Speleological Association of Slovenija

and

Karst Research Institute ZRC SAZU

INTERNATIONAL KARSTOLOGICAL SCHOOL

Classical Karst

DOLINES

GUIDE-BOOKLET FOR THE EXCURSIONS

Postojna, junij 1995

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296.
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LJUBLJANA
TRIESTE
TRST
KOPER
NOVO MESTO
ŠKOFJA LOKA
KRANJ
JESENICE
IDRIJA
POSTOJNSKA JAMA
SUHA KRAJINA
TRIGLAVSKI NARODNI PARK
KOČEVJE
ČRNOMELJ
METLIKA
KARLOVAC

PROGRAM FOR THE LECTURES AND FIELD WORK

Tuesday, June 27, 1995
9.00 - 10.00 the opening of the Karstological School
10.00 - 10.30 coffee break
10.30 - 12.00 lectures
13.00 - 20.00 field work: The dolines above the Postojnska jama cave
20.00 reception with coctail party, invited by the Mayor of Postojna and Slovene national Comeette for UNESCO

Wednesday, June 28, 1995
8.30 - 10.00 lectures
10.00 - 10.30 coffee break
10.30 - 12.00 lectures
13.00 - 20.00 field work: Classical Karst

Thursday, June 29,1995
8.30 - 10.00 lectures
10.00 - 10.30 coffee break
10.30 - 12.00 lectures
13.00 - 20.00 field work: Hrušica and Trnovski gozd

Friday, June 30, 1995
8.30 - 20.00 field work: A whole-day excursion to dolines of karst of south Slovenia

All lectures will be at the Karst research institute in Postojna.
Reception on Tuesday evening will be at restaurant of hotel Kras, oposite to Institute.

Programs for the Excursions

Tuesday, June 27
13.00 - 20.00 field work: The dolines above the Postojnska jama cave
About 9 km walk trough the woods and dolines and into Pivka and Črna jama.

Wednesday, June 28
13.00 - 20.00 field work: Classical Karst
Mini buses about 100 km. Short down and up walks, longest about 2 km.

Thursday, June 29,1995
13.00 - 20.00 field work: Hrušica and Trnovski gozd
Mini buses about 80 km. Short down and up walks, longest about 1 km.

Friday, June 30, 1995
8.30 - 20.00 field work: A whole-day excursion to dolines of karst of south Slovenia
About 200 km by bus. Short walks, no more than 1 km. Lunch prepared by organiser.

Excursions will start from the parking in front of hotel Kras.
No special equipment needed. But have your rain coat and umbrella with you.
There is a lot of ticks in woods and in grass. Some of them are carrying and can infect you with lyme disease or borrelia burgdorferi. Sign of infection comes as a red circle on the place of byte some weeks later. In that stage it can be cured easily. Later is too late.

DOLINES ABOVE POSTOJNA CAVE SYSTEM
27.6.1995

Prepared by Stanka Šebela (points 1,2,3,4,5,6,9 and 10), Janja Kogovšek (point 7) and Nadja Zupan Hajna (point 8)

The excursion has 9,3 km with 10 points to stop.

1. We are in Upper Cretaceous limestone (Senonian), which is according to Placer (1995-manuscript) inverse in hill Sovič.The principal directions of tectonic deformations are 160/80-90^0 and dinaric NW-SE. Outer fault zone of regional Dinaric Predjama fault passes on the border between Upper Cretaceous limestone and Eocene flysch.

2. The surface at this point indicates the anthropological changes (the terraine was used for army polygone).

3. Dolines are in thick layered Senonian limestone. Their NE edges are formed in layers, which dip to SW 40-50^0. NE edges of dolines are less steep than SW. SW part of dolines is normally formed in fault zones.

4. In the slope NE from the doline there is a pit (3-4 m deep and 4 m wide) which was registered in old Italian cadaster.

In the part between point 3 and 4 there are no known cave passages of Postojna cave system. On the surface there is 100 metres wide fissured and crushed zone, well permeable for water.

5. We can observe tectonically crushed Turonian limestone which is crushed to tectonic breccia. This crushed zone is very vissible in SW part of hill Nemčji vrh.

6. Near the road there are outcrops of Turonian limestone(with remains of shells, genus Hondrodonta) and top of Postojna anticline. The axis dips 7-14^0 towards SW. On the top of Postojna anticline the cave channel divides in two parts, the northern one goes to Magdalena jama cave and NE one to Črna jama cave.

7. Pivka jama

8. In dolines different types of mechanical sediments can be found. In the cave under the surface doline we may find minerals which are infiltrated through open fissured zones from the surface. The red colour of material in the fissured zone is not always the red soil from the surface it can be also the tectonic clay.

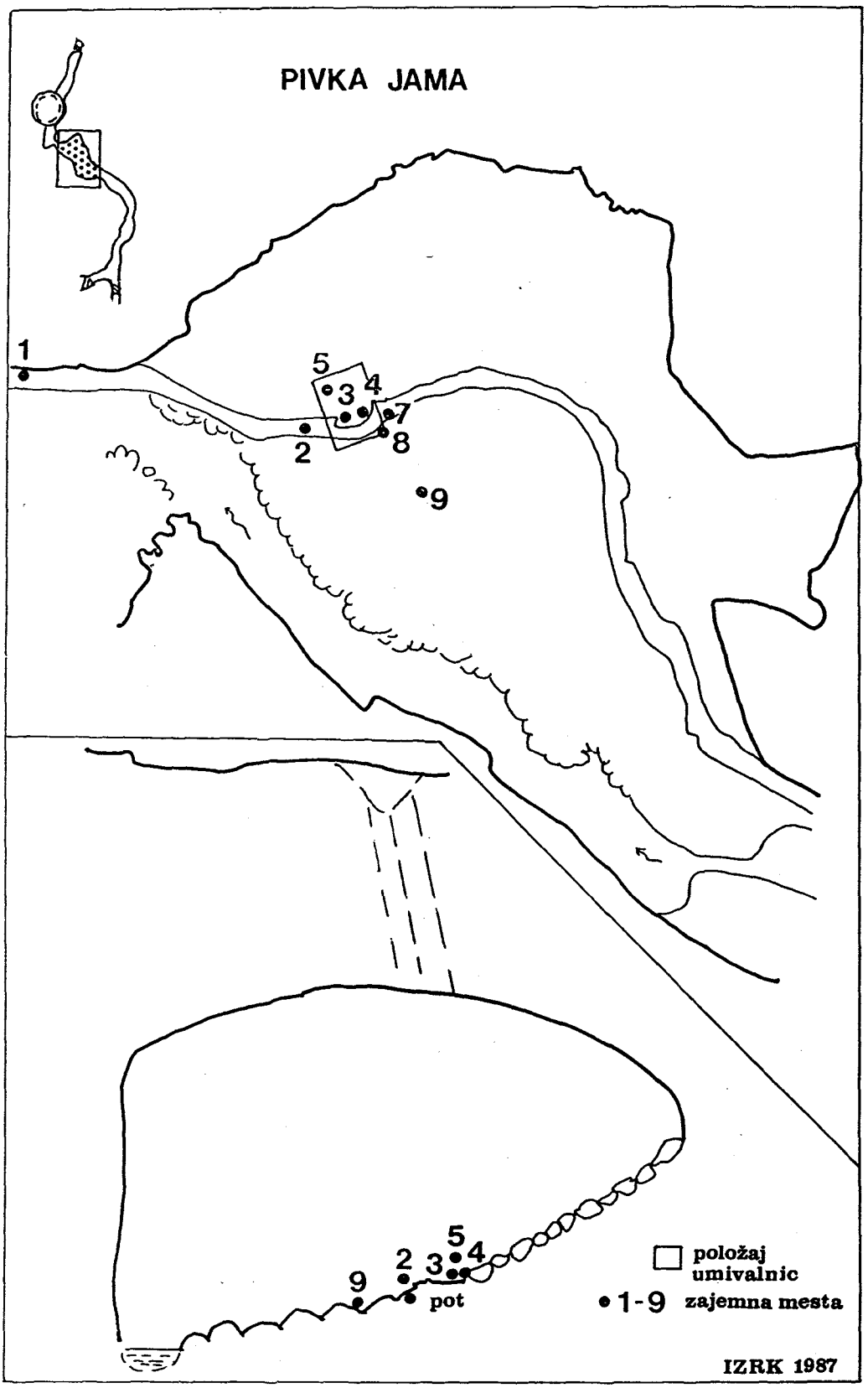
9. North from the road are two big collapse dolines Vodni dol and Kozja stena in the south part is Velika Jeršanova dolina. On the road bend the limestone is tectonically crushed in two principal directions 160/80-90^0 and 70/90^0.

10. Across the doline goes fault zone 20/80-90^0 which is also visible in Pisani rov, but in direction 30/60^0. In the cave we can observe horizontal movement-left movement. The doline is directly 30 metres above the collapsed chamber. The same fault zone is in the cave visible also in Velika gora, where we have vertical movement and on the surface in NE part of hill Nemčji vrh. The doline above Pisani rov has the genetic relationship with collapsed chamber in the cave.

Surface above Postojna cave


PIVKA JAMA
MAGDALENA JAMA
Krožni rov
Zvezni rov
Vilharjev rov
ČRNA JAMA
Umetni rov
Krajgerjeva dvorana
Martelov podor
Jama Koliševka
Perkov rov
Lepe jame
Ruski rov
Čarobni vrt
Velika gora
OTOŠKA JAMA
Koncertna dvorana
Pisani rov
Mišnica
Zgornji Tartar
Male jame
Stara jama
Rov brez imena
Spodnji Tartar
Razpotje
Lekinka
Črni potok
POSTOJNSKA JAMA
Plesna dvorana
Veliki Dom
Biospeleološka postaja
Vhod
Pivka
0
250
500m

Fig. 1



Sl. 1. Položaj umivalnic in sanitarij ter zajemnih mest v jami.
Fig. 1. The situation of washrooms and sanitations and sampling points in the cave.

