

**Comparing natural and anthropogenic dust emitted
in southern Africa as potential sources of nutrients
to open oceans**

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Southern Africa mineral dust can be a major source of nutrients to open oceanic regions, which can then increase productivity and result in drawdown of carbon dioxide from the atmosphere. Trace metals, for example, represent essential nutrients usually provided by the dust. The extent of the fertilising potential of southern African dust has not yet been clarified. This study compares the mineralogy and trace element composition of dust emitted from hotspots along the Namibian coastline with dust emitted from an economically important industrial area. All sites are located adjacent to the highly primary productive Benguela Upwelling system which stretches along the southwest Atlantic Ocean.

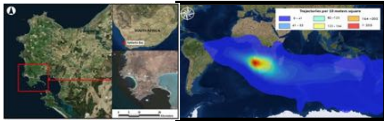


Figure 1. Map of industrial area and Hysplit air masses off the southern Africa in 7 days.

All samples were analysed for particle size distribution, mineralogical characteristics and trace elemental concentrations using QEMSCAN and selected samples were used for leaching experiments. We use particle sizes along with modelled air mass trajectories to assess dust particle long-range transport, and we use mineralogical characteristics and leaching experiments to estimate trace nutrient bioavailability and fertilising effect. This study highlights the significance of dust hotspot sources in southern African as major nutrients contributors to surrounding oceanic regions.