

SPELEOLOGICAL EXPEDITION

LION 2014



SELAS Caving Club (of Athens)

In co-operation with EOS Hania Club (Hania, Crete)

CRETE, HELLAS

AUGUST 2014

With the support of:

EuroSpeleo Projects FSE



SPELEOLOGICA EXPEDITION

L i o n 2 0 1 4



For more information please contact:

SELAS Caving Club

44-46, Pasionos str.

N. Kosmos 116 31 Athens

Greece Tel. / FAX: +30-210-90-20-171

info@selas.org

www.selas.org

www.facebook.com/SELAS.Caving.Club

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Synopsis

This year's expedition, organized for second time in a row in the second deepest cave of Greece, the "Hole of the Lion" (- 1,110m) on the White Mountains massif of the Hania Prefecture of Crete took place from 9th until 18th of August. The expeditions' objectives were to continue the exploration and survey of the collector, but also to collect the three hydrological sensors that the Polytechnic University of Crete had given us to install last year inside the cave.

For the preparation and success of the expedition, apart from SELAS club, the participation and cooperation of the Speleological team of the Mountaineering Club of Hania (EOS Hanion) has been of great importance. Cavers from a number of other clubs also participated, such as POA, SPOK and Hellenic Speleological Society of West Crete. Balkan cavers from Romania, Turkey and Bulgaria also participated in the expedition.

This expedition was the second Euro Speleo Project to be implemented in our country by SELAS. The support of the FSE resulted in the expedition being granted equipment of a great value that was used during the expedition and also remains for future expedition use. The expedition was also supported financially by SELAS, which provided the balance of equipment necessary for the expedition. The unflinching support of the Speleological team of the Mountaineering Club of Hania, for one more time, was also instrumental to the expedition's success.

There were one preparatory expedition, the main nine-day expedition and one wrap-up expedition. These are recounted below:

- The preparatory expedition ran from May 1st to May 4th under the leadership of Michail Tsopelas and the participation of 9 other cavers. This pre-expedition was very fundamental in organizing the base camp. Furthermore it cleaned the water tanks in LO23 and filled them with 350lt of water.
- 9-18 August: main expedition. Sixteen cavers from four countries (Greece-Romania-Turkey-Bulgaria) participated. The cave was rigged to -600m and a bivouac was established (in the same place as last year) with a capacity for 4 people to overnight at -500m. Exploration and survey work was continued from the point reached last year (6m waterfall). The waterfall was rigged and 500m of new passage were reached on the upstream leg of the collector. Again this new section continues towards the South. The collector divides into 4 smaller underground rivers and only the central one was explored. Everyone's hope is that in next expeditions each of these sub rivers will be explored and hopefully will succeed to connect Lion with some other cave that exist above these new passages.
- 20-22 September: six cavers carried out the de-rigging during a two-day post-expedition. During this post-expedition the radon detectors (that were placed during the expe) below -400m were collected. Part of the equipment remained in the cave to facilitate a return in 2015 for the continuation of the exploration.

In addition, given that the expedition contained researchers amongst the participants, who were able to initiate research due to the fact that the cave had been rigged we were able to carry out some scientific investigation also. Specifically, six Radon detectors were placed for measuring radiation from Radon gas by Attila Toth of the Clubul Speologilor Amatori din Cluj and the university Sapientia of Cluj. He also took water samples from -500m and from the gour in LO23 and tested it for nitrite with a portable device (Winlab LF2 400 Photometer) that he had brought with him.

The expedition was supported by:

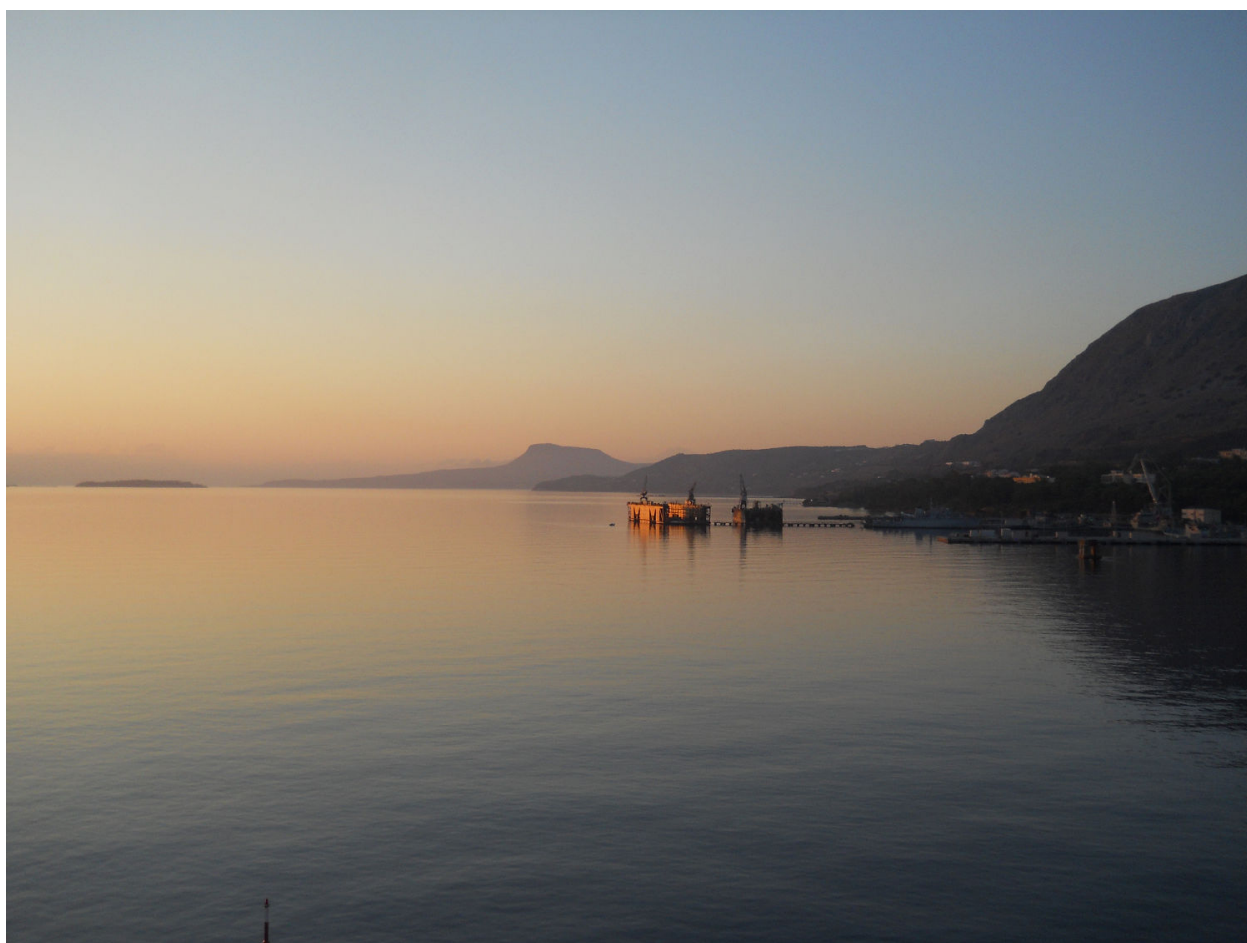


European Federation of Speleology (through the Eurospeleo projects initiative)



Hellenic Federation of Speleology

The expedition used caving gear of the following brands:



Port of Souda (from the ferry boat)

Participants

In total there were 15 full members of the expedition (listed below) in addition to Dr. Daniel Moraitis who joined us at base camp for one overnight. Among the expedition members, beyond the Greek cavers, there were 3 from Romania (from the Clubul Speologilor Amatori and the Asociata Montana Speo Zarand Brad), 2 from Turkey (Obruk Cave Research Group) and 1 from Bulgaria (Salamandar - Stara Zagora) who responded to our call for participation.

