Mw7.7 Supershear Mandalay Earthquake Forum
MYANMAR EARTHQUAKE COMMITTEE
FEDERATION OF MYANMAR ENGINEERING SOCIETIES

Learning from the Past: Seismic Microzonation and Resilience Planning for Yangon

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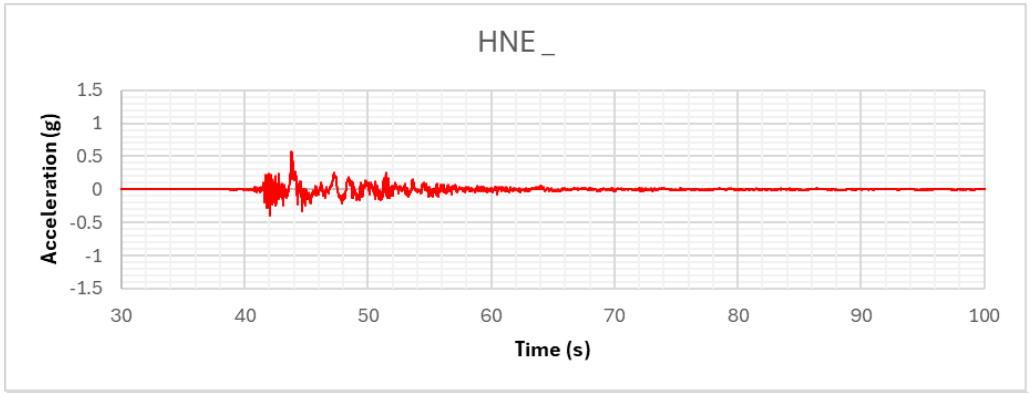
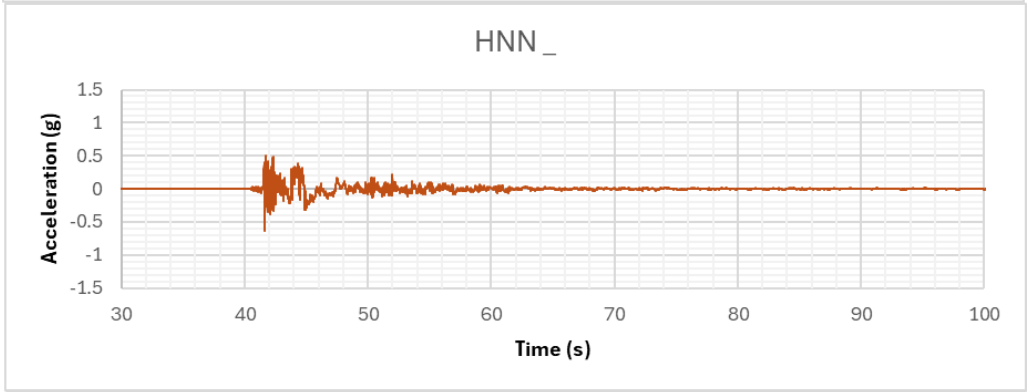
5 April 2026

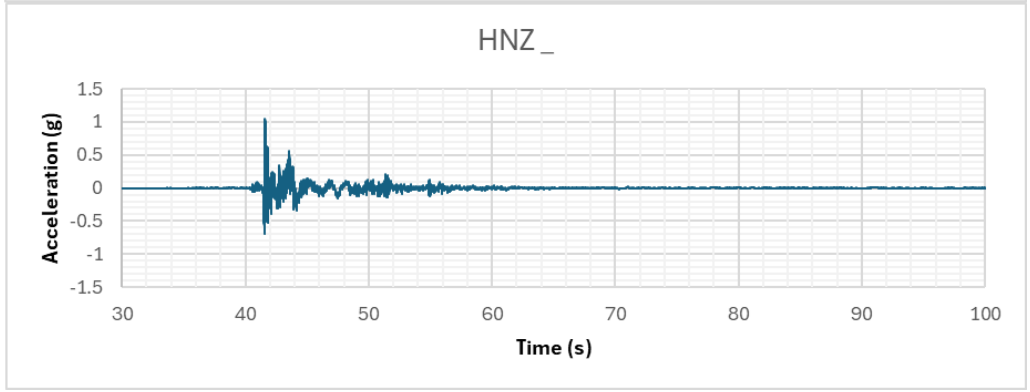
Key Lessons from the 2025 Mandalay Earthquake

- **Large Magnitude → Widespread impact**
- **Urban Vulnerability dominates damage**
- **Heritage highly exposed**

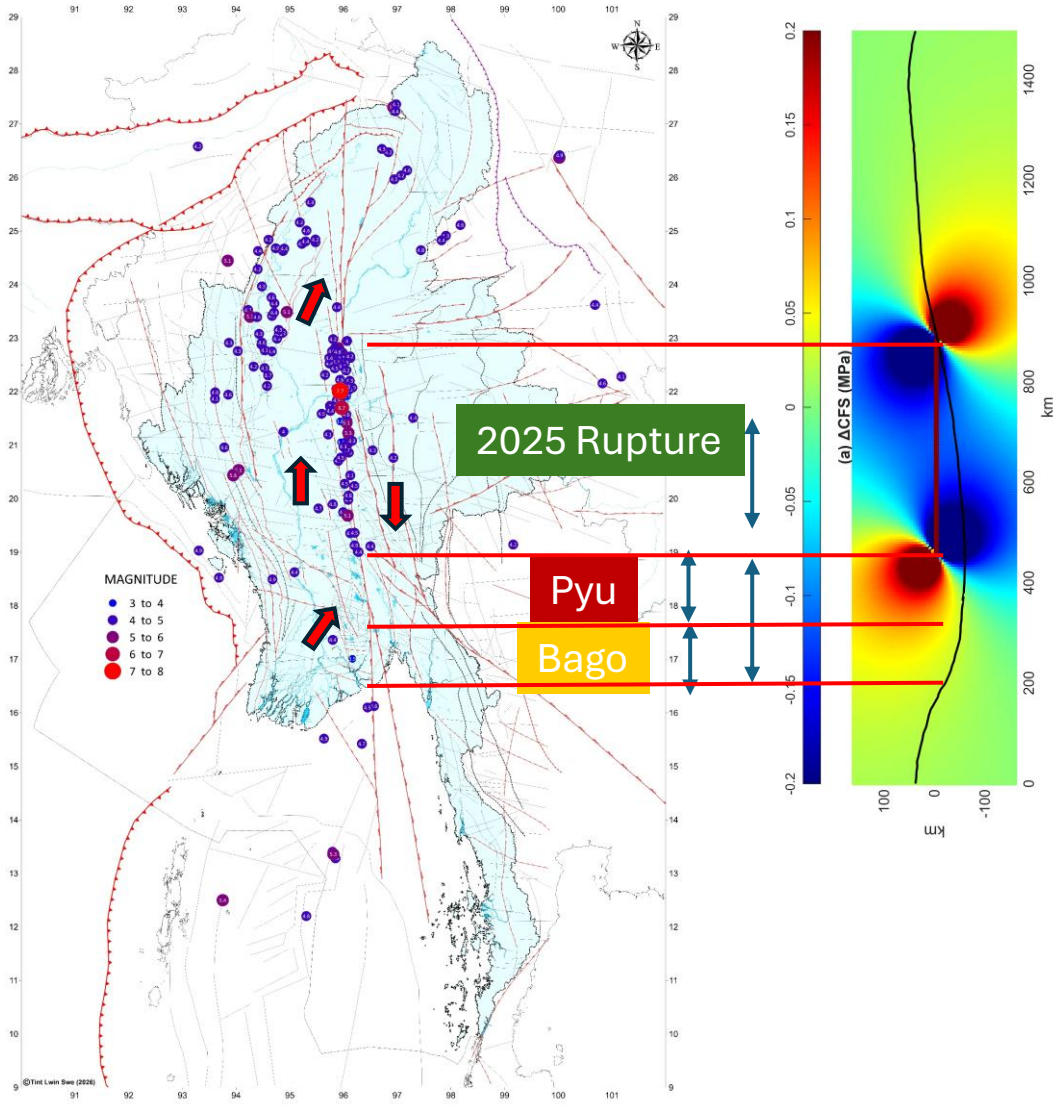
“These lessons are directly applicable to Yangon”.