Fig. 2

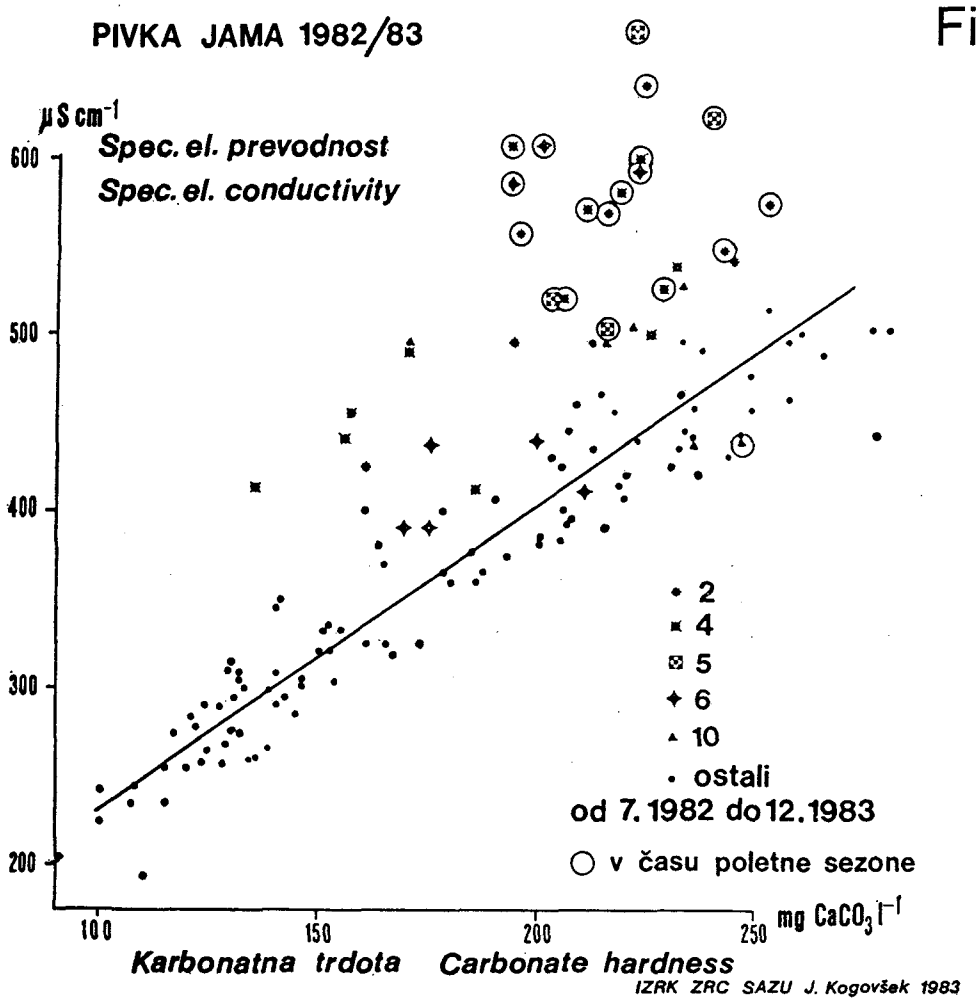
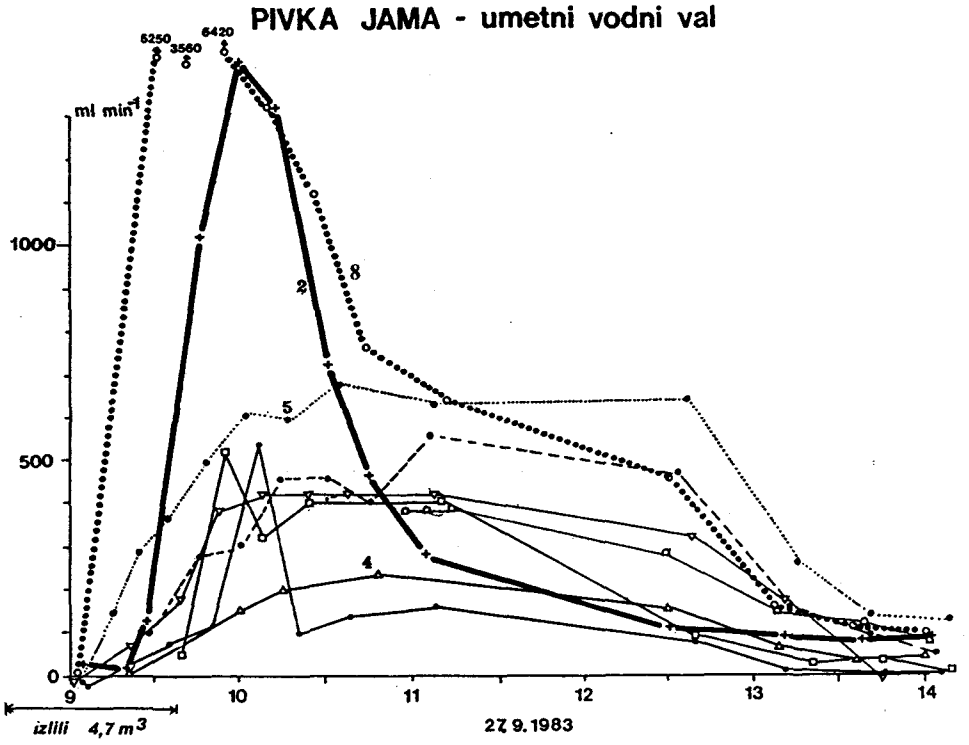


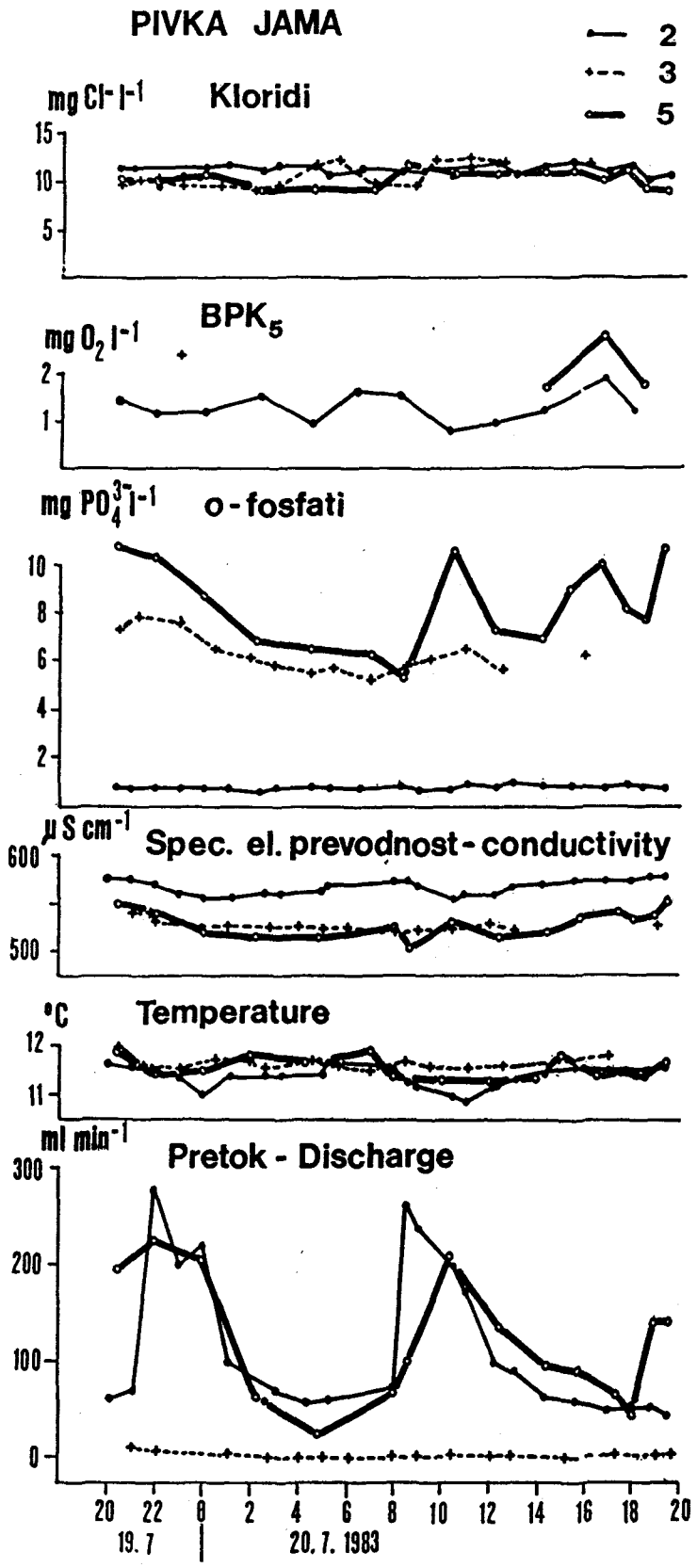
Fig.3



Sl. 4. Oblikovanje umetnih vodnih valov pri curkih v jami v prvem sledilnem poskusu septembra 1983.

Fig. 4. Formation of artificial water pulses at the trickles in the cave during the first tracing experiment in September 1983.

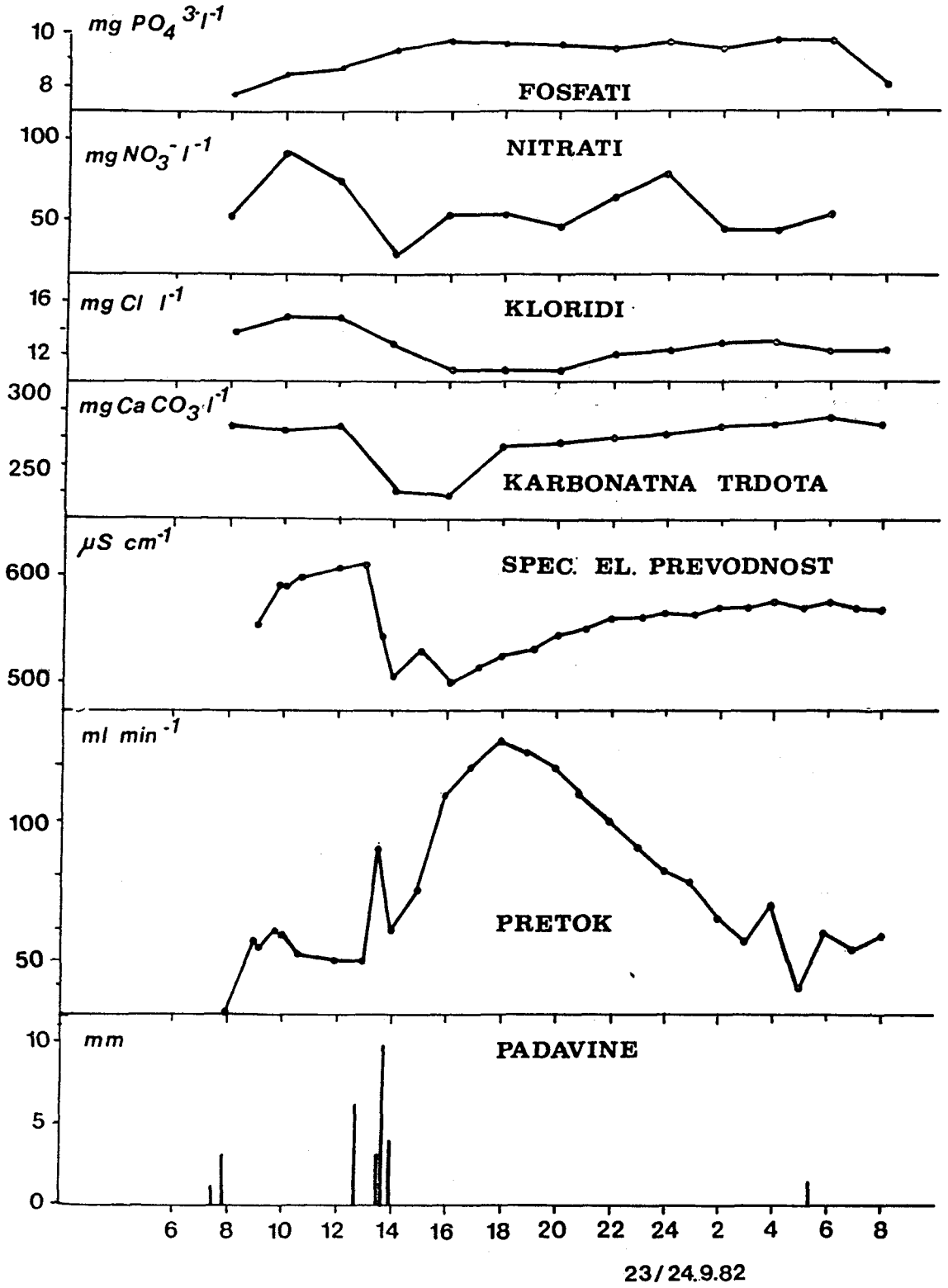
Fig. 4



Sl. 5. Rezultati celodnevnega opazovanja značilnih curkov v jami poleti 1983.

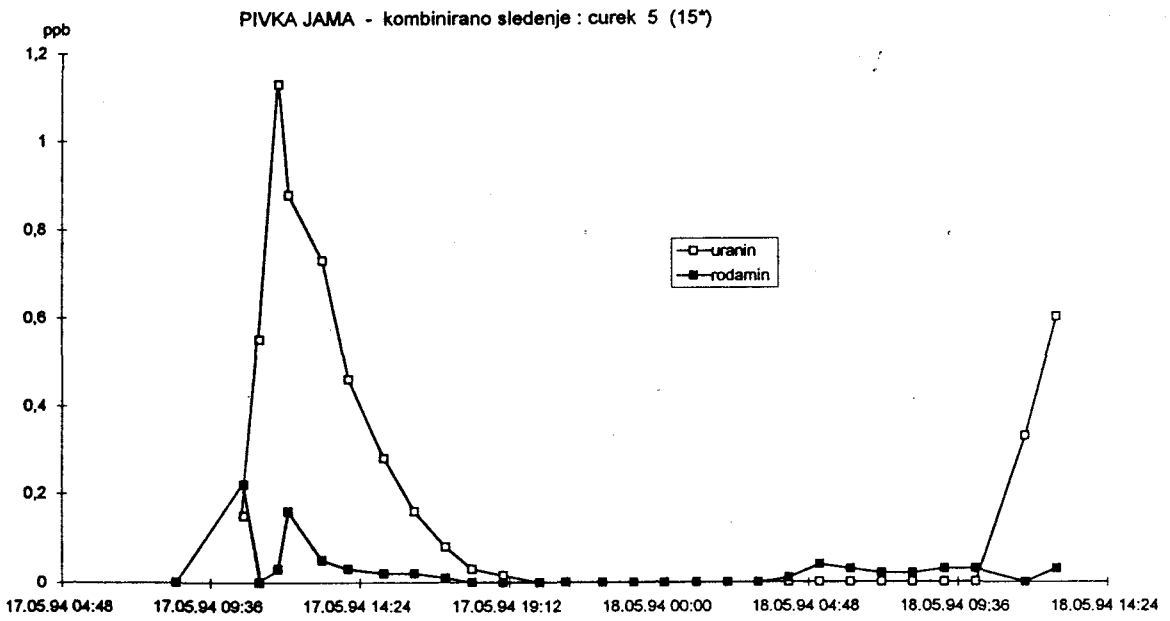
Fig. 5. The results of one day observations of characteristic trickles in the cave in summer 1983.

