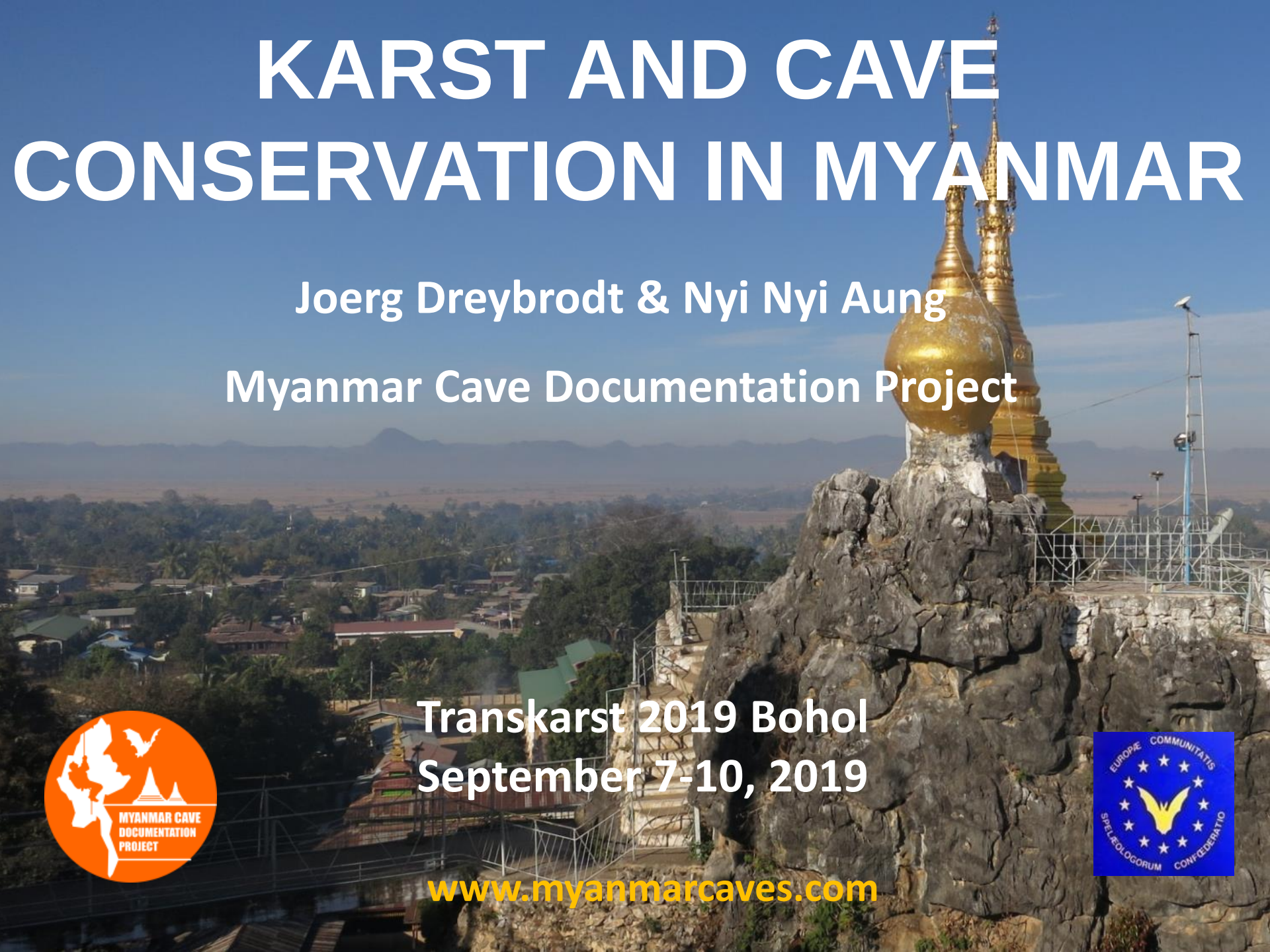
KARST AND CAVE CONSERVATION IN MYANMAR

Joerg Dreybrodt & Nyi Nyi Aung

Myanmar Cave Documentation Project



Transkarst 2019 Bohol
September 7-10, 2019

www.myanmarcaves.com

Karst and Limestone in Myanmar

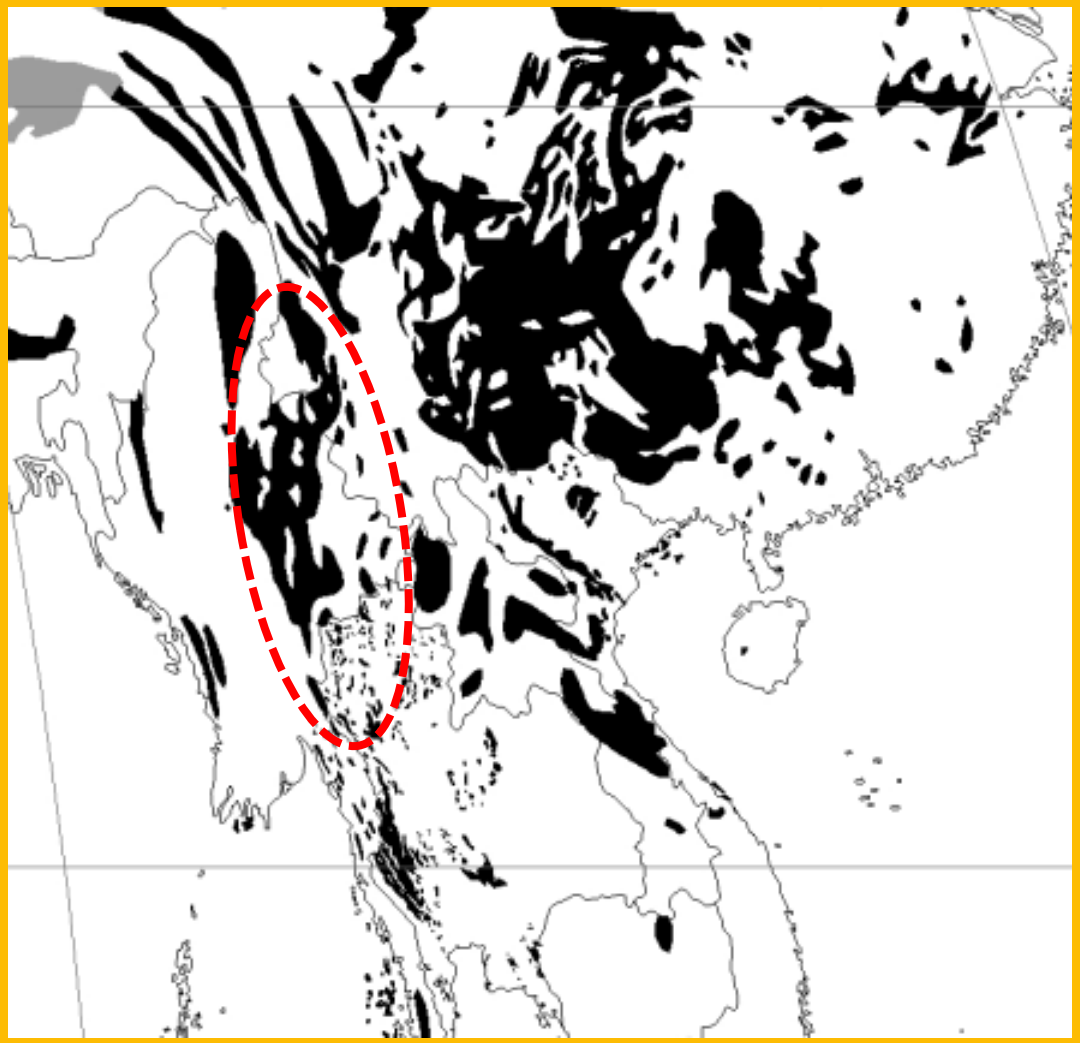


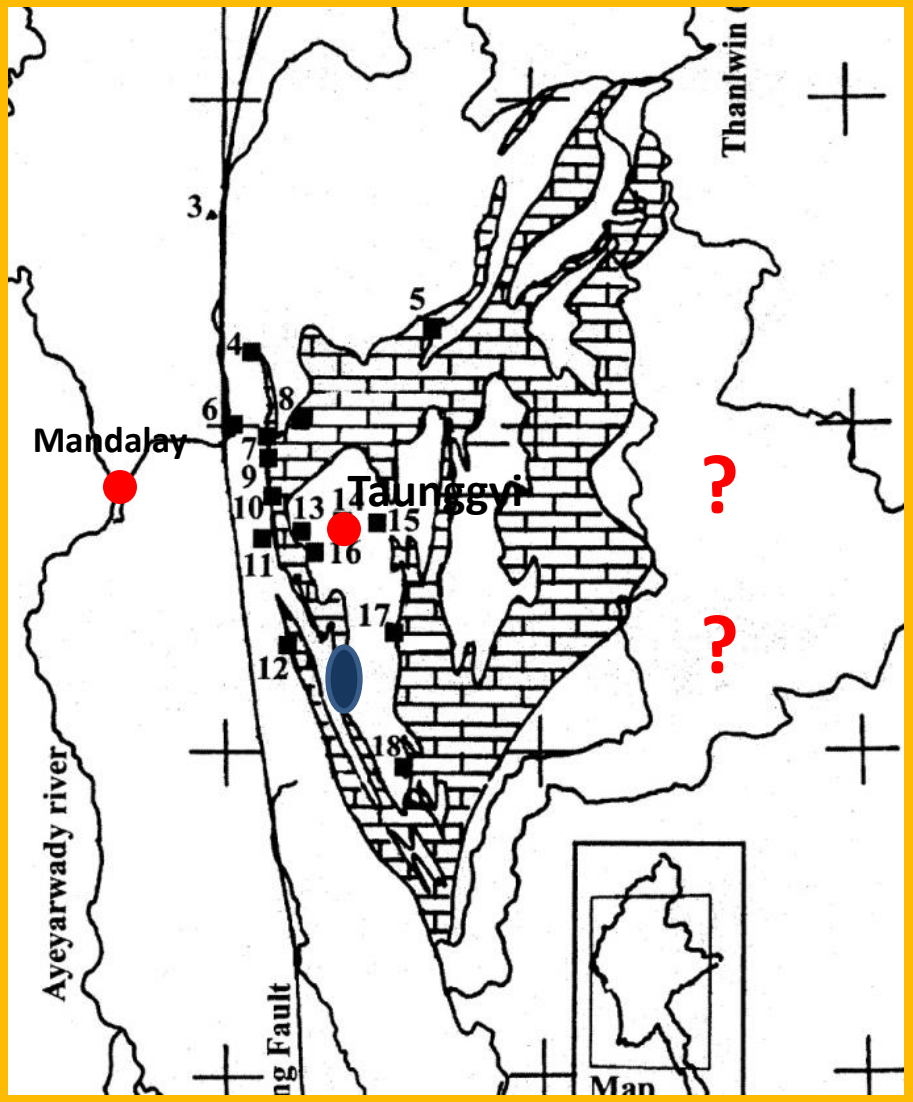
Table 20.2 Protected karst areas in Southeast Asia

Country	Karst area (km²)	Protected karst
Burma	80,000	650
Cambodia	20,000	0
Indonesia	145,000	22,000
Laos	30,000	3,000
Malaysia	18,000	8,000
PNG	50,000	0
Philippines	35,000	10,000
Thailand	20,000	5,000
Vietnam	60,000	4,000
Total	458,000	53,150

Source: Day and Urich 2000

- Large area of karst in SE-Asia (10%), Myanmar has a significant portion
- A formerly white spot for karst research due to the political isolation

Karst Shan Plateau



Landscape on Shan plateau

North-South trending karst ridges up to 1800 m asl

Myanmar Cave Documentation Project

- European-Myanmar Project
- 51 members of 13 nations
- Foundation 2009
- Swiss / British based international expedition teams

Organised with the European Caving Federation FSE: 40.000 Cavers of 41 countries EuroSpeleo Project support from 2014

Project Partners

Ecotourism

Ministry of Tourism
Loikaw Guide Association
GiZ

Conservation

Universities

Yangon (Prof. Saw Yu May)
Loikaw (Prof. ToeToe)
Mandalay (Dr. Sai)

Local Stakeholders

Kayah State Government
Parami Development Network Pa-O
Loikaw Guide Association
Hpruso District Administration
Villages in caving areas