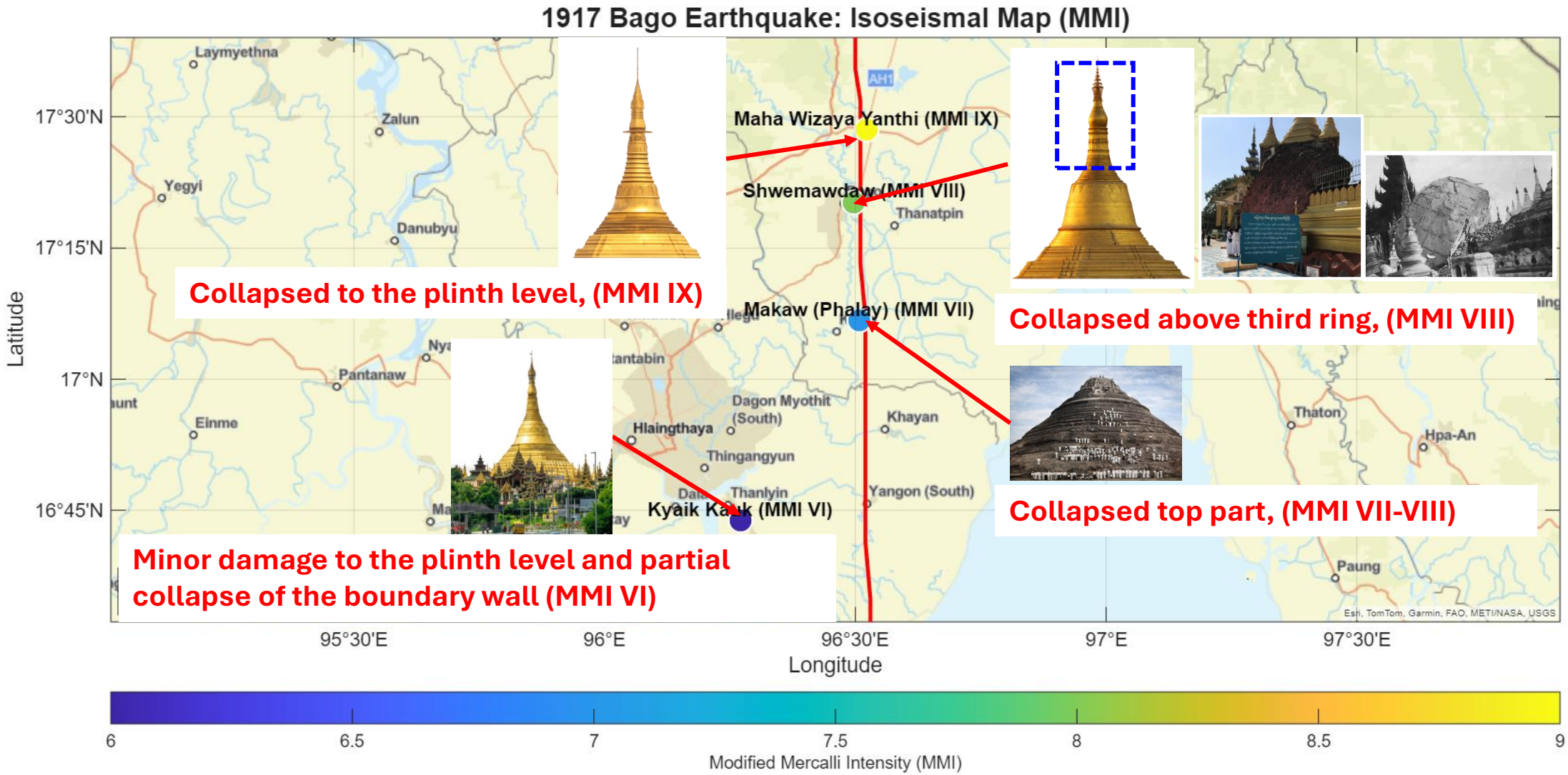
2025 Rupture and sequential ruptures along the Sagaing Fault



