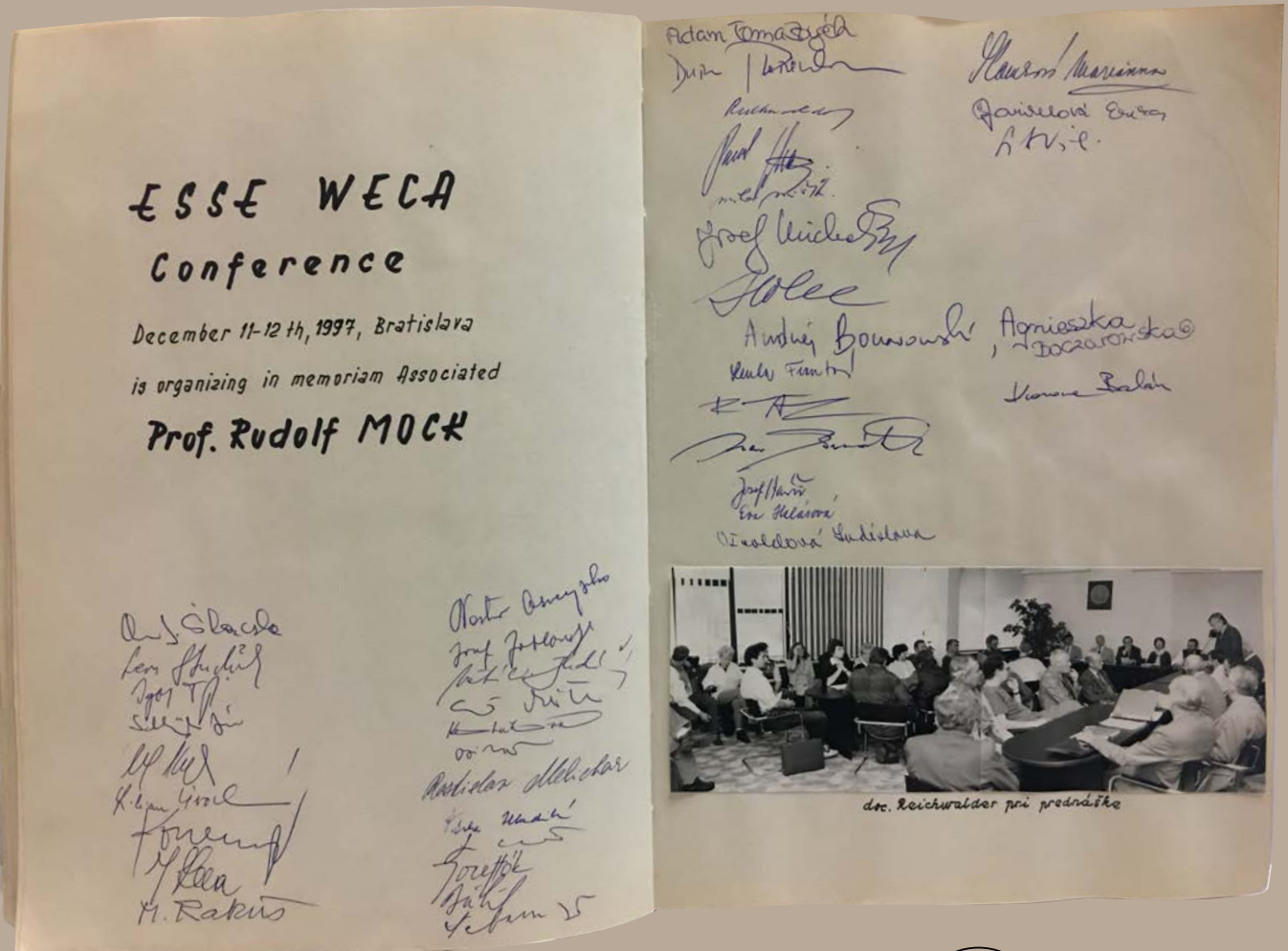


December 3 – 4, 2024
13th ESSEWECA
Conference
 Bratislava, Slovakia



Environmental, Structural and Stratigraphical Evolution of the Western Carpathians

Natália Hudáčková – Ondrej Nemec – Andrej Ruman (Eds.)



