Karst Springs of Skadarsko Jezero
Expedition report

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Warsaw, 2008

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Abstract

Report show results of two international cave diving expeditions on Skadarsko Jezero, concerned of research of karst spring and source of water exploration using the method of cave diving.

Introduction

Oko-type karst springs are typical as well as unique for Skadarsko Jezero area. Available literature provides not much information, and nothing was found about cave diving attempts. The goal of expeditions was to discover Skadar okos and provide informations for international cave divers community and all others whom it may concern.

Report show results of two international cave diving expeditions on Skadarsko Jezero conducted on December 2007 / January 2008, and July 2008, organized by:

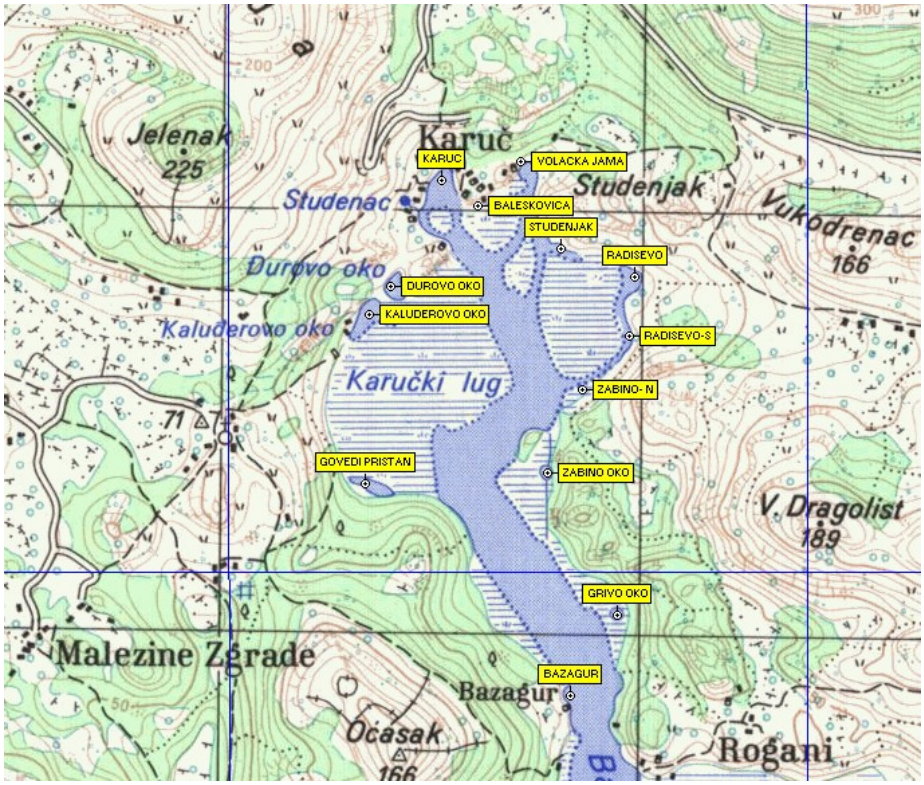
- Speleoloski odsek Beograda – Serbia,
- Speleoklub Warszawski – Poland,
- Cave Divers Group – Poland,
- Polski Związek Alpinizmu – Poland,
- Nacjonalni Park Skadarsko Jezero – Montenegro.

Participants: Uroš Akšamović, Dominik Graczyk, Katarzyna Kędracka, Jacek Olinkiewicz, Paulina Olinkiewicz, Dorota Ostrowska, Rafał Szaniawski, Andrzej Szerszeń.

GPS coordinates, shown below uses WGS-84.
Photos by expedition archive.

Karučki Lug

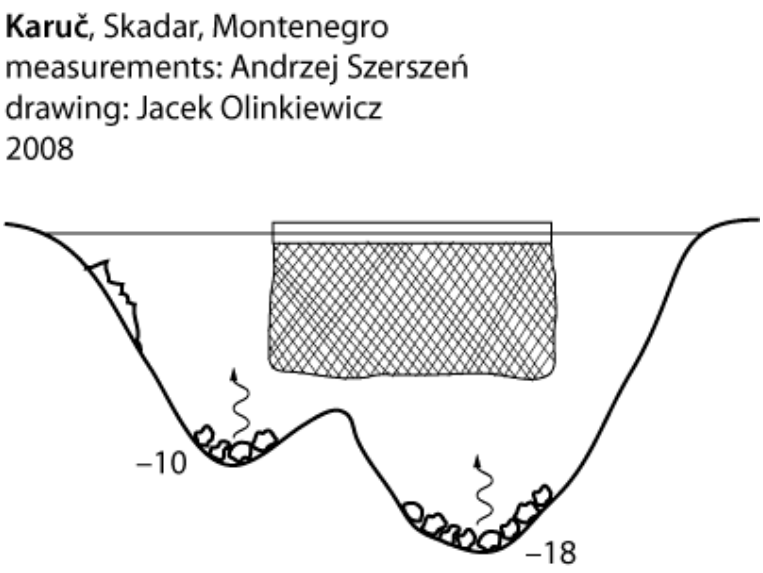
Location: Position of main spring Karuč and the village of the same name is 42°21,48 41 N; 19°6,6700 E. Other objects can be easy found in the area.



Summer view of Karučki Lug

Karuč

Main object of Karučki Lug. Round lake of 50 meters diameter. The warm and poor visibility lake type water on the surface is separated by 1 m depth termocline from lower layer of spring water with excellent visibility and temperature of 12 °C. Spring water emerges from numerous cracks, but none of them is big enough to be penetrated by human.



The floating trout farm is floating on the spring lake.

On the bottom lot of household garbage can be found.

Winter view or Karučki Lug

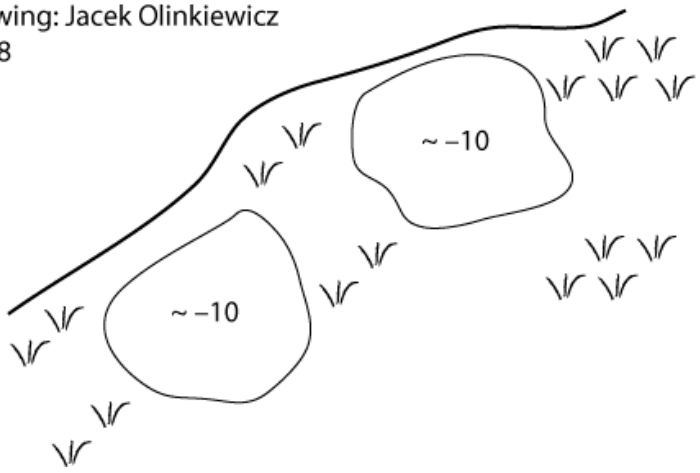
Studenac

Small spring located at west coast of Karuč spring lake.

