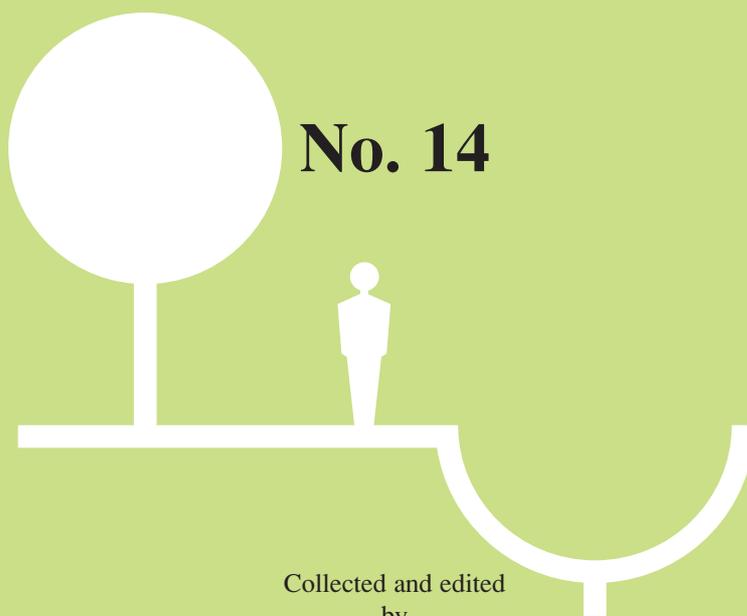


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Karst Commission
International Geographical Union
Association of the Geographical Societies of Slovenia**

Annotated Bibliography of Karst Publications



Collected and edited
by

ANDREJ KRANJC

Karst Research Institute
ZRC SAZU
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Collected and edited by
Andrej Kranjc



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No. 14

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Karst Research Institute
ZRC SAZU
Postojna

June 2006

Posvečeno spominu
na
Mariana Pulino

Dedicated to the memory of
Marian Pulina

YEAR 2002

- 14-1 Audra, Philippe & Échevin Mathias, 2002: Brezno zadnjega poskusa (gouffre de la Dernière chance). Massif du Razor, Slovénie.- Spelunca, 85, 11-16, 2002.**
The Last Chance shaft, Razor Massif, Slovenia, opens at 2230 m elevation in Kriški podi. It was surveyed down to -320 m.

YEAR 2003

- 14-2 Audra, Philippe, 2003: Les valeurs record d'ablation karstique dans les montagnes Nakanai (Nouvelle-Bretagne, Papouasie - Nouvelle-Guinée). - Dynamique et vulnérabilité des milieux montagnards méditerranéens et alpins, 145-154, Chambéry, 2003.**
Range and distribution of the karstic denudation in the Nakanai Mountains karst (New Britain, Papua New-Guinea) - New Britain karst benefits from significant rainfall, estimated at 12 m in the mountains. A dense rainforest provides carbon dioxide allowing intense limestone solution. Hydrodynamic of the Muruk-Berénice system is approached using physical and chemical data (temperature, pH, conductivity, dissolved carbonates, discharge) collected in several points at different times. Three types of recharge occurred. The covered epikarst supplies both rapid and slow seepage that is saturated when entering the karst conduits or slightly later. Sinkholes, acting mainly during flood, supply aggressive water flowing quickly and allowing solution in deepest parts. Flood dilutes the chemical load, which also decreases with altitude according to rainfall gradient. The karstic denudation ranges at about 400 m³ / km² / year corresponding to hyperkarst conditions.
- 14-3 Audra, Philippe, 2003: Le karst des Préalpes de Grasse.- In: Audra Ph., Folléas Ch., Gimenez Br., Hof B., Hotz B. & Sounier J.: Spéléologie dans les Préalpes de Grasse, Édisud, 15-21, Aix-en-Provence, 2003.**
Presentation of landscape, geological structure, hydrogeology and cave morphology of the Grasse Prealps karst. Cave systems display large drains either at the contact of overthrusting or as epiphreatic looping tubes.
- 14-4 Audra, Philippe & Courbon, Paul & Sounier, Jean-Paul, 2003: Expédition Can-Yawa 2002. - Spelunca, 90, 17-35, 2003.**
Report of a caving expedition in Samar Island, Philippines, where several through-caves or sinkholes at the contact of basaltic upper catchment have been surveyed, in one of the last rainforest of this country.

YEAR 2004

- 14-5 Audra, Philippe & Hofmann, Beda A., 2004: Les cavités hypogènes associées aux dépôts de sulfures métalliques (MVT). - Le Grotte d'Italia. 5 (Table-ronde internationale, 2-5 septembre 2004, Valsassina, Italie. *Comunità Montana della Valsassina & Association française de karstologie*), 35-56, 2004.**

Hypogenic cave systems related to metallic sulphide deposits (MVT) - Hypogenic upwelling flows associated with karst caves filled with metallic ore deposits correspond to the same process as for the larger Mississippi-Valley Type (MVT) sulphide ore deposits. Basin margins benefit from metallic-, sulphide- and/or carbonic-rich flows, which mix with oxygenated meteoric water and induce cave development with metallic filling. Three caves are studied: Iboussières Cave in the Donzère Plateau (Rhône Valley) harbouring rare features such as "black tubes" [after Herron 1997]; Oilloki Mine-Cave in the Pierre Saint-Martin (Pyrénées) where galena used to be mined; Malacoste Quarry in the Durance Valley (Provence) displaying geodes outlining a hypogenic chimney. All caves harbour ferrous deposits with microbial sponge texture. Specific characteristics due to the hypogenic origin are discussed, such as cave systems organisation and relationship to the structural setting, cave features, cave deposits and speleogenetical processes.

- 14-6 Audra, Philippe & Mocochain, Ludovic & Camus, Hubert & Gilli, Éric & Clauzon, Georges & Bigot, Jean-Yves, 2004: The effect of the Messinian Deep Stage on karst development around the French Mediterranean.- *Geodynamica Acta*, 17/6, 27-38.**

It is difficult to explain the position and behaviour of the main karst springs of southern France without calling on a drop in the water table below those encountered at the lowest levels of Pleistocene glacio-eustatic fluctuations. The principal karst features around the Mediterranean are probably inherited from the Messinian period ("Salinity crisis") when sea level dropped dramatically due to the closing of the Strait of Gibraltar and desiccation of the Mediterranean Sea. Important deep karst systems were formed because the regional ground water dropped and the main valleys were entrenched as canyons. Sea level rise during the Pliocene caused sedimentation in the Messinian canyons and water, under a low hydraulic head, entered the upper cave levels. The powerful submarine spring of Port Miou is located south of Marseille in a drowned canyon of the Calanques massif. The main water flow comes from a vertical shaft that extends to a depth of more than 147 m bsl. The close shelf margin comprises a submarine karst plateau cut by a deep canyon whose bottom reaches 1000 m bsl. The canyon ends upstream in a pocket valley without relation to any important continental valley. This canyon was probably excavated by the underground paleoriver of Port Miou during the Messinian Salinity Crisis. Currently, seawater mixes with karst water at depth. The crisis also affected inland karst aquifers. The famous spring of Fontaine de Vaucluse was explored by a ROV (remote observation vehicle) to a depth of 308 m, 224 m below current sea level. Flutes observed on the wall of the

shaft indicate the spring was formerly an air-filled shaft connected to a deep underground river flowing towards a deep valley. Outcroppings and seismic data confirm the presence of deep paleo-valleys filled with Pliocene sediments in the current Rhône and Durance valleys. In the Ardèche, several vauclosian springs may also be related to the Messinian Rhône canyon, located at about 200 m below present sea level. A Pliocene base level rise resulted in horizontal dry cave levels. In the hinterland of Gulf of Lion, the Cévennes karst margin was drained toward the hydrologic window opened by the Messinian erosional surface on the continental shelf.

K.W.: Messinian deep stage, karst development, French Mediterranean, deep phreatic cave systems, coastal karst aquifer.

14-7 Audra, Philippe & Häuselmann, Philipp, 2004: Hydrothermal origin of two hypogenic karst caves in French Provence: Preliminary results from fluid inclusions.- Journées AFK, 2003, Rouen, 32-34, 2004.

Adaouste and Champignons caves are localised in Provence, in strongly folded Jurassic limestone. Most of the morphological and sedimentary features related to classic gravitational origin are totally absent. They are related to a hypogenic origin. The Adaouste cave is a 3-D maze, organised in two downward series that are strongly tilted, with two horizontal levels. The aggressive upflowing water and simultaneous calcite deposition by carbon dioxide degassing occurred, forming specific features (condensation corrosion boxwork; "bubble trail"; corroded flowstones; folia; tower coral; tower cones; vuggy calcite linings; coralloids...). The paleogeographic evolution shows that the cave was put in place after the beginning of the fluvial network entrenchment in the Upper Tortonian (8.5 Ma). The cave was drained and isolated from its deep recharge after Messinian entrenchment. The Champignons cave opens in the middle of the Sainte-Victoire mountain scarp. A short tube enters a vast, 60 m-wide circular chamber. Water was flowing upward from several 20 m-deep rifts and CO₂ degassing close to the water table induced oversaturation of the water and calcite deposition into the lake as dogtooth and popcorn linings. Above the lake, the atmosphere rich in CO₂ induced condensation corrosion, which shaped the large rounded roof that is hollowed by ceiling cupolas. The Champignons cave is included between an upper Oligo-Miocene surface cutting the crest and Tortonian marine sediments outcropping at the foot. Its age is thus Miocene or possibly older. Evidence of deep-water upflowing along major faults led us to suspect hydrothermal conditions. Fluid inclusions on calcite speleothems related to the hypogenic activity were carried out to answer this hypothesis. 1/ No salinity was detected and the possibility of juvenile origin water can be rejected. The water shows a meteoric origin, with a deep artesian path flowing up to the surface near large active faults (Durance transcurrent fault, Sainte-Victoire overthrusting). 2/ Temperatures of homogenization (Th) results are poor, because the calcite material is easily cleavable and prone to inclusion stretching or leaking. Moreover, the small amount of Fluid Inclusion Assemblages (FIAs) did not allow ascertaining Th. For these reasons, and also because of inconsistency with the geological setting, the highest values are probably not valid. However, all data -even if not trusty in most cases-, show a Th exceeding surface flow

conditions. Thus, hydrothermalism is effective, within shallow phreatic or epiphreatic conditions, associated to deep-origin artesian upflow mixing with meteoric seepage water.

- 14 - 8 Audra, Philippe, 2004: Kitzsteinhorn high-alpine karst (Salzburg, Austria): Evidence of non-glacial speleogenesis.- Die Höhle, 55/1-4, 12-18, 2004, Wien.**
Cave and karst development in a recently deglaciated alpine area (Kitzsteinhorn, Salzburg, Austria) is examined and briefly compared to presently and previously glaciated karst regions elsewhere. Field evidence suggests that cave genesis occurs mainly during warm, interglacial periods when vegetation and soil formation provides chemically aggressive runoff during the melting season. During cold periods of extensive glacier coverage, the glacial contribution to karst development is restricted to surface abrasion, shaft development in pre-existing vadose caves and fine-grained sediment infill in the epiphreatic zone.
- 14 - 9 Audra, Philippe, 2004: Les apports scientifiques majeurs de Jacques Choppy.- Karstologia, 44, 12-14, 2004.**
The main scientific contribution of Jacques Choppy (1926-2004).
- 14 - 10 Audra, Philippe, 2004: Kitzsteinhorn high-alpine karst (Salzburg, Austria): Evidence of non-glacial speleogenesis.- Die Höhle, 55/1-4, 12-18, 2004, Wien.**
Cave and karst development in a recently deglaciated alpine area (Kitzsteinhorn, Salzburg, Austria) is examined and briefly compared to presently and previously glaciated karst regions elsewhere. Field evidence suggests that cave genesis occurs mainly during warm, interglacial periods when vegetation and soil formation provides chemically aggressive runoff during the melting season. During cold periods of extensive glacier coverage, the glacial contribution to karst development is restricted to surface abrasion, shaft development in pre-existing vadose caves and fine-grained sediment infill in the epiphreatic zone.
- 14 - 11 Audra, Philippe, 2004: Modélisation d'un tracé probable de la zone noyée de la grotte de la Mescla (Malaussène, Alpes-Maritimes).- SIS pieds sous terre, 3, 75-80, Antibes, 2004.**
Modelling of a hypothetical survey of the sumps of the Mescla Cave (Southern France) - The Mescla spring is explored by diving over 1300 m, for a depth of 80 m. The old sketch of the sumps was unrealistic. Taking into account structural constraint (narrow limestone strata with strong dip) and using vertical profile, a computing of a new survey was performed. It shows a direction of sumps parallel to the upper dry levels, that is more realistic.
- 14 - 12 Gilli, Éric & Audra, Philippe, 2004: Les lithophages pliocènes de la fontaine de Vaucluse (Vaucluse, France). Un argument pour une phase messinienne dans la genèse du plus grand karst noyé de France.- C. R. Geosciences, 336/16, 1481-1489, Paris.**
The Pliocene lithophagae of the Fontaine de Vaucluse karst spring (Vaucluse, France): an argument for a Messinian origin of the largest French flooded karst -

The discovery of a level of lithophaga in the entrance of the Fontaine de Vaucluse spring indicates a Pliocene age and support a Messinian origin for the present spring.

K.W.: lithophagae, karst, Fontaine de Vaucluse, Messinian.

- 14-13 Roglić, Josip, 2004: Krš i njegovo značenje, Sabrana djela.- Geografsko društvo Split, Hrvatsko geografsko društvo Zadar, PMF Zagreb, 360 pp., Split.**

Karst and its significance, comprehensive work.

YEAR 2005

- 14-14 Alexander, R.W. & Burek, C.V & Gibbs, H.M, 2005: The Effect of Grike Orientation and Depth Upon Microclimate.- Poster presented at 4th Research Seminar at Malham Tarn Field Studies Centre, Yorkshire, UK, 18-20th November 2005. Published as an internal publication by the Field Studies Council.**

Detailed continuous research into the microclimates of limestone pavements is scarce. Previous studies have generally emphasised the flora and fauna of limestone pavements, with a mention of microclimate as a contributing factor. A 46-week record of microclimate from Cumbria is presented. The wider implications of the microclimate upon biodiversity of grikes using data from other pavements are also considered. Two adjacent grikes of differing orientation (0° - 180° and 120° - 300°) on the limestone pavement at Clawthorpe Hall Fell in Cumbria were chosen. A rig was constructed upon which sensors were attached and connected to a data logger. The climatic variables of photosynthetically active radiation (PAR), relative humidity (RH) and temperature were measured. Temperature was measured at the surface, 70 cm depth, 100 cm depth and just above the base. PAR was measured at 50 cm depth and RH at 70 cm depth. All measurements were taken within the atmosphere. Each variable was measured for a period of four minutes at three-hour intervals, with the average reading recorded. The effect of orientation shows that north-south grikes are better lit, warmer, less humid, but with a greater range of temperatures and PAR. East-west grikes are darker, cooler, more humid, but have more frost events. Temperature ranges are at a maximum at the surface and show attenuation with depth. Ranges reduce markedly by 70 cm depth, and temperatures are very stable at the base of the grikes where no frost occurred throughout the recorded period. Biodiversity data are not available for the monitored pavements but comparisons can be made with other sites. More snails seem to be present in north-south grikes. Lloyd-Jones (2001) found this at Bryn Alyn and Y Taranau and Swindail (2005) found that snail distribution at Y Taranau was influenced by the orientation of the grike (chi-squared = 4.571, $p = 0.033$) in winter, but not in summer (chi-squared = 0.222, $p = 0.637$). Similarly, more plants seem to be present in north-south grikes. This has been shown in plant surveys at Bryn Pydew (Burek and Legg, 1999 and Inman, 2000), Y Taranau

(Lloyd-Jones, 2001) and Bryn Alyn (Lloyd-Jones, 2001 and Inman, 2000). These data would appear to indicate a positive response to PAR levels by the plants, whilst abundance of snails may be in response to food availability. Given the very different diurnal and seasonal temperature regimes with depth, further work could usefully focus on examining diurnal and seasonal patterns in the distribution of invertebrates within grikes.

- 14 - 15 Al-Malabeh, Ahmed & Kempe, Stephan, 2005: Origin of iron ore nuggets ("Bohnerze") through weathering of basalt as documented by pebbles from the Herbstlabyrinth, Breitscheid-Germany.- Acta carsologica, 34/2, 459-470, Ljubljana.**

This study was conducted to investigate the origin of the iron nuggets that have been found in the Herbstlabyrinth at Breitscheid, northern Hessen/Germany. A total of ten pebbles were collected. Petrographically, the pebbles can be divided into three groups: rather fresh basalts, markedly or totally altered basalt (including the iron nuggets) and a dark sandstone. The iron nuggets originate through a progressing alteration (oxidation and hydration) of the basaltic pebbles. The geochemical study shows that the original fresh basaltic pebbles are of alkali type and belong to the Na-series. The magma that gave rise to them was primitive and originated in a mantle peridotite mantle source.

K.W.: iron nuggets genesis, cave sediments, basalt, pebbles, karst deposits, weathering.

- 14 - 16 Ambrožič, Špela & Drovenik, Božidar & Pirnat, Alja, 2005: Water beetles (Coleoptera) of kali and lokve on the karst.- In: Mihevc, Andrej (Ed.). Voda in življenje v kamniti pokrajini - Kras = Water and Life in a Rocky Landscape -Kras, (Projekt Aquadapt): Založba ZRC, ZRC SAZU, 108-125, Ljubljana.**

This paper is the first more extensive contribution to knowledge of the water beetles fauna of »kali« and »lokve« of the Karst of Komen. In 2002, 2003 and 2004, we investigated 41 locations - 32 kali and 9 lokve. In 13 kali and one lokev we found 28 species of water beetles, belonging to the families Haliplidae, Noteridae, Dytiscidae, Gyrinidae, Hydrochidae, Hydrophilidae and Dryopidae. We found no water beetles at 27 locations. The commonest species were *Noterus clavicornis* and *Hydrochara caraboides*. We compared data with the Karst of Trieste and made a survey of water beetles fauna of the whole Kras.

K.W.: water beetles, ponds, "kal", "lokev", Kras, Karst of Komen, Karst of Trieste.

- 14 - 17 André, Grégoire & Bergeron, Gilles & Guyot, Luc, 2005: Contrôle structural et tectonique sur l'hydrogéologie karstique du plateau Mahafaly (domaine littoral semi-aride, sud-ouest de Madagascar).- Karstologia, 45-46, 29-40, s.l.**

- 14 - 18 Angelova, D. & Beloul, M'hamed Alaeddine & Bouzid, Sophia & Faik, Farid, 2005: Karst and cave systems in Bosnek region (Vitosha Mountain, Bulgaria) and Wintimdouine (High Atlas Mountain, Morocco).- Acta carsologica, 34/1, 87-111, Ljubljana.**

The study of both endokarstic systems Bosnek (Vitosha Mountain, Bulgaria) and Wintimdouine (High Atlas Mountain, Morocco) is presented in this work. Both regions are standard for the study of geodynamic processes in Bulgaria and Morocco, and they could be used as geodynamic polygons in the Mediterranean region. The karst is developed in Triassic and Jurassic limestones. The karst processes in both endokarstic systems occur under the conditions of active Quaternary and recent tectonics. A typical structural karst is formed. The present work shows also the results of the comprehensive studies performed in the field of geology, tectonics, geomorphology, hydrology, climatology, etc., of the karst. It is accented on the genesis and the evolution of the greatest cave systems in Bulgaria (Duhlata cave - more than 17 km) and Morocco (Wintimdouine cave - more than 19 km long). Both cave systems are situated in zones with high seismicity, with open surface and sub-surface paleoseismic disruptions. The karst study and monitoring of its processes has great practical value in Bulgaria and Morocco because they are related to one of the largest urbanized territories (Pernik and Sofia for Bulgaria, and Agadir for Morocco) and they are protected natural objectives as well. K.W.: karst, cave systems, Bosnek, Bulgaria, Wintimdouine, Morocco.

- 14 - 19 **Aničić, Bogoljub & Oblak, Katarina, 2005: Budinaž v plasteh srednjemiocenskih kamnin na Kozjanskem.- Proteus, 67/5, 224-225, Ljubljana.**
Boudinage in Middle Miocene rocks at Kozjansko (Slovenia).
- 14 - 20 **ApSimon, A.M., 2005: H.P. Wyndham and the "lost cave of Burrington".- Proceedings University of Bristol Speleological Society, 23/2 (2004), 141-142, Bristol.**
- 14 - 21 **Arfib, Bruno. & Petrič, M. & Santoro, Domenico & Tulipano, Luigi, 2005: Acquisition of hydrodynamic parameters.- Groundwater management of coastal karstic aquifers, COST Action 621, Final Report, 96-104, s.l.**
- 14 - 22 **Atz, Aaron, 2005: Hidden Treasure Beneath Our Feet.- NSS News, 63/8, 4-7, Huntsville**
- 14 - 23 **Audra, Philippe & Bigot, Jean-Yves & Zibrowius Sylvain, 2004: Kammer Höhle. Hohe Tauern 2002 Expedition (Kitzsteinhorn, Kaprun, Salzburg).- Die Höhle, 55/1-4, 136-142, Wien.**
The Kitzsteinhorn massif harbours a high-altitude karst area in the vicinity of Schmiedingerkees, between 2200 and 2700 m altitude. The large ski resort around the "Alpincenter Kaprun" developed over much of the karst area. Several large caves are known, including Feichtnerschacht (2573/3), discovered by Richard Feichtner, who explored it altogether with Polish cavers down to -1049 m. A second large system is Kitzsteinhornhöhle (2573/2), -560 m deep. Cave investigation is only starting in this area. The potential of connecting existing systems as well as finding new extensions in these systems is high. The depth potential of the Kesselfall spring, located at about 1050 m above sea level, surpasses 1500 m. The aim of this expedition was to continue the exploration of swallow hole KA 5, which was discovered in 2001, and to continue the cave in-

vestigation near Feichtnerschacht. Unfortunately, KA 5 was plugged by snow this year. A continuation found in KA 3, however, also discovered in 2001, resulted in the Kammerhöhle (2573/8), a tremendous cave where we reached a depth of -226 m. In the area around the Alpincenter, about 20 small caves were surveyed, some of them new and some already explored by previous cavers.

- 14 - 24 Audra, Philippe & Kranjc, Andrej & Sauro, Ugo, 2005: Kras v konglomeratih - podobnosti in razlike = Three karst in conglomerates similarities and differences.- In: Kranjc, Andrej (Ed.). Kraške kulturne pokrajine : edinstveni odnos med človekom in kraškim svetom : architecture of a unique relationship people/territory, Udin boršt.- Museo di Storia Naturale e Archeologia, 93-94, Montebelluna.**
- 14 - 25 Audra, Philippe, 2005: Méailles et la région d'Annot.- Paesaggi carsici. Architettura di una relazione unica tra uomo e ambiente, 3 KCL, 106 pp., Montebelluna.**
- 14 - 26 Audy, Marek & Šmída, Branislav, 2005: Největší kvarcitová jeskyne světa Cueva Charles Brewer.- Speleoforum, 24, 58-62, s.l.
Cueva Charles Brewer, the world's biggest cave in quartzites.**
- 14 - 27 Azzali, Michele & Elena, Mirco, 2005: Il taccuino di Ulisse: le "marmite dei giganti".- Bollettino SAT, 68/2, 19-23, s.l.
The cave Ullisse: erosion potholes.**
- 14 - 28 Azzali, Michele & Elena, Mirco, 2005: Il taccuino di Ulisse: rocce d'arte.- Bollettino SAT, 68/4, 31-34, Trento.
The cave Ullisse: rock art.**
- 14 - 29 Babij, Valerija, 2005: Natural Environment of the Kras. Introduction.- In: Mihevc, Andrej (Ed.). Voda in življenje v kamniti pokrajini - Kras = Water and Life in a Rocky Landscape - Kras (Projekt Aquadapt): Založba ZRC, ZRC SAZU, 17-19, Ljubljana.**
- 14 - 30 Babij, Valerija & Seliškar, Andrej & Vreš, Branko & Zelnik, Igor, 2005: Flora and vegetation of karstic ponds »kali and lokve« (Kras, Slovenia).- In: Mihevc, Andrej (Ed.). Voda in življenje v kamniti pokrajini - Kras = Water and Life in a Rocky Landscape - Kras (Projekt Aquadapt): Založba ZRC, ZRC SAZU, 83-99, Ljubljana.
Flora and vegetation of »kali« and »lokve« were investigated. The standard method for mapping Central-European flora was used (Häupler 1976) for floristic investigations. On each site ("kal and lokev") the total inventory of vascular plant species was recorded. The standard Central European method (Braun-Blanquet 1964, Dierschke 1994) was used for vegetation studies. Different kinds of vegetation, either associations or their fragments were recorded in the field. Over 260 plant species were found, including the following species from the Slovene Red Data List (Wraber & al. 2002): *Nymphaea alba* (V), *Schoenoplectus tabernaemontani***

tani (V), *Bolboschoenus maritimus* (V), *Ceratophyllum demersum* (V), *Alisma lanceolatum* (V), *Equisetum fluviatile* (V), *Gratiola officinalis* (V), *Lemna gibba* (V) etc. Aquatic and semi-aquatic vegetation was classified into 13 communities: *Lemnetum minoris* Oberd. ex T. Müller et Görs 1960, *Lemnetum gibbae* Myawaki et J. Tx. 1960, *Ceratophylletum demersi* Hild 1956, *Potamogeton natans*-community, *Polygono lapathifolii-Bidentetum* Klika 1935, *Bidenti-Polygonetum hydropiperis* Lohmeyer in R. Tx. 1950, *Typhetum latifoliae* Lang 1973, *Scirpetum lacustris* Chouard 1924, *Glycerietum aquaticae* Hueck 1931, *Leersietum oryziodis* Egger 1933, *Eleocharitetum palustris* Ubrizsy 1948, *Phalaridetum arundinaceae* Libbert 1931, *Agrostis stolonifera*-community. The authors discuss the human influence on flora and vegetation of kali and lokve, and the aim and possibilities of conservation of the investigated water ecosystems in the Kras region.
K.W.: Kras, karst, karstic ponds (kal, lokev), flora, vegetation.

