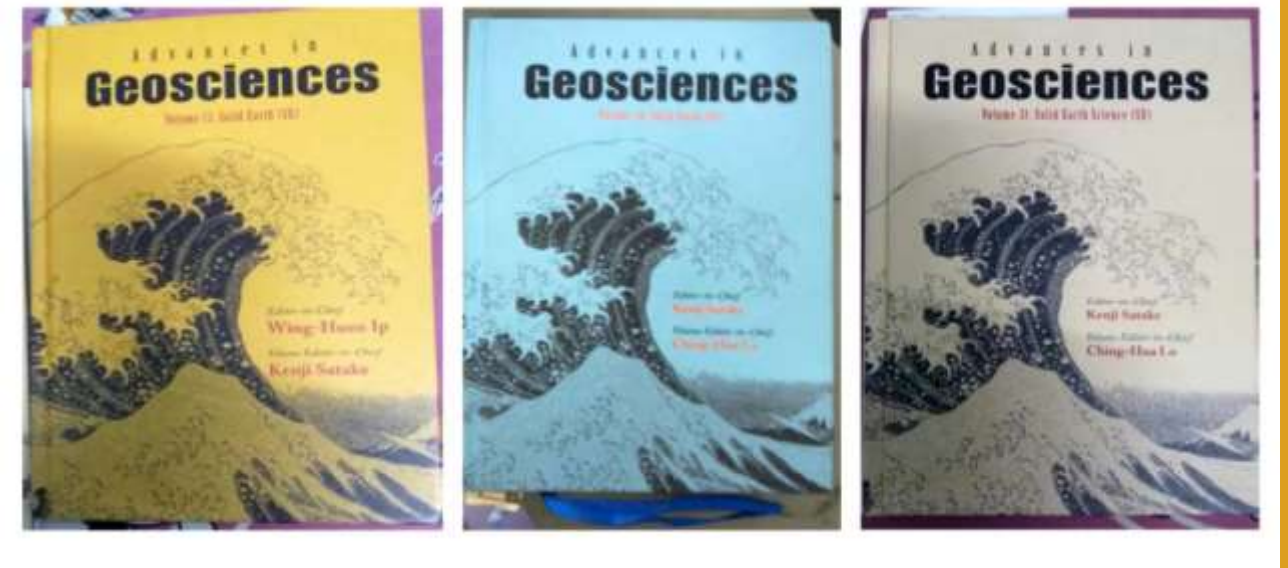
Earthquake Potential in Myanmar

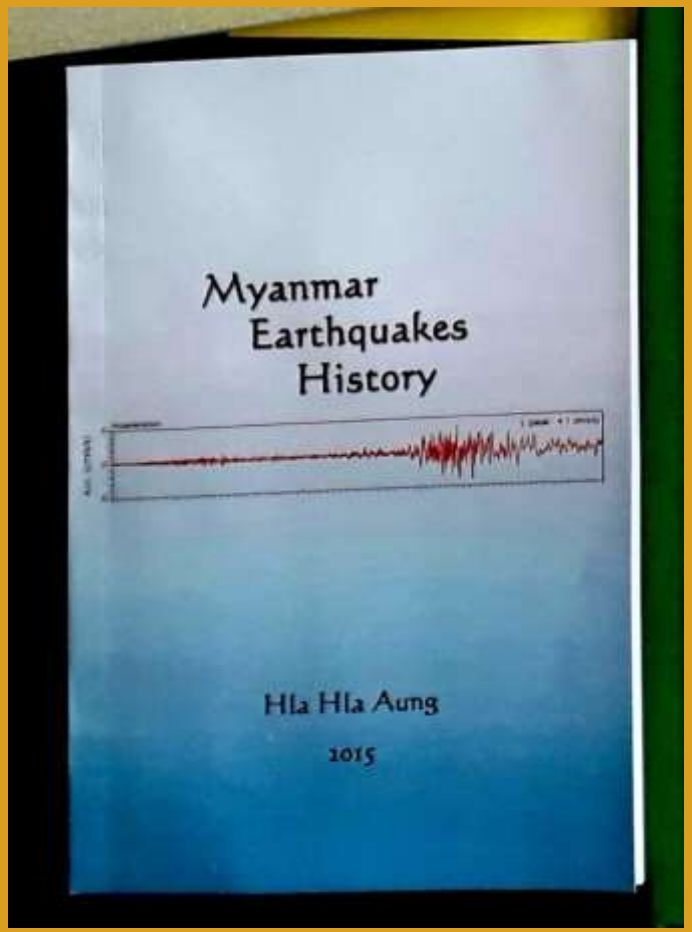
Hla Hla Aung
Senior Researcher / Patron
Myanmar Earthquake Committee (MES)

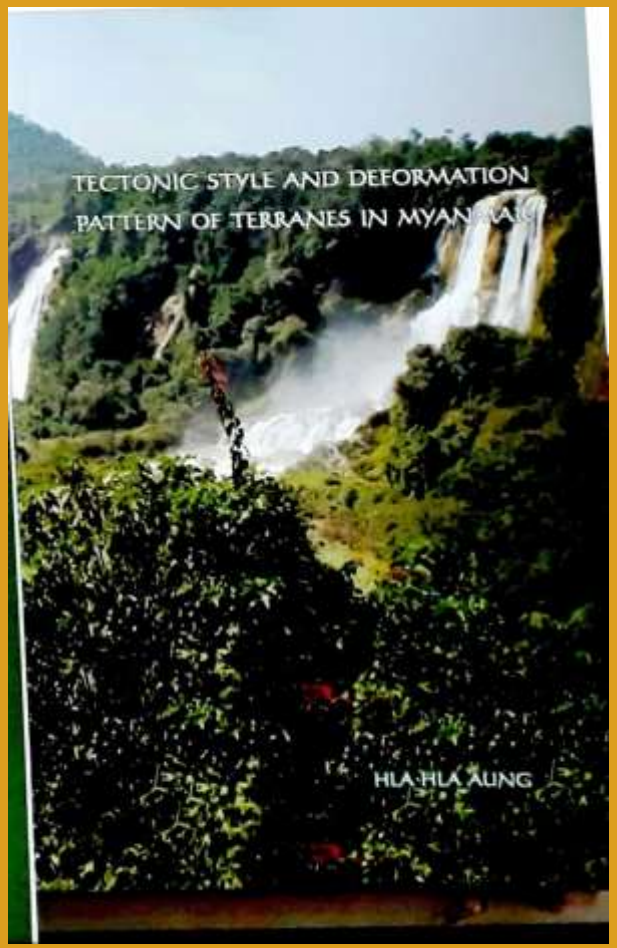
Formar Asst.Lecturer in Geology
University of Yangon

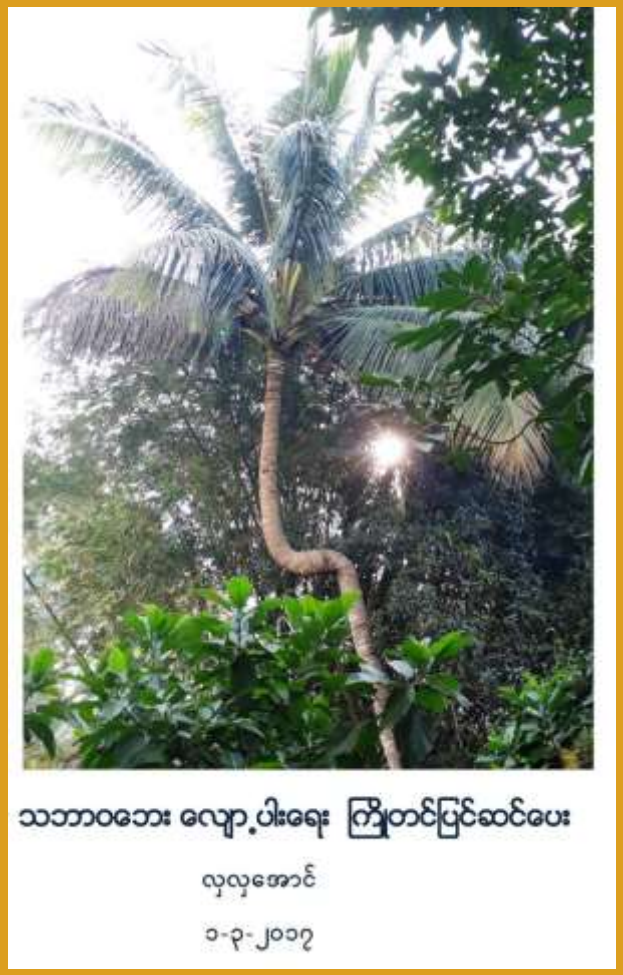
- H.H. Aung: Earthquake Potential in Myanmar (published), **Advanc Geosciences, vol.13 Solid Earth Section ,2009 ,pp.265-280, g . www.asiaoceania.org**
- H.H. Aung: Seismicity in Central Myanmar Basin and Regional Tensional Stress (published), **Advances in Geosciences vol. 26, Solid Earth Section, 2010. www.asiaoceania.org**
- H.H.Aung: Northward Translation of Crustal blocks indicated by Lateral sedimentary facies changes in Myanmar (Case study: Ayeyarwady Delta Basin), Abstract Volume, pp386, 5thAsia Oceania GeoSciences International Conference(AOGS2008), June, 2008,Busan, Korea.

