

## Neogene-Quaternary volcanic forms in the Carpathian-Pannonian Region: a review

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Neogene to Quaternary volcanic/magmatic activity in the Carpathian-Pannonian Region (CPR) occurred between 21 and 0.1 Ma with a distinct migration in time from west to east. It shows a diverse compositional variation in response to a complex interplay of subduction with roll-back, back-arc extension, collision, slab break-off, delamination, strike-slip tectonics and microplate rotations as well as in response to further evolution of magmas in crustal environment by processes of differentiation, crustal contamination, anatexis and magma mixing. Since most of primary volcanic forms have been affected by erosion, especially in areas of post-volcanic uplift, based on the level of erosion we distinguish: (1) areas eroded to the basement level, where paleovolcanic reconstruction is not possible; (2) deeply eroded volcanic forms with secondary morphology with possible paleovolcanic reconstruction; (3) eroded volcanic forms with remnants of original morphology preserved; (4) least eroded volcanic forms with original morphology quite well preserved. The large variety of volcanic forms present in the area can be grouped in: a) monogenetic volcanoes and b) polygenetic volcanoes and their subsurface/intrusive counterparts that belong to the major groups of various rock series found in the CPR: calc-alkaline magmatic rock-types (felsic, intermediate and mafic varieties) and alkalic types including K-alkalic, shoshonitic, ultrapotassic and Na-alkalic. The following volcanic/subvolcanic forms have been identified: (i) domes, dome/flow complexes, lava fields (in grabens), shield volcanoes, effusive cones, pyroclastic cones, various stratovolcanoes and calderas and associated intrusive bodies (necks, dykes, sills, laccoliths, stocks, plutons) for intermediate and basic calc-alkaline volcanism; (ii) domes, dome/flow complexes, calderas, ignimbrite/ash-flow fields with known or unknown eruption centers for felsic calc-alkaline volcanism and (iii) dome flows, shield volcanoes, maars, tuff-cones/tuff-rings, lava lakes, scoria-cones with or without related lava flow/field and their erosional or subsurface forms (necks/plugs, dykes, shallow intrusions, diatremes) for various types of K- and Na-alkalic and ultrapotassic magmatism. Finally, we provide a summary of the eruptive history and distribution of volcanic forms in the CPR using several subregion schemes (1 – Styermark + Burgenland + Balaton Highlands; 2 – Central Slovakia Volcanic Field + Börzsöny-Pilis-Visegrád + Cserhát + Mátra + Bük foreland + Southern Slovakia – Northern Hungary; 3 – Moravia + Pieniny; 4 – Tokaj-Zemplín + Slanské vrchy + Vihorlat-Gutin + Beregovo + Oas + Gutâi; 5 – Tibles-Rodna; 6 – Călimani + Gurghiu + Harghita + Persani; 7 – Apuseni) following our previous reviews.

## Investigation of mass movement deposits within Lake Ohrid (FYR Macedonia/Albania) using high resolution acoustic methods

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Lake Ohrid (FYR Macedonia/Albania) is situated within a tectonically active region on the Balkan Peninsula, and is most likely one of the oldest lakes in Europe (2-5 Ma). Its