

<sup>20</sup> ‘Smoke pours from his nostrils as from a boiling pot over a fire of reeds.

<sup>21</sup> ‘His breath sets coals ablaze, and flames dart from his mouth.’

This passage from Job has correlations with the enduring legends of fire-breathing dragons. Could *Sarcosuchus* have breathed fire? Here we have an organism with an unexplained bulbous snout, under which is an enormous cavity. Could its function have been to produce fire? We can see in the existing natural world an example of a highly exothermic metabolic process, in the bombardier beetle. If such a tiny organism can produce such heat from mixing chemicals in a tiny chamber, it is surely conceivable that a large structure such as the ‘enormous’ cavity under the bulbous snout of the *Sarcosuchus* could actually have been part of a biological mechanism to produce flames and smoke.

Job is quite clear that Leviathan was a large and terrifying enemy.

<sup>9</sup> ‘Any hope of subduing him is false; the mere sight of him is overpowering.

<sup>10</sup> ‘None is fierce enough to rouse him.’

*Sarcosuchus* meets this description. *National Geographic* says:

‘... we estimate that a mature adult *Sarcosuchus* grew to about 40 feet long. Its weight? As much as ten tons.’<sup>5</sup>

A creature of this size would certainly make a human feel overpowered at the sight of him. When *Sarcosuchus* rose up from a prone position onto its legs, it would indeed make even the mightiest human afraid, and retreat before him. It would also make the depths churn like a boiling caldron and leave behind a glistening wake (verses 31–32) by creating a massive trail of turbulence and bubbles as it plunged into the water and swam.

As we noted earlier, verse 30, describing the jagged potsherds beneath Leviathan, and the trail in the mud, argues against *Kronosaurus*

being Leviathan. However, it fits crocodylians such as *Sarcosuchus*.

Leviathan was described in verse 33 thus:

<sup>33</sup> ‘Nothing on earth is his equal—a creature without fear.

<sup>34</sup> ‘He looks down on all that are haughty; he is king over all that are proud.’

In the *National Geographic* article, *Sarcosuchus* is depicted fighting a large dinosaur. It would indeed have been fearless, and a king among living things.

### Conclusion

There are some remarkable parallels between Leviathan, as described in Job, and *Sarcosuchus imperator*. I believe that *Sarcosuchus* is the best candidate yet proposed for Leviathan. I would like to suggest that publishers of future creationist literature should also stress the remarkable parallels between Leviathan and *Sarcosuchus*. (I note with approval that in the just-printed new book *Dragons of the Deep*,<sup>6</sup> AiG’s Dr Carl Wieland comes to the same identification of Leviathan as this article—each of us independently of the other.)

Indeed, Bible footnotes could credibly state, ‘Possibly the now-extinct giant crocodile *Sarcosuchus imperator*’.

### References

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## The astronomical theory of the Ice Age becomes more complicated

Michael J. Oard

Uniformitarian scientists believe that there were 30 or more cycles of glacial advance and retreat during the past 2.5 million years of the most recent ice age.<sup>1</sup> It is generally believed that these cycles are controlled by oscillations in the orbit of the earth according to the astronomical theory of the ice age or Milankovitch mechanism.<sup>2</sup> This mechanism is based on small radiational (sun heating) changes at mid and high latitudes caused by three cycles in the earth’s orbital geometry: the 100,000-year eccentricity cycle, the 41,000-year tilt cycle, and the 19,000- to 23,000-year precession cycle.

Prior to 900,000 years ago (uniformitarian timescale) the ice ages cycled according to the 41,000-tilt frequency, then for some unknown reason, the cycles apparently switched to the 100,000-year eccentricity period—a cycle with almost no radiational change on the earth.<sup>3</sup> As identified elsewhere,<sup>4</sup> there are many other difficulties with the astronomical theory of the ice ages.

A recent quantitative estimate of the Milankovitch radiational forcing for climate change has demonstrated that the eccentricity cycle is no different from chance.<sup>5</sup>

‘Evidence cited to support the hypothesis that the 100 Ka glacial/interglacial cycles are controlled by the quasi-periodic insolation [solar] forcing is likely indistinguishable from chance ...’