14 - 31 Badino, Giovanni, 2005: Underground drainage systems and geothermal flux.- Acta carsologica, 34/2, 277-316, Ljubljana.

An analysis of the interaction between the geothermal flux and the water or air-deep drainage networks. The problem of geothermal power intercepted by deep structures and, in general, the temperature field calculations, is converted to classical thermo-engineering problems in terms of shape factors. It is shown that the fluid flow in a conduit perturbs the whole deep rock temperature field until the geothermal flux of a large area is focalised onto the conduit. It is shown that either small water masses flowing into a mountain are able to perturb the rock temperature up to the surface, on sizes that do not depend on water mass dimension, but on its depth, and then on enormous volumes. The introduction of the "geothermal cross section" of an underground drainage structure allows us to improve the classical formula of minimum provenance depth of geothermal water. Enlarging factors are applied to the classical estimation in dependence of the ratio between the actual average discharge and the critical discharge Q_c , which depends on the conduit geothermal cross section. The geothermal "umbra cones" created in the overlying rock by deep underground structures are described. It is shown that the geothermal flux can play a significant role in the underground drainage phenomenology.

K.W.: geothermal flux, karst, underground drainage system, shape factors, geothermal shielding.

14 - 32 Bakšić, Ana, 2005: Nova istraživanja u špilji Vjetrenici.- Velebiten, 42, 15-16, Zagreb.

New research in Vjetrenica cave.

14 - 33 Bányi-Kevei, I., 2005.: A karsztok védelmének aktuális kérdései (Questions of current problems of protection on karsts).- Karsztfelődés X., 337-342, Szombathely.

In our days increasing anthropogenic impact makes it more and more pressing to explore the past and present processes of karsts and to use this knowledge for the sake of the protection, conservation and sustainable development of karstic resources. In 1992 IUCN's World Commission on Protected Areas (WCPA) formed

the workgroup named Karst Protection Working Group. This group consists of scientists, managers, speleologists and other karst-related experts. This commission (of which the author is also a member) deals with the questions of karst-protection on an international level. It is this commission who suggests karstic areas to become UNESCO World Heritage sites (so far 47 of them have been designated as UNESCO World Heritage sites). This study covers the general question of karst protection, the major problems of international karst protection. It also describes some current protection tasks, considered to be of importance by the author, for the professional public.

Bárány-Kevei, I., & Szőke, E., & Kaszala, R., 2005: Research on heavy metal contamination in the Aggtelek karst area in Hungary. Geophysical Research Abstracts, Vol. 7, 02685, 2005. S ref-ID: 1607-7962/gra/EGU05-A-02685. European Geosciences Union 2005. In our days' pollution hazard researches there's an increasing emphasis placed on the examination of heavy metal contamination in different landscapes. Despite heavy metals being part of the natural environment, in concentrations above certain threshold limits they are considered toxic materials. According to predictions from researches dealing with changes in the element content of soils and cultivated plants heavy metals may become a major stress factor in the next decades. (PAIS, 1992) The main reason for this is that metals cannot be biologically decomposed so they accumulate in living organisms. From an environmental point of view, karsts belong to the most sensitive areas. Due to its open hydrological system and 3-dimensional reaction surface a karstic area reacts very fast to anthropogenic activity. We determined the heavy metal content in the catchment area of Aggtelek, in springs and dripping waters, also in the soil and plants.

14 - 34 Bárány-Kevei, I., 2005: Genetic Types, Human impact and Protection of Hungarian Karsts.- Acta Climatologica et Chorologica. Universitatis Szegediensis, Tom. 38-39, 17-23, Szeged.

There are two major types of Hungarian karsts: Transdanubian type and Aggtelek type. The Transdanubian type consists of those karsts that were significantly affected by tectonic movements and they are faulted into blocks of limestone and dolomite. Surface features in these karsts are scarce, only a few dolines and gorges are present, and karrenfields are the most typical features. The Aggtelek type karsts are tectonically less disturbed and usually characterized by typical karst features. From an environmental point of view, karsts belong to the most sensitive areas. Landscape transformation in the karst environment started with the appearance of early humans. Early man gathered firewood from the karsts, thus the deforestation of karst region began. Later human activity modified karst areas formation due to agricultural activity on the one hand and by industry on the other. In Hungary two karst areas (Bükk- and Aggtelek Mts.) have been designated as national parks, and some are nature reserves. The Law on the Protection of Nature (1996) declared all the springs, dolines, caves, endemic flora and fauna protected. We can say that the karst areas of Hungary are mostly under protection but we still have some conflicts between nature protection and landuse on the karsts.

- 14 - 35** Barton, Hazel A. & Luiszer, Frederick, 2005: Microbial metabolic structure in a sulfidic cave hot spring: potential mechanisms of biospeleogenesis.- *Journal of Cave and Karst Studies*, 67/1, 28-38, Huntsville.
- 14 - 36** Barton, Hazel A. & Pace, Norman R., 2005: Discussion: persistent coliform contamination in Lechuguilla cave pools.- *Journal of Cave and Karst Studies*, 67/1, 55-57, Huntsville.
- 14 - 37** Bavdek, Alma, 2005: Rimsko žarno grobišče Volarije pri Žirjah na Krasu.- *Arheološki vestnik*, 56, 235-262, Ljubljana.
New discovered Roman urn cemetery at Volarija near the village Žirje on Kras.
- 14 - 38** Beaucheron, Emeric, 2005: Le trou d'Enfer par le canyon de Bras de Caverne. La Réunion.- *Spelunca*, 99, 23-30, Paris.
- 14 - 39** Beck, R. K. & Cronauer, W. & Oberle, R., 2005: Boden und Karst als Thema im Unterricht.- *Geographische Rundschau*, Jahrg. 57, Heft 6, 53-59, Braunschweig.
Soil and Karst in school lessons. In one of the Robert-Bosch-Foundation financed project in cooperation between Tübingen University and the Schloss-Gymnasium Kirchheim/Teck the geocological facts of the Swabian Alb were demonstrated to pupils of the gymnasium in school lectures, in field and laboratory courses. The paper shows results of the project and the didactic preparation in the instruction.
- 14 - 40** Belingar, Eda, 2005: Ice Trade in Matarsko podolje and part of Kras.- In: Mihevc, Andrej (Ed.). *Voda in življenje v kamniti pokrajini - Kras = Water and Life in a Rocky Landscape - Kras (Projekt Aquadapt).*: Založba ZRC, ZRC SAZU, 341-368, Ljubljana.
The article describes ice making in Matarsko podolje and part of the Kras area as a supplementary craft adopted by individuals in addition to agriculture, inn keeping and trade. It represented an important additional source of family income. The activity developed because of the close proximity of Trieste, where ice was in great demand, mostly in the 19th century for the preserving of fish, beer, meat and other perishable food. A prerequisite for making ice was sufficiently cold, rainy winters that filled the local ponds or *kali* where ice was harvested and stored in ice pits. The article describes different types of ice pits that were known in the area, the method of ice storage and the final preparation of ice for sale. A list of ice pits in individual places, including a short description supplied by informants is added at the end of the article.
K.W.: ice making, *kal*, ice pit, ice maker, ice, Matarsko Podolje.
- 14 - 41** Benedik, Janja, 2005: Jama pod Babjim zobom.- *Proteus*, 68/3, 137-138, Ljubljana
The cave "Jama pod Babjim zobom".

- 14 - 42 Bigot, Jean-Yves & Audra, Philippe & Mocochain Ludovic, 2004: La grotte des Champignons (Puylobier, Bouches-du-Rhône).- Spelunca, 95, 37-41.**
Description of Champignons Cave, a huge chamber originating from hypogenic upwelling and convection airflow.
- 14 - 43 Binding, C.J. & Wilson, L.J. & Easton, T., 2005: Ritual protection marks in Goatchurch Cavern, Burrington Combe, North Somerset.- Proceedings University of Bristol Speleological Society, 23/2 (2004), 119-133, Bristol.**
- 14 - 44 Biot, Vincent & Gauchon, Christophe, 2005: La contribution des spéléologues au tourisme souterrain, Actes du colloque d'Ollioules : Spéléologie et Société, Spelunca Mémoires n° 29, 231-234, Lyon.**
- 14 - 45 Biot, Vincent & Gauchon, Christophe, 2005: Etat des lieux du tourisme souterrain en France: la fin d'un cycle.- Karstologia, 45-46, 41-54, s.l.**
- 14 - 46 Boban, Slaven, 2005: Istraživanje u Maloj Boki - Kanin, Slovenija.- Velebiten, 42, 13-14, Zagreb.**
Research in the cave Mala Boka (Kanin Mt., Slovenia).
- 14 - 47 Borlini, Andrea & Concina, Gabriele, 2005: Riesplorando il Col Lopic.- Speleologia, 26/52, 34-47, Bologna.**
A new exploration of Col Lopic.
- 14 - 48 Boštjančič, Janko/Ed., 2005: Slavenski zbornik.- 440 str., Slavina.**
Miscellany of the village of Slavina.
- 14 - 49 Bottazzi, Jean, 2005: Guizhou 2005.- Spelunca, 98, 12-13, Paris.**
- 14 - 50 Bratina, Patricija, 2005: Tabor nad Zagorjem - Šilentabor, zaščitna arheološka sondiranja na območju grajskega kompleksa.- Acta carsologica, 34/3, 691-767, Ljubljana.**
The valleys of the Pivka and Reka rivers make a natural passage from the upper Posavje to the Trieste and Quarnero Bays. The strategic significance of this area in prehistoric times is shown in the numerous hillforts/settlements on the secured peaks of the hills in Late Antiquity with Roman defence blockades, and in the times of Turkish invasions with forts against the Turks. Rescue sample trenching in 1996 in the area of the Tabor archaeological monument above Zagorje - Šilentabor, archaeological site reference EŠD: 764, revealed part of the remains of a Middle Age defence architectural structure and numerous archaeological artifacts, which confirm construction and life within the castle complex from the 15th to 17th centuries, as mentioned in historical sources.
K.W.: archaeology, castle, hillfort, fort against Turks, Šilentabor, Slovenia.
- 14 - 51 Bricelj, Mihael & Čenčur Curk, Barbara, 2005: Bacteriophage transport in the unsaturated zone of karstified limestone aquifers.- Proceedings of the international conference and field seminars, Water Resources and Environ-**

mental Problems in Karst/Stevanović, Z. & Milanović, P./Eds., 109-114, Belgrade.

- 14 - 52 Castiglioni, Benedetta/Ed., 2005: Montello.- Paesaggi carsici. Architettura di una relazione unica tra uomo e ambiente, 3 KCL, 181 pp., Montebelluna.**
Karst landscapes. Architecture of the unique relations between the man and the environment.
- 14 - 53 Cernatič-Gregorič, Anica & Gorkič, Mirjam, 2005: Presihajoča jezera Zgoranje Pivke - varstvo skozi čas.- Acta carsologica, 34/3, 815-828, Ljubljana.**
The article presents an overview on organized protection of the intermittent lakes in the Upper Pivka based on nature protection legislation starting from the late 1960s. It includes details on the present protection status of the lakes based on the Act on nature conservation (2004). Besides protection guidelines to preserve the lakes characteristics some most appropriate possibilities to introduce this area into development plans are also discussed.
K.W.: natural heritage, natural importance, natural monument, natural values, biodiversity, ecologic important area, special protection area (Nature 2000), protection regime, protection guidelines.
- 14 - 54 Christenson, Keith, 2005: Going batty in Jamaica.- NSS News, 63/9, 4-10, Huntsville.**
- 14 - 55 Chuanrong, Zhang & Weidong, Li & Day, Michael, 2005: Towards Establishing Effective Protective Boundaries for the Lunan Stone Forest Using an Online Spatial Decision Support System.- Acta Carsologica, 34/1, 151-167, Ljubljana.**
The Lunan Stone Forest is the World's premier pinnacle karst landscape, and was established as a national park in 1982. The existing boundaries are essentially arbitrary, based on notional scenic value, and take into consideration neither the physical landscape nor the existing pattern of urban development. Moreover, the location of the boundaries is not clear to the local community, rendering them largely ineffective. Developing an online Spatial Decision Support System (SDSS) potentially provides a way to establish protective boundaries that are meaningful from the perspective of karst science, yet also readily identifiable by the local community within the context of the existing urban fabric. The 7km² "core area" of the Stone Forest Park is used to illustrate the use of the SDSS.
K.W.: Lunan Stone Forest, karst, conservation, protected area, boundaries, Spatial Decision Support Systems (SDSS).
- 14 - 56 Cigna, Arrigo A. & Middleton, G.J., 2005: The Stufe di Nerone (Nero's Oven): an ancient artificial cave near Naples (Italy). Proc. 14th Int. Congr. Speleology, Greece: O-163, Athens.**
The earliest known example of a cave plan was published in 1546 in a book by Georg Agricola. It represents a set of branching tunnels called the Stufe di Nerone (Nero's Oven) in the volcanic region of Pozzuoli near Naples. This cave was excavated in the tufa deposits to reach hot springs to be used therapeutically. This

old plan, another one drawn at the end of the 18th century and a modern one are here reported together with some ancient prints of this cave which is just one remnant of the rich cultural- and geo- heritage of this corner of Italy.

K.W.: ancient artificial cave, the oldest cave plan, Italy.

14 - 57 Cigna, Arrigo A., 2005: Chats and facts about the Quarry Cave (Bermuda).- Proc. 14th Int. Congr. Speleology, Greece: O-80, Athens.

The Quarry Cave was uncovered during the excavation of Wilkinson's Quarry, Hamilton Parish, Bermuda, in February 2002. In June 2002 and April 2003 detailed studies on pros and cons of the conservation of the cave were carried out. At the same time rumours based essentially on emotional feelings started to be spread around, particularly within the speleological community. Such statements puzzled sometime persons not adequately aware of the aspects of the situation. Here a rather complete description of the Quarry Cave problem is reported.

K.W.: Quarry Cave, safety, environment, protection.

14 - 58 Cigna, Arrigo A., 2005: L'importanza socio-economica delle grotte turistiche.- Atti Conv. Naz. "L'ambiente carsico e l'uomo", Bossea 5-8 Settembre 2003. Staz. Scient., 201-211, Bossea.

The cave environment is, in the majority of instances, a system isolated from the point of view of the energy balance. Therefore any intrusion implies, in principle, a change of the natural equilibrium. For this reason, when an environmental impact assessment has to be carried on, any form of presence of human beings must be taken into account, from the simple cave exploration, to adventure tours, to the visitors in a show cave. Obviously, the latter is in general the most relevant source of energy which may affect the energy balance of a cave. Therefore, it is now widely accepted the necessity of an environmental impact assessment to be performed before the development of a show cave. A monitoring network of the main climatological parameters must be installed and a commission with the task of checking the degree of protection of the cave environment must be established. In this paper the main steps of the evaluation of the cave parameters and their possible changes due to different forms of the human presence are summarised. In particular a rough cost estimation of the different forms of cave monitoring is here reported. However, the socio-economical implications due to the development of a show cave are not limited to the cave environment. In fact, together with the impact of the tourists on the cave environment, also the impact of the show cave in the surroundings must be considered. The most important show caves in the world brought a relevant change. The most important show caves of the world have heavily modified the economy of their neighbouring. Effect resulted in a radical change of the socio-economical characteristics by transforming small towns with a modest agricultural economy into large tourist resorts of regional or national importance. When the whole of show caves is considered, without limiting to the most remarkable caves, the global effects appears clearly as an instrumental source for the economy. Obviously, a very accurate programming of the entire process is required because small anomalies or mistakes may develop rapidly and become ruinous effects both for the cave environment and the corresponding socio-economic environment.

K.W.: cave environment, energy balance, environmental protection, monitoring networks, show caves, socio-economic development.

14 - 59 Cigna, Arrigo A., 2005: Radon in caves.- International Journal of Speleology, 34 (1-2), 1-18.

The physical characteristics of radon are reported as well as its sources, the transport in rock and its behaviour in caves. Then, the instruments, both active and passive, used for the measurement of radon concentration are discussed by taking into account their respective advantages and disadvantages for the use in the cave environment. Since in many countries radon is the object of regulations that were adopted for radiation protection purposes, this aspect is examined and the recommendations issued by international organisations and enforced in different countries are reported. Materials, methods and other remarks on the limits implementation are also listed with the aim of providing the managers of show caves with some instruments to comply with the domestic requirements in the most convenient solution.

K.W.: radon, cave environment, radiation protection, monitoring, regulations.

14 - 60 Cigna, Arrigo A., 2005: Some basic principles for the development of show caves: the Frasassi Charta. Proc. 14th Int. Congr. Speleology, Greece: O-121, Athens.

It was deemed convenient to collect some basic principles concerning the development of show caves on account of their increasing number being developed all over the world. Both the actions to be taken before the beginning of the development and those to be carried on successively, are here considered. These principles, which have been already delivered in Frasassi, Italy, in 2004, are here reported for discussion and a possible adoption as an ethic code.

K.W.: show caves, ethics, environmental protection.

14 - 61 Cigna, Arrigo A., 2005: The propagation of the seasonal heat wave into Fantasy and Crystal caves (Bermuda).- Proc. 14th Int. Congr. Speleology, Greece: O-15, Athens.

Fantasy and Crystal caves were monitored since some years both for air and water temperature. Such temperatures vary along the year due to the influence of the seasonal changes outside. Here the results of a study on the propagation of the heat wave from the surface sea water to the pools of water inside the caves are reported.

K.W.: Bermuda, show caves, environment, heat wave.

14 - 62 Cigna, Arrigo A. & Tomey, R.S. & Nolan, G., 2005: The climate of Kartchner Caverns (Arizona, USA).- Proc. 14th Int. Congr. Speleology, Greece: O-190, Athens.

Kartchner Caverns were opened to the public in November 1999, after 11 years of work carried out by the Arizona State Parks. This cave was monitored from the very beginning of the development and some climatic changes were detected. Here a comparison with some natural caves in the vicinity is reported in order to identify the sources of these changes.

K.W.: Kartchner caverns, climatology, environmental protection.

- 14 - 63** Cipro, Šimon & Tásler, Radko, 2005: Skutnik 2004 (Julské Alpy).- Speleoforum, 24, 69, s.l.
Caving exploration "Skutnik 2004" in Julian Alps (Slovenia).
- 14 - 64** Cole, David, 2005: The exploration and mapping of Waterfall Plunge.- NSS News, 63/6, 14-17, Huntsville.
- 14 - 65** Culiberg, Metka, 2005: Paleobotanic research on the Karst.- In: Mihevc, Andrej (Ed.). Voda in življenje v kamniti pokrajini - Kras = Water and Life in a Rocky Landscape - Kras (Projekt Aquadapt): Založba ZRC, ZRC SAZU, 149-154, Ljubljana.
By means of pollen analyses of samples from Škocjanski zatok and Sečovlje Salt Pans, we ascertained extended periods of the development of Holocene forest vegetation, from approximately 7000 to approximately 500 years BP. At the start of the Holocene, forest thrived here conditioned by climate, in which *Fagus* and *Quercus* predominated. Analyses of wood charcoal from two archaeological sites on Karst of Petrinje show that already in the Neolithic, the forest was already strongly anthropozoogenically degraded. Written sources report the extreme deforestation of the Karst in past centuries.
K.W.: pollen analysis, analysis of charcoal, karst, Slovenia.
- 14 - 66** Culver, David C. & White, William B., 2005: Encyclopedia of Caves.- 654 pp., Amsterdam etc.
- 14 - 67** Čalić, Jelena, 2005: Goran Dujaković: Caves in the Republic of Srpska. Published by: Zavod za udžbenike i nastavna sredstva, S. Sarajevo, 2004, 1-330 pp., 293 color photographs and figures, 42 cave maps, format (32 x 23,5) cm, hardbound; Bilingual (Serbian and English).- *Acta carsologica*, 34/1, 266-267, Ljubljana.
K.W.: Book review
- 14 - 68** Čar, Jože & Zagoda, Bojana 2005: Structural position of the shaft Habečkovo Brezno (Idrijsko, Slovenia).- *Acta carsologica*, 34/1, 113-133, Ljubljana.
With detailed geological mapping at a scale 1:5 000, beside general geological data also the structural and tectonical circumstances of the surrounding of Habečkovo brezno were recognised. The complicated tension deformations developed in compressive condition and the thrust contact are the main reasons for development of hydrological and surface karst features. With kinematical reconstruction we recognised that 400 m deep Habečkovo brezno has a special structural and hydrological location.
K.W.: Western Slovenia, the plateau of Črni Vrh, Habečkovo brezno, structural and tectonical development, kinematics, contact karst along thrust.
- 14 - 69** Čarni, Andraž, 2005: Vegetation between meadows and forests in the Kras region.- In: Mihevc, Andrej (Ed.). Voda in življenje v kamniti pokrajini - Kras = Water and Life in a Rocky Landscape - Kras (Projekt Aquadapt): Založba ZRC, ZRC SAZU, 126-140, Ljubljana.

This work deals with plant communities appearing on the transition between the grasslands of *Danthonio-Scorzonetum villosae* Ht et H-ić (1956) 1958 and forests of the *Ostryo-Quercetum pubescentis* (Ht. 1959) Trinajstić 1978. Here in the ecotone between grasslands and forest areas, the following plant communities may be spotted: fringe community from the suballiance of Submediterranean forest fringes *Dictamno-Ferulagenion* van Gils et al. 1975, pre-mantle of the *Frangulo rupestris-Cotinetum coggygriae* Podini et al. 2002, mantle of the *Fraxino ornico-Cornetum hungaricae* Čarni 1998, secondary forest of the *Seslerio autumnalis-Ostryetum carpinifoliae* Ht & H-ić 1950 and forest of the *Ostryo carpinifoliae-Quercetum pubescentis* representing a potential natural vegetation of the area studied. The communities are presented with tables, photos, a sketch and dendrogram. K.W.: vegetation, reforestation, grasslands, Kras.

14 - 70 Čelik, Tatjana & Verovnik, Rudi & Gomboc, Stanislav & Lasan, Mojmir, 2005: *Natura 2000 v Sloveniji. Metulji, Lepidoptera.*- 288 pp., Ljubljana. "Natura 2000" in Slovenia: butterflies.

14 - 71 Čelik, Tatjana, 2005: *Aquatic Moths (Lepidoptera, Pyralidae: Nymphulinae) of karstic ponds.*- In: Mihevc, Andrej (Ed.). *Voda in življenje v kamniti pokrajini - Kras = Water and Life in a Rocky Landscape - Kras (Projekt Aquadapt): Založba ZRC, ZRC SAZU, 100-107, Ljubljana.*

Aquatic moths (Pyralidae, Nymphulinae) are the only representatives of Lepidoptera whose early development stages (eggs, larvae, pupae) live in water. Eleven species appear in Europe, 5 of which are found in Slovenia. On the Kras, where »kali« and »lokve« are the only surface water ecosystems, we ascertained the presence of two species of water moth (*Elophila nymphaeata*, *Cataclysta lemnata*) in 5 of 60 investigated water reservoir. The decisive factors for the existence of these moths on the Kras are the presence of larval feeding plants and on the sun exposure and structure of the banks of ponds. The survival of both species in the investigated area is threatened primarily because of the abandonment of use and filling in of karstic ponds, causing overgrowing with terrestrial plants, and because of intensive use of the surrounding land. We suspect that the network of water reservoirs on the Kras is an important connecting link between populations of these two hygrophilic species.

K.W.: Pyralidae, Nymphulinae, Kras, ponds, Slovenia.

14 - 72 Čelik, Tatjana & Zelnik, Igor & Babij, Valerija & Vreš, Branko & Pirnat, Alja & Seliškar, Andrej & Drovenik, Božidar, 2005: *Inventory of karstic ponds (kal and lokev) and their importance for biotic diversity.*- In: Mihevc, Andrej (Ed.). *Voda in življenje v kamniti pokrajini - Kras = Water and Life in a Rocky Landscape - Kras (Projekt Aquadapt): Založba ZRC, ZRC SAZU, 72-82, Ljubljana.*

Kal (plural kali) and lokev (plural lokve) formerly had an essential function in the existence, not just of agriculture but even of the human population of Kras. Because of the typical karstic terrain, there are no surface waters here, and for the most part the groundwater is very deep below the surface, so before the supply of mains water, kali and lokve were the only source of water. Nowadays, their ori-

ginal role is in practice unimportant to the local population but, at the same time, kali and lokve, as the only surface water bodies and wetland ecosystems of Kras, have gained a new role. Kali and lokve make an essential contribution to biotic diversity of Kras. In such environment, where overgrowing because of abandonment of land use also means a loss of biotic diversity, their importance is much greater and they must be preserved as many as possible.

K.W.: karstic ponds, Kras, Slovenia.

- 14 - 73 Čermelj, Branko & Perini, Sara, 2005: Bataglioni speciali: Kalvarija primorskih mladoletnikov v sliki in besedi.- 422 p.p., Bilje.**
“Bataglioni speciali” – calvary of the minors from Primorska through pictures and words.

- 14 - 74 Černigoj, Tereza, 2005: The issue of contemporary water supply as seen by the interviewees from five selected regions in south-west Slovenia.- In: Mihevc, Andrej (Ed.). Voda in življenje v kamniti pokrajini - Kras = Water and Life in a Rocky Landscape - Kras (Projekt Aquadapt): Založba ZRC, ZRC SAZU, 535-554, Ljubljana.**

The aim of this contribution is to show the regional differences in the socio-geographic characteristics and the level of development of the water supply network in individual south-west Slovene regions. Once this was established we wished to link these two aspects with the opinion, knowledge and attitude of the inhabitants from the chosen regions in relation to water, water supply and environmental issues in general. The results of these relations are shown in three thematic segments. In the first we discussed the opinions of the inhabitants from individual regions in relation to the various environmental issues. In the second we dealt with the attitude towards water issues. The third thematic segment reveals the behaviour or the actual state of the consciousness towards water and the environment in general. In the conclusion we tried to understand all three chosen views in the light of regional differences, thus we presented individual regions in a joint depiction of natural conditions, the development of the water supply network and the socio-demographic situation and combined them with the gathered responses as regards the situation of the water supply and water issues.