www




Myanmar
Earthquakes
History
Hla Hla Aung
2015


TECTONIC STYLE AND DEFORMATION
HLA HLA AUNG



သဘာဝဘေး လျော့ပါးရေး ကြိုတင်ပြင်ဆင်ပေး

လှလှအောင်

၁-၃-၂၀၁၇

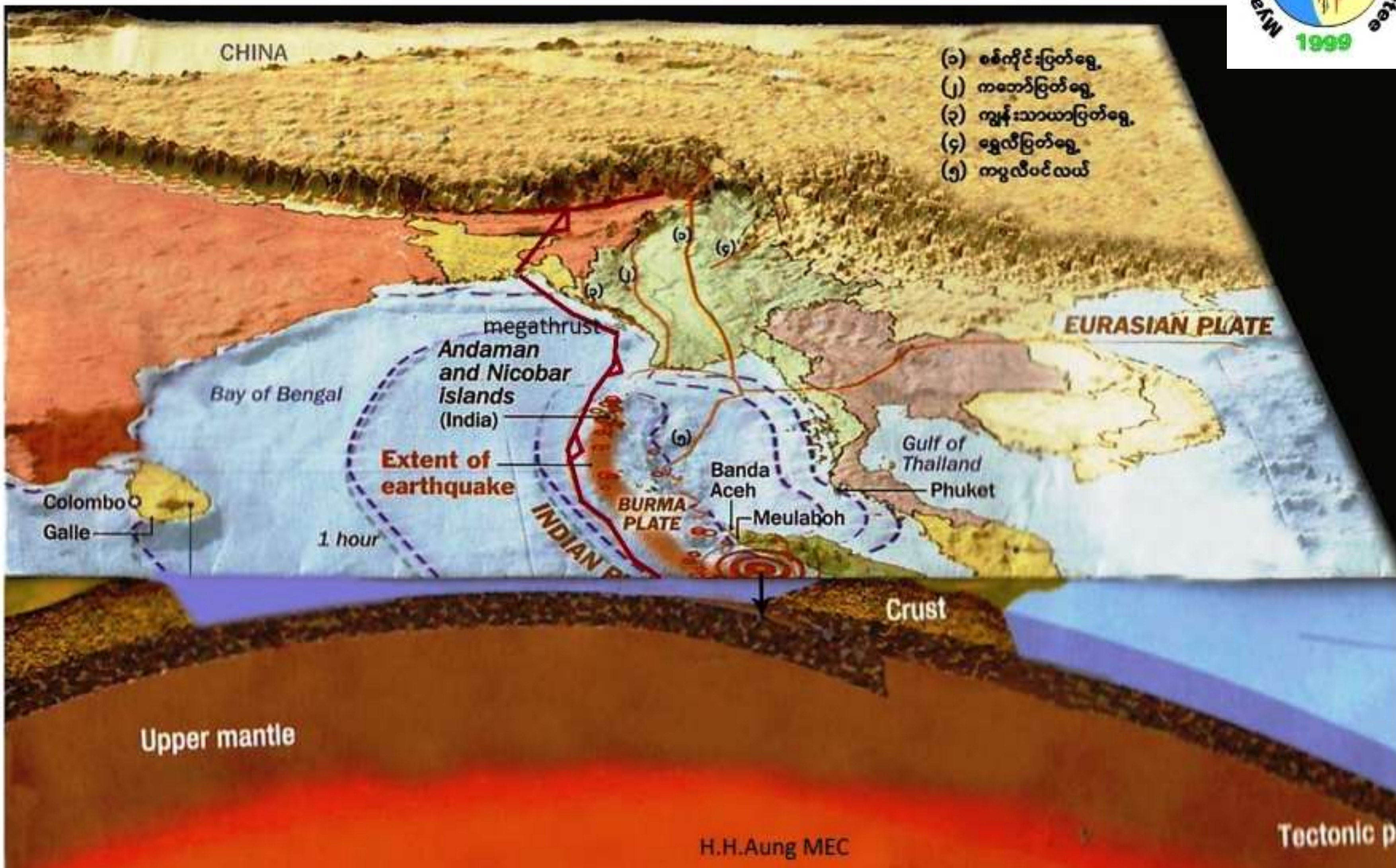
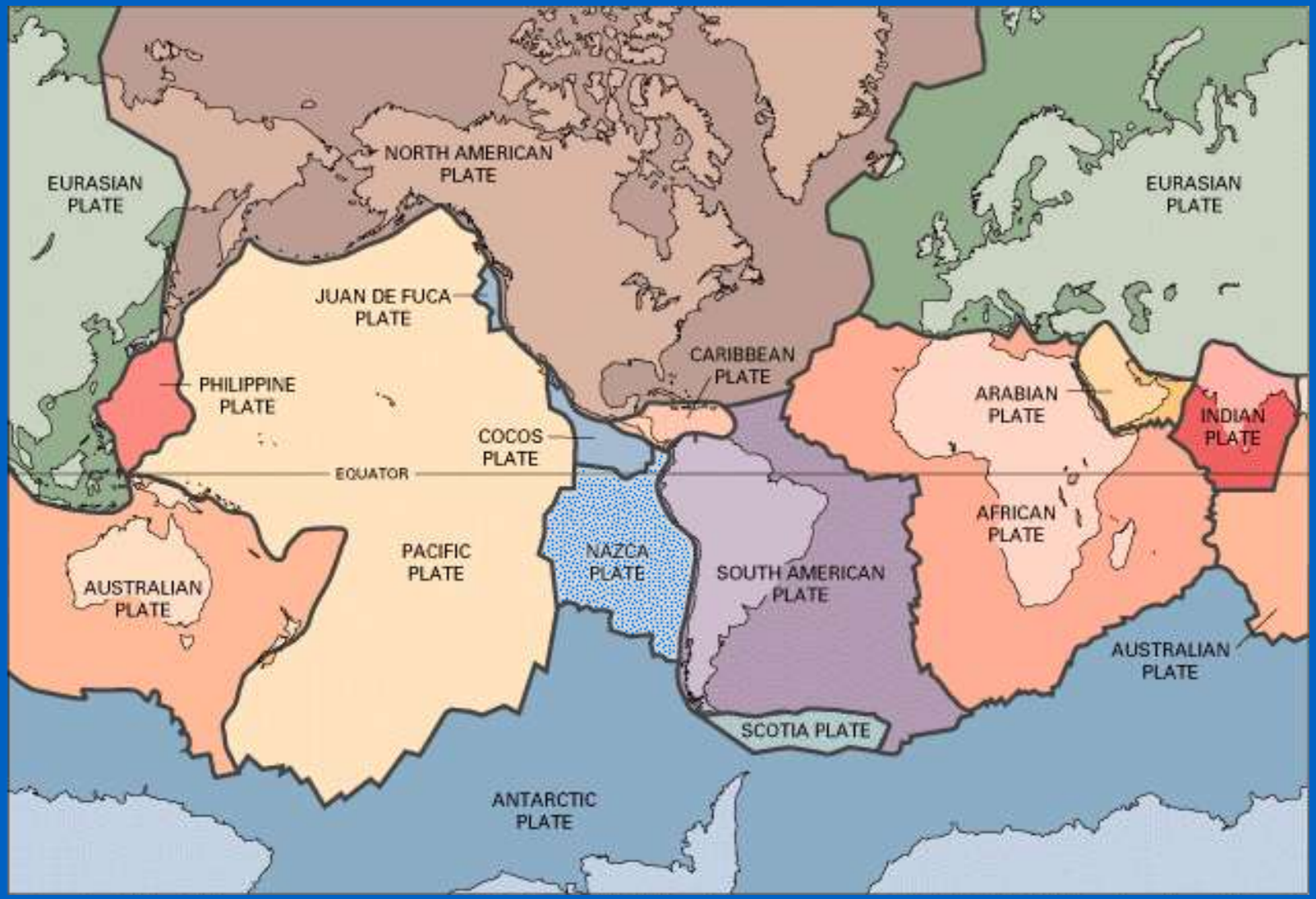
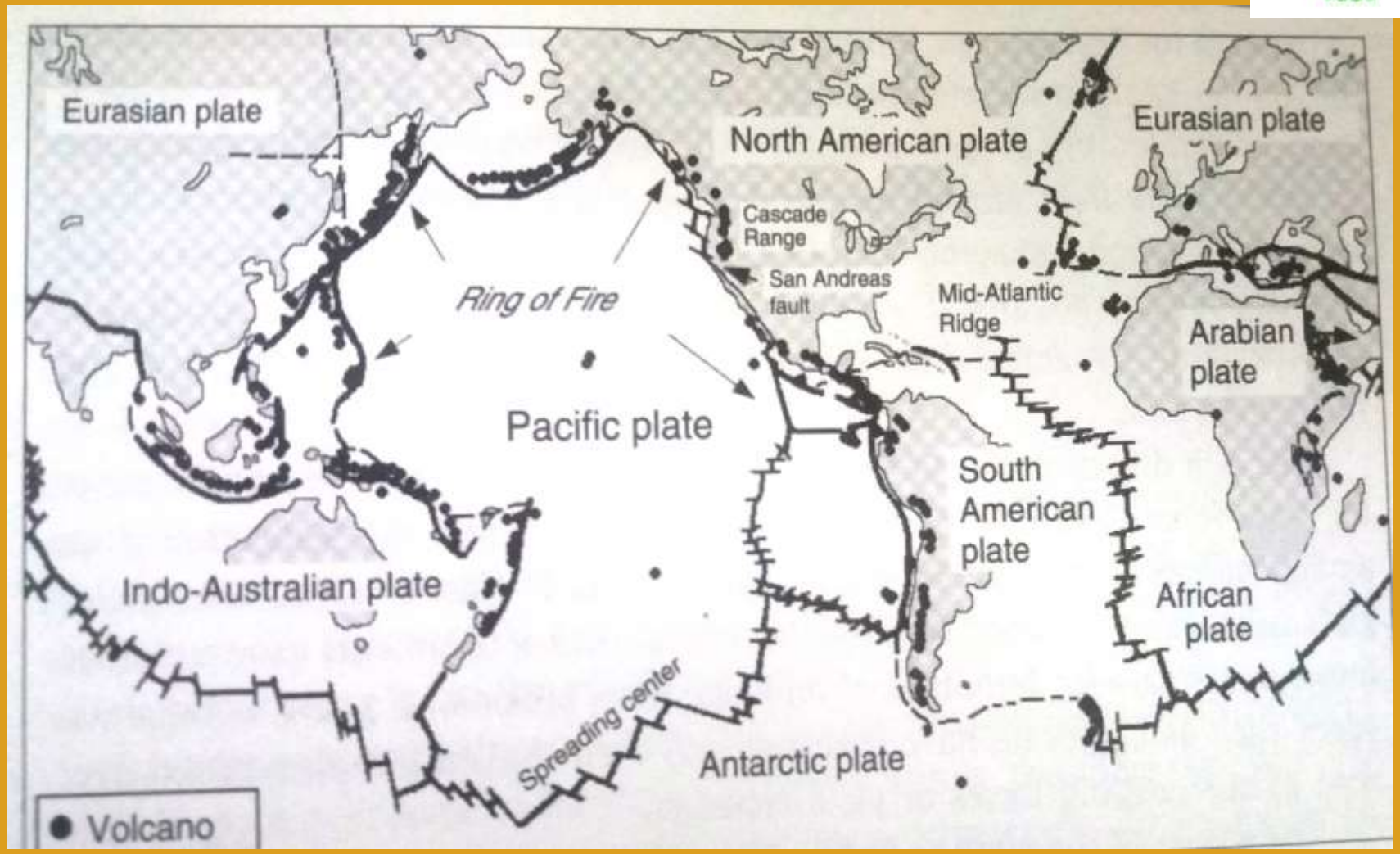

CHINA
(၁) စစ်ကိုင်းပြတ်ရွေ့
(၂) ကဘော်ပြတ်ရွေ့
(၃) ကျွန်းသာယာပြတ်ရွေ့
(၄) ရွှေလီပြတ်ရွေ့
(၅) ကပ္ပလီပင်လယ်
EURASIAN PLATE
megathrust
Andaman and Nicobar islands (India)
Bay of Bengal
Extent of earthquake
BURMA PLATE
INDIAN P
Banda Aceh
Meulaboh
Gulf of Thailand
Phuket
Colombo
Galle
1 hour
Crust
Upper mantle
Tectonic pl
H.H.Aung MEC

Plate Tectonics



USGS

Lithospheric plates



A MEETING THAT HELPED FOSTER THE ACCEPTANCE OF GLOBAL TECTONICS

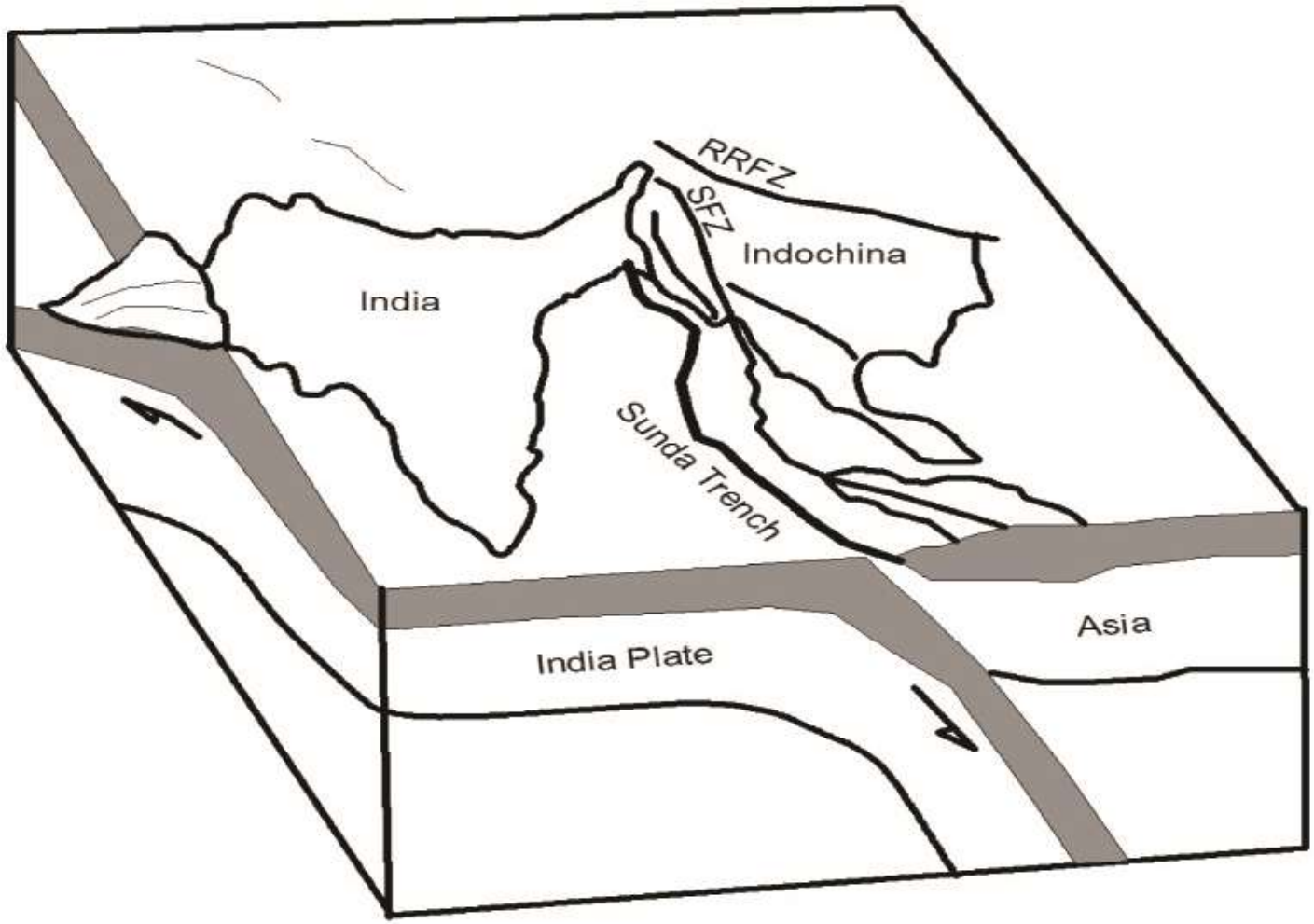
By Michael R. Rampino

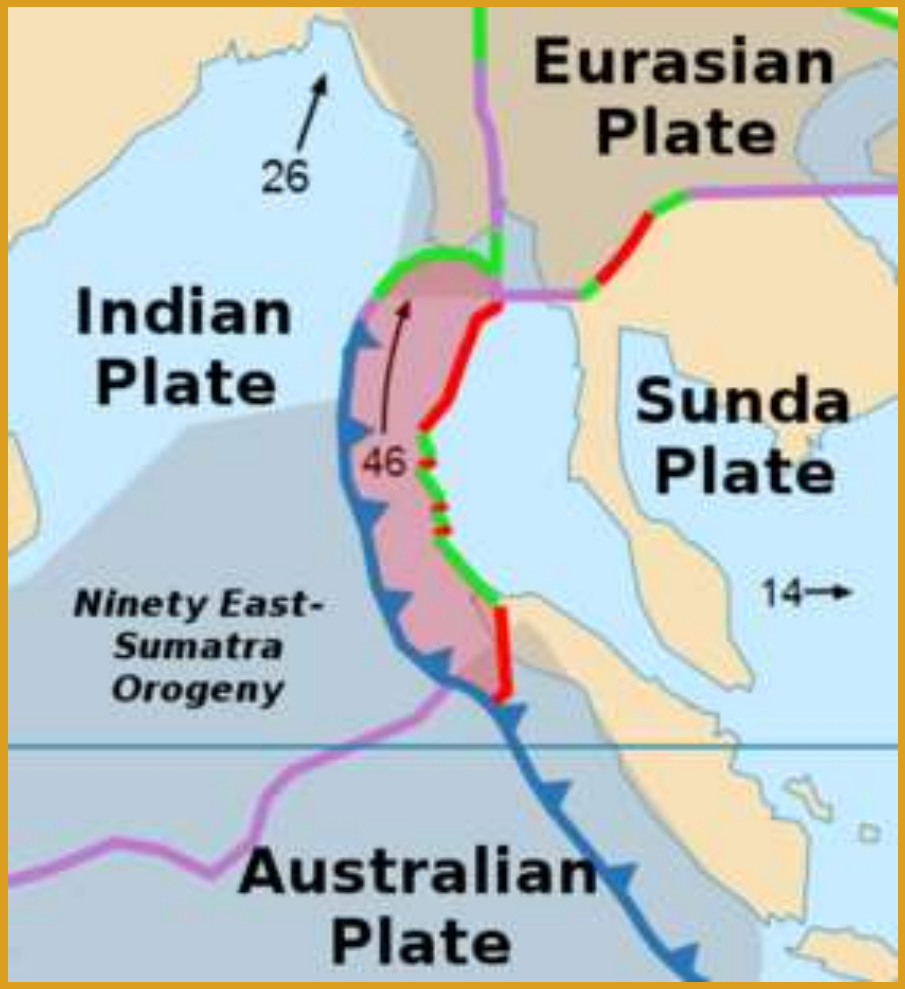
In December, scientists from across the world gathered at the AGU Fall Meeting in San Francisco, Calif. They attended to be a part of history—as such meetings, those who convene present new results, build collaborations, refine ideas, and engage in discussions that could change the very course of our science.

