International Organization for Standardization
Organisation internationale de normalisation
Международная организация по стандартизации

TMB Secretariat
Vote Form
Number: **33/2018**
Date: 2018-05-26

ISO TECHNICAL MANAGEMENT BOARD

SUBJECT

Establishment of a new technical committee on *Karst*

BACKGROUND

Voting on the TS/P 272 on *Karst* closed on 23 May 2018.

The table of replies and comments received are attached in annex. Of the 38 replies, 16 member bodies voted in favour of the proposal, 5 voted against and 17 abstained. Of the 16 member bodies that approved the proposal, 5 have indicated that they wish to participate actively in the work.

According to the ISO/IEC Directives Part 1, clause 1.5.7, acceptance of such a proposal requires approval by a 2/3 majority of the national bodies voting and a minimum of five member bodies who voted in favour indicating they are willing to participate actively in the work. The proposal has therefore been accepted.

SAC (China), the proposer of this TS/P has offered to perform the duties of the secretariat. Normally the secretariat is allocated to the proposer.

Documents available:

- The proposal from SAC (form 1);
- The results and comments of the TS/P 272 *Karst*

ACTION

The members of the Technical Management Board are invited to:

- Approve the establishment of a new ISO/TC on Karst,
- and the allocation of the secretariat to SAC (China).

By **23 June 2018.**

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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 2191-2013Indexes 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 fieldshall 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 perquisites 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

Li Yubing
Director General
Department of International Cooperation,
SAC

Further information to assist with understanding the requirements for the items above can be found inthe Directives, Part 1, Annex C.

Report of voting

Ballot Information

Ballot reference	TS/P 272 - Karst
Ballot type	TMBTSP
Ballot title	Karst
Opening date	2018-02-28
Closing date	2018-05-23
French title	

Member responses - Votes by members

Country (Member body)	Date of reply	Agreement with proposal			Justification provided	Comments on scope	Additional comments	Consultation with stakeholders	Participation				Relevant documents
		Yes	No	Abs					S	P	O	N	
Argentina (IRAM)	2018-05-23			X				X			X		
Australia (SA)	2018-05-23		X		X			X			X		X
Austria (ASI)	2018-05-09			X				X		X			
Barbados (BNSI)	2018-04-17			X								X	
Bulgaria (BDS)	2018-05-11	X			X			X			X		
Canada (SCC)	2018-05-18	X			X			X		X			
China (SAC)	2018-05-11	X			X			X	X				X
Czech Republic (UNMZ)	2018-05-04			X							X		
Denmark (DS)	2018-05-22			X				X				X	
Estonia (EVS)	2018-05-22	X			X			X				X	
Finland (SFS)	2018-05-22			X				X				X	
France (AFNOR)	2018-05-22			X	X	X	X	X			X		
Germany (DIN)	2018-05-16		X		X		X	X			X		
Hungary (MSZT)	2018-05-17		X		X			X				X	
India (BIS)	2018-05-23	X			X			X			X		
Indonesia (BSN)	2018-05-17	X			X	X		X			X		X
Iran, Islamic Republic of (ISIRI)	2018-05-23	X			X	X	X	X			X		X
Israel (SII)	2018-05-21			X				X				X	
Italy (UNI)	2018-05-14			X				X			X		
Japan (JISC)	2018-05-08		X		X			X			X		
Korea, Republic of (KATS)	2018-05-14			X				X				X	
Latvia (LVS)	2018-05-11	X			X						X		
Lithuania (LST)	2018-05-23	X			X			X		X			
Totals (23)		**9**	**4**	**10**	**14**	**3**	**3**	**20**	**1**	**3**	**12**	**7**	**4**