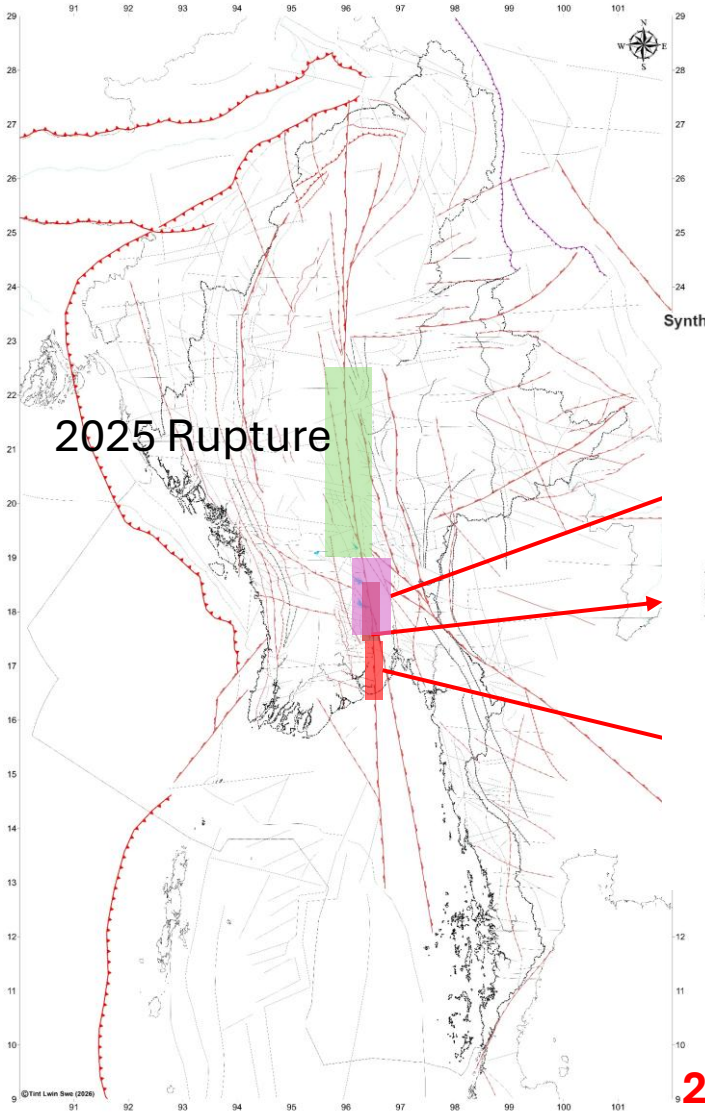
Segment	Median ΔCFS (MPa)	p75 ΔCFS (MPa)	Interpretation
Rupture	−0.12	-0.12	Stress drop from 2025 rupture
Pyu	**+0.29**	**+0.48**	Co-seismic involvement **or** rapid post-seismic slip
Bago	+0.075	+0.11	Consistently loaded, next candidate for rupture

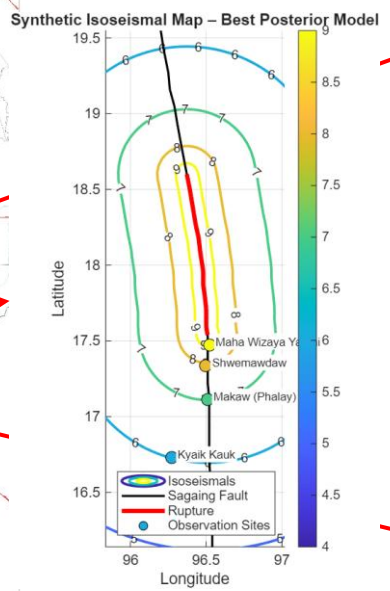
Time to failure ?

