

KARST/SPELEOLOGICAL SUBJECT CLASSIFICATION DRAFT PROPOSAL FOR MODIFICATION

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Introductory comments:

The **Speleological Subject Classification (SSC)** presently used for the Speleological Abstracts has numerous logical controversies in its structure. It does not correspond to the state of art in the field of karst and cave science. It does not meet adequately the needs of both karst/cave science and practical speleology. It does not seem possible to improve it through minor modifications and further deepening of existing codes.

There is a great need to modify the classification so that most of karst and cave scientists and cavers could widely use it for bibliography filing and search. If sufficiently universal scheme developed and adopted by most of relevant organisations and workers, it would greatly facilitate an exchange and spreading of information, provide a better basis for co-operation between different karst/cave related organisations. Such scheme is especially valuable for bibliography publications, for "Speleological Abstracts" in particular, which require unambiguous placement of items.

Examples of some of the most obvious controversies in the current SSC are given below:

- GEOCHEMISTRY is placed under KARST MORPHOLOGY AND MORPHOGENESIS parent;
- GLACIATIONS is placed under GEOLOGY AND PEDOLOGY parent;
- the presence of the topic MORPHOLOGY AND SPELEOGENESIS IN CARBONATE ROCKS within GEOSPELEOLOGY parent means that all range of related items for gypsum caves, for instance, can not be classified here but must all be places to PARAKARST IN EVAPORITES.
- PARAKARST, PSEUDOKARST, AND HYPOKARST topic (1.2.2) exist on the third level under GEOSPELEOLOGY; same topics for various lithologies (1.4 - 1.8) exist on the second level. The latter means that these SPECIAL KARSTS, PARAKARSTS AND HYPOKARSTS are something different then topics KARSTOLOGY and GEOSPELEOLOGY respectively (classified on the same level);
- HISTORY OF SPELEOLOGY, PERSONALIA, SOCIAL SCIENCE AND COLLECTABLES - are all placed as high-level sub-topics into ANTROPOSPELEOLOGY parent!;
- ENVIRONMENT with the wide karstological meaning is placed under APPLIED SPELEOLOGY parent;
- CONGRESSES and UIS sub-topics are placed under TECHNICAL SPELEOLOGY parent.

It is easy to multiply examples.

One of the main problems is that everything related to lithologies other than carbonate rocks must be classified under certain lithological topics. However, gypsum karst and caves, for example, need to be classified with the same wide range of topics as for carbonate rocks (and it is, according to modern views, "normal" karst rather than parakarst), which can not be done within the current scheme. Or this can be done by repeating the whole classification under PARAKARST IN EVAPORITES, starting from the third level, which is totally unreasonable. Moreover, PARAKARST IN EVAPORITES is under GEOSPELEOLOGY parent but there is nothing for evaporates under KARSTOLOGY parent; where then items related to gypsum karst (not caves) should be placed?

Another major problem is that thematic and regional codes are applied as an alternative options only. Most of thematic works are produced with special reference to certain region, but within the current scheme they can be classified alternatively only under thematic code, or under regional code.

This situation makes ineffective bibliography search as many relevant works are just "lost" for thematic, or for regional search being placed to the alternative code.

Many important topics are missed at all, and can not be incorporated by further deepening of existing codes of 2-nd or 3-rd levels because of logical controversies.

The starting point for the development of this draft "Karst & Speleological Subject Classification" was the SSC draft, version 0.3 released by the UIS Informatics Commission (P.Matthews). It was attempted to follow the structure of the current scheme to a maximum possible extent, at least for the 1-st and 2-nd levels. But some radical changes are to be inevitably introduced if we want to eliminate major problems outlined above.

There are still some problems to be solved within the suggested draft, for instance, the way to assign codes for countries. It should allow room to change these codes as political division changes; this still can not be done sufficiently easy within the used format. There are, certainly, plenty of possibilities to further subdivision of the topics.

This draft is informally issued for preliminary discussion between experts in different fields of karstology and speleology.

Important: all current work on bibliography for the Speleological Abstract must be performed using existing classification, until any modification of this scheme will be approved by the UIS Bibliography Commission.

KARST/SPELEOLOGICAL SUBJECT CLASSIFICATION DRAFT PROPOSAL FOR MODIFICATION

General rules:

1. Any topic is allowed to be divided into not more than 10 sub-topics at the one level. Hence each sub-topic can always be represented by a single digit code (0-9). A reference string which consist solely of digits will therefore remain unambiguous as to the sub-classification intended.
2. Two of the general codes ate to retain the following consistent meanings: 0 - General: Matters which could apply to all or several classifications under the parent classification; 9 - Other: Specific topics which fall under the parent topic but which are not covered by any of the existing topic at the level.
3. The maximum depth of subdivision allowed is up to 8 levels, e.g. 1.2.4.8.4.1.7 .

4. Thematic Codes (TC:): Up to three thematic codes are allowed for multy-subjected works, but the first code is considered as the main one and used cases when unambiguous classification is needed (for instance, when organizing material in bibliography publications). Other thematic codes can be used for cross-refferencing. Where an item could be classified in more than one way, preference for the first code should be given to the more specific or more emphasized topic. Where an item relates to several sub-classifications under the one parent, then choose the parent classification. Materials without any thematic emphasis (descriptive ones) can be given with regional code only.

5. Level of abstraction: There is also a need to designate the level of abstraction of material, i.e. the distance removed from a primary source. It is proposed that wherever possible a letter suffix be added to the classification code chosen for material, e.g. 1.1.2b:

a - Primary material: expedition reports, cave descriptions, maps, surveys. research reports, etc.

b - Secondary material: general books, karst atlases, summaries of previous accounts, journal articles, etc.

c - Tertiary material: indexes, catalogues, bibliographies, databases, etc.

