Greenery beneath Greenland Ice Sheet?

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Camp Century, northwest Greenland, 120 km inland from the sea (figure 1), was where a significant ice core was drilled on the ice sheets. It was completed in 1966. It was drilled through 1,368 m of ice, 14 m of silty ice, and penetrated about 4.5 m of dirt below the ice. The dirt had two layers of diamicton, a poorly sorted mixture of particles ranging in size from clay to boulders, separated by a debris-rich ice layer. The diamicton core was 'lost' in a freezer for decades until it was accidently discovered in 2017.[1]

Vegetation beneath the Camp Century ice core

The researchers analyzed the diamicton core and were surprised to find twigs of trees and leaves, still with wax coatings in the dirt. Lead researcher Andrew Christ was quoted as saying:

> "Ice sheets typically pulverize and destroy everything in their path … but what we discovered was delicate plant structures—perfectly preserved. They're fossils, but they look like they died yesterday."[2]

The twigs could be from spruce or fir trees.[1]

The Greenland Ice Sheet dated old

Climate models show that the Greenland Ice Sheet should have been stable for the past 2–3 Ma.[3] Ice-rafted debris (IRD) in the deep ocean offshore caused the researchers to suggest that the ice sheet has existed since anywhere from the Eocene to the Miocene, 45–7.5 Ma.[4] Scientists also find IRD around Antarctica they claim is early Oligocene, about 33 Ma.[5] Since the ice sheets are post-Flood, this suggests that much of the ocean bottom sediments could be post-Flood; at least sediments close to the coasts, no matter what the uniformitarian date, based mainly on considerations of the biostratigraphy of the microorganisms. Because uniformitarian scientists believe the ice sheet has been more or less in equilibrium for millions of years, they assume that annual layers, distinct at the top of the ice core, thin considerably with depth down to about the thickness of a dime near the bottom. Therefore, the bottom of the ice is dated around 110–120 ka, but researchers come up with much older dates for the silty ice, soil, or rock below the ice. Their dates range from many hundreds of thousands to a few million years old.

