

## Forests of the Antarctic continent

Dr Michael Jarvis

The world contains much variety of climates and vegetation types but as we move towards the North Pole or South Pole we encounter greater coldness and less vigorous vegetation. If we look at the large Antarctic continent this is so cold that vast ice sheets cover most of it with only some rocky peaks protruding above the ice.



Below is typical Antarctic scenery.



Drilled sediment cores reveal a fascinating past

A recent article by Coghlan (New Scientist 14 May 2016) summarises research in Antarctica that is detailed in various scientific journals. This research has involved drilling down through accumulated layers of sediment and analysing plant material and other items of interest.

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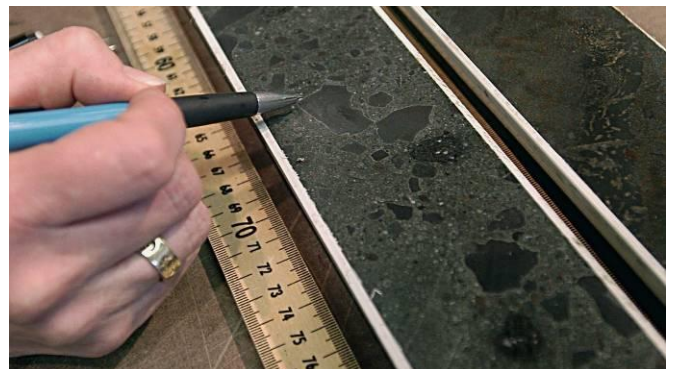


The core was taken from the sea floor off Wilkes Land in East Antarctica as part of the Integrated Ocean Drilling Programme. Pollen grains within the cores show how vegetation on the continent has changed over the past 54 million years.

This particular core is the first one that gives an entire story of changes over this very long period of earth's history.



The extracted cores are carefully stored and then analysed by a team of researchers.



## Climatic history of Antarctica



The cores reveal that **Antarctica was much warmer 54 million years back and the climate could be described as subtropical.** The predominant vegetation was palms and trees like monkeypuzzles. This slowly gave way to vegetation looking much like shown here. The vegetation of that time included species that still thrive as 'living fossils' in New Zealand and Tasmania.

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The sediment cores reveal that the climate slowly became colder and the predominant vegetation ended up with species typical of treeless tundra. By about 12 million years back even the tundra disappeared. At that time glaciers took over and Antarctica became a white desert as it is today.

### **Is this study relevant to Fact and Faith questions?**

In previous articles and DVD's that may be freely sourced from my [www.factandfaith.co.za](http://www.factandfaith.co.za) webpage, I detail the many lines of research that provide evidence for the great age of our earth. **This Antarctic research adds just one more reason why all of us who seek for truth need to realise that God's creation is challenging us to re-examine our understanding of Bible passages that speak about creation.**

One summary of the evidence for the great age of our earth is the DVD segment that can be viewed from the webpage. If you go to 'Free Downloads' this opens up access to four DVD clips, such as:  
Size and age of universe; Quantum Dimension & Timelessness; Creator; **Age of Earth.**

### **A very brief summary of evidence for our earth being millions of years old is as follows:**

1. Radioactive materials slowly decompose and each of many types of such materials decompose at different rates. This has been tested in laboratories for over 100 years. The time taken for half of the material to decompose is called the 'half life'. These measurements are used to date various minerals in samples.
2. Continents slowly move due to a process that has been studied in detail. In fact we can measure the speed of movement very accurately. For instance, Africa is moving away from South America at about 5 cm per year. At one time there was just one super-continent that has now separated into the pattern we see today. This slow process means that it takes millions of years for a separation, such as that between Africa and South America.
3. Processes of rock degradation into soil reveal that on average it takes thousands of years to form a meter of soil.

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4. We can measure the processes of mountain erosion and upliftment. Continents are actually floating on molten rock and each tall mountain has a corresponding 'root' below it. As the mountains are slowly eroded by rain, wind and temperature variations, the land actually rises. This is why we can find sea shells high up on some mountains.
5. Zoogeography is the study of animal distribution around the world. Each continent has characteristic animals and plants, depending on when that continent separated from the original land mass. For instance, Australia separated earlier than most other continents. As a result Australia contains unique animals that dominated the world at the time that Australia split off. In other areas Australia's marsupial animals, such as kangaroos, came to extinction due to competition with placental mammals that dominated the earth after Australia had already split away.
6. Studies of coal formation and patterns of coal deposits reveal that the process of forming coal from rotting vegetation takes a long period of heating and compression. Furthermore, coal deposits vary in composition, depending in part on what species of trees were turned into coal. In some areas several coal seams are found above each other but separated by deposits of other materials. In other words these deposits were not all formed at the same time. The deposits tell us that long periods of time were involved.
7. Cores drilled through Antarctic ice consist of annual winter and summer deposit layers. These layers can be calibrated because some layers contain volcanic ash from known volcanoes and some of these volcanoes have known records of past eruption dates. One ice core revealed about 800,000 years of ice deposits before reaching Antarctic soil. Furthermore, other studies show that this Antarctic soil contains fossils of creatures that lived and died long before the ice was deposited. Within the ice are minute bubbles of trapped air and these can be analysed to determine how the percentage of oxygen and other gasses has changed over millions of years.
8. The early earth's atmosphere contained nearly no oxygen. Nearly all of the oxygen needed for us to breathe comes from the process of photosynthesis in plants. For the earth's atmosphere to reach the 20% oxygen content of today it would have taken millions of years of photosynthesis, even if the early earth was covered with very abundant vegetation.

## **Conclusions**

Personally I am convinced by scientific discoveries that the Creator has used long processes to bring about this universe and humanity. This does not mean that I must reject descriptions of creation given in the Bible. However, it does mean that **we need to re-examine our interpretations of some scriptures and also accept that God does operate within his creation through long processes.**

God designed, initiated and controls all the processes and laws of nature and guides them to achieve the end goals that he has ordained. How does this relate to the Christian Gospel message? If any of you want to go further into how the Gospel message can be reconciled with an ancient universe, a detailed examination of that question can be freely downloaded from the webpage: Go to 'Free Downloads' then to 'PDF UPDATES' and click on the title of item '**The gospel of Jesus Christ in our ancient and evolving universe**'

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