Đurovo Oko and Kaluderovo Oko

Twin springs. Spring generally water emerges from numerous cracks, but none of them is big enough to be penetrated by human.

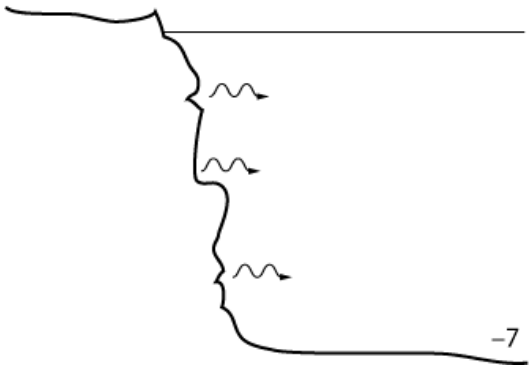
Durovo Oko, Kaluderovo Oko, Karuč, Montenegro
measurements: Uroš Akšamović
drawing: Jacek Olinkiewicz
2008



Bazagur

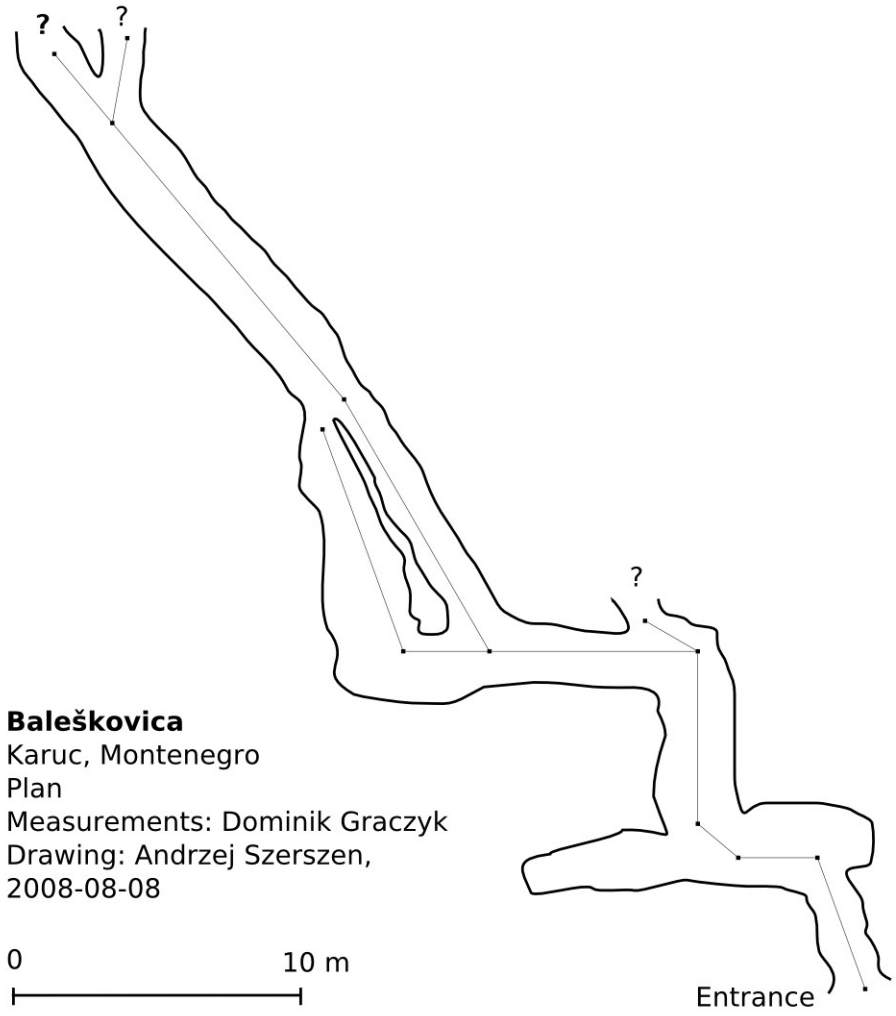
Water emerges from small cracks located on rocky wall.

Bazagur, Skadar, Montenegro
measurements: Uroš Akšamović
drawing: Jacek Olinkiewicz
2008



