

**TSUNAMI SIMULATIONS FOR A PROTOTYPE OF TSUNAMI DATABASE
IN SOUTHWESTERN SUMATRA**

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1. Fault Parameters of Tsunami Sources

Table 1. Three subfaults parameters of real case of the 1833 Bengkulu earthquake (Mw 8.9).

SUB FAULTS		Fault Center		Top Left Corner		SLIP (m)	LENGTH (km)	WIDTH (km)
		Long (E)	Lat (S)	Long (E)	Lat (S)			
3 Segments	A	99.0	-2.9	98.4	-3.5	9	30	174
	B	99.3	-3.3	98.8	-4.0	11	70	174
	C	100.0	-4.2	100.0	-5.2	18	180	124

Table 2. Fault parameter models with different magnitudes and depths.

MAG	DEPTH AT TOP LEFT CORNER (TLC)	DEPTH AT CENTER OF FAULT (DCF)	SLIP (m)	LENGTH (km)	WIDTH (km)	STRIKE (deg)	DIP (deg)	SLIP (deg)
8.5	0	39.6	7.1	224	112	325	45	90
8.5	10	49.6	7.1	224	112	325	45	90
8.0	0	22.3	4.0	126	63	325	45	90
8.0	10	32.3	4.0	126	63	325	45	90
7.5	0	12.5	2.2	71	35	325	45	90
7.5	10	22.5	2.2	71	35	325	45	90
7.0	0	7.0	1.3	40	20	325	45	90

Table 3. Location of source points.

SOURCE POINT	LONGITUDE (E)	LATITUDE (S)
REAL	100.900	-3.500
A	100.000	-2.000
B	99.000	-2.500
C	99.500	-2.500
D	100.000	-2.500
E	100.500	-2.500
F	99.000	-3.000
G	99.500	-3.000
H	100.000	-3.000
I	100.500	-3.000
J	99.000	-3.500
K	99.500	-3.500
L	100.000	-3.500
M	100.500	-3.500
N	101.000	-3.500
O	99.000	-4.000
P	99.500	-4.000
Q	100.000	-4.000
R	100.500	-4.000
S	101.000	-4.000
T	101.500	-4.000
U	99.500	-4.500
V	100.000	-4.500
W	100.500	-4.500
X	101.000	-4.500
Y	101.500	-4.500
Z	100.000	-5.000
ZA	100.500	-5.000
ZB	101.000	-5.000
ZC	99.000	-2.000
ZD	99.500	-2.000
ZE	100.500	-2.000
ZF	101.000	-3.000
ZG	101.500	-3.500

