

UIS BULLETIN

Union Internationale de Spéléologie

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- One year to the world's premier speleological event
- 60th UIS Anniversary
- 2nd Circular available
- Registration open

- UIS becomes Category 1 Member of the ISC
- The International Day of Caves and Karst by UNESCO
- Events and expeditions supported by the UIS

and much more...



UIS BULLETIN

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Union Internationale de Spéléologie

Founded in Postojna, Slovenia, 1965

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Before submitting articles for the UIS Bulletin, please

CLICK HERE!

Deadline for submissions for the next issue (N° 66-2): November 15, 2024

COVER PHOTO:

Cave of Janelão*

Peruaçu Caves National Park - Januária/Itacarambi, Minas Gerais, Brazil

Author: Alexandre Lobo

* Cave to be visited during the 19th ICS Pre & Post congress trips.

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REMEMBER: SAVE A TREE; DO NOT PRINT IF UNNECESSARY

Editorial

ONE YEAR TO THE 19th ICS AND THE 60th ANNIVERSARY OF THE UIS

Time to value the past to build the future

By **Nivaldo Colzato** (Brazil)

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Dear speleologists, cavers, and cave lovers around the world, we are glad to share with you one more issue of the UIS Bulletin, which once more brings good news about the UIS itself and the global speleology.

Reversing the chronological order of facts, let's start with the future, that is, the next International Congress of Speleology (ICS), which everyone knows will have its 19th issue in Brazil in July 2025.

Well, we are one year away from the world's premier speleological event. How time passes!

Since Brazil's confirmation as host, in April 2021, a lot has been done. Upon completing its 18th ordinary meeting, the Organizing Committee (OC) is very proud of the results obtained so far. However, we are aware that the work and challenges tend to increase and to be even hard from now on.

With the publication of the [Second Circular](#) and the opening of registrations on July 15th, we are just entering the final stretch of the organization. It is time therefore to redouble our energy, regulate the engines, accelerate the pace, and take even more care so that everything goes smoothly, as aimed.

At the moment you are reading this Editorial, cavers from all over the world are accessing the website www.speleo2025.org to guarantee their registration and the presence on the field trips. There are many options, but spots are limited. If you haven't done it yet, don't hesitate. Take advantage of the promotional package at affordable prices and receive a series of benefits that will make your registration even cheaper.

After all, the purpose of the OC is not limited to provide an excellent congress. Our goal is also to make it easier for everyone to participate so that the 19th ICS is, in addition to its technical-scientific attributions, a great celebration of global speleology in a festive and welcoming atmosphere typical of Brazilians. Remember that we will also host the major celebration of the 60th anniversary of the UIS. Not by chance, the theme adopted for the congress is "History for the Future." You can not miss.

Another good news that stands out in this issue is the UIS proposal for UNESCO to declare September 13th as International Day of Caves and Karst (IYCK). The negotiations, led by the UIS President Nadja Hajna, are described in her column on the next page.

This is truly another grand project designed by the UIS that will have an important impact in favor of the protection of caves and karst around the world. Whereas the "[International Year of Caves and Karst 2021-2022](#)" (IYCK) pushed the global speleological community to teach the lay public about the importance and need to protect these fragile environments, the IDCK will have a similar effect, with the advantage of being held every year.

From the future to the recent past, another excellent news arrived in early May with the UIS becoming a Full Member (Category 1) of the [International Science Council \(ISC\)](#). On the next page the UIS President Nadja Hajna, who also led this process, brings a summary of the negotiations and makes us understand how important this achievement is and how much it benefits the caves, karst, and the speleology as a whole. Additional information about the process and the ISC itself are in the article on [page 12](#), by the UIS Secretary General Johannes Mattes.

These good news show how committed the UIS is to the development of speleology. Its initiative, for example, to directly support international expeditions and events has grown significantly each year. You will see in this Bulletin some reports of projects that benefited from this important assistance.

This is UIS, whose work has contributed to making it increasingly known, respected, and recognized not only as a scientific organization par excellence, but also as the main representative of global speleology.

One year away from the 19th ICS and the major celebrations of its 60th anniversary, the moment also leads us to remember and value its past. In this sense, the UIS Archive in Postojna, Slovenia, has just received a large volume of documents donated by the family of the then Secretary General and past President Hubert Thrimmel ([page 14](#)); and the book "60 Years of the UIS-1965-2025, by the past President José Ayrton Labegalini, that is in the final stages of preparation to be launched at the congress in Brazil ([page 16](#)).

This is UIS, which works with an eye on the future but know how important it is to record, value, and preserve its past. After all, as Pavel Bosak wrote on page 14,

No history means no future!



The President's Column

CHARTING NEW HORIZONS

By **Nadja Zupan Hajna** (Slovenia)

UIS President

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To start, I would like to address two key issues I have been working on for the UIS: preparing a proposal for UNESCO to establish the International Day of Caves and Karst (IDCK) and securing UIS membership of the International Science Council (ISC).

Proposal for UNESCO to Establish the International Day of Caves and Karst (IDCK), September 13th

With the assistance of John Gunn (IUCN Working Group on Caves and Karst, UK), Paul Griffiths (karst expert, Canada), and UIS Bureau members, I have drafted a proposal for UNESCO to proclaim September 13th as the International Day of Caves and Karst.

As of early July:

- The proposal for IDCK has been completed.
- It has the support of the Slovenian National Commission for UNESCO and is in positive coordination with relevant ministries. Since UIS is registered in Slovenia, the proposal must be submitted by the Slovenian government.

- UIS is seeking support from international professional organizations, member countries, and regional organizations.

- UIS has already received formal support from international organizations: IUCN Cave and Karst Working Group, IUCN WCPA Geoheritage Specialist Group, International Society for Photogrammetry and Remote Sensing (ISPRS), International Union for Quaternary Research (INQUA), Karst Commission of the International Association of Hydrogeologists (IAH KC); Asian Union of Speleology (AUS), Israel Cave Research Center (ICRC); Czech Speleological Society; Slovenian Speleological Association; and is awaiting others.

And a plan:

- Professional letters will be used to garner support from UNESCO National Commissions.

- The proposal, along with supporting letters, will be submitted to the UNESCO Executive Committee.

Launching the UNESCO International Day of Caves and Karst is vital for raising awareness, promoting sustainable practices, encouraging scientific research, preserving cultural heritage, protecting biodiversity, and fostering international cooperation. This initiative is essential for ensuring the long-term conservation and sustainable management of caves and karst systems worldwide. The full proposal is attached herein.

UIS Joins the International Science Council (ISC) as a Category 1 Member

On May 6, 2024, we received the news that our application for ISC Category 1 membership had been approved by the ISC Governing Board, including a request for a reduced fee of 850 EUR (starting in 2025). Previously, UIS was an ISC Category 3 member without voting rights. This achievement follows a year of communication with ISC administration and participation in various meetings of international unions (e.g., Geo-Unions) under the ISC umbrella.

The ISC works globally to mobilize scientific expertise, provide advice, and influence issues of major concern to both science and society. As a non-governmental organization, ISC unites over 250 international scientific unions and associations, national and regional scientific organizations, including academies and research councils, international federations, societies, and young academies and associations.

UIS membership in the ISC significantly benefits speleologists by providing greater influence, funding, networking opportunities, and support for education and conservation efforts. This membership underscores the importance of speleology in the global scientific community and enhances the ability of speleologists to contribute to and benefit from international scientific advancements.

UIS's inclusion as a Category 1 member reflects our commitment to global scientific collaboration and influence, marking a significant milestone for the speleological community. This membership brings numerous benefits and opportunities crucial for the advancement of speleology and the work of speleologists worldwide. Here's why this membership is important:

- ISC membership enhances the credibility and recognition of UIS as a leading scientific organization.

- Being part of ISC allows UIS to have a stronger voice in international science policy discussions, crucial for advocating for the importance of speleology and the protection of caves and karst systems on a global scale.

MAY 6, 2024

The UIS becomes Category 1 Member of



**International
Science Council**
The global voice for science

- Membership in ISC opens doors to new funding opportunities for research and projects related to speleology.

- UIS's membership in ISC connects speleologists with a diverse network of scientists from various disciplines.

- ISC's platform allows UIS to promote the scientific aspects of speleology more effectively.

- ISC membership supports UIS in its educational mission by providing access to global educational resources and platforms.

- As part of ISC, UIS can better coordinate conservation efforts with other international bodies, addressing global challenges such as climate change, biodiversity loss, and water resource management, significantly impacting karst landscapes and cave ecosystems.

As the ISC established several Regional Focal Points, UIS nominated three individuals to represent different regions: Nathalia Vanessa Uasapud Enriquez, UIS Bureau (Latin America/Caribbean), Marc Mentens, UIS Bureau (Asia-Pacific), and Ayoub Nehili, Morocco (Africa). They have already attended regional meetings as UIS representatives.

Conferences and Meetings

As UIS President, I have attended several important conferences and meetings to promote UIS initiatives, particularly the proposal for IDCK:

3rd International Congress on Karst, Speleology, and Natural Heritage Valorization (Rabat, Morocco, November 2023): This congress, organized by Moroccan Explorers, the Faculty of Sciences, Mohammed V University of Rabat, and passionate cavers, focused

on valuing and protecting karst heritage. It provided an excellent opportunity to promote the UIS IDCK initiative and to local speleologist to express their wish for international cooperation.

Meeting with New Zealand Speleological Society (April 2024): I met with NZSS President Kip Mandeno, past President John Patterson, and past UIS Bureau member Prof. Paul Williams, who introduced me to New Zealand's spectacular caves and karst, including the scientifically significant caves and spectacular cave worms of Spellbound.

Balkan Cavers Camp (Zagreb, Croatia, May 29th-June 2nd 2024): At this international camp, I emphasized the importance of cave conservation and introduced the UIS IDCK initiative. It was also an opportunity to meet with Balkan Speleological Union President Ema Marcu and other representatives.

31st International Karstological School (Postojna, Slovenia, June 2024): I reiterated the call for support for our IDCK proposal, engaging participants in efforts to protect and celebrate caves and karst globally.

Regarding the 18th International Congress of Speleology in France (2022), I would like to note that UIS has yet to receive the official report on the Congress.

Regular Work

According to UIS Statutes, Bureau members are obliged to represent UIS between General Assemblies. Their roles involve promoting UIS's objectives and ensuring its smooth operation, reflecting the organization's dedication to speleology and its global heritage.



November 2023: N. Zupan Hajna (CENTER) and Z. Motyčka (SECOND FROM RIGHT TO LEFT) at the 3rd International Congress on Karst, Speleology and Natural Heritage Valorization, Morocco, with the members of the congress organizers from Moroccan Explorers and the Faculty of Sciences, Mohammed V. University of Rabat. PHOTO ARCHIVE NADJA ZUPAN HAJNA.



APRIL 2024: LEFT TO RIGHT: Pete Chandler, his wife Libby, N. Zupan Hajna, and Prof. Paul Williams in front of Spellbound Glowworm Cave, New Zealand. PHOTO BY ANJA HAJNA..

Some Bureau members and individuals have demonstrated exceptional work:

- Nivaldo Colzato has done excellent work on the UIS Media and Bulletin, with support from Nathalia Uasapud and Gerard Campion.
- Marc Mentens has been instrumental in gathering caving equipment for cavers with limited resources and representing UIS at ISC Asia-Pacific Focal Point.
- Secretary General Johannes Mattes has performed exceptional work in maintaining communication with member countries and the ISC.
- Peter Mathews from Australia and Jasmina Rijavec from Slovenia have provided long-standing voluntary technical support to maintain the UIS webpage, for which the UIS is deeply grateful.

Besides my work on the IDCK proposal, I have sent letters to the Australian Government expressing our concerns about the proposed Western Green Energy Hub project, which poses significant threats to the Nul-larbor karst system. The project, involving 3,000 wind turbines, 25 million solar panels, and 15,000 km² of development, risks irreparable damage to Australia's largest limestone cave system, its underground ecosystems, and its Aboriginal cultural heritage.

The electricity produced will be used to manufacture hydrogen and ammonia for export, potentially compromising the area's proven World Heritage values.

UIS Commissions

Under ARTICLE 9 of UIS Statutes, commissions are internal organizations directed by the Bureau, focusing on specific aspects of speleology. These commissions involve experts and interested individuals from around the world. UIS currently has a few active commissions or working groups, many are without leaders or just have disappeared with the change of generations. Because the work of the commissions is crucial for speleological community, we look forward to new proposals at the General Assembly.

The UIS Bureau considered George Veni's proposal for establishing a UIS International Governance Commission. The UIS Executive Bureau, along with the Past Presidents and Advisory Committee, reviewed the proposal and prepared a statement discussed at the UIS Bureau meeting in April 2024.

The consensus is that UIS, as a professional-scientific organization dedicated to speleology, does not require an International Governance Commission or Committee. If necessary, the Bureau will address issues and designate representatives for specific tasks. The group advocating for such a commission is encouraged to propose a UIS Commission on nature conservation, particularly karst system governance.

All involved agreed that any engagement with international bodies should remain under the Bureau's control to prevent autonomous operation and ensure compliance with UIS Statutes.

UIS PROPOSAL FOR AN INTERNATIONAL DAY OF CAVES AND KARST

I. INTRODUCTION AND MOTIVATION

1. The establishment in 1972 of the UNESCO Convention concerning the Protection of the World Cultural and Natural Heritage has facilitated the recognition of 87 World Heritage Properties in 56 Member States that contain caves and/or karst features.

2. UNESCO also recognizes Internationally Designated Areas (IDA) through Biosphere Reserves (BR), Global Geoparks (UGGp) and Ramsar Sites (RS). The Secretariat for the first two are hosted by UNESCO, while the Secretariat for Ramsar Sites is hosted by the IUCN. Analysis undertaken at the end of 2023 suggests that there are at least 167 BR and 97 UGGp (out of a total of 195), and 126 RS that contain caves and/or karst. However, obtaining information on the presence of caves and/or karst known to be in an IDA can be challenging as in some IDA known to have caves and/or karst, this information may not be not recognised in official site descriptions or citations.

3. Caves are defined as naturally formed voids in earth materials that are large enough for humans to enter and explore. Caves are present in most countries of the world, in all climatic zones and in many rocks, especially limestones, evaporites and basalts, and within the ice of glaciers. Our earliest ancestors commonly lived in caves which formed part of the cradle of humankind.

4. Karst is characterised by distinctive landforms and hydrology resulting from a combination of high rock solubility and underground water movement along preferential pathways. Although carbonates such as limestone, marble, and dolomite are the primary karst rocks, karst is also developed on evaporite rocks such as gypsum and rock salt, and karst-like landscapes can be found on some siliceous rocks. Carbonate and evaporite rocks crop out across over 20 % of the Earth's ice-free continental area. The subsurface karst realm and its groundwater circulation can extend even further. The world's longest and deepest caves, as well as the largest cave chambers by area and volume, are all located in karst areas. However, there are also some karst areas in which there are no caves, and caves can occur in areas without karst.

5. Karst systems play a crucial role in the natural storage of groundwater, contributing significantly to water supplies for human consumption and agriculture, especially in regions with limited surface water. Approximately 1.2 billion people live in karst regions, with many relying on karst water for domestic purposes. Moreover, around 20-25 percent of the global population relies, partly or entirely, on fresh water from karst aquifers.

6. Caves and karst have silently witnessed Earth's evolution and the rise of human civilisations. Caves have served as sacred places and shelters throughout human history. Many caves contain archaeological and paleontological treasures that offer invaluable insights into past climates, ecosystems, and human societies.

7. Caves have retained and protected important pieces of Earth's long and eventful geological past. These include ancient mineral deposits, long gone oceans and early life forms, together with remarkable cave adapted organisms, remnants of extinct fauna and the early expressions of human art. Without caves and karst, such information would have been largely unavailable to us.

8. Caves and karst support distinctive ecosystems and diverse species that are often specifically adapted to their particular cave or karst settings. These ecosystems encompass a diverse range of fauna and flora, including endemic cave-adapted species that rely on stable cave environments for survival.

9. Karst and caves are among the most exquisite and valuable landscapes on our planet, with inherent touristic and economic value. The aesthetic and recreational appeal of caves and karst landscapes attracts significant tourism and related economic activities, supporting local economies around the world.

10. Caves and karst have garnered widespread recognition for their cultural, biodiversity and geodiversity values. However, it is also the case that because caves are beneath the surface they are often 'out of sight, out of mind', and do not always receive adequate attention or protection. Similarly, many sensitive karst areas of value, discussed in more detail below, remain unrecognised or poorly understood, posing risks to both environmental and human well-being.

11. Protection of caves and karst is vital to the preservation of our history and that of the planet. Understanding karst and its caves is essential to safeguarding a healthy and harmonious coexistence between karst and our civilisation, minimising and avoiding environmental impacts that will, ultimately, be reflected upon us. Establishing an International Day of Caves and Karst would offer an annual reminder of these resource features, serving as a platform to raise awareness about caves and karst and promoting their protection and wise use for the benefit of humankind.

12. Observing an annual International Day of Caves and Karst would serve as an opportunity to educate the public and key stakeholders about the unique biodiversity, complex water systems, and geological formations found within caves, and in karst regions. Educational initiatives could include workshops, seminars, and school programs aimed at sharing knowledge about the science, exploration, and conservation of these areas.

13. Increasing public understanding of caves and karst regions can support governmental and local leaders as they address complex challenges such as climate change and the responsible, sustainable management and use of limited natural resources, especially water.

14. Supporting letters for this proposal have come from: [list follows after gaining support!](#)

II. THE IMPORTANCE OF CAVES AND KARST TO THE GLOBAL COMMUNITY

15. **Water Resources and Exploration:** Water is essential for life. In karst areas, complex natural conduit systems provide water resources that are vital for human and ecological well-being. In many karst areas, surface streams disappear underground, resurfacing as springs, sometimes many kilometres away. Caves are conduits that are accessible for exploration and karst scientists have devised tools and methods to understand the flow within smaller inaccessible conduits that are tributary to caves, offering valuable insights into these hidden underground water systems.

16. **Environmental Risks:** Karst aquifers, while essential, are among the most sensitive and least understood natural systems. They can rapidly transmit pathogens and chemicals over long distances with limited natural filtering. This makes them susceptible to pollution from agricultural runoff, industrial waste, and urban development, posing serious risks to human health and ecological system integrity. Sinkholes, whether occurring naturally or as a result of human activities, are more common in karst landscapes than in any other type of terrain. All sinkholes in karst areas are connected to underground water flows, with some posing significant collapse hazards.

17. **Biodiversity and Conservation:** Caves and karst environments contribute significantly to carbon sequestration and mitigating climate change. They preserve a rich heritage of biodiversity and environmental history, supporting species adapted to the stable conditions found underground.

18. **Scientific and traditional knowledge:** Karstology, speleology and historical studies enhance our understanding of karst and caves, as well of past climates and environmental changes. Caves act as natural archives, preserving geological, biological and cultural materials and objects that provide insights into long-term environmental changes. This knowledge is crucial for predicting future climate variations and conserving underground habitats and environments.

19. **Geological Heritage:** Karst landscapes are characterized by dramatic topographic variations and remarkable landforms such as karren, dolines, poljes, cone and tower karst, and caves. These landforms and landscapes have great aesthetic appeal and value. They attract many tourists and this generates an important income stream for local economies.

20. **Cultural Heritage:** Throughout history, caves have served as shelter for hominids. They have preserved evidence of human evolution in the form of bones, art and artefacts. Caves have long been a focus of veneration. They feature prominently in many mythological and religious narratives. In modern times, cave sites worldwide attract millions of pilgrims and worshippers annually.

21. **Economic Importance:** The geological resources of karst areas, including minerals and rocks, are vital for diverse industries ranging from construction to agriculture. Careful management of these resources is necessary to safeguard the ecological and cultural values of these regions, particularly their underground environments.

22. **Space Exploration Analogues:** Cave-like features on other celestial bodies, most notably the Moon and Mars, highlight the significance of terrestrial caves as important analogues for space exploration. Earth's caves have been used for training astronauts, testing robotic technologies, mission planning, and they have suggested the potential for astrobiology research.

III. OUTCOMES FROM AN INTERNATIONAL DAY OF CAVES AND KARST

23. An International Day of Caves and Karst will enable coordinated initiatives and activities to take place globally and locally, highlighting the significance of these special environments and promoting efforts for their conservation and sustainable management, resulting in the following outcomes:

- Raising global awareness of the cultural, scientific, and ecological importance of caves and karst landscapes. Educational initiatives, public events, and media coverage, would enhance the understanding of these environments and their significance.
- Designating a specific day dedicated to caves and karst would enhance efforts to conserve these environments. It would inspire governments, organizations, and communities to implement measures aimed at protecting and preserving these fragile geoecosystems, safeguarding biodiversity, geodiversity and cultural heritage for the benefit of future generations.
- Stimulating scientific research and educational initiatives focused on caves and karst, leading to new knowledge and insights into their cultural, ecological and geological significance.
- Supporting the development of projects and programmes for establishing, managing, protecting and preserving important cave and karst sites. World Heritage Properties, Global Geoparks, Biosphere Reserves, Ramsar Sites and nationally or locally designated protected areas can emphasize and extend the close links between biological and earth science interests and sites of cultural, archaeological, and historical importance.
- Promoting sustainable tourism practices, encouraging visitors to appreciate and value these environments while minimizing negative impacts. By emphasizing the economic advantages of responsible tourism, local communities can be empowered to sustainably manage and derive benefits from cave and karst attractions.

- Encouraging community engagement and participation in conservation efforts. Local communities living near caves and karst landscapes would be motivated to take pride in their natural heritage and play an active role in its protection and management.
- Promoting international cooperation and collaboration in the conservation and management of caves and karst landscapes: This would facilitate the sharing of best practices, exchanging of knowledge, and the building of partnerships among countries with comparable geological characteristics and/or features.
- Advocating for policies and regulations that support the conservation and sustainable management of caves and karst environments. This would raise policymakers' awareness about the importance of cave and karst geoecosystems and emphasize the importance of robust and effective measures to protect them.
- Contributing to the preservation of cultural heritage associated with caves and karst landscapes. This would highlight the historical and archaeological significance of caves and karst, promoting efforts to safeguard cultural artifacts and sites found within them.
- Acting as a catalyst for action, inspiring individuals, communities, and governments to prioritize the conservation and sustainable management of caves and karst landscapes, ensuring the protection of these environments for generations to come.