6. Regional codes (RC:): It is proposed that a regional code as a single code be given for primary materials as well as for regional lists, catalogues, databases, inventories, etc. For most other materials a regional code (RC:) must be given in parallel to a thematic code (TC:). Materials without any regional connection can be given with thematic code only.

6. Lithologic type of karst/caves: As most of thematic and regional codes may apply for all major karstified lithologies, it is proposed that lithological type of karst or caves be indicated by a letter suffix added to the classification code chosen for material, e.g. 1.1.2g: l - limestone; m - marble; d - dolomite; g - gypsum/anhydrite; s - salt; k - conglomerate.

1. KARSTOLOGY AND GEOSPELEOLOGY

1.1 KARSTOLOGY

1.1.0 GENERAL TOPICS

- 1.1.0.1 KARST PROCESSES AND PHENOMENA; KARST SYSTEMS: DEFINITIONS, STRUCTURE, FUNCTIONING, KARSTOGENETIC ENVIRONMENTS.
- 1.1.0.2 TYPOLOGY AND CLASSIFICATIONS OF KARST
- 1.1.0.3 PHYSICAL CHEMISTRY OF KARST PROCESSES, NUMERICAL MODELS
- 1.1.0.4 DISSOLUTION FROM FIELD OBSERVATIONS, SOLUTION RATES

1.1.1 KARST MORPHOLOGY AND MORPHOGENESIS (for cave morphology see 1.2.1)

- 1.1.1.1 EPIKARST: STRUCTURE, PROFILES, MORPHOGENETIC MECHANISMS (for epikarst hydrology see 1.1.2.3.1)
- 1.1.1.2 SUPERFICIAL MORPHOGENETIC PROCESSES AND FORMS
 - 1.1.1.2.1 Karren and other small solution features
 - 1.1.1.2.2 Solution dolines
 - 1.1.1.2.3 Collapse and subsidence depressions
 - 1.1.1.2.4 Allogenic input forms, dry valleys, sinks
 - 1.1.1.2.5 Output forms, pocket valleys
 - 1.1.1.2.6 Poljes
 - 1.1.1.2.7 Residual hills
 - 1.1.1.2.8 Depositional features
 - 1.1.1.2.9 Other features
- 1.1.1.3 MORPHOMETRIC ANALYSIS OF KARST LANDFORMS
- 1.1.1.4 TYPOLOGY AND CLASSIFICATION OF KARST LANDFORMS AND LANDSCAPES
- 1.1.1.5 KARST GEOMORPHOLOGICAL MAPPING
- 1.1.1.6 KARST LANDSCAPES EVOLUTION, GEOMORPHIC HISTORY OF KARST TERRAINS

1.1.2 KARST HYDROLOGY AND HYDROGEOLOGY

- 1.1.2.1 KARST HYDRO(GEO)LOGIC SYSTEMS AND AQUIFERS: STRUCTURE, PHYSICAL CHARACTERISTICS, FLOW PROPERTIES AND CONTROLS, BOUNDARY CONDITIONS
 - 1.1.2.1.1 Local and regional characteristics, case studies
- 1.1.2.2 SUPERFICIAL KARST HYDROLOGY
 - 1.1.2.2.1 Overland flow
 - 1.1.2.2.2 Soil hydrology
 - 1.1.2.2.3 Intermittent streams, sinkholes
 - 1.1.2.2.4 Lakes
 - 1.1.2.2.5 Poljes
 - 1.1.2.2.6 Springs
 - 1.1.2.2.7 Rivers in karst areas
- 1.1.2.3 HYDRODYNAMIC ZONES IN KARST; KARST HYDROLOGY IN SPECIFIC ZONES AND SETTINGS
 - 1.1.2.3.1 Epikarst zone
 - 1.1.2.3.2 Vadose zone
 - 1.1.2.3.3 Phreatic zone
 - 1.1.2.3.4 Deep circulation zone
 - 1.1.2.3.5 Confined settings
 - 1.1.2.3.6 Coastal settings
- 1.1.2.4 ANALYSIS OF KARST HYDROGEOLOGIC SYSTEMS: GENERAL METHODOLOGY
 - 1.1.2.4.1 Experimental basins
 - 1.1.2.4.2 Hydrograph and chemograph analysis, component separation

- 1.1.2.4.3 Water balance (budget)
- 1.1.2.4.4 Statistical and stochastic methods
- 1.1.2.4.5 Borehole analysis
- 1.1.2.4.6 Water tracing
- 1.1.3.4.7 Natural isotopes analysis
- 1.1.3.4.8 Numerical modelling

- 1.1.2.5 EVLUTION OF KARST HYDROLOGIC SYSTEMS, PALEOHYDROGEOLOGY
- 1.1.2.6 REGIME OF KARST WATERS, RESOURCES ASSESSMENT, MONITORING
- 1.1.2.7 CHEMISTRY OF KARST WATERS, POLLUTION
- 1.1.2.8 EXPLOITATION OF KARST WATER RESOURCES

