The biomarker inventory, trace and source rock implications from Heinrich events (IODP Expedition 303/306)

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J. Hefter and R. Stein (AWI Bremerhaven, Germany)

The qualitative and quantitative biomarker compositions of identified and presumed Heinrich layers (HL) from Sites U1305, U1308 and U1313 were investigated and compared to ambient (glacial / interglacial) sediments.

HL-samples are clearly distinguishable from samples between those layers due to the abundance of a multitude of "petrogenetic" compounds such as benzohopanes, D-ring monoaromatic 8,14-secohopanes, mono- and triaromatic steranes, and isorenieratene-derivatives. This specific biomarker association provides circumstantial evidence that the organic matter present in HL´s derives from a relatively immature, marine carbonate rock deposited under occasional photic zone anoxic conditions, and that the potential source is a Paleozoic rock from the Laurentide/Canadian shield.

Coincident with e.g. peak values of magnetic susceptibility and bulk density, biomarker compositions from Site U1308 indicate the presence of Heinrich-type events also during older glacials, with the strongest event of the samples analyzed so far occurring during MIS 16.