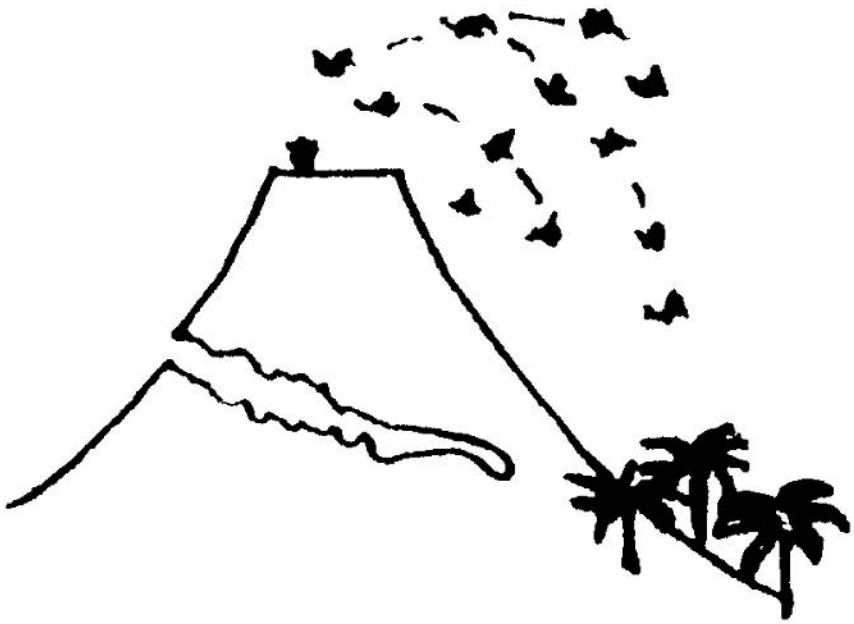

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WWW.VULCANOSPELEOLOGY.ORG

No. 68

November 2014

Union Internationale de Spéléologie (UIS)

Commission on Volcanic Caves

e-NEWSLETTER

Printer-Friendly Edition

e-NEWSLETTER
U.I.S. COMMISSION ON VOLCANIC CAVES

No. 68 - November 2014

Contents

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

http://www.vulcanospeleology.org

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

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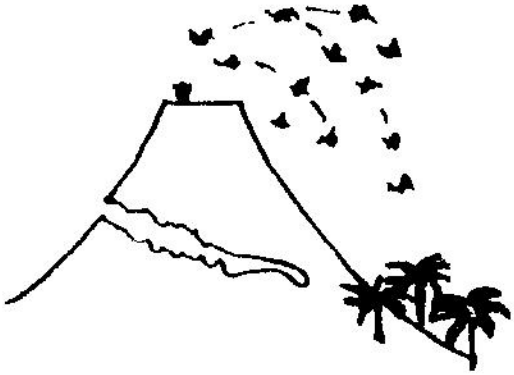
U.I.S. COMMISSION ON VOLCANIC CAVES

MISSION STATEMENT

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



CHAIRMAN'S CORNER

Jan-Paul van der Pas

Minutes of Commission meeting held on occasion of 16th International Symposium on Vulcanospeleology, Puerto Ayora, Santa Cruz, Galapagos, Equador – 17 March 2014

Chair: Harry Marinakis
Minutes: Greg Middleton

The meeting opened at 17:20. Present: about 30 members and supporters.

Minutes of previous meeting held at the 15thSymposium, at Zarka, Jordan, on 17 March 2012 were accepted. Moved: Dr Julia James, seconded: John Brush.

Venue for 17th International Symposium

Three proposals have been put forward: Hawaii (Marinakis *et al.*), New Mexico (Ingham) and Argentina (Benedetto).

New Mexico: Advice was given that NM is currently problematic because of White Nose Syndrome in bats. There seems no prospect of that problem being sorted within 2 years.

Argentina: The proposal involves tacking the Symposium onto a national or international meeting. This was not supported. Tim Francis advised that there is a good venue about 4 hours' drive from Mendoza; there are 6 or 7 caves that could be visited but they are not large; the landscape, however, is impressive. The area is remote, likely to be very hot and the roads are 'challenging'.

Hawaii: Ann Bosted reported the proposal is to hold the Symposium at Ocean View at the south of the Big Island. Accommodation would be disbursed and basic; there is a suitable meeting room. Proposal was endorsed by Ric Elhard and Rose Herrera who said they would be pleased to host at their show cave, Kula Kai Caverns. Peter Bosted suggested there could be pre- and post-symposium trips to Kazamura, etc. The possibility of having to limit numbers due to accommodation restrictions was raised. It was agreed the proponents should be given 3 months to finalise their proposal.