Fig. 5



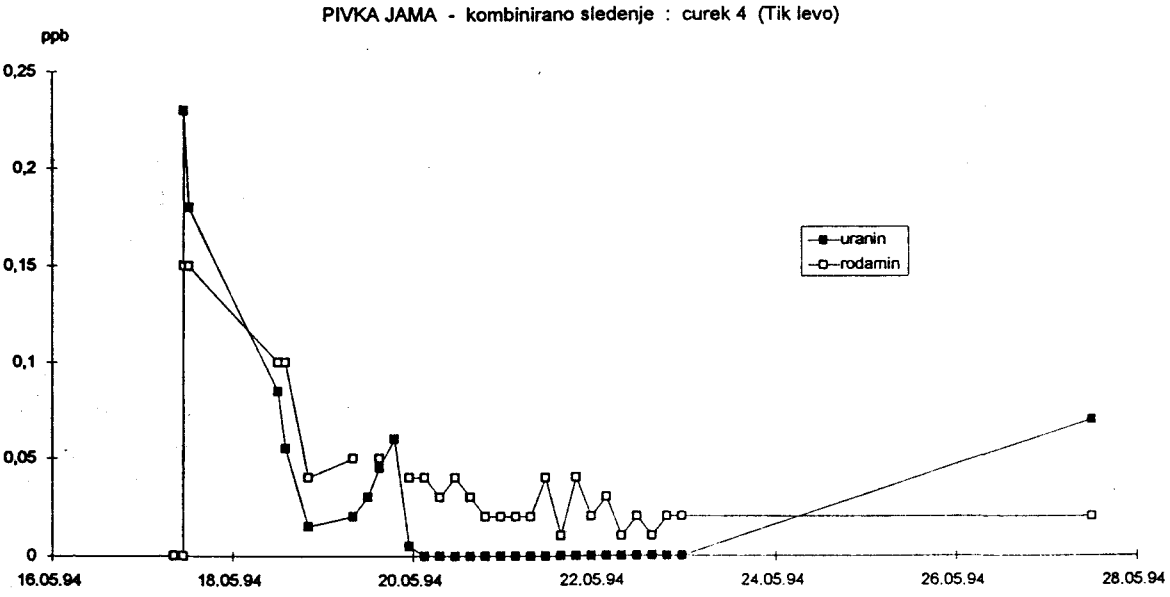
Sl. 3. Naravni vodni val na vzorčnem mestu št. 3 jeseni 1982.
Fig. 3. Natural water pulse on the sampling point no. 3 in the autumn 1982.

Fig. 6



Slika 4. Pojav uranina in rodamina v curku 5 po injiciranju in ponoven pojav po prvih naslednjih padavinah

Figure 4. Appearance of uranine and rhodamine in trickle 5 after the injection, and reappearance after the first precipitations



Slika 5. Pojav uranina in rodamina v curku 4 v sledilnem poskusu maja 1994

Figure 5. Appearance of uranine and rhodamine in trickle 4 during the tracing test in May 1994

Klassical Karst

Wednesday, 13.00 - 20.00

Postojna - Črnotiče quarry - Divača

1. Črnotiče quarry is situated on the edge of plateau Kras in a zone of several owerthrust lenses of Paleocene limestone on Eocene flisch. Flat rocky surface on limestone with some dolines, steep edges of the plateau towards lover relief in flisch is characteristic for the area. Quarrying has opened several geological structures as owertrust, contacts flisch - limestone, different types of fractures and many filled or open caves.

2. Karst surface in Divača lies in altitude of about 440 m, there are many dolines of different shape and dimension.

1.Risnik as a large collapsed doline possibly close to underground Reka between Škocjanske jame and Kačna jama. It is 80 m deep and 150 m across. Most of the sides of doline are vertical in upper parts, on lover, there are still moving screes.

2. Radvanj consists of two slightly elongated dolines Larger one is 70 m deep, 450 m across, both are 750 m long. Upper part of their slopes is gentler, lover is little steeper. Radvanj is probably an old collapsed doline.

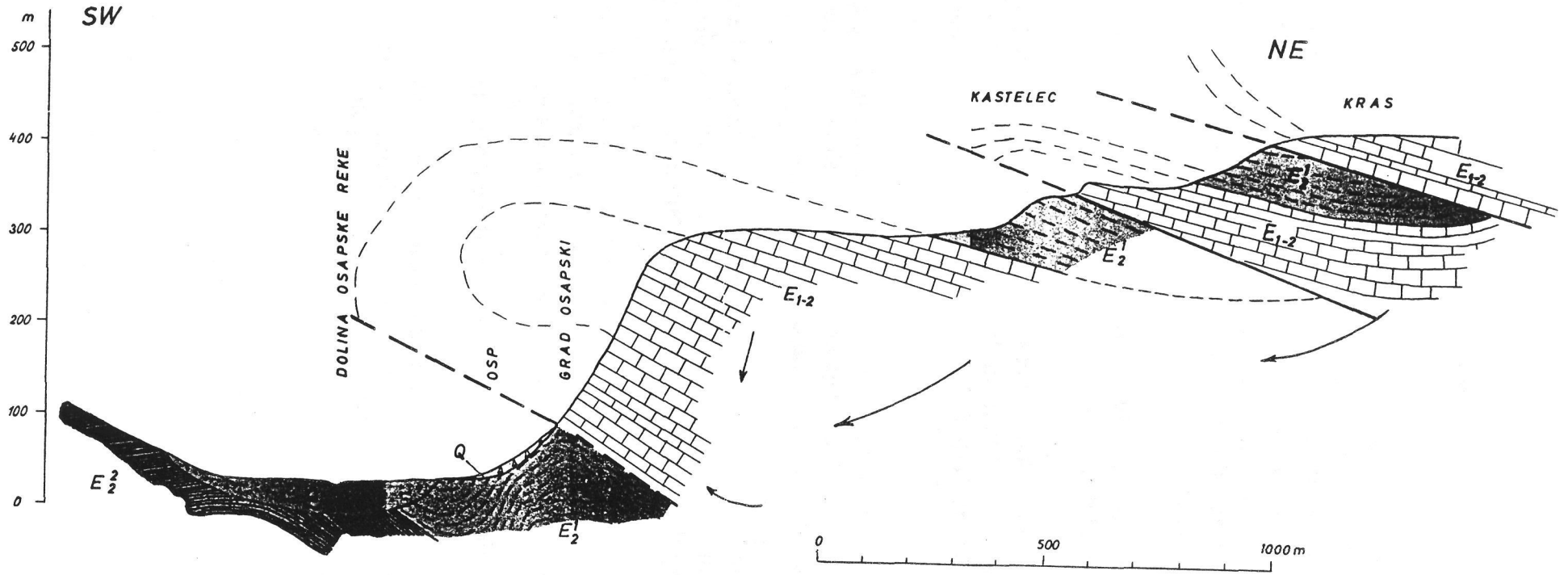
3. Several caves are known the deepest and longest is Kačna jama, where we can follow of about 6 km of Reka underground course in elevation between 182m to 156 m but during floods water rises for about 100 m in it. Entrance to Kačna jama is in altitude of 435 m, 185 m deep shaft follows. There are 8600 m of galleries in three main levels. The morphology of some of still active galleries is controlled by strong fractured zones; on the surface there are elongated dolines and even one collapse doline in the same structure.

3.Bukovnik is a collapsed doline, above two galleries of the Kačna jama.

4. During the highway construction some dolines have been escavated. In them cave fluvial and sediments with sinter cover have been found, showing, that these are an old filed caves which didn't collapsed, but theirs ceilings simply, dissolved, sediment vas washed away making the bulk of depression.

HIDROGEOLOŠKI PROFIL PREKO DOLINE OSAPSKE REKE
A HYDROGEOLOGICAL PROFILE ACROSS THE OSAPSKA REKA VALLEY

MERILO DOLŽIN 1:10000, MERILO VIŠIN 1:5000
HORINZONTAL SCALE 1:10000, VERTICAL SCALE 1:5000



LEGENDA
LEGEND

1 — gruščˇ
1 — a scree material

2 — peščena glina z redkimi prodniki
2 — sandy clay with rare gravels

3 — peščenjak in lapor s polami apnenca
3 — sandstone and marl with limestone intercalations