IV. IMPORTANCE OF AN INTERNATIONAL DAY OF CAVES AND KARST FOR UNESCO

24. UNESCO programs play a pivotal role in the preservation and recognition of the geological, biological, and cultural value of caves and karst landscapes. These programs encompass various initiatives, including UNESCO World Heritage Sites, UNESCO Global Geoparks, the UNESCO Man and the Biosphere (MAB) Programme, and the UNESCO International Hydrological Programme (IHP). Many karst areas and cave systems are designated as World Heritage Sites due to their exceptional natural beauty, geological significance, cultural value or ecological importance. UNESCO Global Geoparks specifically highlight geological heritage, promoting sustainable development through geotourism. The Man and the Biosphere (MAB) Programme focuses on enhancing relationships between people and their environments. Karst regions often fall within biosphere reserves due to their rich biodiversity and significant ecosystems and there is a CaveMAB programme designed to foster links between reserves. The UNESCO water program plays a critical role in promoting a comprehensive understanding of karst aquifers and in implementing effective strategies for sustainably managing these vital water resources. This program not only addresses scientific and technical aspects but also emphasizes the importance of community engagement and international collaboration in preserving these ecosystems.

25. Through these UNESCO programs, caves and karst landscapes are recognized not only for their geological and ecological importance but also as vital components of our cultural heritage and history. Each initiative within these programs emphasizes different aspects of conservation and education while sharing a common goal of promoting the sustainable management of natural resources and cultivating awareness and appreciation among local and global communities. The proposed UNESCO International Day of Caves and Karst seeks to consolidate all aspects of the karst systems into a single day of recognition and celebration.

26. Drawing on the principles outlined in the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), UNESCO's policies support educational and capacity-building initiatives aimed at fostering sustainable and inclusive economic opportunities for local communities and indigenous peoples. This includes encouraging the use of local materials and resources, promoting local cultural and creative industries, and safeguarding the intangible heritage associated with World Heritage sites. These policies are particularly relevant in karst regions, where indigenous knowledge and traditional practices can play a crucial role in conserving and managing caves and karst landscapes, enhancing their value both ecologically and culturally.

27. Development of management and protection protocols for caves and karst systems dovetails with UN Sustainable Development Goals, more specifically to those related to clean water and sanitation, decent work and economic growth, sustainable cities and communities, climate action and life on land:

- *GOAL 6: Clean Water and Sanitation.* Karst aquifers, the primary drinking water source for around 700 million people, are susceptible to pollution, occasionally leading to documented cases of illnesses and some fatalities. Effective management and protection of karst aquifers is essential to ensure access to clean water and sanitation for communities living in karst regions.
- *GOAL 8: Decent Work and Economic Growth.* Tourist caves and karst scenic areas draw hundreds of millions of visitors each year, contributing to significant economic revenue and job opportunities. It is imperative to understand and effectively manage these sites to maintain these economic benefits and employment opportunities for local communities over the long term.
- *GOAL 11: Sustainable Cities and Communities.* Karst regions pose challenges to urban development, most notably through land collapse and subsidence, resulting in billions of dollars in damages annually. Improved understanding and management practices will help to mitigate risks and ensure resilient urban development in karst areas.
- *GOAL 13: Climate Action.* It is well established that human induced climate change is resulting in globally rising temperatures and more frequent extreme weather events, adversely affecting ecosystems, economies, and human well-being. Understanding past environmental conditions is crucial in the face of future changes. Relict caves situated above the present zone of water circulation have stable environments that preserve sediments containing records of past climates and environmental conditions. Extreme weather events, including catastrophic flooding, are expected to worsen with climate change. Caves provide an opportunity to monitor underground water, predict flood levels, and mitigate potential damage caused to human infrastructure.
- *GOAL 15: Life on Land.* Karst regions host some of the world's most biodiverse areas, both on the surface and underground. These ecosystems provide essential benefits for food, medicine, industry, and the environment, making their protection vital for biodiversity conservation and sustainable land use.

28. International Days are key for raising public awareness and providing education on important global issues, including those related to caves and karst. While existing International Days such as World Water Day, the International Day of Biosphere Reserves, and International Geodiversity Day touch on related themes, none fully address the scope of global cave and karst areas. Despite their extensive coverage and ecological importance, these areas are often underrecognized and undervalued. Moreover, the lack of trained scientists and resource managers capable of studying and manage these distinct environments poses a challenge. Establishing a UNESCO International Day of Caves and Karst would greatly enhance worldwide understanding and appreciation, promoting better management and preservation efforts by governments, scientists, and the public.

29. The main reasons for proposing September 13 as the “International Day of Caves and Karst” are:

- The International Union of Speleology was founded in the month of September, 1965.
- Early September is an ideal period for future commemorations as the weather conditions are generally favourable for a range of activities worldwide, including outdoor events, in both the Northern and Southern Hemispheres.
- September 13 is not already designated as an international day by the United Nations or UNESCO.
- September 13 also marks the anniversary when the International Union of Speleology first presented information on caves and karst to UNESCO representatives in Paris.



UIS BECOMES FULL MEMBER OF THE INTERNATIONAL SCIENCE COUNCIL

by Johannes Mattes (Austria)

UIS Secretary General

secretary@uis-speleo.org

At the beginning of May, the UIS was officially appointed as a Category 1 member of the International Science Council (ISC) by its Governing Board in Paris. This approval followed an application by the UIS Bureau last autumn and a subsequent secret ballot of the ISC member organizations last spring. This prestigious appointment grants the UIS the same rights as the other 45 international scientific unions, such as those in geology, geography, biology, and anthropology, to advance the missions, goals, and programs of the ISC.

The ISC, a multilateral non-governmental organization, was established in 2018 through the merger of the International Council for Science and the International Social Science Council, originally founded to reorganize international scientific cooperation after



2023 Mid-term Meeting of ISC Members in Paris. SOURCE: ISC



**International
Science Council**

The global voice for science

World War I. Today, the ISC comprises 250 members, including international scientific unions (Category 1), national academies of science (Category 2), and various affiliated bodies and observers (Categories 3-4). The ISC uniquely integrates science policy expertise and merit across all fields of science and regions of the world. It works globally to catalyse and convene scientific expertise, provide advice, and influence on issues of major importance to both science and society.

Through its full membership, the UIS can now participate in the various ISC programs and resources, enhancing our ability to explore, understand, and protect caves and karst, and to amplify our concerns on a global platform. This upgrade from our affiliated membership, held since 2010, to full membership marks a significant milestone for the UIS and the field of speleology, reflecting the dedication and achievements of many UIS Bureaus, generations of researchers, cavers, and the entire speleological community. It continues our successful trajectory, which also saw the inclusion of UIS in the ISC Geounions network and the International Standing Committee for Gender Equality in Science last autumn.



THE UIS ARCHIVE IN POSTOJNA

Demands - repeated urgent call!

by **Pavel Bosák** (Czechia)

UIS Bureau Honorary Member

Responsible for the UIS Archive in Postojna

bosak@gli.cas.cz

The role and aims of the UIS Archive are defined by valid UIS Internal Regulations, which also define duties of respective UIS officers, past, recently elected, and future (see *Bosák and Motyčka 2022*).

Compiling the report about the UIS Archive in Postojna (Slovenia) for the UIS Bureau before the International Congress of Speleology in Chambéry, France (see *Bosák and Motyčka 2022*), I stressed the deepest problems existing in deliveries to the Archive by the past- and recently elected UIS officers. The problems have been existing from the very beginning after the UIS was established, in spite of validity of UIS principal documents (namely the UIS Statutes and UIS Internal Regulations). Lot of activities have not been documented at all (e.g., public relation), some others only in a very fragmentary form (e.g., early UIS and pre-UIS history, UIS Commission and Working Group activities). The problem was magnified also by fact, that the physically existing UIS Archive was approved by the change of UIS Internal Regulations in General Assembly during 16th ICS in Brno 2013 in Czechia. Before, UIS Bureau documents were dealing mostly by the storage of UIS prints and prints obtained by exchange for the UIS Bulletin in so-called documentation centers (for review see Labegalini 2015), not dealing with other document types.

The only point, which is nearly complete, concerns prints obtained by library exchange for the UIS Bulletin, when printed (thanks to archives of H. Trimmel and P. Bosák, who collected them before the UIS Archive was established).

Recently, we obtained enormous amount of archive materials from Hubert Trimmel legacy, collected by Johannes Mattes, Zdeněk Motyčka, and Pavel Bosák on October 22, 2023, in house of Trimmel's family in Vienna, under control of Trimmel family members, where they were carefully deposited and signed in a separate archive room (Fig. 1). We deeply acknowledge the willing co-operation of Trimmel's family. The materials were partly delivered to Postojna Archive by Z. Motyčka on November 28, 2023 (UIS-related correspondence, documents, ICS Proceedings). The rest (exchange journals, books, etc.) was delivered by Z. Motyčka and P. Bosák both on June 17, 2024. All materials were registered and settled in bookcases on November 28 to December 1, 2023, and on June 17 to 21, 2024 (Fig. 2). Part of materials (prints exchanged for the UIS Bulletins) has been waiting for final processing.

Here I summarize the most urgent needs of our UIS Archive, and I am repeating them, modified according to the state-of-the-art, after the first urgent call in the UIS Bulletin in 2022 (Bosák and Motyčka 2022). I will be highly indebted to all, who are able to contribute any kind of materials concerning the UIS activities (*not only prints, also electronic documents and other UIS-related items and public relation outputs*) to the UIS Archive in Postojna, Slovenia (contacts at the end).

No history means no future!

International Congresses of Speleology

According to the UIS Internal Regulations, the Organizing Committee of each International Congress of Speleology must submit three detailed reports each year for the archives of the Union. The Bureau may request more reports if it believes more information is necessary.



Figure 1: Johannes Mattes (IN FRONT) and Pavel Bosák (back) collecting materials in the archive of late Hubert Trimmel in Vienna, Austria, on October 22, 2023 (PHOTO BY Z. MOTYČKA)

The following materials must be delivered to the UIS Archive, namely:

all printed materials by Congress organizers – Circulars, Proceedings, Books of Abstracts, Excursion Guides, Daily News/Newsletters/Bulletins, advertisement leaflets and posters, all other printed items connected with Congresses;

all Congress-related items issued only in the electronic form both by Congress organizers and other bodies – Circulars, information, etc.;

all produced items connected with Congress and/or containing UIS logo both by Congress organizers and other bodies – specimen of badge, Congress bag/s, stickers, pins, postal stamps, postal cards, flags, T-shirts, mentioning/reporting about the event (local, regional and other journals, magazines, newspapers, etc.), ...;

Congress Proceedings missing in the UIS Archive = fully missing: *ICS 7 (1977 Sheffield)*, *9 (1986 Barcelona)*, *11 (1993 Beijing)*, *12 (1997 La Chaux-de-Fonds)* and *14 (2005 Kalamos)*, partly missing: *6 (1973 Olomouc = vols. II, III, V to VI)*. We acknowledge eventual donations!

Events organized under auspices of the UIS, by UIS Departments / Commissions / Working Groups, using the UIS logo, UIS expeditions

All items as valid for UIS Congress organizers, except regular pre-event reports of Organizing Committee if not issued;

events include, namely: Commission meetings, congresses, conferences, workshops, colloquia, excursions, expeditions, training courses, camps,

UIS Bureau Members (incl. Presidents, Vice-Presidents, Treasurers, General Secretaries, Honorary Members)

According to the UIS Internal Regulations: *demand to deliver copies of all documents and documentation from the 4-year periods of UIS officers* to the archives of the UIS at the UIS headquarters c/o the Karst Research Institute in Slovenia.

Departments/Commissions/Working Groups, event. also Advisory Committee

A written report of the activities of the respective body at each General Assembly of the Union (at least): in copy to the UIS Archive in Postojna;

all printed/electronic outputs (e.g. newsletters, information or event leaflets) have to be delivered to the UIS Archive in Postojna.

The UIS Documentation Centers

According to the UIS Internal Regulations: *all persons responsible for each of the UIS Documentation Centers (Librarian)* are responsible for the presentation of an oral report about the present situation of the re-

spective Documentation Center of the UIS, as well as a written report containing an index of the publications available at the center, at each of the General Assemblies of the UIS for inclusion in the *archives of the Union*.

What is really missing and urgently needed

UIS Foundation (pre-1965 and 1965)

Highly rudimental documentation of the early UIS history, incl. International Congresses of Speleology Nos. 1 to 3. Only rare documents concerning the UIS foundation are located in some of Trimmel's boxes.

UIS principal documents

Versions of Statutes, Reglements Interieur/Internal Regulations, Recommendations for Congress Organizers including the working versions – also partly not complete.

UIS Bureau Meetings (regular/annual, not regular)

Highly incomplete documentation of sessions and their results before 1993 and after 2009.

UIS Past-Presidents, Vice-Presidents, General Secretaries, Treasurers

Archive materials missing/mostly/partly missing: from a part of past UIS Presidents, General Secretaries and Treasurers – urgent call for archive materials!!!

Materials from activities of past Vice-Presidents, with very rare exceptions, are mostly missing.

UIS Bureau Members

Completely missing materials from past UIS Bureau Members from the very beginning of the UIS Bureau! No exception!



Figure 2: Part of the UIS Archive in Postojna (left of the doors) with stored archive materials of late Hubert Trimmel, June 20, 2024 (PHOTO OF H. MOLHANCOVÁ)

UIS Departments/Commissions/ Working Groups

Highly rudimental not only concerning the documents from their daily life and activities; most of body-related prints are not available and/or they are incomplete; documents are missing for some Departments/Commissions/WGs from their whole life-span and/or from different periods of their activities. Some (but rather single) documents (letters) are included in few personal boxes of past-UIS officers.

National delegates

We highly recommend to deliver materials of National Delegates – especially all items concerning the public relations mentioning the UIS and/or its activities (see Public relation items), printed or electronic in the respective the UIS member country.

Relations with UNESCO before late 1997

The early history of relations with the UNESCO is completely missing (before the acceptance as former C category of affiliated institutions) except rare documents in boxes of A. Eraso Romero and H. Trimmel.

UIS relations with ICS, ISCA, IUCN, IGU and regional caving/speleological federations/association (FEALC, ESF/SFEU, etc.), etc.

Highly incomplete to rudimental.

Public relation items

PR materials on national/international levels are completely missing (news in newspapers, journals, magazines, CD/DVD or similar media with TV/broadcasting, related activities, etc.) – not only related

to the UIS Congresses and karst/cave events, but also to UIS activity itself (like IYCK). They are included as only few documents in some personal boxes;

complete documentation of the IYCK on national and international levels is highly demanded; prints (incl. leaflets, calendars, posters, pins, stickers, proceedings, books, etc.), electronic media, etc. Still highly rudimentary, nearly nothing!

Prints, leaflets, posters, and other UIS-related products

concerning speleo/karst-activities, events, education, caves etc., especially those **with the UIS/IYCK logos** or *UIS/IYCK is somehow mentioned there.*

Contacts for the delivery

Postal address:

Union Internationale de Spéléologie, Archive, Karst Research Institute ZRC SAZU, Titov trg 2, 6230 Slovenia

Electronic delivery:

bosak@gli.cas.cz = P. Bosák, responsible for the UIS Archive
z.motycka@mediform.cz = Z. Motyčka, UIS Vice-President of Administration, cloud manager

Reference

Bosák P., Motyčka Z. (2022): **The UIS Archive in Postojna. How the storage is organized, its current content, and future perspectives.** – UIS Bulletin, 64, 2: 17–20. (ISSN 2820-5316)

Labegalini J. A. (2015): **Fifty years of the UIS. 1965 – 2015.** – Založba ZRC and International Speleological Union: 107–113. Ljubljana.



UIS BOOK

UIS HISTORY UPDATE

Fifty to Sixty years

by José Ayrton Labegalini (Brazil)

UIS Past President 2001-2005

ja.labegalini2@gmail.com

The International Union of Speleology (UIS) was founded on September 16, 1965, in Ljubljana, in what was then Yugoslavia (today Slovenia), at the closing General Assembly of the 4th International Congress of Speleology (ICS). At that time the first statutes were approved, and the first bureau of directors was elected. The history of the first fifty years of the UIS history was summarized in the book **Fifty Years of the UIS–1965-2015**



(Labegalini J. A. (2015): **Fifty years of the UIS–1965-2015.** – Založba ZRC and International Speleological Union: 107–113. Ljubljana.)

This book congregates all the information that was available up to the time that it was printed, although the numerous gaps and missing information, as well as punctual mistakes, suggested that an improved registration of the past of the entity would be in order.



The history of the UIS represented by the logos of the 19th International Congresses of Speleological (ICS). The first three ICS were carried out before the existence of the UIS, which was founded in the 4th ICS. The history of its sixty years of activities will be launched at the 19th ICS, which will be held in Belo Horizonte, Brazil, in 2025.

With the intention of correcting errors and completing missing information, the research was not closed, but was complemented by information provided by many friends and collaborators from different parts of the world, including small details, specific corrections and the provision of new materials, previously unavailable.

Between 2015 and 2025, there were another ten years of history to be recorded, although this decade's record has a contemporary form, research work was necessary to bring together scattered information and data.

Two new International Speleological Congresses were held and the book of the sixty years is scheduled to be launched at the 19th ICS, which will held in Belo Horizonte, Brazil, next year. Two more General Assemblies took place and two groups of people from different countries made up the last two UIS Bureaus. Several UIS Documents were updated and others approved; the structure of the Entity was also improved, both in the Directory: the UIS Treasury was created, and in the organization of the Commissions: the figure of Departments were disappeared, Commissions were extinguished and new ones were created.

At least 25 new International Journal of Speleology (IJS), a dozen UIS Bulletin, the Speleological Abstract 54, as well as several proceedings of several international symposia of some UIS Commissions were published; a lot of information was researched and/or recorded by the UIS, through its Commissions and respective members.

The COVID-19 Pandemic impacted the planet, forcing ways of working and communicating, the UIS was no exception. The year 2021 was declared the International Year of Caves and Karst (IYCK) by the UIS, and in 2024 it became an affective member of UNESCO's International Science Council (ISC). Nowadays the UIS is actively working on the establishment of a UNESCO Day of Caves and Karst.

In the second edition of the UIS history book, not only were new chapters included about the last ten years, but some information from the history of the first 50 years already recorded in the first edition was also added or completed, even if insignificant, such as the exact date of an event.

Until now, 48 people from 24 different countries sent me contributions to the new book, if you also have some thing that you consider interesting to the UIS history, I strongly ask for your collaboration sending me this (picture, information, article, comment. observation, correction, suggestion, etc., it will be welcome to be analyzed and possibly used).

The history of the UIS represented by the logos of the 19th International Congresses of Speleological (ICS). The first three ICS were carried out before the existence of the UIS, which was founded in the 4th ICS. The history of its sixty years of activities will be launched at the 19th ICS, which will be held in Belo Horizonte, Brazil, in 2025.





Special issue on Cave Monitoring: the good, the bad, and the nice.

Call for Papers

By Bogdan P. Onac, PhD
 Editor-In-Chief of the *International Journal of Speleology*
 School of Geosciences - University of South Florida, USA
bonac@usf.edu

The **International Journal of Speleology**, the official journal of the Union Internationale de Spéléologie, is excited to announce a call for papers for a special issue on **Cave Monitoring: the good, the bad, and the nice**.

Understanding the dynamics of cave environments requires intensive and extensive measurements and monitoring of the physical, chemical, geomorphological, and hydrological parameters, encompassing all features of the caves (geology, hydrology, morphology, air, water, biota, and human impact).

Technological advances have shifted observations from sporadic to continuous monitoring, albeit methods vary significantly in frequency, precision, accuracy and duration. Historically, measurements were taken on a “need to know” basis, often focusing on specific parameters like air temperature, while overlooking potentially crucial factors such as CO₂ levels or water, soil or rock temperature.

Additionally, the lack of affordable and suitable equipment for harsh cave conditions, standardized tools and methodologies has made it challenging to compare datasets across different studies.

Despite these limitations, we have managed to gain a fairly good, albeit conceptual, understanding of the various cave processes. The recent surge in affordable, complex monitoring devices has led to a plethora of monitoring strategies and an overwhelming amount of data that both help refine our concepts but also complicate them unnecessarily. To address these challenges, we propose a special issue focused on comprehensive cave monitoring strategies.

We invite contributions from the caving community in two ways: **1) review papers that provide guidelines and “manuals” for future monitoring studies**, and **2) case studies that detail both the successes and failures of past monitoring efforts**.

We particularly encourage the publication of challenges and negative results, spectacular failures, and examples of suboptimal outcomes – these can often be more instructive than straightforward successes. By establishing a standardized approach to cave monitoring, we aim to unlock a deeper understanding of “our” subterranean worlds.

GUEST EDITORS:

Nenad Buzjak, *University of Zagreb, Zagreb, Croatia*

Aurel Persoiu, *Emil Racovita Institute of Speleology, Cluj-Napoca, Romania*


Christos Pennos, *Aristotle University of Thessaloniki, Thessaloniki, Greece*

Submission deadline to submit paper:
September 30, 2024

Submission format: Please adhere to the author guidelines found on the journal’s website.
Click here to access the document

Submit online at: <https://digitalcommons.usf.edu/ijs/>

When submitting your paper, please select:
Cave Monitoring under the Type of submission entry.



UIS INFORMATICS COMMISSION (UISIC)

Cave and karst documentation, mapping, and data

A NEW UISIC PRESIDENCY

By **Stefan Näff** (Switzerland)
 UISIC Co-President
steff@speleo.ch

Web: <http://uisic.uis-speleo.org>

Forums: <http://uisic.uis-speleo.org/forum/>

Steff has been working with Peter Matthews (Australia, Immediate Past President) and other UISIC members for countless years. However, stepping in Peter's shoes, who founded the commission in 1986 and has led it through all that time, seemed an almost impossible task. Also, „Informatics“ today is part of everything we do and highly influences the way we explore and see caves and the science around caves & karst. This is nothing a single person can (and should) manage, so the idea of a “collegial presidency” was raised a few months ago. The suggestion was accepted by the commission leadership and it is therefore now led by a small team to manage the commission and the president's tasks. To have a clear single point of contact towards the outside and to comply with the UIS statutes, a “primus inter pares” president and a vice-president are selected to formally hold the title, but operate within a framework where decision-making is shared among all members of the leadership team.

The UISIC leadership team currently consists of the following persons:

Stefan Näff (Switzerland): President & main point of contact for UIS bureau and formal contacts, responsible for commission internal processes & communications.

