

# 3D geological model of the bauxite-bearing district Bnižnica (Posušje, BiH): A powerfull tool from 3D visualization of geological structures to geological prospecting

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**12<sup>th</sup> ESSEWECA conference**  
**8<sup>th</sup> – 9<sup>th</sup> December 2022**  
**Bratislava, Slovakia**

**Environmental, Structural & Stratigraphical Evolution of the Western Carpathians**  
**Since 1998**



**Environmental, Structural and Stratigraphical Evolution of the Western Carpathians**  
**Abstract book**

**COMENIUS UNIVERSITY BRATISLAVA**

**1997**

**AGE**

AGE	LOCALITY / REAM	RESIDENT STRATIGRAPHY
BRONZES	BRONZES	BRONZES
IRON	IRON	IRON
ROMAN	ROMAN	ROMAN
MODERN	MODERN	MODERN

**LEGEND**

**LOCATIONS**

- Pohorlie Dome
- Lahov Faun.
- Golova F.
- Novodol.
- Prímce F.
- Site 54a
- with sediments
- Kozjak anticlinal corrugation
- Cheriz gyps. open trough
- Kapka trough
- Bemachning ridge
- Sylvan Basin

# **Faculty of Natural Sciences**

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**Editors**

## **Environmental, Structural and Stratigraphical Evolution of the Western Carpathians**

**Abstract Book**



**12<sup>th</sup> ESSEWECA Conference**

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**Bratislava, Slovakia**

**2022**

**Comenius University Bratislava**

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## Contents

<b>Preface</b> .....	9
<b>Kishan Aherwar, Michal Šujan, Katarína Šarinová, Régis Braucher, Arjan de Leeuw, Andrej Chyba, Anton Matoshko, Peter Uhlík, Barbara Rózsová and Aster Team:</b> Understanding the variability of authigenic <sup>10</sup> Be/ <sup>9</sup> Be ratio: An example from deltaic to offshore facies of the Slanicul de Buzau section, Romania.....	13
<b>Richárd Gyula Albrecht:</b> In the search of the Jurassic – Cretaceous boundary in the lime kilns of Zengővárkony, Mecsek Mountains, Hungary .....	15
<b>Silvia Antolíková and Ján Soták:</b> Nannoplankton biostratigraphy and paleoecology of the Paleocene formations in K/Pg section near Žilina.....	16
<b>Jaroslava Babejová-Kmecová, Edit Király, Katalin Báldi and Natália Hudáčková:</b> Special preparation procedure for miliolids with preservation problem for Laser Ablation Inductively Coupled Plasma Mass Spectrometry analyses .....	18
<b>Marta Bąk and Krzysztof Bąk:</b> Climate change affecting the intraspecific variability of Saturnaliidae, (Radiolaria) in the pre- and post-OAE2 periods .....	20
<b>Marta Bąk, Krzysztof Bąk and Zbigniew Górny:</b> Carbon-isotope stratigraphy and palaeoceanographic significance of the mid-Cretaceous deep-water sediments from marginal part of the Western Tethys.....	21
<b>Jakub Bazarnik, Piotr Lenik and Magdalena Pańczyk:</b> New U-Pb zircon geochronological data of Neogene andesites (Pieniny Klippen Belt, Poland) .....	22
<b>Pavel Bella, Pavel Bosák, Helena Hercman, Šimon Kdýr, Petr Mikysek, Petr Pruner, Juraj Littva, Jozef Minár, Michal Gradziński, Wojciech Wróblewski and Marek Velšmid:</b> Morphotectonic evolution of the contact of the Malé Karpaty Mts. and Vienna Basin based on dating of cave levels in the Plavecký hradný vrch Hill.....	24
<b>Vladimír Bezák, Ján Vozár, Jozef Madzin and Lenka Ondrášová:</b> Different structure of the crust in western, central and eastern Slovakia from magnetotelluric results.....	26
<b>Miroslav Bielik, Dominika Godová, Hermann Zeyen and Pavla Hrubcová:</b> Carpathian-Pannonian lithosphere: geophysical study.....	28
<b>Melike Bilgin, Peter Joniak, Serdar Mayda, Pablo Pelaez-Campomanes, Fikret Göktaş and Lars Van Den Hoek Ostende:</b> Updated Early Miocene Biochronology of Anatolia .....	29
<b>Marija Bošnjak, Koraljka Bakrač, Jasenka Sremac, Sanja Japundžić and Tomislav Malvić:</b> A short note on the Middle Miocene (Badenian) brachiopods from the southwestern margin of the Central Paratethys, Croatia .....	31
<b>Jana Brčeková, Peter Uhlík, Peter Koděra, Marek Osacký, Jaroslav Lexa and Miroslav Pereszlény:</b> 3D resource modeling of selected mineral deposits in the Neogene Central Slovakia Volcanic Field, Western Carpathians .....	33
<b>Igor Broska, Michal Kubiš, Martin Ondrejka and Marek Vďačný:</b> Two geochemical types of West-Carpathian Permian felsic magmatism and their geotectonic implications.....	35
<b>Rostislav Brzobohatý, Barbara Zahradníková and Natália Hudáčková:</b> Paleoenvironmental characteristics of the Badenian locality Borský Mikuláš-Vinohrádky (Vienna Basin, Slovakia) based on study of fish otoliths and foraminifera .....	37
<b>László Bujtor:</b> First fossil representative of Sediment Hosted Vent ecosystems from Zengővárkony (Mecsek Mountains, Tisza Mega-unit, South Hungary, Early Cretaceous) .....	39
<b>Florentin Cailleux, Lars W. Van Den Hoek Ostende and Peter Joniak:</b> Distributional patterns of the Miocene Talpidae (Eulipotyphla) from the Western Carpathians .....	41

