The 22 December 2018 Anak Krakatau Tsunami: A Post-Event Survey at Banten Coast

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Introduction

• A post-event field survey is very necessary to be conducted soon after the event, before the tsunami traces disappeared.

• The tsunami measurements information is important for the further work of tsunami modeling and for the understanding of the tsunami triggering processes and mitigation efforts.

• We conducted a survey on the affected area on the western coast of Banten.

•We collected data of tsunami measurements on 36 locations and three transect of tsunami deposits.

Method

• The post-tsunami field investigation was conducted from 30 December 2018 to 3 January 2019.

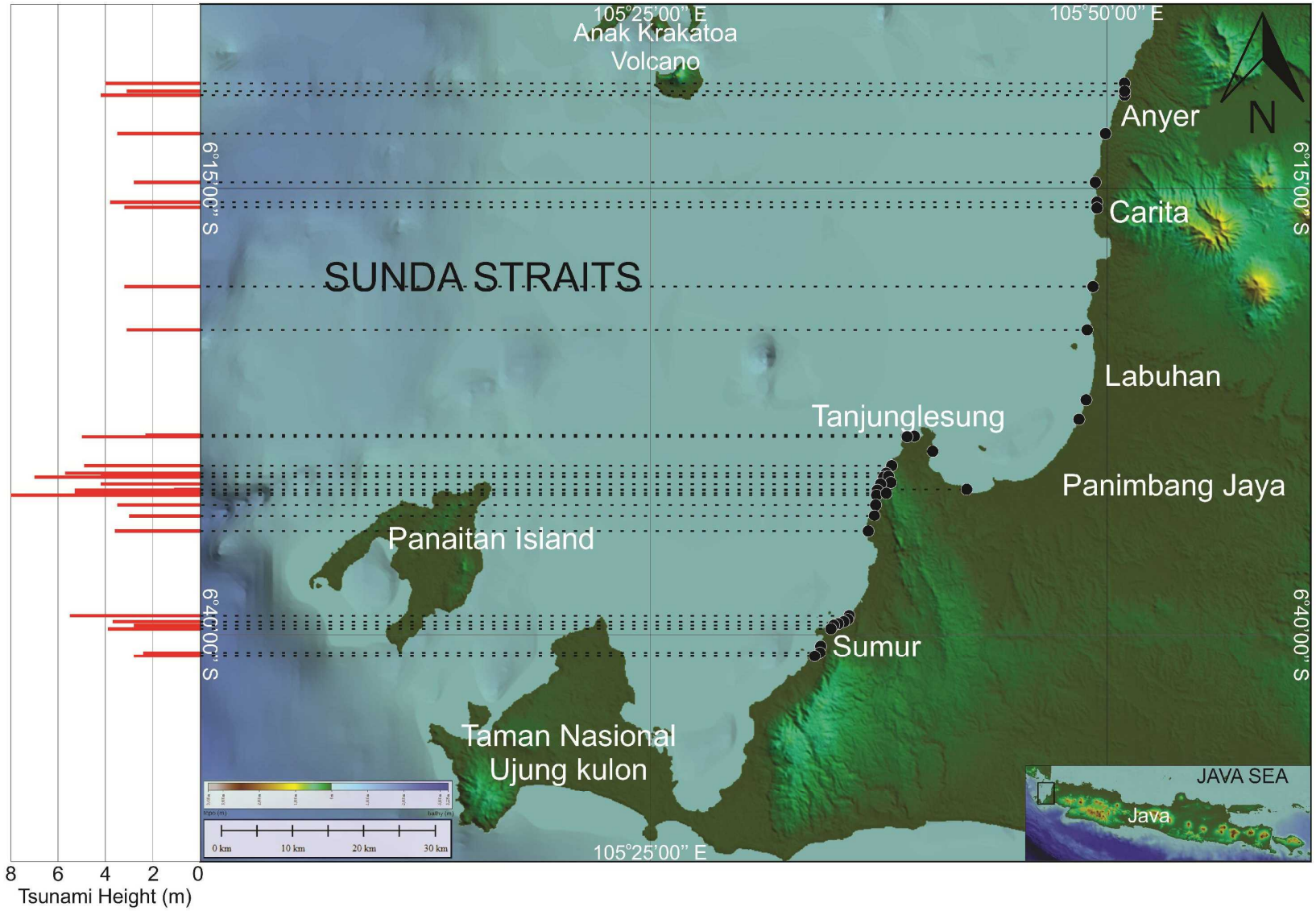
•We surveyed along ~ 100 km coastline from Anyer in the north to Sumur in the south coast of Banten Coast.

• We collected tsunami information and damage observation, at 36 locations / sites. The tsunami height, flow depth, run-up height and distance were measured using a laser range finder.