4 — apnen lapor in peščenjak
4 — marl and sandstone

5 — numulitni in alveolinski apnenci
5 — nummulitic and alveoline limestones

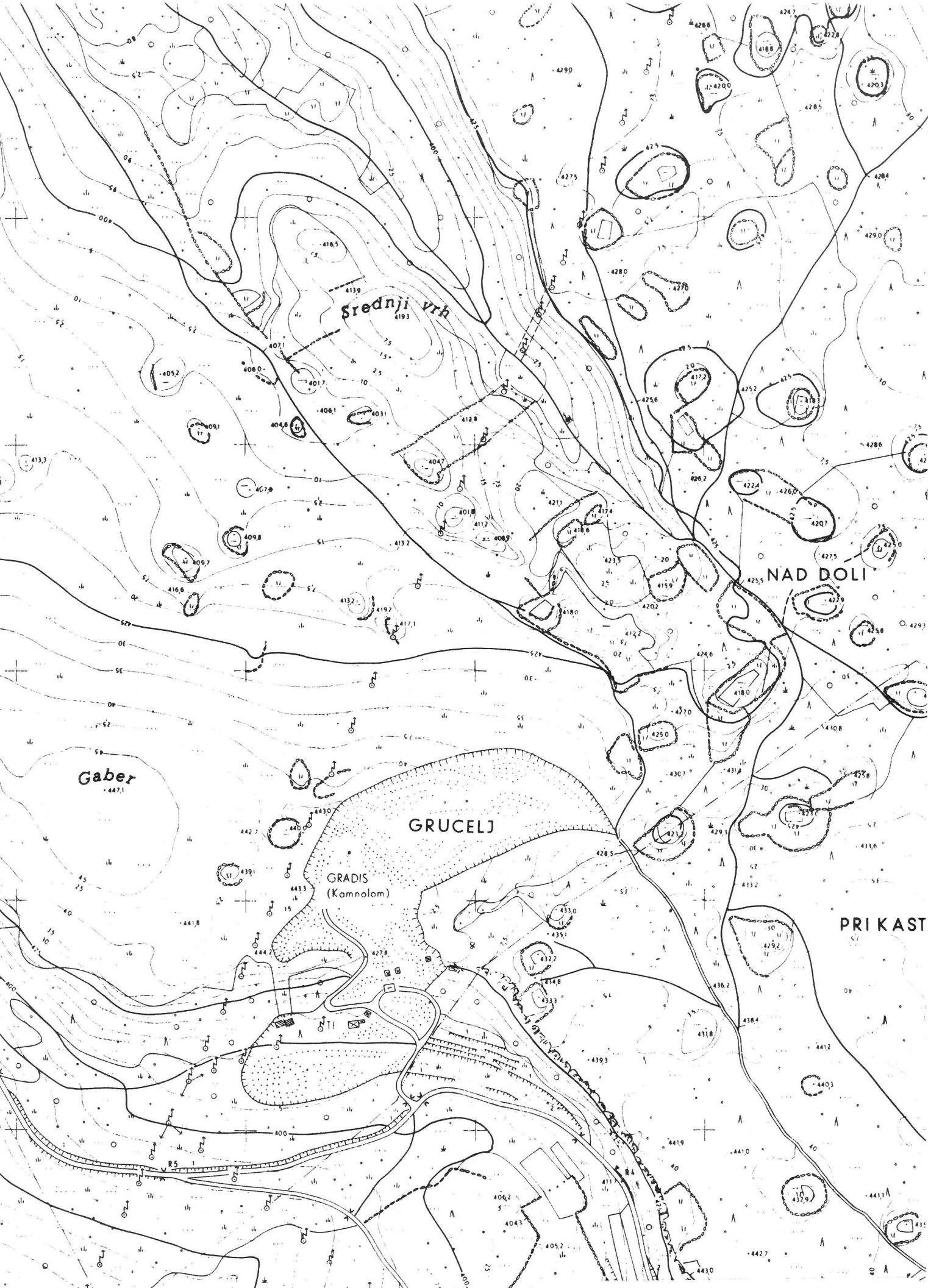
6 — prelom
6 — fault

7 — dobro propustne kamenine
7 — well permeable rocks

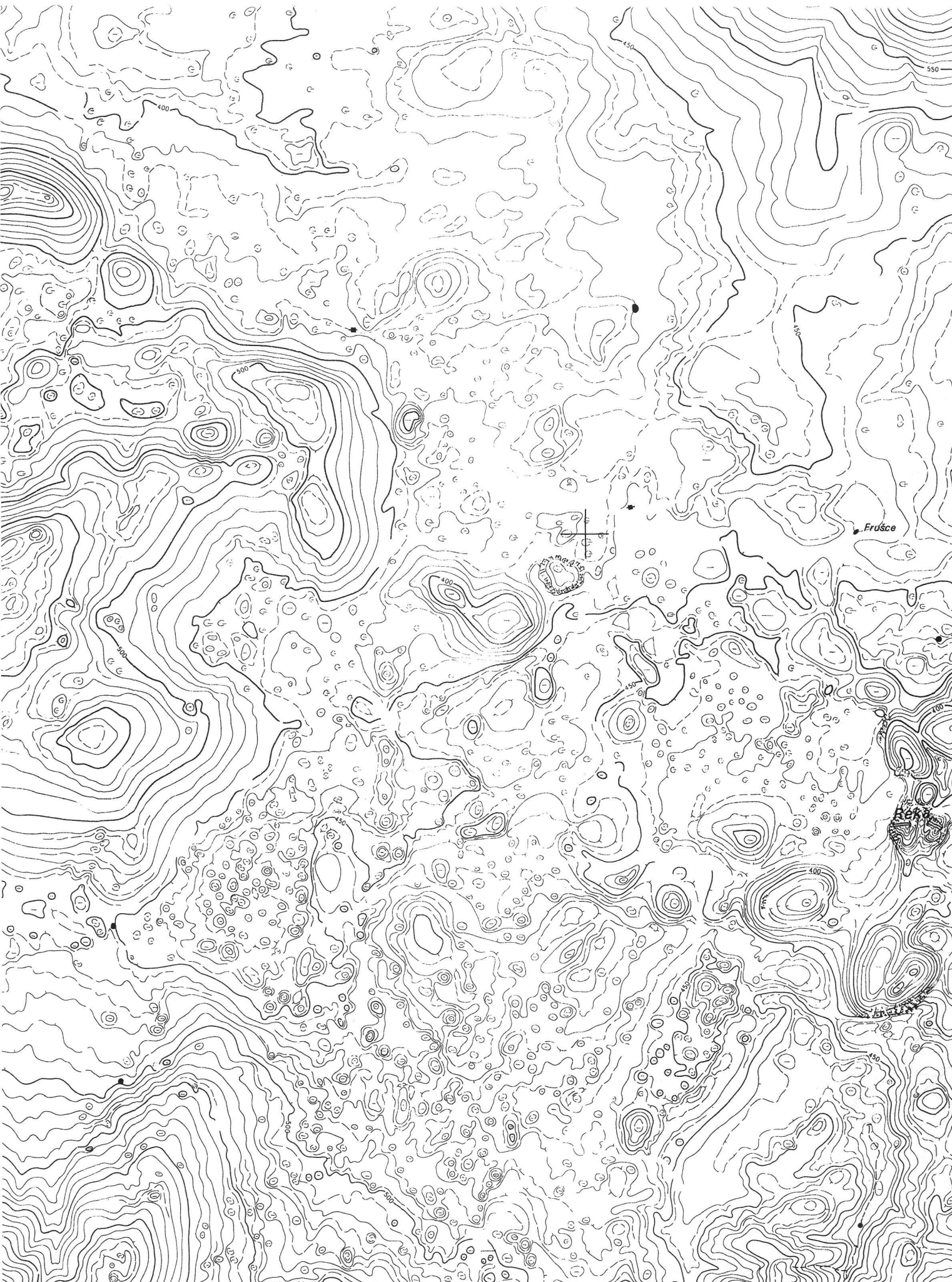
8 — slabo propustne kamenine
8 — badly permeable rocks

9 — nepropustne kamenine
9 — unpermeable rocks

10 — odtoki podzemeljske vode
10 — directions of underground runoff

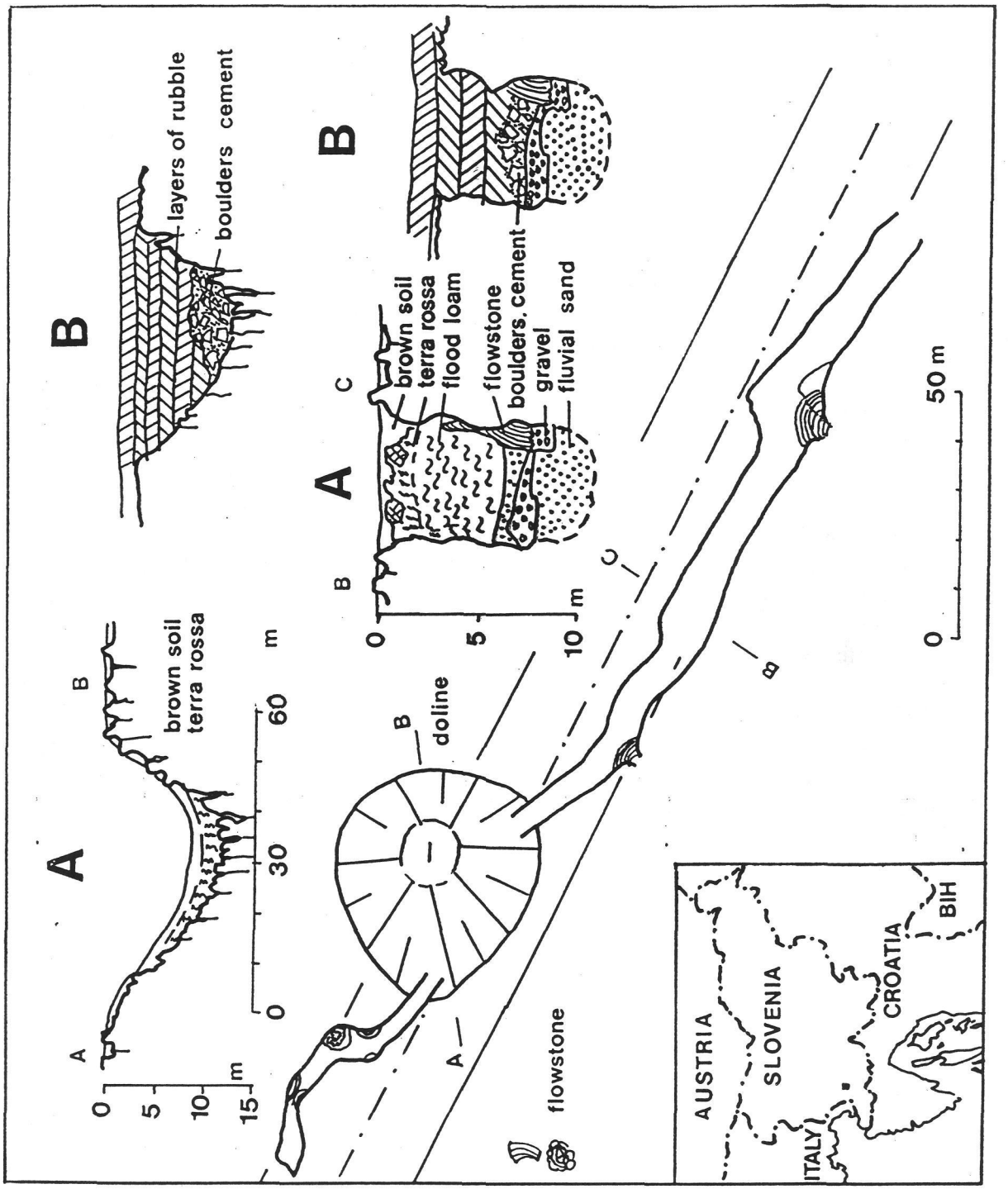


Črnotiče quarry and karst. Map 1:5000



Kras of Divača Surface of Kras NW of ponor of Reka in Škocjanske jame caves. Solution dolines and much larger collapse dolines and their patterns can be seen.

Kras of Divača. Map 1:5000 with the ground plan of Kačna jama cave.



Plan of the old cave Jama brez stropa (No ceiling cave) unearthed during highway constructing. The ceiling of the gallery have dissolved The doline intersecting of the gallery is younger, or it follows the general lowering of the surface.

HRUŠICA IN TRNOVSKI GOZD

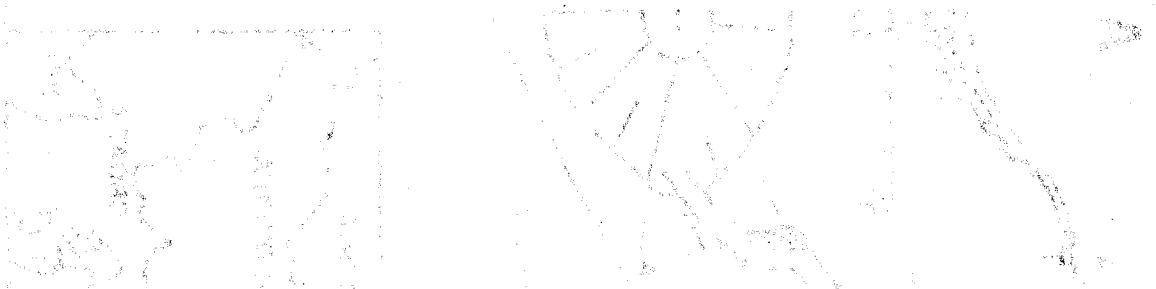
Thursday, 13.00 - 20.00
Postojna - Bukovje - Otlica - Smrekova draga - Črni vrh - Hrušica - Postojna
Field trip will be on the Trnovski gozd and Hrušica high karst, where a deep karst developed.