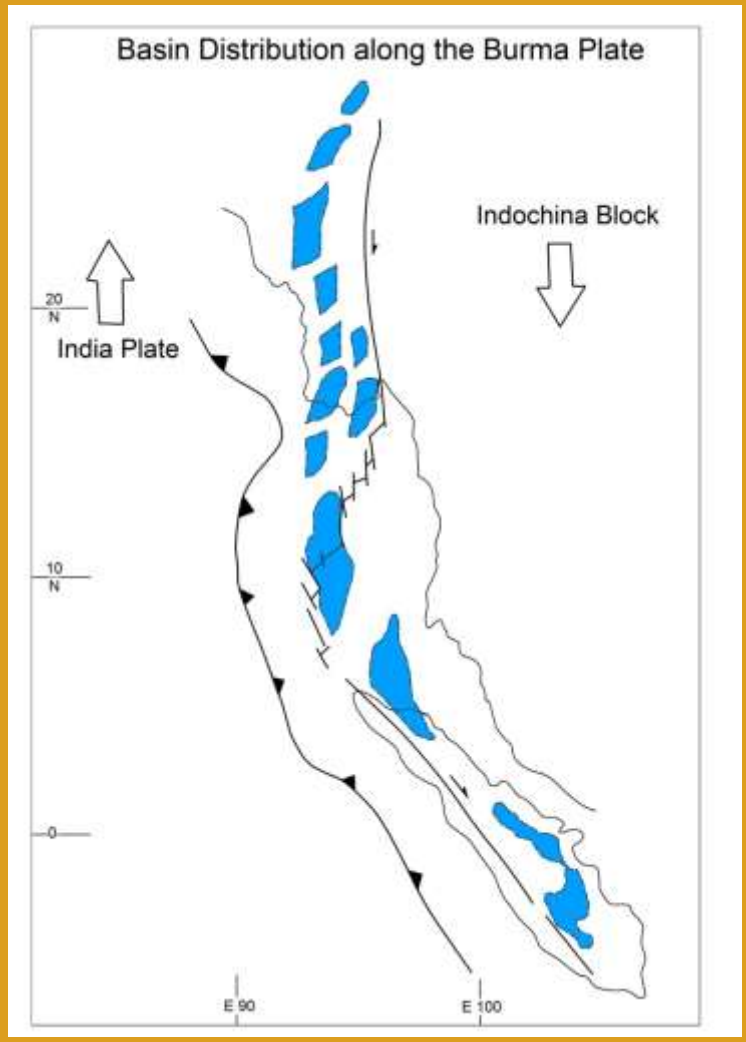
For those involved with seismology, paleomagnetism, and global tectonics, last year's event marked an important anni-

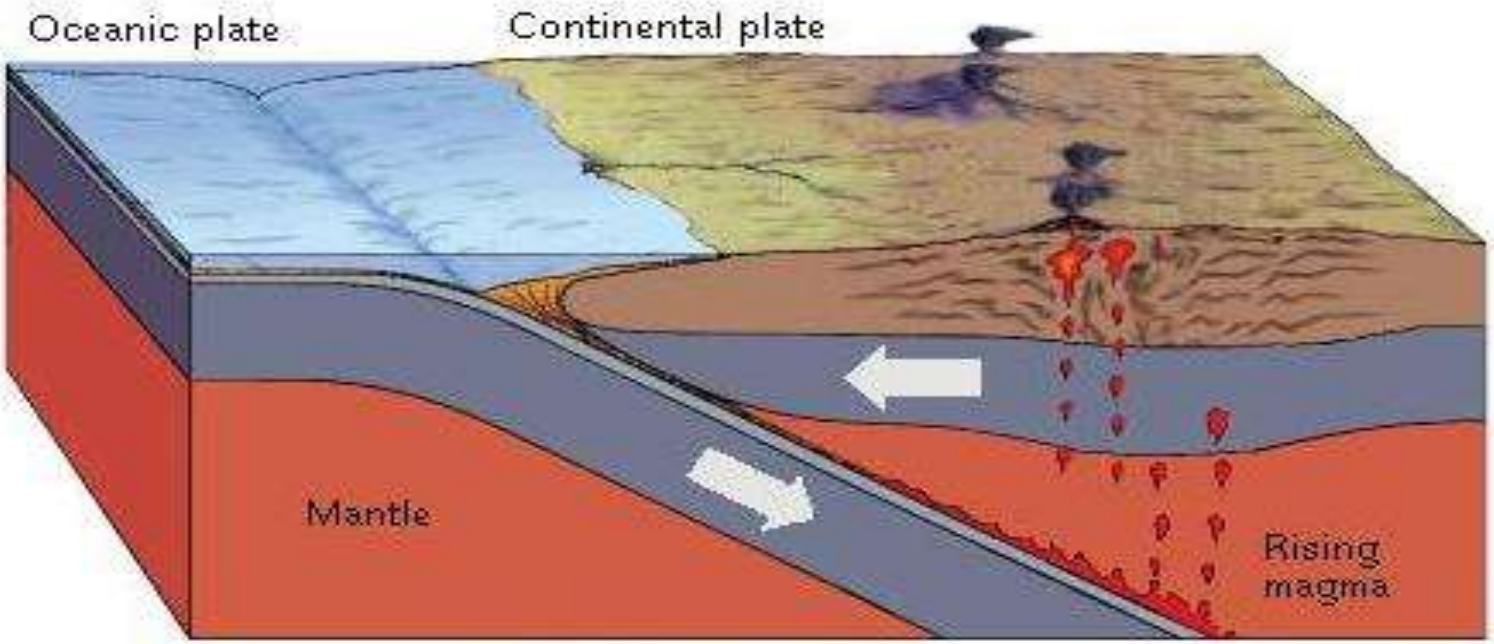
A diver explores a deep fault filled with freshwater in the rift valley between the (left) North American Plate and (right) Eurasian Plate in Iceland's Thingvellir National Park.

Tectonic setting of India and Burma plate (H.H.Aung, 2007)




Eurasian Plate
26
Indian Plate
46
Sunda Plate
14
Ninety East-Sumatra Orogeny
Australian Plate


Basin Distribution along the Burma Plate
Indochina Block
20 N
India Plate
10 N
0
E 90
E 100


Oceanic plate
Continental plate
Mantle
Rising magma

24th August 2016 Chauk Earthqual

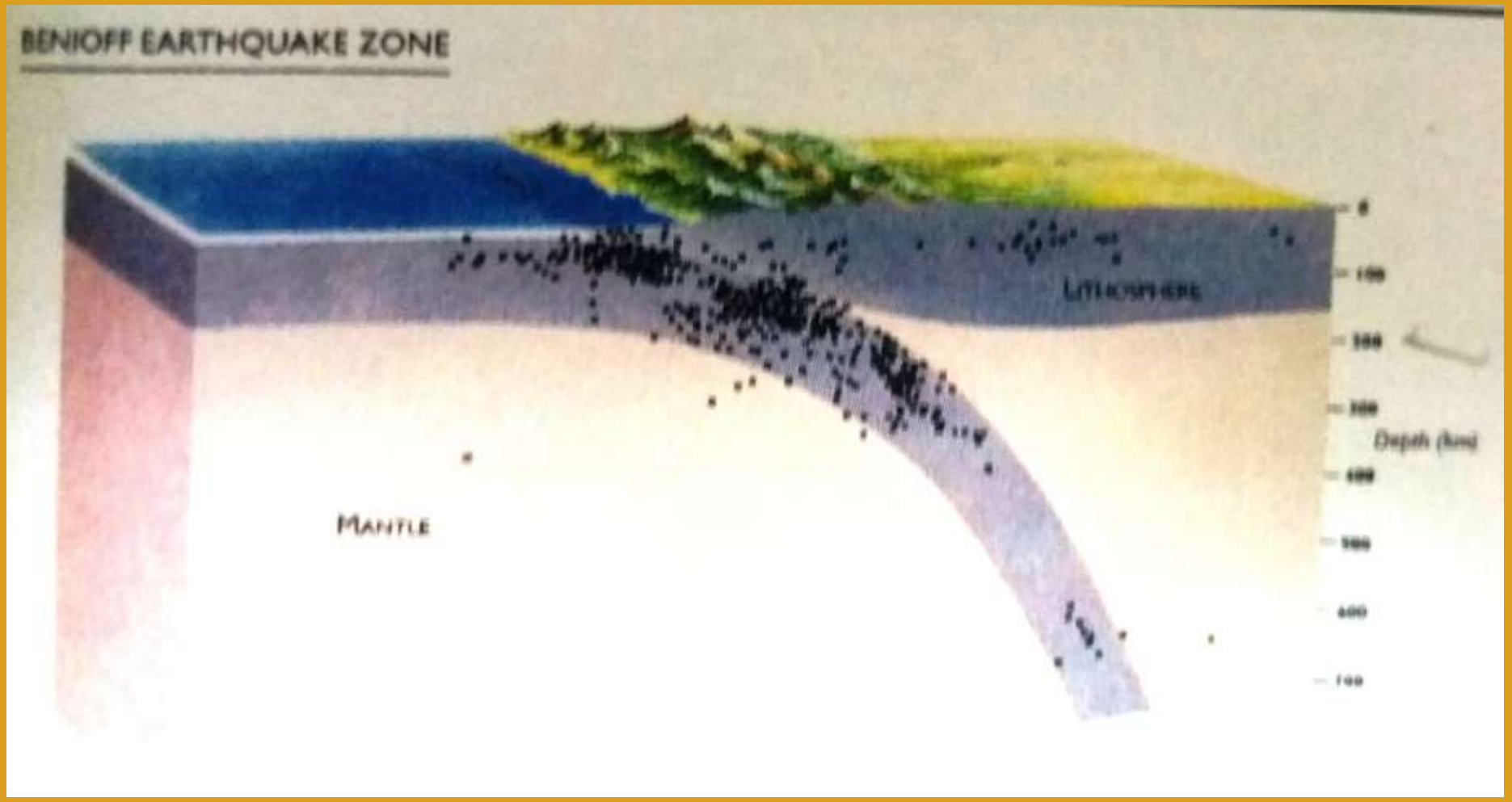
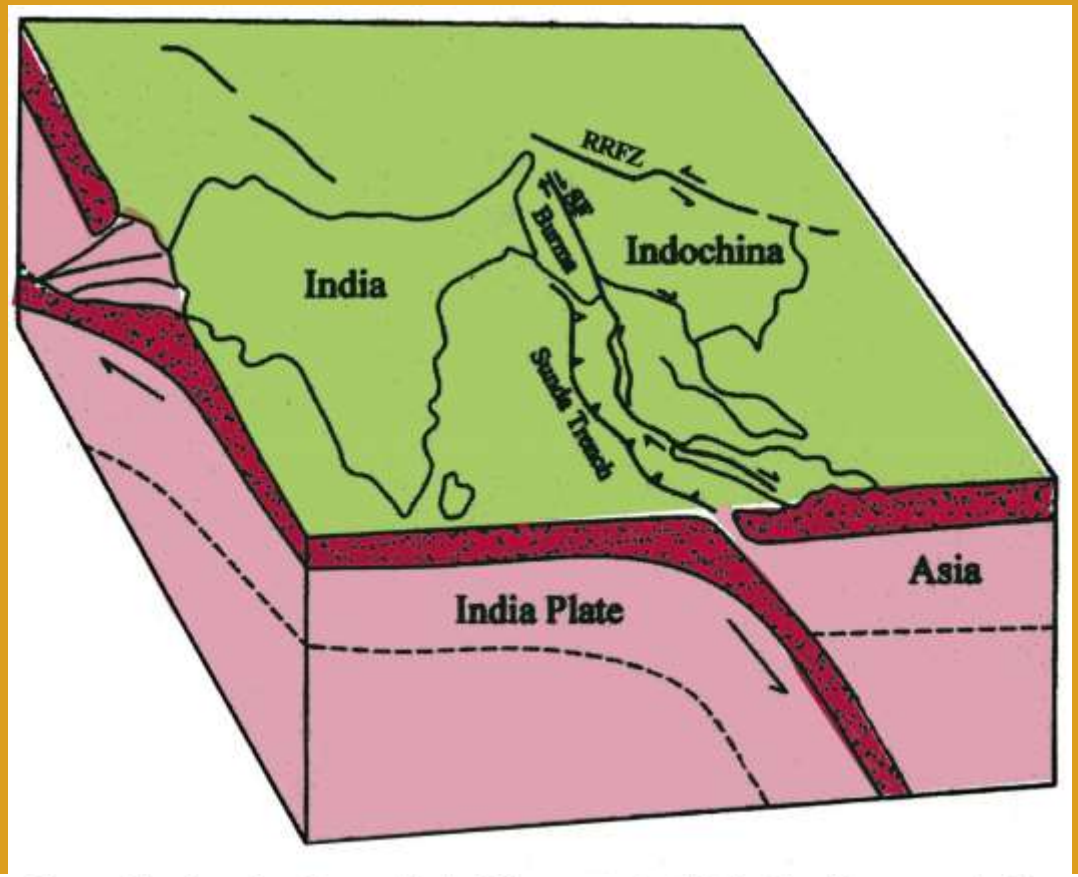


Plate Tectonic Configuration of Myanmar Region



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

- Northward translation of Burma plate by the back-arc spreading mechanism associated with oblique subduction of India oceanic crust beneath Burma plate
- Relative motion along Sagaing Fault (18-25mm/yr) and spreading rate (30mm/yr) in Central Andaman Basin is in harmony