Mike Lake (Australia): Vice President, ensuring continuity and stepping in for whoever within the team is not available for a specific task, coordination with sub-commissions & projects.

Frédéric Urien (France): Member of the leadership team, focus on data & standardisation.

Ferdinando Didonna (Italy): Member of the leadership team, focus on science/academic interaction or other regional/global authorities.

Peter Matthews (Australia): Immediate Past President, ad interim member of the leadership team providing advice and guidance to the team.

Reminder: Goal of the Commission

To remind ourselves of the goal of UISIC, we want to reiterate that the UIS Informatics Commission (UISIC) is a body within the UIS dedicated to promoting and advancing the use of informatics* within the field of speleology and karst studies.

* “Informatics: The science of the collection, evaluation, organization, and dissemination of information, often employing computers.” - Collins.

The purpose of this commission is to encourage and facilitate the systematic collection and responsible use of cave and karst data to advance related exploration, documentation, research, management and conservation.

Its scope covers the documentation and mapping of caves after exploration trips through to filing systems, databases, data consolidation and exchange, reporting and querying systems, publication techniques, data access and protection techniques, and participation in and utilisation of the Linked Data environment.

Update on Recent Commission Activities

UIS MAPPING SYMBOLS & GRADES

The UISIC sub-commission on „Survey & Mapping“, led by Philipp Häuselmann (Switzerland), is continuing to develop karst & cave mapping symbols and standards for rating surveys.

To facilitate its use and updating, the symbols and their translations are currently being transferred to a central UIS website (caution - work in progress): <https://ontology.uis-speleo.org>

Gradually the symbols for surveys (natural and artificial cavities) will be published there. The types of artificial cavities defined by the UIS artificial cavities commission will also be published in the form of a controlled vocabulary. Also, discussion about T-Lidar 3-D cave scanning is ongoing.

KARSTLINK

Boosted by the fruitful workshop during ICS'22 in France, the KarstLink team is advancing and further developing cave data standards, coordinated by Eric Madelaine (France) and supported by Frédéric Urien. Current work focuses on defining a standard to describe physical measurements and human activities in caves.

As part of KarstLink, an important project concerns the definition of "Karstlink Apps". The objective is

to give a label to cave & karst related applications open to all, which respect the standards defined in KarstLink, developed following rules which ensure the sustainability of the code and its quality. We would like to be able to accompany and support projects that will have the "KarstLink Apps" label.

If you are interested in contributing, can subscribe to the mailing list http://uisic.uis-speleo.org/wiki/karstlink/index.php/Mailing_List - [Liste de diffusion](#)

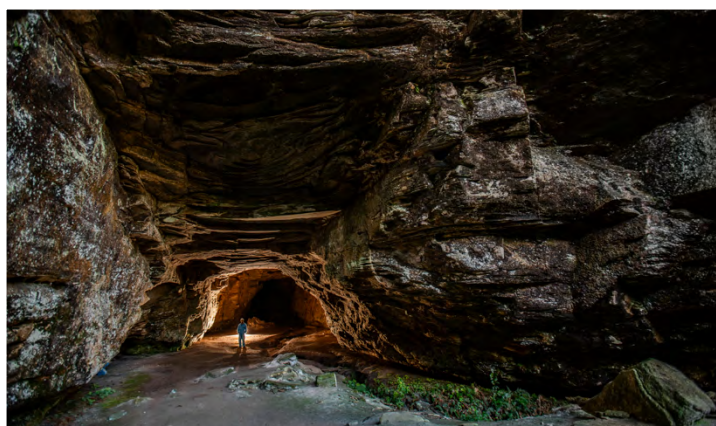
UIS-WIKICAVES (GROTTOCENTER)

Led by Didier Borg (France), UIS is continuing to support the development of GrottoCenter in close collaboration with FSE and other organisations, especially the UIS Bibliography Commission and the Karst Information Portal.

In order to better serve the global caving community, and to turn feedback we are getting from member countries into action, we encourage more people to get actively involved!

19th ICS 2025

BRAZILIAN CAVES IN DIVERSE LITHOLOGIES WAITING FOR YOU



19th ICS POST CONGRESS TRIP #08: Cave of Viajantes (quartzite rock) Ibitipoca State Park (IEF/MG), Lima Duarte, Minas Gerais.
PHOTO BY GABRIEL LOURENÇO



19th ICS PRE&POST CONGRESS TRIP #22: One of the thousands of caves in ferruginous rocks in the Carajás Mountain Range, Pará.
PHOTO BY ATALIBA COELHO



19th ICS PRE&POST CONGRESS TRIP #23: Maroaga Cave (sandstone rock) in Presidente Figueiredo, Amazon - PHOTO BY ATALIBA COELHO



19th ICS PRE CONGRESS TRIP #25: Garganta do Bacupari Cave (carbonate rock) in São Desidério, Minas Gerais - PHOTO BY LUCAS PADOAN



19th INTERNATIONAL CONGRESS OF SPELEOLOGY
38th Brazilian Congress of Speleology
20-27 July 2025 - BELO HORIZONTE - MINAS GERAIS - BRAZIL

60 years of the UIS
History to the Future!

GLOBAL CALL

Dear ladies and gentlemen, cavers, speleologists, and cave lovers around the world, we are one year away from the 19th issue of the world's premier speleological event.

THE SECOND CIRCULAR HAS JUST BEEN PUBLISHED

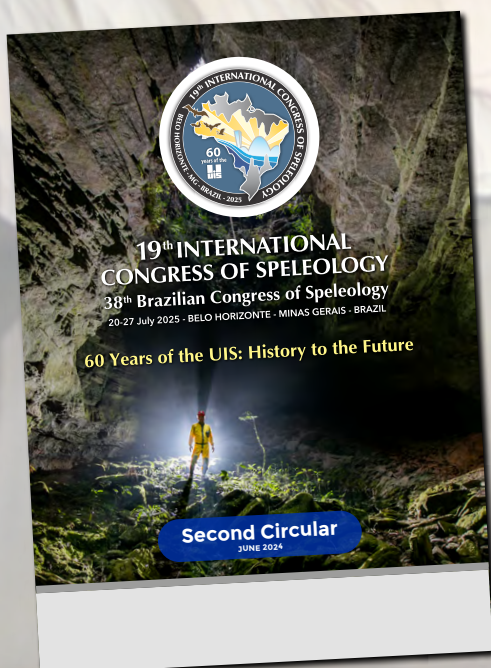
CLICK HERE TO DOWNLOAD THE FILE

Guarantee your registration and a place on the field trips.
There are many options, but spots are limited.

Take advantage of the promotional package at affordable prices and receive a series of benefits that will make your registration even cheaper.

BRAZIL IS WAITING FOR YOU IN JULY 2025

CLICK HERE AND REGISTER NOW



- 25** Pre- and Post-Congress Trips
- 16** One-day tours
- 16** Thematic Sessions and Sub-Sessions
- 12** Symposia
- 4** Major Celebrative Parties
- Photo, Cartographic, and Art Salons
- SpeleoArt
- SpeleMedia
- SpeleOlympics
- Vendors and Exhibitors

Welcome to the Brazilian Karst

- Caves in 6 diverse biomes
- More than 23,000 caves registered so far in Carbonate, Sandstone, Quartzite, Ferruginous, and other rocks.



Edinburgh's skyline during sunset. SOURCE: WIKICOMMONS

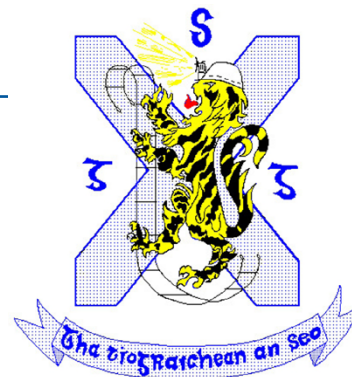
EXPLORING SCOTLAND'S SUBTERRANEAN WONDERS:

The Grampian Speleological Group in Edinburgh

by Johannes Mattes (Austria)
 UIS Secretary General
secretary@uis-speleo.org

During my research stay at the STS Department of the University of Edinburgh in January and February this year, I had the privilege of attending several meetings of the Grampian Speleological Group. This experience allowed me to gain a deep appreciation for the activities of the Group, its extensive programme of work, and its impressive publications.

Founded in 1961, the Grampian Speleological Group is the oldest and largest speleological society in Scotland, with a membership of 150 dedicated cavers. Over the decades, members have discovered and developed caves throughout Scotland and the British Isles, and have participated in numerous international expeditions spanning continents from Ecuador to Zimbabwe. One of the group's notable achievements is the organisation of the Scottish Cave Rescue Organisation (SCRO). The group also runs a field hut in Elphin, Sutherland, in the middle of Assynt, the most cavernous area in Scotland.



GSG meeting at Leslie's bar. FROM LEFT TO RIGHT: Tamlin Barton, Johannes Mattes, Alan Jeffreys (GSG Founder), Joseph Dinn, and Twain Price.
 SOURCE: JOHANNES MATTES

Scotland has around 3,000 known natural caves, with the famous Fingal's Cave in the Hebrides being a celebrated highlight of art and literature. The variety of caves in Scotland is remarkable, ranging from those formed in dissolving rock to lava tubes, frost pockets, and coastal or sea caves formed by the action of the ocean. The landscape is further enriched by numerous disused artificial mines, which add to the diversity of sites of speleological interest.

The Grampian Speleological Group has made significant contributions to the documentation and study of these caves. Of particular note are the third edition of "Caves of Assynt" by T. Lawson and P. Dowswell (2024) and A.L. Jeffreys' book "Hidden Inside the Highlands" (2023). These works are essential reads for anyone interested in speleology and the natural history of Scotland.

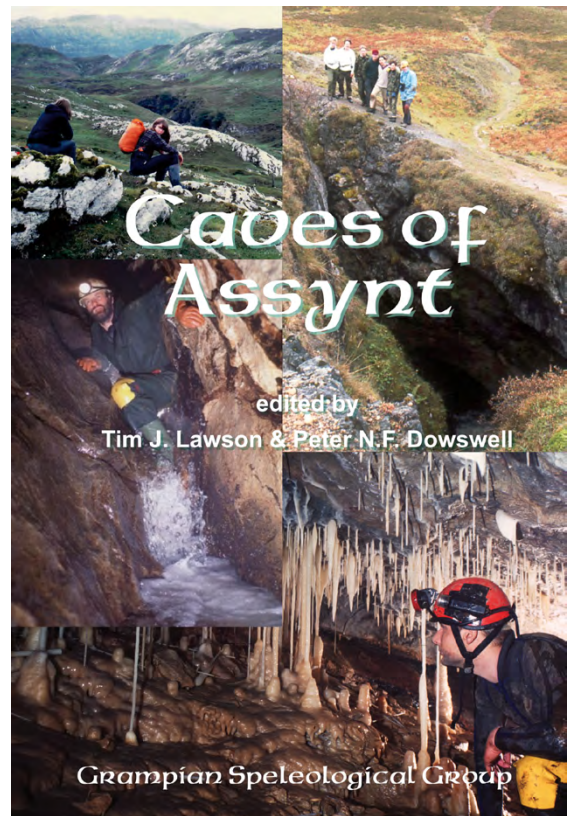
I would like to take this opportunity to thank Alan Jeffreys, Tim Lawson, and Simone Sambento in particular for their warm welcome during my time in Edinburgh. The stimulating conversations and exchange of ideas on Tuesday evenings in Leslie's Bar will be fondly remembered.



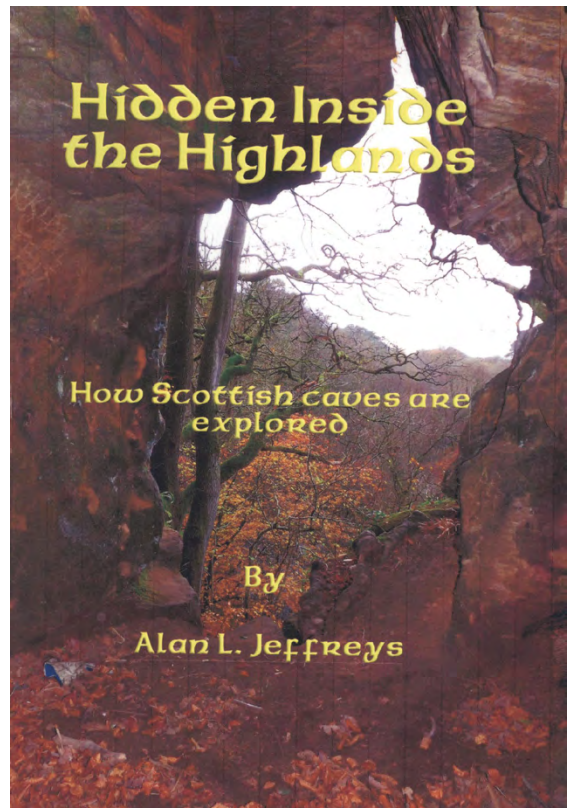
Members of the Grampian Speleological Group in different explorations.
[HTTPS://WWW.FACEBOOK.COM/GSGCAVING/](https://www.facebook.com/gsgcaving/)



Fingal's Cave in the Hebrides, Scotland.
[HTTPS://WWW.BRITANNICA.COM/PLACE/FINGALS-CAVE](https://www.britannica.com/place/fingals-cave)



Tim Lawson & Peter Dowswell: *Caves of Assynt*. 3rd edition, 2024. SOURCE: GRAMPIAN SPELEOLOGICAL GROUP



Alan L. Jeffreys: *Hidden Inside the Highlands*, 2023. SOURCE: GRAMPIAN SPELEOLOGICAL GROUP



Sixth session of the United Nations Environment Assembly (UNEA-6)

ADVANCING KARST AND CAVE ECOSYSTEM PROTECTION: INSIGHTS FROM UNEA-6

By

Ferdinando Didonna (*Costa Rica*)

UIS International Governance Committee Member

ferdinando.didonna@gmail.com

The sixth session of the **United Nations Environment Assembly (UNEA-6)** was held from February 26 to March 1, 2024, at the United Nations Environment Programme (UNEP) Headquarters in Nairobi, Kenya. It brought together stakeholders from across the globe to foster collaboration and shape environmental policy, making significant progress in addressing the triple planetary crisis—the interconnected challenges of climate change, biodiversity loss, and pollution.

UNEA-6 concluded with the adoption of 15 resolutions aimed at advancing collaborative action on the triple planetary crisis. Focused on addressing the intertwined challenges of climate change, nature and biodiversity loss, and pollution and waste, UNEA-6 underscored the critical role of multilateralism in finding solutions. Grounded in robust scientific evidence and bolstered by political commitment and societal engagement, the Assembly provided a platform for governments,

civil society, scientists, and the private sector to shape global environmental policy.

As the preeminent decision-making body on environmental matters, UNEA strives to reconcile the relationship between humanity and nature while uplifting the world's most vulnerable populations. Serving as the sole universal membership forum dedicated to environmental issues, UNEA offers a distinct opportunity for bold decisions and innovative solutions to drive collective environmental action, thereby contributing to the realization of sustainable development goals.

Prior to UNEA-6, a meeting of the Open-ended Committee of Permanent Representatives, held from February 19 to 23, 2024, laid the foundation for the discussions and outcomes of the Assembly. This preparatory meeting set the stage for productive deliberations and constructive engagement during UNEA-6, facilitating the formulation of resolutions to address the urgent challenges facing our planet.

A joint global statement presented during the Major Groups Conference at UNEA-6 also underscored the imperative to safeguard karst and cave ecosystems.

The statement, endorsed by various stakeholders, emphasized the necessity of effective, inclusive, and sustainable multilateral actions to address the systemic threats facing these environments. It called for enhanced international cooperation and robust policies to ensure the long-term sustainability of karst and cave ecosystems.

Furthermore, the joint statement highlighted the disproportionate impacts of environmental degradation on marginalized communities, including Indigenous Peoples and local communities reliant on these ecosystems for their livelihoods. Urgent action is required to mitigate these threats and prioritize the protection of karst and cave ecosystems in global environmental agendas. While two statements about karst in groundwater and mining resolutions were not included at UNEA-6, the joint statement and our general participation are important steps for karst and cave protection. This was our first UNEA, we learned a lot about the UNEA process, and hope for more and bigger successes at future meetings.

In a significant development, UNEA-6 passed a resolution on environmental assistance and recovery in areas affected by armed conflict, underscoring the Assembly's commitment to addressing environmental challenges in conflict-affected regions.

Looking ahead, as the UNEA Presidency transitions to Oman for UNEA-7, scheduled for December 8 to 12, 2024, in Nairobi, Kenya, there is a continued call for heightened awareness and action to protect karst and cave ecosystems.

In conclusion, UNEA-6 marked a significant step forward for the UIS International Governance Committee to advance the UIS' presence and activities at the UN level for a closer focus on the imperative need to protect karst and cave ecosystems. As we move ahead, it is essential to heed the call for collective action and prioritize the conservation of these critical environments for the well-being of present and future generations.

The UIS committee was represented at UNEA-6 by Ferdinando Didonna. George Veni provided technical information on karst groundwater. Barbel Vogel, as President of the German Speleological Federation, was instrumental in obtaining authorization and access to



Ferdinando Didonna presenting the concerns and suggestions of the German Speleological Federation (VdHK) registered as Major Groups and Stakeholders to UNEA-6. PHOTO FERDINANDO DIDONNA ARCHIVE



Representatives from Multilateral Environment Agreements take the stage at UNEA-6 for a dialogue on strengthening the science-policy interface for effective implementation of environmental commitments.

PHOTO © [HTTPS://WWW.UNEP.ORG/NEWS-AND-STORIES/](https://www.unep.org/news-and-stories/)

the process and UNEA. The German Federation is the only speleological organization with United Nations ECOSOC (Economic and Social Council) status, which is necessary for UNEA participation (UIS is applying for ECOSOC status). All members of the UIS International Governance Committee participated in online preparatory sessions and/or frequent communications with suggestions.

A public intervention was done during the Major Groups Conferences, this led to a Joint Global Statement for UNEA-6, presented by various Major Groups and Stakeholders, and highlights the urgent need to address the challenges facing karst and cave ecosystems amid global environmental crises. These ecosystems are essential components of the planet's biodiversity and play a crucial role in maintaining ecological balance.

CONFERENCE REPORT



In the major down-flow segment of Bella Vista Cave. PHOTO: JOHN BRUSH

21st INTERNATIONAL SYMPOSIUM ON VULCANOSPELEOLOGY

Galapagos Islands, 10-19 April 2024

by

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In April 2024, the UIS Commission on Volcanic Caves convened the 21st International Symposium on Vulcanospeleology (ISV21) in the Galapagos Islands, South America. The ISV was based in Puerto Ayora, on Santa Cruz Island. With a population of around 13,000 Puerto Ayora is the largest town in the Archipelago and it was a very fine base for the ISV with excellent meeting facilities in the local community hall, a wide range of accommodation options and plenty of choices for dining and socialising, all within easy walking distance. The field excursions were to caves in the highlands of Santa Cruz, as well as on the islands of Floreana and Isabela.

According to the symposium co-convenors, Aaron

Addison (USA) and Theofilos Toulkeridis (Ecuador), there were 34 registered participants (including two former UIS Presidents) from eight countries (USA, Australia, Ecuador, Korea, Japan, Spain, Germany and the Netherlands), as well as six organisers/ trip leaders from the USA and Ecuador. Sadly, in the days leading up to the ISV, five people cancelled due to illness, personal circumstances, or concerns about personal safety.

The number of participants was considerably lower than for the previous ISV held in the Galapagos in 2014, when some 90 people from 11 different countries participated. The reduced number probably results from a combination of post-Covid issues and global economic circumstances.

Presentations

The relatively small number of presentations covered a wide range of subjects:

- A keynote address on the geodynamics of Ecuador and the Galapagos Islands;
- An overview of work of the local Research Station of the Charles Darwin Foundation;
- Discovery, exploration and documentation of new volcanic caves in Uganda and Kenya;
- Review of a 20-year project to explore and map the 150 km Delissea cave system in Hawaii, which was named after a tree, thought to be extinct, but found in an entrance pit;
- Documentation and recording of caves on Lanzarote in the Canary Islands (Spain);
- Speleogenesis in volcanic settings and a proposed classification scheme for:
 - (a) primary caves (*Presentation 1*); and
 - (b) secondary caves in volcanic rocks (*Presentation 2*);
- Collapsed volcanic pits and associated surface depressions (locally known as 'juba') in northern Israel;
- Description of lava folia, a rare and previously undescribed speleothem type that has been found in two lava caves in Hawaii;
- Human use of caves in Hawaii for temporary shelter and refuge, commencing with early human settlement around 1000 years ago and continuing into the nuclear age when some caves were set up as potential fallout shelters;
- Management and protection of volcanic caves in southeastern Australia;

- Overview of international workshops on cave conservation and restoration;
- Proposals for recognition and assessment of volcanic caves of national and international significance;
- Historic review of the exploration and documentation efforts of Catalan speleologists in volcanic caves around the world over a period of more than 60 years;
- Exploration and documentation of volcanic caves in the Cascades area of Oregon, Washington and northern California in the USA; and
- An update on exploration of volcanic caves in the Galapagos since 2014, covering the discovery of more than 20 caves, including Sistema Silvana where more than 3.7km of passage was mapped over three days in 2020.

The Proceedings will be published on the Commission's Website.

Pre-Symposium field trips

The pre-excursion field trips to caves in the highlands of Santa Cruz Island had three major objectives: exploration and surveying; photographic documentation; and scientific studies. A major scientific goal was to take biological specimens of invertebrates and bird and animal bones under an official collection permit. All items collected were lodged with the Charles Darwin Foundation Research Station in Puerto Ayora.

On the first day, a party visited Sistema Silvana which, when fully surveyed, is likely to be the longest known volcanic cave in both the Galapagos and South America. As it was several years since any cavers had visited the cave, it was first necessary to re-establish an access track through thick undergrowth.



Dominik Frölich, the Commission's new Vice-President, in dense undergrowth searching for the elusive Cerro Mesa Cave. PHOTO: JOHN BRUSH



Passing beneath a skylight in Sistema Silvana. When the current mapping project is completed, this cave is likely to be the longest known volcanic cave in South America. PHOTO: JOHN BRUSH



Multiple levels, representing the surface of successive but lower lava flows, are common in Cascajo Cave. PHOTO: LAURENS SMETS

The volunteer path-hackers started 3 hours earlier than the study team and everyone met up near the entrance before heading underground for familiarisation, systematic photographic documentation and sample collecting. One of the key objectives of the study work in this and other highland caves was to look for bones of terrestrial iguanas to provide evidence that these creatures once lived in the highlands, as now they occur only in the dryer areas close to the coast.

