

UIS Commission on Volcanic Caves Newsletter No.75



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<http://www.uis-speleo.org/>



<http://www.vulcanospeleology.org/>

The Commission on Volcanic Caves Newsletter has been published regularly since December 22, 1993. The Newsletter is available free of charge to all members of the commission, and to others who are interested in Volcanic caves.



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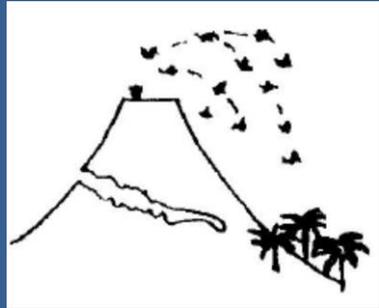
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MISSION STATEMENT

The UIS Commission on Volcanic Caves encourages exploration and scientific investigation of volcanic caves, and hosts the International Symposium on Vulcanospeleology about every two years



COVER PHOTO

Grotta Grotta dei Tre Livelli

By Ed Waters

Editorial

I feel a bit of a fraud as I edit the latest edition of this Newsletter, as I haven't been underground in a volcanic cave for 2½ years, the longest gap I have had in very nearly 20 years. I am however looking forward very much to curing this vulcanospeleological famine next year with the forthcoming 19th Symposium on Volcanic Caves. What better excuse could there be to indulge in a little subterranean fun, learn about the latest thinking on the subject and to spend time with valued friends both old and new.

This edition of the Newsletter therefore concentrates on providing information about the symposium, for which registration will be opening very shortly. Much of the content of this issue is derived from Circulars No.1 and 2 issued by the organising committee, and which I am sure will be of interest to the readers of this newsletter who are considering whether or not to attend.

For those who have not visited Sicily and the volcanic caves of Etna, I can personally recommend the caving here after a visit back in 2009.

Finally many thanks to Stephan Kempe for alerting me to the European Space Agency's project to investigate how to explore caves on the moon. Details of the project can be found at the end of this newsletter.

Wishing you all a very merry Christmas, and looking forward to seeing as many of you as possible in Sicily.

Ed Waters, 8th December 2019

Message from the Chairman

Ciao a tutti

Yes, I am trying to learn a few words of Italian to better prepare myself for the 19th International Symposium at Catania next year. Caffè, birra, vino rosso, saluti, mi sono perso and, of course, parla Inglese.... I am sure it will all help.

The Catania Symposium seems to be approaching with ever-increasing speed. Fortunately, Mel, Giuseppe, Roberto and other members of the Symposium organising committee appear to have everything under control. As most of you would already be aware, the Second Circular and a detailed program for the Post-symposium trip to the Aeolian Islands were recently published on the Symposium's Website. For ease of reference, the key points from those documents and also from the First Circular are reprinted in this issue of the Newsletter.

Over the course of this year many of you pre-registered your interest in the 19th International Symposium on Vulcanospeleology (ISV) at Catania. During this month of December, you will be able to formally commit to participate in the ISV by completing the online registration process through the 19th ISV Website. Hopefully many of you will be in a position to do so. Based on the level of interest already shown, I suspect the symposium will get close to its limit of 80 participants.

Looking ahead to future ISVs, I have had some positive preliminary discussions (via email) regarding the 20th ISV, due in 2022. Hopefully, we will have some good news on that score in the leadup to the meeting in Catania.

It is also time to start thinking about the 21st ISV, due in 2024. Please have a serious think about possible locations for that meeting. Send me your ideas – and also your offers to help organise the event. I am sure that Greg, Ahmad, Theo, Ann, Peter and Mary, as the key organisers of recent ISVs, would all agree that organising an ISV was an immensely

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fulfilling experience even though it did involve a significant commitment of time and effort. Hopefully, Mel, Giuseppe and Roberto will feel the same way in 12 months' time.

The Commission is currently considering the feasibility of adding another page to its Website that would contain links to published papers on any aspect of research on volcanic caves. The thinking is that it would contain links to papers that have been already published and that are freely available on the Web. It has the potential to be a central location for published works on volcanic caves research work but obviously, it will only be as successful as Commission members make it. In other words, if members provide the necessary links to papers that they know about.

And finally, I hope to see many of you at Catania next August.

John Brush

Chairman / President

Commission on Volcanic Caves.

International Union of Speleology



Etna's summit craters seen from Barbagallo craters - photo. G. Priolo

SUMMARY

The 19TH International Symposium on Vulcanospeleology (ISV) will be held in Catania, on the island of Sicily in Italy from Saturday August 29 to Saturday September 5, 2020.

