NUMERICAL SIMULATION OF TSUNAMI PROPAGATION AND INUNDATION ALONG THE   RAKHINE COAST AREAS IN MYANMAR
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1.   Fault Parameters of Tsunami Sources

Table 1. Source parameters of scenario earthquake at the Arakan Trench.

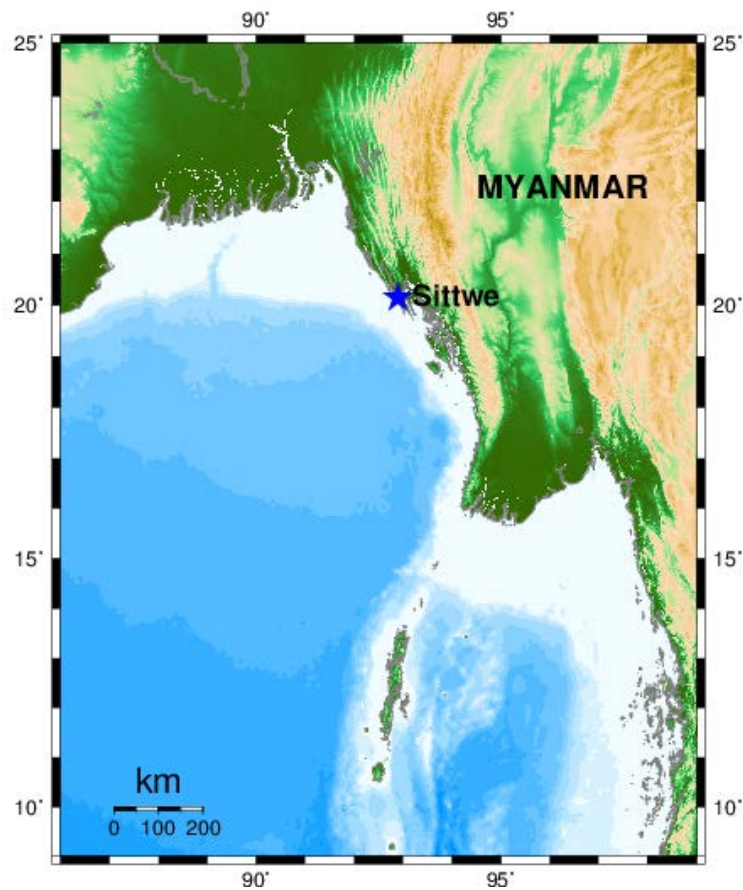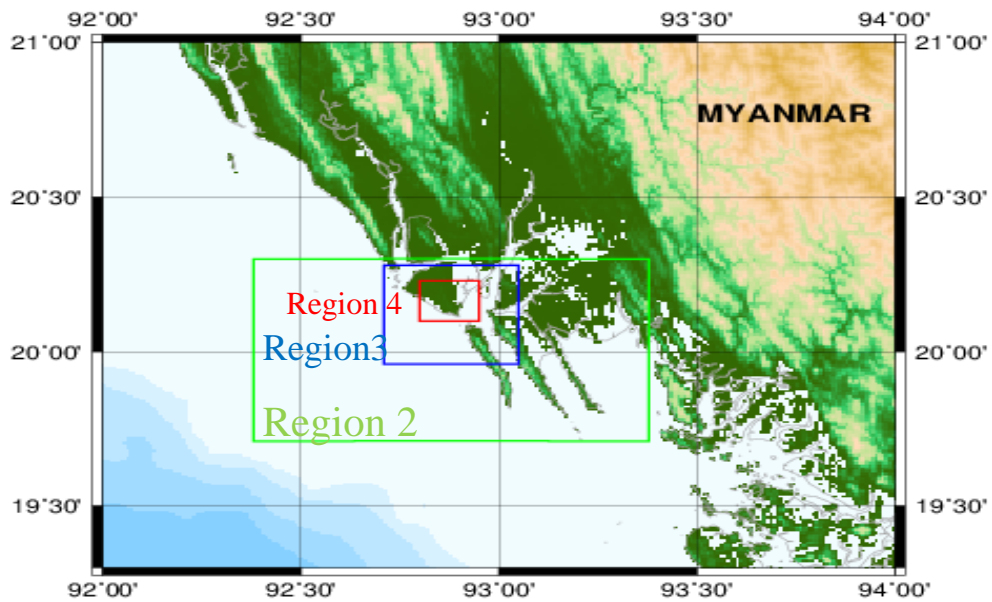| Lat (°N)	Long (°E)	Length (km)	Width (km)	Strike (°)	Dip (°)	Rake (°)	Slip amount (m)	Top depth (km)
17.00	93.9375	358.794	172.811	341	10	127	7.67	0

