

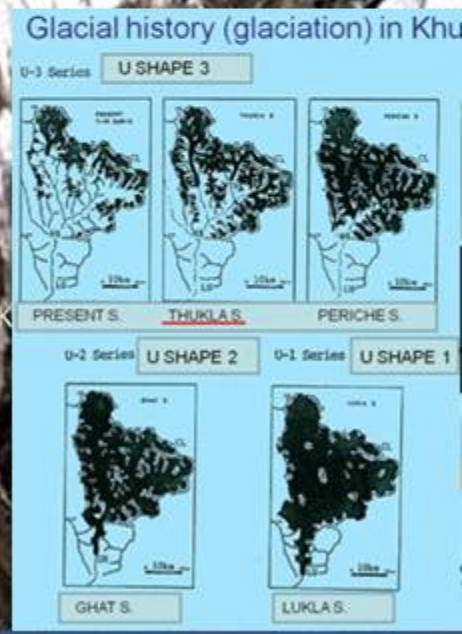
「ヒマラヤ地震博物館」

—ネパール・ヒマラヤの環境変動研究から考える—

Better Build Back for Future Nepal

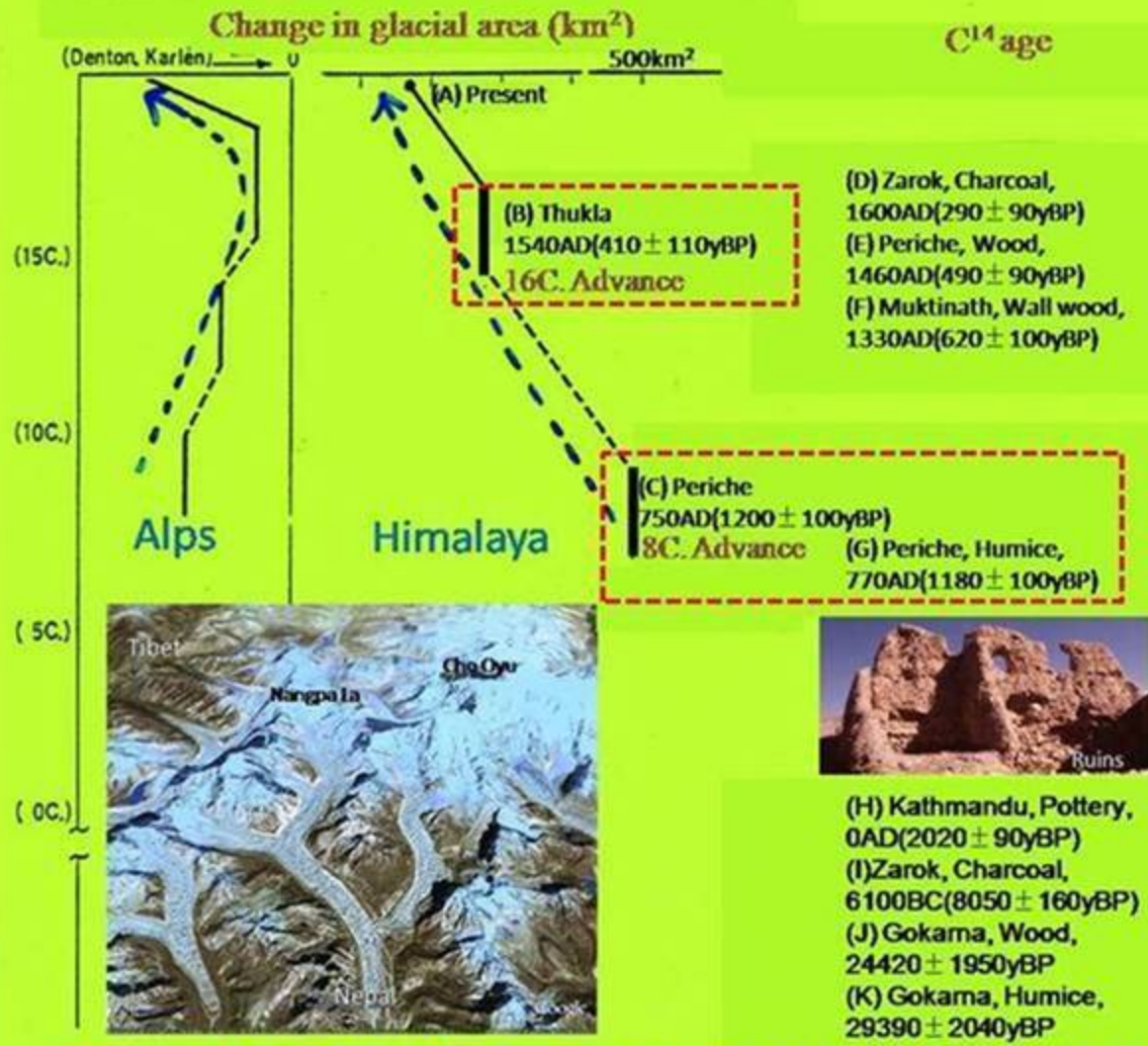
Mingbo GLOF

要旨 1965年からのネパール・ヒマラヤ調査で、3つの自然災害を体験することができた。1) 1977年9月3日のクンブのミンボー氷河湖の決壊洪水と2) 2012年5月5日のポカラのセティ川洪水、そして3) 2015年4月25日のカトマンズ周辺のゴルカ地震である。いずれも発生直後に現地調査を行ったので、ヒマラヤの環境変動研究から考えたそれらの自然災害の特徴とポカラの国際山岳博物館の課題も明らかにしたうえで、ヒマラヤ地震博物館を構想した。



Location of Nanpa La and Gyajo Glacier, Khumbu region.

History of glacial environment and mountain people (Fushimi, 1983)



Environmental history

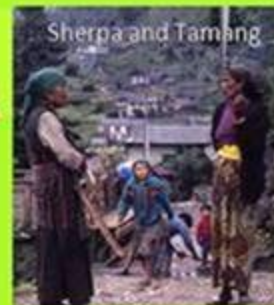
Discharge increase in C. Asia

16C. Sherpa migration

Discharge increase in C. Asia
Sherpa migration (1533AD)
Silk road reopen
Cities in Takulakan desert

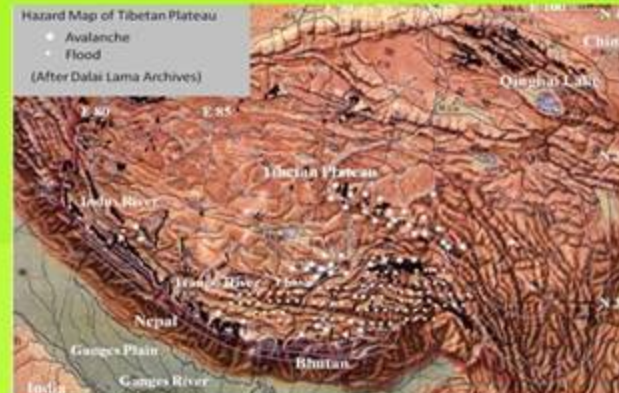
8C. Tamang migration

Cities in Takulakan desert
Discharge increase in C. Asia
Wet climate in NW India
Cities in Takulakan desert
Discharge increase in C. Asia



Wet climate in NW India (1700-900BC)

Wet climate in NW India (4000-2500BC)



Mountain people are very much affected by the environmental changes and had to cross the Himalayas as their ways of severe migration.

Gyajo glacier changes into a perennial snow patch in 40 years.



Glacier → Perennial Snow Patch (PSP)



Climate Gate ; Could Himalayan glaciers disappear by 2035? (Did they "misread 2350 as 2035"? No, they didn't.) Yes, glaciers of the lower type disappear by 2035.

Nepal's first climate refugee village in Mustang

Published on 2010-06-01 00:00:01

http://archives.myrepublica.com/portal/?action=news_detail

AKANSHYA SHAH

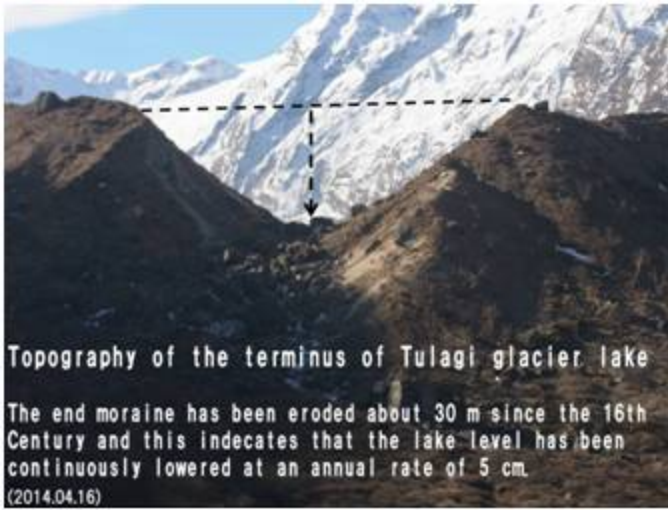
KATHMANDU, June 1: In the first recognized case of climate change refugees in Nepal, the entire village of Dhe, located in Surkhang VDC of upper Mustang, is being resettled in Thangchung in lower Mustang. A total of 150 people of Dhe are being shifted due to the adverse impact of climate change on the livelihoods of the poor in the village. Dhe village has been facing an acute shortage of water for irrigation over the last six to seven years. The irrigated land over the period has also been reduced to less than 50 percent and animal husbandry has declined 40 to 45 %.