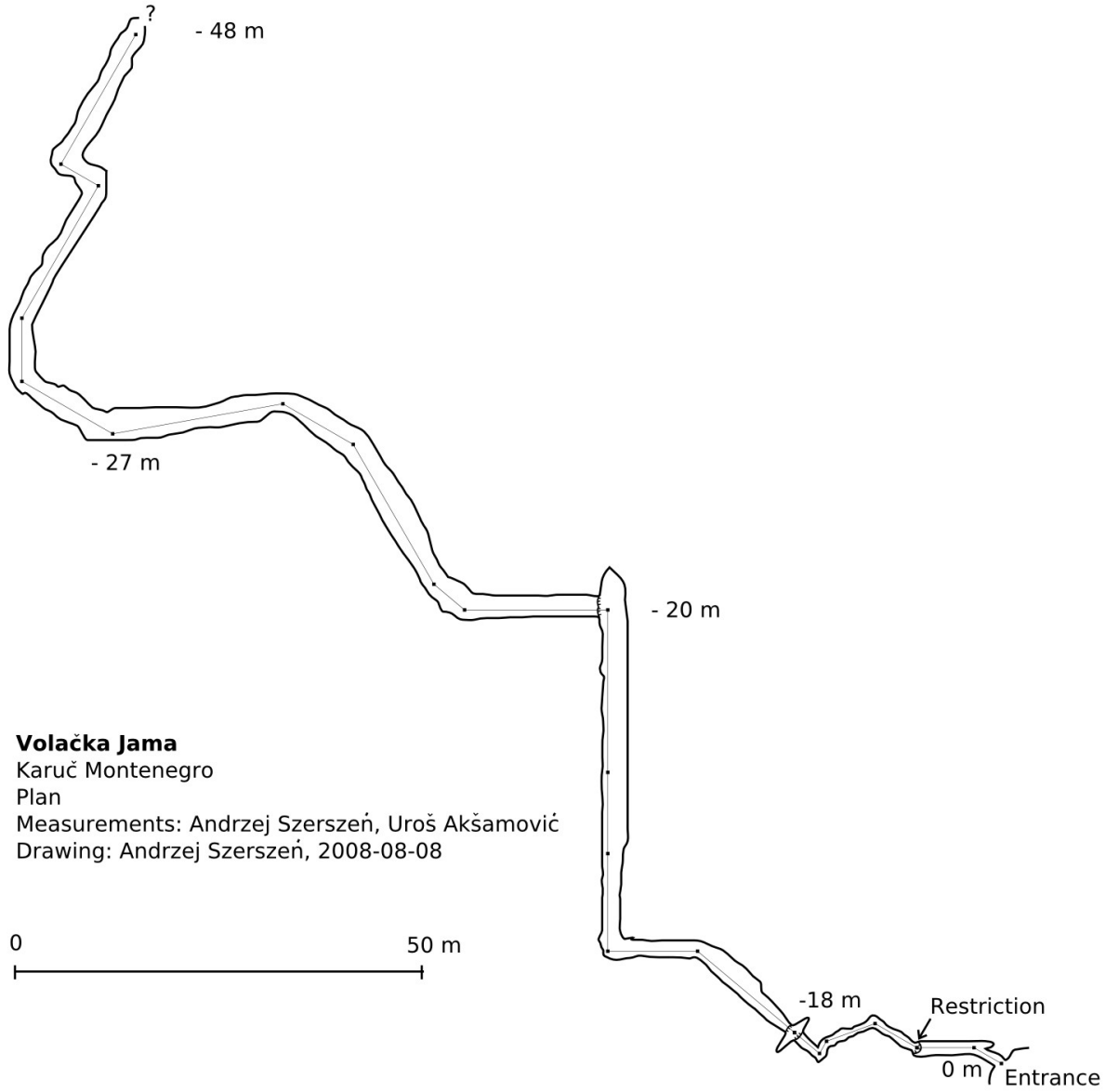
Baleškovica

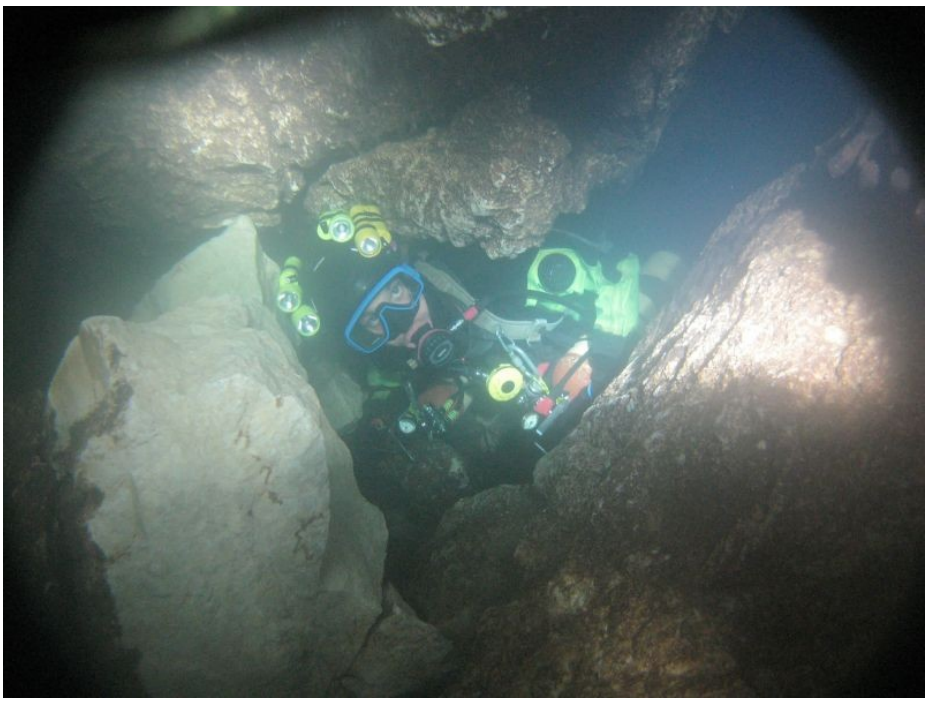
Cave entrace is located on the lake coast. Passages are narrow and restricted. Water is taken for house purposes.



Volačka Jama

Cave entrance is located on the coast of Volač bay. On the first several meters passage is air filled and further continuation is filled with water. Underwater passage begins with restriction – sidemount equipment configuration is recommended for divers. Further passage wide. Water is clear – good visibility, temperature 12°C. Object is used by the local people as the drinking water source. Distance of 200 m with the depth of -48 m was reached, and the passage continues – further exploration is possible.





A cave diver passing restriction in entrace of underwater passage of Volacka Jama.

Studenjak

Small spring located on the coast. No diving possibility.

Studenjak

Radiševo Oko, Radiševo-S Oko, Žabino Oko, Žabino-S Oko, Grivo Oko, Govedi Pristan

Small oko- type springs, several meters deep. Not dived.

Malo Blato

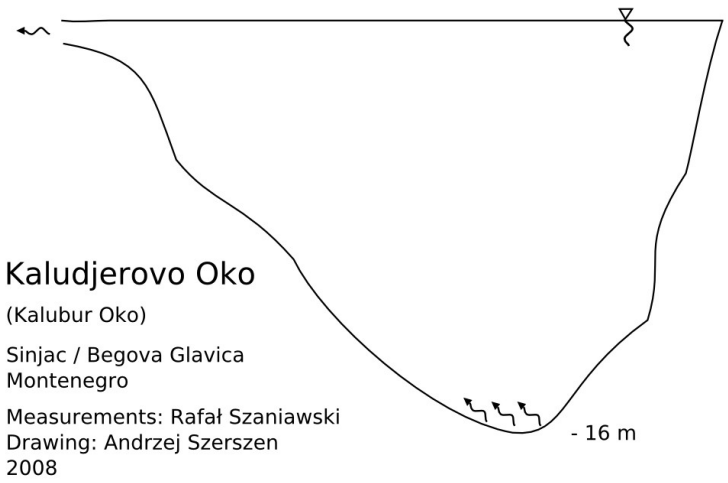
Lake Malo Blato coast are rich with karst resurgences. Most of them can be reached by boat only.

