Supporting Information for

Sensitivity Analysis of Tsunami Heights to Shallow Bathymetric Resolution

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This file contains the following:

- *Figure S1: Comparison of the slope maps of the resampled bathymetries.*
- *Figure S2: Setup of the tsunami source.*
- *Figure S3: Heatmaps summarizing the gauge records (maximum wave height and first wave arrival time) at 10 m water depth of the four sites.*

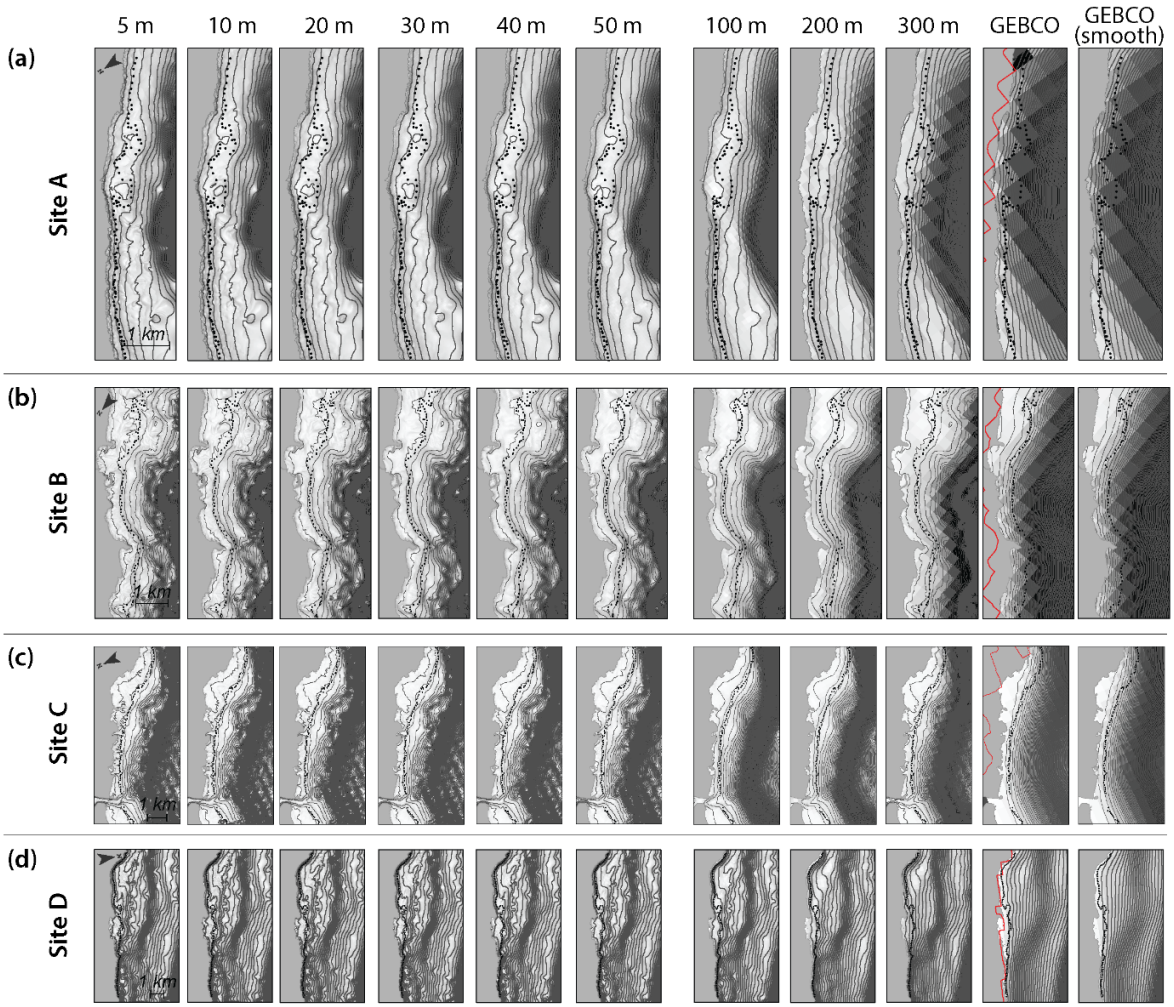

Figure S1. *The resampled bathymetries. Fewer seafloor details are present as the bathymetry resolution becomes coarser (from 5 m to 300 m). Similar features are observed in bathymetry models with resolutions of 5 - 20 m; the bathymetry is visibly smoother for 30 - 50 m bathymetry models but the main features are still present. From resolutions 100 m to 300 m, the seafloor is much smoother. The contour interval is 10 m. The red lines on the maps of the GEBCO column are the original coastline of the GEBCO 2021 dataset. They are generally further inland than the LiDAR-derived coastline. Dots – tide gauges.*

