



## **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. Interestingly, DNA from 75 different microbial species was extracted from the dust, and a great variety of organic compounds, including DDT, were also found. Using a variety of geochemical and palynological ‘fingerprinting’ analyses, including investigations of Nd and Sr, isotopes linked the dust that rained down in Canberra to the Bourke area of western NSW. Investigation of the meteorological events at this time corroborated with these results.

Further investigation of different isotopes of Nd, Pb and Sr, demonstrates that Aus-

tralian dust has clearly been linked, for particular episodes of the Late Quaternary, to Antarctic ice cores. The Australian origin of the dust will be discussed.

Finally, preliminary investigations of the microbiological communities isolated from aerosols pumped at sea offshore Australia will be presented.

Discussion will lead to the potential effects of airborne dust on coral and human health, soil fertility and past and future climates.