

Blink and you'll miss it: evidence of rapid lateral variation in paleoenvironment between adjacent field sites

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Within a single stratigraphic unit rapid lateral changes in paleoenvironment are often lost amidst broad, basin wide investigations. New evidence collected from the Hautawa Shellbed, Whanganui Basin, shows that small scale perturbations in depositional setting can be uncovered through focused investigation of a single stratigraphic horizon. A key aim of this research is to construct a paleogeographic map for the base of the Nukumaruan Stage at 2.40 Mya with increased resolution. The foundational work of Charles Fleming recognised the Hautawa Shellbed as a marker of major climatic change – cooling conditions expressed by the arrival of a sub-Antarctic faunal assemblage into Whanganui Basin. Often this has been linked with the magnification of Northern Hemisphere ice-sheets. However, the beginning of this amplified cryospheric activity is currently tied to the lower boundary of the Quaternary Epoch at 2.588 Mya. But when do we see this cold water influx into New Zealand? Over 150 thousand years later! The issue of correlating the base of the Quaternary into local New Zealand records is yet to be solved. As yet, the New Zealand Geological Timescale has no clear stratigraphic correlative to the global Pliocene-Pleistocene boundary.

While outcrops of the Hautawa Shellbed are known to extend over 50 kilometres laterally, the nuances in paleoenvironment are currently poorly constrained. This project aims to increase knowledge of lateral variation preserved in order to better understand a unit which has been of much historic interest and the centre of significant negotiation for the base of the Quaternary in New Zealand.