

MIKAS and NIKAS springs photo gallery

E U R O P E

Note: *The classification of springs is preliminary, the final lists will be established at the end of project. The first group of evaluated countries and their springs are presented in alphabetic order (data received during the year 2023 and 2024), the rest is in chronological order.*

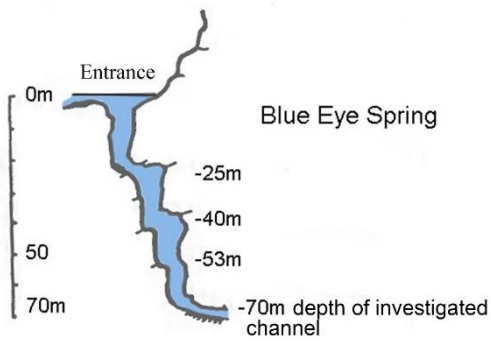
Albania



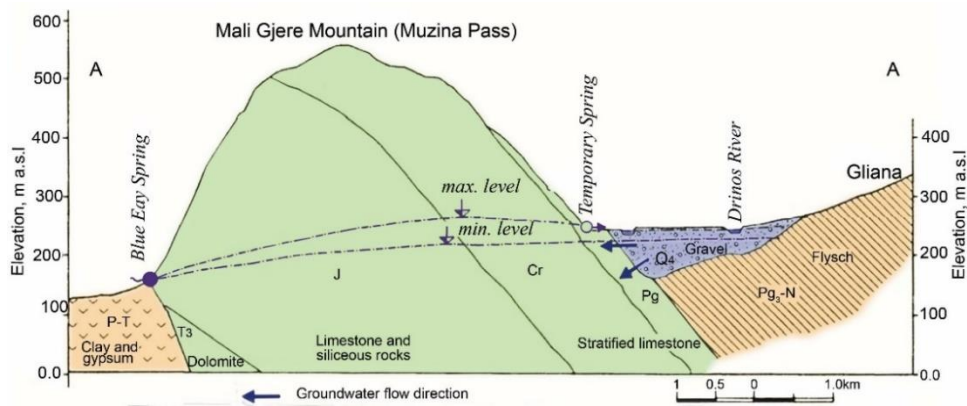
MIKAS - Blue eye (Syri i Kalter)



Blue Eye Spring, main issue (photo R. Eftimi)



Blue Eye Spring, syphon section (Eftimi et al. 2019)



Cross-section through Blue Eye Spring (after Eftimi et al. 2007)

NIKAS - Syri Sheganit

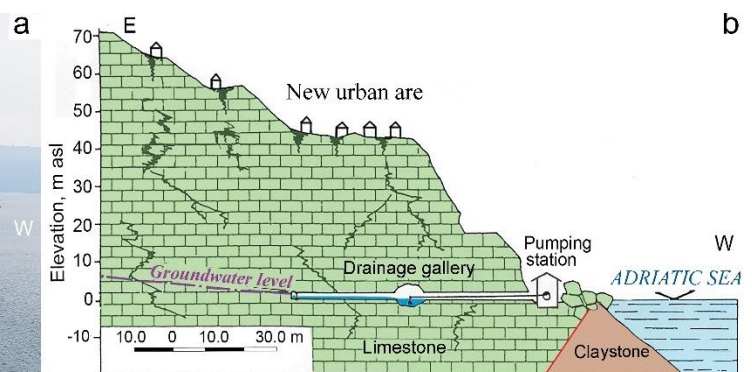


Syri Sheganit Spring, flows to Shkodra Lake (Photo R. Eftimi)



Cross-section A-A, through Blue Eye Spring (after Eftimi R. 2008)

NIKAS - Uji Ftohte



Uji Ftohte Spring; a) Location of pumping station; b) Cross-section of Uji Ftohte Spring (after Eftimi and Zojer 2015)

Austria



MIKAS - Fürstenbrunner Quelle



The Fürstenbrunner Quelle with parts of the tap building on July 24th, 2017 (Photo by D. Fließner)



The stream in the Fürstenbrunner Quelhöhle cave during a flood on June 1st, 2013 (Photo: Landesverein für Höhlenkunde in Salzburg)

MIKAS - Kläfferquellen (Kläffer spring)



Oblique downward view on the outlets of the Kläfferquellen on Mai 9th, 2017 with an overall discharge during snowmelt of $14 \text{ m}^3/\text{s}$ (part of it is into the underground tapping gallery; with in the foreground 350 m; drone photo by Lukas Plan)



Part of the surface water during snow melt on May 24th, 2010 (Photo by Lukas Plan)

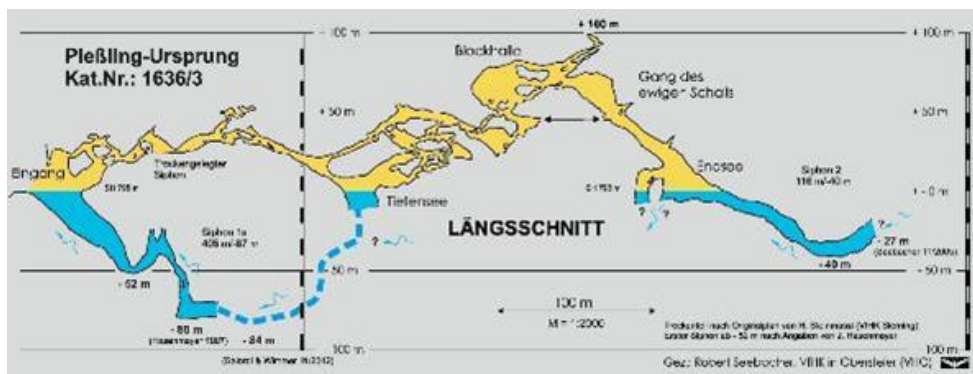


Overview of the plateau catchment area with many dolines. Aflenzer Staritzen in the foreground; Hochschwab summit (2277 m a.s.l.) in the centre (View to the west; drone photo by Lukas Plan)

MIKAS - Pießling-Ursprung



Pießling-Ursprung at medium water situation, outlet with dammed pond, in the rear access to the cave (left; Photo: R. Benischke). Spring at high water situation (right; Photo by H. Steinmaßl).

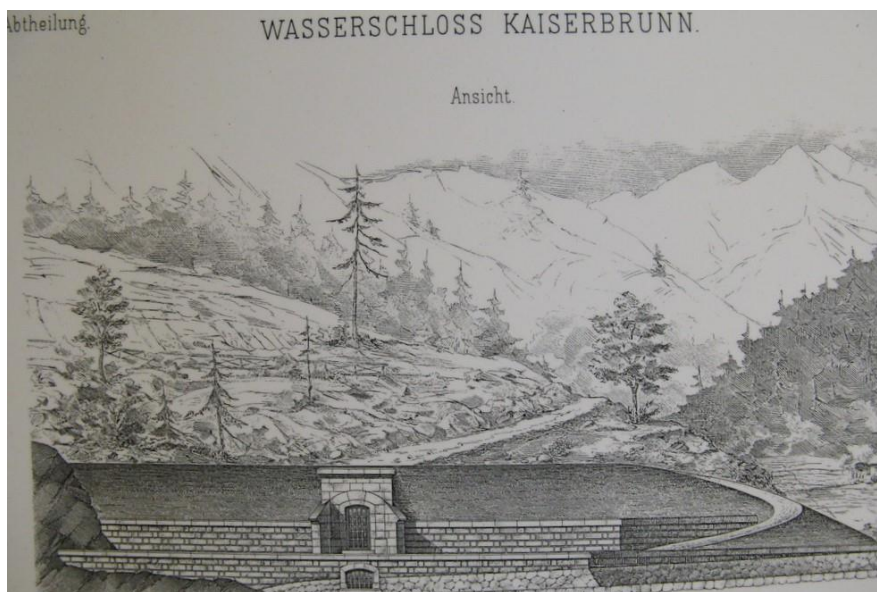


Longitudinal section of Pießling-Ursprung with siphon and overlain cave passages (drawing: R. Seebacher; cave data: H. Steinmaßl)

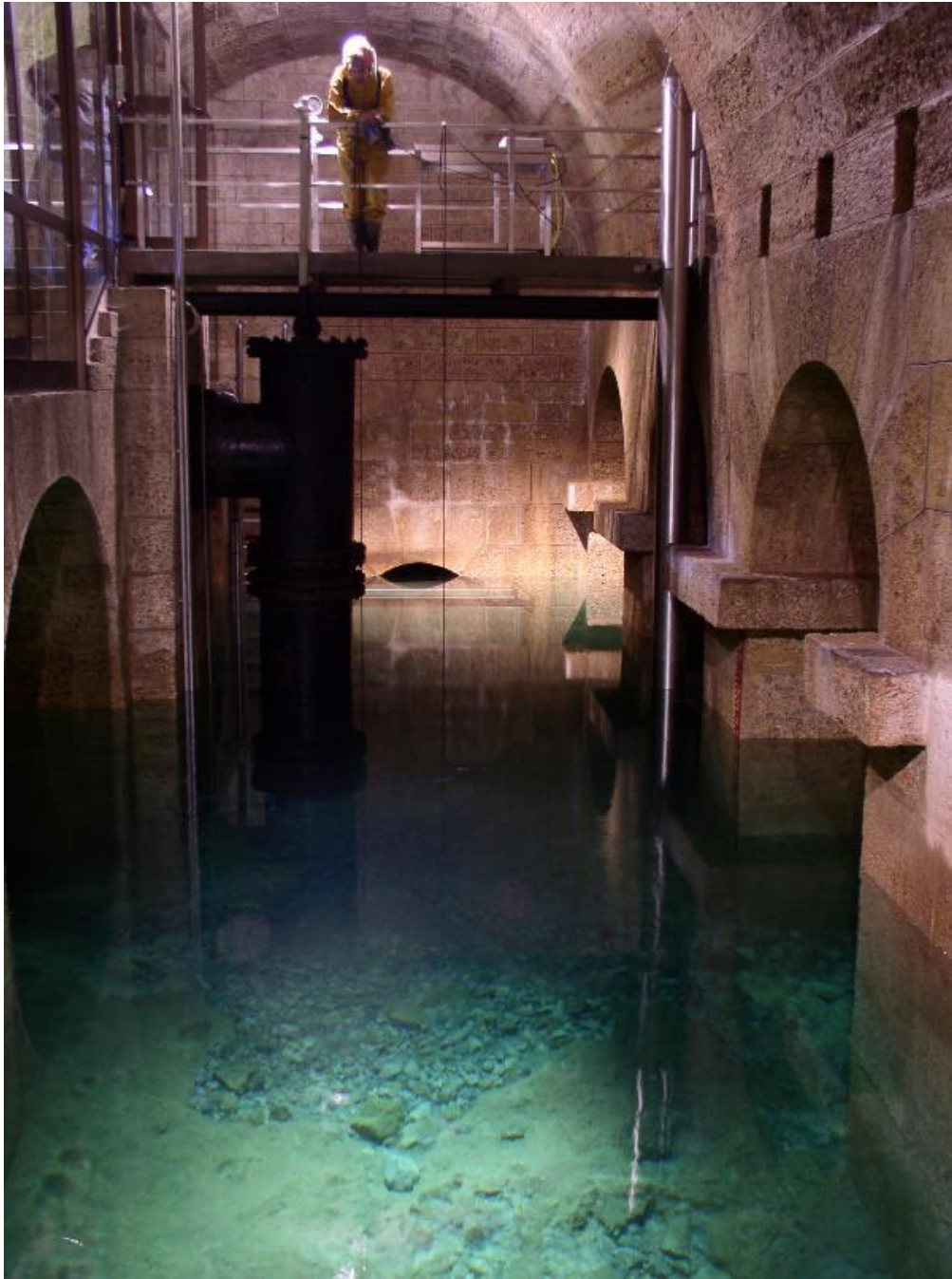
MIKAS - Kaiserbrunnen



Spring capture building at Kaiserbrunn (Photo by Lukas Plan)



Drawing sketch of the Kaiserbrunn intake with landscape of Rax Mt. foothills (courtesy of Kaiserbrunn museum)



Interior the spring capture building of Kaiserbrunnen (Photo by Lukas Plan)

NIKAS - Dachserfall

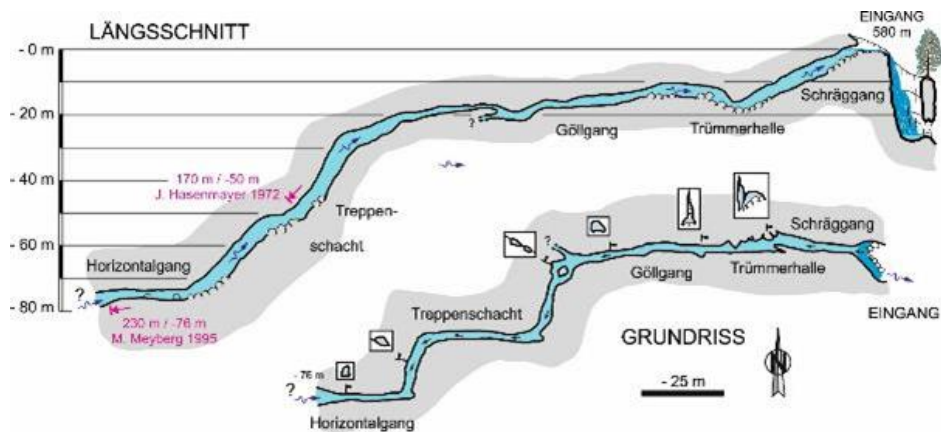


Dachserfall outlets (Photo by Ralph Benischke)

NIKAS - "Gollinger Wasserfall (Schwarzbachfall)"



Gollinger Wasserfall, left: lowest step, right: middle part with water flow through a rock arch (Photo by Ralph Benischke).



Plan view (bottom) and longitudinal section (top) of Gollinger Wasserfall (Schwarzbachfall Cave) to a depth of 76 m (from Spötl et al. 2016; Sketch Meyberg & Rinne 1995, drawing R. Seebache)

NIKAS - Teufelskirche



Teufelskirche spring. Top: Outlet of spring at low water conditions with upwelling water in the centre of the pool (Photo: R. Benischke). Bottom: Outlet of the spring at high water conditions during snow melt (Photo by H. Steinmaßl)



NIKAS - Waldbach-Ursprung



Waldbach-Ursprung (overflow cave) under flood conditions (Photo by G. Völkl)

Bosnia and Herzegovina



MIKAS - Vrelo Bune



Vrelo Bune spring (summer, left and autumn, right)



Vrelo Bune, panoramic view



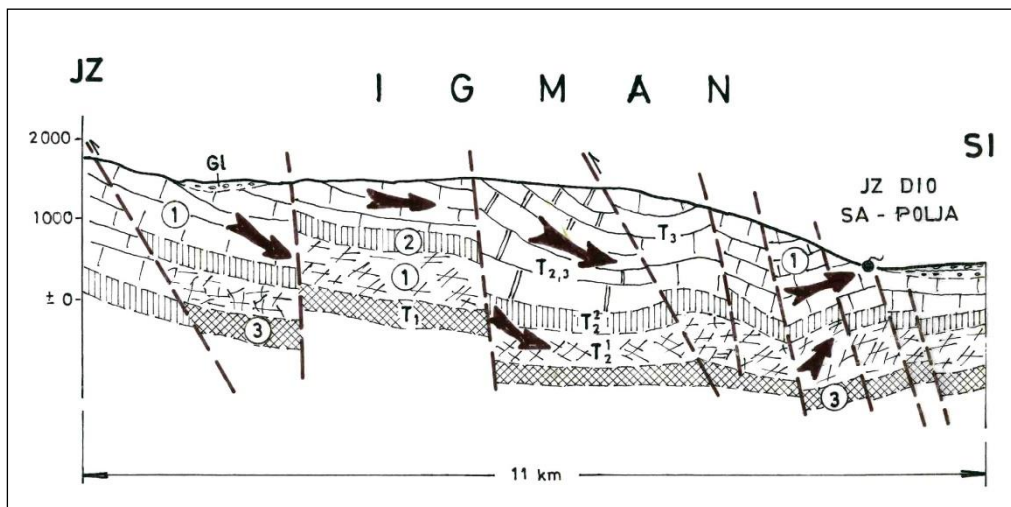
Vrelo Bune under big cliff

(Photo by Z. S tevanović)

MIKAS - Vrelo Bosne



Vrelo Bosne spring and walkways in large Ilidža park



Hydrogeological cross section Vrelo Bosne spring (after Skopljak, F., 2006)

Belgium



MIKAS - Eprave spring



The entrance of the cave where the spring is located with the Lomme river just ahead.

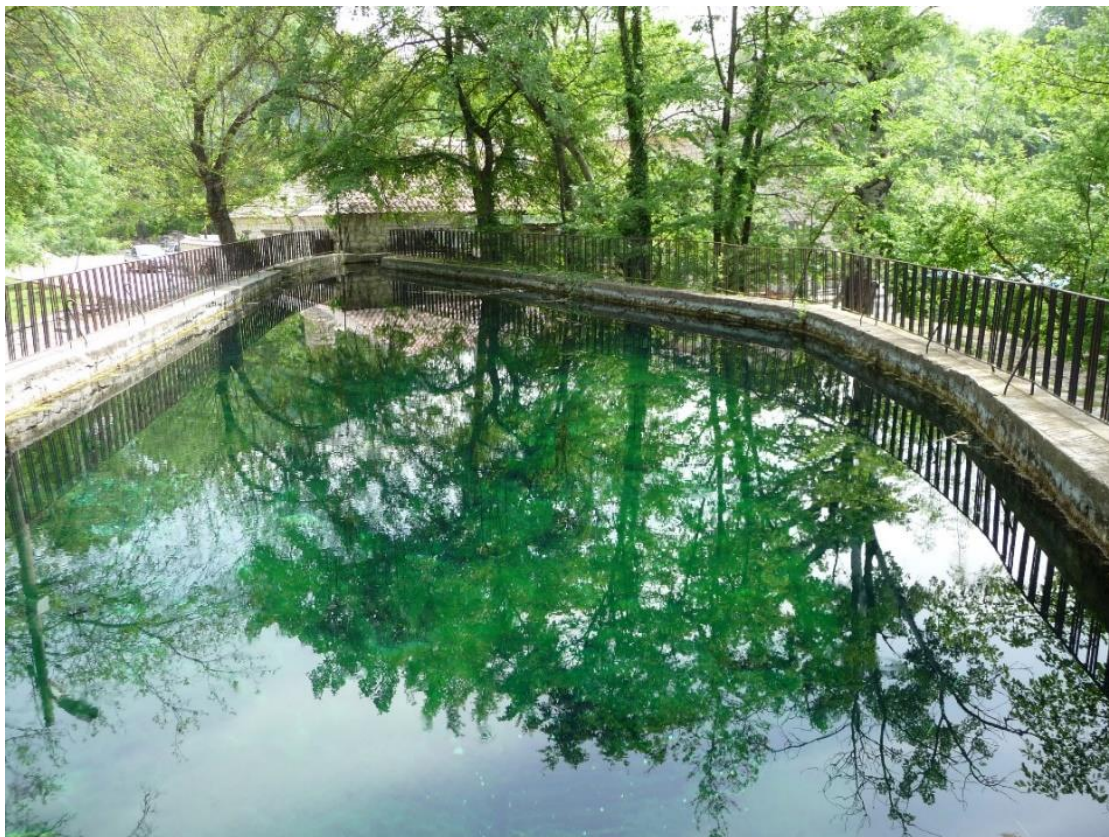


Diver making test of current measurement in the spring conduit.

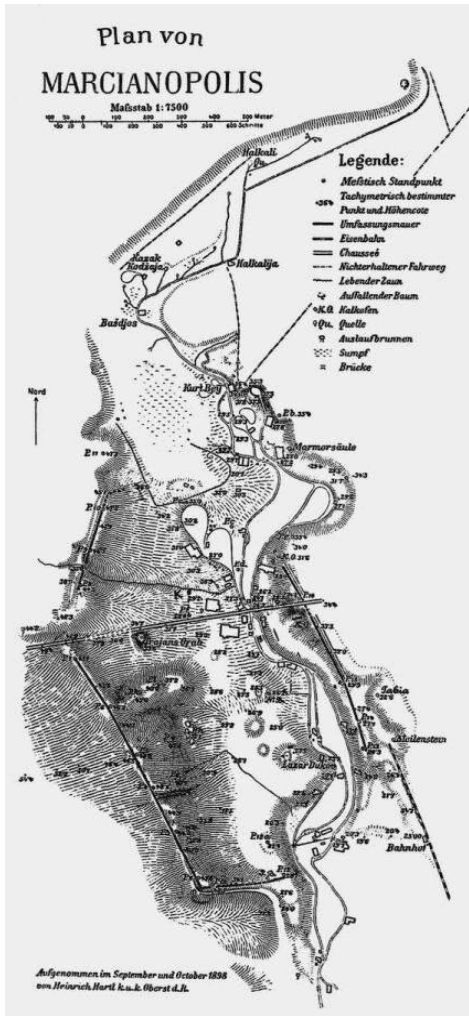
Bulgaria



MIKAS - Devnya



The Devnya's Magic spring (photo by B. Mihaylova)



Plan of Marcianopolis by Heinrich Hartl, 1898



Springwater flowing into the Devnya River (photos by A. Benderev)

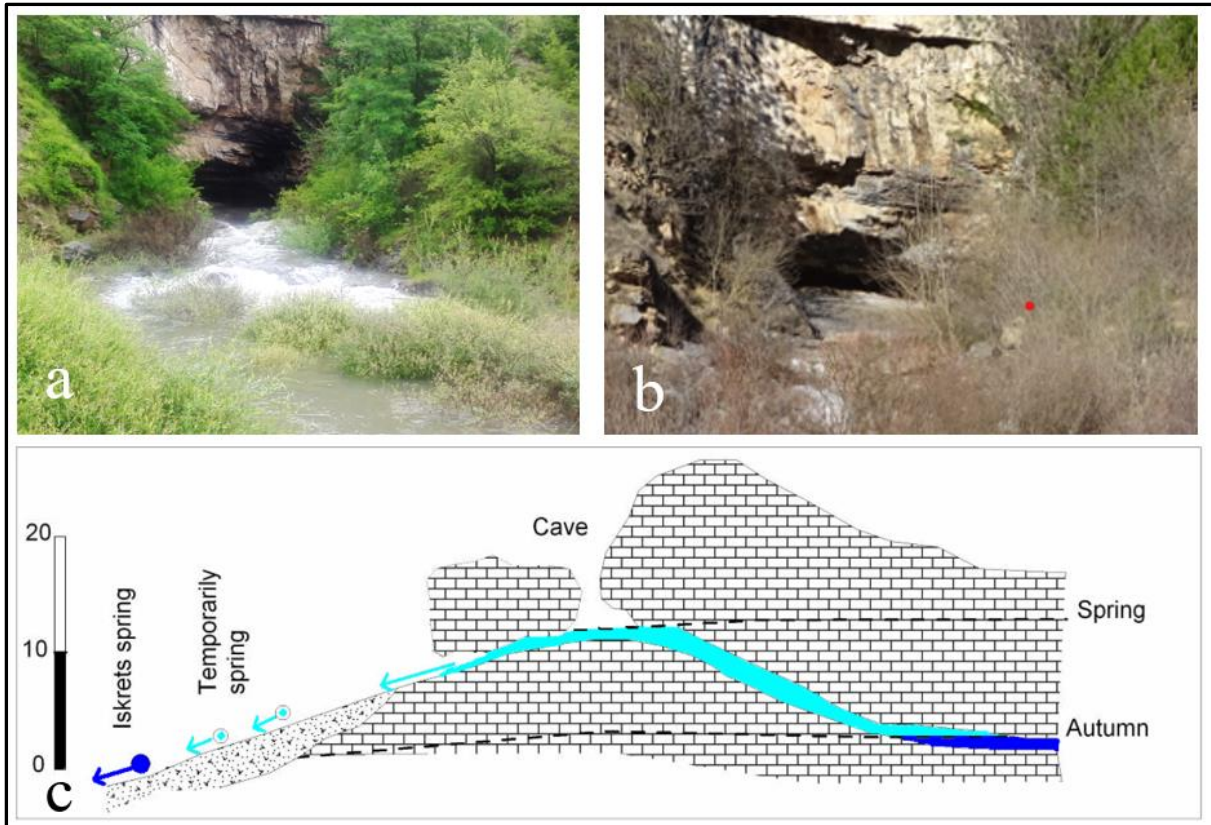
MIKAS - Iskrets (Peshta)



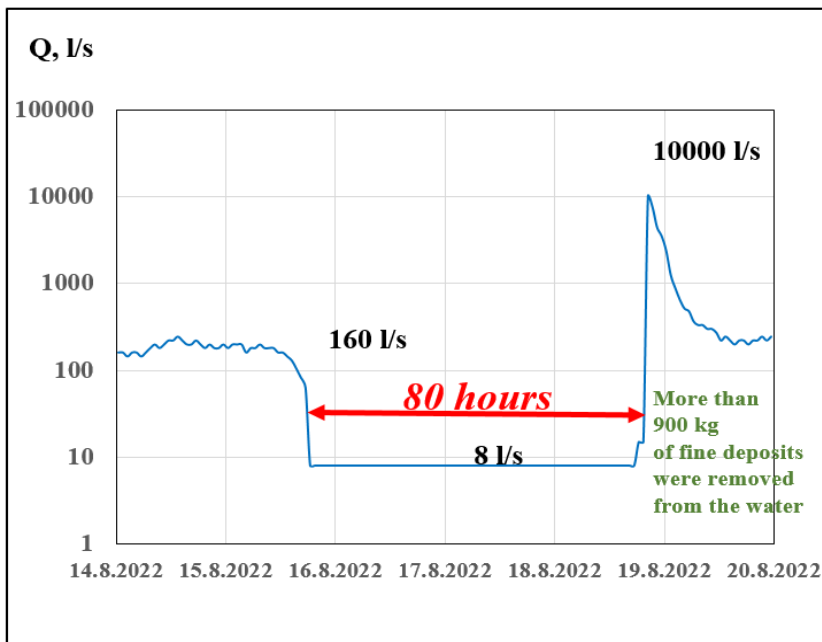
Iskrets spring general view (photo by A. Benderev)



Surface negative karst forms: a – dolines; b– blind valley in Iskrets catchment (photos by A. Benderev)



Entrance of Dusnika Cave in: a – spring; b – autumn and c - cross section of Iskrets Spring and cave with amplitude of water level (Stevanovic et al., 2015)

