Top-notch creation research

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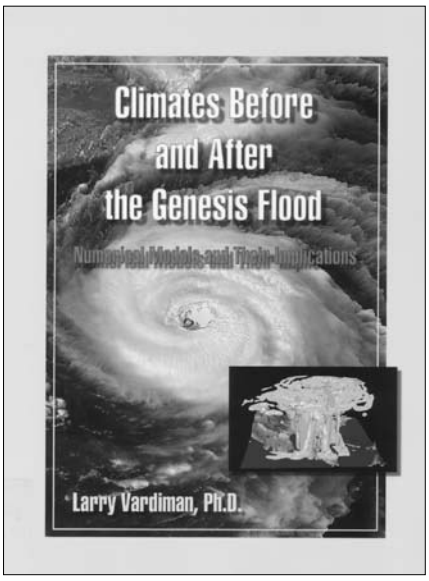
A review of
Climates Before and After the Genesis Flood—Numerical Models and Their Implications
by Larry Vardiman
Institute for Creation Research, El Cajon, California, 2001



This book represents a fairly detailed summary of climatic research performed by Dr Larry Vardiman at the Institute for Creation Research. Most of the text is taken from books and articles that Vardiman has authored. Additional material has been added from theses and articles written by his graduate students.

Pre-Flood vapor canopy models

Vardiman's book begins with climates before the Flood, so after an introductory chapter, he summarizes the main conclusions of his vapor canopy modeling research. He goes through the mathematical derivation of the distribution of water vapor with height and shows that little water vapor from such a canopy would diffuse downward into the atmosphere before the Flood. From his calculations he demonstrates that life would be impossible under a canopy with substantial water because it would cause the Earth's surface to overheat. He also concludes that such a canopy would not hold enough water to cause 40 days and nights of rain.

The vapor canopy was a favorite hypothesis among creationists to explain a warm climate before the Flood at high latitudes, the possible lack of rain and rainbows from clouds before the Flood, and water for the 40 days and nights of rain during the Flood. Vardiman's modeling has shown it to be a problematic model. Since his earlier research has been published, other hypotheses have been devised to explain the supporting Scriptural verses for the canopy, mainly Russ Humphrey's *Starlight and Time*.[1] Other models have been developed that attempt to explain the 40 days and nights of rain at the beginning of the Flood, including Woodmorappe's hypercane model.[2] However, I do not believe the vapor canopy model is completely dead. As Vardiman explains in Chapter 2, his model is a simple first attempt that leaves out many atmospheric variables. He suggests ideas for further research that could lead to a plausible canopy model. Incorporating cloud processes, as well as other atmospheric processes, in a three-dimensional global circulation model may change the entire picture. With the added variables, the model could show it is possible for the vapor canopy to hold enough water for the Flood's rainfall and yet not overheat the Earth's surface. The parameterization of such a computer model would be challenging, since many of the parameter values would be outside the bounds for which they were originally developed. Furthermore, the computer time and expense on a mainframe computer would be very large.

Age of the atmosphere

Chapter 3 summarizes Vardiman's excellent work on the maximum age of the atmosphere based on the amount of atmospheric helium. Helium is a byproduct of radioactive decay and is constantly escaping from the rocks into the air. He started from the known amount of helium that exists in today's atmosphere, and divided it by the difference between the rate of helium entering the atmosphere and the helium exiting the atmosphere. He arrives at a maximum age for the Earth's atmosphere of only 2 million years. This is a pittance of the presumed evolutionary age. His calculation is considered a maximum because Vardiman assumed zero helium at Creation and no input during the Flood, both of which are unlikely. Removing these assumptions would generate a much younger date. This is solid scientific evidence in support of a young Earth and an excellent challenge to the evolutionist.

