

## 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 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.