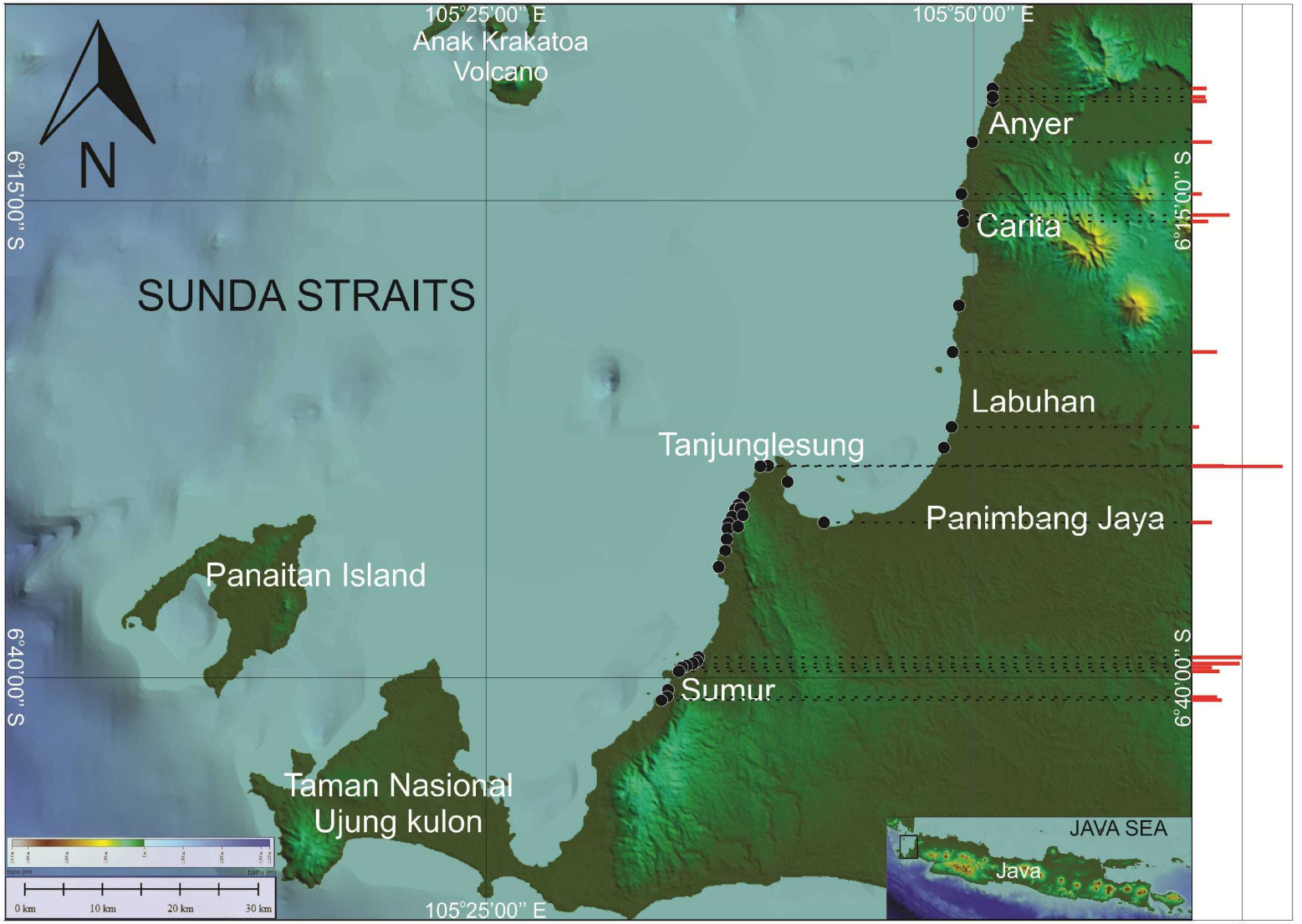
• We surveyed the tsunami deposits in order to understand the field characteristics of the sediments deposited by a flank collapse tsunami.

• The tsunami deposits were observed in three transects located in Tanjung Lesung and Sumur.