Book on Volcanic Caves

Stephan Kempe spoke on a proposal for a comprehensive book on volcanic caves; he summarised the history of the project and presented his current outline. There was general endorsement and some discussion about possible publishers.

Submitted by Greg Middleton

You are invited to the

17th International Symposium on Vulcanospeleology

Big Island, Hawai'i, U.S.A.
Early 2016

Specific dates and details to be announced at a later date

17th International Symposium on Vulcanospeleology

Location: Ocean View on the south point of the Big Island, Hawai'i, U.S.A.

Hosts: Peter & Ann Bosted

Dates: Tentatively scheduled for January, February or March 2016.

Transportation: You will need a rental car on the Big Island.

Space is limited and participation will be limited to current members of the UIS Commission on Volcanic Caves.

Hawai'i Volcanoes National Park
http://www.nps.gov/havo/index.htm

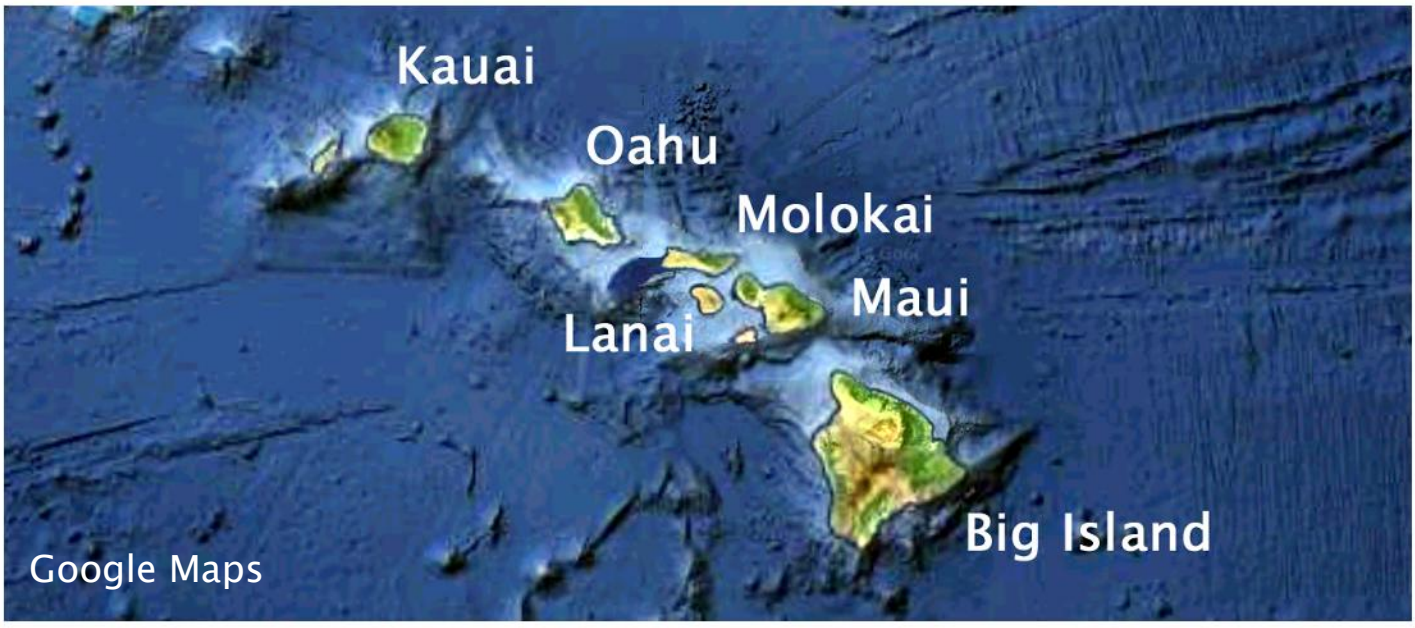
Hawaiian Volcano Observatory
http://hvo.wr.usgs.gov/

