Cave exploration in Phou Pha Marn

EXPLO-LAOS Association

February-March 2025



Tham Nang Long

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Summary 2

Abstract 3

Maps 4

Tham Pong 6

Tham Nang Long 9

Tham Lom 11

Tham Kathoung 14

Tham Kuan Tung 19

Tham Thea 21

Tham Nam Ock 25

Abstract

The expedition, organized by the Explo-Laos association and sponsored by the French Speleology Federation, took place from February 27 to March 17, 2025 in the Phou Pha Marn sector, west of the karst massif of the Khammouane province, following a reconnaissance carried out in 2024 and in collaboration with the Green Discovery agency, concessionaire of the explored area. Several beautiful caves exist in this sector, explored by local guides, notably with the aim of developing sports tourism from the Rock Viewpoint site. Our goal was to continue exploring and survey the caves :

- ThamNang Long is a passage with a beautiful underground river that has revealed 2,945 m of galleries, with several new passages after climbing.
- Tham Pong starts with a magnificent 90 meters pit, and has been surveyed over 525 m and a depth of -185 m.
- Tham Lom is formed by a series of pits ending at -104 m on an impenetrable meander.
- Tham Kathoung, which we explored in 2013, has been extended by 922 m, bringing its length to 4,312 m.
- Tham Kouan Tung, particularly difficult to access amidst the tsingys, has allowed us to explore 2,942 m of conduits with an underground river partly dug along a fault. Despite numerous climbs, no other exit has yet been discovered, despite the distinct draught flowing through the cave.
- Tham Thea, a large opening located in the middle of the cliff, is a fossil cave surveyed over 866 m.
- Tham Nam Ok is a large resurgence active during the monsoon season, extending 555 m to a siphon.

The expedition thus brought back 8,900 m of surveys.

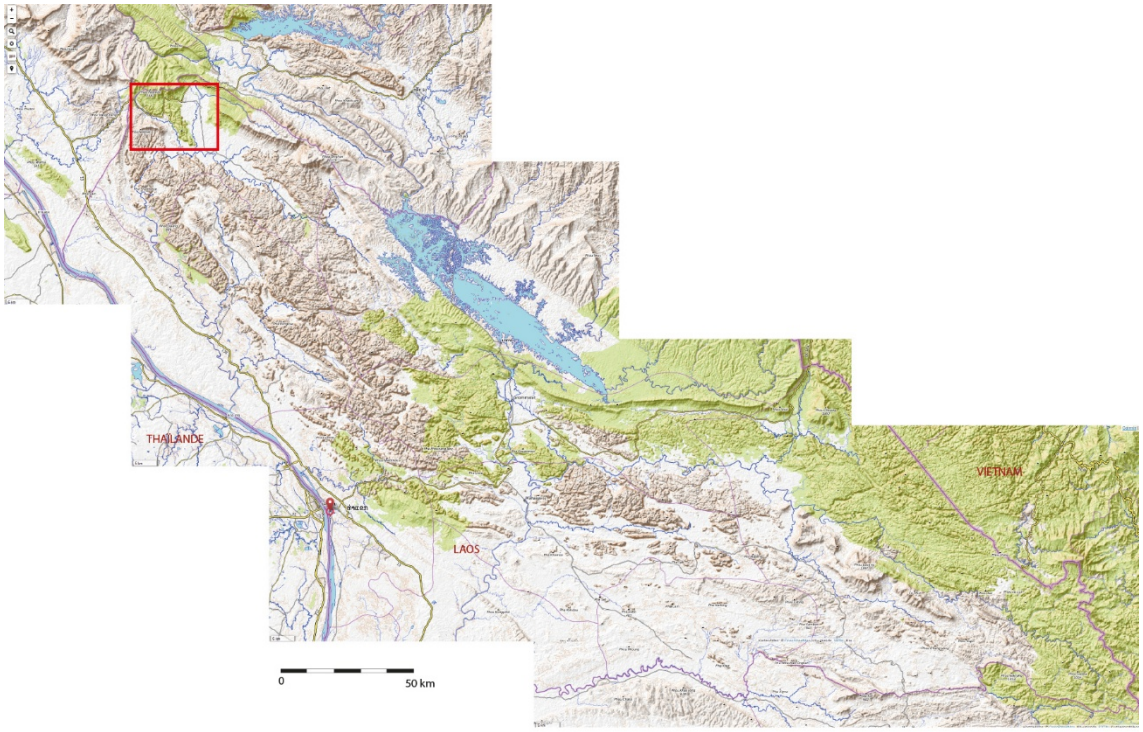
In addition, biospeleological samples were taken in each cave.

We thank our friend Terry Bolger, MM. Thongkhoon Sayalath, Olaxai Saisouphanh and the Green Discovery staff, as well as our guides and drivers.



