna Chwalik-Borowiec, Andrzej Kasza, Artur Zieliński, and Artur Komorowski – "The South-Eastern Nida Basin (Ponidzie)-Karst in Gypsum Rocks"; Chapter 27 by

Radosław Dobrowolski – “Chalk Karst in the Lublin Region”.

Giacomo Medici, a KC friend from Sapienza University of Rome (Italy), asked to present two articles in the KC news. Here is the reference with a brief description and explanation provided by Giacomo:

- *Medici, G., Lorenzi, V., Sbarbati, C., Manetta, M. and Petitta, M., 2023. Structural classification, discharge statistics, and recession analysis from the springs of the Gran Sasso (Italy) carbonate aquifer; comparison with selected analogues worldwide. Sustainability, V. 15(13), 10125.*

The research attempted to statistically characterize the hydrographs of the discharge and study the recessions to determine the degree of reliability and variability of karst natural water resources. This approach was applied to six springs in the Gran Sasso area that were compared to selected analogues worldwide. Our findings depict groundwater resources, which have limited exposure to episodes of summer droughts. The proposed approach is a multidisciplinary integration of structural geology and hydrologic elements and can be successfully exported to other tectonized carbonate areas for the sustainable management of karst groundwater resources.

- *Lorenzi, V., Banzato, F., Barberio, M.D., Goeppert, N., Goldscheider, N., Gori, F., Lacchini, A, Manetta, M., Medici, G., Rusi, S. and Petitta, M., 2024. Tracking flowpaths in a complex karst system through tracer test and hydrogeochemical monitoring: Implications for groundwater protection (Gran Sasso, Italy). Heliyon, V. 10 (2), e24663.*

The work aimed to combine basic hydrochemical analyses, isotope data, and tracer tests to monitor flow pathways in the complex karst system of the Gran Sasso area, Central Italy. Thanks to this holistic approach, a renewed management of the spring has been proposed, considering the different degrees of aquifer vulnerability (turbidity occurrence) directly related to the discharge regime.

Nazzareno Diodato (Met European Research Observatory - International Affiliates Program of the University Corporation for Atmospheric Research Benevento, Italy, and Committee’s Memberships IAH – Commission on Groundwater and Climate Change) asked to advertise his latest Springer-Nature Post in the KC News: https://communities.springernature.com/posts/resonance-of-mediterranean-groundwater-recharges-with-long-term-atlantic-climate-patterns.
In his paper with co-author (*Diodato, N. and Bellocchi, G., 2024. Millennium-scale changes in the Atlantic Multidecadal Oscillation influenced groundwater recharge rates in Italy. Communications Earth & Environment, V. 5(1), 56*), he provided a time-series of groundwater recharge from 801 CE to the present day in the Tiber River Basin, Italy, using historical records and hydrological modeling. A predominant warm phase of the Atlantic Multidecadal Oscillation (AMO), induces a reduction in recharge rates due to hydrological memory effects. The study improves the understanding of climate-water interactions, offers a comprehensive view of groundwater dynamics in the central Mediterranean, and highlights the importance of the past for sustainable future strategies. Leveraging this understanding can address water scarcity and enhance the basin’s resilience. The study reveals the potential of the AMO resonance to supersede the direct impact of seasonal rainfall on the water cycle.

We would also like to draw your attention to an article by a Chinese group that provides a systematic literature review based on the China National Knowledge Infrastructure (CNKI) and Web of Science (WoS) databases, which involves search, appraisal, synthesis, and analysis. Almost 3,000 articles were analyzed. The present paper aimed to reveal research trends based on forest ecology, relating to Karst desertification (KD), and highlight the future direction of KD research and control.

- *Zhang, Y., Zhang, Z., Zhang, M. and Yuan, Z., 2024. The Global Situation of Karst Desertification Research Based on Forest Ecology. Forests, V. 15(1), 126.*

Here we present a selection of very new articles on karst topics from different regions around the world. In some of them, members of the KC are the main or co-authors.

