



**Training Workshop on Disaster Resilient Cities:
Advances in Meteorological Forecasting and Hazards
Assessment**



**Precursor Phenomena of Landslide
in Thit Seint Gon, Vicinity of Mogok
(Gemstone Tract)**

Wai Phyo Kyaw Naing

Geologist

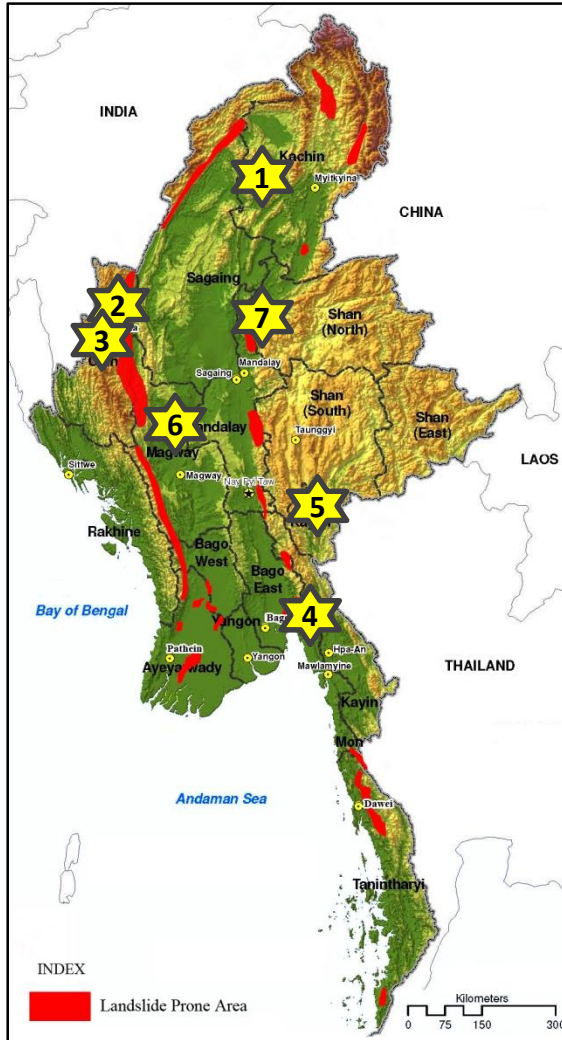
Department of Geological Survey and Mineral Exploration

MINISTRY OF NATRUAL RESOURCES AND

ENVIRONMENTAL CONSERVATION

MYANMAR

Landslide in Myanmar (2013-2017)



Landslide Prone Areas in Myanmar



7. Thit Seint Gon Landslide

Many crack signs appeared and the car road was uplifted owing to creep the soil after the continuous heavy rains.