Historical Earthquakes: 1917 July 5 04:45 MST

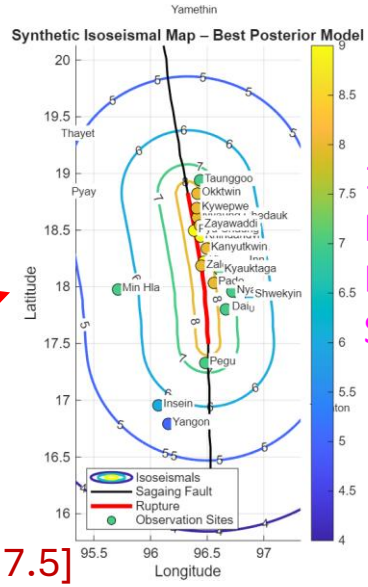


Historical Earthquakes: Ruptures and Potential

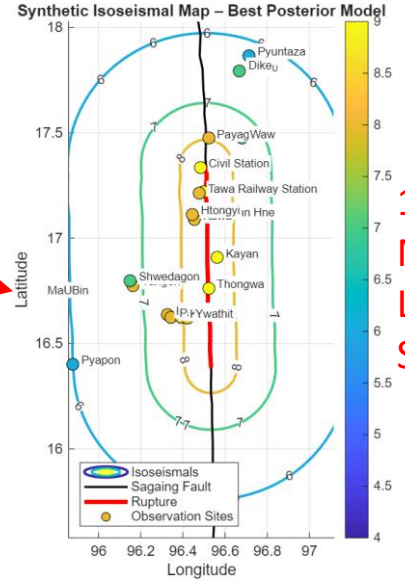




1917
Mw = 7.2 [7.12 - 7.5]
Length = 119.0 km
Slip = 1.67 m



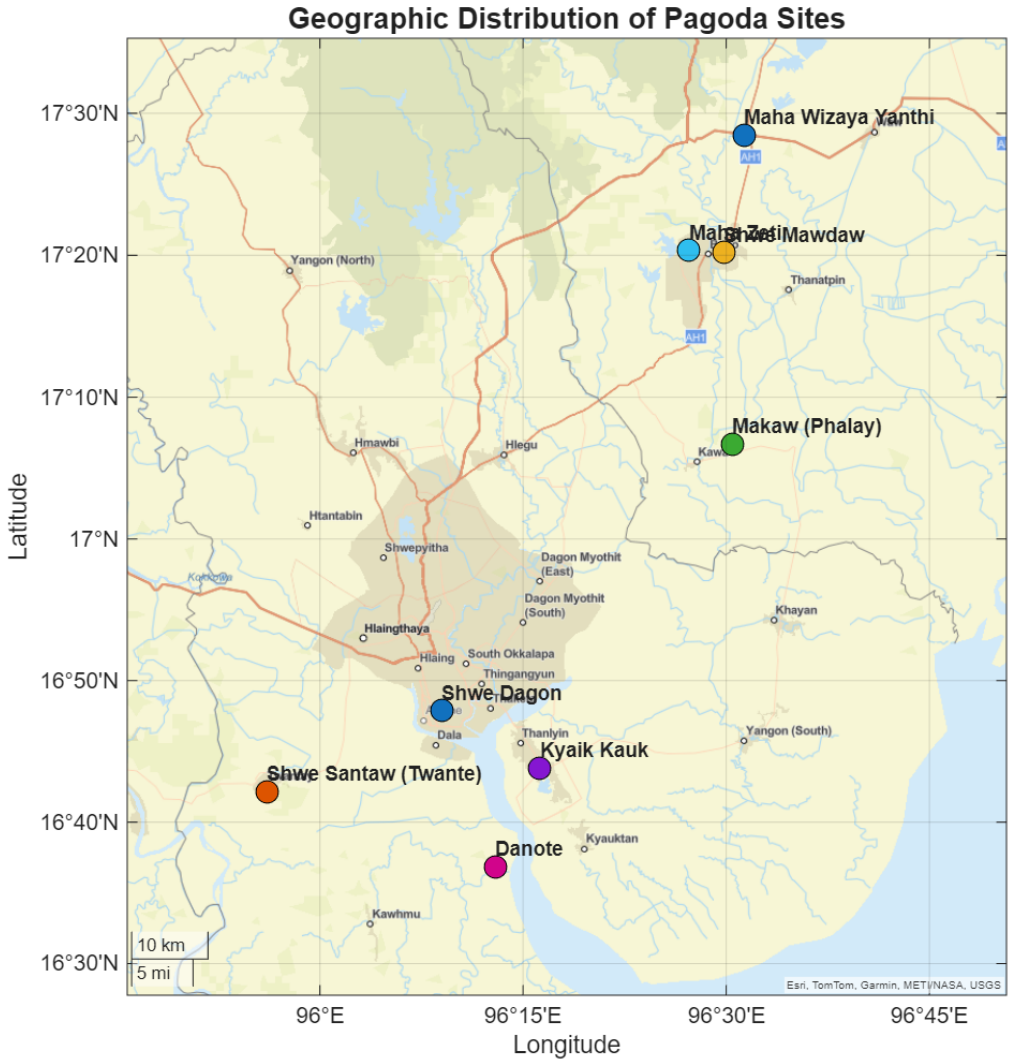
1930 Pyu
Mw = 7.24 [7.2 – 7.58]
Length = 149.4 km
Slip = 1.13 m