Hawai'i Tourism
http://www.gohawaii.com/big-island/about/geography

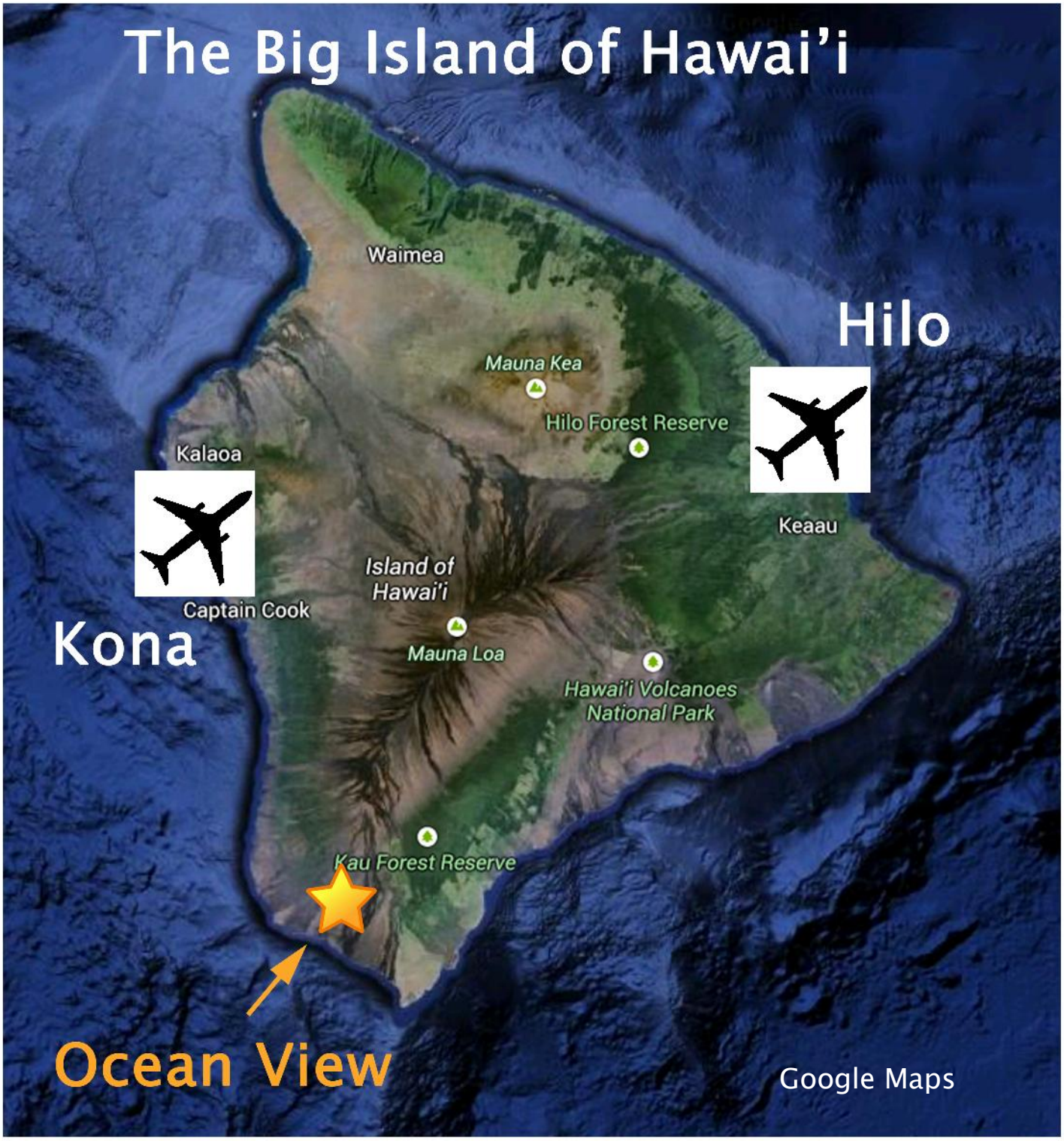
Google Map of Ocean View, Hawai'i
https://www.google.com/maps/@19.084497,-155.7732805,16z?hl=en

Climate data for Hilo, Hawai'i
http://www.weather.com/weather/climatology/monthly/USHI0022

Climate data for Kona, Hawai'i
http://www.weather.com/weather/wxclimatology/monthly/graph/USHI0033



Kona Airport (KOA) > Ocean View: 1 hour 30 minute drive on a winding 2-lane road
Hilo Airport (ITO) > Ocean View: 2 hour drive on a 2-lane highway



A Curious Overcrossing of a Martian Crevice Cave by a Cavernous Lava Tube

William R. Halliday, NSS 812
Commission on Volcanic Caves of the International Union of Speleology

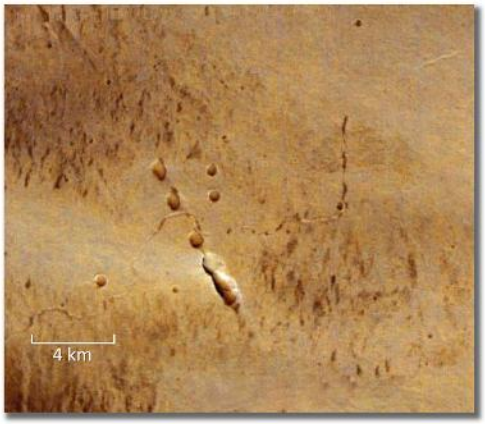


Figure 1. Between Olympus Mons and Alba Mons, the signature of an ancient, partially cavernous lava tube curves around a sinkhole (swallow hole) and overcrosses an older crevice cave identified by the presence of the sinkhole. This overcrossing may have been caused by deflection by a scarp along the eastern margin of a fault block or by a temporary ice plug in the sinkhole.

