

## Obsidian Maritime Connections in Eastern Mediterranean Prehistory

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### Introduction

Despite recent mounting evidence demonstrating the successful early exploitation of insular environments around the globe as far back as 100 ka, the island of Cyprus is still persistently regarded as isolated from regional phenomena and largely unaffected by them. The main reason behind this marginality view is the island's insularity and geographic location at the periphery of the continent. Following a Terminal Pleistocene occupation, the Early Holocene signals the first permanent settlements on the island dating to around 10 ka and followed by a settlement expansion in the Middle Holocene (ca. 8 ka). The traditional view of Cyprus regards these early settlements as the outcome of Neolithic farmers who arrived from the mainland and subsequently turned their backs to the continent developing in isolation because of the presumed sea barriers prohibiting communication.



Fig. 1. Obsidian artefacts from Early Holocene Cyprus (© Theodora Moutsiou).

## Obsidian in Cyprus

Obsidian stone tools (Figure 1) provide an ideal proxy to discuss the extent, scale and directionality of early social interactions between insular and mainland communities in the Eastern Mediterranean. Obsidian is a non-native raw material to Cyprus with good quality geological sources known from the Aegean islands of Melos, Antiparos and Yiali, Turkey and the Caucasus. Obsidian is introduced to Cyprus (Moutsiou, 2018, 2019a) in the Initial Aceramic Neolithic, although its use on the island reaches its peak during the Early Aceramic Neolithic (8200–6900 Cal BC). At this time, it is distributed across the island (Moutsiou and Agapiou, 2019) in quantities that exceed those of the preceding or following periods, even though frequencies differ among sites. A decline in obsidian use is noted from the Late Aceramic Neolithic onwards.