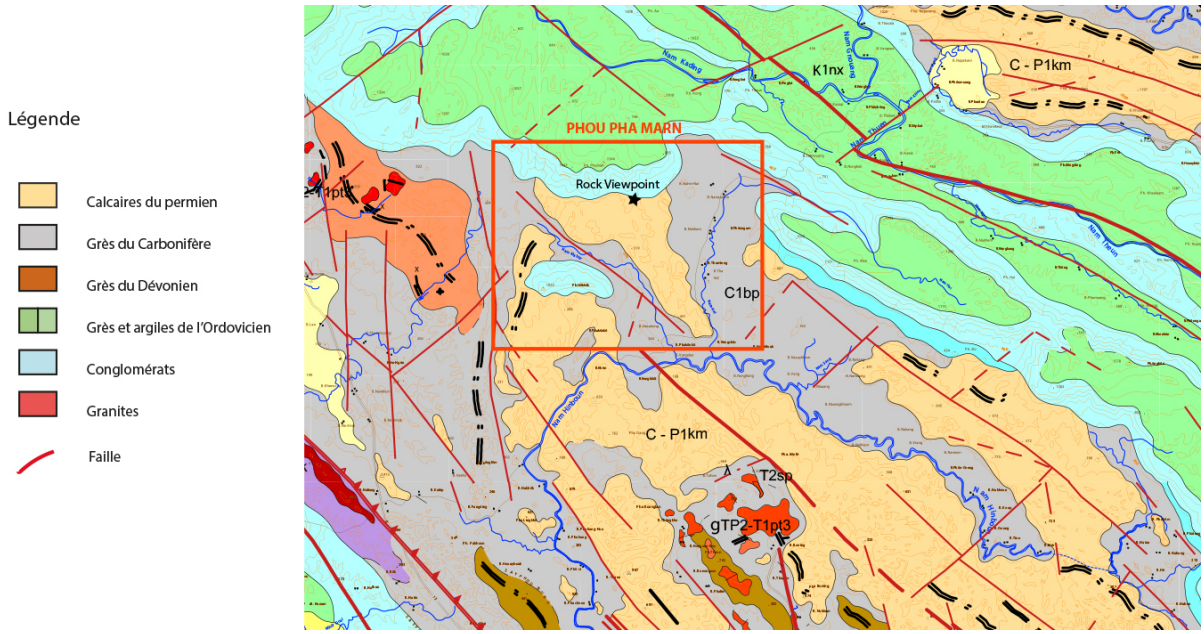
Tham Kathoung entrance

MAPS

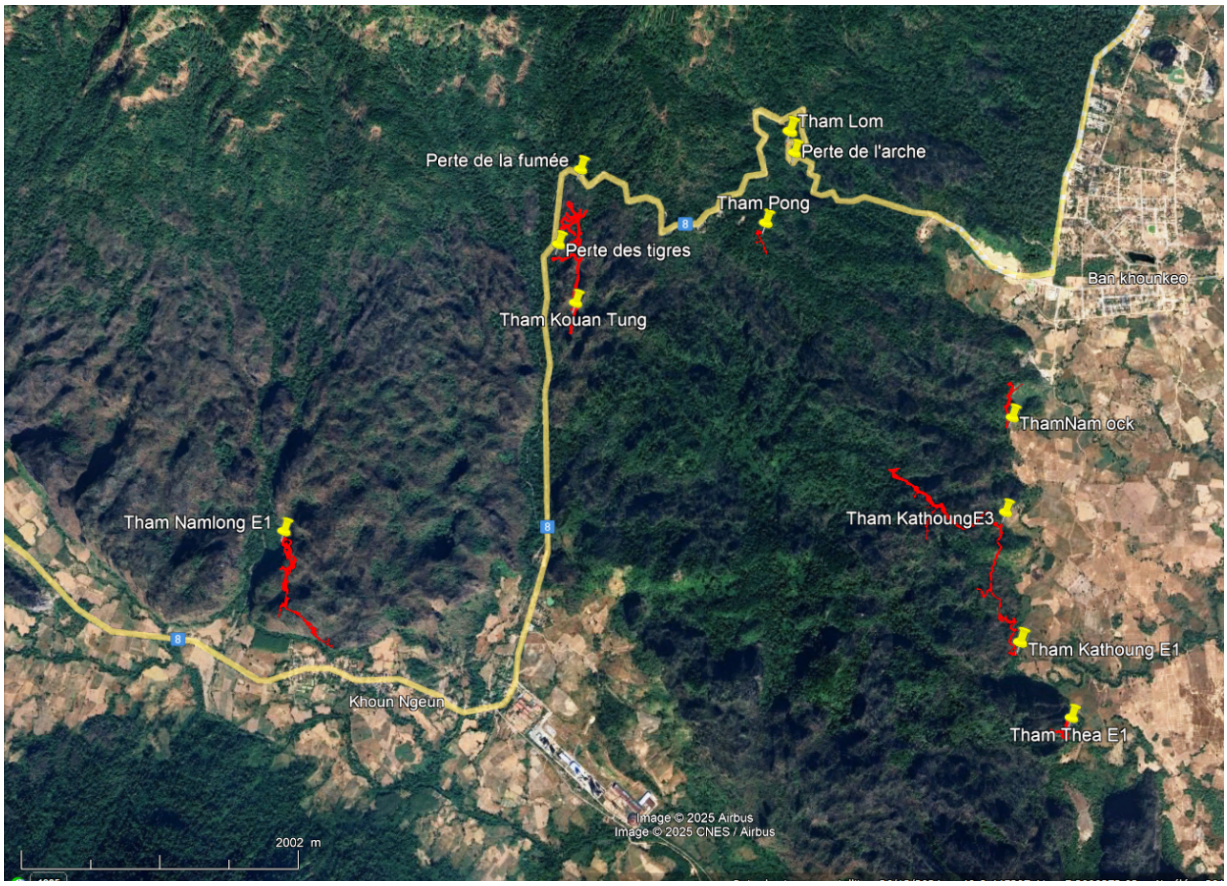


KARST DU KHAMMOUANE

The Khammouane karst and Phou Pha Marn location (OpenStreetMap)



Geology of the area (adapted from Tra Va Ban, 2000)



Caves location

Name	Coordinates	expansion	depth
Tham Nang Long	Upper entrance 442239 m E 2007646 m N, 248 m	2945 m	-39/ + 10
	Low entrance 1: 442500 m E2006935 m N, 196 m		
	Low entrance 2: 442528 m E 2006891 m N, 192 m		
	Low entrance 3 : 442562 m E 2006871 m N, 197 m		
Tham Pong	445898 m E 2009931 m N, 462 m	527 m	- 185 m
Tham Kathoung E1	447840.00 m E 2006776.00 m N, 186 m	4312 m (922 m)	81 m/- 15m
Tham Kathoung E3	447736.45 m E 2007770.72 m, N 203 m		
Tham Lom	446064 m E 2010675 m N, 176 m	157 m	- 104 m
Tham Kuan Tung	444467 m E 2009367 m N, 260 m	2942 m	-46 +41
Tham Nam Ock	447796.00 m E 2008491.00 m N, 170 m	555 m	
Tham Thea	E1: 448197 m E, 2006279 m N, 204 m	866 m	
	E2: 448206 m E 2009133 m N, 200 m		
Ark sink	446126.74 m E 2010488.07 m N 362 m		
Smoke sink	444505.10 m E 2010355.44 m N 409 m		
Tigers sink	444331.13 m E 2009804.94 m N 340 m		

Caves coordinates

Tham Pong

Tham Pong is a large shaft that opens behind the Rock lodge.

It is accessed by a small path that passes a small peak at the end of the hotel and then through the forest to the south before turning east and descending to the entrance.

The sinkhole opens into a wide funnel 25 meters in diameter and becomes a perfectly hewn shaft ~15 meters below.

By descending this P90 almost entirely, you can see the start of a high meander to the south ; it can be reached by ascending a few meters from the base of the shaft.

The bottom of the shaft is relatively flat and provides access on its western edge to a new 60 m deep pitch.

The meander is recognized for about forty meters and continues southwest, stopping at a 4 m pitch.

The large P60 is inhabited throughout its height by numerous sucker-nosed frogs. We continue along a meander that is initially narrow and widens significantly after a 6 pitch.

We advance another 20-30m and find an upstream-downstream intersection. The upstream section quickly leads to an ascending P100. The downstream section continues and once again leads to an upstream-downstream intersection. The upstream section leads to the base of a 90 m shaft after 50 m.

The downstream meander becomes increasingly wider and intersects a straight joint to the south that allows for comfortable progress. Then the ceiling drops drastically. We are clearly in an area that is completely submerged, and the adventure ends with a very narrow sandy passage that marks the end of the cave.

There is a very slight air current; we are at -180m, almost at the base level.

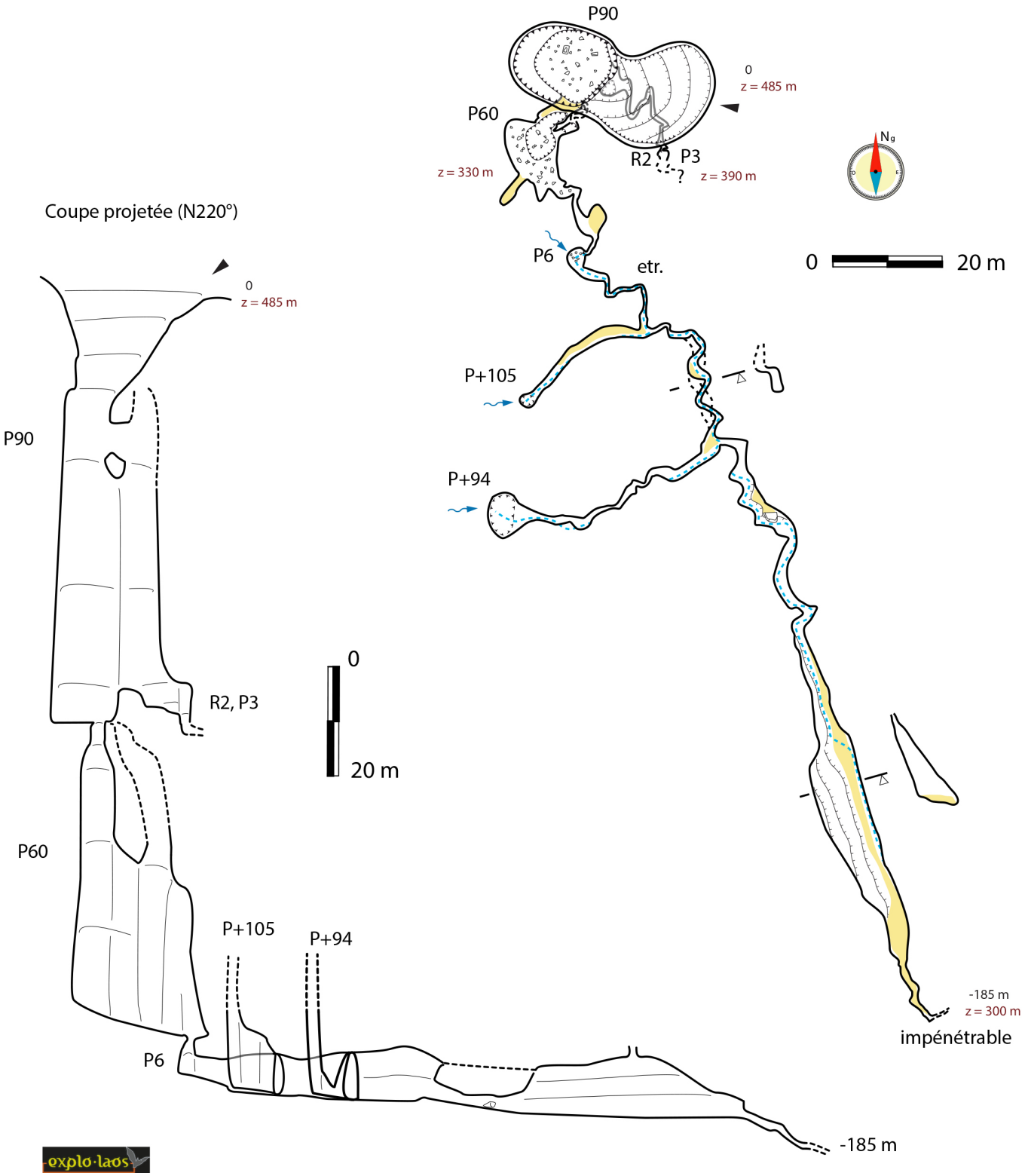
Tham Pong

Province de Khammouane - R.P.D. Lao

48Q X= 446064 Y= 2010675 Y=176 m

Développement: 527 m (-185)