The manpower of the expedition by day and by nation is shown below:

Name / Surname	Country	Expedition Members by day (August)									
		9	10	11	12	13	14	15	16	17	18
Michalis Tsopelas	Greece										
Efsaia Vardoulaki	Greece										
Tanyo Markov	Bulgaria										
Ezgi Tok	Turkey										
Melike Ocakdan	Turkey										
Attila Toth	Romania										
Botond Fabian	Romania										
Panos Georgopoulos	Greece										
Mihai Vlad-Marius	Romania										
Telis Dilintas	Greece										
Miltos Hasialis	Greece										
Kostas Adamopoulos	Greece										
Evgenia Kouzmina	Greece										
Nasy Koutsoumani	Greece										
Stelios Zacharias	Greece										
Cavers per day		10	10	11	11	12	13	12	12	12	11

It has to be mentioned that the expedition received valuable logistical support in Athens and Crete from Alexander Margiolis (SELAS), George Mazonakis (EOS Hanion) and Ali Yamac (Obruk Cave Research Group).

The manpower of the pre-expedition (1-4 May) by day and by club is shown:

Name / Surname	Club	Expedition Members by day (May)			
		1	2	3	4
Michalis Tsopelas	SELAS				
Efsaia Vardoulaki	SELAS				
Alexandros Margiolis	SELAS				
Kostas Adamopoulos	SELAS				
Andreas Apokoroniotakis	ESE				
Nikos Georgakis	SPOK				
Ioannis Soultatos	SPOK				
Giorgos Mazonakis	EOS Hanion				
Despina Tsoukala	EOS Hanion				
Haris Pantoulis	Independent				
Cavers per day		7	10	10	10

Finally, the manpower of the post-expedition (20-22 September) by day and by club is shown:

Name / Surname	Club	Expeditions Members by day (September)		
		20	21	22
Michalis Tsopelas	SELAS			
Alexandros Margiolis	SELAS			
Giorgos Kasoumis	SELAS			
Andreas Apokoroniotakis	ESE			
Ilia Mottaki	ESE			
Nikos Georgakis	SPOK			
Dimitris Mpourdass	Independent			
Xenia Papadimitriou	Independent			
Cavers per day		6	8	8

Members of EOS Hanion and other independent cavers:

The Local Mountaineering club (EOS Hanion) contributed, for one more time, the most to the success by offering upmost support before, during and after the expedition. The club participated with the following members in the expedition, most of whom stayed in the camp for a weekend or a long weekend: George Mazonakis and Despina Tsoukala.

Other independents who participated were Haris Pantoulis (pre-expedition), Dimitris Mpourdass and Xenia Papadimitriou (post-expedition).

Daniel Moraitis participate in the main expedition, and received the hydrological sensors placed during 2013 on behalf of Polytechnic University of Crete.

Many other people also helped out with the transportation of the cavers from the port of Souda to Hoses and the other way round. Thanks a lot guys, you are the best!



The north side of the Lefka Ori, in the base of the pyramidal peak is where we are heading



The view from our balcony, at LO1



The first team is ready to begin the climbing towards Lion cave

[Left to right: Tanyo Markov, Melike Ocakdan, Ezgi Tok, Panos Georgopoulos, Telis Dilintas, Attila Toth, Fabian Botond, Efsaia Vardoulaki and Mihai Vlad]

Governance and Objectives

Coordinating committee: Michail Tsopeles, Stelios Zaharias, Efsaia Vardoulaki, Alexander Margioliis (SELAS), Panos Georgopoulos (P.O.A., cave rescue).

Fundamental objectives:

- A) Safety – Emphasis on prevention and avoidance of any accident during the expedition (explorations matter less: we do not allow any compromise on safety at all times)
- B) Respect – Respect of the caves that we explore and the environment (no rubbish – no alterations) and respect for each other!

Objectives:

Continuation of the explorations of “Lion” cave (-1110m)

- Exploration to the left of the river (moving upstream against the water flow) from the point that we stopped at last year, a 6m waterfall.
- To collect the installed equipment for the collection of hydrological data we left last year at -485m (equipment was made available by the Polytechnic University of Crete).
- To install more Radon sensors in deeper parts of the cave (below -400m) in order to measure radiation levels.
- Take water samples and analyze them for nitrite.

Financials

The financial of the expedition are listed below. Transportation costs for the members are not included but are estimated to exceed the amount of 3,000 Euro if we count the pre-expedition, the post expedition, the main part and the traveling for the foreign cavers. Cost of the equipment used for rigging (offered by the SELAS caving club and EOS Hanion) is also not included, nor is caving equipment offered / owned by the members of the expedition. This equipment returned to the clubs or the individuals who made it available.

Lion 2014 accounts

Received

Nr	Surname
Main expedition	
1	Adamopoulos
2	Tsopelas
3	Zacharias
4	Dilintas
5	Georgopoulos
6	Vardoulaki
7	Markov
8	Botond
9	Vlad-Marius
10	Tok
11	Ocakdan
12	Attila
13	Chasialis
14	Kouzmina
15	Koutsoumani

Logistical Support in Athens and Crete

16	Mazonakis
17	Margiolis
18	Yamac

	Received deposit	Received onsite
Income from expedition members €	573.77	415.00

Received € 988.77

Spent

Date	Item	cost
29/07/2014	Car	150.00
19/08/2014	petrol for car	27.00
08/08/2014	Gas for Bivouac	5.00
08/08/2014	Bags for rubbish	8.00
various	Bank charges	6.00
30/08/2014	EOS Support	85.00
30/09/2014	post expe costs	22.83

Costs shared equally by all € 303.83

Date	Item	cost
29/07/2014	Foods	496.84
08/08/2014	Isotonic	12.00
08/08/2014	More foods	125.27
11/08/2014	Paper towels / baby wipes	10.83
11/08/2014	Cheese	30.00
14/08/2014	Cheese	10.00

Costs shared on a per day basis € 684.94

Spent € 988.77

Safety

For the safety and security of the expedition the following rules and recommendation were communicated to the members in advance:

	<u>SPELEOLOGICAL EXPEDITION: «LION 2014»</u> <u>GENERAL RULES and ADVICE</u>	
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IMPERATIVE RULES

1. Any team of cavers has to declare to the secretariat its planned time of departure, objective, and planned hour of return, and must come back to declare its exit.
2. In case of an unfavorable weather report, we might be obliged to forbid the descents to the cave beyond -400m.