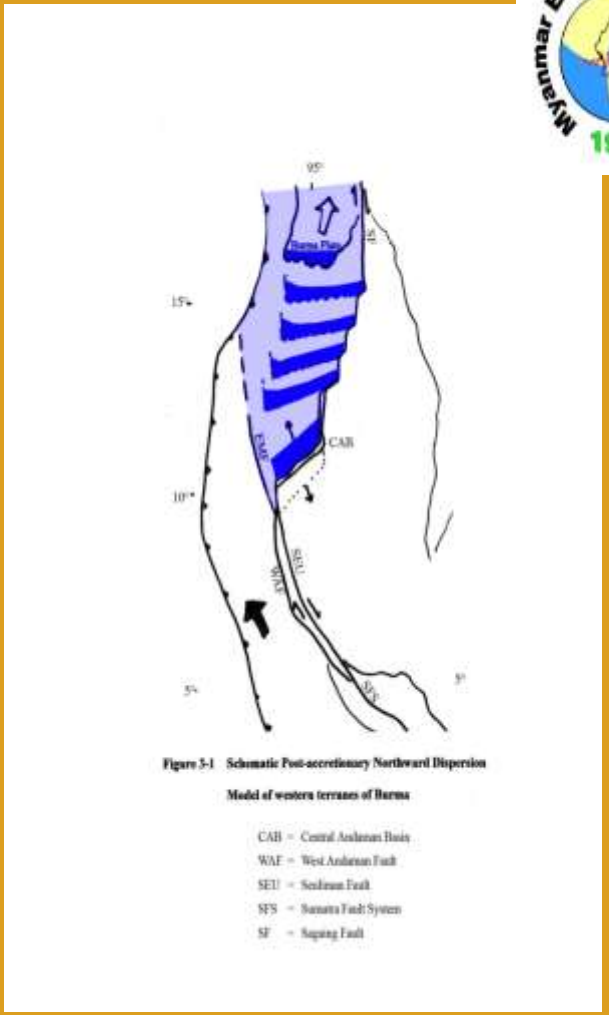
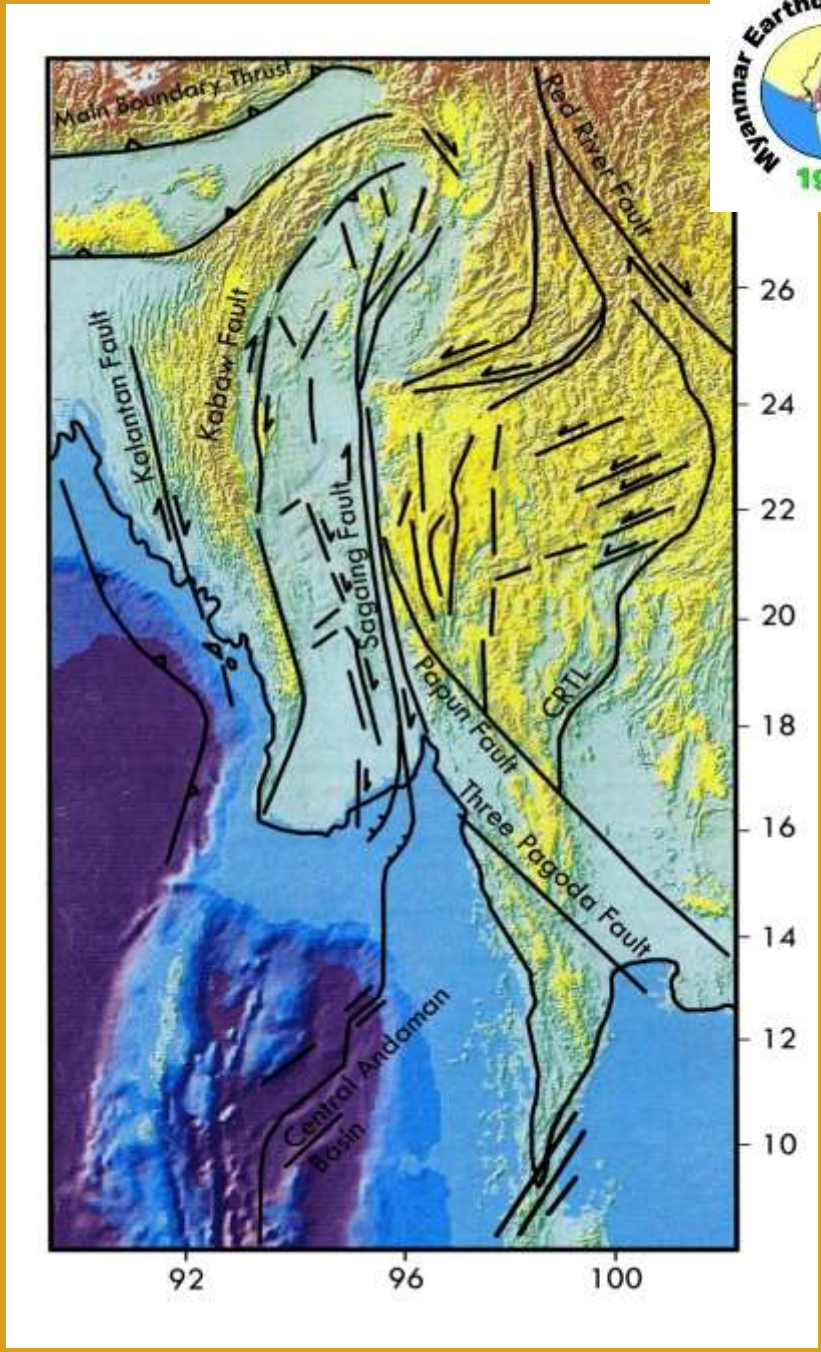


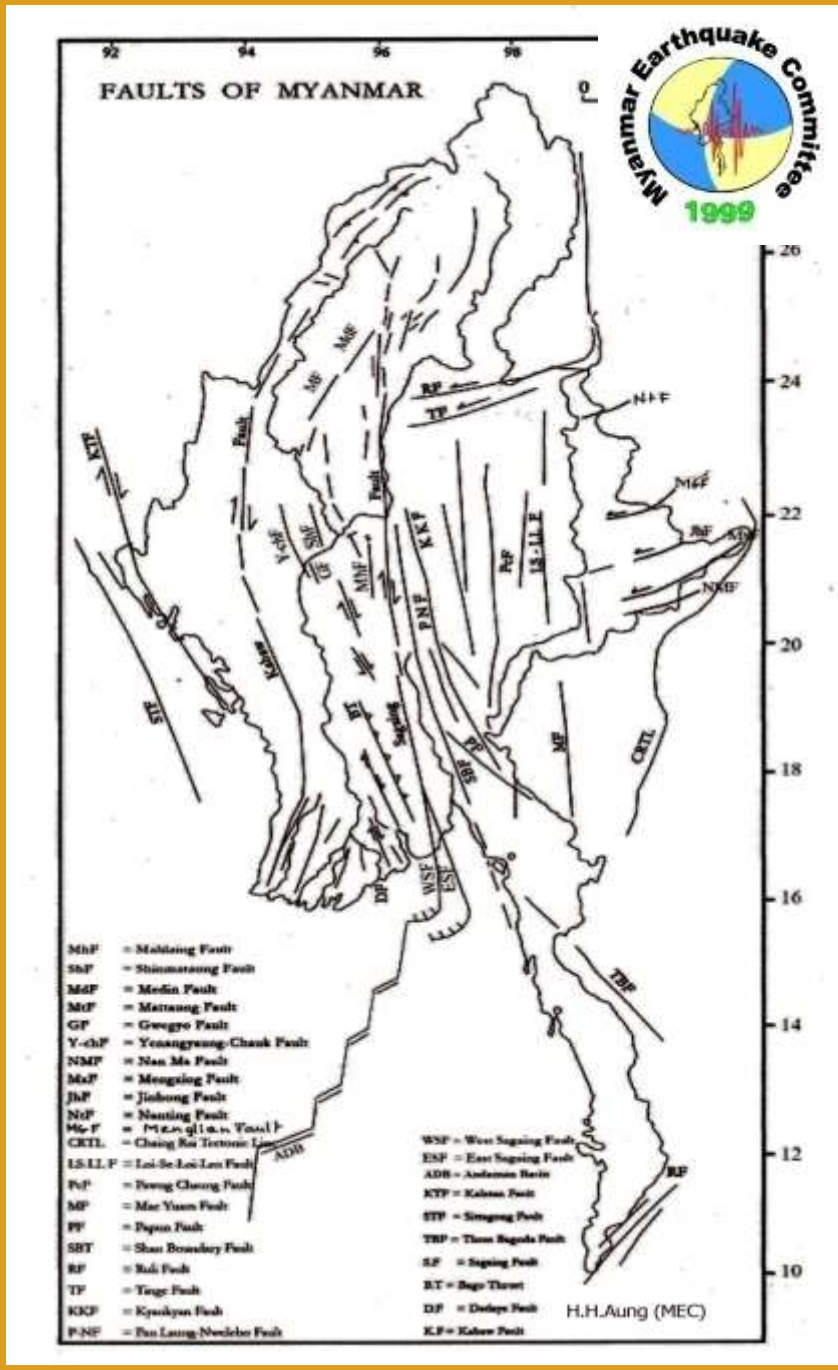
Figure 5-1 Schematic Post-accretionary Northward Dispersion Model of western terranes of Burma

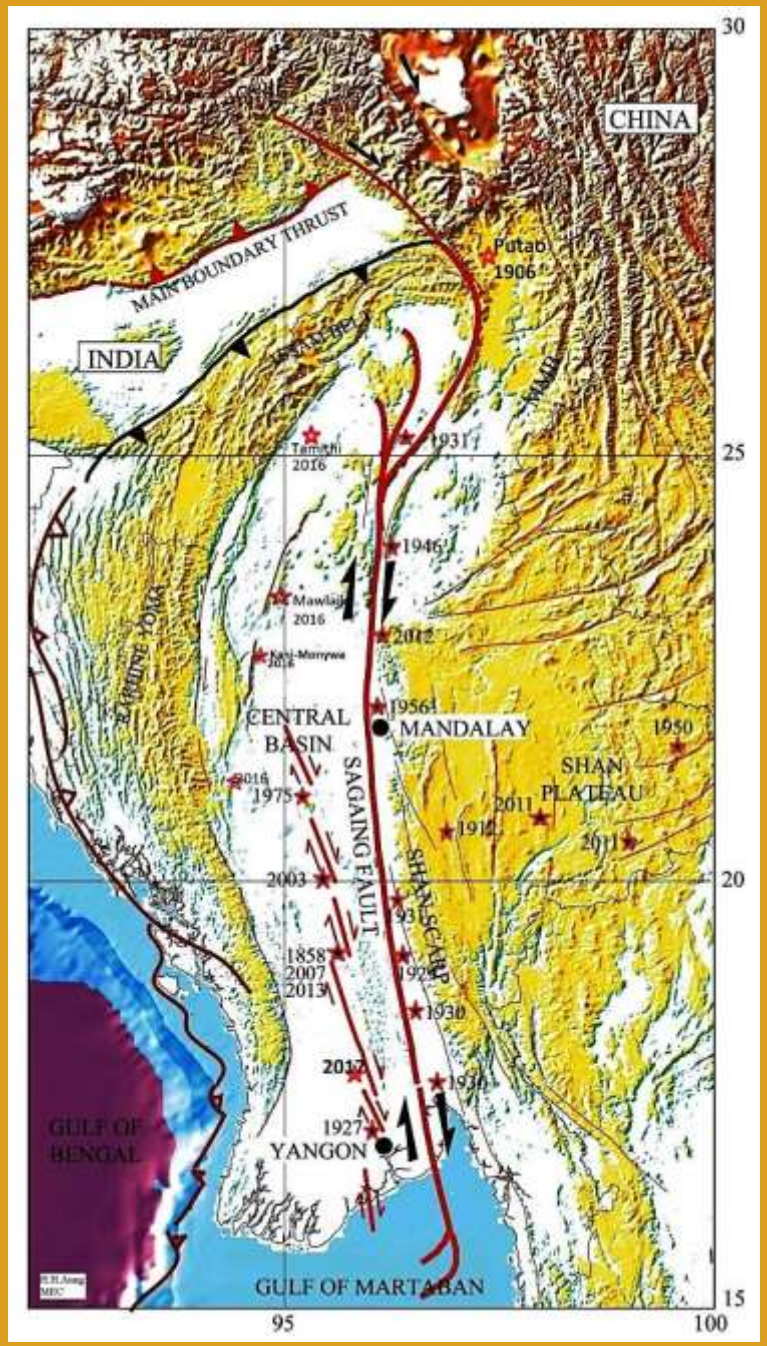
CAB = Central Andaman Basin
WAF = West Andaman Fault
SEU = Seulimun Fault
SFS = Sumatra Fault System
SF = Sagaing Fault

Major Faults(H.H.Aung)