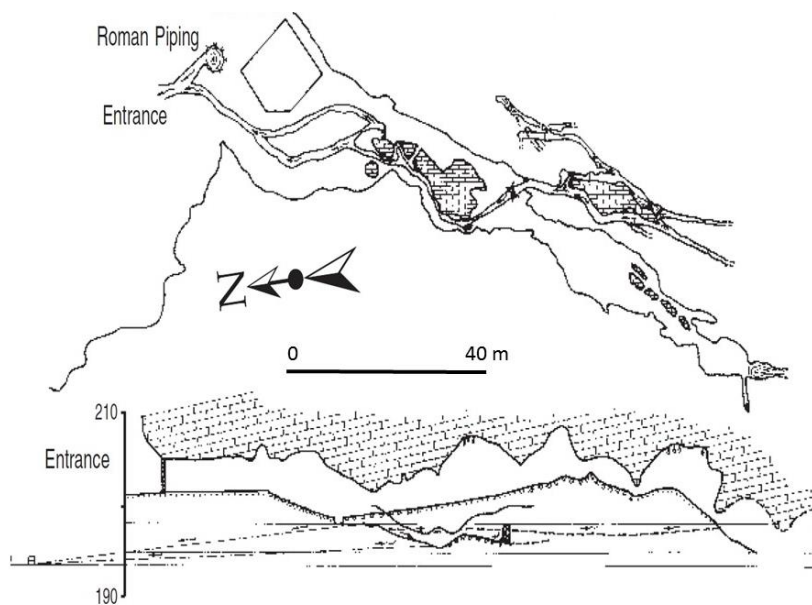


Outflow interruption at Iskrets Spring from 16 to 18/08/2022 (after Benderev et al., 2022)

MIKAS - Musina



Aerial view of the area of the Musina spring and Musina cave (photo by Daniel Yordanov)



Map and longitudinal profile of the Musina cave up to the first siphon (after Beron et al. 2006)



The water issuing from entrance of Musina cave



Musina spring Roman capture (photo by Kalin Chakarov)

NIKAS - Zlatna Panega



The Upper Lake of Glava Panega spring



The Lower Lake of Glava Panega spring

NIKAS - Kleptuza



Kleptuza spring (photo by E. Damyanova)

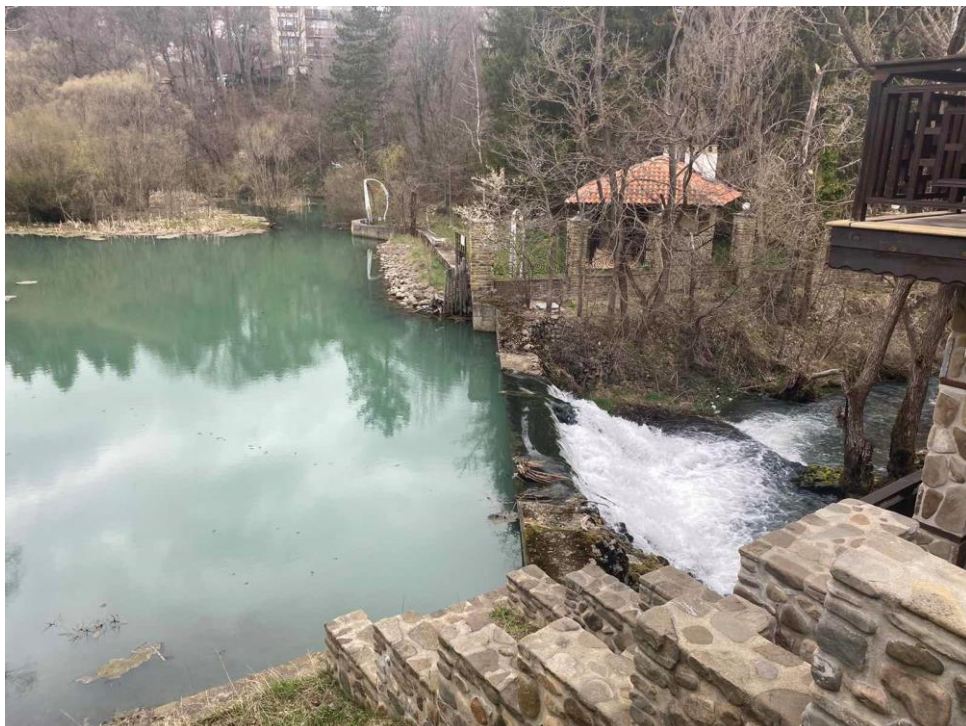


Kleptuza Park – Lower Lake (photo by E. Damyanova)

NIKAS - Kotel spring



General view of Kotel spring (photo by A. Toteva)



Kotel spring and the river flowing from it (photo by E. Damyanova)



The river flows from Kotel spring (photo by E. Damyanova)

NIKAS - Zhitolyub (Lakatnik spring)



Lakatnik rocks with location of Zhytolyub spring and the entrance to Temna dupka cave (photo by A. Benderev)



Zhitolyub spring at low and high flow rates (photos by E. Damyanova)

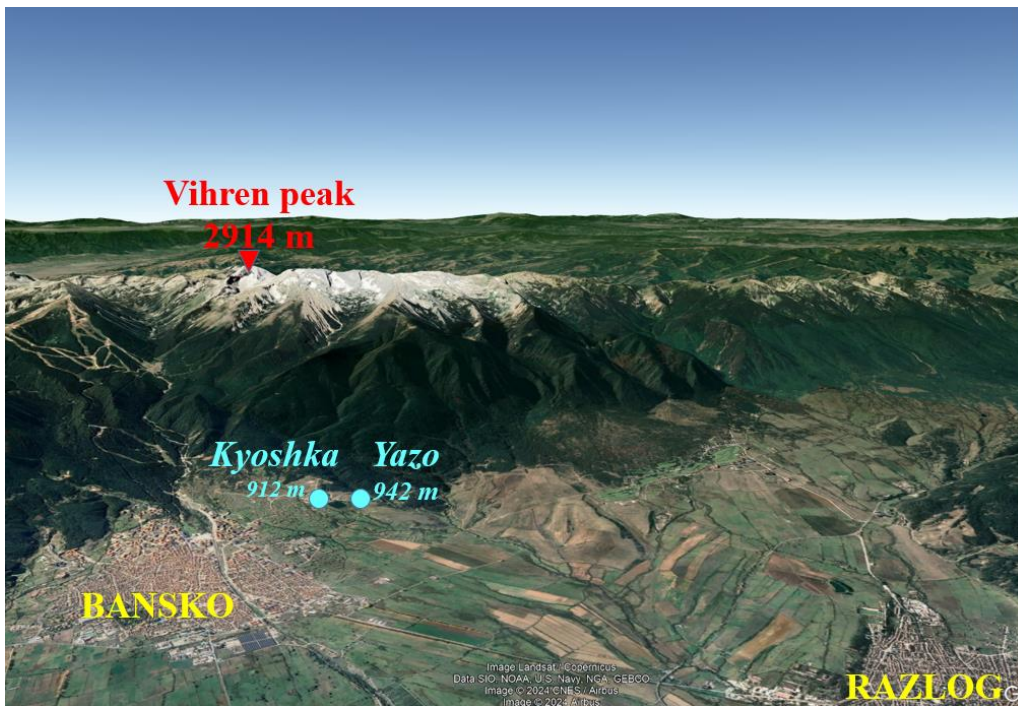


The entrance of Temna dupka cave (photo by A. Benderev)



Water flowing through the entrance of Temna dupka cave (photo courtesy by E. Damyanova, author unknown)

NIKAS - Yazo and Kyoshka springs



Google Earth view of Yazo and Kyoshka springs with Pirin Mountain



Yazo spring (photo by E. Damyanova)



Kyoshka spring (photo by E. Damyanova)



Karstified marbles at more than 2500 m a.s.l. in the catchment area of Yazo and Kyoshka springs in UNESCO Pirin National Park (photo by A. Benderev)

Estonia



MIKAS – Lavi spring



Lavi spring (Photo by Marko Vainu)

NIKAS - Uuemõisa Suurallikas



Spring Suurallikas, Vormsi, July 2014 (copyrights: Eesti Loodushoiu Keskus https://www.loodushoid.ee/Gallery_355-86)

NIKAS - Aravete springs



Photo of the spring (copyrights: lifar/Wikimedia Commons).

NIKAS - Imastu springs



Photo of the spring (Courtesy: NOSSER/Wikimedia Commons).

NIKAS - Völingi (Völlingu) spring

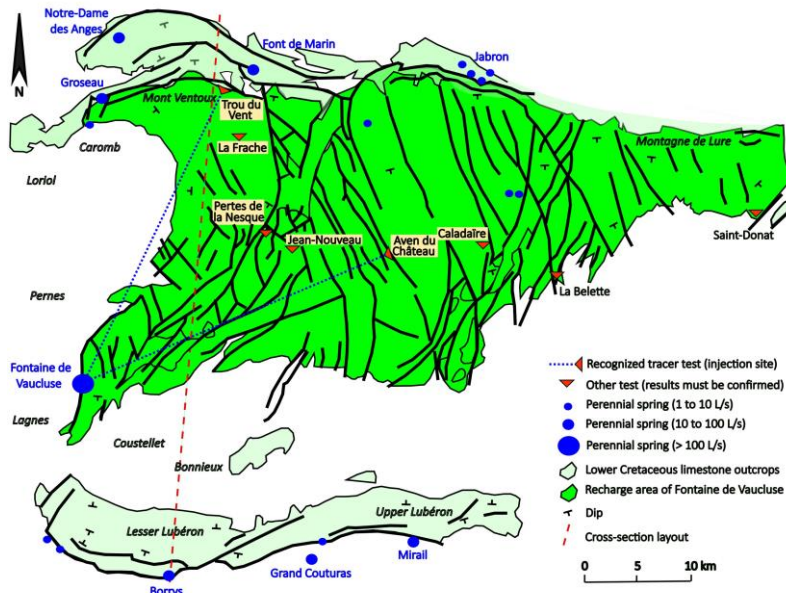


Photo of the spring (Photo by Marko Vainu)

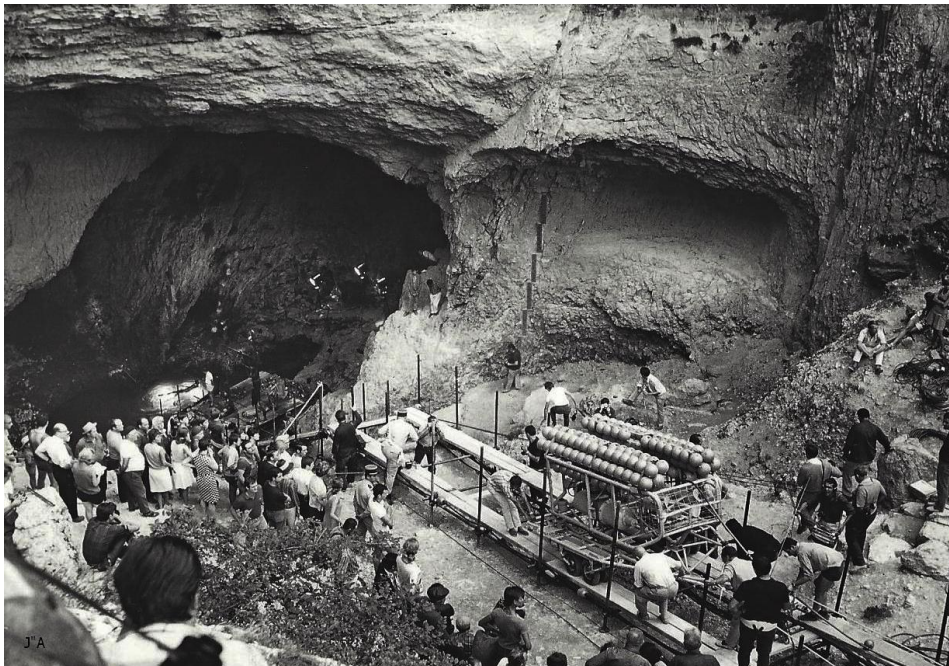
France



MIKAS - Fontaine de Vaucluse



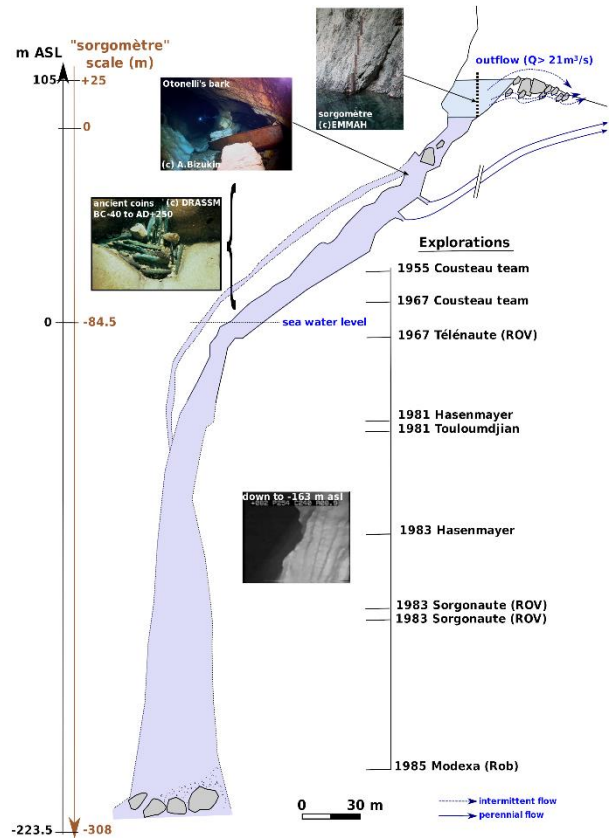
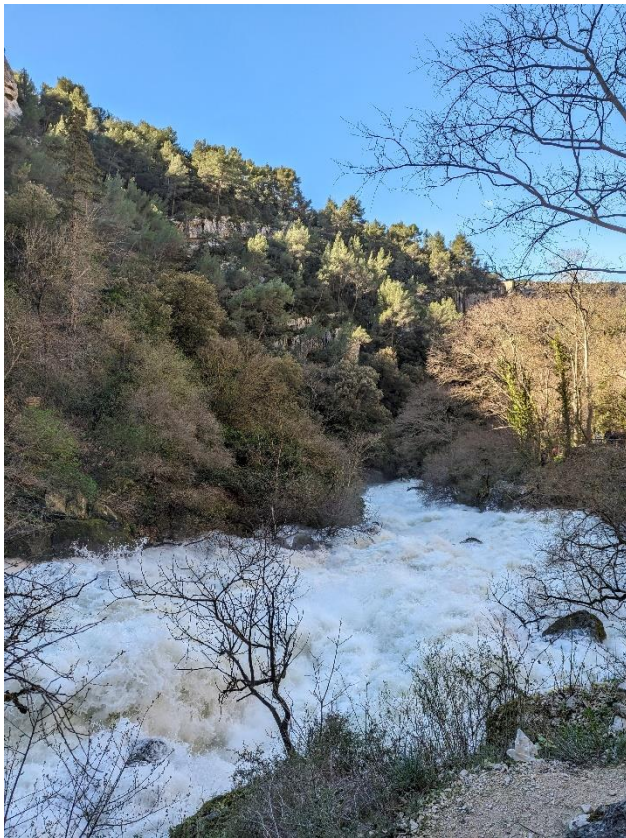
Simplified hydrogeological map - Recharge area of Fontaine de Vaucluse (from Blavoux et al., 1992, updated).



The Telenaute ROV launching, 1967. (Photo by J.Y. Cousteau. Courtesy from Syndicat Mixte du Bassin des Sorgues)



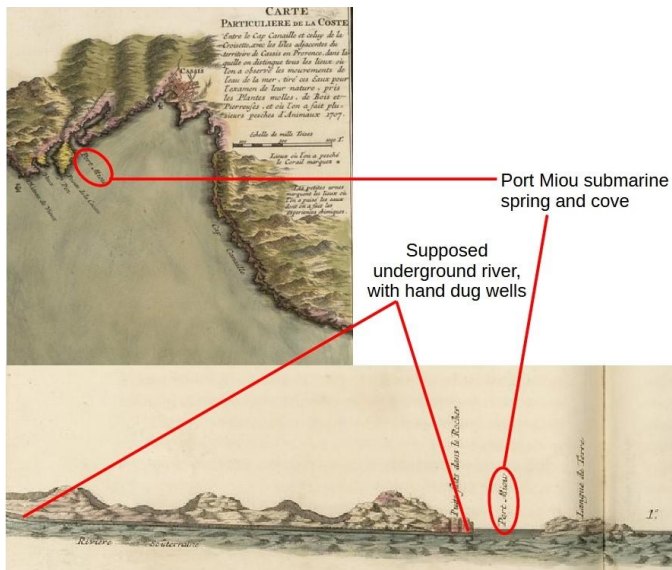
Fontaine de Vaucluse during flood (left. $58.7 \text{ m}^3/\text{s}$, photo C. Emblanch) and low flow stage (right).
 Courtesy from Syndicat Mixte du Bassin des Sorgues



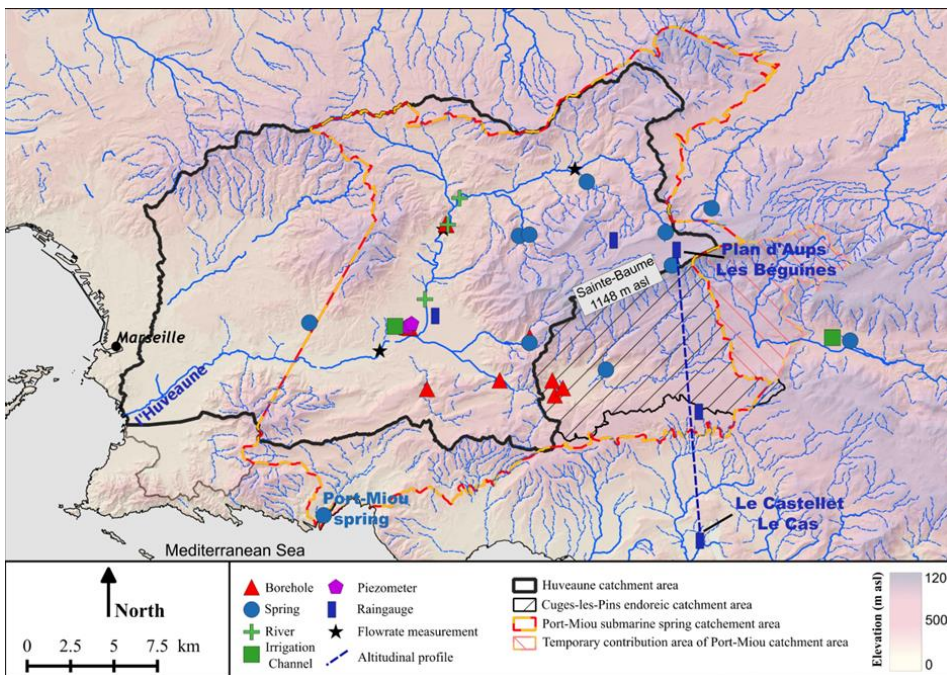
A few dozen meters down the spring, during flood ($64.5 \text{ m}^3/\text{s}$, Photo E. Simon, left);

Sketch of the Vaucluse vertical conduit, showing the progress of diving and ROV explorations (right).

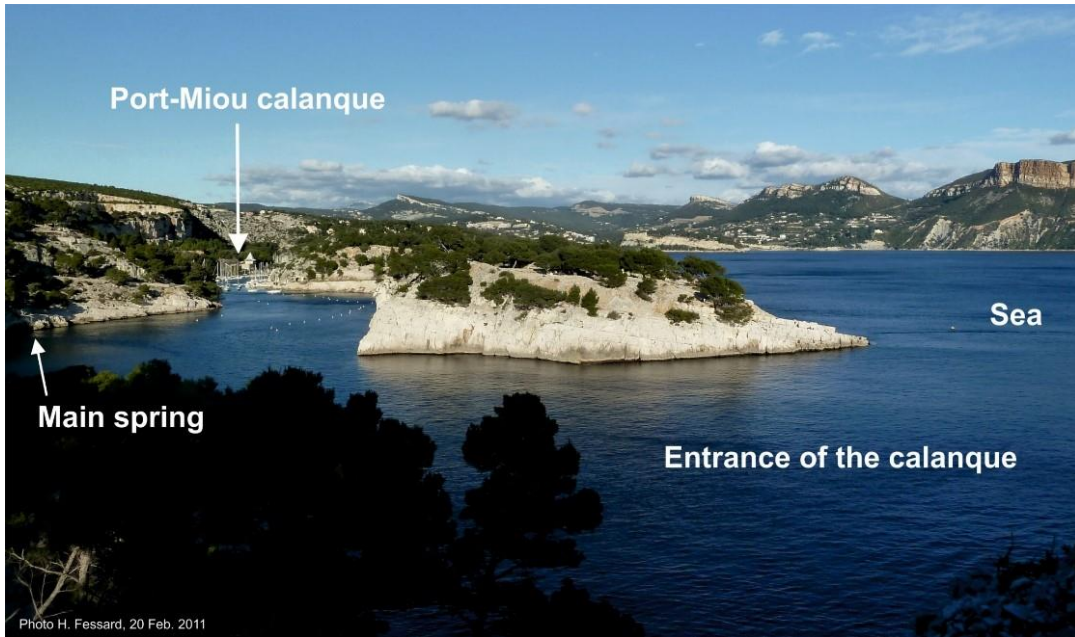
MIKAS - Port Miou



Location map and cross section of Port-Miou cove and submarine spring, according to Marsilli (1725).



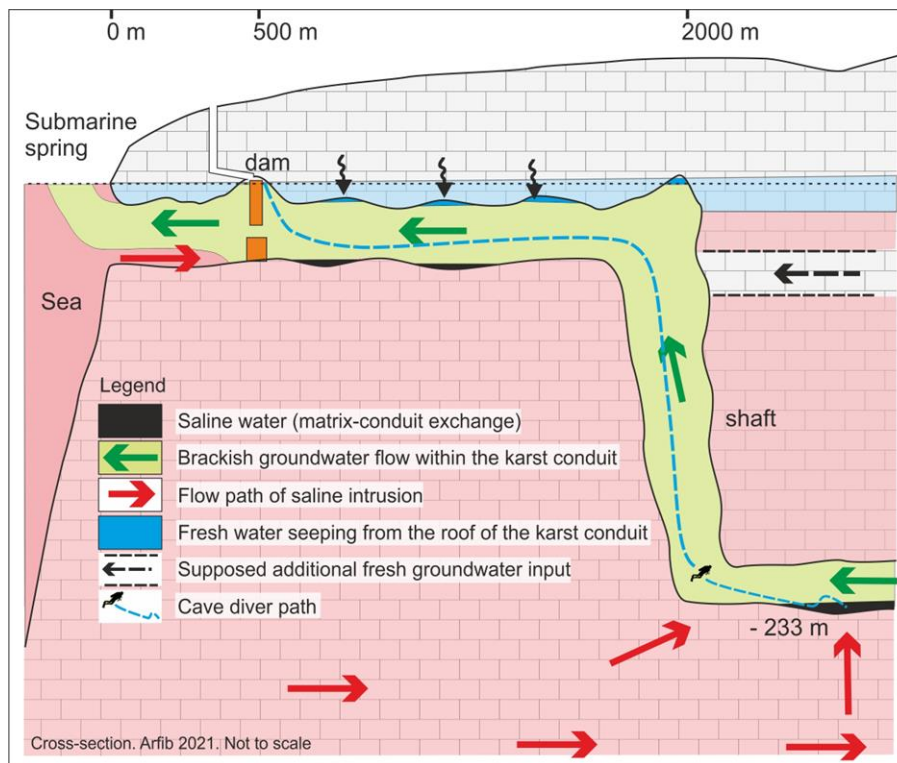
Elevation map with the contour lines of the Port-Miou recharge area and the Huveaune river watershed, and the location of regional groundwater sampling sites used by Garin, 2022.



Panoramic view of the Port-Miou calanque (Photo H. Fessard).

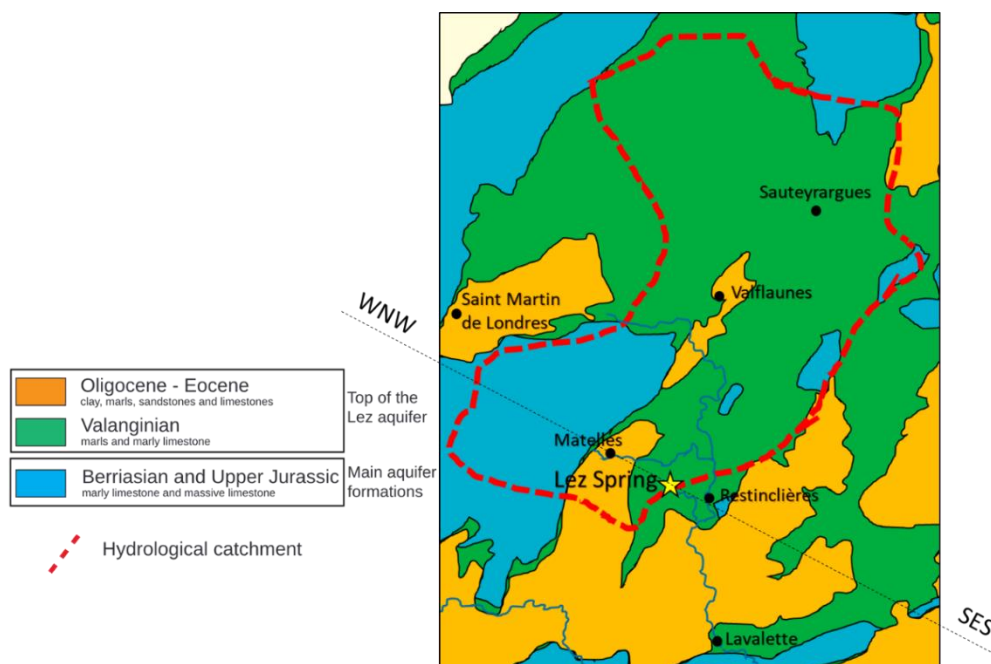


Cave divers at the Port-Miou submarine and underground dam (Photo B. Arfib).