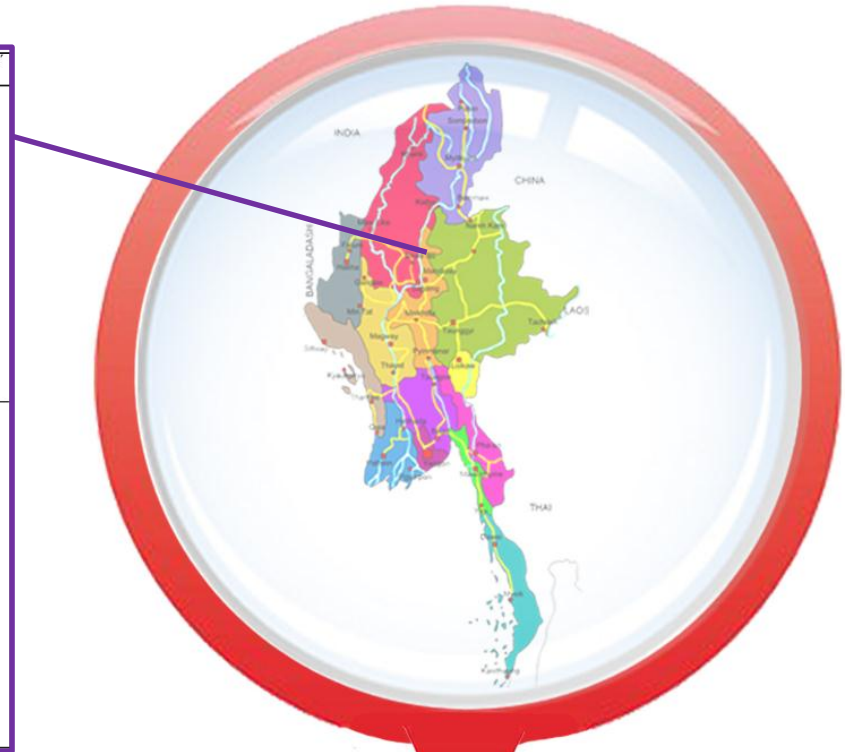
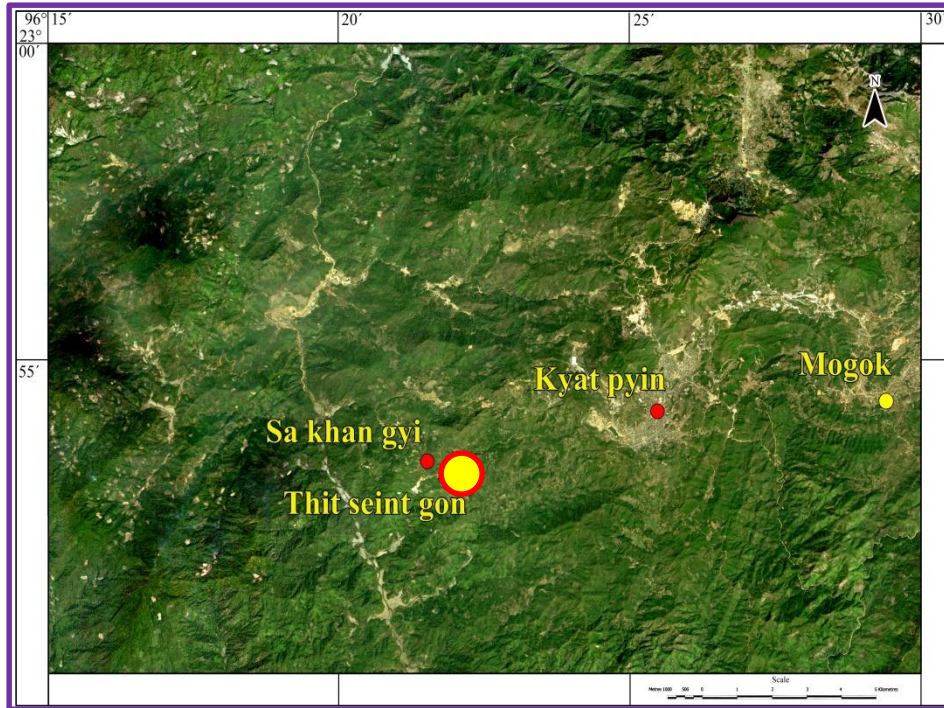
Sr.No	Name	Location	Year	Triggering Process
1	Hpakant Jade Mine Landslide	Hpakant, Kachin	2015,2016, 2017	Torrential Rain & Human Activities
2	Zalai & Laizo	Falam, Chin	2013	Heavy Rain
3	Vicinity of Hakha	Hakha, Chin	2013/2015	Heavy Rain
4	Vicinity of Kyaikhtiyoe Pagoda	Kyaikhto, Mon	2016	Heavy Rain
5	Mawchi Mine Landslide	Hapsaung, Kayah	2015	Heavy Rain
6	Popa Landslide	Kyaukpadaung, Mandalay	2017	Heavy Rain
7	Thit Seint Gone	Mogok, Mandalay	2017	Heavy Rain

Introduction



- **This Seint Gon Village which occurred landslide is situated in **Mogok Township (Gemstone Tract), Myanmar.****
- **The population is very thin and mostly **Lisu** race are living.**
- **During September, 2017 the vicinity of This Seint Gon was appeared the initial crack signs and uplifting the car road.**
- **Our field group was assigned by **Ministry of Natural Resources and Environmental Conservation**, Myanmar. Then our field group carried out the field investigation from 17th October to 23th October, 2017.**