1.1.3 GEOLOGICAL CONDITIONS AND EFFECTS OF KARST

- 1.1.3.1 STRATIGRAPHIC CONTROL
- 1.1.3.2 LITHOLOGIC CONTROLS, TEXTURE AND STRUCTURE OF ROCKS
- 1.1.3.3 TECTONICS
 - 1.1.3.3.1 Geotectonic settings (platforms, folded areas, foredeeps)
 - 1.1.3.3.2 Mode of geologic occurrence of karst rocks
 - 1.1.3.3.3 Tectonic units, faults
 - 1.1.3.3.4 Tectonic movements, neotectonics, seismics
- 1.1.3.4 JOINTING, FISSURING
- 1.1.3.5 PALEOKARST, EPOCHS AND GEOLOGICAL EFFECTS OF KARSTIFICATION, PALEOGEOGRAPHIC RECORDS IN KARST
- 1.1.3.6 KARST SEDIMENTS AND DEPOSITS, DEPOSITION IN KARST ENVIRONMENT
- 1.1.3.7 KARST AND OIL/GAS COLLECTORS

1.1.4 GEOGRAPHIC CONDITIONS AND EFFECTS OF KARST (for karst morphology see 1.1.1; for karst hydrology see 1.1.2.2)

- 1.1.4.1 CLIMATIC PERCEIPT IN KARST GEOMORPHOLOGY, CLIMATIC TYPES OF KARST
- 1.1.4.2 MICROCLIMATE OF KARST LANDFORMS
- 1.1.4.3 SOIL FORMATION, TYPES AND PROCESSES; CO₂ GENERATION
- 1.1.4.4 VEGETATION IN KARST LANDSCAPES

1.1.5 GEOPHISICS OF KARST TERRAINS

- 1.1.5.1 GEOTHERMIC FIELDS IN KARST AREAS
- 1.1.5.2 HEAT EXCHANGE IN KARST MASSIFS
- 1.1.5.3 NATURAL RADIOACTIVITY ON KARST TERRAINS
- 1.1.5.4 GEOPHISICAL METHODS OF INVESTIGATION OF KARST

1.1.6 SPECIFIC SETTINGS OF KARST DEVELOPMENT

- 1.1.6.1 HIGH MOUNTAIN KARST
- 1.1.6.2 HYDROTHERMAL KARST
- 1.1.6.3 DEEP KARST, ENDOKARST
- 1.1.6.4 ARTESIAN KARST
- 1.1.6.5 COASTAL KARST, KARST OF ATOLLS AND REEFS

1.1.7 GEOCHEMISTRY OF KARST ENVIRONMENTS AND CAVES

1.1.8 PSEUDOKARST AND HYPOKARST

- 1.1.8.1 PSEUDOKARST IN VOLCANIC ROCKS
- 1.1.8.2 HYPOKARST IN ICE (CRYOKARST)
- 1.1.8.3 PIPING PROCESSES AND PHENOMENA (IN ANY LITHOLOGIES)
- 1.1.8.9 KARST-LIKE FEATURES IN OTHER LITHOLOGIES

1.2 GEOSPELEOLOGY

1.2.0 GENERAL TOPICS

- 1.2.0.1 SPELEOLOGY: SUBJECT, DEFINITIONS, STRUCTURE ETC.
- 1.2.0.2 SPELEOGENETIC PROCESSES, GENETIC TYPES OF CAVES (VARIOUS)

1.2.1 MORPHOLOGY OF CAVES AND SPELEOGENESIS (Solution caves)

- 1.2.1.1 GENERAL THEORIES OF THE CAVE ORIGIN AND DEVELOPMENT, SPELEOGENETIC SETTINGS, GENETIC CLASSIFICATIONS
- 1.2.1.2 PHYSICAL CHEMISTRY OF SPELEOGENETIC PROCESSES
- 1.2.1.3 EARLY DEVELOPMENT OF CAVES; CONCEPTUAL MODELS, HARDWARE AND HUMERICAL MODELLING
- 1.2.1.4 MACRO-MORPHOLOGY, CAVE PATTERN DEVELOPMENT IN SPECIFIC ZONES AND SETTINGS
 - 1.2.1.4.1 Epikarst and vadose zone
 - 1.2.1.4.2 Base level zone
 - 1.2.1.4.3 Phreatic zone
 - 1.2.1.4.4 Deep circulation settings
 - 1.2.1.4.5 Confined (artesian) settings
 - 1.2.1.4.6 Coastal settings
- 1.2.1.5 MESO-MORPHOLOGY: SOLUTION SCULPTURING FORMS AND MECHANISMS
- 1.2.1.6 BREAKDOWN MORPHOLOGY AND MECHANISMS
- 1.2.1.7 DEPOSITIONAL MORPHOLOGY (morphological aspect only)
- 1.2.1.8 EVOLUTION OF CAVES (combined speleomorphogenetic reconstructions)

1.2.2 HYDROLOGY AND HYDROCHEMISTRY OF CAVES

- 1.2.2.1 HYDRAULIC AND HYDROLOGIC FACTORS IN CAVE DEVELOPMENT
- 1.2.2.2 HYDROLOGIC AND HYDROCHEMICAL REGIME OF CAVES
 - 1.2.2.2.1 Seepage, trickles
 - 1.2.2.2.2 Streams
 - 1.2.2.2.4 Lakes, aquifer "windows"
 - 1.2.2.2.5 Cave floods

1.2.3 GEOLOGIC CONTROLS OF CAVE DEVELOPMENT

- 1.2.3.1 STRATIGRAPHY
- 1.2.3.2 LITHOLOGY, TEXTURE AND STRUCTURE OF ROCKS
- 1.2.3.3 TECTONICS: GENERAL SETTINGS, BLOCK & FAULTS
- 1.2.3.4 JOINTING, FISSURING
- 1.2.3.5 INFLUENCE OF PALEOKARST FEATURES

