



Earthquake Potencial in the Greater Yangon

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Myanmar Earthquake Committee

www.researchgate.net/profile/hlahlaaung

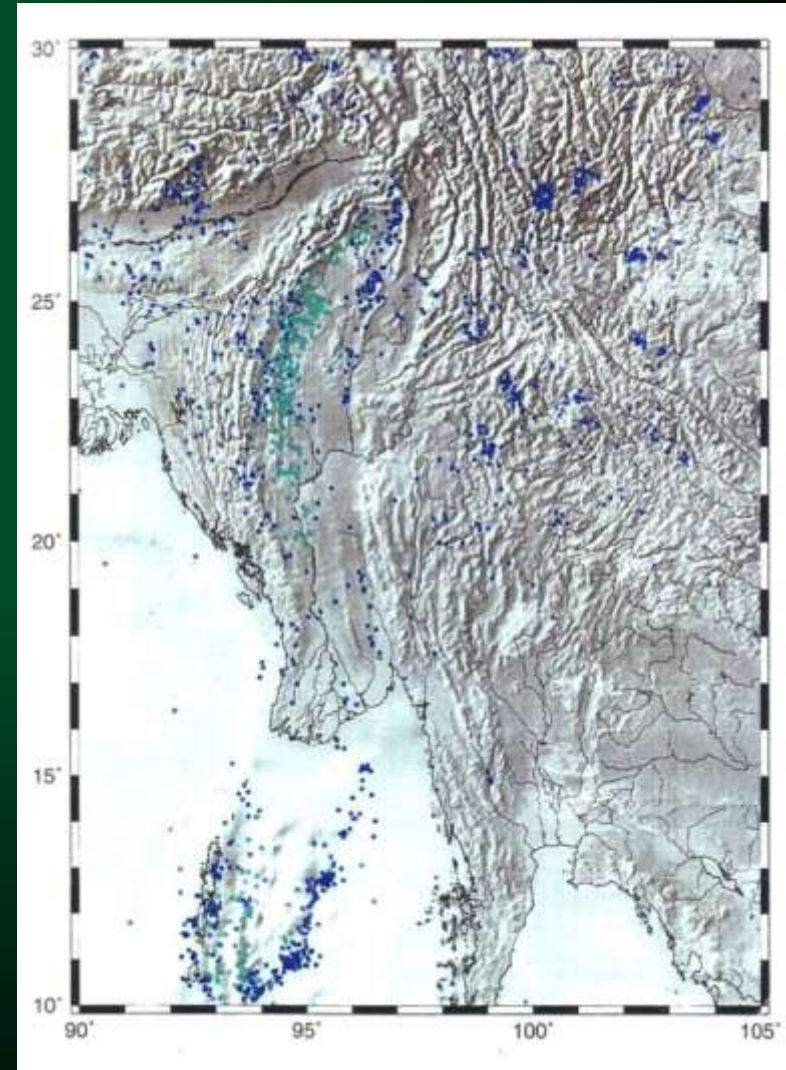
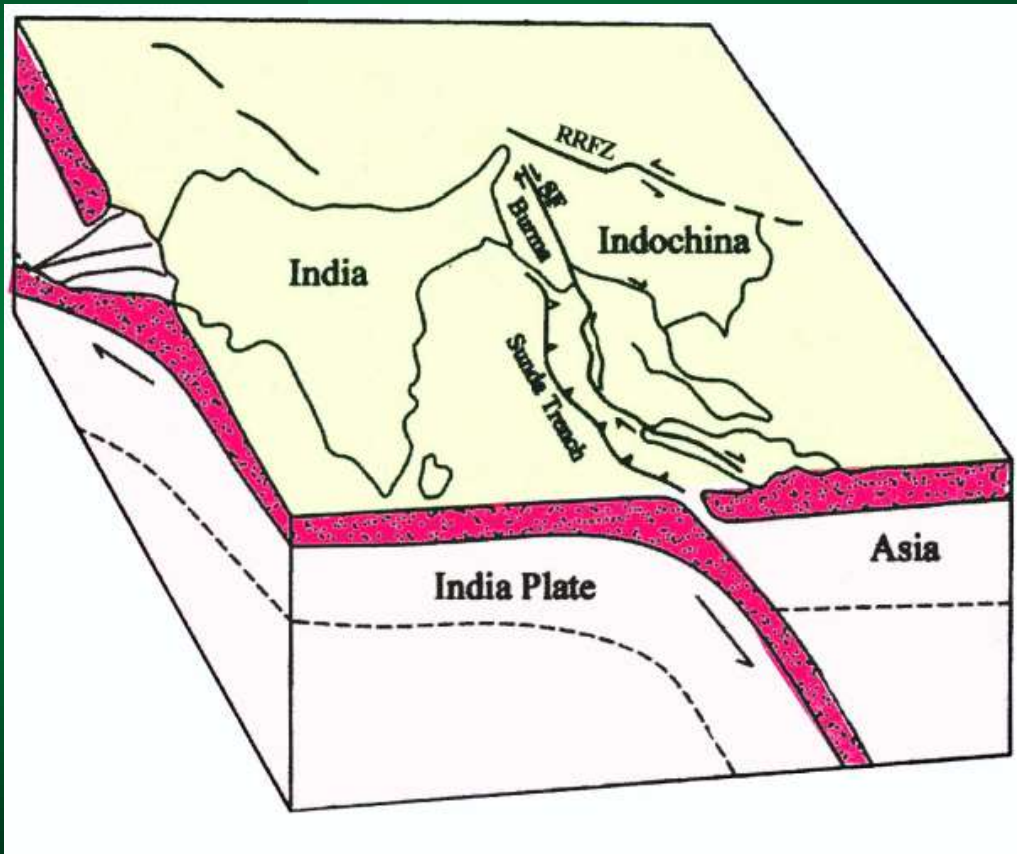
Yangon'Pride "Shwedagon Pagoda"