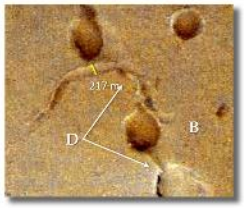


Figure 2. Higher magnification of overcrossing. Width of lava channel is 217 meters as determined by Google Mars measuring tool.

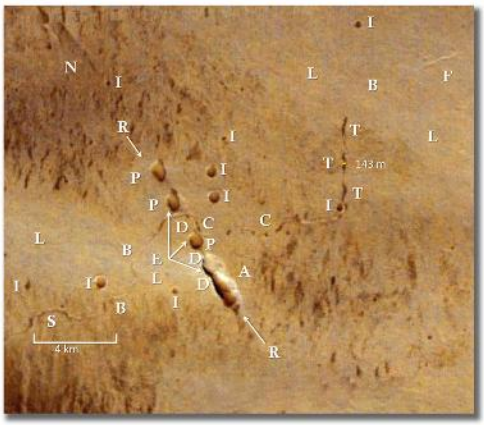


Figure 3. Annotated orbital view of area shown in Figures 1 and 2.

Lettering for all figures: **A** – Aligned complex of originally separate sinkholes (swallow holes) along unnamed rille; **B** – Buried signature of collapsed lava tube cavern ; **C** – Signature of portion of collapsed lava tube cavern with relatively small skylights; **D** – Tilted fault block; **E** – Possible entrance of crevice (fault) cave; **F** – Up-slope section of signature of collapsed lava tube cave; **I** –Impact crater; **L** – Tephra, regolith and/or thin bedded lava surfaces; **N** – Signature of northern extension of fault trace; **P** - Individual funnel-shaped sinkhole (swallow hole) along rille (Note: in the American literature, some similar sinkholes (swallow holes) erroneously are misidentified as pit craters); **R** –Course of unnamed cavernous rille; **S** – Signature of down-slope section of collapsed lava tube cave. All images except Figure 6 by NASA/USGS.

Figure 4. Higher magnification of area of tilted fault block and potential entrance of crevice (fault) cave. Width of rille section as determined by Google Mars measuring tool is 200 meters.

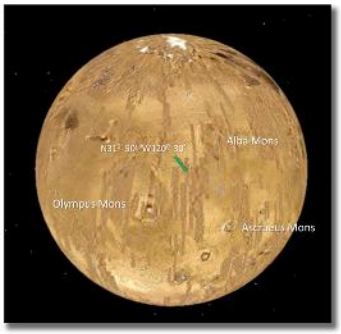


Figure 5. Location of study area on Tharsis Rise.

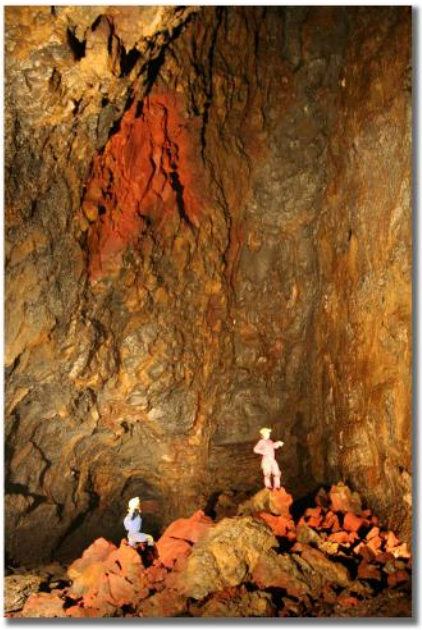


Figure 6. Largest chamber in crevice {fault) cave in Hawaii, USA. A terrestrial analog of Martian crevice (fault) caves. Photo by Gerald Favre.

Conclusions: Further study is indicated to determine the cause of the sudden bend in the signature of the indicated lava tube. Also, some of the geomorphic features of this part of Mars are significantly larger than their terrestrial analogs.

