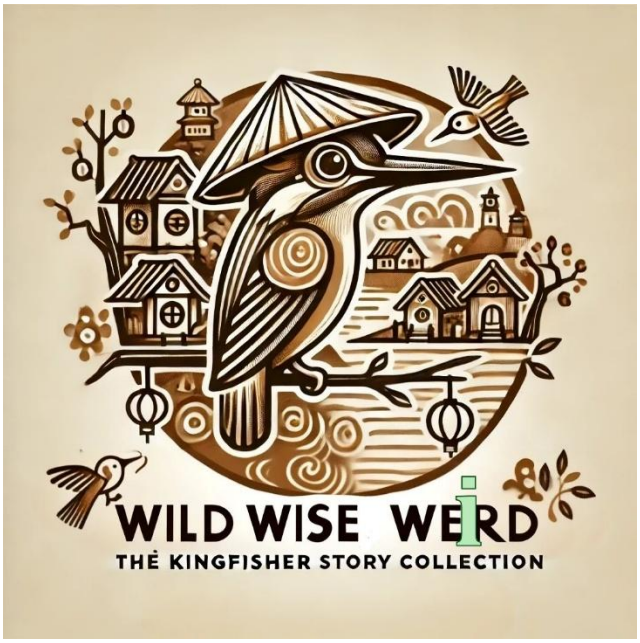
A Medieval Thaw: Surprising Evidence of Past Warming in Antarctica’s Frozen Heart

Chèo Bẻo Đen

14-04-2025



“There must be a plan of action because delaying will be dangerous. […] The hot and stressful weather also makes his feathers molt and grow slower. The situation seems life-threatening!”

In “GHG Emissions”; *Wild Wise Weird* [1]

• • • • •

Antarctica has been regarded as one of the most stable and unchanging landscapes on Earth for at least 13.6 million years [2,3]. However, a new study published in *Communications Earth & Environment* challenges that perception, revealing that a dramatic climate event reshaped part of the continent over a thousand years ago [4].

Researchers used advanced ground-penetrating radar (GPR) and ice core drilling to investigate Boulder Clay Glacier (BCG), located in northern Victoria Land. They discovered a striking feature buried beneath the ice: a 4-kilometer-long meltwater channel and a continuous sediment layer, both marking a significant erosion event. Radiocarbon dating of preserved moss remains embedded deep in the glacier indicated that this transformation occurred between 900 and 989 years before the present—during the Medieval Warm Period (MWP).

This is the first known instance of supraglacial river erosion and sediment transport documented in continental Antarctica. While surface melting in parts of the continent has been detected [5,6], no comparable reshaping of the glacial landscape has been recorded in recent times at Boulder Clay Glacier. This underscores the exceptional nature of the past warming event.

Adding to the intrigue, the researchers identified moss species in the ice core, including *Pohlia nutans*, which today grows only near volcanic heat sources in Antarctica [7,8]. Its presence far from geothermal areas suggests that summer temperatures during the MWP may have been high enough to support more widespread vegetation, pointing to a regionally significant warming episode.

The findings highlight the sensitivity of even Antarctica’s coldest and most remote areas to climatic fluctuations. They serve as a reminder that Earth’s climate system is interconnected across time and space. Understanding these past warming episodes offers critical insights into how today’s global climate shifts might reshape not only polar landscapes but also the balance between nature and humanity [9,10].

References

[1] Vuong QH. (2024). *Wild Wise Weird*. https://www.amazon.com/dp/B0BG2NNHY6/

[2] Sugden DE, Denton GH. (2004). Cenozoic landscape evolution of the Convoy Range to Mackay Glacier area, Transantarctic Mountains: onshore to offshore synthesis. *GSA Bulletin*, 116(7-8), 840-857. https://doi.org/10.1130/B25356.1

[3] Sugden DE, et al. (1999). Landscape development in the Royal Society Range, southern Victoria Land, Antarctica: stability since the mid-Miocene. *Geomorphology*, 28(3-4), 181-200. https://doi.org/10.1016/S0169-555X(98)00108-1

[4] Forte E, et al. (2025). A warming pulse in the Antarctic continent changed the landscape during the Middle Ages. *Communications Earth & Environment*, 6, 281. https://www.nature.com/articles/s43247-025-02259-4

[5] Levy JS, et al. (2018). Decadal topographic change in the McMurdo Dry Valleys of Antarctica: Thermokarst subsidence, glacier thinning, and transfer of water storage from the cryosphere to the hydrosphere. *Geomorphology*, 323, 80-97. https://doi.org/10.1016/j.geomorph.2018.09.012

[6] Winsor K, et al. (2020). Origin, structure and geochemistry of a rock glacier near Don Juan Pond, Wright Valley, Antarctica. *Antarctic Science*, 32(4), 273-287. https://doi.org/10.1017/S0954102020000139

[7] Bargagli R, et al. (2004). New record of moss and thermophilic bacteria species and physico-chemical properties of geothermal soils on the northwest slope of Mt. Melbourne (Antarctica). *Polar Biology*, 27, 423-431. https://doi.org/10.1007/s00300-004-0612-6

[8] Bargagli R, et al. (1996). Preliminary investigation of the thermal biosystem of Mount Rittmann fumaroles (Northern Victoria Land, Antarctica). *Antarctic Science*, 8(2), 121-126. https://doi.org/10.1017/S0954102096000181

[9] Ho MT, Nguyen DH. (2025). Of Kingfisher and Man. https://philarchive.org/rec/HOOKAW

[10] Nguyen MH. (2024). How can satirical fables offer us a vision for sustainability? *Visions for Sustainability*. https://ojs.unito.it/index.php/visions/article/view/11267