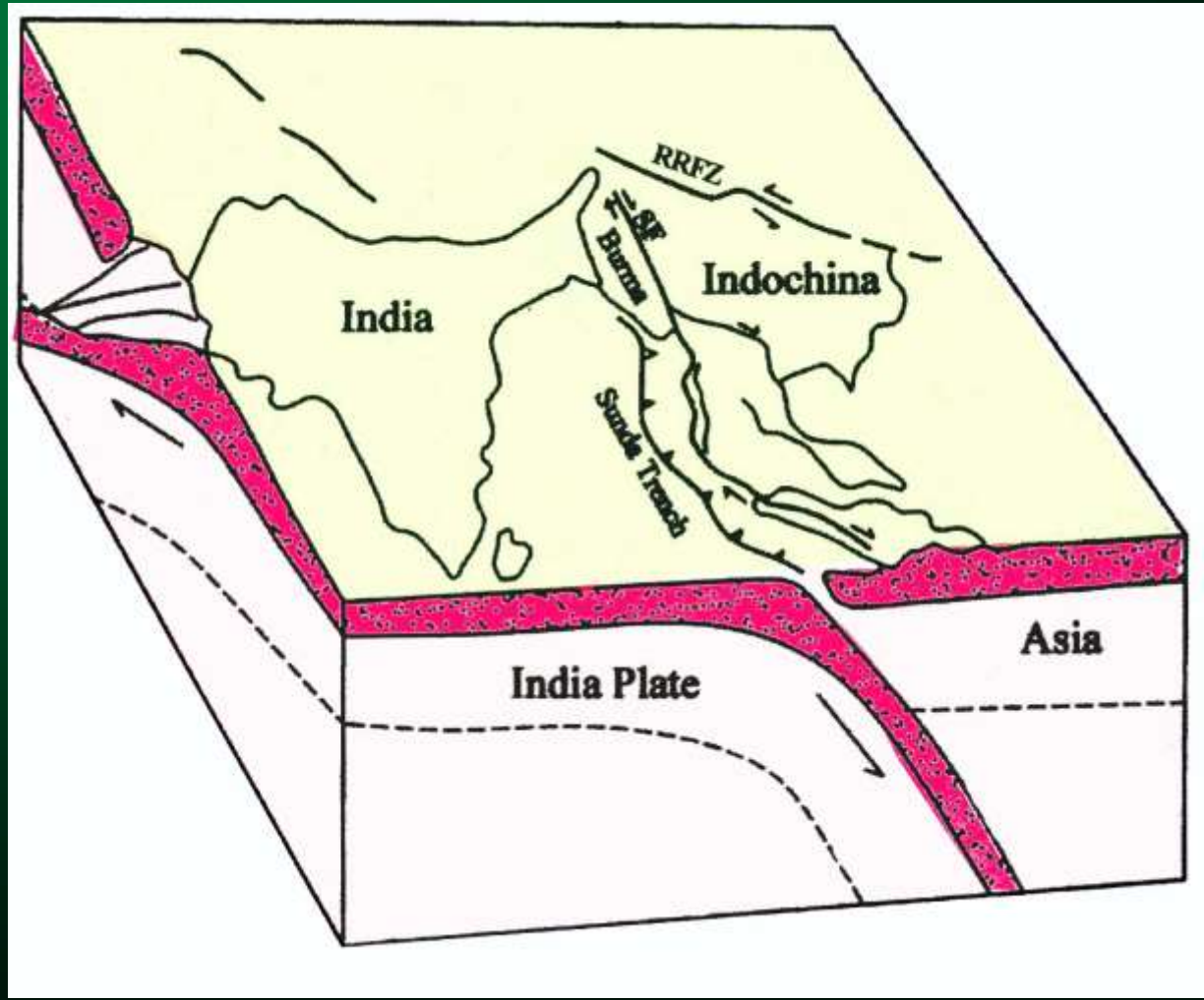
Location Of Yangon Region



Seismotectonics of Myanmar

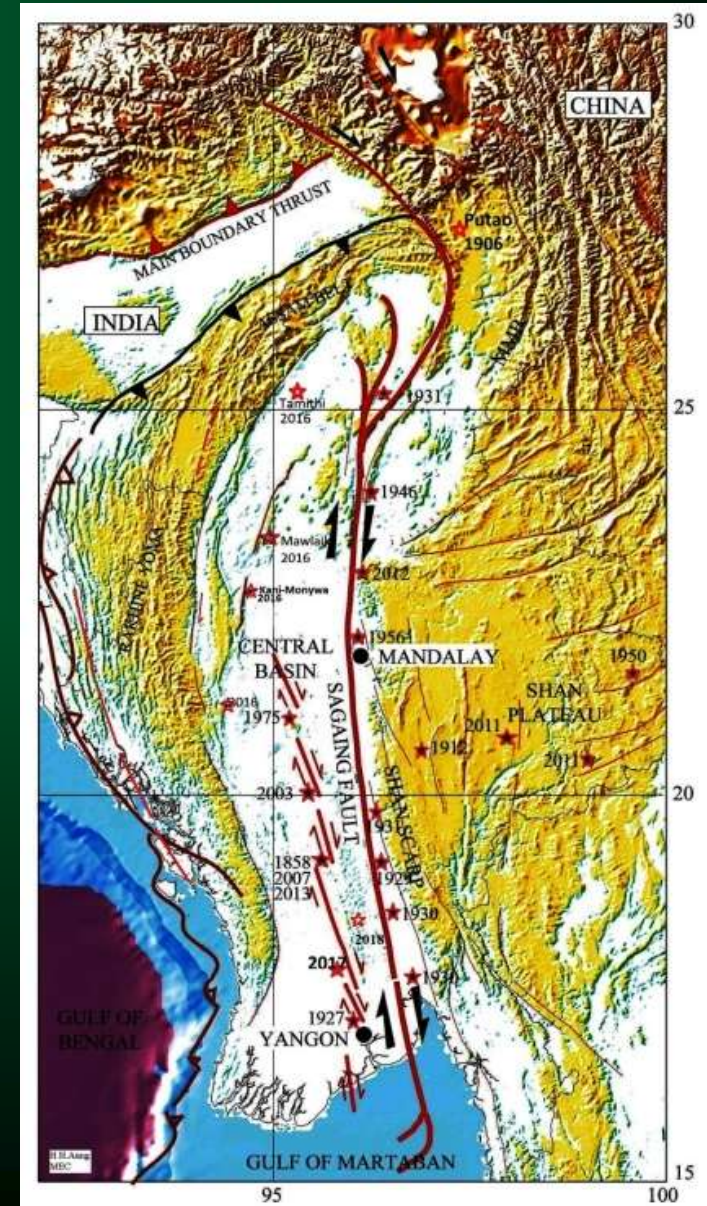
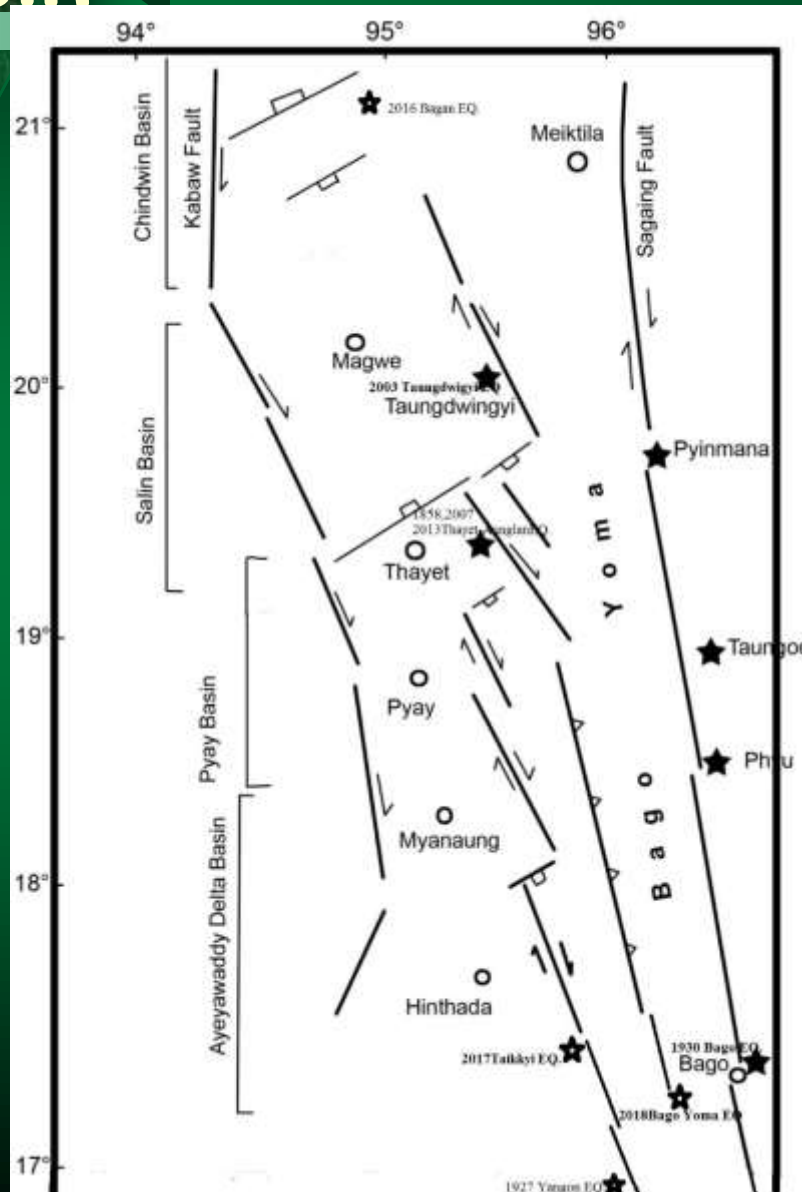