Overview of Caving areas

Lashio/Kutkai

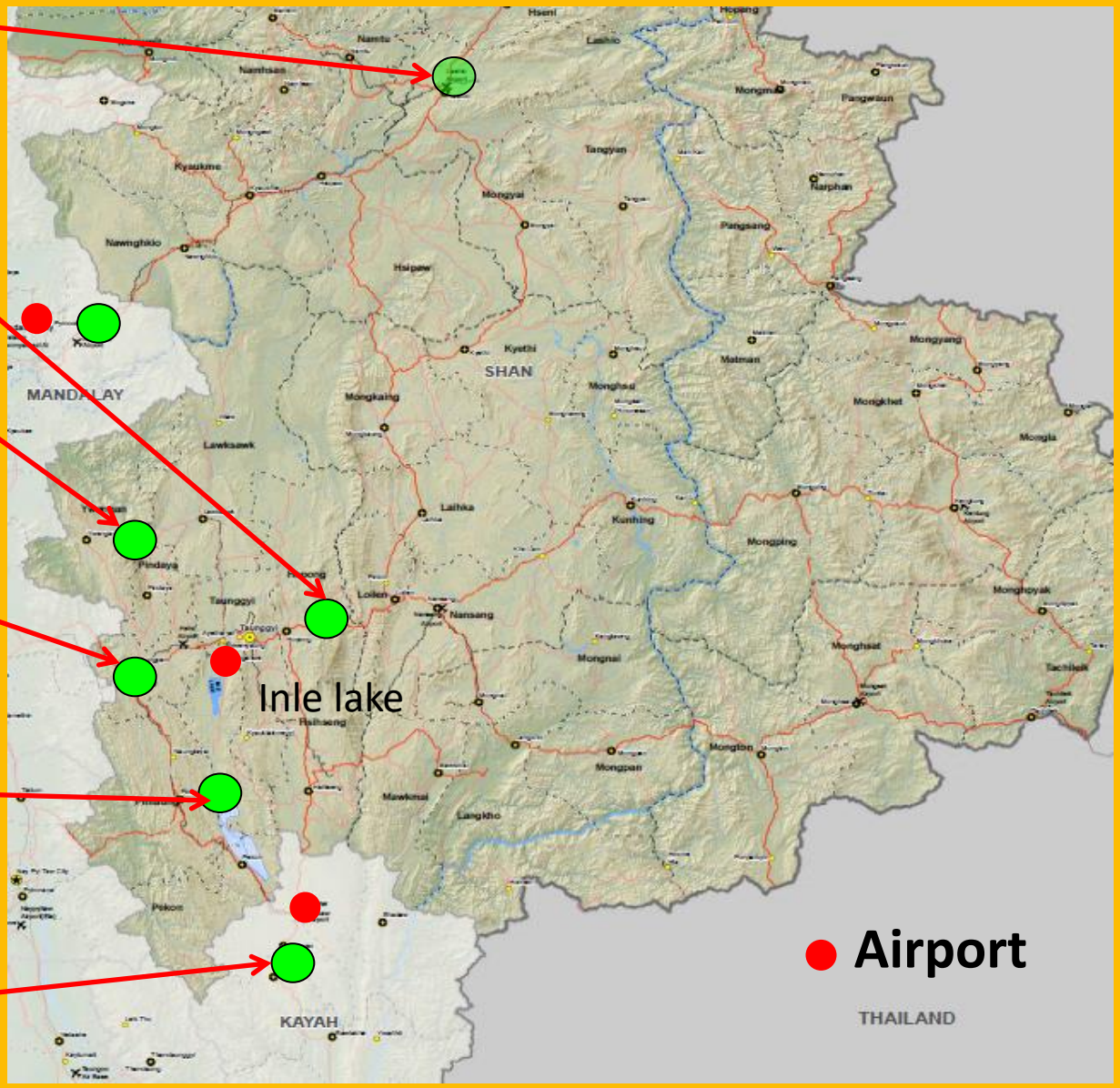
Hopon –
river caves &
monasteries

Ywangan –
Depressions with
rivers

Kalaw –
Conglomerate
caves

Pinlaung – deep
caves to plateau
edge

Kayah –
large river caves



Longest Caves of Myanmar

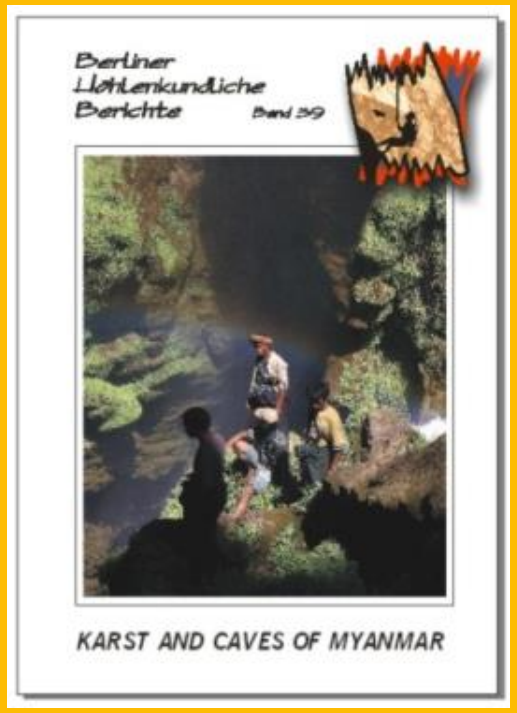
No.	Name	State	District	Length (m)	Year
1	Khauk Khaung (Stone Cave)	Shan	Ywangan	4790	2012-14
2	Phruno River Cave	Kayah	Hpruso	4580	2016-17
3	Red River Cave	Kayah	Bawlakhe	4095	2015-16
4	Namun Spring Cave	Shan	Pinlaung	2628	2013-14
5	Kyet Cave	Kayah	Loikaw	2194	2015
6	Stone Spring Cave	Shan	Ywangan	1917	2014
7	Ho Hwe Cave	Shan	Hopon	1857	2018-19
8	Mondowa Gu	Shan	Taunggyi	1770	1998
9	Hopon Spring Cave	Shan	Hopon	1655	2011
10	Na Gar Gu (Dragon Cave)	Shan	Ywangan	1654	2014