K.W.: contemporary water supply, attitude towards water, regional differences, Slovene Coast, Vipava valley, Kras plateau, Pivka basin, Brkini hills and the valley of the river Reka.

- 14 - 75 Čuček, Martina, 2005: Strateška lega Zgornje Pivke in presihajočih jezer po uveljavitvi rapalske pogodbe.- Acta carsologica, 34/3, 768-783, Ljubljana.**

Its strategic position has given Upper Pivka (Zgornja Pivka) an important role in history on several occasions. The last of these occurred after the implementation of the Rapallo Treaty at the end of the First World War, when the area was annexed to Italy and turned into borderland. Across the border the ‘Kontrabant’ developed. Through the Pivka Basin (Pivška kotlina) ran the second line of the Alpine Wall, which was a mighty defence system build to protect Italy’s eastern border with Yugoslavia. The natural north-east passage, a good view of the valley, and good conditions for supplying military units were the main reasons for built-

ding fortifications on the Primož hill. The command centre for the nearby bunkers was also located there. For military purposes, water reservoirs, roads, bridges, a powder magazine, and an airfield were built; the bed of the Pivka river was regulated, and the parts most exposed to strong winds ("burja") were forested. Lakes Petelinjsko jezero and Palško jezero were used as training fields by the army. The two military fields had already been in service in Austro-Hungarian times. The Yugoslav National Army also used the lakes for its manoeuvres and did much more damage to them than the Italian army had done previously. The bottom of Palško jezero was reconstructed in 1990, and the owners were compensated. On Petelinjsko jezero, however, bomb craters, gun-nests, and a trench can still be seen.

K.W.: Pivka basin, Pivka lakes, Rapallo border, Vallo Alpino, fortifications, Slovenia.

- 14 - 76 **Čukušić, Ivica, 2005: Istraživanje izvora Krušnice kod Bosanske Krupe, BiH.- Velebiten, 42, 9-12, Zagreb.**

The exploration of the spring Krušnica near Bosanska Krupa, Bosnia and Herzegovina.

- 14 - 77 **David, K. & Shurtz, Ryan K., 2005: Main Drain Cave.- NSS News, 63/4, 4-14, Huntsville**

- 14 - 78 **Davis, Donald G., 2005: Forum:persistent coliform contamination in Lechuquilla cave pools.- Journal of Cave and Karst Studies, 67/1, 57, Huntsville.**

- 14 - 79 **Day, M.J., 2005: Stakeholder reaction to the proposed establishment of the Cockpit Country National Park, Jamaica.- Proceedings of the International Transdisciplinary Conference on Development and Conservation of Karst Regions, ed. O. Batelaan, M. Duser, J. Masschelein, Tran Tan Van, Vu Thanh Tam and Nguyen Xuan Khien, RIGMR, Hanoi, 34-39, 2005.**

Stakeholder reaction to the proposed establishment of the Cockpit Country National Park, which expands upon the Forest Reserve that has been in existence since the 1950s, has been very mixed. International attitudes, particularly those of NGOs such as the Nature Conservancy, have been uniformly positive. Likewise, national NGOs, such as Birdlife Jamaica and the Jamaica Conservation Development Trust, have been supportive. The attitudes of local residents have been ambivalent; some see economic benefit through tourism, but others fear prohibition of traditional forest uses. Individuals involved in illegal activities, such as timber cutting and capturing wildlife for the pet trade, are opposed, but operate clandestinely. The Maroon population, which maintains land tenure rights, appears uncertain how best to proceed, but is inherently suspicious and wary. Business concerns, particularly the logging and bauxite mining industries, are opposed to the park because it will proscribe their activities, but other entrepreneurs in the tourism sector visualize economic gain through park development. Government agencies have sent mixed messages, some supportive of conservation, others aligned with the logging and bauxite mining concerns.

- 14-80** Debeljak, Irena & Buffetaut, Eric & Buser, Stanko & Košir, Adrijan & Krivic, Katarina & Mikuž, Vasja & Otoničar, Bojan, 2005: Terrestrial vertebrate locality in Upper Cretaceous Gosau beds near Stranice (NE Slovenia).- In: Horvat, Aleksander (Ed.). 17. posvetovanje slovenskih geologov, (Geološki zbornik, 18), Univerza v Ljubljani, Naravoslovnotehniška fakulteta, Oddelek za geologijo, 26-28, Ljubljana.
- 14-81** Debevec Gerjevič, Vanja, 2005: Naj bo ravnovesje med naravo in ljudmi doma prav tu, pri nas na Krasu.- *Kras*, 69, 28-31, Ljubljana.
The balance between the nature and the man should be just here, on Kras.
- 14-82** Deu, Živa, 2005: Prihodnost Štanjela, najlepšega mesteca na Krasu.- *Kras*, 69, 8-13, Ljubljana.
The future of Štanjel, the most beautiful small town on Kras.
- 14-83** Dobeš, Pavel, 2005: Kras v Irsku.- *Speleoforum*, 24, 79-80, s.l.
Karst of Ireland.
- 14-84** Dobnikar, Meta & Humar, Marjeta & Jarc, Simona & Jeršek, Miha/Eds., 2005: Gemološki terminološki slovar.- *Zbirka Slovarji*, 230 p., Ljubljana.
Terminological dictionary of precious stones.
- 14-85** Dorsten Ingo & Hülsmann, Thomas & Hüser, Anette, 2005: Das Herbstlabrynth-Adventhöhle-System - die erste Riesenhöhle Hessens.- *Mitteilungen des Verbandes der deutschen Höhlen- und Karstforscher*, 51/1, 4-10, München.
- 14-86** Dreybrodt, Wolfgang & Gabrovšek, Franci & Perne, Matija, 2005: Condensation Corrosion: A theoretical approach.- *Acta carsologica*, 34/2, 317-348, Ljubljana.
Condensation of water from warm, humid air to cold rock walls in caves is regarded to play a significant role in speleogenesis. The water condensing to the cave walls quickly attains equilibrium with the carbon dioxide in the surrounding air, and consequently dissolves limestone or gypsum forming various types of macro-, meso-, and micromorphologies. In this paper we present the basic physical principles of condensation and give equations, which allow a satisfactory estimation of condensation rates. Water condensing to a cooler wall releases heat of condensation, which raises the temperature of the wall thus reducing the temperature difference ΔT between the warm air and the cave wall. Furthermore one has to take into account the heat flux from the air to the cave wall. This defines the boundary conditions for the equation of heat conduction. For a constant temperature of the air initial condensation rates are high but then drop down rapidly by orders of magnitude during the first few days. Finally constant condensation rates are attained, when the heat flux into the rock is fully transmitted to the surface of the karst plateau. For spherical and cylindrical conduits these can be obtained as a function of the depth Z below the surface. When diurnal or seasonal variations of the air temperature are active as is the case close to cave entrances, condensation rates can become quite si-

gnificant, up to about 10^{-6} m/year. The theoretical results are applied also to corrosion of speleothems and the formation of »Röhrenkarren« as described by Simms. To convert condensation rates into retreat of bedrock the saturation state of the solution must be known. In the appendix we present experiments, which prove that in any case the solution flowing off the rock is saturated with respect to limestone or gypsum, respectively.

K.W.: condensation, corrosion, speleogenesis, heat transfer.

- 14 - 87 Dreybrodt, Wolfgang & Gabrovšek, Franci & Romanov, Douchko, 2005: Processes of Speleogenesis: a modelling approach.- Carsologica 4, 375 pp.+ CD, Postojna - Ljubljana.**
- 14 - 88 Duval, Mélanie, 2005: Forum sur le karst et le patrimoine mondial en Europe, 3-7 novembre 2004 à Lipica, Slovénie.- Karstologia, 45-46, 67-68, s.l.**
- 14 - 89 Duval, Mélanie, 2005: Tourisme souterrain, 4th International ISCA Congress, Postojna.- Karstologia, 45-46, 76, s.l.**
- 14 - 90 Emblanch, C. & Fidelibus, M.D. & Hertelendi, E. & Kogovšek, J. & Zojer, H., 2005: Environmental tracing for outlining fresh groundwater flow in a coastal karstic aquifer.- Groundwater management of coastal karstic aquifers, COST Action 621, Final Report, 141-153, s.l.**
- 14 - 91 Erjavec, Martina & Peršič, Magda, 2005: Živeti z jezerom, živeti brez jezera. Uvod v raziskovanje načina življenja ob Petelinjskem in Palškem presihajočem jezeru.- Acta carsologica, 34/3, 784-814, Ljubljana.**
 People of Petelinje and Palčje have adapted to the ever-changing nature of the intermittent karstic lakes through the centuries. Both lakes are filled with water only a part of the year, so that the grassy areas usually provide a yearly harvest of hay. Palško jezero and the shores of Petelinjsko Jezero are suitable for pasturing. Economically the lakes were and still are connected with raising livestock. Agriculture is now no longer profitable, so the only way to preserve the land is by the state devoting enough money for agriculture. The lake was connected to another economic activity until the middle of the 20th century, ice making. Additional supplementary activities dependent on the lake are hunting and gathering. Petelinje and Palčje villagers had to share their lakes with the Austro-Hungarian, Italian and Yugoslav armies in the past; they left traces that can still be seen today. The lakes, with their unusual and highly picturesque nature, represent a place of peace and relaxation to the locals.
 K.W.: ethnology, Petelinjsko jezero, Palško jezero, way of life by a lake, water supply, economy by the lake, pasturing, harvesting, ice making, gathering, hunting, military exercise on the lake, free time, tourism, relations with the lake, Pivka basin, Slovenia.
- 14 - 92 Eusebio, Attilio & Bordin, Roberto & Jarre, Roberto & Minciotti, Giuseppe, 2005: Crna gora 2005, speleo-sub in Montenegro.- Speleologia, 26/52, 60-67, Bologna.**

14-93 Faulkner, Trevor, 2005: Cave inception and development in Caledonide metacarbonate rocks.- PhD Thesis. University of Huddersfield, 2005.

This is the first comprehensive study of cave inception and development in metacarbonate rocks. The main study area is a 40000 km² region in central Scandinavia that contains over 1000 individual metacarbonate outcrops, and has nearly 1000 recorded karst caves. The area, which was repeatedly glaciated in the late Cenozoic, comprises a suite of nappes in the Cambro-Silurian Caledonides, a paleic range of mountains with terranes presently occurring on both sides of the northern Atlantic. Information about the stripe karst and non-stripe karst outcrops and their contained caves was assembled into computer-based databases, enabling relationships between the internal attributes of the caves and their external geological and geomorphological environments to be analysed. A rather consistent pattern emerged. For example, karst hydrological system distances are invariably shorter than 3.5 km, and cave passages are positioned randomly in a vertical dimension, whilst commonly remaining within 50m of the overlying surface. This consistency is suggestive that the relevant cave inception, development and removal processes operated at a regional scale, and over long timescales. A consequence of the *epigean* association of caves with the landscape is that cave development can only be understood in the context of the geomorphological evolution of the host region. A review of the latest knowledge of the inception and development of caves in sedimentary limestones concluded that the speleogenesis of the central Scandinavian caves cannot be explained by these ideas. Five new inter-related conceptual models are constructed to explain cave development in metacarbonate rocks in the various Caledonide terranes. These are: 1. The *tectonic inception model*. 2. The *external model of cave development*. 3. The *hydrogeological model (relict caves, mainly vadose caves, combination caves)*. 4. The *internal static and dynamic model of cave development*. 5. The *Caledonide model*. K.W.: allochthon, aquiclude, Caledonide, speleogenesis, dedolomitization, foliation, Holocene, hydraulic ratio, inception, speleogenesis, jökulhlaup, marble, metacarbonate, aquifer, neotectonics, cave, seismicity, subglacial lake, models, Stripe Karst, Weichselian.

14-94 Faulkner, Trevor, 2005: Cave passages as indicators of glacio-climatic events.- Annual meeting of the British Geomorphological Research Group at the University of Southampton, 19-21 September 2005. Abstracts, p20.

A study of the karst caves formed in Caledonide marbles in central Scandinavia has shown that their existences and morphologies can be explained by assuming that phreatic passages were commonly formed from fractures that were enlarged by dissolution beneath active ice-dammed lakes during each major deglaciation, and that many became relict during interglacials. Other "mainly vadose" passages were entrenched during interglacials, with the active ones (which may contain phreatic sections, and which have maximum dimensions related to their catchment areas) primarily entrenched during the Holocene. Now that the laws of the physics and chemistry of limestone dissolution have been derived satisfactorily, the timescales for these processes are calculable from basic assumptions. Some of the longer and deeper caves also illustrate a complex inter-play between passage development at successively lower levels over several glacial cycles

(with correspondingly lower interglacial spring outlets) and removal of upper passages by glacial erosion. Additionally, karst caves situated at lower altitudes nearer the coast can display enlargement of phreatic entrances (and littoral caves can also be formed in a variety of lithologies) by marine processes during times of isostatic depression, with differing morphologies created by the rising and falling sea-levels that occur at the onset and culmination of each glaciation. An inversion of findings such as these should permit precise measurements of individual cave attributes to provide constraints on the local timings and effects of the later Pleistocene glacio-climatic events. K.W.: Caledonide, Scandinavia, ice-dammed lakes, mainly vadose, Holocene, isostatic.

14 - 95 Faulkner, Trevor, 2005: Marmorgrotta, Landbrua and the distortion of magnetic cave surveys. *Grottan* 40 (2) 29-34, 2005.

This article describes two well-known Norwegian caves near the border with Sweden that were surveyed using rapid BCRA Grade 3 techniques. Marmorgrotta was initially surveyed using the author's solo survey method, but an unacceptable mis-closure occurred around a short loop. A repeat survey three years later found the same problem. Closing the loop by manually adjusting the values of recorded magnetic bearings revealed that the distortion was caused by overhead electric power lines. This appears to be the first example of this phenomenon. A possible, untested, solution is to measure the true angle between the two survey legs at each station by using a protractor or by taking the difference of the two magnetic bearings.

K.W.: Mis-closure, magnetic, distortion, power line, solo survey.

14 - 96 Faulkner, Trevor, 2005: Modification of cave entrances in Norway by marine action.- *Proceedings of the 14th International Congress of Speleology, Athens - Kalamos, 21-28 August 2005. Paper no. 069, 6pp.*

Several karst caves in north central Norway lie below the (Weichselian) deglaciation marine limit, which is the highest level reached by the sea during the Younger Dryas and Holocene melting and the associated isostatic uplift. Except for mainly vadose caves of Holocene age, such caves commonly exhibit wide, relatively low, sub-horizontal, tapering, rocky entrances that are larger than internal passages. Such morphology appears diagnostic of erosion by waves and sea ice at a time of falling sea level and confirms the prior existence of the cave passage. However, several Norwegian non-carbonate sea caves and a few karst caves have entrances that are taller and much larger, but lie well above the deglaciation marine limit. It is suggested that these cave entrances were primarily enlarged when the sea approached a glaciation marine limit, perhaps at the start of the Weichselian and / or an earlier glaciation. The different morphology can be explained by enlargement at a time of rising sea level, when the coastline experienced isostatic depression before being covered by ice. In the case of karst caves, these large entrances may indicate that continuing smaller internal passages were in existence before the end of the Eemian interglacial.

K.W.: Norway, Weichselian, sea level curve, deglaciation marine limit, glaciation marine limit, isostasy, Holocene, sea caves, karst caves, marine enlargement.

14-97 Faulkner, Trevor, 2005: Nordlysgrotta og Marimyntgrotta.- Norsk Grotteblad (45) 23-28. [In Norwegian].

Two significant caves in Velfjord (Norway) were originally explored in the mid-1990s by local climbers, most of whom have since moved away. The caves and their hydrology were related to the local 1:5000 economic map by the author in July 2000, and finally surveyed using rapid BCRA Grade 3 techniques by a small team in July 2004. Nordlysgrotta is now 423 m long and 33 m deep, and Marimyntgrotta is 611 m long and 36 m deep. Both caves could be extended further, and new entrances could be found. They could also perhaps be connected, because they are only about 14 m apart at one point. It is likely that the same stream flows from a Dry Doline on the surface into The Meanders of Nordlysgrotta, before re-appearing at the Marimyntgrotta streamway. From its Outlet sump, it then flows to a surface spring below the tiny Masterstonglia Resurgence Cave. The Nordlysgrotta / Marimyntgrotta system is remarkable because of the extent of tectonic influence, for which many examples are given. The speleogenesis of the system can be explained by assuming that the two caves functioned as independent single phreatic loops during several Mid Pleistocene deglaciations. Each glaciation caused surface lowering and the production of deeper inception fractures, so that by the time of the final (Weichselian) deglaciation, there was direct phreatic flow between the two caves. The presence of unlaminated sand deposits in both caves can be understood by realising that these caves were inundated by the sea after the local ice melted at the end of the Younger Dryas stadial, before isostatic uplift brought their entrances to their present altitudes of 155 m and 138 m. K.W.: Norway, tectonic, phreatic loop, inception fracture, glaciation, isostatic.

14-98 Faulkner, Trevor, 2005: Tectonic inception in Caledonide marbles.- 13th International Karstological School "Classical karst": Karst in various rocks, Postojna, 27-30 June, 2005. Presentation abstracts, 25.

A fundamental difference between caves in sedimentary limestones and those formed in a repeatedly-glaciated 40000 km² region in central Scandinavia that contains over 1000 individual marble outcrops and has nearly 1000 recorded karst caves is the metamorphic grade of the karst bedrock and its very low primary porosity. Allied to this is the fine-scale foliation and consequent lack of 'bedding-plane' partings. Indeed, the foliation is commonly vertical in the western part of the study area, where sub-horizontal openings must be along joints or other fractures. The deepest cave is only 180 m deep, despite outcrop vertical ranges reaching over 900 m. Caves tend to cluster together and are positioned randomly in a vertical dimension, whilst commonly remaining within 50 m of the overlying surface. Additionally, despite some stripe karst outcrops being several tens of kilometres in length, there are no regional scale caves, and karst hydrological system distances are invariably shorter than 3.5 km. Because the caves are relatively short and epigeal and there is a complete absence of long, hypogean, cave systems, speleogenesis by the (chemical) inception horizon hypothesis is unlikely. A *tectonic inception model* is derived that proposes that it is only open fracture routes that could provide the opportunity for dissolution and enlargement into cave passages in the Caledonide marbles. It is hypothesised that the dimensions of these fractures are related to the magnitude, and perhaps to the frequency,

of local earthquakes and commonly-small tectonic movements that arose from the isostatic rebound that accompanied deglaciation at the end of each major Pleistocene glacial. The openings formed along *inception surfaces* between the limestone and adjacent aquicludes and at *inception fractures* that are entirely within the limestone and are commonly (though not universally) parallel to, or orthogonal to, the foliation. The model builds on reports of a '*partially detached*' thin upper crustal layer in similar settings in Scotland and shows that the present *maximum* subsurface cave distance is commonly less than one-eighth of the depth of the local glaciated valley. This suggests that fracture generation was related to the scale of isostatic uplift and was partly determined by the magnitude of seismicity caused by the differential pressure change and differential uplift that occurred along valley walls as the icesheet receded. The maximum one-eighth relationship is also commonly maintained in the other Caledonide marble areas of Scandinavia, Scotland and New England (USA). Later neotectonic movements observed by sharp edges and slickensides in most present relict cave passages and sporadically on the surface provide evidence in support of the model.

K.W.: Caledonide, deglacial speleogenesis, epigeal, foliation, ice margin, inception fracture, inception surface, marble, near surface aquifer, neotectonics, one-eighth relationship, seismicity, subsurface cave distance, tectonic inception, stripe karst, Weichselian.

14 - 99 Faulkner, Trevor, 2005: Vallerdalgrotta.- Grottan 40 (4), 11-15.

The exploration and survey of the 344 m-long Vallerdalgrotta, which is just inside Norway near the border with Sweden, is described. The cave has formed in a long outcrop of metamorphic limestone in the Leipikvatnet Nappe of the Middle Köli Nappes, in a vertical stripe karst setting. The vadose entrance passage primarily runs across the strike, suggesting a Holocene age, whereas the larger and predominantly phreatic passage is aligned with the strike, suggesting speleogenesis during one or more deglacial inundations. The sink to resurgence distance is about 3.5 km, which is the longest known karst hydrological system in central Scandinavia.

K.W.: metamorphic, foliation, central Scandinavia.

14 - 100 Faverjon, Marc & Brouquisse, François, 2005: Laos.- Spelunca, 99, 7-9, Paris.

14 - 101 Ferenc, Mitja, 2005: Prikrito in očem zakrito. Prikrita grobišča 60 let po koncu druge svetovne vojne.- 124 p.p., Celje.

Hidden to the eyes. Concealed graveyards 60 years after the second world war.

14 - 102 Ferrarese, Francesco & Sauro, Ugo, 2005: The Montello Hill: The "Classical Karst" Of The Conglomerate Rocks.- Acta carsologica, 34/2, 439-448, Ljubljana.

The Montello hill is, probably, the most typical morphounit between the karsts developed in conglomerate rocks. It may be considered the classical karst of the conglomerates comparable with the Classical Karst of limestones: the Carso of Trieste. The Montello hill consists in an elliptical plan figure, elongated for about 13 km in a WSW-ENE direction and a width of about 5 km. The rock unit involved

is the “Conglomerato del Montello” of late Miocene age (Messinian), mostly composed by carbonate pebbles bound by a calcitic cement, which is 2000 m thick. The Montello is shaped by a complex system of fluvial planation and incision forms in which are distinguishable a main plateau and a stairs of seven planation rock cut terraces. The terraces are cut in the slope of a dead antecedent valley. On the fluvial planation forms dolines, mostly of the drawdown type but also of the point recharge type, have evolved. In total more than 2000 dolines are present. In the seven rock cut terraces the dolines show different development and dimensions according with the ages of the surfaces. In the first morphogenesis of these dolines and of the caves the control of the plan structures as the bedding surfaces and the fractures seems to have been feeble; on the contrary the porosity of the conglomerate has been a determinant factors for the developmente of the karst drainage. K.W.: conglomerate karst, karst geomorphology, doline, Montello, Italy.

14 - 103 Fileccia, Alessio & Sitta, Emanuela & Tormene, Giuseppe, 2005: I laghi sotterranei della Namibia.- Speleologia, 26/52, 68-72, Bologna.

Underground lakes of Namibia.

14 - 104 Florea, Lee J. et al., 2005: The 2004 Vaca Plateau Geoarchaeology expedition - Belize.- NSS News, 63/7, 9-17, Huntsville.

14 - 105 Florjančič, Alojzij Pavel, 2005: Beči, Luže, Škaupce and Šterne. Important Water-Storage Facilities of the Past in the Area between the Gorjanci Hills and Kočevski Rog.- In: Mihevc, Andrej (Ed.). Voda in življenje v kamniti pokrajini - Kras = Water and Life in a Rocky Landscape - Kras (Projekt Aquadapt): Založba ZRC, ZRC SAZU, 287-293, Ljubljana.

The district of Uršna sela, situated on the border between the Gorjanci hills and Kočevski Rog, and between southeast Dolenjska and Bela Krajina, in administrative terms part of the municipality of Novo Mesto, has no natural sources of flowing water. Despite such unfavourable conditions, this area was settled even in prehistoric times. Existence was originally facilitated by beči, natural reservoirs in some of the karst hollows. The interior of one of these, the uršenski beč, of elliptical shape and with steep sides, is lined with stone blocks. Spiral steps lead down into it and three washboards stand outside it. The beč holds more than 50,000 litres of water. It was in use until the first half of the 20th century. By the second half of the 20th century all houses had man-made reservoirs - rainwater tanks known as šterne - used to collect rainwater from the roof for the needs of the people and their livestock. Today these once indispensable and remarkable water-collectors have fallen into ruin or have been converted into cesspits. Until the middle of the 20th century luže (ponds) were used to provide water for grazing animals. In summer, people in remote meadows also obtained water from škaupce, small natural or man-made hollows in the limestone.

K.W.: water-storage facility, beč, luža, škaupca, šterna; Dolenjska karst, Uršna sela, Novo mesto.

14 - 106 Forti, Paolo & Cigna, Arrigo A., 2005: The formations of the Grutas del Palmito (Bustamante, Nuevo Leon, Mexico).- Proc. 14th Int. Congr. Speleology, Greece: O-146, Athens.

The formations found in the "Grutas del Palmito" confirm the existence of different climatic situations occurred in the cave. Among the more common formations this cave is characterised by a number of rimstone pools, sometimes very large. In some of them big cave pearls (up to more than 10 cm diameter) are found. Physical chemical analysis of the material of the rimstone pools show a very fast deposition rate with the presence of thermal water.

K.W.: Palmito, formations, rimstone, cave pearls.

14 - 107 Forti, Paolo, 2005: Genetic processes of cave minerals in volcanic environment: an overview.- Journal of Cave and Karst Studies, 67/1, 3-13, Huntsville.

14 - 108 Forti, Paolo, 2005: Grotte in fior di conio.- Speleologia, 26/52, 48-49, Bologna.

Caves on coins and banknotes.

14 - 109 Fricke, Uwe & Dorsten, Ingo, 2005: Die Höhlen der Insel Helgoland.- Mitteilungen des Verbandes der deutschen Höhlen- und Karstforscher, 51/1, 18-21, München.

The caves of the island Helgoland.

14 - 110 Friedl, Jerneja et al. Kranjc, Andrej, 2005: 30. svetovni kongres Mednarodne geografske zveze.- Geografski vestnik, 76/2, 109-112, Ljubljana.

30th International Geographical Union Conference.

14 - 111 Frisia, S. & Borsato, A. & Fairchild, I.J. & Susini, J., 2005: Variations in atmospheric sulphate recorded in stalagmites Variations in atmospheric sulphate recorded in stalagmites by synchrotron micro-XRF and XANES analyses.- Earth and Planetary Science Letters, 235, 729-740.

