

BOOK OF ABSTRACTS



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**Editors: Florina Chitea, Ioan Munteanu,
Liviu Matenco, Raluca Dinescu, Irina Stanciu**

VOLCANISM AND BASIN DEVELOPMENTS DURING MIOCENE
IN THE ZĂRAND BASIN, APUSENI MTS., ROMANIA

Seghedi Ioan¹, Mirea Viorel¹

¹ Institute of Geodynamics Sabba S. Ștefănescu, Romanian Academy, Endogenous Processes,
Bucharest, Romania

ABSTRACT

The Zărand extensional basin witnessed during Miocene the generation and evolution of an important volcanic activity, dominated by the largest composite volcano in Apuseni Mts., Bontău volcano, the focus of this presentation. The volcano suggests an original oval-shaped edifice base (10/15 km) and according to existing K/Ar ages it was active roughly between ~14–10 Ma. The early volcanic activity was effusive and generated an andesitic composite volcano. The late activity developed at the top of the early volcano with the emplacement of acid andesites lava domes. After the summit dome generation several volcanic collapses developed all around the volcanic edifice producing large volcanic debris avalanche deposits (DADs), accompanied by numerous debris flows, mostly at the volcano periphery. The presence of pumiceous pyroclastic flow covered by DADs at the volcano periphery suggests an event of Plinian eruption before DAD generation. Four DADs units were identified, initially, two directed to the west and east and then the other two directed to the south and north. Small basins where lacustrine and fluvial sedimentation occurred suggest a hummocky topography of the DAD units. The last event in the volcano evolution generated a debris avalanche crater toward north which expose several intrusive andesitic-dioritic bodies and associated hydrothermal and mineralization processes.

The volcanism connects with the two steps geotectonic evolution of the Zărand Basin: (1) The initial volcanism between ~14-12.3–12.1 was generated during regional extension that started at ~16 Ma. It was a period when the Bontău composite volcano and the dome system along main faults that generated the basin were emplaced; (2) The second period, younger than 12 Ma, corresponds to NW-SE compressional tectonics developed only in the Bontău volcano with summit dome generation followed at ~ 10 Ma by volcano destruction and DADs generation. This event also correlates to the collision initiation in the East Carpathians.