Poster by: Jody Bailey NSS 32941

Caves Revealed
http://www.stuff.co.nz/auckland/local-news/central-leader/9443557/Caves-reve

36 Argentina Subterranea 36
https://sinpelos2011.files.wordpress.com/2014/10/36-argentina-subterranea-362.pdf

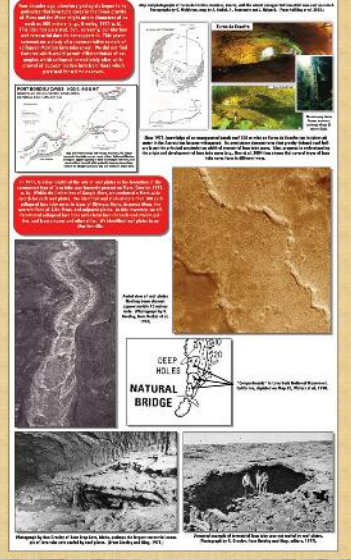
#114

MARTIAN LAVA TUBE CAVES AND MEGA-CAVES REVISITED

W. Halliday (1,2), D. Bunnell (1,2), L. Kestay (3), G. Middleton (1,4), G. Favre (1,5), J. Wynne (6), and C. Okubo (3)

1) Commission on Volcanic Caves of the International Union of Speleology
2) Hawaii Speleological Survey of the National Speleological Society
3) Astrogeology Science Center of the US Geological Survey
4) Sidney Speleological Society (Australia)
5) Swiss Speleological Society
6) Colorado Plateau Research Station of Northern Arizona University

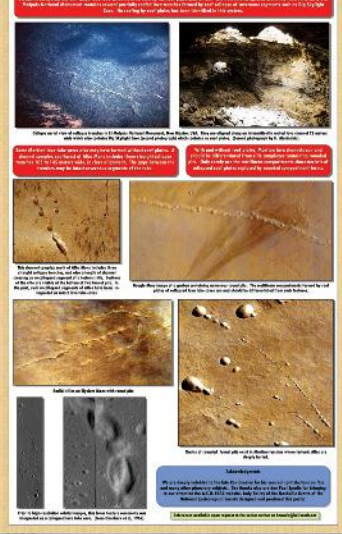
LAVA TUBE CAVES OF EARTH AND MARS



LAVA CHANNELS OF EARTH AND MARS

FEATURES OF COLLAPSED MARTIAN LAVA TUBE CAVES

OTHER TYPES OF LAVA TUBE CAVES, AND "LOOK ALIKES"



CAVES OF ASCENSION ISLAND – AN INTRODUCTION

Rudolf Pavuza, Petra Cech
Karst and Cave Research Unit, Museum of Natural History, Vienna, Austria;
e-mail: rudolf.pavuza@nhm-wien.ac.at

Abstract. Ascension Island is a tiny volcanic island in the South Atlantic Ocean virtually inexistent in the speleological literature. Even though there is a lack of huge lava tunnels some 20 caves of five diverse types are known, some of them being of interest for pseudokarst studies.

Preface

Ascension Island is a 91 km^2 island in the South Atlantic Ocean, 8° S and some 2700 km west of Africa (Fig. 1). Belonging to Great Britain, it is operated conjointly by GB and the USA as a military and technical base. Tourism is negligible and to go there is still complicated and expensive. The speleological documentation is scarce besides remarks in historical and biological monographs. Nevertheless we located a handwritten document of a British caver in the Georgetown Museum. The speleological potential is not as spectacular as elsewhere but not at all exploited. Most caves are of volcanic origin but some are related to erosive processes too.

Fig .1. Position of Ascension Island.

Abb. 1. Lage von Ascension Island.

Geology

Ascension Island lies 80 km west of the Middle Atlantic Ridge and is entirely of volcanic origin. Its last eruption took part some 600 years ago. Despite its small size of the island, there is a variety of volcanic rocks with very diverging geomorphological properties: different basaltic rocks, trachyte and rhyolite and widespread pyroclastic deposits. „Green Mountain", the highest peak of the island (859 m a.s.l.) is mainly built up by pyroclasts.

Speleological Research

The first evidence of caves was given by William Dampier, English adventurer and voyager who shipwrecked here in 1701 and found water in „Dampiers Drip" – a shallow shelter. Biospelological findings in fumaroles were recorded during the British ornithological expedition in the 1950-ies (Stonehouse 1960). More detailed speleological information – mostly connected with zoological findings – was given by Ashmole (2000). Rob James, a British caver serving on Ascension Island in 1985 delivered a handwritten manuscript with many cave sketches to the local museum in Georgetown. An actual information leaflet of the Ascension Conservation Centre lists four types of caves:

- lava tubes,
- fumaroles,
- sea caves,
- erosional caves.

