Southern Greenland—warm and ice free!

Michael J. Oard

Evolutionary scientists have recently discovered evidence that southern Greenland was much warmer and ice-free during an interglacial between one of their dozens of glacial periods.[1,2] According to the uniformitarian ice age paradigm, Greenland first developed an ice sheet around 2.5 Ma (million years) ago; at the same time the ice sheets supposedly developed on North America and Scandinavia. However, opinion on the timing of the Greenland Ice Sheet is changing. Some scientists believe the Greenland Ice Sheet developed 7 Ma ago,[3] while even more recent research claims it was 30–38 Ma ago,[4] or even as old as 44 Ma ago![5] These new results are based on the finding of what are believed to be ice-rafted debris in deep-sea cores in the northern North Atlantic.

A warm, ice-free southern Greenland

The basis of the claim of an ice-free southern Greenland comes from the basal silty ice of the 2 km thick southern Greenland Dye 3 core.[6] (Figure 1 shows the location of the Dye 3 core on the Greenland Ice Sheet.) The Danish researchers discovered the DNA of a wide variety of plants and insects in the silty ice in the bottom of the core. They were able to positively identify DNA from alder, spruce, pine and yew, and DNA from yarrow, birch, chickweed, fescue, rush, plantain, saxifrage, snowberry and aspen, which could not be independently identified by different laboratories. They also collected DNA from beetles, flies, spiders, butterflies and moths. As a control on whether they could really measure DNA from the foot of a glacier, they successfully identified the DNA from all the plants recently overrun by a glacier on Ellesmere Island, northeastern Canada. They apparently also found DNA in the basal layers of the GRIP core drilled 3 km deep in central Greenland (figure 1), but they were unable to analyze it.

These plants and insects are indicative of warm temperatures, much warmer than is current for southern Greenland. The average July temperature must have exceeded 10°C, and winter temperatures *never* fell below –17°C, which is the coldest temperature that yew trees can survive.[7] Furthermore, with little or no ice on Greenland, the land elevation may have been about 1 km above sea level due to isostatic compensation,[8] making such relatively warm temperatures even more anomalous, since higher terrain is cooler than lower terrain.

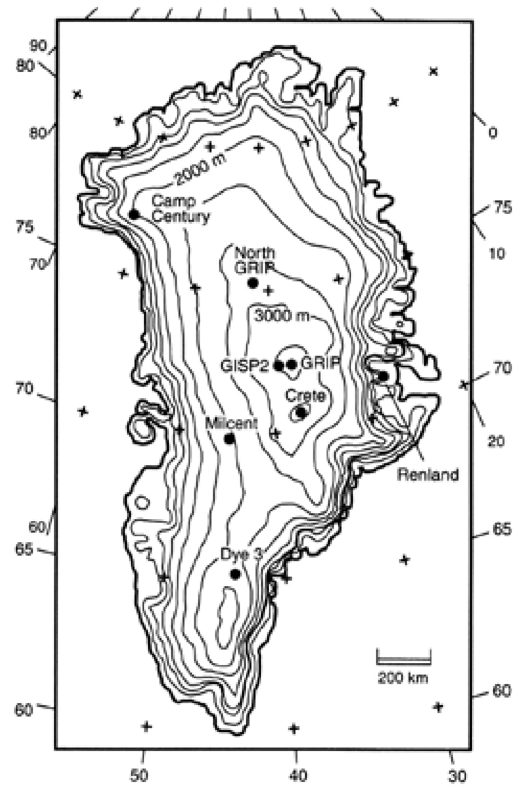

Figure 1. Greenland showing ice thickness above sea level with major ice core locations.[20]

Which interglacial was ice-free?

The researchers had to determine which interglacial the DNA came from. They reasoned that the DNA had to originate from the *last* time southern Greenland was ice-free, because older DNA from previous ice-free interglacials would vanish with the establishment of a new ice-free ecosystem. The basal ice is mixed up, as it is in all basal sections of ice cores. So, glaciologists commonly claim that the basal several metres of dirt and ice can be very old. The researchers used four dating techniques, giving results between 450,000 and 800,000 years. According to the astronomical hypothesis ice ages should repeat every 100,000 years and should have been doing so for the past 900,000 years.[9] So these dates would place the last melting of southern Greenland to sometime between the 4th and the 8th interglacial before the current interglacial, the Holocene.