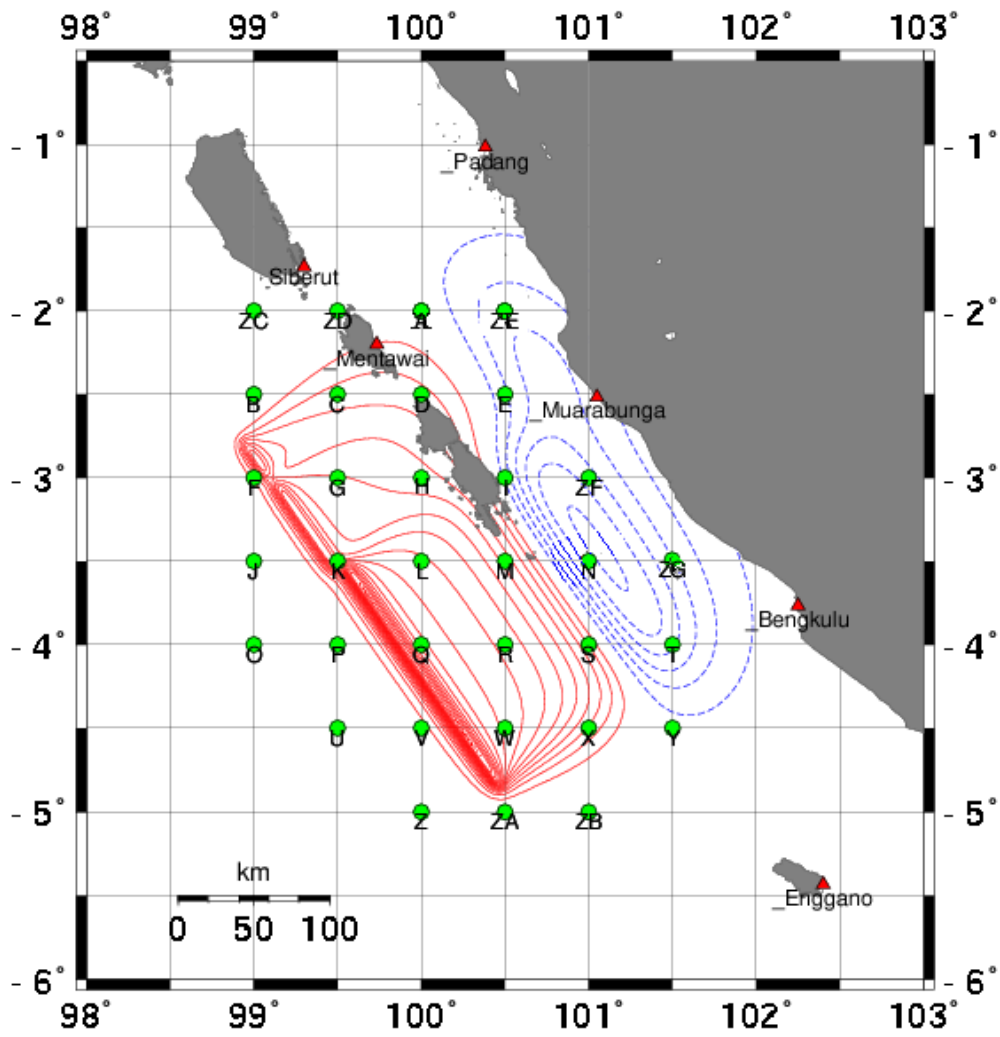


Figure 1. The source points (green dots) location covering the crustal deformation area Refer to Borero (2006).

Red triangles denote the cities; The red contour is uplift area;
The blue contour is subsidence area.