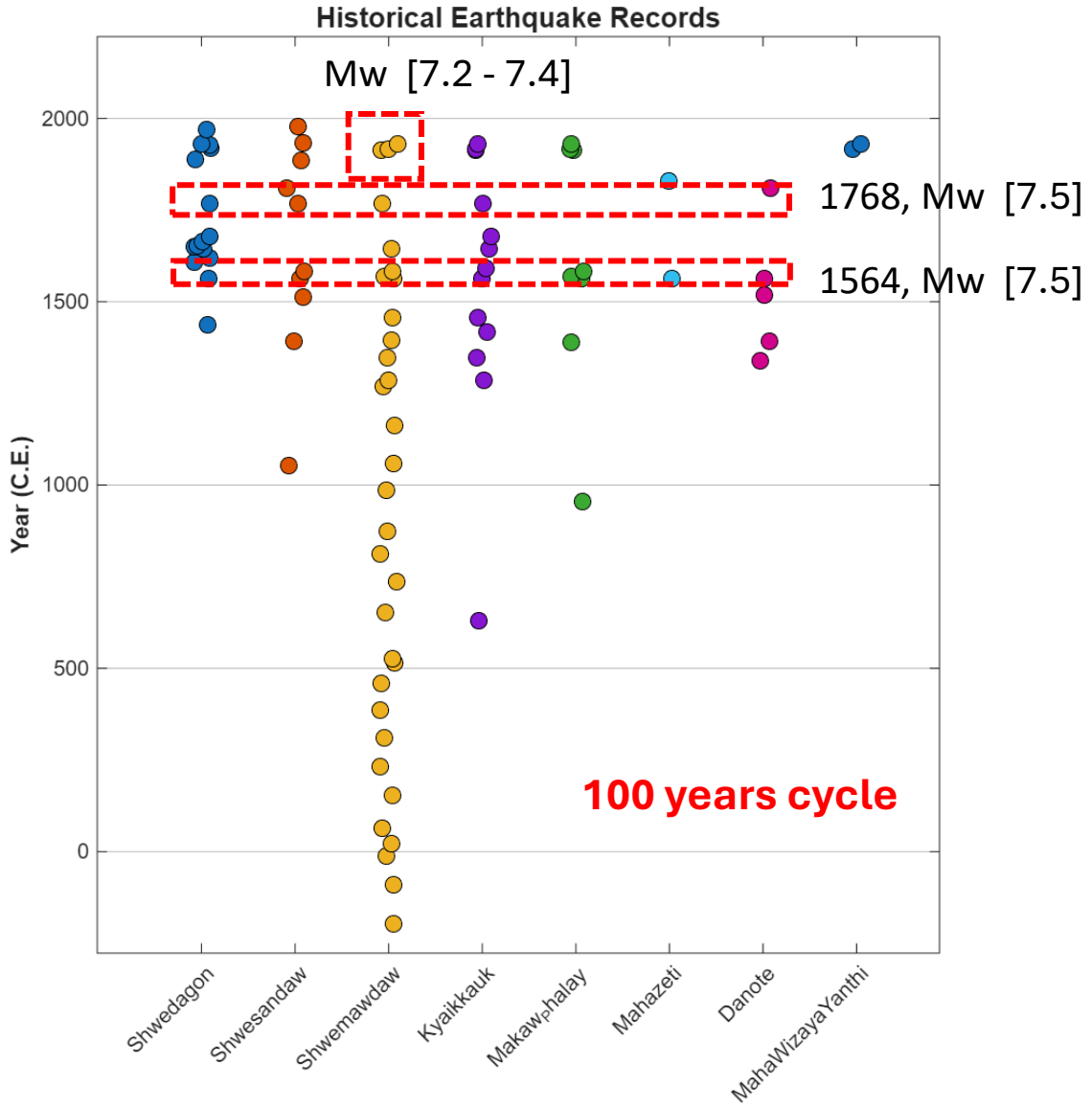


1930 Bago
Mw = 7.39 [7.2 – 7.58]
Length = 107.0 km
Slip = 3.08 m

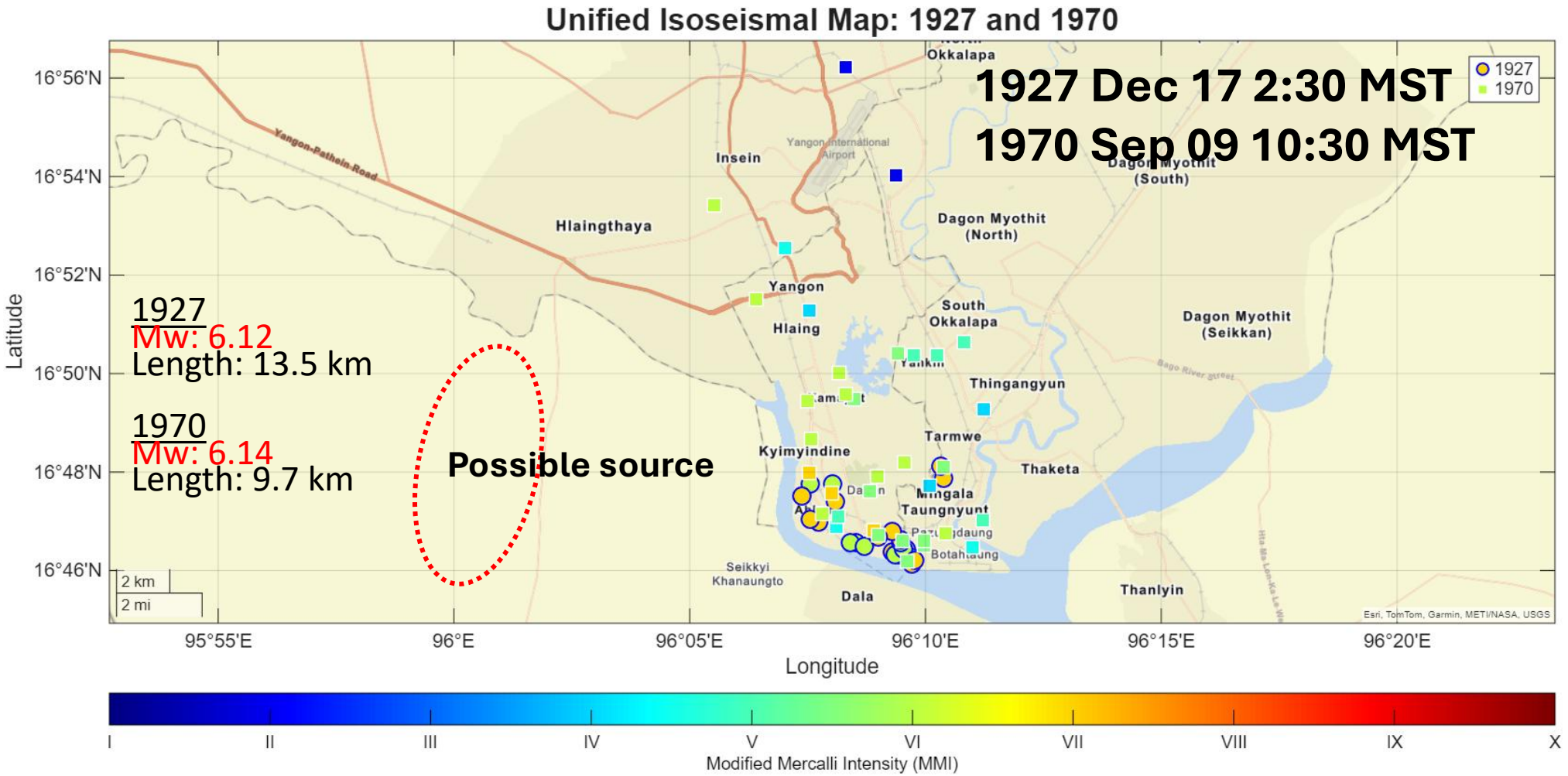
2025 Rupture can trigger this.