The researchers admitted that there are many assumptions and uncertainties behind their conclusions and they cannot rule out the last interglacial as the ice-free time. Their results are contrary to what most researchers had previously concluded—that ice in southern Greenland had melted during the *last* interglacial.[10–12] That would put the age of the DNA between 115,000 to 130,000 years.[13] This interglacial was claimed to be 5°C warmer, with a sea level about 4–6 m higher than today. So, a substantial part of the Greenland Ice Sheet, as well as part of the West Antarctic Ice Sheet, had to melt during the previous interglacial. Hence, many glaciologists have concluded that southern Greenland and probably most of northern Greenland was ice free in the previous interglacial. So, it is likely that these new dates are greatly exaggerated within the uniformitarian paradigm.

Global warming implication

It is interesting that the researchers relate their results to the current global warming.[14] They reason that if the last warm interglacial never melted the ice in southern Greenland, then the current global warming, which so far has been only 0.7°C since 1880, will not melt much of Greenland. Andrew Curry states:

> 'If southern Greenland remained ice-covered during the last interglacial period, it could mean global warming would have to get much worse before it completely melts away the Greenland ice sheet.'[13]

This of course depends upon whether the uniformitarian paradigm is correct, and whether the new, but admittedly flawed, dates are accepted.

Creationist interpretation

So much for the evolutionary, uniformitarian interpretation of the data. From a creationist point of view, I would interpret the evidence as showing that Greenland was ice-free for a while after the Flood. Previously I have argued:

> 'Since the oxygen isotope ratio at the bottom of the Camp Century core, as well as other Greenland cores … , indicates warmer temperatures, it is possible that snow did not accumulate right away [after the Flood] on Greenland. Being surrounded by quite warm water at the beginning of the Ice Age, glaciation of Antarctica and Greenland likely started in the mountains right after the Flood. It would take some time for the ice sheets to develop over the lowlands.'[15]

This delay in glaciation would be even longer in southern Greenland, allowing early post-Flood colonization of plants and insects. Furthermore, such warm water at high latitudes surrounding Greenland would keep temperatures much warmer in winter than expected, thus accounting for Yew trees that cannot tolerate temperatures lower than –17°C. It is doubtful whether any uniformitarian scenario can account for such relatively warm winter temperatures during an interglacial in southern Greenland. Greenland truly was green at one time.

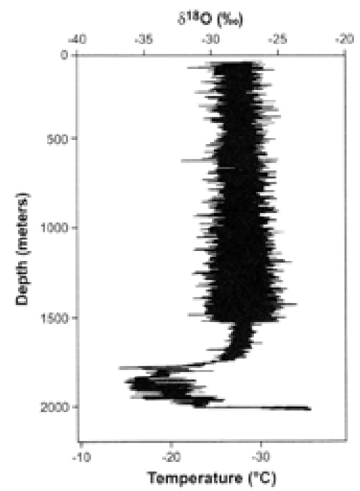

Figure 2. The oxygen isotope ratio to bedrock down the Dye 3, Greenland, ice core. Notice the coarser change of scale below 1,500 m that results in less amplitude to the oxygen isotope ratios in the deeper layer. The top 1,700 m corresponds to the post-Ice Age ice, while the bottom 300 m represents the compressed Ice Age ice and a warmer period before glaciation near the bottom.[21,22]

The straightforward reading of the Dye 3 ice core supports the creationist interpretation. Figure 2 shows the oxygen isotope profile as being generally proportional to temperature down the length of the Dye 3 ice core. The top 1,700 m, 85% of the ice, represents post-Ice Age ice. The Ice Age portion of the core is represented by the bottom compressed 300 m of ice with a low oxygen isotope ratio. The very bottom of the core at bedrock shows high oxygen isotope ratios. This would represent a warm period, which is where the DNA was found, before the cold period. Notice that there is only one cold period, corresponding to just *one* ice age after a relatively warm period. This same situation applies to all the deep Greenland ice cores.