We report here the first speleothem time-series of the variability of sulphate, a species whose abundance in catchments is strongly influenced by atmospheric anthropogenic and volcanic sources. Annually-resolved archives of S, Mg, Si and P were generated by applying synchrotron radiation micro X-Ray Fluorescence (XRF) to two speleothems from different sites in northern Italy. X-ray absorption-edge spectrometry proves that the S is in the form of sulphate and XRF mapping demonstrates that S is within calcite and enriched zones are predominantly as layers. A post-1850 A.D. record from the Ernesto cave shows a substantial rise in sulphate, interpreted as reflecting the largely anthropogenically-forced variation of sulphate of the atmospheric boundary layer, moderated by some ecosystem storage. Analysis of the circa 5.2 to circa 5.0 ka interval of a speleothem from Savi cave, where ecosystem retention of S is likely to have been minimal, shows a spiky sulphate record, resembling that of ice cores. A series of sulphate peaks suggest that multiple volcanic sulphate aerosol missions at that time. This probably enhanced summer temperature cooling thus favouring the preservation of the human mummy of Neolithic-Copper age, the »Iceman« on the watershed between Italy and Austria. Both examples illustrate the power of speleothems to record atmospheric sulphate variability.

K.W.: stalagmites; sulphate; synchrotron radiation; micro X-ray fluorescence.

- 14 - 112 Frumkin, Amos & Fischhendler, Itay., 2005: Morphometry and distribution of isolated caves as a guide for phreatic and confined paleohydrological conditions (in press).-Geomorphology, 67, 457-471.**

Isolated caves are a special cave type common in most karst terrains, formed by prolonged slow water flow where aggressivity is locally boosted. The morphometry and distribution of isolated caves are used here to reconstruct the paleohydrology of a karstic mountain range. Within a homogenous karstic rock sequence, two main types of isolated caves are distinguished, and each is associated with a special hydrogeologic setting: maze caves form by rising water in the confined zone of the aquifer, under the Mt. Scopus Group (Israel) confinement, while chamber caves are formed in phreatic conditions, apparently by lateral flow mixing with a vadose input from above.

- 14 - 113 Fyer, Shane, 2005: Halite caves of the Atacama.- NSS News, 63/11, 4-19, Huntsville.**

- 14 - 114 Gaberščik, Alenka & Urbanc Berčič, Olga, 2005: Ekosistem Cerkniškega jezera ustvarja igra vode.- Kras, 72, 36-39, Ljubljana.**

Ecosystems of Cerknisko Jezero are made by the play of water.

- 14 - 115 Gabrovšek, Franci, 2005: Caves in Conglomerate: Case of Udin Boršt, Slovenia.- Acta carsologica, 34/2, 507-519, Ljubljana.**

Speleologically, a »pie« of mainly carbonate conglomerate atop of a sequence of impermeable oligocene and mainly fed by autochthonic waters, represent a simple speleological settings. There are 14 registered caves in the area, mostly concentrated along the western rim of the terrace. Four caves extend more than 200 m, the cave Arneževa luknja is the longest with 815 m. In the chapter I describe the general speleological settings in Udin boršt, characteristics of caves and factors important for their genesis.

K.W.: speleology, conglomerate, Udin Boršt, Slovenia.

- 14 - 116 Galan, Carlos & Herrera, Francisco F., 2005: Le système Roraima Sud au Venezuela.- Spelunca, 99, 17-22, Paris.**

- 14 - 117 Gams, Ivan, 2005: Kras je največji kemični laboratorij na svetu.- Kras, 70, 24-27, Ljubljana.**

Karst is the greatest natural chemical laboratory in the world.

- 14 - 118 Gams, Ivan, 2005: Role of the tectonics for the poljes and minor basins in the Dinaric Karst (case studies).- Acta carsologica, 34/1, 25-41, Ljubljana.**

The aim of the study is to show tectonic features in selected poljes and minor basins in the Dinaric Karst. Boreholes and gravimetric measurements show thick Neogene loess sediments and the rocky bottom below sea level – a real cryodepressions. The sediments are a part of the large plain sunken at the end of low Pliocene in the tectonically sinking basin. The recent seismic activity of this area proves the ongoing tectonic process. The deepest (more than 100 m) and the smallest polje in the Slovenian Dinaric karst, Globodol is a dry polje and a polje in the piezometric

level. Quaternary sinking of the bottom is the only one reasonable explanation of its genesis. On Planinsko polje there are signs of suballuvial corrosion and the indicators of the Holocene tectonic sinking. Four poljes in the Ravni kotari (Dalmatia) are shallow basins in the first stage of development. They prove the process of the bottom levelling below the shallow cover of alluvial sediments. An extremely deep small basin is about 450 m deep Red Lake (Hercegovina) and little basins at Črnomelj and Kočevje (Slovenia) of the depths of 300 m and 100 m below sea level respectively.

K.W.: karstology, karst geomorphology, neotectonics, polje, Dinaric Karst.

14 - 119 Geneste, Jean-Michel/Ed., 2005: Recherches pluridisciplinaires dans la grotte Chauvet.- Karstologia Mémoires, Société Préhistorique Française, Travaux 6, 11, 208 pp., s.l.

14 - 120 Genna, Antonin & Baily, Laurent & Lafoy, Yves & Augé, Thierry, 2005: Les karsts latéritiques de Nouvelle-Calédonie.- Karstologia, 45-46, 19-28, s.l.

14 - 121 Gillieson, David, 2005: Karst in Southeast Asia.- In: Gupta, A. (Ed.). The Physical Geography of South East Asia: Oxford University Press, 157-176, New York.

The karstlands of Southeast Asia are most diverse reflecting the influence of varied geology, uplift history, eustatic change, and climates past and present. Karst landscapes range in elevation from sea level to nearly 4000 m, and comprise extensive plateaux with dolines, towerkarst, cone karst, and low lying swampy terrain. The carbonate rocks on which they have formed range widely in age, and can be soft and impure or hard and crystalline. Many areas have been wholly or partially blanketed by volcanic ash during their evolution. Thus the region contains an unparalleled array of karst landscapes with some of the longest caves in the world. Throughout Southeast Asia limestone landscapes contain important resources for agriculture, water supply, forestry, extractive industry and tourism. In addition, karst areas contain significant cultural resources such as archaeological sites, cave temples and monuments. The exploitation of limestone resources can have serious impacts on biodiversity and the integrity of the karst system unless careful planning is carried out. This rational approach to the use of limestone resources will ensure that choices among candidate sites are made strategically and in a fully-informed manner. It parallels the environmental and social impact studies being carried out for other resource allocation issues such as hydroelectricity. Thus it is necessary that countries in Southeast Asia with extensive limestone resources make systematic and complete inventories and evaluations of the karst resource for the benefit of present and future generations. This may necessitate the development of specialised legislation to take account of the particular conditions of karst landscapes. Such legislation should include a requirement for strategic management plans, environmental impact plans, socio-economic impact plans, and provisions for mitigations and rehabilitation. Non-governmental organisations active in the field could make very valuable contributions here. These reports should be produced in a timely fashion so that planning is proactive rather than reactive, so that stakeholders can take good notice of the advice and act responsibly.

- 14 - 122 Gillieson, David, 2005: Karst of Okinawa and Kikai, Japan: Geomorphology and management.- In: Henderson, K. (Ed.) Proceedings of the Fifteenth Australasian Conference on Cave and Karst Management: 16-21, Carlton South, Victoria.**

Limestones are widely distributed in the Japanese islands, but the majority of these are hard, crystalline limestones forming impounded karsts (Figure 1). In contrast, eogenetic karsts formed in young porous limestones are widespread in the southern Ryukyu Islands of Japan. The best and most accessible of these are on Okinawa and Kikai islands. Karst and cave development in coastal or oceanic settings is very different to that found in continental or large island settings. The limestones are generally young, diagenesis is not advanced, and they are located close to their original depositional environment. The islands have freshwater lenses overlying brines, and complex mixing phenomena can enhance limestone solution processes. Finally, many of these carbonate islands have experienced profound sea level changes during the Pleistocene, as well as some local tectonic movement. Lessons learnt in eogenetic karsts of the Caribbean can be applied to those of the younger Japanese islands, but one factor is quite different: the Pleistocene limestones of the Ryukyus have been subject to very strong uplift and tilting along an active plate boundary, creating complexities in karst evolution. In addition, they have been subject to extremes of rainfall and periodic tsunamis, which have modified near-coastal environments on a regular basis.

- 14 - 123 Goldie, H.S, 2005: Erratic Judgements: re-evaluating solutional erosion rates of limestones using erratic-pedestal sites, including Norber, Yorkshire.- Area, 37, 4, 433-442.**

The re-interpretation of surface karst landforms in Northern England has led to a re-examination of well-known erratic-pedestal sites that were the origin for karst denudation rates applied extensively, on the supposition that erratics protect underlying limestone from rainwater solution. Height of the pedestal has been used to calculate long-term solutional-lowering, as much as 50 cm in 15 ka (33.3 mm/ka) from UK sites. The sites include Norber and Scar Close, Yorkshire, UK. This paper shows that the sites have been misinterpreted, in particular at Norber, where the erratics lie on a pre-existing structurally stepped surface. Norber and several other sites also experience much mechanical weathering, in relatively weak, well-fractured limestones, a process which must be distinguished from solution. Sites in strong, less-fractured limestones demonstrate lower rates, which are sounder indications of land surface lowering. Some pedestals have been confirmed as partly resulting from solutional weathering in surrounding soil and vegetation. Re-evaluation reduces solution rates to 3 to 13 mm/ka. Applying such rates has profound implications for understanding limestone landscapes, challenging orthodox views.

- 14 - 124 Godina-Golija, Maja, 2005: Water Supply and Its Use in Kras Households.- In: Mihevc, Andrej (Ed.). Voda in življenje v kamniti pokrajini - Kras = Water and Life in a Rocky Landscape - Kras (Projekt Aquadart): Založba ZRC, ZRC SAZU, 369-384, Ljubljana.**

The article discusses water supply in Kras households, particularly in the central part of the karst plateau. With the help of oral, written and visual sources, it sheds light on the problems of water supply and use in the villages of Tomaj, Dutovlje, Kobdilj and Štanjel from the early 20th century to the present day. Prior to the construction of water pipelines in the 1980s and 1990s, the village communities tackled water shortages with good organisation and survived even extremely dry summers by joining forces and building communal water storage facilities (komunske štirne, kali) and helping one another. This kind of joint work and solidarity is still alive today, although most settlements in the discussed Karstic area have a water pipeline.

K.W.: water, well, kal, household; Kras.

14 - 125 Gracia, F. J. & Benavente, J., 2005: Gallocanta karst polje and Piedra river valley.- Field Trip Guide, B - 4, 27 pp., Zaragoza.

14 - 126 Guis, Michel & Tarazona, Laurent, 2005: Bosnie.- Spelunca, 98, 13-14, Paris.

14 - 127 Gutierrez, F. & Gutierrez, M. & Gracia, F.J., 2005: Karst, neotectonics and periglacial features in the Iberian Range.- Field Trip Guide, C-5, 58 pp., Zaragoza.

14 - 128 Häck, Bernhard, 2005: Höhlen-Geschichte(n) aus Deutschland.- Das Archiv als kollektives Gedächtnis des Verbandes der deutschen Höhlen-und Karstforscher e.V.- Mitteilungen des Verbandes der deutschen Höhlen und Karstforscher, 51/2, 56-63, München.

Cave history of Germany through the archives.

14 - 129 Häuselmann, Philipp & Granger, Darryl E., 2005: Dating of caves by cosmogenic nuclides: method, possibilities, and the Siebenhengste example.- Acta carsologica 34/1, 43-50, Ljubljana.

Cosmic rays produce nuclides at and near the Earth's surface. ¹⁰Be and ²⁶Al in quartz are of particular interest for dating cave sediments. These two nuclides are produced at the surface at a fixed ratio. If the quartz is carried from the surface into a cave, the sediment is shielded from additional cosmogenic nuclide production, and the inherited ¹⁰Be and ²⁶Al decay radioactively. Because ²⁶Al decays more rapidly than ¹⁰Be, the ratio of these two nuclides indicates the time since the sediment was washed underground. The burial dating method can be applied to sediments in the age range of approximately 0.1 to 5 Ma. In ideal cases, we get information about valley lowering rates. If the provenance of the sediment is known, averaged erosion rates of the source area can be estimated. The oldest cave phases of the Siebenhengste system, Switzerland, were dated using cosmogenic nuclides. The oldest sediment is 4.4 ± 0.6 Ma and thus indicates Pliocene karstification of the Siebenhengste.

K.W.: cosmogenic nuclides, cave dating, methodology, Siebenhengste, Switzerland.

- 14 - 130 Häuselmann, Philipp & Tognini, Paola, 2005: Kaltbach cave (Siebenhengste, Switzerland): Phantom of the Sandstone?.- Acta carsologica, 34/2, 383-396, Ljubljana.**

Kaltbach cave is developed within the Eocene Hohgant sandstone in the Siebenhengste area in Switzerland. A remapping project of the cave resulted in a huge increase in length. It also produced a complete, updated map and longitudinal section. The cave's morphology does not fit with the "normal" speleogenesis: it is a so-called phantom cave. Phantoms are created by differential weathering of impure limestone under a preferably warm climate and a very low hydrologic gradient. Once the gradient steepens, the undissolved residual sediments are piped out; the "cave" manifests itself. The paper discusses the geomorphological features that permit to recognize the phantom caves.

K.W.: impure carbonate, speleogenesis, Siebenhengste, weathering, piping, cave morphology.

- 14 - 131 Häuselmann, Philipp, 2005: Das Jochloch, la grotte la plus élevée d'Europe.- Stalactite, 54/2, 49-54, s.l.**

- 14 - 132 Herrando-Perez, Salvador, 2005: Ullal de Miravet, tesoro natural najo tierra.- Quercus, 230, 20-26, s.l.**

- 14 - 133 Hinterlechner-Ravnik, Ana, 2005: Žad.- Proteus, 68/4, 169-171, Ljubljana.**
The jade.

- 14 - 134 Horvat, Jana, 2005: Settlement in the Pivka area and along the upper course of the Reka river from the Late Bronze Age to the Late Antique period.- In: Mihevc, Andrej (Ed.). Voda in življenje v kamniti pokrajini - Kras = Water and Life in a Rocky Landscape - Kras (Projekt Aquadapt): Založba ZRC, ZRC SAZU, 220-248, Ljubljana.**

Presented is the settlement development along the Pivka and Reka Rivers, along which significant trade routes connect the Quarnero bay with central Slovenia. Subsistence in fortified hilltop settlements takes on in the Late Bronze Age (Urnfield Culture period); this type of settlement is predominant on into the Early and Late Iron Ages. During the Early Roman period, in the 1st and 2nd centuries, a slight shift of settlement into the lowlands is discerned, while during the Late Roman period, from the mid 3rd century onwards, life revives in the earlier hilltop settlements. Already from the very beginning, settlements were situated along the bordering regions between the karst and flysch, at the juncture of two economically disparate regions with good access to fresh water. Control over roads was also a determining factor in the selection of settlement position.

K.W.: Slovenia, the Pivka River valley, the Reka River valley, settlement, prehistory, Roman period, traffic, environment, water.

- 14 - 135 Horvat, Jana & Modrijan, Zvezdana & Svoljšak, Petra & Turk, Ivan & Velušček, Anton, 2005: Settlement and Land Usage of the Karstic World in Western Slovenia in the Past. Introduction.- In: Mihevc, Andrej (Ed.). Vo-**

da in življenje v kamniti pokrajini - Kras = Water and Life in a Rocky Landscape - Kras (Projekt Aquadapt): Založba ZRC, ZRC SAZU, 167-172, Ljubljana.

- 14 - 136 Hosie, Paul, 2005: Kija Blue Sinkhole, Kimberley, Western Australia.- Caves Australia, Journal of the Australian Speleological Association, 168, 24-27, Sydney.
- 14 - 137 Hrvatin, Mauro, 2005: Ivan Gams: Kras v Sloveniji v prostoru in času, 2.pregledana izdaja.- Geografski vestnik, 76/2, 91-93, Ljubljana.
K.W.: Book review.
- 14 - 138 Jaillet, Stéphane, 2005: Des cavernes et des hommes. Christophe Gauchon.- Spelunca, 98, 45-46, Paris.
- 14 - 139 Jaillet, S., 2005: Le Barrois et son karst couvert, Structure, Fonctionnement, Evolution.- Karstologia-Mémoires, 12, thèse géogr. univ. Bordeaux 3, 2000, 238 fig., 48 tabl. 228 photos, 336 p + 16p. couleur.
- 14 - 140 Jaillet, S., 2005: The Barrois covered karst (NE France): a recorder of valley incision and cover retreat.- Colloque UIS, Union International of Speleology. Athènes aout 2005, Poster P-45, p. 215.
- 14 - 141 Jaillet, S. & Meyssonier, M. & Cailhol, D., 2005: The formation "scientific team-member" of the French Federation of Speleology.- Colloque UIS, Union International of Speleology. Athènes aout 2005, Communication O-136, p. 133.
- 14 - 142 Jaillet, S., 2005: Les opérations de traçage menées sur le Barrois (Meuse, France): une collaboration efficace entre spéléologues, universitaires et collectivités territoriales.- Colloque »Spéléologie et sociétés«, Ollioules, juin 2003, Spélunca Mémoires n°29, 101-106.
- 14 - 143 Jaillet, S. & Herbillon, C., 2005: Recherches sur l'utilisation des grottes au cours de l'histoire: usages multiples et graffitis historique de la grotte de Combles en Barrois (Meuse, France).- Colloque »Spéléologie et société«, Ollioules, juin 2003, Spélunca Mémoires n°29, 138-141.
- 14 - 144 James, Marg, 2005: The Gulf Epistles.- Caves Australia, Journal of the Australian Speleological Association, 168, 18-23, Sydney.
- 14 - 145 Janža, Mitja, 2005: Določitev rabe tal s klasifikacijo satelitske podobe za namene hidrološkega modeliranja na območju zaledja izvira Rižane.- Geologija, 48/1, 153-159, Ljubljana.
Land use determination for hydrological modelling of the watershed of the Rižana river spring by use of satellite image classification.

- 14 - 146 Jesenko, Manca & Veljanovski, Tatjana, 2005: The profile of contemporary drinking water users: typology of perception, attitude and behaviour toward drinking water.- In: Mihevc, Andrej (Ed.). Voda in življenje v kamniti pokrajini - Kras = Water and Life in a Rocky Landscape - Kras (Projekt Aquadapt): Založba ZRC, ZRC SAZU, 513-534, Ljubljana.**

The development of the contemporary society and its participation on Earth is a cause for the increase in the use of drinking water as well as an increase in environment pollution. Thus, the pressures of using natural goods are on a constant increase, while the resources and their regeneration are limited. A question that remains open is how do we conceive this disharmony, in what way do we (contemporary users) respond to it and how could we measure and define the described relation. In this contribution we will deal with whether it is possible to isolate those factors that would help to describe the basic characteristics of the contemporary drinking water user (i.e. his profile) using the responses gathered from questionnaires that relate to various drinking water issues and the notion of water as a part of our environment. This will be followed by the consideration of the different uses of such information. We have focused on three views that can link the user's characteristics into a more complex whole, i.e. a selection of his general characteristics: his perception of the water issue, his attitude to the water issue, drinking water and the environment and his actual behaviour (i.e. everyday habits at the use of drinking water). The results were interpreted from two aspects. Firstly, we interpreted the observed level of general awareness, i.e. in what ways can it be noticed and to what extent and in what way is the user adjustable to the contemporary environmental and water supply challenges. Secondly, we tried to ascertain how can such information lead to a more wholesome understanding of a concrete time and space defined community, i.e. inhabitants of south-western Slovenia. At this we started from the presumption that if we know more about the profile of the drinking water user, it will be easier to socially educate a conscious user.

K.W.: drinking water user profile, analysis of contemporary user characteristics, cluster analysis, water protection consciousness, ecological consciousness, water supply, south-western Slovenia.

- 14 - 147 Jesenko, Manca & Veljanovski, Tatjana, 2005: The problem of managing water and water services - between the public and private interests.- In: Mihevc, Andrej (Ed.). Voda in življenje v kamniti pokrajini - Kras = Water and Life in a Rocky Landscape - Kras (Projekt Aquadapt): Založba ZRC, ZRC SAZU, 555-564, Ljubljana.**

Water represents one of the basic conditions for life on Earth. Thus, we could say that access to drinking water resources is a natural right, not only for mankind, but also for every other living being. And even though we might take this for granted when we look at it from our perspective, there are numerous individuals across the world who face the lack of drinking water and its consequences on a daily basis. Solutions to this problem have been sought for a long time and lately especially the developed countries are becoming increasingly in favour of the privatisation of water services. In this paper we wish to outline the issues linked to the management of water resources or handing out the rights for managing water

resources. At this the emphasis is placed on the thesis that the management of water and sanitary services should be oriented in such a way as to take care of everybody's needs in the long-term, especially the poorest people.

K.W.: water management, management of water services, water economy, privatisation of the water sector, water, natural good, public interest, globalisation processes, ecological laws.

14 - 148 Johnson, Gary, 2005: 50 years of exploration: history of Carroll Cave, Missouri.- NSS News, 63/8, 8-17, Huntsville.

14 - 149 Južnič, Stanislav, 2005: Babbage's calculating machines, the Proteus from Postojna Cave, and the Carniolan Museum Society.- Acta carsologica, 34/1, 211-220, Ljubljana.

We verified some data in Shaw's description of Babbage's visit to Postojna. To compare with, we calculated the exact date of Babbage's voyage from his own descriptions. We researched the motives for his interests in the *Proteus anguinus*. We described other Babbage's scientific activities at the time of his visit to Carniola. We claimed his surprising incompetence in geography. In Babbage's time, Carniolan scientific research of the *Proteus anguinus* began under Dežman's leadership of the Museum Society. For the first time we researched the early Carniolan contribution to the *Proteus* research. We discussed possible reasons for the previous neglect of the Museum Society work and Dežman's publications in particular.

K.W.: Babbage, *Proteus anguinus*, Postojna, Slovenia Karst, Karel Dežman.

14 - 150 Kariž, Sergeja, 2005: Predjamski grad - sožitje kraškega sveta in iznajdljivosti srednjeveškega človeka.- Kras, 71, 8-11, Ljubljana.

The castle of Predjama - combination of karst and ingenuity mediaeval man.

14 - 151 Kasimay, S. & Langer, M. & Pfeffer, K.-H., 2005: Geoökologische Studien in Südthailand bei Ao Luk.- Thailand Rundschau 18. Jahrg., Heft 2, 71 - 78, Köln.

Geoecological studies in southern Thailand near Ao Luk. In this article, there are represented results of two diploma-thesis of Tübingen University. The fields of work are in the towerkarst of Ao Luk region in South-Thailand. Areas with different country-utilization and different soils were selected. The soils were analyzed in the laboratory in Tübingen University and the physical and geochemical data were appraised in their ecological value. This paper is a first geoecological inventory with soil-analysis-data about the southern Karstregions of Thailand.

14 - 152 Kaszala, R. & Bárányi-Kevei, I. 2005. Heavy metal content of soils in the karstic area of North Hungary. In.: Contaminated soils, sediments and water: Science in the Real World, Volume 9. (Ed.: Calabrese, J.E., Kostecki, P.T., Dragun J.) Springer, 167-175.

Research on Aggtelek karsts includes examinations of physical and chemical parameters of soils, especially the acid soluble and the extractable (with EDTA solution) heavy metal content. The assessment of anthropogenic influent has come

to the forefront during the last decades. Research of heavy metal contamination has become increasingly more significant among investigations. The article presents the relationship between two forms of heavy metal content in the karstic soil.

- 14 - 153 Kempe, Stephan & Rosendahl, Wilfried & Döppes, Doris, 2005: The Making of the Cave Bear - Die wissenschaftliche Entdeckung des "Ursus spelaeus".- Mitt. Komm. Quartärforsch. Oesterr. Akad. Wiss., 14, 89-106, Wien.**
- 14 - 154 Kempe, Stephan, 2005: The Inscriptions of the Tartarus Panel and the 1833 Fercher-survey, Postojnska jama.- Acta carsologica, 34/1, 221-235, Ljubljana.** The history of the discovery of the main parts of Postojnska jama that began in 1818 is not well documented. Here I report about the most interesting inscriptions of the "Idrianer" left on February 7th, 1833, including Johann Fercher, Aloys Urbas, Valentin Tracha, and Johann Wruss near the end of the history main passage. Fercher was a mine supervisor at Idria. He conducted the first thorough survey of the cave, published first by Schaffenrath (1834). In the archive of Postojnska jama, kept by the Karst Institute ZRC SAZU in Postojna four documents survive which illustrate the background of this survey. These documents, written in 19th century German Current handwriting are transcribed here for the first time. They not only list the participants of the survey (which also included surveyor Michael Glantschnigg and coachman Johann Leskovitz) but also report costs. K.W.: history, cave survey, Idrianer, Postojnska jama.
- 14 - 155 Keveiné Bárány, I., 2005: A talajok szerepe a környezeti hatások semlegesítésében a karsztokon. (Role of soils in mitigate of environmental damages on karsts).- In.: A földrajz dimenziói. (Szerk.: Dövényi Z.-Schweitzer F).. MTA Földrajztudományi Kutató Intézet, 449-459, Budapest.** Soils play an important role in processes of karst development. The karstic soils have function of buffer and filter on karsts which to a certain limit neutralize to environmental damaging effects. The article presents some important parameters of karst soils.
K.W.: basalt covered karst, development of pseudokarstic depressions, loess covered karst, hidden rock boundary, processes, landforms.
- 14 - 156 Kladnik, Drago & Lovrenčak, Franc & Orožen Adamič, Milan/Eds., 2005: Geografski terminološki slovar.- Zbirka Slovarji, 451 str., Ljubljana.** Geographic terminological dictionary.
- 14 - 157 Kladnik, Drago/Ured., 2005: Slovenija II: [ekskurzije Ljubljanskega geografskega društva].- Vodniki Ljubljanskega geografskega društva, Evropa, 4, 104 str., Ljubljana.** Slovenia II (Excursions of Geographical Society of Ljubljana).
- 14 - 158 Kmecl, Matjaž, 2005: Kulturni pomen J.V.Valvasorja za Slovence.- Kras, 70, 8-11, Ljubljana.** Cultural importance of J.V. Valvasor for the Slovenes.