Historical Earthquakes: From renovation records of famous Pagodas



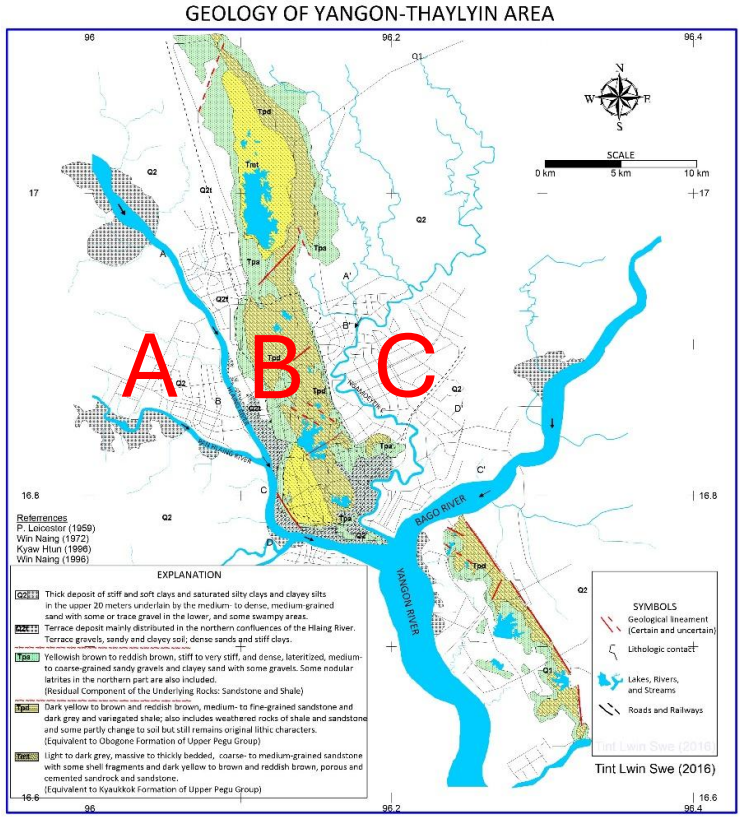


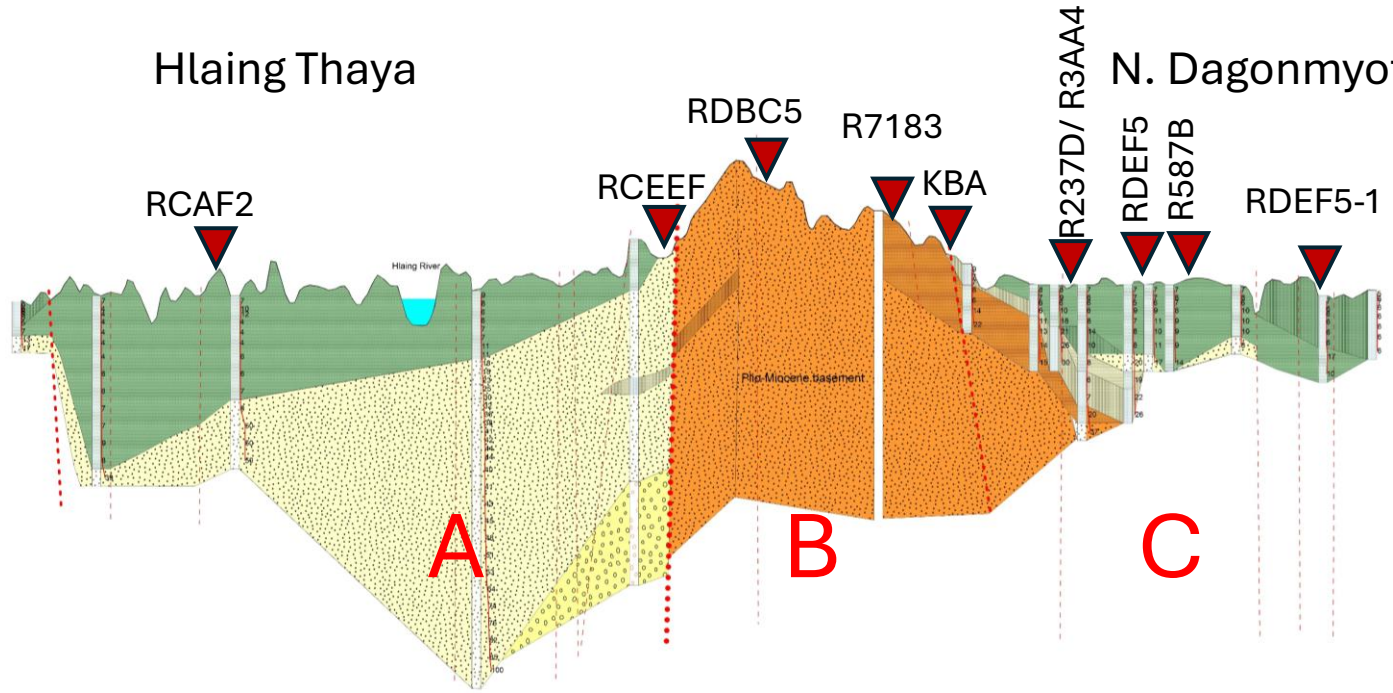
Historical Earthquakes: Yangon



These events show that Yangon has already experienced damaging shaking.