Tectonic configuration of SE Asia



Tectonic basins in Central Myanmar

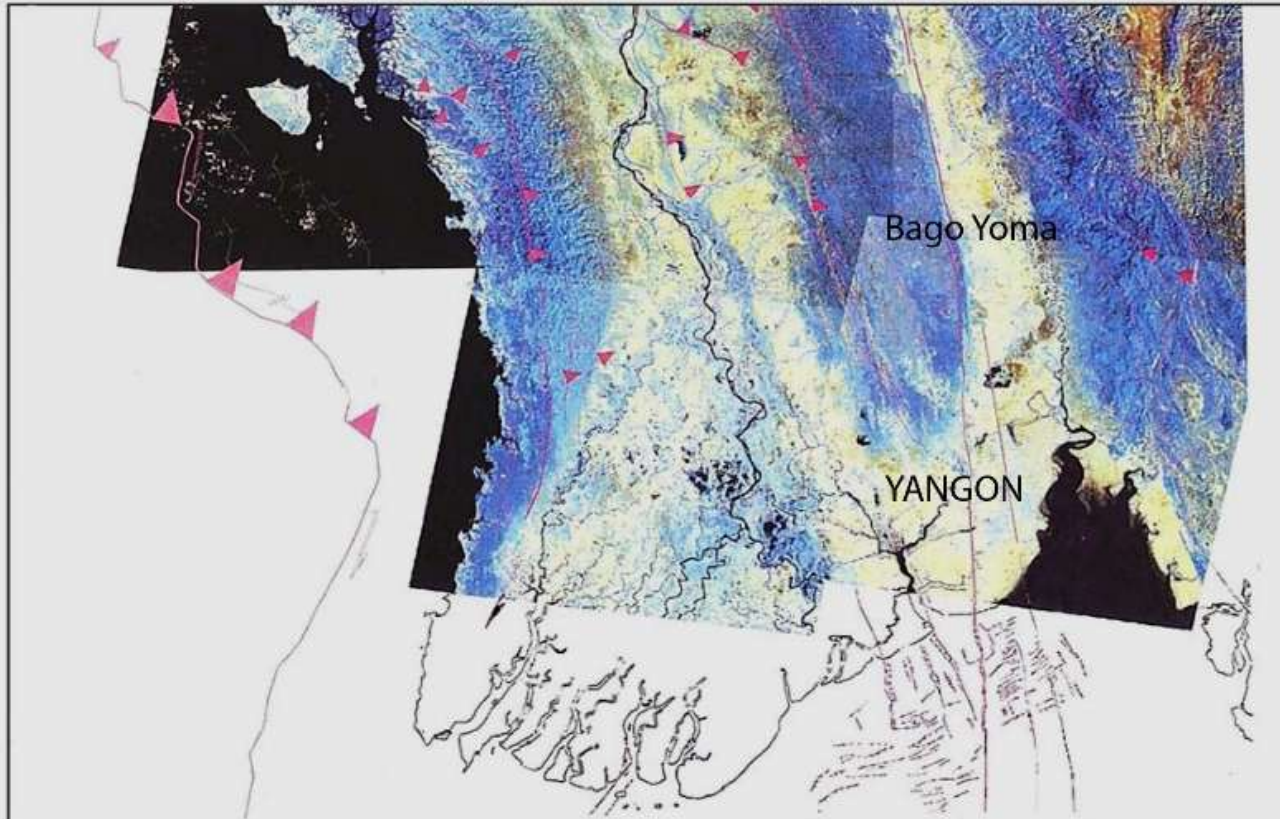
Basin



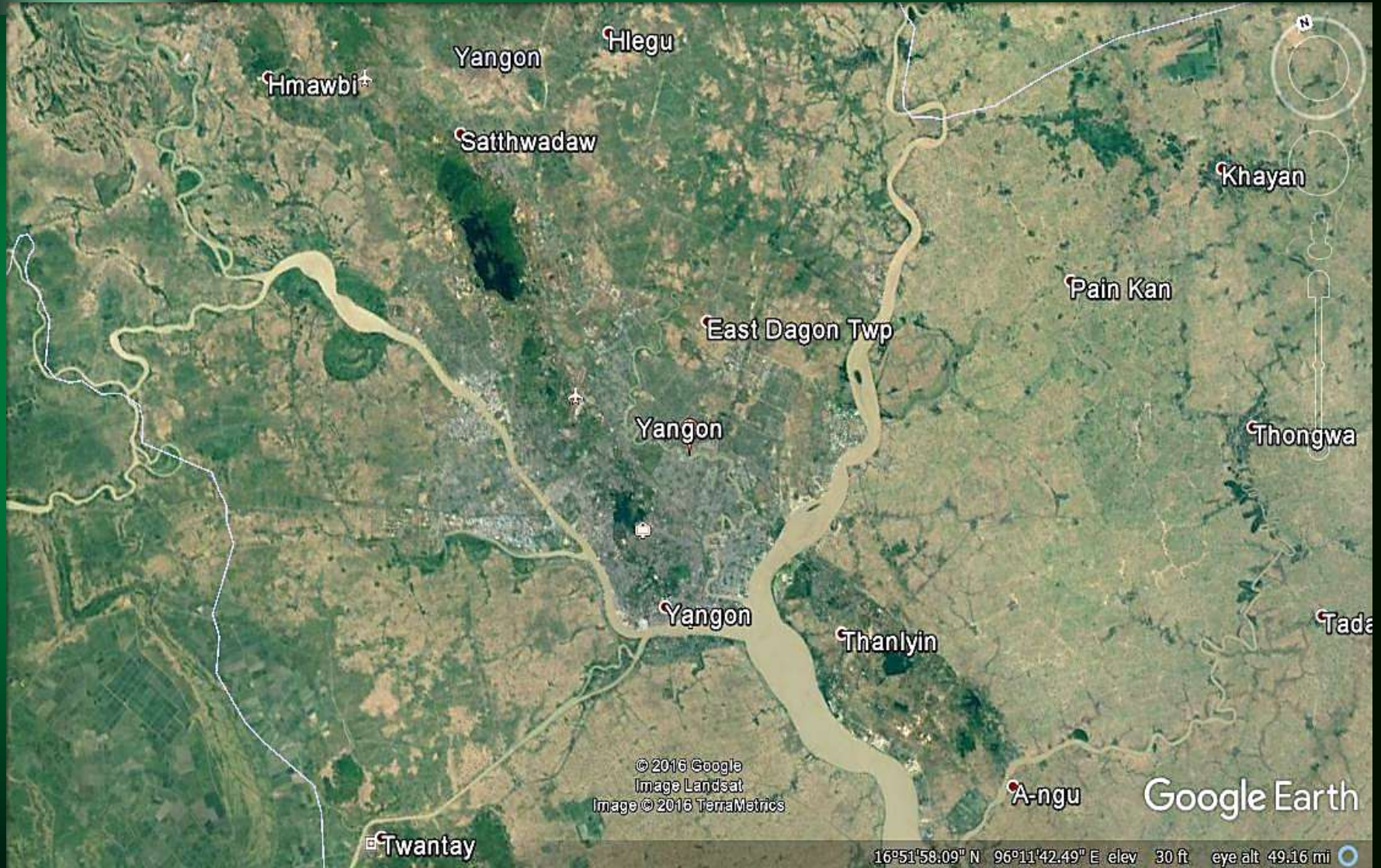
Earthquake Occurrences in the basins

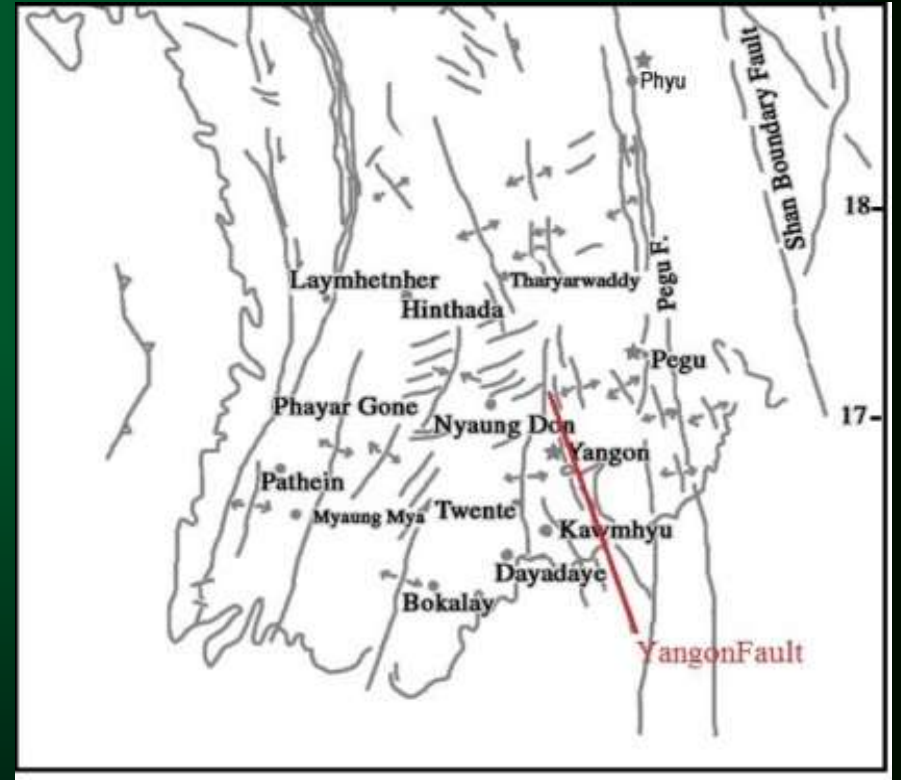
1. Hukawng Basin
2. Upper Chindwin Basin
3. Lower Chindwin Basin
4. Shwebo basin Ye-U EQ (2020)-
5. Salin basin Taungdwingyi EQ.(2003)-
6. Pyay basin Thayet-Aunglan EQ (2013)-
7. Aye-yar-wady Delta basin Taikkyi EQ.(2017)-
Aye-yar-wady Delta basin Yangon EQ.(2019)-
8. Sittaung Basin
9. Mottama Basin

Map of Aye-yar-wady Delta showing, Bago Yoma anticlinorium, location of Yangon City southern coast of ADB

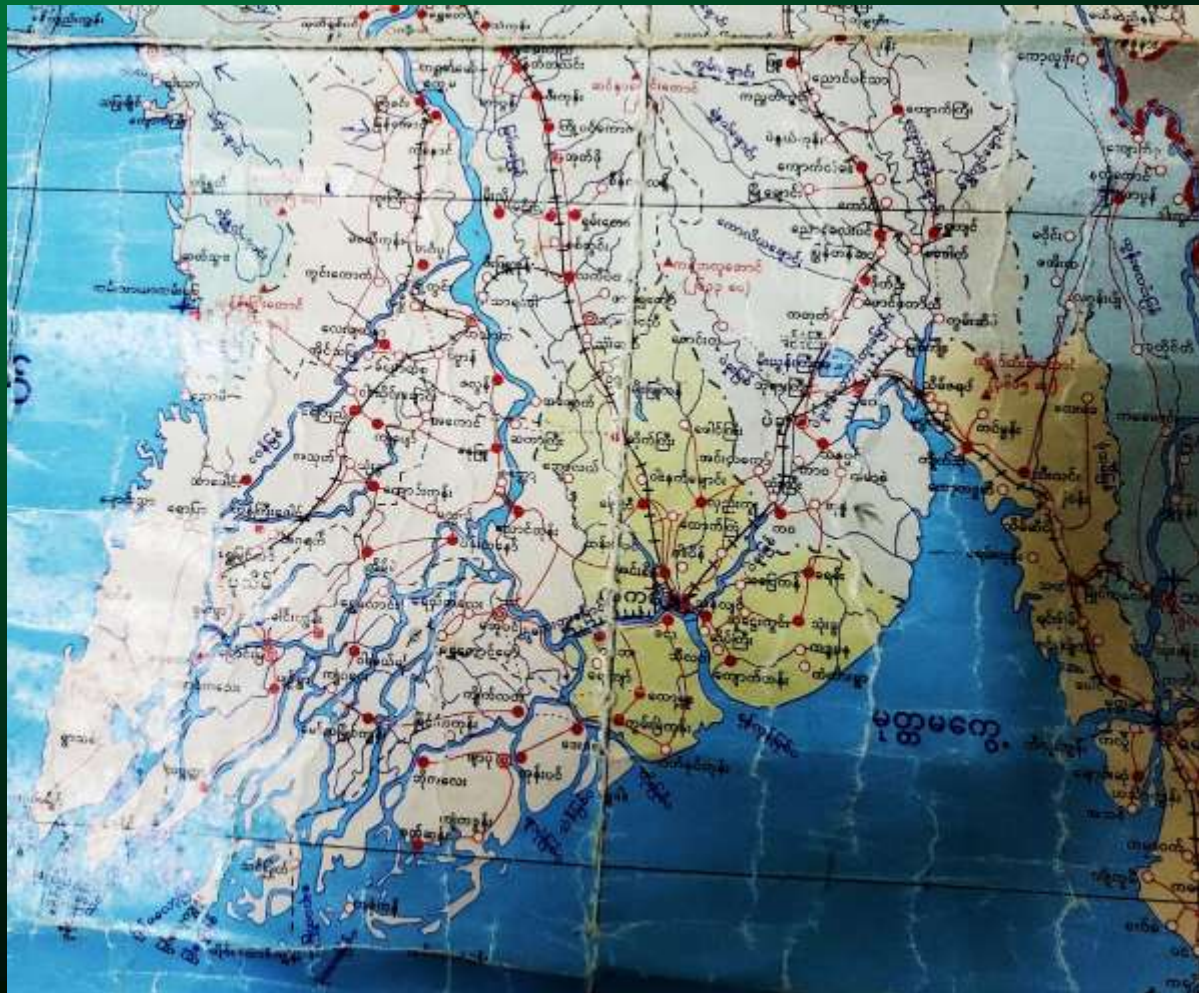


Google Map Of Yangon Region 16 45 N, 96 1 E, 17 04N/ 96 20 E

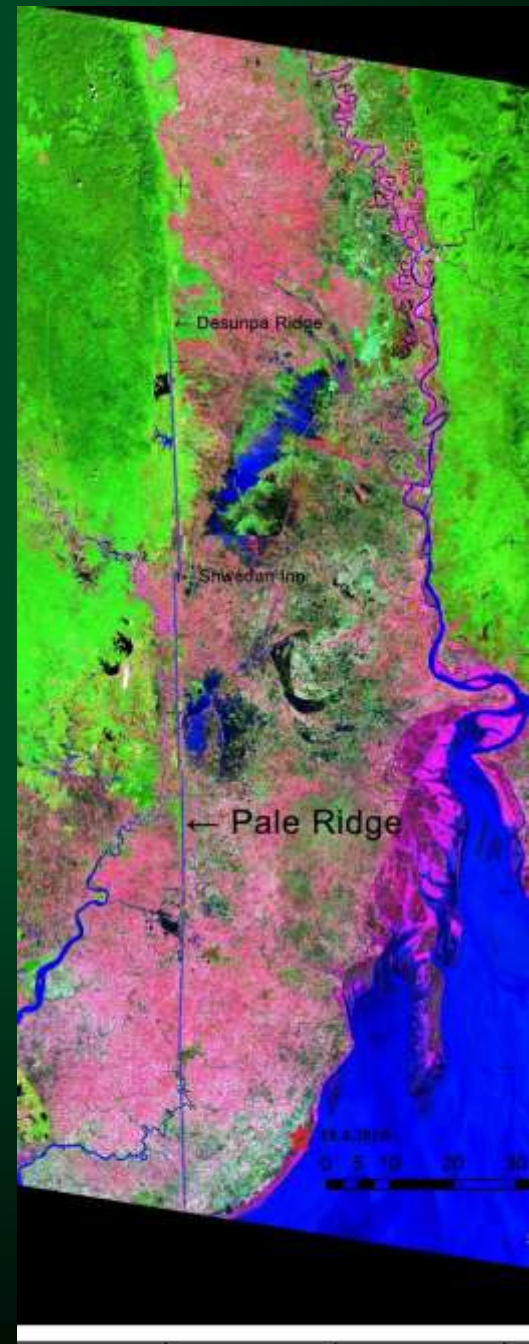
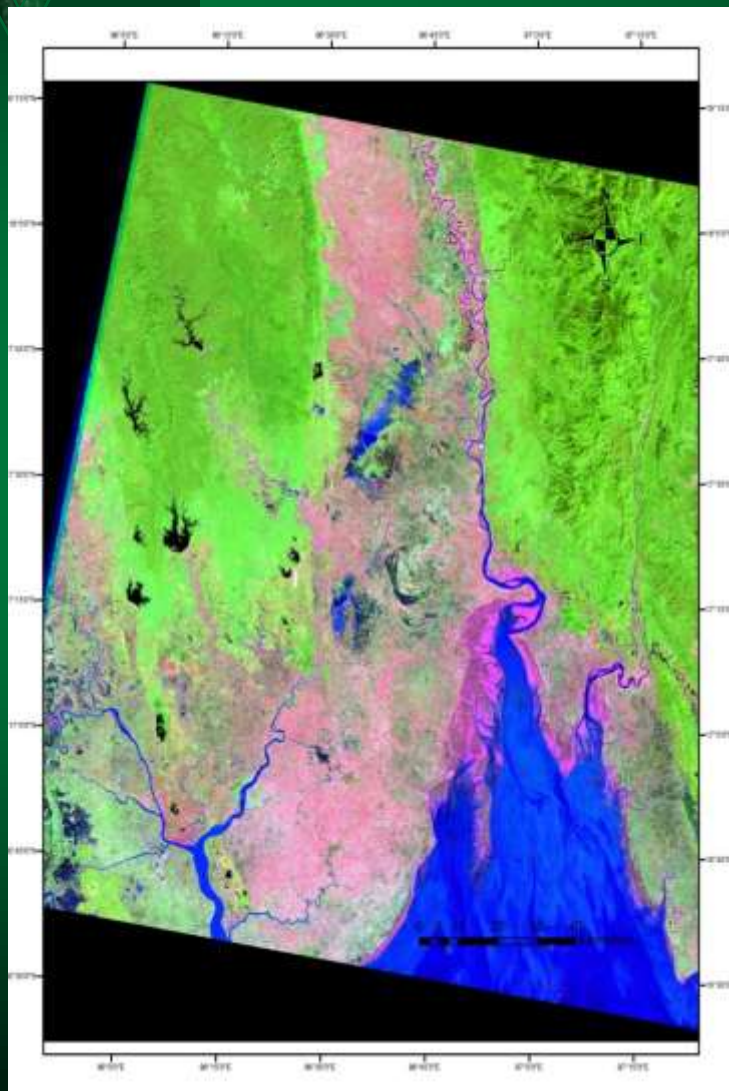