Moreover, the other Milankovitch cycles contribute no more than 20% to the variance in climate records.<sup>5</sup> In contrast to such extremely weak variation, the Ice Age was a dramatic event, suggesting the uniformitarian scientists really do not have the answer to the Ice Age and its many subsidiary mysteries.<sup>6</sup> However, regardless of the facts, numerous textbooks have trum-

peted the success of the Milankovitch mechanism for ice age glacial/interglacial oscillations, reinforcing the faulty paradigm.<sup>5</sup>

It is useful to point out that the terrestrial Quaternary sediments predominantly show only one Ice Age.<sup>7</sup> The common explanation for this is that ice-sheets erase the evidence of previous ice ages on land. In contrast, the bottom of the ocean is considered to be a peaceful archive that faithfully records paleoclimatic changes, such as oxygen isotope ratios of carbonate shells (mainly foraminifera). These are a result of variations in ocean temperatures and changes in the oxygen isotope ratio of the seawater. The build-up of shells on the bottom of the oceans is inferred to be a long historic record going back to the end of the Mesozoic.

Down-core plots of oxygen isotope fluctuations show multiple wiggles, purportedly representing a time series of global ice-volume or temperature fluctuations. These wiggles are analyzed by spectrum analysis for their dominant frequencies, which commonly end up showing the Milankovitch cycles when compared to uniformitarian dating methods. Such mathematical correlations between the wiggles from deep-sea cores, ice cores and radiational patterns (caused by the Milankovitch mechanism) have provided powerful support for the Milankovitch belief among uniformitarian scientists.

The Milankovitch mechanism is so

strongly assumed now that uniformitarian scientists even find Milankovitch frequencies in sedimentary rocks as old as the Cambrian.<sup>8</sup> However, such results present a problem for the model, because these cycles do not correlate with any proposed earlier ice ages.

A new report, from a different proxy for climate than oxygen isotopes in deep-sea cores, puts another monkey wrench in the Milankovitch mechanism.<sup>9,10</sup> The alkenone paleothermometer is based on the organic remains in deep-sea cores of certain temperature-sensitive algae. Using this method, it was ‘discovered’ that sea surface temperatures (SST) from the eastern equatorial Pacific Ocean, between 1.2 Ma and 1.8 Ma, followed the Milankovitch tilt cycle. The problem with this is that the tropics are supposed to cycle according to the *precession cycle*, while the tilt cycle mainly affects high latitudes. Furthermore, the tilt cycle partitions solar radiation by latitude, so that the slight radiational changes caused by the tilt cycle are opposite between high and low latitudes.

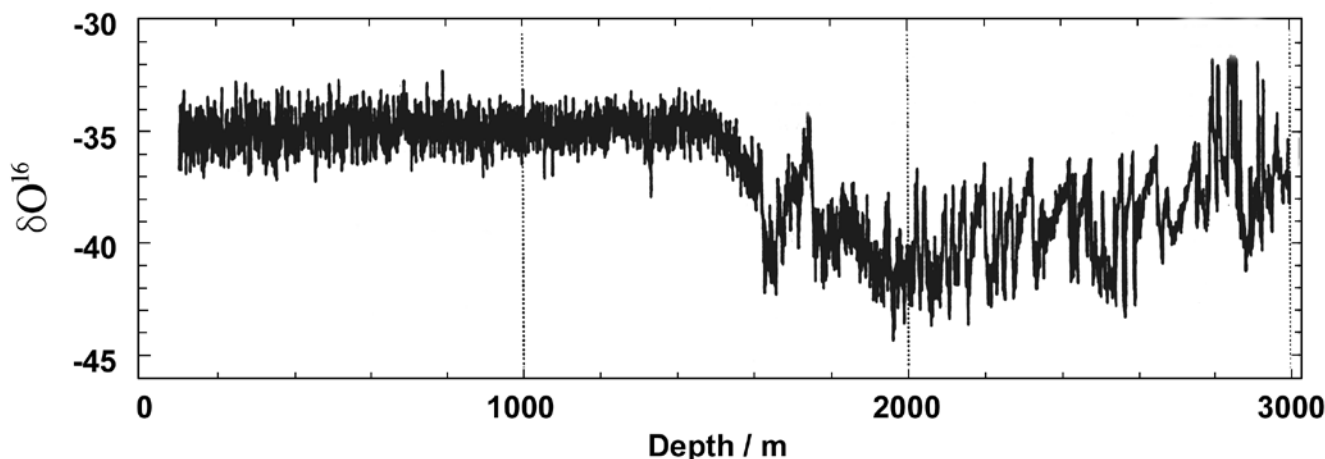
The researchers have discovered that the slight tilt cycle from high latitude causes *equatorial* changes in SST with an amplitude as much as 4.5°C! So, the equatorial sea surface temperatures cool when the tropical solar radiation is *above* normal and warm when the radiation is below normal. This is not only contrary to the astronomical theory of ice ages,

but is also the opposite of what one expects from basic meteorology. The new result adds further complications for an already burdened theory:

