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50 kyr of trace elements fall out over the Atlantic sector of Antarctica and differences in concentrations between dissolved/acid leachable and total metals between glacial and interglacial matrix.

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Several studies have demonstrated that phytoplankton physiology, ecosystem structure and the efficiency of nutrient utilization in the Southern Ocean are influenced by the availability of trace elements that serve as micronutrients. This, in turn, influences the efficiency of CO_2 sequestration in the deep sea.

Here we show new records of leachable Al, Mn and Fe fluxes, going back to 50 kyr B.P., determined in the Dronning Maud Land ice core drilled within the European Project for Ice Coring in Antarctica (EPICA), which records climate proxies in the Atlantic sector of the SO. Trace elements profiles show a high synchronicity with the EPICA Dome C records, despite that the two cores are located hundreds to thousands of kilometres apart from each other and are at opposite sides of the East Antarctic plateau; this suggests a regional representativeness of these records for the SO. The inferred Al, Mn and Fe flux ratio between the LGM and the Holocene is about 38, 20 and 55 and Fe shows a higher solubility during the LGM with respect to the Holocene.

Total, acid leachable and dissolved concentrations for different major and minor elements were also investigated in glacial and interglacial samples from the EPICA Dome C ice core. The observed differences in concentrations between the dissolved/acid leachable and total metals indicate the presence of non-dissolved species that are de-

tectable only after a rigorous acid digestion procedure.