Member responses - Votes by members

Country (Member body)	Date of reply	Agreement with proposal			Justification provided	Comments on scope	Additional comments	Consultation with stakeholders	Participation				Relevant documents
		Yes	No	Abs					S	P	O	N	
Netherlands (NEN)	2018-05-23			X				X				X	
New Zealand (NZSO)	2018-05-23			X				X			X		
Norway (SN)	2018-05-23	X			X	X	X	X			X		
Poland (PKN)	2018-05-23	X			X			X			X		
Portugal (IPQ)	2018-05-02	X			X					X			X
Russian Federation (GOST R)	2018-05-10	X			X			X		X			
Serbia (ISS)	2018-05-21	X			X			X			X		
Singapore (ESG)	2018-05-23			X				X				X	
South Africa (SABS)	2018-05-23			X			X					X	
Spain (UNE)	2018-05-22			X				X			X		
Sweden (SIS)	2018-05-23			X	X			X				X	
Switzerland (SNV)	2018-05-22	X			X		X	X			X		
Thailand (TISI)	2018-05-24	X			X			X			X		
United Kingdom (BSI)	2018-05-22			X				X				X	
United States (ANSI)	2018-05-14		X		X	X	X	X			X		X
Totals (38)		**16**	**5**	**17**	**23**	**5**	**7**	**33**	**1**	**5**	**20**	**12**	**6**

Comments from voters

Member	Comment	Date
Australia (SA) **Batt, Karen Ms.**	**Comment to Q.1:** There is not a well justified case for a new TC to be established at ISO. It is understood that the associations already established internationally have standards in place already and terminology in the area is already well understood and standards are not needed. **Comment to Q.6:** The UIS and ISCA have developed tourism standards already. The UIS also have already developed standards for the mapping of caves.	2018-05-23
Bulgaria (BDS) **Milanova, Kamelia Ms**	**Comment to Q.1:** The karst is widely spread in Bulgaria and its sustainable development as well as the rational use of karst resources are related to a number of current scientifici and practical problems. The new committee "Karst" is a chance for Bulgaria to take a decent place in world list of counties with karst territories. The inclusion of Bulgaria in the committee will be an incentive for the professional entry of more young peopleinto karst theme and standardization as well as a higher qualification in the karst of the Bulgarian institutions, authorized for its management and control. This gives us a reason to support the creation of a new committee on Karst.	2018-05-11
Canada (SCC) **Ersoy, Suzanna Mrs**	**Comment to Q.1:** Standardization on Karst is a urgent priority. Standards in this field would not only contribuite to public safety, the environment and the reduction in corporate expenditures releted to the subject matter, but will also instigate a larger undertanding and consistency in terminology in the fireld.	2018-05-18
China (SAC) **XING, Ran Ms**	**See linked comment file:** *TS P 272 - Karst SAC.docx* (access restricted to ballot audience)	2018-05-11

Comments from voters		
Member	**Comment**	**Date**
China (SAC) **XING, Ran Ms**	**Comment to Q.1:** 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). **Comment to Q.6:** 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 2191-2013Indexes 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.	2018-05-11
Estonia (EVS) **Merimaa, Martin Mr**	**Comment to Q.1:** As our national committee on Karst is currently in the very early establishing stage we do not wish to be eigter P- or O-member at the time being.	2018-05-22
France (AFNOR) **COSTES, Alain M.**	**Comment to Q.1:** **The proposed scope being very broad, the stakeholders had difficulty in understanding the outline and boundaries of possible standardization. The standardization of terminology, however, is one of the consensual aspects. Furthermore, the articulation between the future standardization work and existing regulations needs to be detailed.** **Comment to Q.2:** **The proposed scope is very large and some of the issues are already (or could be) covered by other technical committees such as :** **• ISO/TC 224 "Service activities relating to drinking water supply wastewater and stormwater systems" for example water resources;** **• ISO/TC 182 "Geotechnics" for geological and geotechnics" aspects;** **• ISO/TC 228 "Tourism and related services" for economic aspects.** **Comment to Q.3:** **The economic aspects will be difficult to deal with, the debates must focus on research and protection, as well terminology, measures and environmental assessments.** **The scope, as described is strongly focused on the "water resource" aspects. We must add the problems of natural risks related to collapses and geological heritage (caves ...).**	2018-05-22
Germany (DIN) **Todorovic, Maja Mrs**	**Comment to Q.1:** DIN disapproves for the following reasons: The broad scope is 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. **Comment to Q.3:** DIN has reviewed this proposal carefully and has the following concerns and recommendations: The scope as presented in the proposal is limited to Chinese experience. Proposers were apparently unaware of the show cave and cave mapping standards or the global karst mapping programs. The proposal did not list standards of other major organizations, e. g. for groundwater monitoring in karst, or other national to regional standards that exist outside of	2018-05-16