2. Forecast Points and Coastal Points

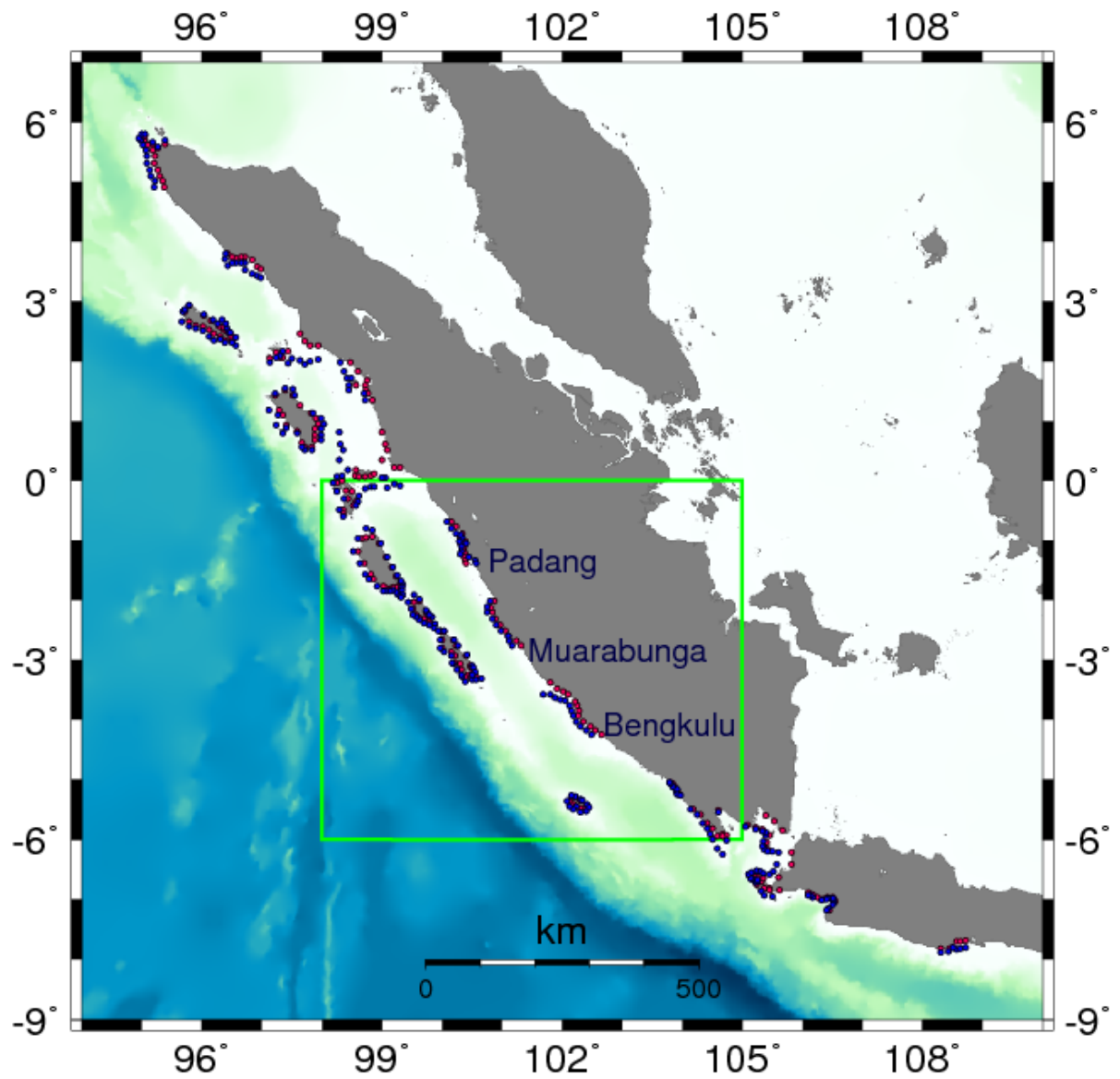


Figure 2A. The 526 output points along the coast of Sumatra and Java islands.

Red dots are coastal points; Blue dots are forecast points;

Green lines box as the site study.

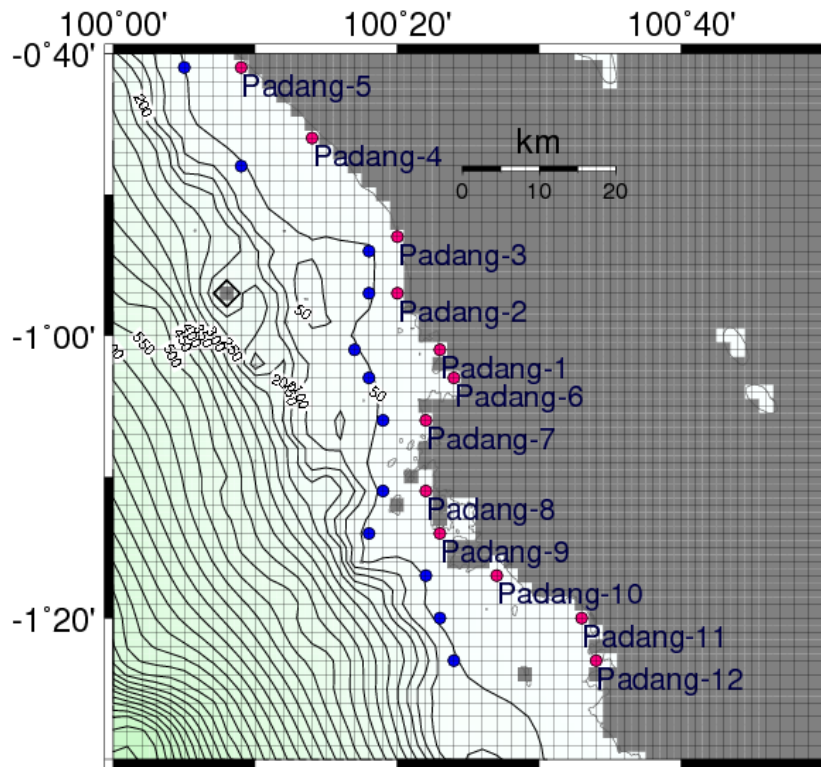


Figure 2B. Bathymetry grid contour map of Padang.
 Blue circles : forecast points; pale red circles: coastal points.