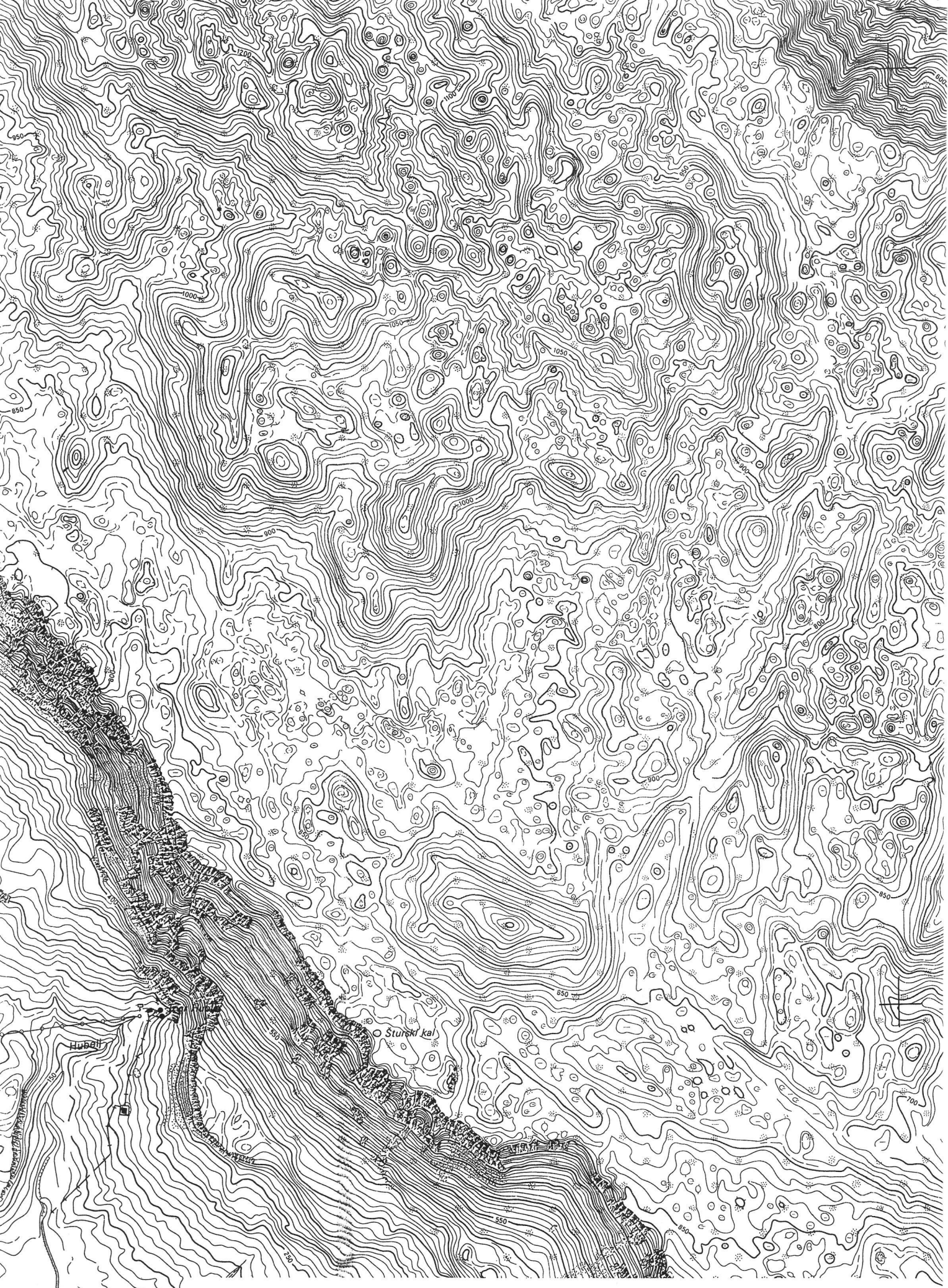
1. Dolines at Bukovje are developed on Triassic dolomite.

2.Doline at Zavrhovc is developet at the edge of the plateau. In the doline several tracing experiments have been made, to the Hubelj spring, vhich is 100 m away and but 540 m lower.

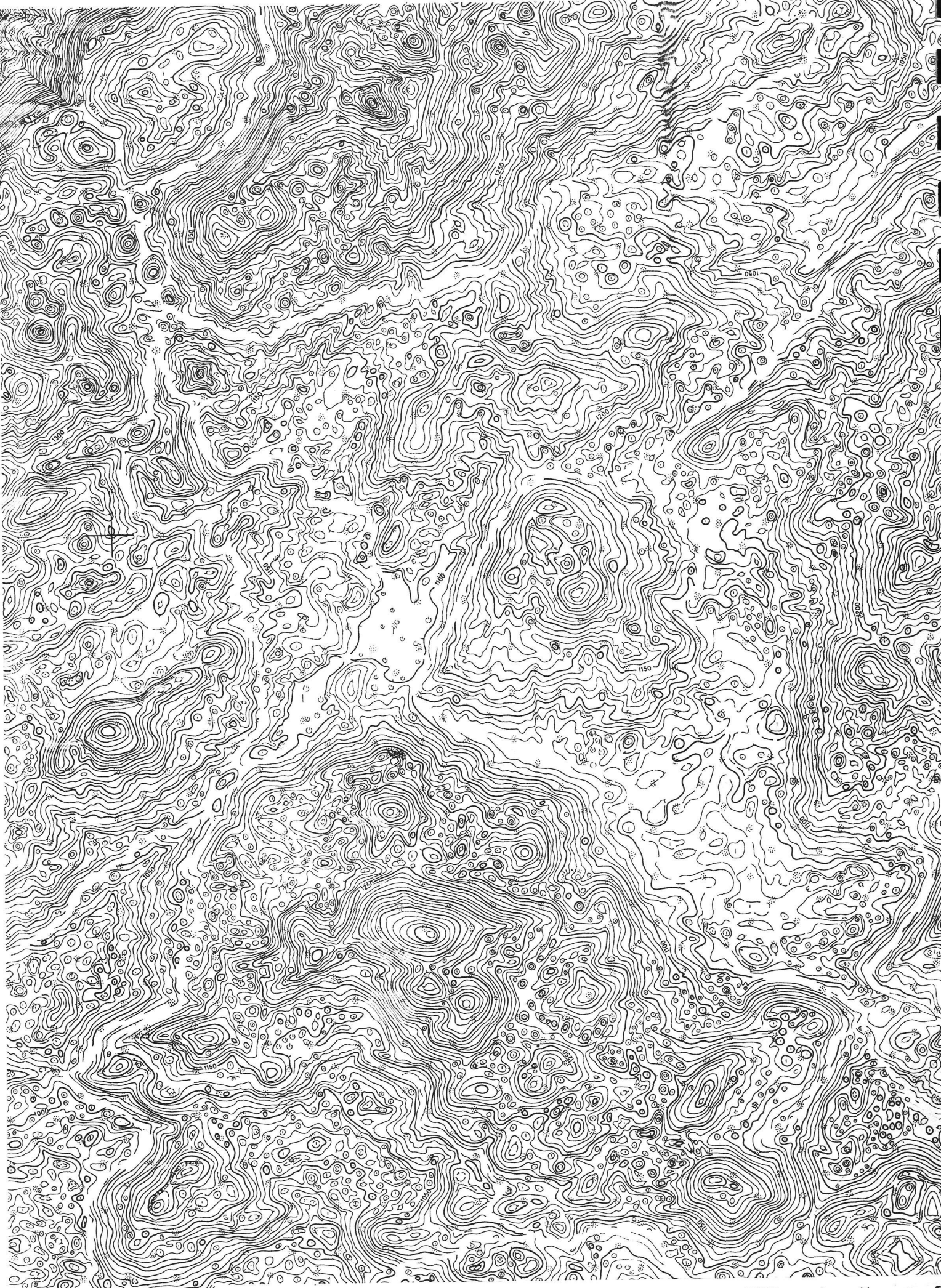
3. Mala Lazna is large karst depression in Jurassic limestone, with chert and dolomite limestone. Their bottom is covered by fluvioglacial gravel which are washing away now forming the alluvial sinkholes.
North of Mala Lazna are some dolines still partly filled with gravels, ice cave Suho brezno and snow kettle like depresions.
4. Paradana is large, 385 m deep cave. From morphological and genetic point of view at least three types of shafts can be distinguished and from them some other features as a big chambers or even collapsed dolines can form. A marked morphological type is presented by the potholes within the fissure zones. There potholes are arranged in a series along the same fissure or along the parallel fissures. Hence the avens are either parallel or they lie one above the other. By linking these avens due to breakdown of the in-between walls big chambers may occur. In Velika ledena jama in Paradana the volume of the potholes within such a series, originated in the zone of 30 x 70 x 300 m vertical section of the cave is 36.000 m3.
Big dimensions distinguish these avens of the same type which opened to the surface due to corrosion sheet weathering of the surface. F.e. the entrance pothole of Ledenica in Kozja stena has the volume of 86.000 m3. The same volume would have a funnel-shaped doline with radius of 45 m and 40 m deep.

5. Smrekova draga is more than 1 km long, 700 m wide and 150 m deep. large doline, their bottom at 1100 m a.s.l., known like Paradana by the temperature inversion and by inversion on vegetation which was described in 1906 by G. Beck (Die Umkehrung der Pflanzenregion in den Dolinen des Kars. Sitzber. Akad. Wiss.CXV . Wien).