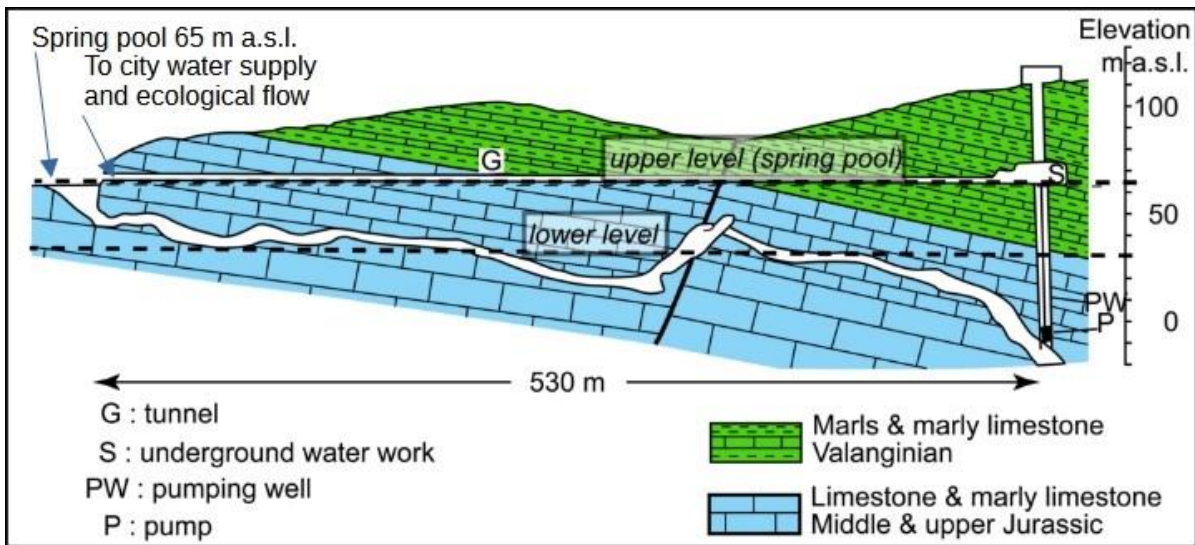


Schematic cross section of Port-Miou submarine karstic spring, explored by cave-diving up to 2000 m from the sea and 233 m below sea level. The underground submarine dam is located 500 m inland from the sea. Deep saline intrusion was revealed by continuous EC measurements at the dam and during the diving explorations (from Arfib & Mocochain, 2022).

MIKAS - Lez



2D simplified geological map of Lez Aquifer and hydrogeological basin of the Lez spring (modified after Dausse et al., 2019 and Leonardi et al., 2013)



Cross section showing the pumping station of the Lez Spring (from Bakalowicz, 2011).

Entrance to the Lez spring pumping station, in honor of J. V. Avias, professor of geology at Montpellier University and former vice-president of A.I.H. (photo M. Bakalowicz)



Lez Spring under normal flow conditions (photo H. Jourde).



Lez Spring (photo H. Jourde).

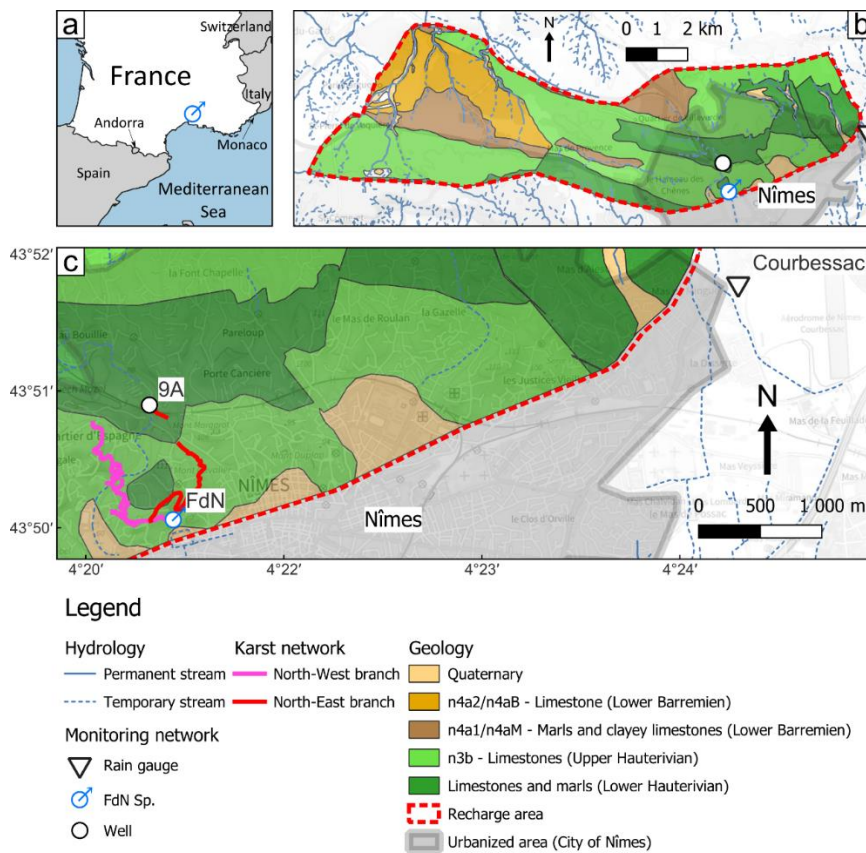


Lez Spring when the pumping flow rate at the spring exceeds the discharge rate (photo H. Jourde).

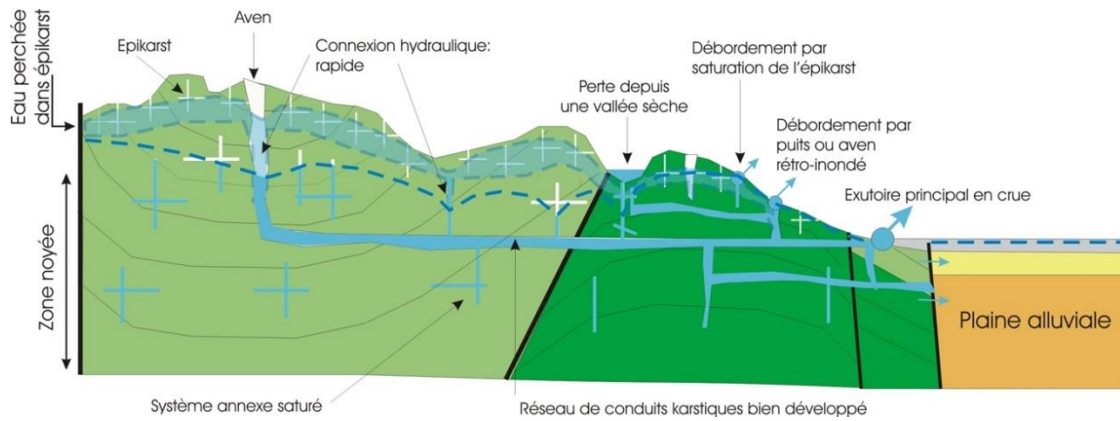


Ecological flow diverted towards the Lez river when the natural discharge becomes insufficient (photo H. Jourde).

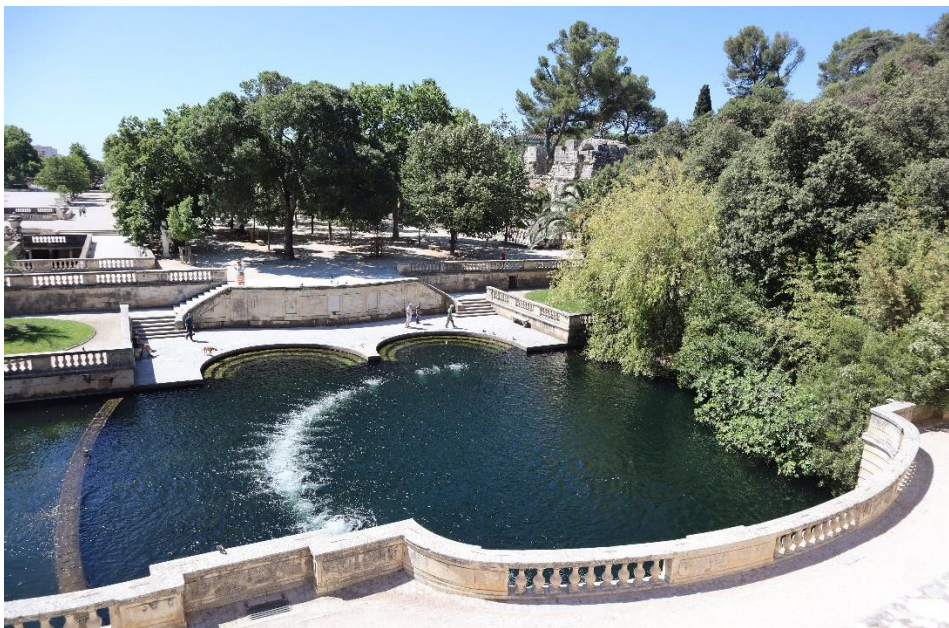
MIKAS – Fontaine de Nîmes



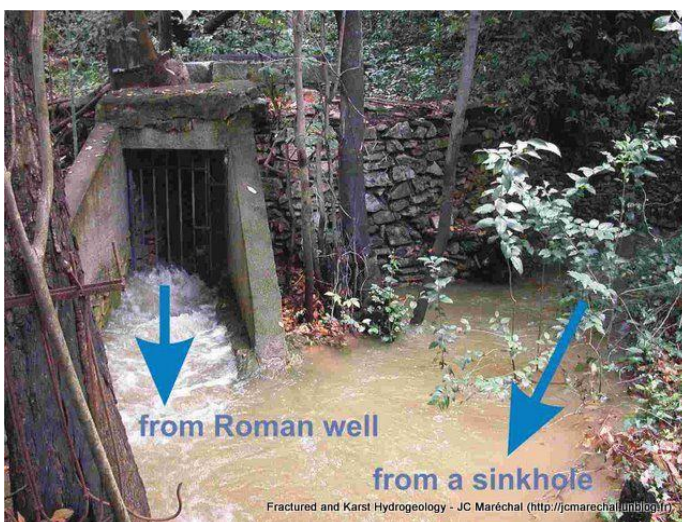
Recharge area of Fontaine de Nîmes. a): general location. b): hydrogeological context. c) urban part with the two explored branches (Bailly-Comte et al., 2023).



Hydrogeological conceptual model of Fontaine de Nîmes karst system during flood events (Maréchal et al., 2005).



Fontaine de Nîmes during low flow stage (photo BRGM).

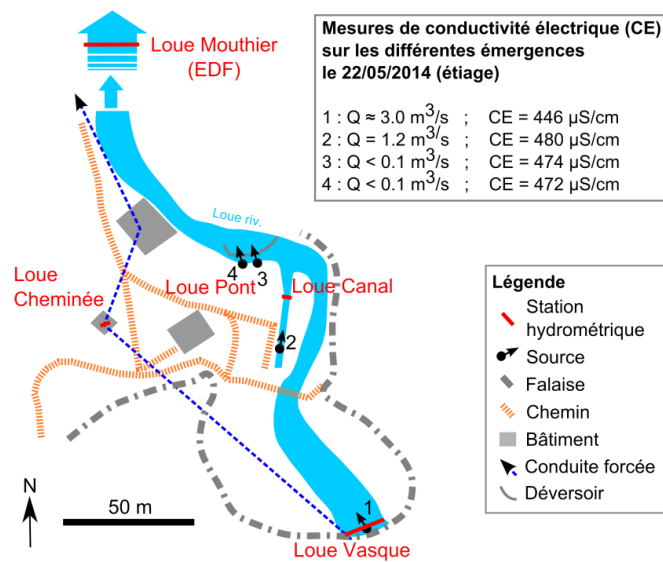


Gaffone Roman well overflowing during the 9 Sept. 2005 flood (photo G. Jouannen)

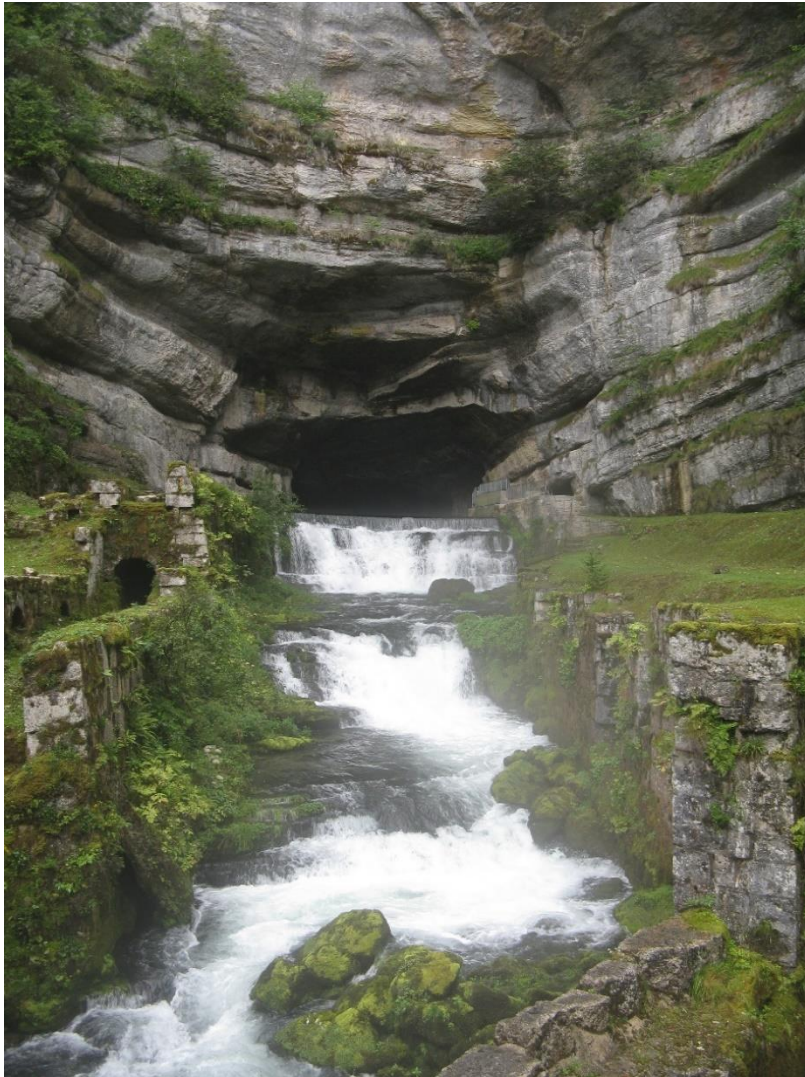


Fontaine de Nîmes during a flood (photo BRGM).

MIKAS – La Loue



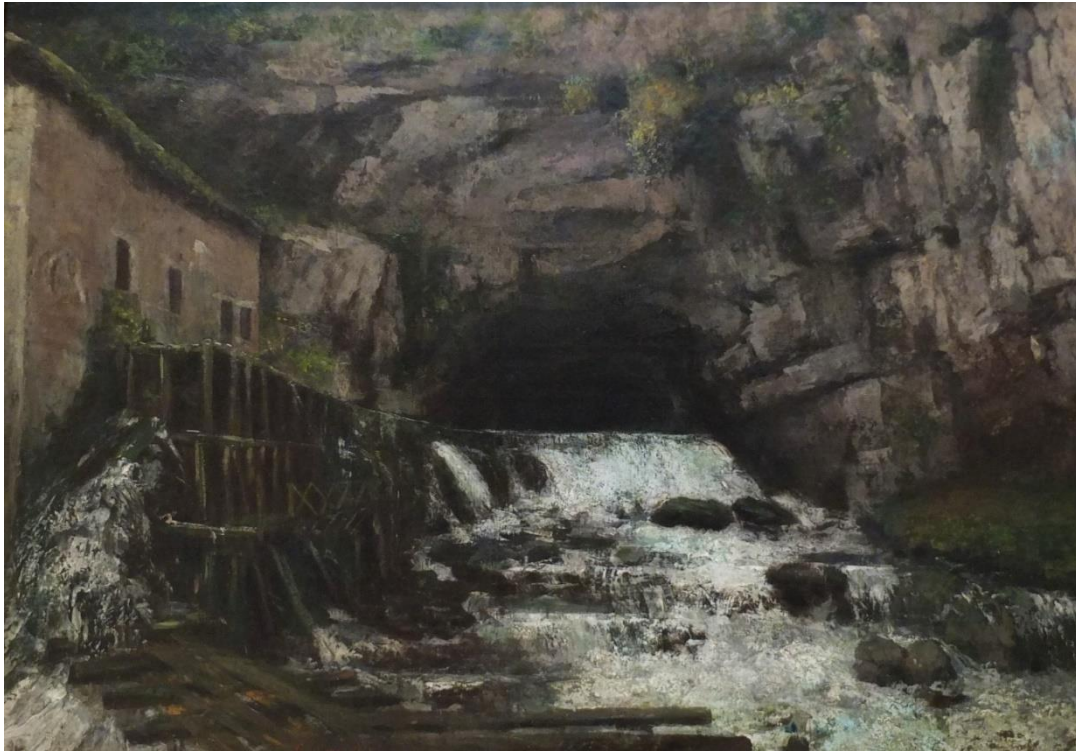
Location of the 4 springs and 3 gauging stations at the Loue River Spring site (Charlier et al., 2014).



The Loue River Spring issuing from Upper Jurassic limestones during low flow period. Photo used for front page of Neven Kresic's book "Water in Karst: Vulnerability, Management and Restoration", McGraw Hill, (photo Z. Stevanović).



The Loue River Spring during flood event season (photo J.-B. Charlier).

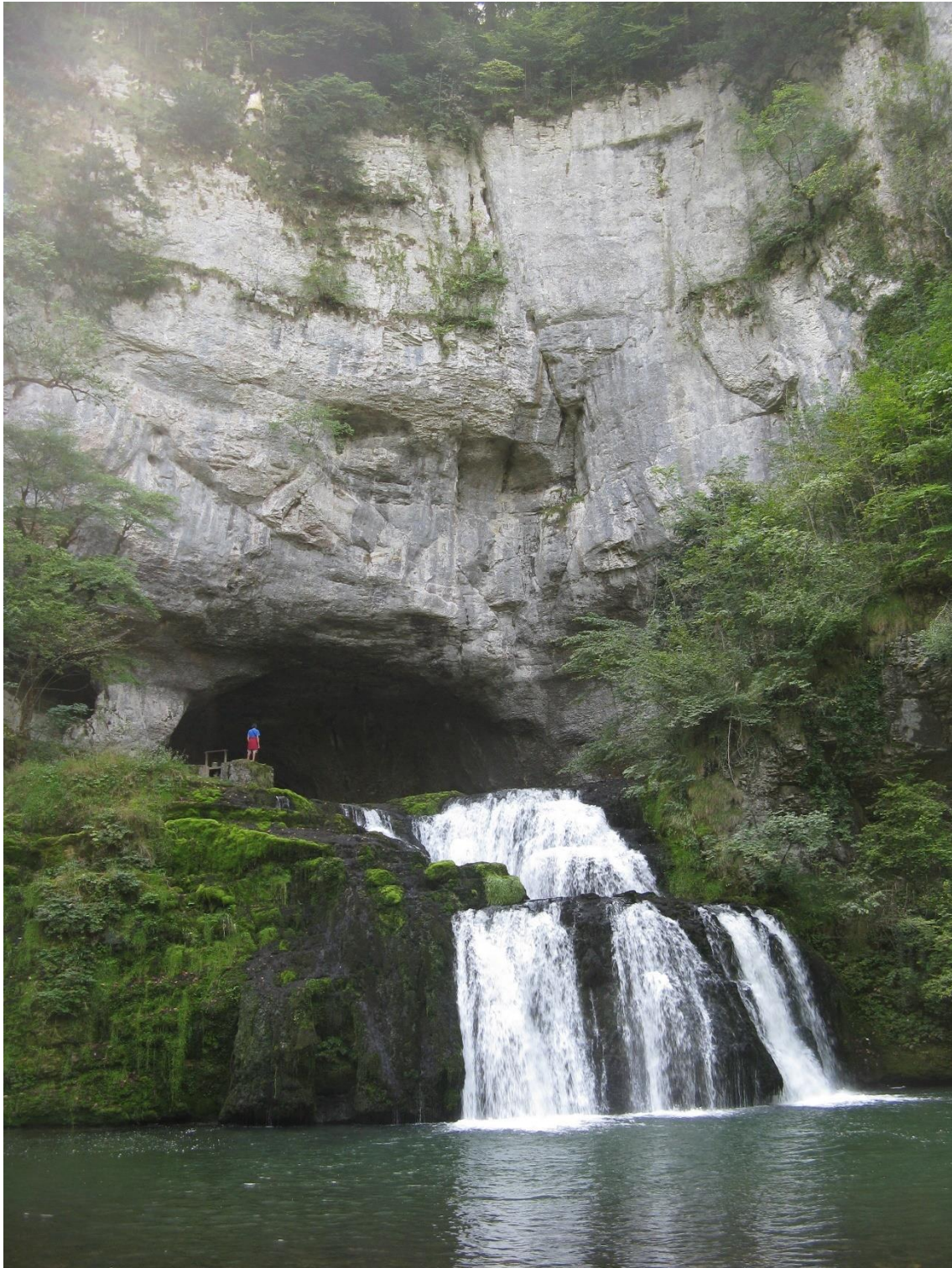


The Loue River Spring, by the famous French painter Gustave Courbet (1864), Metropolitan Museum of Art, New-York

MIKAS – Lison spring



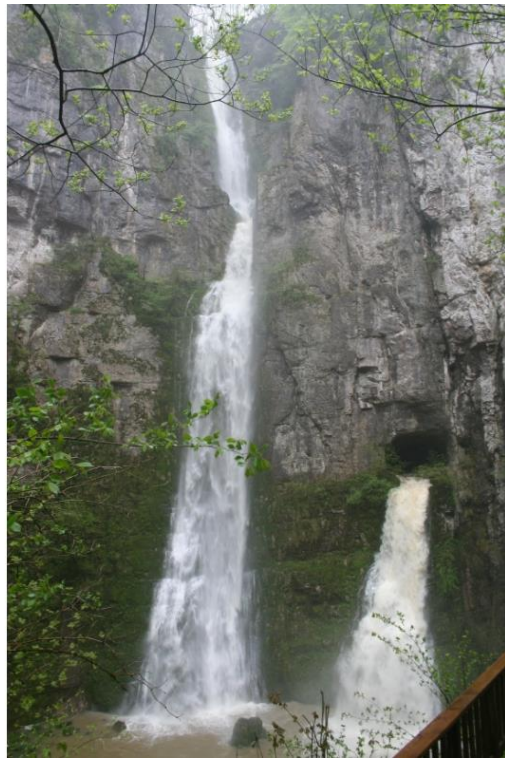
Lison Spring during high flow (photos J. Mudry).



Impressive cave orifice from which is issuing Lison Spring water. Photo used for front page of "Karst: Environment, Management of the Aquifers" of Stevanović et al., GW Project (photo by Z. Stevanović)

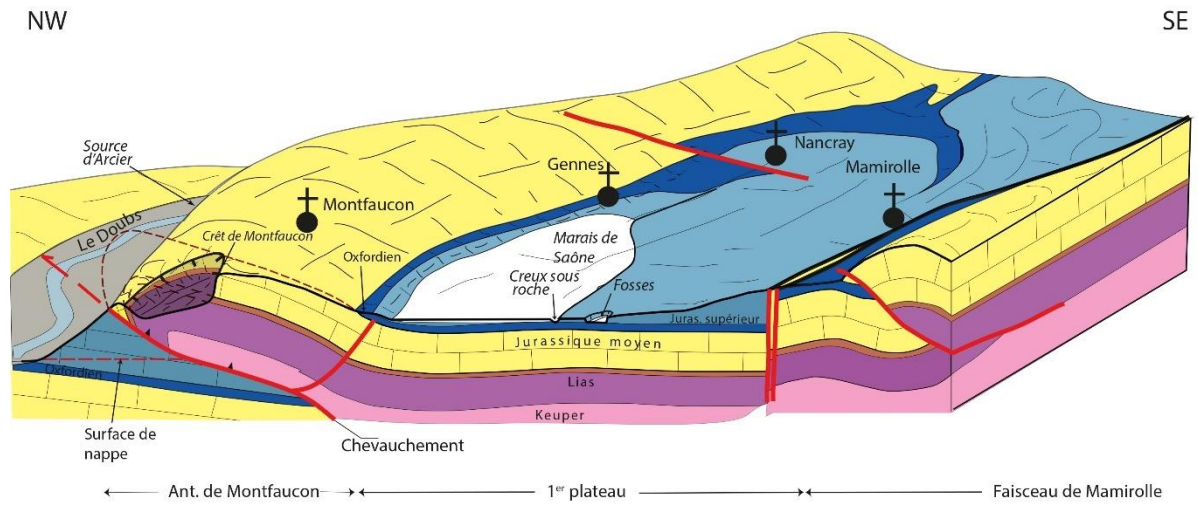


Lison Spring during low flow (photos J. Mudry).



Lison Drainage area: Sarrasine overflow spring(left), Creux Billard (right) (photos J. Mudry).

MIKAS – Arcier spring



3D geological scheme of the Marais de Saône polje, in the recharge area of Arcier Spring (Chauve & Mudry, 2024).

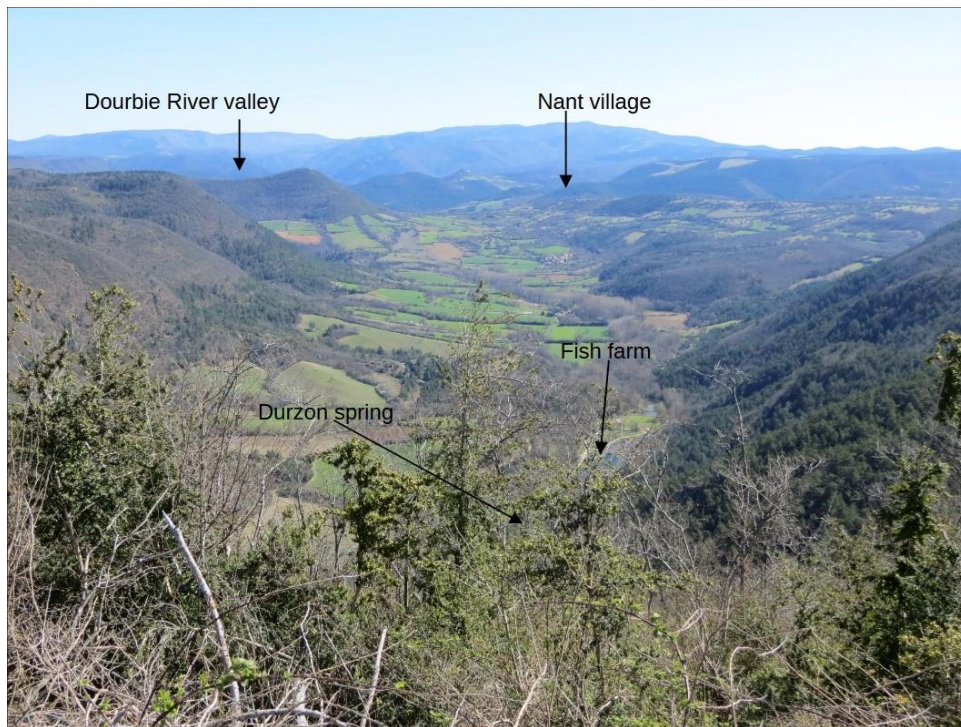


Overflow of Arcier Spring (photo P. Chauve).



Roman tapping of Arcier spring (2nd Century CE). Up: Remains of the Roman aqueduct (Chauve & Rolin, 2015). Down: Distribution basin in the city center of Besançon (photo J.-C. Barçon).