GLOF Map in Khumbu region, Nepal Himalaya.

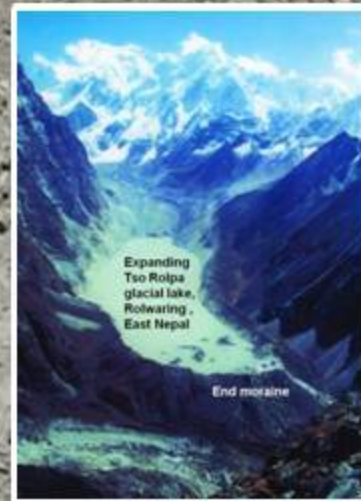
Mt. Everest





Topography of the terminus of Tulagi glacier lake

The end moraine has been eroded about 30 m since the 16th Century and this indicates that the lake level has been continuously lowered at an annual rate of 5 cm. (2014.04.16)



Expanding glacial lake
Too Rolpa glacial lake in Rolwaring Himal, East Nepal, is one of the rapid expanding glacial lake in Nepal, which size is 1km wide, 4km long and 200m deep.



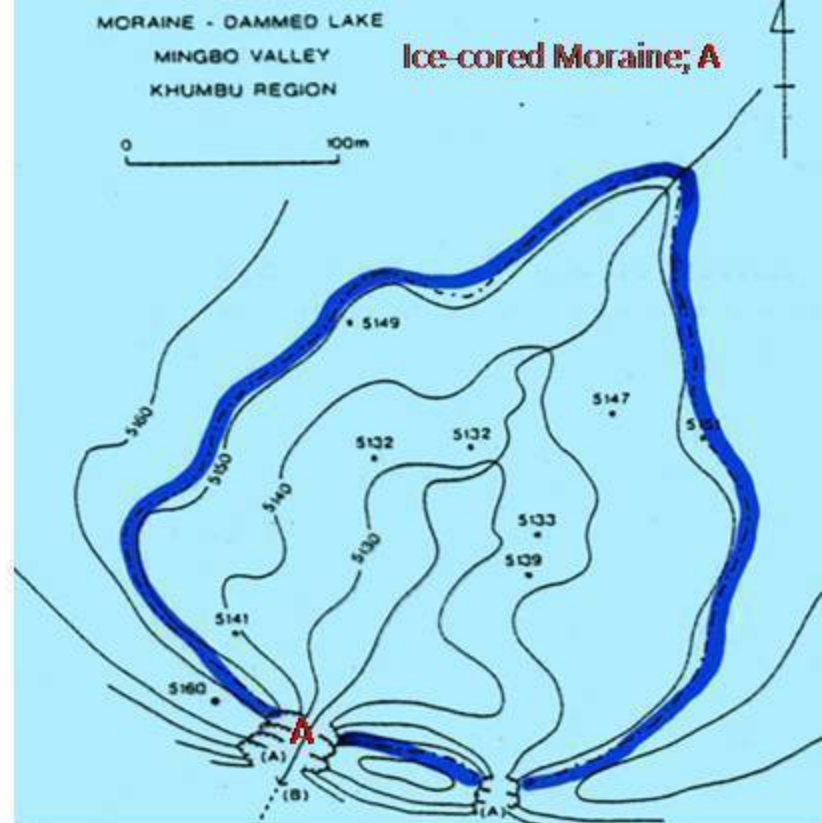
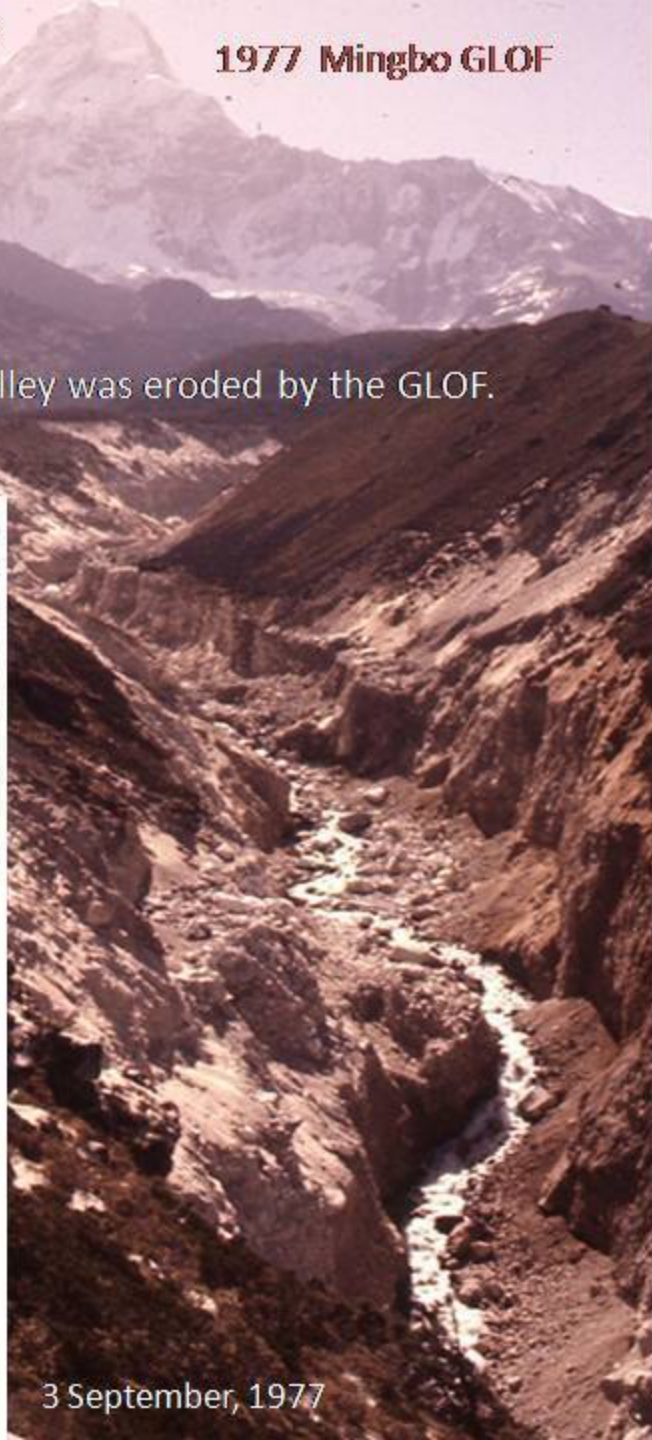
Artificial canal (Google Image: 2008.11.21)
An artificial canal (red mark) was constructed at the terminal moraine of Too Rolpa to lower the water level.

Man-made canal construction at Imja Glacier

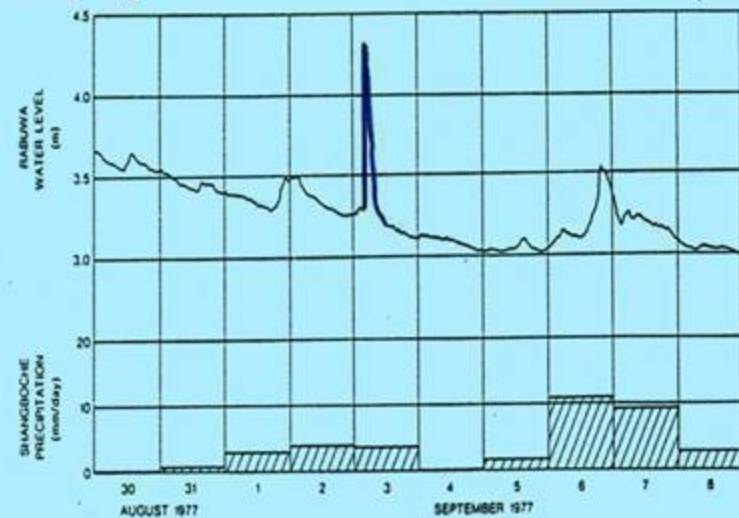
Mt. Ama-Dablam

1977 Mingbo GLOF

Mingbo valley was eroded by the GLOF.

