Biblical Ice Age solves uniformitarian global end-Pleistocene mass extinction debate

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For about 200 years the cause for the global end-Pleistocene mass extinction has been debated. However, there is no solution in sight. Two main options have long been competing: (1) *overkill*, where man is responsible for the mass extinction or (2) *overchill*, in which climate change caused the mass extinctions. Recently, researchers have proposed a 'Controversy Space Model' to help solve the debate, first by finding common ground between opponents, then 'refocusing' and 'solving' small parts of the problem in a step-by-step manner. However, some of the past 'obstacles' to debate resolution include Genesis and strawmen of what Genesis teaches. By revisiting those debates and following a biblical framework, and specifically its Ice Age model, the end-Pleistocene mass extinction issue can find fresh and fruitful solutions.

The global end-Pleistocene mass extinction has been a subject of debate for about 200 years, and there is no resolution in sight:

> "Resembling the fascination for crime stories, speculations about the causes of terrestrial mammal extinctions in the Quaternary have been at the center of one of the most exciting and unresolved debates in contemporary biology. For the last two centuries, hundreds of papers have been written on this topic, proposing a range of explanations. … and to this day there is no agreement forthcoming."[1]

A little less than 65% of the megafauna over 44 kg (100 lb) went extinct worldwide near the end of the 'last' uniformitarian ice age (table 1). Different figures have been used by researchers in the past for Eurasia and Africa. Eurasia is now split between north and south, with fewer extinctions in northern Eurasia than previous statistics indicated, admitting little is known about extinctions in southern Eurasia (it was probably a low percentage).[2] Africa is now known to have had a small percentage of extinctions.

Although there are many hypotheses, two main options have long been competing: (1) *overkill*, where man is responsible for the mass extinction or (2) *overchill*, in which climate change caused the mass extinctions.

Major strengths and problems for overkill

Both overkill and overchill have strengths and weaknesses, which is why this debate is unresolved. Overkill advocates emphasize the 'timing' of man entering a continent. They conclude that the extinction of the megafauna coinciding with man entering new continents is not just a coincidence. They also point out that most of the extinctions were after the 'last' of ~50 ice ages of various intensities, so climate change cannot be the cause.[5] This means that there was something 'special' about the end of the last ice age. Since the only difference between the 'last' ice age and other glacial and interglacial phases is the colonization by man, overkill advocates see this as an argument for their position.

However, it appears on some continents the timing of man's arrival does not coincide with the extinctions. Assuming the 'Out of Africa' hypothesis, Eurasia and Africa do not fit with their low number of extinctions since man (including 'early man') supposedly coexisted with the megafauna for hundreds of thousands of years. So, overkill advocates need to explain this away, which they do (see below). To compensate, overkill enthusiasts point to Australia and the Americas as the primary evidence for their view.

Dating contradictions

However, the timing of man's entry and of the extinctions in Australia and the Americas depend strongly on *precise* dating, which presents another problem. Looking back into the history of the debate, overkill advocates seem to have chosen dates that support their hypothesis and given what seem like legitimate reasons for tossing out dates from carbon-14 and other methods that don't.

For instance, Boulanger and Lyman eliminated 46 carbon-14 dates and kept 69 in their analysis of the abundant megafauna in the northeast United States and southeast Canada.[6] Zazula *et al.* dismiss carbon-14 dates as young as 20,000 years ago on the Ice Age camel in Alaska because of the supposed lack of browse vegetation at that time, but they find new dates of around 50,000 years when they think browse vegetation was plentiful.[7] They also rejected carbon-14 dates as young as 18,000 years on mastodon bones in Alaska and the Yukon Territory of Canada because of the supposed lack of browse vegetation.[8] Most of the new dates for mastodons then 'agreed' with 50,000 years or older.

Table 1. Percentage of mammalian megafauna over 44 kg (100 lb) that went extinct during and around the late Pleistocene.[2–4] Southern Eurasia is not included because of insufficient data.

Continent	Percent extinct
Africa	25%
Australia	88%
Northern Eurasia	36%
Northern America	72%
South America	83%

The dates of Australian extinctions are also sometimes rejected if they disagree with researcher ideas. This was done with dates younger than 28,000 years for megafauna extinction:

> "But one reanalysis has shown that all megafaunal ^{14}C dates younger than 28,000 years were invalidated either by doubtful association of dated samples with megafaunal bones themselves or by difficulties of ^{14}C dating near its limit."[9]

Notice the reasons for the dismissals: (1) the dates did not agree with the paleontology and (2) they suspected errors of contamination, the usual claim for older discarded carbon-14 dates. However, dates of less than 28,000 years are far from the dating limit of carbon-14, which is usually around 50,000 years, although some researchers have pushed the method to 60,000 to 70,000 years ago.