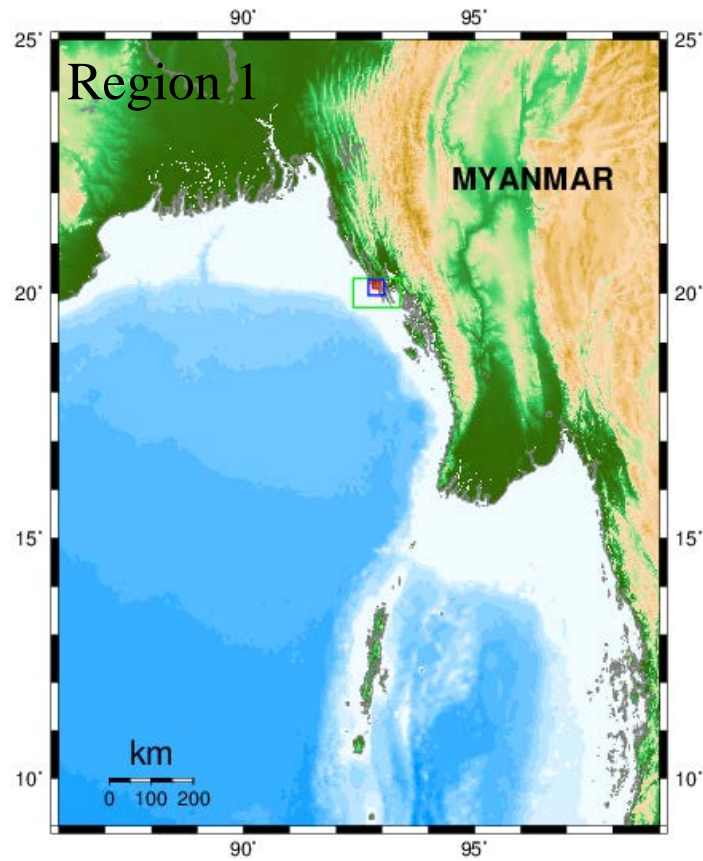Figure 1. Computational domain of study area.

