How climate change is erasing the world's oldest rock art

Australasia is home to some of the oldest rock art motifs in the world. In tropical latitudes, due to climate change, the rock art deterioration is accelerating. This study asked why and how can we preserve them?

The Research & Outcomes

In caves on the Indonesian island of Sulawesi, ancient peoples marked the walls with red and mulberry hand stencils, and painted images of large native mammals or imaginary human-animal creatures.

These are the oldest cave art sites known. One painting of a Sulawesi warty pig was recently dated to at least 45,500 years old.

Since the 1950s, archaeologists have observed these paintings appear to be blistering and peeling off the cave walls. Yet, little had been done to understand why.

This research explored the mechanisms of decay affecting ancient rock art panels at 11 sites in Sulawesi's Maros-Pangkep region. They found the deterioration may have gotten worse in recent decades, a trend likely to continue with accelerating climate change.

These prehistoric artworks have been scientifically dated to between 20,000 and 40,000 years old. Given these artworks have survived over such a vast period, why are the painted limestone cave surfaces now eroding so rapidly.

The team used a combination of scientific techniques, including using high-powered microscopes, chemical analyses and crystal identification to tackle the problem. This revealed that salts growing both on top of and behind ancient rock art can cause it to flake away.

Salts are deposited on rock surfaces via the water they're absorbed in. When the water solution evaporates, salt crystals form. The salt crystals then swell and shrink as the environment heats and cools, generating stress in the rock.

In some cases, the result is the stone surface crumbling into a powder.

Researchers from Griffith University study Rock art in Sulawesi. (image: Jillian Huntley)

The PD Beamline was able to identify both the rock art pigments and the salts that form destroying the art. This helped determine the mechanisms of decay.

Benefits & Impacts

The information from this study can now be used to help develop strategies to preserve the Rock art. Most importantly, we need to act now to stop global temperature increases and drastically cut emissions. Minimising the impacts of climate change will help preserve the incredible artworks Australasia's earliest people left to us.

References

N.B. This text is largely from a conversation article written by the authors of the study

https://theconversation.com/how-climate-change-is-erasing-the-worlds-oldest-rock-art-159929

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