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Miocene Bontău volcanic complex (*Apuseni Mts., Romania*); volume calculations and edifice reconstruction

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The evolution of the largest composite volcano in the Zărand basin of the Apuseni Mts., named recently Bontău has been associated with close-by dome complexes. It was built by calc-alkaline lavas and pyroclastic deposits (basaltic andesites to andesites). According to the available K/Ar data the Bontău Volcano is known to be active roughly between ~14-10 Ma and presently is covering an area of ~ 807.22 square km.

The initial edifice of the volcano is presently not anymore conserved and now the Bontău volcano it is composed of central edifice remnants named NDD, CVE and CVW surrounded by debris avalanche (DADs) and associated debris flow deposits. The stratovolcano had two stages; first effusive-explosive generated in the same time with the Gurahonț, Aciuța and Vârfuri close-by Domes up to ~12 Ma. The second stage, after ~12 Ma started with effusive dome at the top of the Bontău volcano. Further Plinian eruption and then gravitational collapses have emplaced massive volume DADs, widely distributed all around the volcano. Four DADs units are defined, corresponding to collapsed structures directed initially to the west and east and then to the south and north. This is the first calculations volumes of the Bontău volcanic complex, including edifice remnants, associated Domes and the DADs with the intention to reconstruct the initial edifice of Bontău volcano. DADs cover an extensive area around the former volcano edifice; around 346.14 square km and the central edifice remnants cover around 40.65 square km. Two DADs units surrounding the remnants of the former volcanic edifice are E-W directed (EDA, WDA) and the other two are N-S directed (NDA, SDA). The largest unit it is the EDA and characterized by highest run out of debris avalanches (~19 km) filling the Zărand basin interior. The calculations took into account the Pliocene-Quaternary erosion processes including the Crișul Alb River and its tributaries. According to volume calculations we reconstructed the volcano edifice that most probably had a base diameter of ~ 12 km and a height of ~2096 m. The edifice is looks similar in size with other composite volcanoes (i.e., present day Ruapehu volcano, North Island, New Zealand).