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The ^{10}Be isotopic signature of the Brunhes/Matuyama field reversal from marine sediments

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Marine sediments can be used to reconstruct ^{10}Be production changes, which are mainly caused by variations of the geomagnetic field strength. Here we use the so called authigenic ^{10}Be/^{9}Be ratio as a proxy for geomagnetic paleointensity. With a constant flux tracer (^{230}Th) the ^{10}Be flux to the sea floor can be estimated. But this method is limited to about 350 kyrs by the lifetime of ^{230}Th, whereas ^{9}Be-normalization can be applied to reconstruct the relative variation of the geomagnetic field beyond the possibilities of Th-normalization. A global signature of a magnetic field reversial or an excursion in the ^{10}Be/^{9}Be ratio can be used to link the chronologies of ice cores with marine and terrestrial sediments.

A novel method to directly measure the natural ^{10}Be/^{9}Be ratio with low energy Accelerator Mass Spectrometry (AMS) at the compact accelerator Tandy (600 kV) is applied. This method simplifies the determination of the ^{10}Be/^{9}Be ratio in natural samples, because only a single measurement is necessary. With this technique of carrier-free AMS on a small machine a highly resolved data record in a time range 70 ka around the field reversal in up to 1 ka resolution was recorded around the expected maximum according to the magnetic inclination data.

Five locations distributed in the Indic, Pacific and Atlantic at different latitudes have been chosen for sampling and determination of the authigenic ^{10}Be/^{9}Be ratio. First data from these cores in the time range of the Brunhes-Matuyama field reversion will be presented.