

Surviving climate change, then and now

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Trade and social networking helped our *Homo sapiens* ancestors survive a climate-changing volcanic eruption 40,000 years ago, giving hope that we will be able to ride out global warming by staying interconnected, a new study suggests.

Analyzing ancient tools, ornaments and human remains from a prehistoric rock shelter called Riparo Bombrini, in Liguria on the Italian Riviera, archeologists at Université de Montréal and the University of Genoa conclude that the key to survival is [cooperation](#).

Their study was published in early April in the *Journal of Quaternary Science*.

"Liguria is where some of the first *Homo sapiens*, more or less our direct ancestors, lived in Europe," said Julien Riel-Salvatore, a professor of archeology at UdeM who co-authored the study with his Italian colleague Fabio Negrino. "They came after the Neanderthals, and unlike them, when they were faced with sudden changes in their climate they didn't go locally extinct or abandon the region—they adapted."

Home sapiens had been living in the region for about 1,000 years when a "super-eruption" in the Phlegraean Fields in southern Italy, west of present-day Naples, devastated much of Europe. "It used to be thought that this wiped out most of the early *Homo sapiens* in Europe, but we've been able to show that some were able to deal with the situation just fine. They survived by dealing with the uncertainty of sudden change."

In their work, the archeologists gathered tool fragments such as bladelets—small flakes knocked off large stones to use as barbs and slicing components of weapons for hunting—that showed the ingenuity of our early ancestors. Some of the flint they used was brought in from hundreds of kilometres away, indicating a very extensive social and trading network that helped them survive for the next 4,000 years.

"They had a link to people living far away, so that if things went haywire in the territory where they lived, they had the social option of depending on people they'd built relationships with—the broader the network, the easier it was to survive," said Riel-Salvatore, whose evidence also

includes rare skeletal remains and a child's tooth, as well as shell and stone ornaments, that show *Homo sapiens* were there.

His study mirrors others on an even older archeological site, Mount Toba on the Indonesian island of Sumatra, where a super-eruption 75,000 years ago was once thought to have come close to wiping out humanity entirely, a theory since disproven. In both cases, archeology has shown that evolution isn't always as dramatic as we think.

"This seems to be part of a pattern where humans are more adaptable and more resilient in the face of these enormously disruptive events," said Riel-Salvatore. "These events can be really terrible, but only in a limited way, not across continents or globally."

It's a bit of a leap to say that what happened tens of thousands of years ago can help predict how humans today will cope with [climate change](#), but learning from the past does help situate us for the future—and even rebut climate-change deniers, he added.

"It underscores the importance of archeology in being able to inform the more immediate issues we face. Cooperation and resilient social networks were really key in helping people ride out dramatic climate change in the past. And considering some of the challenges we're facing nowadays, and some of the entrenched positions we have to deal with, maybe this notion that cooperation is fundamental is something we can communicate as a take-home lesson."

The bulk of the data the researchers gathered for their study was excavated between 2002 and 2005 from Riparo Bombrini, a part of the Balzi Rossi site complex from the Middle-Upper Paleolithic period that was first probed in 1938 and excavated in 1976. Over the next three years, Riel-Salvatore and Negrino intend to delve further into why the Neanderthal population there disappeared and was replaced by the better-

equipped—and better-connected - *Homo sapiens*.

More information: Julien Riel-Salvatore et al, Human adaptations to climatic change in Liguria across the Middle-Upper Paleolithic transition, *Journal of Quaternary Science* (2018). [DOI: 10.1002/jqs.3005](https://doi.org/10.1002/jqs.3005)

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