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# Eruptive Dynamics and Hazards associated with obsidian bearing ignimbrites of the Geghama Volcanic Highland, Central Armenia: A textural insight

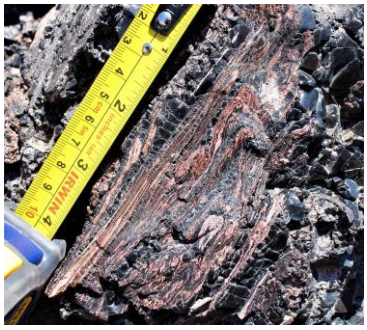
The Geghama volcanic highland presents the ideal setting to study the occurrence of widespread young volcanism in a continental collisional setting, which manifests as a band of volcanics trending NW-SE through central Armenia. These volcanics are bimodal in composition: the eastern highlands are dominated by numerous monogenetic scoria cones whilst the west shows more evolved volcanism centred on two obsidian bearing, polygenetic domes (Hatis and Gutanasar) [1]. Activity at these two volcanoes is thought to have spanned 550-200 ka [2] and produced a range of products from obsidian flows to basaltic scoria cones, indicative of long lived and complex magma storage systems. Whilst large regional studies have striven to better understand the timing and source of volcanism in Armenia, there have been few detailed studies on single volcanoes. My MSc by research project aims to better understand the eruptive history of Gutanasar, with specific focus upon the determination of the petrogenetic history of obsidian lenses observed within ignimbrite deposits. In order to achieve this my project aims to utilise information from macro textural measurements of these obsidian lenses in outcrop and from the quantification of plagioclase microlites in thin section, with supplementary geochemical data. Such measurements can provide significant insight into eruptive dynamics and emplacement history and it is hoped that this will help to better our understanding of volcanic dynamics and the implications that this may have had for the hominin groups that lived in close proximity to the volcano [2].

With partial support from a bursary granted by the Mineralogical Society, I was able to travel to Armenia in April of 2017 and complete a week long field study of these ignimbrite deposits. During this trip I was able to undertake first hand observations and measurements of the deposit in outcrop, as well as to gain a greater understanding of the regional volcanics and further experience in geological field techniques. By producing a detailed outcrop map, supplemented by outcrop photos and quantitative measurements of obsidian textures, I was able to collect appropriate samples for microscopic and geochemical analyses upon return to the UK. The heterogeneity of obsidian textures in this outcrop presents a complex petrogenetic history, the extent of which could only be fully appreciated with first hand observation of the outcrop (*figures 2,3*). This trip was therefore invaluable for the undertaking of my project and I wish to thank the society for their contribution.

***Figure 1 –*** *Fieldwork in April 2017, with the snow covered Gutanasar volcano in the background*

## References

**[1]** Arutyunyan et al (2007) *Dokl. Earth Sci*, **416**, 1042- 1046
**[2]** Adler et al (2014) *Science*, **345**, 1609-1613



***Figures 2 and 3*** *– Field photographs of some of the heterogeneous obsidian textures identified in the outcrop*