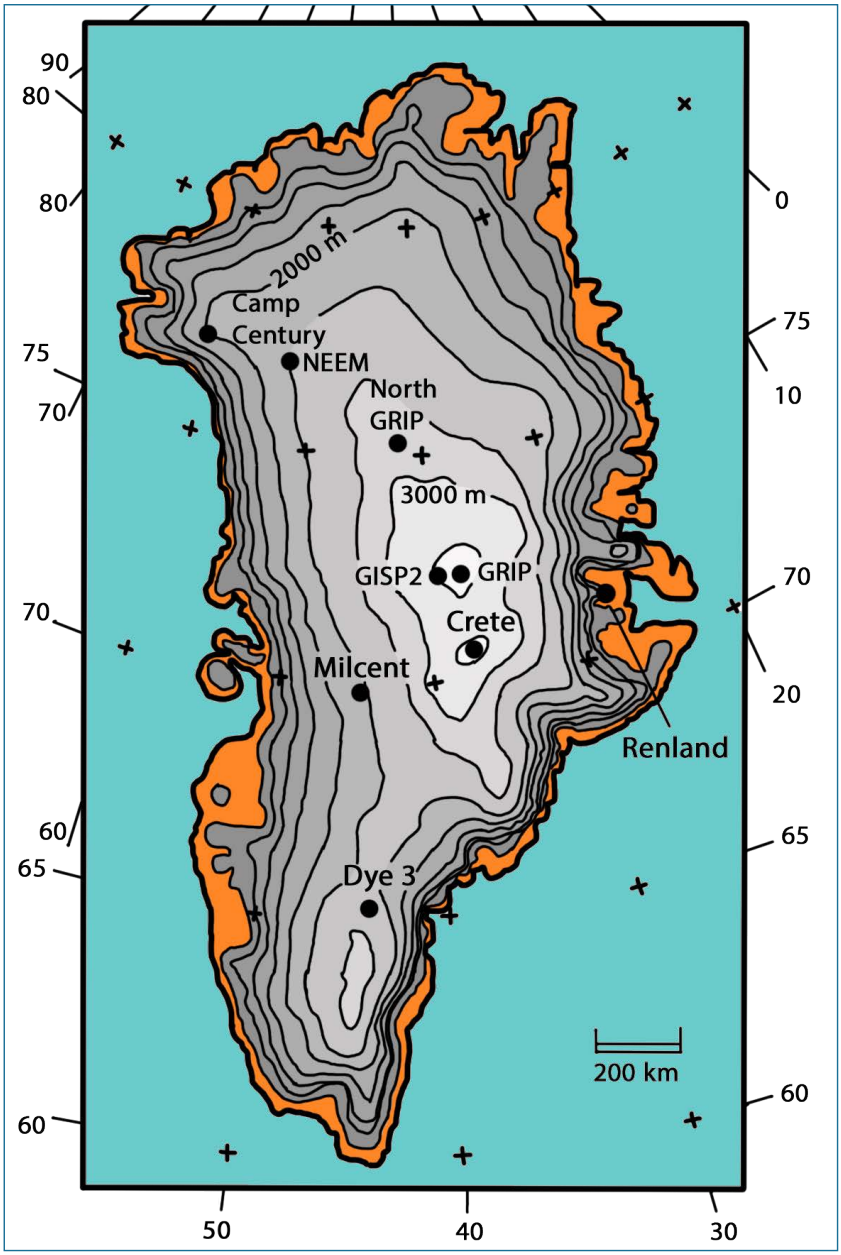

Figure 1. Map of Greenland showing ice thickness above sea level with major ice core locations

The researchers dated the bottom diamicton of the Camp Century ice core by cosmogenic isotopes, mainly *in situ* Be-10 and Al-26, and infrared-stimulated luminescence. The cosmogenic isotopes are formed by cosmic ray bombardment, as cosmic rays interact with atoms in the atmosphere.[6] The isotopes generated attach themselves to aerosols in the atmosphere and fall onto the surface. The *in situ* cosmogenic isotopes, on the other hand, are formed as cosmic rays interact directly with atoms in the ground. The presence of *in situ* cosmogenic isotopes indicates that an area was unglaciated, since cosmic rays cannot penetrate very far into ice or rock in order to form the isotopes. The concentration of isotopes is interpreted to indicate how long the surface was ice free. The Be-10 values in the upper diamicton suggested that the area had been ice free at least once within the past million years. Analysis of the lower diamicton suggested that the area was ice free once in the early Pleistocene.

Since Al-26 decays faster than Be-10, researchers use the Al-26/Be-10 ratio as a 'dating' method. The half-life of the ratio is variably estimated as 1.4 Ma[3] and 2.08 Ma.[7] The ratio today is about 7.3, and the measured ratio in the upper diamicton was 4.5 and in the lower diamicton, 1.8. Based on the Al-26/Be-10 ratio, the researchers claim that the top diamicton is greater than 0.7 Ma and the bottom diamicton is less than 3.2 Ma, despite the bottom of the ice being only 110 ka. Infrared-stimulated luminescence could not be measured on the upper diamicton, but indicated that the lower diamicton was exposed to sunlight before 0.7–1.4 Ma.

Implications of the vegetation

The vegetation at the bottom of the Camp Century core and the various dates suggest that at least the northwest Greenland Ice Sheet, and possibly the rest of it, had melted in the recent past, within the past million years: "Their results show that most, or all, of Greenland must have been ice-free within the last million years, perhaps even the last hundred-thousand years."[2] It was warm enough during that period for trees and plants to grow. This deduction was supported by the oxygen isotope ratios in the bottom ice, which suggested that precipitation had fallen at much lower altitudes with much warmer temperatures than those at the current height of the ice sheet.

A warm, ice-free period is reinforced by fossils from marine and coastal sediments in Melville Bay, off the northwest Greenland coast, that documented a warm, forested period in the early Pleistocene. It is possible that this vegetation at the bottom of the ice core is from the Flood, since it would correspond with paleoflora evidence of temperatures 5–20°C warmer in the Pliocene of northern Canada, which is a likely result from the Flood.[8]