Kaludjerovo Oko, Raško Oko

Other name Kalubur Oko (42°22.415, 19° 9.277).

Spring is located in village Sinjac/ Begova Glavica, and is source of Sinjacka river. After several hundreds meters river disapears in pothole, and re-emerges in Raško Oko spring.

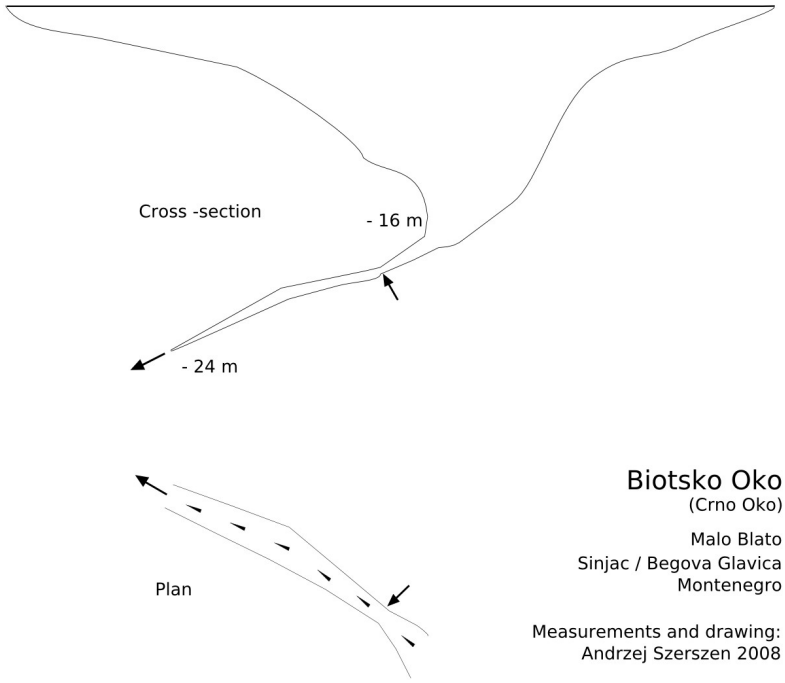
Kaludjerovo Oko forms 16 m deep lake where spring water emerges form small rock cracks, to small to penetraded by human.



Kaludjerovo Oko

Bivotsko Oko

42°21.898, 19° 9.804,

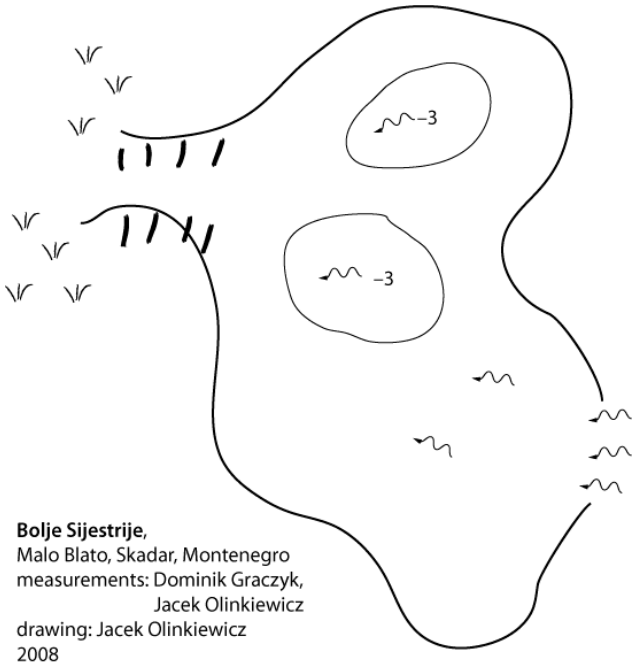


Bivotsko Oko bay

Bolje sestre

42°30.676; 19°50.441

Spring lake is about 50 m wide. Even in dry season (July 2008), when others springs are not working, a lot of water emerges here and forms strong current. All the area is active, water comes out through the stones on the bottom. Visibility is excellent, temperature 13°C. Max depth 3 m.



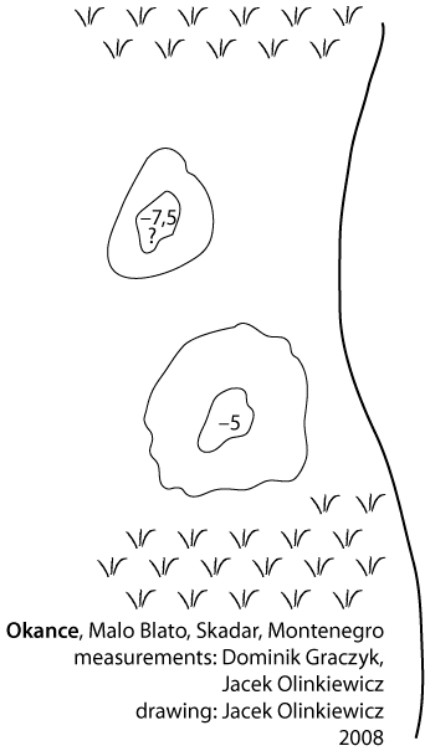
Bolje Sijestrije,
Malo Blato, Skadar, Montenegro
measurements: Dominik Graczyk,
Jacek Olinkiewicz
drawing: Jacek Olinkiewicz
2008

Diving in Bolje Sestre

Okance

42°20.610; 19°10.954,

Okance has two oko-type springs with typical funnel shaped formation in the lake bottom. Visibility is about 10 m, temperature 13°C. In northern oko metal grate exist in the deepest point, and blocks further entrance.