LOCATION

The 19th ISV will take place in the prestigious setting of the University of Catania, in the centre of the city. The town is only 35 kilometres from the top of Mt. Etna. The big draw for cavers will be the lava tubes, numbering over 300, on Mt. Etna. This mountain is a composite strato-volcano that reaches 3.325 m a.s.l. Its pyroproducts cover a large area (8100 hectares/ 20,000 acres).

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ORGANIZING TEAM

The symposium will be organized jointly by Gruppo Grotte Catania (GGC) and University of Catania. The GGC caving group is affiliated with the Catania section of the Club Alpino Italiano (CAI). The University of Catania is one of the oldest in Italy.

INVITATION

Dear Friends,

The big day is coming. We all, including Mount Etna, are pleased to welcome you to this land of extraordinary beauty. I remind you that the 19th symposium will be held in Catania, from August 29th to September 5th 2020.

Three mornings of lectures are scheduled, at the Department of Geology of the University of Catania, to introduce you to volcanic environment in Catania and to other similar areas in the World. In the afternoon, after the lectures, and in the following days, you will be guided on special trips to our most representative lava caves, on Mount Etna and to nearby sites. (I recommend you see also the various cultural activities connected with the Symposium, already described in the first circular – see the link next page).

The Gruppo Grotte Catania has an 86-year history and experience in the speleological field, especially dedicated to the volcanic environment. The study and research in the lava field are still continuing today. Many new caves have been discovered recently with important results in every field such as the recent discovery a new species of beetle inside an Etna cave.

We look forward to sharing our results with you and to listening to your papers.

We hope we'll see you soon

Carmelo Bucolo (Mel)

Chairman of Gruppo Grotte Catania

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SYMPOSIUM PROGRAM [Taken from the first circular, Ed.]

The following is taken from the first circular of the Symposium that includes the program of the Symposium and all the information about lectures, connected events and excursions:

SATURDAY AUGUST 29TH

All Day: Minibus from the airport to registration desk and hotels, WNS decontamination procedures (GGC Headquarters).

Afternoon: Opening of the exhibition: “MONGIBEDDU COLOURS AND FLAVOURS”

SUNDAY AUGUST 30TH

PRE-SYMPOSIUM EXCURSION (2): GEOLOGY OF MT. ETNA an overview of the volcano guided by a geologist, with comments at the most significant points (all day).

All Day: Minibus from the airport to registration desk and hotels, WNS decontamination procedures (GGC Headquarters).

Evening: Visit of the exhibition: “MONGIBEDDU COLOURS AND FLAVOURS”, Welcome party (GGC headquarters)

MONDAY AUGUST 31ST

Morning : Opening ceremony and beginning of work sessions - coffee break incl. (University of Catania – Geological Faculty)

Afternoon: Catania’s natural and cultural heritage (guided short trips), Mt. Etna selected caves (short caving trips)

Evening: Recent discoveries video or slide presentations (GGC Headquarters)

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TUESDAY SEPTEMBER 1ST

Morning: Lectures and work sessions - coffee break incl. (University of Catania – Geological Faculty)

Afternoon: Catania's natural and cultural heritage (guided short trips), Mt. Etna selected caves (2) (short caving trips)

Evening: Participants video or slide contributes (GGC Headquarters)

Partners' Program (2)–Taormina and Alcantara Gorges guided tour

WEDNESDAY SEPTEMBER 2ND

Morning: Lectures and conclusion of work sessions - coffee break incl. (University of Catania – Geological Faculty)

Afternoon: Catania's natural and cultural heritage (guided short trips), Mt. Etna selected caves (2) (short caving trips)

Evening: Gala Banquet in a typical Sicilian restaurant

Partners' Program (2) – Syracuse and Noto guided tour

THURSDAY SEPTEMBER 3RD

GENERAL EXCURSION - Visit of the summit craters or the "Valle del Bove" depending on the volcano activity. (All day - for all participants).

Evening: Musical event with a folk group (GGC Headquarters)

FRIDAY SEPTEMBER 4TH

SPECIAL EXCURSION – Following the 1669 Lava Flo from Monti Rossi craters to the seaside of Catania including a special caving trip to Grotta delle Palombe

Evening: Closing ceremony and Farewell party (GGC Headquarters)

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PRIMA CIRCOLARE (First Circular)

During the Symposium week, the registration desk will be located at the headquarters of Gruppo Grotte Catania, in via Messina 593/A. It will be open from Saturday 29 August 2020 to Friday 4 September 2020 with the following schedule: 8:00 am – 10:00 pm

The desk will also be available for booking the cultural activities and daily excursions indicated in the program.