RECOMMENDATIONS TO BE FOLLOWED

- Enter the cave only if you are in very good health, and experienced in the techniques of alpine caving.
- Every caver must bring with him a rescue blanket, food, lighting, and means of heating in adequate quantity. Remember that the cave is cold (6 degrees Celsius) and wet.
- Moving in the cave will be done in groups of 3 or 2 people minimum, in particular when ropes are in use.
- In every group, some cavers must be able to help a member who may be in trouble on a rope.
- The rhythm of moving in the team, is the rhythm of the slowest.
- If you meet a team in trouble, it is essential to give assistance, even if it opposes your own objective.
- As a matter of courtesy, priority on ropes is given to those who go up (returning from lower parts of the cave)
- If your objective is the bottom, and if it takes you more than 2 hours to reach Camp 1 (-485m) please abort your trip and turn back
- The bivouac placed at -485m is reserved for the teams which go up from the bottom
- Collect and take with you ALL your waste, and do not write on the walls of the cave.
- Indicate any defective equipment when you return: it will be quickly replaced.
- The area used as a campsite should be maintained clean, should not be altered and should be respected by all members.
- Be aware that electricity is limited.
- Mobile (cellular network) signal is available at campsite

DISCLAIMER: Everyone visiting caves during the Lion 2014 expedition is expected to behave in ways that are safe for him and for all other participants. It is also expected not to damage the caves or the land. The organisers of the expedition may ask participants to exit a cave, to leave the expedition or not to enter a cave, if they are acting in a way that threatens their safety or the safety of others or might damage the cave. Caving endeavours carry risks and dangers that may lead to fatal accidents. By participating in the Lion 2014 expedition you acknowledge these risks and you take responsibility for your own safety. Although the organizers have taken measures to ensure the safety of the team during Lion 2014 they cannot be hold accountable for your actions or choices during the expedition.



Enjoying the morning with the best view



After morning faxes everybody is happy

Water supply issues

Planning

While planning the expedition, keeping in mind that in August the spring in Keramos (LO23) does not provide water we made a calculation of the total expedition needs so as to make a plan to store water during the preparatory expedition.

Number of participants:	16	People
Number of days:	9	Days
Daily water needs (drinking/cooking/washing) per person:	3.5	Litres
Water needs for the whole expedition :		504 Litres

Goal:

To cover these needs the collapsible water tanks (2 x 225 & 2 x 400lt) that had been placed in LO23 last year had to be cleaned and filled up at least half of them before the beginning of the expedition in August.

Alternative sources:

Because we succeed to accomplish only one pre-expedition, during which only 350 liters were gathered, we needed 154 liters more. It was therefore necessary to plan for alternative sources of water. In the beginning we were thinking that the spring at LO23 might be able to give us about 150 liters in the summer. Alternately we had to carry water up from the spring at Hoses, 1.5 hours away, in trips of 15 liters. If every portage is 15 liters, only 10 trips would be necessary.

The contingency plan would allow the expedition to have available the quantity of water that it needed:

LO23 storage:	350	liters
Drawing of new water from the spring in LO23:	150	liters
or Carrying of water from Hoses:	150	liters
	500	liters

Central water storage – LO23 procedures

To draw water from the four collapsible water tanks at LO23, we prepared the following protocol. The materials needed are: water container for transfer, jug, funnel, antiseptic baby wipes. These were provided next to the tanks.

- Procedure:
- 1) clean hands with the baby wipes.
 - 2) transfer water with the jug to the funnel, which should be placed over the water container for transfer.
 - 3) care should be taken not to upset the water and not to spill it. Every drop is precious.



Filling up one of the four collapsible water tanks (-30m) in LO23.



Collection of water from the gour (-60m) in LO23



Above, we have depicted the procedure for drawing water with jerry-cans from the gour at -60m and raising it to -30m where the tanks are stored. To raise 150-200 liters, a team of four needs a few hours. The work conducted at positions 4 and 5 (tank) may be done by the same individual. The cavers at positions 1&2 and positions 3&4 may change tasks to rest from time to time. The sketch was prepared by Alexandros Margiolis and Evgenia Kouzmina.

Food and equipment:

The total weight of caving gear and foodstuffs reached 600Kg. This was all transported by foot from the end of the nearest dirt-road to the camp (a route of 2.9Km, with a 550m ascent). Portage trips were carried out throughout the expedition. None of the non-biodegradable rubbish created by the expedition was left at the basecamp. It was all separated (recyclable / not recyclable) and carried down to be disposed of according to type.



Members of the expedition:	15
Average duration of stay per participant (days):	8
Total duration of the expedition from 9/8 to 17/8, with lunches, in days:	9
Average number of people eating meals per day:	13.3
The menu was calculated for 11 people per day on average (to take into account the cavers at the bivouac)	

<i>Date</i>	<i>Recipe</i>	<i>Ingredients</i>
09 August 2014	Traditional thin spaghetti with delicious Tuna and lemon sauce	4 packets of spaghetti, 1 Kg Tuna, citric acid, oregano, mustard, 4 onions, 350ml olive oil
10 August 2014	Eastern flavours: Aromatic rice (Basmati) with Greek tinned tomatoes, accompanied by mushrooms and pork luncheon meat	1 Kg Basmati rice, 2 tins tomatoes, mushrooms, 4 tins of Zwan luncheon meat, 4 onions, 350ml olive oil
11 August 2014	Petrol-station pasta with (soya) mince	4 packets of pasta, 1 bag of grated soya, curry, oregano, mustard, 4 onions, 350ml olive oil
12 August 2014	Experiments in Molecular Gastronomy: Mashed potatoes and bits of Soya (powdered potato with milk, tomato sauce, curry)	12 portions of mashed potato with milk, 1 bag of soya in pieces, 2 tomato juices, curry, pepper, oregano, mustard, 4 onions, 350ml olive oil
13 August 2014	Fasting dishes: lentils with quinoa For the ungodly: there is an option to accompany the above with Tuna	1Kg Lentils, 1/2Kg quinoa, 350ml olive oil, 1/2Kg Tuna

<i>Date</i>	<i>Recipe</i>	<i>Ingredients</i>
14 August 2014	European cuisine night: risotto with eclectic spices and tuna	1Kg Basmati rice, 2 tins of tomatoes, mushrooms, wine, vegetable stock, garlic, 4 onions, 350ml olive oil
15 August 2014	American Fast Food night: BBQed sausages with pasta, and for the vegetarians: pesto with walnuts	4 packets of pasta, 2 tomato juices, 1Kg smoked sausages, oregano, mustard, garlic, 4 portions of pesto sauce, 4 onions, 350ml olive oil
16 August 2014	Fasting dishes: lentils with quinoa For the ungodly: there is an option to accompany the above with Tuna	1Kg Lentils, 1/2Kg quinoa, 350ml olive oil, 1/2Kg Tuna
17 August 2014	Homemade trahanas with a rich tomato sauce (tinned diced tomatoes)	1Kg trahanas, 2 tins of tomato, 2 onions, 350ml olive oil

A balanced dietary plan was drawn up in order to: a) create some variety in the foods to be consumed and b) to cover the daily needs in terms of calories and other nutritional elements and c) to satisfy the nutritional needs of the vegetarians in the tea.