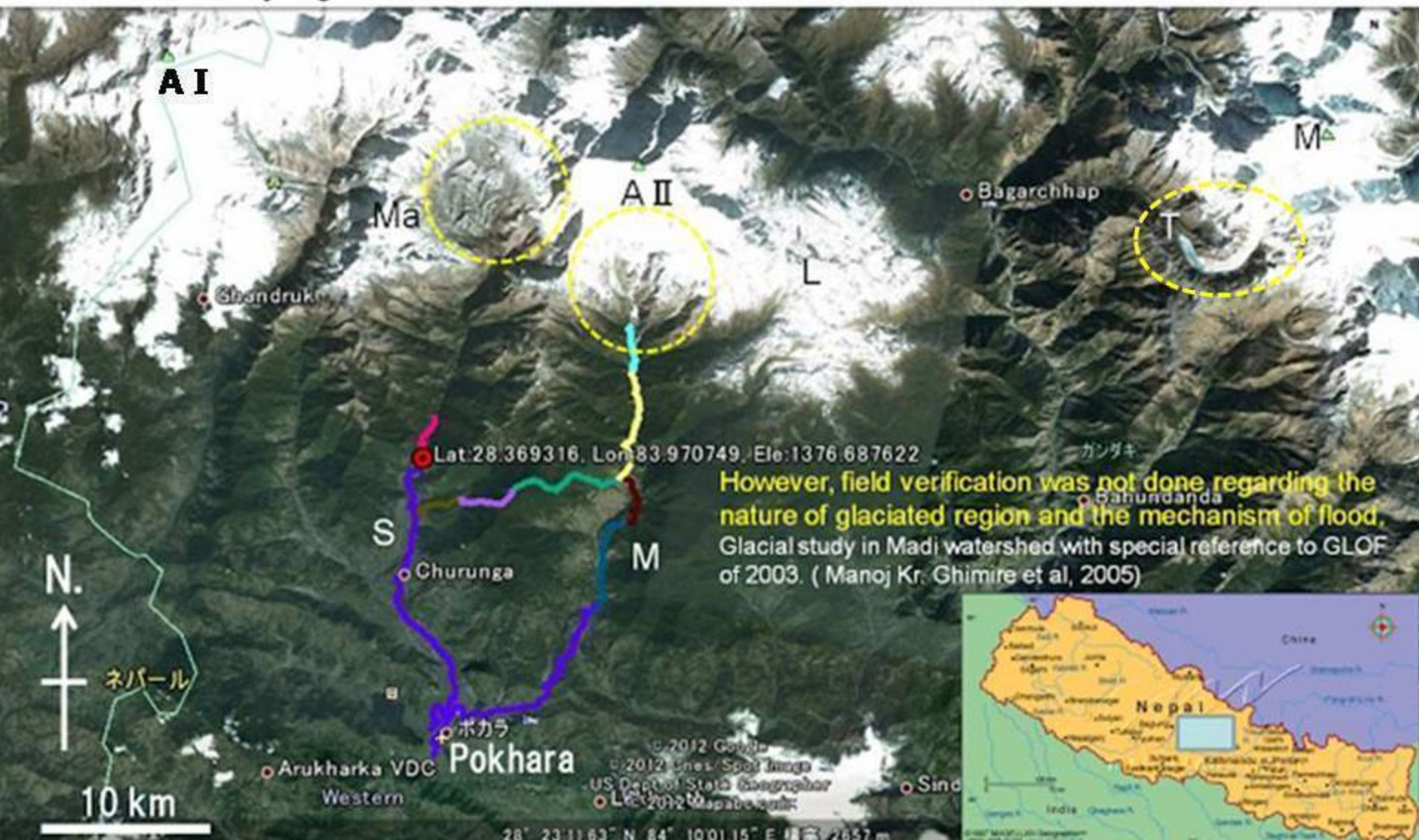


Abrupt Upheaval of River Water at Raswa St.



2012 Observational Route
 S: Seti River M: Madi River
 Ma: Machapuchari
 A II : Anna puruna II
 L : Lamjung Himal

2012年ヒマラヤ・フィールド報告
 -セティ川洪水とマディ川氷河湖決壊洪水の原因-
 Report of Himalayan Field Survey 2012
 - Causes of Seti Flood and Madi GLOF -



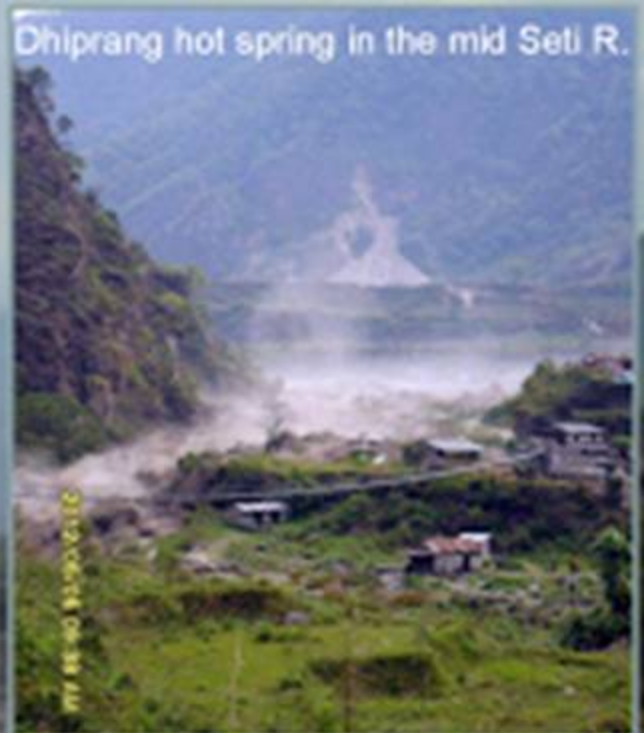
Seti Flood (You Tube) 2012.05.05 (Sat.)



Dhiprang hot spring

Why a mud flow ?
Mud flow

Glacier milk

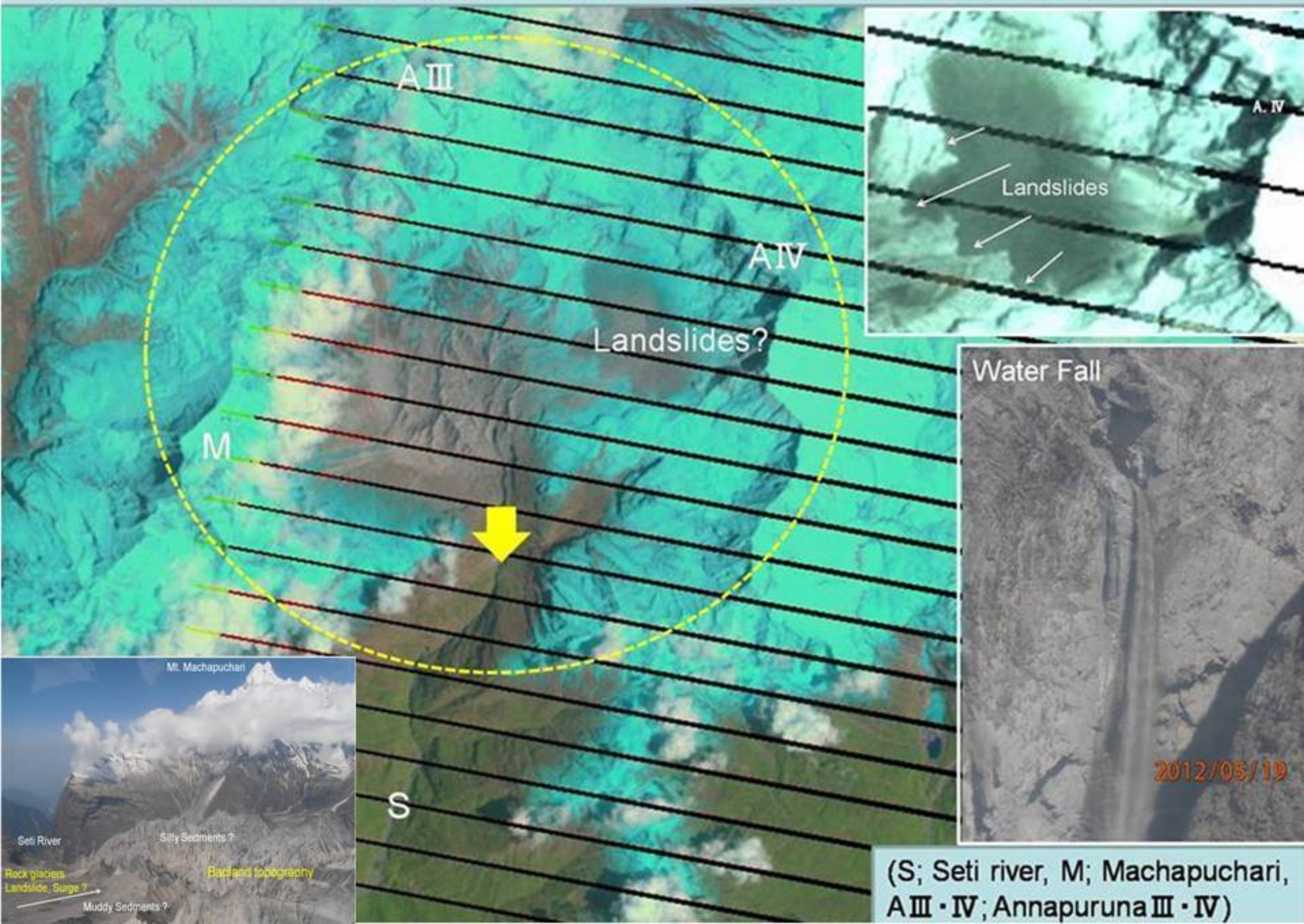


Dhiprang hot spring in the mid Seti R.

my friend's photo

When the Seti flood occurred on 5 May, 2012, the flow characteristics are that of the mud flow.

The flood originates from the upper Seti river shown by dotted line and the water fall by arrow.