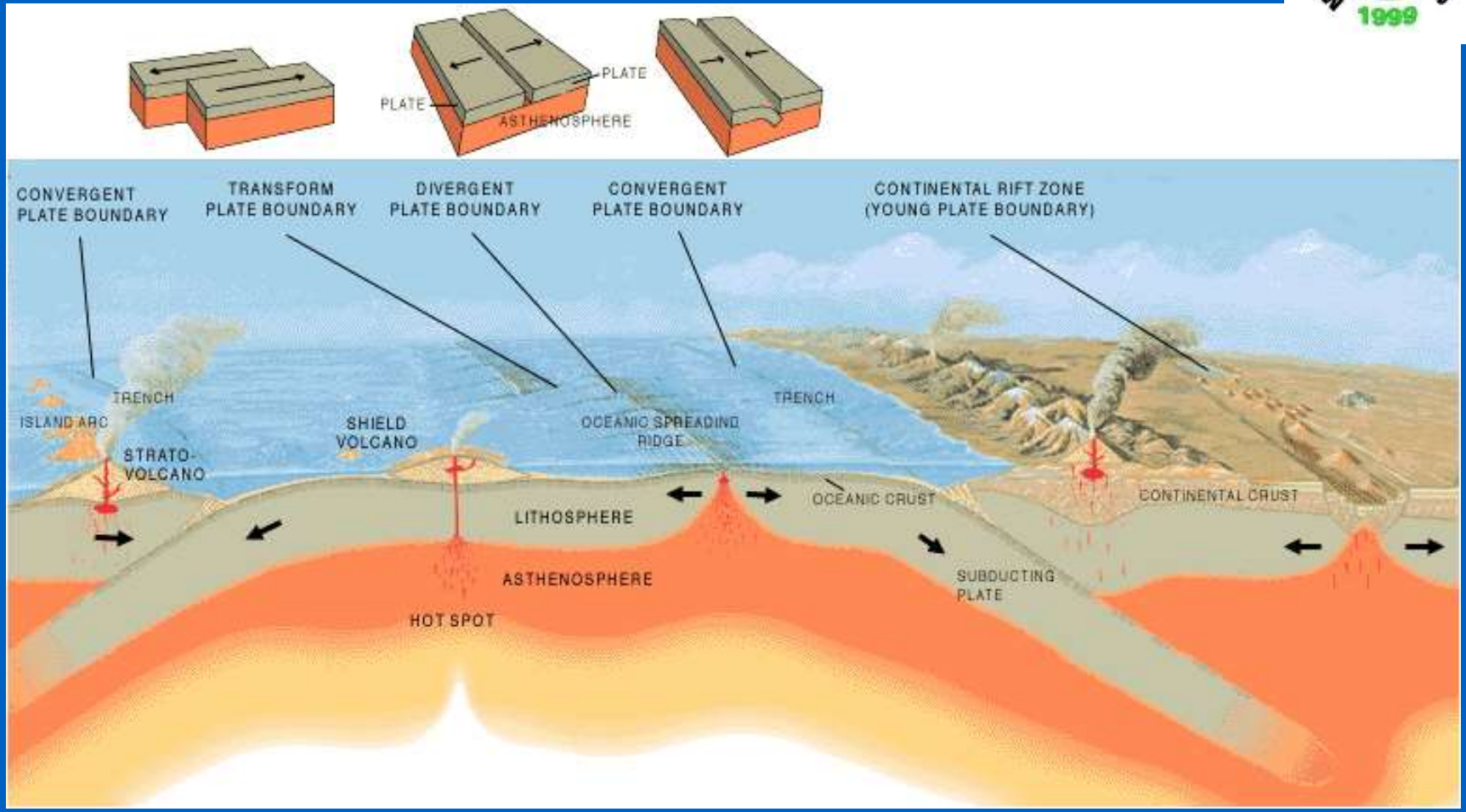
Faults of Myanmar (H.H.Aung)