Levés : Alexis Augustin, Pascal Orchampt, J.M. Ostermann
Dessins/CAD : Pascal Orchampt
Association Explo-Laos / Expédition K25





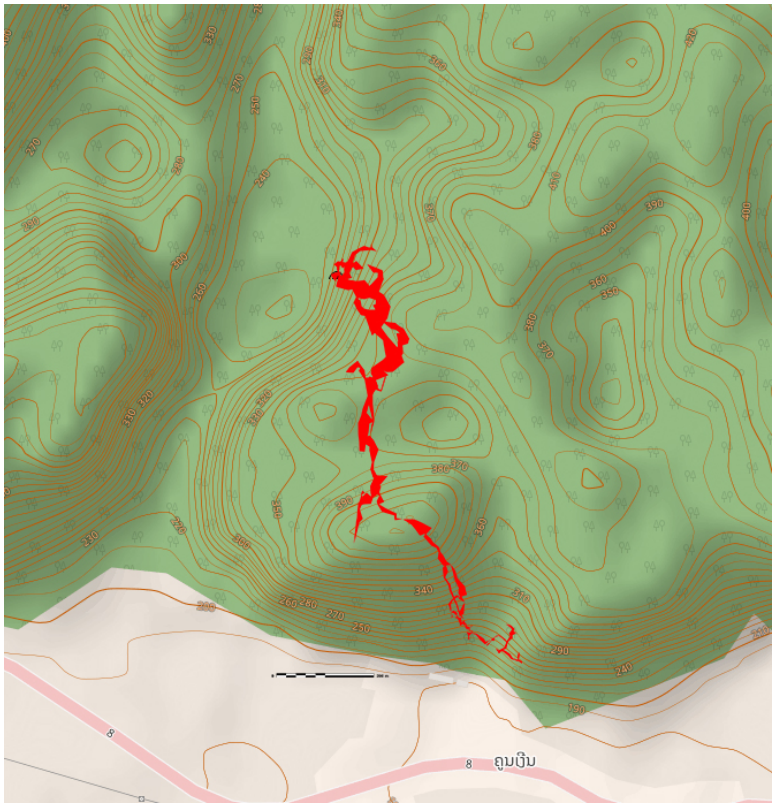
Tham Pong



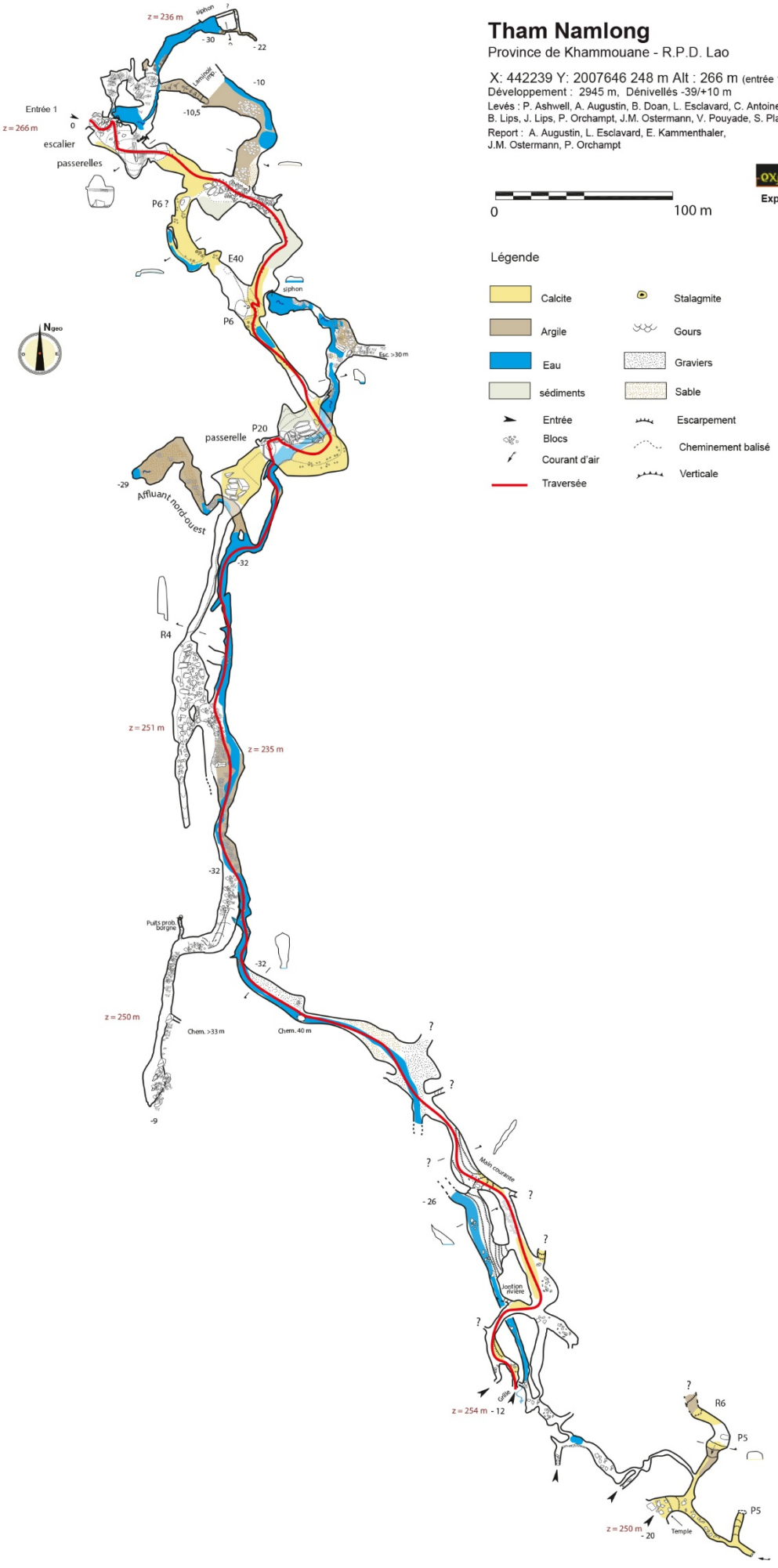
Tham Nang Long

Another cave offered to tourists on a sporty visit is Tham Nang Long: a beautiful crossing run by a turquoise river. The entrance is from the upstream which has been fitted with metal footbridges, to avoid visitors from the scree at the entrance. A 20 m pitch then allows you to reach the active level. Our explorations of the upstream allowed, at the cost of a few climbs, to discover new passages here but without any real possibility to progress now. However, a climb above the siphon under the 20m shaft would be interesting. Almost everywhere above the aquatic route there is a fossil gallery that we end up using at the upward slope equipped with a rope which reach the exit framed by a gate. At this place, several passages generally oriented towards the west could allow the cavity to be extended.

The visit continues by following the aquatic passages which reach a small gallery with two others small exits. We then reach a large entrance with a small Buddhist temple. At this point, further north, a large conduit was explored with a stop due to lack of time; a gallery however goes deep into the mountain...



Tham Nang Long location on the map


z = 236 m
siphon
- 30
- 22
-10
-10,5
Entrée 1
z = 266 m
0
escalier
passerelles
P6 ?
E40
siphon
P6
Ngéo
Exc >30 m
passerelle
P20
-29
Affluant nord ouest
-32
R4
z = 251 m
z = 235 m
-32
Puits prob. borgne
-32
z = 250 m
Chem. >33 m
Chem. 40 m
-9
Main courante
- 26
Jonction rivière
Gour
z = 254 m
- 12
R6
P5
P5
z = 250 m
- 20
Temple
Tham Namlong
Province de Khammouane - R.P.D. Lao
X: 442239 Y: 2007646 248 m Alt : 266 m (entrée 1)
Développement : 2945 m, Dénivellés -39/+10 m
Levés : P. Ashwell, A. Augustin, B. Doan, L. Esclavard, C. Antoine, E. Kammenthaler, B. Lips, J. Lips, P. Orchampt, J.M. Ostermann, V. Pouyade, S. Planès
Report : A. Augustin, L. Esclavard, E. Kammenthaler, J.M. Ostermann, P. Orchampt
explo·laos
Expédition K 25
0
100 m
Légende
Calcite
Argile
Eau
sédiments
Entrée
Blocs
Courant d'air
Traversée
Stalagmite
Gours
Graviers
Sable
Escarpement
Cheminement balisé
Verticale



Tham Nang Long



Tham Lom

Tham Lom entrance is located 2 km east of Rock Viewpoint, along the road leading to Ban Nahin. It is about ten meters upstream of the road, on the north side, at the entrance to a 90° bend leading downhill.