Results
Tsunami Height



Flow Depth

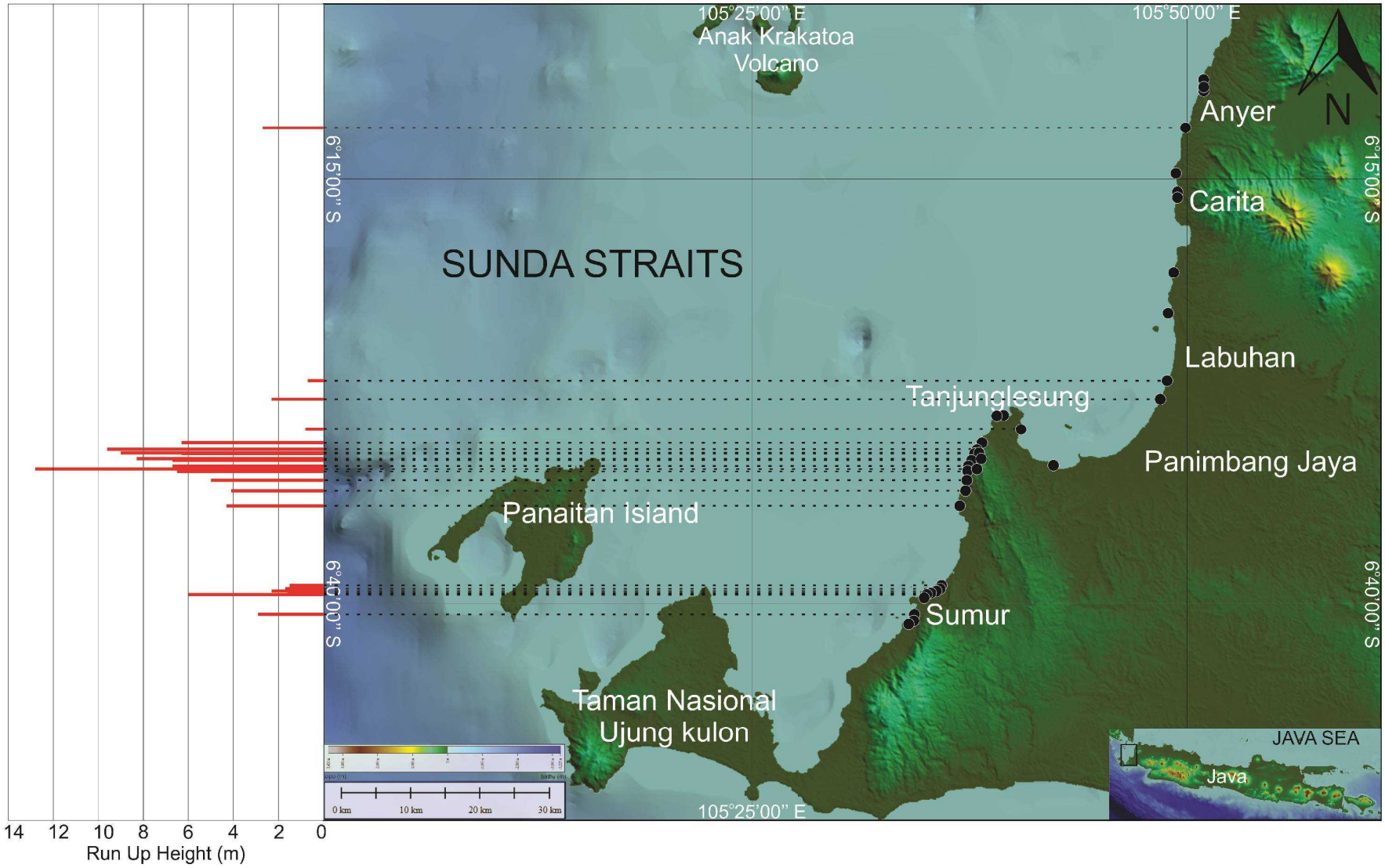

105°25'00" E
Anak Krakatoa
Volcano
105°50'00" E
N
6°15'00" S
SUNDA STRAITS
Anyer
Carita
Labuhan
Tanjunglesung
Panimbang Jaya
Panaitan Island
6°40'00" S
Sumur
Taman Nasional
Ujung kulon
0 km
10 km
20 km
30 km
JAVA SEA
Java
0
2
4
Flow depth (m)