Another party visited the Cerro Mesa Ecological Reserve (a highland tourist ranch) with the aim of locating Cerro Mesa Cave. Despite the best efforts of the property owner, and bush-bashing efforts by a ranch worker and symposium participants, the entrance could not be found. However, it was a pleasant day with a hike to the bottom of a pit crater or collapsed magma chamber, photographing giant tortoises and enjoying cold drinks in the ranch visitor centre while waiting for transport back to town.

On another ranch not far from Cerro Mesa, a party attempted to relocate Cascajo Cave with the principal objective of completing a survey of the cave. Surveying commenced in 2014 during ISV16 pre-symposium field trips and continued through until 2020 when efforts were interrupted by covid-related travel restrictions. Unfortunately, as nobody had been to the cave in several years, no signs of the access track remained. At first, only a short (but beautiful) up-flow segment was found. Even with the property owner's help, it took many hours to locate the main cave in dense regrowth forest (jungle) that was full of fire ants ("don't stop, and if you do, make sure you stand on a rock").

It was a relief to locate the main section of Cascajo as it is one of the most spectacular caves known on Santa Cruz. It has beautiful formations, five lava falls/ cascades, empty lava pools, numerous lateral benches, and as many as nine internal ceiling levels. Such was its reputation, that many ISV participants expressed interest in joining a return trip the following day. On that trip, the group divided into several teams to rig the pitches, complete the mapping task, collect invertebrate specimens and bird and animal bones for the Charles Darwin Research Station and to undertake detailed photo documentation of the cave.

In addition, hastily-organised trips were arranged to well-known caves such as Bella Vista and Soyla for familiarisation and photo documentation.



Impressive lava benches and levees in Cascajo Cave.

PHOTO: LAURENS SMETS



Giant tortoises like this and lava caves, are popular attractions at tourist ranches in the highlands of Santa Cruz Island.

PHOTO: JOHN BRUSH



Multiple wall benches and horizontal partitions in Cascajo Cave.

PHOTO: JOHN BRUSH



A small lava fall in Cascajo Cave.

PHOTO: LAURENS SMETS

Post-Symposium field excursions

Participants were able to select from three excursion options: stay on Santa Cruz Island to visit more caves in the highlands; travel by boat, a 2.5-hour trip each way, for a day trip to Floreana Island; or travel by boat to Isabela Island for a two-day field trip.

On Floreana Island, the group visited Post Office Cave that has a photogenic saline tidal lake; and Barn Owl Cave which is an important archaeological site. Both caves were visited with permission from the Galapagos Islands National Park and the party was accompanied by a park ranger.

The Isabela group visited one of the largest craters in the world, the Sierra Negra Volcano, where an active sulphur field could be seen. On the way back to Puerto Villamil, the only village on the island, the group visited Sucre Cave, a small but complex cave with a range of excellent speleothems and other volcanic features as well as large areas of gold-coloured actinomycete bacterial colonies.

The following day, the group visited Triple Volcan, a huge drained magma chamber, which goes down to 100m depth. The group was lucky to be there at the right time of day to see a beam of sunlight reaching down to the bottom of the cave, illuminating the whole chamber. It was indeed a spectacular conclusion to the trip.

Meeting of Commission on Volcanic Caves

At the end of the final presentations session, the commission convened a brief meeting, in which all ISV participants were invited to participate.

Major outcomes of the meeting were to:

- Note the resignation of Gregory Middleton, who had advised the commission late last year of his intention to resign from the position of Vice President, effective on the date of the commission meeting at ISV21.
- Formally thank Gregory Middleton for his strong support for the commission and its activities, especially the ISVs, over a period of several decades, including as Vice President since 2017.
- Appoint (by popular acclamation) Dominik Fröhlich (Germany) as the new Vice President.
- Agree that the next ISV (ISV22) should be held at La Palma in the Canary Islands in 2026, subject to an acceptable framework for the symposium and associated field trips being agreed with the commission in coming months.
- Thank Aaron Addison and Theo Toulkeridis (co-conveners) and the team of trip leaders for organising a very successful and enjoyable ISV21.

We hope to see you all in the Canary Islands in 2026!



Negotiating a 3m lava fall, one of several climbs in Cascajo Cave. PHOTO JOHN BRUSH



A beam of sunlight illuminating the interior of Triple Volcan, a drained volcanic shaft.

PHOTO: SCOTT LINN



Wading along the first lake in Post Office Cave, Floreana Island. PHOTO: JOHN BRUSH



Participants of the IWIC-X at the entrance of Eisriesenwelt Cave, Austria

PHOTO: IWIC-X ARCHIVE

10th INTERNATIONAL WORKSHOP ON ICE CAVES

Conference Report

by **Christoph Spötl** (Austria)

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Ice caves are a highly vulnerable part of the cryosphere; many will likely disappear as global temperatures continue to rise. The International Workshop on Ice Caves (IWIC) focuses on these threatened cavities in karst and non-karst areas worldwide. The conference is held every two years: Cluj-Napoca (Romania, 2004), Demanovská Dolina (Slovakia, 2006), Kungur (Russia, 2008), Obertraun (Austria, 2010), Grigna-Milan (Italy, 2012), Idaho Falls (USA, 2014), Postojna (Slovenia, 2016), Picos de Europa (Spain, 2018), and Liptovský Mikuláš (Slovakia, 2022).

In May 2024, IWIC-X took place in Werfenweng at the foot of the Tennengebirge (Salzburg, Austria) and was attended by 45 scientists and students from 12 nations (Austria, Canada, France, Germany, Hungary, Poland, Russia, Slovakia, Slovenia, Spain, Switzerland, and USA).

The program included three days of lectures and discussions, and two excursions to the nearby Eisriesenwelt Cave (followed by a visit to the Hohenwerfen castle) and to the Dachstein Rieseneishöhle.

The first and second days of lectures were devoted to ice cave monitoring and case studies, followed by various aspects of paleoclimate records derived from

perennial ice deposits and organic matter preserved in cave ice.

A third day of the conference was dedicated to cryogenic cave carbonates. There were also three invited keynotes focusing on different aspects of glaciology, including alpine glacier research, ice caves as microbial hotspots, and glaciovolcanic caves.

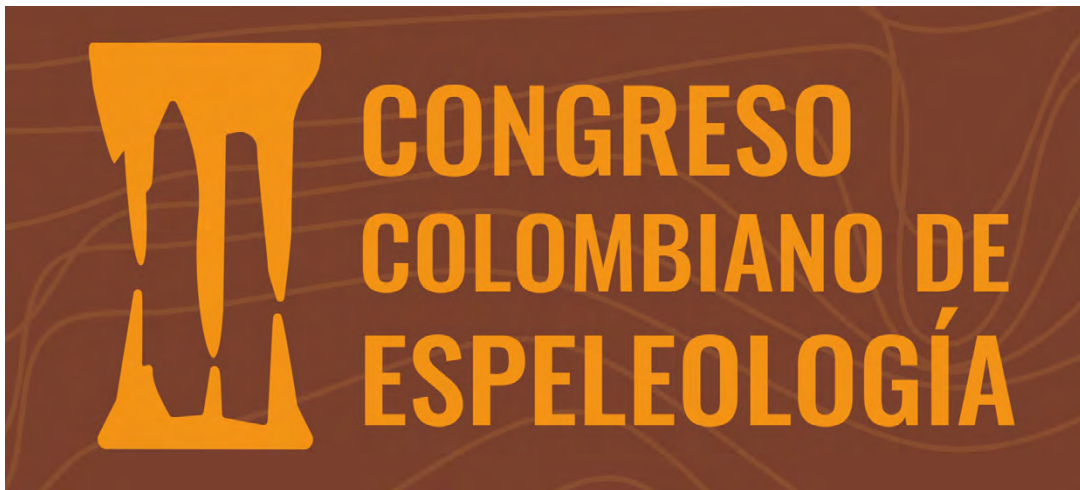
The conference provided an excellent opportunity for learning, networking and connecting with colleagues to discuss the key challenges of ice cave research, and to brainstorm about future research collaborations.

We are grateful to the University of Innsbruck (Vice Rectorate for Research and the Faculty of Geo- and Atmospheric Sciences), the Austrian Speleological Association, the Eisriesenwelt GmbH and the Dachstein Caves for their support. We are also very grateful for the warm welcome we received from our hosts at Barbarahof.

The conference abstracts can be found [here](#).

Gabriella Koltai (on behalf of the organizers)





ORGANIZATION



22-29 June 2024 - EIA University, Campus Zúñiga - Envigado, Antioquia

by Nathalia Uasapud (Colombia)

President of the Organizing Committee

UIS Adjunct Secretary

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Photos: Archive ESPELEOCOL

Between June 22 and 29, 2024, the III Colombian Congress of Speleology, organized by the Colombian Speleological Association (ESPELEOCOL) and the EIA University, was held on the Zúñiga Campus of the EIA University in the city of Envigado, Colombia.

This event brought together Colombian cavers to talk about advances in Colombian caving. This edition featured a day of pre-congress courses, academic and master conferences, discussion panels, and field trips to the stripe karst of *Oriente Antioqueño*.

The congress was attended by 40 people of 10 nationalities (Colombia, Venezuela, Brazil, Puerto Rico, Costa Rica, Uruguay, USA, Germany, Italy, and Spain), with the support and participation of the Latin America Cave Rescue School of the Latin America and the Caribbean Speleological Federation (FEALC) with its course on Caving Techniques; the Brazilian Society of Speleology (SBE) with the course Introduction to Speleology, and the International Union of Speleology (UIS) with the presence of Nivaldo Colzato (UIS Vice President of Operations) who shared conferences on the role of the UIS in caving, in addition to the promotion of the 19th International Congress of Speleology 2025.

During the congress, significant advances were made in different aspects of Colombian speleology, such as recent explorations in the quartzite karst systems of the Colombian Amazon or studies of pathogens in caves, where the work's quality is surpassed yearly.

The participation of government entities related to the Speleological Heritage Protection Law that was approved in 2022 and is in the regulation process was also highlighted. The discussions and panels of the congress allowed us to provide a context of the reality of caving in the country and what is expected of the

government in terms of the management, protection, and use of the Colombian speleological heritage, where it is appreciated that for this entire process, there is the academy and the speleologists who know the karst and the Colombian caves.

The pre-congress courses were a space to learn about different aspects of caving, where the course on the Introduction to Speleology, directed by José Ayrton Labegalini (SBE and UIS Past President) was classified by attendees as a course that invited them to continue with caving exploration and learn more about the subject. The course on Cave Rescue Techniques, directed by the Latin America School of Cave Rescue with its instructors Efraín Mercado, Carlos Laó, Erick Méndez, José Nieves, and Ramiro Pereira was focused on the importance of safety in vertical techniques and the use of suitable equipment in caving, in addition to the practice of the concepts in the practical session of the course.



Pre congress instructors during a cultural visit in Medellín city:
 LEFT TO RIGHT: José Ayrton Labegalini, José Nieves, Efraín Mercado, Erick Mendez, Ramiro Pereira, and Nathalia Uasapud.

In this regard, the need for the country to establish and have a Cave Rescue team that is prepared for any eventuality was widely discussed since the increase in speleological tourism and expeditions to new and remote karst areas makes it necessary that, for prevention, there is a specialized group that can respond to an emergency.

The congress field trip visited the Oriente Antioqueño karst, a marble stripe karst whose geomorphology is an excellent example of karst processes in tropical areas, in addition to edge processes, where you can find blind valleys, cockpits, canyons, karst hills, poljes, and countless caves with abundant biodiversity.

One of the places visited was the *Río Claro* canyon, whose marble walls show a part of the varied karst landscape and the river's fluvial processes, where the resurgences of the Claro River and the rock shelters stand out.

The second place visited was the La Danta karst system, one of the most studied karst systems in the country, which corresponds to a small area that shows the evolution of a fluviokarst system that, combined with tectonic processes, has left a series of fossil caves at different levels of the hill with the active cave at the base. However, being a stripe karst, it has not only the blind valley of the active cave but also a polje that drains the waters to a recently discovered cave, which is responsible for accumulating the waters that arrive through this form and helps them pass to the other side of the hill where they emerge again through infiltration.

Trails were traveled in the *Río Claro* canyon, and some tourist caves were visited in *La Danta*, observing the problems associated with mining and tourism in karst areas.

The experiences at this congress are expected to encourage Colombian speleologists to continue contributing to the knowledge and understanding of the country's karst systems and caves through their research and, in addition, participate in the next International Congress of Speleology in July 2025 in Brazil.



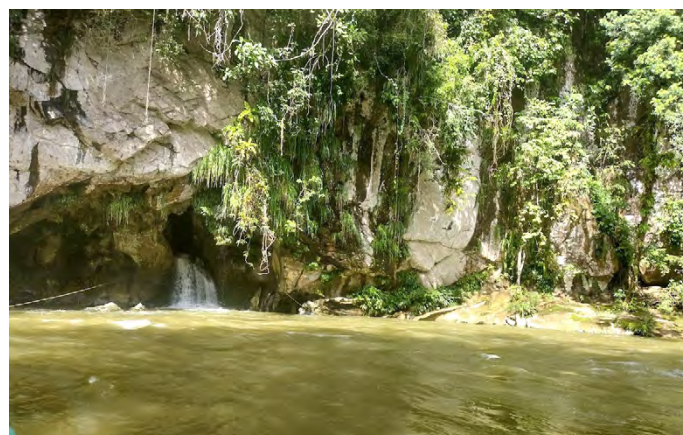
Field Trip group at the entrance of Río Claro Canyon.



José Ayrton Labegalini in his course "Introduction to Speleology."



Allan Calux (LEFT) (SBE) and Nivaldo Colzato (UIS) during the presentation of the UIS role and the promotion of the 19th ICS.



Resurgence of the Borniego Stream into the Río Claro River. El Túnel Cave entrance.



Speleothem at Marleny Cave in La Danta karst system.

INTERNATIONAL EXPEDITION SUPPORTED BY THE UIS



CAVING IN MONGOLIAN PERMAFROST 2023

Expedition Summary Report

By

Sebastian Breitenbach (*United Kingdom*)

on behalf of the entire team

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Team members (countries):

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 Stuart Umbo (UK)
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 Avirmed Dashtseren (MNG)
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 Khozhor Enkhbayar (MNG)
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 Slava Stolyarov (RF)
 Inna Stolyarova (RF)
 Olga Koleda (RF)
 Dimitry Kobylkin (RF)
 Dmitri Sokol'nikov (RF)
 Aleksandr Kononov (RF)
 Shadam Bayr (MNG)
 Enkhuyr Chuluunbayar (MNG)

Speleothems are incredibly valuable archives of past environmental conditions. Their chemical composition reacts very sensitively to changes in local hydrology, vegetation, or temperature dynamics. Importantly, in regions with permafrost (ground that remains frozen for at least two consecutive years) the very presence of speleothems indicates that permafrost was absent in the past, because speleothems can only form at above-zero temperatures and the presence of water.

The permafrost of northern Mongolia is highly vulnerable against ongoing anthropogenic warming. We use speleothems to study the timing of permafrost thaw, the underlying processes that affect permafrost stability, and environmental conditions at the times when permafrost was absent. This information might help to assess the regional ecosystem responses to global climate change.

Although several expeditions over the last ca. 40 years revealed the potential for speleological discoveries in Mongolia, the character and number of its caves remain poorly constrained because the karst areas are mostly in remote regions of this vast land-locked country. An additional factor is the lack of native speleologists that dedicate time and resources to the exploration of Mongolian caves.

Above photo: *The mountains around the Delgermurun river valley host many caves and await keen cavers. PHOTO: S. BREITENBACH.*

Speleological expeditions thus were mostly conducted by foreign cavers and researchers from numerous research fields. The exception was Dr. Erdenedalai Avirmed who dedicated his life to the exploration of Mongolian karst and caves and contributed significantly to the speleology of Mongolia.

His untimely death is a serious loss for Mongolia's speleological and geomorphological research. Erdenedalai supported our exploration work for more than 15 years, as he did for other research teams. Here we report on the results of a speleological expedition to northern Mongolia in summer 2023.

The expedition Caving in Mongolian Permafrost took place between the 20th of August 2023 and the 3rd September 2023. The goals of this expedition included i) intensification of international collaborations between British, Russian, and Mongolian team members, ii) identification of caves and speleothems suitable for the study of past environmental changes and permafrost dynamics, and iii) establishing monitoring at selected cave sites to provide key environmental information on today's climatic conditions.

We focussed on the region south and west of lake Khovsgol in northern Mongolia (Fig. 1). This region is characterized by extensive karst, much of which remains poorly documented, despite several earlier expeditions into this region (Holubek 1995, Komatsu & Olsen 2002, Noike 2015, Avirmed 2020).

We prepared our fieldwork using information available from the literature, earlier reconnaissance work by members of the expedition, and based on personal communication with numerous speleologists and colleagues.

After assembling on the weekend 19.08.-20.08. and last preparations (logistics, equipment, etc.) in Ulaanbaatar our team travelled north. Our first base was at the station of the Mongolian Geological Survey

in Khatgal at the southern end of lake Khovsgol. Khatgal hosts the administration of the Khovsgol national park, and we explained the rangers our goals and obtained permission before the exploration work.

After working near Khatgal we relocated and established camp 1 on a small plateau near Khavtsgait Agui, then relocated for the last days to camp 2 at the Delgermurun river ca. 20 km west of Altraga near the Cave of a Thousand Sheep (Fig. 1). During the expedition we located and surveyed known and new caves, which we shortly describe below.

Urkhet Agui (Өрхтийн агуй)

Urkhet Agui is located in a valley northwest of Khatgal and follows a geological fault trending roughly northwards. This cave has been surveyed by a French team in 2002 (Sautereau de Chaffe et al. 2002) and by a Japanese team (Noike 2015) and is the deepest known cave in Mongolia (-130 m according to Sautereau de Chaffe et al., 2002).

The cave passages are developed as a large main chamber and a lower and narrower series of passages. Our Russian team members entered this cave in 2022 and found a massive pile of animal bones, household trash and entire carcasses at the bottom of the entrance pit (Fig. 2).

Directly after the visit in 2022, several cavers became seriously ill with bacterial infections, which are most likely related to the observed pile of carcasses. During our expedition in 2023, only two crew members entered the cave wearing full body protection and gas masks with antibacterial filters.

This precaution was proven necessary as the pile of animal bodies continued to rot, thus forbidding any research in this cave. We abandoned our plans to conduct speleothem sampling and monitoring and reported our findings to the rangers of the national park together with video evidence.

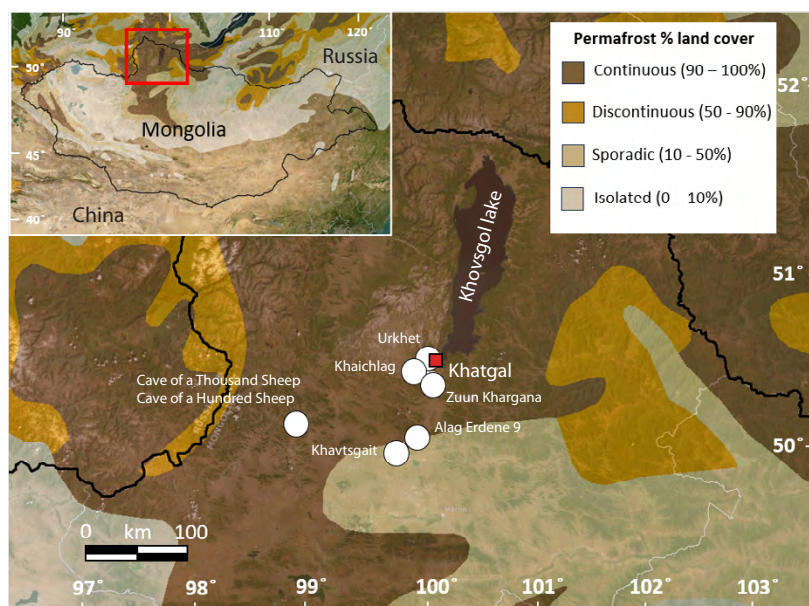


Fig. 1: Map of northern Mongolia with permafrost distribution and some of the cave sites. Map prepared by Maria Box using QGIS. The permafrost distribution is taken from <https://nsidc.org/home>



Fig. 2: Alexander Osinzev and Dima Sokol'nikov rig Urkhet Agui. Unfortunately, the entrance is a convenient pit for the disposal of trash and animal carcasses and the cave currently poses health threats to cavers. PHOTO: A. KONONOV (IRKUTSK)

We surveyed the area around the large entrance pit using a drone-based LIDAR system and opened a soil profile to test the depth of the active layer on top of the permafrost. The waste in the cave stems from local herders that depose of sick animals and any other trash (including rugs) in the convenient entrance pit.

The cave poses a potential health threat as soon as the local permafrost thaws sufficiently to allow water to infiltrate to become contaminated. We advise extreme caution, and protective gear including full-face gas masks should be worn when entering the cave.

Khaichlag Agui (Хайчлагын агуй)

Located further northeast in the same valley as Urkhet Agui, Khaichlag Agui is a ca. 17.8 m deep and relatively short (ca. 34 m) vertical cave. A survey by our team confirmed the cave map provided by Noike (2015). The cave is developed a northeast trending fault and currently in permafrost and air temperature is around zero. There is no potential for continuations. Our team surveyed the surrounding with a drone and developed orthophoto and DEM maps.

Zuun Khargana (Зүүн Харгана)

Zuun Khargana cave is located ca. 12 km south of Khatgal and developed as west-east oriented entrance roughly parallel to the valley. After a vertical entrance pit (Fig. 3) of a few meters, the cave is subhorizontal and easily accessible. The cave floor is dusty and contains bones of mammals, including Siberian ibex (Fig. 4), possibly Pallas cat (*Otocolobus manul*), and a dog (pers. comms. Dr. Louys), and bats. Noike (2015) provided a cave map, although we found some additional passages.

The cave hosts some ice, and the air temperature in the lowermost passages is at or slightly below zero. The main chamber was slightly warmer, with ca. 7° C, but we suspect that our monitoring interval was too short and disturbed by our presence to obtain correct temperature readings. We sampled several fossil flowstone samples that are currently being investigated by PhD student Maria Box (Northumbria University).

A detailed orthophoto and DEM map of the surrounding was surveyed during our visit.