Figure 2. Location and boundary for each computational domain in inundation. Upper figure shows Region 1 and Lower figure shows Region 2 (green rectangle), Region 3 (blue rectangle) and Region 4 (red rectangle).
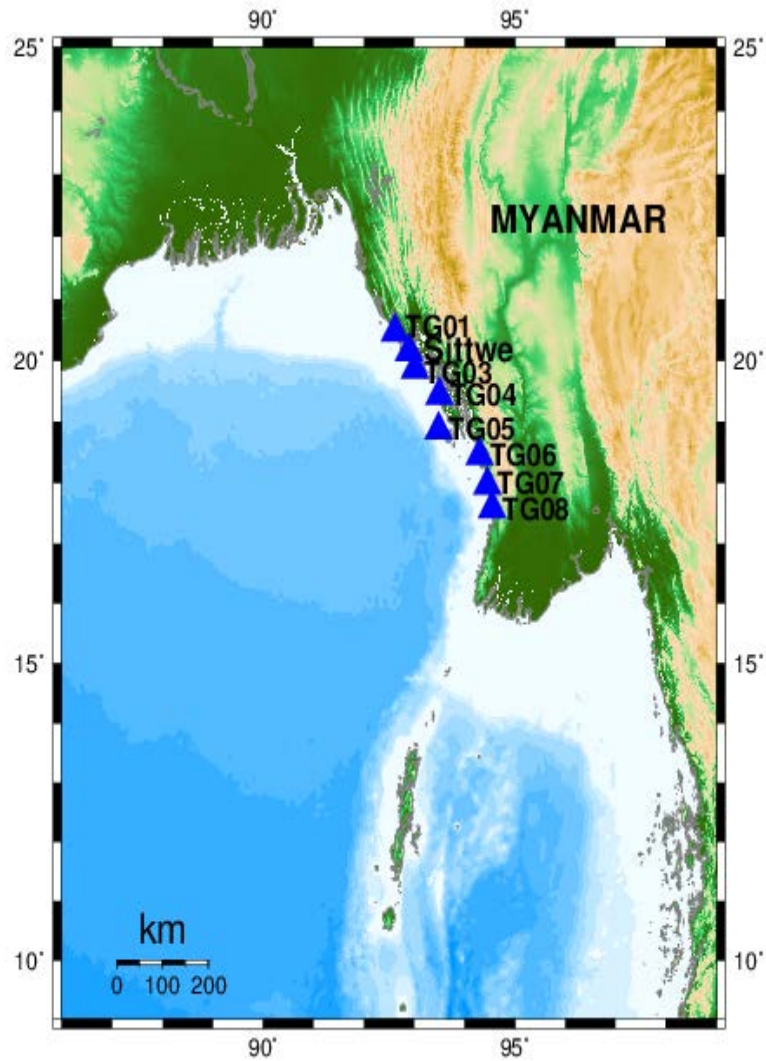
2. Tide Gauge Stations

Figure 3. Location of the tide gauge stations.

Table 2. Location of tide gauge stations and the depths for different bathymetry data.

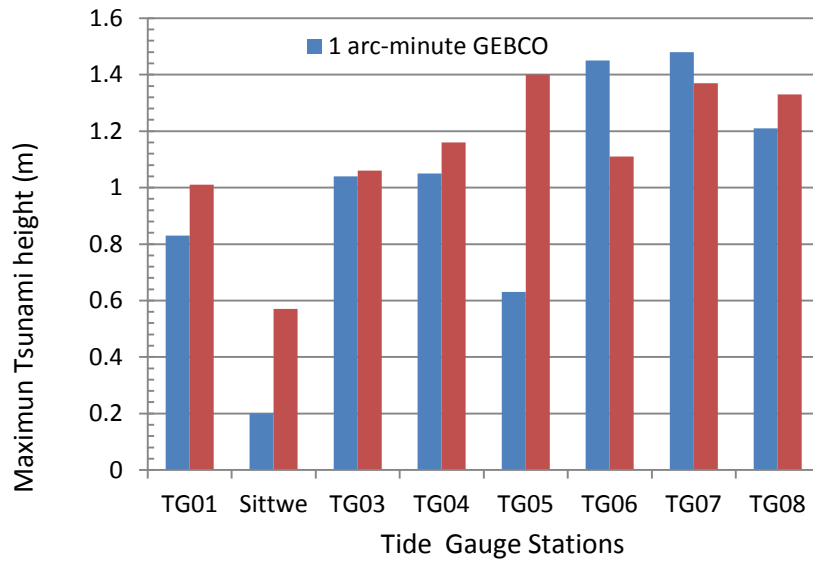| Station name	Latitude	Longitude	Depth (m) (1 arc-minute bathymetry data)	Depth (m) (30 arc-seconds bathymetry data)
TG01	20°28'N	92°37'E	9.8	41.6
Sittwe	20°09'N	92°54'E	1.0	2.4
TG02	20°01'N	93°21'E	1.0	3.6
TG03	19°25'N	93°30'E	1.6	3.2
TG04	18°52'N	93°29'E	1.0	1.0
TG06	18°27'N	94°18'E	1.0	10.0
TG06	17°58'N	94°27'E	2.5	6.3
TG07	17°35'N	94°33'E	1.3	72.4