Abstract book



COMENIUS
 UNIVERSITY
 BRATISLAVA

Faculty of Natural Sciences

prof. Mgr. Natália Hudáčková, PhD.

RNDr. Ondrej Nemec, PhD.

Mgr. Andrej Ruman, PhD.

Editors

Environmental, Structural and Stratigraphical Evolution of the Western Carpathians

Abstract Book



13th ESSEWECA Conference

3rd – 4th December 2024

Bratislava, Slovakia

2024

Comenius University Bratislava

Conference is organized by: *Slovak Geological Society, Bratislava*



*The conference is under financial support of the companies
Nafta a.s., and BARZZUZ s.r.o., UNESCO*



Scientific guarantee:

*Comenius University Bratislava, Faculty of Natural Sciences,
Department of Geology and Paleontology*



COMENIUS
UNIVERSITY
BRATISLAVA



FACULTY
OF NATURAL SCIENCES
Comenius University
Bratislava



Scientific board:

prof. RNDr. Daniela Reháková, CSc.; prof. RNDr. Dušan Plašienka, DrSc.;
prof. RNDr. Michal Kováč, DrSc.; prof. RNDr. Marián Putiš, DrSc.; RNDr. Igor
Broska, DrSc.

Organizing committee:

prof. Mgr. Natália Hudáčková, PhD.; doc. RNDr. Marianna Kováčová, PhD.;
Mgr. Andrej Ruman, PhD.; Mgr. Michal Jamrich, PhD.; Mgr. Marina Matejová, PhD.;
RNDr. Silvia Antolíková, PhD.; RNDr. Ondrej Nemeč, PhD.; doc. Mgr. Štefan Józsa,
PhD.; doc. RNDr. Peter Ružička, PhD.

Editors:

prof. Mgr. Natália Hudáčková, PhD.; RNDr. Ondrej Nemeč, PhD.; Mgr. Andrej
Ruman, PhD.

Reviewers:

RNDr. Ján Madarás, PhD.; doc. RNDr. Michal Šujan, PhD.

Cover figure: record from the chronicle of the Department of Geology and Paleontology

Figures: © the authors

License: Creative Commons CC BY-SA 4.0



https://stella.uniba.sk/texty/PRIF_esseweca_13_2024.pdf

Publisher: Comenius University Bratislava, 2024

ISBN 978-80-223-5956-6 (online)

Contents

Honorees of the Conference	6
Silvia Antolíková and Ján Soták: Integrated study of calcareous nannofossils and planktonic foraminifera across the Eocene/Oligocene transition in the Central-Carpathian Paleogene Basin (Western Carpathians).....	8
Peter Bačík: The bond-topological maps and bond-topological field modelling in crystal chemistry of minerals	10
Igor Broska, Milan Kohút, Sergii Kurylo and Keewook Yi: Cenerian record in the Variscan Western Carpathian granitic rocks: geotectonic implications from zircon ages.....	12
Marija Bošnjak, Jasenka Sremac, Oleg Mandić, Viola Winkler, Sanja Japundžić and Koraljka Bakrač: Brachiopods internal skeletal structures: testing the microCT method on Eocene and Miocene specimens from Croatia	13
Miroslav Bubík, Dragoman Rabrenović, Šimon Kdýr, Radek Mikuláš, Petr Pruner, Daniela Reháková, Petr Skupien, Lilian Švábenická, Andrea Svobodová, Marcela Svobodová and Zdeněk Vašíček: The integrated biostratigraphy and palaeoenvironments across the Jurassic–Cretaceous boundary in the Dedina section (eastern Serbian Carpathians)	15
Tamás Csibri and Radoslav Vaverčák: Determination of hydrocarbon zones by using advanced mud gas logging	16
Nela Doláková, Marianna Kováčová, Torsten Utescher and Mine Sezgül Kayseri Özer: Vegetation and climate oscillations during MCO/MCT in Central and Eastern Paratethys	17
Anna Ďurišová: Fossils from the research of prof. RNDr. Peter Holec, CSc. documented in the paleontological collection of SNM – Natural History Museum.....	18
Fritz Finger and Gertrude Friedl: A Trans-Mid-European, Frasnian, mantle-sourced magmatic belt and its tectonic significance.....	20
László Fodor, Attila Balázs, Éva Oravec, Máté Timkó, Thomas Meier, Amr El-Sharkawi, Bianca Németh and Zoltán Wéber: The Pannonian Basin revisited through geological, seismic tomographical data and numerical modelling	22
Jana Fridrichová, Peter Bačík, Olena Rybnikova, Ján Štubňa, Daniel Furka and Samuel Furka: Forensic optical and crystal-chemical investigation of changes induced by heat treatment in topaz from Ouro Preto and Carai, Brazil	24
Růžena Gregorová and Dana Stehlíková: Toad stone – the pre-scientific history of <i>Scheenstia maximus</i> (Wagner, 1863).....	26
Adam Heteš, Matúš Hyžný, Ján Schlögl and Adam Tomašových: Composition of decapod assemblages from Upper Jurassic sponge megafacies of Kraków-Wieluń Upland (southern Poland).....	27
Theodor Horváth, Filip Cesnak, Florentin Cailleux, Melike Bilgin and Peter Joniak: First insight into a fossil small mammal assemblage from central Anatolia (Turkey)	29
Ema Klamová, Rastislav Vojtko and David Droppa: Structural evolution of the Tatric Unit between Pernek and Pezinská Baba (Malé Karpaty Mts.)	30