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<b>Kamil Cichostępski and Jerzy Dec:</b> Mélanges of the Pieniny Klippen Belt in the shallow Seismic Refraction Tomography Image.....	43
<b>Vlasta Čosović, Đurđica Pezelj, Igor Pejnović, Marina Čančar, Damir Bucković, Dražen Kurtanjek, Nenad Tomašić, Željko Ištuk, Dunja Aljinović, Ines Galović, Marija Horvat and Stjepan Čorić:</b> The multidisciplinary approach of studying the Middle Eocene warming episodes in Dinaric foreland basin: new data or unfulfilled promises? .....	45
<b>Zoltán Cseri, Emő Márton, Márton Palotai, Mátyás Hencz, Tamás Biró and Dávid Karátson:</b> Integrating field volcanology, paleomagnetism and structural geology to correlate a poorly preserved Miocene succession in the East Mátra Mts. (Hungary) .....	47
<b>Tamás Csibri, Ľubomír Sliva, Andrej Ruman, Natália Hlavatá Hudáčková, Michal Jamrich, Katarína Šarinová and Michal Kováč:</b> Deltaic coarse-grained deposits of the northern Vienna Basin: (re)interpretation of older data and cross-border correlation.....	49
<b>Rastislav Demko, Marián Putiš, Lukáš Ackerman, Qiu-Li Li, David Chew and Ondrej Nemeč:</b> Miocene volcanism in the Slovenský Raj Mts.: Magmatic, space and time relationships in the Western Carpathians.....	51
<b>Nela Doláková, David Krejčíř, Torsten Utescher, Marianna Kováčová, Vladimír Gryc and Jakub Sakala:</b> Comparison of pollen spectra and fossilized woods from the Oligocene and Middle Miocene sediments of Central Paratethys area – southern part of the Czech Republic (Moravia) - palaeoecological case studies .....	53
<b>David Miloš Droppa, Rastislav Vojtko, Jozef Hók, Katarína Kriváňová, Alexander Lačný and Silvia Gerátová:</b> Geological structure and structural evolution of the Tatric Unit in the Devínska Kobyla massif (Malé Karpaty Mts.) .....	55
<b>László Fodor, Éva Oravecz and Attila Balázs:</b> Scale-dependent definition of syn-rift and post-rift phases during the extension of the Pannonian Basin: inferences from numerical modelling, stratigraphic and tectonic data .....	57
<b>Dominika Godová, Miroslav Bielik, Ján Vozár, Jaroslava Pánisová, Jana Dérerová and Vladimír Bezák:</b> Preliminary 3D integrated geophysical model of the Tatra Mts and its surroundings .....	59
<b>Jan Golonka and Anna Waškowska:</b> The paleogeography of the Zlatne Basin (Pieniny Klippen Belt).....	60
<b>Valentina Hajek Tadesse, Lara Wacha, Marija Horvat, Ines Galović, Koraljka Bakrač, Anita Grizelj, Oleg Mandić and Bettina Reichenbacher:</b> Do we have enough evidence to prove the oldest environmental change in the area of the Papuk mountain (North Croatian Basin) in the Early Miocene? .....	62
<b>Mathias Harzhauser, Matthias Kranner, Oleg Mandic, Stjepan Čorić, Arthur Borzi, Werner E. Piller, Philipp Strauss, Rudolf Dellmour and Wolfgang Siedl:</b> The Pannonian of the Vienna Basin – from Paleo-Danube Delta to post-Pannonian erosion .....	64
<b>Katarína Holcová, Filip Scheiner, Lukáš Ackerman, Rastislav Milovský, Natália Hudáčková, Mihovil Brlek and Danuta Peryt:</b> Strontium Isotope Stratigraphy in epicontinental basins – possibilities and restrictions – a case study from the Middle Miocene of the Central Paratethys.....	65
<b>Eva Hoppanová, Viera Šimonová, Štefan Ferenc and Richard Kopáček:</b> Brezno-Za dolinou – occurrence of Fe-Cu-Sb-As mineralization and its relationship to the Alpine tectonics.....	67
<b>Marija Horvat, Lara Wacha, Anita Grizelj, Valentina Hajek Tadesse, Ines Galović, Koraljka Bakrač, Oleg Mandić and Bettina Reichenbacher:</b>	