1.2.4 CAVE CLIMATOLOGY, PHYSICS OF CAVE ENVIRONMENT

- 1.2.4.1 CLIMATIC CLASSIFICATIONS OF CAVES
- 1.2.4.2 AIR CIRCULATION AND EXCHANGE, TERMO- AND BARO-CONDITIONS AND REGIME
- 1.2.4.3 HUMIDITY OF CAVE AIR, CONDENSATION PROCESSES
- 1.2.4.4 GAS COMPOSITION OF CAVE AIR
- 1.2.4.5 AEROSOLS IN CAVES
- 1.2.4.6 RADIOACTIVITY IN CAVES
- 1.2.4.7 ELECTROMAGNETIC FIELDS
- 1.2.4.8 MANAGEMENT OF CAVE CLIMATE

1.2.5 CAVE DEPOSITS

- 1.2.5.0 GENERAL: CLASSIFICATIONS OF CAVE DEPOSITS, DEPOSITIONAL ENVIRONMENTS, CAVE FACIES, STRATIGRAPHY
- 1.2.5.1 SUBAQUEOUS CHEMICAL DEPOSITS
- 1.2.5.2 SUBAERIAL CHEMICAL DEPOSITS
- 1.2.5.3 SUBAQUEOUS CLASTIC DEPOSITS
- 1.2.5.4 SOLUTION RESIDUAL DEPOSITS
- 1.2.5.5 BREACKDOWN DEPOSITS
- 1.2.5.6 CAVE ICE
- 1.2.5.7 BIOGENIC DEPOSITS
- 1.2.5.8 CHRONOLOGY OF CAVE DEPOSITS, PALEORECONSTRUCTIONS
 - 1.2.5.8.0 General principles, combined paleoreconstructions from cave record
 - 1.2.5.8.1 Stable isotopes
 - 1.2.5.8.2 Other physical methods
 - 1.2.5.8.3 Radiocarbon dating
 - 1.2.5.8.4 Uranium-series dating
 - 1.2.5.8.5 Termoluminescence and ESR dating
 - 1.2.5.8.6 Paleomagnetic dating
 - 1.2.5.8.7 Palynology
 - 1.2.5.8.8 Paleontology

1.2.6 reserved**1.2.7 CAVES IN SPECIAL LITHOLOGIES, SPECIAL CAVE-FORMING PROCESSES**

- 1.2.7.1 CAVES IN VOLCANIC ROCKS, VOLCANOSPELEOLOGY
- 1.2.7.2 CAVES IN ICE
- 1.2.7.3 PIPING (SUFFOSION) CAVES
- 1.2.7.4 TECTONIC CAVES
- 1.2.7.5 ARTIFICIAL CAVES
- 1.2.7.9 OTHER TYPES OF CAVES

2. REGIONAL KARSTOLOGY AND GEOSPELEOLOGY (Karst and/or caves regional descriptions, expedition reports, locations, warnings, exploration history and exploration status of specific sites. Regional lists, catalogues, databases, inventories, etc. (For History of Karstology and Speleology see 5.3; for Regional Biology, Anthropology and Archaeospeleology, and Paleontospeleology see under those readings. Publications on specific topics with particular reference to certain regions or localities should be classified under corresponding thematic codes, and regional code should be given separately).

2.0 GENERAL

2.0.1 REGIONALIZATION OF KARST: GENERAL PRINCIPLES

2.0.2 MAPPING OF KARST: GENERAL PRINCIPLES (for geomorphological mapping see 1.1.1.5)

2.1 WORLD (including items covering more than one of the groups specified by two-digits code)

2.1.1 Former Soviet Union as a whole (and Russia when item applies to both the European and Asiatic parts).

2.2 EUROPE

/01 Albania	/17 Greece	/34 Poland
/02 Andorra	/18 Greenland	/35 Portugal
/03 Austria	/19 Hungary	/36 Romania
/04 Azores (Spain)	/20 Iceland	/37 Russia (European part)
/05 Belarus	/21 Ireland	/38 San Marino
/06 Belgium	/22 Italy	/39 Slovakia
/06 Bosnia and Herzegovina	/23 Jan Mayen	/40 Slovenia
/07 Bulgaria	/24 Latvia	/41 Spain
/08 Croatia	/25 Liechtenstein	/42 Svalbard
/09 Cyprus	/26 Lithuania	/43 Sweden
/10 Czech Republic	/27 Luxembourg	/44 Switzerland
/11 Denmark	/28 Macedonia	/45 Ukraine
/12 Estonia	/29 Malta	/46 United Kingdom
/13 Finland	/30 Moldova	/47 Vatican City
/14 France	/31 Monaco	/48 Yugoslavia
/15 Germany	/32 Netherlands	
/16 Gibraltar	/33 Norway	

2.3 AMERICA

2.3.1 NORTH AMERICA

- /01 Canada
- /02 U.S.A.

