Deposition of volcaniclastites in pelagic environment on rifted continental margin during the Middle Triassic

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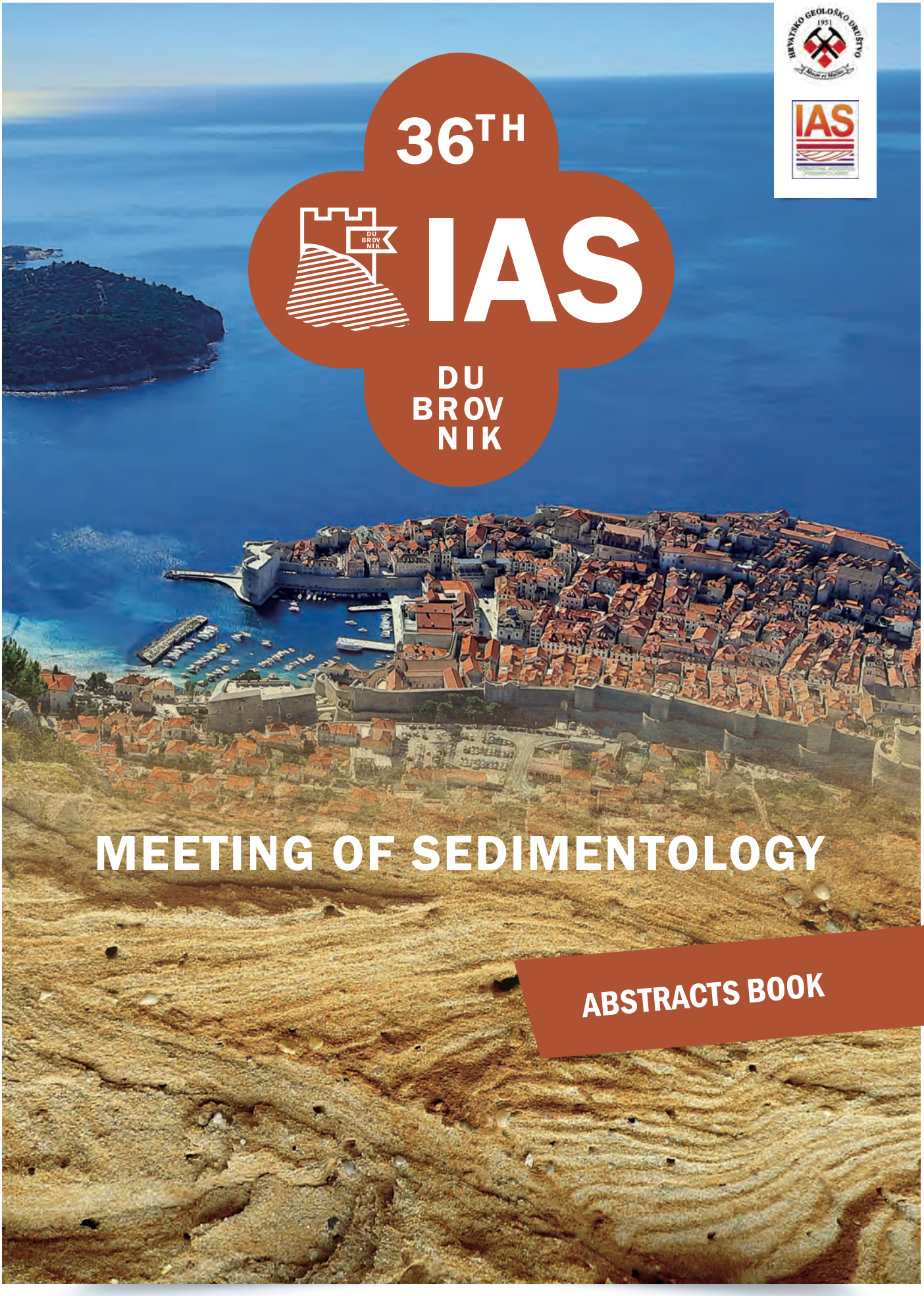

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ABSTRACTS BOOK

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ABSTRACTS BOOK

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Theme 9. Volcaniclastic deposits

General Session

Poster presentation

Deposition of volcaniclastites in pelagic environment on rifted continental margin during the Middle Triassic

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The Middle Triassic volcano-sedimentary successions related to the opening of the Neotethys Ocean in NW Croatia were investigated for their age and facies interpretation. Stratigraphically stacked volcanic and volcaniclastic lithologies, ranging from basaltic to rhyolitic, are interlayered with pelagic sedimentary rocks in the studied sections. These successions were deposited on a passive continental margin with dynamics set by intense rift-related tectonic movements and volcanic activity. Following disintegration of stable shallow-marine environment newly formed lithospheric blocks gave rise to a complex pelagic depositional environment as extension progressed. Pelagic limestones and radiolarian cherts were deposited on drowned blocks with episodic intercalations of volcanic and pyroclastic deposits from the early Illyrian to possibly late Ladinian. Shallow-water carbonate environment still existed laterally as suggested by resedimented carbonate detritus. Deep-rooted normal faults created by extension provided paths for submarine basaltic extrusions. Magma quenched in contact with sea water creating basaltic hyaloclastites that were redeposited in deeper parts of the basin. Acidic volcaniclastics, commonly known as “pietra verde”, were produced by explosive volcanic eruptions, and deposited in pelagic environment by different gravitational mechanisms, including pyroclastic density currents. Variations in thickness of these deposits indicate different sedimentation mechanisms and reflect complex topography of the depositional environment. Water-settled air fall deposits produced thinner layers, while thicker layers indicate redeposition of material from topographic heights to more subsided parts. Unconsolidated pyroclastic detritus was partly reworked soon after deposition and redistributed gradually filing the basin. Medium- to fine-grade turbidite sedimentation is inferred for these deposits based on grain size, normal grading, horizontal lamination and mixing of volcanic and pelagic material. Presumed stratigraphic gaps in investigated successions, and possibly condensed sedimentation, can be explained by complex basin topography and prevailing sedimentation mechanisms, which resulted with sediment erosion and its subsequent redistribution.