Comments from voters		
Member	**Comment**	**Date**
Germany (DIN) **Todorovic, Maja Mrs**	China. The proposal would be stronger and give greater confidence in developing international relevance if the examples 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. The proposal is admirable but too ambitious. At least a greater number of subcommittees or working groups with distinct specialties would be needed to fulfill the proposal: hydrogeology, biology, engineering, tourism, mineralogy, climate, environmental studies, environmental management, etc. It would 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 would be very difficult to assemble such groups for the approximately needed subcommittees or working groups. A much more realistic approach is needed, and what we advise strongly, would be to consider 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. 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. 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. 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. Any standardization should involves formally recognized 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.	2018-05-16
Hungary (MSZT) **Krantz, Domokos**	**Comment to Q.1:** This proposal cannot be supported in the current form. The subject matter is too general to have real use in application, a more limited scope would be more realistic and usable.	2018-05-17
India (BIS) **Bhawana, Bhawana Dr**	**Comment to Q.1:** Subject is of relevance to us.	2018-05-23
Indonesia (BSN) **Sagala, Konny Mrs**	**Comment to Q.1:** Indonesia is currently developing a criteria and a standard procedure for karst survey and management. The initiation of the TC Karst under ISO does echoes Indonesian efforts to have better standard and procedure, as well as regulation in order to have better management of karst areas for sustainable development. **Comment to Q.2:**	2018-05-17

Comments from voters		
Member	**Comment**	**Date**
Indonesia (BSN) **Sagala, Konny Mrs**	Karst areas are highly diverse depending on the local setting. It will be very difficult to establish a standard that is applicable for all karst areas. We suggest that the standard must be very generic which more like a guide line or procedures rather than very technical criteria **Comment to Q.6:** 1) Government Decree on National Spatial Planning (PP 26 Year 2008) which is considered karst area is a protected area under geological heritage criteria. Under this criteria karst area is considered as an area of unique landscape 2) Ministerial Decree on Designation of Karst Landscape as Protected Area (Permen 17 Menteri ESDM 2012 tentang Kawasan Bentang alam Karst). The decree provides criteria and standard procedure for karst survey and designating karst area for protected area. This decree is a revised version of the previous regulation (Kepmen 1456 Year 2000) on karst zonation and standard karst survey procedure 3) Indonesia is drafting an Government Decree of Karst Protection and Management 1) Government Decree on National Spatial Planning (PP 26 Year 2008) which is considered karst area is a protected area under geological heritage criteria. Under this criteria karst area is considered as an area of unique landscape 2) Ministerial Decree on Designation of Karst Landscape as Protected Area (Permen 17 Menteri ESDM 2012 tentang Kawasan Bentang alam Karst). The decree provides criteria and standard procedure for karst survey and designating karst area for protected area. This decree is a revised version of the previous regulation (Kepmen 1456 Year 2000) on karst zonation and standard karst survey procedure 3) Indonesia is drafting an Government Decree of Karst Protection and Management	2018-05-17
Iran, Islamic Republic of (ISIRI) **Ghasemi, Elham Mrs.**	**Comment to Q.1:** Karst outcrops in 11 % of Iran' land and it increases to 23 % in southern Iran. It is the main sources of drinking water. Karst is the most vulnerable water resources due to extensive conduit system. The standardization of caves protection, the buffer zone of springs, sinkholes and ploje is the most important to protect vulnerable karst features. Provide an international cooperation and correlation platform for karst geology, geomorphology, hydrogeology and relevant resources and environmental problem. Help to connect scientists in karst community of IAH karst commission, Iranian Cave Association, UIS and IGCP **Comment to Q.2:** Water resources, monitoring technology of karst critical zones especially caves should be highlighted in the proposal **Comment to Q.3:** IAH karst commission(KC) and UIS, Iranian Cave Association are strongly suggested to be involved in the proposal as partners **Comment to Q.6:** The buffer zone of springs has been defined by the Ministry of power, but it must be revised for karst springs.	2018-05-23
Japan (JISC) **Sato, Fumikazu Mr**	**Comment to Q.1:** JISC disapproves the proposal.	2018-05-08

