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HOLOCENE VOLCANIC SIGNATURES (CONCENTRATION AND FLUXES) AS RECORDED IN THE EPICA-DML ICE CORE (KOHNEN STATION – EAST ANTARCTICA)

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In the framework of the EPICA project (European Project for Ice Coring in Antarctica) a 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. The drilling was completed in January 2006 and the ice core processing and analyses of the last section (around 200 m) are still in progress. More than 2500 m of ice (covering the last glacial/interglacial cycle and the Eemian) 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 the other EPICA ice core, EDC, drilled at Dome C and 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 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 does not fit with model results for a period climatically stable. Additional results from the EDML ice core will provide new information about this topic over the whole Holocene.