TSUNAMI SIMULATION FOR THE 1992 NICARAGUA EARTHQUAKE

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1. Fault Parameters of Tsunami Sources

Table 1. Source parameters of the 1992 Nicaragua earthquake.

Lat (°N)	Long (°W)	Mw	Length (km)	Width (km)	Strike (degree)	Dip (degree)	Rake (degree)	Slip amount (m)	Top depth (km)
10.1	-86.5	7.6	250	40	315	15	90	3.0	10.0

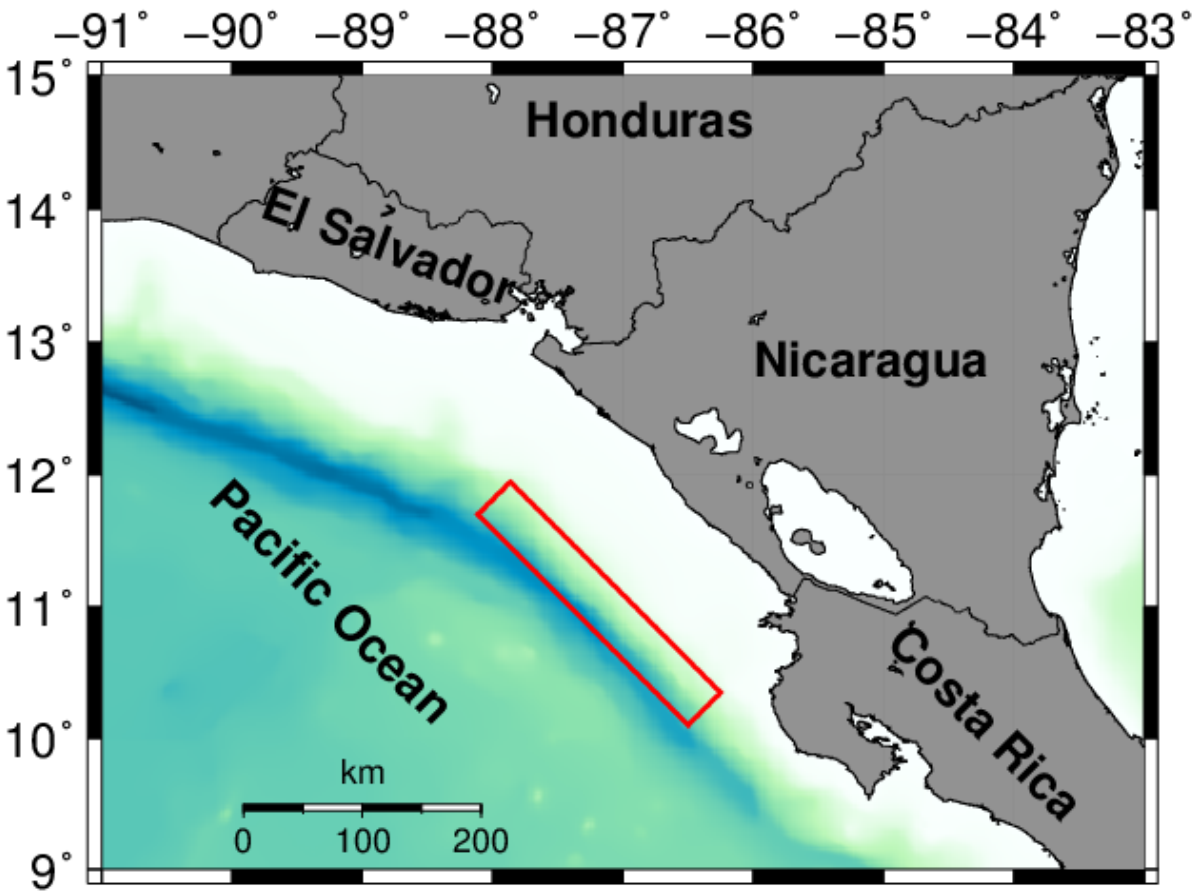

Figure 1. Location of the fault for the 1992 Nicaragua tsunami earthquake obtained by Satake (1994). The magnitude of the earthquake was 7.6.