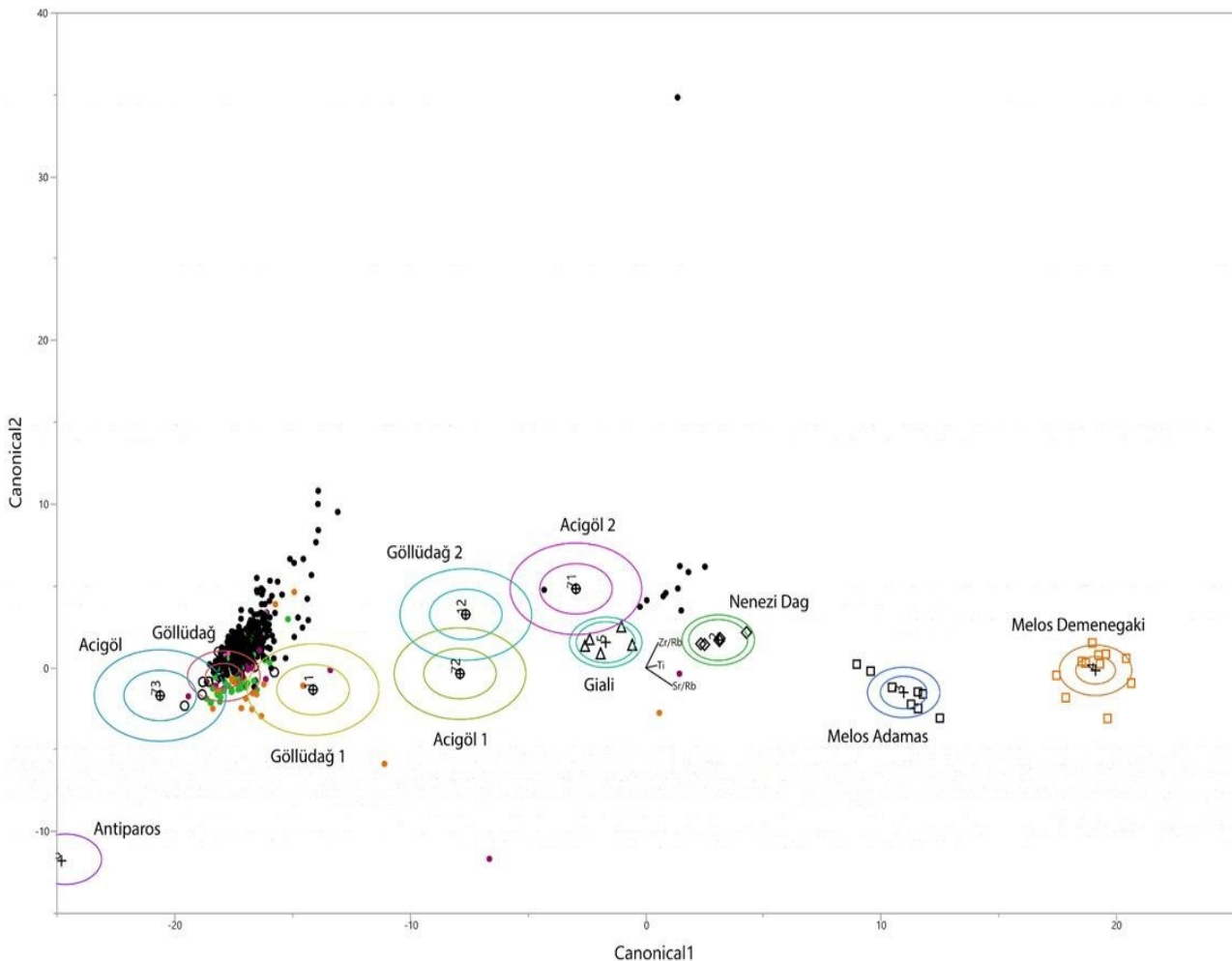


Fig. 2. Discriminant Function Analysis (DFA) of obsidian from Early Holocene Cyprus with the main Eastern Mediterranean geological obsidian sources. The Fig. shows that based on Sr/Rb and Zr/Rb ratios and Ti absolute values, the majority of the Cypriot obsidian can be attributed to the central Anatolian source of Göllü dağ. Colours: black=Shillourokambos, green=Ais Giorkis, orange=Mylouthkia, pink=Arkosyko (covered by the Shillourokambos main cluster), purple=Tenta (© Theodora Moutsiou 2018).

With few exceptions, all the obsidian assemblages discovered on Cyprus are dominated by either small blades or bladelets. To date, there is no evidence of core production or core debris in Cypriot sites dated to the Aceramic Neolithic. In terms of production the obsidian stone tools found on Cyprus exhibit strong technological parallels with those of the Near East and made via the application of

pressure flaking (Moutsiou, 2018). Combined this information suggests that the obsidian artefacts found on Cyprus were manufactured offshore and subsequently introduced to the island in finished form. X-ray Fluorescence Spectrometry (XRF) analyses (Moutsiou, 2018, 2019a) demonstrate that the majority of the obsidian artefacts derive from the central Anatolian volcanic complex of Göllü Dağ, with a lesser amount to Nenezi Dağ. For the first time we have concrete evidence for the presence of material from an Eastern Anatolian source, Bingöl B (Figure 2).

### **Maritime routes in Eastern Mediterranean prehistory**

Cyprus is an oceanic island that has always been disconnected from the mainland with an estimated gap of at least 30–60 km. Thus, at any stage in Eastern Mediterranean prehistory, people involved in the exchange of obsidian and likely other materials and objects would have by default relied on the sea and maritime travel to perform these exchange events. The location of Early Holocene obsidian-bearing sites along the north and south coasts of the island and the apparent obsidian gap between the two regions likely support two different routes for the introduction of obsidian to Cyprus: (a) from the Levant to the south coast of Cyprus, and (b) from Anatolia to the north coast of Cyprus. Sea travel between Cyprus and the neighbouring continent would not have been straightforward due to nautical elements like currents and winds, but a recent ongoing study suggests that such travel would have been possible at different times of the year and under certain weather conditions. Preliminary drift-induced simulation results (Nikolaidis et al., 2020) indicate that there exist at least two periods, during winter for South to North routes (south coast of Anatolia – Cyprus and vice versa), and during summer, for East to West routes (eastern coast of Levant – Cyprus and vice versa), whereby the sea state is favourable to drifting vessels, especially for shorter distances. During almost all the time, departures from the southern side of the Levantine mainland are blocked by currents flowing almost parallel to the coast (Figure 3).