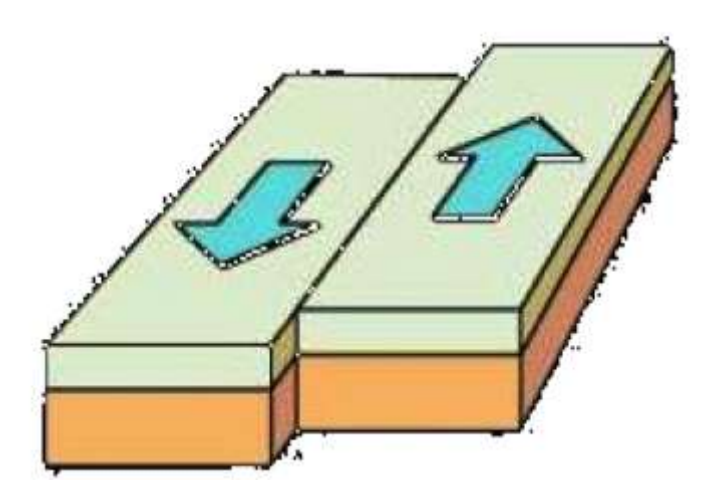


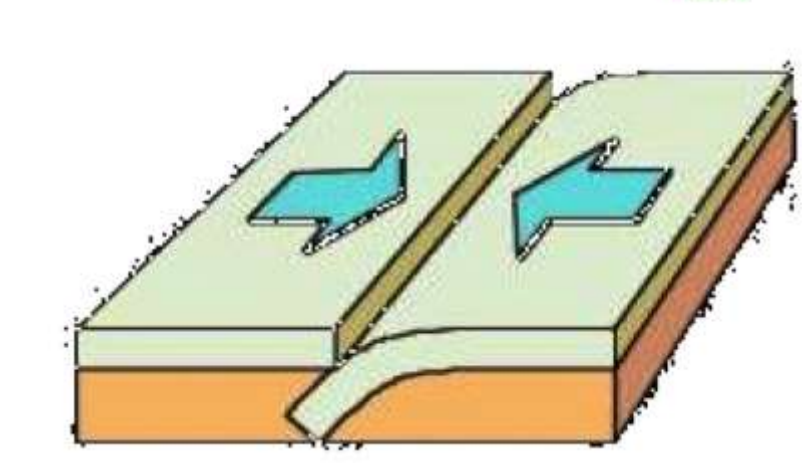
Myanmar Earthquake Committee
1999

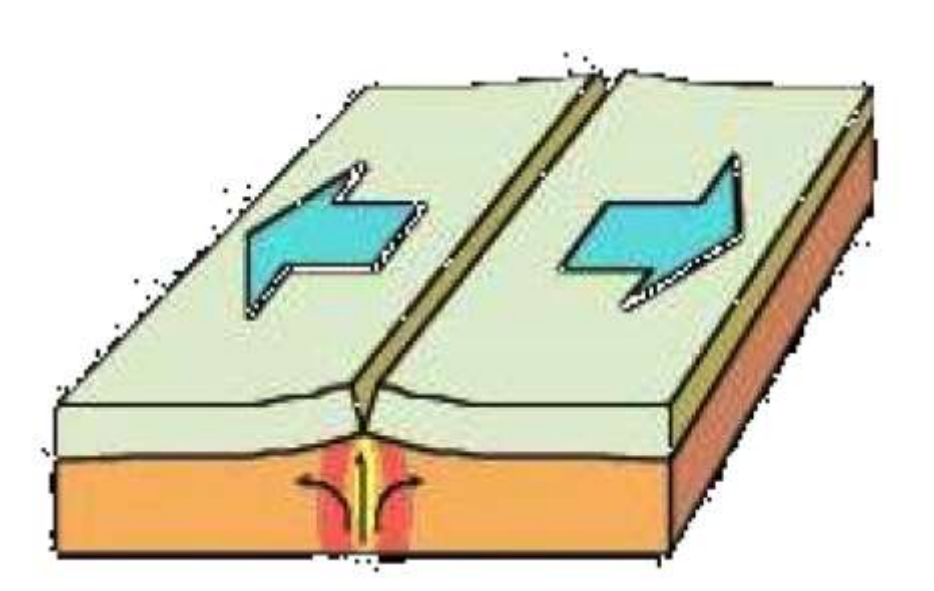
Plate Boundaries

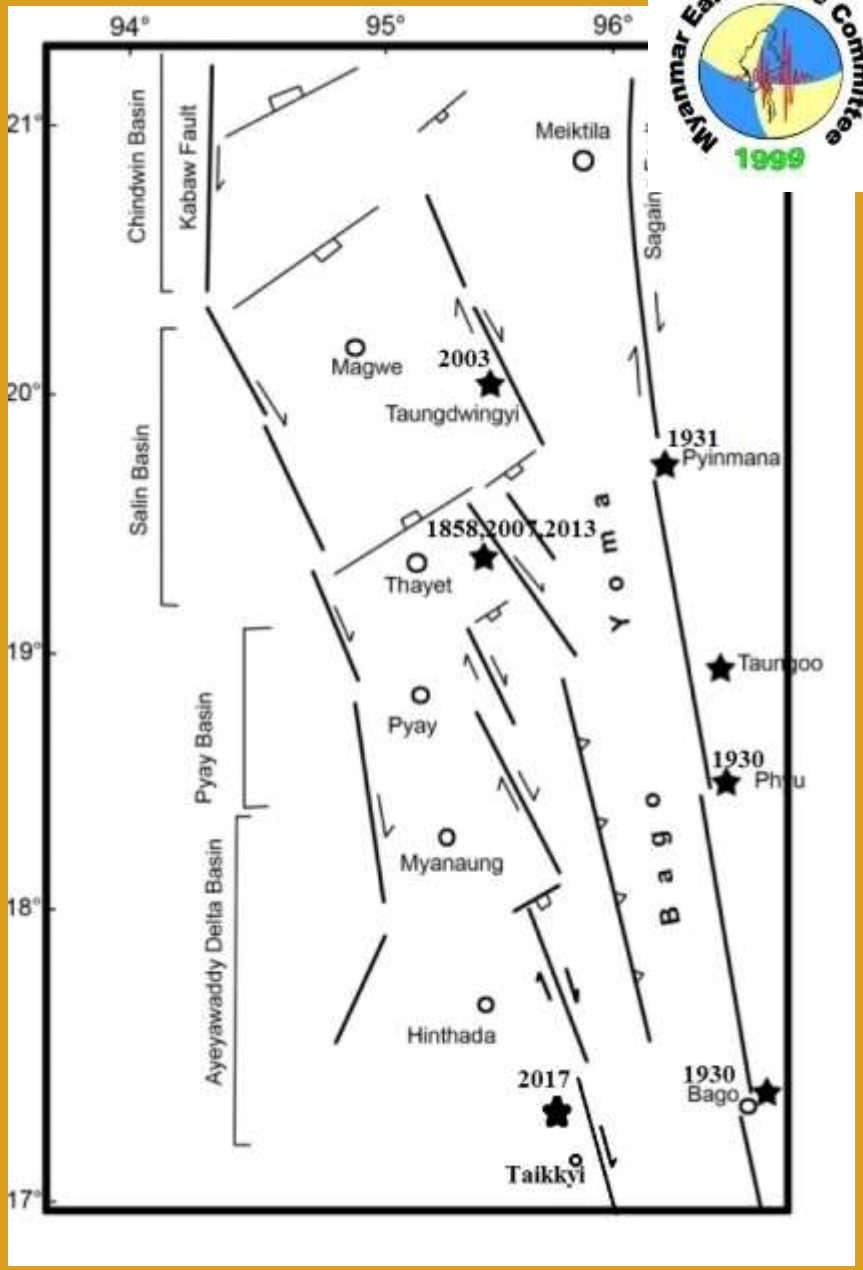


3 types of plate boundary



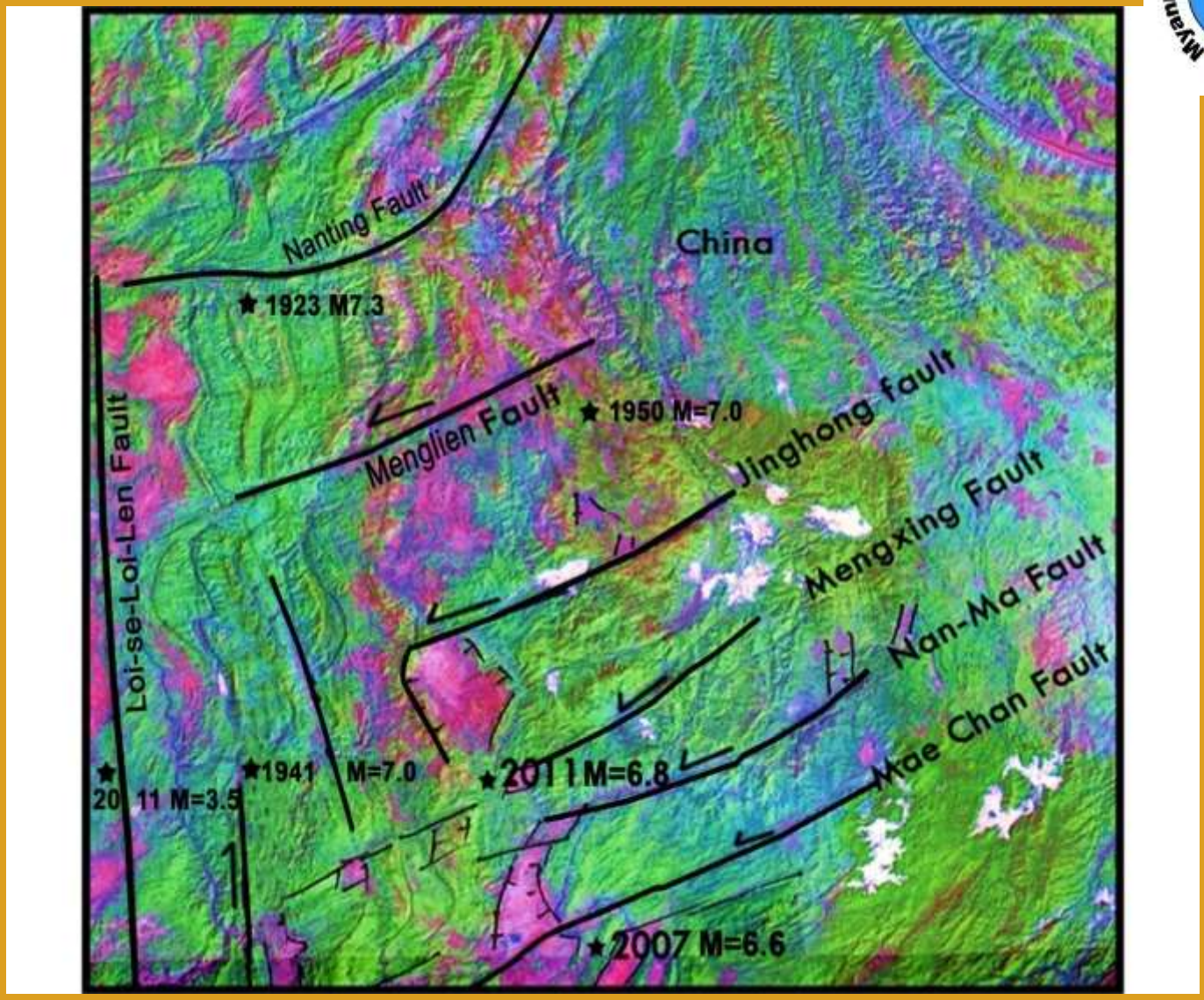




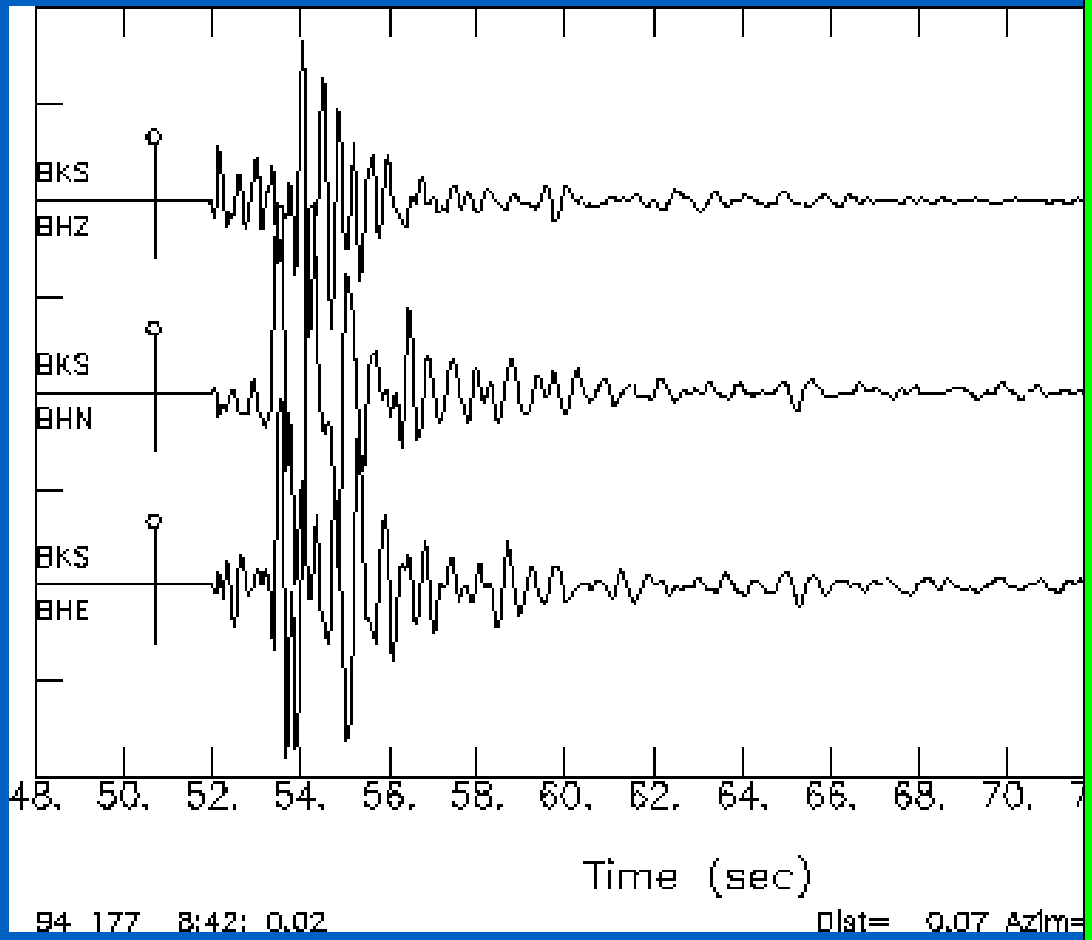


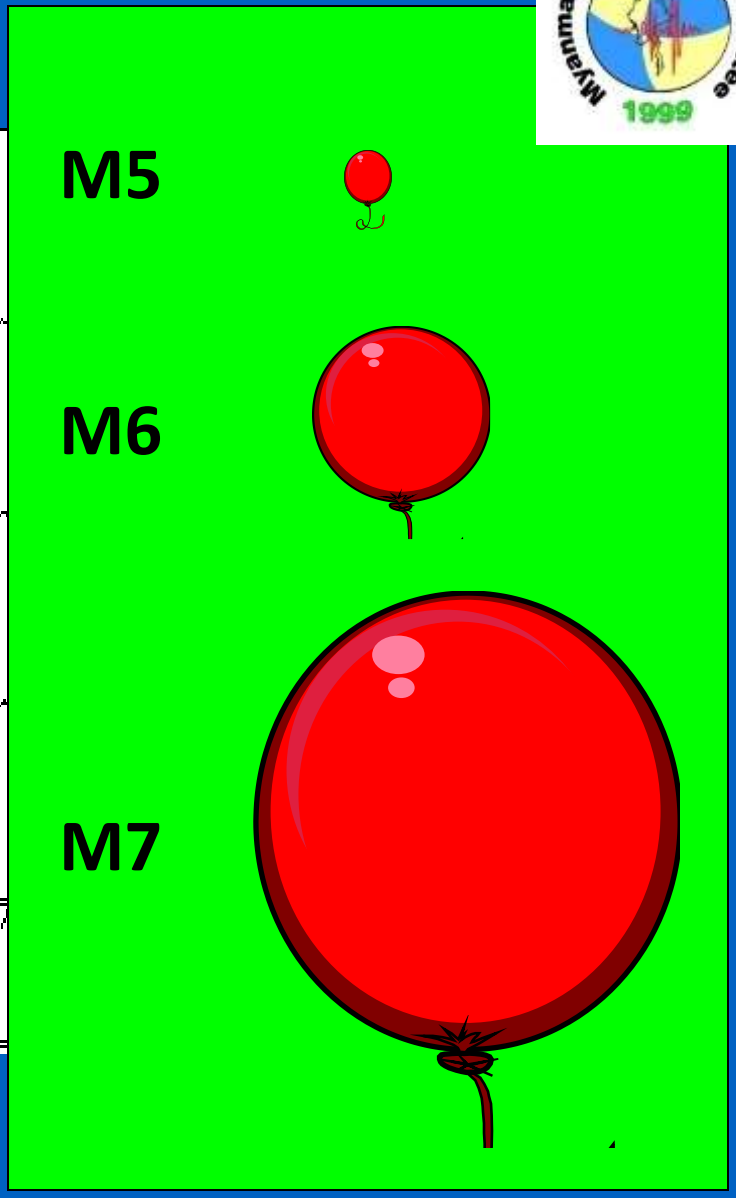
Myanmar Earthquake Committee
1999

ENE-WSW trending faults and bas



Earthquake Magnitude

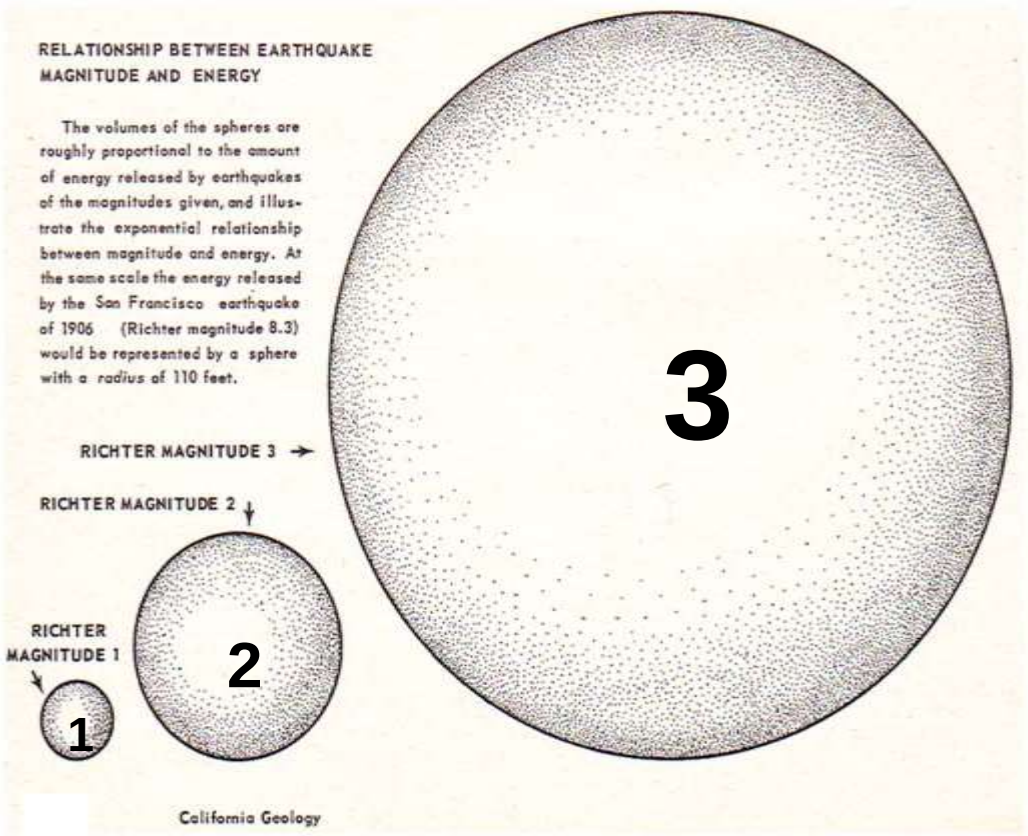




USGS

Classification of Earthquakes

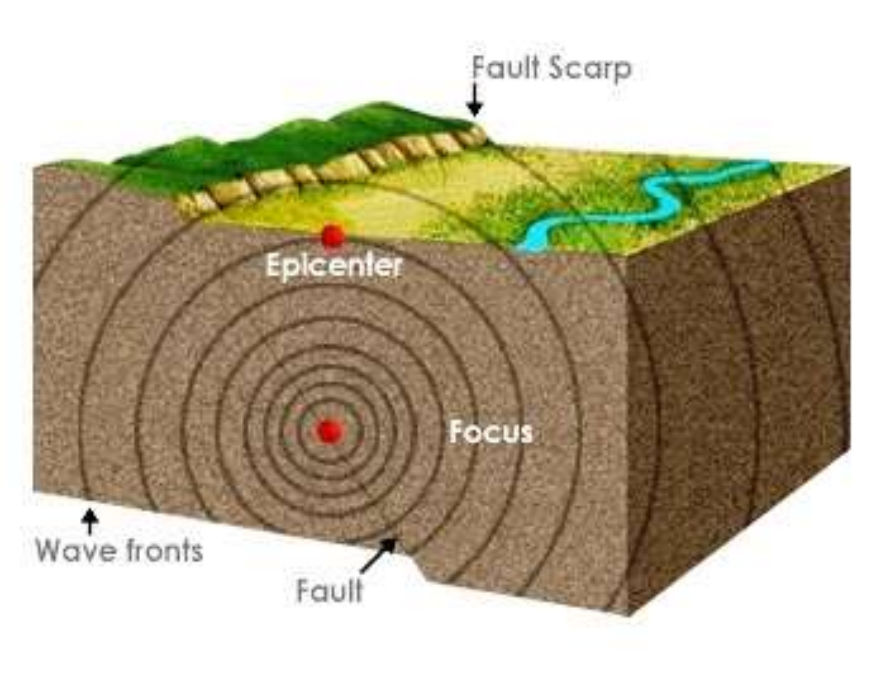
continued

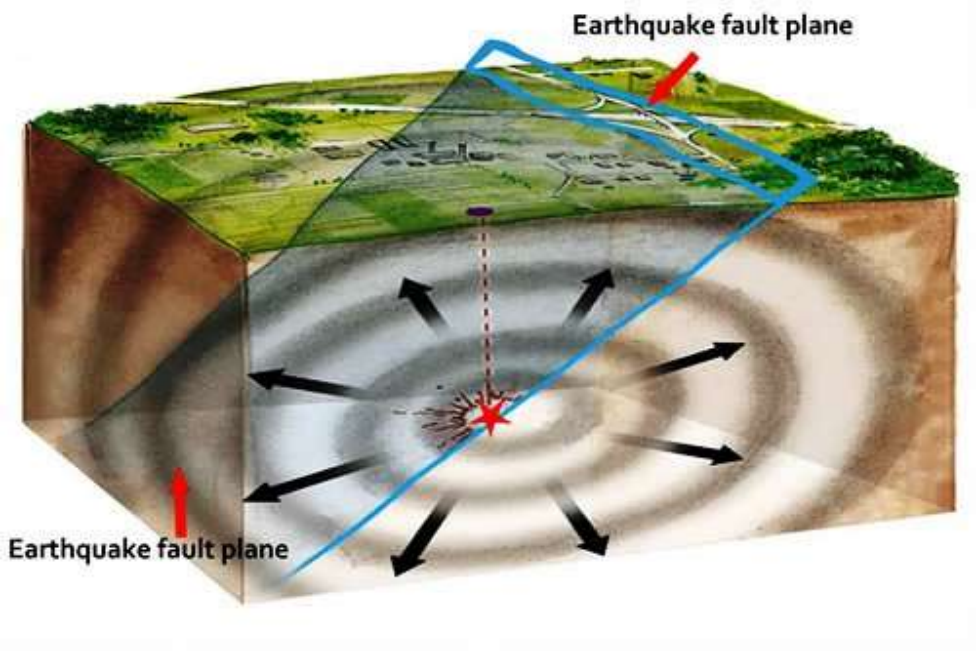


Richter Magnitude		Expected Modified Mercalli Maximum Intensity (at epicenter)
2	I - II	Usually detected only by instruments
3	III	Felt indoors
4	V	Felt by most people; slight damage
5	VI - VII	Felt by all; many frightened and run outdoors; damage minor to moderate
6	VII - VIII	Everybody runs outdoors; damage moderate to major
7	IX - X	Major damage
8	X - XII	Total and major damages

After Charles F. Richter, 1958, *Elementary Seismology*.