Flow Depth

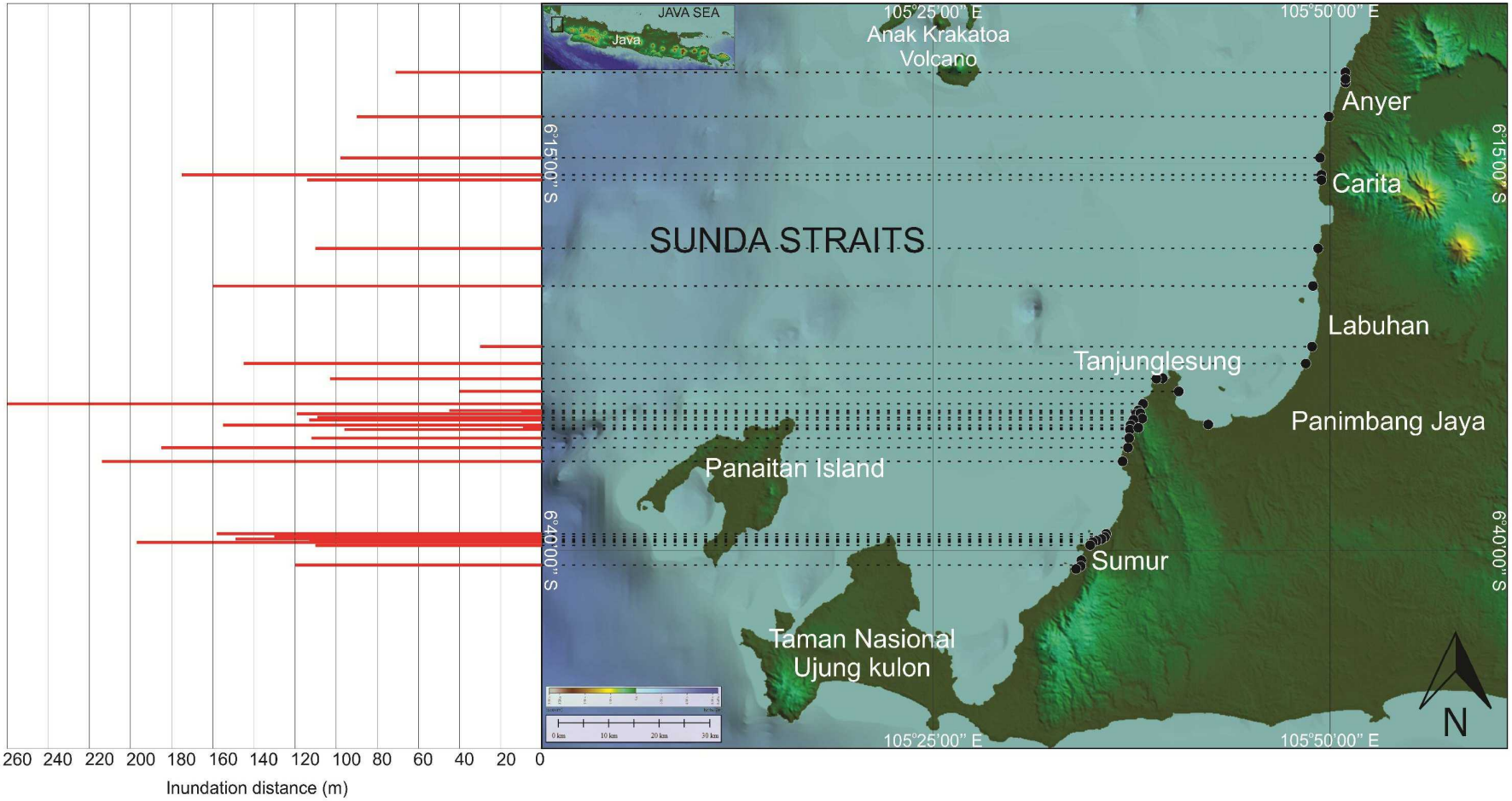
Anyer

Tanjung Lesung

Run-up Height

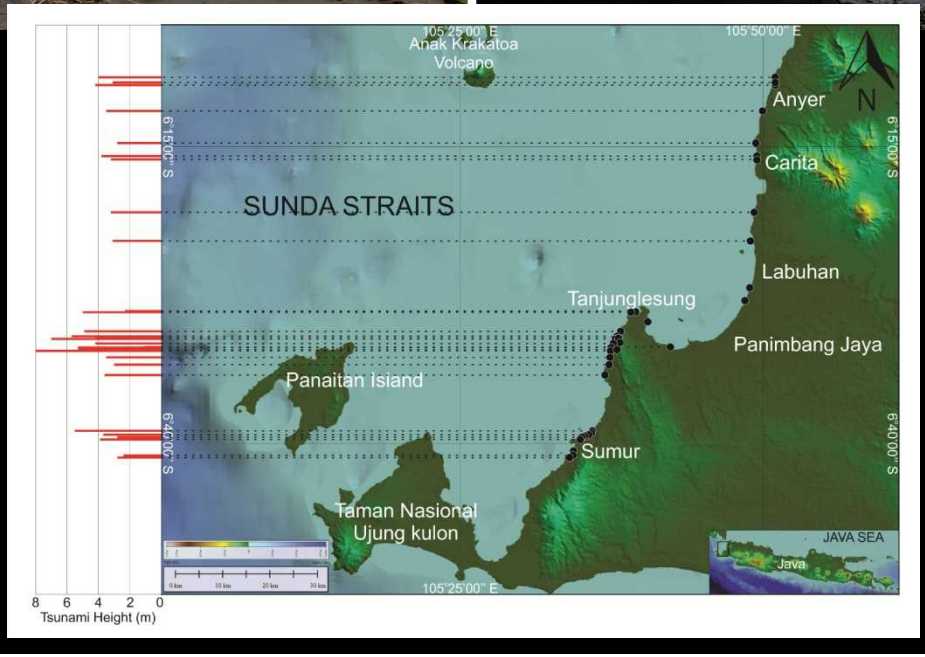


Inundation Distance