Fig. 3: The slippery entrance to Zuun Khargana requires some meters of rope.
PHOTO: S. BREITENBACH



Fig. 4: The skull and horns of a Siberian ibex (kindly identified by Dr. Louys, Griffiths University).
PHOTO: S. BREITENBACH

Alag Erdene 9 (Алаг Эрдэнэ 9)

About 48 km south of Khatgal, the entrance to Alag Erdene 9 is located near the top and on the northern slope of the little valley that leads to it from the main road. The cave is 14 m deep and 38 m long, with massive ice in the lower passage (Fig. 5). The fossil main passage is oriented northward and the entrance slope consists mainly of young soil and litter. Near the lower end, a vertical pit can be climbed down to the lowermost level. This pit contains significant speleothem carbonate of reddish-brown colour.

The speleothems are broken by frost action. We collected several speleothem samples for radiometric dating and palaeoenvironmental reconstructions. Fossil wood has also been collected from the ice body for ¹⁴C dating. The cave has been reported under this name by Komatsu & Olsen (2003), but to our knowledge no cave map has been published and we surveyed it during our visit (Fig. 5), and used the drone to survey the surrounding area.

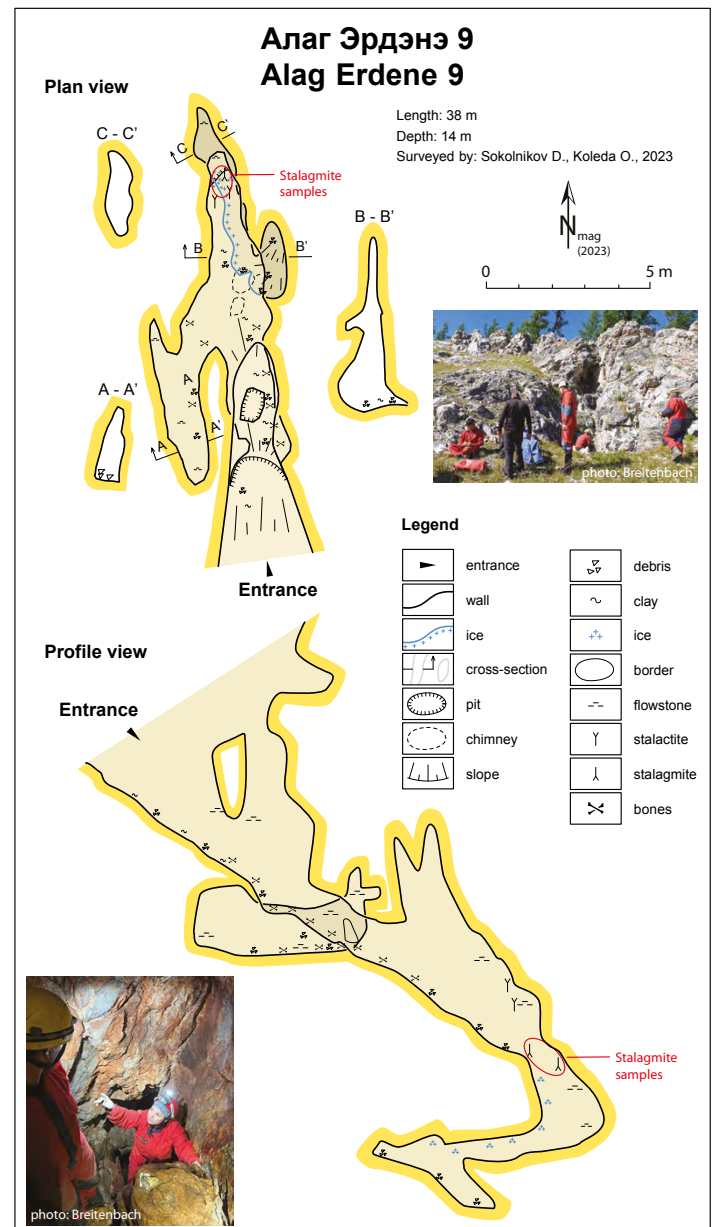


Fig. 5: Map and profile of Alag Erdene 9. Map surveyed by Sokolnikov and Koleda (Irkutsk), drawing by S. Breitenbach.

Khavtsgait Agui (Хавцгайтын агуй)

The complex vertical cave Khavtsgait Agui (also known as Yolt by local herders) has been previously visited by Komatsu & Olsen (2003) but a survey was not available. The cave is oriented mainly NE-SW, along geological fault lines (Fig. 6). The main passage sinks (sub)vertically to a large chamber at ca. -61 m that hosts a frozen lake because permafrost surrounds the entire cave.

Two passages lead from the main chamber, with the one continuing SW-ward being blocked after a few dozen meters, the other extending north-, then NE-ward until it is completely blocked by ice and hoar-frost (Fig. 7). The frozen lake at the bottom is likely the result of incoming spring meltwater and large ice blocks indicate (interseasonal) changes in water level.

Хавцгайтын агуй Khavtsgait Agui aka Yolt

Length: 344 m
Depth: 61 m
Surveyed by: Sokolnikov D., Koleda O., 2023
Drawing: Sokolnikov D., Koleda O., Breitenbach S. 2023-24

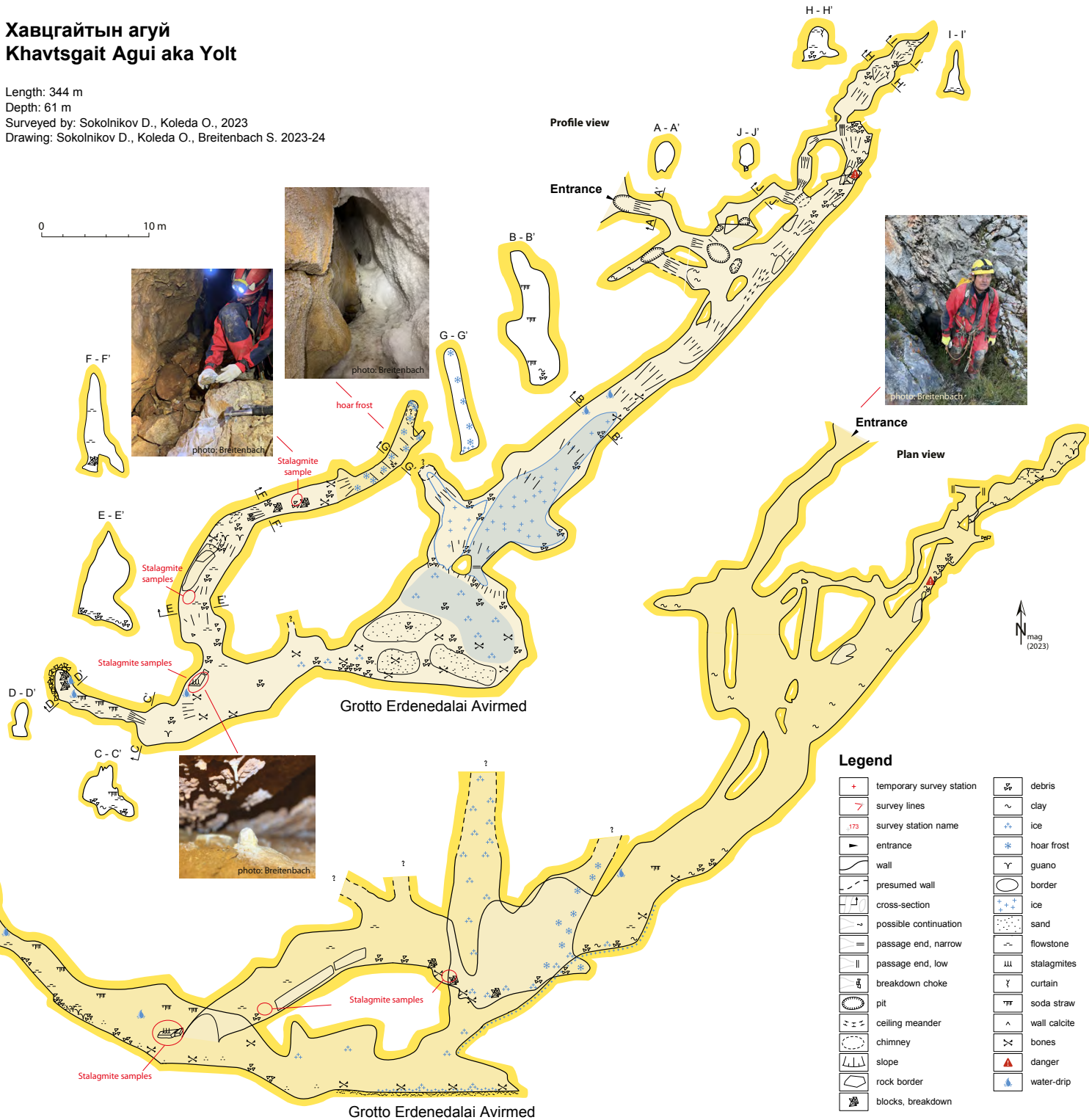


Fig. 6: Map and profile of Khavtsgait Agui. The cave is developed along fault lines and characterised by palaeokarst, which is especially evident in the ceiling of the deepest passage. Numerous fossils (articulated and as bone fragments) are found in the Grotto Erdenedalai Avirmed. Map survey by Sokolnikov and Koleda (Irkutsk), drawing by S. Breitenbach.

The lower half of the cave remains mostly at sub-zero temperature. The cave hosts several speleothems, including several broken stumps of stalagmites that have been broken off by ice action. We collected several speleothems for dating and palaeoenvironmental reconstructions, led by PhD student Box.

Only one active drip spot could be located west of the main chamber, and we installed a drip logger and temperature loggers to obtain detailed information on the microclimatic dynamics in the cave.

The active drip proves that permafrost here is discontinuous. The cave contains many animal bones and entire skeletons, including Siberian ibex.

We also observed numerous bat mummies and plenty guano. Access to this cave requires SRT, and extreme caution is required in the entrance pit because melting ice releases loose rock material. We conducted detailed drone-based surveys around the cave and the camp 1.

Alag Erdene 5 (Алаг-Эрдэнэ 5)

We found this subhorizontal cave a few meters above and on the western side of the small canyon just west of Khavtsgait Agui. The cave has been visited previously by Komatsu & Olsen (2003) although they did not provide survey results.

Our survey reveals a relatively shallow, upward trending cave with a veneer of unconsolidated dust, sand, and some gravel on the heavily metamorphosed limestone floor. The cave is ca. 12 m long and continues westward although it becomes impassable (Fig. 8). This cave seems to be a remnant of a larger, now eroded, cave system.

Ямаан Толгойн Агуй (Yamaan Tolgoin Agui, Cave 4)

A few hundred meters north of Khavtsgait Agui several cave remnants can be found on the plateau, including a short fossil passage called Yamaan Tolgoin Agui (Fig. 9). This very narrow and horizontal cave is about 7 m long and contains many mammal bones and guano. The passage morphology suggests a phreatic origin. Together with other morphological features at the surface and the position relative to Khavtsgait and the other caves near camp 1, this cave indicates the present of a larger cave system before the erosion of the canyon.



Fig. 7: The northwestern passage of Khavtsgait Agui remains frozen in permafrost. PHOTO: S. BREITENBACH

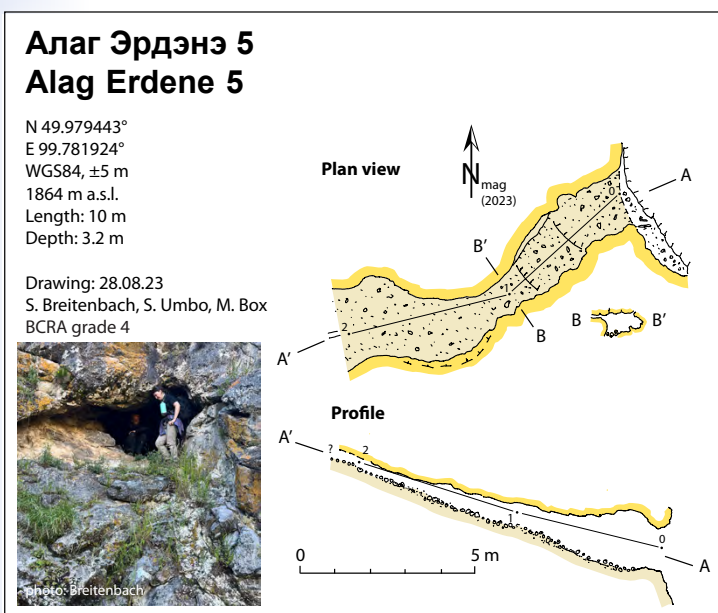


Fig. 8: Alag Erdene 5 is a small subhorizontal cave with only one passage.

Map survey by S. Breitenbach, S. Umbo and M. Box, drawing by S. Breitenbach.

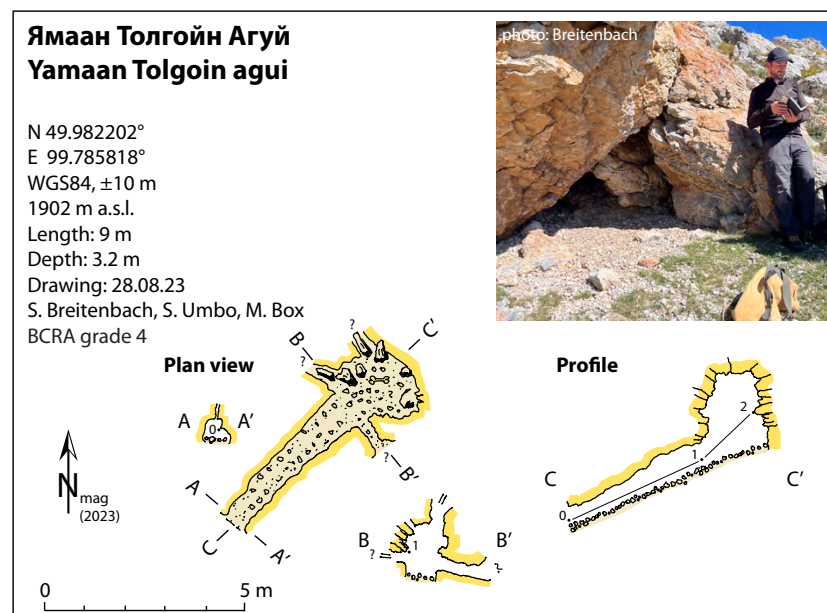


Fig. 9: Yamaan Tolgoin Agui (in line with other caves in this area) testifies a now-eroded phreatic cave system in the region surrounding Khavtsgait Agui.

Map survey by S. Breitenbach, S. Umbo, and M. Box, drawing by S. Breitenbach.

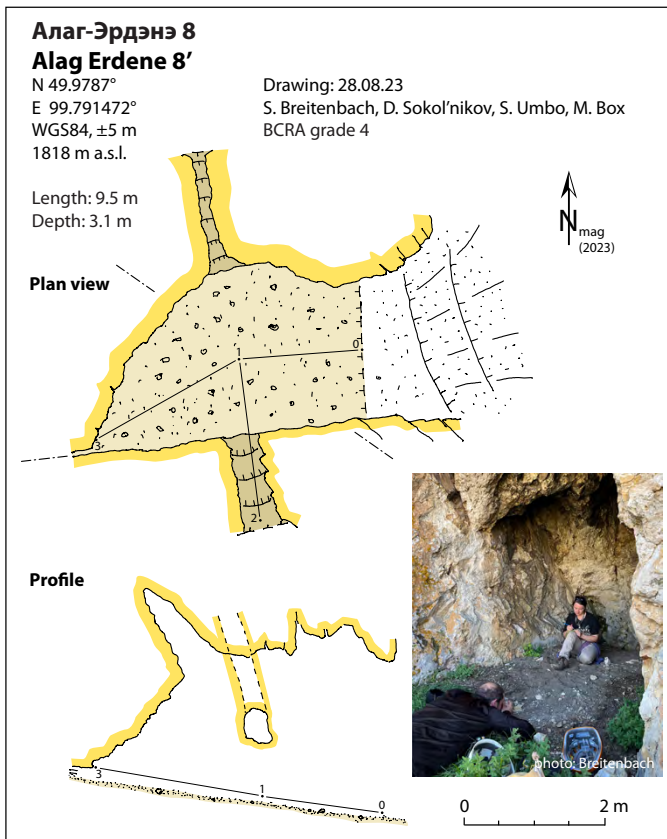


Fig. 10: Falling Rock Cave consists of narrow passages and short shafts that end in breakdown. Map survey by Sokolnikov and Koleda (Irkutsk), drawing by S. Breitenbach.

Falling Rock Cave (Асгатын агуй, *Asgatyin Agui*)

A few hundred meter east of Khavtsgait Agui a very narrow entrance at the base of a prominent cliff is the entrance to Falling Rock Cave, a 56 m long and 16 m deep cave. The cave follows two fault lines that are oriented roughly west-east, and north-south (Fig. 10).

Most passages including the entrance are very narrow. Together with the other cave remnants in this area, Falling Rock Cave is another indicator of a large and now eroded cave system.

Alag Erdene 8 (Алаг-Эрдэнэ 8)

Southeast of Khavtsgait Agui, another small cave remnant is found, called Alag Erdene 8 (Fig. 11). This cave had been noted by Komatsu & Olsen (2003) but no survey or further details were given. Our survey shows a spacious chamber of ca. 5 m length with the entrance oriented towards the east, and impassable passages leading to windows in the ceiling in the south and north. The cave is clearly developed along fault lines and a remnant of a much larger system, like Falling Rock Cave. The horizontal floor consists of soft sediment that might be of interest for archaeologists.

Cave of a Thousand Sheep (Мянган хонины Агуй)

Traveling westward from Altraga one reaches the pontoon bridge across Delgermurun river. Just above the northern end of the bridge the Cave of a Thousand Sheep opens with a magnificent entrance gate into the Bozhloy Chad mountain (Fig. 12). This cave is developed as a single main passage along a north-trending fault with magmatic intrusive rocks on its eastern flank.

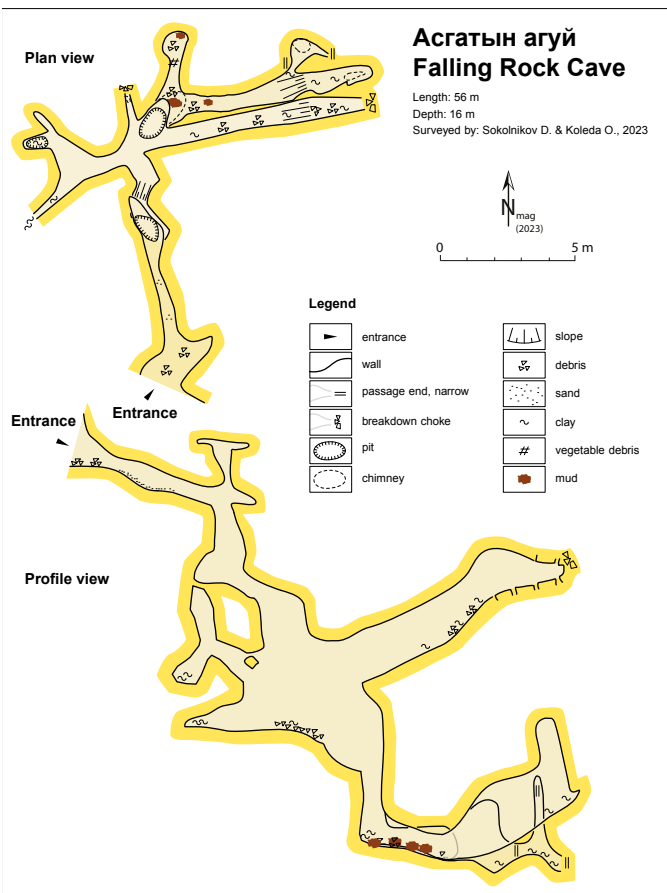


Fig. 11: Alag Erdene 8 is a short chamber with two windows in towards the surface. Its floor consists of soft sediment. Map survey by S. Breitenbach, D. Sokolnikov, S. Umbo and M. Box, drawing by S. Breitenbach.

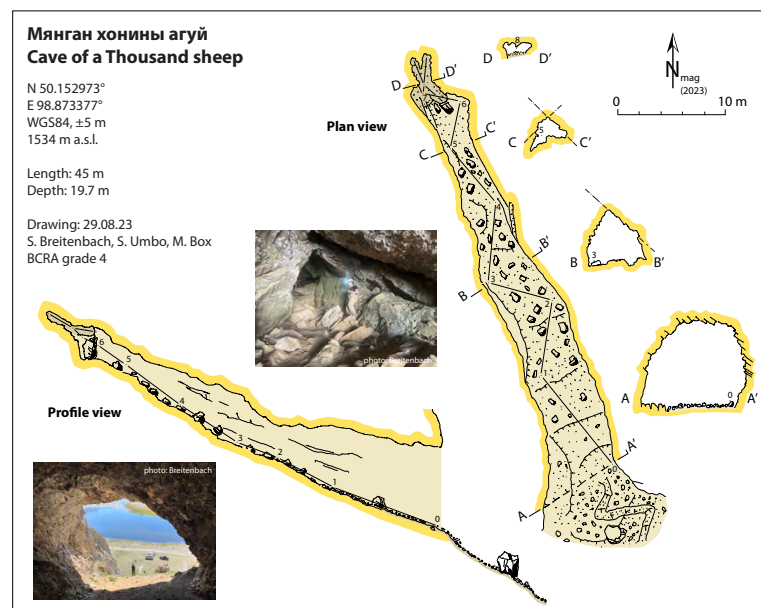


Fig. 12: Cave of a Thousand Sheep. This cave is prominently located to overlook the Delgermurun river. Map survey by S. Breitenbach, S. Umbo and M. Box, drawing by S. Breitenbach.

The intrusion weakened the severely altered limestone/marble and frost action helped further to remove material out of the cave and towards the river. The passage goes steeply upwards and ends at a 3 m high step after which the cave continues in a horizontal section with a few narrow passages that become blocked after a few meters.

A very few and heavily eroded stalactites were found in the uppermost section of the cave, but we did not sample any. The cave is a landmark and well visited (Fig. 13).

Cave of a Hundred Sheep (Зуун хонины Агуй)

Only ca. 150 m east of the Cave of a Thousand Sheep, another cave opens in the same cliffs with a nearly circular entrance. Since we could not identify a local name, we called it The Cave of a Hundred Sheep (Fig. 14).