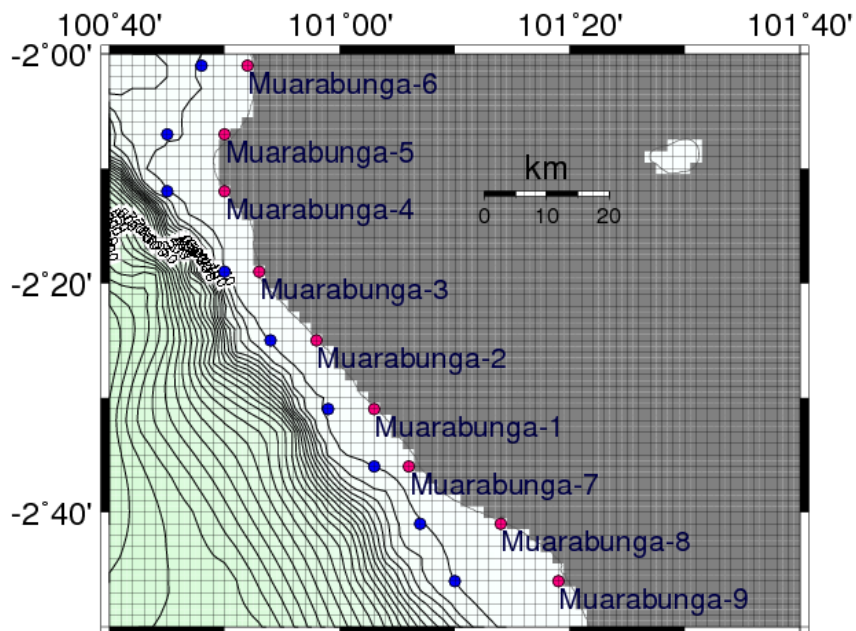


Figure 2C. Bathymetry grid contour map of Muarabunga.
 Blue circles : forecast points; pale red circles: coastal points.

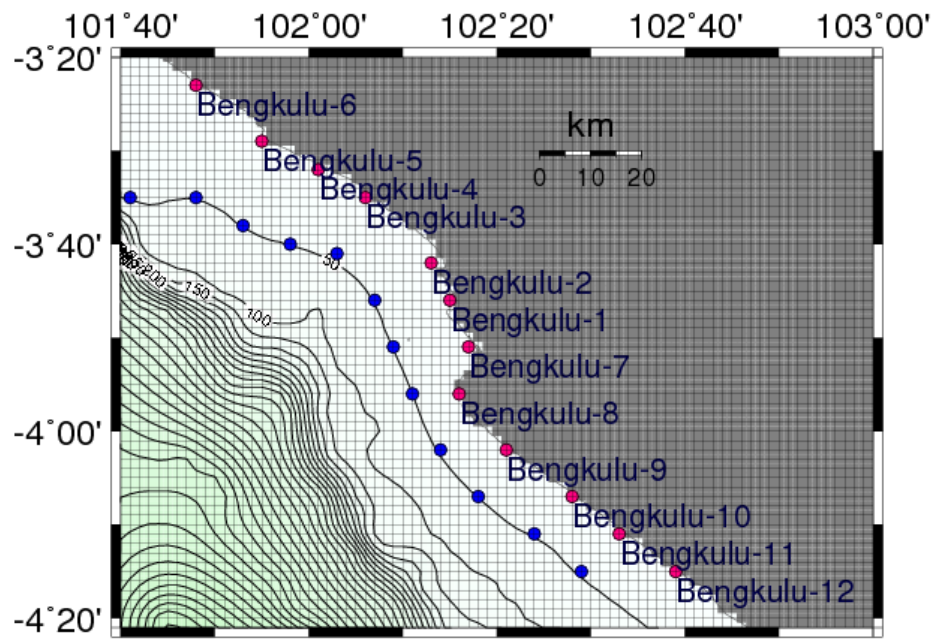


Figure 2D. Bathymetry grid contour map of Bengkulu.
 Blue circles : forecast points; pale red circles : coastal points.

Table 4. Coastal and forecast points location with bathymetry depth.

