

Characterisation of the Helminthoid Flysch facies through calcareous nannofossil assemblage variations (Upper Cretaceous, northern Apennines, Italy)

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The Helminthoid Flysches (HFs) of the northern Apennines (Italy) are among the most famous and spectacular turbidite deposits in the world. Understanding the processes of their formation in confined basins, and how this relates to individual facies, is of fundamental importance for the reconstruction of the Apennine chain's evolutionary history. Generally, the HFs are characterised by impressive tabular (sheet-like) turbidite beds, consisting of an alternation of sandstone, carbonate and shale divisions that were deposited in a tectonically-confined deep basin below the CCD (Scholle, 1971), where ponding and flow-reflection processes played an important role (Tinterri & Mazza, 2019).

This study is based on a detailed bed-by-bed, high-resolution stratigraphy, biostratigraphy and sedimentology of the Monte Cassio Flysch. Eight stratigraphic sections were measured for a total thickness of 5 km. The analysis of 100 samples, which were collected along the extent of the Monte Cassio Flysch, has revealed nannofossil assemblages with preservations ranging from poor to good and total abundances from barren to common. The presence of *Uniplanarius trifidus* and *Broinsonia parca* subsp. *constricta* indicate an age from Subzone UC15d to the top of Zone UC16 (Burnett, 1998; equivalent to CC22 and CC23 of Sissingh, 1977).

Clear differences were apparent with regard to the abundance variations of ecologically-significant taxa. For example, *Micula* spp. and *Watznaueria barnesiae* varied considerably through the section, and a relationship between their abundance and facies types has been highlighted. In light of the varying palaeoecological significance of the predominant species and the total abundances, our goal was to identify a model for the relationship between the nannofossil assemblage variations and the turbidite facies, and to unravel possible links between nannofossil assemblage variations and depositional processes. Therefore, this work aimed to create a palaeogeographic reconstruction of the Palaeotethys in the Apennine and Alpine Basins during the Late Cretaceous that applies to the HF model.

References

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