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3. Results (Tsunami Heights)

Figure 4. Comparison of the maximum tsunami heights obtained through a numerical simulation using TUNAMI-N2 code for coastal output points with different bathymetry data the 1 arc-minute and 30 arc-seconds.
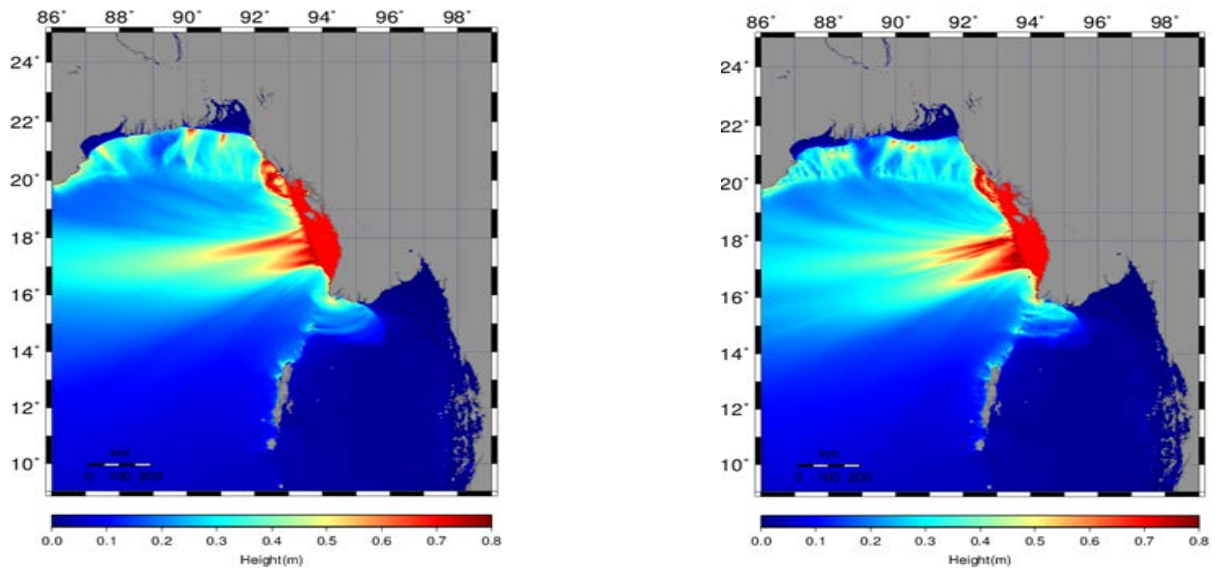