Observed Damage in Carita Area

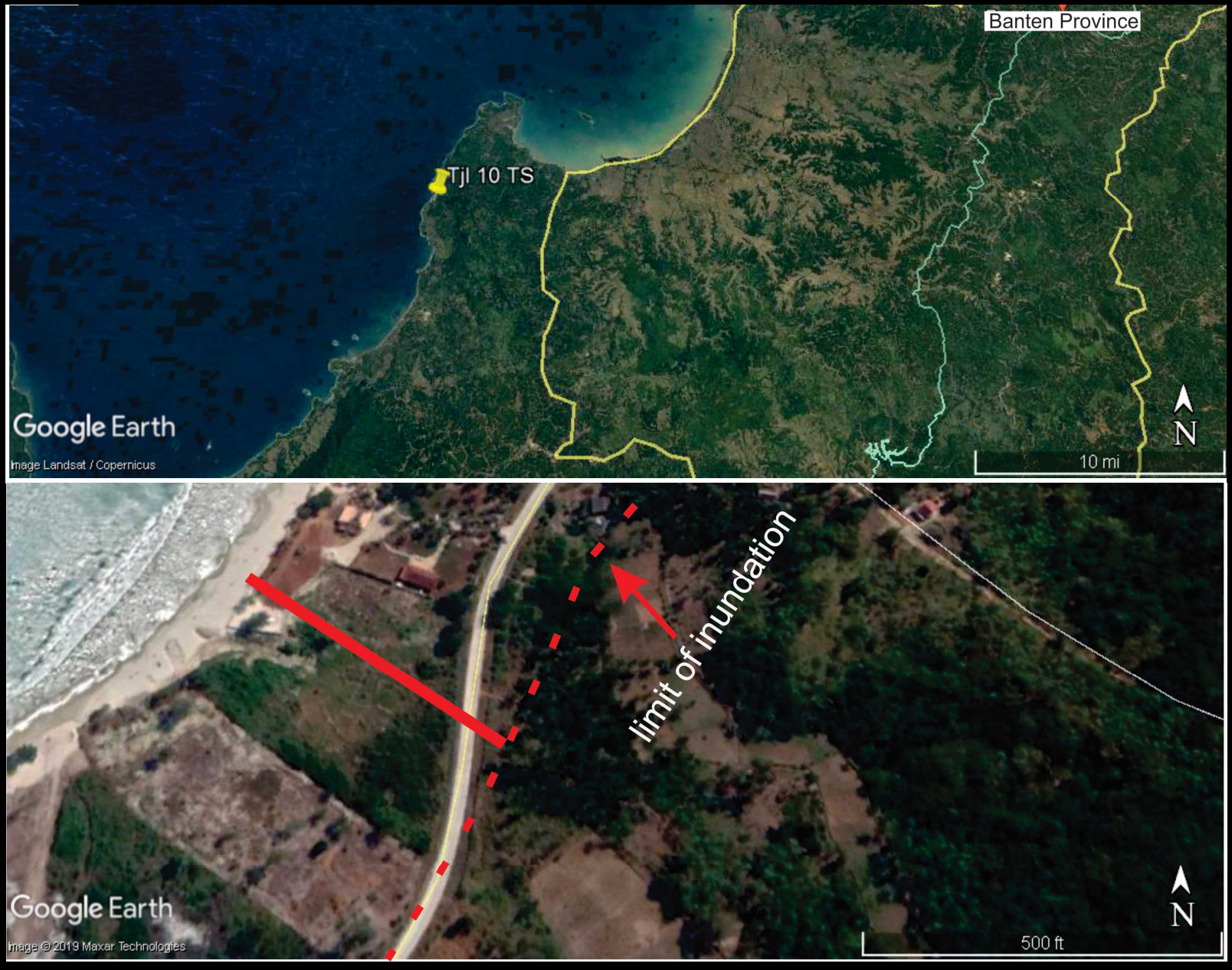
Observed Damage in Labuan and Panimbang



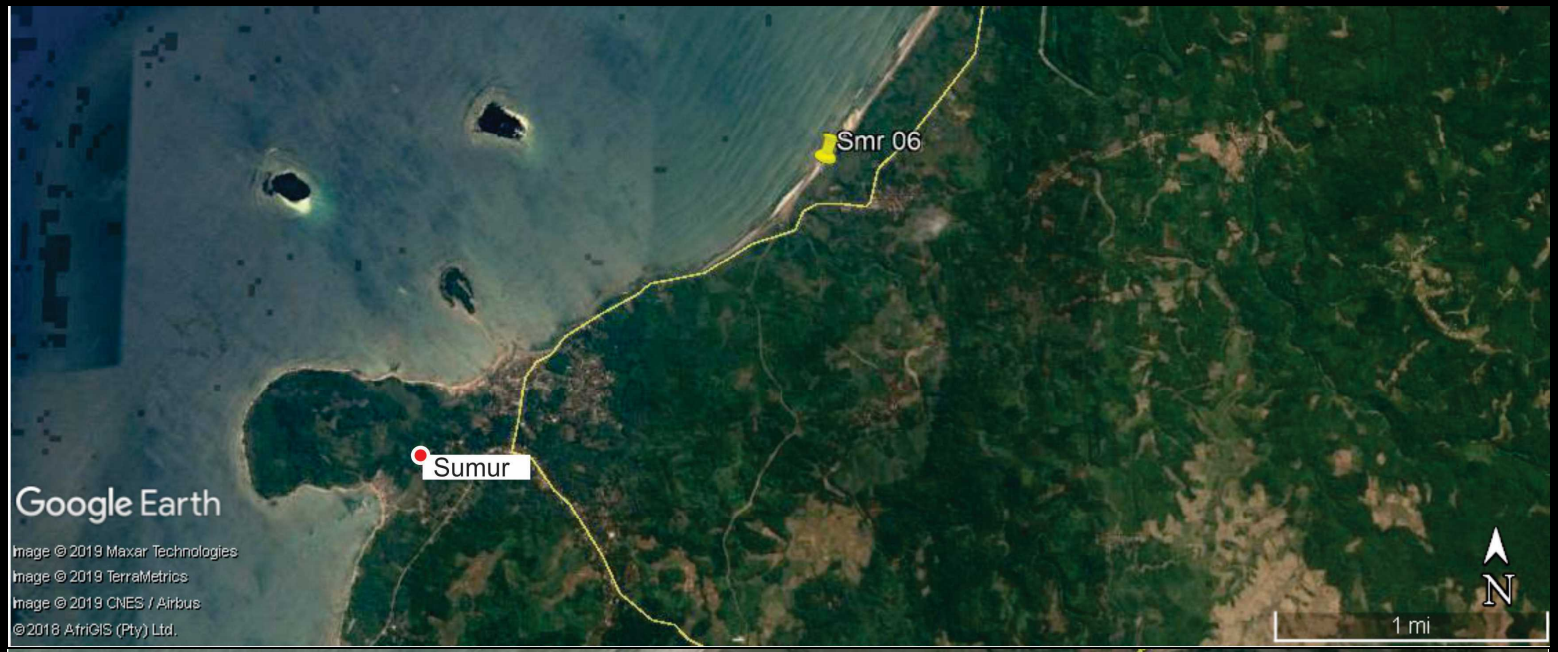