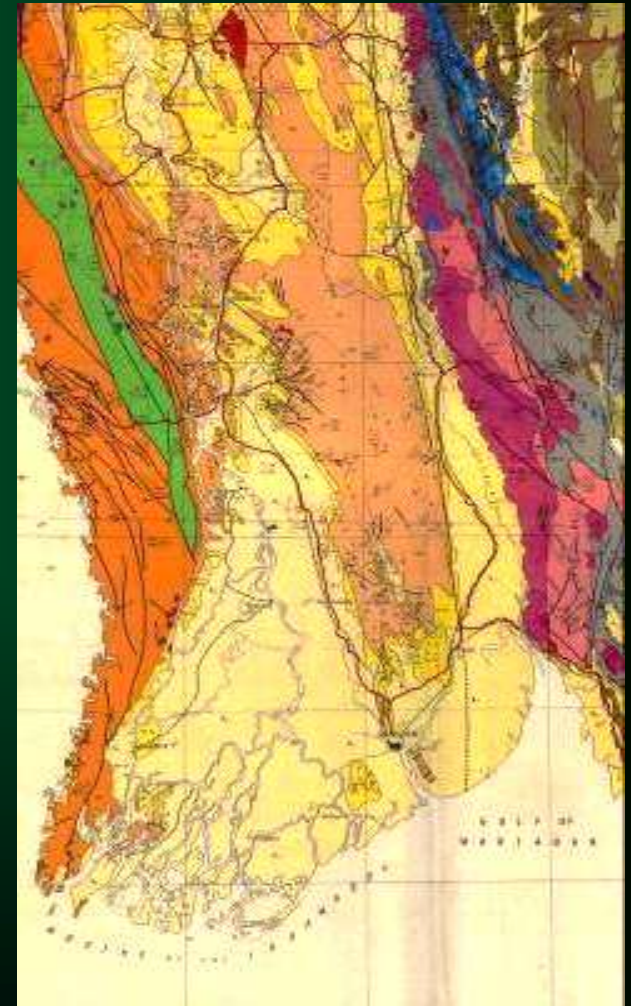
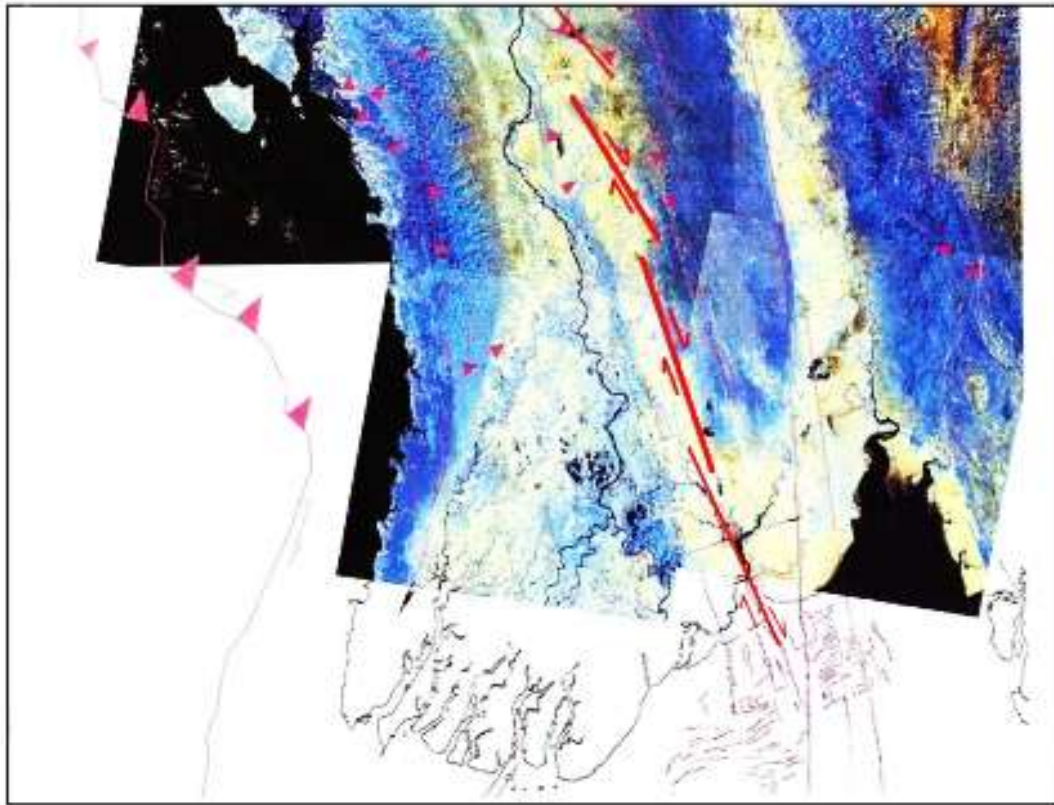
Topo map showing Yangon and its environ