Natália Hudáčková and Elena Čipková: Teachers' attitudes towards the teaching of geological topics within natural science subjects.....	32
Richard Hupka and Martin Sabol: The Čertova pec Cave – A window into the world of Neanderthals.....	34
Matúš Hyžný and Adam Heteš: Late Eocene decapod crustaceans from the Ďurkovec quarry (Western Carpathians, Slovakia): state of art after three decades of research.....	36
Milan Kohút and Igor Broska: How many orogens formed the crystalline basement of the Western Carpathians? – Indications from lithology and petrochronology	38
Szilvia Kövér, János Haas, Nevenka Djerić, Ottilia Szives, Péter Ozsvárt and László Fodor: From Middle Jurassic extension to Late Jurassic obduction-related mélangé formation: sedimentary records from the Adriatic passive margin in NE Hungary	40
Christoph Leitner, Christoph Hauzenberger, Hans Albert Gilg, Gertrude Friedl, Christoph Von Hagke and Fritz Finger: The geochemical character of synsedimentary volcanism in the Permian Haselgebirge Formation of the Eastern Alps (Austria): Implications for palaeogeographic models	42
Martina Jambrović, Lucia Žatková, Radovan Pipík, Ladislav Hamerlík, Rastislav Milovský, Dušan Starek and Peter Bitušik: Holocene environmental changes revealed by subfossil Chironomidae and biomarkers from an alpine lake in the High Tatra Mountains (Western Carpathians).....	43
Martina Moravcová, Adrián Nemergut, Martin Sabol, Mária Hajnalová, Monika Orvošová, Ladislav Vitovič, Patrik Konečný and Klement Fordinál: The interaction of man and the environment in the context of prehistoric cave settlements in Slovakia - multidisciplinary research	44
Franz Neubauer, Yongjiang Liu, Sihua Yuan, Yunpeng Dong, Ruihong Chang, Johann Genser, Qianwen Huang and Qingbin Guan: Mid Permian to Late Triassic felsic and mafic magmatism in the Austroalpine basement and cover: Review, new data and tectonic setting 46	
Angelika Obertová, Viera Šimonová Juraj Butek, Richard Kopáček and Richard Pouš: Reconstruction of Paleostress Conditions in the Malužina Fm. of the Malé Kapaty Mts.	48
Silvia Palgutová, Ľubomír Štrba: Benefits of effective geological heritage interpretation in geotourism on popularizing Earth sciences and enhancing knowledge in general public	50
Radovan Pipík and Dušan Starek: Holocene high-energy event periodicity in the Tatra Mts. (Western Carpathians	52
Daniel Pivko: Educational potential of decorative and building stones.....	53
Răzvan Popescu: Internal structure and characteristics of several low altitude-mid latitude talus deposits affected by chimney effect (Romanian Carpathians)	55
Marián Putiš, Martin Ondrejka, Ondrej Nemeč, Qiu-Li Li, David Chew, Xian-Hua Li, Ján Madarás, Zoltán Németh, Ján Spišiak, Pavol Siman and Peter Ružička: The Western Carpathians Variscan Orogen: A collage of post-Cadomian, Cenerian, and Paleotethyan complexes from the Gondwana-derived terranes (a new concept)	57
Daniela Reháková, Jacek Grabowski and Stephane Reboulet: Jurassic/Cretaceous (J/K) – Tithonian/Berriasian Boundary and Berriasian/Valanginian Boundary – the Global Boundary Stratotype Section and Point (GSSP) – state of the art	62