Comments from voters		
Member	**Comment**	**Date**
Latvia (LVS) **Kukule, Aiva Ms**	**Comment to Q.1:** Karst formations are existing in Latvia in populated areas, subjected to civil construction and agricultural activities – approximately 8% of total state area. Our karst formations consist mostly of carbonate karst and sulphate karst. We are interested in the development of karst standards series within proposed ISO/TC/P 272.	2018-05-11
Lithuania (LST) **Jonevicius, Vaclovas Mr**	**Comment to Q.1:** Standartization in the field of karst terminalogy, enviroment protection and management of karst environment in Lithuania is very important especialy in nord-east part of Lithuania were karst area is located.	2018-05-23
Norway (SN) **Kristoffersen, Anne Ms.**	**See linked comment file:** *TS P 272 - Karst SN.doc* (access restricted to ballot audience) **Comment to Q.1:** SN is positive to standards in the field of karst and to develop common international standards, but when doing so, care should be taken to make sure that the standardization activity is built on a closely coordinated with other international work in this area, see our comment file. **Comment to Q.2:** The priority areas of standardization from a Norwegian point of view are: • standardization methods for investigation and mapping of karst for different needs. Common methods for mapping and investigations are of great importance and will form a basis for sustainable use of karst areas. • protection and sustainable use and development of karst and caves related to tourism activities. An ISO standard could play an important role for fulfilment of national regulation in Norway in this field. The NWI proposal describes three areas for standardization. We would recommend all 3 of them as priority areas. **Comment to Q.3:** See our comment file.	2018-05-23
Poland (PKN) **Terlecki, Piotr Mr**	**Comment to Q.1:** We approve of the proposal.	2018-05-23
Portugal (IPQ) **Isidoro, Alexandra Mrs**	**Comment to Q.1:** Due to specificity of karst, special methods of assessment and management should be developed. The exchange of experiences among international teams and the standardization of the methods will be a very important issue. **Comment to Q.6:** A law concerning the definition of protection areas for public wells (Decreto-lei 382-99) includes a special section for well located in karst regions.	2018-05-02
Russian Federation (GOST R) **Deryabina, Anastasiya Mrs**	**Comment to Q.1:** In consultation with stakeholders, the Federal Agency for technical regulation and Metrology expresses the readiness of the Russian Federation to participate in the work of this TC as a P-member and intends to delegate responsible representatives.	2018-05-10
Serbia (ISS) **Petrovic, Ljubica Mrs**	**Comment to Q.1:** ISS NTC U113 - Hydrometry fully supports the initiative for establishing ISO committee for Karst.	2018-05-21
South Africa (SABS) **Thibedi, Neo Ms**	**Comment to Q.3:** not in use	2018-05-23

Comments from voters		
Member	**Comment**	**Date**
Sweden (SIS) **Danoglou, Despina Mrs**	**Comment to Q.1:** In order to avoid overlaps between the work of this new ISO/TC and ISO/TC 190 Soil quality, SIS proposes to evaluated the published standards and the current work programme of ISO/TC 190.	2018-05-23
Switzerland (SNV) **Hasler, Melanie Ms**	**Comment to Q.1:** Switzerland agrees with the proponents that standardization could, to some degree, help protecting the karst environment and advocate in favour of a concerted reflexion on the procedures and methods used in presence of karst. Therefore, we support the creation of a new technical committee. Switzerland has experts in the field of karst, which are interested in standardization. However, until today, we didnt get a definitive commitment. Hence, we cant choose the P-membership yet. **Comment to Q.3:** While we fully support the idea of defining minimal standards in relation to karst, we feel the proposal, in its present form, is too vaguely conveyed to make a strong appreciation. Several points including the terminology and assessment procedures could gain in normalization at an international level. However, the proposal also suggests standardization with respect to modelling methods and mapping of karst systems, which would be strongly counter-productive. Karst, by definition, is a very heterogeneous medium where site-specific constraints need to be considered. This is particularly true in terms of sustainability, where a strict standardization could hinder creative mitigation measures.	2018-05-22
Thailand (TISI) **Nuanngam, Krongtham Ms**	**Comment to Q.1:** We approve this proposed technical committee for the reason that the development of international standards on karst would positively affect large global area of karst environment.	2018-05-24
United States (ANSI) **Team, ANSI ISO**	**Comment to Q.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. **Comment to Q.2:** • The proposal is too ambitious. At least a dozen subcommittees with distinct specialties will be needed with the proposal: hydrogeology, biology, engineering, tourism, mineralogy, climate, environmental studies, environmental management, etc. We are concerned if enough karst experts with broad international expertise can be pulled together 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. ANSI believes it will be very difficult to assemble such group for the approximately dozen needed subcommittees. A much more realistic approach may be 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. • We do not support that tourism should be part of this scope as there are organizations (UIS and the International Show Caves Association) have developed standards in this area years ago.	2018-05-14