We finally encountered joint related „fissure type caves" showing signs of erosional forces.

Examples of caves

Lava tubes

The most-visited cave due to its easy access is Command Hill Cave near the airstrip in the SW part of the island (Fig. 2). A steep descent (10 m) leads to a linear tunnel of the length ~100 m, width ~5 m and height ~3 m (Fig. 3). The temperature inside reached 27°C (as of July 2011) combined with a very high humidity. However Radon (605 Bq/m^3) as well as CO_2 (446 ppm) remained unremarkable.

Fig. 2. Command Hill Cave, entrance (photo R.. Pavuza).

Abb. 2. Eingang der Command Hill Cave (Foto R. Pavuza).

Fig. 3. Command Hill Cave, inside (photo R. Pavuza).
Abb. 3. In der Command Hill Cave (Foto R. Pavuza).

Other lava tunnels in various stages of degradation are abundant in the adjacent lava fields of the southwest. R. James (1985) mentions Chapel Grotto Cave (lenght ~100 m), Jepsons Cave and Cobweb Cave. In Ravine Cave – a short tunnel cut by a steep valley – a new species of pseudo-scorpion *(Apocheiridium cavicola)* could be detected (Ashmole 2000).

Clarkes Beach Cave represents a mixed genesis. It is located a few meters above sea level but 200 m far from the present beach and reveals at least three phases of development: layered lava fill the lower part of the primary lava tunnel (Fig. 4). The current entrance formed subsequently – most probably by marine erosion. In the back part of the 30 m long tunnel calcite speleothems occur (Fig. 5).

Fig. 4. Clarkes Beach Cave, entrance (photo R. Pavuza).

Abb. 4. Eingang der Clarkes Beach Cave (Foto R. Pavuza).

Fig. 5. Calcite popcorn in Clarkes Beach Cave (photo R. Pavuza).

Abb. 5. Calcitischer Popcornsinter in der Clarkes Beach (Foto R. Pavuza).

Exhalation tubes/Fumaroles

In the northern part of the island, near Sisters Peak several fossil fumaroles were discovered (Stonehouse 1960, p 179 ff., James 1985 and Ashmole 2000, p 189 ff. and 232) where bones of a distinct bird (Ascension rail) could be recovered. Despite the fact that the (vertical) entrance to one of these spectacular cone-shaped vents (Fig. 6) was supplied with a ladder (Fig. 7) an exploration remains difficult due to extreme temperatures (> 30°C) and humidity.

Fig. 6. Bird Cave, fossil vent (photo R. Pavuza).

Abb. 6. Bird Cave, fossiler Vulkanschlot (Foto R. Pavuza).

Fig. 7. Bird Cave descent (photo R. Pavuza).

Abb. 7. Abstieg in die Bird Cave (Foto R. Pavuza).

Sea caves

Sea caves are abundant on many islands and coasts. On volcanic islands additionally to the marine erosion of soft layers, lava tunnels maybe cut by the sea. Sea caves may be encountered on several beaches of the Ascension Island. James (1985) mentioned Coconut Bay Cave (~60m), Comfortless Cove Sea Cave (~15 m), both of rather linear development. This points towards an erosion along joints. Another nameless cave near the „Ariane tracking station" in the NE of the island includes a formidable swimming pool within the lava field due to roof collapse of the sea cave. An adjacent blowhole confirms the high permeability of the lava in this area.

In the Waters Edge Sea Cave (Fig. 8) SE of the airstrip as well as in coastal shallow shelters elsewhere we encountered „pseudokarst stalactites" composed of sea salt (Fig. 9). that formed by sprayed sea water. The occasional striking yellow-green colour is caused by algae (see back cover).

Fig. 8. Water Edge Sea Cave (photo R. Pavuza).

Abb. 8. Water Edge Sea Cave (Foto R. Pavuza).

Fig. 9. Salt stalactite in Water Edge Sea Cave (photo R. Pavuza).

Abb. 9. Salzstalaktit in der Water Edge Cave (Foto R. Pavuza).

Erosional caves

Around Green Mountain where trachytes and pyroclasts are abundant shallow caves and niches are numerous (Fig. 10). Coinciding with joints these small features can become more cave-like. As these features are used and sometime modified by rabbits the cave name „Rabbit Holes" suggested itself. The genesis is connected to the weaker layers of the pyroclasts dipping sub-parallel to the slopes. They are weakened by weathering and subsequently eroded due to occasional heavy rainfall and gravitation. The initial phase is clearly visible at the slopes of White Hill (Fig. 11).

Fig. 10. Rabbit Holes (photo R. Pavuza).

Abb. 10. Rabbit Holes (Foto R. Pavuza).