Observed Damage in Tanjung Lesung

Observed Damage in Sumur

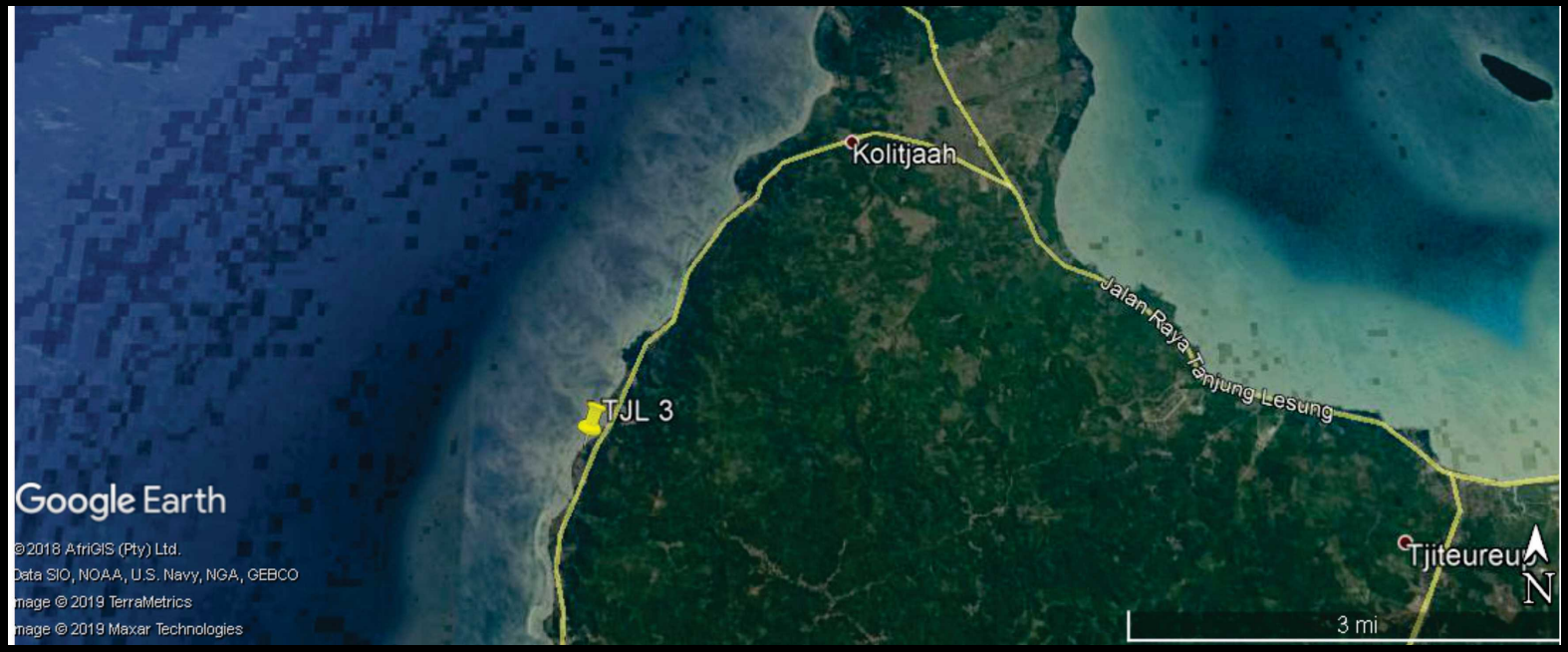
Tsunami Deposit Transect, Tanjung Lesung 1