Aye-wa-wady Delta Basin

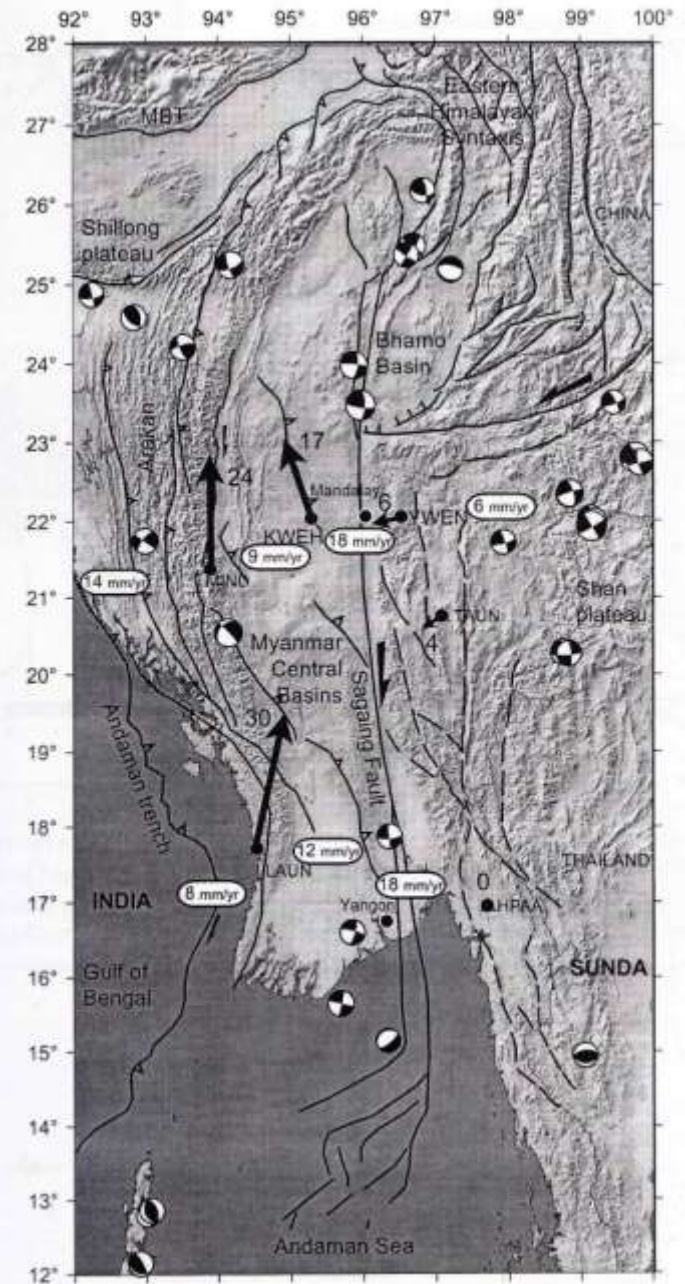


Basin bounding faults of CMB



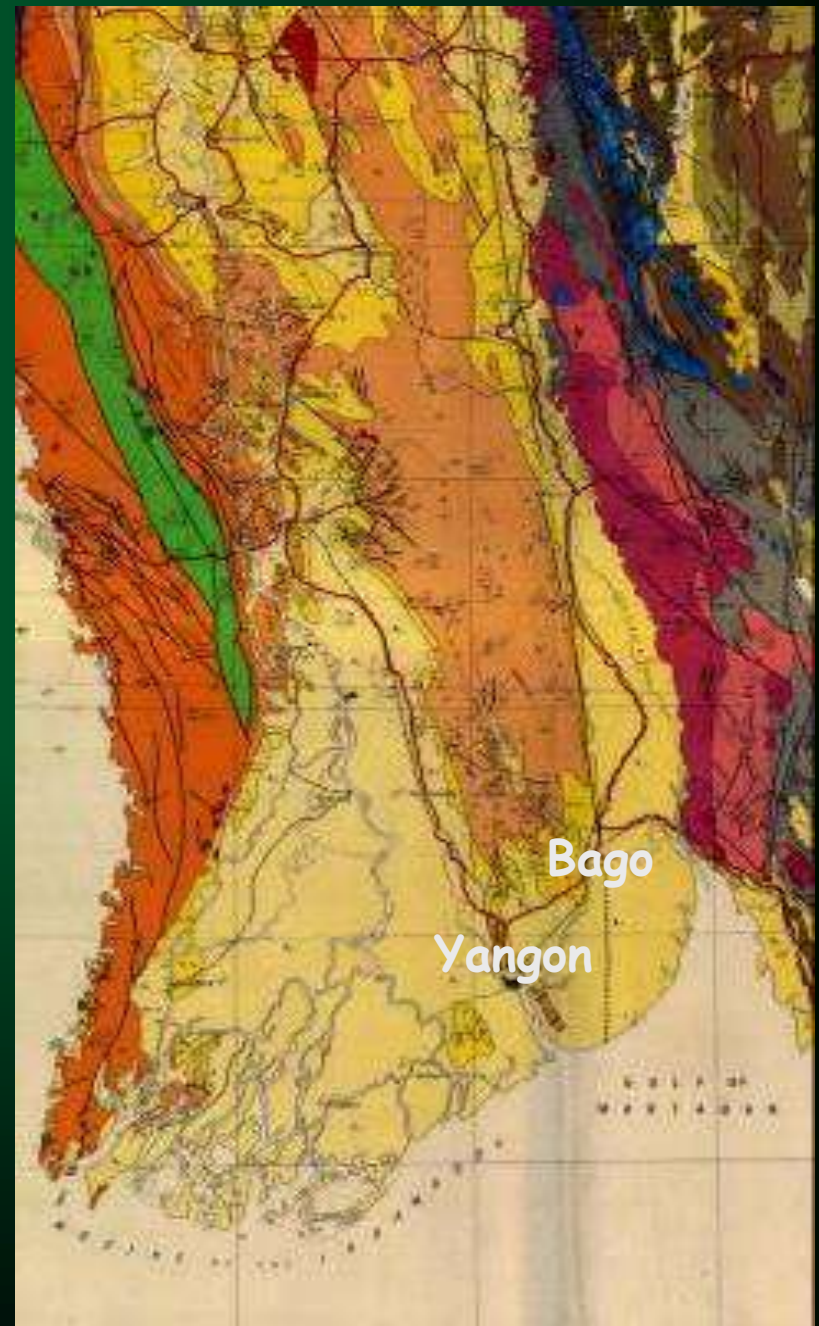
Tectonic stress field in Ayeyya-wady Delta Basin

- NNW-SSE extensional regime (black quadrant)
- and
- ENE-WSW compressional regime (white quadrant)



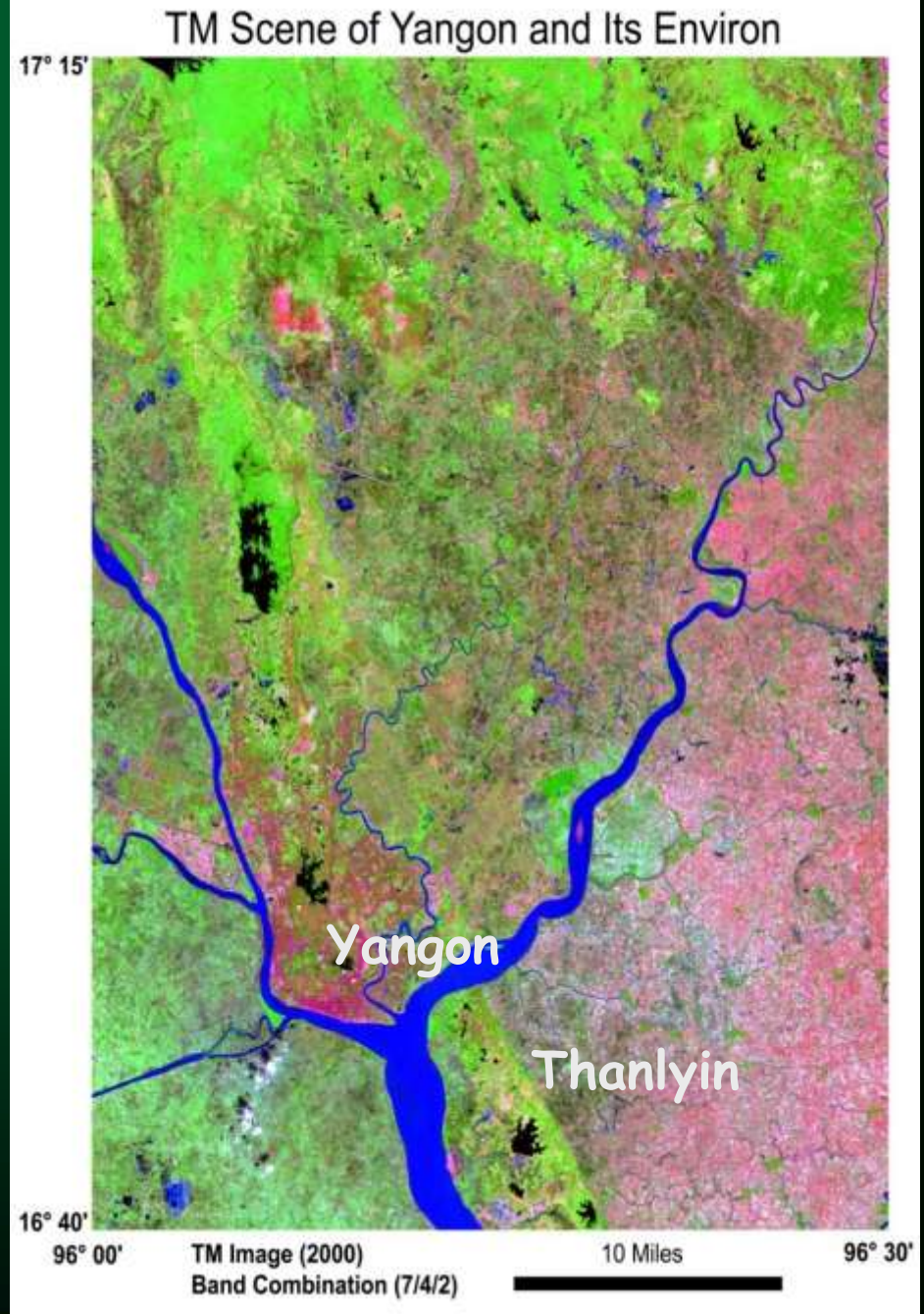
Geological map of lower Myanmar

- ✔ Yangon is located in the SE corner of Ayeyarwady Delta basin
- ✔ On the southern spur of Bago Yoma which extend south to Mottama basin
- ✔ At the mouth of 3 rivers
- ✔ 34 km from the sea
- ✔ In the coastal area



TM Scene of Yangon and its Environs

- Yangon and Thanlyin can be seen clearly in the TM map
- Right on the Bago anticline
- Western anticline approach Yangon
- Eastern anticline extends to Thanlyin
- Striking NNW-SSE
- Parallel to the extension direction



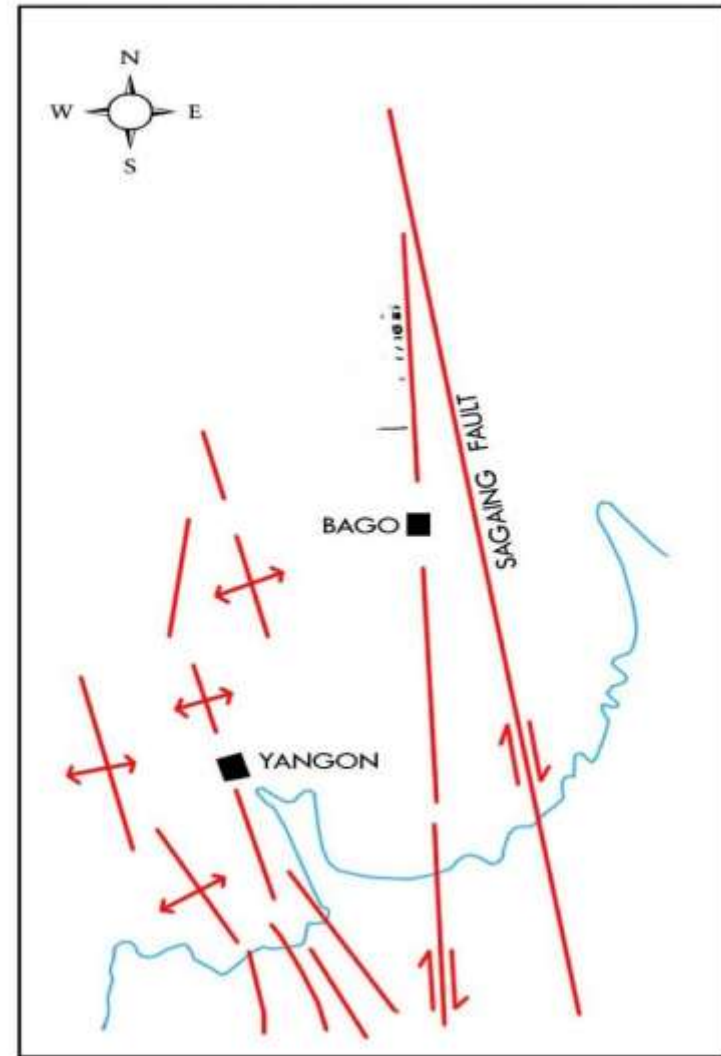
Lithology of Yangon region

- Yangon is mostly covered with alluvium
- Central part of Yangon has been occupied by the extension of Bago anticlinal ridge as a back-bone, seen in the map
- Thein-gote-taya Hill.
- Anticlines are doubly plunging and asymmetrical
- Composed of Miocene and Pliocene sediments
- Central portion of the area is occupied by the Irrawaddian rocks of soft sandstones, shale, laterites (< 23 million yrs)
- Peguan rocks of hard, compact sandstones and shale (< 65 million yrs)
- Both sides of the ridge is covered with alluvium
- Sands, silt, clay, gravels and laterites

Potential damage to Yangon area from the point of view of Tectonics

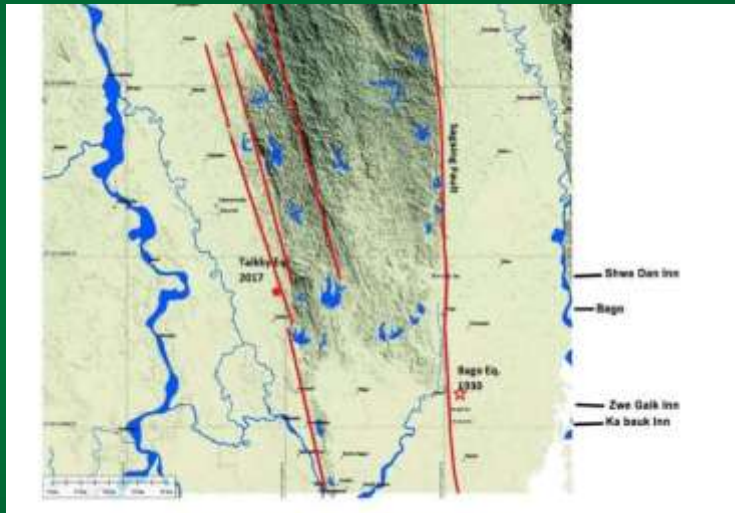
- Yangon is situated on Bago anticlinal ridge
- 35 km in the west of major active Sagaing fault
- Yangon area has been built in the Ayeyarwady delta basin which is a pull-apart basin and actively growing breadth and depth

