



Conceptual model of volcanism and volcanic hazards of the region of Ararat valley, Armenia

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Armenia and the adjacent volcanically active regions in Iran, Turkey and Georgia are located in the collision zone between the Arabian and Eurasian lithospheric plates. The majority of studies of regional collision related volcanism use the model proposed by Keskin, (2003) where volcanism is driven by Neo-Tethyan slab break-off. In Armenia, >500 Quaternary-Holocene volcanoes from the Gegham, Vardenis and Syunik volcanic fields are hosted within pull-apart structures formed by active faults and their segments (Karakhanyan et al., 2002), while tectonic position of the large in volume basalt-dacite Aragats volcano and periphery volcanic plateaus is different and its position away from major fault lines necessitates more complex volcano-tectonic setup. Our detailed volcanological, petrological and geochemical studies provide insight into the nature of such volcanic activity in the region of Ararat Valley. Most magmas, such as those erupted in Armenia are volatile-poor and erupt fairly hot. Here we report newly discovered tephra sequences in Ararat valley, that were erupted from historically active Ararat stratovolcano and provide evidence for explosive eruption of young, mid K2O calc-alkaline and volatile-rich (>4.6 wt% H₂O; amph-bearing) magmas. Such young eruptions, in addition to the ignimbrite and lava flow hazards from Gegham and Aragats, present a threat to the >1.4 million people ($\sim \frac{1}{2}$ of the population of Armenia). We will report numerical simulations of potential volcanic hazards for the region of Ararat valley near Yerevan that will include including tephra fallout, lava flows and opening of new vents.

Connor et al. (2012) *J. Applied Volcanology* 1:3, 1-19; Karakhanian et al. (2002), *JVGR*, 113, 319-344; Keskin, M. (2003) *Geophys. Res. Lett.* 30, 24, 8046.