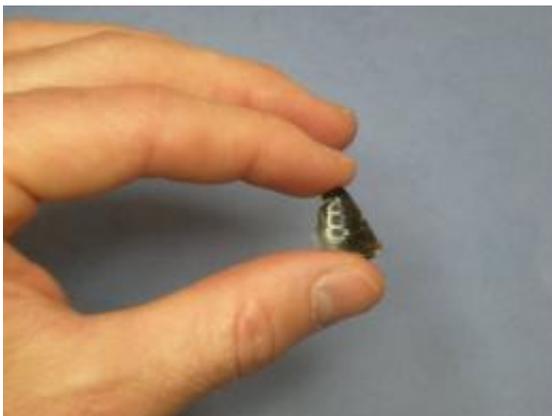


## Obsidian 'trail' provides clues to how humans settled, interacted in Kuril Islands

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Tiny obsidian flakes such as this found in the Kuril Islands have been traced to their source on Japan's Hokkaido Island and Russia's Kamchatka Peninsula.

(PhysOrg.com) -- Archaeologists have used stone tools to answer many questions about human ancestors in both the distant and near past and now they are analyzing the origin of obsidian flakes to better understand how people settled and interacted in the inhospitable Kuril Islands.

Using X-ray fluorescence spectrometers, archaeologists from the University of Washington and the Smithsonian Institution have found the origin of 131 flakes of obsidian, a volcanic glass. These small flakes were discarded after stone tools were made from obsidian and were found at 18 sites on eight islands in the Kurils. The flakes were found with other artifacts that were dated over a time period spanning about

1,750 years, from 2500 to 750 years before the present.

The Kuril Archipelago stretches for nearly 800 miles between the northern-most Japanese island of Hokkaido and the Kamchatka Peninsula in Russia. Despite the islands' volcanic origin, there are no known local sources of obsidian.

"A key quality of obsidian is you can create very sharp edge. Obsidian flakes easily and fractures in a way that is predictable. When it was available [people](#) have used it," said Colby Phillips, lead author of the new study and an anthropology doctoral student at the University of Washington. His co-author is Robert Speakman of the Smithsonian's Museum Conservation Institute.

Obsidian is formed when magma is extruded from a volcano and can be geochemically identified Phillips said. That's because the obsidian from each volcano has a unique [chemical signature](#) based on the amount of elements such as rubidium, zirconium and strontium in the glass. Archaeologists gather obsidian samples from volcanoes to create a data base of chemical signatures and compare archaeological samples collected in the field to the data base.

Phillips and Speakman pinpointed the Kuril flakes they analyzed to four locations on Hokkaido and five sources on Kamchatka. The majority of the flakes, slightly more than 60 percent, originated in Kamchatka.

Human occupation of the Kurils began about 4,000 years ago at the southern end of the island chain near Hokkaido and gradually spread northward. And where humans went they carried obsidian with them.

"Obsidian only makes up about 8 percent of the stone tools and the waste left from their manufacture, but it shows up at all sites and over all time periods," said Phillips. "Obsidian may have played a role in maintaining

social and trade networks as people migrated across the Kurils. Our work suggests social relationships can be important in local and regional areas. Here we have people living in an isolated area that is covered by fog and clouds and subject to tsunamis, volcanic eruptions and earthquakes. So it would be advantageous to have connections with other people. The fact that we have a material such as obsidian throughout the islands shows people were proactive in maintaining ties in the prehistoric era."

The researchers found a basic pattern of obsidian distribution in the islands. Obsidian from Hokkaido was primarily found in the Southern Kurils with a few samples discovered in the Central Kurils. Kamchatka obsidian was only found in the Central and Northern Kurils.

The Southern Kurils are separated from the other islands in the chain by the 70-mile-wide Bussol Strait. Phillips believes that at some time it became too costly to make the dangerous ocean crossing, and people in the central and northern [islands](#) began trading for Kamchatka obsidian.

Since the research was accepted for publication, Phillips and Speakman have analyzed the sources of an additional 700 obsidian flakes and their results mirror the newly published data.

Source: University of Washington ([news](#) : [web](#))

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