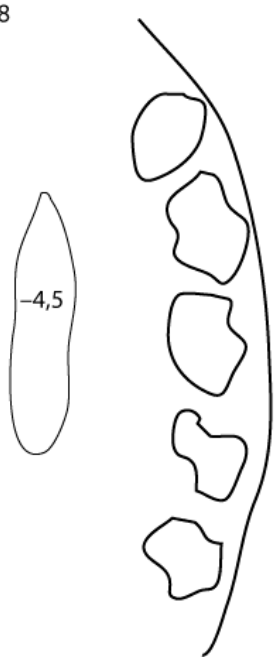


Okance, Malo Blato, Skadar, Montenegro
measurements: Dominik Graczyk, Jacek Olinkiewicz
drawing: Jacek Olinkiewicz
2008

Brodič

Visibility is about 10 m, temperature 13°C. Water emerges through the stones on the bottom.

Brodič, Malo Blato, Skadar, Montenegro
measurements: Dominik Graczyk
drawing: Jacek Olinkiewicz
2008

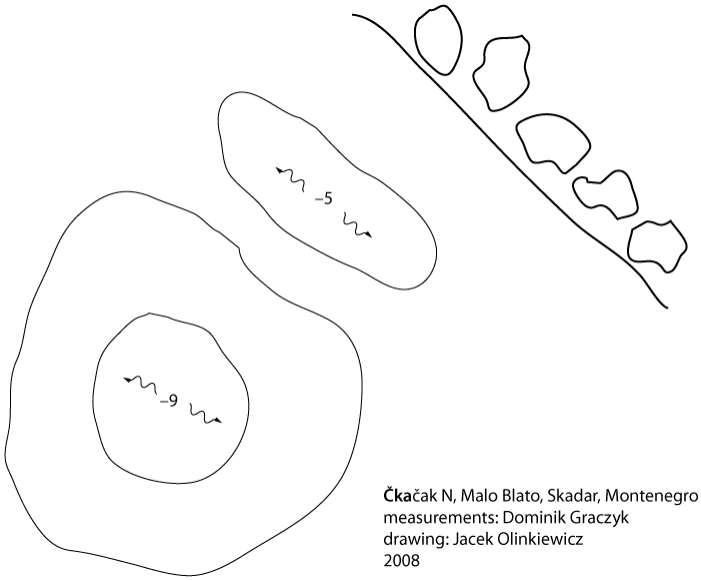


Čkačak

Two, near located springs.

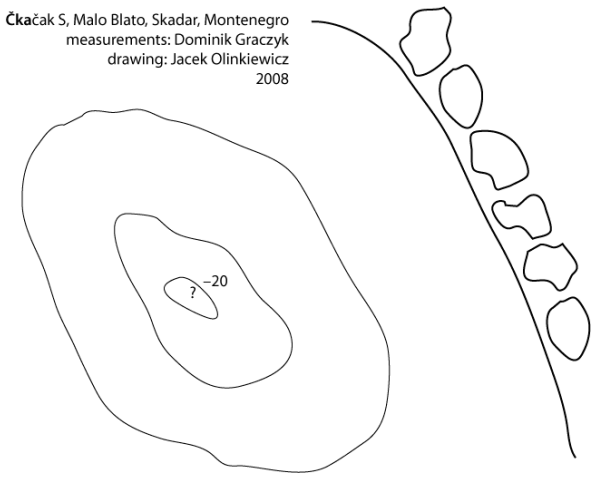
42°21.390; 19°10.602

Water emerges from small crakcs on the bottom. Visibility is about 10 m, temperature 13°C.



Čkačak N, Malo Blato, Skadar, Montenegro
measurements: Dominik Graczyk
drawing: Jacek Olinkiewicz
2008

Čkačak S, Malo Blato, Skadar, Montenegro
measurements: Dominik Graczyk
drawing: Jacek Olinkiewicz
2008



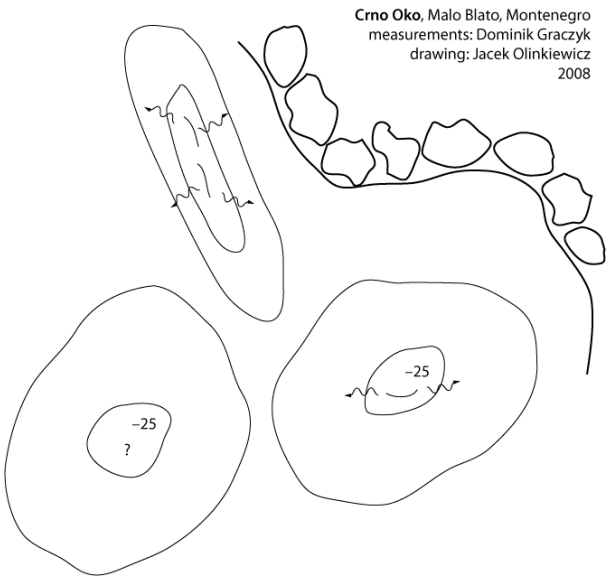
42°21.335; 19°10.686

Visibility is less than 4 m, and zero on the bottom, temperature 13°C.

Crno Oko

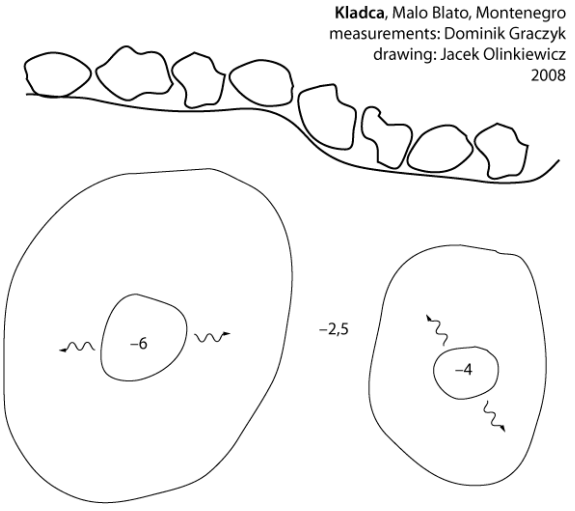
42°17.269, 19° 5.816,

Deepest point of Malo Blato, and probably one of the biggest springs there. Three funnel shaped holes on the bottom. Both northern (- 11 m deep) and eastern (- 25 m deep) are working – water emerges from cracks on the bottom and visibility is about 5 m. Western one – zero visibility, the depth of – 25 m was reached but not the final bottom.