Circular reasoning

Circular reasoning certainly plays a part in all the published dates and events. For example, James Kennett and others, who advocate extinction by a late Pleistocene comet or asteroid impact, claim, "Out-of-sequence ^{14}C dates are a common dating problem that is solved by discounting outlying young dates."[10] In other words, dates from carbon-14 and other methods are eliminated if they do not agree with their preconceived narrative.

Major strengths and problems for overchill

Overchill advocates point out that the small populations of man entering Australia and the Americas, mostly with spears and stone knives, could not wipe out so many large mammals, most of which were non-prey animals. The climate was radically changing at the time, so they blame the extinctions on climate change. This works well for North America at the end of the Ice Age, but South America supposedly experienced only weak climate change at the end of the Pleistocene. However, South America was one of the continents hardest hit, with 83% of its megafauna going extinct.

Moreover, the timing for overchill is off for Australia, since they believe man entered only about 45–60 ka ago, when the major climate change would have been at about 20–30 ka near glacial maximum. Overchill advocates counter this by inventing a climate change episode soon after man entered Australia.

Of course, overchill advocates point to Africa and Eurasia as contradictions to overkill, as stated above. Then they point out that there are only two human/megafaunal associations in New Guinea and Australia and about 14 in North America—way too few to provide evidence for overkill.[11] But overkill advocates point out that such low numbers of man/megafauna associations are what they 'expect' because the older the associations the faster they should disappear from the archaeological record.[12]

Each side is deeply entrenched into their position, which is why the sometimes-acrimonious debate has lasted 200 years, and why there does not seem to be any possible solution in sight. Enter the 'Controversy Space Model' (CSM) to help 'solve' the problem.

The CSM model to the rescue

The CSM is an arbitration model and is supposed to work by first finding common ground of theoretical agreements between opponents, then 'refocusing' and 'solving' small chunks of the problem, called a 'conceptual blockage', and moving onto the next question in a step-by-step manner.[13] The authors of this model have high hope of eventually settling the dispute by modelling: "we can contribute to the solution of the conceptual blockage by means of mathematical and simulation models".[14]

To show how 'successful' the CSM has worked in the past, the authors go back into history to show how questions arose, were debated, and were solved (table 2), starting with the dispute over the origin of fossils.

Some questions were correctly solved, such as the nature of fossils as once living organisms. This good start would seem to add confidence for the solving of later conceptual blockages. However, in some of the 'settled' questions, biblical earth history comes off as a stopper to 'progress'. In deciding the cause of extinctions, they solve a 'straw man':

> "The disappearance of species from the planet was in direct conflict with the notion of a 'perfect creation', that stated that living beings had been created a single time, and were meant to exist forever."[16]

This is untrue. All the authors needed to do was read the early chapters of Genesis to discover in chapter 3 that because of sin creation is no longer perfect, and to read Genesis 6–9 to discover the real cause of extinctions.

Table 2. Major episodes of the 'Controversy Space Model', simplified and taken from table 1 in Monjeau *et al*.[15]

Dates	Major questions	Conceptual blockage	Unblocking decision
About 1565	Nature of fossils	Organic or created in situ	Organic
1665–1795	Local vs global extinctions	Naturalistic vs creation and catastrophism	Many naturalistic global extinctions
1795–1830	Age of the earth	Uniformitarianism vs biblical timescale	'Discovery' of deep time
1810–1863	Natural or divine causes	Creation vs evolution	Uniformitarianism and evolution
1863–present	Search for a cause of extinction	Mainly overkill and overchill	Unresolved

Regarding 'settling' the question of the age of the earth, they confidently assert:

> "Within this framework, an important conceptual blockage that got in the way of the debate's advance was the uncertainty regarding the age of the Earth, spanning around six thousand years (Ussher, 1650), a very short period to easily accommodate any explanation regarding extinctions."[16]

They think that a greatly expanded timescale, along with evolution and uniformitarianism, will solve their many mysteries, including the end-Pleistocene mass extinction.