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Mineralogical and geochemical proxies of the Lower Miocene sediments of Mtn. Papuk – Poljanska and Mala sections (Northern Croatia) .....	69
<b>Natália Hudáčková, Katarína Šarinová, Michal Jamrich and Andrej Ruman:</b> Mineral selectiveness in agglutinated foraminifera from the Middle Miocene Hámor site (Novohrad-Nógrád Basin).....	71
<b>Matúš Hyžný, Samuel Rybár, Natália Hudáčková, Andrej Ruman, Michal Jamrich, Katarína Holcová, Eva Halásová and Kamil Zágoršek:</b> New fossil association of the Badenian open coast tidal flats from the Novohrad-Nógrad Basin (Slovakia).....	73
<b>Milan Kohút:</b> Where are the roots of the Western Carpathians? – Provenance and detrital zircon study of the Tatric Unit basement .....	75
<b>Michal Kováč, Eva Halásová, Jozef Hók, Natália Hudáčková, Matúš Hyžný, Tomáš Klučiar, Michal Jamrich, Peter Joniak, Marianna Kováčová, Silvia Ozdínová, Petronela Nováková, Andrej Ruman, Samuel Rybár, Martin Sabol, Ján Schlögl, Ľubomír Sliva, Ján Soták, Lenka Šamajová, Katarína Šarinová, Michal Šujan, Viktória Šubová, Adam Tomašových, Tomáš Vlček, Rastislav Vojtko and Colleagues from Austria, Bulgaria, Croatia, Czech Republic, Hungaria, Netherlands, Poland and Romania:</b> The Western Carpathians back-axis basins sedimentary record: new geochronological, biostratigraphical and multiproxy data, results of sedimentology, structural geology and geophysics.....	77
<b>Matthias Kranner, Mathias Harzhauser, Oleg Mandić, Werner E. Piller, Philipp Strauss and Wolfgang Siedl:</b> Paleoenvironmental evolution of the Vienna Basin during the Miocene .....	84
<b>Katarína Kriváňová, Rastislav Vojtko, David Miloš Droppa and Silvia Gerátová:</b> Geological structure of the junction zone between the Tatric and Veporic units in the Nízke Tatry Mts. (Western Carpathians) .....	85
<b>Tomislav Kurečić and Marijan Kovačić:</b> Modal composition of clastic sediment as an indicator of tectonic and climatic events during the post-rift development of the Pannonian Basin System; the example from the North Croatian Basin, Republic of Croatia.....	87
<b>Juraj Littva, Pavel Bella, Ľudovít Gaál, Laura Dušeková and Pavel Herich:</b> Preliminary results from the geological and geomorphological research of the cave with blue and green speleothems (Low Tatras, Western Carpathians) .....	89
<b>Jozef Madzin and Dušan Plašienka:</b> Provenance study of the Upper Cretaceous – Paleocene turbiditic deposits of the Pupov Formation (Pieniny Klippen Belt, Terchová-Zázrivá area).....	91
<b>Imre Magyar:</b> Clinoforms as paleogeographic tools: the late Neogene evolution of Lake Pannon .....	93
<b>Elżbieta Machaniec, Renata Jach, Ewa Malata, Maciej Kania and Mateusz Szczęch:</b> The Eocene – Oligocene boundary along the northern margin of the Tatra Mts in the Central Carpathian Paleogene Basin in Poland - a problem to be solved .....	95
<b>Elżbieta Machaniec and Alfred Uchman:</b> A new agglutinated benthic foraminifera <i>Remesella varians</i> – <i>Rectoprotomarssonella rugosa</i> Zone for the latest Maastrichtian .....	97
<b>Oleg Mandic, Karin Sant, Mădălina-Elena Kallanxhi, Stjepan Ćorić, Dörte Theobalt, Patrick Grunert, Arjan De Leeuw and Wout Krijgsman:</b> Integrated bio-magnetostratigraphy of the Badenian reference section Ugljevik - implications for the Paratethys history .....	100
<b>Emő Márton, Vlada Čosović and Gábor Imre:</b> The mechanism accounting for the geometry of offshore External Dinarides .....	102
<b>Jozef Michalík, Silviya Petrova and Diana Ölvecká:</b> Calpionellids on the Jurassic / Cretaceous boundary and their lorica ultrastructure .....	103