Tsunami Deposit Transect, Sumur

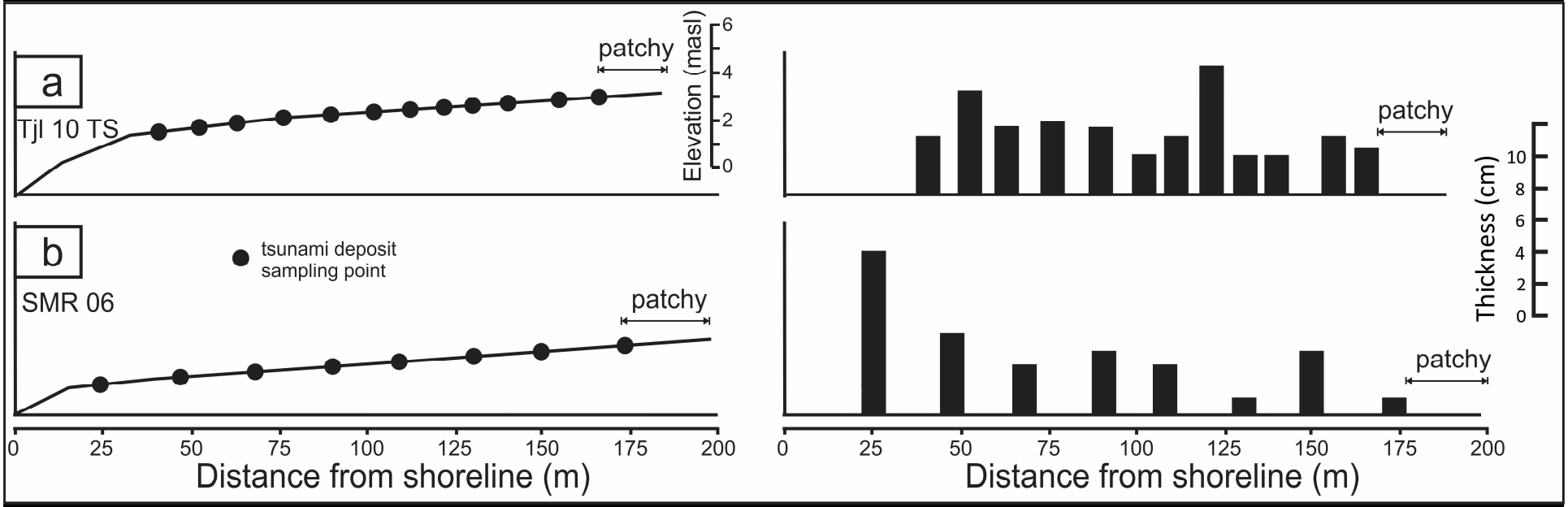


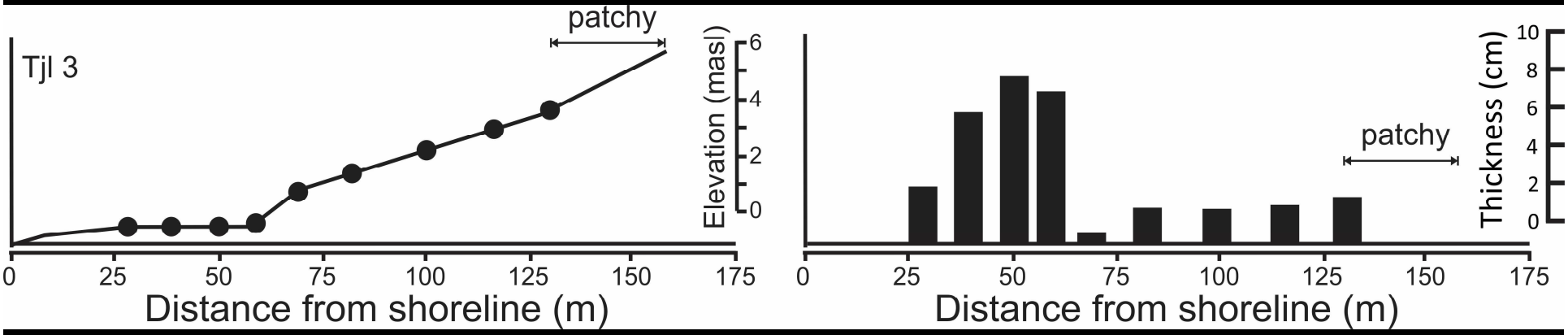
Tsunami Deposit Transect, Tanjung Lesung (2)