11 years – 16 expeditions – 80 km passage

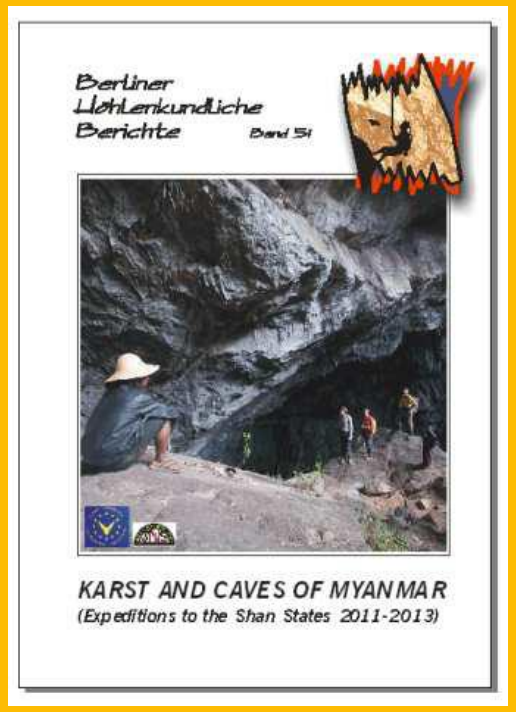
Cave Database with about 650 objects

Publications & Documentary

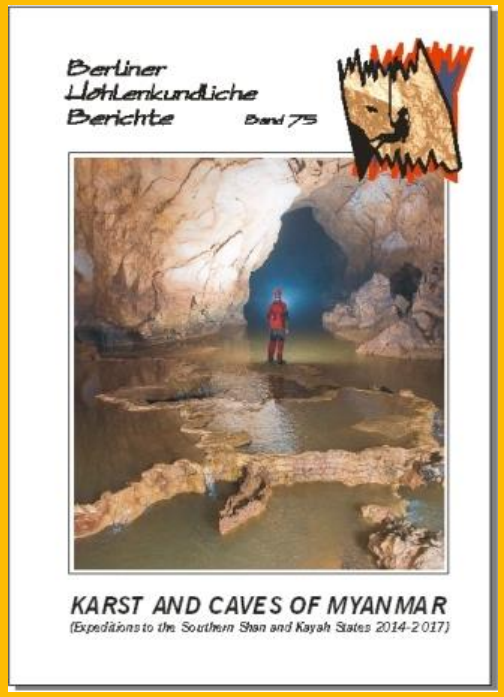
2010



2013



2018

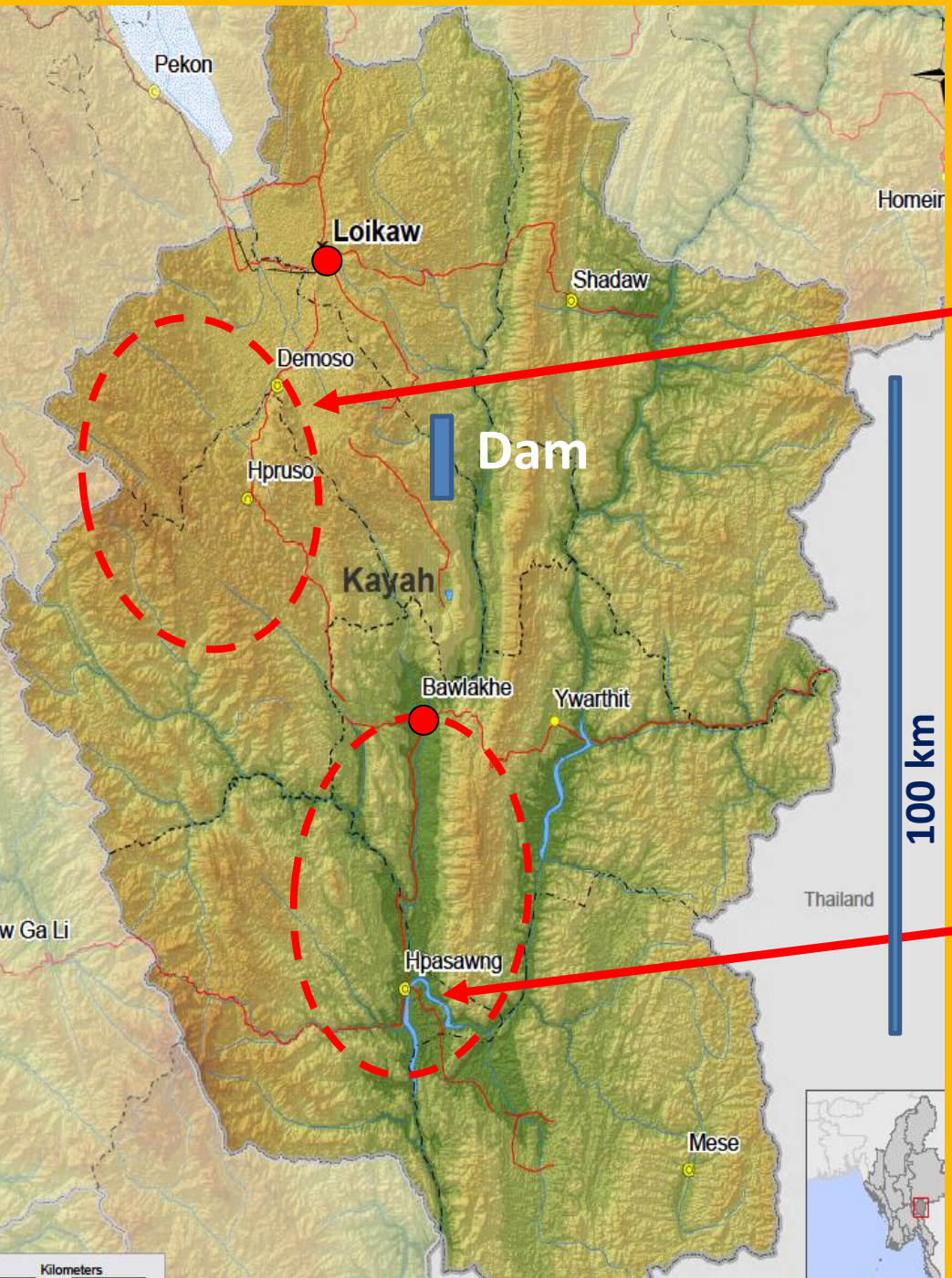


Documentary Movie