The cave presents itself with a very uneven shape, largely due to the strongly faulted and folded host rock. Two larger chambers trend NW and ENE, likely developing through frost action along geological faults. The floor is rocky and very uneven with little soft sediment. No speleothems were found in this cave.

The mountains on both sides of the Delgermurun river south of the bridge (photo on page 14) reveals innumerable cave entrances that invite extended speleological work. The limestones here are strongly metamorphosed, although they have not transformed into proper marble.

The steeply tilted and folded rocks give the impression that caves are mostly vertical and relatively short. The potential for long horizontal caves seems limited, but we did not have time for detailed reconnaissance work.

Conclusions & Outlook

Northern Mongolia, in particular the region south and west of lake Khovsgol, shows enormous speleological potential and many other caves have been reported in the wider surrounding. The key problem for speleological expeditions is time – the terrain makes travel extremely slow and expensive.

We managed to survey eleven caves and visited several smaller entrances. Speleothems from some of these caves are now being studied in detail to elucidate the history of permafrost changes and environmental conditions during warm intervals.

These investigations are further informed by microclimatic monitoring. The expedition also fostered close collaboration with our Mongolian partners, and we now develop further project ideas to obtain longer-term funding for research activities.

Our key goals have been met and we were able to i) confirm the presence of permafrost in the deeper caves, ii) find and collect speleothem samples for palaeoenvironmental studies, and iii) develop friendships and close cooperation with Mongolian researchers.

We plan to return in 2024 to collect the monitoring data and continue our survey work.



Fig. 13: View of Cave of a Thousand Sheep.

PHOTO: S. BREITENBACH

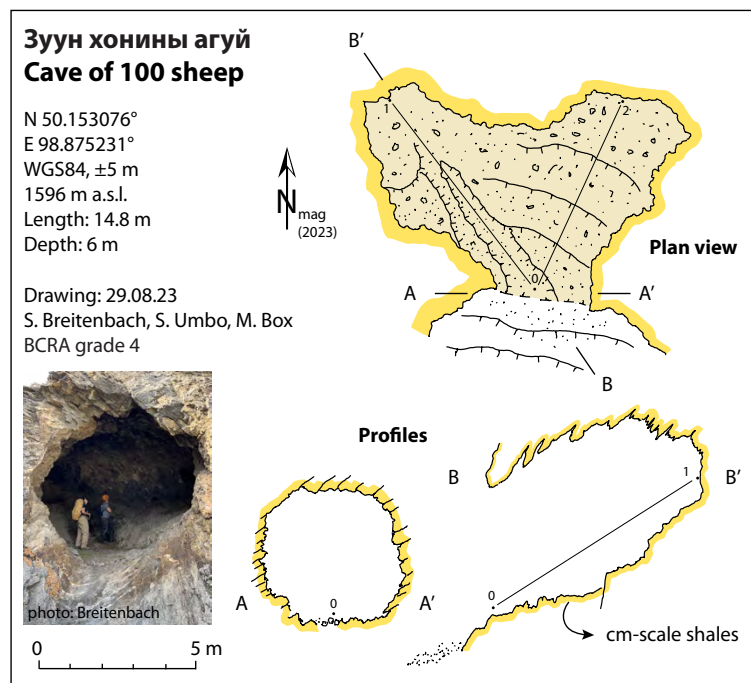


Fig. 14: Map and profile of Cave of a Hundred Sheep.

Map survey by S. Breitenbach, S. Umbo and M. Box, drawing by S. Breitenbach.

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INTERNATIONAL EXPEDITION SUPPORTED BY THE UIS



Tipan Cave entrance.
PHOTO BY LEO BUCOY ALEJO (DENR)

2024 TIPAN (PH) EXPEDITION

Summary Report

March 10 until March 25 2024 a group of Dutch, Belgian, and Austrian cavers took part in a caving expedition to the Tipan area, part of the Naga municipality in the province of Zamboanga Sibugay on the island of Mindanao in the Philippines.

By
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Area

The expedition site is part of the newly declared Protected Area in the Philippines-the Naga-Kabasalan Protected Landscape proclaimed under Republic Act 11686 on April 8, 2022. The group explored and surveyed the Tipan cave system and other caves in the surrounding area with permission from the Protected Area Management Board.

This was the sixth caving expedition of Dutch/Belgian cavers to the Zamboanga peninsula, and the third fully devoted to the Tipan cave system. The cave is named after the baragay (a Philippino village within a bigger municipality) the main entrance is situated in.

During the first three expeditions several different karst areas in the Zamboanga Peninsula were visited, in search for promising systems. Various caves were surveyed but the Tipan cave system (Figure 2) was the most promising by far.

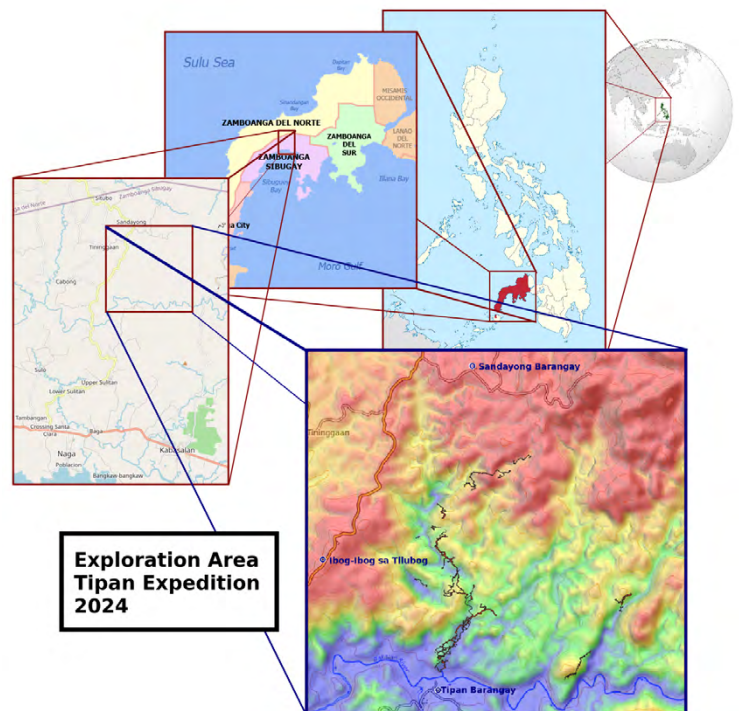


Figure 1: Area of the Tipan cave system, main objective of the Tipan 2024 expedition



Figure 3: Partial expedition team. LEFT TO RIGHT: Pascal Reenaers, Marc Mentens, Daniel Husana, Eugene Logatoc, Erik Claes, and Patrick van den Berg. PHOTO BY MARJORIE GALVE CANDIA

It has big and long galleries, various beautiful river passages, and seems to be the only drain of an enclosed surface area of approximately 28 square kilometers: no other caves or rivers exiting on the lower river Bakalan in the North are found in the area. Compared to all other cave systems visited on the Zamboanga peninsula, these characteristics made the Tipan cave system the most interesting to explore.

Expedition team members

The core of the expedition team were Lisette de Graauw (NL), René Haemers (NL), Patrick van den Berg (NL), Erik Claes (BE), Pascal Reenaers (BE), Martin Schreiner (AT), and of course Marc and Bing Mentens as our local liaisons (BE/PH). Two scientists also joined during a part of the expedition: Daniel Husana (University of the Philippines Los Baños, PH) and Eugene Logatoc (University of the Philippines Los Baños, PH) (Figure 3).

The expedition was organized in close collaboration with the Department of Environmental and Natural Resources (DENR). Many DENR employees also took part in the expedition, guiding the team to cave entrances, assisting in photography and surveying, and cooking.

The team was also accompanied by a security detail to take away any security concerns.

Basecamp

The team set up its basecamp in the Ibog-Ibog sa Tilubog family park (Figure 4) in the barangay Tilubog.

In 2023 the same location was used by the team, and because it was then considered the Club Med of basecamps, it became the obvious choice for this year as well. It has a marvelous view, a good restaurant, covered patios for briefings and eating (Figure 5), and several terraces to camp. The only downside was very poor Internet reception, but that was easily remedied by bringing our own Starlink dish this year, creating an added convenience for any Bridgerton fans as well.



Figure 4: Basecamp and view at Ibog-Ibog sa Tilubog. PHOTO BY ERIK CLAES



Figure 5: Briefing at basecamp. Left to right: Marc Mentens, Patrick van den Berg, Lisette de Graauw, and Pascal Reenaers. PHOTO BY ERIK CLAES

Tipan survey objectives

During the 2023 expedition the survey of the Tipan cave system was finished, and a total of 11,171 meters of passages was surveyed (Figure 6). This included all passages not needing diving gear for, horrendous bolt climbing or digging, or training toddlers for tight surveying purposes.

Because the Tipan system probably collects water from approximately 28 square kilometers, as well as judging from the volume and flow rate of the various sumps in the cave, there is still a lot of mileage left for surveying. That is why in 2023 the team also went looking for additional cave entrances. At the end of that expedition 48 cave entrances were identified, 17 of which were surveyed (Figure 7).

All of these surveyed entrances are in line with each other and seem to connect with the sump in the most north-western branch of the Tipan system. The 31 caves yet to survey were mostly situated around the western side of the basin, meaning relatively short distances before reaching the Tipan system, as well as being probably narrow, based on all the squeeze passages going to the west from the Tipan system.

Because of the potential far larger gains to the east of the Tipan system, the team decided to initially go prospecting primarily in that area, and subsequently survey promising newly found cave entrances. It was decided to do that to the east of both the most northern and most southern sump in the Tipan system (Figure 7).

A secondary objective was finishing the survey of a fossil cave above the northern branch of the Tipan system, hoping to shunt a sump.

Survey findings

The secondary objective was a disappointment. After only 4 additional survey stations the cave ended, with no connection to the underlying Tipan system. Adding insult to injury, the cave now probably had elevated levels of carbon monoxide, judging from the higher temperatures inside, difficulty performing, and for some members nausea and/or head ache until well after exiting the cave.

Fortunately, prospecting to the east was more fruitful. At the end of the expedition 29 additional cave entrances had been found, bringing the total to 77 entrances, 34 of which have still to be surveyed (Figure 8).

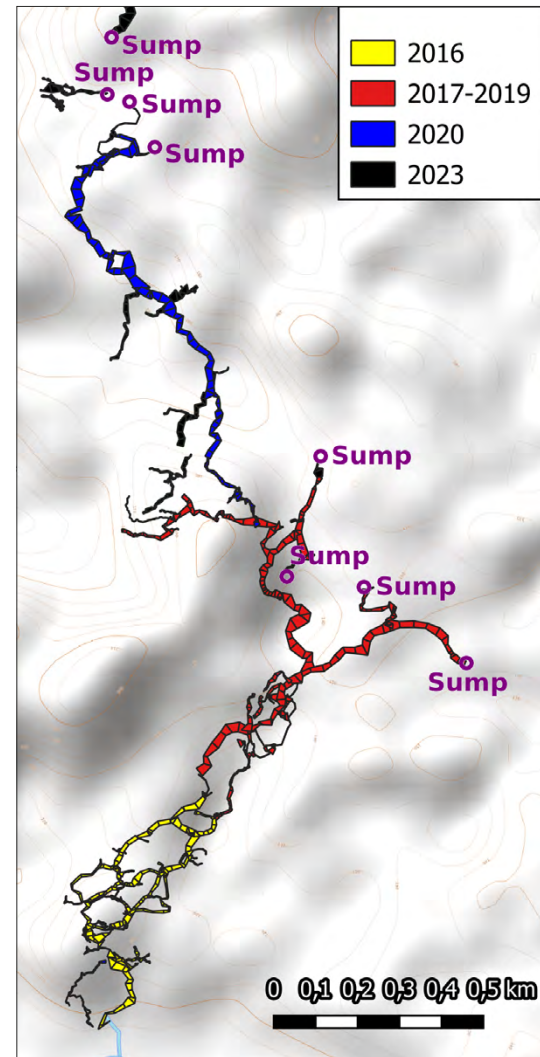


Figure 6: Completed survey of the Tipan cave after the 2023 expedition. CREATED BY ERIK BIRKHOFF

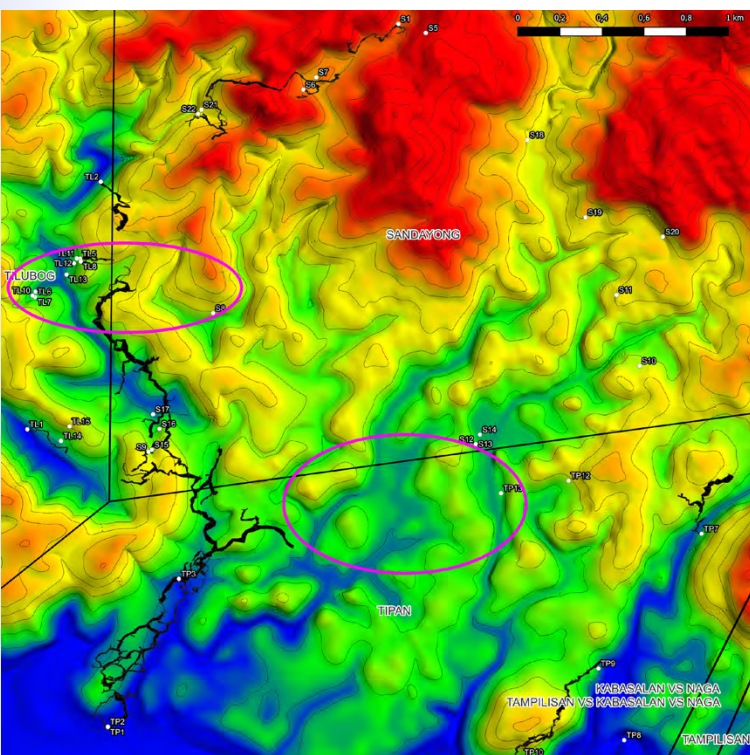


Figure 7: Areas and cave entrances to explore.

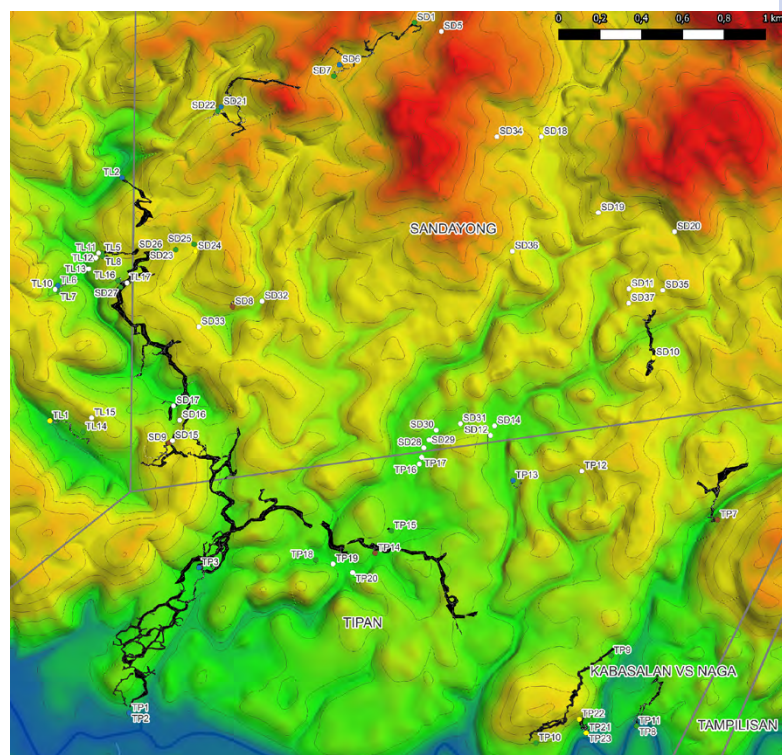


Figure 8: Areas and cave entrances to explore.

Describing all of these caves is beyond the scope of this summary, but here are some highlights:

- An attempt was made to connect Tipan with TP14 using an underwater ROV (*Figure 9*), but failed because of bad visibility.
- Judging from the entrances we have found so far, the system seems to have somewhat the topology of a chandelier, with the candles pointing to the north-east.
- The entrances to the east of the most north-eastern Tipan sump are all pits going down 15 meters or more, with no draft and often elevated levels of carbon dioxide.
- TP14 probably connects to the most south eastern sump of Tipan, and is likely the main Tipan river, draining the largest part of the basin above.
- The continuation of cave TP13 is probably one big sump for the most part, because it is in a gorge which is already close to the underground water level.
- Cave SD10 high up in the north east was quite a surprise. Very big galleries and quite active, which was not expected so relatively close to the edge of the basin (*Figure 10*).
- During a scientific support trip to SD6 in the high north, an adventurous team member accidentally connected the cave with SD1 after a 5 meter freedive.
- Entrance TL16 was found to be connected to the far north of the Tipan cave system, creating both an additional escape from the cave in case of emergencies, as well as an entrance for making a complete Tipan traverse.

Scientific objectives

Dr. Daniel Edison Husana (*Professor of Natural Environment Studies, University of the Philippines Los Baños*) and Eugene Logatoc (*Assist. Professor Plant Ecology, University of the Philippines Los Baños*), were our scientific team members, just like last year.

Dan, as his friends and colleagues call him, is also a crab and cave fish taxonomist with over 29 years of experience exploring and studying the karst and caves in the Indo-West Pacific region. Last year, his main research subject initially were the cave fishes but later expanded to extremophiles in a thermal spring found in one of the caves. This year the extremophiles were again the main subject (*Figure 11*).

Eugene studies Bryophyta (non-vascular land plants, e.g. moss) and was interested in populations in and around cave entrances. This year he wanted to visit additional sites to take samples.

Hot water spring with extremophiles

Last year Dan took samples from the biofilm of extremophiles found at the subterranean hot water spring and left a data logger to measure differences in temperature and other parameters. This year he returned to collect the data logger, as well as to collect additional extremophile samples. Last year's samples were used to try and extract DNA from to enable identification. This however did not succeed (might be because of impurities, a faulty kit, or a special resistant coating on the extremophiles) necessitating in collecting the additional samples.



Figure 9: Exploration using an underwater ROV in Tipan cave. Left to right: René Haemers, Pascal Reenaerts, and Martin Schreiner. PHOTO BY ERIK CLAES

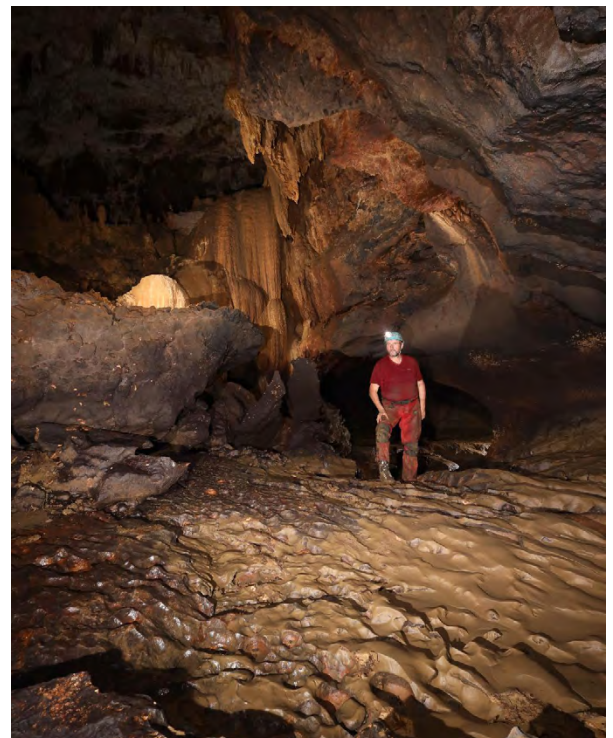


Figure 10: Erik Claes in SD10 passage. PHOTO BY ERIK CLAES



Figure 11: Pascal Reenaerts and Daniel Husana observing and documenting the biofilm on the cave floor next to the hot water spring before collecting samples. PHOTO BY ERIK CLAES

Aquatic cave fauna

Last year Dan collected several samples of cave fish and macro crustaceans. He found out there probably are several sub-species of *Barbodes* cave fish found in Tipan, including new ones; but further research is still needed (Figure 12).

There seems to be a hybrid species of cave *Barbodes* with features of fish normally found on the surface streams in some parts of South East Asia. This year Dan took additional cave fish and crustacean (Figure 13) samples.

Bryophyta findings

Eugene's specialization is Bryophyta s.l. which are a botanical taxonomic division containing three groups of non-vascular land plants: liverworts, hornworts and mosses (but not related to lichen). Last year Eugene took many samples from various sites. This year he visited an additional 22 sites. He found a rather rich bryophyte flora with each species thriving in abundance. Examples are *Epiphyllous* liverworts (Figure 14), *Epiphyllous* moss, and *Marchantia* (Figure 15).

These observations are likely due to the micro climate at the cave entrances and their vicinity.

Photo documentation

Just like last year, Erik Claes (Figure 16) was the cave photographer during the expedition.

He made sure there was proper photo documentation of all caves visited. He photographed all important karst features, as well as expedition life outside of the caves.



Figure 14: *Epiphyllous* liverworts. PHOTO BY EUGENE LOGATOC



Figure 15: *Marchantia* found at cave entrance. PHOTO BY EUGENE LOGATOC



Figure 12: *Barbodes* n. sp. found in the Tipan cave system. PHOTO BY ERIK CLAES



Figure 13: Tipan crustacean. PHOTO BY ERIK CLAES



Figure 16: Erik Claes at work at the Tipan main entrance. PHOTO BY LISETTE DE GRAAUW

Education

While assisting the main team, many DENR employees were introduced to the basics safe caving, cave ecology and preservation, and some cave surveying as well.

Governor Dr. Ann K. Hofer was the main sponsor of our expedition. Towards the end of the expedition she and her officials were updated on all our findings, including advice on karst preservation (Figure 17).

On the last day of the expedition, the team gave a cave tour to all the mayors of the province Zamboanga Sibugay, organized in Team Sibugaynon of the Philippine Mayors Association. They learned about the beauty, but also the fragile ecology of caves and how to preserve them (Figure 18).

Future plans

Large areas of the Tipan basin have not yet been prospected for cave entrances yet. Extrapolating from the current density of known entrances, hundreds more should be out there! Also in the current systems there are still several leads to follow up on. And then there is also plenty of diving to do. Like a daisy chain, more and more sumps need to be connected.

Acknowledgements

The expedition team would like to thank Governor Dr. Ann K. Hofer for her generous support for this expedition, her warm welcome and hospitality. Without her support, this expedition would not have been possible. Also a big thank you to the mayor of Naga, Rino O.

