Extending the paleo-tsunami record along the west coast of Sumatra, Indonesia

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The 2004 Indian Ocean Tsunami tragically underscored the practical implication of understanding the Sumatran subduction zone and its tsunami potential. Further paleo-tsunami research is needed to fully inform the assessment of future tsunami hazards for coastal regions of the Indian Ocean. However, the Covid-19 pandemic has severely limited the ability of many international teams to conduct field investigations of paleo-tsunami sites in Southeast Asia. In collaboration between Syiah Kuala University in Indonesia and Nanyang Technological University in Singapore our team has been investigating the paleo-tsunami history of Sumatra for more than 10 years. This year, in order to facilitate training of junior staff at Syiah Kuala University we recorded a number of coring, sampling and sediment description videos combined with virtual workshops. Written material, as well as regular meetings via zoom, have made co-ordination of fieldwork possible. We also uploaded all data to cloud services immediately following fieldwork to allow everyone in the project to have access to it quickly. This data now consists of more than 500 photographs, field description files, and field reports.

Previously our efforts have concentrated along the northern half of the Aceh province, which was devastated by the 2004 Indian Ocean Tsunami. Over the past 12 months, we have extended our field research ~250 km southwards along the western coastline of Sumatra. Despite the pandemic, we have been able to investigate 4 new coastal wetland sites and identify between 1 and 5 potential paleo-tsunami layers at each site at depths of 1.7 to 4.5 m. More than 50 samples of the sediments have been sampled and are currently being analyzed to confirm their marine origin and the chronology of the events they represent.