Expedition diary

Maintained by basecamp manager, Efsaia Vardoulaki

Day 1 – Saturday 9/8/2014

In the morning, we (Michail, Efsaia, Tanyo and Mihai) arrive at the port of Chania. At the well-known cafeteria, we are met at around 07.30 by Panos, Telis, Botond, Attila, Ezgi and Melike who had all arrived the previous day. George Mazonakis joins us with Kostas from EOS Hanion to help with the transfer of equipment and cavers to the mountain. At around 08.30 the four car convoy sets off towards Aghio Pnevma, the Hosses spring where we arrive, arrange the gear in the small store held by the Cultural Association of Pemonia who had again allowed us to use their store for the needs of the expedition. We share out the gear that is to go to LO1 and commence the ascent at 11:20. The weather is sunny but still cool, which helps the loaded hikers. We reach LO1 in groups from 14:00 to 15:00. After a makeshift meal we rest a little and at about 17:00 – 18:00 we separate into four work-teams:



Team 1: Telis, Attila, Botond return to Chosses to bring up more materials. They take down recyclable materials left at LO1 at the end of last year's expedition (tins, glass, other containers). They return at around 19:30.

Team 2: Panos and Tanyogo to the Lion to begin the rigging. They reach -130m and return at about 20:30.

Team 3: Efsaia, Tanyo, and Mihai to the Lion to begin the rigging. They reach -130m and return at about 20:30.

Team 3: Michail, Ezgi and Mihai go to LO23 for water and to put in place the ropes from bringing the water up from -30m. They take another 50 litres from the gour and put them into the tanks. There is no inflow into the gour and it is left almost empty. They return at 22:30.

Team 4: Efsaia and Melike undertake to set up and organise the basecamp area.



Day 2 – Sunday 10/8/2014



Ezgi and Melike at LO1

At around 11:00, Attila and Botond go to continue the rigging until -300m and return at around 18:20.

At around 12:45, Mihail, Ezgi and Melike go to the Lion to replace the small carabiners near the entrance with larger ones and progress the smaller carabiners deeper into the cave. Mihail reaches -180m, the girls -130m. They return at around 17:15.

At around 16:15, Panos, Telis and Mihai begin rigging and improving the existing rigging until -350m. They return after midnight, at around 00:45.

Efsaia and Tanyo go to bring water from LO23 at about 17:00 and return with 39 liters of water at around 17:45.

The hard work of all the team is rewarded by a beautiful night with an August full moon, dark beers and a wonderful view. Ezgi shares gifts with all of us (souvenir T-shirts and OBRUK club stickers). Tanyo, Attila and Botond stay up waiting for the last group to return to the camp.

Day 3 – Monday 11/8/2014

At about 7:00, Attila and Botond make the descent to Hosses to bring up material and equipment for the bivouac as well as food and they return with Miltos who has come from Athens. The three of them are back at camp by 11.10. The day is very hot.

At about 12:20, it is the turn of Panos, Telis and Mihai to descend to Chosses to bring up more materials and equipment. They return by 17.00.



At about 13:15 Michail, Tanyo, Ezgi and Melike go to the Lion to forward equipment deeper into the cave and to continue the rigging.

Miltos and Efsaia went for water at about 14:00 and returned from LO23 at 17:30 with 50 lt.

Attila and Botond rested and prepared themselves for the Lion (with the objective to establish the bivouac and overnight inside) and left at about 18:00.

At around 20:30 Ezgi returns alone having left Melike at -300m. Mihail, Tanyo and Melike complete the rigging to the river at -485m where they leave the bivouac equipment and exit at around 02:00. During the ascent, they pass Attila and Botond at about -300m.

Day 4 – Tuesday 12/8/2014

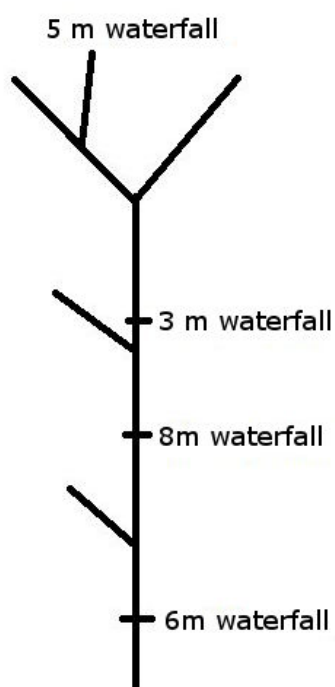
At about 13:15 Telis and Panos set off for -485m to begin rigging the waterfall where the last years expe had stopped and to continue the exploration, possibly together with Attila and Botond who were already at the river. They too will overnight inside. Panos prepares the bivouac for four people to overnight comfortably. At about 14:00 Miltos and Mihai enter the Lion intending to go to -240m and tidy up the hot spot there, to leave a gas stove and lighter and to bring out a 50m rope that was not necessary. At about 18:30 they exit after completing their task.

At about 14:00 Melike and Tanyo go to LO23 for water and return at 17:00.



Telis, Panos, Botond and Attila at the bivouac

At about 19:00 Mihail and Efsaia descend to Chosses, overnight there intending to make the ascent the next day with Kostas Adamopoulos, carrying food and equipment. They reach Chosses at 20:15.



Day 5 – Wednesday 13/8/2014

At about 12:15 Michail returns from Chosses and Kostas and Efsaia follow.

At about 14:00 Miltos, Tanyo and Mihai prepare to enter the Lion but return without entering as they meet Attila and Botond at the entrance, who inform them that spoons and forks are missing from the bivouac along with a camping stove (it transpired that no equipment was missing). In that way, we all gathered in LO1 for a small update on the progress of the exploration above the waterfall. Attila reported that they had scaled the 6m waterfall and continued the exploration about 200-300m further horizontally with a vertical difference of 30-40m. The section after the waterfall branches out into 4-6 different branches. They explored the first branches on the right which form the main route. Initially, they climbed an 8m waterfall, there followed another of about 3m and in the end they climbed over a breakdown slope at the ned of which it was necessary to descend 20 to 25m to rejoin the stream. At the

highest point of the breakdown, they found speleothems made of aragonite trees (CaCo_3). They did not continue further as they had run out of rope. They returned to the left branch where they reached a 5m waterfall and stopped.



Miltos with Tanyo at the entrance to the Lion

After hearing the boys describe their exploration, Miltos, Tanyo and Mihai left for the Lion (15:00) planning to meet Panos and Telis at -500m, overnight at the Bivouac and continue the exploration. Miltos returned to the surface at 16:30 after injuring himself slightly at -100m.

At around 14:00 Melike goes with Ezgi to LO23 for water and they return at 17:00. At about 24:00 Telis and Panos return, having rigged the first waterfall. They did not continue on account of the cold.

Day 6 – Thursday 14/8/2014

Early in the morning, (8:30) Attila, Botond and Miltos descend to Chosses to bring up rope and water and to accompany the new arrivals, Nasy and Evgenia.