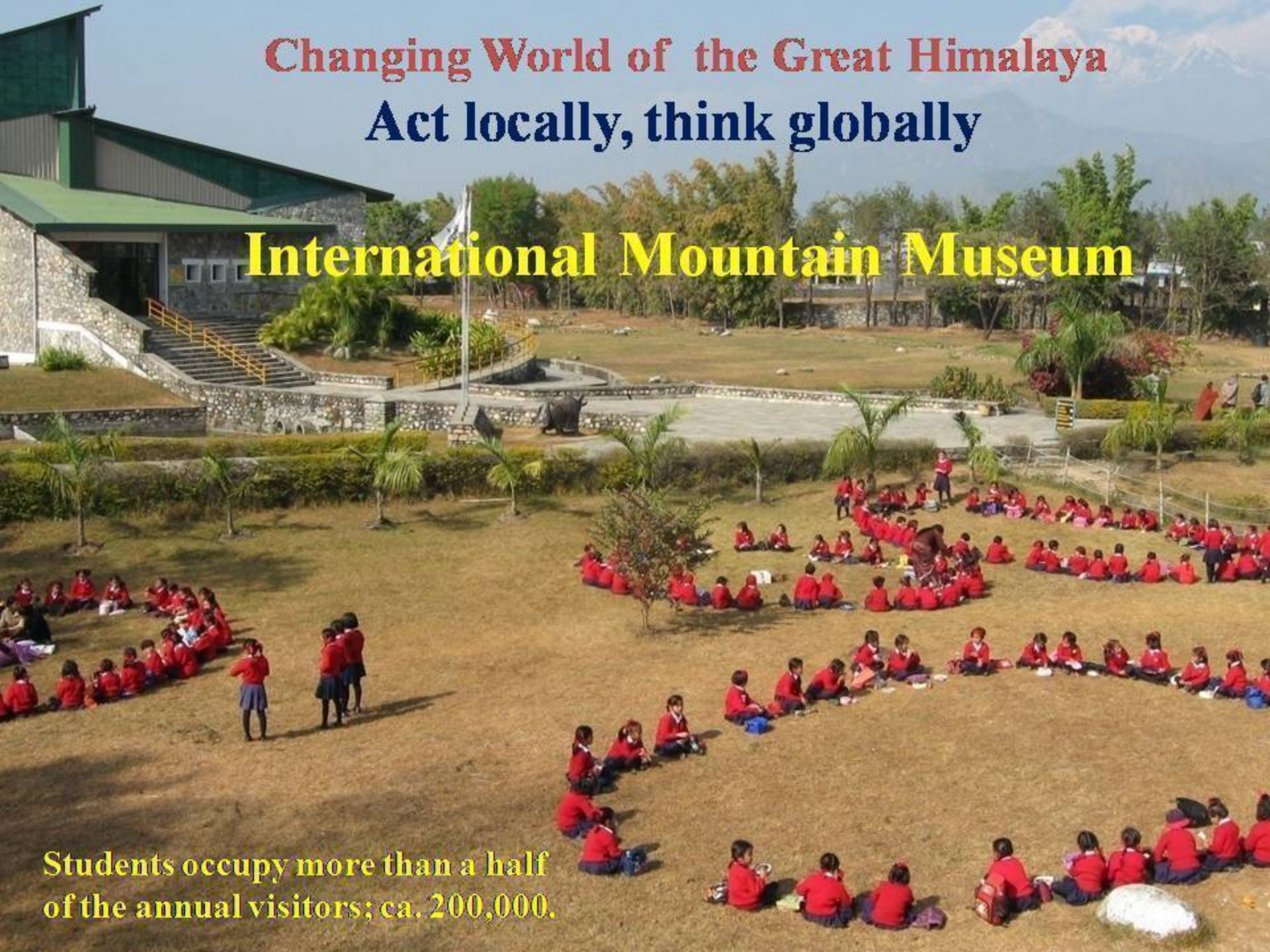
(S; Seti river, M; Machapuchari, A III · IV; Annapuruna III · IV)

Changing World of the Great Himalaya

Act locally, think globally

International Mountain Museum

Students occupy more than a half of the annual visitors; ca. 200,000.



KU LECTURE 2015 - 2017



HOME

1) INTRODUCTION

2) PHILOSOPHY OF NATURE

3) ENVIRONMENTAL ISSUE

SCHEDULE

CONTACT

NOTICE



Swayambhu Temple (2015.05.15 at 15:48)

Open Lecture

**KATHMANDU UNIVERSITY
LECTURE**

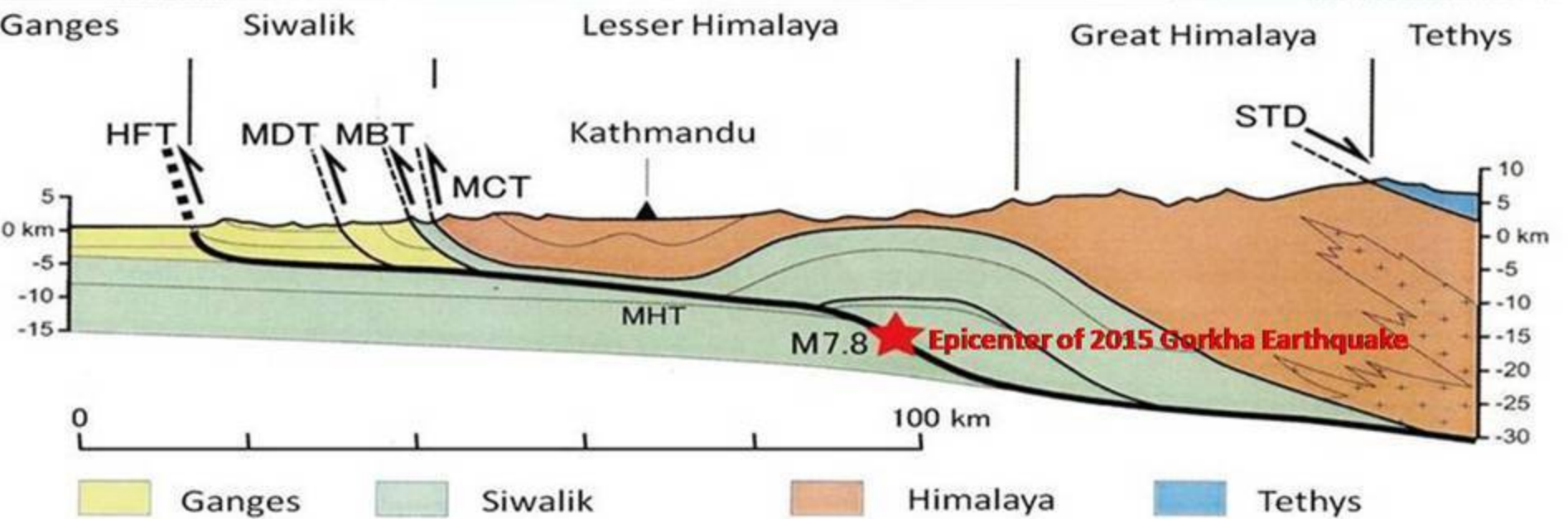
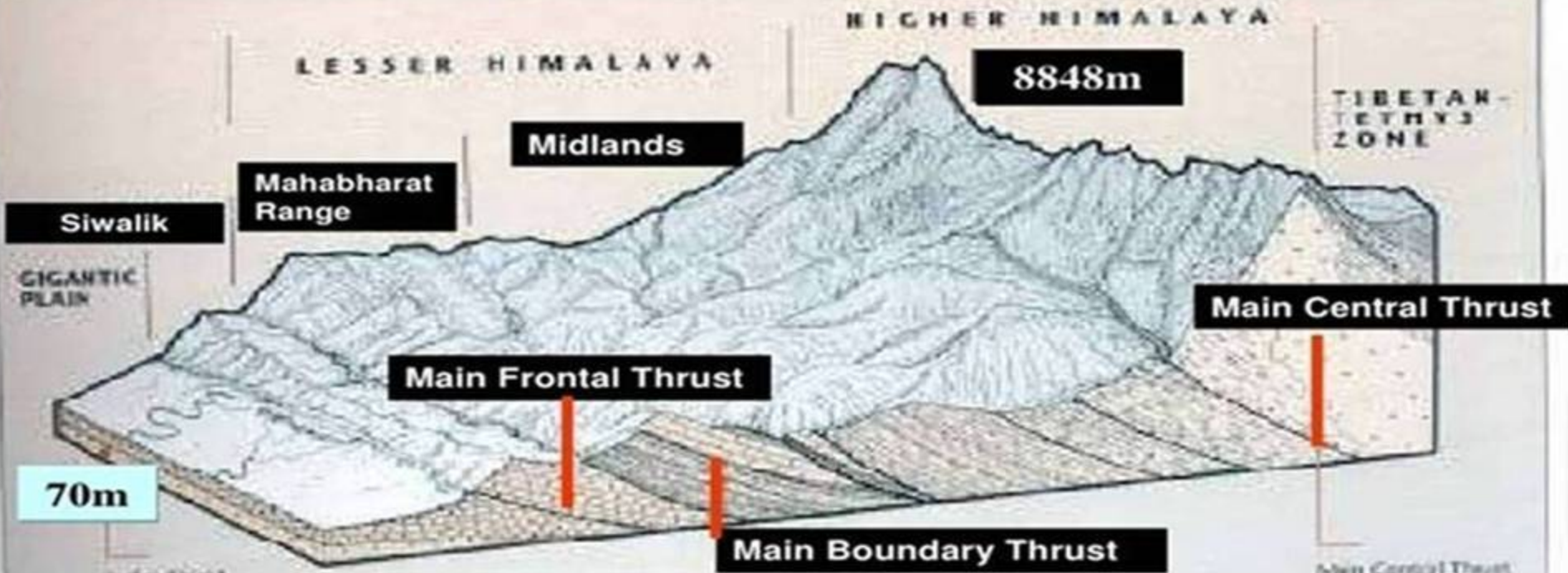
**—ENVIRONMENTAL
CHANGES OF THE
NEPAL HIMALAYA—**