Kladca

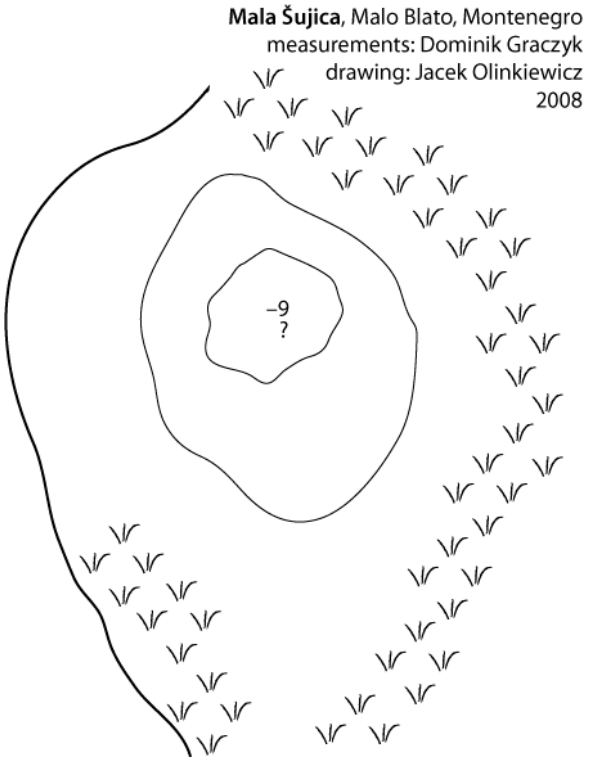
Visibility is about 8 m, and zero on the bottom, temperature 13°C. Water emerges from mud on the bottom.



Mala Šujica

42°21.677; 19° 9.288

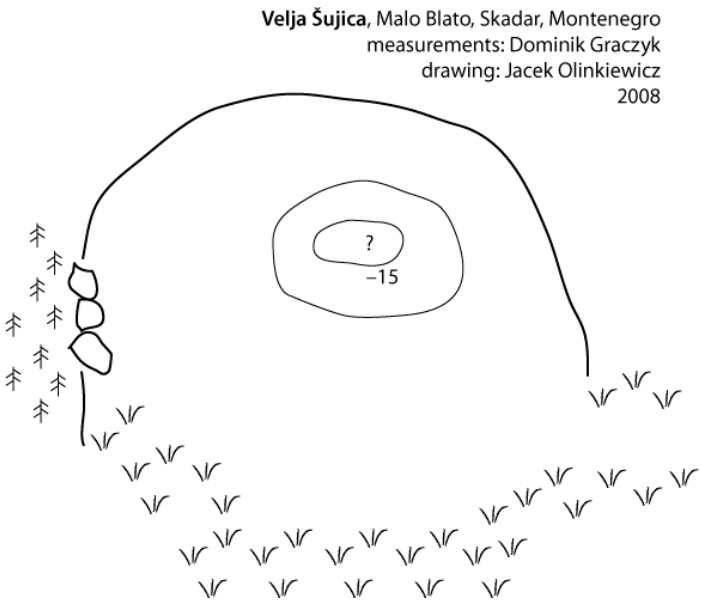
Visibility was zero, and spring was not working, , temperature 24°C up to the bottom. Depth of 9m was reached which is not the final bottom.



Vela Šujica

42°21.617, 19° 9.140,

Max depth -15 m. Visibility was zero, and spring was not working in July 2008 , temperature 20°C on the bottom.. Access from coast, boats were parked.



Humsko Blato and surroundings

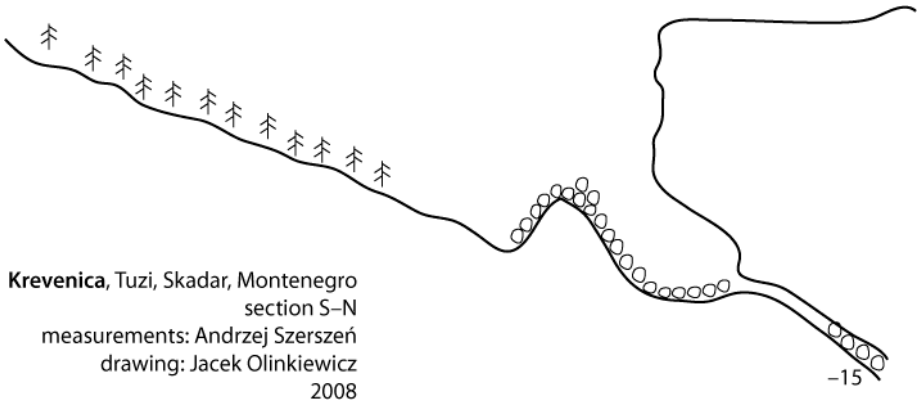
Humsko Blato is full of intensive vegetation, only narrow channels between plants.

Krevenica (near Tuzi)

42°21.149, 19°20.824

Resurgence inland located (not on the coast of Skadarsko Jezero). Spring was absolutely dry in July 2008, but seasonably is fully filled with water. Also big water currents occurs, and forms gravel dunes. A few meters from the cave entrance passage was blocked by stones and gravel.

Cave has been earlier explored up to 250 m long and – 50 mdeep (Milanović Saša, Tajne Podzemlja, Ronilacki Svet, April-Jun 2006).

