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Preliminary findings on the geochemical and microbiological fingerprinting of Australian aeolian dust

Implications for (past) climates, the environment, health and the oceans

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Understanding the origin and composition of Australian dust has implications on the environment, ocean and human health. However, there is scant published information on the chemical and biological composition of airborne dust from the Australian continent. For example, an isotopic comparison of aeolian material from the southern continents with dust recovered in Antarctic ice cores listed only 5 samples for the entire Australian continent, and consequently argued for a Patagonian source during glacial periods for dust recovered at Vostok.

This presentation will concentrate on an intensive, multidisciplinary and collaborative analysis of dust from the October 22, 2002 “Canberra dust storm” event. This

dust event was studied using a variety of approaches including DNA Biology, Geochemistry, Palynology, Sedimentology, Mineralogy, Microbiology, Meteorology, and Satellite imagery.

Using a variety of geochemical and palynological ‘fingerprinting’ analyses, including investigations of Nd and Sr isotopes, the provenance of the dust that rained down in Canberra was linked to the Bourke area of western NSW. Investigation of the meterological events at this time corroborate with these results.

Further investigation of different isotopes of Nd, Pb and Sr, demonstrates that Australian dust has clearly been linked, for particular episodes of the Late Quaternary, to Antarctic ice cores.