

Platinum group elements (Pt and Ir) deposition at Dome C (East Antarctica) between 572 kyr BP to 800 kyr BP

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Platinum group elements (PGE: Ir and Pt) concentrations were determined in 42 sections from the EPICA (European Project for Ice Coring in Antarctica) Dome C ice core, covering a period from ~572 kyr BP to ~800 kyr BP, by inductively coupled plasma sector field mass spectrometry (ICP-SFMS) coupled with desolvation nebulization system and sub-boiling pre-concentration. Our data enable us to extend the previous EPICA Dome C (EDC) records of Ir and Pt covering the past 270 kyr, which corresponds to the last two climatic cycles. Here we discuss the Ir and Pt concentration records coupling with crustal reference element (Ba) and some refractory trace metals (Yb and Hf). Crustal enriched elements (Ba, Yb and Hf) show well defined variations in concentrations in relation to climatic conditions with lower values during the interglacial periods and much increased values by ~10 during the glacial periods. On the other hand, the siderophile elements (Ir and Pt) show a less differences between their concentrations for different climatic conditions. Mean concentrations of Ir and Pt for the glacial periods were approximately two times higher than their mean concentrations for the interglacial periods. Concentration ratios (Ir/Pt) and crustal enrichment factors (EFc) of Ir and Pt indicate that atmospheric PGE in Antarctica originated dominantly from non-crustal source (i.e., extraterrestrial), and the extent of the extraterrestrial contributions were likely regulated by the climatic conditions during the investigated time period.