In regard to the claim that the ice age cycle of glacials and interglacials started 2.5 Ma ago, Peter Klevberg, Rick Bandy and I analyzed one of those claimed glacial tills dated about 2.5 Ma just east of Glacier and Waterton National Parks in the northwest United States and Canada, respectively.[16] The uniformitarian researchers had determined, by relying on a paleosol analysis, that there were about seven glacial till layers alternating with interglacial debris. We determined that the deposits were most likely a huge debris flow deposit that spread eastward from the Parks. We also concluded that the paleosol interpretation was based on questionable assumptions.[17,18]

Implications for 'old' DNA

Willersley *et al.*[1] based their conclusions on finding the DNA of the organisms within organic matter in the silty ice. It is claimed that this DNA is the oldest intact DNA ever found.[19] What about all the previous claims for ancient DNA found in many organisms, some dated as being millions of years old, clear back to the time of the dinosaurs? All this apparently has been dismissed; scientists have simply assumed such claims are due to contamination since DNA is destroyed within 100,000 years.[13] Contamination is probably a rubber-stamp excuse, but I can believe that DNA would be destroyed within 100,000 years, and probably much sooner. But now the new results from Greenland are being hailed as a new record for the survival of DNA! Here we go again; contamination exists as and when required!

Of course, all that ancient DNA (provided there is no contamination) really is not that old. It originated only about 4,500 years ago, either during the Flood or the early post-Flood period.

References

1. Willerslev, E. *et al.*, Ancient biomolecules from deep ice cores reveal a forested southern Greenland, *Science* **317**:111–114, 2007.
2. Curry, A., Ancient DNA's intrepid explorer, *Science* **317**:36–37, 2007.
3. Larsen, H.C., Saunders, A.D., Clift, P.D., Beget, J., Wei, W., Spezzaferri, S. and OPD Leg 152 Scientific Party, Seven million years of glaciation in Greenland, *Science* **264**:952–955, 1994.
4. Eldrett, J.S., Harding, I.C., Wilson, P.A., Butler, E. and Roberts, A.P., Continental ice in Greenland during the Eocene and Oligocene, *Nature* **446**:176–179, 2007.

5. Tripati, A.K. *et al.*, Evidence for glaciation in the Northern Hemisphere back to 44 Ma from ice-rafted debris in the Greenland Sea, *Earth and Planetary Science Letters* **265**:112–122, 2008.
6. Dansgaard, W., Clausen, H.B., Gundestrup, N., Hammer, C.U., Johnsen, S.F., Kristinsdottir, P.M. and Reeh, N., A new Greenland deep ice core, *Science* **218**:1273–1277, 1982.
7. Willerslev *et al.*, ref. 1, p. 113.
8. Oard, M.J., *The Frozen Record: Examining the Ice Core History of the Greenland and Antarctic Ice Sheets*, Institute for Creation Research, Dallas, TX, p. 10, 2005.
9. Oard, M.J., Astronomical troubles for the astronomical hypothesis of ice ages, *Journal of Creation* **21**(3):19–23, 2007.
10. Koerner, R.M. and Fisher, D.A., Ice-core evidence for widespread Arctic glacier retreat in the Last Interglacial and the early Holocene, *Annals of Glaciology* **35**:19–24, 2002.
11. Overpeck, J.T., Otto-Bliesner, B.L., Miller, G.H., Muhs, D.R., Alley, R.B. and Kiehl, J.T., Paleoclimatic evidence for future ice-sheet instability and rapid sea-level rise, *Science* **311**:1747–1750, 2006.
12. Otto-Bliesner, B.L., Marshall, S.J., Overpeck, J.T., Miller, G.H., Hu, A. and CAPE Interglacial Project members, Simulating Arctic climate warmth and icefield retreat in the Last Interglacial, *Science* **311**:1751–1753, 2006.
13. Curry, ref. 2, p. 37.
14. Oard, M.J., Global warming—examine the issue carefully, *Answers* **1**(2):24–26, 2006.
15. Oard, ref. 8, p. 47.
16. Klevberg, P. and Oard, M.J., Drifting interpretations of the Kennedy gravel, *Creation Research Society Quarterly* **41**(4):289–315, 2005.
17. Klevberg, P., Bandy, R. and Oard, M.J., Investigation of several alleged paleosols in the Northern Rocky Mountains—Part I: background and methods, *Creation Research Society Quarterly* **44**(1):4–25, 2007.
18. Klevberg, P., Bandy, R. and Oard, M.J., Investigation of several alleged paleosols in the Northern Rocky Mountains—Part II: additional data and analysis, *Creation Research Society Quarterly* **44**(2):94–106, 2007.
19. Anonymous, Oldest DNA ever recovered suggests earth was warmer, 5 July 2007, <www.physorg.com/news102864888.html>.
20. Oard, ref. 8, figure 1.1, p. 3.
21. Oard, ref. 8, figure 2.6, p. 23.
22. Vardiman, L., *Climates Before and After the Genesis Flood: Numerical Models and Their Implications*, Institute for Creation Research, Dallas, TX, p. 57, 2001.