An additional info point will be installed at the University, during lectures.

SIGNING UP

To allow the participation of the greatest number of interested persons, four possibilities of enrollment are being offered:

- Full participant € 230.00 (€ 280.00 from April 2020)
- Accompanying member (in association with a participant) €170.00 (€220.00 from April 2020)
- Student (with university identification card – all lectures) € 30.00
- Daily pass (lecture session only – 1 day) € 30.00

For the details of what is included in the individual fees see the first circular, but please note that cave rescue insurance is no longer included in the (now reduced) registration fee (see below on page 5 for new information on insurance).

The Gala Banquet of Wednesday 2nd is not included in the fee but the organizing team recommends that you don't miss this special social event. The team selected for that event, the Restaurant "IL POZZO", near the University, where a special typical Sicilian menu will be served for € 40.00 per person, drinks included.

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Due to logistical constraints, the maximum number of participants to the Symposium, including full members and accompanying members, is 80 people. If the maximum number of attendants is reached, priority will be given to those who have pre-registered. Students and visitors will be admitted to the theoretical sessions until the room capacity is reached.

The final registration procedure will take place exclusively online and will be available from December 2019. Full registration is needed before submitting any abstract or presentation to the Symposium.

The payment of the fee will take place upon registration.

The following payment methods are accepted:

- PayPal
- Credit card.

In case of registration not accepted, for any reason, the fee paid will be fully refunded.

CALL FOR PAPERS

Papers on any topic related to volcano-speleology are allowed. They will be grouped in theoretical sessions and discussed during the three days of lectures at the University. All the works submitted will be included in the Proceedings of the Symposium that will be published on the Symposium website and on the Vulcanospeleology Website and printed on a special book about the event.

Please, refer to the first circular to find the directions to follow for submitting abstracts and papers.

The dates to remember are the following:

End of December 2019 – deadline for sending the abstracts (must be in English)

End of March 2020 – deadline for sending the papers (preferably in English).

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VISITS AND EXCURSIONS DURING THE SYMPOSIUM

The general excursion on Mount Etna on Thursday 3rd and the following excursion on Friday 4th following the 1669 flow path are confirmed with the features indicated in the first circular. Those excursions are free of charge for all participants and accompanying members, except for the daily insurance fee where it is necessary (see Insurance Policy paragraph).

Cultural Heritage: During the days of the Symposium, a variety of cultural activities in the Catania town and suburbs is planned. These visits will be managed directly by the Gruppo Grotte Catania. At the Registration Desk you will find all information about them and the possibility to make your reservation. Reservation will be required for all the activities even if most of them will be free of charge.

Caving excursions: As indicated in the first circular, during the Symposium, the Gruppo Grotte Catania will lead several caving excursions to lava caves, located near the city. The list and the characteristics of the selected caves are available on the first circular. The organizers reserve the right to add on other cavities or eliminate some caves depending on the conditions of seismic or meteorological danger. To attend those excursions, it is absolutely necessary to make a reservation, at the Registration Desk, by the day preceding the date on which the excursion is scheduled.

The daily excursions, for accompanying members, to the main touristic attractions along the Sicilian coast will be carried out by specialized carriers for this service. Therefore, these excursions must be booked on line at the time of the registration and paid in advance upon receiving the confirmation of participation.

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INSURANCE POLICY

Participants and accompanying persons who want to attend to the excursions on Mt. Etna lava fields and in the caves are required to have insurance coverage for all the period of the conference and connected excursions. All members are required to indicate at the time of the registration, if they are in possession of an international insurance that involves repayment of rescue costs in case of accident during their stay in Italy or if they are already members of the Italian Mountaineering Association (CAI) or the Italian Speleological Association (SSI).

For those who don't have any kind of similar coverage, the organizing team suggests participants subscribe to a daily policy through the organization of the Symposium; the daily cost for that policy is 8.00 €, if booked at the time of the registration. The same policy can be bought at the Symposium Desk, but the cost will be 15.00 € per day.

ACCOMMODATION

The city of Catania offers a great range of accommodation but it is important to keep in mind that August is a month of high season and therefore the accommodation must be booked well in advance.

