



Extensional faulting and dolomitization pattern in the Jurassic rocks exposed in the core of the Montagna dei Fiori Anticline, Central Apennines, Italy

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Alteration and recrystallization of limestone into dolomite is frequently accompanied by a significant increase in porosity. Among the different dolomitization mechanisms, tectonic faulting can trigger limestone dolomitization by enhancing fluid flow in fault damage zones. It is thus important to study natural examples where the relations between dolomitization and faulting are exposed. In this contribution, we present a new geological map of the Jurassic formations that crop out in the central sector of the Montagna dei Fiori anticline, at the mountain front of the Central Apennines. There, in the anticlinal core, a block faulted pre- to post-rift carbonate platform and basinal succession is preserved and exposed due to tectonic uplift and exhumation. Mapping activity was devoted to better detail the Jurassic extensional fault patterns and to separate dolostones from the parent limestones. Results of our work indicate that the tilted fault blocks of lower Jurassic platform carbonates are selectively dolomitized parallel to bedding and in fault-bounded compartments. On the other hand, the lower half of the overlying and/or laterally overlapping synrift basinal carbonates of the Corniola Fm. is systematically dolomitized whereas no evidence for dolomitization was found in the overlying strata. The boundary between dolostones and limestones in the Corniola Fm. is provided by the first occurrence of centimetre-thick clayish interlayers, which acted as a barrier to the migration of the dolomitizing fluids. Dolostones are more abundant in the intersection area among three different fault sets, suggesting that fault-related fracturing played an important role in the dolomitization process. Our work emphasizes the valuable role that the study of natural analogues can play to better understanding the relations among fracturing, fluid flow, and dolomitization and to provide templates for hydrocarbon exploration.