- 14 - 159 Knez, Martin 2005: Geological conditions in the cadastral municipalities of Divača, Volčji grad and Račice as one of the essential elements determining land use.- In: Mihevc, Andrej (Ed.). Voda in življenje v kamniti pokrajini - Kras = Water and Life in a Rocky Landscape - Kras (Projekt Aquadapt): Založba ZRC, ZRC SAZU, 29-36, Ljubljana.**

The geological structure of the three areas of the Kras was studied. In the Divača cadastral municipality we can follow the transition of massive limestones from lower Cretaceous to the end of carbonate sedimentation in Palaeogene. In the northern part of the cadastral municipality where thin-bedded Palaeogene limestone and marl limestone prevail the surface is softer and less rocky. In Volčji grad cadastral municipality on cherty limestones thick red-brown karst soils were formed. Fewer soils developed and more rocks are exposed on limestones of Repen and of Kopriva formation. This limestone was used to be quarried in several quarries and was prized as an architectural building stone. In the area of the Komen strata owing to the relatively resistant platy limestone, the scarps there are solid and durable. Several slopes in Račice cadastral municipality have been transformed into terraces. There are no outcrops of bedrock on them. Individual pieces of rock were probably removed from the surface and used in the inclined, step-like walls of the terraces, today overgrown by grass. In the levelled parts of the terrain we find large heaps of collected rock. Southern part of the area is formed of massive limestone so there the terrain is rocky. K.W.: karst, lithology, land use, Kras.

- 14 - 160 Knez, Martin & Šebela, Stanka & Gabrovšek, Franci, 2005: Geološke osnove ter jame, Geološke razmere na področju Udin boršta, Tektonski položaj Udin boršta, Jame v Udin borštu.- In: Kranjc, Andrej (Ed.). Kraške kulturne pokrajine : edinstveni odnos med človekom in kraškim svetom : architecture of a unique relationship people/territory, Udin boršt, Museo di Storia Naturale e Archeologia, 9-24, Montebelluna.**

Geology and tectonics of Udin boršt conglomerate karst (Slovenia).

- 14 - 161 Knez, Martin & Slabe, Tadej & Šebela, Stanka, 2005: Smoganica - a cave developed in upper Cretaceous breccia.- Acta carsologica, 34/2, 425-438, Ljubljana.** On the Banjšice plateau (NW Slovenia) the longest spring cave is 492 m long Smoganica. The cave (505 m above sea level) is situated on the SW slope of Čukla (770 m) E from the Soča river (153 m above the sea level). Smoganica is developed in limestone breccia, which is 10 m thick and belongs to the Upper Cretaceous flysch rocks. On the territory around the cave, the green marls are included in breccias or breccias are included into the green marls. Clasts in coarse-grained breccia, in which the cave is located, vary from some cm to several 10 dm in diameter. Clasts are mostly deriving from younger rudist limestones, Lower and Upper Cretaceous and Jurassic micritic and oolitic limestones. Smoganica is situated about 2 km south from Idrija fault and about 200 m north from Kobarid fault. There are two principal fissure orientations in the cave, N30-45°E and N120-135°E. Smoganica was formed from the system of smaller passages that have been developed inside the breccia in 3D. The cave was formed in phreatic conditions, later it was completely filled with cave sediments. In the next stage the above-sediment rock forms were developed. Ca-

ve sediments were later removed from the cave. Today the active water stream is cutting rock forms in the bottom of the cave passages. Higher water quantities are forming scallops and shafts and lower quantities floor channels. Smoganica can be described as polygenetic cave because the percolating water is re-shaping the passages.

K.W.: Upper Cretaceous breccia, Smoganica cave, Slovenia.

- 14 - 162 Knez, Martin & Slabe, Tadej, 2005: Caves and sinkholes in motorway construction, Slovenia.- Sinkholes and Subsidence. Karst and Cavernous Rocks in Engineering and Construction/Waltham & Bell & Culshaw/Eds., 283288, Chichester.**
- 14 - 163 Knez, Martin & Slabe, Tadej, 2005: Lithostratigraphic characteristics of the intermittent Pivka lakes region and Matijeva jama cave estavelle.- Acta carsologica, 34/3, 582-598, Ljubljana.**
This article describes the typical characteristics of rock found in the area of the intermittent Pivka Lakes. Two characteristic karstic caves formed in Upper Cretaceous limestone: Matijeva jama, which appears as an estavelle today, and Trnska jama, with several old and recent signs of frequent and plentiful fluctuation in groundwater level. Several new research results are presented.
K.W.: Pivka lakes, geology, rock relief, Matijeva jama, Trnska jama, Slovenija.
- 14 - 164 Knez, Martin & Slabe, Tadej, 2005: Non-destructive georadar researches in the area of road subsidence of motorway near Postojna, Classical karst, Slovenia.- Geophysical research abstracts. [CD-ROM ed.], vol. 7, 1 str.**
- 14 - 165 Knez, Olga, 2005: Matavun - sodelovanje s Parkom Škocjanske jame.- Lipov list, 47/3-4, 57, Ljubljana.**
The village of Matavun - co-operation with the Škocjanske jame Park.
- 14 - 166 Knolle, Friedhart & Schütze, Bernd, 2005: Dr. Benno Wolf, sein Umfeld und seine interdisziplinäre Wirkung - eine Klammer zwischen den deutschen Höhlenforscherverbänden.- Mitteilungen des Verbandes der deutschen Höhlen- und Karstforscher, 51/2, 48-55, München.**
Life and work of Dr. Beno Wolf.
- 14 - 167 Knutson, Steve, 2005: Deep in the Andean Mist: Peruvian caving on the grim side....- NSS News, 63/2, 4-15, Huntsville.**
- 14 - 168 Köberle, G., 2005: Gis-generierte Bodenkarte von Baden-Württemberg - 1:25.000 Blatt 7424 Deggingen.- Tübinger Geographische Studien, Heft 138, Tübingen. GIS generated soil map of Baden Württemberg 1:25.000 Sheet 7424 Deggingen.**
GIS-generated pedological map of Baden-Württemberg, Sheet 7424 (Germany).
- 14 - 169 Köberle, G., 2005: Gis-generierte Bodenkarte von Baden-Württemberg - 1:25.000 Blatt 7524 Blaubeuren.- Tübinger Geographische Studien, Heft**

139, Tübingen. GIS generated soil map of Baden Württemberg 1:25.000 Sheet 7524 Blaubeuren.

From the data base of the dissertation of Gesa Köberle, two soil maps 1:25000 of the Swabian Alb karst were generated. The data of the typical soils of the Alb are in the text-part.

14 - 170 Köberle, G., 2005: Umweltprobleme in Karstgebieten.- Geographische Rundschau, Jahrg. 57, Heft 6, 28-33, Braunschweig.

Environmental Problems of Karst Areas - Influences and possible Solutions. Exemplified by the Case of Swabian Alb. Karst areas cover around 14 % of Germany's landscape. They are very important for a large number of human activities. For example, karst regions are attractive recreation areas and also high quality farming land. The increasing air and soil pollution from industrial sites, road traffic and lots of different other origins is creating more and more problems for the groundwater protection. Therefore - among the various environmental problems of karst areas - groundwater quality is (at least at the moment) one of the main concerns. To improve the environmental protection in karst areas, it is necessary to establish an ecological management system. For this purpose a large amount of input information needs to be collected, documented and evaluated. This has been done for a case area located in the Swabian Alb in Germany. In particular a geoeological database was developed by using GIS and Remote Sensing methodologies. Once all information was posted to the database, a number of thematic maps (e.g. vulnerability maps) were created. The possibility to generate maps on specific issues and in different scales with only little expense of money and time has proved to help immensely to communicate risks and hazards of groundwater resources.

14 - 171 Kogovšek, Janja & Petrič, Metka & Pregl, Melhior, 2005: Preparation of the water quality plan for monitoring the impact area of the Mala gora landfill near Ribnica (SE Slovenia).- Proceedings of the international conference and field seminars, Water Resources and Environmental Problems in Karst/Stevanović, Z. & Milanović, P./Eds., 169-174, Belgrade.

14 - 172 Kogovšek, Janja, 2005: Ugotavljanje podzemnega pretakanja vode v krasu kot osnova za načrtno trajnostno gospodarjenje s prostorom.- Zbornik predavanj, Raziskave s področja geodezije in geofizike 2004, 10, 31-36, Ljubljana.

Assesment of underground flow in karst as a base for sustainable planning of the space.

14 - 173 Kokalj, Žiga & Oštir, Kristof, 2005. Application of satellite image classification for land cover mapping in the Kras region.- In: Mihevc, Andrej (Ed.). Voda in življenje v kamniti pokrajini - Kras = Water and Life in a Rocky Landscape - Kras (Projekt Aquadapt): Založba ZRC, ZRC SAZU, 155-163, Ljubljana.

Kras, a very diverse and sensitive eco-region, needs to be managed with special attention and consideration of its natural resources. Land cover is an important in-

dicator, which enables the analysis of their condition and development monitoring. Remote sensing, or to be more specific advanced satellite images classification, represents an accurate and cost-effective alternative to the classical techniques of land cover mapping. The methods used to produce a reliable land cover map are presented in this paper. The complexity of the area requires a combination of various data such as Landsat satellite images supplemented with a digital elevation model, digital orthophotos as well as existing topographic and thematic maps. The maximum likelihood algorithm was used as the main classifier and the accuracy of results was further improved by fuzzy classification, altitude and inclination filtering and auxiliary data.

K.W.: remote sensing, land cover, land use, classification, satellite imagery, karst, Kras.

- 14 - 174 Košir, Adrijan & Otoničar, Bojan & Popit, Tomislav & Mišič, Miha, 2005: Vadozni karbonatni cementi v kvartarnih pobočnih sedimentih se lahko izločajo z biološko induciranimi procesi.- In: Horvat, Aleksander (Ed.). 17. posvetovanje slovenskih geologov, (Geološki zbornik, 18). Ljubljana: Univerza v Ljubljani, Naravoslovnotehniška fakulteta, Oddelek za geologijo, 57-59.**

Biologically induced processes can be the cause of the precipitation of vadose carbonate cement in Quaternary slope sediments.

- 14 - 175 Koštiál, Rosana, 2005: Collecting of Water in the Slovenian Istria.- In: Mihevc, Andrej (Ed.). Voda in življenje v kamniti pokrajini - Kras = Water and Life in a Rocky Landscape - Kras (Projekt Aquadapt): Založba ZRC, ZRC SAZU, 405-420, Ljubljana.**

This paper deals with water supply in the slovenian part of Istria in the 20th century and is a part of a more extensive research conducted on the example of Nova vas nad Dragonjo and its surroundings. Water supply in the Slovenian Istria has contributed to the Slovenian ethnology the term collecting of water, which draws its origins in the oldest know method of exploitation of water resources (surface and ground water). It describes who and how collected water for transport to people's homes and distinguishes between the carrying of water in pails on the head, transport of water in "brente" (tall wooden tubs usually carried on the shoulders) mounted on donkeys, and transport of water in barrels on carts drawn by animals. It gives a classification and description of containers for transport and storage of water. The summary paper brings to light the need of and concern for water as an important element of everyday life in the Slovenian part of Istria.

K.W.: water, water resources, collecting of water, gathering, transport of water, containers, countryside, the 20th century, Slovenian Istria.

- 14 - 176 Kovačič, Gregor & Habič, Špela, 2005: Intermittent karst lakes of Pivka basin (SW Slovenia) during high waters in November 2000.- Acta carsologica, 34/3, 619-649, Ljubljana.**

The article presents the characteristics of the 17 intermittent karst lakes of Upper Pivka. During the extended precipitation in November 2000, when the amount of precipitation was more than three times the average, all the lakes were flooded for

the first time in several decades. Also several additional small karst depressions were flooded, where overflowing had never been recorded before. By combining field observations with the interpretation of aerial photographs the water level, the extent of the lakes and the volumes of containing water were calculated.

K.W.: intermittent karst lake, floods on karst, karst hydrology, Pivka, Slovenia.

- 14 - 177 Kovačič, Gregor & Habič, Špela, 2005: Karst periodical lakes of Pivka (SW Slovenia) during high waters in November 2000.- Proceedings of the international conference and field seminars, Water Resources and Environmental Problems in Karst/Števanović, Z. & Milanović, P./Eds., 517-524, Belgrade.**

- 14 - 178 Kovačič, Gregor & Ravbar, Nataša, 2005: Mapping of hazards to karst groundwater on the Velika planina plateau.- Acta carsologica, 34/1, 73-85, Ljubljana.**

The present paper presents the hazard mapping of groundwater on the Velika planina alpine karst plateau. There are no permanent residents on the plateau. Nevertheless, some serious hazards to the quality of the respective karst springs are arising from sports, tourist and farming activities. Some pollution has been already recorded in springs, showing the shortcomings of drinking water management also in uninhabited alpine karst areas, which are ordinarily very favourable for water protection.

K.W.: alpine karst, karst hydrology, hazard mapping, contamination of karst aquifers, protection of karst aquifers.

- 14 - 179 Kovačič, Gregor & Ravbar, Nataša, 2005: A review of the potential and actual sources of pollution to groundwater in selected karst areas in Slovenia.- Natural Hazards and Earth System Sciences, 5, Special Issue, 225-233, s.l.**

- 14 - 180 Kranjc, Andrej, 2005: Conglomerate Karst in Slovenia : history of cave knowledge and research of Udin Boršt (Gorenjsko).- Acta carsologica, 34/2, 521-532, Ljubljana.**

Folk tales and tradition evidence that people in Udin Boršt were aware of caves from old. In the 19th century a special type of outlaws occurred in Gorenjska. One of the centres was in Udin Boršt where brigands hid in caves. Under the French occupation the villagers hid in the caves, while during the 2nd World War they were partisans. Water is another factor playing an important role at studying Udin Boršt. Most of the villages were water supplied from Udin Boršt, partly out of caves. As elsewhere in conglomerates in Udin Boršt also there are traces of rock cutting for millstones. The first printed news about the caves in Udin Boršt are found in Valvasor's *Die Ehre des Herzothums Crain*. The book *History of the Ljubljana Bishop's Diocese*. The modern caving research started in 1946. In 1954 the members of the Natural Science Circle of the 1st Grammar School, Kranj started to visit caves in Udin Boršt. About that time a co:worker of the Karst Research Institute from Postojna started to research these caves. The caves in Udin Boršt were revisited in the seventieths of the past century in connection with the project "Speleological Map of Slovenia". The connection between the people and

the land can be seen from the topographical names too. The last part of the paper deals with these names, including the explanation of the name Udin Boršt.
K.W.: karstology, speleology, history, toponymy, Slovenia, Gorenjsko, Udin Boršt.

- 14 - 181 Kranjc, Andrej, 2005: A short history of forest on Kras (Classical Karst).- In: Mihevc, Andrej (Ed.). Voda in življenje v kamniti pokrajini - Kras = Water and Life in a Rocky Landscape - Kras (Projekt Aquadapt): Založba ZRC, ZRC SAZU, 141-148, Ljubljana.**

The country Kras in the background of the Trieste bay gave the name to the term "karst". One of the reasons was the bareness of this land. Approximately 5000 years ago *Abies* and *Fagus* were common. During the Neolithic the first deforestation started and the "complete desertification" reached its peak in the 19th century. Also in the 20th century the first attempts of Kras reforestation started with *Pinus nigra*. This was very successful and nowadays more than half of the Kras is covered by forest, mostly by monoculture type of planted black (Austrian) pine. In recent times the landscape of Kras has experienced great changes: almost everywhere pasture is completely abandoned, and the surface is slowly being overgrown by forest. This results in various inconveniences: forest fires, pests, changing of microclimate (for vineyards, dry ham production). After 150 years of work and efforts, including large sums of money for the reforestation of Kras, the specialists and laymen started to ask: how reasonably can we stop the overgrowing of Kras?

K.W.: deforestation, land degradation, reforestation, Kras, Slovenia.

- 14 - 182 Kranjc, Andrej, 2005: Pokrajinska sinteza In: Kranjc, Andrej (Ed.). Kraške kulturne pokrajine : edinstveni odnos med človekom in kraškim svetom : architecture of a unique relationship people/territory, Udin boršt.- Museo di Storia Naturale e Archeologia, 83, Montebelluna.**

Landscape synthesis in Karst landscapes: Architecture of the unique relations between the man and the environment.

- 14 - 183 Kranjc, Andrej, 2005.:Toponimika ali o imenih. In: Kranjc, Andrej (Ed.). Kraške kulturne pokrajine: edinstveni odnos med človekom in kraškim svetom : architecture of a unique relationship people/territory, Udin boršt.- Museo di Storia Naturale e Archeologia, 81-82. Montebelluna.**

Toponymics in: Karst landscapes: Architecture of the unique relations between the man and the environment.

- 14 - 184 Kranjc, Andrej, 2005: Annotated bibliography of karst publications.- Ljubljana: Slovenska akademija znanosti in umetnosti: Znanstvenoraziskovalni center SAZU, vol. 13.**

K.W.: Bibliography.

- 14 - 185 Kranjc, Andrej, 2005: Baltazar Hacquet (1739/40 -1815): Precursor of karst geomorphologists.- Sixth International Conference on Geomorphology, Geomorphology in Regions of Environmental Contrasts;Abstracts Volume, Abstracts Volume, 220, Zaragoza.**

Beside other sciences, B. Hacquet has dedicated his research to geology and geomorphology (as we call them now). His most important work "*Oryctographia carniolica or Physical (= geological) description of Carniola...*" (1778(1789) presents descriptions of many rocks, ores, fossils, as well as surface and underground features. In Carniola, karst is prevailing and therefore there is a lengthy description of karst geology and geomorphology included. His classification of mountains specially mentions *Montes secundarii* formed from grey limestone. Of surface features dolines, glacio-karstic dolines on high plateaus (with temperature and vegetation inversion), and karst poljes are mentioned. Hacquet has presumed the evolution from flooded polje (seasonal lake) to a dry one. To explain the weathering and dissolution of limestone Hacquet took into account the differences between the rock, the exposition and its element content. That is the reason that Gams regards him as a precursor of climatic geomorphologists and the "father" of corrosion theory. Hacquet has also found the difference between limestone and dolomite. His description of dolomite as *Lapis suillus* preceded the one of D. Dolomieu for 13 years. Hacquet's statements were not based on observation only, but on the experiment too. When looking upon Hacquet's explanations and results we must not forget that Hacquet's time was still time of parathetic logic, of four elements and of the principle of burning - the phlogiston.

K.W.: history of geomorphology, history of karstology, Balthasar Hacquet.

- 14 - 186 Kranjc, Andrej, 2005: Fissured rock phenomena in UNESCO World Heritage.- 7th Hellenic Hydrogeological Conference, 2nd MEM Workshop on fissured rock hydrology/Stournaras, G. & Pavlopoulos, K. & Bellos, Th./Eds, 2, 69-73, Athens.**

In the UNESCO List of World Heritage there is altogether 812 World Heritage (WH) sites. Among them 628 cultural and 160 natural sites. Among the Natural WH there is about 30 sites in carbonate fissured rock - karst ones. There are karst regions and phenomena also on the list of Cultural WH. Taking into the consideration all the sites, there is about 50 karst sites. In 1972, the World Heritage Convention was established. Actually a new strategy appeared to incorporate natural sites, as cultural landscapes and geoparks. Problem of new karst sites inscriptions is the concept of the "outstanding universal value". An international forum proposed to use "hierarchical framework". The Forum on Karst and World Heritage in Europe was organized. It was stated that there is a number of karst phenomena and landscapes which merit and need to be put on the WH List, in the Europe. The paper reports also about the intention to publish World Atlas of Karst and Karst Conservation, Volume II (Europe). The Forum agreed upon and supported strongly both ideas.

K.W.: UNESCO World Heritage List, Karst Atlas of Europe, karst, protection, Europe.

- 14 - 187 Kranjc, Andrej, 2005: Kako je nastalo Cerknjsko polje.- Kras, 69, 24-27, Ljubljana.**

On the origin of Cerknjsko polje (Slovenia).

- 14 - 188 Kranjc, Andrej, 2005: Kako nastaja in izginja Cerknško jezero.- Kras, 70, 12-17, Ljubljana.**
On the functioning of seasonal karst lake Cerknško Jezero (Slovenia).
- 14 - 189 Kranjc, Andrej, 2005: Speleologija Cerknškega jezera.- Kras, 71, 36-37, Ljubljana.**
Caverns of seasonal karst lake Cerknško Jezero (Slovenia).
- 14 - 190 Kranjc, Andrej/Ed., 2005: Udin boršt.- Paesaggi carsici. Architettura di una relazione unica tra uomo e ambiente, 3 KCL, 102 pp., Montebelluna.**
Udin Boršt conglomerate karst in: Karst landscapes: Architecture of the unique relations between the man and the environment.
- 14 - 191 Križnar, Naško & Mahnič, Rado, 2005: Water and Ice. An ethnographic portrait of water sources in Brestovica pri Povirju.- In: Mihevc, Andrej (Ed.). Voda in življenje v kamniti pokrajini - Kras = Water and Life in a Rocky Landscape - Kras (Projekt Aquadapt): Založba ZRC, ZRC SAZU, 311-340, Ljubljana.**
Brestovica is a small Kras village, population 48. Lives of its inhabitants and their farming have always depended on natural water sources in its surroundings. The village has no waterworks yet. This paper describes different ways of collecting water for drinking, cooking, doing laundry, washing, watering of stock and bathing. In winter some Brestovians cut ice in the waterhole Globočaj. The tradesman from Trieste collected ice in the nearby ice store and sold it in summer. This activity stopped after the first World War. Common concern for water has always been a strong socializing element. Well owners carried out maintenance works on water sources in the village and its surroundings.
K.W.: kultura, tradicionalni vodni vir, uporaba, voda, ledarstvo, etnografija, kraška vas, Brestovica pri Povirju.
- 14 - 192 Križnar, Naško, 2005: Andrej Gogala: Kamen, voda, sonce in veter. Narava Krasa in slovenske Istre. Prirodoslovni muzej Slovenije, 2003, Ljubljana, ISBN 961-6367-06-4.- Acta carsologica, 34/1, 264-266, Ljubljana.**
K.W.: Book review.
- 14 - 193 Kryštufek, Boris & Režek Donev, Nataša, 2005: The Atlas of Slovenian Bats (Chiroptera).- Scopolia, 55, 92 pp., Ljubljana.**
- 14 - 194 Kunaver, Jurij, 2005: Kras v Sloveniji v prostoru in času.- Kras, 72, 46-47, Ljubljana.**
K.W.: Book review.
- 14 - 195 Kürti, L. & Bárány-Kevei, I, 2005: Néhány Bükkaljai forrás és patak összehasonlító vízkémiai vizsgálata (Water chemical investigation in some springs and streams in Bükk Mountains).- Karszfejlődés X., 77-79, Szombathely.**
There are several karst springs in the Bükk Mountains. Some of these has an important role in the drinking water supply system in the region of Borsod, like the

system of Kács and Sály. Here we can find springs with hot water, springs with mixed water and cold water springs. We have sampled these springs and some streams for know how the system works. We analyzed the total hardness, the Ca²⁺ and Mg²⁺ contents, and also the content of chloride, sodium, potassium, phosphate, nitrate, sulphate and heavy metals. There are some differences between these springs.

- 14 - 196 Laguna, Emilio & Deltoro, Vincente & Lipej, Bojana & Kaligarić, Mitja & Sovinc, Andrej, 2005: Diversidad y conservacion de los ambientes karsticos: ejemplos valencianos y eslovenos. Pestrost in ohranjanje kraške pokrajine: Primeri iz Valencije in Slovenije.- 167 pp., s.l.**
- 14 - 197 Lasson, Nadir, 2005: L'émergence de Bons, Larroque-Toirac (Lot).- Spelunca, 99, 11-16, Paris.**
- 14 - 198 Lazić, Miloško, 2005: Izrada bezfilterskih bunara.- 165 pp., Beograd.**
Constraction of the wells without filters.
- 14 - 199 Lepirica, Alen, 2005: Basic Morphological and Morphostructural Characteristics of the Rakitnica Canyon (Dinaric Karst, Bosnia and Herzegovina).- Acta carsologica, 34/2, 449-458, Ljubljana.**
The canyon valley of the Rakitnica river is one of the deepest and longest in the Dinaric karst. The paper states the basic morphological and morphostructural characteristics of the canyon, and gives its geomorphological regionalization. High level of correlation between lithology, tectonics and relief of the researched area has been determined. Genesis and development of this relief form have been considerably guided by neotectonic processes during the Quaternary.
K.W.: Rakitnica canyon, fault neotectonics, deep fluvial incisions, Dinaric karst.
- 14 - 200 Lips, Bernard, 2005: Chine.- Spelunca, 99, 6-7, Paris.**
- 14 - 201 Lismonde, Baudouin, 2005: La sécheresse 2003 et les mesures de température au Trou qui Souffle de Méaudre: rôle du flux géothermique.- Karstologia, 45-46, 63-66, s.l.**
- 14 - 202 Losson, Benoît & Corbonnois, Jeannine & Argant, Jacqueline & Audra, Philippe & Quinif, Yves & Rochette, Pierre, 2004: Données spéléochronologiques et paléoclimatiques issues des remplissages de la grotte de Sainte-Reine (Pierre-la-Treiche, Lorraine, France).- Le Grotte d'Italia. 5 (Table-ronde internationale, 2-5 septembre 2004, Valsassina, Italie. Comunità Montana della Valsassina & Association française de karstologie), 81-90, 2004.**
- 14 - 203 Martini, Jacques, 2005: Etude des paléokarsts des environs de Saint-Remèze (Ardèche, France): mise en évidence d'une rivière souterraine fossilisée durant la crise de salinité messinienne.- Karstologia, 45-46, 1-18, s.l.**

- 14 - 204** McFarlane, Donald A. & Lundberg, Joyce, 2005: The 19th century excavation of Kent's Cavern, England.- *Journal of Cave and Karst Studies*, 67/1, 39-47, Huntsville.
- 14 - 205** McMillan, E. & Fairchild, I.J. & Frisia, S. & Borsato, A. & McDermott, F. 2005: Annual trace element cycles in calcite-aragonite speleothems: evidence of drought in the western Mediterranean 1200-1100 yr BP.- *Journal of Quaternary Science*, 20, 423-433.
Each of two calcitic stalagmites from Grotte de Clamouse, Herault, southern France displays a discrete aragonite layer dated at around 1100 years BP. The layer of fanning aragonite ray crystals is immediately preceded by calcite with Mg and Sr compositions that are uniquely high for the past 3 ka. Trace element compositions close to the boundary between original aragonite and calcite are consistent with quasi-equilibrium partitioning of trace elements between the phases close. Study of modern dripwaters demonstrates that pronounced covariation of Mg/Ca and Sr/Ca ratios in dripwater occurs due to large amounts of calcite precipitation up-flow of the drips that fed the stalagmites. Trace element to Ca ratios are enhanced during seasonally dry periods. Ion microprobe data demonstrate a pronounced covariation of trace elements, including Mg and Sr in calcite, and Sr, U and Ba in aragonite. The mean peak spacing is close to the long-term mean of annual growth rates determined by differences in U-series ages and so the trace element peaks are interpreted as annual. The trace element chemistry of the stalagmites on annual to inter-annual scales thus directly reflects the amounts of prior calcite precipitation, interpreted as an index of aridity. The longer-term context is a multi-decadal period of aridity (1200-1100 years BP) possibly correlated with an analogous episode in Central America. The arid period culminated in the nucleation of aragonite, but within a decade was followed by a return to precursor conditions.
K.W.: stalagmites, annual laminae, trace elements, aridity, palaeoprecipitation.
- 14 - 206** Menin, Adriano & Sauro, Ugo & Tuccimei, Paola & Zampieri, Dario, 2005: La Grotta della Donna. Storia di una riscoperta.- *Speleologia*, 26/52, 22-33, Bologna.
The cave Grotta della Donna - history of anew discovery.
- 14 - 207** Middleton, Greg, 2005: Eleventh international symposium on vulcanospeleology and some interesting volcanic caves of the Azores.- *Journal*, 60, 10-16, s.l.
- 14 - 208** Mihelič, Jože Andrej, 2005: Prof. dr. Fran Jesenko (1875-1932).- *Planinski vestnik*, 110/1, 59-60, Ljubljana.
K.W.: Biography.
- 14 - 209** Mihevc, Andrej & Vrabc, Marko, 2005: Ekskurzija 3: Geološke in geomorfološke zanimivosti med Pohorjem in Savinjo.- In: Prelovšek, Mitja (Ed.), Mrak, Irena (Ed.). *Vodnik po programu, ekskurzijah, predavanjih in povzetkih posterjev*. Ljubljana: Geomorfološko društvo Slovenije, str. 18-24.
Geological and geomorphological points of interest between Pohorje Mt. and the Savinja river (Slovenia).