Delos Reyes, who arranged for all transportation during our stay. We would also like to thank former DENR Region IX Assistant Director Dante Oporto (Figure 19) for his support. Although no longer working for DENR, his support was invaluable.

And of course, also many thanks to all DENR Region IX officials working tirelessly behind the scenes making the expedition possible, both before and during the expedition: Edgardo P. Montojo (Provincial Environment and Natural Resources Officer, Officer in Charge), Dennis Catalan (Community Environment and Natural Resources Officer, Officer in Charge), Reynaldo C. Cuaresma (Provincial Environment and Natural Resources Officer, Technical Services Division Chief), and Georgina Fernandez (Conservation Development Section Chief).



Figure 17: Marc Mentens updates Governor Dr. Ann K. Hofer on the expedition findings. From left to right: Governor Dr. Ann K. Hofer, Marc Mentens, Patrick van den Berg. PHOTO BY ERIK CLAES



Figure 18: Tipan cave tour and education for all mayors of the province Zamboanga Sibugay. PHOTO BY ERIK CLAES



Figure 19: Dante Oporto in SD6 Cave. PHOTO BY ERIK CLAES

Of course we are also immensely grateful for all the DENR personnel helping out during each and every day of the expedition (Figure 20). You are too many to mention individually, but all are equally appreciated.

Special thanks also to the Philippine National Police, and particularly to the 2nd Provincial Mobile Force and Naga Municipal Police Station. You are all greatly appreciated.

And last but not least we are also greatly appreciative of the support we got from the *Unión Internacional de Spéléologie* (UIS). Their grant enabled us to buy a drill used to rig various pits and traverses with (Figure 21), and which surely will be re-used the next expeditions as well.



Figure 20: Support team carrying equipment. PHOTO BY ERIK CLAES.



Figure 21: Marc Mentens rigging the entrance pit of SD35 with the drill acquired through UIS sponsorship. PHOTO BY ERIK CLAES

TIPAN 2024 (PH) EXPEDITION SUPPORTERS



PROJECT SUPPORTED BY THE UIS

VIRTUAL SPELEOLOGICAL FIELD TRIP IN GREECE

Project Report

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INTRODUCTION

The project sought to develop an immersive virtual field trip featuring scientifically significant caves and geosites in Greece, specifically designed for educational purposes. In the digital environment, the structure of the field trip focuses to spotlighting caves of interest, where available information and key features related to speleogenesis are emphasized.

The platform offers a unique opportunity for users to make observations, collect data, and analyze samples to unravel puzzles and address questions embedded in case studies. This interactive experience is facilitated by the provision of raw data, comprehensive definitions, detailed descriptions, and pertinent literature for each site.

Conducted by the cave research team at the School of Geology, Aristotle University of Thessaloniki, Greece, this project has gathered diverse information types to create detailed cave descriptions and a virtual reality environment. The core of the developed database consists of 3D digital scans capturing caves (Figure 1), chambers, dissolutional, and depositional forms.

These scans are seamlessly integrated with other

informative materials, including digital photos, cave maps, and cross sections, providing users with a comprehensive and enriching educational experience.

METHODS AND RESULTS

Caves included in the database and the virtual speleological field trip were selected by a set of criteria designed to ensure a comprehensive and educational experience. The selection criteria:

- **Well-known examples linked to publications:** Selection of caves with established recognition and connection to literature, fostering a basis for academic exploration and understanding.
- **Accessibility:** Prioritizing caves that are safely accessible, ensuring safe working conditions for the team.
- **Well-documented examples of morphological features:** Inclusion of caves with meticulously documented morphological features, facilitating effective presentation for educational purposes.
- **Coverage of various speleogenetic settings:** Ensuring diversity in the selection to cover a range of speleogenetic settings, providing a holistic perspective on cave formation.



Figure 1: Example of 3D cave model created for the project. CREDIT TO G. LAZARIDIS

The scans of caves were executed using lidar sensors in iPhones and the Polycam application. This method proved to be cost-effective and was efficiently conducted by experienced cavers within the cave environment (Figure 2).

Challenges were encountered, particularly in vertical caves, prompting innovative solutions. Limitations associated with the application, such as a scanning distance restricted to 5 meters and difficulties in processing prolonged scanning durations, were observed.

These challenges were addressed by extending the scan distance to approximately 10 meters using extendable sticks. Additionally, software for 3D graphics was employed to combine multiple scans. Consideration of battery usage limitations during each fieldwork session was crucial.

The initial catalog comprises twenty caves spread in twelve areas of Northern Greece. Notably, ongoing efforts are in place to expand the database regularly. To estimate the rate of expansion, a working plan is in motion to incorporate approximately 15 new examples per year for at least two years (2024-2025).

Concerning cave morphology, a diverse array of features has been identified and presented to enrich the educational content. These features predominantly belong to karst caves formed in both epigene and hypogene settings. Specifically, caves exhibiting hypogene speleogenesis and features formed by carbonic and sulfuric acid have been documented. The collection also includes constructive caves in travertine and destructional caves in granite, recognized in the European region as tafoni. This comprehensive selection ensures a varied and enlightening educational experience for virtual field trip participants.

SUMMARY OF MORPHOLOGICAL FEATURES

The scanned caves boast a diverse array of morphological features, spanning various scales from micro to macro, encompassing the entire extent of the cave as typically observed in ground plans. These features include:

- **Flat ceiling with notches:** serving as an indicator of the water table, a flat ceiling combined with a pair of notches provides valuable insights into the cave's



Figure 2: During the scanning process in one of the caves included in the project.

PHOTO COURTESY OF PETROS SAMARTZIDIS

hydrological history.

- **Flat cave-floor:** correlating with corrosion tables, this feature is a result of sulfuric acid speleogenesis, offering a glimpse into the geological processes shaping the cave environment.

- **Notches at various passage heights:** functioning as water level indicators, these notches are formed either in carbonic acid caves or sulfuric acid caves, reflecting distinct speleogenetic influences.

- **Feeders, recharge slots, and sulfuric feeder slots:** indicative of hypogene speleogenesis, these features offer clues about the geological forces at play in the cave's formation.

- **Cupolas and related forms:** including pendants, rock bridges, rock ridges, cusps, blades, etc., These formations are found in diverse settings of sulfuric acid, carbonic acid speleogenesis, condensation corrosion, biocorrosion, and epigene speleogenesis.

- **Phreatic passages:** developed through condensation corrosion by sulfuric acid, these passages, along with those displaced by active faults, spring passages, keyhole passages, and vadose canyons, act as indicators of water table fluctuations.

- **Scallops:** serving as indicators of lateral flow along a pressure head, these features in both phreatic and epiphreatic settings offer valuable information for estimating paleo-flow velocities.

- **Branchwork, network, ramifying, and spongwork cave patterns:** reflecting epigene and hypogene speleogenesis, these patterns contribute to understanding the dynamic geological processes that shaped the cave's structure.

- **Progradational travertine cave in waterfall:** an example of a constructive cave, this feature showcases the formation of travertine in a waterfall setting.

- **Granite caves (tafoni), alveoli features, honeycomb morphology:** representing non-karstic caves, these formations in granite illustrate unique geological processes distinct from traditional karstic environments.

This comprehensive list of morphological features not only enriches the educational content but also provides a nuanced understanding of the geological history and processes that have shaped these caves into unique and diverse environments.

FUND USAGE AND DISSEMINATION

The allocated funds were utilized for covering travel expenses to cave localities, ensuring the successful execution of the project. The outcomes and insights from the case studies, along with the comprehensive project database, are accessible on our dedicated webpage <https://speleology8.wordpress.com/> (Figure 3).

The information is meticulously organized, providing a detailed account for each cave and its associated morphological features.

Access to the site is granted after obtaining permission for the publication of 3D scans and digital photos from the Ephorate of Paleoanthropology and Speleology, under the Greek Ministry of Culture and Sports. While a secondary permission for archaeological sites is pending, efforts are underway to secure the necessary further approvals for future scans.



Figure 3: The home page of the website that is created to provide access to the content created during the project.

The integration of 3D models into educational practices has proven impactful. Students at the School of Geology, which set the web-page under its auspices, actively engaged with these models in the “Information and Communication Technologies (ICT) in Geological Education” course throughout 2023. Using iPhones and the augmented reality mode in the Polycam application, students virtually explored caves within the physical confines of the university (Figure 4).

The positive feedback received highlighted the students’ enthusiasm and appreciation for the immersive experience of navigating a virtual cave. This positive response translated into a noteworthy 25% increase in student participation in speleological projects.

In addition to the dedicated webpage, promotional videos and a Facebook page have been established to showcase various case studies and project highlights.

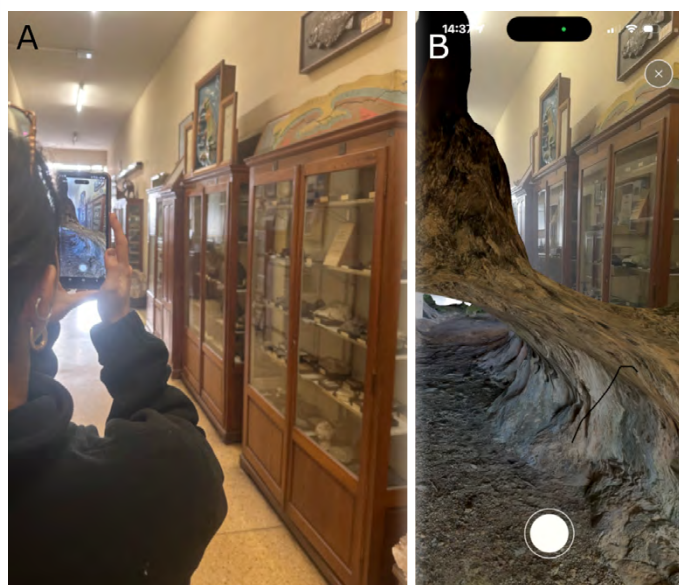


Figure 4: Use of 3D models in augmented reality mode by students who attend the course “**Information and Communication Technologies (ICT) in Geological Education**” in the school of Geology, Aristotle University of Thessaloniki and they have virtually explored Greek caves and identified morphological features. **A.** View of how the real space is and the student who “explores” the cave. **B.** What the students see during “cave exploration” with augmented reality in the same space. PHOTOS G. LAZARIDIS

As of January 2024, in about one month, the page has garnered a substantial following, with over 150 followers engaging with the content and reaching over 5.500 individuals.

This social media presence serves as a platform to share the project’s achievements, foster community interest, and extend the reach of our speleological initiatives.

CONCLUSIONS AND FUTURE STEPS

The project has achieved substantial progress in crafting an innovative and easily accessible educational resource featuring diverse content.

During the upcoming spring semester, the project’s website will be introduced to approximately 80 students enrolled in the Speleology course at the School of Geology, Aristotle University of Thessaloniki.

This strategic presentation aims to integrate the virtual field trip into the academic curriculum, providing students with a firsthand exploration of the caves and their morphological features. To enhance this educational experience, links to the generated 3D models will be seamlessly incorporated into forthcoming publications detailing the project’s case studies (i.e. Lazaridis et al., in press).

Looking ahead, the project is committed to ongoing development and enrichment. Plans are in place to conduct additional scans and design exercises over the next two years, contributing to the continuous expansion and enhancement of the virtual field trip’s content. This proactive approach ensures the sustained growth and relevance of the educational resource, offering a dynamic learning experience for students and enthusiasts alike.

REFERENCES

Lazaridis, G., Katrivanos, E., Dora, D., Papadopoulou, L., Lazos, I., Chatzipetros A., (in press). *Evaluating the relation of cave passage formation to stress-field: Spatio-temporal correlation of speleogenesis with active tectonics in Asprorema Cave (Mt. Pinovo, Greece)*. *Geosciences, Advanced Studies in Structural Geology: The Role of Tectonics on Applied Geology Aspects*.


 Union Internationale
 de Spéléologie
 www.uis-speleo.org

UIS BUREAU MEETING

 December 13th, 2023 (15:00–19:00) CET-Central European Time, online

Minutes: José María CALAFORRA - Revised by Johannes MATTES

ATTENDANCE

President: *Nadja ZUPAN HAJNA*
Vice-President of Administration: *Zdeněk MOTYČKA*
Vice-President of Operations: *Nivaldo COLZATO*
Secretary General: *Johannes MATTES*
Treasurer: *Mladen GARAŠIĆ*
Adjunct Secretaries:
Bärbel VOGEL
Gerard CAMPION
José-Maria CALAFORRA
Marc MENTENS
Mario PARISE
Patricia SEISER
Nathalia Vanessa UASAPUD ENRÍQUEZ
Past-Presidents:
Andy EAVIS
George VENI

1) Opening Session

President welcoming introduction

(N. Zupan Hajna)

UIS President N. ZUPAN HAJNA welcomed all participants to the videoconference meeting of the UIS Bureau. J. MATTES and B. VOGEL pointed out that minor corrections had been made to the minutes of the last UIS Bureau meeting, which did not affect the decisions. The agenda was approved, with some items added (M. PARISE asked to include a point to discuss the patronage to the Eurokarst 2024 meeting).

DECISION 1: The UIS Bureau approved the agenda.

2) Report of the Working Committee on endangered karst and cave features - CEKC

(B. Vogel, J.M. Calaforra, M. Parise)

There is nothing new regarding the Committee. The lack of involvement and the difficulty of reaching out to the groups concerned was highlighted. B. VOGEL proposed that a section on this subject could be included on the UIS website. M. PARISE suggested contacting the webmaster directly to make this possibility more concrete. G. VENI pointed out that direct e-mail contact with the list of organizations affiliated to the UIS should also be attempted.

ACTION 1: B. VOGEL to convene a zoom meeting with all those involved to see if progress can be made including a dynamic list of the endangered caves and karst on the UIS website.

3) Financial update *(M. Garašić)*

M. GARAŠIĆ summarized the state of accounts in the treasury of UIS. Currently there is a balance of approximately 84,000 as a total account in dollars and euros. The requested projects are financed with practically no rejections. However, he pointed

out that bank rates are getting higher and higher. N. ZUPAN added that there are still some countries, which, although they have applied for membership, have not yet paid any dues (Libya, etc.), and that communication with some countries after changes in leadership is a problem (Mongolia). M. GARAŠIĆ will try to contact the representatives of these countries to clarify their situation.

N.V. UASAPUD pointed out that the UIS is already a partner of the Committee for Gender Equality in Science as stated on its website:

<https://gender-equality-in-science.org/>

DECISION 3: The UIS Bureau approved the treasury statement of accounts 2023.

ACTION 2: M. GARAŠIĆ will contact the representatives of the countries that have not paid their dues and find out about the problems that may affect them financially.

4) UIS Media

a. UIS Bulletin *(N. Colzato)*

The final version of the latest UIS Bulletin (currently around 82 pages) will be sent to all members of the Bureau for review and correction. However, he is still waiting for some reports not yet received, such as the article on the France Habe Prize 2023 for the Protection of Caves and Karst obtained by the Speleo-Club of Quebec. N. ZUPAN and the other members of the Bureau are grateful for the work done by N. COLZATO.

b. UIS Website (payment of domain) and social media *(N. Colzato, N.V. Uasapud)*

N. COLZATO proposed some restructuring of the documents on the UIS website to make them easier to find. N. ZUPAN proposed that the “news” section of the website should not only publish the news related to the Bureau’s activities but also news received from UIS member countries. P. SEISER indicated that one possibility is to contact the delegates of each member country so that they can contribute the news to be published on the website and agreed with N. V. UASAPUD on the creation of this new section “UIS News from the countries.”

G. VENI proposed that the creation of a “UIS Newsletter” publication could be interesting for a quick communication with member countries and delegates.

N.V. UASAPUD proposed to unify the social media where the UIS is active, which could be relatively simple in some cases. J. MATTES indicated that we may need someone working very directly on this issue for the real involvement of the UIS in social media to be very effective.

M. GARAŠIĆ commented that currently the hosting and payment of the UIS web domain currently costs € 440, which he considered a somewhat high cost.

ACTION 3: N. COLZATO will inform the Bureau on the progress of the latest issue of the UIS Bulletin.

ACTION 4: N.V. UASAPUD and N. COLZATO will contact the webmaster to assess the possibility of implementing the connection between the different social networks in which the UIS should be present and the creation of the new section "UIS News from the countries."

5. UIS Relationships with Regional Organizations and Countries

a. Member countries: Mongolia (*M. Mentens*)

There is nothing clear about the contacts with the Mongolian caving groups or their representatives, but he will try again and seek new contacts.

M. MENTENS also pointed out the possibility of contacting speleologists in Tajikistan. B. VOGEL has a contact in Tajikistan who will provide M. MENTENS with information.

ACTION 5: M. MENTENS will work to establish contact with the representative speleological groups of Mongolia, Tajikistan and Morocco and to further consider their registration as member countries of UIS and to initiate collaboration.

b. Free material for the cavers: Morocco (*M. Mentens*)

M. MENTENS needs some information about groups that are working or have worked in Morocco in order to contact local groups and send them speleological material. G. CAMPION and J.M. CALAFORRA know some groups that have been involved in expeditions to this country and could provide some direct contact.

c. Other organizations: Austrian Academy of Sciences

In recent months, J. MATTES has been in contact with officers of the Austrian Academy of Sciences, the largest extramural body for basic research in Austria, to establish a partnership with UIS. J. MATTES is employed by the Academy as a researcher and was therefore able to establish these initial contacts. Yesterday, he was informed by the Presidium of the Austrian Academy that they agree to affiliate with the UIS and are willing to pay an annual contribution of € 240 to the UIS.

DECISION 3: The UIS Bureau approved the application of the Austrian Academy of Sciences to join the UIS as an Affiliated Organization. (J. MATTES)

6. UIS Relationships with International Organizations

a) International Day of Caves and Karst/UNESCO: state of the art, work, deadlines, movie, leaflet (*N. Zupan*)

N. ZUPAN indicated that to make further progress in the petition to UNESCO for the International Cave and Karst Day, it will be necessary to ask for support from other countries to the request. All the members of the Bureau agreed with this proposal to work together to submit a more solid proposal to UNESCO signed by different countries. In this respect, N. ZUPAN stressed the importance of China also being involved in this project.

DECISION 4: A specific meeting will be convened by video conference to discuss the progress of the IDCK issue on 18 January at 15:00 CET.

b) Membership proposal to the ISC (*J. Mattes*)

J. MATTES reported that confirmation of the resolution of the International Science Council regarding the inclusion of the UIS as a Category 1 member is awaited.

ACTION 6: J. MATTES to inform the members of the Bureau of the ISC decision as soon as it is communicated to the UIS.

c) ISC - GeoUnions (*J. Mattes*)

J. MATTES attended the first meeting of the ISC GeoUnions network (<https://gender-equality-in-science.org/>) in early September, where UIS was officially welcomed as a member. The ISC GeoUnions is currently working on the renewal of its website and is discussing whether to continue its ISC lecture series. The next meeting will take place on January, 26.

d) Standing Committee for Gender Equality in Science and set-up of a UIS working group for a code of conduct for social and gender equality (*N. Uasapud, J. Mattes, B. Vogel*)

Some information on this point was provided earlier in this agenda. N.V. UASAPUD reported that the next meeting of the Committee will take place in Paris. The exchange of ideas between the different associations registered in this Committee on Gender Equality in Science is proving to be very productive.

ACTION 7: N. UASAPUD and J. MATTES to report on progress of the outcomes and recommendations emanating from the Committee for Gender Equality in Science and how to apply them to the UIS and speleological organizations.

7. UIS Commissions and Expeditions

a) Recent call for speleological event support (*Z. Motyčka, J. Mattes*)

Z. MOTYČKA reported that eight applications were submitted yet.

b) New/adapted conditions for the Speleological Event Support Guidelines (*Z. Motyčka*)

Z. MOTYČKA proposed that the deadline for requesting project support be removed or that a second call be established so that some project requests are not kept without financial support due to exceeding the annual deadline. This may require a change in the project support request regulation. He also suggested increasing the total annual amount to be applied to projects supported by the UIS to € 8,000.

c) Suggestions to activate the work of UIS Commissions (*Z. Motyčka*)

Z. MOTYČKA pointed out that there are still some commissions that we should try to reactivate by searching for new members. Commissions that are not active should be canceled.

DECISION 5: The change in the application to the Speleological Event Support guidelines to extend the application for asking of support to two deadlines per year was approved.

DECISION 6: The increase of the annual budget dedicated to project supports to 8,000 € was approved.

8. Organization of the 19th ICS in Belo Horizonte

N. COLZATO reported that the second circular would be ready by the end of March. It will already include more precise information on excursions and prices of the various activities.

ACTION 8: N. COLZATO to send the second circular (English/Brazilian/Spanish) to the members of the Bureau as soon as the first draft is completed.

9. Proposal of two new categories for UIS awards for long-term distinguished service and intermediate/young speleologists (*J. Mattes*)

ACTION 9: J. MATTES will prepare a draft proposal for a regulation on these new awards to be presented at the next meeting of the Bureau.

10. Attendance to future speleology events

M. PARISE reported on the Eurokarst 2024 meeting which is sponsored also by the UIS (action approved during the present Bureau meeting). Eurokarst is the European bi-annual conference on the Hydrogeology of Karst and Carbonate Reservoirs. The next Eurokarst will be held in Rome, June 10-14, 2024. M. PARISE is a member of the organizing committee and will keep the Bureau informed about the progress of the event.

M. MENTES is awaiting information on a caving conference to be held in Mexico. As soon as he has more information, he will pass it to the Bureau.

DECISION 7: The UIS Bureau approved M. Parise's request for UIS patronage of the Eurokarst 2024 conference.

11. Next UIS Bureau Meeting in 2024 (M. Mentens, J. Mattes)

N. ZUPAN and J. MATTES reported on the next meeting of the Bureau in Yogyakarta (Java, Indonesia) at the Asian Trans-Disciplinary Karst Conference to be held at the University of Gadjah Mada (UGM) from 12 to 15 August 2024. More information: <https://karst.geo.ugm.ac.id/en/main-page/>.

M. MENTENS will ask the event organizers about further details of the conference, as well as the need to have a venue for the UIS Bureau meeting.

N. UASAPUD indicated the difficulty that some members of the Bureau may have in attending in person due to the considerable distance and costs, so it would not be a bad idea to ask UGM about the possibility that the meeting could also be held by video conference.