Telis later bids farewell to the camp (10.00) and sets off the Chosses.

At around 11:30 Attila returns to LO1, leaves his load and returns to help the rest who are on their way up. At around 12:30, they are all up, Miltos having brought a jerry can of water with him (13 litres).



Michail and Kostas prepare to enter the Lion (15:00) to go to -500m for two overnights aiming to survey the new sections after the first waterfall. Ezgi and Melike descend with them intending to overnight and return materials to the surface from the bivouac while stopping to explore the meander at -400m on the way up.

At around 18:30 Panos, Evgenia and Nasy go to LO23 for water and to de-rig the cave from -60m to -30m. Attila, Botond and Miltos go to Gourgouthakas to rig it until -35m and to LO44 until -30m to collect Radon detectors placed during the pre-expedition in May.

At about 20:30 the team returns from LO1 with the Radon detectors and water.

At about 22:30 Mihai and Tanyo return from -500m in the Lion.

At the collector

Day 7 – Friday 15/8/2014

At about 6:30 Miltos and Mihai depart from the camp for Chosses. Panos descends with them to escort Stelios who had just arrived, up to camp.

Later, Attila and Botond prepare to descend to -500m for an overnight. Evgenia and Nasy go to the entrance with them for photography.



Ezgi in the sleeping area at LO1

At around 13:30 Panos and Stelios arrive from Chosses.

In the afternoon, Efsaia, Evgenia and Nasy go to LO23 for water.

In the evening, Ezgi and Melike return from -500m and report that the meander progresses only 26m upstream before reaching a 6m waterfall which for the time being is impassable.

Later on Attila and Botond return. They had been to -600m and turned back when they had run out of rope and anchors. That night we had a small party with red wine to celebrate the holiday and Panos' saint's day.

Day 8 – Saturday 16/8/2014

At about 12:00, Tanyo, Panos, Nasy, Evgenia and Efsaia set off for the Lion. The first two head for the bivouac, with an objective to bring up the bivouac gear which Kostas and Michail would be disassembling. The girls went to -70m as a practice. Attila prepared a spicy dish with materials brought from his homeland. In the evening Botond, Ezgi, Melike and Attila went to LO23 for water. At about 21:00 Panos, Kostas, Michail and Tanyo return from the Lion. Kostas tells us that they surveyed about 210m of horizontal passage from the waterfall upstream, of which 70m was surveyed "old-school" by hand as the PDA batteries had run out. The survey stopped at the base of a three meter waterfall.

After many days, tonight is the first time we have everyone present at camp, seeing as no one was overnighing in the Lion.

Day 9 – Sunday 17/8/2014



Clockwise from bottom left: Stelios, Kostas, Tanyo (hidden), Attila, Ezgi (hidden), Melike, Botond, Daniel, Evgenia and Nasy

Panos collected his things and left camp at about midday. He is accompanied to Chosses by Attila, Botond, Evgenia, Nasy, Michail and Kostas who begin to return gear and equipment to the storage space at Chosses. Those who remained at basecamp began to put things in order for the winter before our final descent the next day. This involved separating rubbish, sorting equipment from older

expeditions to the area, etc. Attila and Botond return having made the climb in only one hour. The rest follow bringing Daniel with them. That night we had Cretan wine and raki and the nuts and Cretan cheeses brought up to the camp by Daniel.

Day 10 – Monday 18/8/2014

Last morning on the mountain. From early morning, there is a thick fog and slight rain. Fortunately, the weather opens later. We start to put together everything for the descent and at about 12:00 we bid farewell to the Lion for another year. One more expedition reaches its end.



From L to R:

Attila, Ezgi, Botond, Kostas, Michail, Stelios, Tanyo, Efsaia, Nasy, Evgenia, Melike,

Daily movements of members

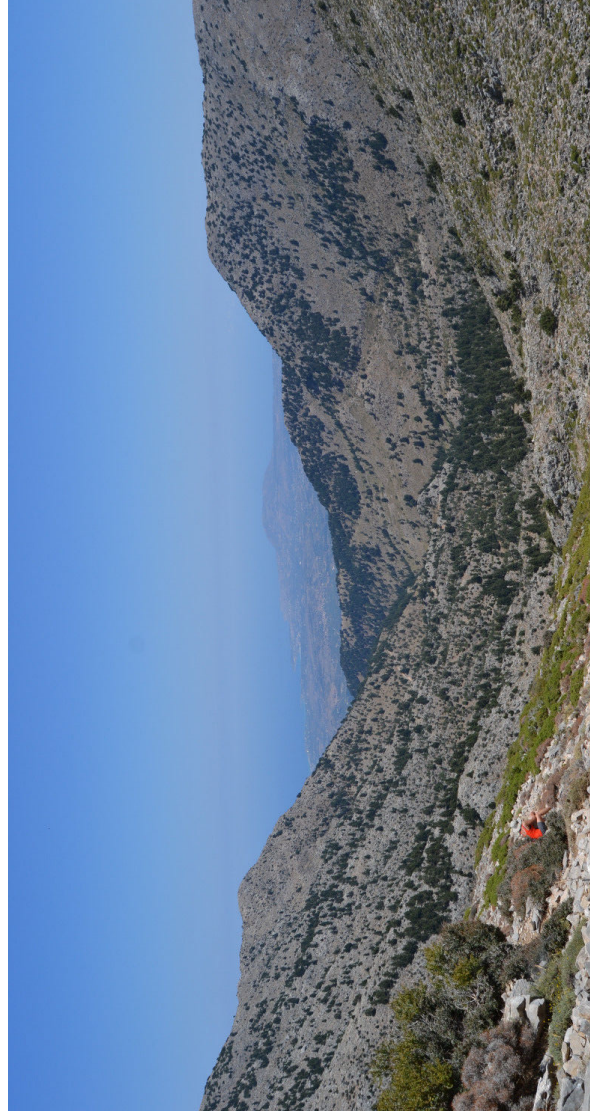
N	Team composition	Where / what	Depart (day/time)	Estimated return (day/time)	Return	Notes
1	Telis Dilintas Attila Toth Botond Fabian	Chosses to bring up equipment and take down recyclable waste from 2013	9/8 17:00	9/8 20:30	19:30 Ok	
2	Tanyo Markov Panos Georgopoulos	LOC21 (-200m) for rigging	9/8 17:00	9/8 21:00	20:30 Ok, reached -130m.	
3	Michail Tsopelas Ezgi Tok Mihai Vlad-Marius	LO23 for water and setting up hauling line from -30m.	9/8 17:00	9/8 21:00	22:30 Ok, brought 50 litres from the gour, which is now empty.	
4	Efsaia Vardoulaki Melike Ocakdan	Setting up and organizing camp	9/8 18:00	9/8 20:30	20:00 Ok	
5	Attila Toth Botond Fabian	LOC21 (-300m) continuation of rigging	10/8 10:00	10/8 19:00	18:20 Ok	
6	Ezgi Tok Melike Ocakdan Michail Tsopelas	LOC21, changing carabiners, forwarding materials deeper	10/8 12:45	10/8 15:00	17:15 Ok, reached -180m.	
7	Tanyo Markov Efsaia Vardoulaki	LO23, for water	10/8 14:10	10/8 17:00	17:45 Ok	
8	Panos Georgopoulos Telis Dilintas Mihai Vlad-Marius	LOC21, (-400m) continuation of rigging	10/8 15:00	10/8 23:00	00:45 Ok, reached -350m	
9	Attila Toth Botond Fabian	Chosses to bring up bivouac materials, foodstuffs and Miltos	11/8 7:00	11/8 12:00	11:10 Ok	
10	Mihai Vlad-Marius Panos Georgopoulos Telis Dilintas	Chosses to bring up materials	11/8 12:20	11/8 16:00	17:00 Ok	
11	Michail Tsopelas Ezgi Tok Tanyo Markov Melike Ocakdan	LOC21 (-500m), finalization of rigging and taking in materials for the bivouac.	11/8 13:15	11/8 23:00	20:30 (Ezgi) 02:00	Ok, Ezgi separates from Melike and returns.