After crossing the small roadside wall and climbing up the right bank of the valley, the pitch is located at the foot of a rocky outcrop, on a slight ledge.

The cave is known to the Rock Viewpoint teams, who explored it in 2020 ?

Tham Lom appears as a 104 meters depth vertical cave with and a length of 157 meters. The entrance opens into a pitch with a cross-section of approximately 1 x 2 meters. A short, gently sloping path leads to the top of a first 50-meter pitch. This pitch, with its smooth, locally fluted walls, has a cross-section of 2.5 meters at the top, widening to about ten meters at the base.

After setting foot on horizontal sandy soil, the descent continues over a chaos of unstable blocks to reach the head of the second pitch, which leads to a landing at elevation -86. A final pitch, about ten meters high, finally opens onto sandy soil located at -97 meters. The network then develops, as in its upper section, in a northwest/southeast direction. Upstream, the cavity is partially filled with sandstone pebbles, the cross-section of which can be up to 2 m.

Downstream, a narrow meander extends southward for about a dozen meters. At -104 m, this narrows into an impenetrable joint that allows a strong air current to pass through.

This entire cavity has been explored with no further prospects. Of course, unblocking the terminal section would be particularly interesting, given that there are active cavities of interest to the south (Tham Kathoung, Tham Nam Ock).

This small pitch is located at the junction between the Mesozoic sandstones that covered the karst and the Permian limestones. This is an absorption zone for the runoff water that flows over the sandstones that formed the pitch. As with Tham Kuan Tung, scree from this covering partially filled the cavity.

Tham Lom

Province de Khammouane - R.P.D. Lao

(UTM 48Q) X= 446064 Y= 2010675 Y=176 m

Développement : 157 m, Dénivellés +0 -104

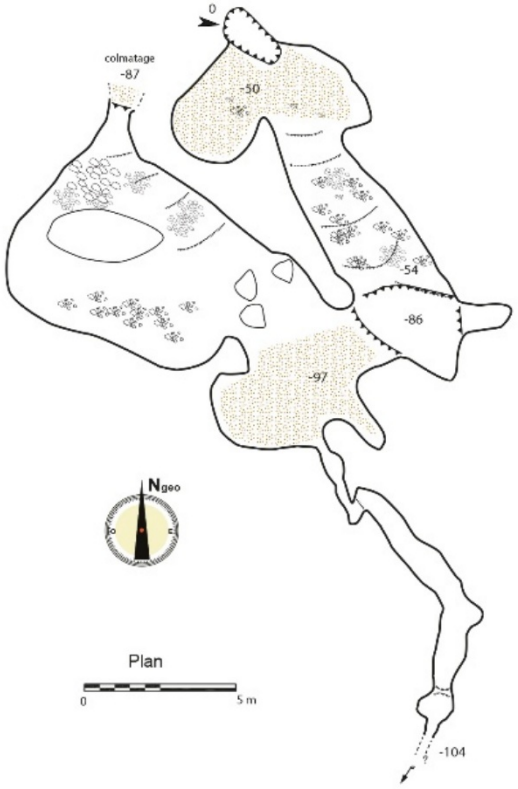
Levés : L. Esclavard, E. Kammenthaler, J.M. Ostermann, S. Planès

Report : E. Kammenthaler

Expéditions K 25

Légende

Graviers
Sable
Entrée
Puits
Courant d'air
Escarpement
Ressaut
Blocs
Galets







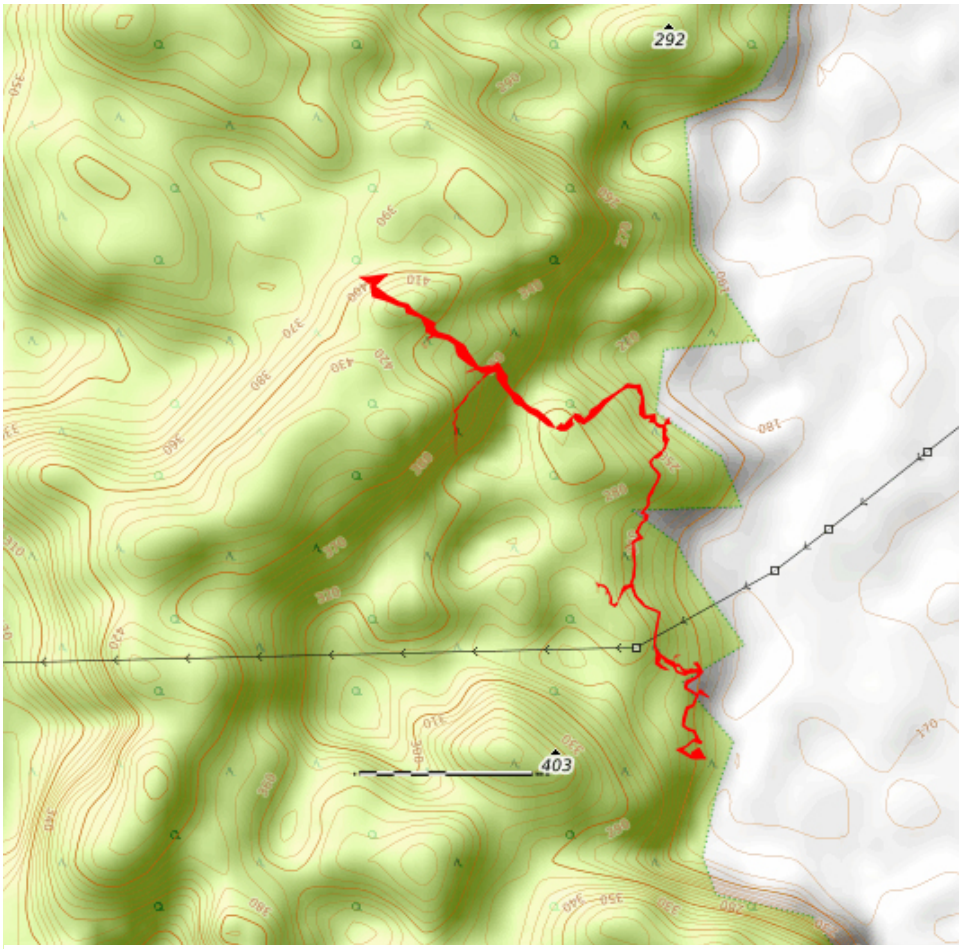
Tham Lom



Tham Kathoung

Tham Kathoung is a cave that we had partially explored in 2013 over 3,390 meters in 48 hours, at the request of local authorities. The question marks were gradually lifted, bringing the development to 4,312 meters. Unfortunately, no significant extension was discovered. But this river still has magnificent concretionary passages.

The main entrance to Tham Kathoung was discovered by a farmer clearing brush at the foot of an escarpment. The Explo Laos 2013 team was led there, allowing the exploration of 3.3 km of a sub-horizontal network in two days. That year, the cave was surveyed from the main entrance by two teams, one for the southern half and the other for the northern section. Unfortunately, the raw data from the topographic survey of the northern section were not found. In order to continue the exploration and compile new data with the old ones, we felt it was important to retrace the surveyed path of the northern section and add it to the old data from the southern section. Thus, 1,550 m of the path was surveyed in the northern part of the cave. The new explorations of the 2025 campaign include 922 m of additional surveys, which brings the total development to 4,312 m for a difference in altitude of 95 m (-15/+80 m compared to the main entrance).



Tham Kathoung on the map

Description

Located at the foot of a rocky ledge, at the edge of a cultivated plot, the main access to Tham Katoung is by winding through the boulders of a chaotic landscape, in the bed of a cliff that runs along the rocky escarpment. After a few uncomfortable meters of walking, one sets foot in the main bed of a dry river (section 6x10 m).

Downstream, a comfortable gallery runs south for over a kilometer. The ground is flat, alternating between sandbanks, pebbles, and rocks. The dimensions increase to 6 m wide and 16 m high. The concretions are massive and various.

