in the meridional overturning of the upper North Pacific. However, the data presented by Max *et al.*[1] clearly argue that any such northward heat transport was insufficient to overcome the large northern hemisphere cooling that reigned during HS1 and the Younger Dryas throughout the western subarctic Pacific. ❐

Samuel L. Jaccard is at the Geological Institute, ETHZ, CH-8092 Zurich, Switzerland.
e-mail: samuel.jaccard@erdw.ethz.ch

References

1. Max, L. *et al. Paleoceanography* http://dx.doi.org/10.1029/2012PA002292 (2012).
2. Warren, B. *J. Marine Res.* **41,** 327–347 (1983).
3. Emile-Geay, J. *et al. J. Geophys. Res.* **108,** 3178 (2003).
4. Okazaki, Y. *et al. Science* **329,** 200–204 (2010).
5. McManus, J. F., François, R., Gherardi, J.-M., Keigwin, L. & Brown-Leger, S. L. *Nature* **428,** 834–837 (2004).
6. Saenko, O. A., Schmittner, A. & Weaver, A. J. *J. Clim.* **17,** 2033–2038 (2004).
7. Kienast, S. S. & McKay, J. L. *Geophys. Res. Lett.* **28,** 1563–1566 (2001).
8. Jaccard, S. L. & Galbraith, E. D. *Nature Geosci.* **5,** 151–156 (2012).
9. Galbraith, E. D. *et al. Nature* **449,** 890–893 (2007).
10. Lund, D. C., Mix, A. C. & Southon, J. *Nature Geosci.* **4,** 771–774 (2011).

ANTHROPOLOGY

Ice-free emigration

From a European perspective, the Americas have been seen as the 'New World'. Later anthropological and archaeological investigations revealed that this moniker may be surprisingly apt. Modern humans, or at least their early forbears, had colonized most of the world by 40,000 years ago. Even Australia saw the arrival of its original human inhabitants 50,000 years ago. Evidence for the colonization of the Americas is placed much later, between about 15,000 and 13,000 years ago, although some of the earliest coastal sites have probably been lost to the rising seas at the end of the last glacial maximum.

It was the drawdown of sea level associated with glacial ice-sheet growth that provided the path for early humans to travel from the easternmost tip of Asia into the Americas, across an exposed land bridge known as Beringia. But the growth of ice that exposed this land would have made its passage challenging, with glaciers blocking the way across the coastal areas of Beringia and the Aleutian Archipelago. This has led to suggestions that early migrants were able to forgo their coastal roots and use more inland, ice-free avenues, or that they were sufficiently proficient with maritime technology to travel between exposed coastal areas by sea.

Now, Nicole Misarti of Oregon State University, USA, and colleagues have demonstrated that the deglaciation of the Aleutian Archipelago and Alaska Peninsula occurred by 17,000 years ago (*Quat. Sci. Rev.* **48,** 1–6; 2012), implying that the coastal pathways were clear about two thousand years earlier than previously believed.

The authors assessed the history of glacial cover in the Gulf of Alaska using lake sediments from Sanak Island, which is located along the proposed coastal migration corridor. Based on an age model derived from radiocarbon dating and the correlation of volcanic ash layers, the authors found that lacustrine sedimentation began about 17,000 years ago, requiring the lakes to be ice-free. Pollen data indicate the establishment of an arid terrestrial ecosystem by at least 16,300 years ago. Marine evidence for warming sea surface temperatures and lessening sea ice support the idea of a general warming of this region 17,000 years ago. Taking this together, it seems likely that the proposed southeastern coastal route would have been passable well before the earliest evidence of human colonization.

Of course, just because the route was useable does not necessarily mean that it was actually used, or that it was the only route in use. A recent dating effort in the Paisley Caves of Oregon suggests that two distinct technologies — the Western Stem Tradition and Clovis — were in use at about the same time, indicating two distinct groups of American settlers (*Science* **337,** 223–228; 2012). The two technologies could reflect the divergence of a single group of early American migrants. However, perhaps more intriguingly, these two stone tool groups could also reflect the migrations of multiple founding groups bringing different technologies — and possibly genetics — to the Americas. If so, it remains to be seen whether these groups chose to use the same route into the New World.

ALICIA NEWTON

© ISTOCKPHOTO / THINKSTOCK

© 2012 Macmillan Publishers Limited. All rights reserved