Comments from voters		
Member	**Comment**	**Date**
United States (ANSI) Team, ANSI ISO	**Comment to Q.3:** • Clarification is needed on the goal of mapping karst systems. This 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. These two tasks should not be part of the “mapping” task. • Regarding proposed standardization of terminology, this has been standard for many years and widely used internationally and published in many forms. There are regional variations in some use, most notably between Europe and the Americas, but the variations are also well understood. In principle, ANSI has 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. ANSI 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 communications and understanding of the major and voluminous karst literature. • Noting the diversity in karst sites globally, and the diverse social and economic drivers as well as various environmental statutory and regulatory provisions that address karst issues, we do not see value in a standard that would lay out a “one size fits all” approach. However, a standard that provides information on approaches and “best practices” used at different types of sites may be useful as reference to practitioners globally. • Karstification in carbonate (limestone, dolomite and marl rock types) is a long term process based on carbonate solubility in acidic ground water recharge via precipitation or other water sources. Rates of carbonate dissolution vary (due to non-carbonate impurities and geochemical variables) leading to variable maturity of karst features. Some karst rocks may have barely noticeable solution enhancement of existing fractures, others have isolated dissolution conduits (caves), others have cavernous networks, and in tropical areas, dissolution is so extensive that only isolated towers of rock remain, all other material eroded by dissolution. The true nature of karst is a continuum. As a continuum, it is extraordinarily difficult to make yes/no decisions so as to generate and apply ISO standards. There are no easy or natural dividing lines. • Given the diverse statutory and regulatory provisions that address karst issues, karst issues may be best addressed on a site-specific basis. Harmonizing diverse state and federal program needs nationally, let alone internationally, to standardize approaches to karst management globally seems counter-productive to improving public health protection in karst. **Comment to Q.6:** • An update to the ASTM International Standard D 5717 – 95, “Standard Guide for Design of Ground-Water Monitoring Systems in Karst and Fractured-Rock Aquifers” is now under consideration. It is important to avoid duplication or conflicts between the two potential international standards of ASTM International and ISO. ANSI recommends that the new committee, if formed, work carefully to coordinate its efforts with ASTM International Committee D18 on Soil and Rock, which engages about 1200 members from 40 different	2018-05-14

Comments from voters		
Member	**Comment**	**Date**
United States (ANSI) Team, ANSI ISO	countries to develop more than 350 standards that cover a broad range of geotechnical and geoenvironmental areas. The full body of work and list of current standards and open work items are available on the Committee's website, located here: https://www.astm.org/COMMITTEE/D18. • In addition to existing international activities, we understand that there are a number of relevant existing documents and standards for a number of countries at national and subnational levels. If a new technical committee is formed, we recommend that a global literature review be undertaken as an initial step. This should include outreach and engagement with relevant governmental agencies and stakeholders in the U.S., Canada, the European Union, and others for existing resources that may or may not be readily available to the public. • ISO/TC113, Hydrometry, SC 8, Ground Water provides standardization of methods and procedures relating to the direct measurement and inferential techniques to determine ground-water movement, availability, recharge, discharge, and the determination of aquifer properties. Karst science is a broad field that encompasses many disciplines. The SAC proposal provides opportunities to engage ISO/TC113/SC8 as a liaison with regards to availability and movement of ground water in karst areas and avoid duplication of efforts. Specific collaborative opportunities within the current scope of ISO/TC113 include terminology and symbols; collection, evaluation, analysis, interpretation and presentation of hydrometric data; and assessment of aquifer properties. • While the geologic standards referenced appear to be mainly technical in nature (e.g., SL461-2009 Technical standards of integrated treatment to water loss and soil erosion in karst area), item 2 of the proposal appears to be focused on management of environmental aspects and conditions, and has potential for significant overlap with ISO/TC 207. If the proposal moves forward to establish a new TC, as opposed to pursuing the work either within TC207 or within TC 182 on Geotechnics, the new committee should keep this in mind and consider joint working group opportunities, for example if they have interest in developing a standard on environmental management systems in karst regions/topographies, storm water management in karst topographies, or life cycle assessment in relation to karst resources.	2018-05-14

