



A tuned chronology for EPICA Dome C between MIS 12-15 using the elemental and isotopic composition of trapped air

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We present measurements of the concentration ratio and isotopic composition of O₂ and N₂ in trapped air of the EPICA Dome C (EDC) ice core. Using the coherence between the isotopic composition of atmospheric O₂ and insolation, together with constraints from changes in CO₂ [Siegenthaler *et al.*, 2005] and deuterium of the ice, we generate an optimized chronology between 430 and 620 ka (MIS 12-15). At the time of this writing, the intervals 300-430 ka and 550-620 are well constrained, and additional complementary measurements are in progress. Available data indicate that the duration of interglacial MIS 15.1 is overestimated by a factor of 2 in the published EDC2 chronology [EPICA community members, *Nature* 2004]. Uncertainty in accumulation rate alone is insufficient to explain this stretching, implying that the thinning function is significantly underestimated over this interval. In contrast, the orbital tuning analysis supports the long duration of MIS 11.