MIKAS – Durzon spring



Valley of the Durzon River (Photo M. Bakalowicz)

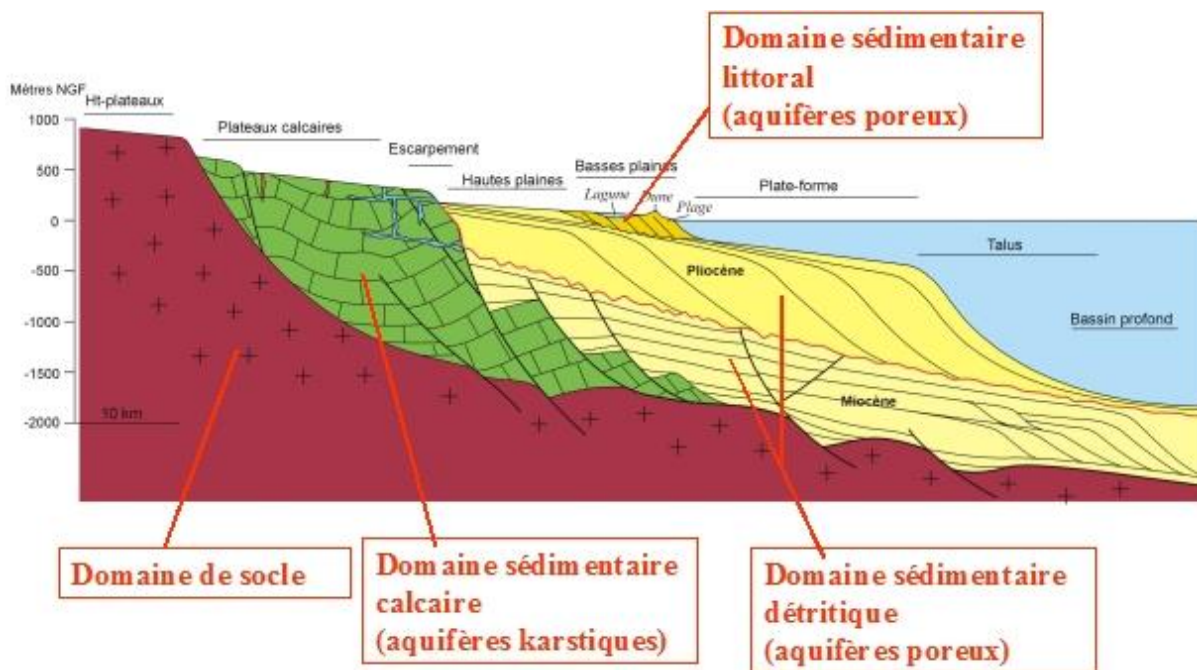


The Durzon spring in winter, looking upstream (photo L. Danneville).



The Durzon spring, looking downstream (photo M. Bakalowicz).

MIKAS – Font Estramar spring

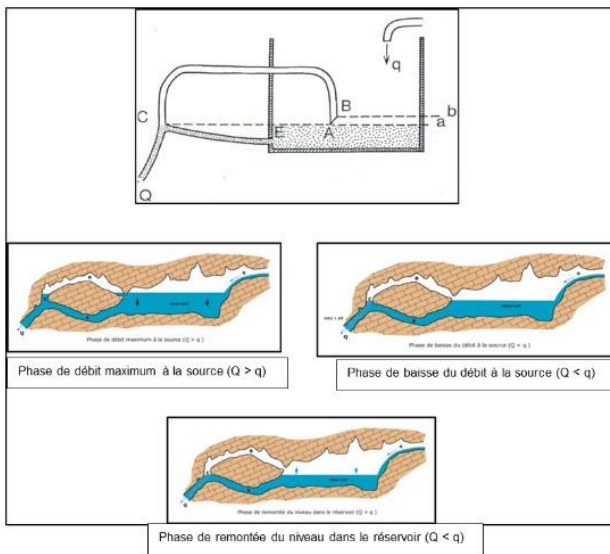


Schematic cross section of the carbonate massif with karst development at depth during the Messinian Salinity Crisis (from BRGM Report).

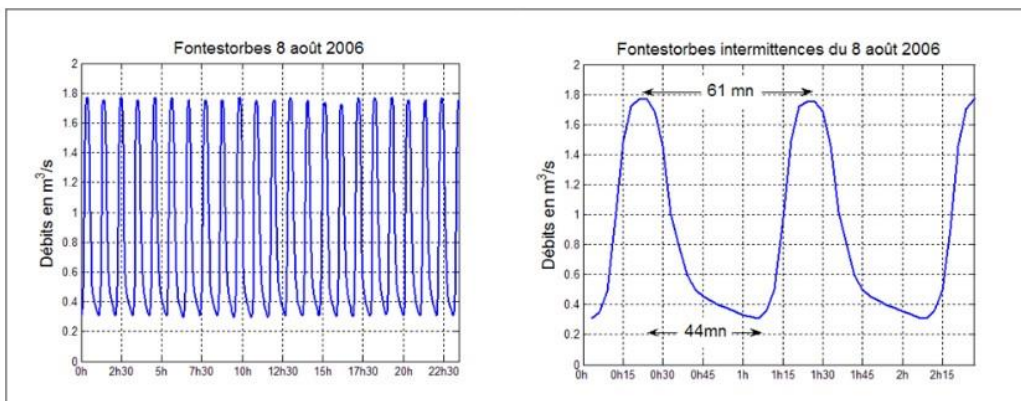


Font Estramar spring (photos, left: P. Fleury; right: BRGM).

MIKAS – Fontestorbes



Hydrogeological system producing the periodic flow, according to Mangin (1973) (from BRGM Report 2015 RP-64209-FR).

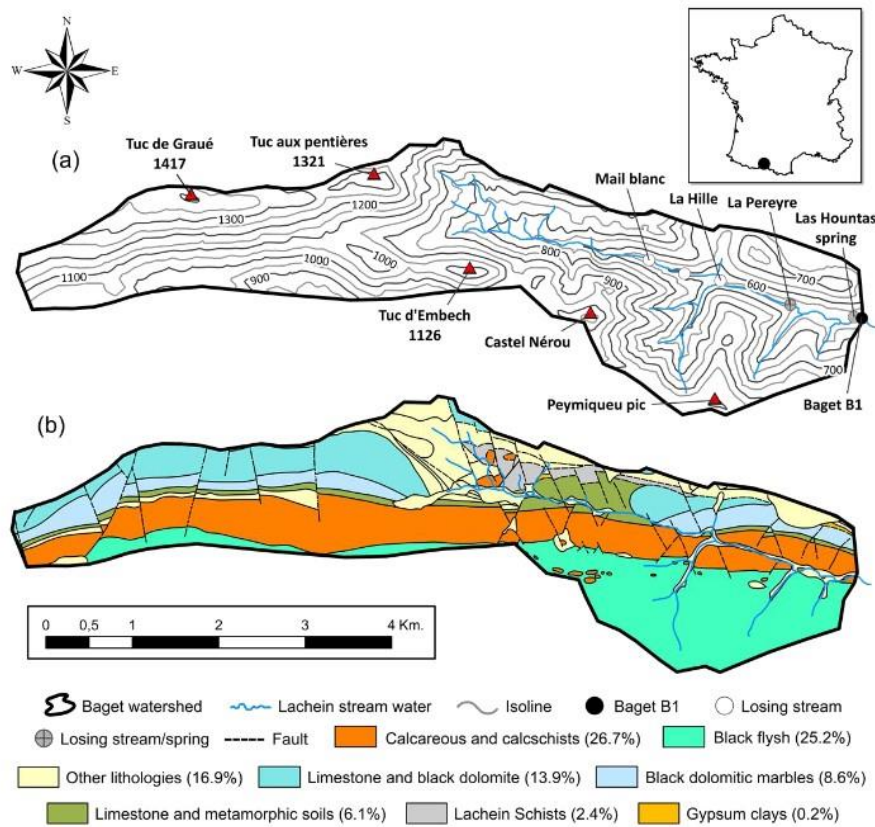


Example of spring hydrograph during intermittencies (from BRGM Report 2015 RP-64209-FR).

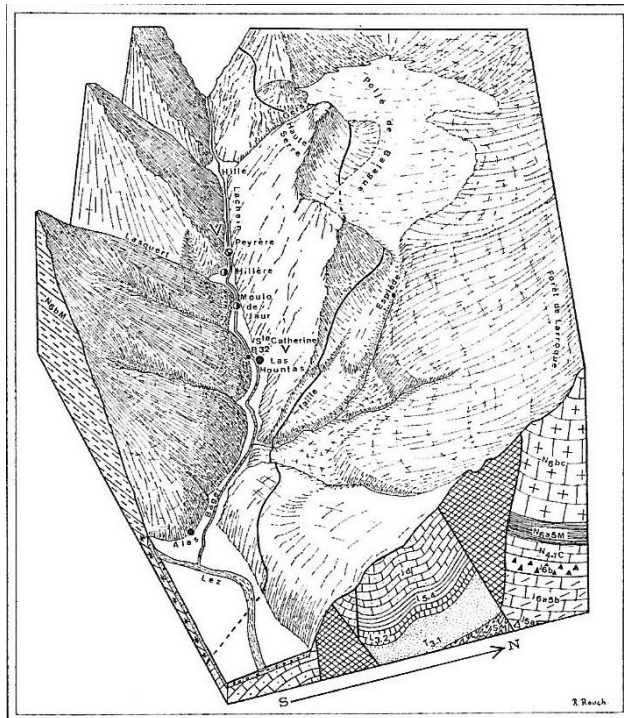


Fontestorbes spring, during low flow (photo BRGM).

MIKAS - Bates (Las Houtas)



Topographic and geological map of Baget system (Ulloa-Cedamano et al., 2020)



Geological 3D representation of the Baget karst system (from Mangin, 1976).

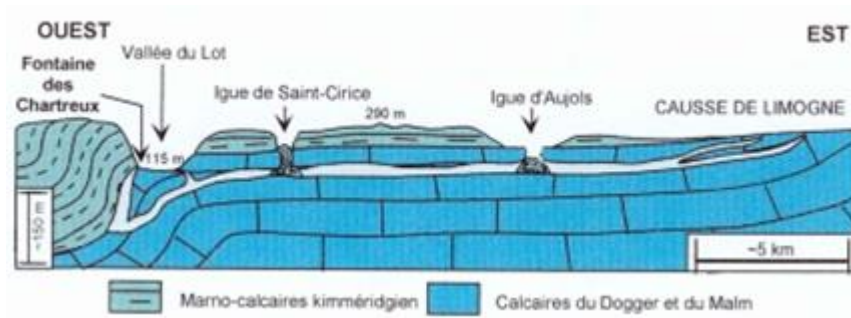


Las Hountas and the field lab, during a winter flood (photo D. Labat).

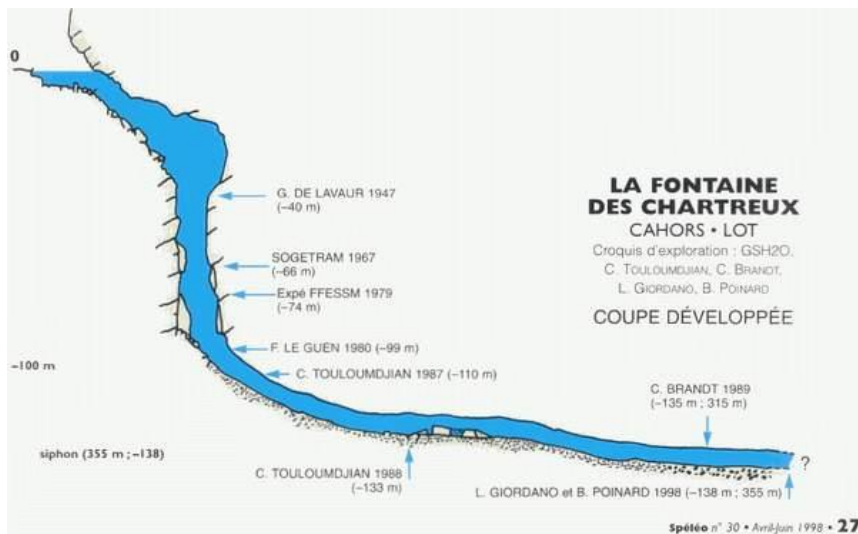


The main hydrometric station, downstream Las Hountas, controlling the total flow from the main spring and the overflow springs (photo D. Labat).

MIKAS - Fontaine des Chartreux



Hydrogeological cross section of Fontaine des Chartreux recharge area, with the assumed main conduit (from Astruc & Soulé, 1977).



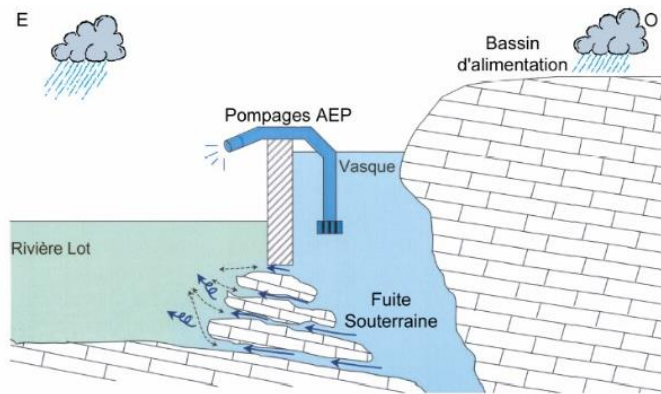
Cross section showing the Fontaine des Chartreux conduit explored by divers (from Giordano & Poinard, 1998).



General view of the Fontaine des Chartreux, on the left bank of the Lot, with the famous Valentré bridge (14th century) in Cahors (photo C. Kupiec).



The Fontaine des Chartreux flowing into the River Lot (photo C. Kupiec).



Simplified representation of Fontaine des Chartreux's functioning (Hoareau, 2005). Direct leakage into the river Lot demonstrates the difficulty of estimating flow rates using hydraulic models.

MIKAS - Touvre



Le Bouillant, the main spring of the Touvre River (photo J. Mudry)

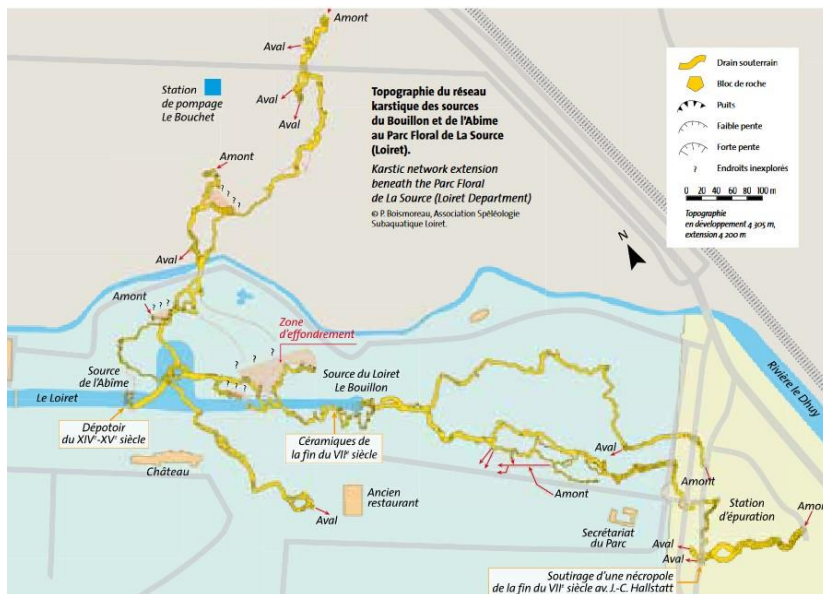


Le Bouillant spring, Touvre River and pumping station (<https://www.charentelibre.fr/charente/ruelle-sur-touvre/source-de-la-touvre-un-mystere-leve-a-120-m-de-fond-6427154.php>)

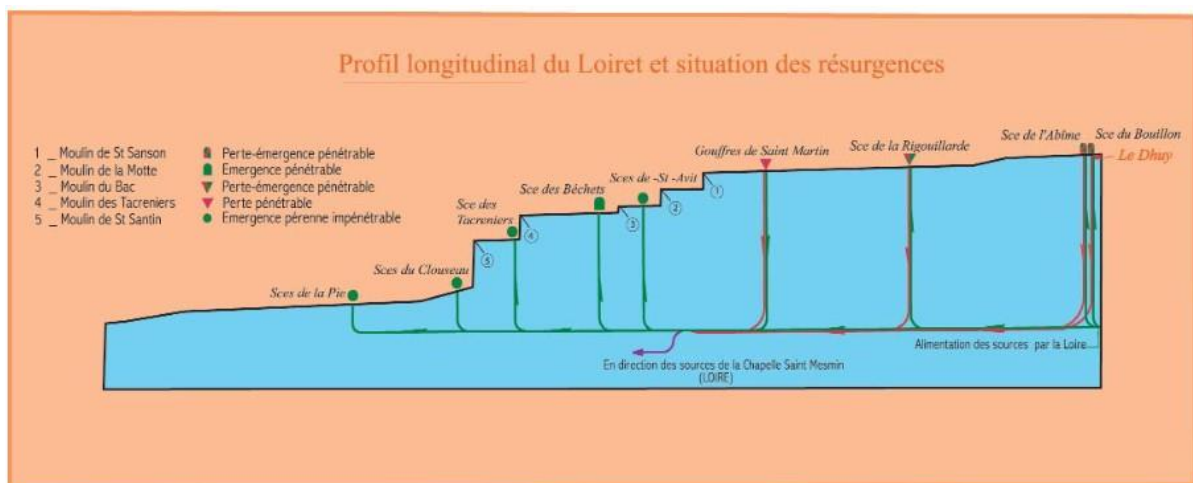


Cross-section of the Font de Lussac, one of the Touvre springs (<https://subaqua.ffessm.fr/article/les-sources-de-la-touvre/>)

MIKAS - Le Bouillon (Source of Loiret River)



Map of the karstic conduits explored by divers from Le Bouillon, Loiret River Spring (Gutierrez and Binet, 2010).



Schematic cross section showing the resurgences downstream Le Bouillon. Green arrows show upward flow; red arrows show downward flow, or inversac (extract from https://www.assises-riviere-loiret.fr/images/DIAGNOSTIC/Fiche_alimentation.pdf, based on Lepiller, 2006).



View of Loiret Spring (19th century print,
https://www.wikiwand.com/fr/Fichier:La_source_du_Loiret_estampe_1.jpg)

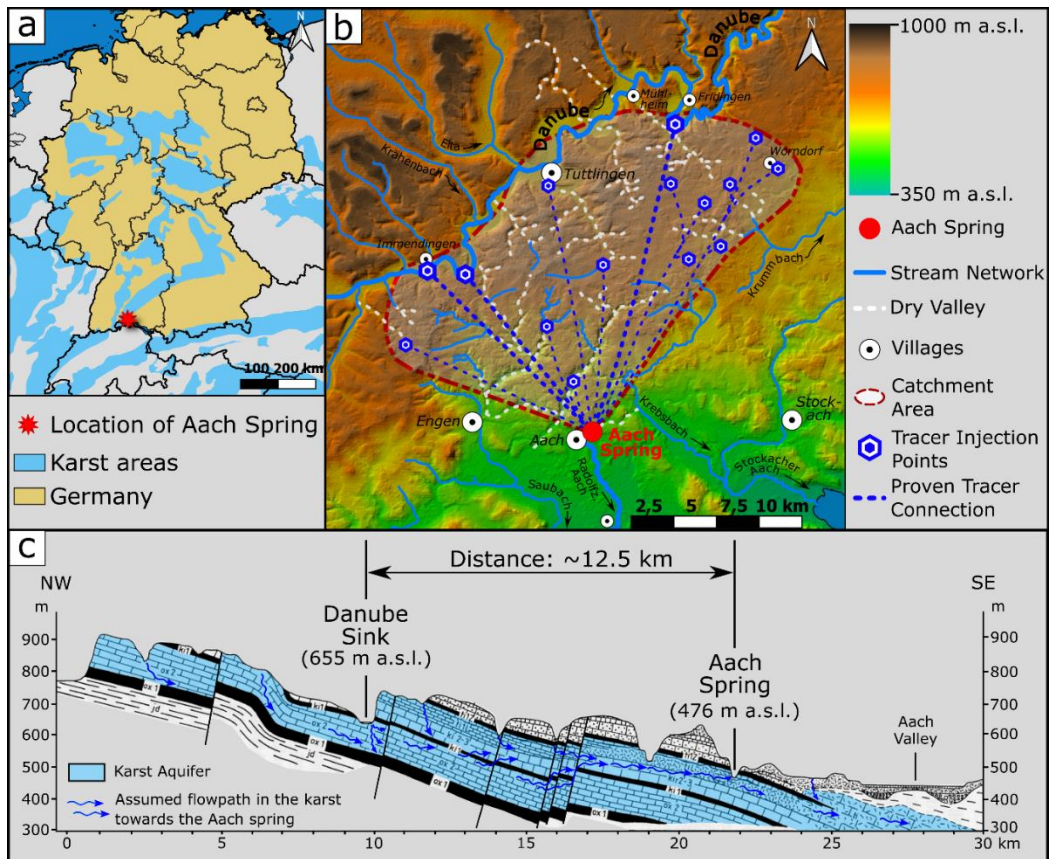


Le Bouillon, spring of Loiret River (<https://www.parcfloraldelasource.com/les-jardins/la-source/>)

Germany



MIKAS – Aach spring



a) Location of the Aach spring in Southern Germany, shown on the World Karst Aquifer Map; b) Schematic illustration of the Danube-Aach system with the major sink points and tracer connections; c) Hydrogeologic cross-section from the principal sink of the Danube at 655 m asl to the Aach spring in 12.5 km distance at 476 m asl, resulting in a hydraulic gradient of 1.44% (graphics: Leon Seehrich, modified after Hötzl 1996).



The Aach spring outlet (photo: N. Goldscheider).

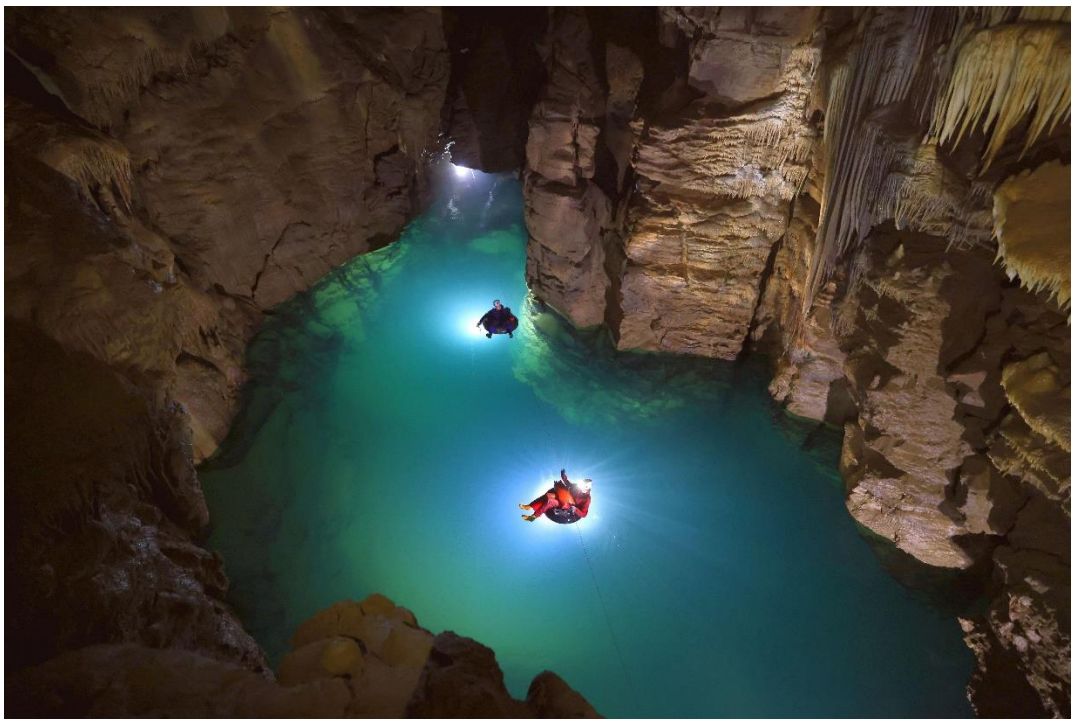


Principal sink of the Danube near Immendingen, where the river sinks partly or completely underground, during conditions of complete sinking that occur about 155 days per year (photo: N. Goldscheider).

MIKAS – Blautopf

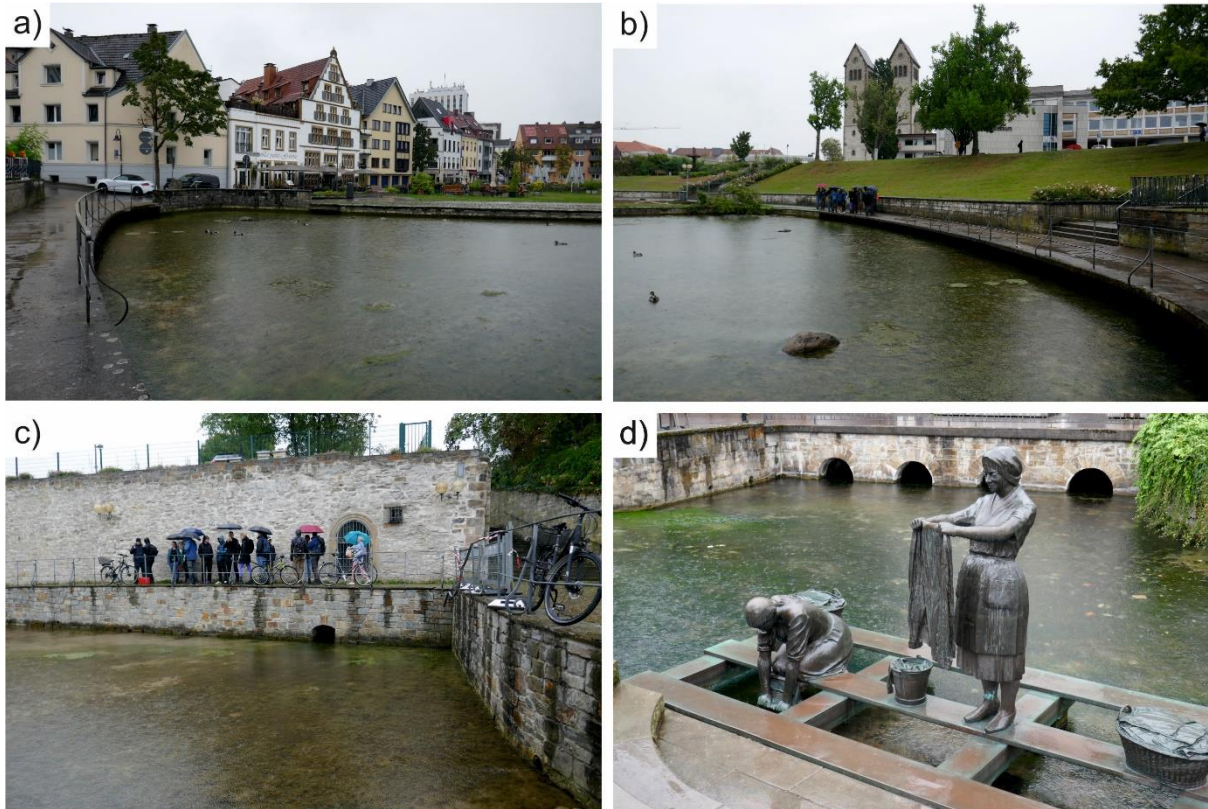


The Blautopf (= Blue Pot) spring, which is famous for its deep water, blue colour and beauty (photo: N. Goldscheider).