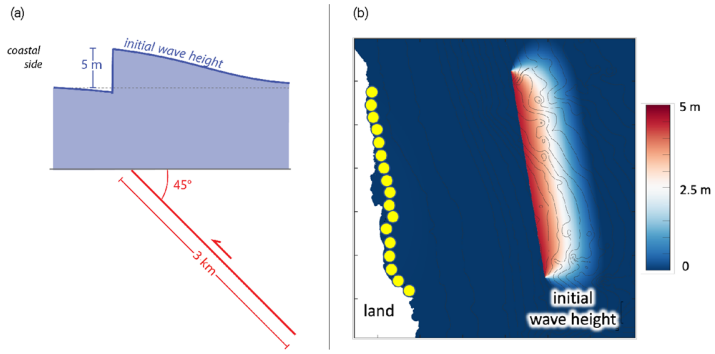

Figure S2 .*Tsunami source setup. (a) The profile of the hypothetical thrust fault used as the tsunami source. The coseismic slip is set to 8 m to generate an initial tsunami with a maximum wave height of 5 m. The fault plane dips 45° seawards to ensure that the main propagation of the waves is towards the coast. (b) Map view of the initial tsunami source. Yellow dots - schematic representation of the virtual gauges set up at the 10 m water depths.*

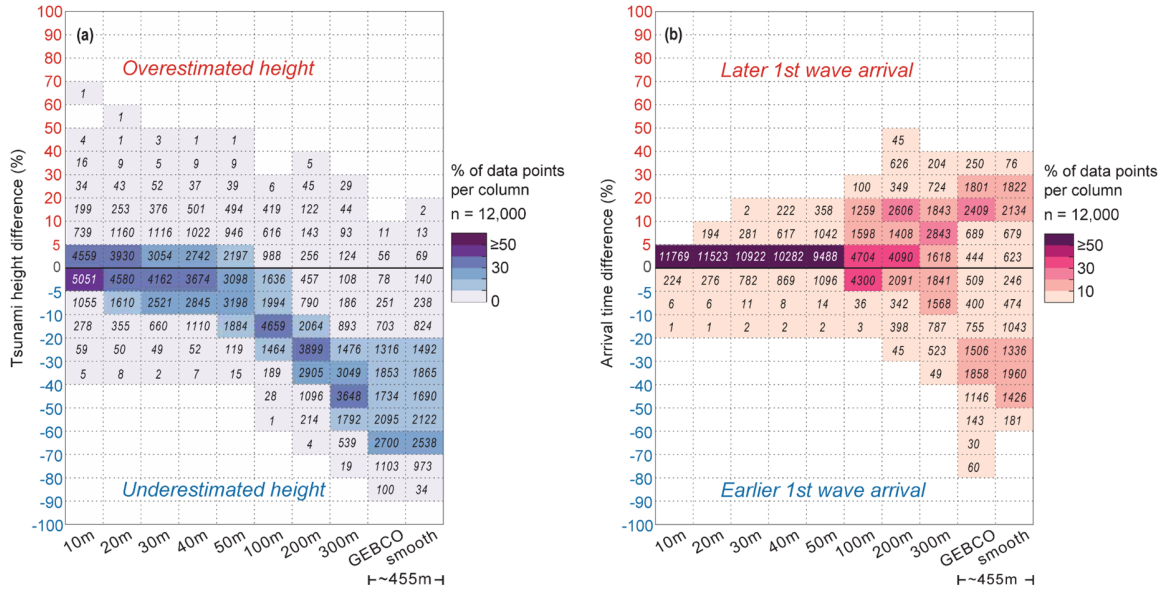

Figure S3 .*Summary heatmaps - combining all the data points from the 4 sites. The bathymetry with resolutions of 10 – 50 m could overestimate the maximum wave height by 5% or underestimate it by 10%. The coarser resolutions are likely to underestimate the maximum wave height by as much as 40 – 70%. The first wave arrival time of the 10 – 50 m resolution models is 5% later than expected. The arrival time became more variable for the coarser bathymetries.*