



Dust records in the Pleistocene sediments of Fraser Island: palaeoclimatic reconstruction of wind erosion over the last 600ka.

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ABSTRACT

Pleistocene lake sediments from a relic perched freshwater lake on Fraser Island have been found to date back to *ca.*600ka using U/Th analysis of the organics. This sequence is one of the three longest terrestrial records of environmental change in Australia and the contained evidence of vegetation, fire and lake level changes (Longmore and Heijnis, 1996) and is an invaluable contribution to palaeoclimatic reconstruction. A younger sequence, dated by conventional radiocarbon analysis, has 6.5m of continuous organic sedimentation from *ca.*30ka. to the present. The last 8.5ka has been analysed in detail, showing a mid-Holocene 'dry' period (Longmore, 1996).

Continental aeolian dust from extreme wind erosional events has been measured in modern atmospheres (McTainsh, 1989; Knight *et al.*, 1995) and deep sea cores (Hesse, 1994), but the terrestrial record of wind erosion during the Pleistocene is sparse. We will report on a pilot project to determine the presence of aeolian dust from extreme wind erosional events in the past in the sediments of Fraser Island lakes. Due to the highly weathered, well-sorted, siliceous nature of the dune sands forming the Island and the highly organic nature of the lake sediments (80-95% LOI), these are some of the few terrestrial sequences that permit separation of aeolian dust from local catchment materials. In the future, oxygen isotope and XRD analysis of the extracted dust will allow the most likely source of the entrained material to be determined and thus provide further evidence as to the wind regime during the last 600ka and 30ka respectively. The separation of dust from these terrestrial sequences is a major achievement and potentially may make a significant contribution to global palaeoclimatic models.

References

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