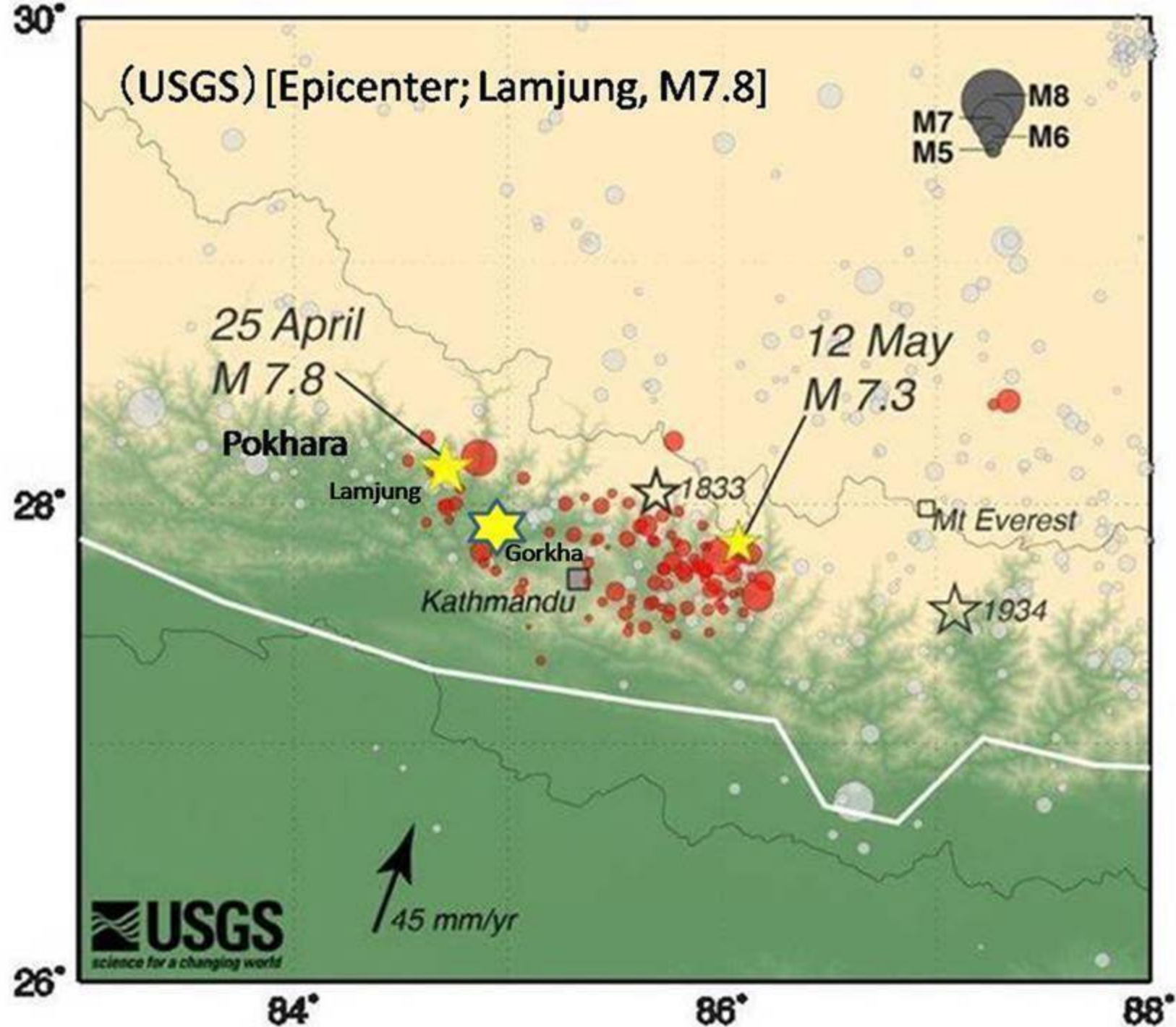
FROM 1 APRIL TO 31 MAY, 2017



Hiroji FUSHIMI
Satoru HOSHIBA

Topography and Geological Formation





セミナーの主な趣旨は地震後の日本とネパールの復興過程についての情報交換でしたが、内容は日本の地震災害の歴史や耐震家屋の実験的研究などが中心で、建物の基礎になるカトマンズ盆地の湖底堆積物などの地盤の課題はありませんでした。

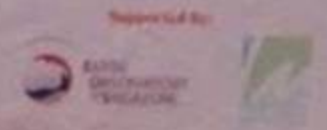


JICA地震会議開会式 (2015.05.25)

INTERNATIONAL WORKSHOP ON GORKHA EARTHQUAKE
"Lessons Learned and Future Road Map for Safer Community and Sustainable Development"
24-25, April 2016

**INAUGURATION BY CHIEF GUEST HONORABLE MINISTER
SOM PRASAD PANDEY (Ministry of Industry, Government of Nepal)**

April 24, 2016, Sunday
Hotel Yak & Yeti, Kathmandu, Nepal



(2016/04/24 at 11:56) International Workshop on Gorkha Earthquake

Himalayan Earthquake Museum



Nuwakot Palace
(2015.05.26 at 14:52)



Sun Rise at Bagmati Temple
(2015.04.06 at 06:02)

**We can't stop an earthquake, but we can reduce it's risks.
For people' s understanding of natural disaster
in terms of improving their better perceptions.**

**A visiting professor
Kathmadu University
Hiroji FUSHIMI**

Swayanbhunath Temple (2015.05.15)



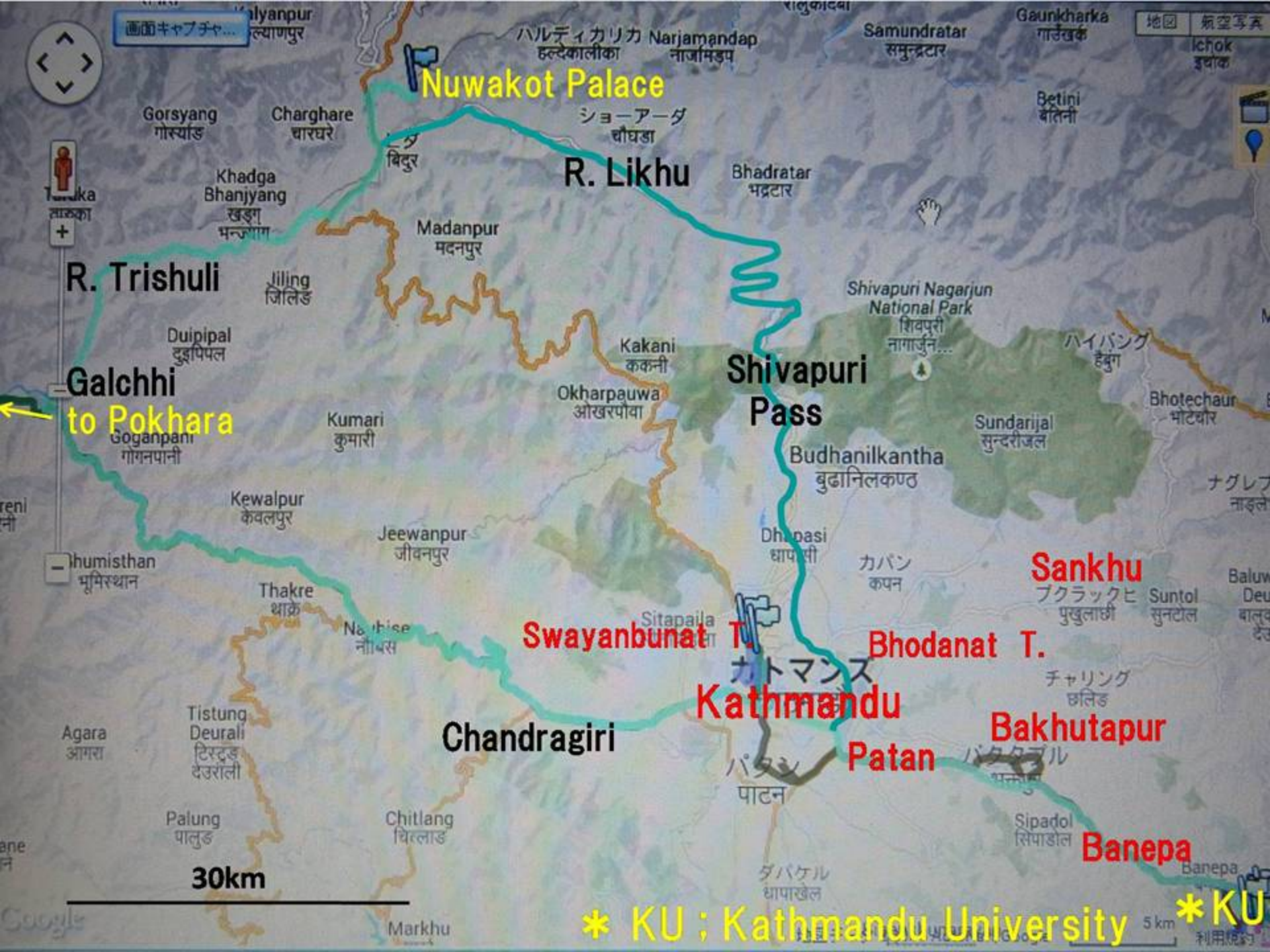
(2015.04.29 at 16:48)

Small crack at the KU guest house



Changes of Bookshelf at Kathmandu University Library after Earthquake.