by Phil Bence
28 min
2016

Main Expedition Area since 2015

Loikaw – Capital of Kayah State

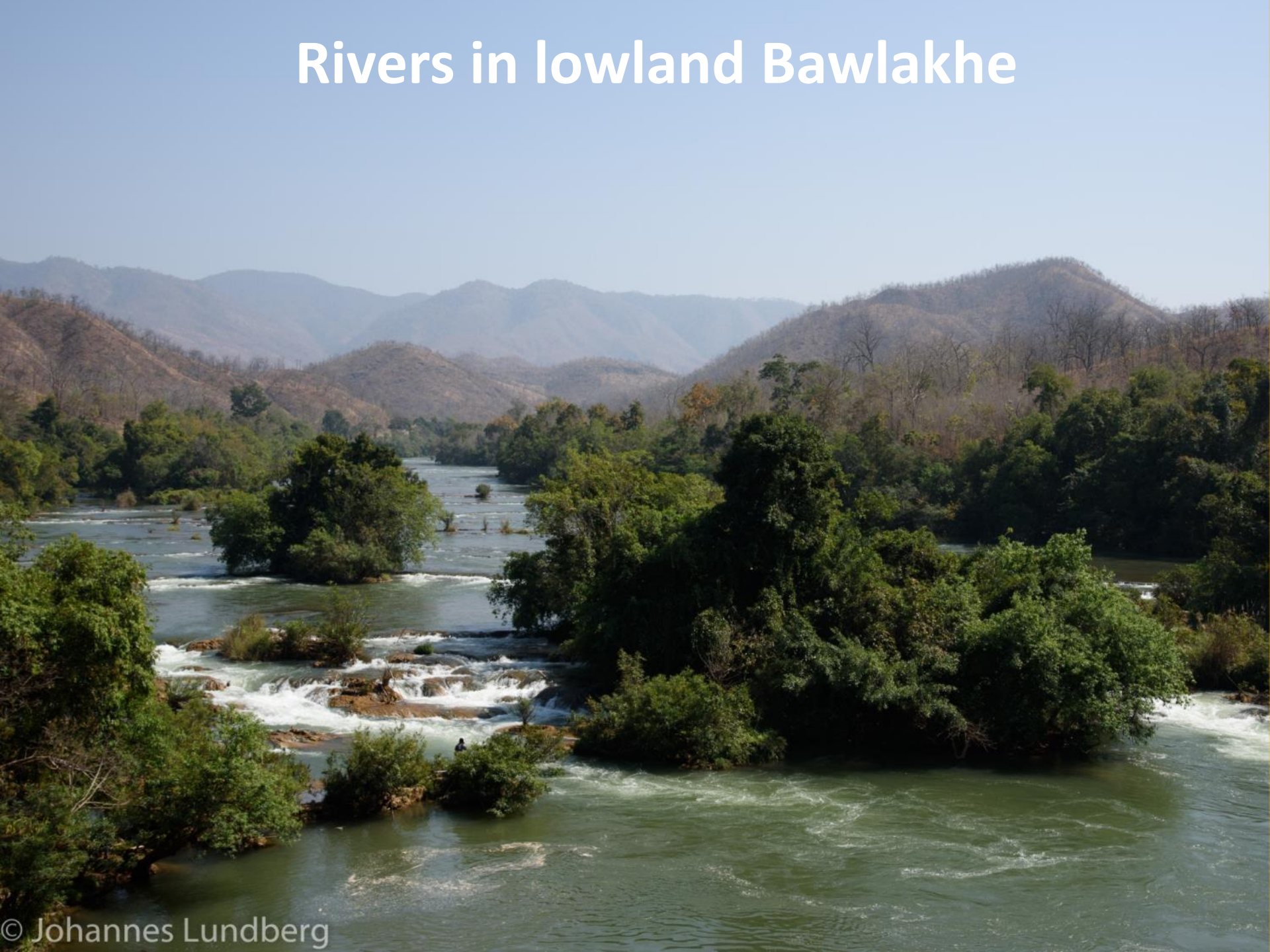
Kayah State



Hpruso plateau karst 900-1500 m asl

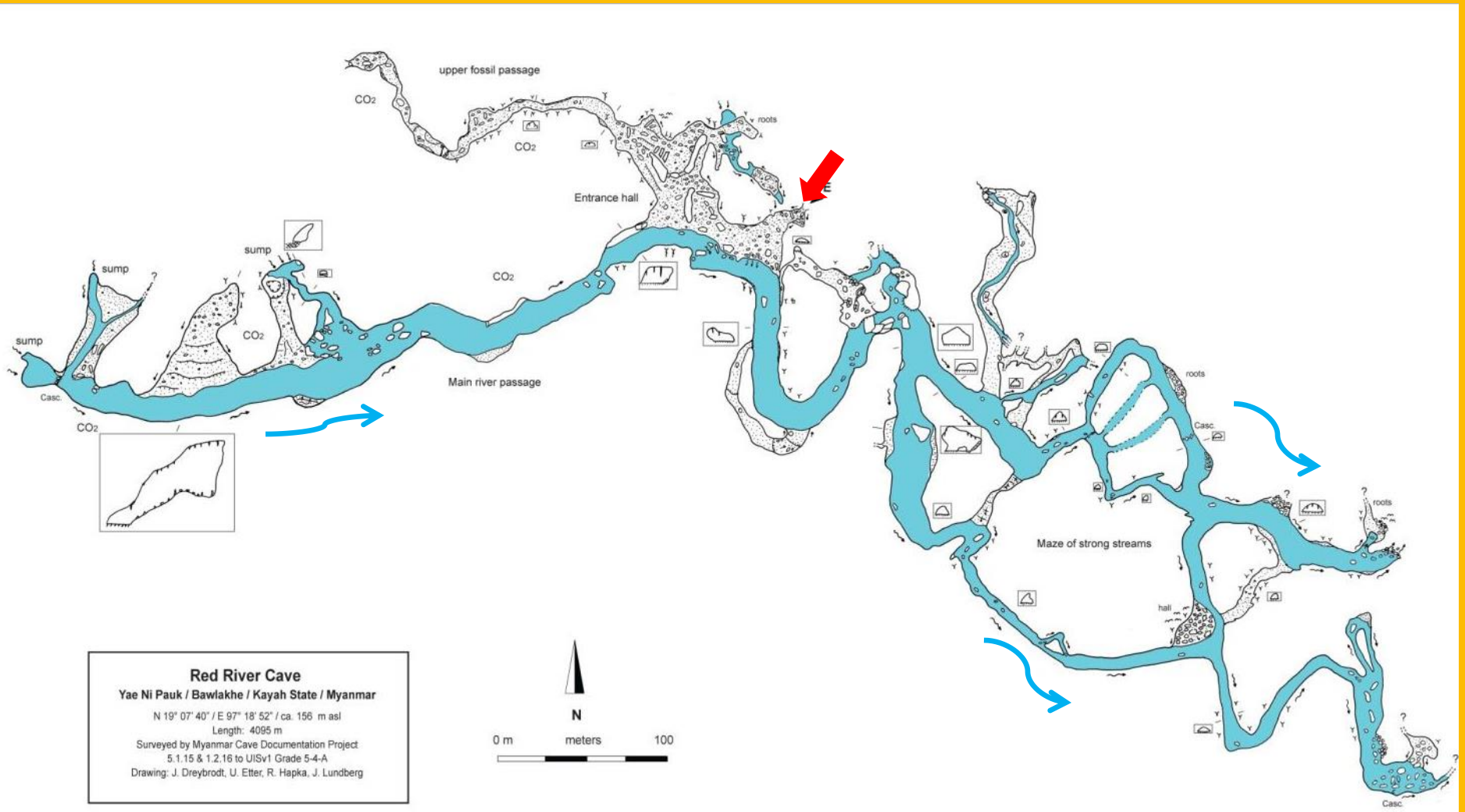
Salween river 150 m asl

Rivers in lowland Bawlakhe