Member responses - Votes not cast (123)
Afghanistan (ANSA)
Albania (DPS)
Algeria (IANOR)
Angola (IANORQ)
Antigua and Barbuda (ABBS)
Armenia (SARM)
Azerbaijan (AZSTAND)
Bahamas (BBSQ)
Bahrain (BSMD)
Bangladesh (BSTI)
Belarus (BELST)
Belgium (NBN)
Belize (BZBS)
Benin (ANM)
Bhutan (BSB)

Member responses - Votes not cast (123)
Bolivia, Plurinational State of (IBNORCA)
Bosnia and Herzegovina (BAS)
Botswana (BOBS)
Brazil (ABNT)
Brunei Darussalam (NSC)
Burkina Faso (ABNORM)
Burundi (BBN)
Cambodia (ISC)
Cameroon (ANOR)
Chile (INN)
Colombia (ICONTEC)
Congo, The Democratic Republic of the (OCC)
Costa Rica (INTECO)
Côte d'Ivoire (CODINORM)
Croatia (HZN)
Cuba (NC)
Cyprus (CYS)
Dominica (DBOS)
Dominican Republic (INDOCAL)
Ecuador (INEN)
Egypt (EOS)
El Salvador (OSN)
Eritrea (ESI)
Ethiopia (ESA)
Fiji (DNTMS)
Gabon (AGANOR)
Gambia (TGSB)
Georgia (GEOSTM)
Ghana (GSA)
Greece (NQIS ELOT)
Guatemala (COGUANOR)
Guinea (IGNM)
Guyana (GNBS)
Haiti (BHN)
Honduras (OHN)
Hong Kong (ITCHKSAR)
Iceland (IST)
Iraq (COSQC)
Ireland (NSAI)

Member responses - Votes not cast (123)
Jamaica (BSJ)
Jordan (JSMO)
Kazakhstan (KAZMEMST)
Kenya (KEBS)
Korea, Democratic People's Republic of (CSK)
Kuwait (KOWSMD)
Kyrgyzstan (KYRGYZST)
Lao People's Democratic Republic (DOSM)
Lebanon (LIBNOR)
Luxembourg (ILNAS)
Macao (CPTTM)
Madagascar (BNM)
Malawi (MBS)
Malaysia (DSM)
Mali (AMANORM)
Malta (MCCAA)
Mauritania (DNPQ)
Mauritius (MSB)
Mexico (DGN)
Moldova, Republic of (ISM)
Mongolia (MASM)
Montenegro (ISME)
Morocco (IMANOR)
Mozambique (INNOQ)
Myanmar (DRI)
Namibia (NSI)
Nepal (NBSM)
Nicaragua (DNM)
Niger (DNQM)
Nigeria (SON)
Oman (DGSM)
Pakistan (PSQCA)
Palestine, State of (PSI)
Panama (COPANIT)
Papua New Guinea (NISIT)
Paraguay (INTN)
Peru (INACAL)
Philippines (BPS)
Qatar (QS)

Member responses - Votes not cast (123)
Romania (ASRO)
Rwanda (RSB)
Saint Kitts and Nevis (SKNBS)
Saint Lucia (SLBS)
Saint Vincent and the Grenadines (SVGBS)
Saudi Arabia (SASO)
Senegal (ASN)
Seychelles (SBS)
Sierra Leone (SLSB)
Slovakia (UNMS SR)
Slovenia (SIST)
Sri Lanka (SLSI)
Sudan (SSMO)
Swaziland (SWASA)
Syrian Arab Republic (SASMO)
Tajikistan (TJKSTN)
Tanzania, United Republic of (TBS)
The Former Yugoslav Republic of Macedonia (ISRM)
Trinidad and Tobago (TTBS)
Tunisia (INNORPI)
Turkey (TSE)
Turkmenistan (MSST)
Uganda (UNBS)
Ukraine (DSTU)
United Arab Emirates (ESMA)
Uruguay (UNIT)
Uzbekistan (UZSTANDARD)
Viet Nam (STAMEQ)
Zambia (ZABS)
Zimbabwe (SAZ)