Ice cores

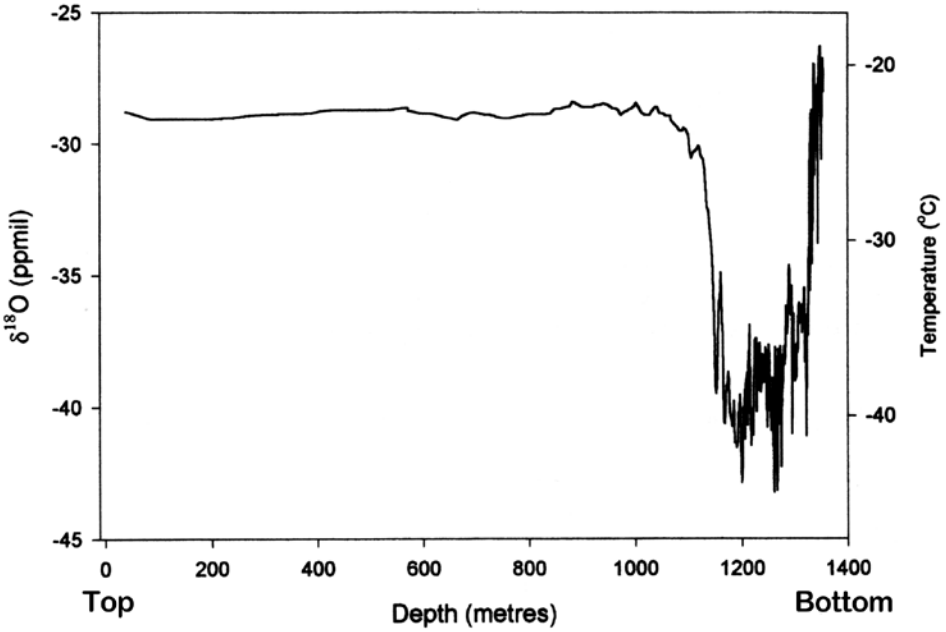
In Chapter 4, he moves onto his ice core work. By altering initial conditions, the buildup of ice on the Greenland Ice Sheet is impressively modeled within a young-Earth time frame. He shows how the oxygen isotope ratio, which depends upon other variables besides temperature, is also influenced by the amount of sea ice around Greenland. Furthermore, glaciologists have claimed to have counted 110,000 years of annual layers in the cores drilled from the top of the ice sheet at Summit. Vardiman states that in the creationist model more than one oscillation of a particular variable, assumed to be annual by uniformitarian scientists, would form in a year. This is because creationists assume that the ice sheet has not been in equilibrium for millions of years, but built up during and after

the post-Flood Ice Age. Within the creation model, the unique climate and weather of the Ice Age, together with snowstorms after the Ice Age, formed the ice sheets. Many of the supposed annual layers deeper in the ice core can be explained as individual storms.[3] So, the uniformitarians' many tens of thousands of years are simply an outgrowth of their long-age assumption, like many other of their deductions in the earth sciences.

The uniformitarian interpretation of ice cores is also having an ominous political effect on our world today, as Vardiman points out. Deeper down in the Greenland ice cores, there are large fluctuations in the oxygen isotopes. Because of the rapid changes in the oxygen isotope ratios, uniformitarian scientists now are forced to believe that the temperature on Greenland changed as much as 20°C in periods as short as one to three years![4] Such interpretations are fueling the concern that we humans can abruptly cause catastrophic changes in temperature by burning fossil fuels and contributing to a greater greenhouse effect. Some uniformitarian scientists even postulate that global warming will cause the North Atlantic ocean currents to slow or halt, triggering an abrupt cooling or another ice age. These ideas are filtering into the popular literature and suggesting drastic political responses.[5] There are a number of problems, however, with such ideas, which a creationist interpretation of the ice core fluctuations would mitigate.[6] Such wild ideas, bolstered by the uniformitarian interpretation of Greenland ice cores, bode ill for future economic and political policy.

Sea-floor sediment

Next, in Chapter 5, Vardiman delves into his work on sea floor sediment accumulation. Uniformitarian geologists assume oxygen isotope ratios in microfossils during the 'Cenozoic', record the cooling of the oceans from a warm Cretaceous period. They also believe that fluctuations in oxygen isotopes in microfossils in the tops of the cores are a result of many repeating ice ages. They base their assumptions on the astronomical theory of ice ages, which allows them 30 or more ice ages over the past 2.5 million years of evolutionary time. There are many problems, however, with the interpretation of oxygen isotopes from microfossils and their supposed connection to the astronomical theory.[7–9] Vardiman translates these uniformitarian interpretations into a young-Earth time frame by using different assumptions—a perfectly valid procedure since it is the *interpretation* of the data that is the main difference between creationists and evolutionists. With creationist assumptions, the cooling is simply the result of the post-Flood Ice Age. Vardiman goes one step further and attempts to model the shorter-period oxygen isotope fluctuations, but this is where I believe much more work is required. Creationists need an explanation for these oxygen isotope oscillations, which depend on more variables other than temperature, as well as the accumulation of the sediments during and after the Flood.[10]



$\delta^{18}O$ with depth for Camp Century, Greenland (from Vardiman, p.43). The upper portion of the ice core has a uniform value of $\delta^{18}O$, which becomes much more negative in the bottom portion of the core. At the base of the core the ratio increases to its highest value. Vardiman links the bottom portion of the core with the post-Flood Ice Age. He relates the slow decrease in $\delta^{18}O$ with time during the early Ice Age to the slow growth of an ice shelf on the upwind ocean (rather than slow cooling of the ocean itself). The rapid increase in $\delta^{18}O$ represents rapid melting of the ice shelf.

