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Testing the Australian Megatsunami Hypothesis

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In the wake of the 2004 Indian Ocean Tsunami, many countries have been forced to reassess the risk of tsunamis to their coasts. Australia, with relative tectonic stability, has previously been considered at low risk of tsunami inundation. Within written history, only small tsunamis have struck the Australian coast, causing little damage. However, a body of work has arisen that sheds doubt on this apparent low risk, with researchers suggesting that megatsunamis have affected the east Australian coast, in particular southern New South Wales. With proposed run-ups in excess of 100m, recurrence of such megatsunamis in the now densely populated New South Wales coastal region would be catastrophic. The disjunct between historical and geological records demands a thorough re-evaluation of New South Wales sites purported to contain evidence of megatsunamis. In addition, the unique set of diagnostic criteria previously used to identify Australian palaeotsunami deposits is distinctly different to criteria applied to paleotsunamis globally. To address these issues, four coastal lagoonal sites in southern New South Wales were identified for further investigation. In addition to paleotsunami investigation, these sites were selected to provide a geological record of significant events during the Holocene. Site selection was based on small accommodation space and a high preservation potential with back barrier depressions closed to the sea. A suite of diagnostic criteria developed over the past two decades to identify palaeotsunamis have been applied to cores extracted from these sites. Methods used include sedimentary description, grain size analysis, micropalaeontology, geochemistry and a variety of dating techniques such as radiocarbon and lead 210. Preliminary analysis of these results will be presented, with particular focus on sites where there is evidence that could indicate catastrophic saltwater inundation.