The organizing committee of the 19th International Vulcanospeleology Symposium has selected a range of accommodation facilities (hotels, motels, university campus or camping places) that have offered special fees for participants of the conference.

If you choose a partner property (see table below) it will be possible to book your stay at the time of registration. However the payment must be sent directly to the chosen property following the instructions that will be communicated at the confirmation.

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The organizing committee has selected the following possibilities:

| Property | Reserved rooms | Type of accommodation | Price € | Note: City tax: 2,50€ p/day p/day = person / day |
|--|----------------|--|---|---|
| NH HOTEL CENTRO **** (Near the University) | 35 | <u>Single room</u> <u>Double room</u> | <u>120 day</u> <u>140 day</u> | Breakfast incl. |
| 8ROOM HOTEL **** (Near the University) | 8 | <u>Single room</u> <u>Double room</u> | <u>75 day</u> <u>85 day</u> | Breakfast incl. |
| MEDITUR HOTEL OGNINA *** (Near the sea and the GGC Headquarters) | 52 | <u>Single room</u> <u>Double room</u> <u>Three-bed room</u> | <u>59 day</u> <u>65 day</u> <u>80 day</u> | Breakfast incl. Half board € 21 p/day |
| CAMPLUS COLLEGE CATANIA (Near the University) | 17 | <u>Single room</u> <u>Double room</u> <u>Three-bed room</u> | <u>50 p/day</u> <u>28 p/day</u> <u>26 p/day</u> | Breakfast incl. Self-service dinner € 12 p/day |
| CAMPING IONIO CATANIA (Near the sea and the GGC Headquarters) | | Bungalow (max 4 people) or Caravan (max 6 people) Bungalow (max 4 people) or Caravan (max 6 people) Tent | 27 p/day 22 p/day 9 p/day | Breakfast incl. Breakfast not incl. Breakfast not incl. |

In addition to the possibilities mentioned above, participants can search for their accommodation directly through internet providers. Sometimes those providers use the commercial approach of making special offers or have rewards schemes for members. In this case the organizers recommend participants pay attention to the location of the selected B&B or Hotel; if the location of the selected property is not near to the University or the town centre they may have problems reaching Symposium events each day because public transport is not very efficient.

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MEALS

With the exceptions of the Welcome Party and the Farewell Party, meals are not included in the Symposium fee.

The area surrounding the University, where the Symposium will take place, has many restaurants and bars where it is possible to have a variety of lunches at reasonable prices.

For dinner, the organizing team suggests to go to the Camplus College, where all participants, even if not staying in the College, may have a complete dinner, at the Self-service Restaurant, for the price of € 12.00 per person.

EXCURSIONS BEFORE AND AFTER THE SYMPOSIUM

PRE-SYMPOSIUM TOUR OF ETNA - August 30th

A geological tour of Mount Etna, led by PhD. Giuseppe Priolo, is scheduled before the Symposium opening, on Sunday August 30th. This excursion will follow the route indicated on the first circular and will have six stops of explanations on the field where the guide will show you the singular morphology of this volcano.

The cost for this excursion is € 40.00 per person, transport and lunch included.

This excursion must be booked on line at the time of registration. Payment will be required upon receiving the confirmation of participation. The maximum number of participants for this excursion is 16 people.

POST-SYMPOSIUM - AEOLIAN ISLANDS - September 5th to September 10th.

After the Symposium, an excursion to the Aeolian Islands is scheduled to show the participants the volcanic features of the islands themselves. The excursion will be guided by a team of experts from Gruppo Grotte

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Catania and the local section of Club Alpino Italiano. It will be the only post-symposium trip offered by the organisers.

The excursion, that will start and end in Catania, will take 6 days (5 nights) from Saturday 5th to Thursday 10th.

Transport will be by bus and boat specially reserved for this excursion. Accommodation will be in small hotels and half board is included.

The detailed program of this excursion can be found on the 19ISV Website.

The program may change depending on the weather / sea conditions and volcanic activity. For example, at the moment, the walking excursions on the island of Stromboli are forbidden and the ascent to the Big Crater on Vulcano Island is possible only with the help of a professional guide. Therefore, the organizers reserve the right to cancel some visits or indicate alternative destinations without changing the total duration of the excursion.

This excursion must be booked on line at the time of registration. Payment will be required upon receiving the confirmation of participation.

The minimum number of participants required for this excursion is 10 people and the maximum number allowed is 30 persons. The participation cost is € 700.00 per person.

