

# **A rapidly prograding beach ridge plain in northern Sumatra as an archive for past tsunamis**

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The 2004 Sumatra-Andaman earthquake and following tsunami were unprecedented in Aceh, the northernmost province of Sumatra. In this study we use buried sand sheets on a rapidly prograding beach ridge plain to extend tsunami history 1000 years into Aceh's past. The 2004 tsunami deposited a sand sheet up to 1.8 km inland on a marshy beach ridge plain. Sediment cores from these coastal marshes revealed two older extensive sand sheets with similar sediment characteristics. These sheets, deposited soon after AD 1290-1400 and AD 780-990, probably represent earlier tsunamis. An additional sand sheet of limited extent might correlate with a documented smaller tsunami of AD 1907. The data suggest that recurrence intervals of destructive tsunamis from Sumatra-Andaman sources can span centuries, with the 2004 Indian Ocean tsunami separated by its youngest full predecessor by perhaps 600 years. Such long recurrence intervals add to the challenge of preparing communities along Indian Ocean shorelines for future tsunamis.