Correlation of Richter Magnitude Scale with Modified Mercalli Intensity Scale


Fault Scarp
Epicenter
Focus
Wave fronts
Fault


Earthquake fault plane
Earthquake fault plane

Kobe, Japan 1995

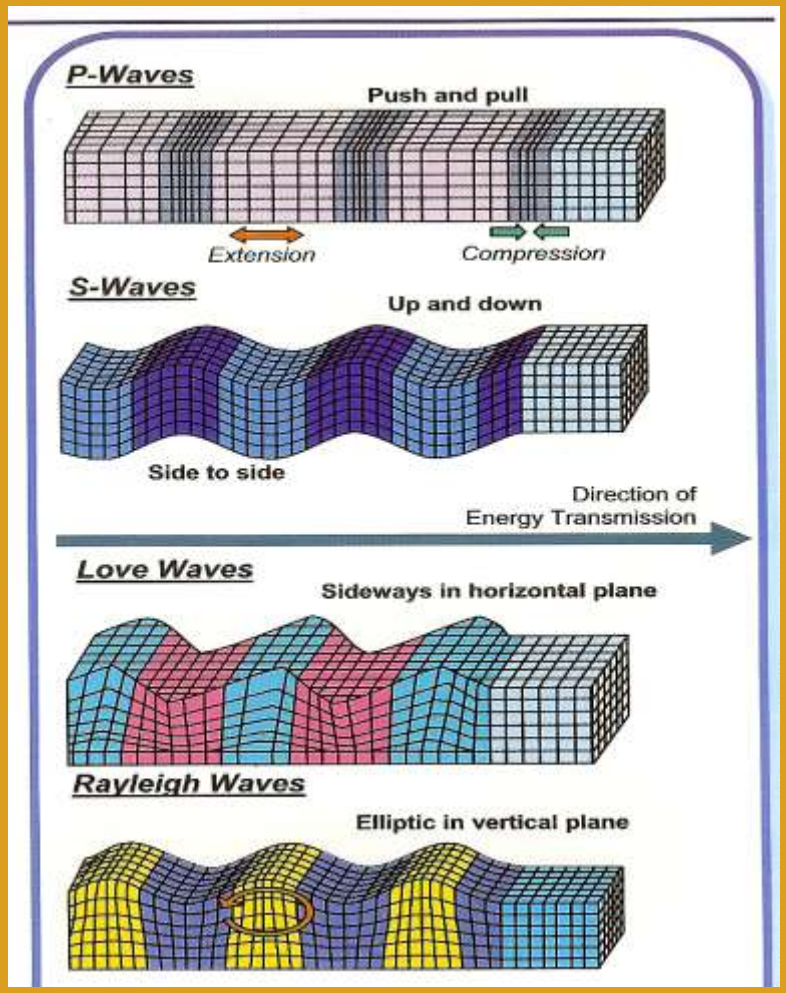
Niigata, Japan 1964

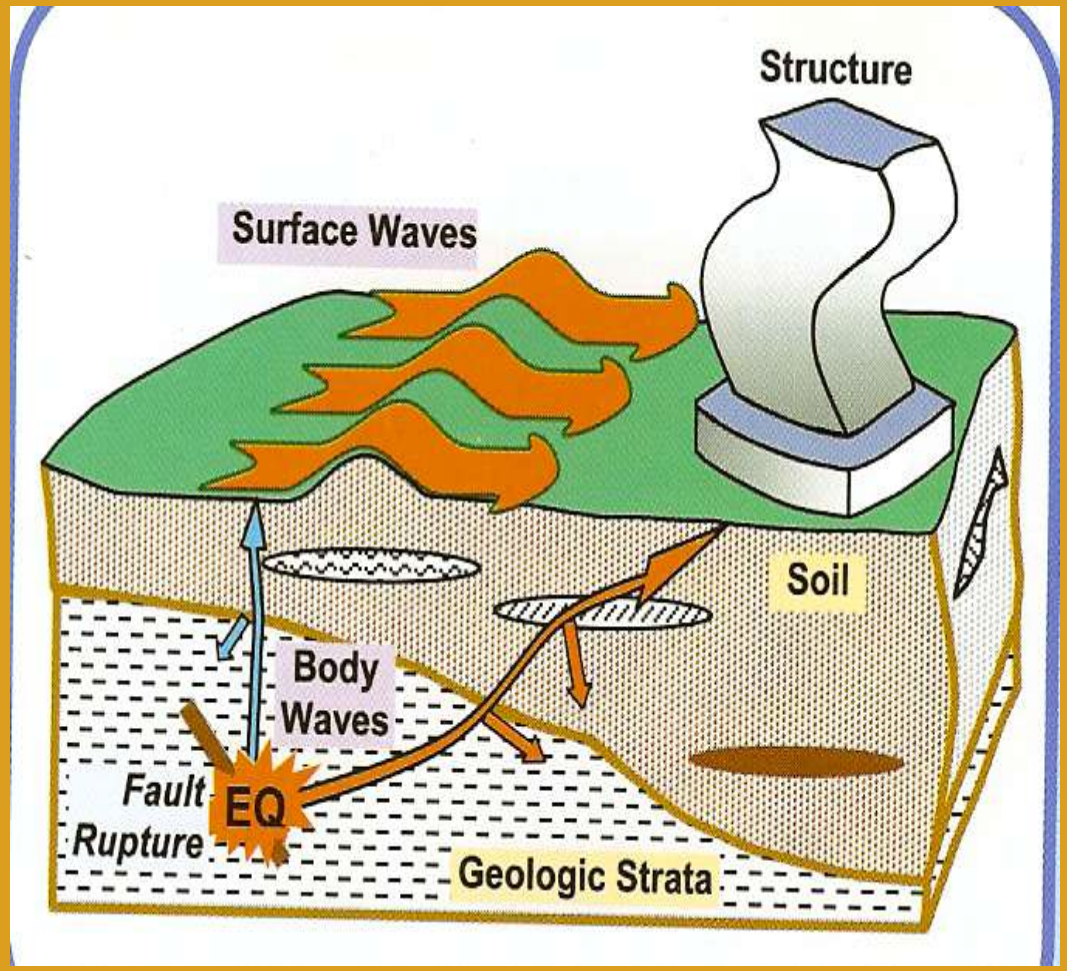
Tsunami

Fire

How the earthquakes move and shak the ground

Types of seismic waves





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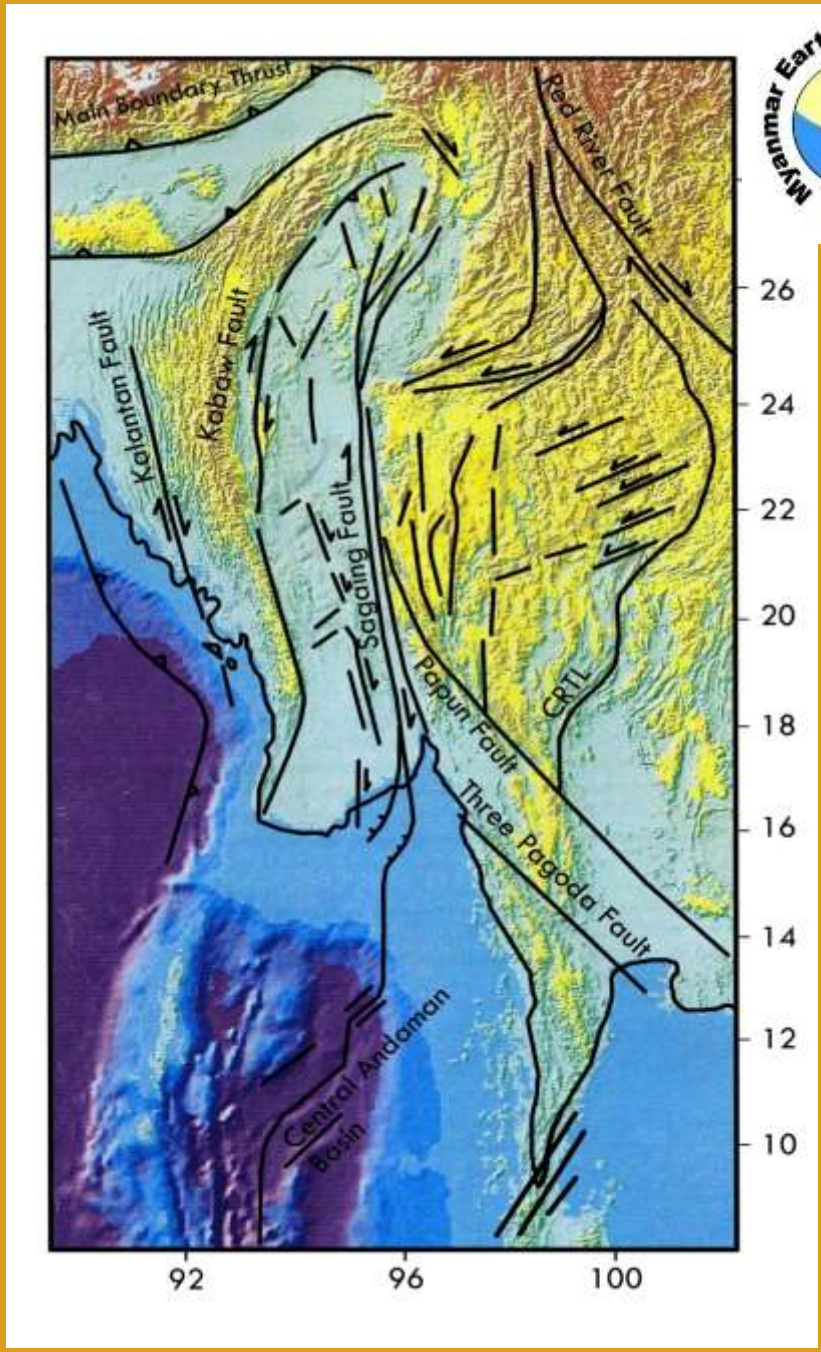
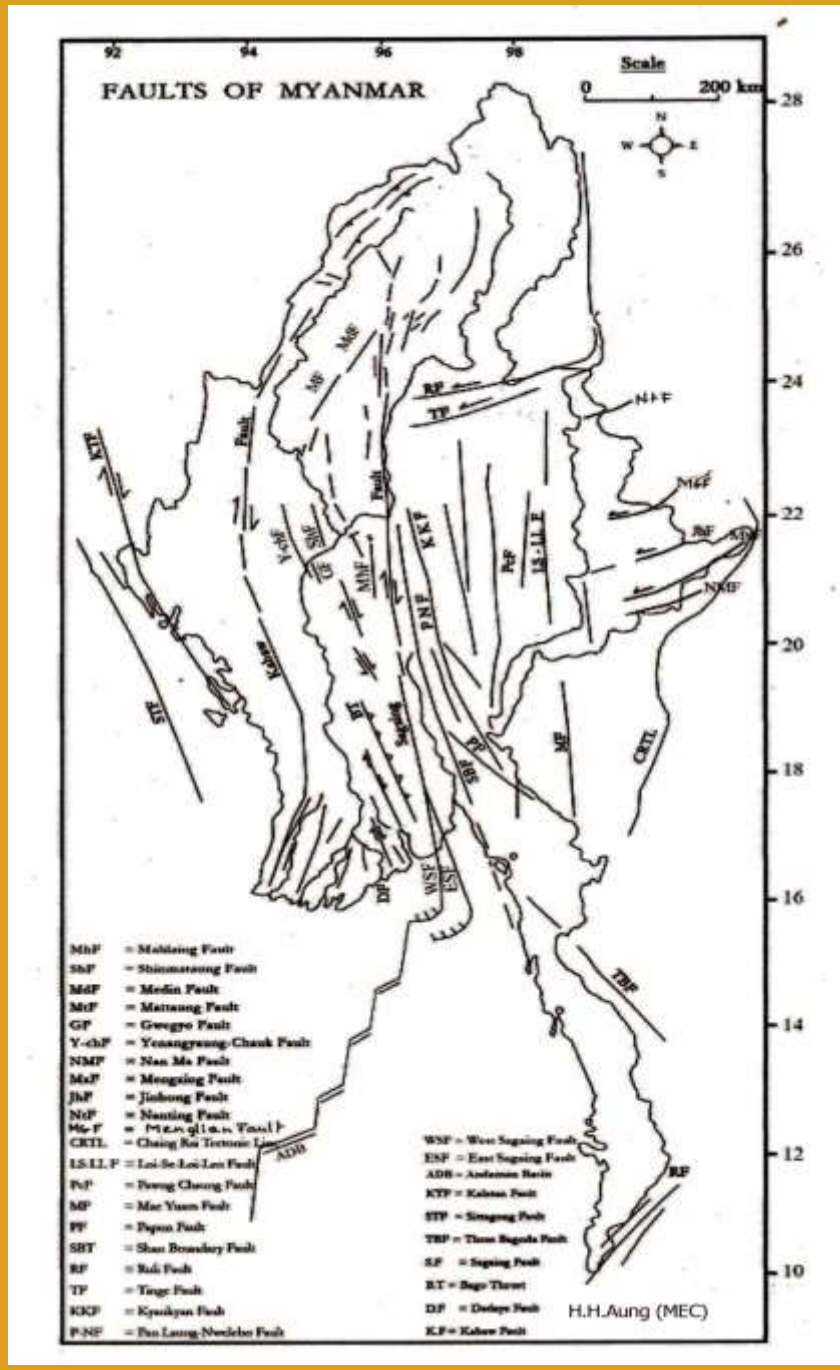
Seismicity Background & IMPACT

- Ava Earthquake 1839
- 1. Putao earthquake 31.8.1906 27° 00' N 97° 00'E 7.0
- 2. Putao earthquake 12.8.1908 27° 00' N 97° 00'E 7.5
- 3. May Myo earthquake 23.5.1912 21° 00' N 97° 00'E 8.0
- 4. Swar earthquake 8.8.1929 19° 25' N 96° 25'E 7.0
- 5.Bago(Pegu) earthquake 5.5.1930 17° 00' N 96° 55'E 7.3
- 6.Phyu earthquake 3.12.1930 18° 00' N 96° 50'E 7.3
- 7. Kamaing earthquake 27.1.1931 25° 60' N 96° 80'E 7.6
- 8. Tagaung earthquake 12.9.1946 23° 50' N 96° 00'E 7.0
- 9. Tagaung earthquake 13.9.1946 23° 50' N 96° 00'E 7.0
- 10. Sagaing earthquake 16.7.1956 22° 00' N 96° 00'E 7.0
- 11. Bagan earthquake 8.7.1975 21° 50' N 94° 70'E 6.8
- 12.Tagaung earthquake 5.1.1991 23° 48' N 95° 98'E 7.1
- 13.Taungdwingyi earthquake 22.9.2003 19° 94' N 95° 72'E 6.8
- 14. Yangon earthquake 17.12.1927 20° 705' N 99° 949'E 7.0
- 15.Tarlay earthquake 4.3.2011 20° 705' N 99° 949'E 6.8
- 16. Thabeikyin earthquake 11.11.2012 23° 009' N 95° 884'E 6.8
- 17. Thayet-Aunglan EQ. 3.4.2013 19.24N-95.66 E 5.4
- 18. Monywa-Kani earthquake 27.12.2015 22.614N-95.04E 5.4
- 19. Mawlaik earthquake 13.4.2016 22.614N-95.04E 6.9
- 20.. Chauk earthquake 24.8.2916 20° 919' N 94° 579'E 6.8
- 21. Taikkyi earthquake 13.3.2017 5.1
-

