Fined-grained Recent Tsunami Deposits of Phra Phat Bay, Andaman Coast, Thailand Part 1

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Panorama-view from NNE to E from parking lot with location of profile

Location, Topography

The Phra Phat Bay is located approximately 60 km South of Ranong on the Thai Andaman Coast. This bay provides the opportunity, due to its topographic and morphological setting, to study sediments of a "passing-through" tsunami.

Geological Setting

The southern fringe of the bay is characterized by a granite cliff and the bedrock in the bay where samples were taken is built up by sedimentary rocks of the same Tanaosi Formation, which are overlain by a residual soil cover and the tsunami deposits.

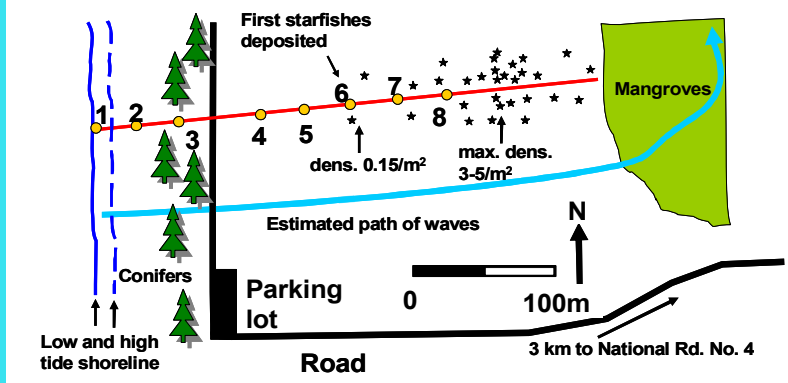
Tsunami Deposit Blanket, Sampling

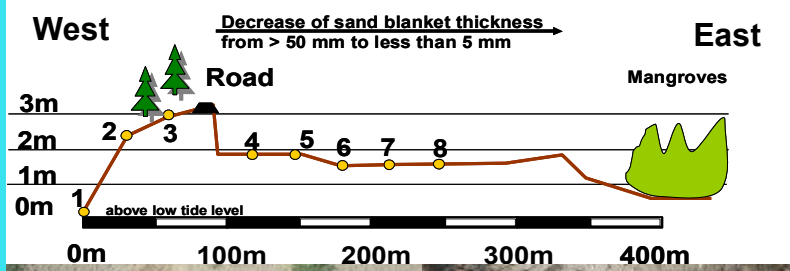
The field situation suggests that the area between the coastline and the road is built up by thick beach sand, while the plain east of the road was an un-vegetated bare field and covered by in-situ soil prior to the tsunami event. This situation allowed to identify the tsunami deposits in the latter area (samples 4-8). An accumulation of starfishes at a certain distance parallel to the shoreline additionally supports that the deposits were brought in by the tsunami.

Samples were collected at various distances from the shoreline along a 350 m long profile. For better data representation, three samples were taken at each sampling distance from the shoreline.

Initial Lab Investigations

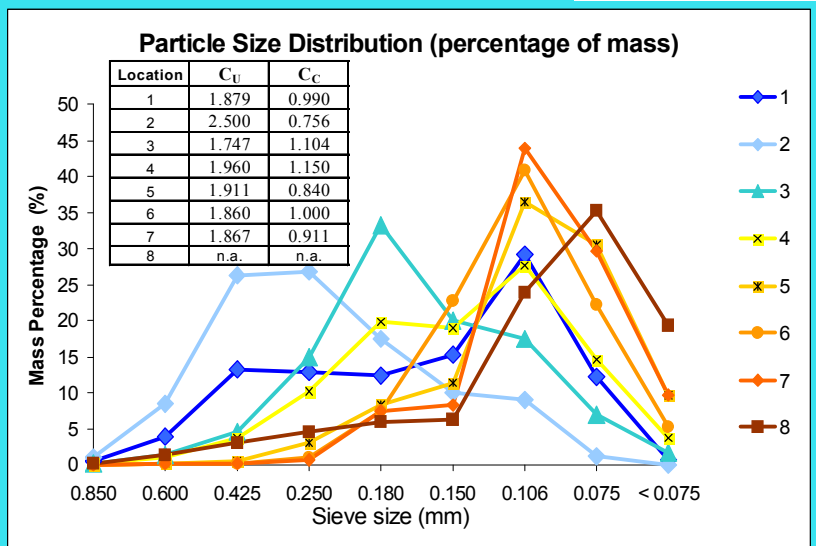
Simple grain size analyses were performed for each sample and, as the results of the three samples of each location were consistent to each other, the values were arithmetically averaged. This data is presented below for each location.





The sandy tsunami sediments were deposited on top of clayey in-situ subsoil east of the beach road (see figs. above). The deposit thickness decreased with distance from the shoreline. Left: At location 5 with a thickness of several cms; Right: On top of a small hill 300 m east of the road in the mangroves, less than 3 mm in thickness

Particle Size Distribution of Sediments



Location	C_U	C_C
1	1.879	0.990
2	2.500	0.756
3	1.747	1.104
4	1.960	1.150
5	1.911	0.840
6	1.860	1.000
7	1.867	0.911
8	n.a.	n.a.

Preliminary Results

Sediment Type A (beach sediments or mixtures, samples 1-3):

- Negligible fine content (< 0.075mm)
- Grain sizes 0.075 mm and 0.106 mm contribute between 9% and 41% to total

Sediment Type B (tsunami deposits, sample 4-8):

- Increasing fine content (< 0.075 mm) with distance from shoreline
- More pronounced sorting
- Grain sizes 0.075 mm and 0.106 mm contribute between 42% and 73% to total