- 14 - 210** Mihevc, Andrej, 2005: Jama Ulica pečina, brezstropa jama Ulica in kraško površje.- In: Prelovšek, Mitja (Ed.), Mrak, Irena (Ed.). *Vodnik po programu, ekskurzijah, predavanjih in povzetkih posterjev*. Ljubljana: Geomorfološko društvo Slovenije, 41-42.
The cave Ulica pečina, unroofed cave Ulica and the karst surface.
- 14 - 211** Mihevc, Andrej, 2005: Kras v Sloveniji - geomorfološki izziv.- In: Prelovšek, Mitja (Ed.), Mrak, Irena (Ed.). *Vodnik po programu, ekskurzijah, predavanjih in povzetkih posterjev*. Ljubljana: Geomorfološko društvo Slovenije, 28-29.
Karst in Slovenia - a geomorphological challenge.
- 14 - 212** Mihevc, Andrej, 2005: Neotektonski razmik rova v Kamniški jami.- In: Zborovanje slovenskih jamarjev in raziskovalcev krasa, Gorjuša 2005: zbornik 2004. Domžale: Društvo za raziskovanje jam, 2005, str. 26.
Neotectonical opening of the cave passage of the cave Kamniška jama.
- 14 - 213** Mihevc, Andrej, 2005: Ostanki zgodnjih bakel iz Postojnske jame.- In: Zborovanje slovenskih jamarjev in raziskovalcev krasa, Gorjuša 2005: zbornik 2004. Domžale: Društvo za raziskovanje jam, 2005, str. 26.
The rests of old torches from Postojnska jama cave.
- 14 - 214** Mihevc, Andrej, 2005: Cave Ulica and the denudation of the karst surface - case study from Kras, SW Slovenia.- Final Programme and Abstract Book, 14th International Congress of Speleology, 128, Athens.
- 14 - 215** Mihevc, Andrej, 2005: Traces of adaptation of karst agrarian land use - case study from Dinaric Karst, SW Slovenia.- Proceedings of the international conference and field seminars, Water Resources and Environmental Problems in Karst/Števanović, Z. & Milanović, P./Eds., 849-854, Belgrade.
- 14 - 216** Mihevc, Andrej & Bosák, Pavel & Pruner, Petr & Zupan Hajna, Nadja, 2005: Datacije sedimentov iz Račiške pečine.- In: Zborovanje slovenskih jamarjev in raziskovalcev krasa, Gorjuša : zbornik 2004. Domžale: Društvo za raziskovanje jam, str. 30.
Cave sediment datation of Račiška pečina cave.
- 14 - 217** Mihevc, Andrej/Ed., 2005: Voda in življenje v kamniti pokrajini - Kras. Water and life in a rocky landscape - Kras.- Projekt Aquadapt, Založba ZRC, ZRC SAZU, 564 pp., Ljubljana.
- 14 - 218** Mihevc, Andrej, 2005: Introduction.- In: Mihevc, Andrej (Ed.). *Voda in življenje v kamniti pokrajini - Kras = Water and Life in a Rocky Landscape - Kras (Projekt Aquadapt)*: Založba ZRC, ZRC SAZU, 11-13, Ljubljana.
- 14 - 219** Mihevc, Andrej, 2005: Dry Walls and Transformed Dolines - Anthropogenic Influence on the Surface of the Kras in the Area of Divača, Račice and

Volčji Grad.- In: Mihevc, Andrej (Ed.). Voda in življenje v kamniti pokrajini - Kras = Water and Life in a Rocky Landscape - Kras (Projekt Aquadapt): Založba ZRC, ZRC SAZU, 57-71, Ljubljana.

In the past all the Kras plateau where was at least a little soil was adapted to the farming. Today most of the area is abandoned in that respect, only witnesses of a former land use are traces of the removing of the rocks from the surface. Mechanism of managing was the cleaning of stones from the surface or the excavation of the rocks, which jutted out on the surface, and piling them into the high walls or heaps of stones. The scarps were scarcer. In the paper the cases of three cadastral municipalities, Račice, Divača and Volčji Grad are described. Rocks were removed for making the fields, meadows while they didn't change the pasture-grounds much. The position and quantity of the removed rocks indicates the areas where the natural conditions for the land use were favourable, the amount of the rocks removed shows us the lithological properties of the rock. The Divača cadastral municipality consists of 7.9 km² of surface. Here rocks were removed into 69.5 km of dry walls. The quantity of stones built into the walls is 2825 m³ on the square kilometre. All of 261 dolines were used too. Thus they gained 99 hectares of field surfaces on the karst surface and 24.6 hectares of field surfaces in the dolines. The rest of the surfaces were also used as meadows and mostly as pasture-grounds. The cadastral municipality of the village Račice consists of 11.9 km² of the land. Most of the territory is build of thick-layered pure limestones so it is less favourable for agriculture. Removed stones are piled in dry walls 23.2 km long. The volume of the removed stones represents 5815 m³ or 488 m³ per square kilometre. The meadows and pasture-grounds cover 33%, fields 14.3 ha or 1.2% of the area. The rest is today under the forest. There is 1395 dolines, but only 88 of them were used for agriculture due to large clints in them and poor soil. The land of the cadastral municipality Volčji Grad covers 4.8 km² of the Kras. With cleaning the stones from the surface they gained 38.6 ha of fields and meadows respectively. In the area of the cadastral municipality there are 162 dolines and in them there were all together 20 ha cultivated land. When cleaning the surface 94.2 km of dry walls or 19.4 km per square kilometre were built. In the whole area 47125 m³ of stones or 9812 m³ per each square kilometre of surface were cleaned. We have to also add to those walls the 1016 m long wall of the prehistoric sponce, which has a volume of approximately 10,000-15,000 m³.

K.W.: dry wall, doline, land use, karst, Divača, Račice, Volčji grad, Kras.

- 14 - 220 Milanović, Petar & Stevanović, Zoran & Radulović, Mićko/Eds., 2005: Excursion Guide of the International Conference.- Water Resources and environmental problems in karst, 84 pp., Beograd.**
- 14 - 221 Mocchiutti, Andrea & Maddaleni, Paolo, 2005: Chemical, geomechanical, and geomorphological aspects of karst in sandstone and marl of flysch formations in north east Italy.- Acta carsologica, 34/2, 349-368, Ljubljana.** Geomorphology, geomechanical and geochemical features of some caves in flysch sediments in Prealpi Giulie, Friuli, North East Italy are described. K.W.: geomorphology, geomechanics, karst, flysch, speleogenesis.

- 14 - 222 Modrijan, Zvezdana, 2005: Water supply to the Late Antique fortified settlement of Tonovcov grad near Kobarid.- In: Mihevc, Andrej (Ed.). Voda in življenje v kamniti pokrajini - Kras = Water and Life in a Rocky Landscape - Kras (Projekt Aquadapt): Založba ZRC, ZRC SAZU, 249-264, Ljubljana.**

Excavations at the Late Antique upland settlement of Tonovcov grad revealed a water cistern measuring approximately 7.6 m long and 3.3 m wide. The cistern was built of two walls, both interlinked with a high quality mortar. The internal facing was made with a thick layer of waterproof roughcasting. The cistern was surrounded by a poorly constructed stone wall, which was positioned about 0.6 m away from the cistern wall. Analogies for water cisterns exist throughout the wider region of the southeastern Alpine area as well as along the Adriatic coast; however, they were investigated in only a few rare cases.

K.W.: Tonovcov grad, Late Antique, upland settlement, water cistern, water supply.

- 14 - 223 Móga, János & Németh, Róbert, 2005: The morphological research of the basalt and loess covered plateaus in the Bakony Mts. (Transdanubian middle Mts. - Hungary).- Acta carsologica, 34/2, 397-414, Ljubljana.**

We have conducted our morphological researches on the loess-covered Tési plateau and on the basalt covered karst area around Mt. Kab in the southern part of the Bakony Mts. The nearly 600 m high basalt covered Mt. Kab emerges high from the undulating mountains and hilly areas of the Southern Bakony Mts. Its surface, an area about 35-40 km² is covered by basaltic rocks of different thickness. Pseudokarstic landforms (depressions) developed on the basalt surface due to the karstic corrosion of the buried limestone layers. Grouping the objects of different morphology and evolution rate, and studying in correlation the genetic marks of the significant groups, a special karst process can be drawn, in which the depressions of various form can be understood as different stations of the same evolutionary series. The Mesozoic rocks building up the 60 km² Tési plateau emerge to the surface rarely above the loess cover. There is agricultural activity on most part of the plateau. Typical covered karstic landforms developed on the 3-5 m thick loess cover. Subsidence dolines or alluvial steamsink dolines with a small catchment area were formed on the summits. We studied the processes, forms and occurrence of recent covered karst of Mt. Bakony, and these studies shows that on the covered karst surface of the Tési-plateau the recent pit formation along with baticapture connected to hidden and real rock boundary, as well as the opening and activation of paleokarstic passages developed before loess formation also play a role in the evolution of the covered karst surface forms of the Tési-plateau.

- 14 - 224 Mulec, Janez & Kranjc, Andrej (ur), 2005: Excursion to Udin boršt, Slovenia : 9 April 2005, program and field material.- Postojna: Karst Research Institute ZRC SAZU, ilustr.**

- 14 - 225 Mulec, Janez & Mihevc, Andrej & Pipan, Tanja, 2005: Presihajoča jezera na Pivškem.- Acta carsologica, 34/3, 543-565, Ljubljana.**

Many karst features are characteristic of the Pivka basin. The Pivka intermittent lakes appear when high karst waters flood large and small karst depressions. The

basins of the lakes were shaped by lateral and subsoil corrosion of flood waters. In the wider area around the intermittent lakes short dry caves prevail. Flora and fauna have adapted to the changeable water land regime. A favourable strategic position and climate have enabled human settlement of the region early in history. K.W.: Pivka intermittent lakes, Pivka, Slovenia.

- 14 - 226 Mulec, Janez & Pipan, Tanja, 2005: Prst Udin boršta.- In: Kranjc, Andrej (Ed.). *Kraške kulturne pokrajine : edinstveni odnos med človekom in kraškim svetom : architecture of a unique relationship people/territory, Udin boršt.*- Museo di Storia Naturale e Archeologia, 37-41, Montebelluna. Soils of Udin boršt conglomerate karst (Slovenia).
- 14 - 227 Mulec, Janez & Pipan, Tanja, 2005: Vegetacija Udin boršta.- In: Kranjc, Andrej (Ed.). *Kraške kulturne pokrajine : edinstveni odnos med človekom in kraškim svetom : architecture of a unique relationship people/territory, Udin boršt*, Museo di Storia Naturale e Archeologia, 43-45, Montebelluna. Vegetation of Udin boršt conglomerate karst (Slovenia).
- 14 - 228 Mulec, Janez, 2005: Alge v kraških jamah Slovenije : doktorska disertacija = *Algae in the karst caves of Slovenia : dissertation thesis.*- Ljubljana: [J. Mulec], 2005. XII, 149 str., ilustr., graf. prikazi, pril. Algae in karst caves - doctoral thesis.
- 14 - 229 Mulec, Janez, 2005: Presihajoča jezera na zgornji Pivki.- In: Prelovšek, Mitja (Ed.), Mrak, Irena (Ed.). *Vodnik po programu, ekskurzijah, predavanjih in povzetkih posterjev.* Ljubljana: Geomorfološko društvo Slovenije, 43-44. Seasonal karst lakes of Zgornja Pivka region (Slovenia).
- 14 - 230 Mullan, G.J. & Boycott, A., 2005: Archaeological Note: skeletal material recovered from Tynning's Great Swallet, Charterhouse-on-Mendip, Somerset.- *Proceedings University of Bristol Spelaeological Society*, 23/2 (2004), 135-140, Bristol.
- 14 - 231 Mullan, G.J. & Boycott, A., 2005: Cave notes: Co.Clare, Ireland.- *Proceedings University of Bristol Spelaeological Society*, 23/2 (2004), 143-148, Bristol.
- 14 - 232 Mullan, G.J. & Wilson, L.J., 2005: A possible mesolithic engraving in Aveline's Hole, Burrington Combe, North Somerset.- *Proceedings University of Bristol Spelaeological Society*, 23/2 (2004), 75-85, Bristol.
- 14 - 233 Nicod, Jean, 2005: Spéléogénèse et vulnérabilité des systèmes karstiques. *Acta carsologica* 33/2, 2004.- *Karstologia*, 45-46, 77, s.l.
- 14 - 234 Nicoud, G. & Hoblea, F., 2005: Un classique revisité: le MVGA du Mt Granier (Chartreuse, France).- *Riscuri si catastrofe An IV, n°2*, Ed. V. Sorocovschi, Casa Cartii de Stiinta, Univ. Babes-Bolai, 59-64, Cluj-Napoca (Romanie).

New field data about the wellknown historic (1248 A.D.) rockslide of the Mount Granier (northern french subalpine Chartreuse massif), including the interactions between the instability of the rock faces and the subterranean karstic volumes. The speleologic network is used since 1996 for a monitoring of the actual instability of the mountain.

- 14 - 235 Novak, Michal & Štos, Oldrich, 2005: Speleoprojekt Kanin v roce 2004.- Speleoforum, 24, 67-69, s.l.**
Speleoprojekt Kanin of the year 2004.

- 14 - 236 Novak, Tone, 2005: Terrestrial Fauna from Cavities in Northern and Central Slovenia, and a review of systematically ecologically investigated cavities.- Acta carsologica, 34/1, 169-210, Ljubljana.**

In the years 1977-2001, the fauna of and ecological conditions in 55 cavities - caves and artificial tunnels - in northern and central Slovenia were systematically investigated. Zoogeographically, this is the meeting point of the Alpine, Pannonian and Dinaric biome. This article lists 321 terrestrial genera, 456 species and 100 subspecies belonging to 183 families, that had been recorded by 2005 in cavities of this region in the course of our own investigations, and that have been cited in the references. This taxonomical review serves as a foundation for understanding ecological and other treatise on the terrestrial fauna in the hypogean habitats of northern and central Slovenia, those that have been published ones, as well as those in preparation. The overview of the systematically investigated cavities, and the review of the methods and techniques used has been added to provide general information about the morphology of these caves, and the ecological research within them.

K.W.: artificial tunnels, bibliographic review, caves, cavities, ecological research, faunal review, northern and central Slovenia, terrestrial fauna.

- 14 - 237 Osborne, R. Armstrong L., 2005: Dating ancient caves and related paleokarst.- Acta carsologica, 34/1, 51-72, Ljubljana.**

There are few cases of open caves that have been reliably dated to ages greater than 65 Ma. This does not mean that such caves are extremely rare, rather it is difficult to reliably establish that a cave, or palaeokarst related to a cave, is this old. Relative dating methods such as: - regional stratigraphic, lithostratigraphic, biostratigraphic, relative climatic, relative isotopic, morphostratigraphic, and regional geomorphic are very useful. They suffer however from significant difficulties, and their results lack the impact of a crisp numerical date. While many of the methods used to date younger caves will not work over the required age range, some isotopic methods and palaeomagnetic methods have been applied with varying degrees of success. While finding something to date and having it dated is difficult enough, producing the date is rarely the end of the story. The difficult issue is not the date or relative correlation itself, but what the date or correlation *means*. Demonstrating that caves are ancient seems to rapidly become beset with the old adage that "extraordinary claims require extraordinary proof". The presence of a well-dated or correlated sediment in a cave does not necessarily mean that the cave is that old or older. Perhaps the dated material was stored somewhere in the surrounding environ-

ment and deposited much more recently in the cave. A lava flow in a cave must be demonstrated conclusively to be a flow, not a dyke or a pile of weathered boulders washed into the cave. It must be conclusively shown that dated minerals were precipitated in the cave and not transported from elsewhere. There seems little doubt that in the future more ancient caves, or ancient sections of caves, will be identified and that as a result our perception of the age of caves in general will change.

K.W.: speleology, age of cave, ancient cave, datation methods.

- 14 - 238 Otoničar, Bojan & Košir, Adrijan & Žumer, Jože & Zajič, Alfred, 2005: Holocenska karbonatna grebenska tvorba tipa "Coralligene" v Koprskem zalivu.- In: Horvat, Aleksander (Ed.). 17. posvetovanje slovenskih geologov, (Geološki zbornik, 18). Ljubljana: Univerza v Ljubljani, Naravoslovnotehniška fakulteta, Oddelek za geologijo, 87-90.**

Holocene carbonate reef formation of the "Coralligene" type in the Bay of Koper (Slovenia).

- 14 - 239 Palmer, Arthur N., 2005: Milanović P.T., Water resources engineering in karst.- *Journal of Cave and Karst Studies*, 67/1, 60, Huntsville.**

- 14 - 240 Parise, Mario & Trocino, Antonio, 2005: Gypsum karst in the Crotona Province (Calabria, Southern Italy).- *Acta carsologica*, 34/2, 369-382, Ljubljana.**

The Calabria region of southern Italy presents remarkable examples of gypsum karst, involving evaporite rocks ranging in age from Trias to Miocene. Triassic evaporites are limited to a sequence of about one hundred meters of thickness in the Coastal Chain, on the western Calabrian coast. Messinian evaporites, on the other hand, extensively crop out to the east, in the Crotona Basin. The present contribution intends to describe the main features of gypsum karst in the latter area, from the surface karst morphology to the development of caves. The Crotona Basin is among the most interesting areas as regards evaporite karst in Italy: a variety of surface karst landforms is there present, including dolines, blind valleys, closed depressions, and deep and narrow canyons intensely affected by slope movements. Many caves are located at the bottom of the dolines, as Grave Grubbo which, with a length over 2,500 meters, is one of the longest Italian caves in evaporites. The study area has experienced several transformations, mostly due to agricultural activity and to scarce attention paid by local administrators toward this unique naturalistic landscape. The high value of Calabrian gypsum karst is thus not fully exploited, and several cases of degradation of the caves have been registered, even with consequences for the quality of water flowing in the karst systems.

K.W.: gypsum karst, geomorphology, speleology, degradation, Italy, Calabria.

- 14 - 241 Parise, M. & Gunn, J. (Eds). 2005. Natural and anthropogenic hazards in karst areas.- *Natural Hazards and Earth System Science*, Vol 4, 569-774 & Vol 5, 1-250.**

- 14 - 242 Parise, Mario & Suarez, Manuel Valdes, 2005: The show cave at "Gran Caverna de Santo Tomás" (Pinar del Rio province, Cuba).- *Acta carsologica*, 34/1, 135-149, Ljubljana.**

At *Gran Caverna de Santo Tomás*, one of the longest karst system of Cuba, a part of the cave is exploited since 1994 as show cave. It corresponds to the sixth level (out of the total of seven) of the complex karst system, which lowest part is still active today, being the present course of *Arroyo Santo Tomás*. Even with the difficulties related to great distance from the main tourist routes of the island, *Gran Caverna de Santo Tomás* was visited in the last 10 years by a significant number of tourists and scientists, due to its remarkable variety of karst landscape, at the surface as well as within the cave, and the important archaeological discoveries therein carried out. Management of the show cave is a good example of low-impact effect of tourism in a karst cave, as many features point out. Among these, the limited number of visitors allowed for each group, the choice in using only wooden ladders and passages to reach the cave entrance, and the adoption of rechargeable electrical light (without realizing any fixed light system in the cave). *Gran Caverna de Santo Tomás*, therefore, has a high potentiality for becoming one of the best location in the Caribbean to develop an ecological sustainable tourism and, at the same time, due to its size and length, to allow international and Cuban cavers and scientists to continue carrying out speleological and karst research.

K.W.: karst, show cave, tourism, Cuba.

- 14 - 243 **Pekčes, Martina, 2005: 12. škola krša, Postojna (SLO), 21.-24.6.2004. Datiranje špiljskih sedimentov.- Velebiten, 42, 30-31, Zagreb.**
12th Karst School at Postojna (Slovenia).
- 14 - 244 **Peric, Borut, 2005: Stota obletnica odkritja Tihe jame.- Kras, 68, 40-41, Ljubljana.**
100 years of the discovery of Tiha jama passage (Škocjanske jame caves).
- 14 - 245 **Peric, Borut & Debevec, Albin & Kranjc, Andrej & Mihevc, Andrej & Slapnik, Rajko, 2005: Les grottes de Škocjan. Groty Szkojcjafskie Maaroth Škocjan A Škocjani-barlang.- Škocjan: Park Škocjanske jame.**
- 14 - 246 **Petek, Franci, 2005: Spremembe rabe tal v slovenskem alpskem svetu.- Geografija Slovenije, 11, 216 pp., Ljubljana.**
Land use changes in the Slovene Alps.
- 14 - 247 **Petrič, Metka, 2005: Hydrogeological characteristics of Kras.- In: Mihevc, Andrej (Ed.). Voda in življenje v kamniti pokrajini - Kras = Water and Life in a Rocky Landscape - Kras (Projekt Aquadapt): Založba ZRC, ZRC SA-ZU, 21-28, Ljubljana.**
Kras is built by karstified and well permeable limestones and dolomites. Waters in them are flowing underground towards the springs in the Trieste bay. The biggest are the Timava springs with discharges between 9.1 and 127m³/s and the mean discharge 30.2 m³/s. The main source of recharge of this karst system is the infiltration of precipitation over the whole karst area, and additional source is the inflow of sinking streams from the surrounding areas. The most important among them is the Reka river which sinks in the Škocjanske jame Caves. The underground water flow can be observed in some water caves in which the water table

oscillates for even more than hundred meters. Characteristics and directions of groundwater flow can be defined also by indirect methods such as tracing tests. At different hydrological conditions the apparent flow velocities between 25 and 300 m/s were estimated by the use of this method. The aquifer of Kras is also an important water resource. Inhabitants of the Kras area, and occasionally also of the Slovene Coast, are supplied by drinking water from the pumping station Klariči near Brestovica. The water quality is satisfactory and after some basic treatment suitable for drinking. But since the aquifer of Kras is very vulnerable to different types of pollution any unreasonable dealing with it may result in permanent consequences. Therefore for its efficient protection it is necessary to undertake proper actions which have to be based upon adequate understanding of functioning of this karst aquifer.

K.W.: geology, hydrology, karst, water quality, Kras.

14 - 248 Petrič, Metka & Kogovšek, Janja, 2005: Hydrogeological characteristics of the area of intermittent karst lakes of Pivka.- *Acta carsologica*, 34/3, 599-618, Ljubljana.

A special hydrological feature of the western part of the Javorniki karst massif is the intermittent karst lakes of Pivka. For the whole area a close connection between underground and surface water is characteristic. In the karst aquifer water flows mostly underground, but after more intensive or long-lasting precipitation the water table rises and water emerges on the surface at different locations. Intermittent karst springs along the Pivka river are activated. Also karst depressions are filled with water and up to 17 intermittent karst lakes can be formed. Some of them appear very often and contain water for up to six months, but mostly they are very rare and filled up only exceptionally in the time of big floods. In the article the hydrogeological characteristics of the area are presented, which are reflected in the flow regime of karst water and in the forms of its appearance on the surface.

K.W.: hydrogeological structure, intermittent karst lakes, intermittent karst springs, Pivka, Slovenia.

14 - 249 Petrič, Metka & Šebela, Stanka, 2005: Hydrogeological research as a basis for the preparation of the plan of monitoring groundwater contamination - a case study of the Stara vas landfill near Postojna (SW Slovenia).- *Acta carsologica*, 34/2, 489-506, Ljubljana.

