



**Union Internationale
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INTERNATIONAL SHOW CAVES ASSOCIATION

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To: Member Nations and Delegates of UIS and ISCA

Re: ISO karst proposal: position by UIS by ISCA

Dear Members and Delegates,

The International Organization of Standardization (ISO) has received a proposal to create a technical committee on karst for the standardization of:

- (1) "karst terminology;
- (2) sustainable development of karst resources, environmental protection and management of karst environment; and
- (3) investigation, assessment (including modeling methods and mapping of karst systems)."

That proposal is attached to this message.

The UIS Bureau and ISCA Board have reviewed this proposal carefully and have the following concerns and recommendations:

- 1) Karst science is a multidisciplinary, growing, and complex robust field. That creates a somewhat contradictory position that would benefit from standardization and also find it detrimental in some areas of karst where it is too early for standardization.
- 2) The proposal is admirable but too ambitious. At least a dozen subcommittees with distinct specialties will be needed to fulfill the proposal: hydrogeology, biology, engineering, tourism, mineralogy, climate, environmental studies, environmental management, etc. It will be difficult to assemble enough karst experts with broad international expertise in each field to develop effective, accurate, and useful standards. Unlike standards for a manufactured item, karst is a highly complex and diverse landscape, environment, and eco-groundwater system that varies tremendously around the globe. To overcome regional biases, it would be necessary to assemble enough internationally knowledgeable experts on a topic, or an even larger number of regionally knowledgeable experts on the topic. We believe it will be very difficult to assemble such groups for the approximately dozen needed subcommittees. A much more realistic approach, and what we advise strongly, is to reduce the scope of the committee to hydrogeologic monitoring and research methods. This is the most urgently needed topic and it best lends itself to standardization.

- 3) Tourism should be removed from the list for standardization. The UIS and ISCA, which represents the affected community of cave and karst tourist sites, worked together to develop such standards a few years ago. Those standards are already available.
- 4) Clarification is needed on several goals. For example, the mapping of karst systems could be anything from geologically mapping the physical extent of karst areas, to hydrologic boundaries of karst aquifers, biological boundaries of karst ecosystems, and/or mapping the size, shape, and contents of caves. If the goal is mapping the extent of karst globally, that was completed last year by an international team funded by the International Association of Hydrogeologists. If the goal is mapping caves, the UIS developed such standards long ago and continues to update and distribute them internationally. Clarification is needed for several goals, and mapping the extent of karst and caves should not be part of the “mapping” task.
- 5) Karst terminology has been standard for many years. It has been used internationally and published in many forms. Some regional variations are in use, most notably between Europe and the Americas, but the variations are generally understood. Occasionally some new terms are developed, such as a recent few from China, but they have also been understood and incorporated into the greater lexicon. In principle, we have no problem with standardization if it involves formally recognizing the long-established terminology, including major regional variations, and clarifies a few minor inconsistencies in usage. In practice, we don't see this as a priority since there is no notable terminology problem. We would oppose any terminology standard that would replace the long-established nomenclature with more recent or new words and phrases. This would cause chaos for scientific and management communications and understanding of the major and voluminous cave and karst literature.
- 6) The organizers of the proposal are from China. We work with China's International Research Center on Karst and the Institute of Karst Geology and have great appreciation and respect for their work. We are friends. However, the scope of their knowledge and experience as presented in the proposal is limited to China. It is concerning that they were apparently unaware of the show cave and cave mapping standards or the global karst mapping mentioned above. They did not list the well-known and important ASTM standards, the other major standardization organization, for groundwater monitoring in karst, or other national to regional standards that exist outside of China. Their proposal would be stronger and give greater confidence in developing international relevance if the examples they used as standards, and examples of some specific karst issues and research possibilities, were not all focused on China but included examples from several countries.
- 7) The UIS is mentioned in the proposal as a possible collaborator in distributing the results of the proposed ISO committee. On the one hand UIS is a logical organization for distributing the new standards internationally. UIS has 54 member countries and connections in other countries which are not current UIS members. However, UIS was not contacted for collaboration in distributing the information from the proposed committee. This would have been simple and would bolster the proposal. It may have been a simple oversight while rushing to complete the proposal by a deadline, but it may also reflect the above focus on programs and activities in China.

Our recommendation is to not accept the proposal in its current form. The broad scope is admirable, but not realistic. Parts of the proposal are redundant on existing standards. Clarification is needed on many of the concepts. General terms cannot be used for a topic as diverse and multidisciplinary as caves and karst. We strongly suggest that the proposal focus on one specific and well defined, achievable task.

As international organizations, the UIS and ISCA cannot participate directly with ISO. ISO is an organization of member countries represented by national organizations. If you agree with our concerns about the proposal, we urge you to quickly contact your ISO organization, listed at <https://www.iso.org/members.html>, and give them your views. You are welcome to share this letter. The deadline for comments will pass in a few days.