Template for comments and secretariat observations

Date: 2018-05-18	Document: **ISO NWIP Technical committee on karst (ISO/TS/P 272)**	Project: ISO

MB/ NC[1]	Line number (e.g. 17)	Clause/ Subclause (e.g. 3.1)	Paragraph/ Figure/ Table/ (e.g. Table 1)	Type of comment[2]	Comments	Proposed change	Observations of the secretariat
NO					**Input from stakeholders** To collect input to this new work item, Standards Norway has been in contact with • Environmental national and regional authorities • University • Research institutes • Consultants • National geologists • National geotechnical Institute • Norwegian geological mapping institute • Tourism companies • Museums • Norwegian mineral industry We arranged for a national meeting on 18 of May, and 7 experts participated at this meeting. **Karst situation in Norway** Norway has some karst areas and they are mainly used for adventures tourism (caves climbing and diving) and extraction of minerals. There are two national mapping projects running related to karst: 1. National mapping of karst areas and caves and development of an action plan for protection of them 2. Vulnerability assessment of selected habitats and geomorphology including karst.		

1 **MB** = Member body / **NC** = National Committee (enter the ISO 3166 two-letter country code, e.g. CN for China; comments from the ISO/CS editing unit are identified by ******)

2 **Type of comment:** **ge** = general **te** = technical **ed** = editorial

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					Our national geotechnical institute has been involved in several international projects related to investigations of karst areas and assessment of areas related to the planning phase of new infrastructure, dams and tunnels. Investigations has been done using georadar (equipment developed in Norway). We do not have national standards specific for karst. There exist European standards for Geotechnical Investigation and Testing, but not related to karst. Our main national concerns related to caves from karst, is the • methods for mapping and investigations of karst areas • developing data suitable for land-use planning • vulnerability of these areas • protection of the natural and cultural heritage and information in karst caves which can be destroyed by tourism activities • risks for tourism and adventure activities. Lately there has been 3 drowning accidents in Norway related to use of water filled caves **National position on the New work item proposal and the need for coordination** Standards Norway is positive to standards in the field of karst and to develop common international standards, but when doing so, care should be taken to make sure that the standardization		

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					activity is built on and closely coordinated with other international work in the following committees/associations: • The Union Internationale de Spéléologie (UIS) http://www.uis-speleo.org/ UIS has developed terminology in the area and should serve as a basis for international ISO terminoloy • The International Show Caves Association (I.S.C.A.) http://www.i-s-c-a.com/news • The international Union for Conservation of Nature (IUCN) https://www.iucn.org/ in general and their : Guidelines for the application of IUCN Red list of Echosystems Categoreies and Criteria https://www.iucn.org/sites/dev/files/content/documents/rle_guidelines_draft_dec_2015.pdf • British cave research association http://www.bcra.org.uk/ has developed methods for mapping and measuring • ISO/TC 228 Tourism and related services. This committee has developed standards for adventures tourism, see https://www.iso.org/committee/375396/x/catalogue/p/1/u/0/w/0/d/0 • ISO/TC 113 Hydrometry https://www.iso.org/committee/51678.html **Scope** The priority areas of standardization from a Norwegian point of view are:		

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					• Standardized methods for investigation and mapping of karst (radar, seismic or other methods) for different needs (national mapping, investigations for the planning of dams, tunnels and other infrastructure). Common methods for mapping and investigations are of great importance and will form a basis for sustainable use of karst areas. • Protection and sustainable use and development of karst and caves related to tourism activities. An ISO standard could play an important role for fulfilment of national regulation in Norway in this field The New Work item proposal describes 3 areas for standardization We would recommend all 3 of them as priority areas. **Participation** Standards Norway would like to join this work as an observer if/when it is approved. At this moment we do not have national experts who has committed themselves to participate actively in the work because it depends on the costs and areas for standardization. We do have several interested stakeholders and will strongly consider active participation as soon as the committee is established.		

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Template for comments and secretariat observations

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MB/ NC[1]	Line number (e.g. 17)	Clause/ Subclause (e.g. 3.1)	Paragraph/ Figure/ Table/ (e.g. Table 1)	Type of comment[2]	Comments	Proposed change	Observations of the secretariat

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