Nuwakot Palace

R. Likhu

R. Trishuli

Galchhi to Pokhara

Shivapuri Pass

Swayanbunat T.

Bhodanat T.

Kathmandu

Patan

Chandragiri

Bakhtapur

Banepa

30km

* KU ; Kathmandu University

* KU

地図 航空写真

ichok 伊予

画面キャプチャ...



Tokka 滝

+

Humisthan 聖地

-

Google

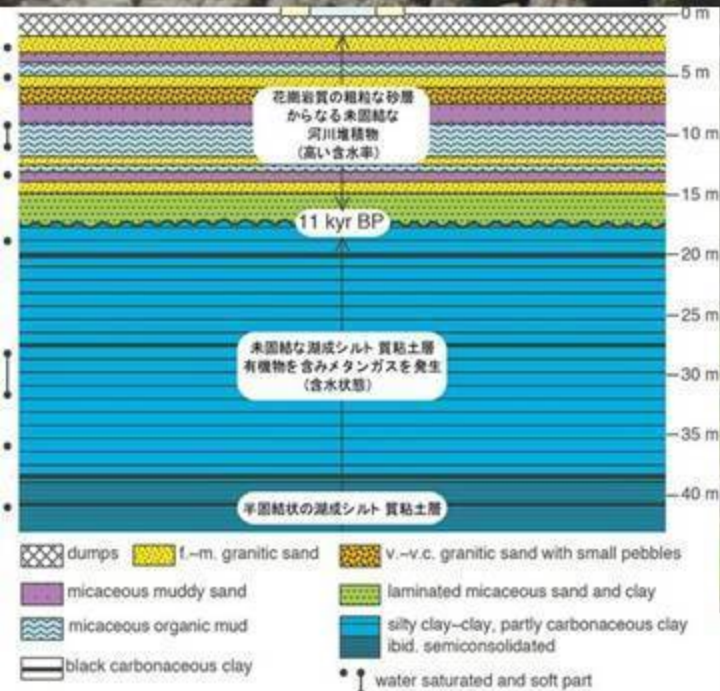
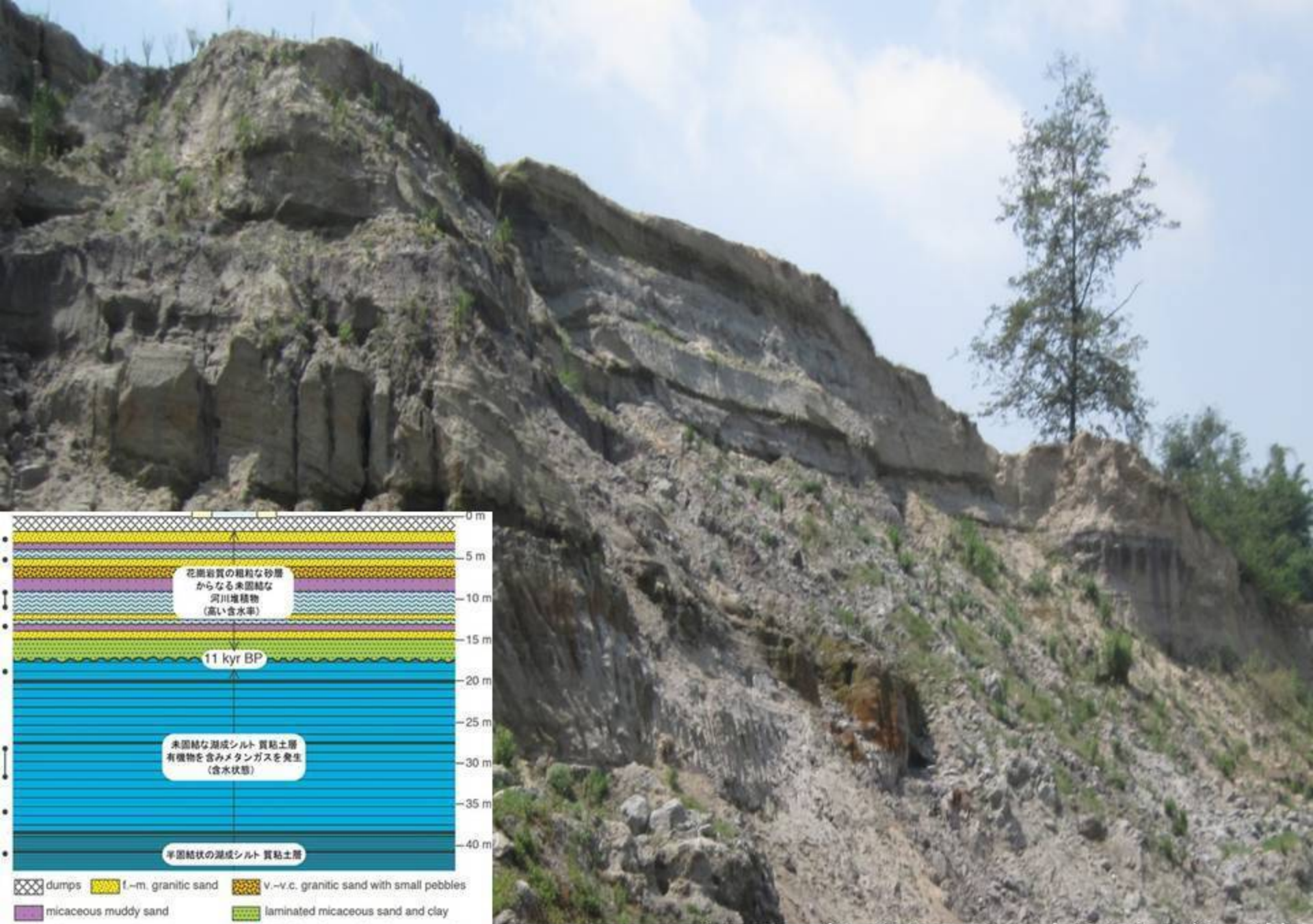
利用規約



(2015.04.24 at 12:43)



Continuous thunder storms in April, 2015



Kathmandu lake deposit seen near Gorkana



Destroyed houses in Sankhu

(2015.06.06 at 09:23)

Destroyed road with sand volcano (jet) phenomena





C03B08S02

Bhimsen Tower seen from Swayambhunath in the garden city, Kathmandu in 1070's.



(2015.05.15)

Kathmandu lost the landmark Bhimsen Tower after 2015 earthquake.



カトマンズのドゥルバール広場の旧王宮の建物；地震前(下)と地震後(上)



リク川周辺の破壊された民家





(2015.05.15 at 14:53)

House of cards, even if it's the reinforced concrete construction.

