



1.2 million years of aeolian activity in northwestern Western Australian recorded in a deep-sea core in the eastern Indian Ocean

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There is no continuous record of aridity from the Australian continent and we are presenting here, for the first time, a record of aeolian activity for northwestern Western Australia. Our data are based on a 32m long deep-sea core taken offshore North West Cape, the northwestern tip of Western Australia. Our data rely on 2 adjacent studies: (a) a complete XRF scan of the core which provide elemental ratios which are translated into an aeolian component as well as a fluvial discharge-to-sea component. The first one relates to periods of aridity inland Australia, whereas the second one is interpreted as river discharge during periods of monsoonal activity; (b) a close examination of samples collected in the source area(s) of sediments that are both blown to the core site as well as washed into the ocean by rivers. The bulk-chemical composition of these sediments are compared to each other and show that there is clear end-member signal in the sediment core that can be related to differing sediment-transport mechanisms: aeolian dust and river mud.

Our results clearly show a cyclic record of alternating dry and wet periods spanning the last 1.2 million years. Our findings also indicate that monsoonal activity as well as desertification were already in place in northern Australia so long ago, and this has clear implications for the evolution of the arid zone biota, associated fire activities and geomorphological features in northern Australia.