

The Australian 'Mega Tsunami' Debate: Insights from the Geological Record

Speaker: Dr Adam D. Switzer
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Chair: A/P David Higgitt
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3.30 pm – 5.00 pm

Place: Earth Lab (AS2 02-03)
Department of Geography, NUS

Abstract

Research over the last 25 years advocates that the southeast coast of Australia was repeatedly impacted by tsunami during the Holocene. This body of research can be divided into two main themes. The first, coined the 'Australian mega-tsunami hypothesis' refers to work principally by Bryant and a second theme primarily by the speaker and co-authors has focused on boulder accumulations, shell-rich sands and sandsheets found in coastal settings that provide evidence for much smaller, less frequent events.

The proposers of the 'mega-tsunami hypothesis,' have described a varied and primarily geomorphological record of Holocene palaeotsunami that suggests frequent large tsunamis have struck and significantly modified the coast often inundating distances of several kilometers inland (up to 10 km in places) and achieving enormous flood run-ups (up to + 130 m ASL). Recent criticisms of the mega tsunami hypothesis and a societal demand for tsunami risk assessment after the 2004 Indian Ocean tsunami have prompted a re-evaluation of several sites. This talk will summarise this ongoing debate and present new data that indicates the coast has been subject to mid-sized tsunami events in the Holocene.

Throughout the course of this talk the speaker will discuss some of the problems and pitfalls encountered when interpreting the geomorphology and stratigraphy of coastal embayments, including problems defining chronology, the equivocal nature of transported boulders and the uncertainty faced when attempting to distinguish between storm and tsunami deposits.

About the Speaker

The speaker is a sedimentologist with interests in coastal geomorphology, palaeoenvironments and natural hazards. The overarching driver of his research is a desire to use geomorphological and sedimentological techniques to solve contemporary problems at local, regional and international scales. His main research interest lies in using coastal stratigraphy to define the recurrence interval of catastrophic marine inundation (tsunami or large storms). After obtaining a BSc and PhD in Geosciences from the University of Wollongong, Australia he accepted an Endeavour Australia Cheung Kong fellowship to study at The University of Hong Kong where he held positions as Post-Doctoral Fellow and Centenary Research Assistant Professor until September 2009. He has recently taken up a position as Principal Investigator at The Earth Observatory of Singapore. Dr Switzer also has a keen interest in the education of future geoscientists in Asia and has given numerous school presentations, public talks and invited lectures on climate change, sea level rise, tsunami and storms, coastal dynamics and dune migration throughout Asia.