Yangon- Geology



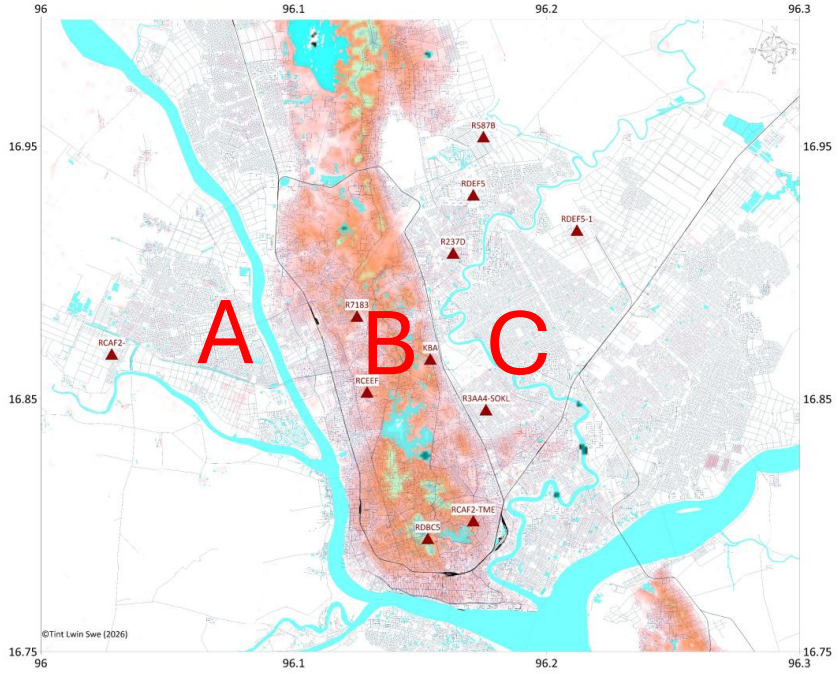


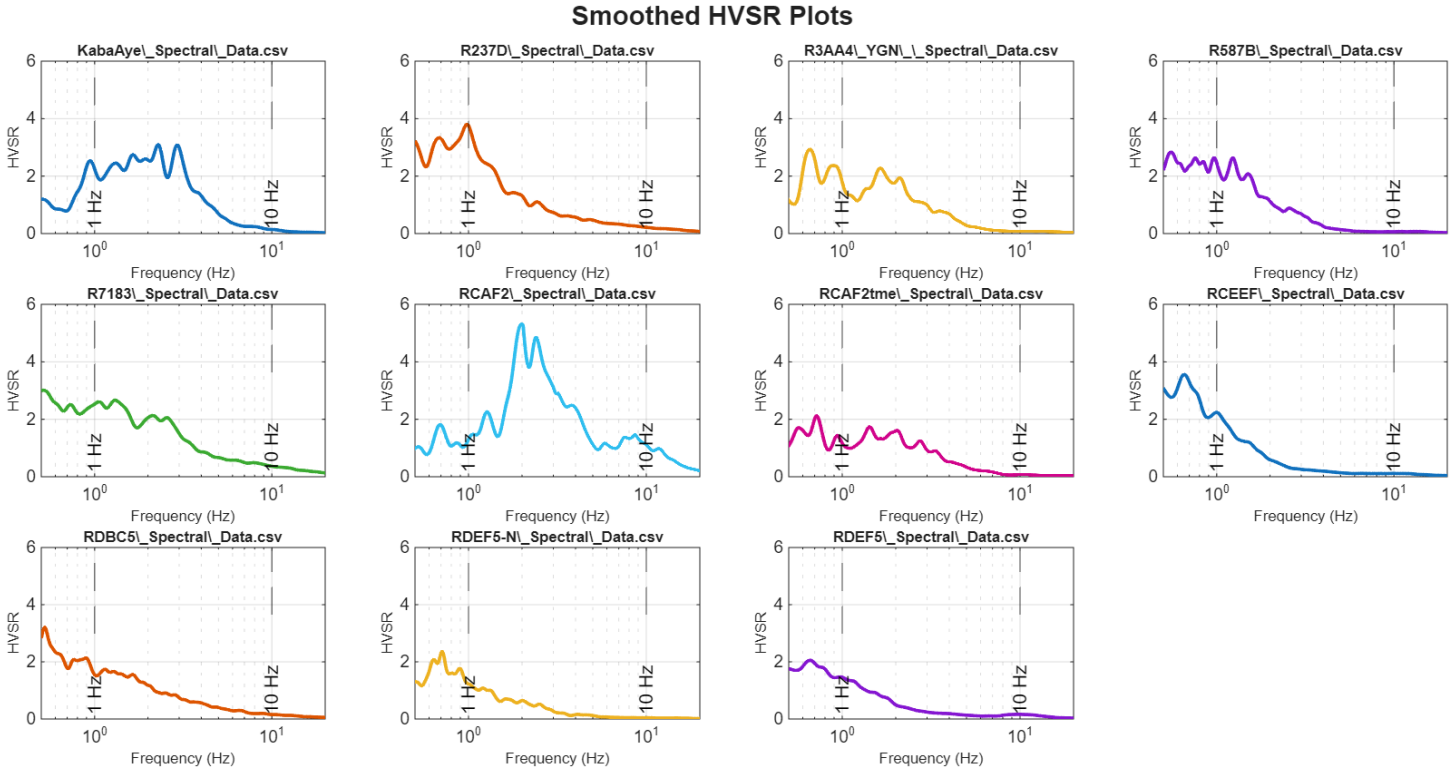
A. Hlaing River fluvial deposits

B. Mio-Pliocene rocks in Yangon Ridge

C. Ngamoeyeik deep basin sediments

HVSR Analysis

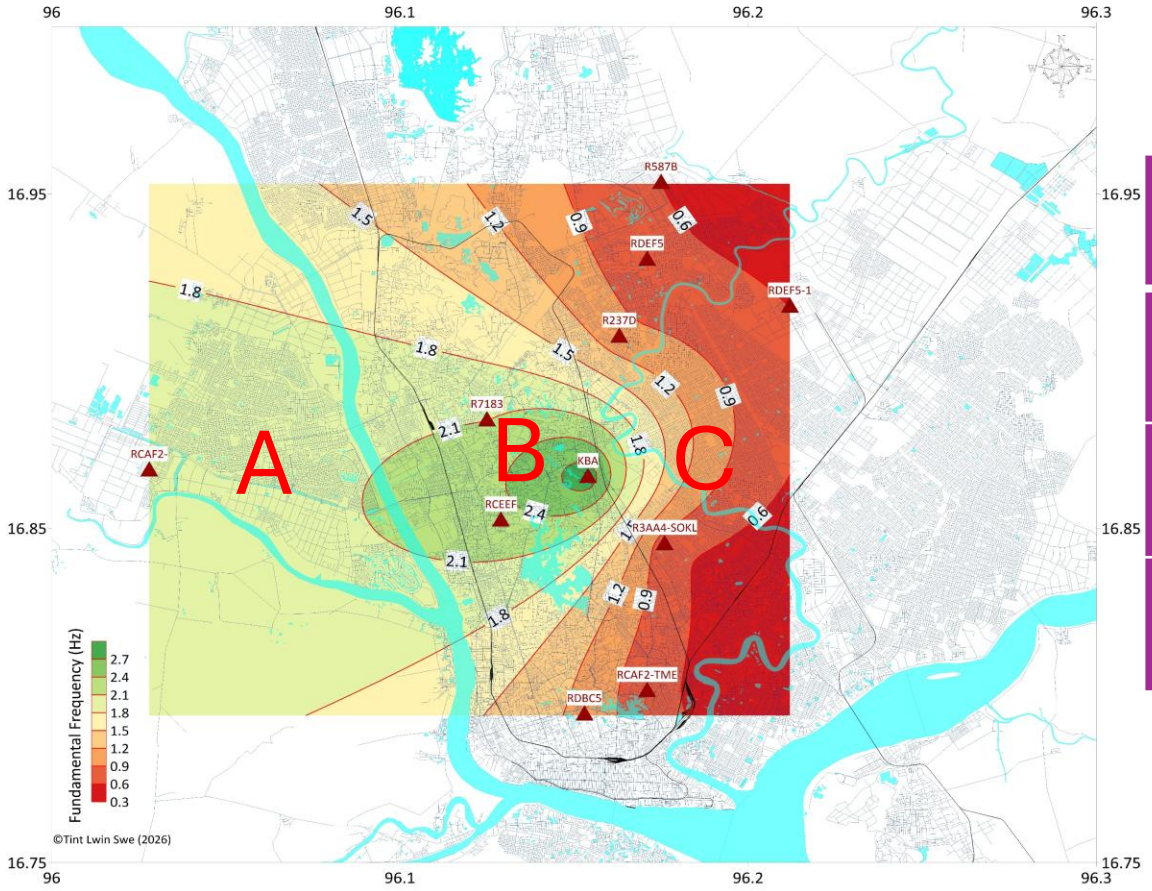




<u>Stations and ground motion records from</u>
DMH
MEC (2022 – 2026)
PSC Myanmar Off-road (2026)

Site response varies strongly across Yangon due to geology.