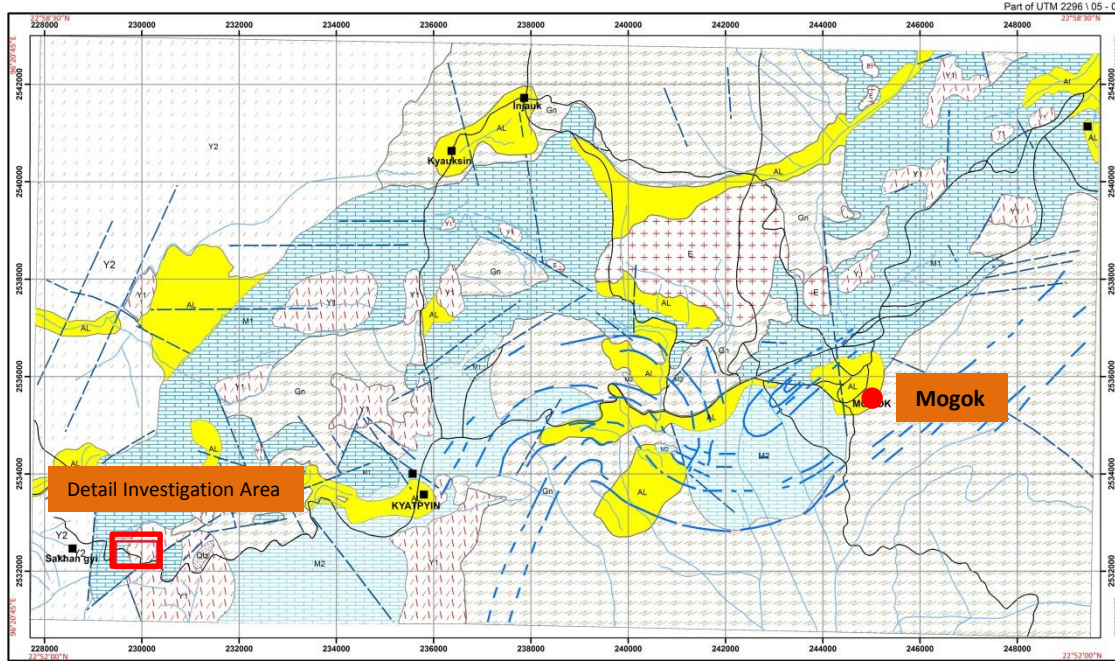
Location



The **Thit Seint Gon** village lies in $22^{\circ} 53' 35.5''$ N , $96^{\circ} 22' 02.1''$ E ,
29 km west from **Mogok Township**.



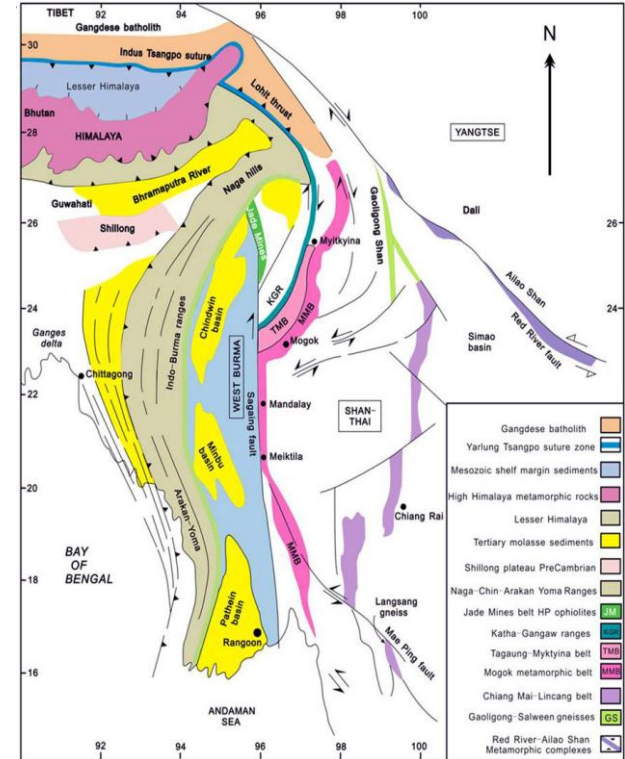
Geology



Legend

- | | | | |
|---|----------------|-----------------|---------------------------|
| AL Alluvium | Qtz Quartzite | Folding Pattern | Detail Investigation Area |
| Y1 Leucogranite | M1 Marble (M1) | Fault | |
| Y2 Biotite microgranite (Kabaing granite) | M2 Marble (M2) | Stream | |
| E Syenitic rocks | Gn Gneiss | Road | |

Modified After T.Themelis (2006)