Figure 5. Calculated maximum tsunami height for the scenario earthquake using the 1 arc-bathymetry from GEBCO (left) and 30 arc-seconds bathymetry from GEBCO (right). Based on scale, dark color shows lower tsunami waves height while brighter color shows higher tsunami waves height.
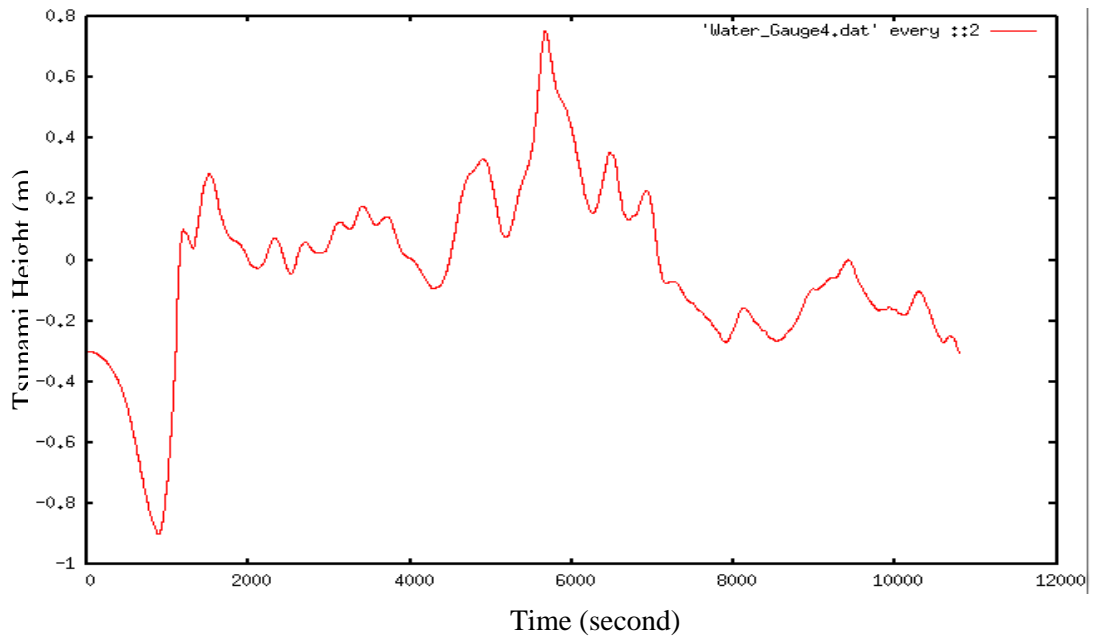
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Figure 6. Tsunami waveform computed from tsunami inundation modeling.

4. Conditions for Computation

Table 3. Computed tsunami arrival time and maximum height between

1 arc-minute GEBCO and 30 arc-seconds GEBCO.

	Bathymetry 1 arc-minute		Bathymetry 30 arc-second	
STATION	TUNAMI-N2		TUNAMI-N2	
	Arrival Time (min)	Maximum Tsunami Height (m)	Arrival Time (min)	Maximum Tsunami Height (m)
TG01	5.49	0.83	7.58	1.01
Sittwe	0.42	0.20	0.22	0.57
TG03	3.11	1.04	1.01	1.06
TG04	1.79	1.05	1.74	1.16
TG05	0.21	0.63	0.10	1.40
TG06	1.81	1.45	1.13	1.11
TG07	2.25	1.48	0.86	1.37
TG08	0.41	1.21	2.91	1.33

Table 4. Summary of bathymetry data and resolution used for simulation.

Bathymetry Data	GEBCO 1arc-min	GEBCO _08 30 arc-sec
Resolution	1 arc-min	1 arc-min
Grid dimension	780×960	780×960
Temporal Grid Size (dt)	3 s	3 s

Table 5. Boundary, resolution and data source for each computational domain.

Region	Longitude (°E)		Latitude (°N)		Resolution	Data Source		Grid Size Number
						Bathymetry	Topography	nx/ny
1	86.00°	99.00°	9.00°	25.00°	1 arc-min	GEBCO 30c	GEBCO 30c	780/960
2	92.38°	93.38°	19.71°	20.30°	20 arc-sec	GEBCO 30c	GEBCO 30c	180/105
3	2.71°	93.05°	19.96°	20.28°	6.66667 arc-sec	GEBCO 30c	GEBCO 30c	180/171
4	92.80°	92.95°	20.10°	20.23°	2.22222 arc-sec	GEBCO 30c	SRTM(90m)	243/216

The spatial grid interval Δx was 1,774 m and Δy was 1,844 m for the 1 arc-minute GEBCO and 30 arc-seconds GEBCO data resolutions.

The temporal grid sizes *(Δt)* were set at 3.0 s in the 1 arc-minute bathymetry data and 30 arc-seconds bathymetry data.