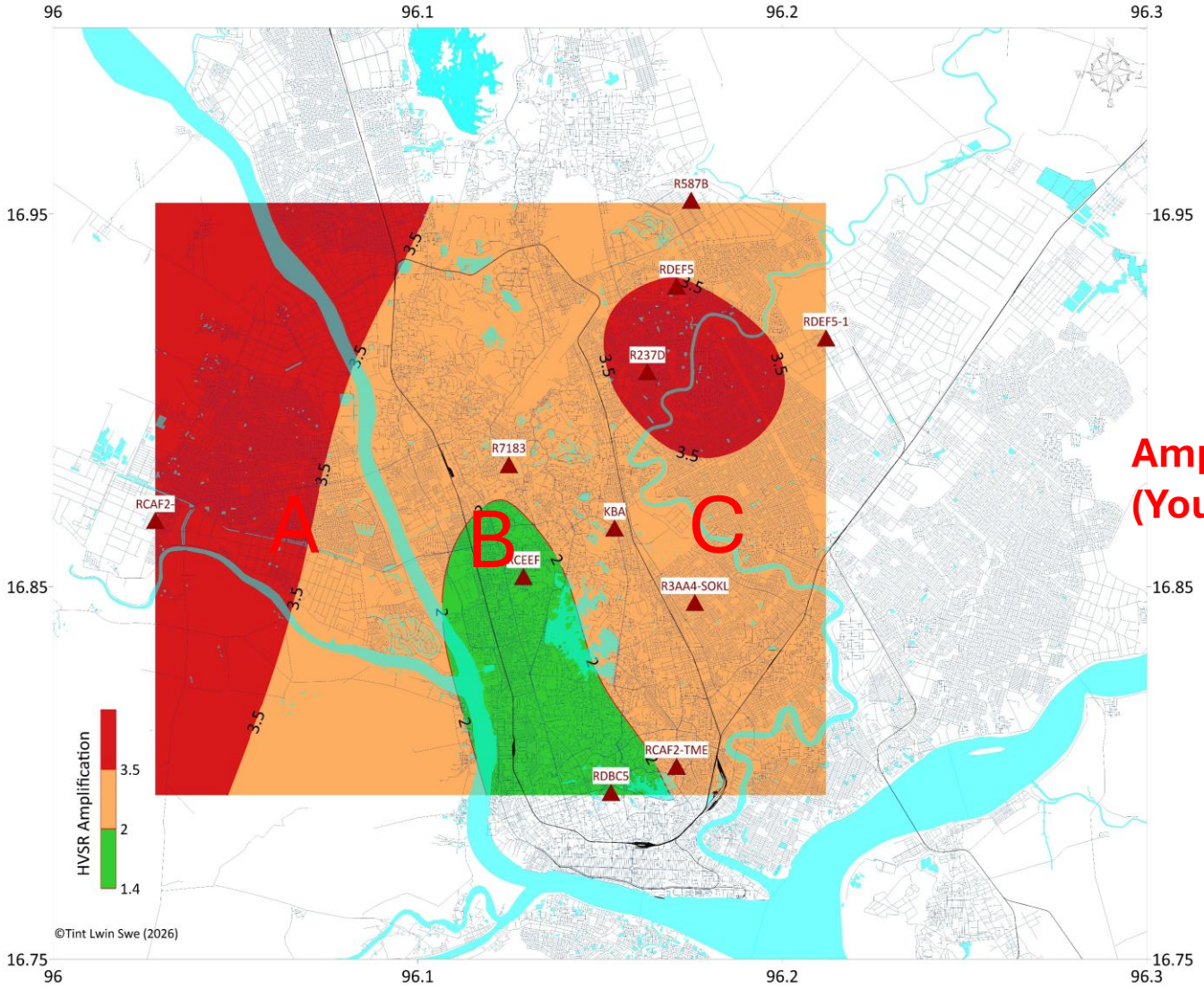
Fundamental Frequency



f_0 Range	Site	Implication
< 1 Hz	Deep basin	Long-period amplification
1–2 Hz	Intermediate	Mixed response
> 2 Hz	Stiff ground	Lower amplification

Low-frequency zones indicate deep sediments and higher amplification potential.

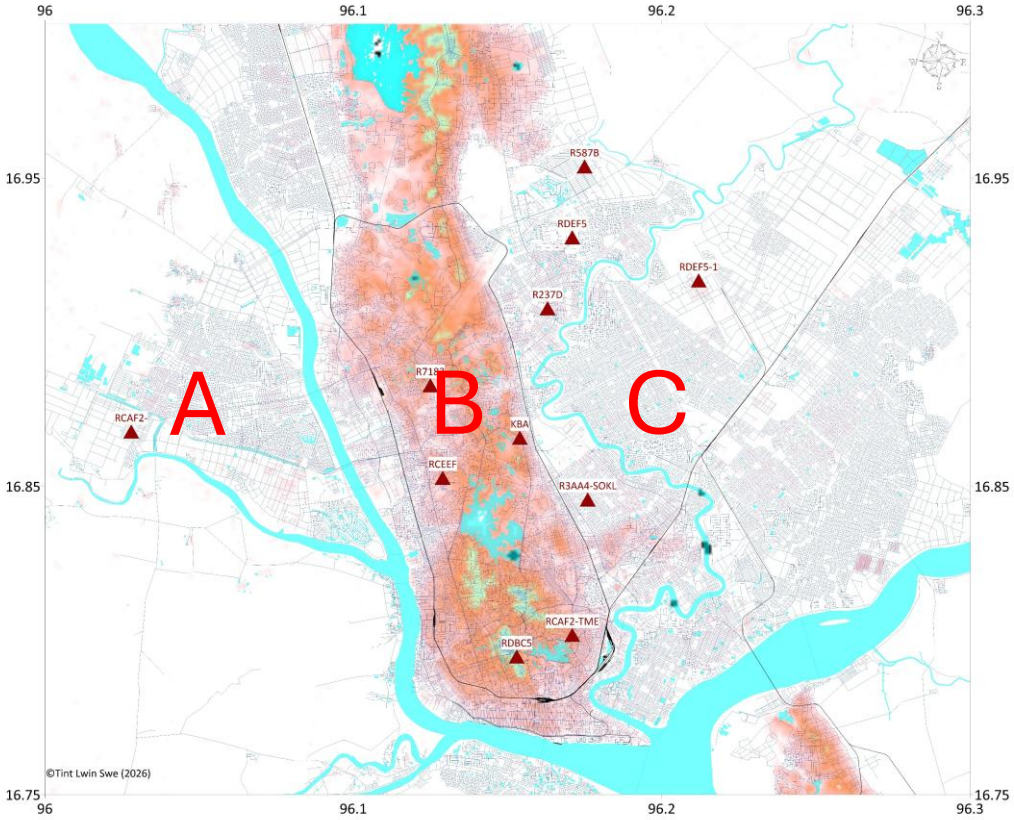
Yangon Seismic Microzonation



Amplification > 3
(Young Sediments Basin)

Summary

- Possibility of fault rupturing- yes, sources identified
- Size- confirm >7
- Vulnerability- High (Yangon is expanding towards major seismic source)
- Heritage- within hazard zone
- Controlling factor- geology
- Deep young sediments basin – Amplified
- Move forward- Seismic microzoning



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