Changes in trace elements, Platinum group elements and Pb isotopic compositions during a period from 570 kyr BP to 800 kyr BP at EPICA Dome C Antarctic ice core

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Geochemical proxies were measured from the EPICA (European Project for Ice Coring in Antarctica) Dome C ice core, covering a period from ~570 kyr BP to ~800 kyr BP, by inductively coupled plasma sector field mass spectrometry (ICP-SFMS), ion chromatography (IC) and thermal ionization mass spectrometry (TIMS) for trace elements and platinum group elements (PGEs), major ions, and Pb isotopic compositions, respectively. The main trend of trace element and other proxy concentrations match well defined insoluble dust concentration profile. It shows that mineral dust was the dominant source of trace elements to East Antarctica whatever the period. For In, Tl, Bi and F- the volcanic proxies were partially increased with higher $^{206}Pb/^{207}Pb$ during the period from ~690 kyr BP to ~740 kyr BP. Although Pb concentration variations coincide with crustal dust, the Pb isotopic compositions do not coincide with crustal dust. It means that the Pb isotopic compositions were influenced by volcanic input or other materials that periods. PGE concentrations show a less difference between glacial and interglacial periods in comparison with crustal enriched elements and concentration ratios of Ir and Pt indicate that PGEs in Antarctica may be originated from non-crustal sources. These geochemical and isotopic evidence suggest that changes in relative contribution of crustal dust, volcanic and extraterrestrial input to Antarctic ice during period from ~570 kyr BP to ~800 kyr BP.