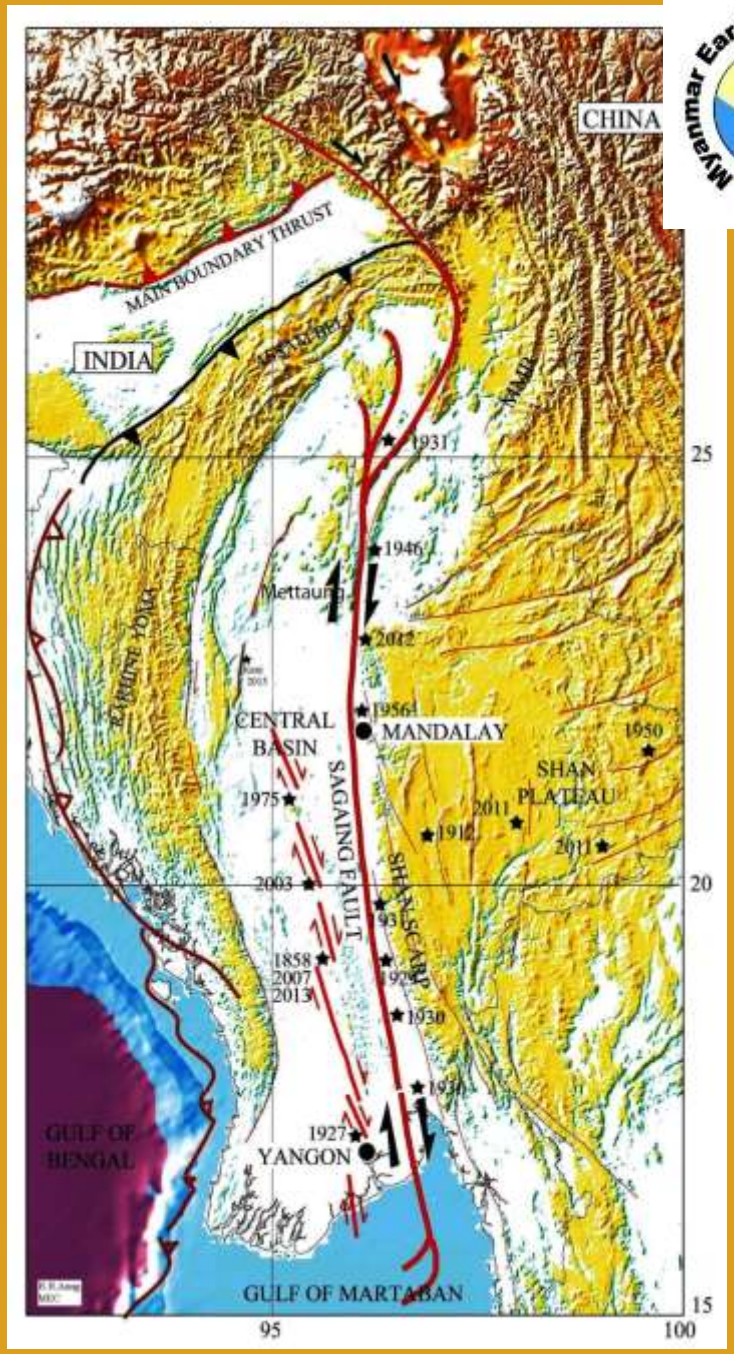
Major Faults(H.H.Aung)



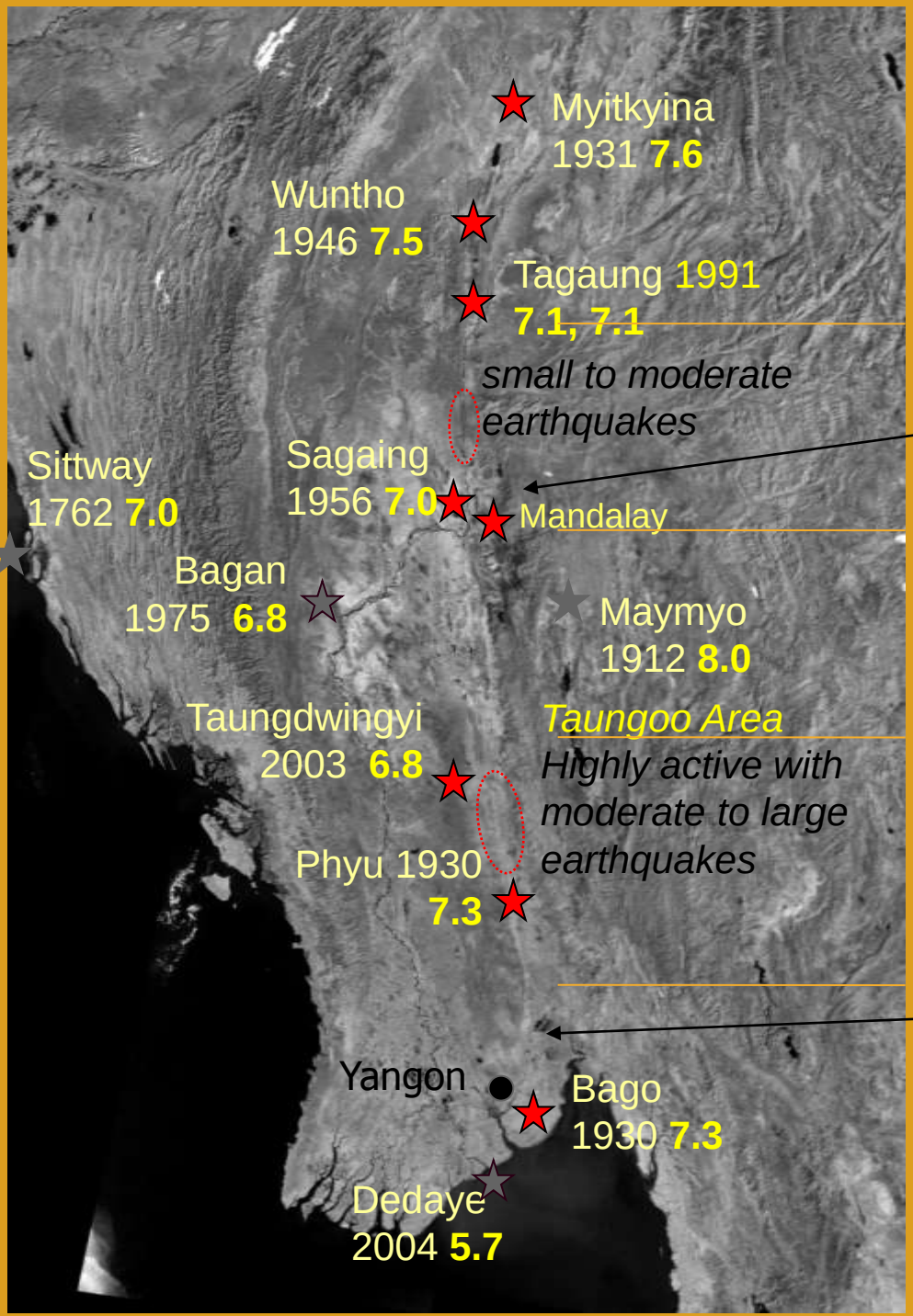
FaultsofMyanmar(H.H.Aung)



Previous Earthquakes in Myanmar(H.H.Aung)



Significant Earthquakes



Historic earthquakes in AVA Era

1429, 1467, 1501, 1602, 1696, 1762, 1771, 1776, 1830, **1839**

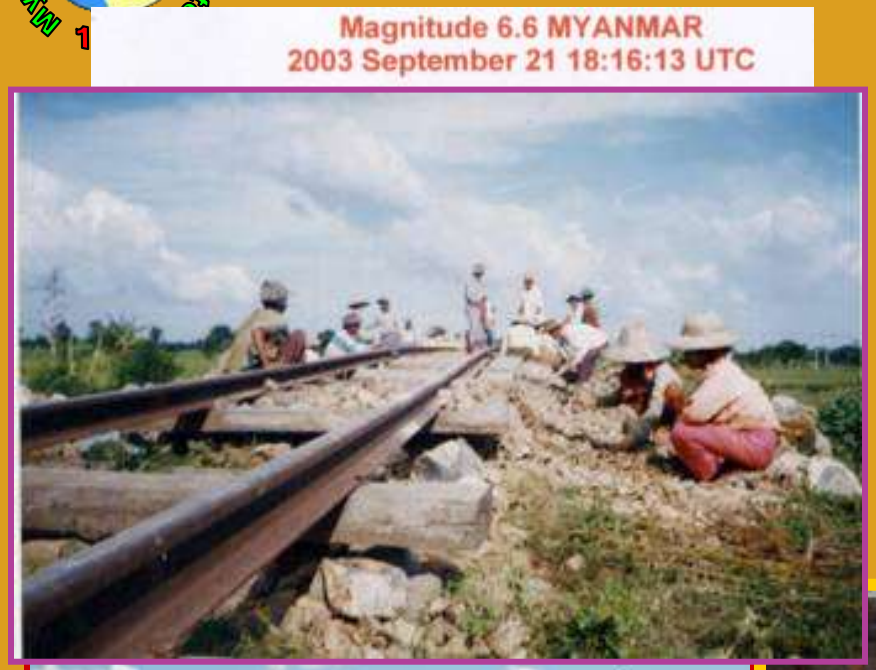
Historic Earthquakes in Bago

868, 875, 1564, 1567, 1582, 1588, 1590, 1757, 1768, 1830, 1888, 1913, 1917, 1920, 1930

BAGO EARTHQUAKE

Top portion of the pagoda fallen down by 1917 Bago Earthquake

TAUNGDWINGYI EARTHQUAKE



Taungdwingyi Earthquake
22 September, 2003
00:46:54 MST
6.8 on magnitude Scale
7 death, 42 Injure, 180 houses damaged, 182 Pagodas collapsed

The 1839 Inwa Earthquake & Mingun Pago

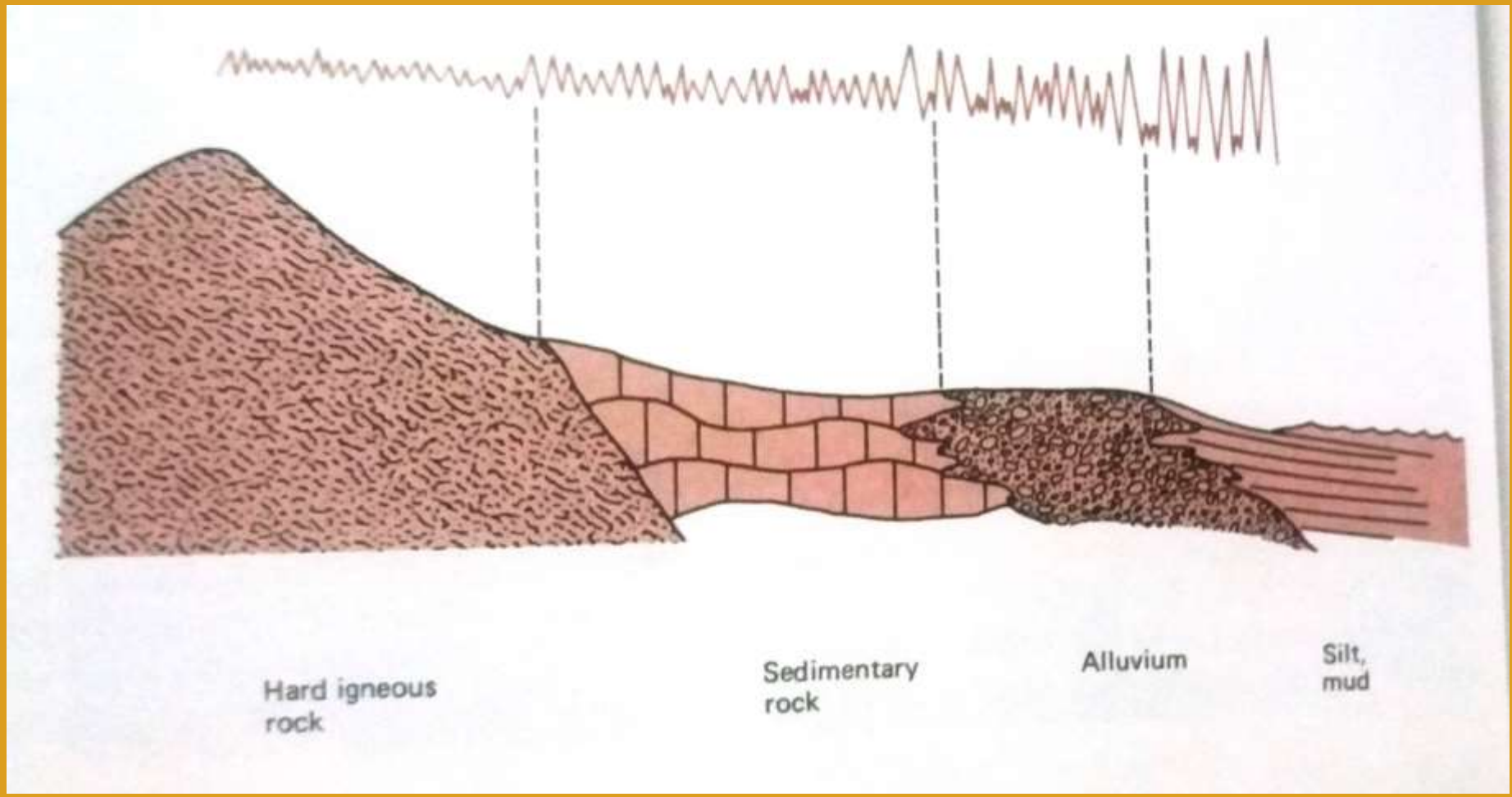
Mingun Pagoda, Mandalay Area,
Earthquake Hazard Memorial Monument

Damaged in 1839 (Innwa Earthquake)

And

1956 (Sagaing Earthquake)

MYANMAR
Top of the Pagoda toppled down by the 1975 Bagan earthquake


Hard igneous rock
Sedimentary rock
Alluvium
Silt, mud

THANK YOU !