Many times ISO standards are used by governments, agencies, and other authorities to create rules for best practices. UIS and ISCA do not object to rules for best practices. We are concerned that best practices may not develop from the proposal as it is currently written.

If the proposal is approved in its current form, we encourage experts among our members to participate on the committee and make the results as good as possible.



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Form 1: Proposal for a new field of technical activity

Circulation date: 2018-02-28 Closing date for voting: 2018-05-23	Reference number (to be given by Central Secretariat)
Proposer: SAC	ISO/TS/P 272

A proposal for a new field of technical activity shall be submitted to the Central Secretariat, which will assign it a reference number and process the proposal in accordance with the ISO/IEC Directives (part 1, subclause 1.5). The proposer may be a member body of ISO, a technical committee, subcommittee or project committee, the Technical Management Board or a General Assembly committee, the Secretary-General, a body responsible for managing a certification system operating under the auspices of ISO, or another international organization with national body membership. Guidelines for proposing and justifying a new field of technical activity are given in the ISO/IEC Directives (part 1, Annex C).

The proposal (to be completed by the proposer)

Title of the proposed new committee (The title shall indicate clearly yet concisely the new field of technical activity which the proposal is intended to cover.) Technical Committee on Karst
Scope statement of the proposed new committee (The scope shall precisely define the limits of the field of activity. Scopes shall not repeat general aims and principles governing the work of the organization but shall indicate the specific area concerned.) Standardization in the field of karst terminology, sustainable development of karst resources, environmental protection and management of karst environment, as well as investigation and assessment (including modeling methods and mapping of karst systems).

Proposed initial programme of work (The proposed programme of work shall correspond to and clearly reflect the aims of the standardization activities and shall, therefore, show the relationship between the subject proposed. Each item on the programme of work shall be defined by both the subject aspect(s) to be standardized (for products, for example, the items would be the types of products, characteristics, other requirements, data to be supplied, test methods, etc.). Supplementary justification may be combined with particular items in the programme of work. The proposed programme of work shall also suggest priorities and target dates.

The compilation and revision of international standards on karst containing the standardization of terminology, sustainable development of karst resources, environmental protection and management of karst environment, as well as investigation and assessment.

The aim of management of karst environment is to facilitate sustainable development of karst resources and protection of the environment. Management of karst environment should be followed by investigation and assessment.

Investigation and assessment will focus mainly on karst, water resources, tourism, caves, geomorphology, and environmental or ecological vulnerability. Methods may include traditional ones such as slug, pumping, and tracing tests, as well as monitoring (e.g. cave mapping).

The standards are composed of three parts: the first part focuses on the terminology of karst, including the features, structure, formation and functions of karst systems; the second part focuses on sustainable development of karst resources (e.g. water, minerals, biological resources, tourism), environmental protection (e.g. karst desertification, surface collapse and depression, leakage, water pollution, seawater intrusion) and management of karst environment (e.g. prevention and mitigation); and the third part focuses on investigation and assessment (including modeling methods and mapping of karst systems).

If the new technical committee is approved, the first and second parts are highly recommended to be put forth. The establishment of international standards on terminology and sustainable development of karst resources, environmental protection and management of karst environment will be the basis for the development of other future related standards. Lastly, it is also highly recommended to develop standards related to investigation and assessment.

Indication(s) of the preferred type or types of deliverable(s) to be produced under the proposal (This may be combined with the "Proposed initial programme of work" if more convenient.)

- (1) Karst terminology.
- (2) Sustainable development of karst resources, environmental protection and management of karst environment.
- (3) Investigation, assessment (including modeling methods and mapping of karst systems).

A listing of relevant existing documents at the international, regional and national levels. (Any known relevant document (such as standards and regulations) shall be listed, regardless of their source and should be accompanied by an indication of their significance.)

There isn't any direct standards or documents on karst under ISO; however, some national, industrial or local standards have been published by China as follows:

GB 12329-1990 Karst geology terminology

YS/T 762-2011 Technical specification for mined area regeneration of karst accumulating type of bauxite

SL461-2009 Technical standards of integrated treatment to water loss and soil erosion in karst area

LY/T 2191-2013 Indexes system of observation at fixed station on rocky desertification ecosystem in karst area of Southwest China

DBJ/T45 Basic technical specification of building foundation in karst area of Guangxi

These standards played an important role to karst investigations and assessment, and provided experiences and technical basis for the serial standards' compilation in future.

A statement from the proposer as to how the proposed work may relate to or impact on existing work, especially existing ISO and IEC deliverables. (The proposer should explain how the work differs from apparently similar work, or explain how duplication and conflict will be minimized. If seemingly similar or related work is already in the scope of other committees of the organization or in other organizations, the proposed scope shall distinguish between the proposed work and the other work. The proposer shall indicate whether his or her proposal could be dealt with by widening the scope of an existing committee or by establishing a new committee.)

