



Radiocarbon analyses along the Berkner core in Antarctica

Robert Mulvaney (2)

(1) IMAU, Beta faculty, utrecht, Netherlands (wal@phys.uu.nl), (2) British Antarctic Survey, Madingley Road, CB3 0Et, UK,
(3) Center for Isotope Research, University of Groningen, The Netherlands

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R.S.W. van de Wal¹, R. Mulvaney², H.A.J. Meijer³, M. de Rooij³, C. van der Veen¹

1:Institute for Marine and Atmospheric research Utrecht, Utrecht University, The Netherlands

2:British Antarctic Survey, Madingley Road, CB3 0Et, UK.

3:Center for Isotope Research, University of Groningen, The Netherlands

Samples, 21 in total from the Berkner core spanning 35 kyrs, are analyzed for ^{14}CO and $^{14}\text{CO}_2$ with a dry extraction technique in combination with accelerator mass spectrometry. In situ produced ^{14}CO is 19 ± 9 at/g, which is within the uncertainties equal to measurements for the EDML and Dome C cores and slightly above background levels. Despite these low levels of ^{14}CO a significant in situ $^{14}\text{CO}_2$ concentration is deduced from a comparison of the measured ^{14}C ages with glaciological estimates of the air age of the core. Calculating the in situ $^{14}\text{CO}_2/^{14}\text{CO}$ ratio shows values ranging from -1 to 2 prohibiting a simple correction for in situ production. In addition we noted that a previously developed model for in situ correction of $^{14}\text{CO}_2$, based on degassing of $^{14}\text{CO}_2$ from the matrix, as developed for the EDML core does not provide correct ages for the Berkner core. Without a correction for in situ production ^{14}C ages are in agreement with glaciological estimates for the first 15 Kyr BP for older samples the ^{14}C measurements underestimate the ages for unknown reasons, which are probably not related to in situ production during the formation of the ice.