



Volcanic events as recorded in the EPICA DML and DC ice cores (East Antarctica): frequencies and depositional fluxes through the Holocene.

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In the framework of the EPICA project (European Project for Ice Coring in Antarctica) a further deep ice core, named EDML, was drilled up to the bedrock at Kohnen Station (75° 06' S, 00° 04' E, 2892 m a.s.l.) in the East Antarctic Plateau, coupling the first successful drilling at Dome C. The whole ice core have been already analyzed at high resolution (1-2 cm) by Fast Ion Chromatography (FIC) for chloride, nitrate and sulphate: in particular this latter parameter was used to reconstruct the paleo-volcanism history as recorded at Kohnen Station. Sulphate background (mainly of biogenic origin) was firstly separated from volcanic spikes by means of a statistical method; successively every volcanic spike was characterized (flux of volcanic deposition, dating and temporal duration). Here we present the complete Holocene record of volcanism in the EDML ice core and we use these data for a comparison with the Holocene data set coming from EDC ice core, analysed by FIC at a similar resolution. Depositional flux values for synchronous signatures are compared in order to highlight the possible effect of the different geographical location and different accumulation regimes on depositional processes. Moreover, Kohnen Station, located on the Atlantic Sector of the East Antarctica, should be more affected by deposition of emissions from regional eruptions (resulting in higher sulphate fluxes) because of the proximity of many volcanic systems in the South America and Antarctic Peninsula areas. Particular attention is paid on the study of changes of volcanic frequencies at the two sites. The EDC ice core revealed an intriguing high frequency of volcanic signatures for the last 2000 years (confirmed also by other short Antarctic records, spanning not more than 4000

years) that however does not fit with statistical models. Additional results from the EDML ice core will provide new information about increasing volcanic frequencies and their link to the changing climate, over the whole Holocene.