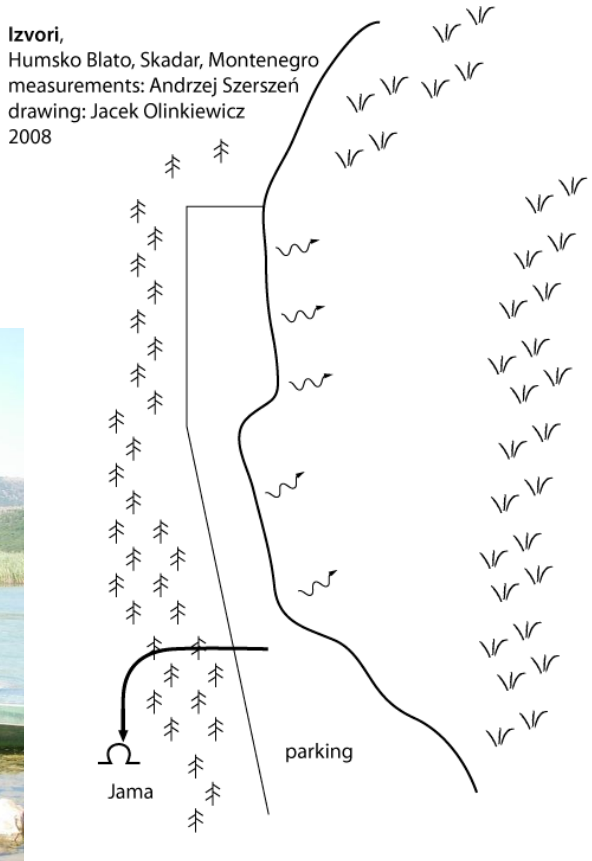


Dry pool of Krevenica

Izvori

42°18.804, 19°21.482

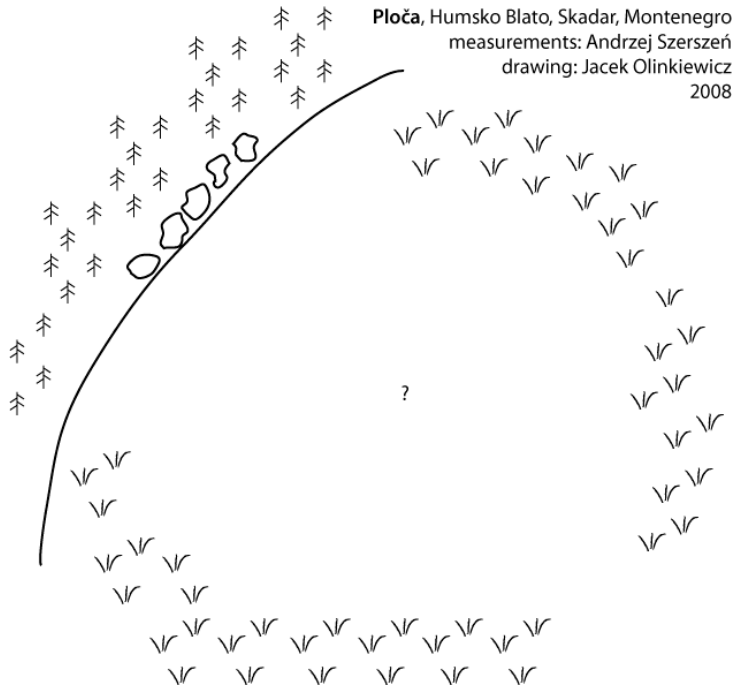
Crack-type spring located on western coast of Humsko Blato. Concrete platform is used for boat parking. Dry cave entrance (Jama) is located neat (not penetrated).



Ploča

42°19.237, 19°21.362

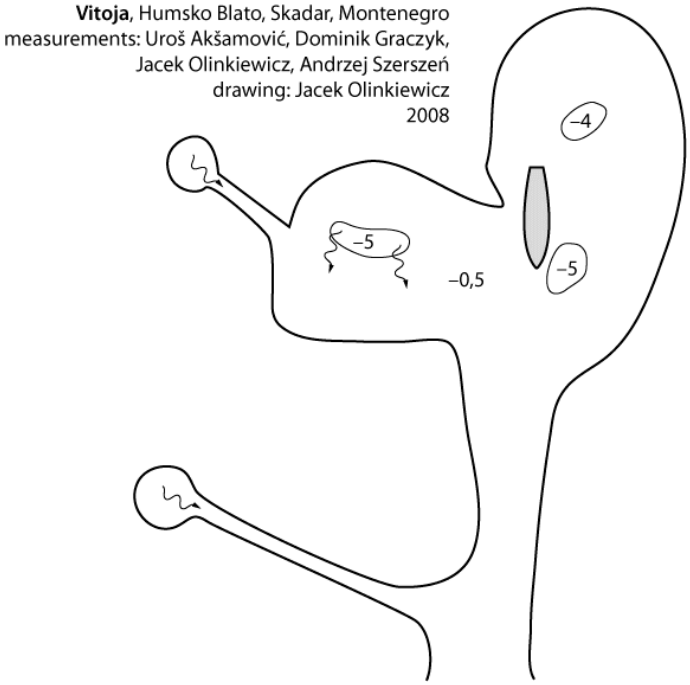
Not explored yet.



Vitoja

42°19.509, 19°22.074

Big spring with several sources. The cracks on the bottom are to narrow to be penetrated by human. Easy accessible by car, near road. Wreck of steel boat. Temperature 11°C, visibility about 7 m.

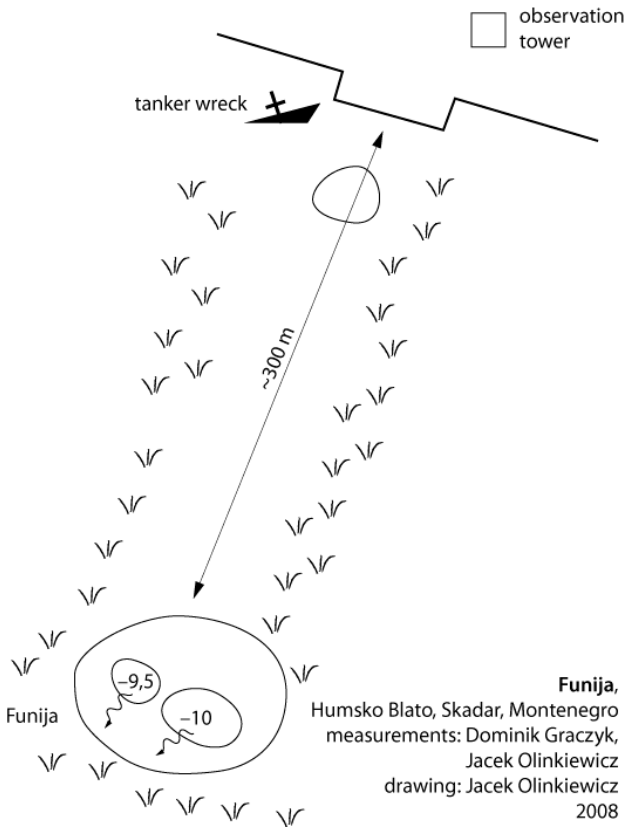


Cave divers in Vitoja pool

Funija

42°18.243, 19°22.363

Typical oko-type spring with. Water emerges from cracks on the bottom. Visibility about 5 m, temperature 13°C.