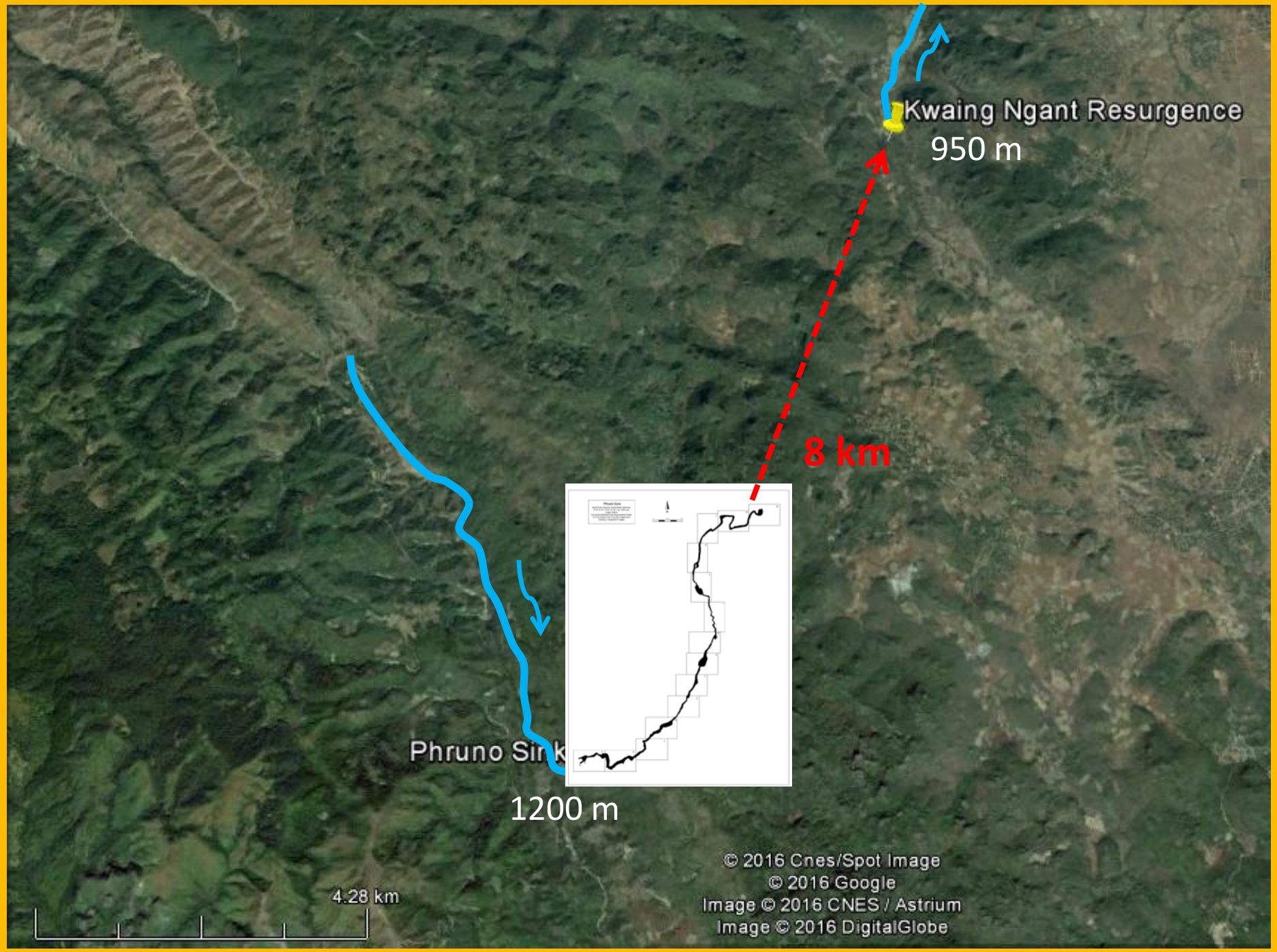


Map Red River Cave

4095 m



Karst of Hpruso

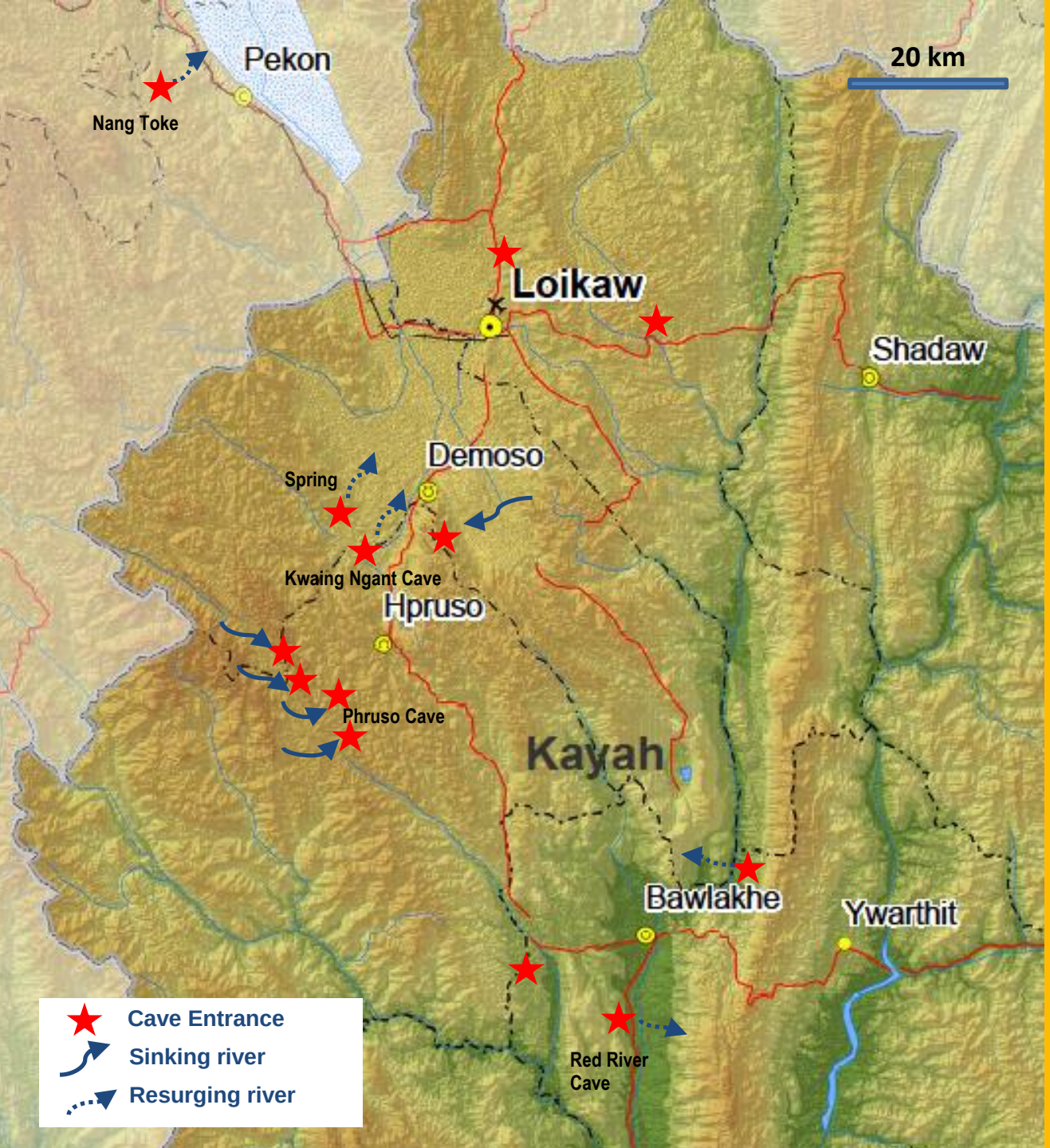

Kwaing Ngant Resurgence
950 m
8 km
Phruno Sink
1200 m
4.28 km
© 2016 Cnes/Spot Image
© 2016 Google
Image © 2016 CNES / Astrium
Image © 2016 DigitalGlobe