N	Team composition	Where / what	Depart (day/time)	Estimated return (day/time)	Return	Notes
12	Attila Toth Botond Fabian	LOC21 (-500m), for overnight and exploration beyond the waterfall.	11/8 18:00	13/8	13/8 14:00	Ok
13	Telis Dilintas Panos Georgopoulos	LOC21 (-500m), rigging of the section beyond the waterfall and overnight.	12/8 13:15	13/8 (pm - Telis) 14/8 (Panos) 14/8	14/8 24:00	Ok, Telis and Panos exited together.
14	Mihai Vlad-Marius Miltos Chasialis	LOC21 (-240m), progression of stove and lighter, removal of 50m rope (50m).	12/8 14:00	12/8 19:00	12/8 18:30	Ok
15	Melike Ocakdan Tanyo Markov	LO23, for water	12/8 18:35	12/8 20:35	12/8 20:30	Ok
16	Michail Tsopelas Efsaia Vardoulaki	Chosses with overnight, to bring up equipment and accompany Kostas	12/8 19:00	13/8 11:00	13/8 12:20	Ok
17	Miltos Chasialis Mihai Vlad-Marius Tanyo Markov	LOC21 (-500 m) for exploration beyond the waterfall and overnight.	13/8 15:00	14/8 17:00	14/8 22:30	Miltos returned 13/8 due to injury.
18	Melike Ocakdan Ezgi Tok	LO23, for water	13/8 14:00	13/8 17:00	16:00	Ok
19	Attila Toth Botond Fabian Miltos Chasialis	Chosses to bring up rope and water and to accompany Evgenia and Nasy.	14/8 8:30	14/8 13:00	13:00	Ok
20	Michail Tsopelas Kostas Adamopoulos	LOC21 (-500m), beyond the waterfall for survey, photography and overnight.	14/8 14:00	16/8 17:00	16/8 21:00	Ok
21	Melike Ocakdan Ezgi Tok	LOC21 (-500m), exploration in the meander and bringing out bivouac equipment	14/8 15:00	15/8 17:00	15/8 20:00	Ok

N	Team composition	Where / what	Depart (day/time)	Estimated return (day/time)	Return	Notes
22	Panos Georgopoulos Evgenia Kouzmina Nasy Koutsoumani	LO23, for water and from -60m to -30m.	14/8 17:30	14/8 21:00	20:30	Ok
23	Attila Toth Botond Fabian Miltos Chasialis	LOC1, LO44, Keramos , to collect radon detectors	14/8 18:30	14/8 22:30	20:30	Ok
24	Miltos Chasialis Panos Georgopoulos Mihai Vlad-Marius	Chosses: Panos to bring back Stelios, the others depart.	15/8 06:30	15/8 13:00	13:30	Ok
25	Attila Toth Botond Fabian	LOC21 (-500m) to explore beyond the waterfall and overnight.	15/8 09:30	16/8 18:00	15/8 22:00	Ok, went to (equipment lack) returned wet.
26	Efsaia Vardoulaki Evgenia Kouzmina Nasy Koutsoumani	LO23, for water	15/8 17:30	15/8 20:30	20:30	Ok
27	Tanyo Markov Panos Georgopoulos	LOC21 (-500m), to extract bivouac materials.	16/8 12:00	16/8 24:00	21:00	Ok
28	Efsaia Vardoulaki Evgenia Kouzmina Nasy Koutsoumani	LOC21 (-70m), visit	16/8 12:00	16/8 15:00	14:30	Ok
29	Attila Toth Botond Fabian Melike Ocakdan Ezgi Tok	LO23, for water	16/8 18:40	16/8 21:00	20:30	Ok
30	Panos Georgopoulos Michail Tsopelas Kostas Adamopoulos Evgenia Kouzmina Nasy Koutsoumani Attila Toth Botond Fabian	Chosses, taking down equipment (personal and expedition). Panos departs.	17/8 12:40	17/8 20:00	18:00	Ok

N	Team composition	Where / what	Depart (day/time)	Estimated return (day/time)	Return	Notes
31	Stelios Zacharias Efsaia Vardoulaki	LO1, tidying up basecamp, sorting old materials.	17/8 13:00	17/8 16:00	16:30	Ok
32	Efsaia Vardoulaki Michail Tsopelas Kostas Adamopoulos Evgenia Kouzmina Nasy Koutsoumani Attila Toth Botond Fabian Stelios Zacharias Daniel Moraitis Melike Ocakdan Ezgi Tok	LO1, packaging materials and descent...	18/8 12:00	-----	-----	-----

The above information is transcribed from the hand-written tables for recording the movement of the members of the expedition maintained by the secretariat