### **Social connectivity across the sea**

Why, though, would these early communities choose to get involved in the establishment and maintenance of risky, time and effort consuming long-distance maritime exchange networks? From a cost-effective perspective the benefits associated with such an undertaking must outweigh these cognitive and organisational costs. The amount of obsidian found on Cyprus indicates that the value of these exotics lies within the realm of their social life (Moutsiou, 2019b). The symbolic role of obsidian artefacts is linked to their ability to entangle communities and individuals in emotional bonds – either kinship or alliance relationships – that can be maintained at a distance and without the need for face-to-face interactions. These exotic objects functioned then as a powerful symbolic medium for those early Cypriot communities' social strategies and negotiations within the changing Mediterranean Neolithic world, possibly as a buffer against resource stress and the risks associated with frontier colonisation. The Mediterranean Sea facilitated these interactions, serving as a highway to communication that extended across the sea.

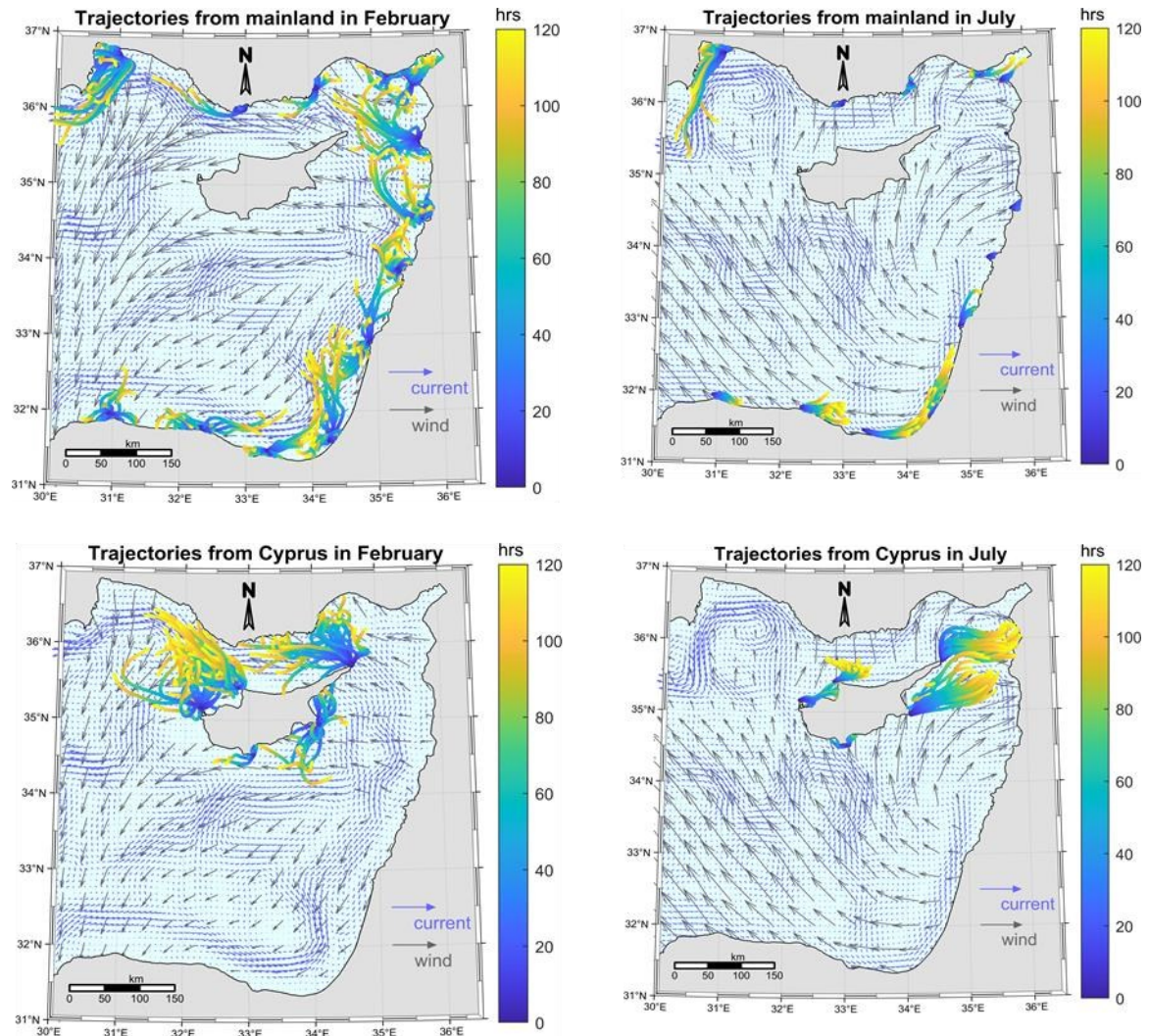


Fig. 3. Lagrangian-based simulation algorithms for modelling the drift-induced sea-borne movements to/from Cyprus based on drift-induced modelling based on data and assumptions regarding the prevailing paleo-environmental conditions and vessel characteristics. (© Nikolaidis et al., 2020).

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## Conflict of Interests Disclosure

No competing interests exist.