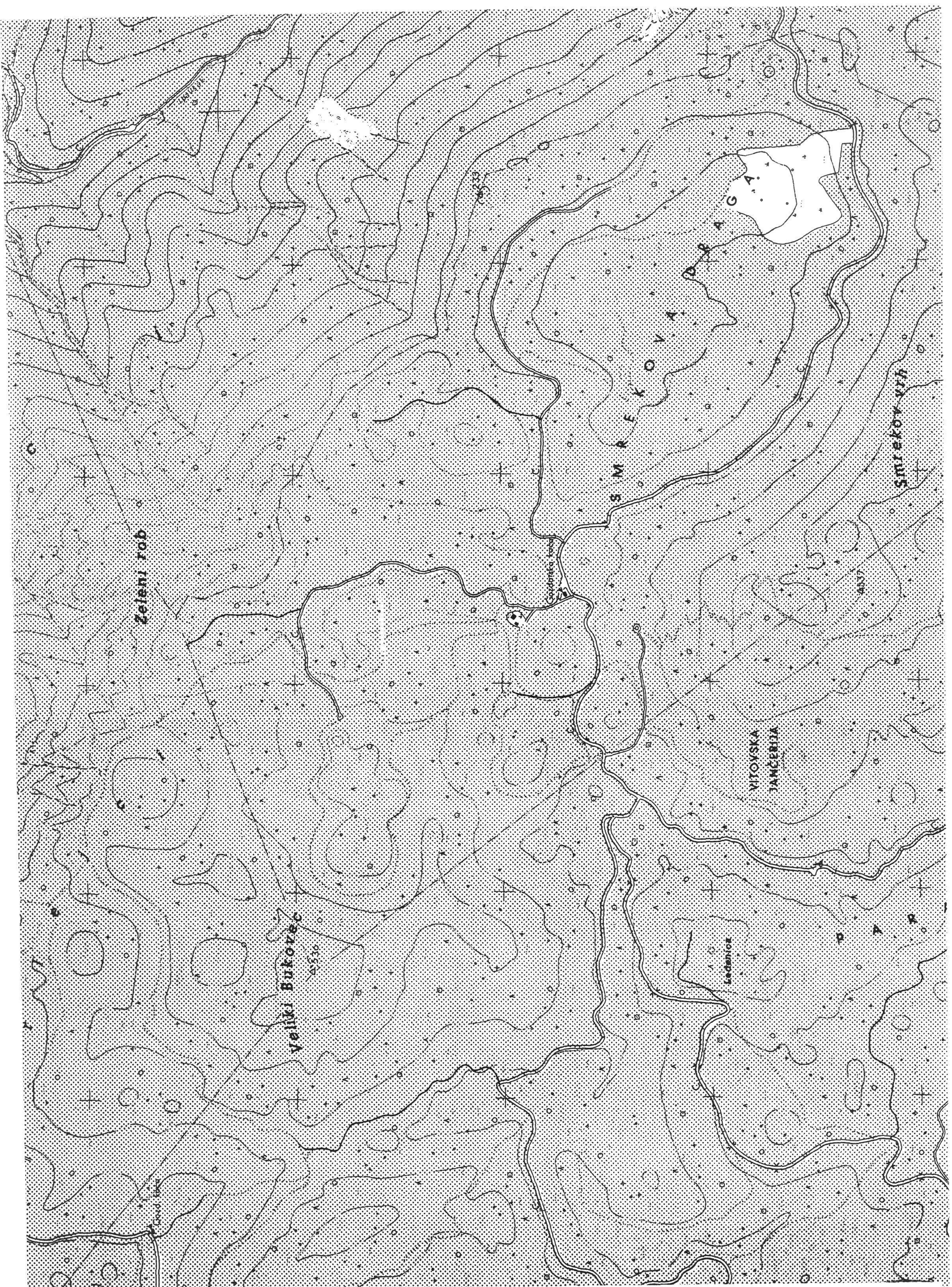




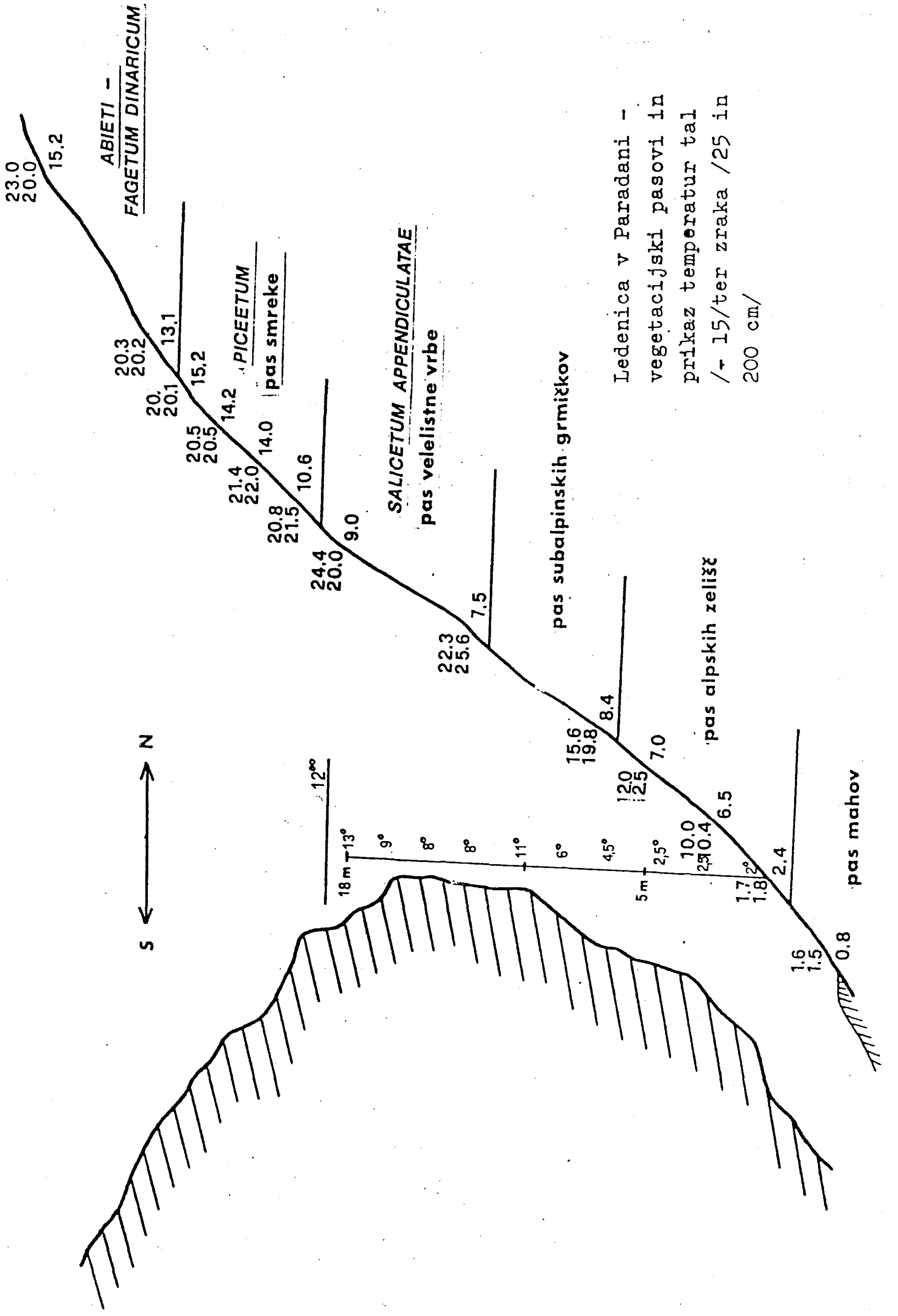
Surface on the edge of Trnovski gozd plateau above the karst spring Hubelj near Ajdovščina. Map 1: 25 000



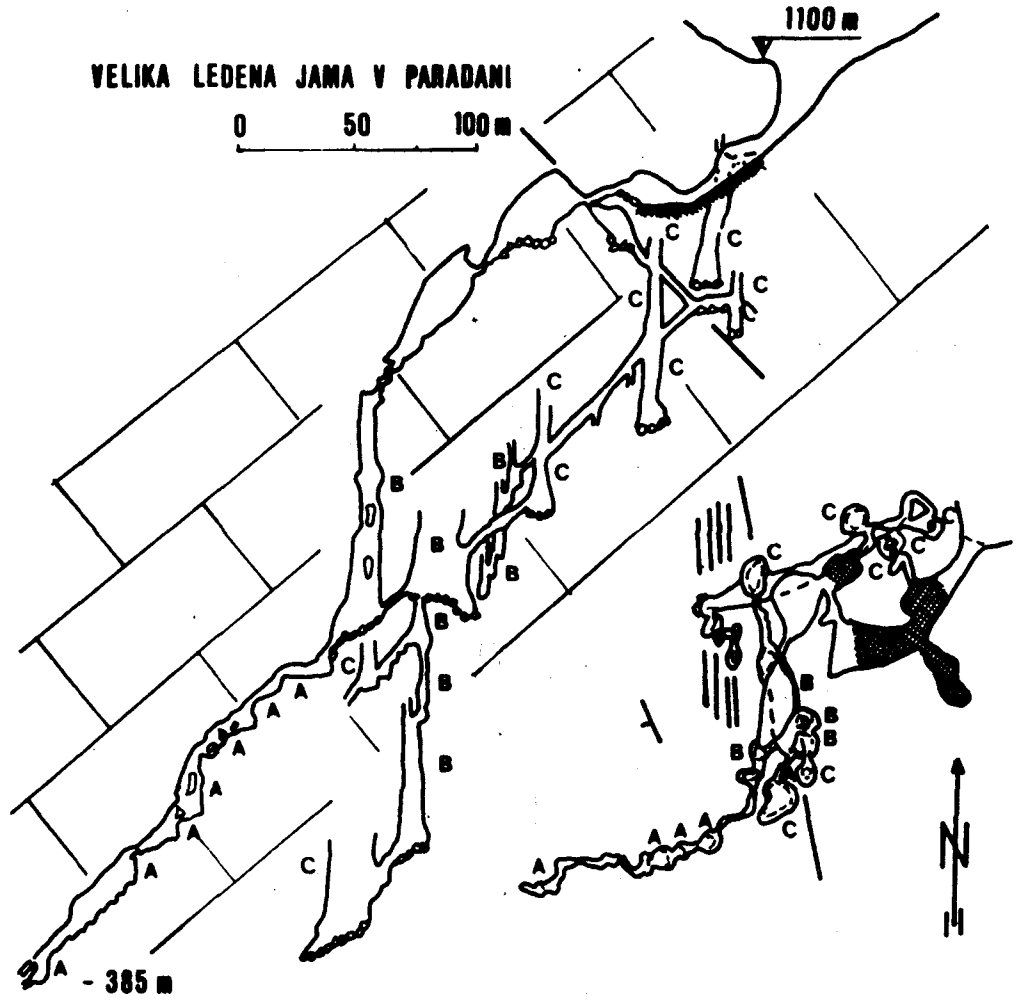
Surface in the middle of the Trnovski gozd plateau. Different patterns of doline - hummocks can be seen.



Map 1:10 000 of the surface and large Smrekova draga.



Entrance part of Velika ledena Jama v Paradani cave with vegetation belts. Temperatures of ground were taken at depth 15 cm. Air was measured in height of 25 and 200 cm.



cave ice. important fissures and fissured zones. dip

Types of shafts:

A – shafts in steep meanders following the dip

B – shafts developed in fissured zones

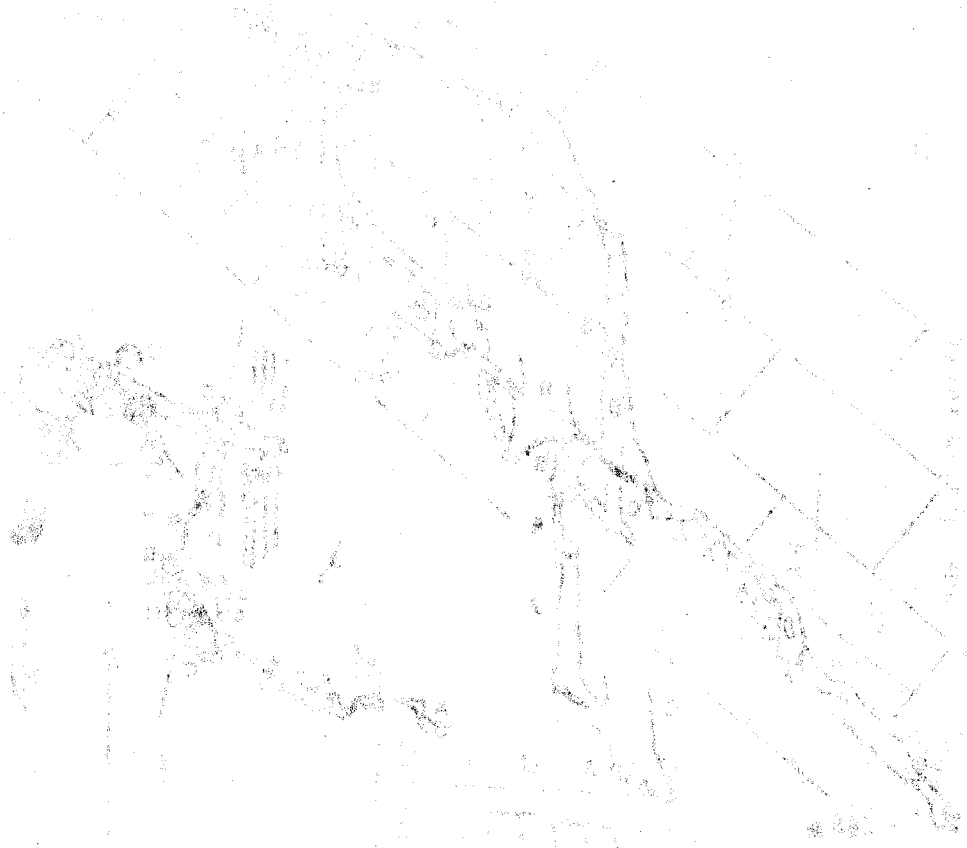
C – shafts that do not follow the structure

Map of the Velika ledena Jama v Paradani.

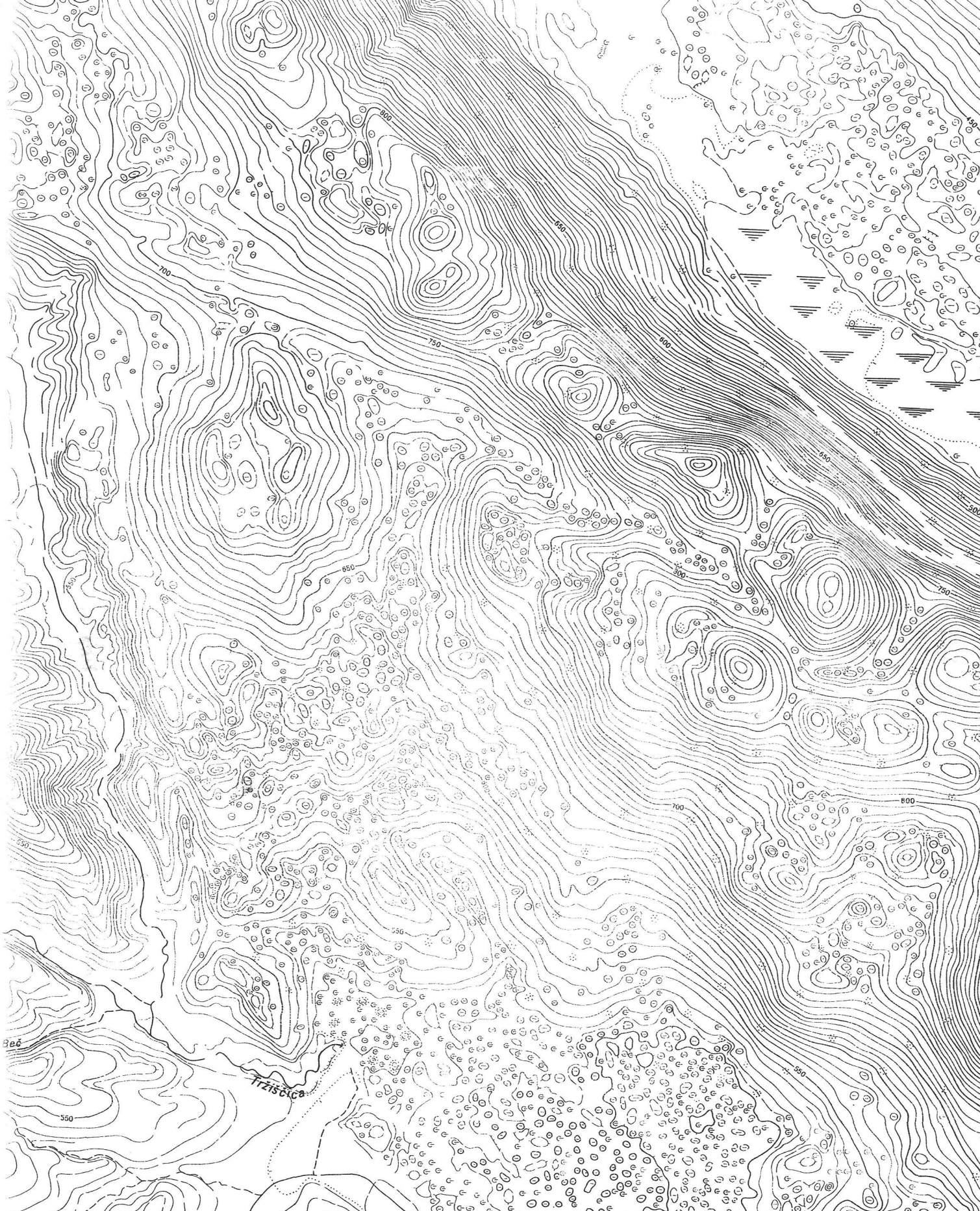
KARST OF SOUTH SLOVENIA
Friday, 8.30 - 20.00

Postojna - Snežnik - Kočevska reka - Novi Lazi - Sinji vrh - Bojanci

Field trip will take us across different karst landscapes, high karst plateau, karst poljes, karst plains and shallow karst of inner Dinaric mountains.