2. Forecast Points

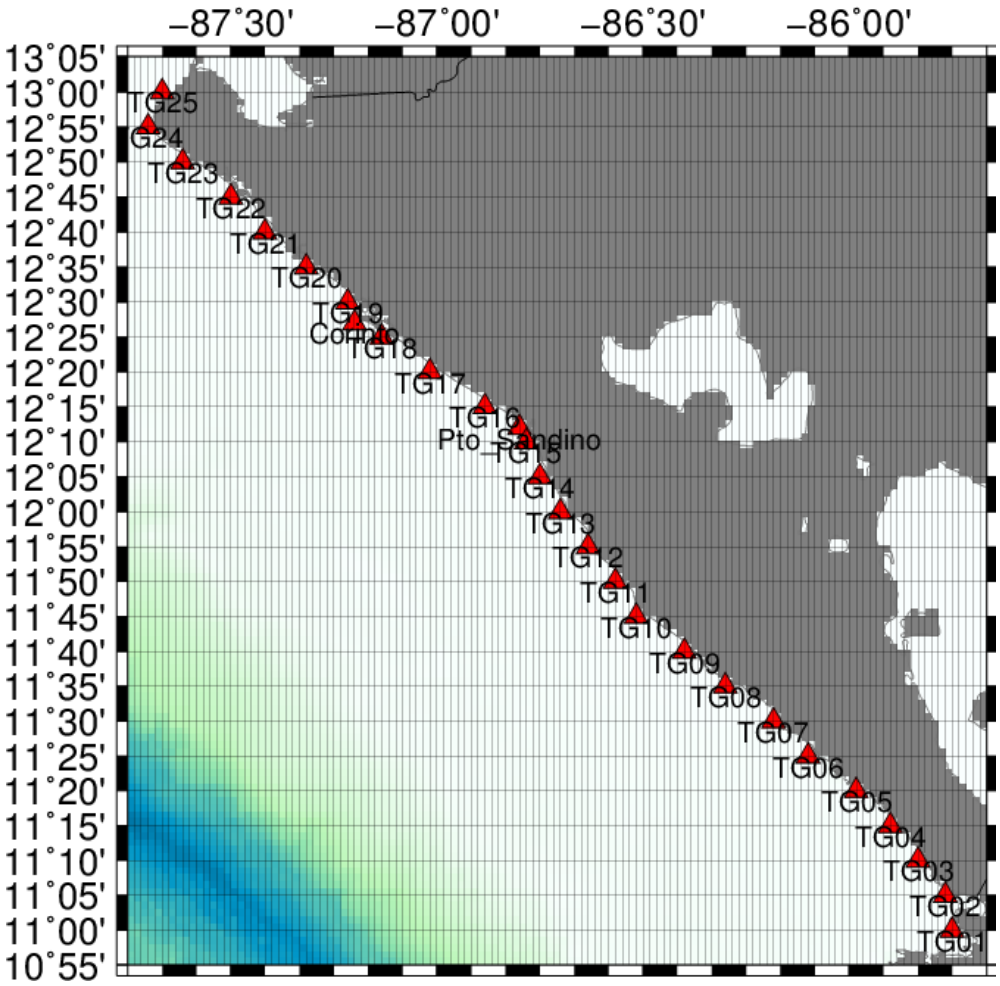

Figure 2. Forecast points along the Pacific coast of Nicaragua for tsunami simulation. A total of 27 forecast points were set along the coast of the Pacific of Nicaragua, for tsunami simulation. 25 of them were spaced every 5' in latitude.

Table 2. Location of the forecast points for tsunami simulation assumed in this study.

No.	Forecast Point Station Name	Latitude (N) (deg: min)	Longitude (W) (deg: min)
1	TG01	11:00	-85:45
2	TG02	11:05	-85:46
3	TG03	11:10	-85:50
4	TG04	11:15	-85:54
5	TG05	11:20	-85:59
6	TG06	11:25	-86:06
7	TG07	11:30	-86:11
8	TG08	11:35	-86:18
9	TG09	11:40	-86:24
10	TG10	11:45	-86:31
11	TG11	11:50	-86:34
12	TG12	11:55	-86:38
13	TG13	12:00	-86:42
14	TG14	12:05	-86:45
15	TG15	12:10	-86:47
16	Puerto Sandino	12:12	-86:48
17	TG16	12:15	-86:53
18	TG17	12:20	-87:01
19	TG18	12:25	-87:08
20	Corinto	12:27	-87:12
21	TG19	12:30	-87:13
22	TG20	12:35	-87:19
23	TG21	12:40	-87:25
24	TG22	12:45	-87:30
25	TG23	12:50	-87:37
26	TG24	12:55	-87:42
27	TG25	13:00	-87:40

The Corinto and Puerto Sandino are permanent tide gauge stations which are currently in operation.