Resurgence Kwaing Ngant

Hydrogeology in Kayah Karst

Location of sinks and resurgences

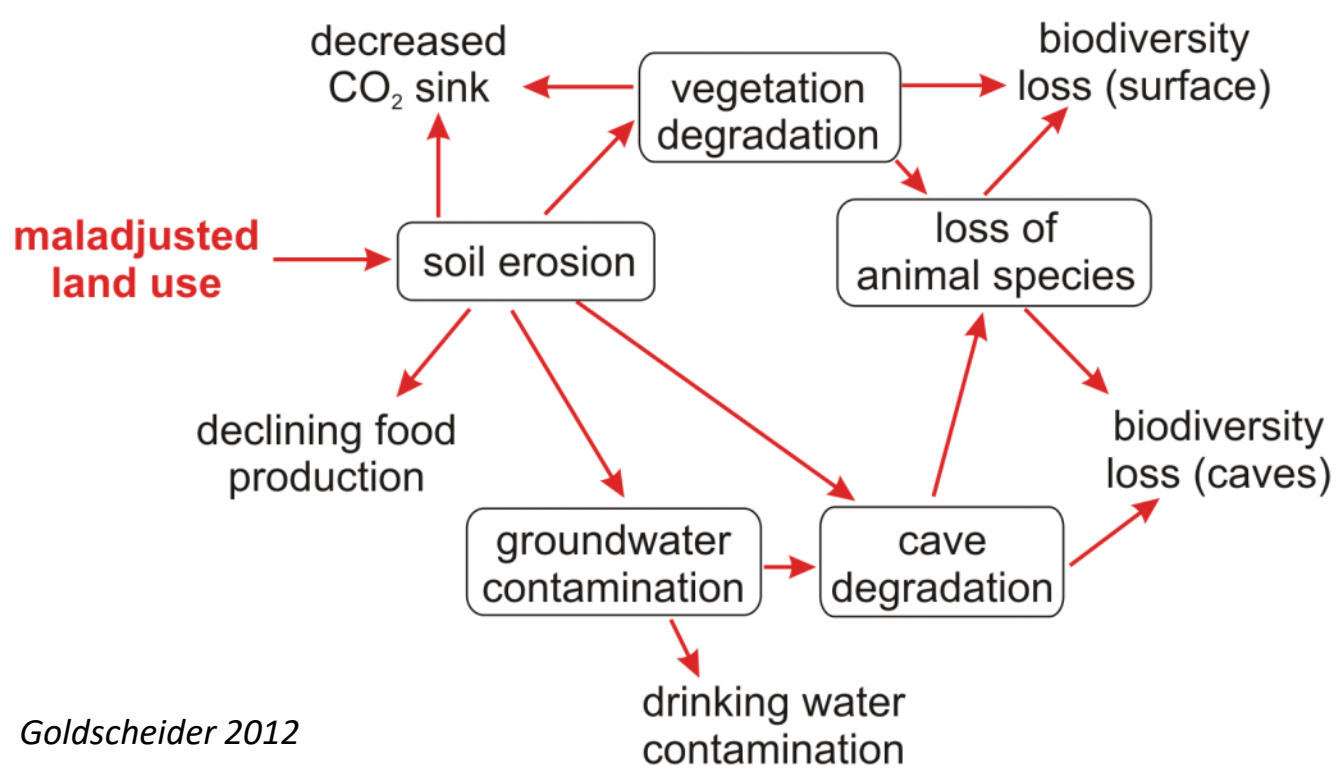
Resort Construction



Risk of poor Karst Management

1. Unsafe Drinking Water
2. Pollution by industrial development

   Agriculture / Cement and Mining / Hydropower projects
3. Loss of biodiversity



Goldscheider 2012

Biodiversity Assessment

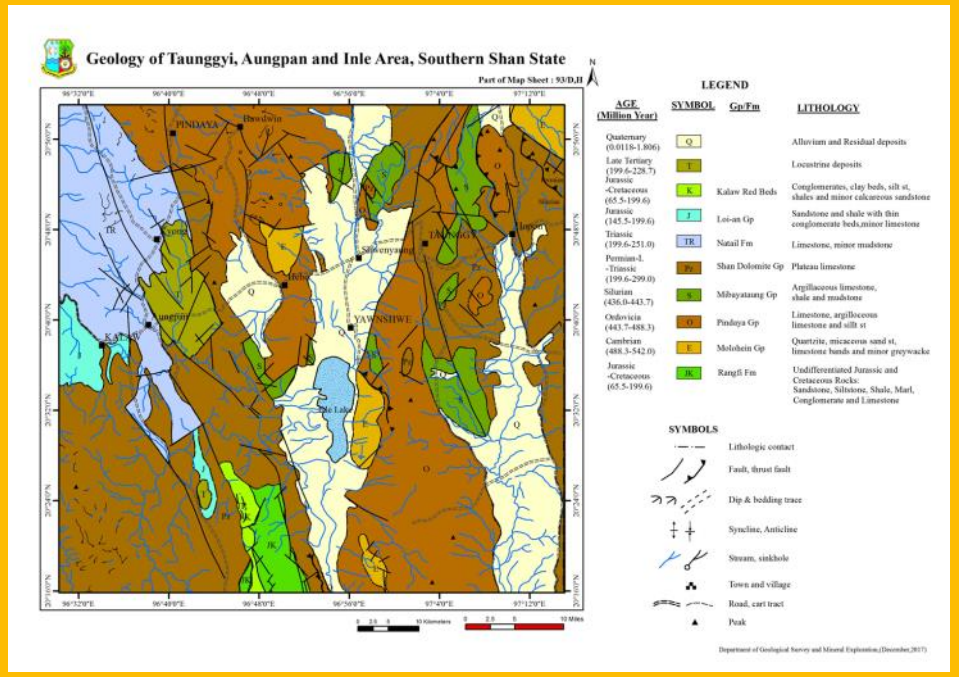
Adapted fauna: Cave geckos, white blind fish, bats

Presentation to Kayah State Government

University Contacts

Loikaw University Main Building

Professors from Taunggyi University



Plan for Karst conservation

Education & Research (SDG 4, 17)

- Karst workshops at universities with student field trips to enhance knowledge
- Karst monitoring with data loggers, measurement of river systems

Water Supply (SDG 6, 17)

- Hydrogeological modelling, calculation of recharge for groundwater supply management
- Identification of key areas for drinking water supply
- Karst policy with the local government

Ecotourism (SDG 4, 8)

- Karst and cave development for ecotourism based on IUCN practises
- minimal impact guidelines, guide education, marketing support, concept of LED illumination

Biodiversity (SDG 15)

- Research on fauna, ie. bats, white blind fish, and cave geckos in Kayah
- Implementing a policy for karst management and protection

Karst Workshops

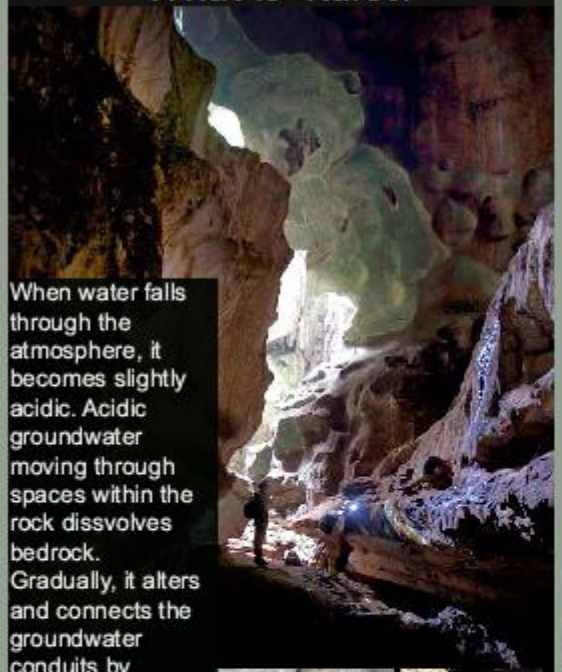
in the karst area of Hpa-An in March 19 organized by FFI

FAUNA & FLORA INTERNATIONAL

Flyer for raising Karst Awarness

Text1

What is Karst?



When water falls through the atmosphere, it becomes slightly acidic. Acidic groundwater moving through spaces within the rock dissvolves bedrock. Gradually, it alters and connects the groundwater conduits by creating passages and enlarging fissures. When the openings are large enough for humans they are called caves.