Approximately 500 m south of the main entrance, there is a gallery on the right bank of the river, towards the west. This gallery was explored in 2013 for 75 m.

The main watercourse continues south for approximately 250 m before crossing several outlets that lead to various entrances identified in 2013. This year, not all of these entrances were seen. At the southern end of the network, there is a large porch, clearly visible from the outside.

On the north side of the main entrance, the upstream part of the river extends for over a kilometer. A perched pool can quickly be crossed from the left. A handrail has been installed to secure this passage. This is followed by a high gallery whose floor drops about 5 meters, forming a tsingy with sharp edges over two meters high. The most dangerous edges were broken with a mallet.

After a first large chamber (40 x 20 m) oriented east/west, the network continues north for 100 meters before heading southwest again for 150 meters. Several narrow passages were noted on the 2013 survey. A quick exploration of these outlets did not yield encouraging results.

At the top of a sandy slope going to a lake, there is a passage leading upwards on the right-hand side. This upper passage was explored. It is of no interest and has not been surveyed. The following lake is formed by a double basin that must be crossed by swimming, passing in the middle under a rocky ledge where a very strong air current circulates.

After leaving the silted sandbanks of the lake, the ground becomes very chaotic.

A little further upstream, during the exploration of the cave in 2013, two possible continuations were noted: "7 m Climb" and "10 m Climb," on the west side of the main gallery.

In 2025, these two climbs were completed. The first, located at the ceiling of the large gallery, is accessible from a ledge that runs towards the top of the main gallery on its west side. The upper network formed on the limestone stratification joint beyond the ceiling of the main gallery, over a thickness of approximately 2 m. This network extends for about twenty meters along the axis of the main gallery. It has not been surveyed due to its limited interest. It continues upward for about ten meters. An old penstock (section 1 x 2 to 0.5 x 0.4 m) with a weak but clearly perceptible air current allows for an ascent of about 20 to 25 m. The end of this gallery has not been reached. It was prospected until its section became too small. It seems possible, for the motivated, to push the exploration further.

The second climb, noted "Escalade 10 m" (10 m climb), is located slightly further north. The network occupies the same context as the climb described above. It was explored and surveyed over a 200 m stretch with an elevation gain of 80 m. The entire network is covered by a 10 to 20 cm clay layer. Access is gained by climbing the west wall of the main gallery to reach the ceiling. A short climb, aided by a Dyneema rope held in the hand, leads to a small, steeply inclined room measuring 25 m x 40 m.

At the northern end of the chamber, a 10-meter-wide chimney was observed from its base for about twenty meters. The ceiling is visible, but it seems possible that a continuation could exist at the top.

A few meters south of the base of this chimney, a projection in a skylight overlooks an old penstock of fine cross-section. This pipe was raised over a 40-meter drop, then splits into two branches. The southern branch extends for only a few meters. On the north side, the gallery continues on a steep slope. It was observed for about thirty meters, with no stops. Further exploration requires the use of a rope.

Beyond this, the main gallery continues to a very sharp turn to the southwest. On the left, a branch leads to a medium-sized gallery through which a weak air current circulates, gradually disappearing. A climb to attempt was observed about 80 meters from the junction with the main gallery (starting between large boulders). This gallery splits into several branches over a few meters. On the right, a short gallery quickly becomes impenetrable. The gallery continues for another 90 meters to an impenetrable narrowing with the presence of water. Despite a distinct echo, no draft was perceptible.

Back in the main river, 200 meters further upstream, at the top of a bench on the right bank, a small, draft-free gallery extends for about fifty meters, reaching a junction. A branch to the left that seems a bit tricky has not been explored. On the right, another gallery quickly becomes impenetrable.

Beyond this, the main gallery becomes more spacious. On the right side, we see numerous fossils.

Further on, the gallery becomes very spacious and measures up to 50 meters wide and about fifteen meters high. On the west side, a magnificent calcite flowstone forms the Submarine : a summit, a succession of small gours overflow and form an immense calcite massif.

At the northern end of the Submarine, there is a sand dune, at the top of which we see "the ultimate obstacle of the *speleus vulgaris* (...): an enormous sump!"

Perspectives

The exploration prospects, aside from crossing the siphon, in Tham Kathoung are still spread throughout the cave section.

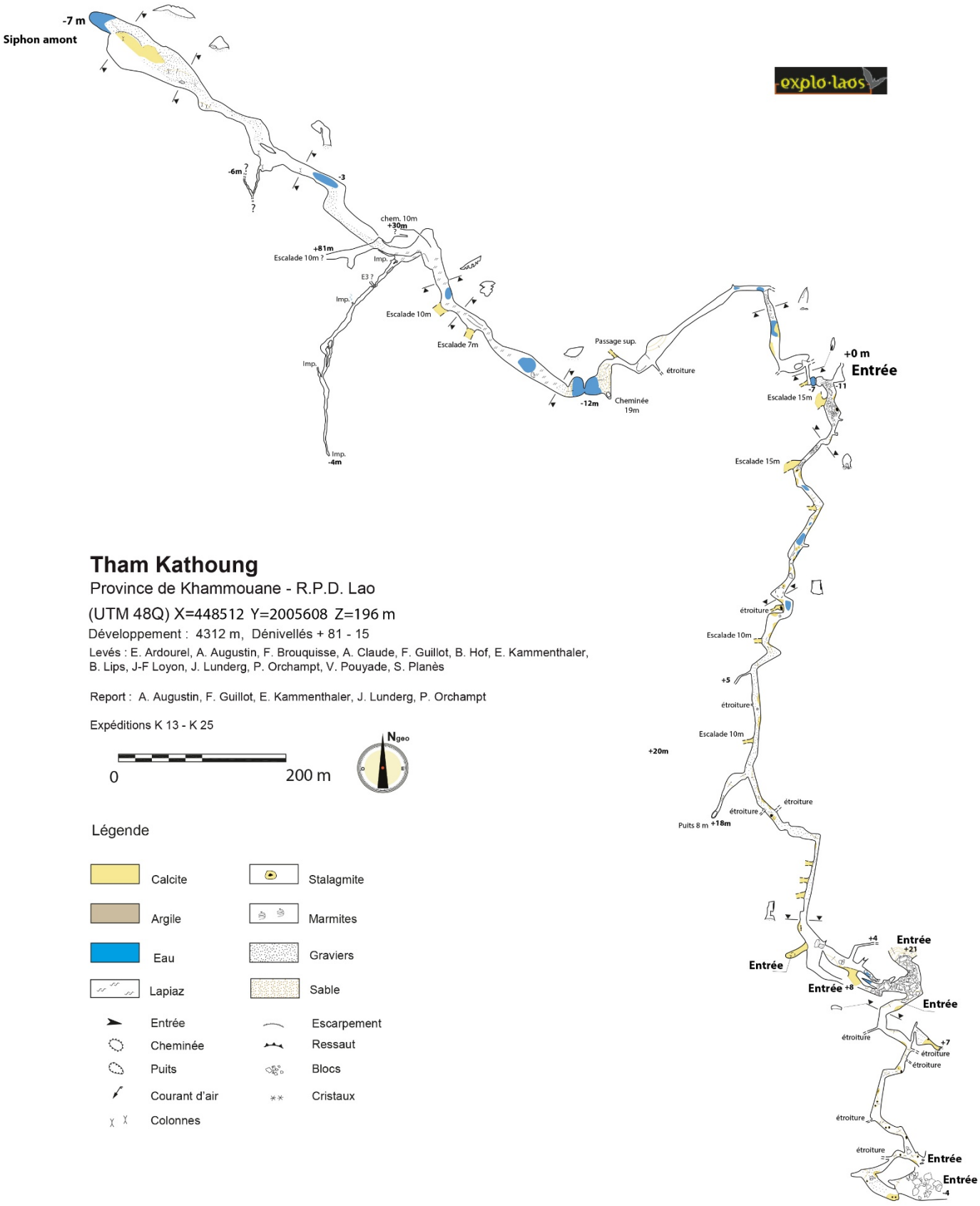
From the north, an uninviting section has been left in the gallery facing south-southwest and located 250 m from the terminal siphon.

A little further south, at elevation +81, a rather difficult climb has not been attempted. A second climb has also been left, stopping at nothing. Is it possible to reach a higher level?

South of the main entrance, two 15 m climbs have not been attempted due to lack of time.

In the middle of the southern section, a 10 m climb remains unresolved.