CONTACTS

WEBSITE <http://www.19isvetna.com/index.php>

MAIL TO: contact@19isvetna.com

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REGISTRATION

The registration procedure will be available on-line, on the Symposium website in December 2019.

Registration fee is fixed at Euro €230 (early bird price available until the end of March 2020) and includes:

- 19th ISV booklet
- Transport from and to the airport
- Welcome Party
- Morning lectures at the University of Catania
- Catania's natural and cultural heritage
- Evening programs at GGC Headquarters•
- General excursion to Mt. Etna
- Special 1669 excursion
- Proceedings of the Symposium (hardcopy or USB key)
- Farewell Party (as per info above)

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EXCURSIONS

B) GENERAL EXCURSION

Mt. Etna is an active volcano. From the summit craters there is often the emission of gasses and steam. During periods of high activity, the hike to the craters is strictly forbidden. Thus, the organizers will be able to confirm the destination of this excursion only during the Symposium.

If the volcano is quiet, our goal will be to take all participants as high as possible on the volcano, towards the summit craters.

The idea is to reach the highest parking place, by 4x4 minibuses, at 2.700 m a.s.l.

From that point, there is a two hour walk on cinder and unconsolidated lava to reach the summit of the north east crater at 3.350 m a.s.l. In this excursion you will see many volcanic features and the fantastic panorama from the top of the mountain.

This part of the excursion will be led by the rangers of the Etna Park.

It requires good health and to be trained for long walks. Sack lunch and drinks included.

C) ALTERNATIVE GENERAL EXCURSION

This excursion is an alternative program in case that the activity of the volcano doesn't permit the ascent to the craters.

The participants will reach the parking place near "case Pirao" at 1.850 m a.s.l. by bus.

From that place a long and winding track named "Sentiero della Schiena dell'Asino" will lead us to a panoramic point at 2.050 m a.s.l. Where there is the possibility to see the inside of the depression whose name is "Valle del Bove". This depression is famous because most of the lava flows coming from upper craters, stop there.

From the panoramic point it is possible to see the most spectacular features of the valley: hornitos, lava bridges, columnar basalt, etc.

Requires: good health and good shoes.

Packed lunch and drinks included.

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D) FOLLOWING THE 1669 FLOW

This excursion is designed to show the path followed by the biggest lava flow that reached the town 350 years ago.

In the morning a bus will take all participants to the erupting cones of that flow whose name is "I Monti Rossi" at 750 m. a.s.l. There will be an explanation of the highlights of the event starting from the description as were given by the witnesses of that time.

In the afternoon the excursion will follow the path of the lava, visiting the town of Nicolosi and then reaching the centre of Catania. There will be some stops near monuments that were left untouched by the lava flow.

This excursion will end at the seaside, at the edge of the area, more than 2 square kilometres, that was added to the land with that flow. A sweet lunch is included at the typical restaurant attached to the Condorelli confectionery factory.

For those who wish, there will be the possibility to descend the first pit of the crater in order to have a quick look inside. This is vertical cave and caving equipment is needed.

E) CAVING TRIPS

More than 300 volcanic caves are known on Mount Etna, scattered on the slopes of the mountain, from the upper part of the volcanic cones, to the dark beaches of the seaside.

The caves of the upper part of the volcano are generally very far from the roads or located in dangerous areas because of the volcano activity. Moreover, the highest part of the volcano is included in the area of the Park of Etna and the access is subjected to restrictions due to the dangerousness of the volcano itself.

It is therefore not possible to plan the visit of the highest caves of the Etna in a half-day excursion during the period of the symposium.

For the days of the Symposium, the organizing team has selected some caves, very representative of Mt Etna caves features, so close to the town to permit the visit them in a short caving trip, from afternoon to the evening. Due to their beauty and importance, the organizing team particularly has selected the caves "GROTTA DEI 3 LIVELLI" and

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“GROTTA KTM”. Since they have small internal jumps to overcome, the organizers will set up ladders to allow all participants to visit them.

In addition, other easy-to-walk cavities have been selected for the excursions during the symposium period. You can find below a non-exhaustive list of them, with the description of each cave. More caves will be added in the future.

Finally, near the town of Catania there is an area in which some simple caves have been prepared for a didactical tour (Grotte di San Gregorio). The access to that area is possible to all participants and is included in the cultural heritage program.

More details on all scheduled excursions will be published in the second circular; the organizers will be happy to answer any other questions you may have about speleology in the area of Catania.