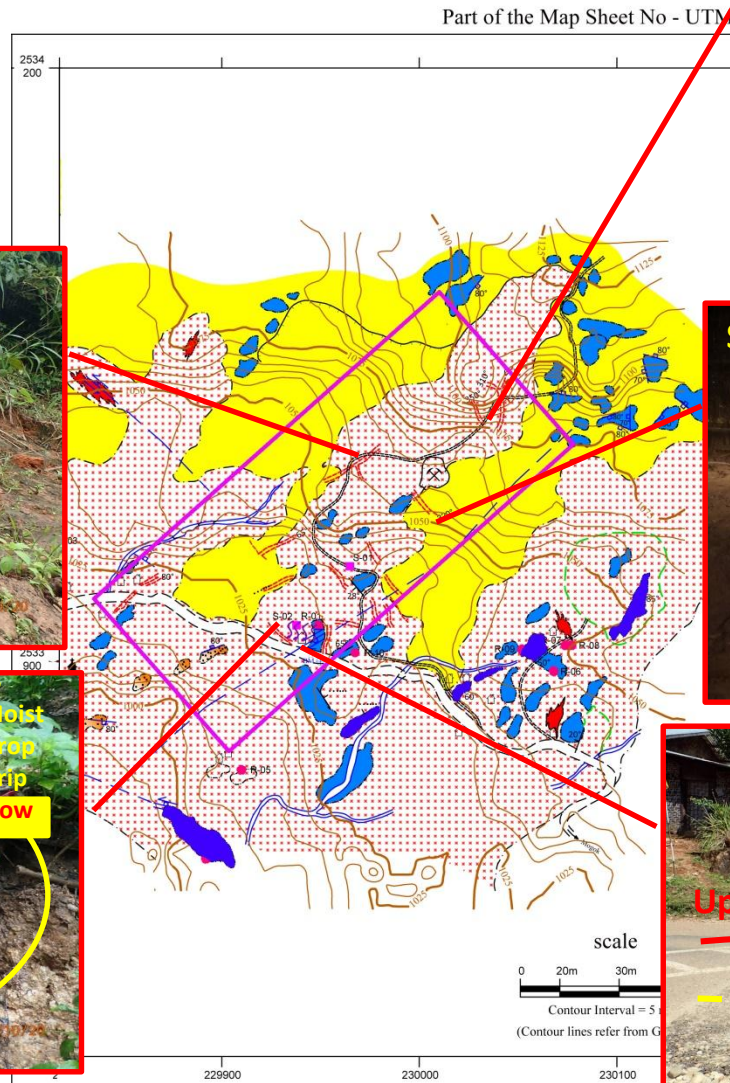


REGIONAL GEOLOGICAL MAP OF MOGOK AREA

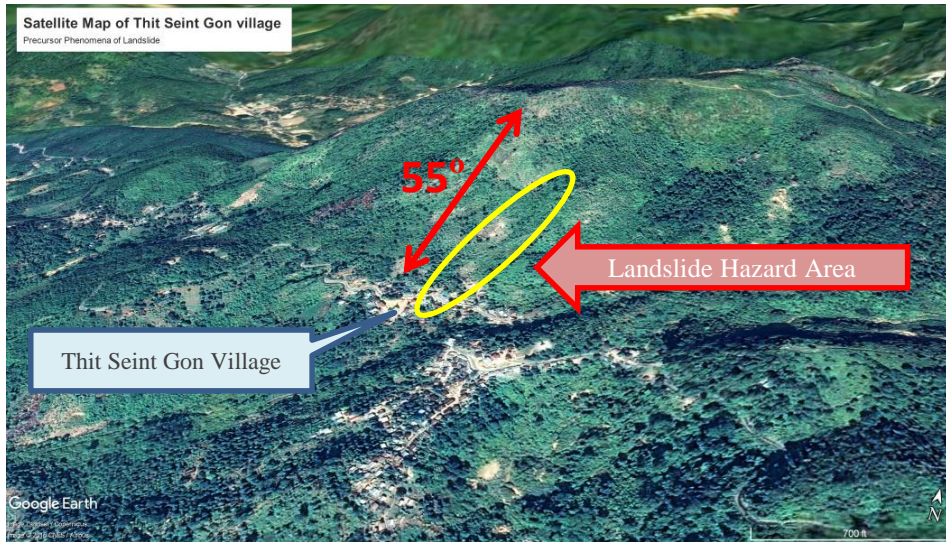
Tectonic Event and Mogok Metamorphic Belt of Myanmar

Field Investigation

1:1000 scale detailed mapping of Thit Seint Gon Area.



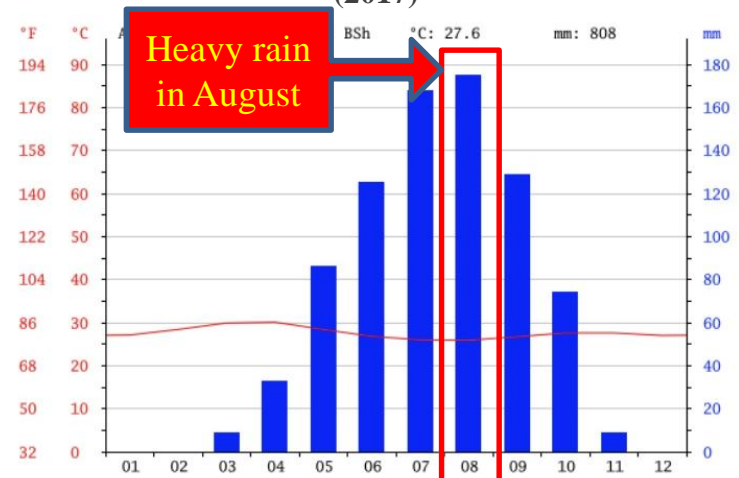
Culprits of Landslide



1. The mountain is 1320 m (above sea level) in height and **the gradient of Slope >50°**
2. **Lack of Vegetation**

3. **The Torrential rainfall** [The annual rainfall is 2000mm to 4000mm (Humid Climate)].