12. Any other business

International Year of Caves and Karst: G. VENI continues working on summarizing all the events of the International Year. As he reviews the events listed on the International Year website, he has found more events that were not listed, increasing the total to over 1,200.

Translations of the Guidelines for Cave and Karst Protection: The translations continue. While some are delayed, G. VENI reported we currently have four translations of the full document and 21 translations of the summary of the 76 guidelines. He asked that if anyone knows people fluent in Ukrainian who might be willing to translate the guidelines, to send their names and email addresses to George. Alexander Klimchouk was going to work on the Ukrainian translations but died earlier this year.

B. VOGEL commented that the German translation of the Guidelines of Cave and Karst Protection has not yet been completed but believes it will be ready for publication in near future.

UIS Patches: M. MENTENS suggested the possibility of asking a Philippine company for some cloth patches with UIS logos to be distributed during international congresses in which the UIS participates. He will ask for prices.

PARTICIPANTS OF THE UIS BUREAU VIRTUAL MEETING - DECEMBER 13, 2023





UIS BUREAU MEETING

April 17th, 2024 (15:00–19:00) CET-Central European Time, online

Minutes compiled by Gerard CAMPION

Revised by Johannes MATTES

ATTENDANCE

President: *Nadja ZUPAN HAJNA*

Vice-President of Administration: *Zdeněk MOTYČKA*

Vice-President of Operations: *Nivaldo COLZATO*

Secretary General: *Johannes MATTES*

Treasurer: *Mladen GARAŠIĆ*

Adjunct Secretaries:

Gerard CAMPION

José-Maria CALAFORRA

Marc MENTENS

Patricia SEISER

Nathalia Vanessa UASAPUD ENRÍQUEZ

Bärbel VOGEL

Past-President:

George VENI

Guest: *Eko HARYONO*

Excused: *Mario PARISE*

AGENDA

1) Opening Session - President welcoming introduction/Approval of Agenda

(*N. Zupan Hajna*)

The UIS President opened the meeting by welcoming bureau members commenting that it was good to see everybody since the last meeting. The agenda was formally approved.

2) Next UIS Bureau Meeting in Yogyakarta, Indonesia, on August, 11th

a. Bureau Meeting (*N. Zupan Hajna, J. Mattes*)

A room for the bureau meeting has been booked and the Secretary General will prepare the agenda.

b. Asian Trans-Disciplinary Karst Conference: Universitas Gadjah Mada, Yogyakarta (Java), Indonesia, 12-15 August (*E. Haryono, M. Mentens*)

Bureau members were asked to confirm whether they would be attending, in person, the conference in Yogyakarta. All confirmed they were attending with the exception of P. Seiser, N. Uasapud, and B. Vogel. M. Mentens introduced E. Haryono, conference organizer, who updated the bureau on details of the venue and accommodation for bureau members. Pre-conference excursions are listed on the website and he gave details of the programme structure for the conference. A one-day excursion is listed for August 15, 2023. To date 20 individuals have registered. Arrangements have been made for a strong WIFI connection. Also a summer school will be held before

the conference and N. Zupan Hanja and J. Mattes offered to provide input on suitable subjects. N. Zupan Hanja felt it would be advantageous to organize a short meeting with the Asian Union of Speleology to lobby support for the International Day of Caves and Karst (IDCK) initiative.

DECISION 1: Bureau members to make a contribution to summer school and regional meeting.

ACTION 1: N. Zupan Hanja and J. Mattes to provide summer school input by way of agreed presentation.

ACTION 2: M. Mentens to collate flight details for E. Haryono. Bureau members to send their flight details to M. Mentens by the end of April.

c. Mulu Pre-Excursion (*A. Eavis*)

Due to A. Eavis being absent no further details were provided on the Mulu excursion. He will provide an update when he returns from his travels.

3) Review Action Items and Decisions of previous UIS Bureau Meeting (12/2023) – Decisions to be made on follow up un-accomplished actions

a. Working-Group, UIS List of the endangered caves and karst (*B. Vogel, M. Parise, J.-M. Calaforra, P. Seiser, N. Uasapud Enríquez*)

A questionnaire is currently being prepared and will be sent to countries. This will also appear on the website.

J.-M. Calaforra will include this initiative by making a presentation at the Man and Karst Conference in Sicily.

b. Contact with the speleological groups of Mongolia, Tajikistan, and Morocco (*M. Mentens*)

M. Mentens has good contact with Moroccan cavers and has arranged to provide materials and equipment.

J.-M. Calaforra will help by contacting Spanish cavers who are active in Morocco. However, there is no response from organisations in either Tajikistan or Mongolia.

DECISION 2: Despite poor response, UIS Bureau agreed that further efforts should be made to contact Tajikistan and Mongolia.

Action 3: M. Mentens to continue to try and elicit a response from these countries.

c. Commissions activities – problems and future (*Z. Motyčka*)

Z. Motyčka restated the problems of keeping certain commissions active, engaged and encouraging them to report regularly. A decision needs to be made on which inactive commissions should be ended and a strategy devised to encourage individuals and groups to establish new commissions.

B. Vogel mentioned the termination of the biology commission and N. Colzato raised his concerns about no commission updates being provided for the bulletin.

ACTION 4: Z. Motyčka and N. Colzato to organise a meeting with Commission presidents by either late May or early June.

4) Updates on UNESCO Day of Caves and Karst proposal *(N. Zupan Hanja)*

N. Zupan Hanja has now submitted the draft document on the UIS proposal for the International Day of Caves and Karst to the Slovenian National Commission for UNESCO (SNCU). She thanked J. Gunn and P. Griffith for their assistance in formulating the document. It is still work in progress. After feedback from the SNCU the UIS can start looking for supporters among member countries, regional and national organisations, UNESCO commissions with UIS following UNESCO's protocols. G. Veni has information and data from the International Year of Caves and Karst (IYCK) that he will conclude in June that might dovetail into the document.

DECISION 3: UIS Bureau to continue to strongly support the development of the document.

ACTION 5: Bureau members to read through the document and send comments or corrections to N. Zupan Hajna.

ACTION 6: J.-M. Calaforra to prepare a template to tackle the issue of different languages.

5) Finance Update *(M. Garasic)*

The UIS currently has a balance of **88,000 EUR**. Some countries have continued to default on payment of subscriptions. The countries were listed. The website domain has been paid for a further two years. No money has been received from the French Speleological Federation (FFS) regarding the last ICS.

ACTION 7: M. Garasic to continue to chase countries that have defaulted on payment.

ACTION 8: J. Mattes to make further contact with FFS by contacting the UIS delegate B. Chirol.

6) UIS Media

a. UIS Bulletin *(N. Colzato)*

N. Colzato shared the proposed contents of the next bulletin with the meeting but is still waiting for a number of articles to be completed. The date for publication is currently July. No commission reports have been received to date. B. Vogel enquired about F. Diadonna's report on the UNEP assembly in Nairobi.

She commented that his support will be important regarding Africa regarding the IDCK.

b. UIS Website & Social Media *(N. Colzato, N. Uasapud Enríquez)*

N. Uasapud Enríquez shared a revised social media report following comments from the bureau on the original proposal. She emphasized the need for a single technical manager.

N. Zupan Hanja felt the proposals were still too ambitious given that the UIS depends entirely on volunteers.

J. Mattes thanked Rodrigo Severo for updating the website so quickly and efficiently in February.

B. Vogel suggested using a YouTube channel to bolster commission work.

N. Zupan Hanja will organize a meeting in Postojna to clarify J. Rijavec's current role vis a vis the documented proposals.

Z. Motyčka reminded the meeting that the call for speleological event support needed to be updated on the website as a matter of urgency. A discussion took place regarding the importance of the bureau/UIS approving the integrity of proposed website content.

ACTION 9: N. Colzato to update website regarding the call for speleological event support.

ACTION 10: N. Colzato as operations manager will receive additional support on social media and website matters from N. Uasapud Enríquez.

7) UIS Relationships with International Organizations

a. International Science Council, ISC Membership Category application, vote in progress *(J. Mattes)*

UIS application is still in progress. An email was sent to the bureau asking individuals to try and lobby their respective scientific unions and national academies for support. Only one reply received from G. Campion yet.

ACTION 11: Bureau members to contact their scientific unions national science academies and if they have connexions with them and request support for process of ISC membership.

b. Standing Committee for Gender Equality in Science *(J. Mattes, N. Uasapud Enríquez)*

J. Mattes, N. Uasapud Enríquez, and S. Sambento still working to gather support of colleagues to move this agenda forward.

8) Organization of the 19th ICS in Belo Horizonte, Brazil *(N. Colzato)*

Organisation of ICS in Belo Horizonte continues. Currently finalizing excursion details with colleagues. Website will have different language options. Registration for the ICS will commence from 1st July this year. N. Colzato confirmed that everything was on track.

9) Proposal to create a UIS International Governance Commission *(G. Veni, N. Zupan-Hanja)*

N. Zupan Hanja stated that the UIS Advisory Committee had questioned the autonomy of the commission and whether its purpose was commensurate with the values and interests underpinning UIS statutes. It can be argued that ‘governance is the bureau’.

G. Veni explained that the purpose of this commission was for the UIS to have greater impact on broader issues. It was acknowledged that this commission would principally be concerned with raising environmental issues especially those pertaining to cave and karst protection. There was also discussion on if it should be a commission or a committee.

B. Vogel raised the practical problem of the UIS/bureau capacity to respond to very short deadlines expected by outside agencies and bodies when applying for membership or funding.

ACTION 12: G. Veni and B. Vogel will review the comments of the Advisory Committee and send the Bureau a revised proposal.

DECISION 4: UIS Bureau to further discuss the IGC at the next bureau meeting after reviewing the revised proposal.

10) Proposal of two new categories for UIS awards for long-term distinguished service and intermediate/young speleologists (J. Mattes)

DECISION 5: UIS Bureau agreed that this issue will be discussed at the next bureau meeting.

ACTION 13: Any suggestions for changes to the proposal should be sent to J. Mattes until the next bureau meeting.

11) Attendance to future speleology events

a. 17th Balkan Cavers Camp

Zagreb (Croatia), May 29 to June 2, 2024

<https://www.balkan-cavers.org/>

b. 14th International Cave Rescue Conference

Ramales de la Victoria (Spain), 6-9 June, 2024

<https://espeleosocorro.es/14-th-international-cave-rescue-conference/>

c. 31st International Karst School

Postojna (Slovenia), 17-21 June, 2024

Topic: Data Acquisition and Analysis in Karst Systems

<https://iks.zrc-sazu.si/en/>

d. Man and Karst Conference

Ragusa Ibla, Sicily (Italy), 24-29 June, 2024

<https://cirs-ragusa.org/blog/man-and-karst-2024/>

e. Eurokarst 2024

Rome (Italy), 10-14 June, 2024

<https://www.eurokarst.org/>

DECISION 6: UIS Bureau members asked to consider these events and let Secretary General know whether they can attend.

12) Any other business

a. Venue of the International Congress of Speleology 2029

Short discussion followed regarding location of the 2029 ICS. There are a number of possibilities such as UK but nothing agreed yet. The announcement of next ICS may have been postponed until a country comes forward with a firm proposal.

DECISION 7: UIS Bureau members decided that, due to the short period between the last and the next ICS, proposals from UIS member countries to host the ICS 2029 will be accepted until autumn 2024.

b. Iran and national representation at UIS

UIS Membership of Iran was discussed. There are two organizations domestically vying for national recognition. The UIS is not in a position to mediate.

13) Closing Statements (N. Zupan-Hanja)

The President thanked bureau members for attending.

PARTICIPANTS OF THE UIS BUREAU VIRTUAL MEETING – APRIL 17, 2024



A TRIBUTE TO

REINHOLD HEINRICH SCHERRER (*René*)

Switzerland, 21.05.1933 - 03.03.2023

by

Saeed Hasheminezhad (*Iran*)

An Iranian Speleologist

sh_infinite1@yahoo.com

Reinhold Heinrich Scherer (René) was a strong old man, full of motivation and passion to live. He was President of the Swiss Speleological Society (SSS) 1986-1992, SSS Honorary President since 2006, and Swiss Delegate at the UIS and the European Speleological Federation (FSE).

In September 2008, we met for the first time during the International Speleological Expedition to Iran. We met again in 2011 at the International Conference of Salt Domes in Qeshm, Iran, and he was still full of life. In 2013, he played an essential role in our presence at the International Congress of Speleology in Brno, Czech Republic, when Iran joined UIS as a new member.

After the painful death of Leila at Eight-thousender peak (Gasherbrom), he told me that Leila was supposed to take him to Damavand peak (5,671 meters), so in 2014 I guided him to the peak and he climbed to the height of 4,200 m at the age of 81.

In 2015, I met him in Switzerland and heard his story of his trip to America by bicycle in 1962 and witnessed his legacy of caving books and material, and this friendship and reunions continued until his death in 2023.

The biggest lesson I learned from him was to have discipline, be punctual and be loyal to one's words.

Rest in peace in Heaven my friend. You will be always remembered by your true friends.



1962: René and the bike he used on a trip to the USA.
PHOTO TAKEN BY AN OLD JOURNAL BY SAEED HASHEMINEZHAD



2015: René and your "companion" bike, in Switzerland. PHOTO BY, SAEED HASHEMINEZHAD



2015: René and Saeed Hasheminezhad in Switzerland.
PHOTO BY SARAH EDALATIAN ARASTEH



2014: René in Mashhad, Iran.

PHOTO BY SAEED HASHEMINEZHAD

2016: René in Garmsar, Iran.

PHOTO BY SAEED HASHEMINEZHAD



UIS BUREAU 2022/2025

President

Nadja ZUPAN HAJNA (*Slovenia*)

Vice-President of Administration

Zdeněk MOTYČKA (*Czech Republic*)

Vice-President of Operations

Nivaldo COLZATO (*Brazil*)

Secretary General

Johannes MATTES (*Austria*)

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José María CALAFORRA (*Spain*)

Gerard CAMPION (*UK*)

Marc MENTENS (*Belgium*)

Mario PARISE (*Italy*)

Patricia SEISER (*USA*)

Nathalia Vanessa UASAPUD ENRÍQUEZ (*Colombia*)

Bärbel VOGEL (*Germany*)

UIS Past-Presidents

Arrigo A. CIGNA (*Italy*) - 1973-1981

Derek C. FORD (*Canada*) - 1986-1989

Paolo FORTI (*Italy*) - 1993-1997

Julia Mary JAMES (*Australia*) - 1997-2001

José Ayrton LABEGALINI (*Brazil*) - 2001-2005

Andrew EAVIS (*United Kingdom*) - 2005-2013

Kyung Sik WOO (*Republic of Korea*) - 2013-2017

George VENI (*USA*) - 2017-2022



UIS BUREAU 2022/2025 in Le Bourget-du-Lac, France, on July 31, 2022.

LEFT TO RIGHT: José María CALAFORRA (*Adjunct Secretary/Spain*); Patricia SEISER (*Adjunct Secretary/USA*); Mario PARISE (*Adjunct Secretary/Italy*); Johannes MATTES (*Secretary General/Austria*); Mladen GARAŠIĆ (*Treasurer/Croatia*); Gerard CHAMPION (*Adjunct Secretary/UK*); Zdeněk MOTYČKA (*Vice-President of Administration/Czech Republic*); Nadja ZUPAN HAJNA (*President/Slovenia*); Bärbel VOGEL (*Adjunct Secretary/Germany*); Nivaldo COLZATO (*Vice-President of Operations/Brazil*); Nathalia Vanessa UASAPUD ENRÍQUEZ (*Adjunct Secretary/Colombia*), and Marc MENTENS (*Adjunct Secretary/Philippines*)



Union Internationale
de Spéléologie
www.uis-speleo.org

LIST OF MEMBER COUNTRIES as reported by the UIS Treasurer

57 Members in June 2024

Argentina (2022)	Czech Republic (2024)	Malaysia (2024)	South Korea (2023)
Armenia (2023)	France (2021)	Mexico (2025)	Spain (2024)
Australia (2024)	Germany (2024)	Morocco (2025)	Sweden (2024)
Austria (2024)	Greece (2024)	Netherlands (2024)	Switzerland (2023)
Belgium (2024)	Hungary (2024)	New Zealand (2024)	Turkey (2024)
Bosnia and Herzegovina (2022)	India (2022)	Norway (2024)	United Kingdom (2025)
Brazil (2024)	Indonesia (2022)	Philippines (2022)	Ukraine (2025)
Bulgaria (2024)	Italy (2024)	Poland (2024)	<i>UIS Bureau decision: due to war, not paying until next ICS (2025)</i>
Canada (2022)	Japan (2023)	Portugal (2025)	USA (2022)
China (2023)	Lebanon (2025)	Puerto Rico (2022)	Venezuela (2025)
Colombia (2023)	<i>UIS Bureau decision: no debt, not paying until next ICS (2025)</i>	Romania (2022)	<i>UIS Bureau decision: no debt, not paying until next ICS (2025)</i>
Costa Rica (2022)	Lithuania (2024)	Serbia (2025)	Vietnam (2022)
Croatia (2024)	Luxembourg (2024)	Slovakia (2024)	
Cuba (2024 and half for 2025)		Slovenia (2024)	
Cyprus (2023)		South Africa (2024)	

UIS MEMBERS WITH DEBTS FOR 2020 OR MORE (LAST PAYMENT)

Iran IR (2020)
Israel (2020)

Kyrgyzstan (2018)
Libya (first fee still to be paid)

Mongolia (2019)
*UIS Bureau decision: UIS donation
of 2 years membership dues*

Please indicate WHO is paying for your country - especially if there are two or more speleological associations in your country. The UIS Bureau can't select the payer for your country and we don't return money.

If you have a new treasurer or responsible person for payments, please send the new name and e-mail address to garasic.mladen@gmail.com.

We do not know who to contact in some countries or we do not have their proper address.

UPDATE your status now!

CONTACT UIS

UNION INTERNATIONALE DE SPÉLÉOLOGIE
www.uis-speleo.org
Titov trg 2, 6230 Postona, Slovenia

If there are any irregularities, or if you have not found your country in this list, please, ask the UIS Treasurer Mladen Garasic

FINANCE

ANNUAL CONTRIBUTIONS

By Mladen GARAŠIĆ (Croatia), *UIS Treasurer* - garasic.mladen@gmail.com



Prof. Dr. Mladen GARAŠIĆ (Croatia), *UIS Treasurer*.

The UIS General Assembly at the 18th International Congress of Speleology (*Le Bourget-du-Lac, France, on July 31, 2022*) approved the new amended fee categories of member countries, which are based on the number of speleologists in the national organization or organizations that represent the country to the UIS.

The new annual contributions from 2023 are as follows:

Category A: 2,000 speleologists or more	480 Euros
Category B: at least 1,000 but fewer than 2,000	360 Euros
Category C: at least 500 but fewer than 1,000	240 Euros
Category D: at least 100 but fewer than 500	120 Euros
Category E: less than 100	60 Euros

If the fees are not paid for more than five years, the Member Country will lose its membership in the UIS.

The UIS Bureau may reduce or waive the fee of a Member Country if the Member Country makes a written request describing the reasons why it is having difficulties making its payments and how long those difficulties are expected to continue. All fee payments and related communications are conducted between the UIS Treasurer and the Member Countries.

UIS BANK ACCOUNT

Account name	Account N°
Mednarodna speleološka zveza-UIS Titov trg 2 6230 Postojna - Slovenia	IBAN SI56 1010 0003 7861 520
Bank (name and address)	SWIFT Code: BAKOSI2X
Intesa Sanpaolo Bank d.d. Traška 2 - 6230 Postojna - Slovenia	Accepted Currencies: EUR (Euros)

STATE OF UIS BANK ACCOUNT ON JUNE 30, 2024

EUR - Account balance = 38,815.31
USD - Account balance = 50,687.93



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Headquarters of the Karst Research Institute in Postojna, Slovenia, where the offices of the UIS are located. In the detail, the bronze plaque with the emblem of the UIS affixed below the name of the institute.

Calendar of Events

2024
2025

If you are interested in any of the following events, contact them directly to learn if they are still planned as announced below

Asian Trans-Disciplinary Karst 2024

UIS Bureau Annual Meeting

12-15 August 2024 (Yogyakarta, Indonesia)

<https://karst.geo.ugm.ac.id/en/main-page/>

International Conference on Subterranean Biology and International Symposium on Anchialine Ecosystems

9-14 September 2024 (Cagliari, Sardinia, Italy)

<https://www.abcdarkworld.com/icsb-conference/>

17th European Cave Rescue Association (ECRA) Meeting

19-22 September 2024 (Mostar, Bosnia and Herzegovina)

<https://www.caverescue.eu/>

2024 International Show Cave Association Conference

28 September - 6 October 2024 (Mulu National Park, Malaysia)

<https://www.i-s-c-a.org/>

9th US Geological Survey Karst Interest Group Workshop

22-24 October 2024 (Nashville, Tennessee, USA)

<https://www.usgs.gov/kig-workshop>

Middle East Speleology Symposium V (MESS 5)

22-25 October 2024 (Muscat, Sultanate of Oman)

info@speleoliban.org

Syphonia 2024 - International Meeting of Speleology

31 October - 3 November 2024 - (Caselle in Pittari, Salerno, Italy)

<https://www.tetide.org/syphonia2024/>

4th Appalachian Karst Symposium

7-10 November 2024 (Lewisburg, West Virginia, EUA)

<https://karstwaters.org/conferences/appalachian-karst-symposium-2024/>

Congreso Internacional

Aniversario 85 de la Sociedad Espeleológica de Cuba

21-25 January 2025 (Gibara, Holguín, Cuba)

presidentesec@ceniai.inf.cu

19th International Congress of Speleology

20-27 July 2025 (Belo Horizonte, Minas Gerais, Brazil)

<https://www.speleo2025.org/>

National Cave Management Symposium

6-10 October 2025 (Ely, Nevada, USA)

<https://nckms.org/>

EDITOR'S DISCLOSURE

Before submitting articles, please, refer to the
Guide for Submitting and Publishing Articles in the UIS Bulletin

[CLICK HERE TO DOWNLOAD THE FILE](#)

UIS Bulletin, nor its editors are responsible for:

- misspellings
- wrongly written names
- incorrect articles
- typographical mistakes

Every effort possible has been made to keep all articles as close to the original version.

In some cases, the editors review the structure in order to present the article in a clear and consistent manner and obvious errors are corrected if found.

We appreciate your understanding.

Should you have any question or comments, please send them to:

uisbulletin@uis-speleo.org



UIS BULLETIN



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