For the present 9 landfills on karst are still active in Slovenia, among them also the Stara vas landfill near Postojna. As strong fissuration of the rock base and very good permeability is typical for karst areas, the waste waters from the landfills particularly endanger the groundwater. The capacity of natural filtration in karst is very low and the dimension of possible negative impact is very high. The actual legislation regulates the performance of operational monitoring, a part of which is also the measurement of parameters of contamination of groundwater by hazardous substances, if they are in the area of influence of the landfill. Preparation of the monitoring plan is based on adequate hydrogeological researches. Besides basic geological and hydrogeological data also the results of tracer tests were used in the case study of the Stara vas landfill. Additionally, the detailed tec-

tonic-lithological mapping in the scale 1:5000 was performed in the narrow area of the landfill. Based on defined characteristics of underground water flow and in accordance with the regulations 3 monitoring points inside (Malenščica and Vipava springs, Fužina cave) and one point outside the area of influence of the landfill (Matijeva jama cave) were selected. The monitoring plan for the observation of water quality and capacity was suggested.

K.W.: landfill, monitoring of groundwater, Stara vas, Postojna, Slovenia.

- 14 - 250 Petrič, Metka 2005: Coastal karstic aquifer exploitation fact sheet : Klarici, Breštovica, Slovenia.- In: Tulipano, Luigi (Ed.). Final report, (EUR, 21366). Brussels: Office for Official Publications of the European Communities, pp. 258**
- 14 - 251 Petrič, Metka, 2005:. Hidrološke značilnosti območja Udin boršt.- In: Kranjc, Andrej (Ed.). Kraške kulturne pokrajine : edinstveni odnos med človekom in kraškim svetom : architecture of a unique relationship people/territory, Udin boršt, Museo di Storia Naturale e Archeologia, 53-58, Montebelluna.**
Hydrological characteristics of the Udin boršt conglomerate karst (Slovenia).
- 14 - 252 Pfeffer, K.-H., 2005: Mediterraner Karst und Tropischer Karst.- Geographische Rundschau, Jahrg. 57, Heft 6, 12 - 18, Braunschweig.**
Mediterranean and tropical karst are karst-landscapes with characteristic forms. The mediterranean karst (or dinaric karst) is characterized by dolines, dry valleys, poljen and corrosion plains. Hollow moulds determine the karst-landscape which is situated in the alpidic folded carbonate mountains bordering the Mediterranean sea. The individual forms of this karstic landscape are described and essential elements of their genesis are shown. Human interferences with the karstic ecosystem since the Neolithic age has destroyed the vegetation, activated soil erosion and generated a bare limestone rock landscape. The possibilities of human utilization of poljen are being discussed. Tropical karst also tower karst, cockpit-karst, Fengcong karst, Fenglin karst - is marked by steep convex forms with star shaped cockpits and by plains with steep towerlike convex forms, furthermore by karst margin plains. Tropical karst receives its denomination by the occurrence in equatorial areas and areas of south China. The various forms associated with it are shown in the essay and the genesis of tropical karst with its specific solution processes and desilicating weathering processes is discussed. Possibilities of utilizing the tropical karst are outlined on the basis of examples.
- 14 - 253 Pint, John & Pint, Susy, 2005: Searching for lava tubes in Arabia.- NSS News, 63/5, 9-15, Huntsville.**
- 14 - 254 Pipan, Tanja & Culver, David C., 2005. Estimating biodiversity in the epikarstic zone of a West Virginia Cave.- Journal of Cave and Karst Studies, 67/ 2, 103-109, Huntsville**
- 14 - 255 Pipan, Tanja & Culver, David C., 2005: Epikarst fauna from north American caves.- In: Gibert, Janine (Ed.). World subterranean biodiversity : pro-**

ceedings of an international symposium held on 8 - 10 December 2004 in Villeurbanne, France. Villeurbanne: [CNRS], 136.

- 14 - 256 Pipan, Tanja & Culver, David C., 2005: Microgeographic study of copepods in the epikarst zone of West Virginia caves.- In: Abstract book. [S. l.]: The World Association of Copepodologists (WAC), 109.
- 14 - 257 Pipan, Tanja & Culver, David C., 2005: Epikarst communities: biodiversity hotspots and potential water tracers.- Proceedings of the international conference and field seminars, Water Resources and Environmental Problems in Karst/Stevanović, Z. & Milanović, P./Eds., 823-830, Belgrade.
- 14 - 258 Pipan, Tanja, 2005: Živalstvo Udin boršta.- In: Kranjc, Andrej (Ed.). Kraške kulturne pokrajine : edinstveni odnos med človekom in kraškim svetom : architecture of a unique relationship people/territory, Udin boršt, Museo di Storia Naturale e Archeologia, 47-51, Montebelluna.
The fauna of Udin boršt conglomerate karst (Slovenia).
- 14 - 259 Pipan, Tanja, 2005: Epikarst - a promising habitat. Copepod fauna, its diversity and ecology: A case study from Slovenia (Europe).- Carsologica 5, 101 pp., Postojna - Ljubljana.
- 14 - 260 Pipan, Tanja, 2005: Fauna of the Pivka intermittent lakes.- Acta carsologica, 34/3, 650-659, Ljubljana.
The present contribution deals with aquatic fauna of the Pivka intermittent lakes. Due to their intermittent character some interesting crustaceans from the groups of fairy shrimps (Anostraca), water fleas (Cladocera) and copepods (Copepoda) are found there. Petelinjsko jezero is the only known location in the world for the endemic species *Chirocephalus croaticus*. Copepod species *Diaptomus cyaneus* and *Diacyclops charon* are relatively abundant in Europe, but Petelinjsko jezero and Veliko Drskovško jezero are the only two locations known in Slovenia for both species. All the species are threatened due to destruction of their natural habitats.
K.W.: aquatic invertebrates, *Chirocephalus croaticus*, Pivka intermittent lakes.
- 14 - 261 Pleničar, Mario, 2005: Upper Cretaceous Rudists in Slovenia.- Razred za naravoslovne vede, Dela, 39, 254 pp., Ljubljana.
- 14 - 262 Polak, Slavko, 2005: Favna kopenskih habitatov Pivških jezer.- Acta carsologica, 34/3, 660-690, Ljubljana.
The paper gives an overview of the current knowledge of the fauna of the land habitats around the Pivka intermittent lakes. So far 20 mammal species and 127 bird species have been identified. Of the bird species, 75 also nest here. Special attention is paid to European conservation species such as the corn crake, woodlark, nightjar and barred warbler. The nesting density of the barred warbler, skylark, red-backed shrike and corn bunting at the Pivka lakes is among the highest in the country. In the area of the Pivka lakes 8 reptile species and 9 amphi-

bian species have been identified. The majority of these species are on the Red List of Threatened Animals. Among invertebrates only the butterflies have been relatively well researched. 106 species have been identified in the area, which amounts to 57% of all species of butterflies living in Slovenia. Among butterflies as well there are many threatened and vulnerable species. Beetle fauna is underresearched. To the present, 210 species have been identified, but it is estimated that between 4000 and 6000 species of beetle live here. An analysis of animal species in land habitats and their ecological requirements indicates that many of the threatened species are connected with the marshy grasslands of the lakes themselves, and many of them are connected with the dry karst grasslands and barren rocky outcrops. There are fewer threatened animal species in the forests and brush. Among forests the most scientifically important are the remains of old oak forests. Due to the abandonment of land use by humans in the area of the Pivka lakes we can observe the rapid overgrowth of pasturelands, which leads to decreased biodiversity. In addition to legal protection of the Pivka lakes it is therefore also recommend active management and conservation as well as preserving and encouragement of the formerly extensive farming practices.

K.W.: Pivka lakes, mammals, birds, reptiles, amphibians, butterflies, beetles, conservation, Slovenia.

- 14 - 263** Pregl, Melhior & Kogovšek, Janja & Petrič, Metka & Gabrovšek, Franci & Mulec, Janez & Prelovšek, Mitja & Drame, Leon & Drole, Franjo & Zadel, Mateja, 2005: Končno poročilo za optimizacijo točk monitoringa onesnaženosti podzemnih voda z nevarnimi snovmi: rezultati sledilnega poskusa z območja odlagališča Cero Sežana: ip 364/2005.- Ljubljana: IRGO, oktober 2005. III, 27 f., 1 pril., ilustr., zemljevid, graf. prikazi, načrt.

K.W.: karst hydrology, pollution monitoring, tracing test, waste deposit, Kras, Slovenia.

- 14 - 264** Pregl, Melhior & Kogovšek, Janja & Petrič, Metka & Gabrovšek, Franci & Mulec, Janez & Prelovšek, Mitja & Drame, Leon & Drole, Franjo & Zadel, Mateja, 2005: Prehodno poročilo za optimizacijo točk monitoringa onesnaženosti podzemnih voda z nevarnimi snovmi: rezultati sledilnega poskusa z območja odlagališča Cero Sežana: ip 213/2005.- Ljubljana: IRGO, junij 2005. 29 f., 1 pril., ilustr., zemljevid, graf. Prikazi.

K.W.: karst hydrology, pollution monitoring, tracing test, waste deposit, Kras, Slovenia.

- 14 - 265** Pregl, Melhior, Kogovšek, Janja, Petrič, Metka, 2005: Izdelava načrta monitoringa kakovosti vode na vplivnem območju odlagališča Mala gora pri Ribnici.- In: Horvat, Aleksander (Ed.). 17. posvetovanje slovenskih geologov, (Geološki zbornik, 18). Univerza v Ljubljani, Naravoslovnotehniška fakulteta, Oddelek za geologijo, 103-104, Ljubljana.

K.W.: water quality monitoring, waste deposit, Ribnica, Slovenia.

- 14-266** Prelovšek, Mitja & Slabe, Tadej, 2005: Geomorfologija in skalne oblike, Geomorfologija, Kraške skalne oblike Udin boršta.- In: Kranjc, Andrej (Ed.). Kraške kulturne pokrajine : edinstveni odnos med človekom in kraškim svetom : architecture of a unique relationship people/territory, Udin boršt.-Museo di Storia Naturale e Archeologia, 25-35, Montebelluna. Geomorphology and rock features of Udin boršt conglomerate karst (Slovenia).
- 14-267** Prelovšek, Mitja & Ravbar, Nataša. Značilnosti poselitve Udin Boršta in njegova funkcija.- In: Kranjc, Andrej (Ed.). Kraške kulturne pokrajine : edinstveni odnos med človekom in kraškim svetom : architecture of a unique relationship people/territory, Udin boršt.- Museo di Storia Naturale e Archeologia, 73-80, Montebelluna. Settlement of Udin boršt conglomerate karst (Slovenia).
- 14-268** Prelovšek, Mitja, 2005: Možnosti uporabe apnenčevih ploščic za merjenje korozije oz. odlaganje sige v slovenskih jamah.- In: Prelovšek, Mitja (Ed.), Mrak, Irena (Ed.). Vodnik po programu, ekskurzijah, predavanjih in povzetkih posterjev, Geomorfološko društvo Slovenije, 45-46, Ljubljana. Use of limestone tablets to asses corrosion rate and flowstone deposition in the caves of Slovenia.
- 14-269** Radinja, Darko, 2005: Gams, I., Kras v Sloveniji v prostoru in času. Druga pregledana izdaja. Izdajatelj Inštitut za raziskovanje krasa ZRC SAZU, založila Založba ZRC SAZU, glavni urednik Vojislav Likar. Ljubljana 2004, 515 s.- Acta carsologica, 34/1, 261-263, Ljubljana. K.W.: Book review.
- 14-270** Ravnik, Mojca, 2005: Water in the Ethnological Heritage of Bržanija and Breg.- In: Mihevc, Andrej (Ed.). Voda in življenje v kamniti pokrajini - Kras = Water and Life in a Rocky Landscape - Kras (Projekt Aquadapt): Založba ZRC, ZRC SAZU, 385-404, Ljubljana. The article deals with the ethnological heritage of the villages under the Karst Rim in the northern part of Istria. Sources, catchment ponds, throughs, wells, washing places and waterworks are quality components of village space which shed light on the technical know-how of the inhabitants, their survival strategy, mutual help, neighborly relations and village communities. In the turbulent historical events of the previous century, the cultural heritage of these villages was frequently damaged; later on it was threatened by unsuitable building interventions. The author concludes that cultural heritage has been less thoroughly researched and preserved than natural heritage; this study could be a basis for drawing up a comprehensive plan for its renovation and protection. K.W.: water, village community, cultural heritage; Slovenian Istria, Karst Rim.
- 14-271** Ramovš, Anton & Herlec, Uroš, 2005: Spongijski greben v Krnici pod Zadnjim Prisojnikom.- Proteus, 67/9-10, 464-465, Ljubljana. "Spongolite" reef in Krnica (Zadnji Prisojnik, Julian Alps).

- 14 - 272 Ramovš, Anton, 2005: Kaj so kokarde in kako nastanejo.- Proteus, 67/8, 369, Ljubljana.**
What are "cockades" and how they developed?
- 14 - 273 Ravbar, Nataša & Prelovšek, Mitja, 2005: Raba tal na kraški terasi Udin boršta in njegovem obrobju.- In: Kranjc, Andrej (Ed.). Kraške kulturne pokrajine : edinstveni odnos med človekom in kraškim svetom : architecture of a unique relationship people/territory, Udin boršt, Museo di Storia Naturale e Archeologia, 65-71, Montebelluna.**
Land use of Udin boršt conglomerate karst (Slovenia).
- 14 - 274 Ravbar, Nataša, 2005: Use of Drinking Water from the Karst Aquifers in south-western Slovenia.- In: Mihevc, Andrej (Ed.). Voda in življenje v kamniti pokrajini - Kras = Water and Life in a Rocky Landscape - Kras (Projekt Aquadapt): Založba ZRC, ZRC SAZU, 475-493, Ljubljana.**
The present article presents the historical development and the contemporary condition of water supplies from the karst water resources in south-western Slovenia. Data as regards the water resources that are intended for water supply is provided. The final results regarding the use of water, the extent of the waterworks networks, the distribution of drinking water, the number of people that are supplied by the individual sources and the data regarding the quantity as well as the aim of the used water in the researched area is presented. In the studied area water gained from the karst water resources is more than 95%. Somewhere their capacities are not fully taken yet and present an alternative water resource in the future. In order to preserve sufficient quantities and satisfactory quality of the karst groundwater for the future generations it is important to make users acquainted with significance of the karst resources sustainable management.
K.W.: karst waters, drinking water supply, drinking water consumption, water sources management.
- 14 - 275 Ravbar, Nataša, 2005: Naše orožje je svetovni splet.- Geografski. obzornik, 52/ 3, 18-23, Ljubljana.**
World web side is our weapon.
- 14 - 276 Ravbar, Nataša, 2005: Upravljanje s kraškimi vodnimi viri in odnos do pitne vode.- IB rev., 39/4, 60-75, Ljubljana.**
Karst water resources management in view of drinking water.
- 14 - 277 Ravbar, Nataša, 2005: Kolesarjenje po matičnem Krasu.- Slovenija II, 4, 5-18, Ljubljana.**
By bicycle across Kras.
- 14 - 278 Ravbar, Nataša, 2005: Kras in voda.- In: Plut, Dušan (Ed.). Slovenija - vodna učna pot Evrope. Filozofska fakulteta, Oddelek za geografijo, 10, 39-48 Ljubljana.**
Karst and water.

- 14 - 279 Ravbar, Nataša, 2005: Spill of dangerous substances in the catchment area of Globočec karst spring, SE Slovenia.- Proceedings of the international conference and field seminars, Water Resources and Environmental Problems in Karst/Stevanović, Z. & Milanović, P./Eds., 193-200, Belgrade.
- 14 - 280 Rebolj, Dušan, 2005: Monografija o Parku Škocjanske jame.- Kras, 71, 49-50, Ljubljana.
K.W.: Book review.
- 14 - 281 Richardson, Keith & Carlingm Paul Anthony, 2005: A typology of sculpted forms in open bedrock channels.- Special Paper, 392, 108 p., Boulder, CO.
- 14 - 282 Roglič, Josip, 2005: Geomorfološke teme, Sabrana djela, Knjiga II.- Geografsko društvo Split, Hrvatsko geografsko društvo Zadar, Prirodoslovnomatematički fakultet Zagreb, Sveučilište u Zadru, Meridijani Samobor, 558 pp., Split.
Geomorphological themes, comprehensive work.
- 14 - 283 Romanov, Douchko & Gabrovšek, Franci & Dreybrodt, Wolfgang, 2005: Leakage below dam sites in limestone terrains by enhanced karstification: a modeling approach.- Proceedings of the international conference and field seminars, Water Resources and Environmental Problems in Karst/Stevanović, Z. & Milanović, P./Eds., 645-650, Belgrade.
- 14 - 284 Rykwalder, Philip, 2005: Alpine Caving in Western Montana.- NSS News, 63/5, 4-8, Huntsville.
- 14 - 285 Sabatier, Christian, 2005: La mémoire des pierres....- Spelunca, 99, 37-40, Paris.
- 14 - 286 Salomon, Jean-Noël & Diaz del Olmo, Fernando, 2005: Don Quichotte, spéléologue avant la lettre, et Sancho Panza par accident.- Karstologia, 45/46, 55-62, s.l.
- 14 - 287 Salomon, Jean-Noël & Pulina, Marian, 2005: Les karsts des regions climatiques extremes.- Karstologia Mémoires, 14, 220 pp.
- 14 - 288 Sandfuchs, Urs, 2005: Les cavités les plus longues et les plus profondes de Suisse.- Stalactite, 54/1, 54-56, s.l.
- 14 - 289 Sapač, Igor, 2005: Grajske stavbe v osrednji Sloveniji. III. Notranjska. Prva knjiga: Med Planino, Postojno in Senožecami.- 175 str., Ljubljana.
Castles and manors of the Middle Slovenia (Notranjska): between Planina and Senožec.
- 14 - 290 Schassmann, Silvia, 2005: Impressions du monde souterrain du Rwanda.- Stalactite, 54/2, 38-40, s.l.

- 14 - 291 Schulting, R.J., 2005: ... Pursuing a rabbit in Burrington Combe: New research on the early mesolithic burial cave of Aveline's Hole.- Proceeding University of Bristol Speleological Society, 23/3, 171-265, Bristol.**
- 14 - 292 Self, C.A. & Boycott, A., 2005: Landslip Caves on the Middle Cotswolds.- Proceedings University of Bristol Speleological Society, 23/2 (2004), 97-117, Bristol.**
- 14 - 293 Self, Charles A. & Mullan Graham J., 2005: Rapid Karst Development in an English Quartzitic Sandstone.- Acta carsologica, 34/2, 415-424, Ljubljana.**
Many karst features, including caves, have been found in the outcrop of the Fell Sandstone in Northumberland, England. These features are Holocene in age, since the area was glaciated during the Devensian cold stage. It is suggested that tectonic inception and selective arenisation of rock faces that remain damp are responsible for these karst features. The limitations of textbook definitions of the term karst are discussed.
K.W.: sandstone karst, rapid arenisation, piping, tectonic inception.
- 14 - 294 Self, Charlie, 2005: Incomplete solution: weathering of cave walls and .../Nadja Zupan Hajna.- Proceedings University of Bristol Speleological Society, 23/2 (2004), 150-152, Bristol.**
K.W.: Book review.
- 14 - 295 Shaw, Trevor R., 2005: Škocjanske jame, Slovenia, in 1891 - an alpine club excursion.- Acta carsologica, 34/1, 237-260, Ljubljana.**
The excursion after the 1891 general meeting of the Deutsche und Österreichische Alpenverein (DÖAV) was to their Section Küstenland in Trieste which was then actively exploring Škocjanske jame. J. Sigrist-Herder of Switzerland was one of those who visited the cave and he compiled an album containing contemporary publications and also 25 photographs by Francesco Benque of Trieste, 15 of which are published here for the first time. They show the 1891 festivities as well as scenes at the cave entrances and in the dolines. The visit is described here from newspaper articles by Sigrist-Herder supplemented by publications of the DÖAV. A comparison is made with a similar visit in 1885 when less of the cave had been explored. In 1891 the visitors were taken to Müllerjeva dvorana but a few people went along the walls as far as Dvorana planinskega društvo, only discovered in 1887.
K.W.: cave, history, alpine clubs, photography, Slovenia, Škocjanske jame 1891, Francesco Benque, Sigrist-Herder.
- 14 - 296 Sibert, Eric, 2005: Madagascar.- Spelunca, 98, 16-17, Paris.**
- 14 - 297 Sivelli, Michele, 2005: Sotto un cielo di pietra.- Speleologia, 26/52, 50-59, Bologna.**
Undre the rock sky.
- 14 - 298 Slabe, Marijan, 2005: Kamen v kulturi in kultura v kamnu.- Kras, 69, 14-19, Ljubljana.**
Stone in culture and culture in stone.

- 14 - 299 Slabe, Marijan, 2005: Stare kartice, razglednice, voščilnice.- Kras, 71, 12-17, Ljubljana.**
Old post cards, congratulation cards ...
- 14 - 300 Slabe, Tadej, 2005: Rocky relief as a reflection of the development of the surface of the karstic aquifer.- In: Mihevc, Andrej (Ed.). Voda in življenje v kamniti pokrajini - Kras = Water and Life in a Rocky Landscape - Kras (Projekt Aquadapt).: Založba ZRC, ZRC SAZU, 44-56, Ljubljana.**
Rock features directly reflect the factors influencing the rock and often they are an important trace of karst surface development and its use. The rock relief of studied karst surface reveals that it was heavily exploited. The cultural landscape adapted to natural circumstances on heterogeneous geological and geomorphological base. Man tried to improve the standard of his living by extensive interventions into landscape that lasted for a long time. The surface was bare, therefore the soil erosion was accelerated and thus the soil must have been replaced in each case. Various types of cultivation and exploitation of arable land followed. Now, once cultivated landscape is abandoned for several decades already. The landscape is more and more overgrown by vegetation and the rock relief is changing. The rock is covered by detritus and mosses.
K.W.: rock relief, korrosion, small feature, Kras.
- 14 - 301 Slabe, Tadej, 2005: Inštitut za raziskovanje krasa ZRC SAZU v letu 2004.- Geografski vestnik, 77/1, 132-133, Ljubljana.**
Annual report on Karst Research Institute, ZRC SAZU, Postojna.
- 14 - 302 Slabe, Tadej, 2005: Two experimental modelings of karst rock relief in plaster: subcutaneous "rock teeth" and "rock peaks" exposed to rain.- Zeitschrift für Geomorphologie, N.F., 49/1, 107-119, Berlin -Stuttgart.**
- 14 - 303 Smith, S.L. & Telling, J.P., 2005: UBSS expedition to Northern Thailand 2003.- Proceedings University of Bristol Speleological Society, 23/2 (2004), 87-95, Bristol.**
- 14 - 304 Spötl, C. & Fairchild, I.J. & Tooth, A.F., 2005 Cave air control on dripwater geochemistry, Obir Caves (Austria): Implications for speleothem deposition in dynamically ventilated caves.- Geochimica et Cosmochimica Acta, 69, 2451-2468.**
There are very few process studies that demonstrate the annual variation in cave environments depositing speleothems. Accordingly, we initiated a monitoring program at the Obir Caves, an Austrian dripstone cave system characterized by a seasonally changing air flow that results in a predictable pattern of high pCO₂ during summer and low pCO₂ in winter. Although similar seasonal changes in soil pCO₂ occur, they are not directly connected with the changes in the subsurface since the dripwaters are fed from a well-mixed source showing little seasonal variation. Cold season flushing by relatively CO₂-poor air enhances degassing of CO₂ in the cave and leads to a high degree of supersaturation of dripwater with regard to calcite. Forced calcite deposition during the cold season also

gives rise to a pronounced pattern of synchronous seasonal variations in electrical conductivity, alkalinity, pH, Ca and $\delta^{13}\text{C}_{\text{DIC}}$ which parallel variations recorded in $\delta^{13}\text{C}_{\text{cave air}}$. Chemical components unaffected by calcite precipitation (e.g., δD , $\delta^{18}\text{O}$, SiO_2 , SO_4) lack a seasonal signal attesting to a long residence in the karst aquifer. Modeling shows that degassing of CO_2 from seepage waters results in kinetically-enhanced C isotopic fractionation, which contrasts with the equilibrium degassing shown from the Soreq cave in Israel. The Obir Caves may serve as a case example of a dripstone cave whose seepage waters (and speleothems) show intra-annual geochemical variability that is primarily due to chemical modification of the groundwater by a dynamic, bidirectional subsurface air circulation.

K.W.: carbon isotopes, cave ventilation, karstic systems, soil chemistry, cave air.

14 - 305 Stafford, Kevin & Mylroie, John & Taboroši, Danko & Jenson, John & Mylroie, Joan, 2005: Karst development on Tinian, commonwealth of the Northern Mariana Islands: controls on dissolution in relation to the carbonate island karst model.- *Journal of Cave and Karst Studies*, 67/1, 14-27, Huntsville.

14 - 306 Stanonik, Marija, 2005: Water in Slovenian verbal art.- In: Mihevc, Andrej (Ed.). *Voda in življenje v kamniti pokrajini - Kras = Water and Life in a Rocky Landscape - Kras (Projekt Aquadapt): Založba ZRC, ZRC SAZU, 421-460, Ljubljana.*

The article focuses on the motif of water in Slovenian verbal art in the broadest sense. Although in a creative process there is no need to name waters, we often find motifs with precisely defined water sources and rivers that have symbolic meaning. The content is divided into four types of creative endeavour: folk narrative and poetry; creativity between folk narrative and poetry and the art of literature; literature in dialect; and literature.

K.W.: folk narrative and poetry, creativity between folk narrative and poetry and the art of literature, literature in dialect, literature, Fish Faronika, water of life, offerings to water, koliščarji, ice pits, well, waterfall, kal, deluge, rivers, karst, Kras, the Drava, the Mura, the Sava, the Soča.

14 - 307 Stanonik, Marija, 2005 : Water and culture. Introduction.- In: Mihevc, Andrej (Ed.). *Voda in življenje v kamniti pokrajini - Kras = Water and Life in a Rocky Landscape - Kras (Projekt Aquadapt): Založba ZRC, ZRC SAZU, 273-285, Ljubljana.*

14 - 308 Stevanović, Zoran & Mijatović, Borivoje/Eds., 2005: *Cvijić and Karst.*- 405 pp., Belgrade.

14 - 309 Stevanović, Zoran & Milanović, Petar/Eds., 2005: *Water Resources and Environmental Problems in Karst.*- Proceedings of the international conference and field seminars, 888 pp., Belgrade.

