Geophysical Research Abstracts,
Vol. 10, EGU2008-A-03251, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-03251
EGU General Assembly 2008

The impact of abrupt climate variations on the carbon isotopic signature of methane

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Air enclosures in bubbles of polar ice cores provide an unique and direct access to the paleoatmosphere. There are still various uncertainties concerning the source contributions to the global methane cycle during rapid millenial scale warming events such as the so-called Dansgaard-Oeschger events and the Bolling/Alleroed-Younger Dryas Oscillation. The analysis of the isotopic signature of methane may constrain the various contributions of sources and sinks to the global carbon cycle during those warm periods. We use a high precision GC/C/irmMS technique based on developments by Merritt et al. (1995) to derive high-resolution and high-precision δ^{13}CH4 records from the EPICA ice core from Dronning Maud Land (75°S, 0°E) for selected time intervals over the last glacial/interglacial transition as well as specific Dansgaard-Oeschger events.