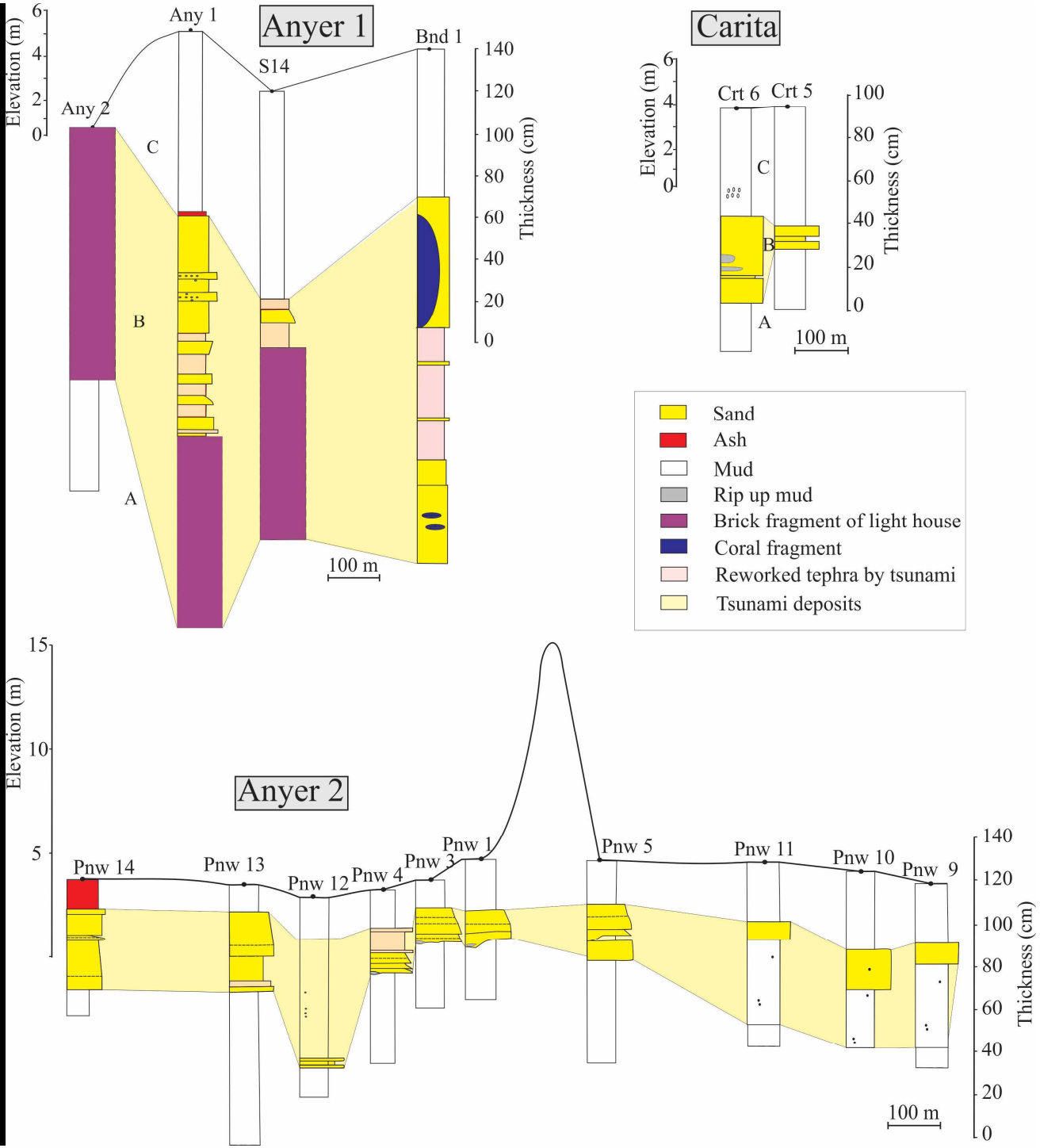
Tsunami Deposit Characteristics Along the Transects

Deposits Thickness Along the Transects





Comparison with the 1883 Krakatau tsunami deposits



Conclusion

- All tsunami measurements indicate that the area located relatively to the south of AK were the most impacted by tsunami.
- The eyewitnesses mostly accounted that at least 2 waves inundated and the 2nd wave was the biggest and responsible for the destruction.
- It seems that the tsunamis not totally destroyed most of the concrete buildings in the inundated area, although the flow depth at some locations were high enough (up to nearly 4 m).
- The distribution of the 2018 AK tsunami deposits not simply thinning landward along the transects, even on the relatively simple topography.
- The tsunami deposits tend to be very thin (max ~ 10 cm) with fining upward as the most common sedimentary structure.
- The 2018 AK tsunami deposits have general characteristics that are similar with the sediments deposited by the EQ tsunami, as no specific volcanogenic material that could be used to distinguish the deposits from the EQ-induced tsunami.