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May 2023 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)

Introduction by the chairman

The summer for those living in the northern hemisphere is almost here and we wish you great summer times, vacations, and sunny and warm days. 27 of us are going to start the summer travels in a few days by participating in the traditional KC geotrip, organized by our friends in Croatia and Slovenia. In the next KC news, we will summarize this experience assuming that those who hesitated to join this geotrip will change their minds and ask to participate in the next geotrip!!!

A few words after our friend, a KC member - Dr. Barbara June Mahler

This text was written by Nicolas Massei from the University of Rouen and MaryLynn Musgrove from the USGS, colleagues and close friends of Barbara.

Our colleague and friend Barbara June Mahler passed away on April 29, 2023, at the age of 64, as a result of injuries sustained in a tragic traffic accident that occurred two years ago. She has now joined her husband Peter Chapman Van Metre, who did not survive the accident. Barbara spent most of her career as a Research Hydrologist at

the United States Geological Survey in Austin, TX. Many of us knew her for her work in karst hydrology, which she approached primarily with an environmental geochemist's perspective. She focused much of her work in this arena in the karst springs of the Barton Springs segment of the Edwards Aquifer in Central Texas, an ideal natural karst laboratory that allowed her to apply an understanding of that system to other karst areas. Her work has contributed greatly to the understanding of the functioning and vulnerability of karst hydrosystems, and furthermore has been of critical importance to water resource management in the Austin area. Additionally, with her husband Pete, also a renowned USGS Research Hydrologist, they worked together on numerous ground-breaking studies of lake sediments, stream quality, and environmental contaminants across the United States, often with concerted industry pushback. Barbara had worked with many of us and we had shared many good times. She was a remarkable scientist, colleague, teacher and mentor, and generous with her time and expertise. We pay tribute here to our friend, fellow scientist, an outstanding musician, and brilliant person who lived with overflowing enthusiasm and extreme kindness.



May her memory be blessed!

Thanks to Nico Goldscheider and MaryLynn Musgrove for the attached photos of Barbara.

New member of the KC group - Niladri Chowdhury

We are pleased to welcome Niladri Chowdhury from Ireland as a new associate member of the KC Group.

Here is what Niladri wrote about himself:

I am Niladri Chowdhury and I am a 1st year PhD student in the Department of Civil Structural and Environmental Engineering at Trinity College Dublin. My supervisor is Professor Laurence Gill. My research incorporates groundwater hydrology in Irish



Karst and contaminant transport modeling.
See University Link for more details regarding
Niladri's research:

<https://www.tcd.ie/civileng/people/doctoral-students-/niladri-chowdhury/>

We welcome Niladri to our group and we hope he will
be involved and active in the commission activities.

We are also happy to inform you that Prof. Zaghran Mohammadi from Shiraz University, Iran, is a full KC member after completing two years of associated membership, since March 2023.

Our friend George Veni is retired

We would like to congratulate Karst Commission member George Veni on his retirement as Director of NCKRI after 16 years in the position. George, thank you for the support and insight you have given to the karst community and we look forward to continuing to work with you as you continue your research and cave exploration endeavors! Since George is no longer at NCKRI, if you wish to reach out to him, his new contact information is: gveniassociates@gmail.com

<https://www.linkedin.com/in/george-veni-6107a346>

UPCOMING KC EVENTS

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Visual KARSYS GeoModelling Course N5: 31 May-1 June 2023

The GeoModelling course N5 will be organized in two sessions:
Wednesday, May 31st, 2023 - from 1 PM to 4 PM*

Thursday, June 1st, 2023 - from 1 PM to 4 PM*

*(GMT+00:00 Time zone)

The course is dedicated to the learning of the construction of 3D geological models with the implicit approach. Participants will be briefly introduced to the theoretical aspects of 3D geoModelling and will be guided through the construction of a 3D geological model in a folded / eroded / thrust environment by using different geological data (maps, cross-sections, drillholes, galleries, faults, etc.). The course is dedicated to geologists / hydrogeologists working in complex areas.

Course fee: employees CHF 170.- / students CHF 120.-

Contact for registration / questions: info@visualkarsys.com

For the program of the course go to: <https://www.visualkarsys.com/courses>

IAH worldwide groundwater congress: 17 – 22 Sept. 2023, Capetown, South Africa

The Congress theme for IAH 50 is "Groundwater: A Matter of Scale". This theme combines scientific advances through local to global scale experiments and case studies, with those extending over various temporal scales.

