

7. HRVATSKI GEOLOŠKI KONGRES
s međunarodnim sudjelovanjem

7TH CROATIAN GEOLOGICAL CONGRESS
with international participation

02. – 04. 10. 2023.
Poreč, Croatia

7 HGK

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Karmen Fio Fir

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cur rarely in the studied succession, comprise mainly Ta and Tb divisions, but are not regarded as MTDs because they are generated by flows whose motion is supported by turbulence. The studied succession shows several transgressive–regressive cycles and progressive deepening of the sedimentary basin, with an accompanying increase in the occurrence of blocky-flow deposits and debrites. Slump-debrites are mostly found in association with off-shore transition deposits, suggesting that mass flows were triggered in fairly shallow water above the storm wave base. It is suggested that they were most likely mobilised due to a combined effect of strong earthquakes related to the basin tectonic development, sediment destabilisation due to pore water overpressure during forced regressions, and storm-wave loading affecting the shallow seabed. Progressive basin deepening likely favoured mass flow

transformations, although the overall paucity of turbidites suggests relatively short mass-flow transport distance and turbidity current bypass to deeper realms. Multiple erosional phases and re-sedimentation processes from the Cretaceous to the Late Eocene contributed to the diverse suite of both intraformational and extraformational clasts in the MTDs studied. The study results show that MTDs may be triggered and emplaced in shallow-marine settings mainly during regressive stages of basin development. Some of their peculiar sedimentary features and occurrence within shallow-marine calciclastic deposits render these MTDs rather unique. Therefore, they are suitable to re-assess the preservation potential of sedimentary features in wave-worked nearshore environments, as well as the nature and evolutionary continuum of processes involved in subaqueous sediment mass transport.

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PARTICLE COMPOSITION AND DEPOSITIONAL ENVIRONMENT OF THE KOŠNA CONGLOMERATES (VELEBIT MT., CROATIA)

SASTAV ČESTICA I TALOŽNI OKOLIŠ KOŠNA KONGLOMERATA (VELEBIT, HRVATSKA)

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Carboniferous and Permian carbonate and clastic rocks crop out in the Brušane area of the Velebit Mt., Croatia. Within them, the Košna conglomerates from the ‘Košna voda’ spring (SALOPEK, 1942) are quite distinct due to their multicoloured gravel-size clasts and red matrix. The conglomerates are clast- to matrix-supported, poorly sorted, and often normally graded. Imbricated gravel clasts of different size and composition occur locally and are surrounded by a sandy stratified matrix. Several types of clasts are present: sandstone, limestone, chert, as well as monomineral and polymineral quartz of pebble and cob-

ble size. Sandstone clasts are classified as lithic arenites, subarkoses and arkoses. Limestone clasts are represented by shallow-marine wackestones to packstones with foraminifera, ostracods, echinoid, and bryozoan fragments. *Microcodium* and calcisphaerae are also present in the clasts. Particle composition suggests different sediment sources and possibly multiple re-sedimentation phases, while normal grading and imbrication indicate tractive particle transport. Fragments of fusulinid foraminifera found in the matrix suggest deposition in a marine environment.

Based on field observations and conducted paleontological, petrographic, ore microscopy and X-ray diffraction analyses, the Košna conglomerates are defined as Early Permian polymict conglomerates derived from

the uplifted Hercynian Mountains and deposited and reworked in a coastal part of the Paleo-Tethys. Due to their structural and textural features, the Košna conglomerates

are comparable with Late Paleozoic conglomerates from other areas in the Dinarides, Eastern and Southern Alps.

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FROM REEF TO BASIN – PROGRADATION OF THE SHALLOW WATER CARBONATES OVER THE MIDDLE TRIASSIC NORTHWESTERN CROATIAN RIFT RELATED BASIN (IVANŠČICA MT., NW CROATIA)

OD GREBENA DO BAZENA – PROGRADACIJA PLITKOVODNIH KARBONATA PREKO SREDNJETRIJASKOG RIFTNOG BAZENA SJEVEROZAPADNE HRVATSKE (IVANŠČICA, SZ HRVATSKA)

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The NW part of Croatia represents a tectonically complex area at the junction of the Dinarides and the Southern Alps. In Očura Quarry on Ivanščica Mt. there is 34 m thick section composed of volcanic, volcanoclastic and carbonate rocks that can be divided into three parts. The lower interval (7 m) is composed of dominantly basaltic rocks (SiO₂ = 43–51 wt%). In the basal part glomeroporphyritic basalt is followed by basaltic autoclastic breccia. The second interval (7–19 m) is composed of cm–dm irregularly and wavy bedded calcarenites, occasionally coarsening upward, with lithoclasts varying in size from fine sand up to fine breccia. Carbonate lithoclasts are mostly micritic limestones – biomicrite, pelmicrite, pel-sparite, intrasparite, also bioclasts of bivalves, crinoids, ammonoids, brachiopods, and gastropods. Two types of basaltic lithoclasts are present in the dominantly calcarenite interval, one with the porphyritic to glomeroporphyritic texture, similar to the basalts of the lower part; and the other type completely hyaline. Lithoclasts are cemented by sparry calcite. In the coarser varieties lithoclasts are the same, with the only difference in the matrix found between the clasts, that is composed of fine calcarenites with basaltic lithoclasts. Calcarenites are interlayered by thin layers of biomicrites with filaments and radiolarians,

and thin layers of fine to coarse ash vitriclastic tuffs. In the middle of this interval around 1.5 m thick matrix supported breccia occurs with limestone and basaltic lithoclasts. Third interval of the section (19–34 m) is composed of extremely unsorted breccia with slump texture. Clasts of limestones, calcarenites, and subordinate basalts are supported by fine grained matrix of carbonate and basaltic particles. Abundant framestone clasts are present in the breccia, containing complex reef community, dominating of sponge *Celyphia zoldana*, with other microorganisms of uncertain taxonomy *Plexoramea cerebriformis* and *Olangocollia otti*, and others. Generally in this interval carbonate material is predominant over basaltic lithoclasts.

The investigated section represents sedimentation in the deeper marine environment near the steep edge of the carbonate platform and reef. Basalts found at the base of the section present effusions in the marine areas, and their fragmentation and reworking. A thick interval of calcarenites with basaltic lithoclasts is formed by shedding of the carbonate material from the nearby platform to the pelagic/basinal areas, indicated by the pelagic limestone interlayers. Chaotic breccia with meter sized fragments of reefal limestones indicates a more proximal position to the shallow marine area from which these clasts were derived. Slump texture emphasizes gravitational processes. The general trend of coarsening upward, as well as the predominance of the framestone clasts in the breccias

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