

**Appendix 1: Joint COCARDE-IGCP 580 project poster presented at the IGCP meeting at Liège, December 2-3, 2009.**

# Magnetic Susceptibility records in Recent (Cenozoic) and Ancient (Devonian - Palaeozoic) Mound Systems

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### Introduction

Magnetic measurements on carbonate-rich sediments are scarce. However, Kent (1982) and Robinson (1986) found already convincing correlations of calcium carbonate variations with the magnetic susceptibility signal. They explained this phenomenon as a cyclic dilution and enrichment of the magnetic mineral component by climatically driven changes in carbonate accumulation. Moreover, Bloemendal et al. (1992) related variations in magnetic susceptibility to sediment sources, lithology and diagenetic processes. In this study, records of magnetic susceptibility (MS) in ancient (Devonian, Frasnian, Belgium) and Recent (Cenozoic, NE Atlantic, SW Ireland) carbonate mound systems are compared. The relevance and the use of magnetic susceptibilities in particular Recent and ancient mound systems are discussed.



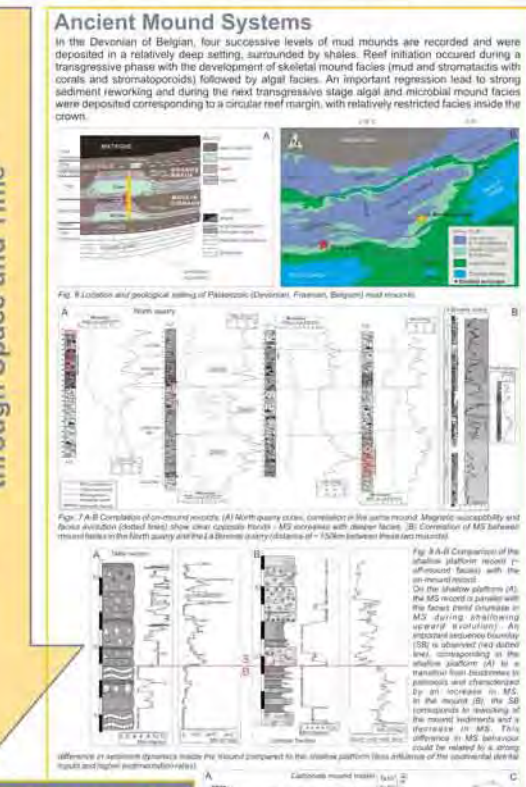
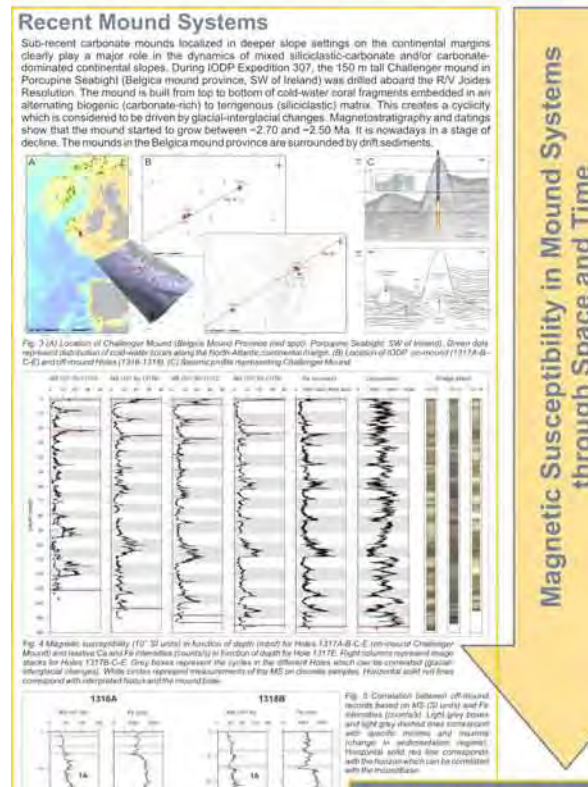
Fig. 1 (A) Faces of ancient (Cenozoic, Belgium) (A-B) and Recent (Frasnian Seabight, SW of Ireland) (C-D) mound sediments.

### Methodology

Magnetic susceptibilities were measured using a Kappabridge KLY-3S (Fig. 2A). For Recent mounds, measurements were made on constant volume individual cubes resulting in volume susceptibility values. Additionally, bulk magnetic susceptibilities were measured using a Bartington Model MS-2 meter (Fig. 2B-C) on whole round sections and this with a resolution of 5 cm. For ancient mounds, measurements were made on samples of various size and the values were divided by the sample mass resulting in mass susceptibility values.



Fig. 2 (A) Picture of KLY-3S Kappabridge magnetometer (B) and picture (C) of the Bartington Model MS-2 meter (integrated in the multi-sensor block (MS1)) for whole core logging of the MS component (and other parameters).



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### Conclusion: a comparative approach

In both types of mound systems, magnetic susceptibility (MS) and Fe oxides (count/s) are good indicators of glacial-interglacial cycles. On the one hand, the on-mound records (based on MS (SI units) and Fe oxides (count/s)) and on the other hand, the off-mound records (based on MS (SI units) and Fe oxides (count/s)) are good indicators of glacial-interglacial cycles. The on-mound records (based on MS (SI units) and Fe oxides (count/s)) are good indicators of glacial-interglacial cycles. The off-mound records (based on MS (SI units) and Fe oxides (count/s)) are good indicators of glacial-interglacial cycles.

### References

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