Lake in "Mörikedom", named after the German poet Eduard Mörike (1804-1875) and located in the heart of Blauhöhle (Blue Cave) (photo: Andreas Kücha, ARGE Blautopf).

MIKAS – Pader springs



Impressions of the Pader Springs (on a rainy day): a) Börnepader, b) Börnepader with Cathedral in the background, c) Rothobornpader with spring orifice emerging from the cellar of the ancient imperial palace, d) Warme Pader, with sculpture illustrating the former utilization of this warm spring (photos: N. Goldscheider).

Greece



MIKAS - Almyros



Almyros spring, Crete Island, Greece (Photo by V. Perleros)



Almyros dam, Crete Island, Greece (provided by V. Perleros)



Overview of Almyros dam, Crete Island, Greece (Photo by H. Bouloukakis)



Old watermill (photo from 1957)

MIKAS - Aggitis river Springs (Maaras cave)



Photo from Aggitis River spring



Photo from the Maaras cave

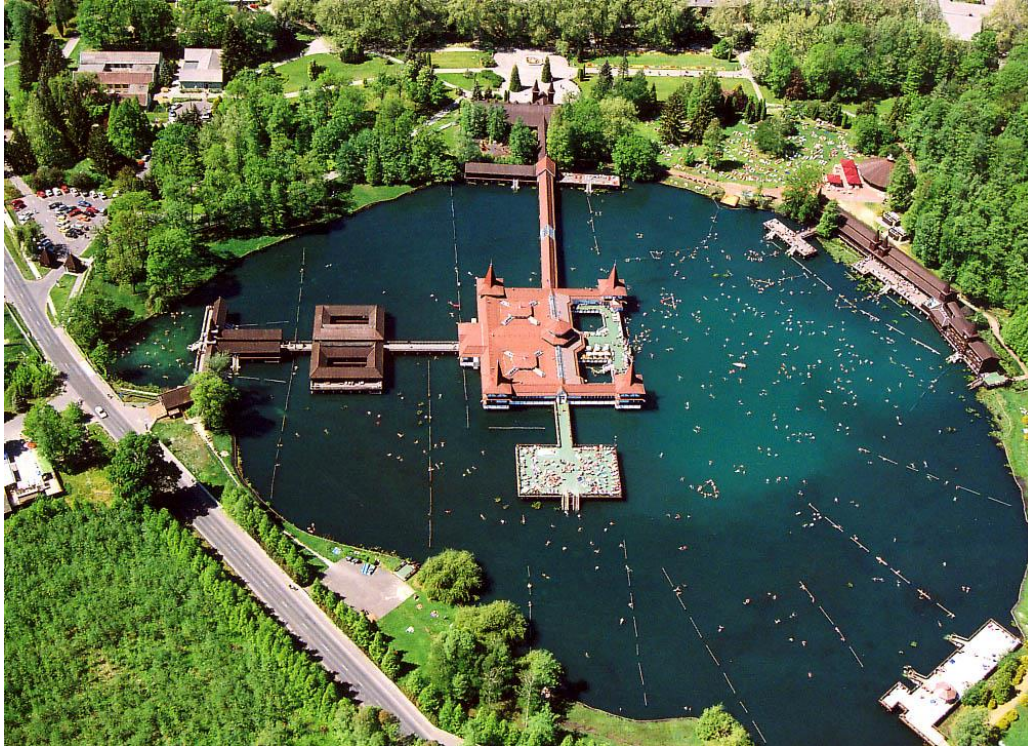


Pumping system in Maaras Cave entrance / Aggitis Spring

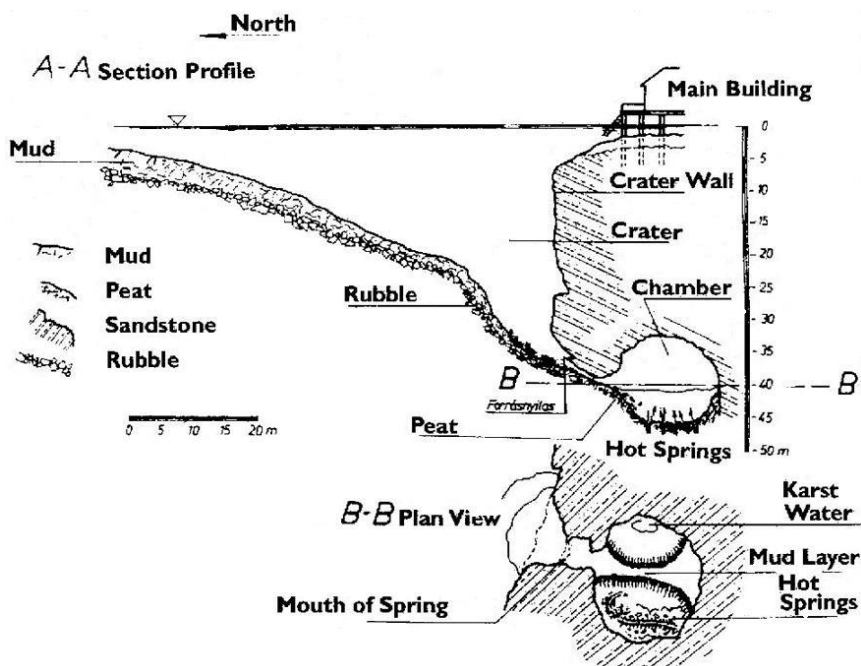
Hungary



MIKAS - Heviz



Thermal Lake Hévíz (source: Civertan Grafikai Stúdió)

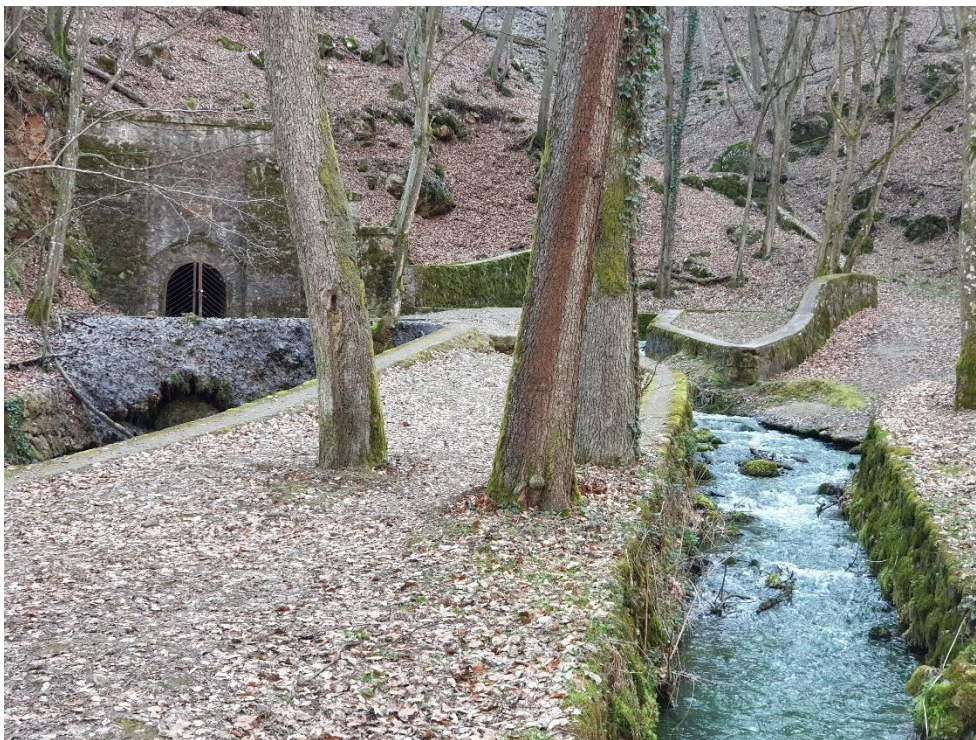


Section of Hévíz Lake and Amphora spring cave (Amphora Divers Group, 1976)



Spring cave (photo by Dénes Szieberth)

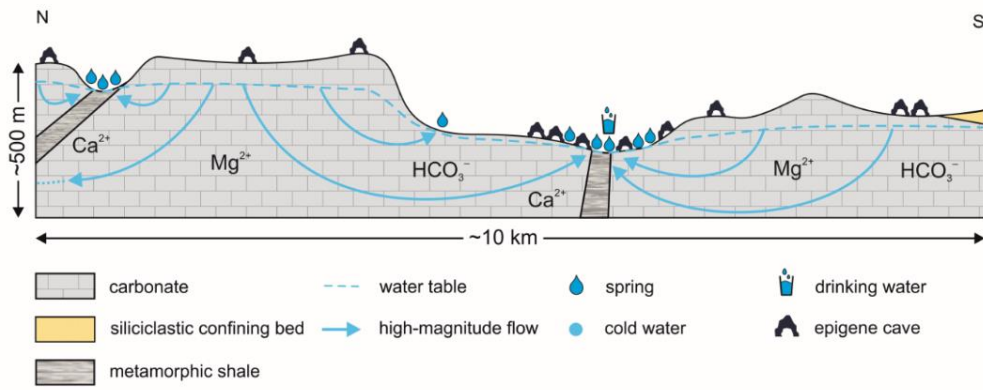
MIKAS - Jósva spring



Jósva Spring at normal flow rate (photo by Péter Gruber)



Jósua Spring in flood conditions (photo by Péter Gruber)



Generalized hydrogeological cross-section for the plateau of the Aggtelek Karst (Mádl-Szőnyi et al., 2022)

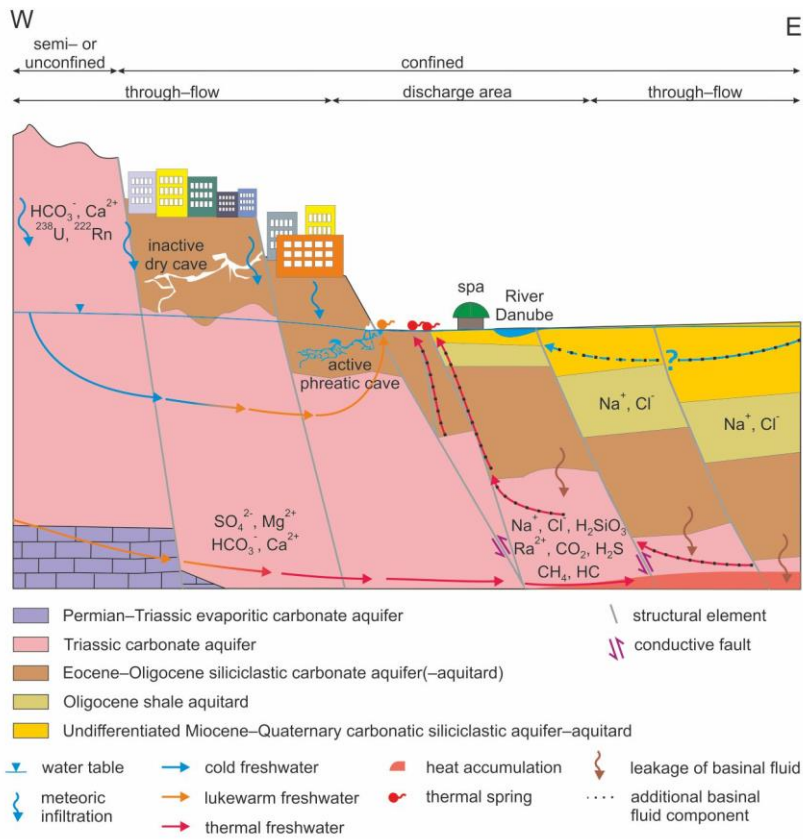
MIKAS - Boltív Spring



Boltív Spring and Malom lake (photo source: <https://hu.wikipedia.org>)

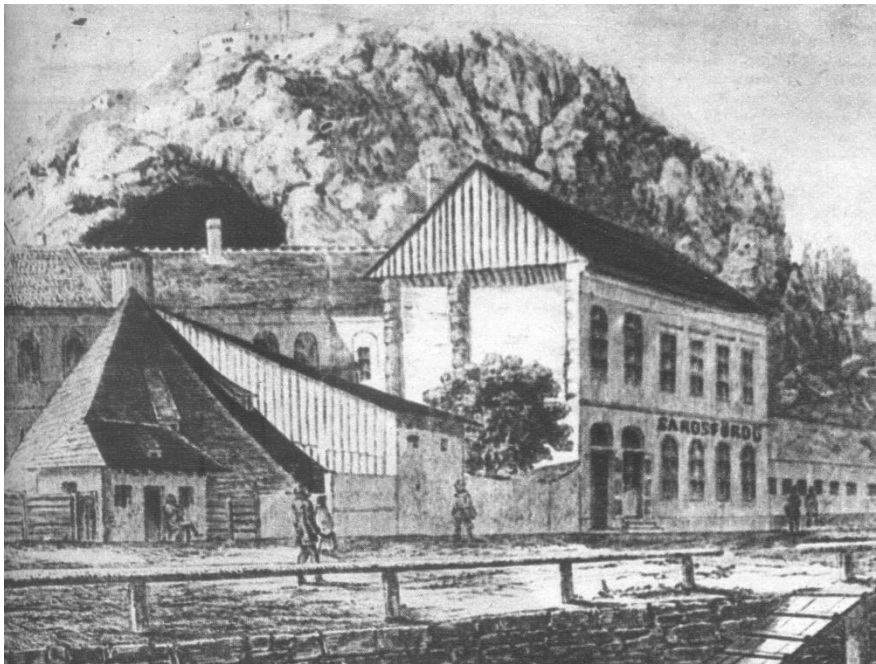


Molnár János Cave (photo by József Spanyol)

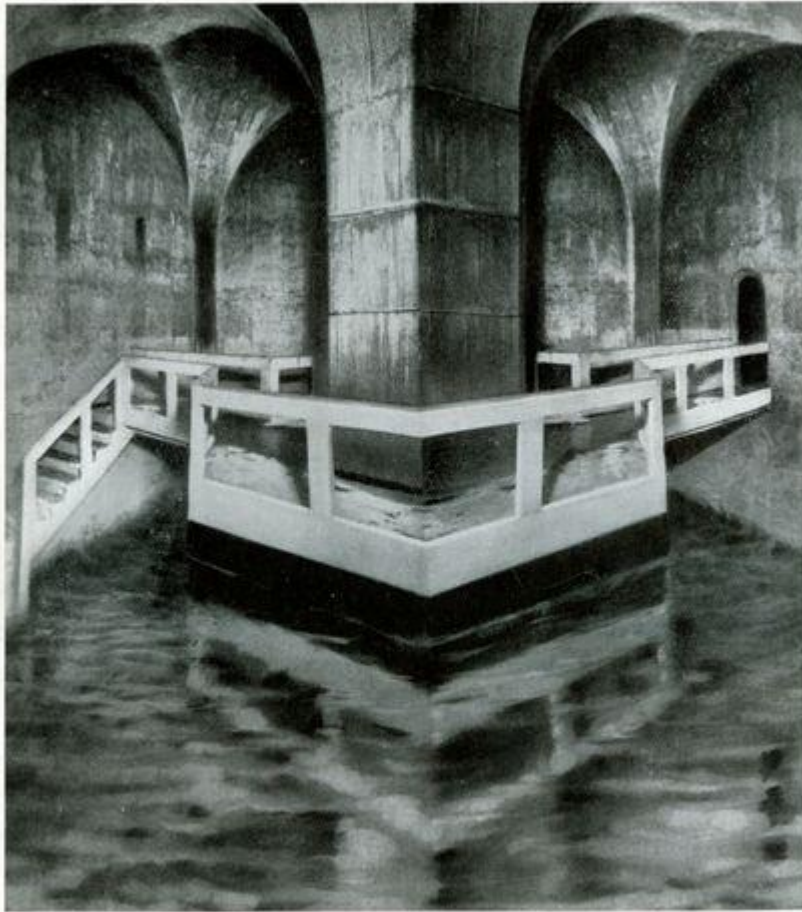


Conceptual flow model for the Rose Hill discharge area (after Erőss, 2010, modified)

MIKAS - Spring of the Gellért Spa (Ósforrás)

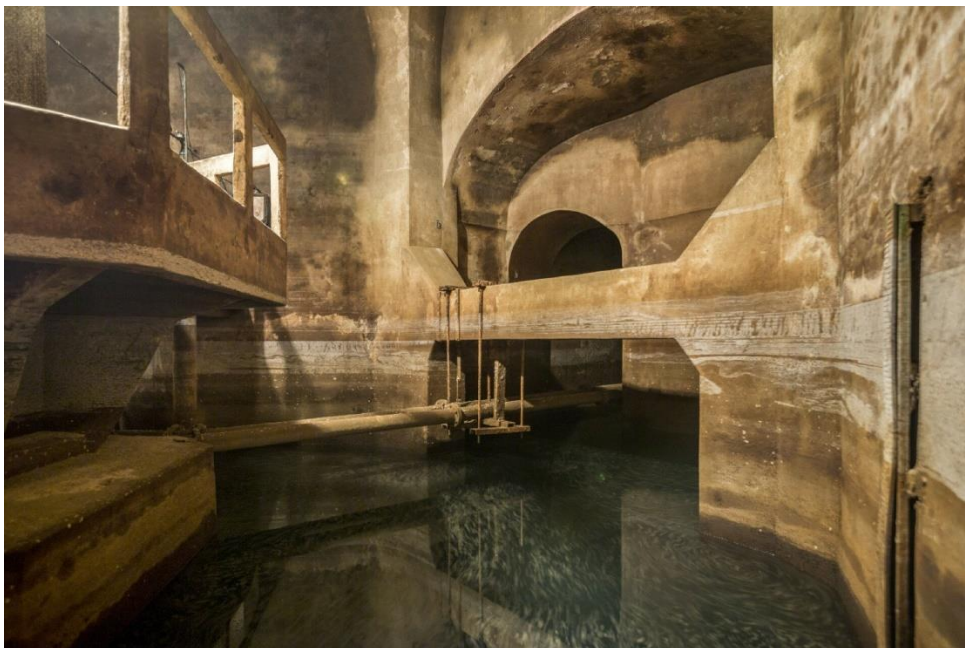


The so called "Muddy Bath", the ancestor of the Gellért Spa in the 19th century (from the archive of I. Dobos)



A régi Sárosfürdő egykori közös medencéje, amely még valószínűleg a török hódoltság elejéről való építkezés, — a közepén látható támasztóoszloppal való megerősítése és beboltozása után. Jelenleg ide vezetik a Szent Gellért-gyógyfürdő forrásainak vizét

Sketch of the Ósforrás spring



Spring of the Gellért Spa

Ireland



MIKAS – Cong spring



*Drone image that showing the spring complex. The blue star shows the Hatchery Spring branch
(Photo by David Drew)*



Cong Hatchery Spring (the largest) (Photo by John Gunn)

MIKAS - Shannon Pot



Shannon Pot looking towards outlet channel (photo by John Gunn)

NIKAS - Ogulla Spring



Ogulla holly well (spring) (source: <https://pilgrimagemedievalireland.com/2012/06/23/ogulla-holy-well/>)

Latvia



MIKAS - Bārbeles sulfur spring

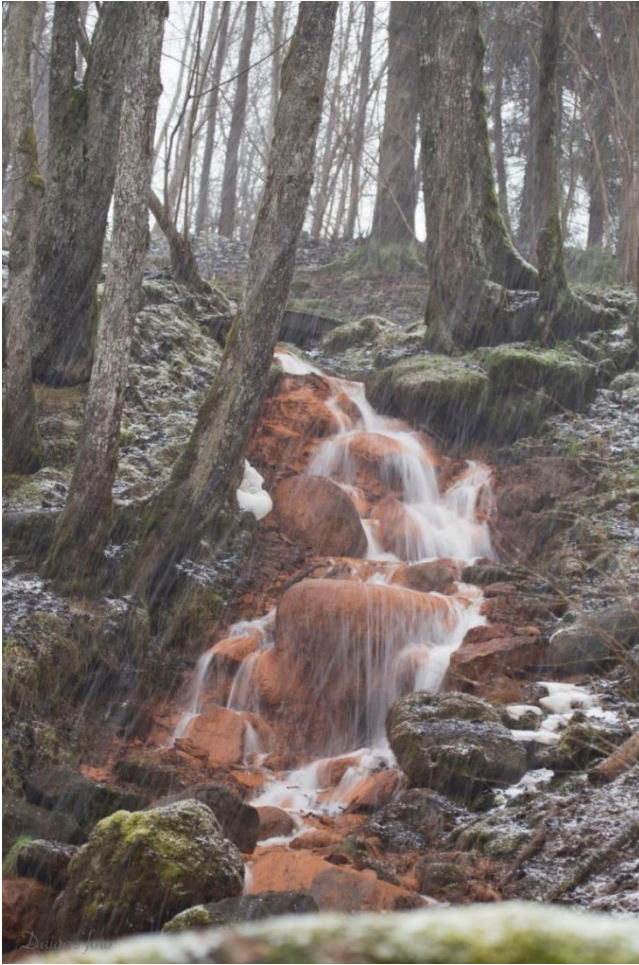


Bārbeles spring (June 2020; Photo by Jānis Bikše)



Bārbeles spring, downstream view (January 2024; Photo by Jānis Bikše)

NIKAS – Dāvida mill springs (Dāvida dzirnavu avoti)



Dāvida mill springs (February 2016; Photo by Zigmunds Kazanovskis)

NIKAS – Ķemeri sulfur spring “Ķirzaciņa” (“Little Lizard”) (Ķemeru sēravots “Ķirzaciņa”)



Ķemeri sulfur spring “Ķirzaciņa” (September 2021; Photo by Jānis Bikše)



Pavilion of the \u0160 emeri sulfur spring “ \u0160 irzaci\u0144a” (September 2021; Photo by J\u0101nis Bik\u0161e)

NIKAS – Kul\u0161\u0113nu sulfur spring (Kul\u0161\u0113nu s\u0113ravots)



Kul\u0161\u0113nu sulfur spring (September 2021; Photo by J\u0101nis Bik\u0161e)

NIKAS – Mežmuižas springs (Mežmuižas avoti)



A spring stream connecting spring outflow to the pond (October 2023; Photo by Jānis Bikše)

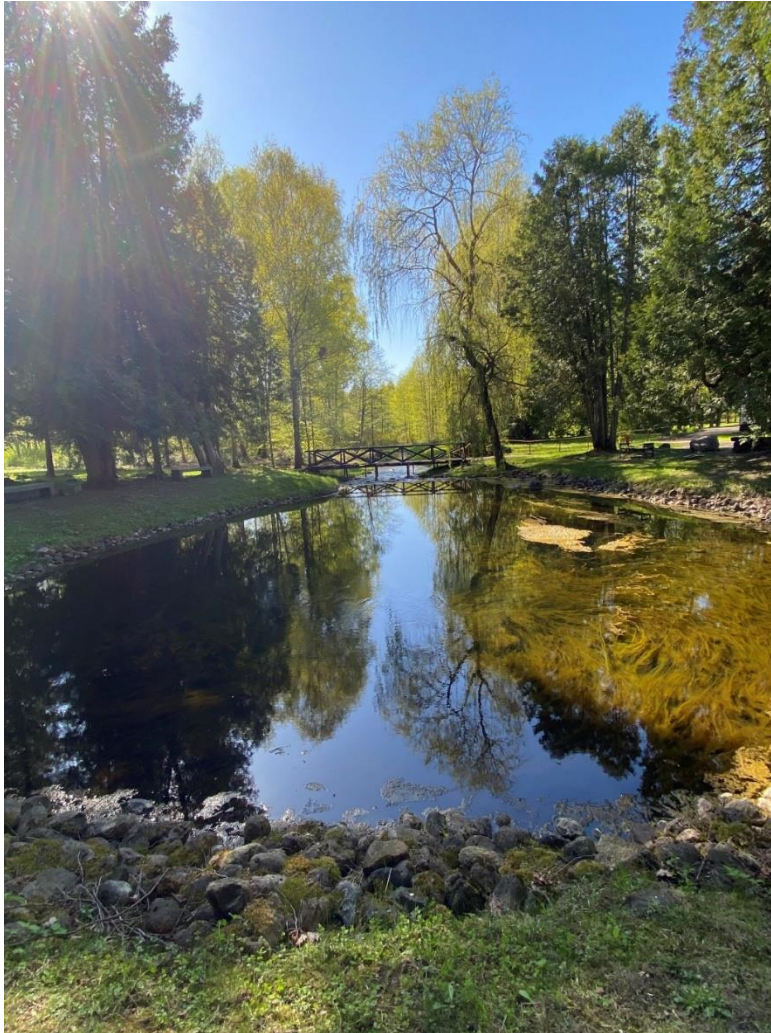


A pond where spring water is collected (October 2023; Photo by Jānis Bikše)

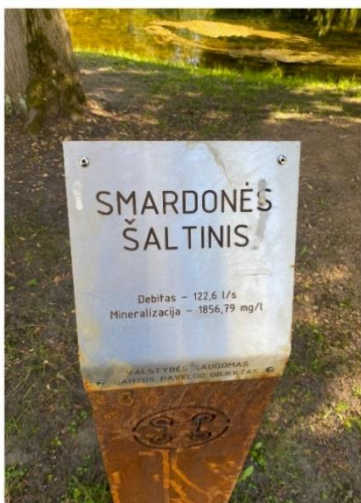
Lithuania



MIKAS – Smardonės



Spring at the river bank (late spring) (Photo by Vytautas Samalvičius, 07/05/2023).



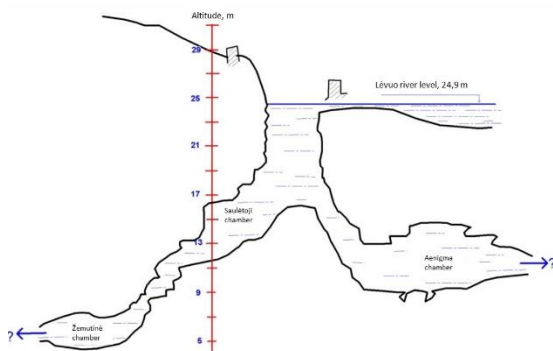
Spring name tablet, info dashboard, and the memorial for Theodor Grottuss, a world-famous chemist who was the first to analyze and study Smardonės spring water

NIKAS – Žalsvasis



Spring at the river bank (late summer – early fall)

<https://www.pamatyklietuvoje.lt/details/zalsvasis-saltinis/3838> .