STRUCTURAL TRENDS IN YANGON-BAGO AREA



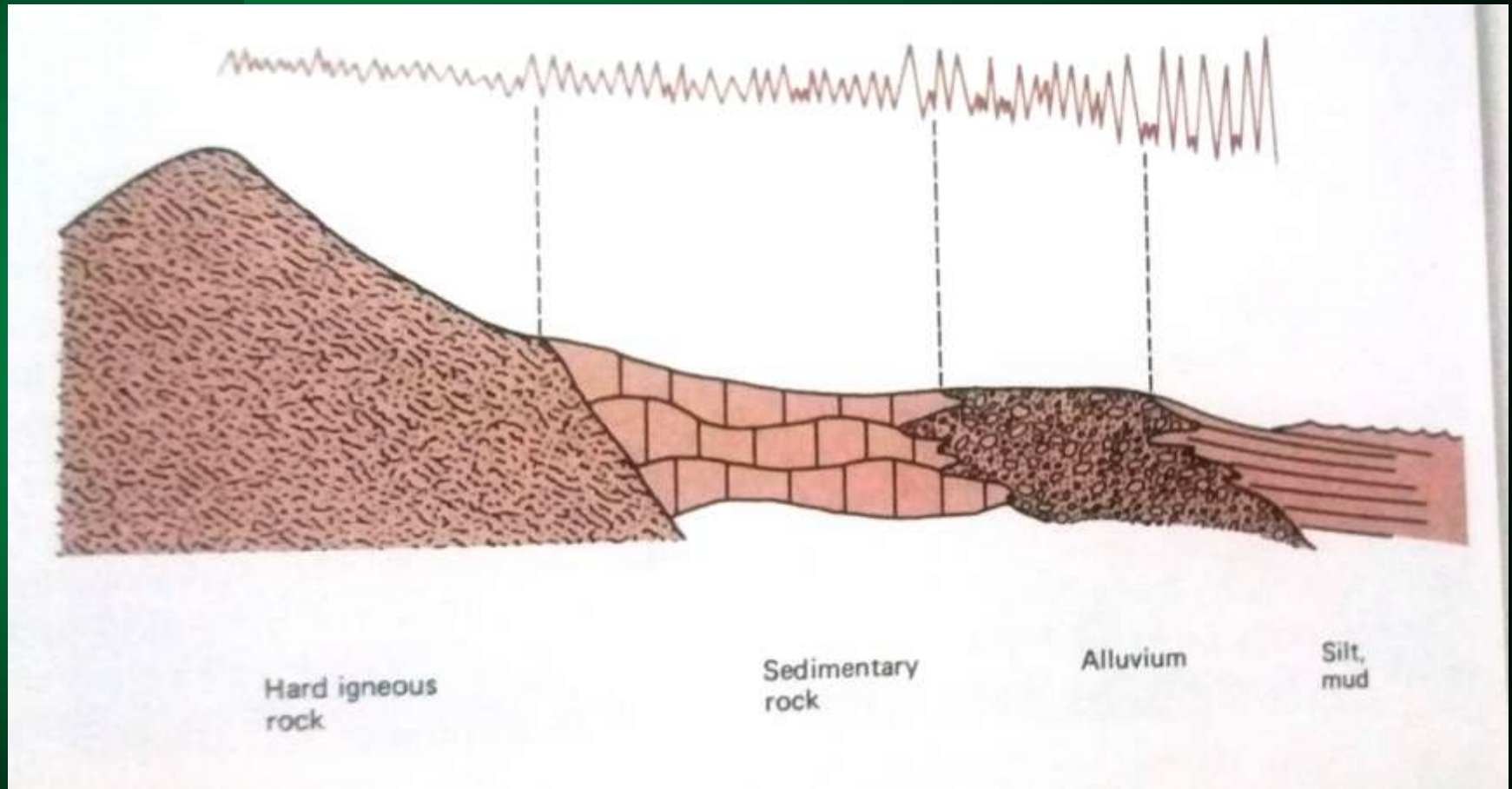
Potential damage to Yangon area from the point of view of Tectonics

Sagaing fault, Taikkyi fault, Bago fault



- Yangon is situated on Bago anticlinal ridge
- 35 km in the west of major active Sagaing fault
- Bago Yoma plung towards south and disappear under the Ayeyarwady delta sediments
- 400 miles long and 40 miles wide

Differentiation of soil and their intensity of earthquake shaking





THANK YOU !!!





Practicing Earthquake Drills

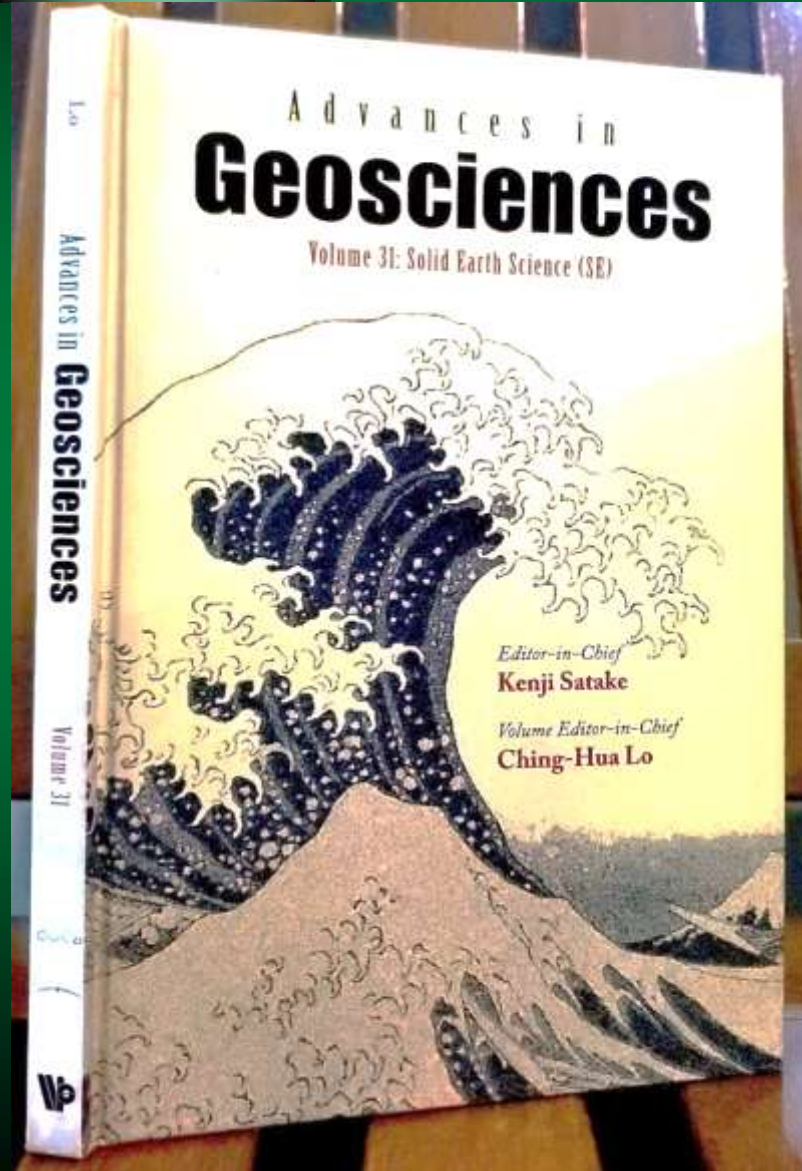
HLA HLA AUNG

PATRON & SENIOR RESEARCHER

MYANMAR EARTHQUAKE COMMITTEE

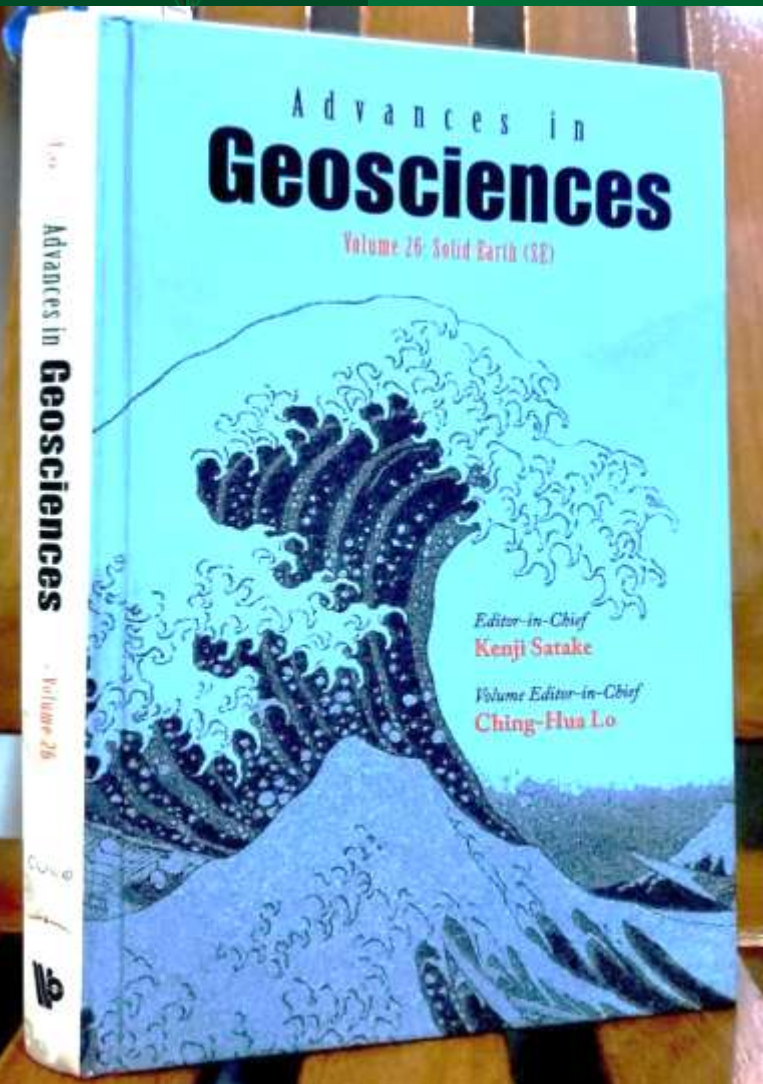
FEDERATION OFF MYANMAR ENGINEERING SOCIETIES

Books published by Advances in Geosciences



**1. H.H. Aung: Earthquake
Potential in Myanmar
(published), Advances in
Geosciences, vol.13 Solid Earth
Section ,2009 ,pp.265-280,
www.asiaoceania.org**