‘Changes in the amount of solar energy reaching Earth account for certain climate cycles at high and low latitudes. Surprisingly, the effect of a high-latitude cycle evidently reached into the tropics.’<sup>11</sup>

But the theory is plastic enough to accommodate even this contrary result. The researchers suggest it was caused by changes in the equatorial thermocline and trade winds induced by the tilt cycle at high latitude.<sup>12</sup>

Certainly, the Milankovitch mechanism is on shaky ground. However, we need to explain why so many wiggles in oxygen isotopes and other paleoclimatic variables match with the Milankovitch frequencies. Is it because of a pervasive reinforcement syndrome<sup>13</sup>—a type of circular reasoning that causes all the data, especially in the historical sciences, to be organized into a pattern according to preconceived expectations? Or could all this matching of wiggles be caused by systematic fluctuations during the single, post-Flood Ice Age? The answer could be both. Challenging the astronomical theory of the ice ages is certainly a worthy project for creationist Earth scientists, but it is a mammoth task to sift through the huge amount of paleoclimate data.



Down-core plots of oxygen isotope fluctuations show multiple wiggles, which are analysed by spectrum analysis for their dominant frequencies. (GRIP ice core, central Greenland.)

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## Mutations, selection and the quest for meatier livestock

Jean K. Lightner

One place that mutations and selection can be readily studied is within the livestock industry. Mutations that naturally occur in livestock can be selected for or against depending on their ability to meet the needs of this industry. A major product of the livestock industry is meat. Several mutations exist that increase muscle mass, decrease body fat and improve feed efficiency.

### Beefed-up cattle

Some of the best known and most studied of these mutations are the ones associated with the double muscling phenotype in cattle. Animals possessing this phenotype are heavily muscled, particularly in the shoulders, back and upper hind limbs. This phenotype is present in a number of breeds, although it is variable in how strongly it is expressed. It has been actively selected for within the Belgian Blue and Piedmontese to the point where it has become a characteristic of those breeds. Belgian Blues with this phenotype have an 11-nucleotide deletion in the myostatin<sup>1</sup> gene that causes a frameshift which results in the formation of a premature stop codon.<sup>2</sup> When the myostatin protein is produced, it is thus severely truncated and missing nearly all of its active region. In the Piedmontese, the mutation involves the substitution of an adenine base for a guanine (G→A) in the myostatin gene, resulting in a myostatin protein with the typical amino acid cysteine being replaced by tyrosine in the active region.<sup>3</sup> At least four other mutations in the myostatin gene have been described associated with double muscling in various other breeds of cattle.<sup>4</sup>

In each case, without the functional myostatin protein, muscle growth

continues uncontrolled in the animal at the expense of other bodily functions, including reproduction and normal fat and bone deposition. This translates into cattle that often possess hypoplastic (underdeveloped) reproductive tracts, experience high rates of infertility, and are more susceptible to stress and fractures.<sup>5</sup>

In cattle, the increase in muscle mass observed with myostatin gene mutations is due to hyperplasia, an increase in the number of muscle fibres.<sup>6</sup> This begins before birth and often results in dystocia, that is difficulty calving. A number of breeds or strains within breeds characterized by double muscling advertise that they have selected their animals for calving ease. For example, the Charolais breed, a beef breed not normally characterized by double muscling, has a strain which exhibits this trait. A trial done in the United Kingdom compared the calving performance of cows bred to a Culard (the French term for ‘double-muscled’) Charolais bull to those bred to a British Charolais bull. They chose a Culard bull with high calving ease scores. However, the scores seemed meaningless when four of the 16 calves died during birth and 6 of the 9 bull calves needed a calving jack to remove them from the cow. Only two of these 16 cows were able to deliver their calves without help. The economic losses didn’t stop there; 35% of the cows bred to the Culard would not conceive again, likely due to internal injuries from the traumatic calvings. No premiums from the remaining calves could come close to making up for these losses. In contrast, only two of the cows bred to the British bull needed help; one needed only a little, the other needed a calving jack.<sup>7</sup> One must wonder what the term ‘calving ease’ means when applied to double-muscled animals. Less than 30% need a c-section and most of the bull calves do just fine being forcefully extracted from the dam with a calving jack. Needless to say, this does not fit most cattlemen’s idea of calving ease.

Myostatin mutations are pleiotropic