STATION OBSERVATION	COASTAL POINT			FORECAST POINT		
	LONG	LAT	WATER	LONG	LAT	WATER
	(E)	(S)	DEPTH (m)	(E)	(S)	DEPTH (m)
Padang-1	100.383	-1.017	1	100.317	-1.183	53
Padang-2	100.333	-0.950	1	100.300	-1.233	60
Padang-3	100.333	-0.883	1	100.317	-1.100	60
Padang-4	100.233	-0.767	1	100.383	-1.333	55
Padang-5	100.150	-0.683	1	102.050	-3.683	50
Padang-6	100.400	-1.050	6	100.833	-2.317	55
Padang-7	100.367	-1.100	1	100.983	-2.517	37
Padang-8	100.367	-1.183	1	100.900	-2.417	30
Padang-9	100.383	-1.233	1	100.367	-1.283	33
Padang-10	100.450	-1.283	1	101.683	-3.583	46
Padang-11	100.550	-1.333	1	102.233	-4.033	40
Padang-12	100.567	-1.383	5	102.483	-4.250	55
Muarabunga-1	101.050	-2.517	13	102.400	-4.183	44
Muarabunga-2	100.967	-2.417	1	101.800	-3.583	44
Muarabunga-3	100.883	-2.317	1	102.117	-3.767	43
Muarabunga-4	100.833	-2.200	19	100.800	-2.017	52
Muarabunga-5	100.817	-2.133	22	101.167	-2.767	52
Muarabunga-6	100.867	-2.017	1	101.883	-3.633	48
Muarabunga-7	101.100	-2.600	10	101.050	-2.600	49
Muarabunga-8	101.233	-2.683	1	102.150	-3.850	55
Muarabunga-9	101.317	-2.767	1	101.967	-3.667	49
Bengkulu-1	102.250	-3.767	1	102.300	-4.117	48
Bengkulu-2	102.217	-3.700	2	102.183	-3.933	42
Bengkulu-3	102.100	-3.583	1	100.083	-0.683	49
Bengkulu-4	102.017	-3.533	1	100.750	-2.117	49
Bengkulu-5	101.917	-3.483	2	100.750	-2.200	48
Bengkulu-6	101.800	-3.383	2	100.283	-1.017	46
Bengkulu-7	102.283	-3.850	1	101.117	-2.683	49
Bengkulu-8	102.267	-3.933	1	100.400	-1.383	50
Bengkulu-9	102.350	-4.033	1	100.150	-0.800	46
Bengkulu-10	102.467	-4.117	1	100.300	-1.050	49
Bengkulu-11	102.550	-4.183	1	100.300	-0.950	47
Bengkulu-12	102.650	-4.250	1	100.300	-0.900	46

