Palaeoenvironmental reconstruction of the Marmorito (NW Italy) diatomites based on microfossil assemblages

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The outcrop at Marmorito in northwestern Italy consists of the Marmorito limestone, sandstone and diatomite, in ascending order. The limestone has very low $\partial^{13}C$ values, derived from the reaction between bacteria and methane. Bonci et al. (1990) reconstructed the palaeoenvironment of the Marmorito diatomite using diatoms and foraminifera, and placed the deposit into foraminiferal Zone N6 (Late Aquitanian–Burdigalian, Early Miocene). However, they did not examine the calcareous nannofossils. In this study, we collected samples from all 28 diatomite layers from the same location as Bonci et al. (1990), and made observations using light and scanning electron microscopy, on standard smear-slides and stubs, respectively. Based on the presence of *Helicosphaera ampliaperta*, the diatomite sedimentation was placed in Zones MNN2b–MNN3a (Mediterranean nannofossil zonation of Fornaciari & Rio, 1996). Surprisingly, *Tergestiella adriatica*, recently observed in the Japan Sea and off Croatia (Hagino et al., 2015), was occasionally observed in the Marmorito diatomites as coccospheres. Individual coccoliths of *T. adriatica* can be difficult to distinguish from the reworked Cretaceous species *Cyclagelosphaera margerelii*. To keep the coccospheres intact for ease of identification, the samples were filtered and mounted using immersion oil and Norland Optical Adhesive No. 61 for further light microscope analysis.

References

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