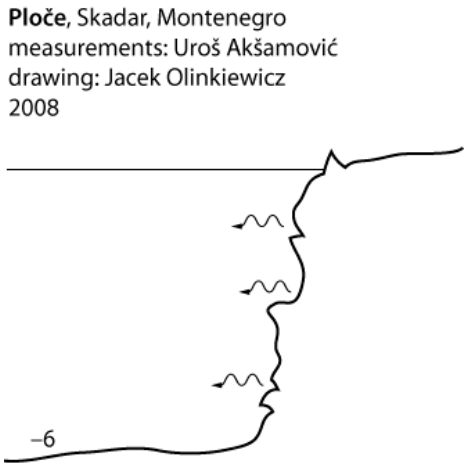


View on Funija from the coast

Southern coast of Lake Skadar

Ploče

Easy acces. Poor visibility (less then 1 m), muddy bottom, stones full of mud. No water current.



Modro Oko

Other name Modra Oka

42°17.269, 19°5.816

Oko has diameter of about 30 m, and is almost closed by water vegetation, and very muddy, no water current , seems to be not active anymore. Depth about 2 m. Not dived.

Šarovo Oko

Oko has diameter of about 15 m, no water current. Depth 3 - 4 m. Not dived.

Raduš

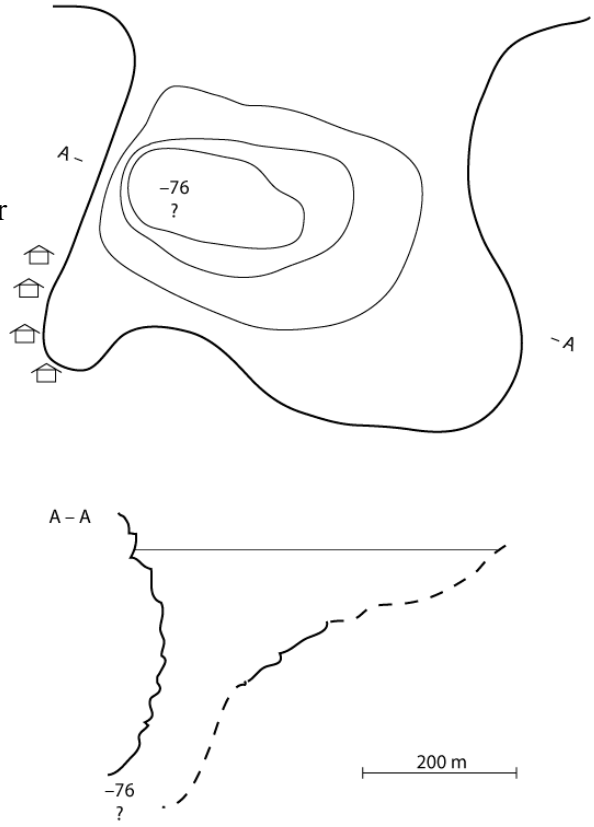
42°13.526, 19°9.898

Most significant spring of Lake Skadar.

In July 2008 depth of 76 m was reached, but not the deepest point. Visibility on the surface area was about 3 m, and lowers down to zero in deeper part. No water flow was found, spring was not working.

On the rocky walls settlements of shells can be found. Wintertime intensive fishing is kept, bulk of fish winters there.

Raduš, Humsko Blato, Skadar, Montenegro
measurements: Uroš Akšamović, Dominik Graczyk, Jacek Olinkiewicz, Andrzej Szerszeń
drawing: Jacek Olinkiewicz
2008

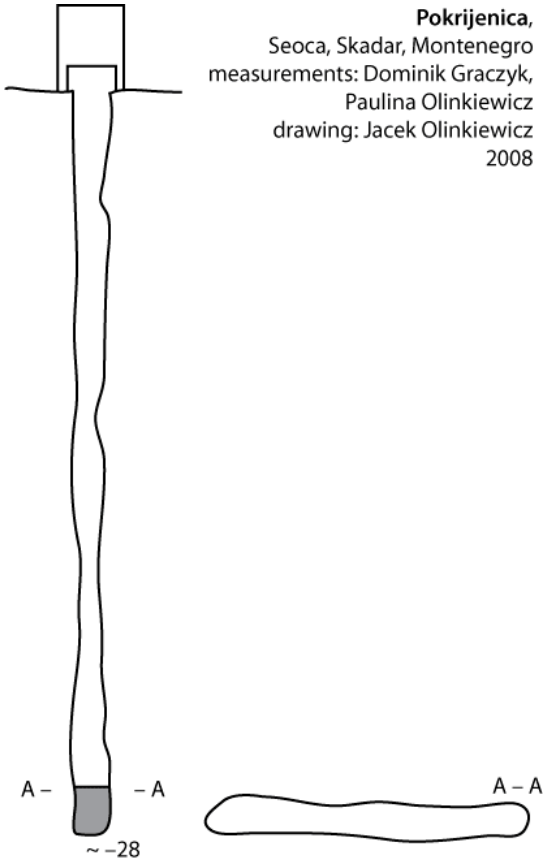


Bay of Raduš

Pokrijenica

42°13.045, 19°8.790

Well located inland, in Seoca village near Radus. Well has been built on natural rock crack with water on the bottom. No passage continuation on both air and water filled part was found. Object is still in use for water supply by the local inhabitants.



A cave diver ascending into Pokrijenica well

Krnjice Oko

Visibility 2 m, temperature 12°C, no current. Muddy. On the bottom narrow crack difficult to penetrate.

Krnjice Oko

Other locations

According to information from local inhabitants location at the front of national park on Vranjina island has been checked, but no spring was found there.

Conclusions

Skadarsko Jezero is an unique places where oko-type springs are located in the lake. Many of them are quite small and works only seasonably (emerges waters during and after rainy periods), and forms local karst systems drying nearest hills. But some of them definitely dries much bigger and remote area i.e. Bolje Sestre, Raduš, Volacka Jama. They are also have big meaning as drinking water sources for local inhabitants. Finally the touristic and recreational aspect have to be considered, most spectacular and promising for further cave diving exploration is Radus and Volacka Jama.