Here is a short description of the selected caves:

a) GROTTA DEI 3 LIVELLI

This is an inclined tunnel formed in the lavas that flowed from the lower effusive mouth of the 1792 eruption. Overall, the cave is very well preserved and there are few places where collapses occurred. At the entrances, the cavity is divided into three superimposed galleries located at three different levels. The upper tunnel, 60 m long, is rather narrow and a part of the ceiling consists of a reinforced concrete slab that supports the provincial road. The intermediate tunnel is about 40 m long. Greater development presents the lower gallery which is more than 400 m long. The three levels are connected by small jumps to overcome which a 10 m ladder is useful. For the first 50 m from the base of the wells the route is very easy given the height of the vault that only forces you to bend down in some places. The floor is of lava with a slag surface in large fragments, which have a characteristic wavy surface in the southern ends of the tunnel. Throughout the cave it is possible to observe remelted stalactites that appear as shreds of lava with a glass surface and interesting protrusions, similar to cornices, arranged along the walls. The cavity is visited by many bats.



Figure 2: Tre Livelli Cave, from first level to the second – ph. G. I. Sanfilippo

b) GROTTA KTM

The search for a continuation downstream of the lava tube of the Grotta dei Tre Livelli led to the discovery, in 1995, of the KTM cave.

Imposing cavity of 650 m of development and 60 m of elevation gain, which opens just 20 m downstream from the final point of the Grotta dei Tre Livelli.

The two cavities are part of a "system" of inclined tubes which, stretching and overlapping, had to feed the lava fronts of the 1792-93 eruption for a long time.



Figure 1: KTM Cave - ph. G. Priolo
c) GROTTA DELLE PALOMBE

A pit 8 m deep gives access to a first room of the size of 5 m by 15. At the bottom of this room there is a 3 m deep well that leads to a 15 m long steep slope that ends in a smaller room than the previous above a 17 m deep well. From the base of this pit you can follow the eruptive fracture for about 60 m southwards. This is well preserved in some sections and has a uniform glazed lining on the walls, formed during the eruption. Elsewhere the walls of the fracture collapsed and the material behind them collapsed inside the cavity in chaotic masses of large blocks or in heaps of small stones. Following these phenomena, the cavity has several enlargements. Continue through a passage located 6 m high, reachable by a ladder that can be fixed to a rocky outcrop. This opening leads to a section of the cavity where the walls are intact and a couple of metres apart. A little further on we note a collapse of the western wall. The consequence of the collapse is the formation of a room at a higher level.

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To reach the front of the collapsed material requires climbing a jump of 6 m on unstable blocks. From the room, a steep slope of loose material can be followed for 25 m. Subsequently, it is still possible to follow the fracture for 75 m, which is again intact and gradually shrinking until it becomes blocked. The floor here is made up of lava with a fragmented scoriaceous surface. In the terminal part of the cave the eruptive fracture is on two different levels. In the lower one there are at some points accumulations of fine volcanic sand; it is also possible to observe curled sheets of lava with the formation of rolls. In many places, slabs have detached from the walls and clutter the passage.



Figure 4: Palombe Cave, a lava roll - ph. B. Scammacca

d) GROTTA INTRALEO

The cave consists of a set of lava flow galleries of various sizes located at different levels and variously oriented. Near the entrance of the northeast gallery there is a small altar. This gallery is about 40 m long. On the opposite side there are three overlapping galleries. The upper gallery is 13 m long. The lower one is about 30 m long; it begins with a slope of large boulders that ends in a large room, several meters high, where you can observe two large lava rolls, among the largest known to us, and numerous large sheets protruding from the walls. The intermediate cavity is the longest of the three branches and begins with a tunnel about 30 m long, over 2 m high, with a flat floor on which two rolls can be seen, smaller than the previous ones but longer. Further on, this gallery is divided into three branches located at different heights. The eastern branch, at a lower altitude, is very short and has an accentuated slope, the central branch is 50 m long and its ceiling is low, so that it is necessary to crawl here and there; in some places it presents domes where it is possible to stand; the floor of this gallery is flat and consists of slag partly welded and partly movable. The third branch has the same configuration of the previous one; in this branch a wedge-shaped boulder, detached from the ceiling, almost completely obstructs the passage, about halfway. The three branches end up with the ceiling and the floor joining together.