The failure to solve the mystery

As they go on in their historical summary, emphasizing the heroes of the so-called Enlightenment that resulted in the 'unblocking', they come to a major conceptual blockage: the actual solving of the problem of end-Pleistocene extinctions. They summarize:

> "Nowadays, the controversy space on the causes of megafauna extinction is suffering a period of conceptual blockage. This may be because the authors are clustered around the two major paradigms (environmental versus anthropic causes …) in a sometimes, inflexible disputational fashion … . This controversy space is one of the most passionate debates of science, resembling fans of a soccer team or pre-election bids between political parties."[14]

They have been stuck on this conceptual blockage for almost 200 years! You would think they would back up and see if maybe they made the wrong unblocking decisions.

Post-Flood Ice Age solution

If they return to biblical earth history, they would discover there is a clear explanation for extinctions.[17,18]

The global Flood described in Genesis is the only viable explanation for an Ice Age. Since there was only one global Flood,[19] there was only one Ice Age.[20,21] Indeed, the fact that such a mass extinction occurred *only* after the 'last' ice age argues strongly against any previous ice ages. If there were many previous ice ages of comparable severity and duration, why is it that mass extinctions only occur at the end of the last ice age? This solves the issue of the lack of extinctions after their supposed earlier 49 ice ages.

The Ice Age after the Flood was much different than what uniformitarians propose. Instead of ice ages being bitterly cold in the uniformitarian model, winters were actually much warmer due to the warm oceans while summers much cooler due to Flood volcanism and meteorite impacts and post-Flood volcanism. This equable, mild climate with little seasonal contrast occurred early in the Ice Age, contrary to uniformitarian expectations and climate simulations. The disharmonious associations of plants and animals early in the Ice Age, especially the warm-climate types so far north in the Northern Hemisphere, is evidence of such an equable climate, but strongly contrary to uniformitarianism.[22] The animals thrived in this equable climate. The abundant moisture and mild temperature combined with rich virgin soil to provide perfect grazing over the middle and high latitudes. The diversity of mammal populations has been described as similar to the Serengeti of Africa.

But the Ice Age was dynamic, changing all the time. By the end of the Ice Age, the climate was drastically different. Summers became warmer while the ice sheets melted. However, winters became even colder than today because of the existence of the ice sheets and the increased sea ice,[23] resulting in a large seasonal contrast. Less-dense fresh water from melting ice caps in the mountains of the high and mid latitudes flooded over the top of salt water in high latitude oceans. This fresh water rapidly froze into sea ice. The greater amount of sea ice, colder sea surface temperatures, and the large ice sheets that formed after the Flood resulted in a drier atmosphere. Colder sea surface temperatures evaporate less water vapour into the atmosphere compared to today, while more sea ice restricts the oceanic evaporation in that area. Drought struck Australia and South America especially hard.

The tropics and subtropics likely warmed to near their present temperatures once copious post-Flood volcanism had ended. The temperature difference between the low latitudes and the mid and high latitudes would be much stronger than today because of the existence of the ice sheets and the increased sea ice. The stronger the temperature difference, the stronger the jet stream by the thermal wind

equation. Therefore, there would be much greater wind during deglaciation. This is supported by the abundant sand and loess, wind-blown silt, associated with the Ice Age.[24] Fierce wind and drought would cause fires to rage across large areas of land.

Most of the animals were *not* conditioned to cold winters as uniformitarian scientists think. When the winters became much colder, they were greatly stressed. Drought resulted in less food, which would have a greater impact on the larger and slower-reproducing animals.

Rapid melting of ice and snow would occur in such a climate because of little winter snow. This resulted from less evaporation from a cooler ocean and warmer summer temperatures with much more solar radiation, due to the decrease in stratospheric aerosols. With less winter snow and warming summers, the winter snow easily melts early with most of the warm season dedicated to melting the ice sheet. Meltwater from the glaciers flooded the rivers and streams.

The cold winters in non-glaciated areas at mid and high latitudes would create permafrost, which is known to have been significantly more extensive during deglaciation.[25] Since the top of permafrost would melt during the summer and refreeze in the fall and winter, numerous summer bogs would occur south of the ice sheets in the Northern Hemisphere and in non-glaciated areas of high latitude. Bog vegetation is often toxic to grazers, which most end-Pleistocene extinct animals were.

Less forage, cold weather, drought, and winds combined to cause the mass extinctions. Each continent experienced their own unique variations of these factors. The vast majority, if not all, of the mass extinctions were caused by overchill. There are very few associations between megafauna and man, and most of them are found at kill sites. There is no reason for other sites to disappear in the short time since the Ice Age, so overkill had little or nothing to do with the mass extinctions.

Conclusion

Going back in history in the CSM model and changing the wrong unblocking decisions provides a solution to this 200-year mystery. Specifically, reintroducing the biblical Flood and the biblical timeframe allows for a productive solution to this enigma.

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