2.3.2 CENTRAL AND SOUTH AMERICA

/01 Anguilla	/08 Belize	/15 Colombia
/02 Antigua	/09 Bermuda	/16 Costa Rica
/03 Argentina	/10 Bolivia	/17 Cuba
/04 Aruba (Neth.)	/11 Brazil	/18 Dominica
/05 Bahamas	/12 British Virgin Islands	/19 Dominican Republic
/06 Barbados	/13 Cayman Islands	/20 Ecuador
/07 Barbuda	/14 Chile	/21 El Salvador

/22 Falkland Islands
 /23 French Guiana
 /24 Grenada
 /25 Guadeloupe
 /26 Guatemala
 /27 Guyana
 /28 Haiti
 /29 Honduras
 /30 Jamaica

/31 Martinique
 /32 Mexico
 /33 Nicaragua
 /34 Panama
 /35 Paraguay
 /36 Peru
 /37 Puerto Rico
 /38 St. Kitts-Nevis
 /39 St. Lucia

/40 St. Martin
 /41 St. Vincent
 /42 Suriname
 /43 Trinidad
 /44 Turks And Caicos Islands
 /45 Uruguay
 /46 U.S. Virgin Islands
 /47 Venezuela

2.4 ASIA

/01 Afghanistan
 /02 Armenia
 /03 Azerbaijan
 /04 Bahrain
 /05 Bangladesh
 /06 Bhutan
 /07 Brunei
 /08 China
 /09 Georgia
 /10 Hong Kong
 /11 India
 /12 Indonesia
 /13 Iran
 /14 Iraq
 /15 Israel
 /16 Japan
 /17 Jordan

/18 Kampuchea
 /19 Kazakhstan
 /20 Kuwait
 /21 Kyrgyzstan
 /22 Laos
 /23 Lebanon
 /24 Malaysia
 /25 Maldives
 /26 Mongolia
 /27 Myanmar
 /28 Nepal
 /29 North Korea
 /30 Oman
 /31 Pakistan
 /32 Papua New Guinea
 /33 Philippines
 /34 Qatar

/35 Russia (Asiatic part)
 /36 Saudi Arabia
 /37 Singapore
 /38 South Korea
 /39 Sri Lanka
 /40 Syria
 /41 Tadzhikistan
 /42 Taiwan
 /43 Thailand
 /44 Turkey
 /45 Turkmenistan
 /46 United Arab Emirates
 /47 Uzbekistan
 /48 Vietnam
 /49 Yemen

2.5 AFRICA

/01 Algeria
 /02 Angola
 /03 Benin
 /04 Botswana
 /05 Burkina
 /06 Burundi
 /07 Cabinda (Angola)
 /08 Cameroon
 /09 Canary Islands
 /10 Cape Verde
 /11 Central African Republic
 /12 Chad
 /13 Comoros
 /14 Congo
 /15 Djibouti
 /16 Egypt
 /17 Equatorial Guinea
 /18 Ethiopia
 /19 Europa Island
 /20 Gabon

/21 Gambia
 /22 Ghana
 /23 Guinea
 /24 Guinea Bissau
 /25 Ivory Coast
 /26 Kenya
 /27 Lesotho
 /28 Liberia
 /29 Libya
 /30 Madagascar
 /31 Malawi
 /32 Mali
 /33 Mauritania
 /34 Mauritius
 /35 Mayotte
 /36 Morocco
 /37 Mozambique
 /38 Namibia
 /39 Niger
 /40 Nigeria

/41 Reunion
 /42 Rwanda
 /43 Sao Tome
 /44 Senegal
 /45 Seychelles
 /46 Sierra Leone
 /47 Somalia
 /48 South Africa
 /49 Sudan
 /50 Swaziland
 /51 Tanzania
 /52 Togo
 /53 Tunisia
 /54 Uganda
 /55 Western Sahara
 /56 Zaire
 /57 Zambia
 /58 Zimbabwe

2.6 AUSTRALIA AND OCEANIA

/01 Australia	/09 Marshall Islands	/16 Palau Islands
/02 Cook Islands	/10 Midway Islands	/17 Solomon Islands
/03 Fed. States of Micronesia	/11 Nauru	/18 Tonga
/04 Fiji	/12 New Caledonia	/19 Tuvalu
/06 French Polynesia	/13 New Zealand	/20 Vanuatu
/07 Guam	/14 Niue	/21 Western
/08 Kiribati	/15 Northern Mariana Islands	
Samoa		

2.7 ANTARCTICA

2.8 COSMOS

3 SPELEOBIOLOGY AND KARST GEOMICROBIOLOGY

3.0 GENERAL

3.1 SYSTEMATICS

- 3.1.1 CRUSTACEA
- 3.1.2 HEXAPODA
- 3.1.3 ARACHNIDA, MYRIAPODA, ONYCHOPHORA
- 3.1.4 MOLLUSCS, VERMES, OTHER INVERTEBRATES
- 3.1.5 VERTEBRATES
- 3.1.6 MICROBIOLOGY OF KARST ENVIRONMENT
- 3.1.7 HYPOGEAN FLORA, FUNGI, ALGAE

4. SPELEOANTHROPOLOGY AND SPELEOARHAELOGY

4.1 SPELEOANTHROPOLOGY

4.2 SPELEOARHAELOGY

- 4.2.1 GENERAL
- 4.2.2 CAVES AS A LIVING ENVIRONMENT FOR MAN
- 4.2.3 PREHISTORIC CULTURES
- 4.2.4 PREHISTORIC CAVE ART
- 4.2.5 CAVE DWELLINGS AND CAVE TOWNS
- 4.2.6 HISTORIC CULTURES
- 4.2.7 HISTORIC USE OF CAVES

5 SPELEOLOGICAL AND KARSTOLOGICAL SCENE

5.1 SPELEOLOGY: SUBJECT, DEFINITIONS, STRUCTURE

5.2 KARSTOLOGY: SUBJECT, DEFINITIONS, STRUCTURE

5.3 HISTORY

- 5.3.1 HYSTORY OF SPELEOLOGY
- 5.3.2 HYSTORY OF KARSTOLOGY
- 5.3.3 PERSONALIA

5.4 SPELEOLOGICAL AND KARSTOLOGICAL ORGANISATIONS

- 5.4.1 UIS
- 5.4.2 IGU KARST COMMISSION
- 5.4.3 IAH KARST COMMISSION
- 5.4.4 OTHER INTERNATIONAL BODIES
- 5.4.5 NATIONAL ORGANISATIONS
- 5.4.6 INTERNATIONAL CONGRESSES AND SYMPOSIA

