



ABSTRACT SUBMISSION

Open Sourcing Approach to Reveal Obsidian Procurement Strategies at Tirinkatar: A Multi-Period High Mountain Site in Armenia

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Abstract

Traditionally, reliable attribution of obsidian artifacts to their geological origins requires high-precision instruments, expensive calibration standards, and extensive geological reference collections. After comprehensive tests with geological specimens of known origins, we employed an alternative “open sourcing” workflow using portable X-ray fluorescence (pXRF) measurements with two innovations: (1) commercially available calibration standards were replaced with a loanable Peabody-Yale Reference Obsidians (PYRO) set, and (2) an extensive geological reference collection was replaced with a published dataset of consensus values. We applied this “open sourcing” approach to more than 3000 obsidian artifacts found at the site of Tirinkatar (also known as Kamir Sar), located at 2850 masl on Mount Aragats. Although Mount Aragats itself is a volcano, it did not produce obsidian outcrops, so all obsidian found at the Tirinkatar site had to be brought from elsewhere. The results of our obsidian sourcing identify at least ten different geological sources, whose proportions changed during the attested periods of occupation: Chalcolithic, Early, Middle, Late Bronze Age, and Early Iron Age. Consequently, a complex pattern emerges that sheds light on the procurement strategies of prehistoric communities using the high mountain for pastoral and cultic purposes.

Keywords

obsidian sourcing, new methodology, South Caucasus, exchange networks, high mountain archaeology

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