

Cenozoic massive carbonate breccia in the External Dinarides of Croatia: the largest outcrop on the island of Krk

Matešić, Darko; Matoš, Bojan; Billi, Andrea; Smeraglia, Luca; Fabbi, Simone; Balaić, Lucija; Vlahović, Igor

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ABSTRACTS BOOK



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Poster presentation

Cenozoic massive carbonate breccia in the External Dinarides of Croatia: the largest outcrop on the island of Krk

Darko Matešić¹, Bojan Matoš¹, Andrea Billi², Luca Smeraglia², Simone Fabbi³, Lucija Balaić¹, Igor Vlahović¹

¹University of Zagreb, Faculty of Mining, Geology and Petroleum Engineering, Zagreb, Croatia

²Consiglio Nazionale delle Ricerche, IGAG, Rome, Italy

³Sapienza Università di Roma, Dipartimento di Scienze della Terra, Rome, Italy

darko.matesic@rgn.unizg.hr

The Cenozoic carbonate breccias in the External Dinarides, known as Jelar deposits or Velebit breccia, have been puzzling geologists for decades. The timing and formation mechanisms of this interesting lithological unit is still debatable.

The largest breccia outcrop on the Adriatic islands is located on the southeasternmost part of the island of Krk, on the karstic plateau between Stara Baška and Draga Bašćanska. Approximately 11.5 km long and 350 to 1300 m wide outcrop of a typical Dinaric strike (NW–SE) was studied by detailed geological mapping, structural measurements and sampled along the profile normal to the structure.

The breccia outcrops are massive, mostly clast-supported, mostly lacking sedimentary structures. Clasts are unsorted and typically angular, ranging in size from sand to gravel, with rare cobbles and boulders. Clasts are mainly derived from adjacent lithostratigraphic units, many showing calcite-filled fissures, indicating intense tectonics prior to deposition. Clast contacts are commonly characterized by pressure solution, while grey, whitish, yellowish to reddish matrix mostly consists of finely crushed limestone particles or coarse-crystalline calcite grains. Rare small-sized sedimentary bodies rich in matrix with numerous rounded clasts indicate local fluvial transport prior to deposition.

Most of the breccia outcrops are located in the hinge zone of the NE-verging overturned anticline (a tectonic transport not common in the Dinarides but typical for all Cenozoic carbonate breccia zones). Along the studied profile, the contacts between breccia and the surrounding rocks are steep but gradual. In most places transition zones from (i) limestones to (ii) tectonized limestones to (iii) cataclastic limestones to (iv) monomict and/or polymict breccia can be several meters wide.

Results of studied breccia outcrop suggest that breccia formation probably onset during the late stage of the principal Late Eocene–Oligocene Dinaric compressional phase by disintegration of source rocks into small-sized clasts. Subsequent localized extension in the hinge of the overturned large-scale anticline created a series of deep canyon-like fractures filled by a large quantity of clasts lithified by mosaic calcite cement.