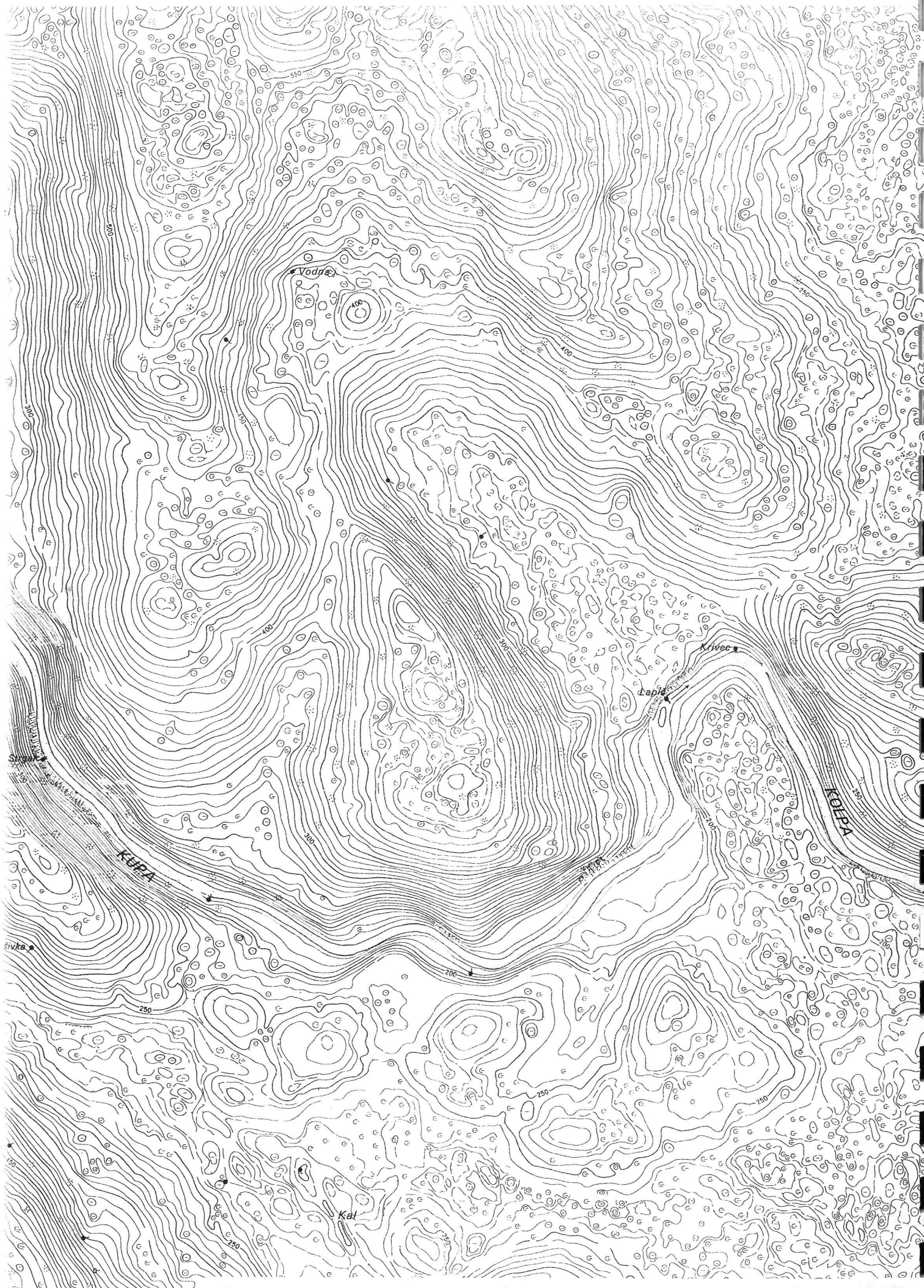


Different types of larger karst depressions (cockpits ?) and dolines between isolated hummocks on the Snežnik karst massif.

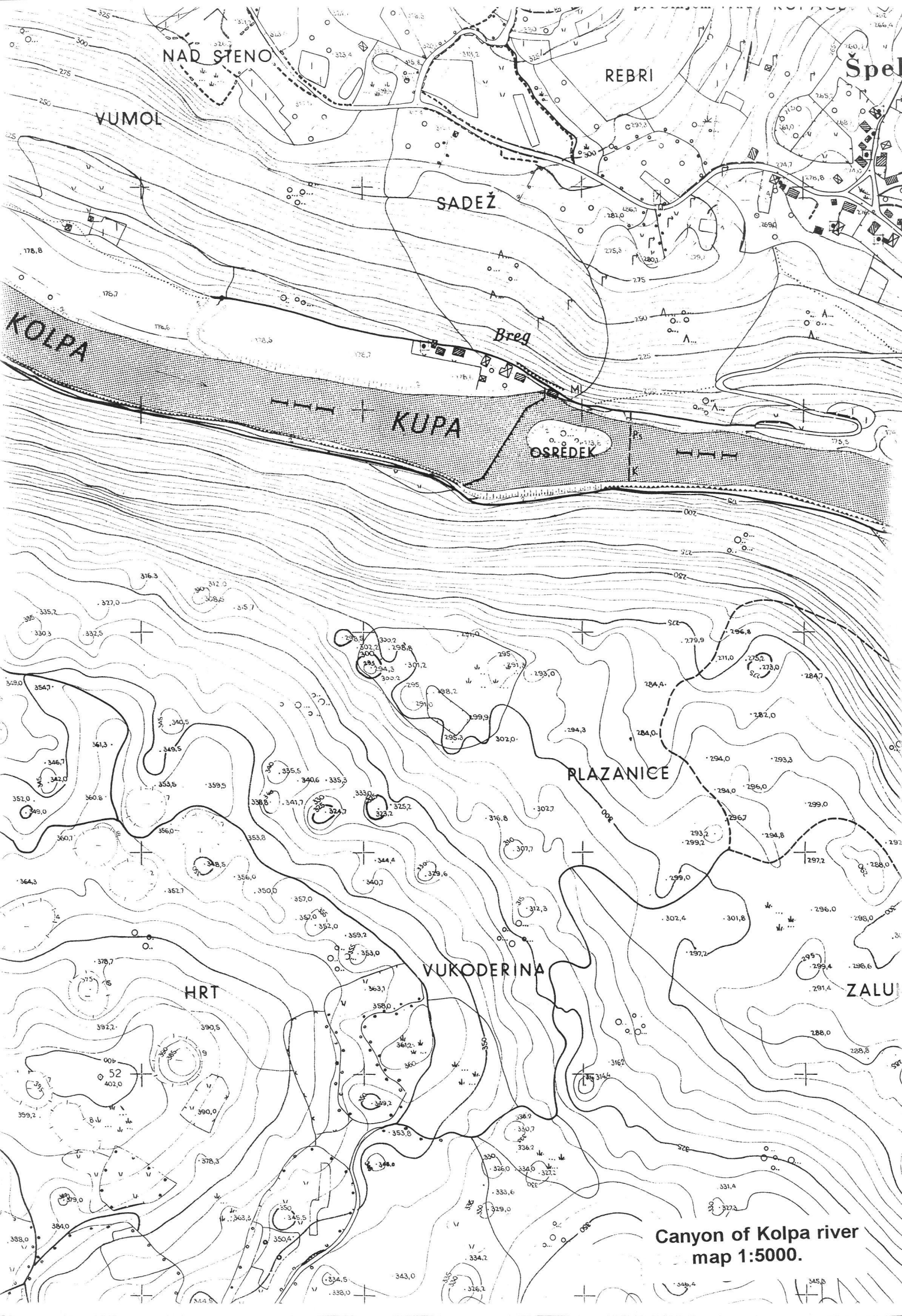


Doline distribution on the Dobro polje (top), Mala gora karst massif and edge of Ribniško polje, north of Ribnica.

Corrosion plain with dolines on limestone, larger dolines with small first order streams on dolomite around the village and large Kočevska reka sinking at the end of blind valley. Map 1:5000

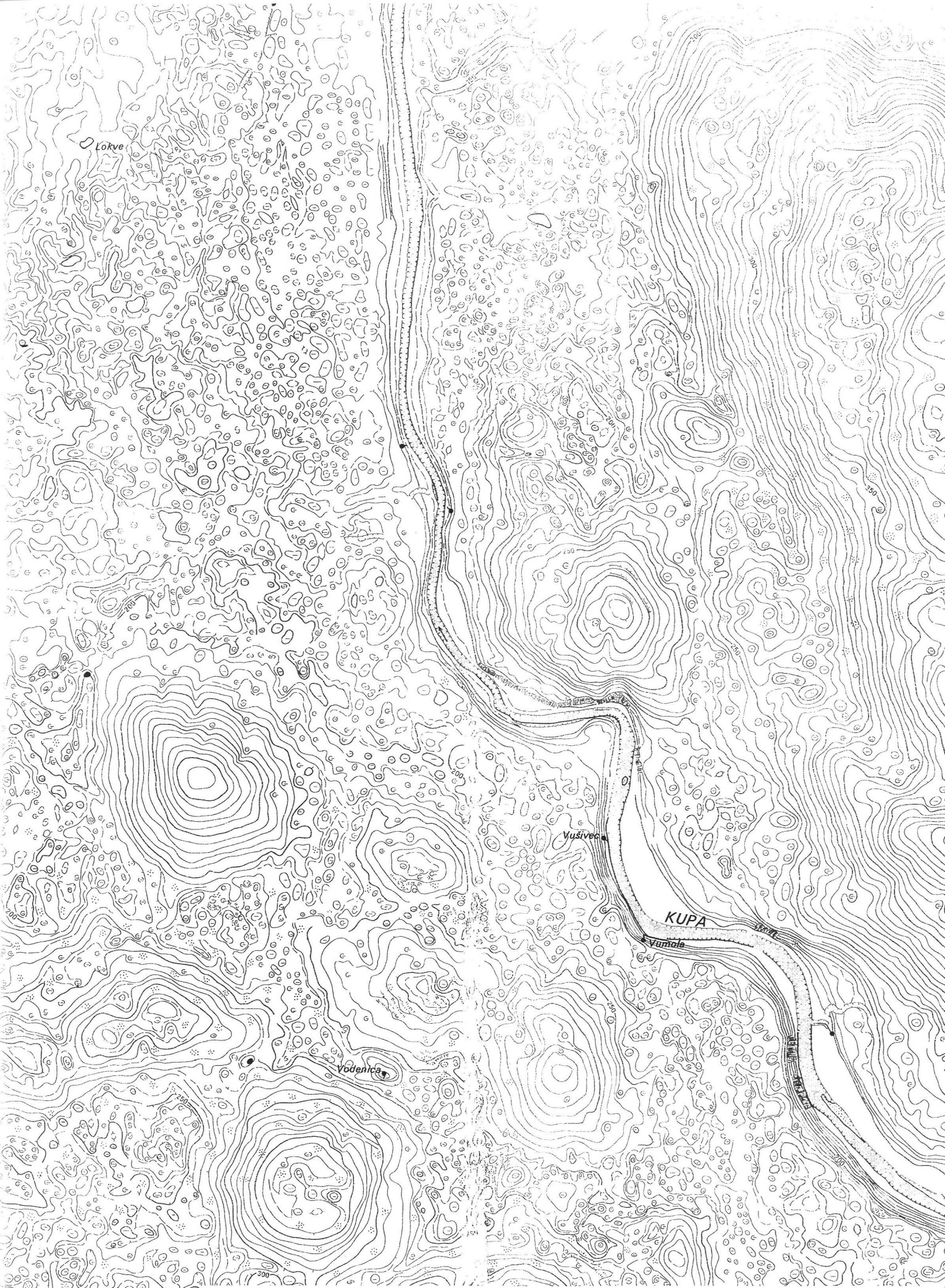


Canyon of Kolpa river and the karst surfaces. Around Stari trg, map 1:25000.