Andrej Ruman, Tália Chabanová, Filip Cesnak, Dominik Kuvik, Petra Astrid Michel, Theodor Horváth, Michal Jamrich, Štefan Meszároš and Natália Hudáčková: Badenian / Sarmatian boundary detected at the south-west slopes of the Devínska Kobyla hill (Bratislava, Vienna Basin).....	65
Ladislav Šimon: Paleovolcanic reconstruction of the geological structure in the northwestern part of the Central Slovak neovolcanites.....	67
Ján Soták, Silvia Antolíková and Jiří Sláma: Biostratigraphy vs. tephrochronology in determination of the Eocene/Oligocene boundary in the Central-Carpathian Paleogene basin	69
Jasenska Sremac, Filip Huić, Marija Bošnjak, Tihomir Marjanac, Šimun Aščić and Renato Drempetić: From Nummulitic breccias to Flysch deposits: Eocene treasure of Central Dalmatia (Croatia).....	72
Lubomír Štrba, Silvia Palgutová, Branislav Kršák and Csaba Sidor: Various perspectives of important geological sites perception	74
Peter Toth and Dušan Kúšik: Mineralogy of residues from the extraction and processing of mineral resources in Slovakia	76
Peter Uhlík, Rastislav Milovský, Stanislava Milovská, Lucia Žatková, Radovan Kyška-Pipík, Dušan Starek, Juraj Šurka and Barbora Uhlíková: Geochemical and Mineralogical Analysis of Two Soil Profiles in the Lake Vinderel Area, Maramureş, Romania.....	78
Marek Vd'ačný and Jozef Michalík: The origin of quartz grains of the end-Triassic aeolianites from the Fatra Formation in the Tatra Mts (Fatric Unit, Western Carpathians, Slovakia) determined by cathodoluminescence microscopy	80
Yuliia V. Vernyhorova and Natália Hudáčková: Comparison of the changes in the foraminiferal assemblages at the Badenian (Konkian) – Sarmatian boundary in the Central and Eastern Paratethys	81
Tomáš Vlček, Katarína Šarinová, Marianna Kováčová, Orsolya Sztanó and Michal Šujan: Organic matter dynamics and paleoenvironmental changes in an epicontinental basin (Miocene of the northern Pannonian Basin): Insights from biomarkers, palynology, and geochemical proxies.....	84
Rastislav Vojtko and Katarína Kriváňová: Eo-Alpine collision and thrusting of the Veporic Unit onto Tatric Unit in the Nízke Tatry Mts. (Western Carpathians).....	86
Barbara Zahradníková: The fossil remains of fish (otoliths) from the Lower Badenian sediments from the Hrušovany nad Jevišovkou locality (Carpathian Foredeep, Czech Republic).....	88

From Nummulitic breccias to Flysch deposits: Eocene treasure of Central Dalmatia (Croatia)

JASENKA SREMAC¹, FILIP HUIĆ², MARIJA BOŠNJAK³, TIHOMIR MARJANAC⁴,
ŠIMUN AŠČIĆ¹ and RENATO DREMPETIĆ⁵

1 – Faculty of Science, Department of Geology, University of Zagreb, Horvatovac 101 B, Zagreb, Croatia