**one destroyed (C) and
other not destroyed (A,B)
in narrow area at Patan.**

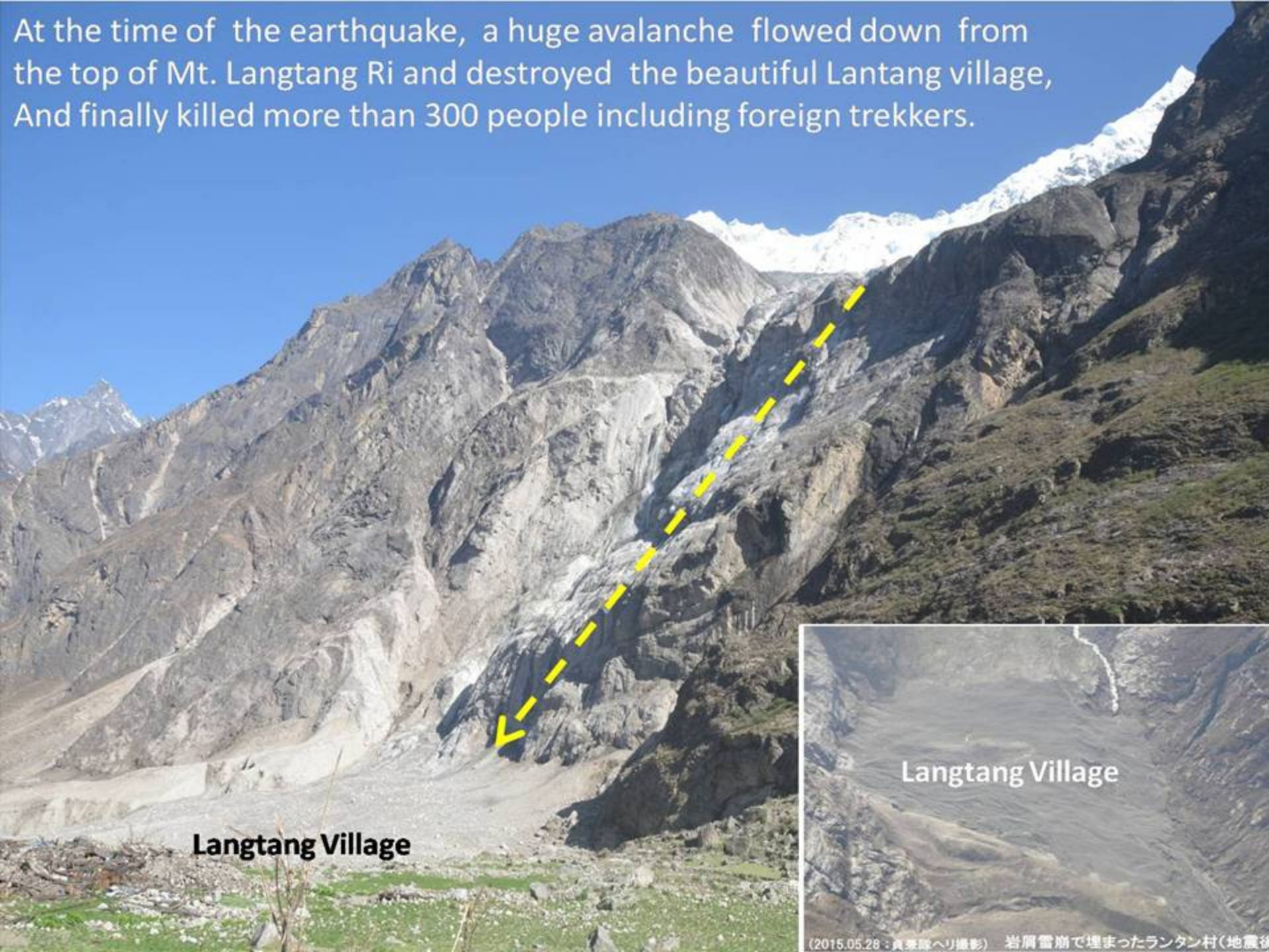


Patan



Avalanches

Photo taken at Langtang valley before the earthquake by Mr. Rakesh Kayastha in April 2015.



At the time of the earthquake, a huge avalanche flowed down from the top of Mt. Langtang Ri and destroyed the beautiful Lantang village, And finally killed more than 300 people including foreign trekkers.

Langtang Village



(2015.05.28 : 真珠峠へリ撮影) 岩屑雪崩で埋まったランタン村(地震後)

“Himalayan Earthquake Museum”

Perception Issues of People !

1) **Abnormal Precipitation in March and April**

Risk of (Soft Ground) and (Avalanche)

what on earth did they notice risks of liquefaction and avalanche?

2) **Magnitude and Disasters ?**

Kathmandu Lake Deposit and Building Structure

3) **Lesson from Past Earthquakes**

What on earth did they learn from these mega-earthquakes of 1934 and 1833?

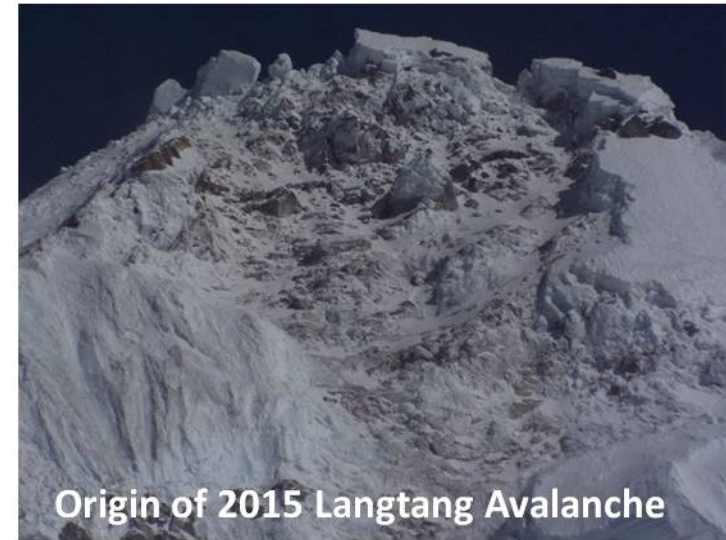
Proposal for having People’s Museum

Himalayan Earthquake Museum in Kathmandu

Himalayan Disaster Information Center in Langtang

Information Sharing of Himalayan Disaster

Participation of People and their Decision making





Bhimsen Tower before the 2015 Earthquake



Dharahara (Bhimsen Sthamva) after 1934 earthquake.



(2012.05.01)

(2015.05.01)



People watched regretfully the destroyed Bhimsen Tower.(2015/05/02 :54)

Acting Ambassador Mr. Gahendra Rajbhandari attending the earthquake poster exhibition held in Kyoto.



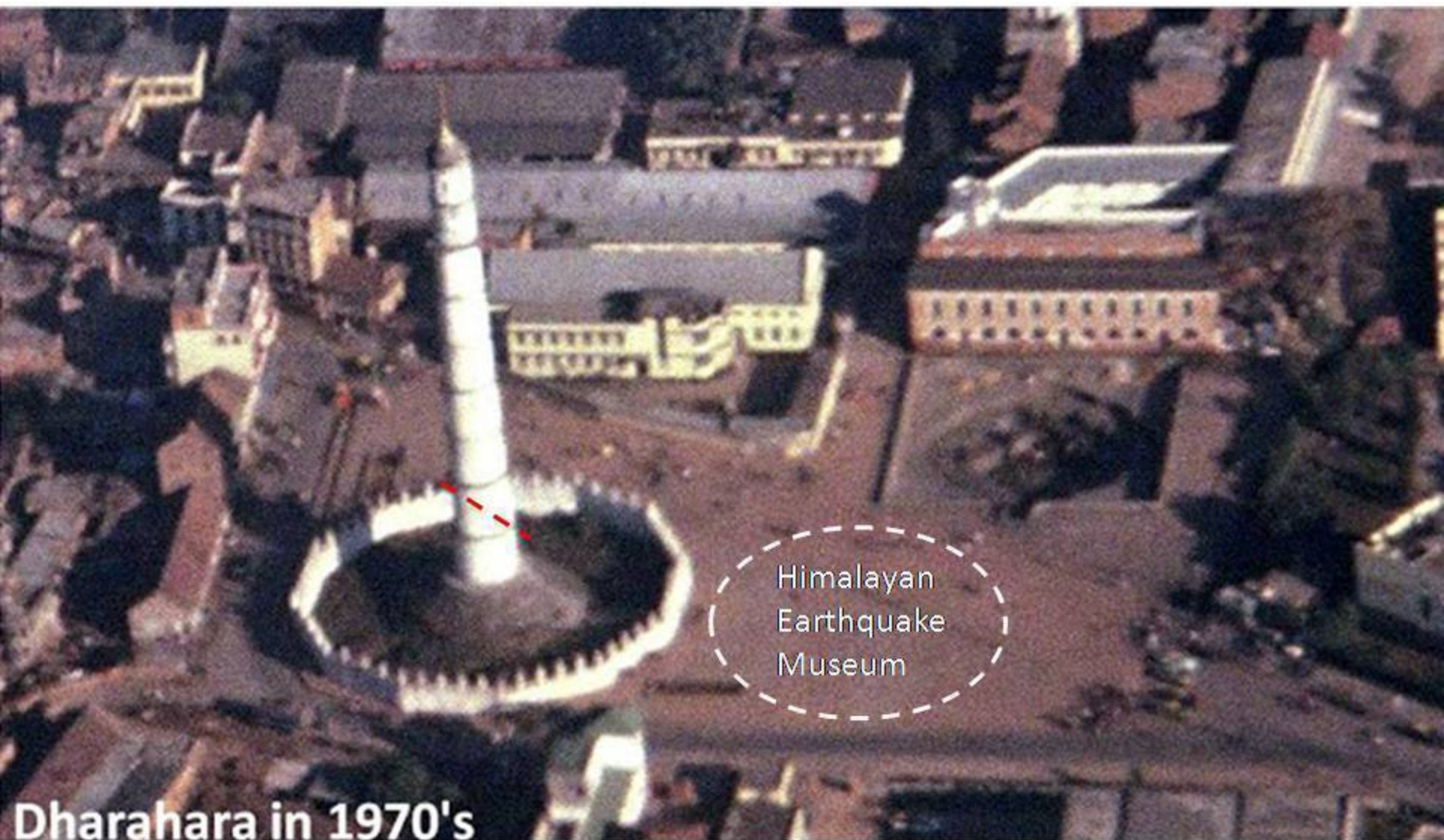
(2016/06/29 at 09:30)



KANTIPUR ENGLISH HIGH SCHOOL
RAJSHREE SHRESTHA
GRADE - 5

Kantipur English High School

"Teaching Hospital" Rajshree Shrestha.



Dharahara in 1970's

Dharahara (Bhimsen Tower) in 1970's.



Dhara Hara preserved and Memorial Monument planned in this plan.