Books published by Advances in Geosciences



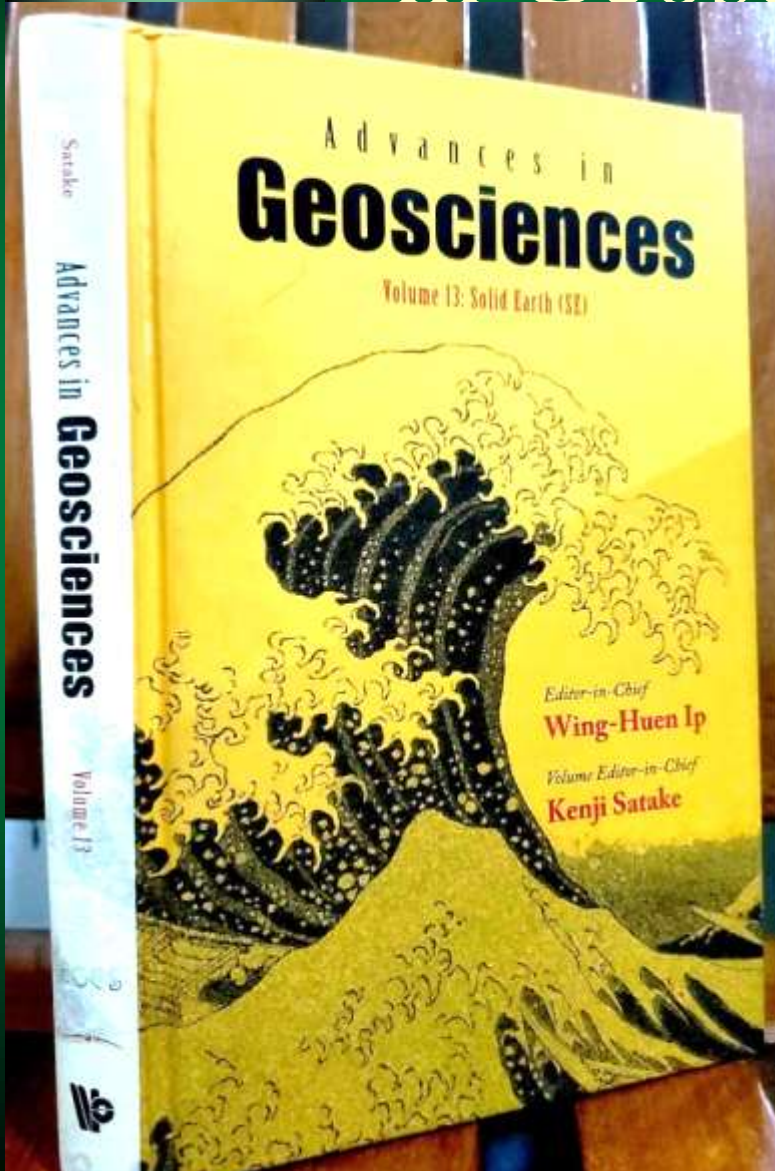
- **2. H.H. Aung: Seismicity in Central Myanmar Basin and Regional Tensional Stress (published), Advances in Geosciences vol. 26, Solid Earth Section, 2010.**

www.asiaoceania.org

- **3. H.H.Aung: Potential seismicity of Yangon Region, Advances in Geosciences vol. 26, Solid Earth Section, 2010.**

www.asiaoceania.org

Books published by Advances in Geosciences



4. H.H.Aung:
Reinterpretation of Historical
Earthquakes for the period
1929-191, Myanmar. Advances
in Geosciences vol. 31, Solid
Earth Section, 2011,
www.asiaoceania.org

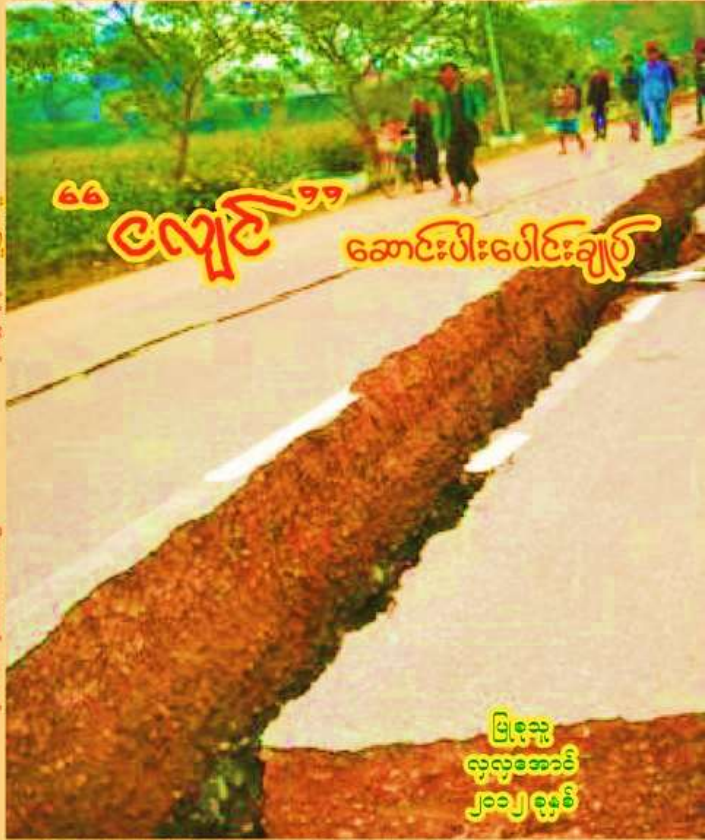
Books published in Myanmar



မိုးလွန်၊ မိုးခေါင်၊ ရေကြီး၊ မီးလောင်၊ တောင်ပြိုကျ၊ လျင်တော်လှန်ခြင်းမှအစ
 “သဘာဝအန္တရာယ်” ဟုဆိုကာ ရှစ်ဆရာ သိပ္ပံပညာရှင်တို့ကလည်း “ဒါ - ငါတို့မတတ်နိုင်”
 ဟု၍လည်း မပြောကြဘဲ၊ စကားယဉ်ယဉ်ဖြင့် စစ်ဆင်ဆင် လုပ်နေကြပြန်၏။
 “မိမိကိုယ်သာ အားကိုးရာ” ဟု မမြင်သော လူသားတို့ ဘဝသည် သနားစရာကောင်းလှပေ၏။
 မိုးရွာခြင်း၊ မိုးခေါင်ခြင်း စသည့် သဘာဝအန္တရာယ်သည် လူတို့၏ ကိုယ်ကျင့်တရားနှင့်
 ဆက်စပ်နေကြောင်း.....

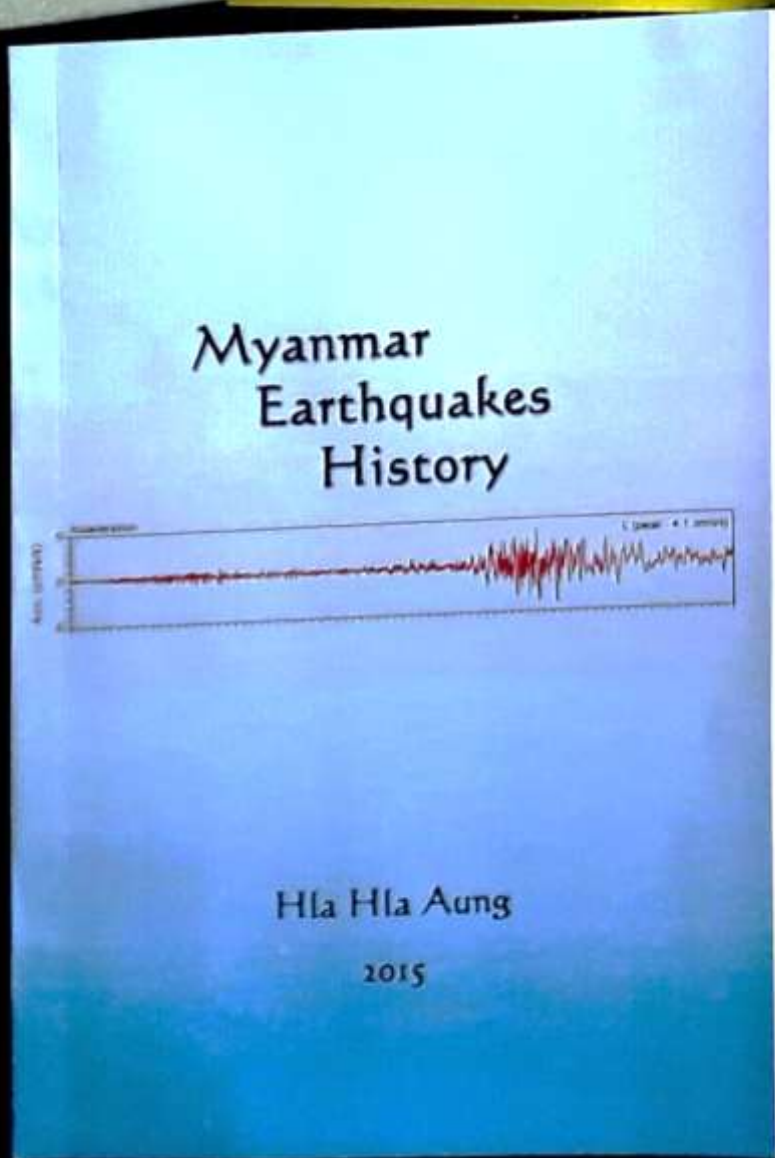
(ဝလာဟက သံယုတ်ပါဠိတော်အဋ္ဌကထာ)
 ကျမ်းကိုး - ရဟန္တာနှင့် ပုဂ္ဂိုလ်ထူးများ - စာမျက်နှာ ၄၂၃

စာရေးသူ ဒေါ်လှလှအောင်သည် ရန်ကုန်တက္ကသိုလ် ဘူမိဗေဒအဓိကဘာသာရပ်ဖြင့်
 ဘွဲ့ရရှိပြီး ရန်ကုန်တက္ကသိုလ်ဘူမိဗေဒဌာနတွင် လက်ထောက်ကထိကအဖြစ် တာဝန်
 ထမ်းဆောင်ခဲ့သည်။ ယခုအခါ မြန်မာနိုင်ငံလျှင်တော်မတီတွင် သုတေသနပညာရှင်
 အဖြစ် သုတေသနများ ပြုလုပ်လျက်ရှိပါသည်။



