

Keynote Speech

Tuesday, September 17th, 13:30 - 14:00

Conference Hall

Chair: J. Bruce H. Shyu

What We've Learned about Tsunamis in Aceh from Corals, Sands, Bats, Sherds and Gravestones

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Destructive large earthquakes usually generate a flurry of scientific activity – witness the rapid growth of modern earthquake science in Taiwan in the aftermath of the 1999 Chi Chi earthquake. The giant 2004 Indian Ocean earthquake and its tsunami also provoked a rapid growth in regional knowledge of seismic and tsunami hazards. Discovery of a sequence of sand layers in a cave along the western coast of Aceh yielded a tsunami record that extends 7,600 years into the past. Sand layers in swales behind beach ridges and uplifted corals implied that the penultimate large earthquakes and tsunamis occurred about six centuries prior to 2004, in about 1394 and 1450 CE.

The effects of these two penultimate tsunamis on coastal settlements and trade patterns were significant, because Aceh had become an important link in Chinese and Indian-Ocean maritime trade by medieval times. Archeological evidence demonstrates that the 1394 tsunami devastated nine distinct communities along a 40-km section of the northern coast of Sumatra. Our evidence is the spatial and temporal distribution of tens of thousands of ancient Chinese, Thai, and Burmese ceramic sherds and over 5,000 carved gravestones, collected and recorded during a systematic landscape archaeology survey near the modern city of Banda Aceh. Only the trading settlement of Lamri, perched on a headland above the reach of the tsunami, survived into and through the subsequent 15th century. It is of historical and political interest that by the 16th century, however, Lamri was abandoned, while low-lying coastal sites destroyed by the 1394 tsunami were resettled as the population center of the new economically and politically ascendant Aceh sultanate. Our evidence implies that the 1394 tsunami was large enough to impact severely many of the areas inundated by the 2004 tsunami and to provoke a significant reconfiguration of the region's political and economic landscape that shaped the history of the region in subsequent centuries.

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