

## Results of a preliminary study on the obsidian outcrops and Pre-Hispanic sites in Tenerife, Canary Islands

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The Canary Islands are an east trending volcanic archipelago located off the western Atlantic coast of North Africa. Tenerife Island, the largest in the seven island chain, was an active volcanic island formed in an active rift zone punctuated by repeated mountain formation and collapse. Volcanic activity on the island started 11.9 Ma, with 90% of the island's volume created by 3.5 Ma during three distinct formation stages (Carracedo and Perez-Torrado, 2013). The latest formation created the Las Cañadas Caldera located in the middle of the island. This area includes the island's tallest volcanoes Teide and Pico Viejo. Los Guanches were the indigenous population who inhabited the island from the late Holocene until Spanish colonization in the 15th century. This Pre-Hispanic society is characterized by life-ways focusing on hunting, gathering, and domestic plant use (e.g., barley). Although there is no evidence of metallurgy, technology focused on stone and osseous tools, ceramic pottery, and wood. Among tool resources, obsidian generated by the volcanic activities on Tenerife was a widely used raw material for making stone tools. The goal of this preliminary study is to collect basic data that helps evaluate Pre-Hispanic lifeways on Tenerife in terms of long-term use of island resources and to elucidate human-volcanic relationships on this geologically and biogeographically unique island. To do this, we focus specifically on the Pre-Hispanic exploitation of obsidian. Since the available data regarding obsidian use in Pre-Hispanic sites are limited, we conducted a field study focused on both (1) obsidian outcrops made by volcanic activities in the Las Cañadas Volcano, and (2) a systematic survey on the alluvial fans and gullies in the southern dry area of Tenerife. With permission from the Teide National Park, two known obsidian outcrops (Tabonal Negro and Tabonal los Guanches) in the central area of Las Cañadas Volcano (Hernández Gómez and Galván Santos, 2008) and a single outcrop along the northern coastal zone (Charco de Viento) were surveyed. Tabonal Negro is located on a phonolitic lava dome originated from Montaña Blanca and contains extensively distributed obsidian boulders dated to ca. 2000 BP (Ablay et al., 1995). The Pre-Hispanic artifacts samples (obsidian debitage and ceramic sherds) represent surface finds located on the alluvial fans deposited in between lava domes. These surface scatters are located in 2270 - 2300 m asl. Tabonal Guanches is an extensive lava flow located on the northern slope of Mt. Teide. Numerous obsidian workshops are identified in between the obsidian boulders that make up the Lavas Negras phonolitic lava flow. This flow dates to  $1150 \pm 140$  cal. BP based on charcoal samples obtained from just beneath the Lavas Negras. This suggests that the Guanches' exploitation of Tabonal los Guanches was at least initiated after this period. The northern coastal region (Charco de Viento) where natural obsidian was outcropped is on the distal end of the lava dome (called as Abejara Alta) originated from the slope in 2500 m asl. The AMS radiocarbon date for the charcoal beneath the Abejara Alto is  $5911 \pm 264$  cal. BP (Carracedo et al., 2007, 2013), suggests that obsidian of Charco de Viento was generated no earlier than 6000 BP. During the survey campaign, no obsidian artifacts were identified on this part of the lava dome. In southern Tenerife, the archaeological survey took place in the Granadilla area among the extensive alluvial slopes at the outskirts of the Teide volcano. Because of the dry climate, alluvial slopes created numerous now-dry gullies, known as "barrancos". Our three-day survey along the barrancos recorded a total of 32 scatters of artifacts attributable to Pre-Hispanic period. Among them, 29 scatters contained obsidian debitage. The surveyed region of Granadilla is covered with ignimbrite and

fallen pumice that included basalt flows. Obsidian was found from the alluvial terraces, although they are generally pebble size and poor in abundance. Conversely, the obsidian from the artifact scatters are larger in size and exhibit various appearances including translucent, opaque, and dark green, indicating that Guanches obtained obsidian from remote regions outside the Granadilla. As research continues, it will be critical to address three main questions: (1) Identifications of the distributions of natural obsidian outcrops, (2) Geochronology of obsidian-related lava flows and terraces/surfaces where archaeological sites are located, and (3) Geochemical sourcing of obsidian and other lithic materials using currently standardized methods. This research was supported by the JSPS KAKENHI Grant No 26350374.

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