- 14 - 310 Sumer, J (sic!) Žumer, Jože & Mihevc, Andrej, 2005: Demonstrations and observations of cave animals in show caves.- Final Programme and Abstract Book, 14th International Congress of Speleology, 125, Athens.**
- 14 - 311 Surić, Maša, 2005: Submerged karst - dead or alive? Examples from the Eastern Adriatic Coast (Croatia).- Geoadria, 10/1, 5-19, Zadar.**
- 14 - 312 Svoljšak, Petra, 2005: A historical profile of the Kras with special regard to influences of its natural characteristics on human life.- In: Mihevc, Andrej (Ed.). Voda in življenje v kamniti pokrajini - Kras = Water and Life in a Rocky Landscape - Kras (Projekt Aquadapt): Založba ZRC, ZRC SAZU, 265-270, Ljubljana.**
 The historical survey of the Kras deals with the period from the year 500 to the present days. A continuity of settlement runs from prehistoric times through antiquity to the Middle Ages. A large part of the present-day settlements are mentioned in written sources from the beginning of the 13th century. The characteristics of the Karst region defined its economic image. The Kras had a relatively good road system. Systematic work on arranging economic circumstances began in the second half of the 18th century with reforestation. Water supply was throughout the time based on collecting rainfall water; first written sources on building cisterns are from the middle of the 19th century while building of water collectors began in the 20th century.
 K.W.: Kras, history from 6th - 20th Century, economic development, transport, reforestation, water supply.
- 14 - 313 Sydney, Joe, 2005: Casteret.- Caves Australia, Journal of the Australian Speleological Association, 168, 14-16, Sydney.**
- 14 - 314 Szóke, E., 2005.: Research on the Heavy Metal Pollution of some Cave Waters of the Karsts of Aggtelek form 2000 until now.- Acta Climatologica et Chorologica. Universitatis Szegediensis, Tom. 38-39, 135-142, Szeged.**
 Nowadays, the research of environmental pollution come to the front the importance of heavy metals in the landscape classification. However the heavy metals are the natural component of the environment, we have to look them toxic materials. Our goal is to determinate the degree of the impact of heavy metals on the karsts, which are sensitive for the environmental changes. Since 2000, we collected cave water samples from five different location of caves and springs and we have also clay samples from the Baradla cave, that was analysed too. Until now the results shows, the content of metallic contents in the cave waters are higher than the expected. The analysis of heavy metal-contamination cave waters is a part of the investigation of heavy metal pollution in karst soils and vegetation. In case, we can to detect the interaction among soil, vegetation and hydrology, that would show to a new way in the managemant of future environmental problems.
- 14 - 315 Szunyogh, Gábor, 2005: A Theoretical Approach to Establish the Duration of Denudation on Limestone Surface without Soil Cover.- Acta carsologica 34/1, 9-23, Ljubljana.**

This paper deals with the question of how the duration of karstic denudation depends on the dip angle, the annual amount of precipitation, the rain intensity, and the prevailing wind direction and speed in case of an initially plane, sloping limestone surface without soil cover. The answer is given by the solution of a differential equation system describing the lowering speed of the rock surface. It turns out that the rate of the denudation does not increase in proportion to the intensity of precipitation and that it can never exceed a maximal value. Furthermore, long, soft rains result in higher annual denudation than short, abundant downpours. With increasing wind-speed the corrosion rate also increases, but above a certain wind speed the dissolution does not become faster. This paper presents numerical examples with diagrams about how these factors affect the expected duration of denudation. K.W.: karstic denudation, lowering speed, rain intensity, slope angle, theoretical model, wind.

- 14 - 316** Šebela, Stanka & Gosar, Andrej & Koštak, Blahoslav & Stemberk, Josef, 2005: Active tectonic structures in the W part of Slovenia - setting of micro-deformation monitoring net.- *Acta Geodynamica et Geomaterialia, Formerly Acta Montana*, 2/1, 45-57, Prague.
- 14 - 317** Šebela, Stanka & Gosar, Andrej, 2005: Začetek meritev premikov ob prelomih v zahodni Sloveniji s 3D ekstenziometri TM71.- *Zbornik predavanj, Raziskave s področja geodezije in geofizike 2004*, 10, 37-45, Ljubljana.
Measurements of displacements along faults starts with 3D extensimeters TM71 in Western Slovenia.
- 14 - 318** Šebela, Stanka, 2005: Monitoring of active tectonic structures - Project COST 625.- *Acta carsologica*, 34/2, 471-488, Ljubljana.
For Western Slovenia moderate historical to recent seismicity is characteristic. The principal aim for Slovenia to join the COST 625 project was to exchange the experiences and methodology and in this way to determine the activity or non-activity of selected faults in Western Slovenia. Within the project frame we decided for several years of monitoring, and in this sense four TM 71 extensometers were installed in Western Slovenia. In the first half of the 2004 two TM 71 instruments were installed in Postojnska Jama on the Dinaric oriented fault that is situated about 1 km North from Predjama fault. The third instrument was installed on Raša fault on the SE slope of Vremščica and the fourth instrument in Učja valley on Idrija fault. The fifth instrument TM 71 will be set up on Kneža fault that is situated south from Ravne fault. The first results from Postojnska Jama are showing the small horizontal movements for 0.05 mm in one year.
K.W.: active tectonic structures, monitoring, project COST 625.
- 14 - 319** Šebela, Stanka, 2005: Postojna - Planinska cave system, Slovenia.- In: Culver, David C. (Ed.), White, William Blaine (Ed.). *Encyclopedia of caves*. Amsterdam; Boston: Elsevier: Academic Press, 2005, 456-458.
- 14 - 320** Šebela, Stanka, 2005: Tectonic sights of the Pivka basin.- *Acta carsologica*, 34/3, 566-581, Ljubljana.

The important regional thrust called Snežnik thrust, that divides the Snežnik thrust sheet from the parautochthon of the Komen thrust sheet, runs through the Pivka basin. A tectonic window near Knežak is proof of older thrusting deformations. The landscape is cut by numerous younger faults between which the most important are Raša, Predjama and Selce faults. The area of Upper Pivka is tectonically quite active, which is shown by earthquakes in recent years. It looks as if the most active is the Raša fault or one of its northern parallel faults, for example Šembije fault or maybe Selce fault. Karst intermittent lakes of Upper Pivka are developed in Upper Cretaceous limestones. The lakes are situated 0.5-4.0 km NE from the Snežnik thrust. Most of the lakes are situated along the Selce fault.

K.W.: tectonics, earthquakes, karst intermittent lakes, Pivka, Slovenia.

- 14 - 321 Šmuc, Andrej, 2005: Jurassic and Cretaceous Stratigraphy and Sedimentary Evolution of the Julian Alps, NW Slovenia.- 98 pp., Ljubljana.**

- 14 - 322 Štos, Oldrich, 2005: Expedice Krubera - Voronja 2005 aneb ruska ruleta v divoke Abchazii.- Speleoforum, 24, 65-67, s.l.**
2005 speleological expedition to Krubera - Voronja shaft.

- 14 - 323 Taboroši, Danko & Hirakawa, Kazuomi & Sawagaki, Takanobu, 2005: Carbonate precipitation along a microclimatic gradient in a Thailand cave - continuum of calcareous tufa and speleothems.- Journal of Cave and Karst Studies, 67/1, 69-87, Huntsville.**

- 14 - 324 Tanács, E. & Bárány-Kevei, I., 2005: A karsztökológiai adottságok és az erdőgazdálkodás kapcsolatának vizsgálata az egyes fajok termőhelyi preferenciái alapján, aggteleki példán.(Connection of karstecological factors and forest management example of Aggtelek National Park).- Karsztfejlődés X., 343-359, Szombathely.**

The potential vegetation of Hungarian karstlands is woodland. Despite the vegetation having been affected for centuries by human activity, the proportion of woodlands in these areas is still high. The extension and state of the forest today is defined by forest management; meanwhile changes in the vegetation have an effect on the other factors of the karstecological system: they directly affect microclimate and soil. Forest management is based on management plans, which - some dating back to beginning of the 20th century - provide a unique information source on the state of forests and production sites. This study provides a review of the possible impacts of silvicultural practices on karstlands on the example of Aggtelek National Park and also aims to examine the possible uses of forest management plans in karst research.

- 14 - 325 Tarman, Kazimir, 2005: Okamneli gozd na Lezbosu.- Proteus, 67/9-10, 461-463, Ljubljana.**
Petrified forest on Lesbos Island (Greece).

- 14 - 326 Terry, James P., 2005: Karst distribution and control on Yoron-Jima, an emerged reef island in sub-tropical Japan.- Journal of Cave and Karst Studies, 67/1, 48-54, Huntsville.**
- 14 - 327 Thomas, Christian, 2005: 10 années dans le grottes mayas (Mexique).- Speleunca, 98, 25-42, Paris.**
- 14 - 328 Thompson, Bob, 2005: Wade Highbaugh's Glass Lantern Slides of Sand Cave.- NSS News, 63/6, 4-8, Huntsville.**
- 14 - 329 Tončič Štrancar, Marija, 2005: Springs, Water Captures and Puddles called "kali" in Villages between Starod and Materija.- In: Mihevc, Andrej (Ed.). Voda in življenje v kamniti pokrajini - Kras = Water and Life in a Rocky Landscape - Kras (Projekt Aquadapt).: Založba ZRC, ZRC SAZU, 294-310, Ljubljana.**
 The article discusses the significance and supply of potable fresh water in the Karst villages of Podgrajsko-Matarsko podolje in the past. It features villages of the Slovenian region of Čičarija and some villages of the southern edge of the Brkini hill range. It is based on statements of elderly people about the significance of potable water in the past and the author's field notes. The aim of the article is to create a list and description of springs, wells and old built-in water sources (springs, bučki, bečuni) and kali (lokve), and to present certain information of how they were adapted for use. It also comments on their present condition.
 K.W.: freshwater, potable water, source, built-in source, spring, buček, bečun, well, kal, lokev, Podgrajsko-Matarsko podolje, slovenska Čičarija.
- 14 - 330 Torelli, Louis & Guidi, Pino, 2005: La Grotta Impossibile e i lavori per la grande viabilità triestina.- Speleologia, 26/52, 12-21, Bologna.**
 The works for fast communication and the cave Grotta Impossibile.
- 14 - 331 Trček, Branka, 2005: How can the epikarst zone influence the karst aquifer hydraulic behavior? Ed.- Proceedings of the international conference and field seminars, Water Resources and Environmental Problems in Karst/Stevanović, Z. & Milanović, P./Eds., 411-416, Belgrade.**
- 14 - 332 Trček, Branka, 2005: The use of natural tracers in the study of the unsaturated zone of karst aquifer.- Geologija, 48/1, 141-152, Ljubljana.**
- 14 - 333 Trofimova, Elena, 2005: Cave ice of Priolhonie (Eastern Siberia, Russia). Glacier Caves and Glacial Karst in High Mountains and Polar Regions.- Institute of geography of the Russian Academy of Sciences, 127-131, Moscow.**
 Congelation ice, sublimated ice and deposited and metamorphic ice is distinguished in the 8 ice caves of Priolhonie. In caves researched the following cave ice deposits are occurred: congelation ice - droplet-accumulative aufeis, aufeis-layers, mantle of ice, ice of the lake, segregated ice; sublimated ice - hexahedral plates and deposited and metamorphic ice - snow-banks.

- 14-334 Trofimova, Elena, 2005: Karstic caves of France: an experience of the utilization.- Proceedings of the Russian Geographical Society, V. 137, issue 6, 2005, 53-58.**

The following types of the use of the caves in France are considered: underground laboratories, museums, objects of the recreation, objects of national economy and cave-hospitals.

- 14-335 Trofimova, Elena, 2005: Karstic denudation: an experience of the estimation in the platform and mountainous regions of Siberia and the Far East. New methods in geomorphology.- Moscow State University, 565-568, Moscow.**

K.W.: karstic denudation, Siberia, Far East.

- 14-336 Turk, Ivan & Skaberne, Dragomir & Blackwell, Bonnie A. B & Dirjec, Janez, 2005: Assessing humidity in the Upper Pleistocene karst environment. Palaeoclimates and palaeomicroenvironments at Divje babe I, Slovenia.- In: Mihevc, Andrej (Ed.). Voda in življenje v kamniti pokrajini - Kras = Water and Life in a Rocky Landscape - Kras (Projekt Aquadapt): Založba ZRC, ZRC SAZU, 173-198, Ljubljana.**

The article presents a new sedimentary-climatic model for explaining autochthonous clastic sediment in the Upper Pleistocene site, Divje babe I, Slovenia. The sediment analysed here was deposited during Oxygen Isotope Stages 1, 3 and 5 (OIS, OIS 3, OIS 5). The stress is on precipitation, which we explained on the basis of the quantity of authigenic structural aggregates in the sediment. We supported the results with quantitative analysis of clasts with cavernous corrosion, which represent corrosion of the cave ceiling, and etched bones, which represent corrosion on the cave ground. We also analysed the relation between climate and cave bears, and Neanderthals and climate, on the basis of mass fossil remains and finds of artefacts. All analyses were made on the basis of three-dimensional sampling, i.e. in horizontal and vertical directions by means of quadrats 1 x 1 m and 12 cm spits. We sampled 65 profiles over an area of 65 m². Each profile had 35 arbitrary stratigraphic units (spits) with data on aggregates, etched bones, fossil remains and artefacts. In explaining the sediment characteristics that point to climatic parameters, we consistently took into account the Holocene standards for the site. We found that the climate in OIS 3 was colder and damper than in OIS 1 and OIS 5. People and animals responded to the climatic changes in OIS 3 with more visits to the cave but not at the same time. The climatic change was presumably reflected in the microlocation of the cave mainly by the longer duration of snow cover.

K.W.: Divje babe I cave, Slovenia, Upper Pleistocene, OIS 3, OIS 5, palaeoclimatic sedimentary analyses, moisture, temperature, micro-environment, Neanderthals, cave bears.

- 14-337 Turk, Ivan & Pflaum, Miran & Pekarovič, Dean, 2005: Rezultati računalniške tomografije najstarejše domnevne piščali iz Divjih bab I (Slovenija): prispevek k teoriji luknjanja kosti.- Arheološki vestnik, 56, 9-36, Ljubljana.** Results of computer tomography of the oldest suspected flute from Divje babe I (Slovenia): contribution to the theory of making holes in bones.

14 - 338 Ujević, Petra & Paar, Dalibor, 2005: Špilja u kamenolomu Debeljača.- Velebiten, 42, 2-4, Zagreb.

14 - 339 Veljanovski, Tatjana & Ravbar, Nataša, 2005: Socio-cultural determinants of drinking water consumption and the relation to it in south-western Slovene households.- In: Mihevc, Andrej (Ed.). Voda in življenje v kamniti pokrajini - Kras = Water and Life in a Rocky Landscape - Kras (Projekt Aquadapt).: Založba ZRC, ZRC SAZU, 494-512, Ljubljana.

An extensive analysis of drinking water household users has been performed in 2003 in south-western Slovenia. The most important goal of the present research was to deepen the understanding of the socio-cultural, economic and technological characteristics of drinking water consumption. Thus we can deduct as regards the factors, which can cause a change in the treatment of water resources. The behaviour of household water users (habits in drinking water use), the attitude towards water (ecological awareness) and how the users would respond to changes in water quality, water supply quality, water price and similar have been investigated. Household users present the most numerous group of drinking water users, and are also the most demanding and sensitive users. Data on how water problematic is sensed in the households was collected in the course of opinion poll survey (421 completed questioners). It has turned out that the respondents are well aware of the importance of drinking water for their life. They are also well aware of the negative human impact on the environment and the urgency of economical treatment of drinking water. Although the majority treats drinking water as economical as possible, each individual consumes over one hundred litres of water daily, which is believed rather uneconomical than neglecting use. If the users will not start treating drinking water more reasonably, the stock of clean water could soon reach critical limits. This paper reviews the characteristics of drinking water consumption of contemporary users and their relation to the water problematic through the behaviour of the respondents' sample.

K.W.: drinking water, water consumption, water resource management, households, attitude towards water.

14 - 340 Veljanovski, Tatjana, 2005: Water supply and drinking water consumption characteristics in the contemporary society. Introduction.- In: Mihevc, Andrej (Ed.). Voda in življenje v kamniti pokrajini - Kras = Water and Life in a Rocky Landscape - Kras (Projekt Aquadapt).: Založba ZRC, ZRC SAZU, 463-474, Ljubljana.

14 - 341 Velušček, Anton, 2005: The Kras plateau in southwestern Slovenia and the Ljubljansko barje in the Neo-Eneolithic period - a comparative study.- In: Mihevc, Andrej (Ed.). Voda in življenje v kamniti pokrajini - Kras = Water and Life in a Rocky Landscape - Kras (Projekt Aquadapt). Založba ZRC, ZRC SAZU, 199-219, Ljubljana.

The contribution presents a comparison of archaeological data for the Neo-Eneolithic period on the Kras in southwestern Slovenia and for the Ljubljansko barje in central Slovenia. The dissimilarity is understood as the result of "economic-political conditions", geographical positioning and natural characteristics. Scarcity of fresh

surface water and cultivable soil for the development of agriculture is characteristic of the Kras plateau. The "Neolithic" lifestyle appears with a truncated Neolithic package (pottery, animal husbandry) in approximately the mid 6th millennium BC. Seasonal and short-term settlements predominate. Inferably, the Kras plateau was of particular interest to mobile groups of herdsman, who were perhaps also collectors of salt from along the seacoast already from the very start. A relatively large lake was present on the Ljubljansko barje during this discussed period. The first Neolithic groups appear as late as the first half of the 5th millennium, and at this point, they are sustaining the complete Neolithic package (permanent settlement, pottery, animal husbandry, agriculture). Our goal is to link settlement with the first searchers for copper ore deposits, although evidence has yet to be found. It is evident though that the Ljubljansko barje, where local copper ore was very likely also exploited, becomes an important supraregional metallurgic center during the 4th and 3rd millennia BC.

K.W.: Slovenia, Kras plateau, Ljubljansko barje, Neolithic, Eneolithic, settlement, comparative study.

- 14 - 342 Vidau, Pavel, 2005: Tovarna naravnega ledu pri Banih.- Kras, 68, 48-50, Ljubljana**
"Factory" of natural ice near Bane (Kras - Carso).
- 14 - 343 Vintar Mally, Katja, 2005: Maroko.- Vodniki Ljubljanskega geografskega društva, Afrika, 1, 92 pp., Ljubljana.**
Guide of Morocco.
- 14 - 344 Viršek, Damjan, 2005: Županova jama - TOD Grosuplje. Skoraj osem desetletij.- Lipov list, 47/7-8, 114, Ljubljana.**
80 years of Županova jama show cave.
- 14 - 345 Vuga, Davorin, 2005: Možna povezanost s sago o Argonavtih.- Kras, 70, 20-23, Ljubljana.**
Possible relation between the saga of Argonauts and Kras.
- 14 - 346 Walck, Cyndie, 2005: Observations on Halite Cave Geomorphology.- NSS News, 63/11, 20-21, Huntsville.**
- 14 - 347 Waltham, Tony & Bell, Fred & Culshaw, Martin, 2005: Sinkholes and Subsidence. Karst and Cavernous Rocks in Engineering and Construction.- 382 pp., Chichester.**
- 14 - 348 Willey, P. & Stolen, Judy & Crothers, George & Watson, Patty Jo, 2005: Preservation of prehistoric footprints in Jaguar Cave, Tennessee.- Journal of Cave and Karst Studies, 67/1, 61-68, Huntsville.**
- 14 - 349 Wood, P. J. & Gunn, J. & Smith, H. & Abas-Kutty, A., 2005: Flow permanence and macroinvertebrate community diversity within groundwater dominated headwater streams and springs.- Hydrobiologia, 545, 55-64.**

The response of aquatic macroinvertebrate communities to flow permanence within limestone springs and headwater streams was examined across the English Peak District. At the regional scale, macroinvertebrate communities of perennial and intermittent springs displayed significant differences in the number of taxa, macroinvertebrate community abundance, diversity indices (Shannon and Simpson indices) and the Berger-Parker dominance index at intermediate discharge. However, no significant difference was recorded between intermittent and perennial sites at high discharge or when all sampling occasions were pooled. At the catchment scale, the number of taxa, community abundance and Bray-Curtis similarity coefficients within the River Lathkill differed significantly between intermittent springs and other habitats. At both the regional and catchment scale the macroinvertebrate communities of intermittent springs were characterised by a small number of taxa displaying life cycle adaptations to intermittent aquatic habitats, particularly Trichoptera.

- 14 - 350 Zboray, Z. & Bárány-Kevei, I., 2005.: A dolinák korróziós felszínének meghatározása digitális domborzatmodell alapján (Determine of corrosions surface of dolines on base of digital relief model).- Karszfejlődés X., 221-228, Szombathely.**

We present a study about the measure the real surface values of the dolines. First of all, we derived a digital elevation model based on high scale aerial images in the Bükk-Plateau (Bükk-Fennsík). The help of these we computed the slope values of the dolines (between the most external contours), and specified the real area values of the surface (as opposed to the area of the dolines in the projection).

- 14 - 351 Zboray, Z. & Tanács, E., 2005. An Investigation of the Growth types of Vegetation in the Bükk Mountains by the Comparison of Digital Surface Models.- Acta Climatologica et Chorologica. Universitatis Szegediensis, 38-39, 163-169, Szeged.**

The most common form of land use in Hungarian karsts is woodland. The rate of tree growth in the forest is of utmost importance for forest management but is also useful for monitoring purposes. In this study we review the possible uses of digital surface models (DSM) derived from aerial imagery in investigating tree growth rates. Two digital surface models were created of a 100 km² study area in the Bükk Mountains, Hungary by using aerial imagery from the years 1965 and 2004. Tree growth maps were created by extracting the areas' digital elevation models from these surface models. Our results suggest that these digital maps could replace field measurements in the future.

- 14 - 352 Zboray, Z. & Bárány-Kevei, I. & Tanács, E., 2005: Defining the Corrosion Curface of the Dolines by means of Digital Elevation Model.- Acta Climatologica et Chorologica. Universitatis Szegediensis, Tom. 38-39, 157-162, Szeged.**

The complex study of most typical karst features, the dolines, forms an important part of karst morphological research. The varied surface of the karst, the individual shapes of the dolines can only be analysed with the help of proper cartographical methods and holistic approach. The use of digital elevation models provides possibility to compute the precise slope values and trough these to specify the real area values of the surface (as opposed to the area in projection).

- 14 - 353 Zorko, Danica, 2005: Skoraj pol milijona obiskovalcev.- Lipov list, 47/1-2, 11, Ljubljana.**
Nearly half a million of visitors of Postojnska jama cave.
- 14 - 354 Zupan Hajna, Nadja & Mihevc, Andrej, Pruner, Petr, Bosák, Pavel, 2005: Nova spoznanja o starosti jamskih sedimentov v Sloveniji.- In: Horvat, Aleksander (ed.). 17. posvetovanje slovenskih geologov, (Geološki zbornik, 18). Ljubljana: Univerza v Ljubljani, Naravoslovnotehniška fakulteta, Oddelek za geologijo, 132-135.**
New results on the age of cave sediments in Slovenia.
- 14 - 355 Zupan Hajna, Nadja, 2005: Barka depression, remodelled shaft in the area of Snežnik Mountain, SW Slovenia.- Sixth International Conference on Geomorphology, Geomorphology in Regions of Environmental Contrasts; Abstracts Volume, Abstracts Volume, 220, Zaragoza.**
- 14 - 356 Zupan Hajna, Nadja, 2005: Clastic sediments and soils on the Kras.- In: Mihevc, Andrej (Ed.). Voda in življenje v kamniti pokrajini - Kras = Water and Life in a Rocky Landscape - Kras (Projekt Aquadapt). Založba ZRC, ZRC SAZU, 37-43, Ljubljana.**
One of the characteristics of the Kras is red soil, which is developed on different clastic sediments, limestones, limestone with chert and on dolomite. Clastic sediments on the surface and in the caves differ by the size of the grains and by the origin. But in almost all samples of sediments from caves, unroofed caves and bottom of dolines relatively equal mineral composition prevailed, indicating the main source from Eocene flysch sediments, which were weathered to different degree. These sediments are yellow or red. Yellow sediments, which have been in contact with percolating water from the surface, have changed colour during diagenesis in oxidation zone to red. In sediments from caves and from now roofless caves we didn't find minerals, which are characteristic for material with loess origin, it looks like that caves have already been filled up by sediments when loess deposition in Istria started.
K.W.: red soil, cave sediments, mineral composition, Kras.
- 14 - 357 Zupan Hajna, Nadja, 2005: Various types of gypsum crystals from Tajna jama, Slovenia.- Final Programme and Abstract Book, 14th International Congress of Speleology, 103, Athens.**
- 14 - 358 Zupan Hajna, Nadja, 2005: Klastični sedimenti in prst na Krasu.- In: Prelovšek, Mitja (Ed.), Mrak, Irena (Ed.). Vodnik po programu, ekskurzijah, predavanjih in povzetkih posterjev, Geomorfološko društvo Slovenije, p. 48, Ljubljana.**
Classtic sediments and soil on Kras.

- 14 - 359** Zupan Hajna, Nadja, 2005.: Starost jamskih sedimentov v Sloveniji in rezultati paleomagnetnih datacij.- In: Zborovanje slovenskih jamarjev in raziskovalcev krasa, Gorjuša 2005: zbornik 2004, Društvo za raziskovanje jam, str. 25, Domžale.
The age of cave sediments and the results of palaeomagnetic dating in Slovenia.
- 14 - 360** Zupan Hajna, Nadja & Mihevc, Andrej & Pruner, Petr & Bosák, Pavel, 2005. Nova spoznanja o starosti jamskih sedimentov v Sloveniji.- In: Prelovšek, Mitja (Ed.), Mrak, Irena (Ed.). Vodnik po programu, ekskurzijah, predavanjih in povzetkih posterjev, Geomorfološko društvo Slovenije, 48-49, Ljubljana.
New results on the age of cave sediments in Slovenia.
- 14 - 361** Žagar, Petra, 2005: Geometrija faset v Križni jami.- *Proteus*, 68/3, 109-113, Ljubljana.
Geometry of scallops in the cave Križna jama.

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