3. Results (Tsunami Height)

MAX TSUNAMI HEIGHT BY DIFFERENT MAGNITUDES AND DEPTHS

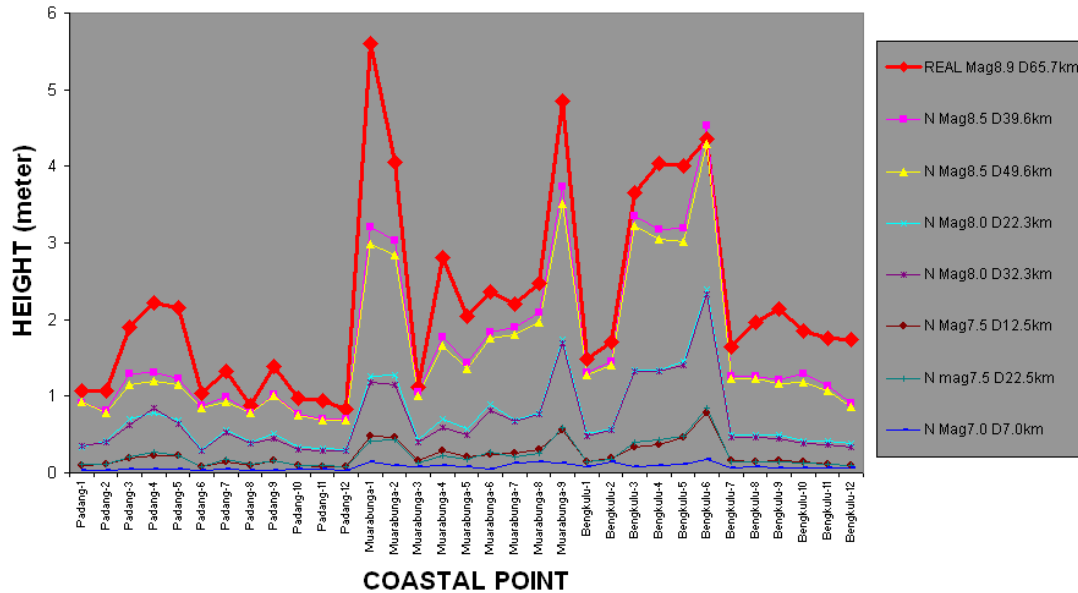


Figure 3. Tsunami heights according to different magnitudes and depths.

MAX TSUNAMI HEIGHT BY DIFFERENT SOURCES

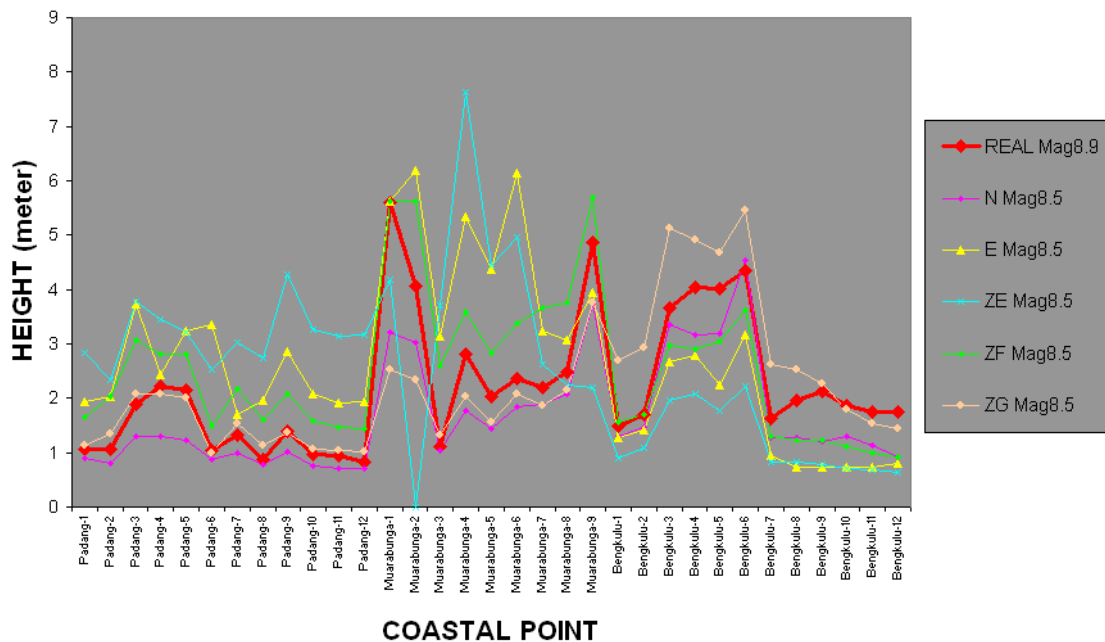


Figure 4. Tsunami heights according to different source points.