5.5 RESEARCH AND EXPLORATION MANAGEMENT AND CENTRES

- 5.5.1 RESEARCH MANAGEMENT
- 5.5.2 RESEARCH CENTRES
- 5.5.3 SUBTERRENEAN LABORATORIES
- 5.5.4 EXPEDITION LOGISTIC, APPLICATION AND RULES
- 5.5.5 RESEARCH AND EXPLORATION PROJECTS

5.5 MUSEUMS AND COLLECTABLES

- 5.5.1 KARST/CAVE MUSEUMS, MUSEUMS OF SPELEOLOGY
- 5.5.2 COLLECTABLES
 - 5.5.2.1 PHILATELY
 - 5.5.2.2 BADGES
 - 5.5.2.3 STICKERS
 - 5.5.2.4 POSTCARDS
 - 5.5.2.9 OTHERS

5.6 CAVE AND KARST PHOTOALBUMS, POSTERS**5.7 SPELEOLOGICAL BELLETRISTIC, POETRY****5.8 CAVES AND KARST IN ARTS, SPELEOLOGICAL CARTOONS****6. APPLIED SPELEOLOGY AND KARSTOLOGY****6.1. APPLIED KARSTOLOGY, ENGINEERING KARSTOLOGY**

- 6.1.1 KARST GEOHAZARDS, VULNERABILITY AND STABILITY ASSESSMENT
 - 6.1.1.1 COLLAPSING AND SUBSIDENCE
- 6.1.2 LAND USE AND IMPACTS IN KARST TERRAINS
 - 6.1.2.1 AGRICULTURE
 - 6.1.2.2 FORESTRY
 - 6.1.2.3 GRAZING
 - 6.1.2.4 CATCHMENT MANAGEMENT, SURFACE RUN-OFF MODIFICATION
 - 6.1.2.5 SETTLEMENTS, SITIES
 - 6.1.2.6 RECREATION
- 6.1.3 WATER SUPPLY
- 6.1.4 MINING
- 6.1.5 DAMS, RESERVOIRS, HYDROPOWER PLANTS
- 6.1.6 CONSTRUCTION

6.2 APPLIED SPELEOLOGY

- 6.2.1 SPELEORESOURCES: CONCEPT, ASSESSMENT
- 6.2.2 USE OF CAVES: ENGINEERING ASPECTS, MANAGEMENT, PRACTICE
 - 6.2.2.1 SHOW CAVES
 - 6.2.2.2 RECREATION, ADVENTURE AND SPORT CAVING
 - 6.2.2.3 SPELEOTHERAPY
 - 6.2.2.4 EXTRACTION OF MINERAL RESOURCES

6.2.2.5 MAGAZINES

6.2.2.6 PRODUCTION: AGRICULTURE, CHEESEMAKING, MUSHROOM GROWING

6.2.2.7 OTHER PRODUCTION

6.2.2.9 OTHER USE OF CAVES

6.2.3 INDUSTRIAL WORKS (use of caving techniques and methods)

6.3 PROTECTION OF KARST TERRAINS AND CAVES: legal aspects, regulations, guidelines, codes of practice, remedy measures

6.3.0 GENERAL, METHODOLOGY

6.3.1 PROTECTION OF WATER RESOURCES

6.3.2 PROTECTION OF LANDSCAPES

6.3.3 PROTECTION OF CAVES

7 PRACTICAL SPELEOLOGY

7.0 GENERAL

7.1 EXPLORATION TECHNIQUES AND MATERIALS

7.1.1 VERTICAL AND OTHER ROPE TECHNIQUES AND MATERIALS

7.1.1.1 TECHNIQUES (SRT AND OTHERS)

7.1.1.2 MATERIALS

7.1.1.2.1 Ropes

7.1.1.2.2 Descending/ascending devices

7.1.1.2.3 Carabines, rigging equipment

7.1.1.2.4 Bolting

7.1.2 LIGHTING EQUIPMENT

7.1.3 CLOTHING AND BOOTS

7.1.4 CAMPING EQUIPMENT

7.1.5 DIGGING TECHNIQUES AND EQUIPMENT

7.2 CAVE DIVING

7.3 PROSPECTING OF CAVES (for geophysical methods see 1.1.5.4)

7.4 ACCIDENTS AND RESQUE

7.4.1 RESCUE ORGANISATION AND MANAGEMENT

7.4.2 TECHNIQUES AND EQUIPMENT

7.4.3 ACCIDENTS REPORTS AND STATISTICS

7.5 MEDICINE

7.6 EDUCATION

8 DOCUMENTATION OF KARST AND CAVES

8.0 GENERAL

8.1 TOPOGRAPHY, CARTOGRAPHY (for karst geomorphological mapping see 1.1.1.5; for general karst mapping see 2.0.2)

8.1.0 GENERAL

8.1.1 CAVE SURVEYING

8.1.2 CARTOGRAPHY

8.1.3 COMPUTER TECHNIQUES

8.1.3.1 COMPUTER PROGRAMS FOR PROCESSING OF CAVE SURVEYS

8.1.3.2 GEOGRAPHIC INFORMATION SYSTEMS IN KARST AND SPELEOLOGY

8.1.3.3 COMPUTER REPRESENTATIONS, VIRTUAL REALITY (subterranean and geomorphological images and representations which exist solely in a computer)