3. Results (Tsunami Height)

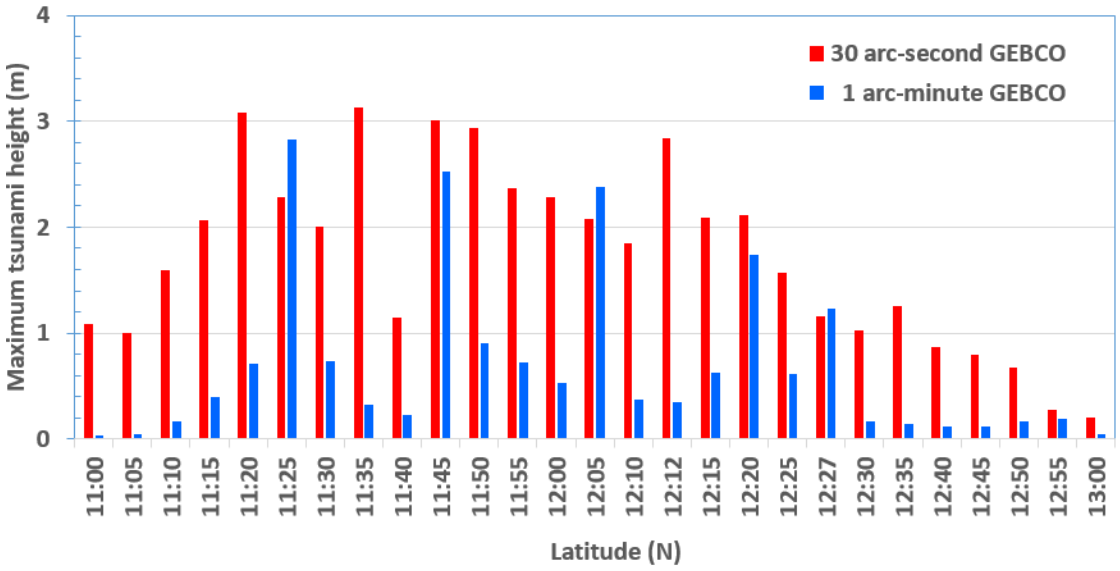

Figure 3. Comparison results of the maximum tsunami height, obtained from numerical tsunami simulation propagation, using TUNAMI-N2 code with GEBCO bathymetry of 1 arc-minute and 30 arc-seconds.