Tham Kathoung

Province de Khammouane - R.P.D. Lao

(UTM 48Q) X=448512 Y=2005608 Z=196 m

Développement : 4312 m, Dénivellés + 81 - 15

Levés : E. Ardourel, A. Augustin, F. Brouquisse, A. Claude, F. Guillot, B. Hof, E. Kammenthaler, B. Lips, J-F Loyon, J. Lunderg, P. Orchampt, V. Pouyade, S. Planès

Report : A. Augustin, F. Guillot, E. Kammenthaler, J. Lunderg, P. Orchampt

Expéditions K 13 - K 25

0 200 m

Ngeo

Légende

- Calcite
- Argile
- Eau
- Lapiaz
- Entrée
- Cheminée
- Puits
- Courant d'air
- Colonnes
- Stalagmite
- Marmites
- Graviers
- Sable
- Escarpement
- Ressaut
- Blocs
- Cristaux

Tham Kuan Tung

Tham Kuan Tung is another underground river discovered by the Green Discovery team. Quite difficult to access because it's in the middle of the karst, it was of course known to the guides who pointed out a cave whose bottom they hadn't reached, which was a great motivation for us. Several outings were therefore necessary to explore most of it.

After a nice approach walk among the tsingys, the small entrance leads to a fossil conduit of modest dimensions, dug to benefit a beautiful fault, which allows you to continue on to the rest of the cave with more comfortable dimensions. However, you can access the active part via a 35 m pitch a few meters from the entrance. This active part continues downstream to a pretty sump at -49 m, where dozens of troglobitic fish swim (probably *Schistura kaysonei*, determination in progress...). Upstream reaches the fossil, but you quickly lose the river, which you will never find again. It actually emerges from an impenetrable spring under a scree. The next section leads to a first side gallery, the "Braunhian Meander." Two aid climbs of 10 and 15 meters lead us to a labyrinthine area blocked by scree, but with a water supply, rubbish and sandstone pebbles, signifying proximity to the surface.

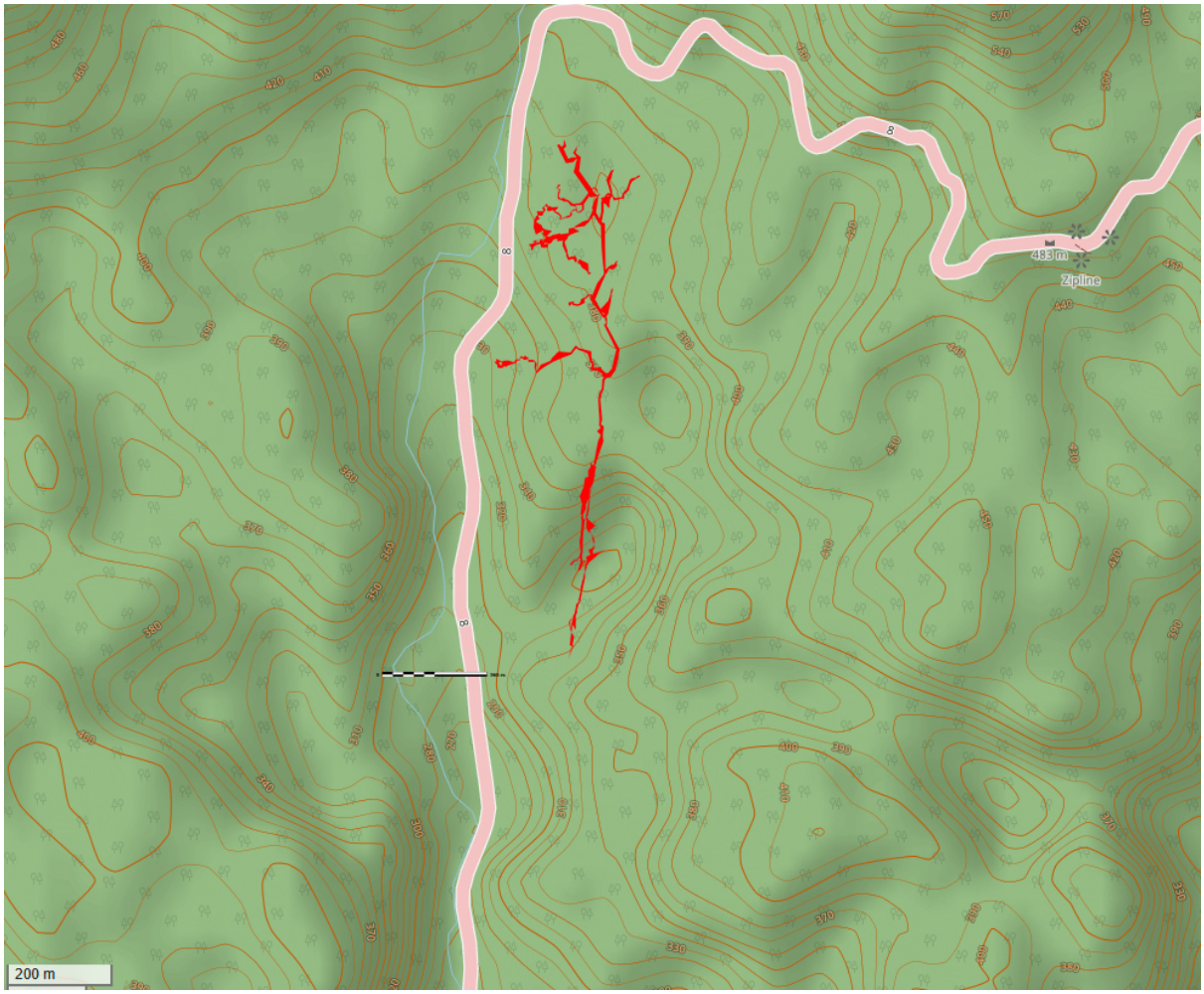
Continuing along the main passage, 200 meters further on, we reach another western tributary, where we encounter a 20-meter climb that we didn't attempt due to lack of time. We'll have to come back because it's windy...

The main passage is then wide and well-concreted. We finally reach an area where several galleries are connected. We are not far from the surface: in one of them, we find roots and large sandstone pebbles (more than 5m in diameter) from the ancient karst cover. The highest point of the cave is here at + 60 m. There are many possibilities to find another entrance there even it will be necessary probably to climb and dig the galleries.

Discovering an entrance here would allow us much easier access to the cave, as we are only a few dozen meters from the road, and it could make for a superb sporty crossing to the actual entrance.



Tham Kuan Tung



Tham Kuan Tung location on the map



Cave pearls in Tham Kuan Tung

Tham Kuan Tung

Province de Khammouane - R.P.D. Lao

48Q X: 444467 Y: 2009367 Z: 260 m

Développement: 2492 m (-49/+60 m)

Levés : A. Augustin, B. Doan, L. Esclavard, A. Claude, E. Kammenthaler, B. Lips, P. Orchampt, J.M. Ostermann, V. Pouyade, S. Planès

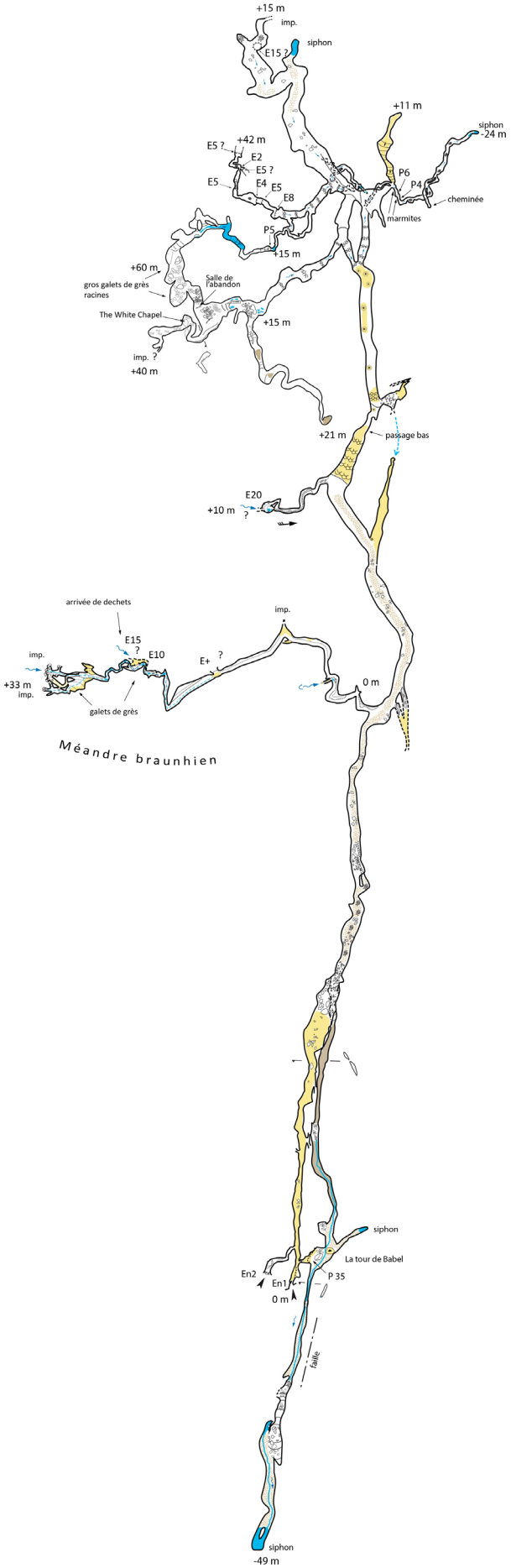
Report : A. Augustin, E. Kammenthaler, Pascal Orchampt, J.M. Ostermann