Spring cross section. Data is obtained during the technical diving expeditions. Three known chambers are observed below the spring and Lėvuo river.



Spring name tablet, info dashboard, and carved wood statue at the entrance

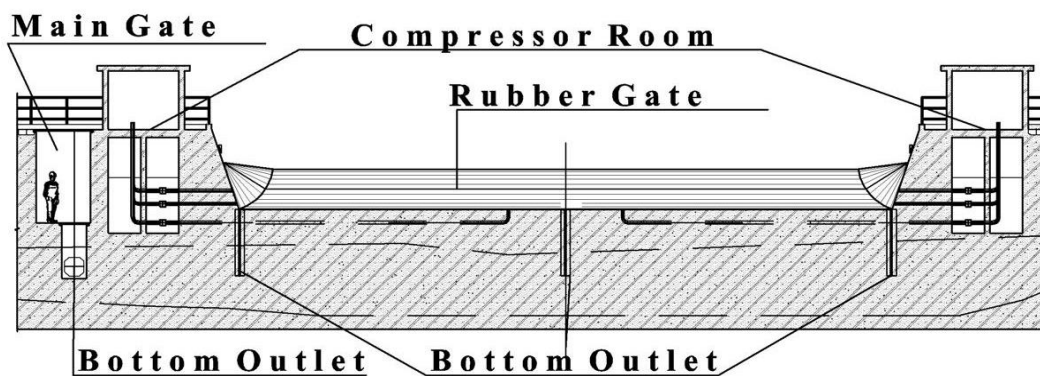
Montenegro



MIKAS – Bolje Sestre



Sublacustrine spring (vrulja) Bolje Sestre, before and after tapping (Photos by Zoran Stevanović)

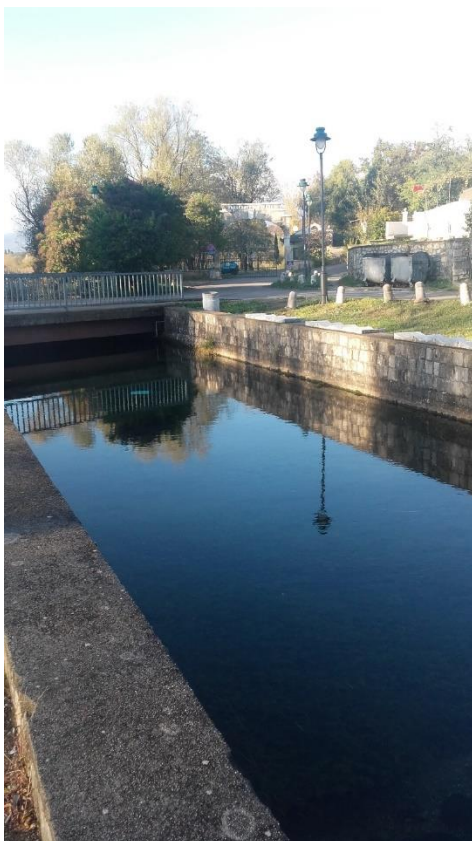


Bolje Sestre intake - Elliptical coffer dam and weir with movable rubber gate

MIKAS – Mareza



*Spring site and wetland
(source: Wikipedia)*



Channelled overflow spring water (Photo by Zoran Stevanović)

NIKAS – Alipašini izvori



Alipašini springs (Photo by Zoran Stevanović)

NIKAS – Bistica spring

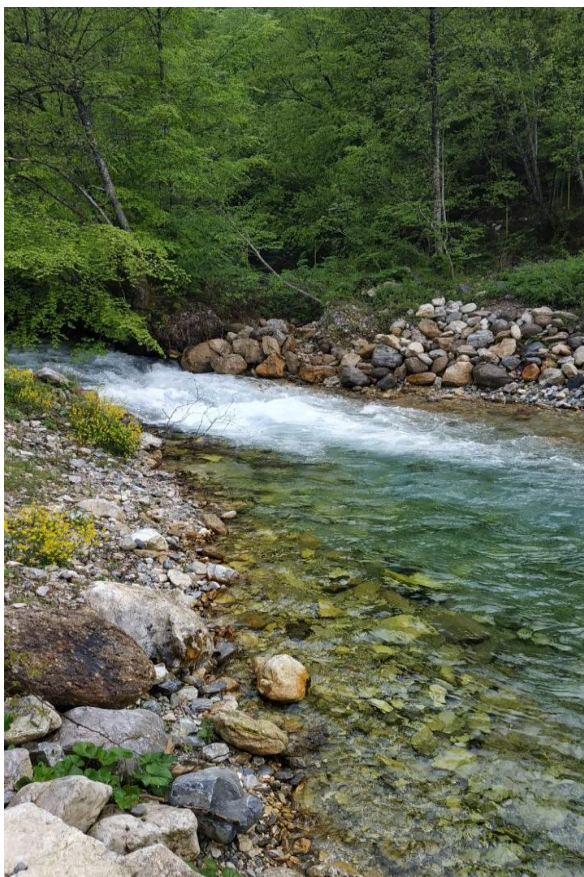


Photo of the Bistrice Spring (courtesy of IHMS, 2019)

NIKAS – Glava Zete



Photo of the Glava Zete Spring (Photo by Milan Radulović)

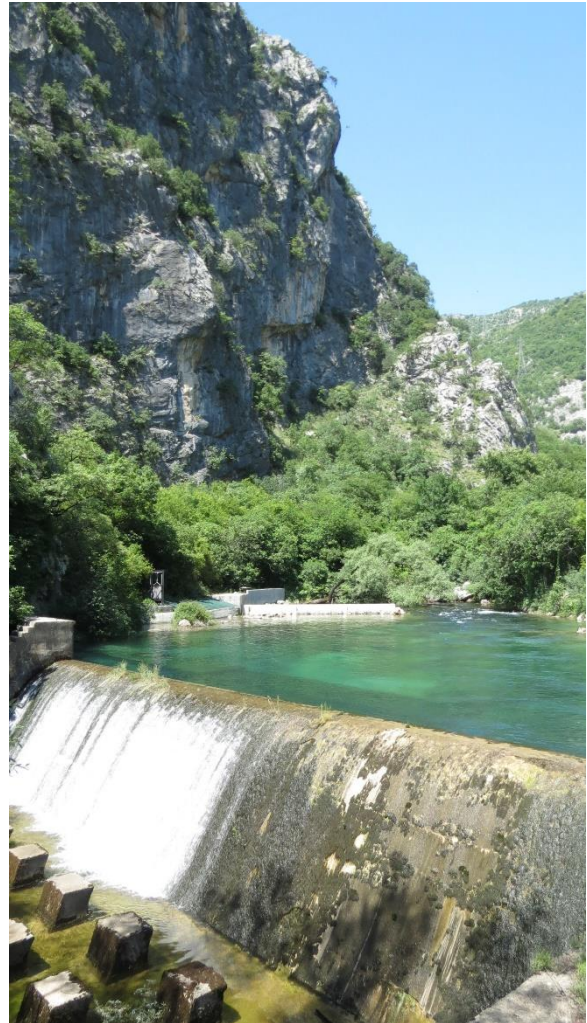


Photo of the Glava Zete Spring (Photo by Zoran Stevanović)

NIKAS - Podgor spring



Photo of the Podgor Spring (Photo by Milan Radulović)

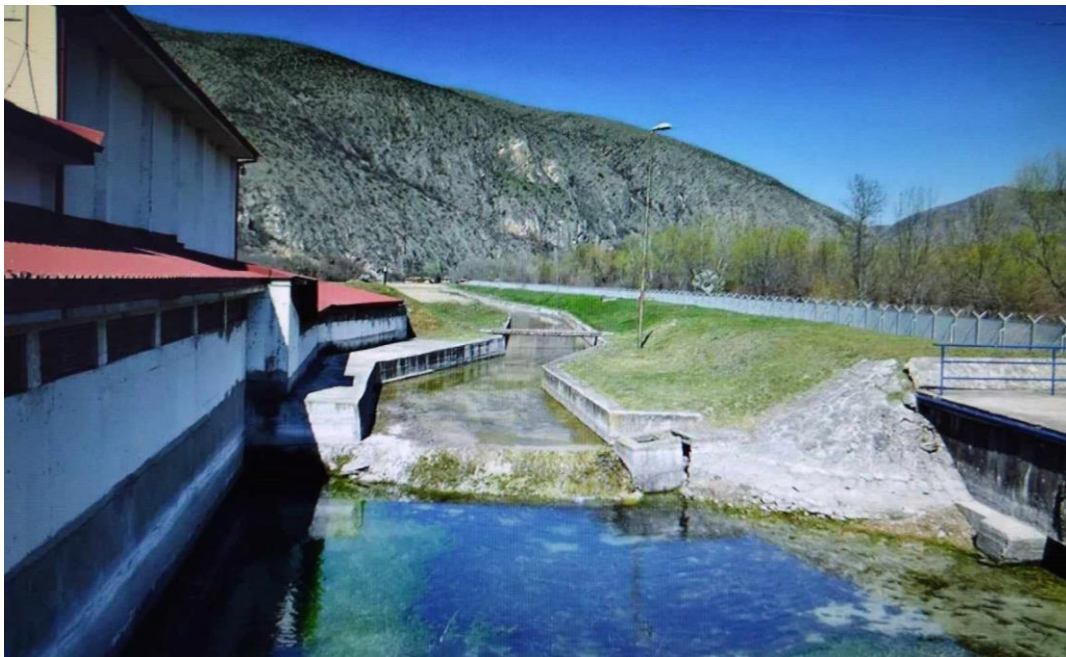
North Macedonia



MIKAS - Vrelo Rashche



The intake Rashche 1 (photo Stojan Mihailovski)



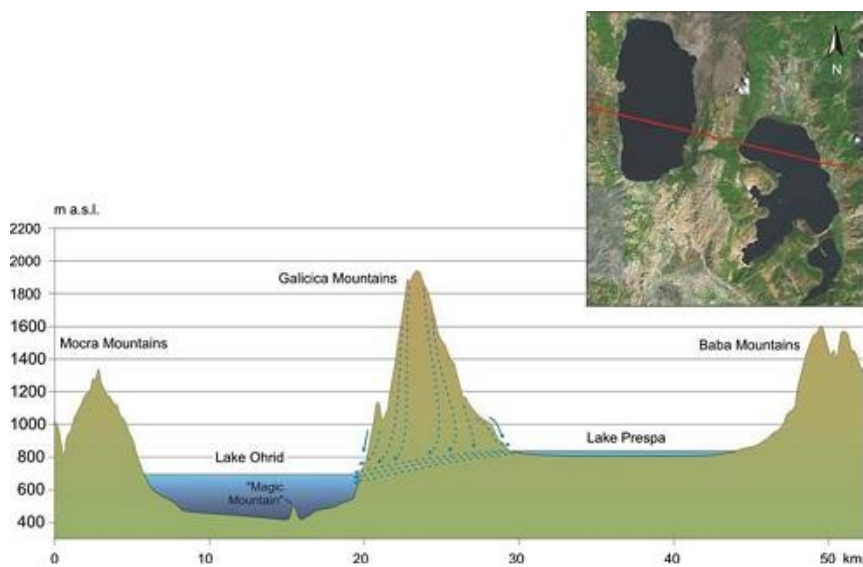
The intake Rashche 2 and a channel for diverting overflow into the nearby Vardar River

MIKAS – St. Naum spring



Outflow of the Saint

Naum spring in Ohrid Lake (spring time, photo from a drone)



Schematic cross-section of the St Naum spring occurrence and its water originated from Lake Prespa



Outflow of the Saint Naum spring into the Ohrid Lake, on a bridge (Photo by Silvana Peshovska)



St. Naum spring at its mouth to Ohrid Lake (Photo by Zoran Stevanović)

NIKAS - Studenchica Spring



Reinforced concrete slab above the intake structure/collection channels and the spring of Studenchica

NIKAS – Spring of Treska River



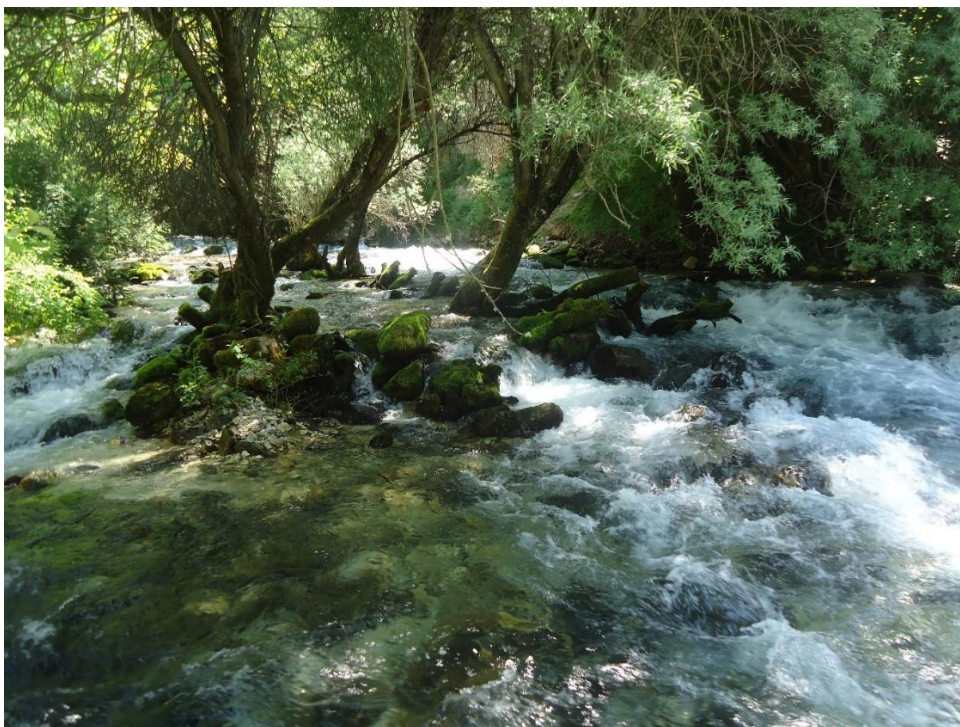
Spring of Treska River

NIKAS – Zheleznec Spring



Zheleznec spring and its immediate mouth to the Crna Reka River (autumn)

NIKAS – Belichki Spring



Belichki spring (during springtime)

Poland

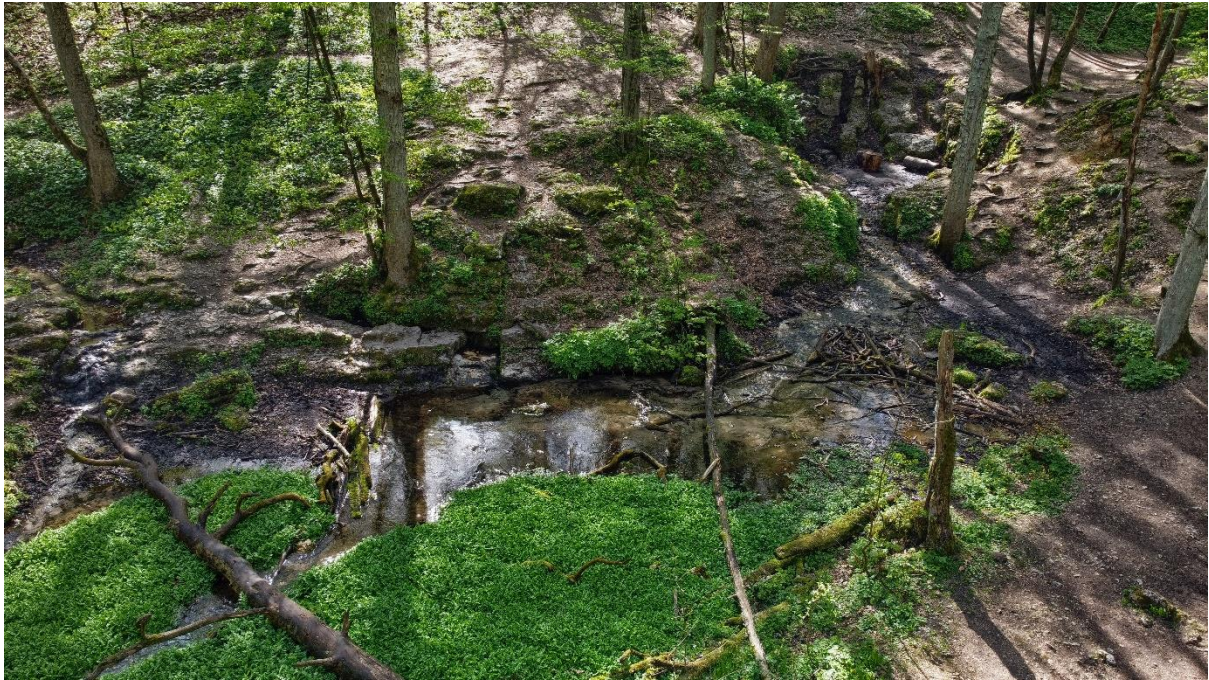


MIKAS - Goryczkowe (Wywierzysko Goryczkowe)



Outflow from the Kasprowa Niżna Cave during a high water level of the massif (flood), an example of a "safety valve" type reaction for the circulatory system of Wywierzysko Goryczkowe, 1999 (Photo by Grzegorz Barczyk)

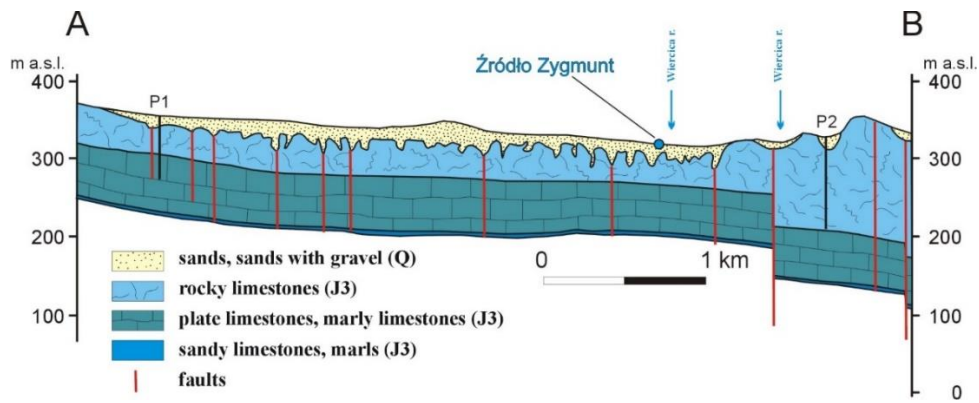
MIKAS – Zygmunt spring (Źródło Zygmunt)



Zygmunt Spring (Photo by P. Kokoszka)



Photo of the contemporary Trout House (Photo by P. Kokoszka)

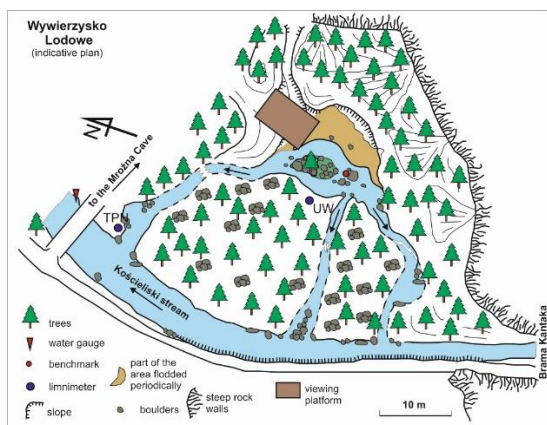


Geological cross – section with the location of the spring (after R. Więckowski, 1973)

NIKAS - Lodowe spring (Lodowe Źródło)



Lodowe Źródło (photo Grzegorz Barczyk)

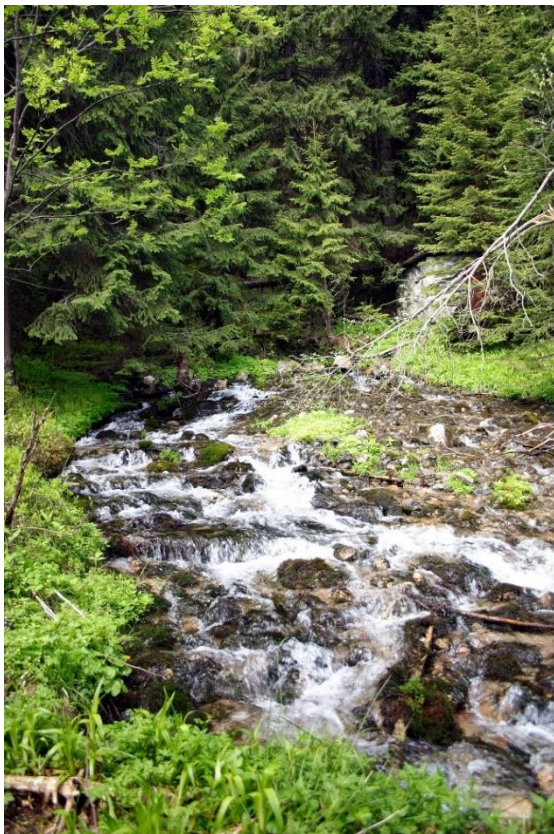


Lodowe Źródło schematic map (after Barczyk 2008)

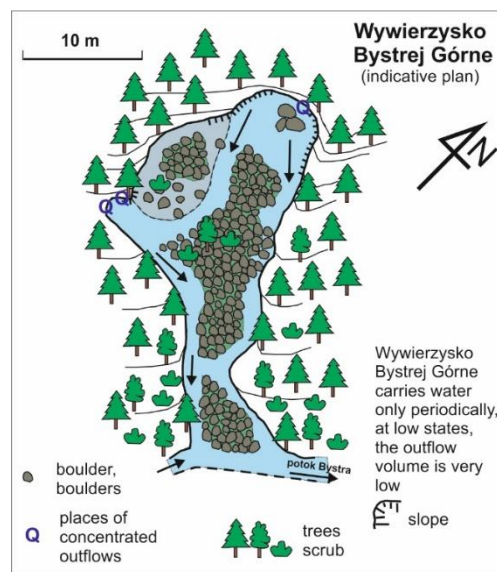


Lodowe Źródło during winter 2023 (photo Grzegorz Barczyk)

MIKAS - Wywierzysko Bystrej



Wywierzysko Bystrej Górne (photo Grzegorz Barczyk) and schematic map (after Barczyk 2008)





Orifice of Bystra Cave connected to Wywierzysko Bystrej (photo Grzegorz Barczyk)

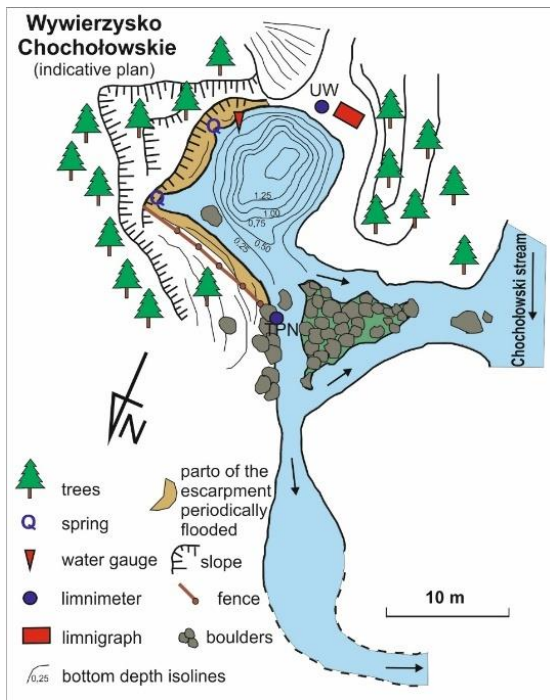
MIKAS - Chochotowskie spring (Wywierzysko Chochotowskie)



Wywierzysko Chochotowskie (photo Grzegorz Barczyk, December 2013)



Wywierzisko Chochotowskie (photo Grzegorz Barczyk, November 2019)

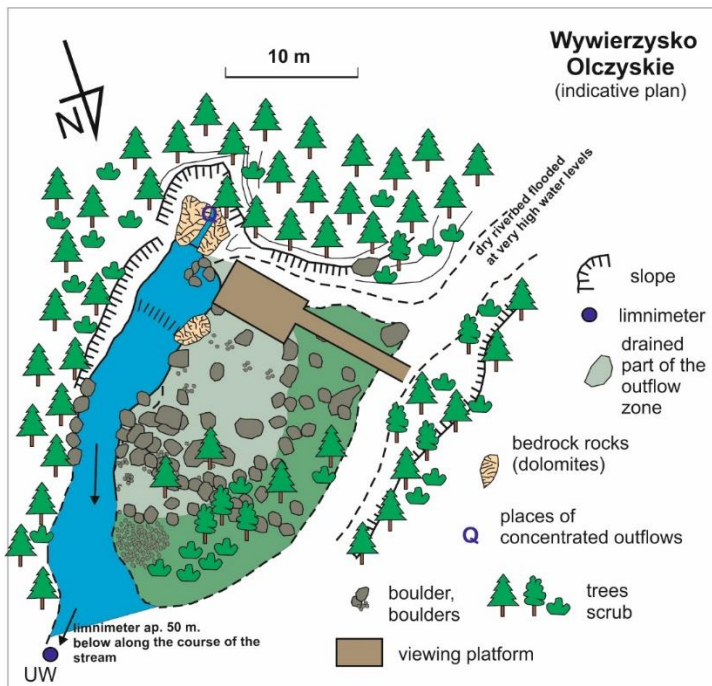


Plan of the Wywierzisko Chochotowskie (after Barczyk 2008)

MIKAS - Wywierzisko Olczyskie



Wywierzisko Olczyskie (Photo by Grzegorz Barczyk)



Plan of the Wywierzisko Olczyskie
(after Barczyk 2008)

MIKAS - Błękitne Źródła



Błękitne Źródła spring (photo by P. Kokoszka)



Błękitne Źródła spring (photo by P. Kokoszka)