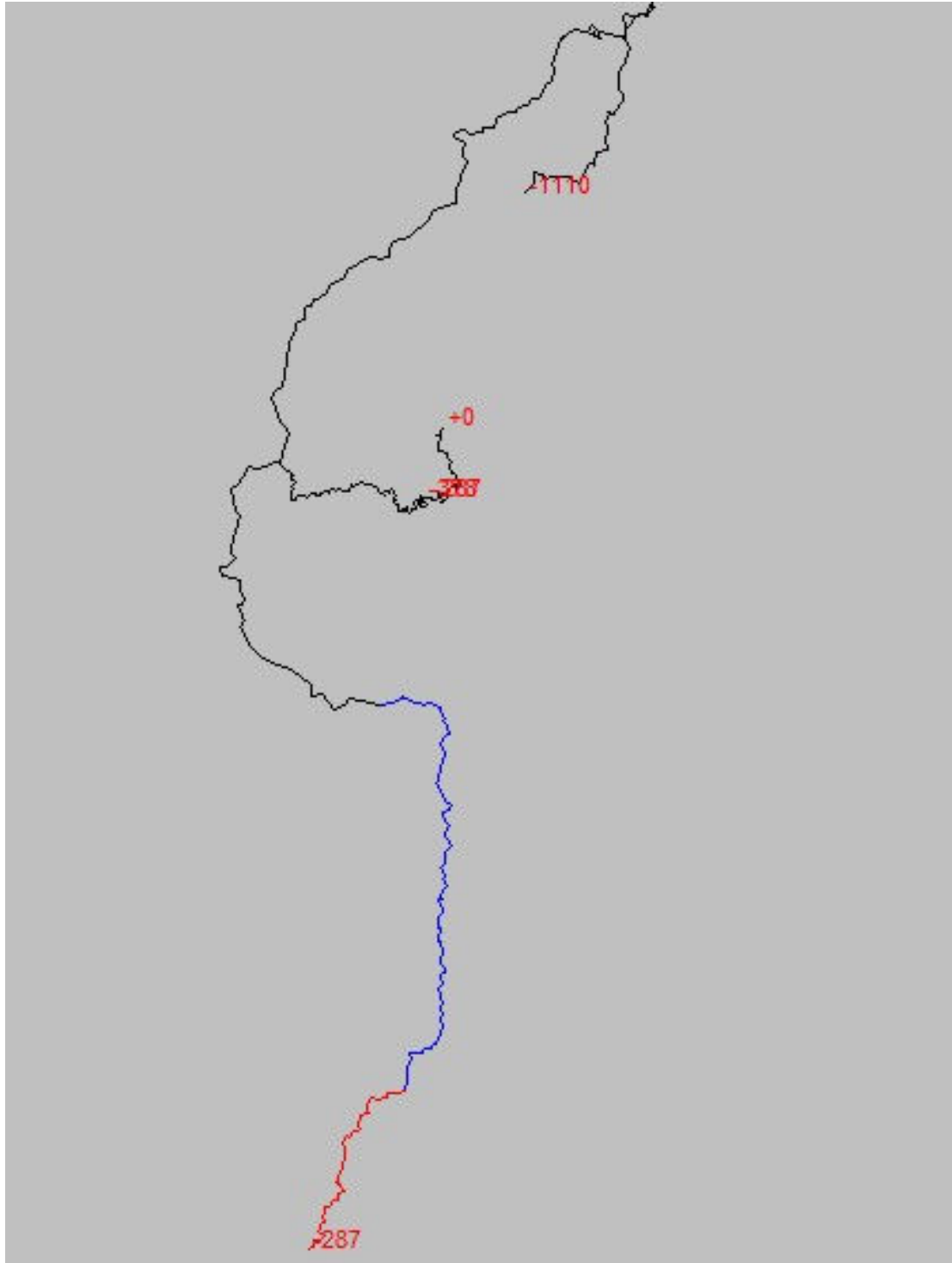


INITIAL RESULTS OF THE EXPLORATION

1. Direction of the cave

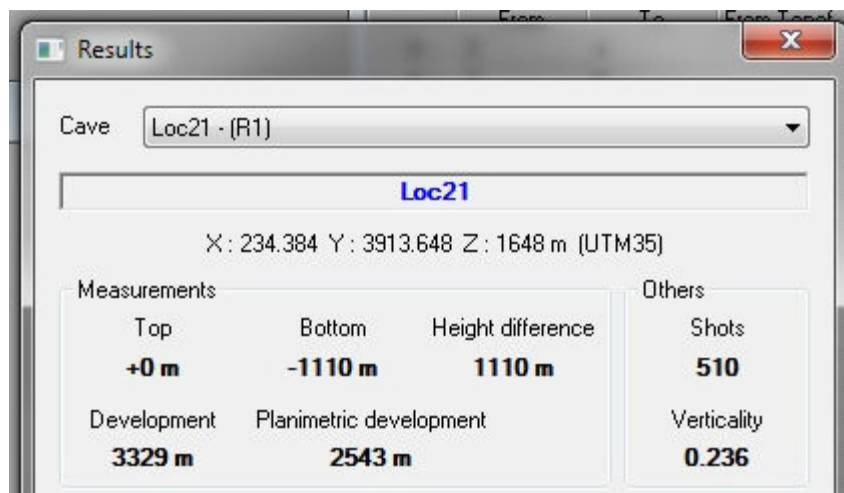
Kostas Adamopoulos

We used a DistoX distance meter for the surveying of the parts of the cave not surveyed last year. This connects with a handheld computer (PDA) which runs Pocket Topo. The data is exported in *.tro format for initial processing using the vtopo cave survey software.



A presentation of the first results of the survey through vtopo. The section of the cave surveyed last year is marked in blue, while this years' survey is marked in red.

The river continues upstream and begins to branch creating at least four separate streams, all of which have flowing water and a noticeable wind. The cave moves south and has now entered the heart of the massif having passed under the peak of Keramos or Trocharis. It is the first time I have experienced what it's like to penetrate under the anticline of a ridge and the spaces are simply huge! Each and every attempt to take a reading off the roof with the laser distance meter gave readings between 40 and 80 meters!!! We were just walking in the channels carved by the water in these very large spaces. It is absolutely clear that the river is fed either by the Pavlia Chalara basin or the Livada basin (less likely). What is sure is that water is moving from one karstic basin to another through the cave, and this fact alone is enough to justify and reward us for the efforts of eleven years of work in the area. The possibility of linking the caves of this area with those of the Pavlia Chalara basin (and LO50) is what drove us to start this project in the White Mountains in 2003. Today, eleven years later, we are one breath away from penetrating under this basin, having entered the cave in the Atzinolakkas area. This year's exploration progressed about 500m more, but we could only survey the first 200m!!! It goes without saying that the cave is progressing ever upwards and we are now at -286m compared to the entrance – It is just a little more and we will pass the entrance in height.



Measurements			Others
Top	Bottom	Height difference	Shots
+0 m	-1110 m	1110 m	510
Development	Planimetric development		Verticality
3329 m	2543 m		0.236

The results of this years survey are (in total) 3,329 metres length and 1,110m depth (no change in the depth). The estimated length including the un-surveyed sections explored this year are 3,600m.

2. Hydrological observations

Dr. Daniel Moraitis and Kostas Adamopoulos



The data gathered by the three sensors placed on behalf of the Polytechnic of Crete show that in the rainy period (October-November mainly) the water level rose by up to 60cm in a gallery of width 5m despite the winter last year being mild with few rains and fewer snows. Despite this, 60 centimetres is a considerable rise, which will be even bigger if the winter is stronger. Fortunately the gallery at the collector has very wide dimensions so the bivouac position at -500m is protected and safe, even under these conditions. Of course, the entrance to and exit from the cave during these

winter months would be dangerous. Following this surge, the water levels stabilize until spring when the snows melt and we observe waves of water level rises but on a smaller scale. Conclusion: the most dangerous period for visiting the cave is that of the autumn / beginning of winter (in other words, until the first snows). The temperature inside the cave at -485m was stable at 5.8 degrees Celsius. The scientists at the Polytechnic will now correlate the data collected with meteorological information and information gathered about the water levels in the springs at Stylos (River Koiliaris) which is located nearby. Following that, reports will be published.

We consider that it will be an important piece of research and we are anxious to see the conclusions which will be drawn. Furthermore, we consider that the efforts of everyone last year and this year were not just “for the fun of it” but indeed go towards significant research such as this.

