Ice age 'indicators' can form in warmer environments

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The idea that the bulk of the geological column formed during the Genesis Flood is challenged by claims that there were multiple ice ages in geological history, such as in the Permian. One supporting evidence used to justify such 'ice ages' is the presence of the pseudomorph[1] ikaiite/ikaite/glendonite, which is claimed to only form in cold, glacial environments. A careful examination of the locations where these pseudomorphs are found reveals that they are not ice-age indicators and that all interpretations of past ice ages based on their occurrence are invalid.

Ikaite is a hexahydrate of calcium carbonate ($CaCO_3 \cdot 6H_2O$) that forms spiky crystals of various sizes at near-freezing water temperatures. Calcite concretions sometimes form around its centre (figure 1). The macrocrystals found in sediments can be many centimetres long.

Ikaite was first discovered in the Akka Fjord of south-west Greenland. Since then, it has been noted in many high-latitude locations and in the deep-sea environment of the Congo submarine fan. It is possible that it is present in other cold, deep-sea environments. Ikaite decomposes rapidly upon warming as it dehydrates. Sometimes the hexahydrate of calcium carbonate is replaced with calcite and retains the shape of the original crystal. It is then called a pseudomorph. Although these pseudomorphs have been given various names, glendonite is the most common.

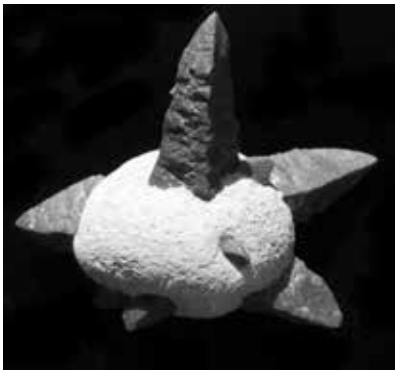

Figure 1. Ikaite with a calcite concretion at its center (wikipedia).

Glendonite assumed to be a proxy for near-freezing temperatures

Because the formation of ikaite is observed at near-freezing water temperatures, glendonite has been used as a proxy (or indicator) for near-freezing temperatures when it is found in sedimentary rocks:

> "Although elevated levels of dissolved phosphorous may modestly increase the stability field of ikaite (Bischoff *et al.* 1993a) the relatively strict temperature limits on its stability make ikaite a robust indicator of cold water conditions and thus of great paleoclimate significance when its former presence can be detected in ancient sediments."[2]

As a result of this conclusion, glendonites are believed to form in a glaciomarine environment. This has been used to substantiate the uniformitarian Permian or late Paleozoic 'ice age'.[3] There are 30 geographic localities of glendonite in the Permian marine strata in the Sydney Basin, Australia, and this is used to support an 'ice age' interpretation of the sediments. This supposed 'ancient ice age' is assumed to have affected much of the southern hemisphere continents.

Glendonite can also form in warmer conditions

However, glendonite is also found in sedimentary rocks formed under a variety of conditions and of all 'ages'. This shows that it can form in warmer conditions as well. Glendonites have been discovered in mudstones and siltstones from the Precambrian to the present, including the Cretaceous and Tertiary, which are interpreted as being warm.[3] Except for the supposed 'ice age' periods throughout the geological column, and at the end of the Tertiary, nearly all of geological history is interpreted by uniformitarian scientists to have been warm, even at high latitudes.[4] This deduction is usually based on warmth 'indicators', such as fossils.

Because of this belief that glendonites are proxies for near-freezing water temperatures, some researchers have been forced to postulate a 'cold phase' during the warm periods. For instance, scientists have claimed a brief cold climate in the high latitudes during the Cretaceous 'greenhouse' period.[5] On Svalbard, the Norwegian archipelago in the Arctic Ocean at about 80°N, another cold phase during the very warm Paleocene and Eocene was claimed due to the discovery of rather abundant glendonites and 'erratics'[6] in Tertiary sedimentary rocks that were over 2 km thick.[7] Erratics up to 50 cm in diameter and weighing up to 150 kg are assumed to have been transported by ice. However, the sedimentary rocks also contained coal and have other warm climate indicators, although not in the same layer. This claimed 'cold phase' also goes against the current belief that the Arctic climate was surprisingly warm in the early Tertiary.[8] The Arctic Ocean has even been postulated to have been as warm as 18°C to 24°C at this time,[9] compared to an average Arctic Ocean sea surface temperature today of –2°C. These interpretations should have caused researchers to look for a mechanism for forming ikaite at warm temperatures.

The above discoveries are all found in the high latitudes and so uniformitarian scientists are able

Figure 2. Remnant of a landslide at the top of the Gravelly Mountains, southwest Montana, USA, that striated the bedrock. Outcrop is dated Eocene by uniformitarian scientists, and it used to be considered an ancient ice age because of two out of three 'diagnostic criteria'. Since the Eocene is now considered very warm, this ancient ice age had to be abandoned.

to claim a brief cold spell within a generally warm climate. However, some glendonites are found in mid-latitude strata, for instance in north-west Oregon and western Washington in the Miocene (early part of the late Tertiary).[10]

A recent discovery in northern Germany confirms that a warmer environment can also produce ikaite.[11] Abundant glendonites were found in what are considered to have been ocean-bottom sediments. Based on oxygen isotopes from fossils, the near-bottom temperatures were believed to be 10°C. Based on the carbon isotope values, the formation of the original ikaite is attributed to a nearby methane seep, with the methane allowing ikaite to form at warmer temperatures.

Implications

Uniformitarian geologists used glendonites to reinforce the Permian 'ice age', but creationist geologists do not accept this claim because Permian rocks are considered to have been laid down during Noah's Flood. Thus, we are wary of what are considered 'robust' proxies for past climate conditions. And with more research, when other variables and more data are considered, these proxies are found to be unreliable.

In this case, ikaite cannot only form in cold water but also in relatively warm water in the presence of methane. Confident uniformitarian paleoenvironmental interpretations are thus nullified by this further analysis and the consideration of neglected data.[12] Glendonites as a cold-climate proxy is shown to be no longer reliable. The rest of the indicators for the supposed Permian 'ice age', such as 'erratics', can be explained by massive downslope, underwater landslides during the Genesis Flood.[13]

References

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