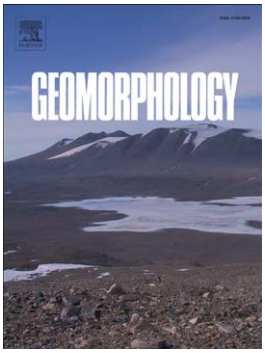

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A geomorphic and tectonic model for the formation of the flight of Holocene marine terraces at Mahia Peninsula, New Zealand

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Abstract

At Table Cape, Mahia Peninsula, North Island, New Zealand, four marine terraces have been uplifted coseismically during the past 3500 years. Detailed facies assessment of the terrace coverbed sequence coupled with identification of modern analogues on the active shore platform were used to infer the process of marine terrace formation and to estimate the timing and amount of past uplift events (earthquakes). The modern platform can be subdivided into seven depositional zones: subtidal, outer platform, intertidal sand pockets, inner platform, high-tide, mid-storm, and storm beach. Terrace coverbeds were characterised from two trenches excavated across the full width of the uplifted terrace sequence. Off-lapping packages of high tidal, mid-storm, and storm beach sediments were most common. Outer platform sediments occurred only rarely near the base of some uplifted shore platforms. Overlying the marine sediments were near-horizontal terrestrial deposits of airfall tephra (on the two highest terraces), subsoil, topsoil, rare wedges of colluvial sediment (slopewash) shed from terrace risers, and an anomalous deposit possibly emplaced by a tsunami. Fifty-one radiocarbon ages, obtained from molluscs in the marine coverbeds, showed a general pattern of seaward-younging across the coastal plain and across each terrace and a less pronounced pattern of decreasing age upward in each coverbed sequence. The distinctive stepped