TSUNAMI HEIGHTS OF COASTAL AND GREEN'S LAW CALCULATION BY DIFFERENT SOURCES

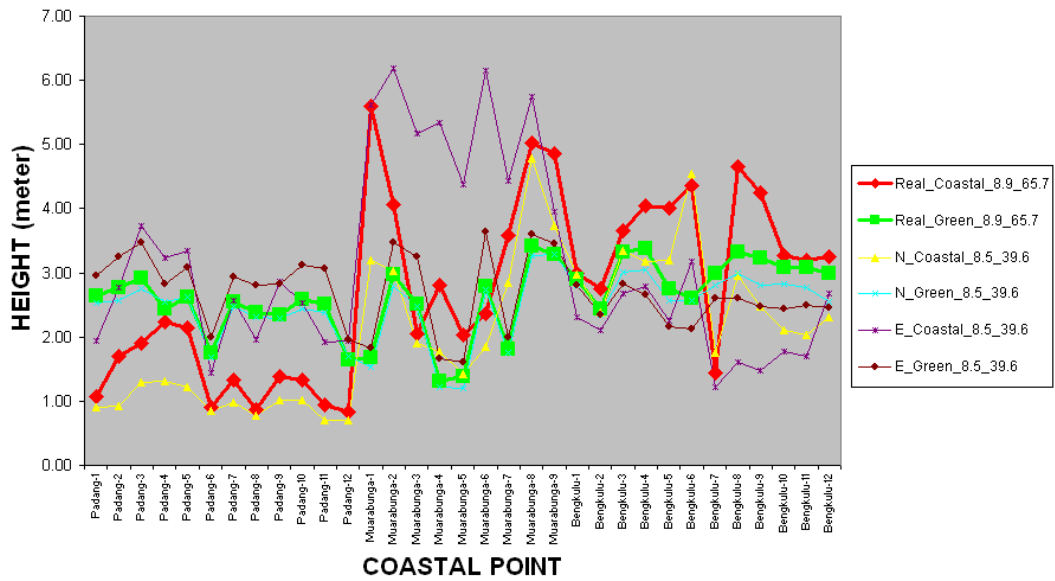


Figure 5. Tsunami height of coastal point and Green's Law calculation by different sources.

TSUNAMI HEIGHT OF COASTAL AND GREEN'S LAW CALCULATION BY DIFFERENT MAGNITUDES AND DEPTHS

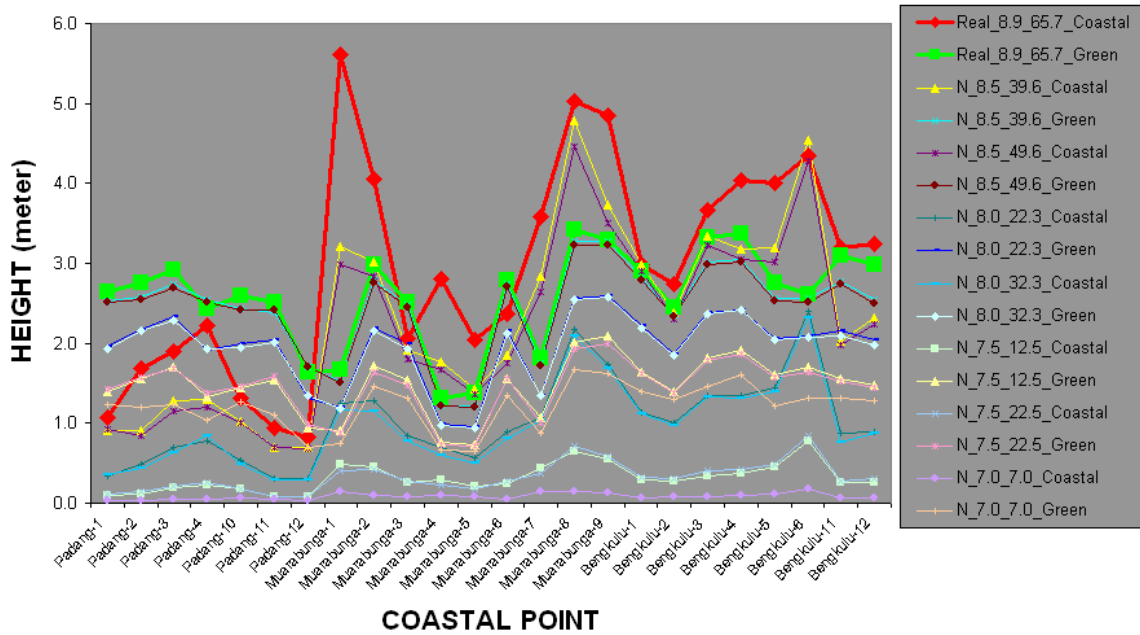


Figure 6. Tsunami height of coastal point and Green's Law calculation by different magnitudes and depths.

4. Conditions for Computation

Table 5. Region for computation and data used for simulation.

Area	0°00' S - 6°00' S / 98°00' E - 105°00' E
Bathymetry data	1 arc-minute GEBCO
Δt	2.0s