

The impact of tsunami on the coasts of Indonesia



Examples of historic tsunami's

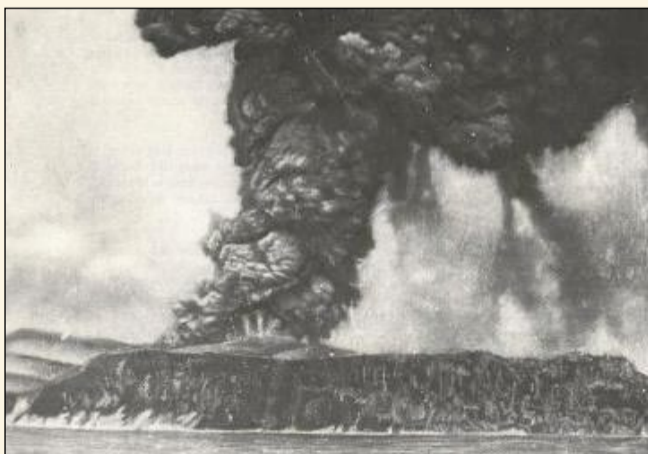
Year	Location	Source location (if different)	Max. Runup	Deaths
1700	Sanriku coast	---	?	~ 100.000
1755	Lisbon	Atlantic Ocean	25 m.	> 25.000
1883	Java & Sumatra, Indonesia	Krakatau volcano	35 m.	~ 36.000
1908	Messina, Italy	---	8 m.	~ 6.000
1983	Hokkaido, Japan	Sea of Japan	15 m.	103
1992	Flores, Indonesia	---	26 m.	~ 1.000
1998	Sissano, PNG	---	20 m.	~ 2.000

Causes of a tsunami

1. Earthquakes, for instance at ocean floor (plate boundaries)
2. Submarine landslides / slumps near canyons
3. Submarine volcanic eruptions (kick 'em Jenny, Carribean)
4. Volcanic eruptions at sea level: volcanic ash clouds, lahars
5. Caldera collapse: Krakatau tsunami 1883

27 may 1883 the Krakatau volcano collapsed in Strait Sunda, Indonesia

- Run-up at the coast locally 35 m.
- 36.000 people killed
- Also city of Jakarta damaged
- Wave up to 8 km in dense jungle



Krakatau volcanic eruption - 27 may 1883



Steamship "Beraw"



Coral block 600 tons, 300 m3

Krakatau volcanic eruption - 27 may 1883



2.5 km inland..

Tsunami modeling

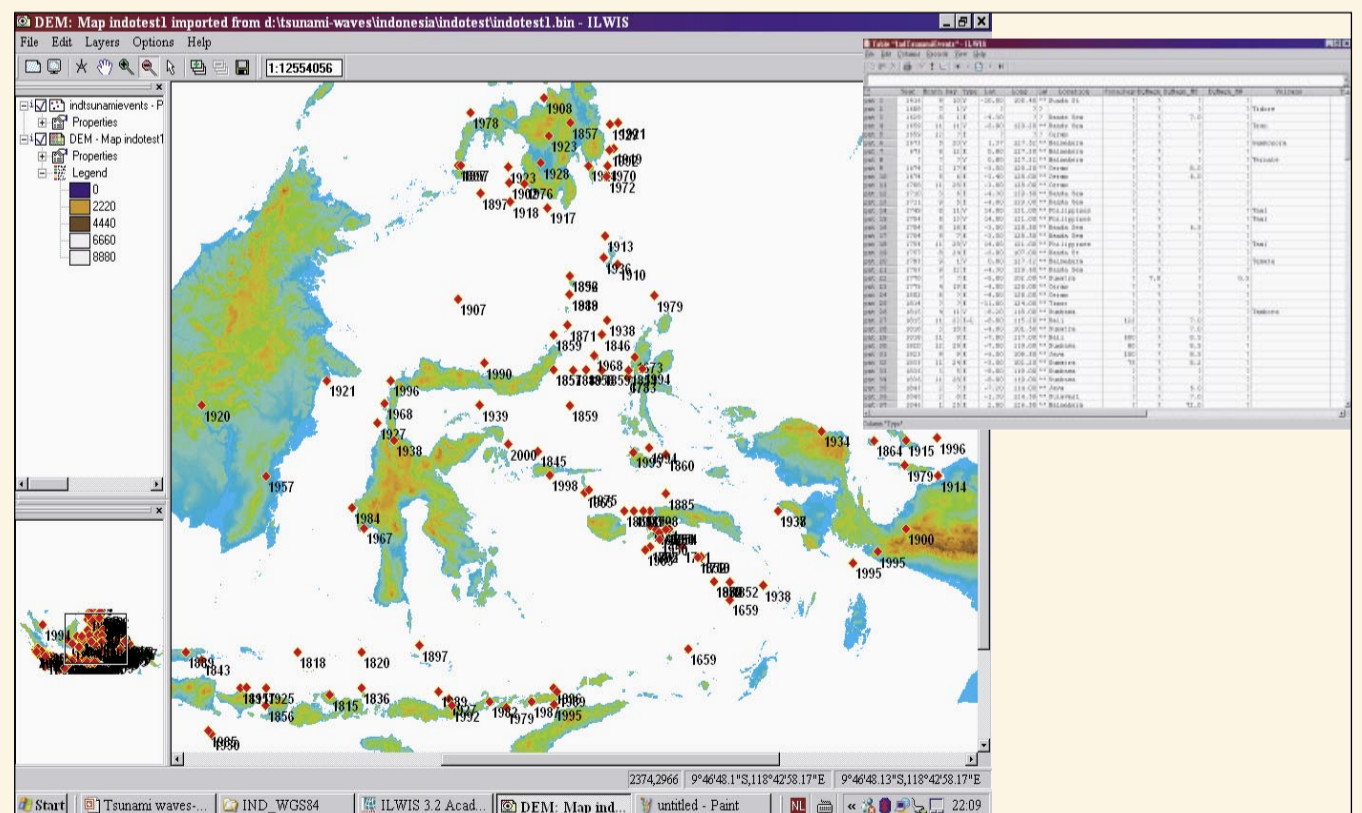
Factors controlling the inundation distance are the maximum "run-up" height at the coastline H and the roughness of the surface.

Terrain type	H 10 m	H 50 m
Mud flats, open fields	5.700 m	48 km
Built-up area (low)	1.000 m	9 km
Forest	250 m	2 km (*)

(* The Krakatau tsunami of 1883 (H : 35 m) penetrated up to 8 km in dense jungle !!)

Natural Environment Research Council, Coventry Univ. CollegeLondon, UK - 2000

Tsunami Database, Indonesia



For more information:

Drs. M.C.J. (Michiel) Damen

Earth Systems Analysis, ITC
Hengelsestraat 99, 7500 AA Enschede, The Netherlands
E-mail: damen@itc.nl

www.itc.nl/library/tsunami.asp
E-mail: tsunami@itc.nl

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