Figure 5: Intralio Cave, the biggest lava tube - ph. G. Priolo

e) GROTTA GALLO BIANCO

The Gallo Bianco caves are located in the township of Adrano. To reach them, you have to walk up a long lava canyon until you reach an impressive lava arch, which is what remains of a large collapsed lava tube. Further on, along the canyon, two lava tubes can be seen. These are lava flow caves, 60 meters long, with a marked slope. Both end after a narrow passage that brings to a slightly larger hall.

f) GROTTA BURRO'

This is a large lava tube cave, 250 meters long with a difference of 47 meters between the highest and the lowest point. The entrance is located inside a large depression in which two large holm oaks have grown. The initial part of the cave presents many collapses on the floor whereas, in the final stretch, there are many puddles of water and mud. In the middle

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part of the cavity a large lamina detached from one of the walls and, leaning against the opposite side, produced some sort of elevated room. About 30 meters further down, a rock pillar separates the tunnel into 2 small parallel tunnels. The cave has a large colony of bats of different species.



Figure 6: Burrò Cave - ph. B. Scammacca

g) GROTTA MICIO CONTI

This cave is located in the natural reserve of the "Immacolatelle and Micio Conti Complex". This complex is also known as "Grotte di San Gregorio". It consists of a system of nine volcanic cavities within a lava field of morphology similar to that of the Hawaiian caves. In the Immacolatelle caves, two collapses divided a single lava tunnel into separate parts, giving rise to a complex of four caves. Inside the caves there are interesting morphologies: in the Micio Conti cave, the lava flow has left linings on the walls and small refusion stalactites on the ceiling.



Figure 7: Micio Conti Cave - ph. G. Priolo

h) GROTTA AMPUDDA DU PISCITEDDU E DEI TADDARITI

These caves are lava flow tunnels dating back to the famous eruption of 1669 that destroyed many small villages and reached the town of Catania. The entrances of the caves are skylight windows caused by collapses of the lava tube vault. Inside both cavities it is possible to observe flow linings and re-melting stalactites.

At the end of the tunnel, the Ampudda du Pisciteddu cave has a small wooden door, placed laterally to the tunnel. From this door the citizens of Catania entered the cave during the World War II because this cave was used as a shelter from the Anglo-American bombings.

The origin of the name of the Taddariti cave derives from the presence of a large colony of bats that, in the past, lived inside the cave. In Sicilian dialect they are called "taddariti". Today, unfortunately, only a few

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isolated specimens have remained of the large bat colony due to the disturbance caused by external works.



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Figure 8a: Ampudda di Pisciteddu Cave- ph. G. Priolo

Figure 8b: Taddariti II Cave, the skylight - ph. G. Priolo

i) GROTTA CATANESE

These two caves are in the township of Ragalna.

The first one is a lava tube characterized by a room that is among the largest known on Mt. Etna. Passing the entrance, you descend on large collapsed blocks and you immediately find yourself in a vast bell-shaped environment. The floor, at the lowest point of the room, is of earth mixed with stones and plant debris. On the south side it rises abruptly until it forms the back wall of the room; the lava appears here with a united surface with the formation of ropes and edges. It is easy to climb up this wall until you reach a characteristic hollow almost at the height of the ceiling, from which you dominate the environment. On all walls you can observe a great number of small protruding sheets; on the west side near the entrance there are any shallow grooves, parallel to each other, which abruptly change direction bending downwards at an angle of 140° . At the foot of the wall, on the south side, the lava formed large blocks that might seem collapsed, but which actually are huge irregularly crumpled sheets. From this first large room the cave continues, through a narrow passage at the base of the east wall, with a tunnel about 70 m long. Some bones, presumably human, and many small ceramic fragments were found in this gallery. Numerous bats of the genera *Myotis* and *Rhinolophus* still inhabit the cavity.



Figure 10: Catanese I - ph. B. Scammacca

The second cave consists of a single tunnel just over 20 m long. You enter by descending on a chaotic mass of collapsed blocks. The floor, after the first section, appears flat with beaten earth and stones; towards the bottom it is possible to observe lava with a joint surface. On the walls there are numerous sheets of lava of different thickness and folded in various ways. The section of the cave has a characteristic pointed arch shape, but not symmetrical as is normally observed in other cavities. The southwest wall is overhanging while the northeast is an inclined plane on which it is easy to climb.



Figure 10: Catanese II, a lava roll - ph. G. I. Sanfilippo

F) CATANIA'S NATURAL AND CULTURAL HERITAGE

Catania was founded in the 8th century BC by Chalcidians, a Greek population coming from Thrace. In 1434, the first university in Sicily was founded in the city. In the 14th century and into the Renaissance period, Catania was one of Italy's most important cultural, artistic and political centres.