3. Water analysis

Michail Tsopelas

Finally, our geologist friend Attila from Romania who was a member of the expedition took samples of water for onsite testing using a portable analyser (Winlab LF2 400 Photometer) which he had brought with him. The analysis showed a concentration of nitrites (NO_2) in the water at the collector at -485m in the order of 1.9 mg/l (collector) and 0.7 mg/l from LO23. Together with our original wrong belief that the normal maximum content for drinking water is 0.5 mg/l, these values worried us a little. Of course, when we returned to Athens we found that we were confused and the normal maximum permissible values for drinking water are in fact 100 times more, at 45-50 mg/l.

After overcoming our initial worries, we decided that a new set of samples should be taken during the closing expedition in September using sterile bottles for chemical analysis. So, I collected three samples, one from the meander at -400m, one from the river at -485m and one last one from a stream which joined the collector (a little upstream from the connection point) -458m. At the lab they informed me that they would be testing for Nitrites and not nitrates (NO_3) as these latter are what is normally encountered in waters polluted by fertilisers and there is no use of fertilisers at 1,600m. So if the waters had been polluted by the excrement of the herd animals grazing on the mountain, the Nitrite analysis would show this.

Analysis of water samples

Depth

	-400m	-485m	-458m	Units	Maximum safe dose
Hardness	107.4	125.3	125.3	mg/l CaCO ₃	150
Iron	0,03	0,05	0	mg/l	200 mg/l
Chlorine	0	0	0	mg/l	0,50 mg/l
pH	7.63	7.60	7.33		>6.5 and <9.5
Conductivity	180 µS/cm	165 µS/cm	176 µS/cm	µS/cm	2,500 µS/cm
Nitrites	0.006	0.006	0.003	mg/l	0.5 mg/l

The *hardness* of the water expresses the concentration of dissolved calcium and magnesium salts in the water and depends on the rocks through which the water has travelled. Hardness is separated into that dependent on carbonate salts of calcium and magnesium (temporary hardness) and that not dependent on carbon (permanent), which is caused by chlorine and sulphur based salts of calcium and magnesium. The term hardness refers to a property of water which does not foam when used with soap to wash and which leave white scale on the internal workings of household appliances. There are no set limits for water hardness in health directives but water may be used as drinking water with hardness up to 500 mg/l CaCO₃ although values between 80 and 150 are preferable. The values recorded in all three samples which we took would place the water in the cave amongst the semi-hard waters (Semi-hard waters: 143.2-214.8 mg/l CaCO₃).

The *iron* content in water is dependent on the iron salts contained in the rocks. Continuous consumption of water with high concentrations of iron may cause tissue damage in humans, especially children. In our samples, the iron content is almost zero.

The *chlorine* values in our water are zero, which should not come as a surprise as chlorine is only present in water destined for drinking, to which it has been added. The following information is only repeated therefore for the purpose of a full future reference. The Greek legislation sets no upper limit for chlorine in water but only a lower limit. Health directive 5673 of 1958 which is still in force stipulates that “the amount of chlorine added will depend on the quality of the water and will be sufficient to result in chlorine residues of at least 0.20mg/l at the edges of the water system». In parallel, the WHO sets a maximum limit of 5 mg/l while the legislation of the USA sets 4 mg/l. In line with international norms, chlorine should not exceed 0.50mg/lit.

The acidity or alkalinity of a liquid is given by the pH value (puissance Hydrogen) which indicates the concentrations of hydrogen ions in the liquid. When the pH value is below 7, water is said to be acidic, when it is 7, it is neutral and when it is between 7 and 14, the liquid is characterised as alkaline. The water in the Lion is slightly alkaline.

The *conductivity* of the water is the numerical expression of the ability of a solution to conduct electric current. This property depends on the presence of ions, their overall concentration, the strength and the individual concentrations of the ions as well as the temperature of the liquid. Conductivity in water increases with temperature. The maximum permitted levels of conductivity for drinking water are 2,500 µS/cm, measured at 20° C. Our samples are again very much below the limit.

Nitrites (NO₂) – Nitrates (NO₃). These are part of the nitrogen cycle in nature and so both exist in water in nature albeit in low concentrations. High concentrations are usually due to fertilizers, rubbish and animal or human waste. They exist also in the air when there is air pollution, so they can be brought down from the atmosphere by rain or deposited on the ground. In aerobic conditions, nitrites infiltrate into the water table. Nitrites in our samples are very low, almost zero.

The general conclusion to be drawn from the analysis of the three samples is that the water is of very good quality and has not been compromised by the overgrazing in the area.

4. Fauna

Stelios Zacharias

I have been three times now to base camp (LO1), in 2008, 2013 and this year. The caves visited have not been systematically monitored for fauna, although chance findings of cave life have been noted: a flying insect found in the first pit (to -70m) by Oana Chachula in 2013 and gastropod found in the river at -500m by Tanyo Markov this year (length 1-2mm). Photographs do not exist of either, and this is something which may be remedied in future years, when even samples may be collected.

In general this year the insect fauna at LO1 was more noticeable: wasps, robber flies and butterflies which have not been noticed at LO1 in the past, probably appearing at higher altitude due to the milder winter of 2013/2014. The increased night-time activity of the insects made walking outside with a headlamp an “interesting” activity.

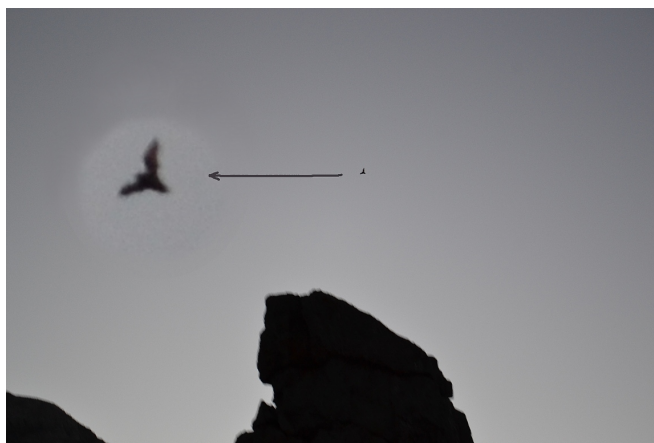
We had heard *Tadarida teniotis* bats in 2013 and also this year, but this year we also observed at least two individuals of another genus at dusk on 16 August outside the Lion which were large and fast moving. The same evening we found a large scorpion outside the Lion. The next morning a harvestman ‘spider’ was photographed in LO1.



Opiliones sp. in LO1



Scorpion at the Lion



One of the two bats photographed above the Lion

Promotion of the expedition

Stelios Zacharias presented the expedition and its results during the 8th Balkan Cavers Camp in Mravinci, Valjevo, Serbia in front of a large interested audience of cavers. Michail Tsopelas wrote an article about the expedition in issue 13 of the magazine “The World of Canyoning, the Mountain and the Deep”. Finally, the members of the expedition’s Coordinating Committee Stelios Zacharias and Efsaia Vardoulaki appeared as studio guests and presented video and stills from the expedition on the morning informational magazine-style programme LiveU on the national TV channel Star. The link may be found here:

<https://www.youtube.com/watch?v=uWrrsv8WUOI>.