8.1.4 SOLID MODELS**8.1.5 MORPHOMETRY OF CAVES (for karst landforms morphometry see 1.1.1.3)****8.2 TERMINOLOGY, TOPONYMY****8.2.1 KARST AND CAVE TERMINOLOGY, GLOSSARIES****8.2.2 TOPONYMY OF KARST TERRAINS****8.2.3 CAVE NAMING PRACTICES****8.3 BIBLIOGRAPHY (Techniques. General bibliographies, indexes and lists. Regional or thematic bibliographies should be classified under their respective codes, and 8.3.1 code should be indicated as the second thematic one)****8.3.0 GENERAL****8.3.1 BIBLIOGRAPHIES (See note above)****8.3.2 CATALOGUES****8.3.3 LIBRARIES****8.3.4 KARST AND SPELEOLOGICAL PERIODICALS****8.3.9 OTHER****8.4 PHOTOGRAPHY, AUDIO-VISUALS (Techniques and materials. Photographic and audio-visual works should be classified under their respective codes, and codes of this parent should be indicated as the second thematic ones)****8.4.0 GENERAL****8.4.1 PHOTOGRAPHY****8.4.2 FILMS AND AUDIO-VISUALS****8.4.9 OTHERS****8.5 reserved****8.6 DATABASES, INVENTORIES, REPOSITORIES****8.6.0 GENERAL****8.6.1 COLLECTING (Methods for collecting of field or other primary information)****8.6.2 STORAGE (Filing systems, data attributes, data structures, cross-referencing, storage media)****8.6.4 ANALYSIS, REPORTING (Methods for analysis, reporting, publishing)****8.6.5 DATA TRANSFER (Methods and formats)****8.6.5 SECURITY (Methods for protecting data. Rules for release of data)****8.6.6 QUALITY (Accuracy, lineage, age, completeness, logical consistency)****8.7 IDENTIFICATION SYSTEMS (Methods for systematic identification of caves, karst features, maps)****8.9 OTHER****9. OTHER (Classifications not covered elsewhere)**

CLASSIFICAZIONE DELLA SOGGETTO CARSO/SPELEOLOGICO PROPOSTA DI MODIFICA

Preparato da **Alexander Klimchouk, 1996**

Commenti introduttivi: La classificazione dei soggetti speleologici attualmente utilizzata per gli Abstracts speleologici presenta numerose controversie logiche nella sua struttura. Ciò non corrisponde allo stato dell'arte nel campo della scienza del carsismo e delle caverne. Non soddisfa adeguatamente le esigenze sia della scienza carsica/speleologica che della speleologia pratica. Non sembra possibile migliorarlo attraverso piccole modifiche e ulteriori approfondimenti dei codici esistenti. C'è un grande bisogno di modificare la classificazione in modo che la maggior parte degli studiosi e degli speleologi del carsismo e delle caverne possano utilizzarla ampiamente per l'archiviazione e la ricerca bibliografica. Se uno schema sufficientemente universale fosse sviluppato e adottato dalla maggior parte delle organizzazioni e degli interessati, faciliterebbe notevolmente lo scambio e la diffusione delle informazioni e fornirebbe una base migliore per la cooperazione tra diverse organizzazioni legate al carsismo e alle grotte. Tale schema è particolarmente utile per le pubblicazioni bibliografiche, in particolare per gli "Speleological Abstracts", che richiedono un posizionamento univoco delle voci.

Di seguito sono riportati esempi di alcune delle controversie più evidenti nell'attuale SSC:

- GEOCHIMICA è posta sotto la voce MORFOLOGIA E MORFOGENESI DEL CARSO;

- GLACIAZIONI è associato sotto GEOLOGIA E PEDOLOGIA;

- la presenza dell'argomento MORFOLOGIA E SPELEOGENESI NELLE ROCCE CARBONATE all'interno dell'ambito GEOSPELEOLOGIA significa che tutta la gamma di elementi correlati per le grotte di gesso, ad esempio, non può essere classificata qui ma deve essere tutta collocata in PARAKARST IN EVAPORITES.

- Gli argomenti PARAKARST, PSEUDOKARST E HYPOKARST (1.2.2) esistono al terzo livello sotto la GEOSPELEOLOGIA; al secondo livello si trovano gli stessi argomenti per le varie litologie (1.4 - 1.8). In quest'ultimo caso significa che questi CARSII SPECIALI, PARAKARSTI E IPOCARSI sono qualcosa di diverso rispettivamente dagli argomenti KARSTOLOGY e GEOSPELEOLOGIA (classificati sullo stesso livello);

- STORIA DELLA SPELEOLOGIA, PERSONALIA, SCIENZE SOCIALI E COLLEZIONISMO - sono tutti inseriti come sottoargomenti di livello superiore sotto l'ANTROPOSPELEOLOGIA!!;

- AMBIENTE dal significato carsico ampio è posto sotto la voce SPELEOLOGIA APPLICATA;

- I sottoargomenti CONGRESSI e UIS sono posti sotto la voce SPELEOLOGIA TECNICA.

È facile moltiplicare gli esempi.

Uno dei problemi principali è che tutto ciò che riguarda le litologie diverse dalle rocce carbonatiche deve essere classificato in determinati argomenti litologici. Tuttavia, il carsismo del gesso e le grotte, ad esempio, devono essere classificati con la stessa vasta gamma di argomenti delle rocce carbonatiche (e si tratta, secondo le visioni moderne, del carso "normale" piuttosto che del paracarso), cosa che non può essere fatta all'interno lo schema attuale. Oppure si può fare ripetendo l'intera classificazione sotto PARAKARST IN EVAPORITES, a partire dal terzo livello, il che è del tutto irragionevole.