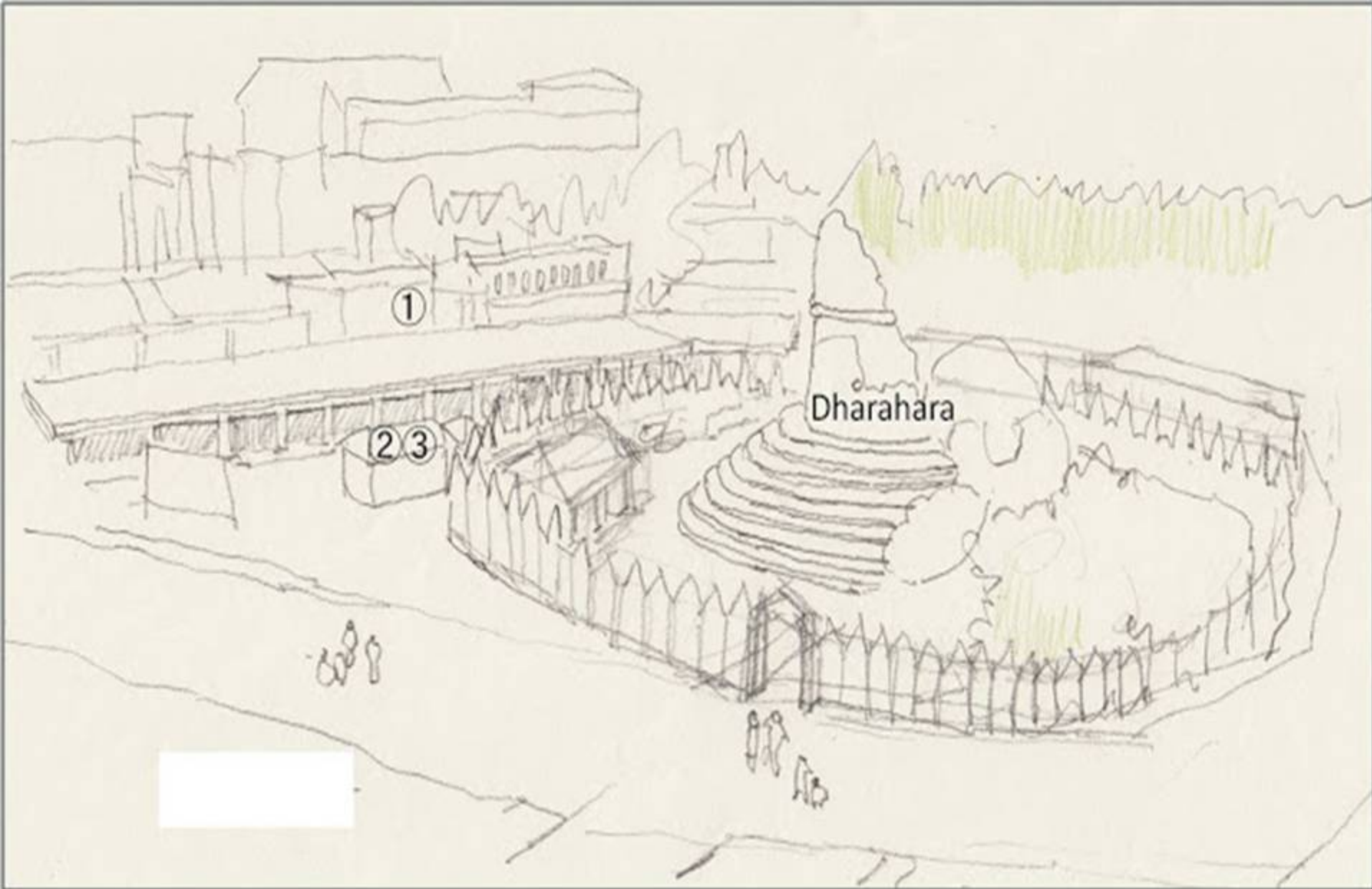


Image views of ① Himalayan Earthquake Museum, ② Reception and Management Office, and ③ Conference Room and Warehouse designed by architects, Mr. Yoshifumi Kaneko and Mr. Tenkei Sato.

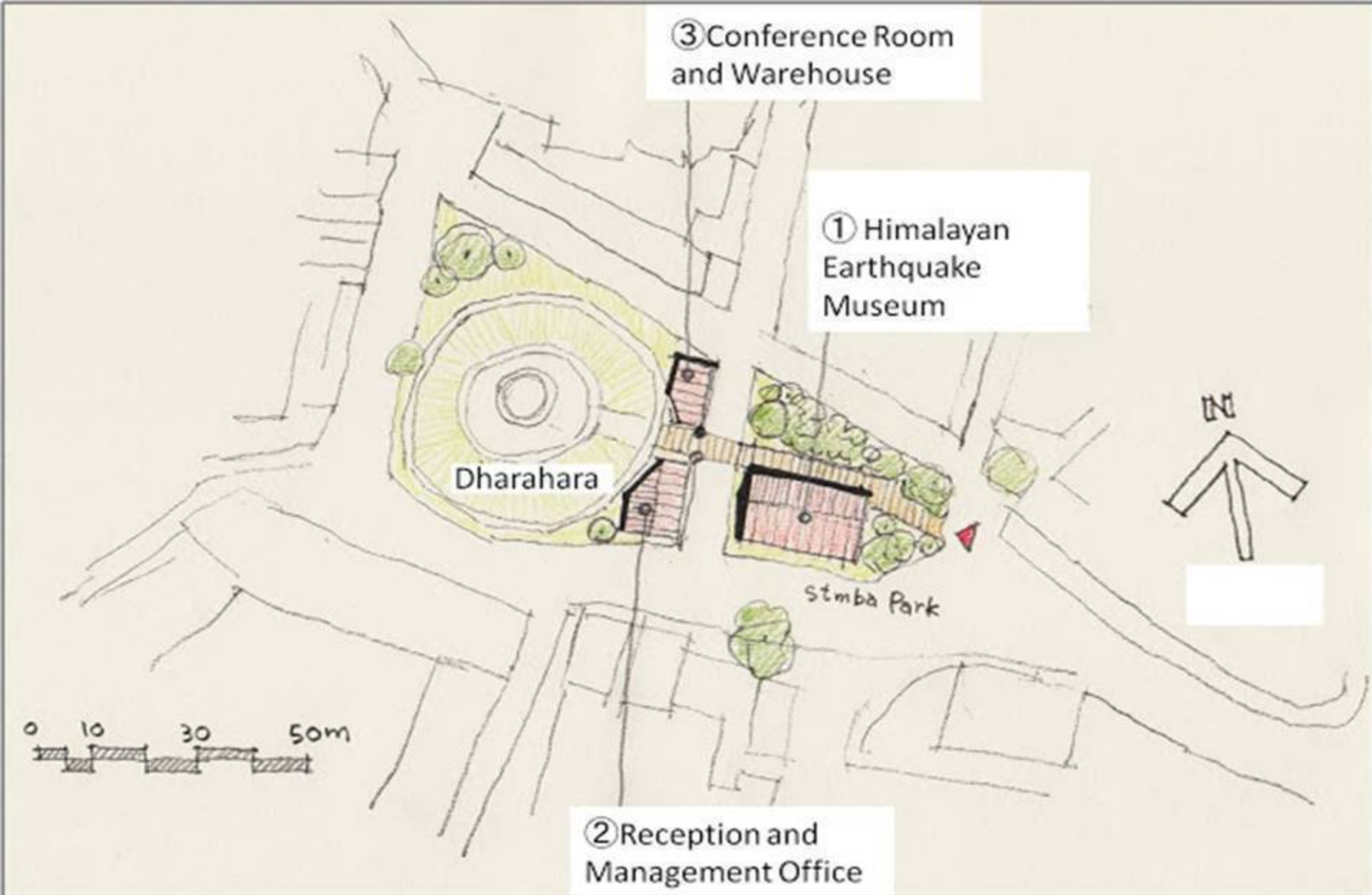


Image views of ① Himalayan Earthquake Museum, ② Reception and Management Office, and ③ Conference Room and Warehouse designed by architects, Mr. Yoshifumi Kaneko and Mr. Tenkei Sato.



**Awaji Earthquake Museum
built after 1995 disaster.**



えき じょう か じっ けん
液状化実験
Liquefaction Experiments

(2016/06/16 at 15:53) Kobe Earthquake Museum built after 1995 disaster.



How to build Earthquake proof Houses in Nepal (Part one)
<https://www.youtube.com/watch?v=4nL3s90IAxw>





Government moves to hand over Dharahara project to NT
August 18, 2016 23:55 PM , Gyan P Neupane
<http://www.myrepublica.com/news/4077>

はたして、第4回目は、どのような自然災害になるのでしょうか！

ご静聴、ありがとうございました。

(2015.04.06 at 06:02) バグマティ寺院背後から昇る朝日 (カトマンズ大学にて撮影)

Before 1970's

Glaciological Expedition to Nepal

In 1970's

Glaciological Expedition of Nepal

After 1970's

Glaciological Expedition for Nepal



The environmental changes of the Nepal Himalaya

Nepal is losing important resources of glaciers and forests.

India

Nepal

Tibetan plateau

Forest Fire



The Third Pole
with Earthquake

Himalayan Earthquake Museum

Gyajo glacier changes into a perennial snow patch in 40 years



The lower type of glaciers locate below 6000m will disappear in the middle of this century

Glacier Melting

Lower Himalaya

Lower Lakes

(Eutrophication)

Non-glaciated area

Higher Himalaya

Higher Lakes

(GLOF)

Glaciated area