2 – Oboj 9D, Zagreb, Croatia

3 – Croatian Natural History Museum, Demetrova 1, Zagreb, Croatia

4 – ProGEO –Croatia, Horvatovac 101 A, Zagreb, Croatia

5 – Mrnjaki I.2, Zagreb, Croatia

Eocene deposits from Dalmatia were disconformably deposited over Cretaceous rudist limestones near the coast of the Western Neotethys (Marjanac, 1996, Čosović et al. 2018). In the Omiš area, Lutetian-Early Bartonian Nummulitic limestones and bioclastic “breccias” are dominantly composed of large orthofragminid genera *Nummulites* and *Discocyclusina*. In younger horizons they comprise planktic taxa *Globigerinatheka* and *Subbotina*. Red algae often compose macroids, with *Sporolithon* and *Lithoporella* being the main bioconstructors. They are associated with other corallgal genera (*Mesophyllum*, *Polystrata*, *Lithothamnion*, *Neogoniolithon* and *Hydrolithon*) and encrusting foraminifera *Acervulina*, *Solenomeris*, *Placopsilina* and *Nubecularia*, sometimes incorporating the genera *Rotalia* and *Eoannularia* (Sremac et al. 2020, 2024a,b). Less abundant but diverse macrofossils include solitary and colonial corals, bivalves (cockles, oysters, scallops), gastropods (*Columbella* sp.), rhynchonellid brachiopods, rotularian serpulids, crinoids (*Isselocrinus* sp.) and echinoids. Carbonate deposits are overlain with glauconite marls known as Transitional beds and, finally, Flysch deposits (Fig. 1). Grey marls comprise rich and diverse nannofossil assemblages (e.g. the genera *Chiasmolithus*, *Coccolithus*, *Corannulus*, *Discoaster*, *Reticulofenestra*, *Sphenolithus*), pointing to the NP17 and NP18 nannozones (Bartonian-Early Priabonian) (Martini, 1971). Limestone olistoliths, dispersed along the Omiš area beaches, are a part of the regionally developed megabed, connected with the collapse of the platform margin (e.g. Marjanac 1996).

Acknowledgement: This research was supported by the project: “Mathematical methods in geology VIII” (2023), led by T. Malvić (Univ. Zagreb), and the Croatian Science Foundation Project “Sedimentary paleobasins, water corridors and biota migrations” (IP-2019-04-7042), led by M. Kovačić (Univ. Zagreb).

References:

- Čosović, V., Mrinjek, E., Nemeč, W., Španiček, J. & Terzić, K. 2018: Development of transient carbonate ramps in an evolving foreland basin. *Basin Research* 544 (30/4), 746–765.
- Marjanac, T. 1996: Deposition of megabeds (megaturbidites) and sea-level change in a proximal part of Eocene-Miocene flysch of central Dalmatia (Croatia). *Geology*, 24/6, 543–546.
- Martini, E. 1971: Standard Tertiary and Quaternary calcareous nannoplankton zonation. In: Farinacci, A. (Ed.): *Proceedings of the 2 Plankt. Conf., Roma*, 739–785.
- Sremac, J., Huić, F., Bošnjak, M. & Drempećić, R. 2020: Morphometric characteristics and origin of Palaeogene macroids from beach gravels in Stanići (vicinity of Omiš, Southern Croatia). In: Malvić, T.; Barudžija, U.; Bošnjak, M. et al. (Eds.). *Mathematical methods and terminology in geology 2020, Zagreb, Faculty of Mining, Geology and Petroleum engineering, Univ. Zagreb, Croatian Geol. Soc.*, 49-61.

Sremac, J., Huić, F., Bošnjak, M. & Marjanac, T. 2024a: The Composition of Acervulinid – Red Algal Macrofossils from the Paleogene of Croatia and Their Distribution in the Wider Mediterranean Region. *In: Recent Research on Sedimentology, Stratigraphy, Paleontology, Geochemistry, Volcanology, Tectonics, and Petroleum Geology Proceedings of the 2nd MedGU, Marrakesh 2022 (Volume 2)*. Cham, Switzerland: Springer Nature, 59-62.

Sremac, J., Huić, F. & Bošnjak, M. 2024b: Application of biometrical analyses in the determination of the coralline algal genus *Sporolithon*—examples from the Eocene deposits of Omiš (SE Croatia). *In: Mathematical methods and terminology in geology 2020, Zagreb, Faculty of Mining, Geology and Petroleum engineering, Univ. Zagreb, Croatian Geol. Soc.*, 127-138.