As the organization in charge of the Committee's operation, the International Research Centre on Karst (IRCK) under the Auspices of UNESCO and the Institute of Karst Geology of China (IKG) have been endowed with a professional team and staff on karst research, especially presided 6 IGCP (including currently executing "IGCP661") on global karst comparative studies; it bears the missions and demands to establish standards for karst.

So far, there hasn't been a TC nor a PC related to karst directly within the framework of ISO or IEC, hence there isn't any duplication or conflict.

A listing of relevant countries where the subject of the proposal is important to their national commercial interests.

China, USA, UK, Germany, France, Canada, Australia, Russia, South Africa, Bosnia and Herzegovina, Slovenia, Croatia, Poland, Thailand, Vietnam, India, Austria, Brazil, Iran, Indonesia, and Turkey have abundant resources and serious environmental problems due to the large karst distribution area. Karst scientists and experts from these countries have expressed their support for the creation of a TC on Karst.

A listing of relevant external international organizations or internal parties (other ISO and/or IEC committees) to be engaged as liaisons in the development of the deliverable(s). (In order to avoid conflict with, or duplication of efforts of, other bodies, it is important to indicate all points of possible conflict or overlap. The result of any communication with other interested bodies shall also be included.)

IRCK (International Research Center on Karst), UIS (Union of International Speleology) and IKG (Institute of Karst Geology of China) can be engaged as liaisons in the development of the deliverables.

No ISO and IEC committees are known to be impacted.

A simple and concise statement identifying and describing relevant affected stakeholder categories (including small and medium sized enterprises) and how they will each benefit from or be impacted by the proposed deliverable(s).

On a global scale, the karst area is estimated to reach 22 million sqm. It is now suffering from severe environmental degradation. The establishment of standards on terms, investigation, assessment, sustainable development of karst resources, as well as environmental protection and management of karst environment will facilitate the sustainable development, international academic exchange in the field of karst. Great social value and potential commercial value will thus be generated.

China is one of the most widespread countries of carbonate rocks in the world, with a total karst area of 3.44 million square kilometers. Diverse karst (including bare, covered and buried karst) is developing extensively, which can provide good examples for global scientists to carry out karst comparative studies.

The IKG has extensively and deeply cooperated with related research institutions from the USA, UK, Germany, France, Canada and other countries in the fields of karst carbon cycle, karst desertification control, speleology, karst water investigation and assessment, karst microorganisms and environmental remediation, and surface collapse monitoring and control, during the executions of IGCPs (e.g. IGCP-299, -379, -488, -513, -598 and -P661) and operation of IRCK under UNESCO.

An expression of commitment from the proposer to provide the committee secretariat if the proposal succeeds.

Should ISO approve the implementation of a technical committee, China is willing to undertake the secretariat of the new technical committee on karst.

Purpose and justification for the proposal. (The purpose and justification for the creation of a new technical committee shall be made clear and the need for standardization in this field shall be justified. Clause C.4.13.3 of Annex C of the ISO/IEC Directives, Part 1 contains a menu of suggestions or ideas for possible documentation to support and purpose and justification of proposals. Proposers should consider these suggestions, but they are not limited to them, nor are they required to comply strictly with them. What is most important is that proposers develop and provide purpose and justification information that is most relevant to their proposals and that makes a substantial business case for the market relevance and the need for their proposals. Thorough, well-developed and robust purpose and justification documentation will lead to more informed consideration of proposals and ultimately their possible success in the ISO IEC system.)

1. To provide uniform standards for karst investigation and assessment all over the world.

Karst is an extremely complicated system with high heterogeneity and anisotropy, many terms and methods applied to other mediums do not apply to karst, or may require specific adaptations. In addition, karst investigation and assessment are essential prerequisites for resource development and environment protection, thus uniform standards should be established for such objectives.

2. International standardization of karst technologies would facilitate sustainable development and environment protection.

The karst environment is among the most fragile and vulnerable on earth due to its specialty. The peculiarities of karst environment make it highly vulnerable to a number of geo-hazards. For example, the main categories of natural hazards are sinkholes, slope movements, and floods. In addition to these, anthropogenic hazards also have to be taken into account, such as pollution events, land use changes resulting in loss of karst landscape, karst desertification, destruction of karst landforms, etc. Standardization of karst technologies would promote geo-hazards mitigation, environment protection, and sustainable development.

3. To foster international academic exchange and commercial cooperation on karst.

Taking the international standardization of karst as a platform to attract and retain experts engaged in the fields of karst standardization. It will strengthen the international exchange and cooperation among related universities, research institutions and enterprises, with more chances for S&T cooperation and commerce being created.

Signature of the proposer

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Further information to assist with understanding the requirements for the items above can be found in [the Directives, Part 1, Annex C](#).