Expéditions K 25

0 100 m

Légende

Calcite
Argile
Eau
Mondmilch
Stalagmite
Gours
Graviers
Sable
Entrée
Cheminée
Puits
Courant d'air
Escarpement
Ressaut
Blocs
Cristaux





Tham Kuan Tung



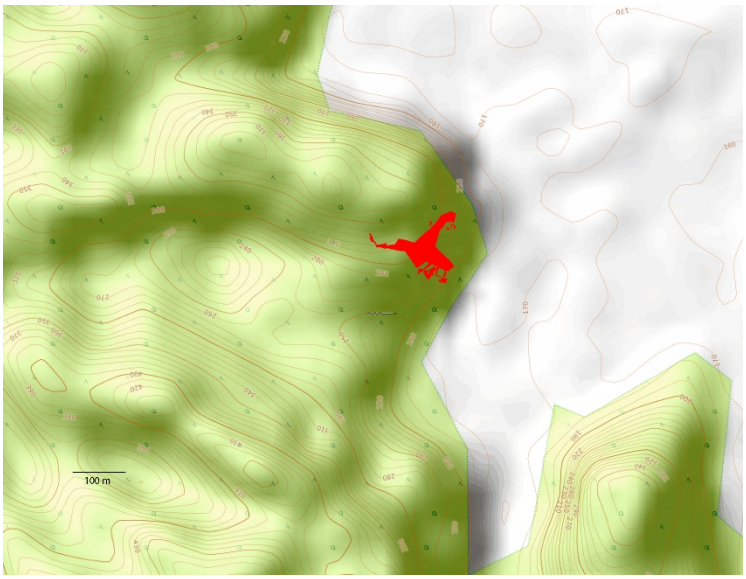
Tham Thea (Bat Cave)

It is accessed from Ban Nahin by taking a passable road (4x4 preferred) that starts from the intersection at the bus stop. You walk alongside a quarry and then continue along the path through rice paddies and cassava plantations until you reach a bridge about 3.2 km away, where you must park your vehicle and continue on foot. Then, head west for 500 m, following the valley from a distance; the upper entrance is clearly visible. To reach the main entrance, once you reach the foot of the escarpment, you must climb towards the less visible entrance 1, through the pinnacles and vegetation (machete recommended).

It is also possible to begin the visit at entrance 2, following the wooded area to the south until you reach the entrance, which you will not see, but the same difficulty arises: intertwined pinnacles and jungle. This entrance is located about fifty meters above the level of the plain.

The cave, whose multiple entrances are clearly visible from the plain it overlooks, has of course been frequented by long-time locals.

Robinson et al., 2000, mentioned it during research on the bats of Khammouane. While the description of the location is precise, the description of the cavity is much less so, as it mentions 30x50m porches and several rooms over 100m high. The coordinates given are also inaccurate.



Tham Thea location on the map

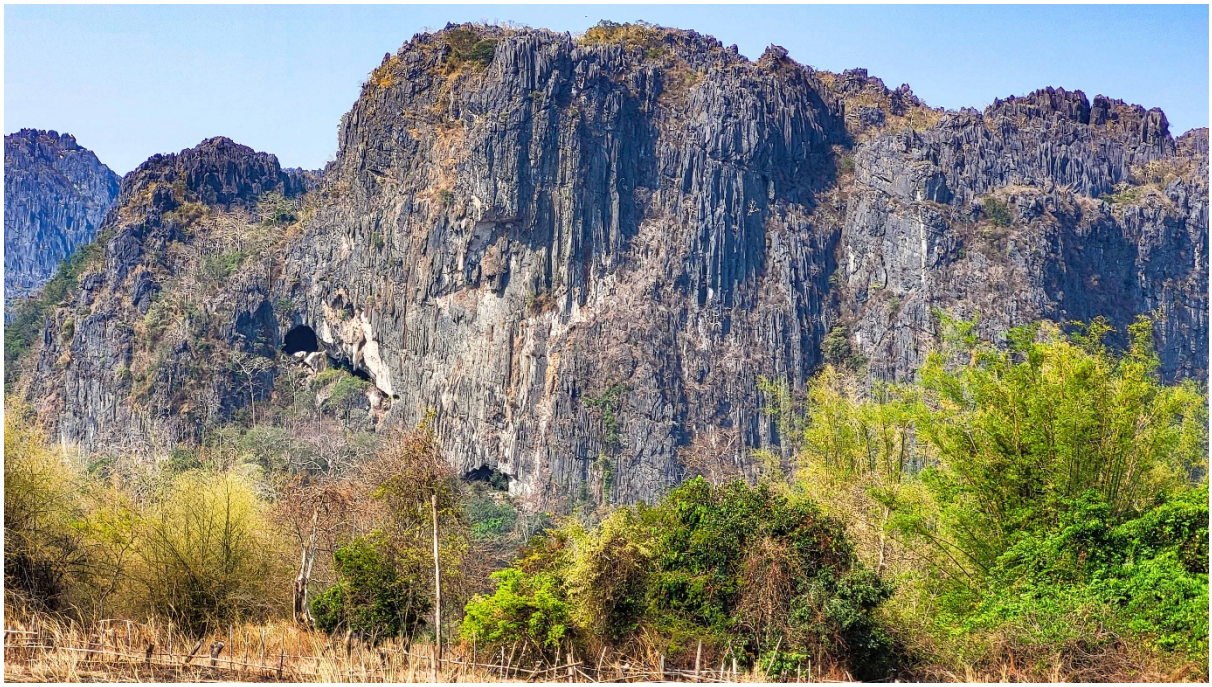
Description

From entrance 1, occupied by a scree, a wide passage quickly presents an east-facing diverticulum ending in a small concretionary room and a sealed gallery. Another small gallery exists on the north wall, which quickly becomes blocked.

Continuing for another fifty meters, we reach a wide intersection where daylight can be seen along the axis of the entrance gallery.

Continuing to the SE, after about 80 m, we come to a wide, heavily decorated entrance. A gallery to the south quickly leads to the third entrance. Another small gallery leads to a network of conjoined conduits with no obvious connection.

Back at the intersection, you can climb a 30x20 m rock slide to the west, beginning with a step that can be crossed on the right, to reach a narrower, ever-rising passage that ends after a 15 m climb, then an E5 passage to be equipped on an obstruction at +32 m.



Tham Thea entrances



Tham Thea



Just after the step at the intersection, you can reach the base of the illuminated section to the south, also accessible via a passage that leads to entrance 2.
It is at the base of this well-lit section that you can see a wide, high passage, which will only be accessible after a 25 m climb by our team.
Once at the top, you will find the fourth entrance at +43 m.
You can continue south to a chamber occupied by an upward-moving calcite flow and a parallel passage.

Perspectives

There are none for the explored sections. However, from the plain, north of entrance 4, we can see another equally wide but lower entrance, which we didn't have time to reach, as equipment was required. However, there's little chance that this entrance will take us very far...

Speleogenesis

The cavity is clearly a very ancient conduit, uncovered and intersected by the formation of the valley. The galleries have phreatic excavation patterns. The fillings are mainly clastic at entrance 1 (scree), then clayey soil on the main gallery. Entrances 2, 3, and 4 are the site of intense and aesthetic concretion.

Equipment

The 24-meter climb was primarily equipped with Pulses and natural or drilled Dyneema anchors, and required approximately 50 meters of rope.

Bibliography

ROBINSON (M. F.) & WEBBER (M.), 2000: Survey of bats (Mammalia: Chiroptera) in the Khammouan Limestone National Biodiversity Conservation Area, Lao. *P. D. R. Natural History Bulletin of the Siam Society* 48(1):21-45.