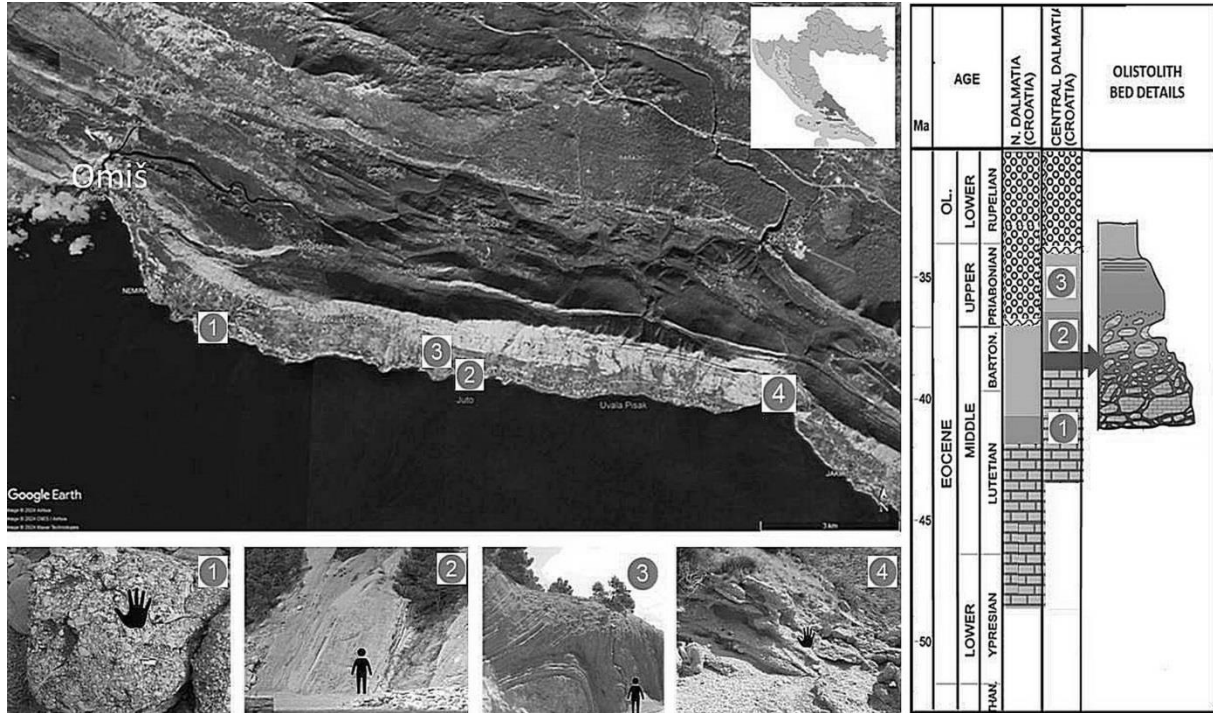


Figure 1: The geographic (Google Earth, 2024) and stratigraphic position of the studied outcrops in the vicinity of Omiš: 1. Nummulitic limestone; 2. Glauconite marl; 3. Folded flysch deposits; 4. Quaternary breccia. Clastic deposition started during the Bartonian, later than in Northern Dalmatia (partly after Sremac et al., 2020, 2024a). Outcrop size is shown by human or palm silhouettes.

prof. Mgr. Natália Hudáčková, PhD.
RNDr. Ondrej Nemec, PhD.
Mgr. Andrej Ruman, PhD.

Editors

Environmental, Structural and Stratigraphical Evolution of the Western Carpathians

Abstract Book

Published by Comenius University Bratislava, 2024
Graphic design: doc. RNDr. Michal Šujan, PhD.; Mgr. Andrej Ruman, PhD.
Cover design: doc. RNDr. Michal Šujan, PhD.; Mgr. Andrej Ruman, PhD.

Manuscript 91 pages, first edition,
published as an electronic publication

ISBN 978-80-223-5956-6 (online)

ISBN 978-80-223-5956-6