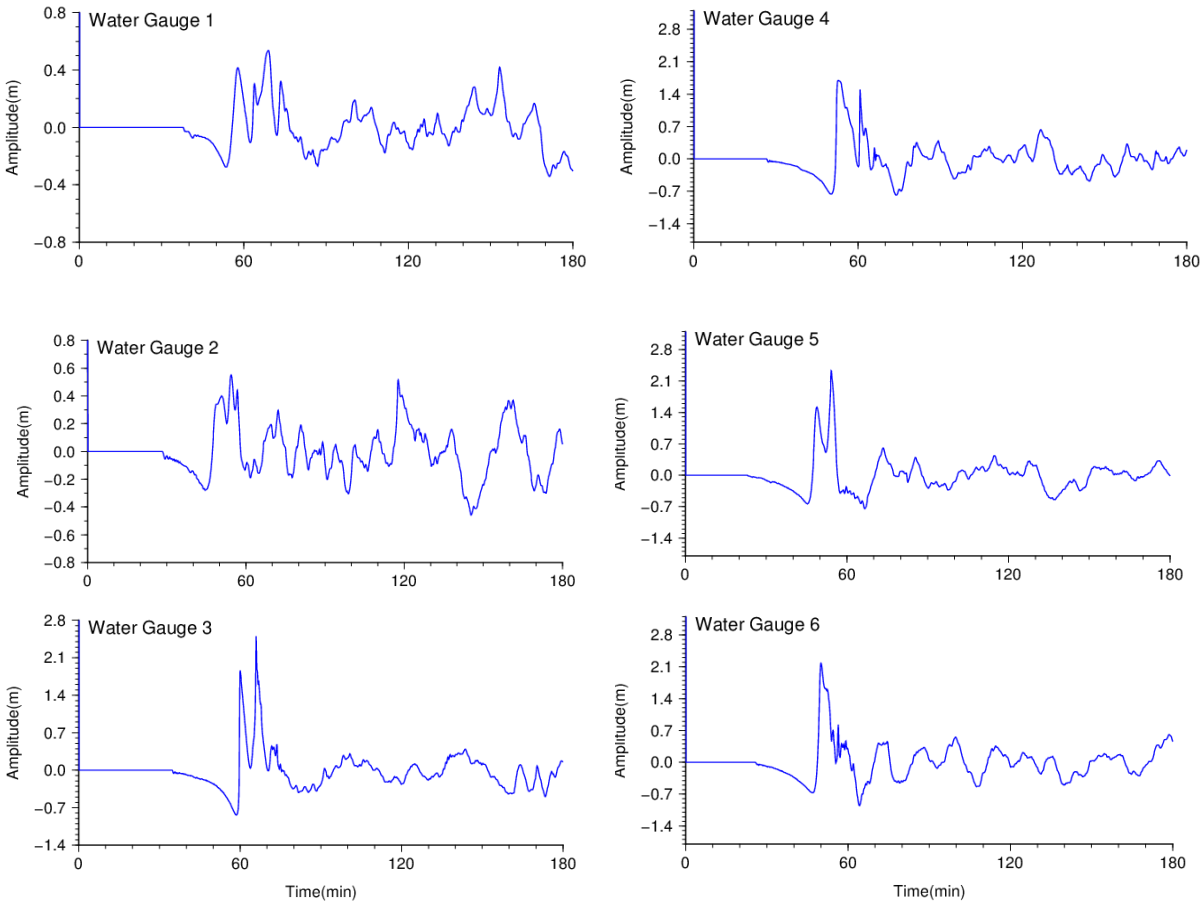

Figure 4. Waveform calculated from numerical tsunami inundation at each water gauge station set along the coastline of Pacific of Nicaragua.

Table 3. Tsunami travel time and tsunami heights obtained from simulation.

Forecast points	GEBCO 1 arc - minute		GEBCO 30 arc - second	
	TTT (min)	Tsunami heights (m)	TTT (min)	Tsunami heights (m)
TG01	124.0	0.028	48.5	1.080
TG02	121.8	0.051	45.9	1.000
TG03	69.0	0.163	44.1	1.594
TG04	68.1	0.391	44.3	2.062
TG05	53.0	0.706	47.3	3.087
TG06	48.1	2.831	46.1	2.278
TG07	58.1	0.735	50.2	2.009
TG08	68.2	0.323	49.9	3.124
TG09	71.5	0.229	54.5	1.152
TG10	48.9	2.531	48.9	3.006
TG11	53.4	0.909	51.6	2.931
TG12	53.9	0.728	53.1	2.368
TG13	54.4	0.530	50.6	2.281
TG14	52.6	2.375	52.5	2.074
TG15	62.2	0.367	57.7	1.850
Pto_Sandino	69.3	0.350	59.7	2.839
TG16	60.8	0.628	56.9	2.087
TG17	53.6	1.738	52.1	2.112
TG18	53.8	0.608	51.6	1.564
Corinto	49.0	1.232	47.7	1.158
TG19	67.2	0.169	51.9	1.028
TG20	72.4	0.147	52.0	1.255
TG21	65.9	0.121	57.0	0.865
TG22	79.0	0.112	62.6	0.800
TG23	75.0	0.164	59.4	0.671
TG24	72.4	0.186	65.5	0.280
TG25	103.7	0.043	77.7	0.204

4. Conditions for Computation

Tabe 4. Region for computation and data used for simulation.

Area	9° N to 15° N / -91° W to -83° W
Bathymetry data	1 arc-minute and 30 arc-seconds GEBCO
Δt	3.0s