Tham Thea

Province de Khammouane, Région de Ban Nong Ping
République Démocratique Populaire du Laos

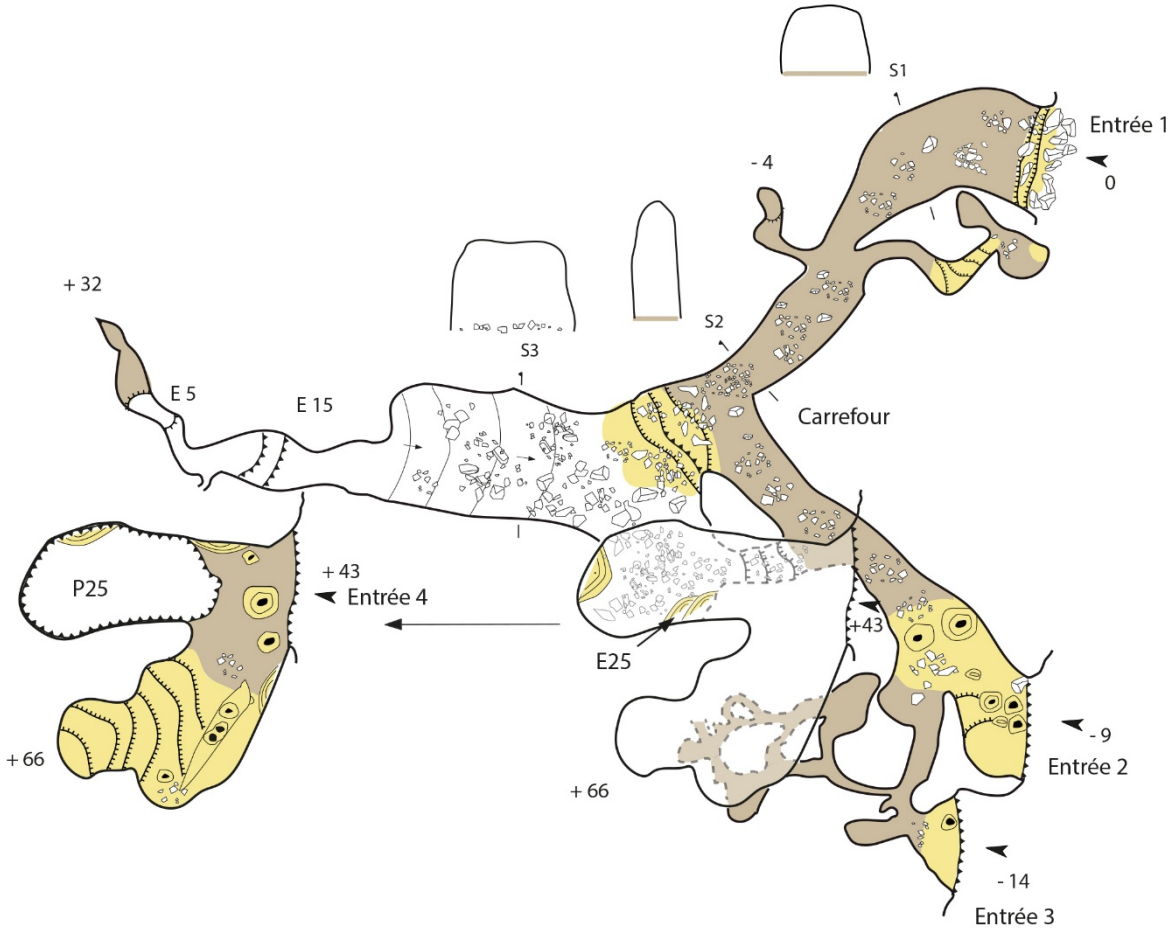
48Q X: 448197 Y: 2006279 Z: 204 m
Développement: 866 m Dénivelée: - 21/+ 66 m
Levés: L. Esclavard, P. Orchamps, J.M. Ostermann, V. Pouyade
Dessins/CAD: J.M. Ostermann
Association Explo-Laos / Expédition K25

Ngeo

0 50 m

Légende

- Calcite
- Argile
- Eau
- Mondmilch
- Stalagmite
- Gours
- Graviers
- Sable
- Entrée
- Cheminée
- Puits
- Escarpement
- Ressaut
- Blocs



Tham Nam Ork

Access

From Ban Nahin, go to the intersection between the Laksao road and the Konglor road.
From there, take a passable track that heads south and runs along the karst.
Pass a quarry on the right and continue zigzagging to a house on the right in front of another intersection.
From there, pass the fence in front of the house to head west for 200 meters.
Turn right and follow more or less the thalweg, crossing several barriers to finally reach the thalweg and the resurgence at the foot of the cliff.

Description

The resurgence is a large, wide, and tall, straight gallery. The north-south joint can be seen on the ceiling on which it develops.
The ground is covered with gravel, or a mixture of sand and small gravel. The high-water mark is clearly visible on the wall ; three-quarters of the cave is flooded during the rainy season.
There are a few changes in direction with chicanes to the east, often also on joints, before continuing north again. The end of the cavern, about 500 meters in, comes up against a siphon. 100 meters before this terminus, you can enter a particularly clayey inclined joint. Surprisingly, it takes a northeasterly direction, which is a departure from the usual orientations of the cavern. This draft-free joint ends at a clayey suction well that has not been excavated...



The final sump

Tham nam ork

Province de Khammouane, district de Hinboun, ban Khounkeo
République Démocratique Populaire du Laos

N 18.164795 E 104.506228 183 m

Développement: 555 m (-7)

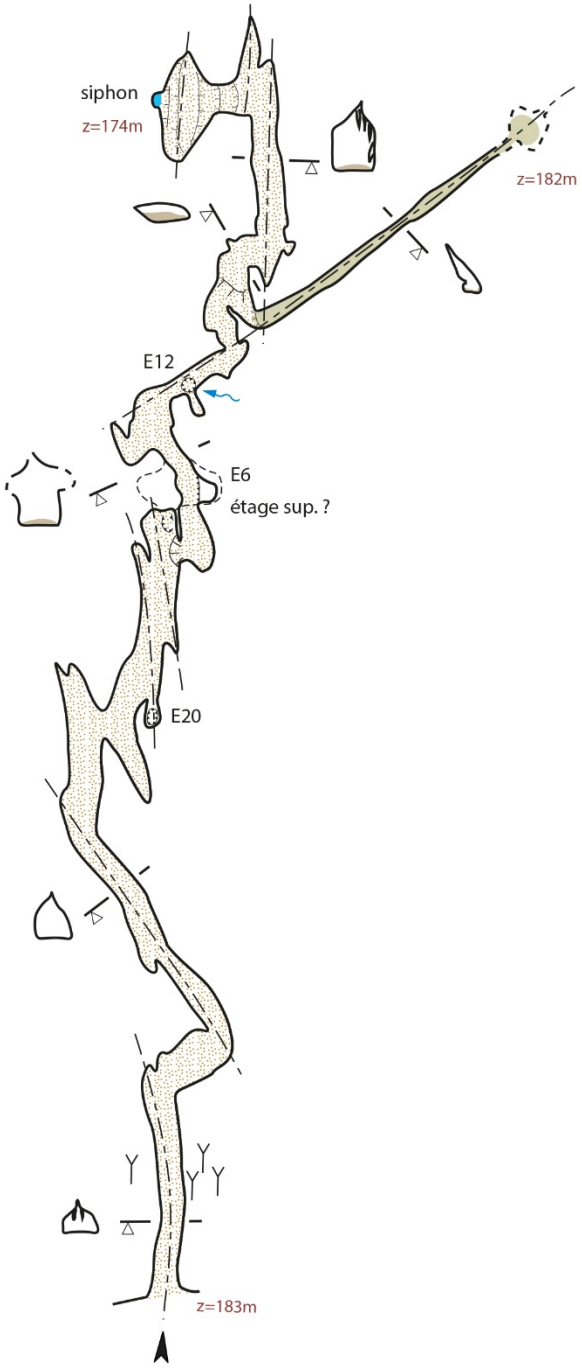
Levés : Lucie Esclavard, Pascal Orchampt
Dessins/CAD : Pascal Orchampt
Association Explo-Laos / Expédition K25



0 20 m

Légende

- Calcite
- Argile
- Eau
- Mondmilch
- Stalagmite
- Gours
- Graviers
- Sable
- Entrée
- Puits
- pente
- diaclase, faille



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