CLIMOGRAPH MOGOK
(2017)



Culprits of Landslide



Weathered Leuco-granite

4. Earth material on the slope is mainly composed of weathered leuco-granite (Sandy soil).



5. Poor Drainage System (Increasing Pore Water Pressure)

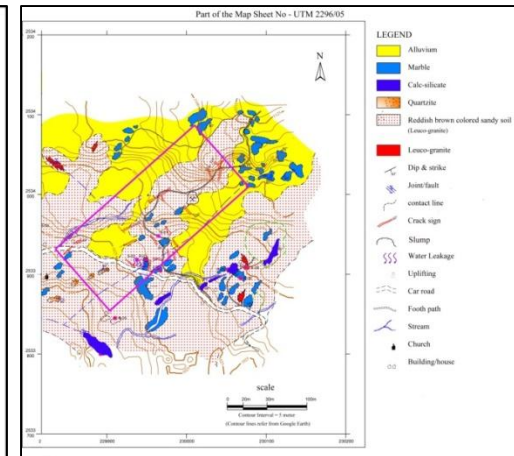
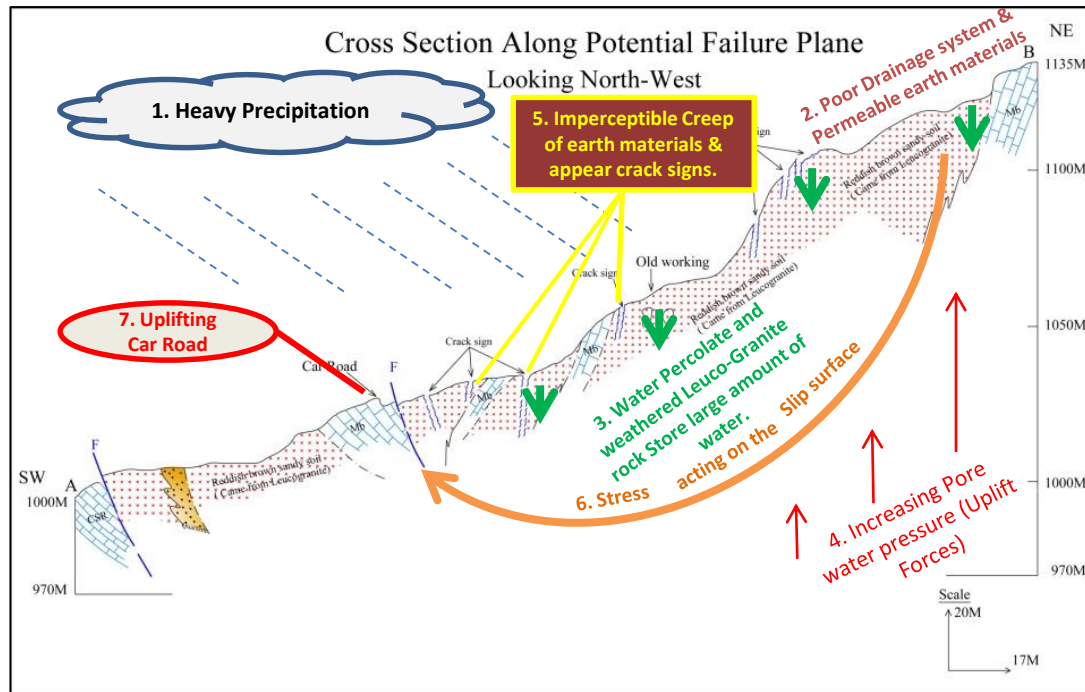


6. Local fault and direction of crack signs. (Generally = 70°)



7. Human Activities (Old pit of Gemstone Mining activities)

Conclusion



Mitigation of Landslide – Need to carry out the drainage system of surface and underground, reinforced earth wall and planting with the guide of a geotechnical engineer.

THANK YOU FOR YOUR ATTENTION



Welcome to Inlay Lake, Myanmar