## Author Contributions

**Conceptualization:** Theodora Moutsiou

**Funding acquisition:** Theodora Moutsiou

**Investigation:** Theodora Moutsiou

**Methodology:** Theodora Moutsiou

**Project Administration:** Theodora Moutsiou

**Writing – original draft:** Theodora Moutsiou

## References

- Moutsiou, T. (2019a). 'A compositional study (pXRF) of Early Holocene obsidian assemblages from Cyprus, Eastern Mediterranean', *Open Archaeology* 5(1), pp. 155–166. doi: [10.1515/opar-2019-0011](https://doi.org/10.1515/opar-2019-0011)
- Moutsiou, T. (2019b). 'Raw material circulation and the Early Holocene social landscape of Cyprus', in Astruc, L., McCartney, C., Briois, F. and Kassianidou, V. (eds.), *Studies in Mediterranean Archaeology Volume 150, Near Eastern Lithic Technologies on the Move. Interactions and Contexts in Neolithic Traditions, 8<sup>th</sup> International Conference on PPN Chipped and Ground Stone Industries of the Near East, Nicosia, November 23<sup>rd</sup>–27<sup>th</sup> 2016*, pp. 119–132.
- Moutsiou, T. and Agapiou, A. (2019). 'A least cost pathway analysis of obsidian circulation in Early Holocene – early Middle Holocene Cyprus', *Journal of Archaeological Science Reports* 26, 101881. doi: [10.1016/j.jasrep.2019.101881](https://doi.org/10.1016/j.jasrep.2019.101881)
- Moutsiou, T. (2018). 'The obsidian evidence for trans-maritime interactions in the Eastern Mediterranean: The view from Aceramic Neolithic Cyprus', *Journal of Mediterranean Archaeology* 31(2), pp. 232–251. doi: [10.1558/jma.38084](https://doi.org/10.1558/jma.38084)
- Nikolaidis, A., Akylas, E., Michailides, C., Moutsiou, T., Leventis, G., Constantinides, A., McCartney, C. et al. (2020). 'Modeling drift-induced maritime connectivity between Cyprus and its surrounding coastal areas during early Holocene', *EGU General Assembly Conference Abstracts*, 19782.