Fig. 11. Proto-caves at White Hill (photo R. Pavuza).

Abb. 11. Proto-Höhlen am White Hill (Foto R. Pavuza).

Fissure type caves

In the vertical parts of White Hill in the far east of the island two joint related cave entrances (White Hill Caves) were spotted but due to the dangerous approach not yet visited (Fig. 12). Both entrances – being some 5 m high – continue at least several meters and show signs of erosion caused by intense runoff.

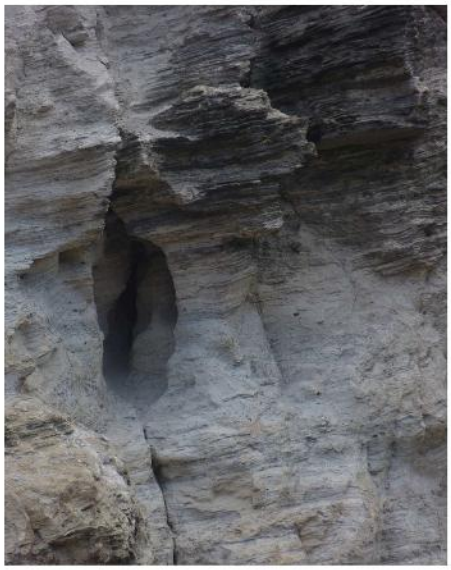


Fig. 12. White Hill (fissure) Cave (photo R. Pavuza).

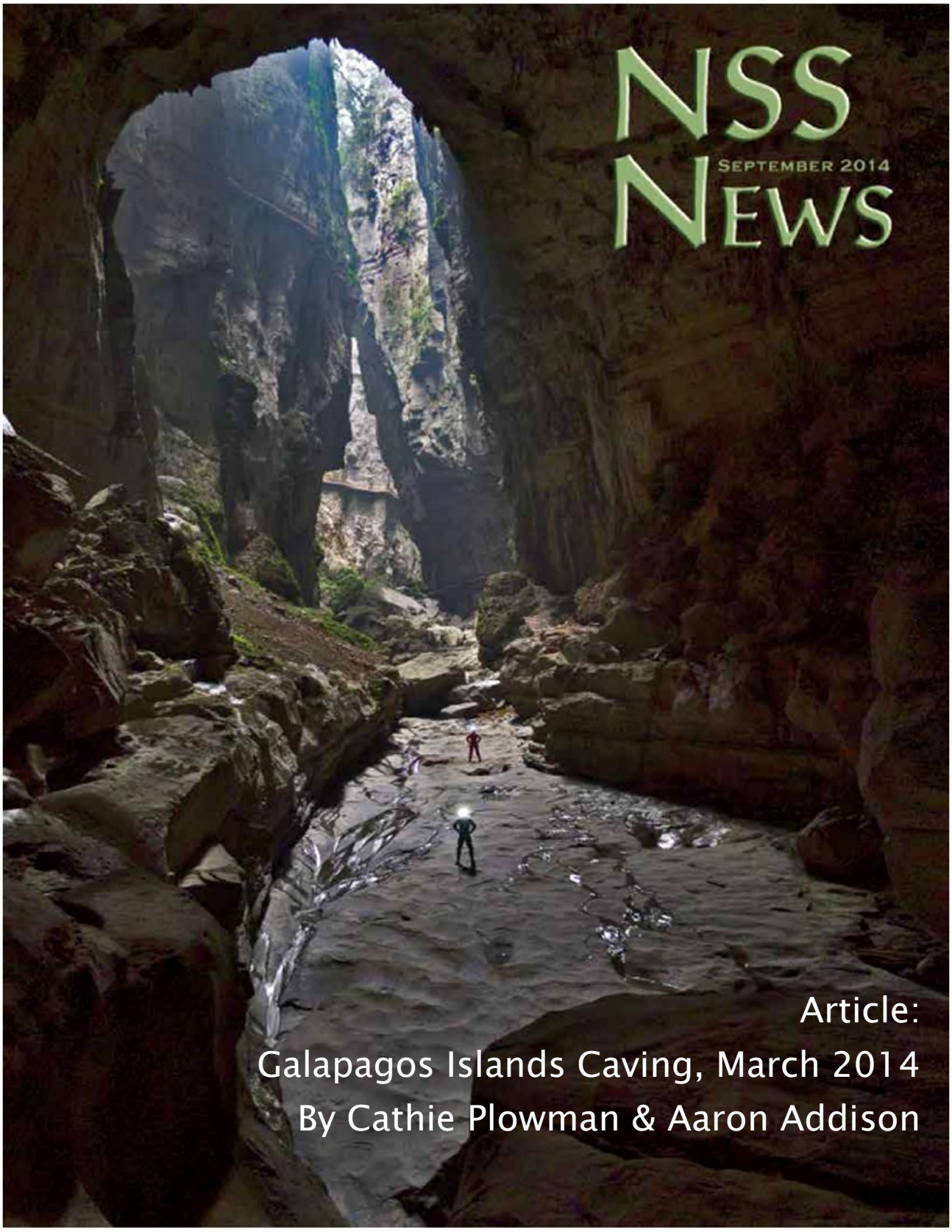
Abb. 12. White Hill Spalthöhle (Foto R. Pavuza).