We urge the KC group members to attend this conference that brings together most members of the IAH - the umbrella organization that hosts several commissions including our own.

Find out more information at <https://iah2023.org.za>;

Below are the important dates relevant to those who intend to participate:

- 31 May 2023 – Early Bird registration deadline,
- 21 August 2023 – Late registration deadline,

Recommended articles and publications

Our active friend Zoran Stevanović drew our attention to two publications:

(1) Springer's book "Characterization and Engineering of Karst Aquifers" (2015) edited by Zoran, to which Peter Milanović also contributed greatly, has now been fully translated into Chinese and can now be found in this world's largest scientific market. The translation is by the hydrogeologist Chen Hongfeng. The book contains contributions written, among others, by as many as 16 active members of the IAH

Karst Commission. So, the book can really be considered a KC piece of work and a common achievement.

(2) an article of which Zoran is the first author, describing the karst aquifer in the southeast of the Dinarides and located in the territory of four countries in southern Europe - Croatia, Bosnia and Herzegovina, Montenegro and Albania.

Stevanović, Z. and Milanović, P., 2023 . South-eastern Dinaric karst: contrasts in water treasury. *Environmental Earth Sciences*, 82(9), 1-15.

Along with the general description of this highly karstified terrain, the article refers to many contrasts in the management of aquifers, such as abundant water reserves yet water shortages in certain areas, special natural phenomena versus limited sources of life, good natural water quality but highly vulnerability to pollution, feasible engineering solutions along with a partly negative impact on the environment, and water management at the national level contrasting with the transboundary character of most large aquifers. The article ends with the question of whether the aquifers are being utilized in the best way and what the prospects are for sustainable use and their protection in the future.

Zoran Stevanović is also a co-author in another new article that deals with karst aquifer characterization using time series and stochastic analysis and modeling as well as groundwater quality analyses in Serbia.

Petrović, B., Marinović, V. and Stevanović, Z., 2023. Characterization of the eastern Suva Planina Mt. karst aquifer (SE Serbia) by time series analysis and stochastic modeling. *Environmental Earth Sciences*, 82(9):222, 1-17.

See below some other interesting new articles, all dealing with different aspects of flow in karst complexes. Article (1) explores the potential of hydraulic tomography for the characterization of the distribution and connectivity of conduits in a two-dimensional sandbox and its corresponding synthetic aquifer; article (2) presents a methodology that accounts for the physics of flow by employing a variably saturated dual-permeability flow model to simulate diffuse and preferential infiltration in a large-

scale carbonate aquifer in Israel and the West Bank; article (3) presents new observations of seismic signals generated within a karst aquifer during both human-generated injection experiments as well resulting from a large natural rain event; article (4) represents a contribution to the protection techniques of karst aquifers against groundwater pollution in Crete, and article (5) present monitoring temperature data from a two-year-long study of a 10 km long river cave, Greece, and the data from five measuring stations along the cave stream show how different flow paths transform the temperature signal.

(1) Wang, X., Kong, X.Z., Hu, L. and Xu, Z., 2023. Mapping conduits in two-dimensional heterogeneous karst aquifers using hydraulic tomography. *Journal of Hydrology*, 617, 129018.

(2) Bresinsky, L., Kordilla, J., Engelhardt, I., Livshitz, Y. and Sauter, M., 2023. Variably saturated dual-permeability flow modeling to assess distributed infiltration and vadose storage dynamics of a karst aquifer–The Western Mountain Aquifer in Israel and the West Bank. *Journal of Hydrology X*, 18, 100143.

(3) Bilek, S.L., Luhmann, A.J., Grapenthin, R., Woo, H.B. and Gochenour, J. A., 2023. Capturing Seismic Signals from Karst Aquifer Injection Experiments and a Natural Recharge Event. *Journal of Geophysical Research: Solid Earth*, e2022JB025635.

(4) Steiakakis, E., Vavadakis, D. and Mourkakou, O., 2023. Groundwater Vulnerability and Delineation of Protection Zones in the Discharge Area of a Karstic Aquifer–Application in Agyia’s Karst System (Crete, Greece). *Water*, 15(2), 231.

(5) Skoglund, R.Ø., Pennos, C., Perşoiu, A. and Sotiriadis, Y., 2023. Karstic Aquifers–Simple or Hybrid Systems? Thermal Stories from Maaras Cave, Greece. *Water*, 15(3), 488.

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.

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Newsletter sent to members and friends of the IAH Karst Commission