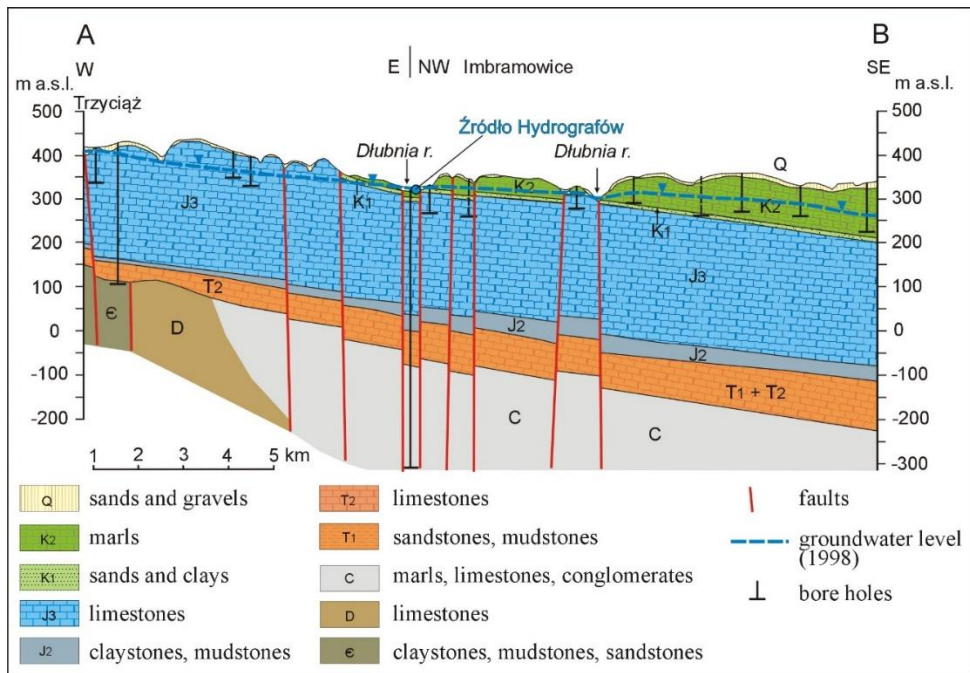
MIKAS - Źródło Hydrografów



Źródło Hydrografów (Photo by Dorota Okoń)

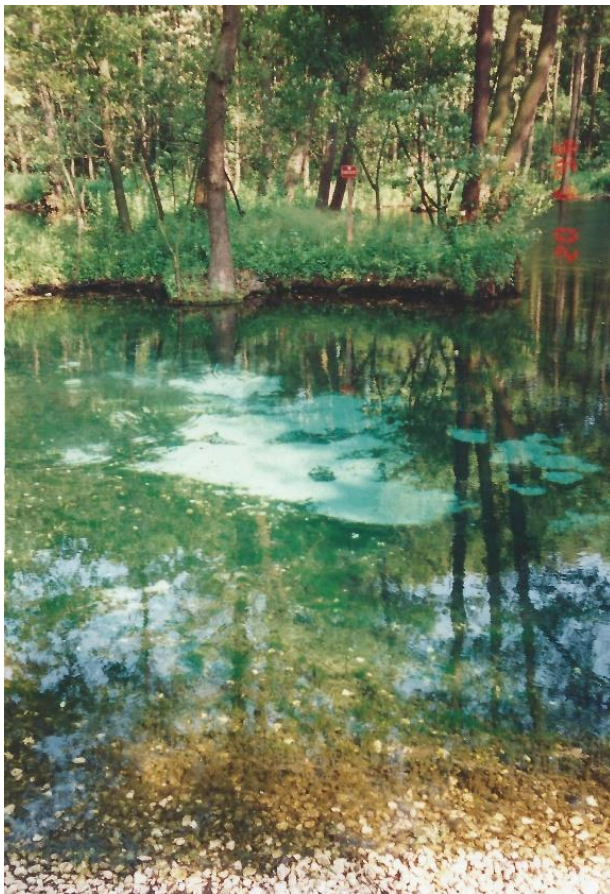


Źródło Hydrografów (Photo by Jacek Rózkowski)

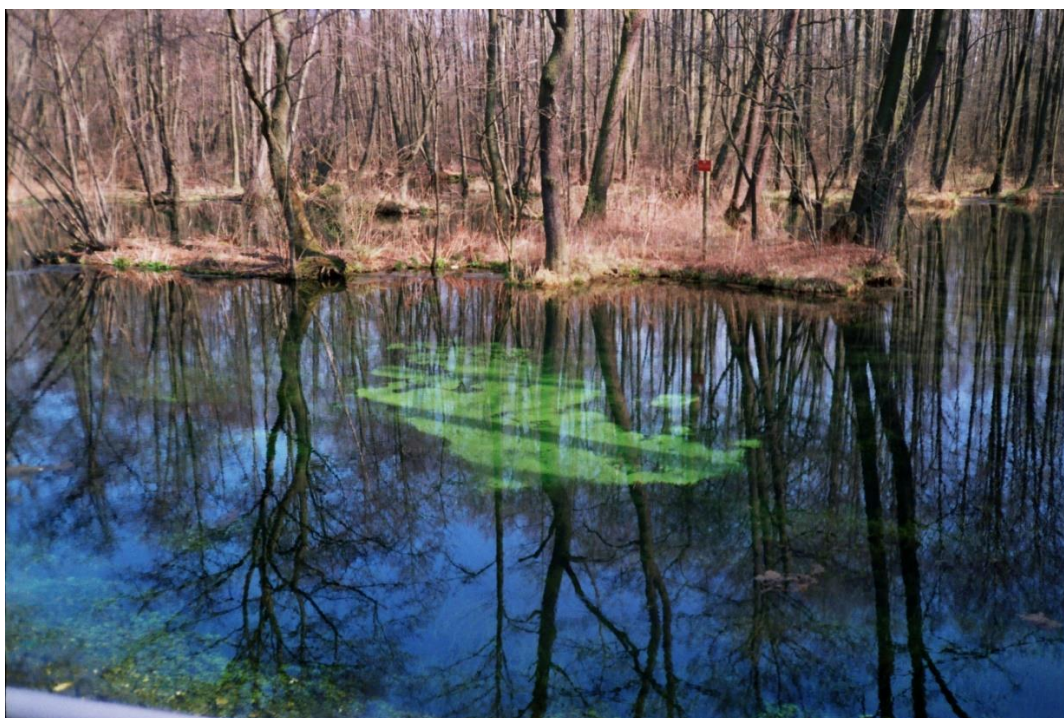


Geological cross-section with the location of the Źródło Hydrografów (after Lewandowski, 2004)

MIKAS – Niebieskie Źródło



Niebieskie Źródła (Photo by J. Małcki)



Niebieskie Źródła (Photo by Jacek Różkowski)

MIKAS – Winiary



Winiary spring (Photo by M. Borowiec)



Winiary spring (Photo by A. Chwalik - Borowiec)

MIKAS – Zimne Wody



Zimne Wody (photo A. Chwalik - Borowiec)



Zimne Wody (photo A. Chwalik - Borowiec)

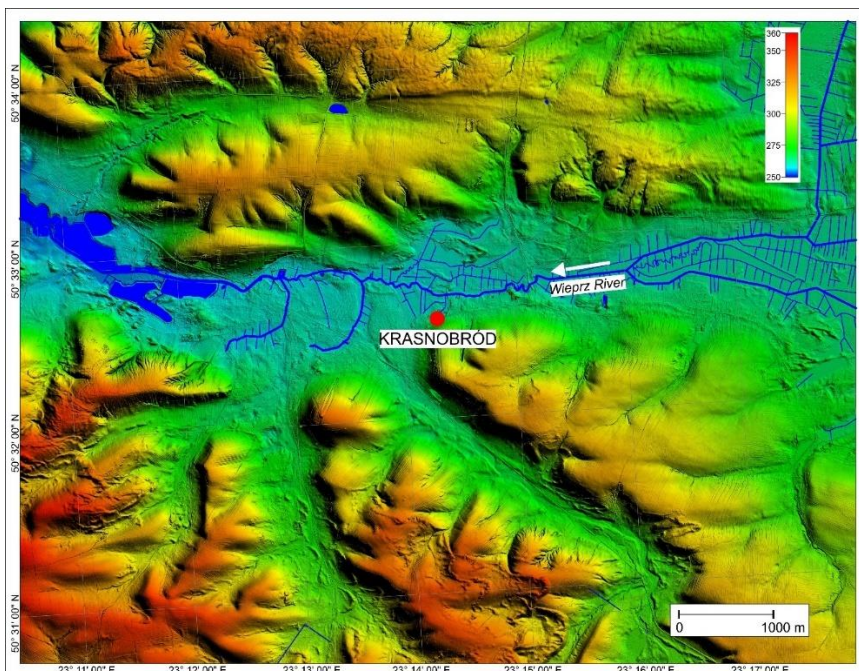
MIKAS - Krasnobród Kapliczka Podlasztor



Krasnobród spring – chapel on the water (Photo by Stanisław Chmiel)



Krasnobród spring (Photo by Stanisław Chmiel)

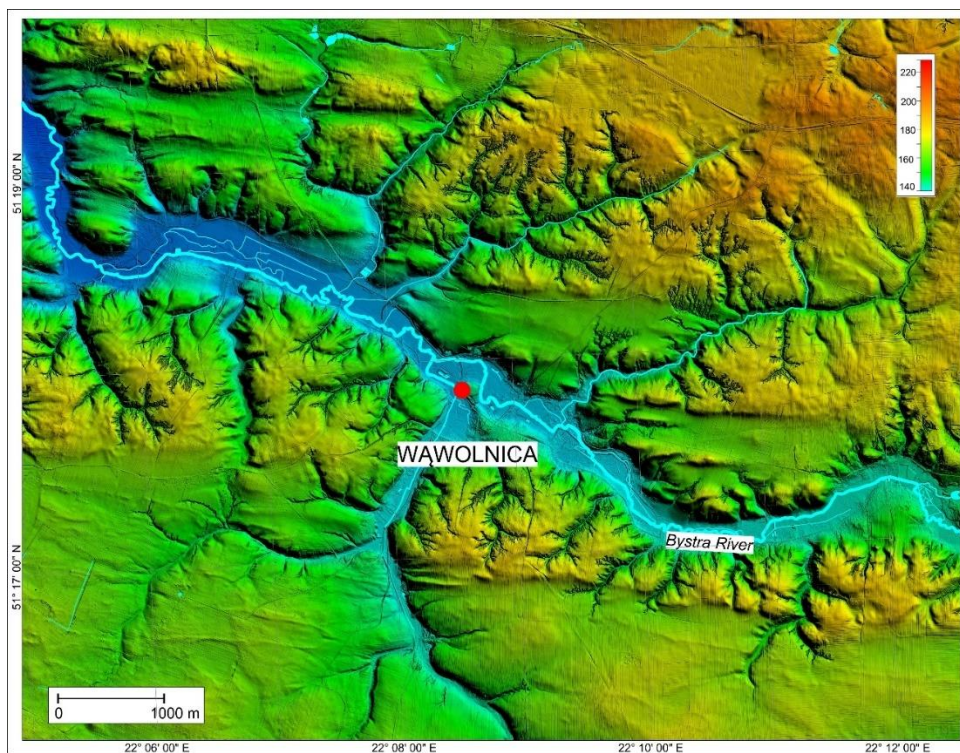


Surface relief of the Krasnobród spring area

MIKAS – Wąwolnica



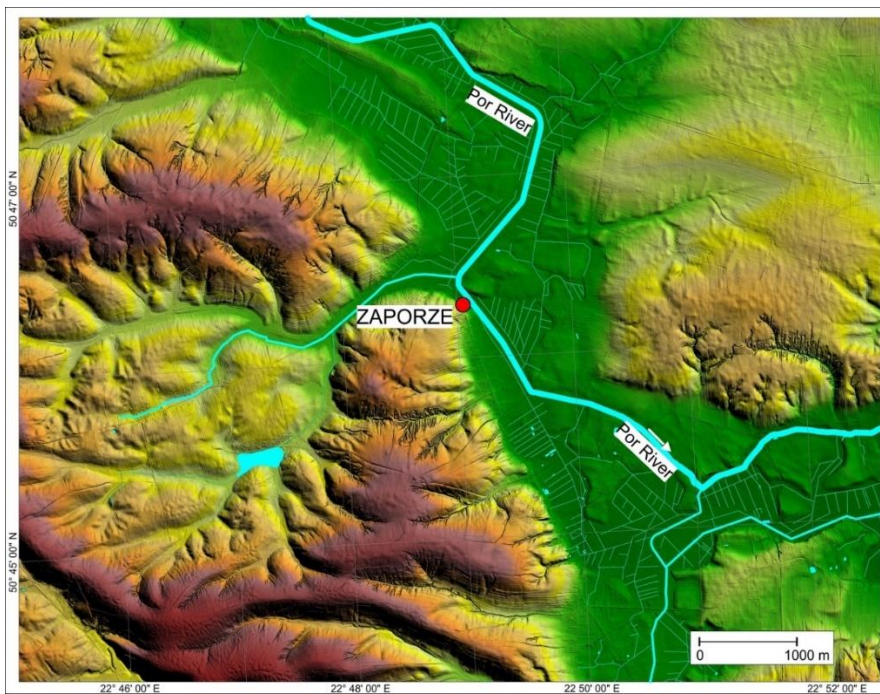
Wawolnica spring (Photo by K. Stepniewski)



MIKAS – Zaporze



Zaporze spring (Photo by Stanisław Chmiel)



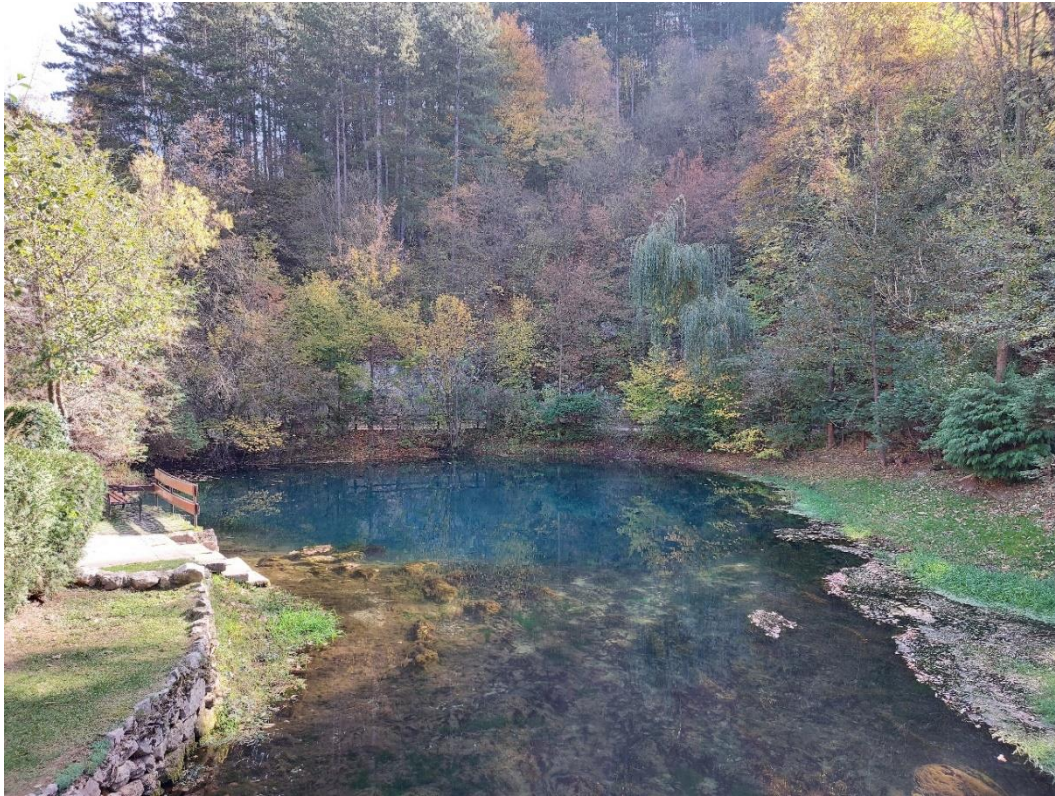
Surface relief of the Zaporze spring area

Serbia

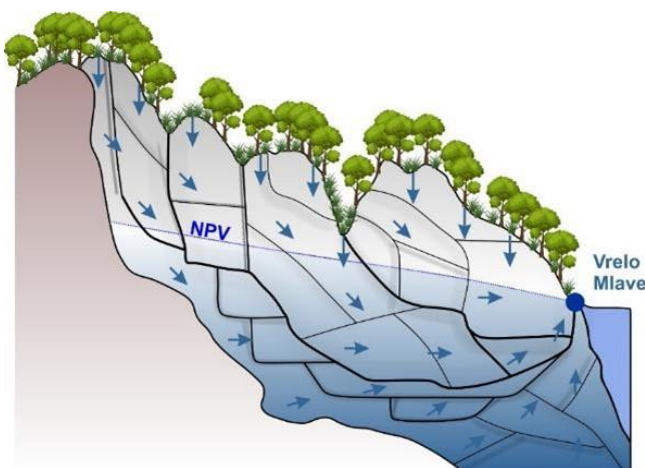


MIKAS - Vrelo Mlave

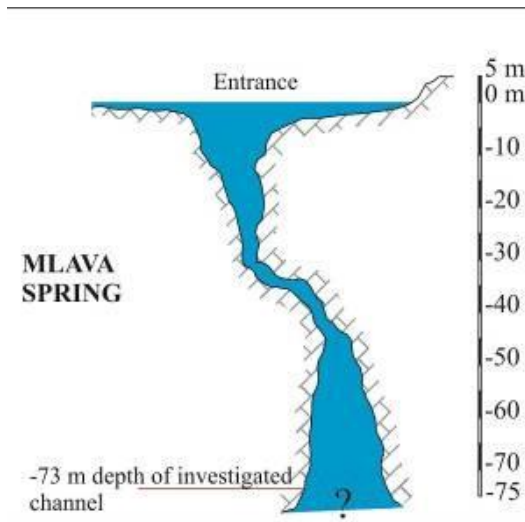
Photos by Zoran Stevanović



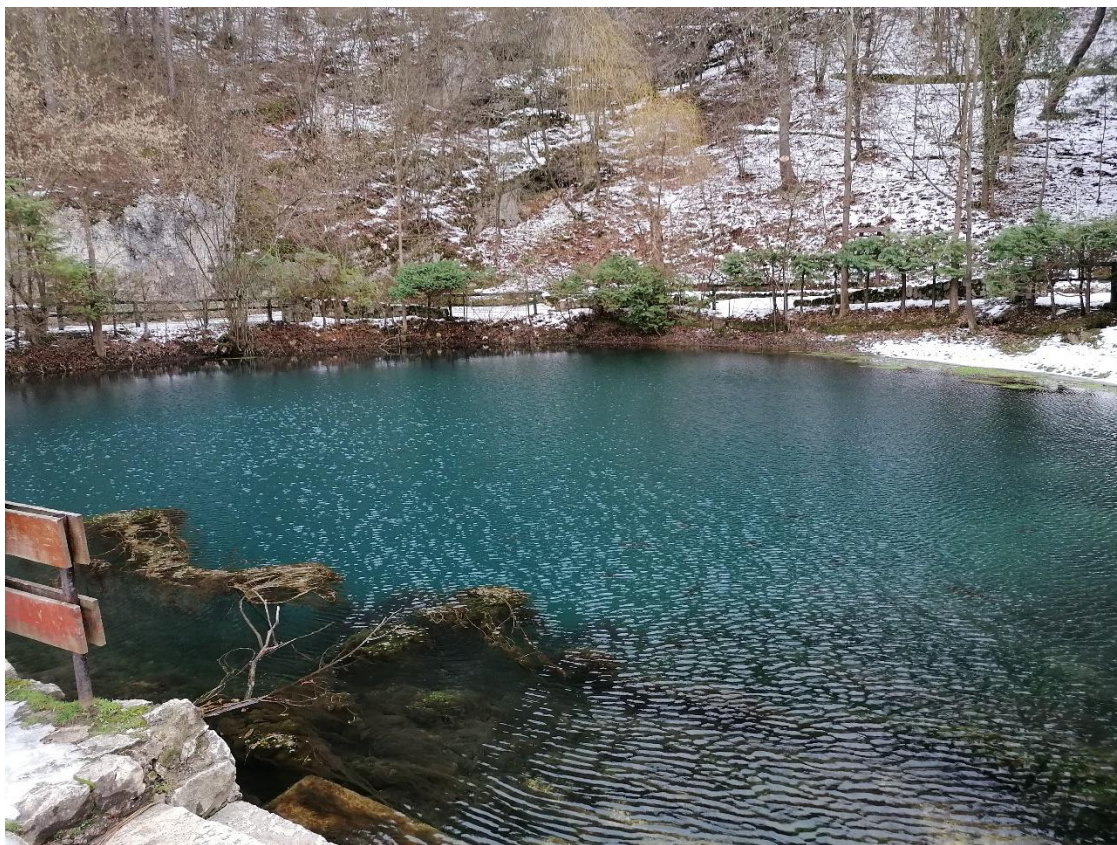
Vrelo Mlave spring (summer)



Schematic cross section (after Vasić, 2017)



Vrelo Mlave, siphon section (Milanović, 2010)



Vrelo Mlave spring (winter)

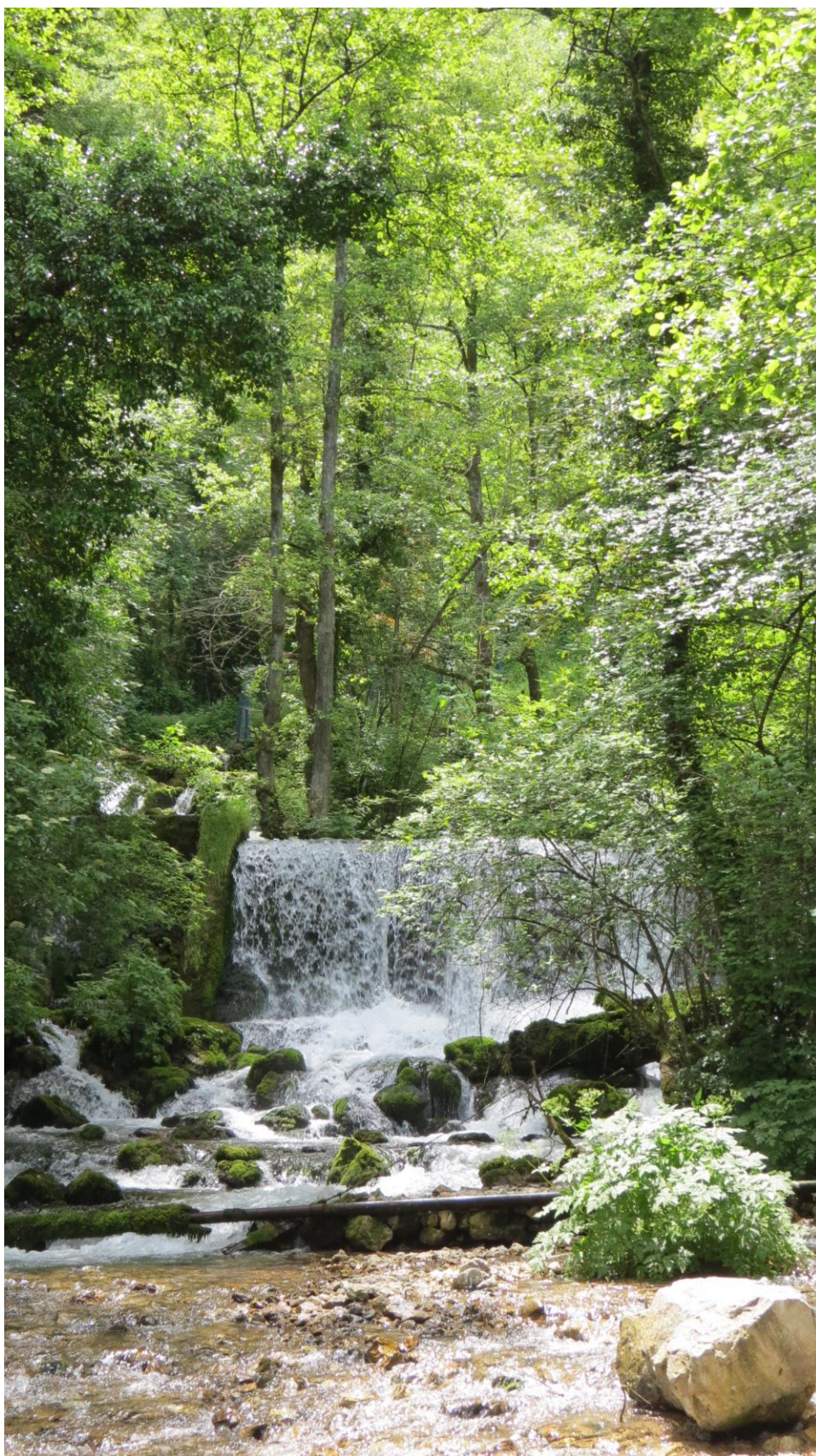


Vrelo Mlave, panoramic view

MIKAS - Perućac (Perućačko vrelo)



Perućac spring waterfall at the mouth to Drina River (<https://tara.rs/sr/perucac-odmor-pored-jezera-i-reke-drine/>)

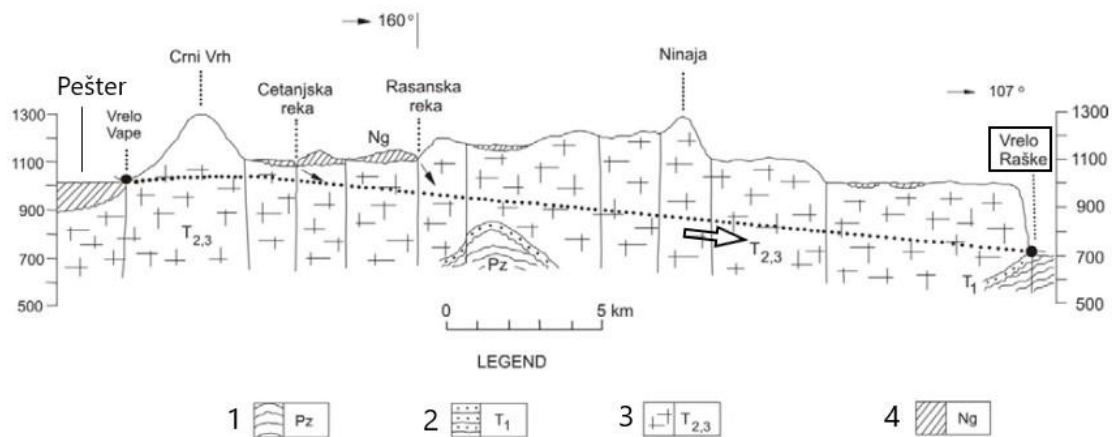


Perućac karst spring (photo by Z. Stevanović)

MIKAS - Vrelo Raške



Intake and overflow of the Vrelo Raške (Photo Z. Stevanović)



Schematic cross-section Pešter – Vrelo Raške. Legend: 1. Paleozoic schists, 2. Clastic rocks of Lower Triassic age, 3. Middle and Upper Triassic limestones, karst aquifer, 4. Neogene deposits (after Ristic Vakanjac et al. 2014)



Entrance of the cave with upper flow of Vrelo Raške (Photo Z. Stevanović)