Because caves are relatively stable environments, the animals within them have adapted to the darkness, high humidity and low-energy of the system by evolving into highly unusual assemblages which are incapable of living outside the cave.

Back Cover

Threats to Karst Systems

- poorly-managed quarrying for cement, tourism and guano extraction
- modification of cave entrances
- modifications to the surrounding habitat
- wild fires
- hunting for bat



Since economic sanctions have been lifted and Myanmar issued a new Foreign Investment Law, construction is booming and so is the cement market.

Without attention to karst ecosystems it is certain that:

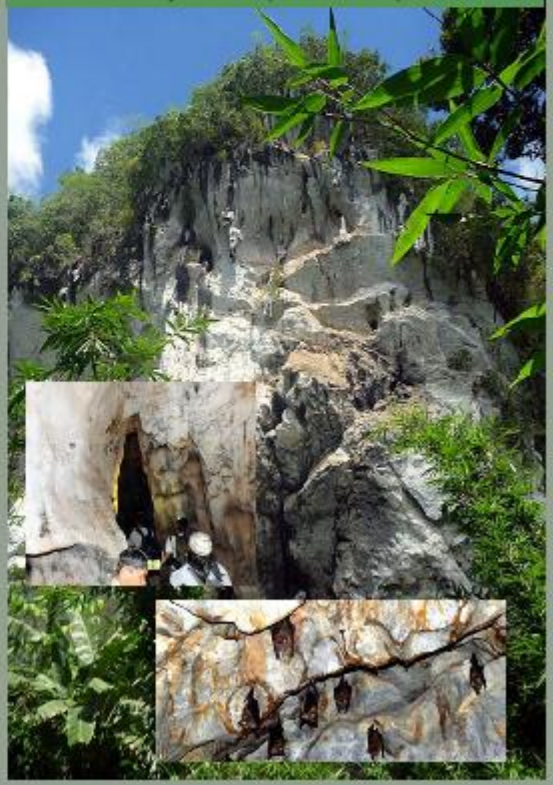
- **species will become extinct**
- **potential sources of income will be spoiled**

Front Cover

Coexisting with Karsts

FAUNA & FLORA INTERNATIONAL

Formed over millions of years, limestone karsts are amongst the world's most ancient and diverse terrains. They inhabit many rare species and are very important for a healthy ecosystem. This brochure will help you to understand how karsts evolve and why it is important to protect them.



Summary

- The Shan Plateau in Myanmar is a large almost unexplored karst terrain
- Kayah exhibits a unique karst landscape with large river caves
- The hydrology has to be explored systematically
- Increasing trade and development of infrastructure threatens the karst ecosystem
- Karst conservation is urgently to be addressed by involving local stake holders, research institutions and policy makers.
- We are looking for cooperation partners!


MYANMAR CAVE
DOCUMENTATION
PROJECT
Thank you?
Questions ?
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