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Timing of eastward-migrating compression in the Miocene Umbria Preapennines (Italy)

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The Umbria Preapennines is an east-verging embricate thrust-system deforming a Meso-Cenozoic carbonate succession and the overlying Miocene foredeep turbidites. The major thrust-sheets correspond to three regional tectonic units whose stratigraphy shows sensible differences as regards the onset-time of foredeep sedimentation, the age of its top and the source areas of the turbiditic fill.
These "tectono-stratigraphic" units are characterised by an eastward-younging of the contractional deformations and by an analogous allochthony decrease. The eastward-rejuvenating trend was summarily documented by the past literature but a regional overview, calibrated on an updated bio-chrono-stratigraphic scale, is still lacking.
In this work, we try to reconstruct an exhaustive tectono-stratigraphic frame of this part of the Apennine foredeep with the aim of define and date the main tectonic events occurred from the Aquitanian to the Early Tortonian.
To achieve this purpose, a multidisciplinary research, integrating physic stratigraphy, nannofossil biostratigraphy and structural analysis, was carried out on the main outcropping tectonic structures and on a large number of stratigraphic sections located in north-central Umbria. In more detail, the study area is bounded to the west by the Tuscan allochthon leading-edge (Sansepolcro - Monte S. M. Tiberina – Mt. Murlo alignment) and extends eastward to the inner side of the Umbria-Marche calcareous chain.
The obtained results precisely highlight the steps through which each zone of this area evolved from foreland to foredeep domain and was, subsequently, incorporated into the chain. The influence of allochthon sheets emplacement, and of growing compressional structures, on sin-tectonic sedimentation is also discussed.