Canyon of Kolpa river
map 1:5000.

Karst surface on the map 1:5000 at village Bojanci. See also the cove page of guide - booklet.



Low karst plateau of Bela krajina with isolated hums and canyon of Kolpa. Map 1:25 000.

3rd International Karstological School
"Classical Karst"
Postojna, June 27 - 30, 1955

ABSTRACTS

KARTIRANJE VRTAČ NA APNENCIH

Jože ČAR*

V preteklih dveh desetletjih smo na Notranjskem in Idrijskem geološko kartirali več tisoč vrtač na apnencih, v glavnem kredne starosti. Osnovni zaključek analize zbranih podatkov je, da so vrtače v splošnem rezultat sorazmerno plitvega površinskega zakrasevanja in le redke so vezane na kraška dogajanja globlje v apnenčastih masivih. Oblika in značaj vrtač sta odvisna od geoloških danosti preučevanega terena. Če torej želimo pojasniti njihovo genezo in lego v prostoru moramo za vsako vrtačo določiti osnovne geološke parametre, njene morfološke elemente, raziskati povezanost vrtač med seboj ter značaj prehodov med njimi. Iz tako zbranih podatkov lahko vrtače zelo jasno razvrstimo v naslednje tri genetske razrede:

- vrtače vezane na stratifikacijo,
- vrtače nastale v različnih pretrtih conah in na
- udorne vrtače oziroma vrtače prehodnega tipa.

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61000 Ljubljana, Aškerčeva 2 (Slovenia)

DOLINES AND POTHOLES AS NATURAL HERITAGE

Danijel ROJŠEK*

KEY WORDS: conservation of nature, natural heritage and karst phenomena, Slovenija, Europe.

Conservation of nature, natural heritage and karst phenomena is an exigency of our time. The Slovenian independence has brought new circumstances of nature and natural heritage conservation. The law of natural and cultural heritage conservation from 1981 preferred conservation of small isolated areas, but proclamation of parks was in the second plan.

Seven decrees of natural heritage conservation were prepared in our Institute. The six decrees were proclaimed by communes of Ajdovščina, Idrija, Nova Gorica, Postojna, Sežana and Tolmin, where many dolines, caves and potholes were conserved as natural monuments, but many of them were also indirectly protected in the Triglav national park and in some landscape parks.

* The Institute for Conservation of Natural and Cultural Heritage
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TOPONOMASTICA CARSICA DELLE DOLINE DELLE MURGE NORD-OCCIDENTALI (PUGLIA, ITALIA)

Vincenzo MANGHISI*

Nelle Murge nord-occidentali vengono utilizzate due terminologie differenti "pulo" e "gurgo" con le loro relative deformazioni per indicare doline, generalmente di grandi dimensioni, come ad esempio il Pulo di Altamura, che ha un diametro minimo di 450 m ed una profondita di circa 90 m.

L'Autore tenta di analizzare l'origine dei due vocaboli, cercando analogie con termini consimili italiani ed esteri.

I LAGHETTI CARSICI DI CONVERSANO (PUGLIA, ITALIA)

Vincenzo MANGHISI*

Il territorio di Conversano nelle Murge del sud-est barese e caratterizzato dalla presenza di una decina di laghetti carsici temporanei, in cui sono stati scavati, in epoca remota, numerose cisterne per conservare l'acqua nella calda stagione estiva.

Dopo alcune note storiche ed alcuni cenni di geomorfologia, l'Autore si sofferma sul problema del recente inquinamento che minaccia gravemente questi fragili ecosistemi.

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DOLINES AS RESULT FO THE KARSTIFICATION THE SPANISH CASE: THE "TORCAS" IN CUENCA

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KEY WORDS: Torcas, collapse, karstification, prediciton method.

The "torcas", "torca" is a spanish word which means circular depression in a terrain and with steep edges, is then, analogue to the word "doline".

In Spain, there are two great groups of these "torcas", located in the Province of Cuenca. These "torcas" have a relation with to the carbonatic landscape, full of karstic signs, so the genesis of the torcas-dolines has a relation with a deep karstification, and more specifically with dolomitic materials in the Jurasic deposits.

This karstification, as we will see later on, is also connected with singular fractures, which only have effect on the jurassic and underlying series, which are the series which present the "torcas".

So we can deduce that the origin of the "torcas" is due to the collapse or subsidence which happens in the upper layers when the support of the inferior layers disappears, having been dissolved and carried away by the underground (water) flow, (and) creating a gap which represents the origin of the "torca".

We can also observe that the "torcas" are located around a straight line, a regression one, which coincides with the direction of the singular fault and which also coincides with the local direction of the underground drainage, and therefore, with the karstification process.

To conclude we applied the "prediction method of the underground drainage main directions" discovering that the direction given by this method coincides with the formerly mentioned ones, fact which represents one more reason to verify that the "torcas" appeared as a consequence of the dissolution of the underlying layers, i. e. the karstification of the deeper located materials.

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STAGES IN THE HYDROLOGIC HISTORY OF SOME CAVES IN THE DINARIC KARST

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It is known that various cave deposits are produced locally and intermittently, and that phreatic voids mostly experience dissolutional widening (James & Choquette, 1988).

A study of cave deposits in the Dinaric Karst fo the central Croatia revealed that caves investigated experienced a long-term, meteoric phreatic regime in the Late Quaternary. The evidence of this are specific teatures of the speleothems found in these caves. They show uniform continous lamination, which cover all cave surfaces, and grow concentrically from the walls inward. These speleothems are up to 1 m thick. The relevant phreatic periods are longer than those short intervals corresponding to heavy rain events or rainy periods, during which the most part of the voids may be saturated with water.

As the phreatic speleothems are deposited along entire cave channels they may be used as an inportant regional stratigraphic marker, and their identification can help in decifering depositional and hydrologic history of caves.

James, N. P. & Choquette, P. W. (Eds.), 1988, Paleokarst. 416 pp. Springer Verlag. New York

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SOME DETAILS OF COLLAPSE DOLINES EVOLUTION

France ŠUŠERŠIČ*

General processes of collapsing of cave roofs, and collapse dolines formation, have been studied by several authors and have been explained in general lines. However, many details have not been even recognized. The paper presents possible formation of collapse doline Vranja jama on the position of phreatic break through between two inception horizons, and a possible "ghost" doline in the close neighbourhood.

TOWARDS GENETIC SYSTEMIZATION OF DOLINES

France ŠUŠERŠIČ*

The fundamentals of the dolines systemization, and consequently, terminology, were established by Cvijić in 1895. Since this time the main frame has remained unchanged, what brought about a number of papers, making use of equal terminology, but dealing with evidently different closed depresions. A new systemization is presented, based on the fact that some dolines reflect underground karst activity, while the others are just extensions of surficial drainage into the underground.

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CLAY SEDIMENTS IN SOME DOLINES OF NOTRANJSKA

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25 samples of clayey sediments in dolines and close neighbourhood were examined by X-ray diffraction. Though general results remain within the frames of expectations, the present study revealed great diversity of mineral associations. Especially the ones, atributed to fluvial origin, appear in somehow unexpected positions. More detailed and more extensive study is needed to decipher the fundamentals of clayey sedimentation in the area.

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DEFORMATION OF CIRCULAR CAVE PASSAGE DEPENDENT OF THE DEPTH

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Deformations of circular cave passage were simulated by a computer program, applying the method of finite differences. The independent variable was geostatic pressure (depth). Based on the data from literature four types of limestones were defined according to their good/bad geomechanical properties. If assuming the Mohr-Coulomb's criterion of failure, channels in the limestone of good geomechanical properties collapse at the depth about 2,5 km. In the future the data obtained from selected natural samples will be taken into consider, as much as the presence of pore water, and different channel geometries.

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Stanka Šebela*

THE DOLINES ABOVE THE COLLAPSED CHAMBERS OF POSTOJNSKA JAMA CAVE

Abstract

On the surface above the known cave passages of Postojnska jama cave which is 13,5 km long, there are 20 dolines and two collapse dolines (Kafrna dolina and Stara apnenica). Almost half (9 examples) of dolines is formed above the collapsed chambers. Dolines and collapsed chambers are formed in regionally the most determined tectonically crushed zones. Collapsed chambers in the cave represent places of the youngest transformation of cave passages. All the dolines above the collapsed chambers are rather steeply sloped. Vertical percolation in vadose zone is in this places normally very good, evidenced by chimneys in collapsed chambers.

The dolines above collapsed chambers in Postojnska jama cave are found above Rov brez imena, Pisani rov and Koncertna dvorana.

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Nadja Zupan & Andrej Mihevc

CLASTIC SEDIMENTS FROM DOLINES AND CAVES ON THE ROUTE OF THE HIGHWAY AT DIVAČA, CLASSICAL KARST

Abstract

Dolines are relief depressions formed on the places of stronger diluting of the limestone and point discharge trough karst or possibly by other processes too. We can distinguish them by their size, form and their origin.

Many of the dolines on the Kras plateau are partly filled with alohtonous fluvial sediments, gravel, sand or reddish or yellowish loam. During the highway construction over the Kras in past two years several dolines and old filled cavities have been opened, making us possible to compare sediments in them. Several samples from them have been taken and analysed by X-ray diffraction method too.

In the caves opened by surface processes or cut by dolines, flood loam, sand and gravel from flysh sediments can be found. Yelowishbrown colour is typical for them. When these sediments are near the surface their colour was changes into red, but the association of minerals is slightly different than in surface "terra rossa". This make us possible to decide, the origin of the doline sediment and with that to speculate about their origin too.

Janja Kogovšek

THE VERTICAL RUNOFF OF RAINFALL TROUGH DOLINES
The examples of dolines above Planinska Jama and Pivka Jama

Abstract

It was presumed that the abundant trickles, which were observed in detail in the underground caves, are fed from the areas covered by dolines. Later we assessed it by water tracing tests above Planinska Jama and Pivka Jama. The dolines above Planinska Jama, separated from the cave by 100 m thick layer of limestones, drain the rainfall water fast in significant quantities of through the central, very permeable conduit. By the system of less permeable conduits which are associated with the central one, smaller quantities drain much slower. However, it was inferred that the observed trickles presumingly fed from a doline, receive the water out of the area.

From a doline above Pivka jama two well permable conduits lead through 40 m thick rocks draining significant amount of water. Around them several smaller conduits exist which drain essentially less of water. Recharge area of the trickles is connected but their mutual links are variously permeable.

Tadej Slabe

KARST FEATURES IN THE MOTORWAY SECTIONS BETWEEN ČEBULOVICA AND DANE

Abstract

Construction works for motorways discover interesting phenomena, such as fossil caves (hollow or filled with sediments), potholes with percolating waters seeping from the surface into the karstic underground and various dolines. Karstologists take part in road planning and construction. Karst phenomena are being surveyed, studied and solutions to their conservation are being suggested. New perceptions serve as a very useful aid to explaining the development of this part of the karst.

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MARTIN KNEZ

HARACEA IN TRNJE PROFILE

In the Trnje profile only oogonia of Haracea may be found. In the limestones and slightly marly limestones on the transition of the beds without oogonia to the sediments with numerous Haracea oogonia no significant lithological difference occur. It means that during the material deposition there were no essential changes in the sedimentation. Micritic base indicates that the sedimentation environment was rather calm (energy index from 1 to 2). However not that calm that the oogonia may remain in their living position as it is the example at some other localities. I presume that the withered away rests of the Haracea plants suffered short transport towards relatively deeper part of the sedimentation basin. Only oogonia - the most resistant parts of Haracea were preserved. Other parts of taluses are found in Trnje profile exceptionally.