Serial cell differentiation: intricate system of design

Shaun Doyle

Single celled organisms replicate as fully functional cells, and they maintain cellular integrity through a system of direct epigenetic inheritance,[1] or 'cell memory'. Some tissues in multicellular organisms proliferate in the same way. However, the majority of tissues in adult multicellular organisms don't.

Most tissues in mature multicellular organisms replicate via a method called *serial differentiation*.[2] Cells go through a series of differentiation stages as they duplicate, ending in a fully differentiated cell, which eventually dies and passes out of the system, or is recycled by apoptosis (programmed cell death). There are three different types of cells in this system: stem cells, a class called 'transient amplifying cells' (TACs) and fully differentiated cells.

Serial differentiation

Stem cells

The undifferentiated cells are the only ones in this differentiation process that are self-renewing, i.e. they produce daughter cells that are exactly like the mother cell. These cells have the capacity to divide and change into many different types of cells. They are also very important during embryonic development, where new cell types are constantly needed.[3] These stem cells are kept relatively few in number, and the cell lines proliferate through the differentiation process.

Transient amplifying cells

The daughters of stem cells do more than just self-renew; they differentiate into different kinds of cells. However, they don't change into fully differentiated cells immediately; they change into a class called 'transient amplifying cells' (TACs). While TACs divide; unlike stem cells, TACs do not self-renew. Rather, the daughter cells of TACs are one stage further along the differentiation process than the 'mother' cell. These cells amplify the number of cells that will eventually become fully differentiated from the original stem cell that they started from.

Fully differentiated cells

A particular stem cell goes through a number of cell division events and the differentiation process of the TAC stage to produce fully differentiated cells. These are the mature cells that carry out the different jobs of the tissues, such as blood cells (figure 1), reproductive cells and epithelial cells. These cells no longer divide or differentiate, and once they have served their purpose, they are 'deleted' from the system and their components are recycled.[4]

Designed for maintenance

This is a rather elaborate system to conjure up if you just want to maintain tissues! It is also metabolically expensive because not only do the mature cells require nutrients, but so do the stem cells and TACs. Therefore, you're feeding cells that don't actually do anything in the body except replicate. So why bother using so much energy?

As Pepper *et al.* point out, the aim of this process is to separate the self-renewing and active proliferating properties of cells into different groups.[2] This severely limits the number of duplications that any one cell line will undergo, which limits the possibility of mutational damage taking hold in a particular tissue.

This system actively works against natural selection of individual cells in favour of tissue integrity to suppress somatic evolution, which is the change that the body is subjected to due to mutation and selection within the body's cell population. Pepper *et al.* comment: