



# A technological approach to obsidian circulation in Prehistoric Central Alaska



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## ABSTRACT

Central Alaska is a key-region for studying long-distance circulation, trade and use of obsidian. Although the main raw materials in the early and late prehistoric sites from the Nenana and Tanana valleys are various types of local cherts, basalts, rhyolites and so on, a large number of these sites include a small percentage of stone tools made on obsidian. The aim of this research, based on obsidian artefacts from 11 sites from the Tanana and Nenana valleys in Central Alaska, is not to determine from where the obsidian was coming from, but rather to apprehend how obsidian was being transported and used, in order to have a better grasp at the economic and social implications that lie behind the obsidian. The technological analytic method used during the analysis sheds new light on cultural behavior concerning procurement, transportation, exchange, circulation and use.

## 1. Introduction

In Central Alaska, the first known human occupation dates back to 14,000 years ago, as evidenced by the lowest cultural horizon of Swan Point in the Tanana Valley (Holmes, 2008, 2011). In this interior region of Alaska, nomadic and semi-nomadic populations will inhabit the area from the Late Pleistocene to the Late Holocene. The main type of material culture that has preserved at the prehistoric sites of the region is stone tools. The analysis of the lithic industry can provide a whole range of information about prehistoric groups, including the understanding of how landscape was used and the interactions among groups through the analysis of raw material procurement strategies. This article will focus on the Tanana and Nenana valleys, an area that has provided extensive archaeological research and that offers large assemblages to work on (Cook, 1996; Goebel and Bigelow, 1996; Goebel et al., 1996; Hoffecker et al., 1996; Holmes, 1996, 2011; Lively, 1996; Mobley, 1991; Pearson, 1999; Potter et al., 2011; Powers and Hoffecker, 1989; Powers et al., 1983). At these sites, various types of local and non-local raw materials have been used through time for the manufacture of stone tools, including basalt, rhyolite, chert, quartzite and obsidian (Coffman and Rasic, 2015; Gore, 2017; Graf and Goebel, 2009). Obsidian in the Tanana and Nenana valleys only represent a small percentage of the raw materials used at the sites, but even if found in small quantities, this raw material allows us to discuss long distance circulation issues.

### 1.1. Obsidian and long-distance circulation in other areas of the world

Obsidian is a volcanic rock used during Prehistory for the manufacture of stone tool artefacts. Since obsidian is such a high-quality raw material, it is commonly involved in long-distance circulation and exchange networks as early as the Palaeolithic. Given the durability of stone, it is one of the very rare witnesses to such cultural behavior that remains in the archaeological record from such early times. There are numerous examples worldwide where obsidian is treated as a prestige good and where the source is located hundreds and even thousands of kilometers from the archaeological sites (e.g., Kuzmin et al., 2008; Perlès, 1984). Therefore, understanding how obsidian was acquired, traded and used can help us understand certain aspects of past societies. In the regions where obsidian is found (Greece, Turkey, Central Europe, North China, Korea, Japan, Alaska, Canada, United States, Mexico, etc.), prehistoric groups have used these geological sources for the production of stone tools (e.g., Binder and Balkan-Atli, 2001; Perlès, 1984; Sato and Tsutsumi, 2007), and they have done so as early as the Lower Palaeolithic in Africa (Carter, 2014). Obsidian has also been used as a proof for early seafaring, since it was sometimes acquired from islands as soon as the Upper Palaeolithic, such as in Japan (Ikawa-Smith, 2009) and in the Mediterranean (Perlès, 1979). In the North Pacific region, scholars have already discussed the use and trade of obsidian in prehistoric sites from China, Japan, Siberia and Alaska, demonstrating that it could circulate over long distances. In Japan, as early as 12,000 years ago, obsidian is found in Palaeolithic sites over 1000 km from the original geological source (Kuzmin and Glascock, 2007). In the Far East, a two-way exchange network between the