Climate modeling

The last three chapters deal with climate modeling using the computer models developed at the National Center for Atmospheric Research and Penn State University. He applies them to a variety of paleoclimatic creationist problems, such as the atmospheric consequences of a universally warm ocean during the beginning of the Ice Age, the simulation of precipitation resulting from the possible left-over heat of the mid-ocean ridges in the immediate post-Flood period, and hypercane modeling.

A good book

It should be one of Murphy's Laws that, 'There is always one more typo in a manuscript'. The

monograph has several typographical errors, two of which are significant. Figure 5.5 is the wrong figure. The correct figure can be found as Figure 3.6 in Vardiman's monograph, *Sea-Floor Sediments and the Age of the Earth*.[11] The second error is on page 95 in which he refers back to Chapter 4 for a comment on his Ice Age research over the Colorado River Basin. Instead of Chapter 4, it should be page 4. These are in the process of being corrected.

Vardiman's monograph is the result of 20 or more years of top-notch creation research. As you would expect for state of the art research, it details various mathematical models and has many partial-differential equations. This may make challenging reading for the layman or scientific people from other fields. However, the layman or biologist will still follow the logic even if he skips over the math. The 100-page monograph is well presented, well illustrated, and has excellent color images of hurricanes on the front cover. The monograph comes with a pocket inside the back cover holding a computer CD showing hurricane movies from satellite and a few of his hypercane simulations. Some of the results are reproduced in four pages of color plates at the end of Chapter 7. It is a good book that should interest a cross-section of more technical people.

References

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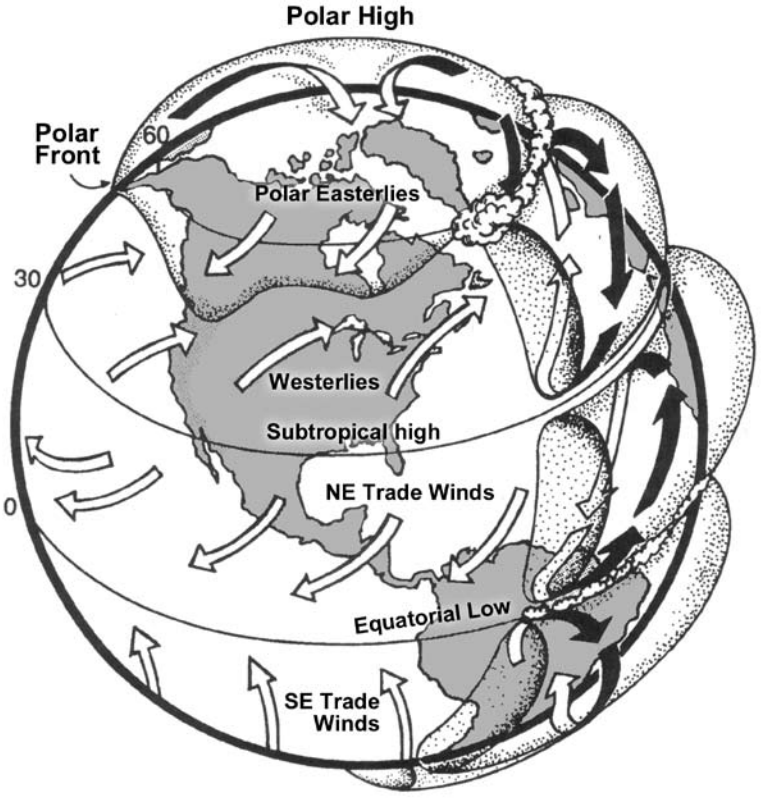

The general circulation of today's atmosphere. Light arrows show air flow at the surface and dark arrows aloft (from Vardiman, p. 83). Air circulation today is essentially the global movement of air on a rotating Earth in response to differential heating of the equator and poles and the Coriolis force. Modelling of past climates shows that warmer oceans would not warm the continents. Instead, the continental interiors would have been cold with a large surface temperature gradient at the ocean-continent boundaries. The discovery that warm oceans would have produced rapid ice sheet growth on the continents supports the concept of the Ice Age occurring after the Biblical Flood.