---

<b>Marína Molčan Matejová and Dušan Plašienka:</b> Age of the radiolarian assemblage from the Šariš Unit near Zázrivá (Pieniny Klippen Belt) ....	104
<b>Franz Neubauer, Xiaoming Liu, Yunpeng Dong, Shuyun Cao and Isabella Merschorf:</b> Opening and closure of the Penninic ocean basin at the Alpine-Carpathian transition: new structural data and U-Pb zircon ages .....	106
<b>Mariusz Paszkowski, Robert Anczkiewicz, Przemysław Gedl, Artur Kędzior, Stanisław Mazur and Mateusz Mikołajczak:</b> Reinterpretation of the Outer Carpathian paleogeography based on the study of the exotic blocks from the turbidite series ...	108
<b>Ivica Pavičić, Ivan Dragičević, Ida Pavlin, Filip Šegović and Vladislav Brkić:</b> 3D geological model of the bauxite-bearing district Bnižnica (Posušje, BiH): A powerful tool from 3D visualization of geological structures to geological prospecting .....	109
<b>Radovan Pipík, Dušan Starek, Rastislav Milovský, Juraj Šurka, Peter Uhlík, Stanislava Milovská, Marina Vidhya, Lucia Žatková, Ramachandran Dhavamani, Roberta Prokešová, Tímea Chamutiová, Ladislav Hamerlík and Peter Bitušik:</b> From valley to valley – heterochronous paleoclimatic and paleoecologic evolution of the Tatra Mts. as inferred from lacustrine deposits .....	110
<b>Daniel Pivko:</b> Evolution of the Dreveník and the Spiš Castle travertine plateaus in Slovakia (Late Pliocene to Holocene) .....	112
<b>Dušan Plašienka, Przemysław Gedl, Štefan Józsa, Ján Soták and Marína Molčan Matejová:</b> Structure of the Čergov segment of the Western Carpathian Klippen Belt (north-eastern Slovakia).....	114
<b>Slawomir Porzucek and Monika Loj:</b> Pieniny Klippen Belt in the reference to the gravity image of the Outer and Inner Carpathians.....	116
<b>Tomáš Potočný, Marián Putiš and Jiří Sláma:</b> Metarhyolites of Meliatic Bôrka Nappe: Zircon U-Pb LA-ICP-MS dating of Triassic volcanism, Western Carpathians, Slovakia .....	118
<b>Weronika Pratkowiecka, Patrycja Wójcik-Tabol, Alfred Uchman and Marta Oszczytko-Clowes:</b> Petrological composition of organic matter in the Oligocene Dynów Marl Member (Menilite Formation, Skole Unit, Polish Outer Carpathians) in Tarnawka and its implication in basin salinity interpretations .....	120
<b>Luca Reato, Monika Huraiová, Patrik Konečný and Vratislav Hurai:</b> Protolith identification of skarnoid xenoliths from Southern Slovakia: New insights from geochemical and isotopic data .....	122
<b>Boštjan Rožič, Alfred Uchman, Luka Gale and Timotej Verbovšek:</b> Possible fossil medusae in the Eocene flysch from the Slovenian coast .....	124
<b>Krisztina Sebe and Michal Šujan:</b> Pleistocene aeolian erosion and wind system in Slovakia .....	125
<b>Krisztina Sebe, Levente Laisz and Szabolcs Harangi:</b> Miocene andesite volcanism in the Mecsek Mts, SW Hungary .....	127
<b>Filip Scheiner, Martina Havelcová, Katarína Holcová, Nela Doláková, Slavomír Nehyba, Lukáš Ackerman, Jakub Trubač, Torsten Utescher, Šárka Hladilová and Jan Rejšek:</b> Multiproxy reconstruction of a gradual prodeltaic evolution during the Miocene Climate Optimum .....	129
<b>Ján Schlögl, Martin Košťák, Dirk Fuchs, Milan Havrila, Tea Kolar-Jurkovšek, Attila Vörös and Juraj Šurka:</b> Rare Middle Triassic coleoids from the Western Carpathians .....	131
<b>Ján Schlögl, Adam Tomašových, Natália Hudáčková and Stanislava Milovská:</b> Peculiar microstructure of the outer shell wall in the Lower Miocene <i>Aturia</i> from the Central Paratethys (Vienna Basin, Western Carpathians, Slovakia) .....	132
<b>Vladimír Šimo, Adam Tomašových, Ján Schlögl and Duarte Luís Vitor:</b> Trace fossil association within Sinemurian/early Pliensbachian carbonate	