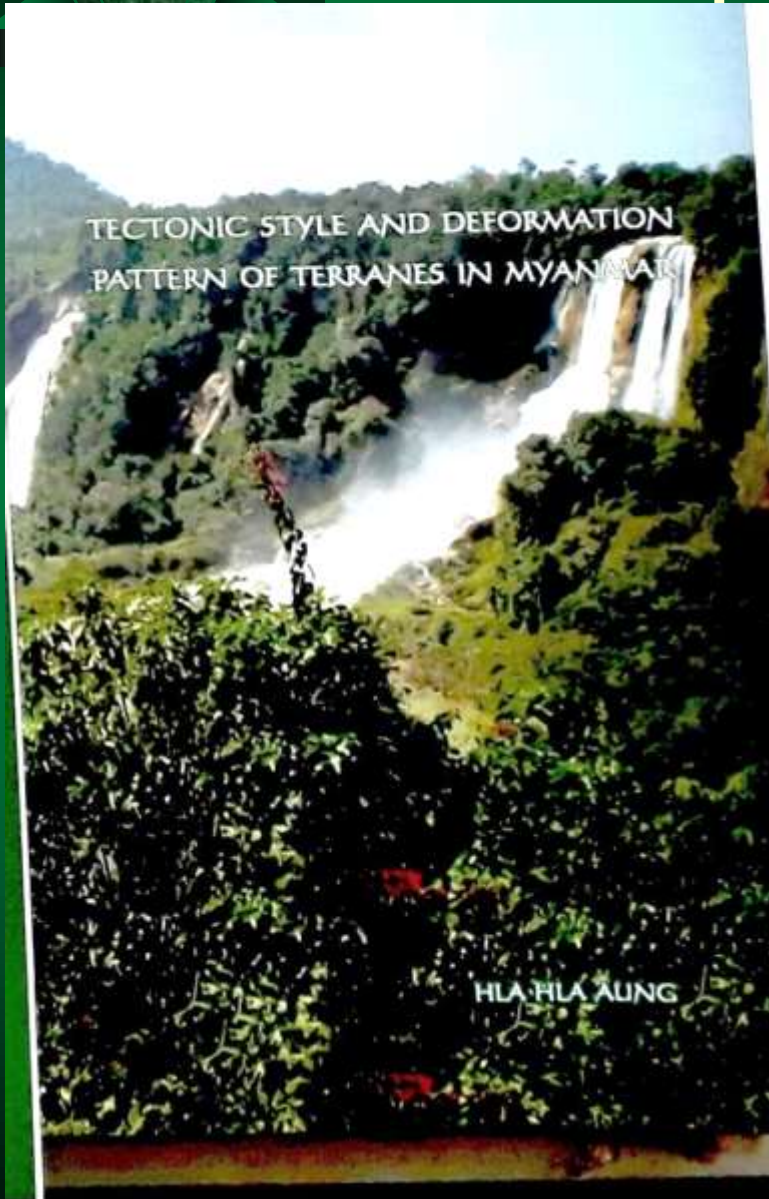
မြို့လူ့လူ့လူ့အောင် - နေမိမြို့

Books published in Myanmar



- ✓ Myanmar Earthquakes History, 2015 (Printed in Myanmar

Books published in Myanmar



- ✔ Tectonic Style and Deformation Pattern of Terranes in Myanmar, 2013 (Printed in Myanmar)

Books published in Myanmar



သဘာဝဘေး လျော့ပါးရေး ကြိုတင်ပြင်ဆင်ပေး

လှလှအောင်

၁-၃-၂၀၁၇

Lectures for Myanmar Association of Petroleum Geologists (MAPG)



Lectures for knowledge sharing program at MAPG (Myanmar Association of Petroleum Geologists)

1. Insight into the Nature of Basin Formation in Myanmar (15.10.2017)
2. 2017 Rift Volcanism and Volcanic Occurrences in Central Myanmar Tertiary Belt (29.10.2017)
3. Mesozoic Plate Tectonic History of Myanmar (19.11.2017)
4. The Framwork of Plate Tectonics (24.12.2017)
5. The Bago Yoma and its Tectonic Implication (18.2.2018)
6. Stress Transfer by The 2018 Bago Yoma Earthquake and Effeect on Aftershocks (13.5.2018)
7. Basin Fomation in Central Myanmar (1.6.2018)

Articles published in The Global New Light of Myanmar



Articles published by MES



- ▼ Tech Digest
Quarterly
Magazine

List of earthquakes



Name/Date/Time	Duration	M/D	Epicenter lat./long.	Damage	Loss of Life	Focal Mechanism	earthquake Source
Ava EQ 23 March 1893 at 4:00 am	30 Sec.		22° N 96° E	Pagodas Monasteries Mingun Pagoda	300-400	Strike-Slip Faulting	Yega Inn Pull-apart basin
Swa EQ 8 Aug 1929 At 7:20 pm	5 Sec.	M.S 7.0	19° 25'N 96° 25'E	Bridge & Culnets Collapsed			Fault scarp
Bago EQ 5 May 1930 at 8:18 pm	30 Sec.	MS 7.3 (Abe)	17 °N 96.50°E	Hti of Shwemawdaw, Shwe Dagon, Sule	500(Bago) 50 (YGN)	Strike-Slip Faulting	Kabauk inn Pull-apart basin
Phyu EQ 4 Dec, 1930 At 1:20 am	20 Sec.	MS 7.5	18° 24'N 96° 24'E		30		Restraining bend
Kamaing EQ 27 Jan 1931 At 2:25 am	30 Sec.	MS 7.6	25.60°N 96.80° E	Fissure and cracks block fissures		Strike-Slip Faulting	Indawgyi Lake,pull- apart basin
Pyinmanar EQ 10 Aug 1931 At 4 :50 pm	10 Sec.			Two pagodas destroyed, bamboo house collapse			Releasing bend
Tagaung EQ 12 Sept. 1946 At/ 5 Jan 1991		MW 7.5		Pagodas collapsed landslides		Strike-Slip Faulting	Sag pond
Sagaing EQ 16 July 1956 At 9:40 pm		7	21° 58'N 95° 50'E	Pagodas, Monasteries, Mingun Pagoda		Strike-Slip Faulting	Yega Inn Pull-apart basin
Thabeikyin EQ 11 Nov 2012 At 7:42 am		6.8 10km	23.009°N 95.884°E	More than 150 pagodas destroyed school bridges	34	Strike-slip faulting	Fault scarp
Maymyo EQ 23 May, 1912 At 9:00 am		MW 8.0	21°N 97'E	60 pagodas landslides		Strike-slip faulting	Inlay lake Pull-part basin
Yangon EQ 17 Dec 1972 30 Sep 1978 30 Jan 2013	5/6 Sec.	MW 7.0 10km	16.950°N 96.127°E				
Bagan EQ 8 July 1975 At 12:00 night		6.8		Pagodas in Bagan	1 person		Subduction
Taungdwingyi EQ 22 Sept. 2003		MW 6.6 10km	19.90°N 95.73°E	Landslides, Damagepagodas ,bridge & school	7	Strike-slip faulting	Flower structure
Tarlay EQ 24 March 2011		6.8 10km	20.705°N 99.949°E		74	Strike-slip faulting	Tarlay basin pull-

Earthquake occurrences after the year
new era of seismic activity.

- the 2011 M 6.8 Tarlay earthquake,
- the 2012 M 6.8 Thabeikkyin earthquake,
- the 2013 M 3.4 Yangon earthquake,
- the 2013 M 5.4 Thayet-Aunglan earthquake,
- the 2015 M 5.0 Monywa-Kani earthquake,
- the 2016 M 6.9 Mawlaik earthquake,
- the 2016 M 6.8 Chauk earthquake,
- the 2017 M 5.1 Taikkyi earthquake,
- the 2018 M 6.0 Bago Yoma earthquake,
- the 2019 M 3.4 Yangon earthquake
- the 2020 M 5.9 Falam earthquake

Community Outreach Activities between the year 2005-2024



1. Earthquake science education for school children

2. Earthquake Drill exercise

3. Series of interviews by several TV channels

4. Articles in Newspapers

5. Articles in journals and TechDigest Magazine

6. Book: Myanmar Earthquakes History

7. Earthquake Education

8. Preparedness

Attending international AOGS conferences



Conferences: AOGS, JPTM, IGCP attended since the year 2007



1. Tokyo Japan,
2. Beijing, China
3. Hyderabad, India
4. Busan, Korea
5. BKK, Thailand
6. Teipei, Taiwan
7. Hanoi, Vietnam
8. Singapore
9. Myanmar



Interviews by various multi-media channel



INTERVIEW



Earthquake education for awareness and Preparedness to the public and students in townships and wards in Yangon



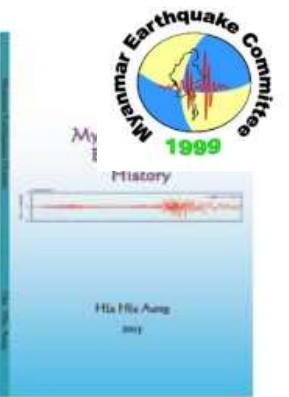
Giving lectures on earthquake preparedness in various township, YGN



Records of Practicing earthquake drills in various township community and school in YGN



Introduction
The Myanmar Earthquake Committee (MEC) was established in 1999 to coordinate and promote earthquake preparedness and response activities in Myanmar. The MEC is a non-profit organization that works to reduce the impact of earthquakes on the Myanmar population. The MEC has been successful in raising awareness and promoting earthquake preparedness in Myanmar. The MEC has been successful in raising awareness and promoting earthquake preparedness in Myanmar. The MEC has been successful in raising awareness and promoting earthquake preparedness in Myanmar.





Earthquake Drills at monastic school in YGN



Earthquake drill at B.E.H.S.- Dagon High School



Broadcasting earthquake drills by BBC Burmese- Mya



SKYNet-uptodate Program





လျင်စဉ် လှုပ်သည့်နှင့်ပြုလုပ်ရန်များ

- (၁) ထွက်မပြေးပါနှင့်၊ လှုပ်တာရပ်သည်ထိ ခိုလှုံရာနေရာမှာငြိမ်နေပါ။
- (၂) ထိုင်ချ -(Drop)လျင်လှုပ်သည်ဟု ခံစားရချင်း ဆောင့်ဆောင့်ထိုင်ချပြီး၊ လက်နှစ်ဖက်ယှက်၍ ဦးခေါင်း ပေါ်တင်ကာဦးခေါင်းကိုငုံ့လိုက်ပြီး အကာအကွယ် ယူလိုက် ရမည်။
- (၃) ခိုလှုံ-(Cover)စားပွဲ၊ ထိုင်ခုံ၊ ကုတင်တစ်ခုခုကို ရှာတွေ့လျှင် အလျင်အမြန်ရွှေ့သွားပြီး စားပွဲအောက်သို့ ပြေးဝင်ခိုလှုံရသည်
- (၄) ငြိမ်နေ-(Hold on)စားပွဲခြေထောက်ကို လက်နှစ်ဖက်နှင့် မြဲမြဲကိုင်၍ ဦးခေါင်းငုံ့၍ ဝပ်နေရသည်။
- (၅) လျင်လှုပ်ခြင်းရပ်သွားပြီဆိုမှ ထိုင်နေရာမှ ကွင်းပြင်ရှိရာသို့ အမြန်သွားစုရမည်။

- အိပ်ရာထဲတွင်ရှိနေပါက ခေါင်းအုံးနှင့် မိမိဦးခေါင်း၊ မျက်စေ့ ကိုကာကွယ်ထားပါ။
- အိမ်အပြင် ပြင်ပရောက်နေပါက တိုက်၊ သစ်ပင်၊ မီးကြိုးများလွတ်ရာနေရာကျယ်တွင် ထိုင်နေပါ။
- ကားမောင်းနေစဉ်ဆိုပါက ကားကိုဘေးလွတ်ရာတွင် မောင်းပြီးကားအတွင်းမှာပင်နေပါ။

ဤလုပ်ဆောင်ချက်ကို မြန်နိုင်သမျှ မြန်မြန်လုပ်၍ အကာအကွယ် ယူရမည်ဖြစ်သည်။



First Aid Kit



THANKS YOU