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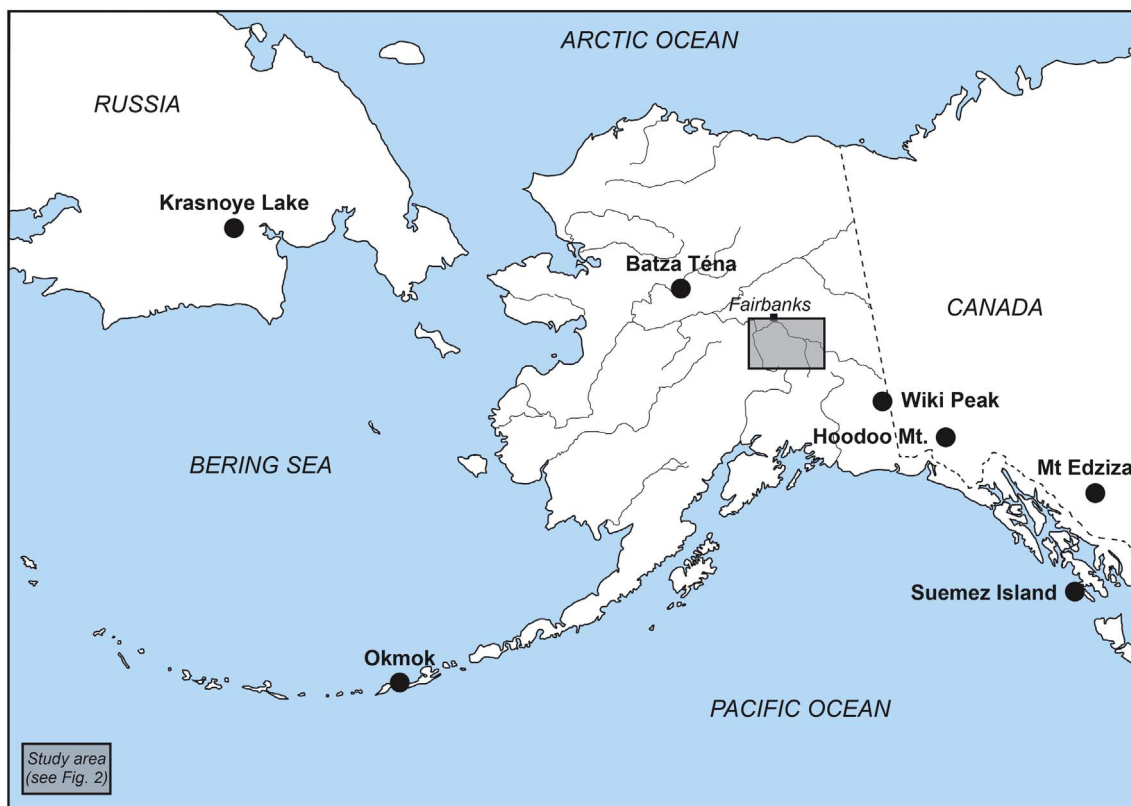


Fig. 1. Distribution of known obsidian sources used in prehistoric Alaskan sites (based on Reuther et al., 2011 and Grebennikov et al., 2016) and location area of studied sites.

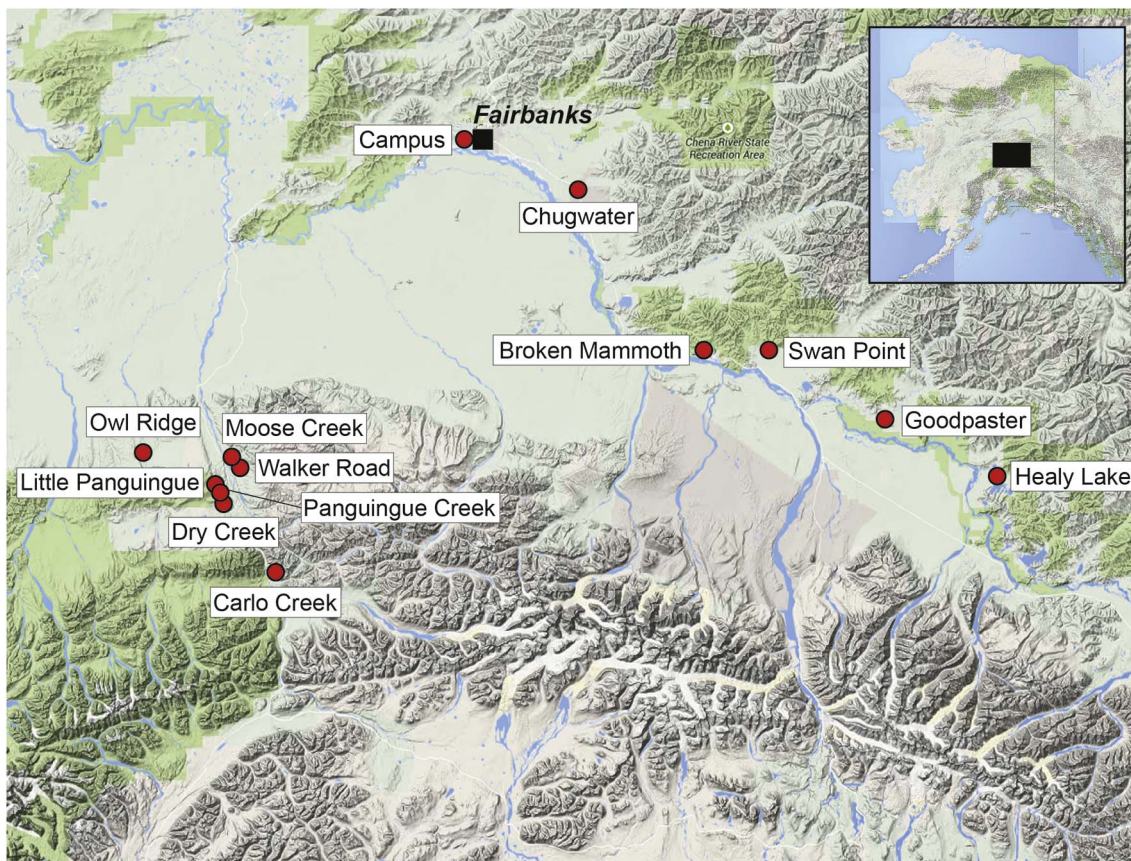


Fig. 2. Map of the Tanana and Nenana valleys (Central Alaska) with the location of sites mentioned in the article. (adapted from Google Maps)

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