The city is well known for its history, culture, architecture and gastronomy. Its old town, besides being one of the biggest examples of baroque architecture in Italy, is a World Heritage Site, protected by UNESCO.

During the 3 days of the symposium, in the afternoon, after the morning lectures, short trips will be planned to visit relevant artistic or scenic places. Organizers selected some places that are connected with the volcanic features of its territory.

At the moment the following visits are planned:

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- **Walking through the Baroque**
A wonderful walk in the centre of the town.

- **Etna's endemic species**
Guided tour of Catania botanical gardens.

- **The caves of San Gregorio**
The natural reserve is characterized by the presence of numerous lava flow caves in a relatively small area. The reserve was established in order to "preserve and protect the important complex of lava flow caves colonized by cave fauna and bat colonies".

- **The "Paternò mud cones"**
The idea is to go and visit the mud "vulcanelli" near Paternò, including also a stop at a winery to taste the famous wines of Etna.

- **Boat trip from Aci Trezza to the Coast of Cyclops**
A boat trip from the port of Aci Trezza to go and see the columnar basalts of the faraglioni up close and see the stretch of coast affected by the 1669 flow.

- **Living on an active volcano**
Over 150 fixed detection stations (seismic, GPS, infrasonic, clinometric, extensometric, etc.) are installed on the Etna slopes, thus making this volcano one of the best monitored volcanoes in the world. Visit of the "monitoring room" of the INGV (Istituto Nazionale di Geofisica e Vulcanologia) in Catania.

- **The beach of San Giovanni li Cuti**
Black sand beach with the possibility to see the front of a lava flow.

Participation on some visits could be limited due to logistic reasons; entrance to museums or monuments is to be paid on site and an extra fee might be required to cover transport outside the town.



Figure 11: Acitrezza port, in background the Lachea island

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European Space Agency Appeals for Innovative Ideas to Aid Exploration of Lunar Caves

Stephan Kempe has drawn attention to an interesting programme being run by the European Space Agency (ESA). During August 2019 ESA asked for proposals to explore and study caves, thought to be lava tubes, below the lunar surface. Specifically ESA were looking for ideas to address five themes which I am sure will be all too familiar with most readers of this newsletter, these being;

Theme#1 Robotic concepts for cave access along a vertical wall

Theme#2 Navigation and progression inside the cave on horizontal segments

Theme#3 Cave mapping and navigation

Theme#4 Communication/power network cave interior/lunar surface

Theme#5 Science payload

At the time of writing ideas have been submitted, and ESA are evaluating the submissions. It may well be interesting to keep an eye on progress of these studies on the ESA website

<https://ideas.esa.int/servlet/hype/IMT?documentTableId=45087583371818598&userAction=Browse&templateName=&documentId=d5e1d96887b7644587a60ba84f549af3>

STOP PRESS!

Hello everyone and a Happy New Year to you all

I am pleased to advise that the registration page on the 19th ISV* Website is now fully operational. This means that you can now register to attend the Symposium, which will be held in Catania (Sicily) in August-September this year.

* 19th International Symposium on Vulcanospeleology

I know the organisers had hoped to have the registration page available from early December, but there were some IT issues to overcome.

To find the registration page, go to <https://www.19isvetna.com> and click on the Registration tab. This will bring up the Preregistration Form.

However, before you do anything else, I suggest you download and read the Registration Guide.

You can find the guide by clicking on the “click here” link just under the Preregistration Form heading.

If you have already preregistered, as I know many of you have, then the next step is to click on the second “click here” link. This will take you to the online registration form.

If you have not already preregistered, then you will need to complete the pre-registration form before moving on to the registration form.

As another piece of advice: If you are planning to do any of the caving trips or cultural/ scenic/ scientific excursions on offer during the Symposium, then might I suggest that you have a good idea about the trips that are of most interest to you before you start filling out the registration form. This is because the registration form will ask you to nominate one trip option for each day. You can read about the various trip options in several places:

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under the Excursions tab on the ISV 19 Website;

in the First Circular for ISV 19; or

in this Issue of the newsletter

If you have any questions, please ask. If your questions are of a general nature, I may be able to help, but if they are directly related to the ISV 19, then I suggest you contact the organisers directly at: contact@19isvetna.com . It may take a couple of days to get a response, so please be patient and bear in mind that the organisers are all volunteers.

Regards

John Brush

Chairman/ President

UIS Commission on Volcanic Caves