Earthquake Report: 2022.11.18

M 6.9 Sumatra, Indonesia (& USGS Seismicity 1922-2022 M ≥ 6.5)

Mechanism Types: Normal Fault | Thrust Fault | Strike-Slip Fault (Top View / Side View)

SHAKING	Not Felt	Weak	Light	Moderate	Strong	Very Strong	Severe	Violent	Extreme
DAMAGE	None	None	None	Very Light	Light	Moderate	Moderate/Heavy	Heavy	Very Heavy
PGA (%g)	<0.05	0.3	2.76	6.2	11.5	21.5	40.1	74.7	>139
PGV (cm/s)	<0.02	0.13	1.41	4.65	9.64	20	41.4	85.8	>178
INTENSITY	1	2-3	4	5	6	7	8	9	10

Seismic Hazard

Seismic Hazard PGA (g)
0.00 - 0.01
0.01 - 0.02
0.02 - 0.03
0.03 - 0.05
0.05 - 0.08
0.08 - 0.13
0.13 - 0.20
0.20 - 0.35
0.35 - 0.55
0.55 - 0.90
0.90 - 1.50
> 1.50

GEM GLOBAL EARTHQUAKE MODEL working together to assess risk

Seismic Risk

AAL Normalized by Construction Cost (m^2)
< 50
50 - 100
100 - 250
250 - 500
500 - 750
750 - 1,000
1,000 - 2,500
2,500 - 5,000
5,000 - 10,000
10,000 - 25,000
> 25,000

Yangon, Bangkok, Manila, Kuala Lumpur, Singapore, Jakarta, Port Moresby

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Earthquake Intensity

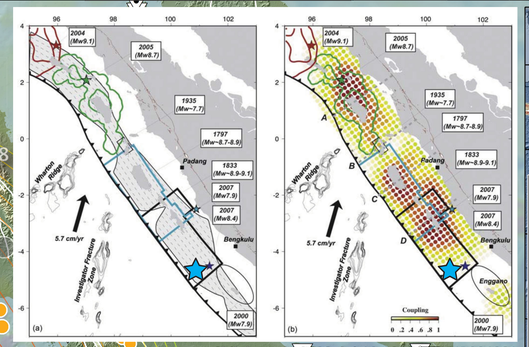
MMI 7, MMI 6, MMI 5, MMI 4, MMI 3

0 25 50 100 Kilometers

Tectonic Strain

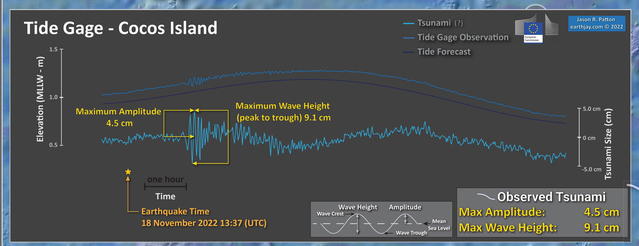
80°E 90°E 100°E 110°E 120°E 130°E
20°N 10°N 0° 10°S

Fault
GEM
Tectonic Strain
High
Low
Land (NE)

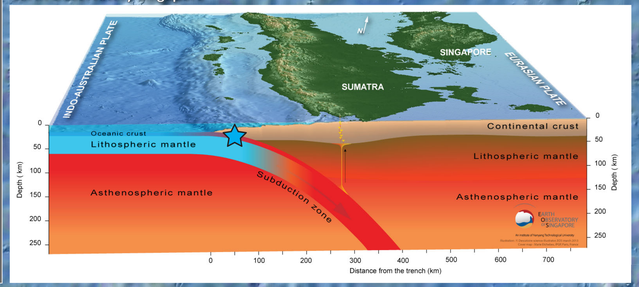


Chileh et al., 2008 doi:10.1029/2007JB004981

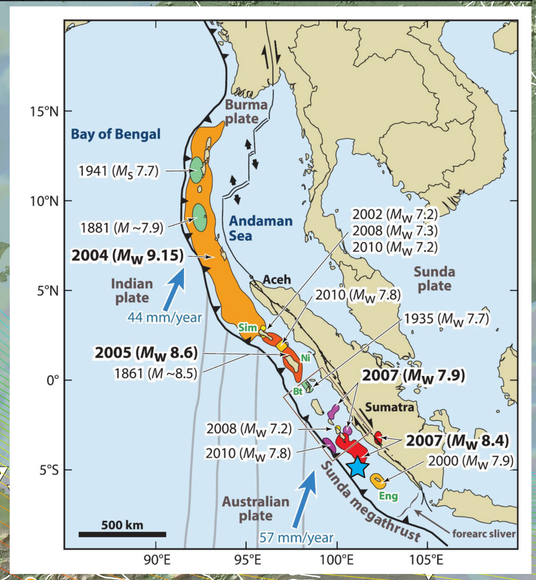
Tide Gage - Cocos Island



Earth Observatory Singapore



Sumatera



Philibosian et al., 2014 doi:10.1002/2014JB011200

2012.04.11 M 8.6
2004.12.26 M 9.15
2005.03.28 M 8.6
2010.04.06 M 7.8
2008.02.25 M 7.2
2012.04.11 M 8.2
2010.10.25 M 7.8
2020.08.18 M 6.9
2020.08.18 M 6.8
2010.03.05 M 7.3
2007.09.12 M 7.9
2001.02.13 M 7.4
1994.02.15 M 6.9
2022.11.18 M 6.9
2007.09.12 M 8.4
2000.06.04 M 7.9
2002.06.27 M 6.5
2019.08.02 M 6.9
2009.09.02 M 7.0
2006.07.17 M 7.7

120 km, 100 km, 80 km, 60 km, 40 km, 20 km
Slab Contours
Sunda trench
Nineyeast Ridge
Sumatra fault
Bintuhan
Java
Java trench
Cocos Island
Investigator fracture zone

19 Nov '22 M 6.9

Seismicity (USGS - 3 month) magnitude
3.7 - 4.5
4.6 - 5.0
5.1 - 5.5
5.6 - 6.0
6.1 - 6.5
6.6 - 7.0
7.1 - 7.6

Seismicity (USGS - 1 century) magnitude
6.5 - 7.0
7.1 - 7.5
7.6 - 8.0
8.1 - 8.5
8.6 - 9.1

Lake (Natawidjaja)
Tide Gage

Intensity (USGS) MMI
I (Not Felt)
II - III (Weak)
IV (Light)
V (Moderate)
VI (Strong)
VII (Very Strong)
VIII (Severe)
IX (Violent)
X+ (Extreme)

Fault
CCOP
Deformation Front

Topobathy: doi: 10.1029/2008GC002332.
Topography: DEMNAS Road: DIVA

Total Intensity Anomaly (nT)
-200 -150 -100 -50 0 50 100 150 200

Depth to Slab (km)
0 50 100 150 200 250 300 350 400 450 500 550 600 650 700

Depth: Shallow / Deep
Elevation: High / Low

0 75 150 300 Miles
0 112.5 225 450 Kilometers

Made with Natural Earth
CCOP
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