Inoltre, PARAKARST IN EVAPORITES è sotto il livello GEOSPELEOLOGY ma non c'è nulla per evaporazione sotto il livello KARSTOLOGY; dove collocare allora gli soggetti legati al gesso carsico in generale (non alle grotte)? Un altro problema importante è che i codici tematici e regionali vengono applicati solo come opzioni alternative. La maggior parte delle opere tematiche sono prodotte con particolare riferimento a determinate regioni, ma nell'ambito dello schema attuale possono essere classificate alternativamente solo sotto codice tematico, oppure sotto codice regionale. Questa situazione rende inefficace la ricerca bibliografica poiché molte opere rilevanti vengono semplicemente "perse" per tematica o perché la ricerca regionale viene inserita nel codice alternativo. Molti argomenti importanti mancano del tutto e non possono essere incorporati in ulteriori approfondimenti dei codici esistenti di 2° o 3° livello a causa di controversie logiche.

Il punto di partenza per lo sviluppo della presente bozza di "Classificazione dei soggetti carsici e speleologici" è stata la bozza SSC, versione 0.3 rilasciata dalla Commissione Informatica UIS (P.Mattews). Si è cercato di seguire il più possibile la struttura dello schema attuale, almeno per il 1° e il 2° livello. Ma alcuni cambiamenti radicali saranno inevitabilmente introdotti se vogliamo eliminare i principali problemi sopra delineati. Ci sono ancora alcuni problemi da risolvere nella bozza proposta, ad esempio il modo di assegnare i codici ai paesi. Dovrebbe lasciare spazio per modificare questi codici man mano che cambia la divisione politica; questo non può ancora essere fatto in modo sufficientemente semplice nel formato utilizzato. Sicuramente ci sono molte possibilità per un'ulteriore suddivisione degli argomenti. La presente bozza viene pubblicata in modo informale per la discussione preliminare tra esperti in diversi campi della carsologia e della speleologia.

Importante: tutto il lavoro attuale sulla bibliografia per l'Abstract speleologico deve essere eseguito utilizzando la classificazione esistente, fino a quando qualsiasi modifica di questo schema non sarà approvata dalla Commissione Bibliografia dell'UIS.

CLASSIFICAZIONE DEL SOGGETTO CARSO/SPELEOLOGICO PROPOSTA DI MODIFICA

Regole generali:

1. Qualsiasi argomento può essere suddiviso in non più di 10 sottoargomenti allo stesso livello. Pertanto ogni sottoargomento può sempre essere rappresentato da un codice a una cifra (0-9). Una stringa di riferimento composta esclusivamente da cifre rimarrà quindi inequivocabile per quanto riguarda la sottoclassificazione prevista.

2. Due dei codici generali hanno mantenuto i seguenti significati coerenti: 0 - Generale: questioni che potrebbero applicarsi a tutte o più classificazioni nella classificazione principale; 9 - Altro: argomenti specifici che rientrano nell'argomento principale ma che non sono trattati da nessuno degli argomenti esistenti a livello.

3. La profondità massima di suddivisione consentita è fino a 8 livelli, ad es. 1.2.4.8.4.1.7 .

4. Codici tematici (TC): sono consentiti fino a tre codici tematici per opere con più soggetti, ma il primo codice è considerato quello principale e viene utilizzato nei casi in cui è necessaria una classificazione univoca (ad esempio, quando si organizza materiale in pubblicazioni bibliografiche). Altri codici tematici possono essere utilizzati per i riferimenti incrociati. Laddove un elemento possa essere classificato in più di un modo, la preferenza per il primo codice dovrebbe essere data all'argomento più specifico o maggiormente enfatizzato. Se un elemento si riferisce a diverse sottoclassificazioni nell'ambito di un unico genitore, scegliere la classificazione principale. I materiali senza enfasi tematica (quelli descrittivi) possono essere forniti solo con il codice regionale.

5. Livello di astrazione: è inoltre necessario designare il livello di astrazione del materiale, ovvero la distanza rimossa da una fonte primaria. Si propone che, ove possibile, sia aggiunto un suffisso letterale al codice di classificazione scelto per il materiale, ad es. 1.1.2b:

a - Materiale primario: rapporti di spedizione, descrizioni di grotte, mappe, rilievi. rapporti di ricerca, ecc.

b - Materiale secondario: libri generali, atlanti carsici, riassunti di resoconti precedenti, articoli di riviste, ecc.

c - Materiale terziario: indici, cataloghi, bibliografie, banche dati, ecc.

6. Codici regionali (RC): si propone di fornire un codice regionale come codice unico per le materie prime nonché per elenchi regionali, cataloghi, banche dati, inventari, ecc. Per la maggior parte degli altri materiali un codice regionale (RC) deve essere fornito parallelamente a un codice tematico (TC). I materiali senza collegamento regionale possono essere forniti solo con codice tematico.

6. Tipo litologico di carsismo/grotte: poiché la maggior parte dei codici tematici e regionali può applicarsi a tutte le principali litologie carsiche, si propone che il tipo litologico di carsismo o di grotte sia indicato da un suffisso di lettera aggiunto al codice di classificazione scelto per il materiale, ad es. 1.1.2g: l - calcare; m - marmo; d - dolomite; g - gesso/anidrite; s - sale; k - conglomerato.