- *Zhang, J., Sirieix, C., Genty, D., Salmon, F., Verdet, C., Mateo, S., Xu, S., Bujan, S., Devaux, L. and Larcanché, M., 2024. Imaging hydrological dynamics in karst unsaturated zones by time-lapse electrical resistivity tomography. Science of The Total Environment, V. 907, 168037.*

Electrical resistivity tomography (ERT) in the Karst Critical Zone was used to visualize specific karstic zones, including cave galleries, water storage reservoirs, wetting fronts, soil layers, and potential preferential flow paths down to a depth of 20 m. The research took place above Villars Cave - a well-known prehistoric cave in SW France. The findings have significant implications for predicting rainwater infiltration pathways into caves, thereby assisting in the conservation and preservation of prehistoric caves and their cultural heritage.

- *Fernández-Ortega, J., Barberá, J. A. and Andreo, B., 2024. Real-time karst groundwater monitoring and bacterial analysis as early warning strategies for drinking water supply contamination. Science of the Total Environment, V. 912, 169539.*

The study describes an improvement in groundwater protection through an integrated methodological approach based on real-time measurements of continuous water parameters combined with bacterial analysis for the characterization of contamination events in a carbonate karst aquifer of a mountainous and rural area in southern Spain.

- *Savatier, M., Morrissey, P., Gill, L. and Rocha, C., 2023. Intercomparison of marine tracer and catchment-based submarine groundwater discharge estimates for a karst aquifer. Journal of Hydrology, V. 627, 130358.*

The study compares the results of tracer-based (salt mass balance, tidal prism, and radon mass balances) and catchment-based methods (water balance, semi-distributed karst network model) to assess submarine groundwater discharge (SGD) in a data-rich coastal location at Kinvara Bay, Ireland.

- *Cusano, D., Lepore, D., Allocca, V. and De Vita, P., 2024. Control of soil mantle thickness and land cover types on groundwater recharge of karst*

aquifers in Mediterranean areas. Journal of Hydrology, V. 630, 130770.

A methodology based on field and laboratory characterizations, as well as soil water balance modeling approaches, is proposed in this work to advance the knowledge of groundwater recharge processes. The experimental approach was applied to the Soprano-Vesole-Chianello Mts. karst aquifer (Campania region), which is considered representative of karst aquifers of southern Italy and the Mediterranean areas. Based on consistent spatial models of soil thickness and soil hydrologic properties, the Soil Water Balance code (SWB 1.2) was applied to evaluate the spatial and temporal variability of the groundwater recharge of the karst aquifer.

- *Puigserver, D., Giménez, J., Gràcia, F., Granell, À., Carmona, J.M., Torrandell, A. and Fornós, J.J., 2024. Effects of global and climate change on the freshwater-seawater interface movement in a Mediterranean karst aquifer of Mallorca Island. Science of The Total Environment, V. 912, 169246.*

The study objectives were to analyze the environmental consequences of global and climate change on the intrusion of seawater into Mediterranean coastal karst aquifers. Mallorca Island in the western Mediterranean, where a karst aquifer system discharges into the sea, was selected for the research.

- *Tobin, B.W., Miller, B.V., Niemiller, M.L. and Erhardt, A.M., 2024. Expanding Karst Groundwater Tracing Techniques: Incorporating Population Genetic and Isotopic Data to Enhance Flow-Path Characterization. Hydrology, V. 11(2), 23.*

This study attempted to assess the complex groundwater flow paths, by combining the more traditional approaches, including artificial (dye) and natural (geochemistry, isotopes, and discharge) tracers, with the population genetic data of a groundwater crustacean, and to determine whether these data can provide insights into seasonal or longer changes in connections between conduits. The data collected included dye trace, hydrographs, geochemistry, and asellid isopod (Caecidotea bicrenenta) population genetics in Fern Cave, AL, USA, a 25 km-long cave system.

- *Peely, A.B., Mohammadi, Z., Sivelle, V., Labat, D. and Naderi, M., 2024. A New Index to Assess the Effect of Climate Change on Karst Spring Flow Rate. Sustainability, V. 16(3), 1-19.*

Ten karst springs in the Zagros region, Iran were selected to investigate the impact of climate change under three CMIP6 scenarios: SSP1-1.9, SSP2-4.5, and SSP5-8.5, which represent low, intermediate, and high emissions of greenhouse gases, respectively.

Members who are interested in recommending a new relevant publication (their own or of their friends) are welcomed to send a link to one of the co-chairs.

IAH Karst Commission
Newsletter sent to members and friends of the IAH Karst Commission