

# 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

Source / Izvornik: **Abstracts book / 36th International Meeting of Sedimentology, 2023, 517 - 517**

Conference paper / Rad u zborniku

Publication status / Verzija rada: **Published version / Objavljena verzija rada (izdavačev PDF)**

Permanent link / Trajna poveznica: <https://um.nsk.hr/um:nbn:hr:169:813309>

Rights / Prava: [In copyright](#) / [Zaštićeno autorskim pravom.](#)

Download date / Datum preuzimanja: **2024-05-15**



Repository / Repozitorij:

[Faculty of Mining, Geology and Petroleum Engineering Repository, University of Zagreb](#)





36<sup>TH</sup>



IAS

DU  
BROV  
NIK

MEETING OF SEDIMENTOLOGY

ABSTRACTS BOOK



12–16 June 2023, DUBROVNIK, CROATIA

**36<sup>th</sup> International Meeting of Sedimentology**  
**June 12–16, 2023, Dubrovnik, Croatia**

# ABSTRACTS BOOK





## Organized by:

Croatian Geological Society (HGD) and International Association of Sedimentologists (IAS)



## Organizing Committee

Lara Wacha, **chair**, *Croatian Geological Survey, Zagreb*  
Katarina Gobo, *University of Zagreb, Faculty of Science*  
Nikolina Ilijanić, *Croatian Geological Survey, Zagreb*  
Tvrtko Korbar, *Croatian Geological Survey, Zagreb*  
Marijan Kovačić, *University of Zagreb, Faculty of Science*  
Duje Kukoč, *Croatian Geological Survey, Zagreb*  
Borna Lužar-Oberiter, *University of Zagreb, Faculty of Science*  
Maja Martinuš, *University of Zagreb, Faculty of Science*  
Slobodan Miko, *Croatian Geological Survey, Zagreb*  
Davor Pavelić, *University of Zagreb, Faculty of Mining, Geology and Petroleum Engineering*  
Kristina Pikelj, *University of Zagreb, Faculty of Science*  
Igor Vlahović, *University of Zagreb, Faculty of Mining, Geology and Petroleum Engineering*

## Scientific Committee

Igor Vlahović, **president**, *University of Zagreb, Croatia*  
Nevena Andrić Tomašević, *Karlsruhe Institute of Technology, Germany*  
Bruno Campo, *University of Bologna, Italy*  
Sonia Campos Soto, *Complutense University of Madrid, Spain*  
Luca Caracciolo, *FAU Erlangen-Nürnberg, Germany*  
Blanka Cvetko Tešović, *University of Zagreb, Croatia*  
Shahin E. Dashtgard, *Simon Fraser University, Canada*  
Andrea Di Capua, *National Research Council – IGAG, Italy*  
Goran Durn, *University of Zagreb, Croatia*  
Gianluca Frijia, *University of Ferrara, Italy*  
Massimiliano Ghinassi, *University of Padova, Italy*  
Luis Gibert Beotas, *University of Barcelona, Spain*  
Bosiljka Glumac, *Smith College, USA*  
Antun Husinec, *St. Lawrence University, USA*  
Stuart Jones, *Durham University, UK*  
Tvrtko Korbar, *Croatian Geological Survey, Croatia*  
Marijan Kovačić, *University of Zagreb, Croatia*  
Juan Carlos Laya, *Texas A&M University, USA*  
Marta Marchegiano, *University of Granada, Spain*  
Cole McCormick, *Pennsylvania State University, USA*  
Mardi McNeil, *Geoscience Australia, Australia*  
Theresa Nohl, *University of Vienna, Austria*  
Shuxin Pan, *PetroChina – NWGI, China*

Guido Pastore, *University of Milano-Bicocca, Italy*  
Maximiliano Paz, *University of Saskatchewan, Canada*  
Daniel A. Petráš, *Czech Geological Survey, Czech Republic*  
Miquel Poyatos-Moré, *Universitat Autònoma of Barcelona, Spain*  
Joanna Pszonka, *Polish Academy of Sciences – MEERI, Poland*  
John J.G. Reijmer, *Vrije Universiteit Amsterdam, The Netherlands*  
Valentina Marzia Rossi, *National Research Council – IGG, Italy*  
Arnoud Slootman, *Colorado School of Mines, USA*  
Mirosław Slowakiewicz, *University of Warsaw, Poland*  
Thomas Steuber, *Khalifa University of Science and Technology, Abu Dhabi, UAE*  
Finn Surlyk, *University of Copenhagen, Denmark*  
Michal Šujan, *Comenius University in Bratislava, Slovakia*  
Romain Vaucher, *University of Geneva, Switzerland*  
Alan Vranjković, *INA Oil Company, Croatia*  
Lara Wacha, *Croatian Geological Survey, Croatia*  
Guodong Wang, *PetroChina, China*  
Pujun Wang, *Jilin University, China*  
Valentin Zuchuat, *RWTH Aachen University, Germany*  
Nadja Zupan Hajna, *Research Centre of the Slovenian Academy of Sciences and Arts, Slovenia*

**Publisher:** Croatian Geological Society (HGD)

**For the publisher:** Slobodan Miko

**Editors:** Igor Vlahović and Darko Matešić

**Language Editor:** Julie Robson (Scotland, United Kingdom)

**Digital layout:** Laser Plus d.o.o

**Cover design:** Ana Badrić

**eISBN:** 978-953-6907-79-3

**Theme 14. Tectonics and sedimentation****General Session**

Poster presentation

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

Darko Matešić<sup>1</sup>, Bojan Matoš<sup>1</sup>, Andrea Billi<sup>2</sup>, Luca Smeraglia<sup>2</sup>, Simone Fabbi<sup>3</sup>, Lucija Balaić<sup>1</sup>, Igor Vlahović<sup>1</sup>

<sup>1</sup>University of Zagreb, Faculty of Mining, Geology and Petroleum Engineering, Zagreb, Croatia

<sup>2</sup>Consiglio Nazionale delle Ricerche, IGAG, Rome, Italy

<sup>3</sup>Sapienza Università di Roma, Dipartimento di Scienze della Terra, Rome, Italy

[darko.matesic@rgn.unizg.hr](mailto: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.