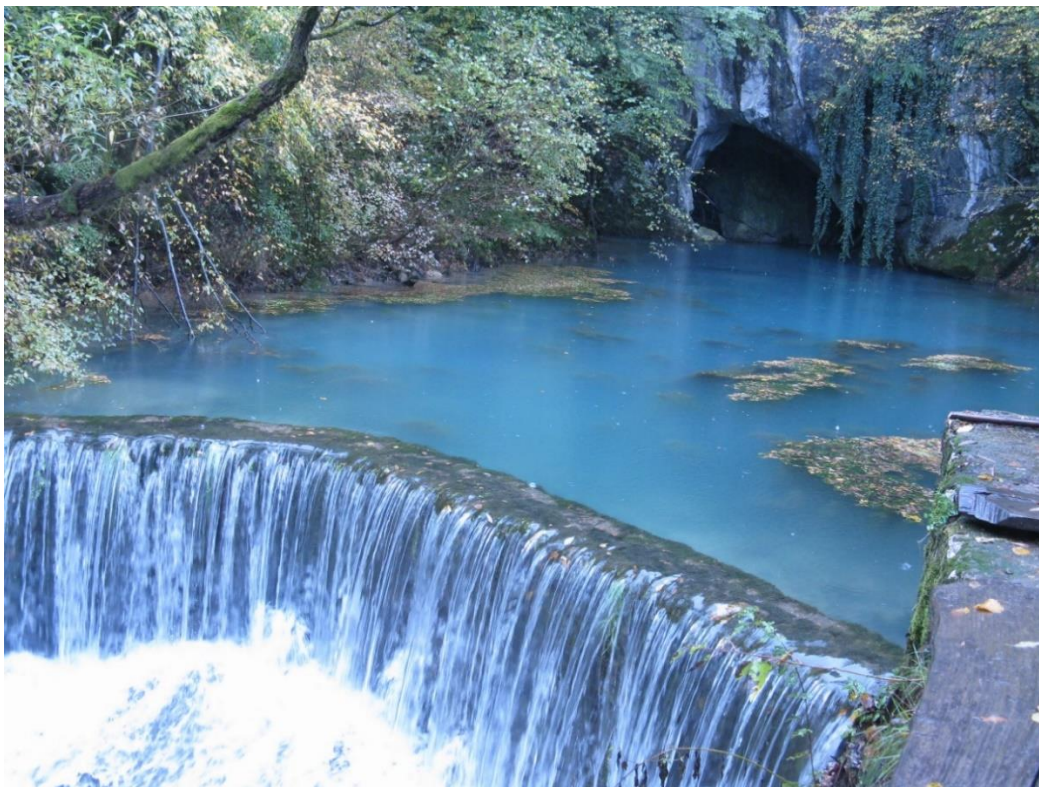


Ponor Boroštice – one of several ponors (swallow holes) at the Pešter karst polje (Photo Z. Stevanović)

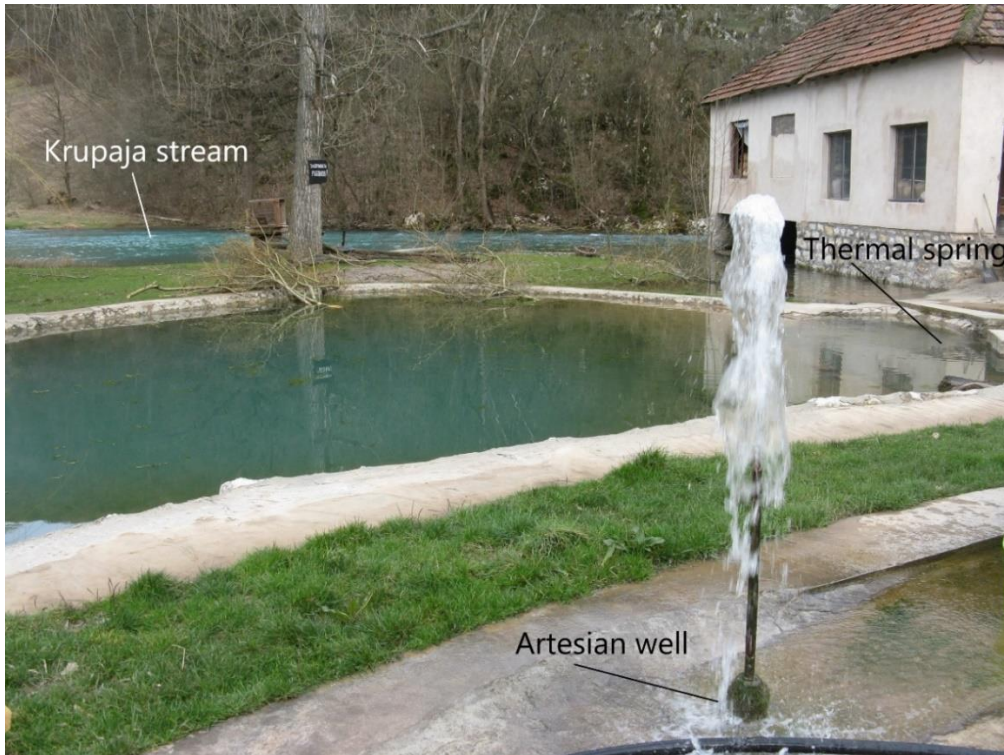
NIKAS – Krupajsko vrelo



Krupajsko vrelo spring – drainage from cave and overflow over small weir (Photo Z. Stevanović)



Krupajsko vrelo spring (Photo Z. Stevanović)

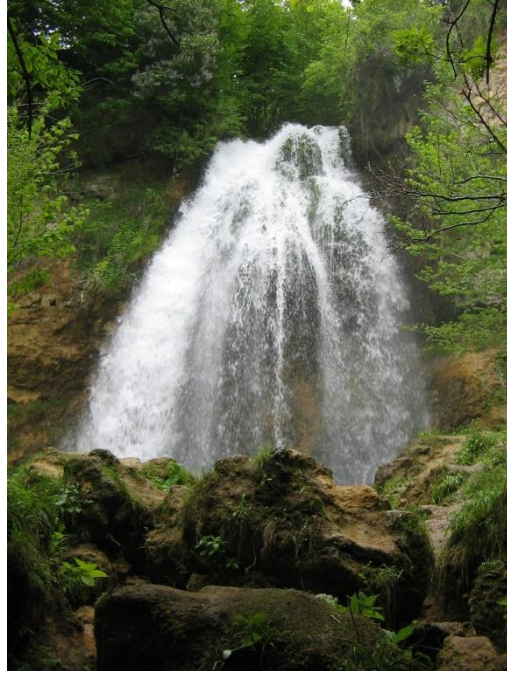
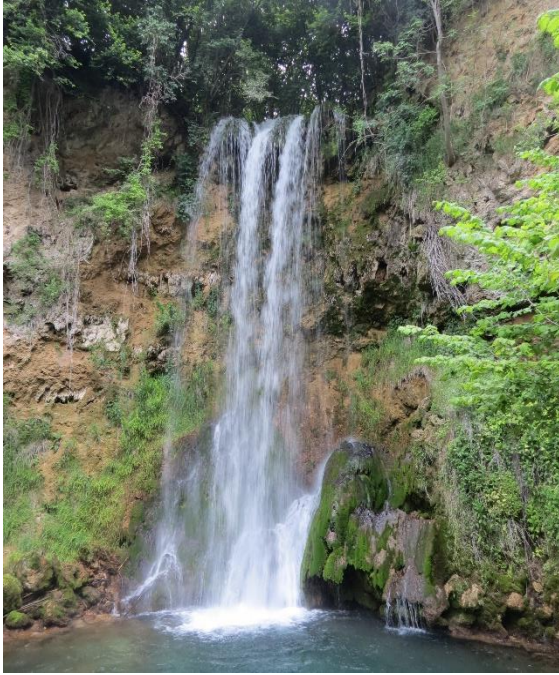


Krupaja stream, thermal spring and artesian well (Photo Z. Stevanović)

NIKAS – Veliko vrelo



Veliko vrelo gravity flow issuing from big blocks (Photo by Z. Stevanović)



Veliko vrelo spring at Veliki buk waterfall in Lisine – minimal and maximal discharge (Photos by Z. Stevanović)

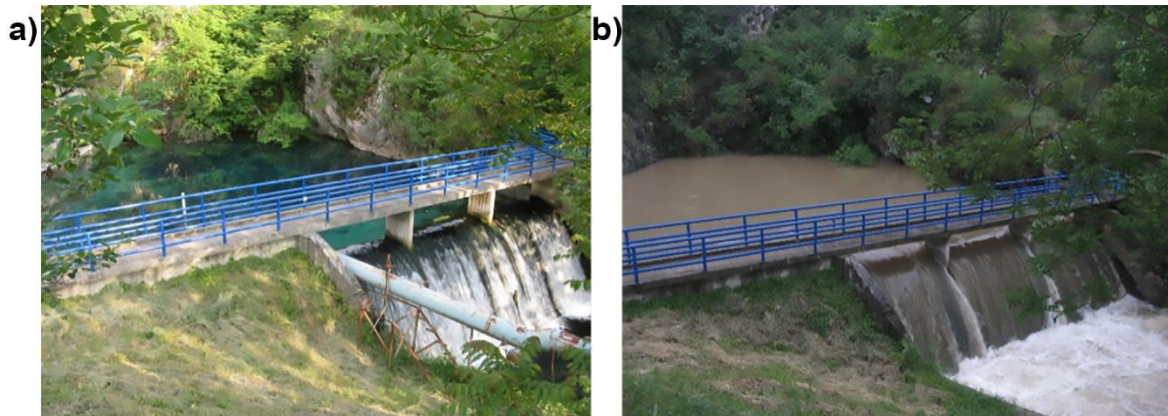
NIKAS – Krupac – Modro oko



Google Earth with pinned spring in the foothills of Svrliške Mts.



Krupac – Modro oko vauclosian spring during low water season



Krupac – Modro oko during periods of low water (a), and high water (b), when there is a substantial increase in turbidity as a result of the collapse of sinkholes in the catchment and flushing of sediment from underground storage (Photos of Z. Stevanović)

NIKAS – Sopotnica



*Sopotnica
waterfalls
over thick tufa
cascades
(Photo by Z.
Stevanović)*



Sopotnica (Photos by Z. Stevanović)

Slovenia



MIKAS – Hubelj



The Hubelj spring at low waters



*Panoramic view of the Hubelj spring at high waters
(<https://www.vipavskadolina.si/si/odkrivaj/dediscina/narava/reke/reka-hubelj>)*

MIKAS – Unica



Pivka River sinking into Postojnska Jama.



Rak River sinking at Rakov Škocjan



The Malenščica spring



The Unica spring

NIKAS – Doblíčica



The Doblíčica spring (<https://natura2000.gov.si/narava/obmocja/SI3000048/>)



Discovery of the first black Proteus in the Doblíčica spring (Photo by Andrej Mihevc)



Pumping station at the Dobličica spring (<https://www.radio-odeon.com/novice/crpalisce-v-doblicah/>)

NIKAS - Rižana



The Rižana karst spring

Spain



MIKAS - Gato Cave spring



Oil on canvas to Manuel Barrón y Carrillo (1869) (Retrieved from <https://www.carmenhyssenmalaga.org/obra/emboscada-a-unosbandoleros-en-la-cueva-del-gato>)



Gato Cave waterfall (Retrieved from https://www.tripadvisor.es/Attraction_Review-g265784-d10236448-Reviews-Cueva_del_Gato-Ronda_Costa_del_Sol_Province_of_Malaga_Andalucia.html)

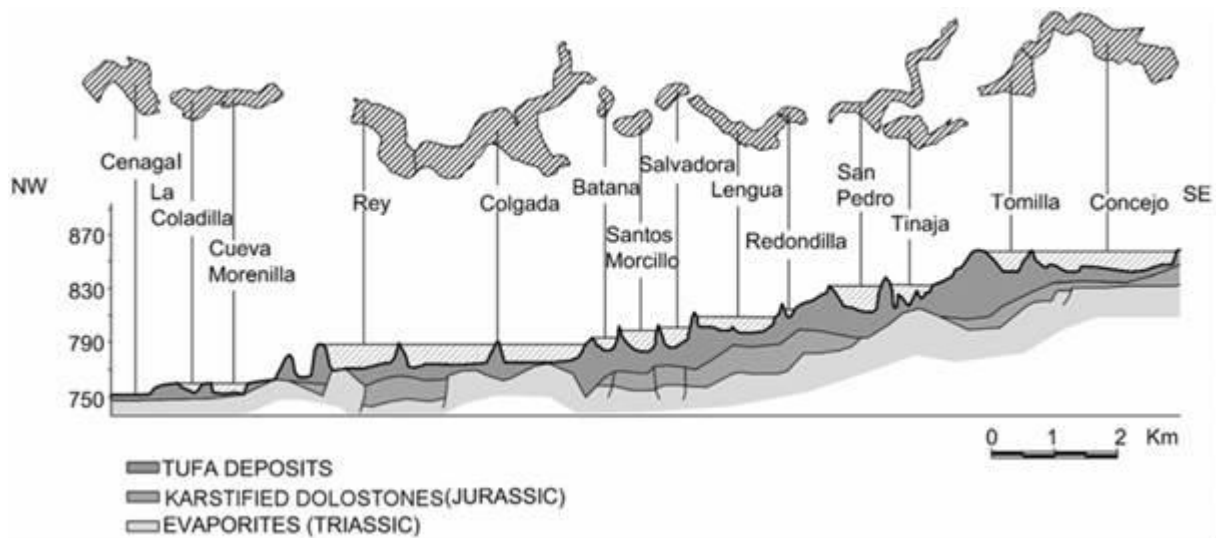
MIKAS - Lagunas de Ruidera



Retrieved from <http://www.turismocastillalamancha.es/naturaleza/parquenatural-de-lagunas-de-ruidera-en-albacete-58272/descripcion/>



Retrieved from <https://www.viajesporcastillalamancha.es/rutas/id121-las-8-sendas-de-las-lagunas-de-ruidera.html>



Cross section of lagunas Ruidera (Moya et al., 2018).

MIKAS - Nacedero de Arteta



Artazul waterfall (Retrieved from <https://ca.wikiloc.com/rutessenderisme/ulzurrun-cascada-de-artazul-nacedero-de-arteta-66904099/photo-44160813>) (left); Arteta Spring (from Alegría-Suescun, 2011) (Right)

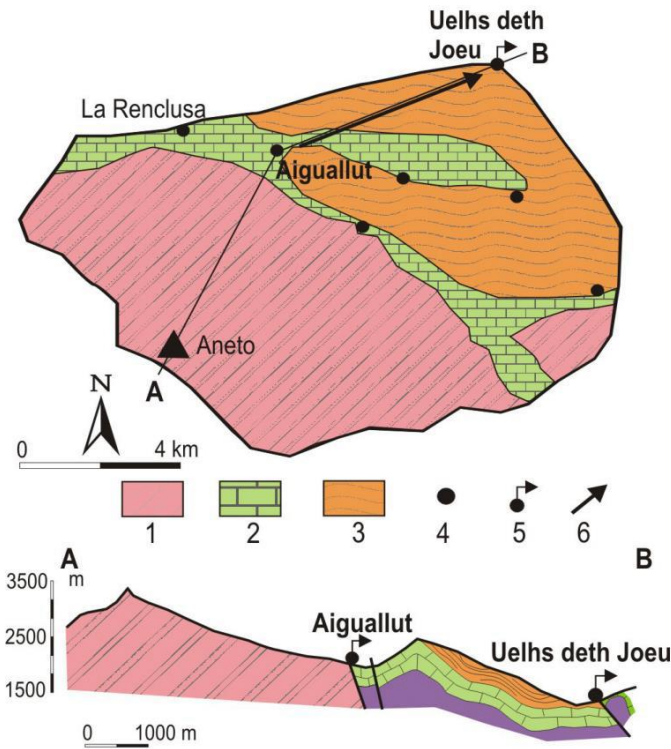


Arteta Springflow

MIKAS - Uelhs deth Joèu



Photo of the Uelhs deth Joèu spring taken from the downstream perspective (taken from Andreu et al., 2016).



Hydrogeological section of the Aiguallut (swallet)-Uelhs deth Joeu (spring) system. Lithologies: 1) Hercinian granites, 2) Devonian limestones and 3) Carboniferous metapelites. Symbols: 4) swallet, 5) karst spring and 6) preferential groundwater flows (modified from Freixes, 2014).

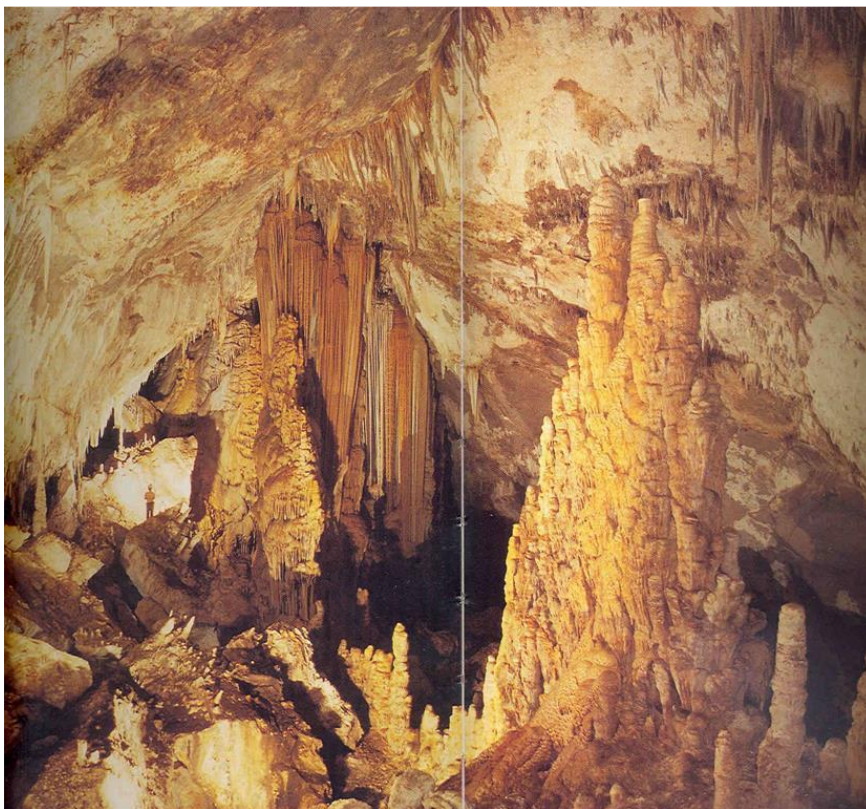
MIKAS - Mundo River spring



Low-front views of the Mundo River spring during low flow (left) and flood (right) conditions (taken from García and Rodríguez-Estrella, 2003).

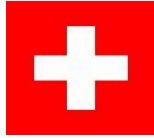


Close-up photography of the Mundo River spring in the summer season (taken from García and Rodríguez-Estrella, 2003).



Cave room with a wide variety of speleothems within Los Chorros cave system (taken from García and Rodríguez-Estrella, 2003).

Switzerland



MIKAS - Source de l'Areuse



Areuse spring in high-water conditions

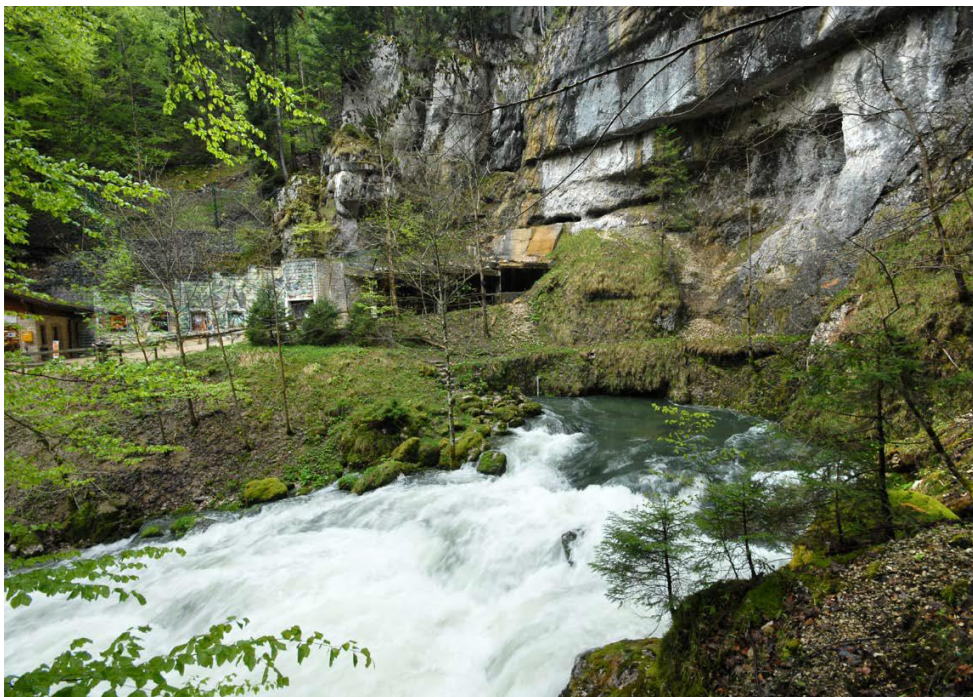


Fault over the Source de l'Areuse, the vaclusian type spring (courtesy of Z. Stevanović)



One of the sumps (left) and one cave passage (right) in the Rutelins cave

MIKAS - Source de l'Orbe



Picture of the Orbe resurgence. © Rémy Wenger, ISSKA.



The Orbe resurgence; the end of the river's underground journey. © Rémy Wenger, ISSKA.



The subterranean Orbe river. © Rémy Wenger, ISSKA.

United Kingdom



MIKAS – Bath Hot Springs



The Cross Bath Spring (photo provided by Thermae Bath Spa)



*One of the Bath hot springs
(photo copyright Alan Gray)*



The old thermal baths fed by hot springs (photo copyright Alan Gray)

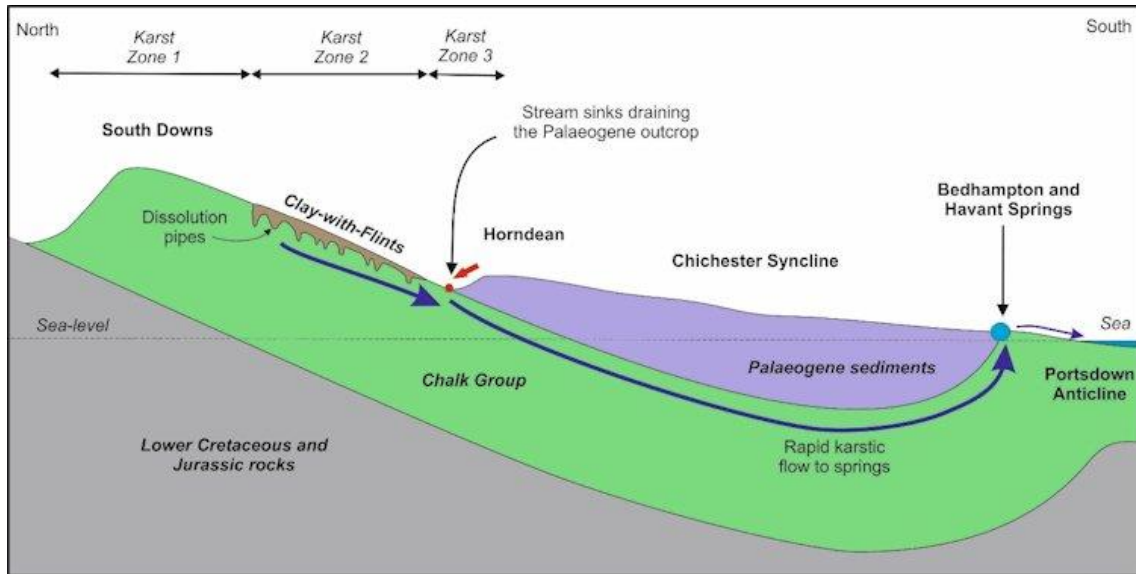
MIKAS – Bedhampton and Havant



Spring overflow following public supply abstraction (Photo copyright Portsmouth Water)

Spring upwelling hatch at the Public Water supply site (Photo copyright Portsmouth Water)





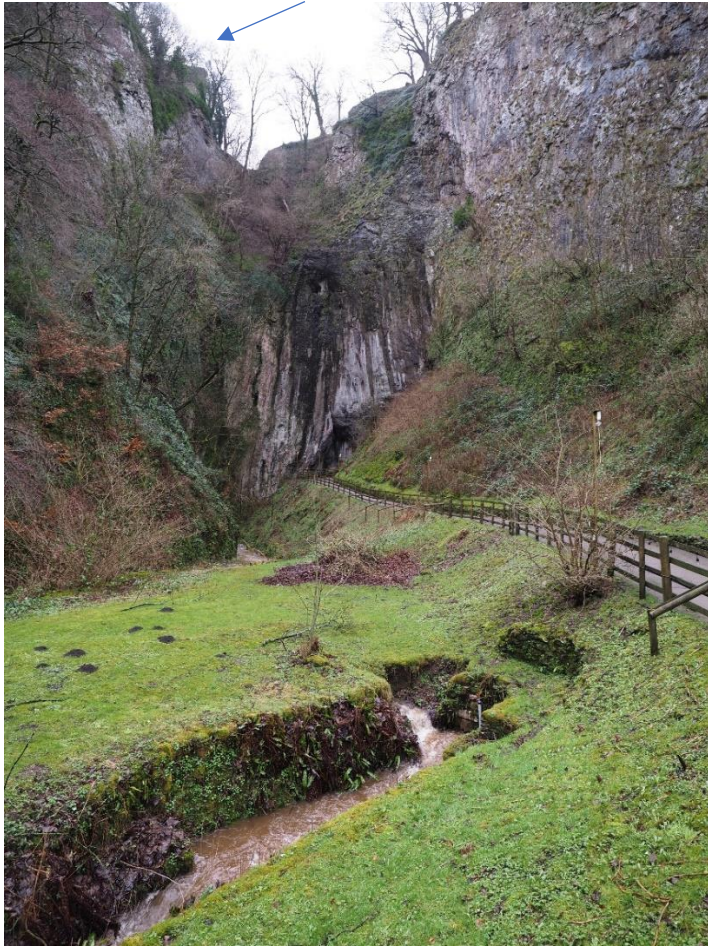
Schematic cross section showing flow to Bedhampton and Havant springs under the Chichester syncline, in karstic networks in the Chalk beneath the Palaeogene sediment cover. Geological material © NERC. All rights reserved. Topography © Crown Copyright reserved.

MIKAS – Castleton spring group

Photos of springs during high flow, 6 February 2022. All photos by John Gunn



Russett Well (note the pressure dome)



Peak Cavern Gorge. Slop Moll is in bottom right. Path on right leads to entrance of tourist cave "The Devil's Arse". Peak Cavern Rising is mid-left and is shown in detail on lower photo.

The arrow is pointing to the ruins of Peveril Castle



MIKAS – Wookey Hole spring



Wookey Hole Resurgence in context (photo by Andrew Farrant)



Wookey Hole Resurgence in detail (photo by Chris Howes)



Penelope Powell and Graham Balcombe kitted up in Wookey Hole Cave for the first ever cave dive in 1935. Historical photo courtesy of Mendip Cave Registry and Archive Cave Diving Group: Image and caption from: <https://xray-mag.com/content/diving-then-and-now-wookee-hole-caves-birthplace-cave-diving>