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### **3D geological model of the bauxite-bearing district Bnižnica (Posušje, BiH): A powerful tool from 3D visualization of geological structures to geological prospecting**

IVICA PAVIČIĆ, IVAN DRAGIČEVIĆ, IDA PAVLIN,  
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Bauxite deposits formed during the terrestrial phase between the Upper Cretaceous and Paleogene periods represent the most valuable bauxites economically in the Adriatic Carbonate Platform (AdCP) area. The deposits formed during Upper Cretaceous-Paleogene emersion are present on the entire AdCP. One of the largest and most exploited area is the Posušje bauxite-bearing area in western Herzegovina. Geological exploration and exploitation were very intensive between 1950 and 1990, but after that time, exploration was terminated by war events. This work aimed to collect all available data, systematize them into a 3D geodatabase and construct a 3D geological model of Snižnica, one of the most complex districts in the Posušje bauxite-bearing area. The results of this work are a composite geological map, 15 geological sections, and a 3D geological model with structural-kinematic analyses in a 3D environment and 3D bauxite prospection. The structural-kinematic analyses include fault movement analyses, the thickness of Paleogene deposits, which is important for drilling planning, reconstruction of eroded part of the Paleogene deposits in the hanging wall, spatial analysis of bauxite deposit locations, and azimuth and dip angle distribution of the palaeorelief surface. The results indicate that displacements on individual faults range between 0 and 100 m, while the maximum cumulative displacement is estimated to be  $\geq 250$  m (Pavlin and Šegović 2022). The thickness of Paleogene deposits ranges from 0 to almost 200 m, while the thickness of the eroded part of Paleogene deposits reaches up to 100 m (Pavlin and Šegović 2022). Maps of azimuth and dip angle distribution of the palaeorelief surface and analysis of structural positions of bauxite deposits indicate that a larger number of deposits are in the anticline and syncline hinge zones, which indicates that the depressions in the palaeorelief are partly structurally predisposed (Pavlin and Šegović 2022). The constructed 3D geological model and the conducted analysis can serve as a basis for planning further exploration works, primarily drilling holes to find new bauxite deposits.

#### **References:**

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