References

Ashmole P.M. 2000. St. Helena and Ascension Island – a natural history. A.Nelson, Shropshire, England.

James R. 1985. Caves - Ascension Island (manuscript). Archive of the Museum of the Ascension Island Heritage Society Georgetown (No. F11/95).

Stonehouse B. 1960. Wideawake Island. The story of the B.O.U. Centenary Expedition to Ascension. Hutchinson, London.



Article:

Galapagos Islands Caving, March 2014

By Cathie Plowman & Aaron Addison

16th International Symposium on Vulcanospeleology

March 16 -23, 2014

Galápagos Islands, República del Ecuador

The conference co-chairs were Theofilos Toulkeridis, Ph.D. and Aaron Addison, MSGISc.

The pre- and post-symposium activities spanned the entire month of March, and included project caving, vertical caving, naturalist cruises, overland tours and scuba diving.

This symposium had more participants in attendance than any other previous Vulcanospeleology symposium.

The entire Commission is grateful to Dr. Toulkeridis and Aaron Addison for the incredible hard work that they put into making this on one the most exciting and exotic Vulcanospeleology symposiums that we have attended. We are also very grateful to all members of the symposium staff who made our visit to the Galápagos so very memorable.

THANK YOU!

(A more detailed report about the Galápagos will follow in the next newsletter.)

Here are some photo galleries from the Galápagos sympsoium:

Julia James - http://ozspeleo.phanfare.com/6566625

Stephan Kempe - http://ozspeleo.phanfare.com/6479476

Greg Middleton - http://ozspeleo.phanfare.com/6479442

Al Warild - http://ozspeleo.phanfare.com/6566626

Phil Collett - https://www.flickr.com/photos/pc_image/sets/72157644458460980/

Peter and Ann Bosted - http://www.cavepics.com/html/EQDR.html

Photo by Gregory Middleton

GOOGLE GROUPS

As the editor of the e-Newsletter, I would like to switch my primary method of mass e-mail distribution of the newsletter to Google Groups. Google Groups can also be used for other mass communication within the Commission besides the e-Newsletter.

1. What is Google Groups?

Google Groups is merely an automated message distribution center, without the disadvantages that come with direct mass e-mails.

2. How do I view messages in our Google group?

All messages posted to our group are automatically forwarded to your personal e-mail account. There is no need to log in to Google Groups to view messages.

3. How do I post to our Google group?

Send an e-mail from your personal e-mail account to:
ius-commission-on-volcanic-caves@googlegroups.com

Your e-mail will automatically post to our Google group and be forwarded to all members via their personal e-mail accounts.

4. How do I sign up for Google Groups?

Send a message from your personal e-mail account to me at harrymarin@gmail.com and I will send you an invitation to join.

5. Do I need a Goggle account to join Google Groups?

No, you can join Google Groups from whatever e-mail provider you chose (e.g., Yahoo, Hotmail, etc.).

6. Do I need to login to Google Groups to view or send messages?

No, you can view and send messages directly from your own personal e-mail account. However, you always have the option of going to Google Groups and logging in as well.

7. What are the advantages of using Google Groups?

-Your e-mail address can be hidden from others in group messages.
-You will not see all of the delivery failures from dead e-mail accounts when you send a mass e-mail to the group.

8. Do I have to join Google Groups to stay in contact with the Commission?

No, Google Groups is primarily to distribute the e-Newletter. You may still use mass e-mail for other topics if you desire, but with over 100 members I will not try to keep the e-mail list current anymore. If you want the e-Newsletter by regular e-mail instead of through Google Groups, then send an e-mail to me with a message that you do not want to join Google Groups. I will forward the e-Newsletter to you via regular e-mail. If you are not on Google Groups then be sure to promptly inform me of any changes to your e-mail if you want to keep receiving the e-Newsletter.

Vulcanospeleology Symposia

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2006 Mexico
2008 Korea
2010 Australia
2012 Jordan
2014 Ecuador