Other ice cores indicate mild temperatures and melting at the bottom

Information from the bottom of the other deep ice cores in Greenland indicates relatively warm temperatures and even ice-free conditions. Scientists dated 1.55 m of granite bedrock penetrated by the GISP2 ice core drilled in the Greenland Ice Sheet.[3] Based on the accumulation of *in situ* Be-10, the secular scientists came up with a total time of exposure of 280 ka for the bedrock surface. This means that the ice sheet must have been totally, or almost totally, melted for a total length of time of at least 280 ka during the past 2.6 Ma. They think that since exposure is additive, this 280 ka of Be-10 exposure could have come in 10 ka increments during the numerous 'interglacials'. DNA found at the bottom of several ice cores came from plants that would thrive with summer temperatures averaging 10°C.[9] DNA and amino acids from the silty ice base of the GRIP and Dye-3 cores in central and southern Greenland, respectively, suggests forests and insects:

> "We show that high-altitude southern Greenland, currently lying below more than 2 kilometers of ice, was inhabited by a diverse array of conifer trees and insects within the past million years. The results provide direct evidence in support of a forested southern Greenland."[10]

Applied to the global warming scare

The researchers, of course, applied the new results to the global warming scare:

> "The discovery helps confirm a new and troubling understanding that the Greenland ice has melted off entirely during recent warm periods in Earth's history—perhaps like the one we are now creating with human-caused climate change. … 'Greenland may seem far away,' says UVM's Paul Bierman, 'but it can quickly melt, pouring enough [*sic*] into the oceans that New York, Miami, Dhaka—take your city—will go underwater.'"[11]

Bierman also stated that 'fighting' global warming is an urgent problem for the next 50 years. But the facts of global warming show that there has only been an increase of about 1°C since 1880, if you can believe the long-term temperature records, which have endemic warm biases.[12] People should weigh all the evidence to determine the amount of actual global warming, its future projections, and whether we have time to do more research.[13]

Creation science interpretation of the Greenland Ice Sheet

The oxygen isotope ratio, roughly proportional to temperature,[14] in the six deep ice cores on Greenland Ice Sheet shows only one Ice Age, as posited by the biblical worldview.[15] Near the bottom, warmer temperatures of

about 6°C at GISP2[16] and 7.5–8.5°C at NEEM[17] are inferred because of more positive oxygen isotope ratios. This warmer period is sometimes suggested to be from the previous interglacial, provided that the bottom dates are 'old' enough for this to be the case, a little older than 120 ka. So, information on previous ice ages, if they occurred, is non-existent:

> "… however, that history [of the Greenland Ice Sheet] is poorly known before the last interglacial. Most knowledge [of previous ice ages] comes from interpretation of marine sediments, an indirect record of past ice sheet extent and behavior."[18]

One ice age is also shown in the West Antarctic Ice Sheet cores.[19] It is the deep cores from the East Antarctica Ice Sheet that supposedly show up to eight ice ages based on wiggles in the deuterium isotope ratio, especially in the Dome C ice core, which has more wiggles than the others. However, the first four wiggles from the bottom of Dome C are unimpressive, and the oscillations were simply 'dated' by comparing oxygen isotope oscillations in deep-sea cores, which were 'dated' assuming the Milankovitch mechanism for multiple ice ages. The East Antarctic dates, as well as the deep-sea core dates, are based on circular reasoning.

The biblical Ice Age model would also expect very thick annual layers in the Ice Age portion of the deep ice cores before thinning, on the order of 5 m of ice in Greenland[15] and 10 m of ice in East Antarctica.[19] So, the uniformitarian model that requires deep time is counting storm and intrastorm layers in the Greenland ice cores.[20]

The vegetation and insect debris discovered at the bottom of the ice core are predicted by the biblical Ice Age model since post-Flood warm water would have surrounded Greenland. It cooled as the Ice Age developed. Glaciation of all of Greenland would have taken 100–200 years, beginning in the mountains and spreading into the low areas of Greenland, where the ice cores were drilled.[15] A few hundred years between the end of the Flood and the encroachment of Ice Age glaciers into the lowlands would have provided enough time for vegetation, including small trees, to grow.

The luminescence dating technique is questionable at best. This applies to thermoluminescence,[21] but likely would apply to other measurement techniques of luminescence as well. The Al-26/Be-10 ratios for the upper and lower diamictite indicate anywhere from 0.7–3.2 Ma of radiometric decay at *today's* rate. The low ratios, compared to today, would indicate accelerated radiometric decay continued into the Ice Age.[6] Since the bottom silt likely collected over about 200 years before glaciation,[15] it is likely that the significantly higher ratio in the upper diamicton indicates that accelerated decay was decreasing rapidly early in the Ice Age.

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