

Melbourne *Earth Sciences* sides with the Angels!

Bob Foster, August 2007

Why am I not invited anymore to give an annual lecture about climate change to Melbourne University first year students in Earth Sciences? My puzzlement has been resolved - the timing correlates with a changing of the guard therein. Ian Plimer has been replaced by Andy Gleadow as Head of School; and the penny dropped when I read Professor Gleadow's *From the President* in the Geological Society of Australia *Newsletter Number 142* of March 2007. He invokes a people-driven climate – saying (p. 2), for instance:

... as I write this column , the Intergovernmental Panel on Climate Change (IPCC) is meeting in Paris to finalise its fourth major report; and from all accounts this will strengthen the predictions of global warming due to greenhouse gas emissions made in the previous IPCC Reports. This is the biggest single issue facing society today ...

But not all GSA members agree. The *Letters to the Editor* of the next newsletter (*The Australian Geologist* of June 2007) contained critical responses by me (p.31) and Phillip Playford (pp.33,4). Both are reproduced here.



Antwerp in winter, 1575 - with frozen Schelde
Lucas van Valkenborch 1535-97 (Stadische Galerie, Frankfurt)

Letters to the editor

Will it be warmer or cooler?

Andy Gleadow's editorial (From the President, TAG March 2007) presents but one hypothesis for explaining observed changes in 20th century climate:

These changes are well outside the range of natural variability in the oscillating climate states that have prevailed throughout the Pleistocene. Debate amongst atmospheric and climate scientists about cause and effect in all of this is long-since over. Their clear consensus is that the principal culprit in global warming, added to all the normal forcing factors, is CO₂ emissions from fossil fuel burning.

Andy Gleadow may be right, of course; but no-one knows at this stage. In the interim, the people-driven climate remains a hypothesis – because no amount of “clear consensus” can make it a fact. The advancement of scientific understanding is not a matter of voting. In my opinion, it is too early for planners to eliminate all other hypotheses from their consideration. Below, I make five points in support of keeping an open mind for now. *Time reveals Truth*, they say.

1. No-one knows the future. There are firmly-based, but mutually-exclusive, views on climate. The consensus supports the Royal Society's dogma that observed correlation between events on Sun and Earth is “mere coincidence”. Thus, the Intergovernmental Panel on Climate Change is able to claim that people are driving a self-contained climate. But people like me accept the compelling observational evidence for a variable Sun-Earth connection as main climate-driver.

2. People-driven-climate hypothesis “projects” NO cool periods ahead. IPCC invokes a stable pre-industrial Arcadia – only now disturbed by humans burning fossil fuels. But a self-contained climate demands an autonomous Earth – traveling in an empty Universe! IPCC's infamous ‘hockeystick’ has 900 years of gentle cooling, now abruptly reversed by human-caused warming. (The Mediaeval

Warm Period, and subsequent Little Ice Age cold periods, didn't happen.) Unless greenhouse gas emissions are much reduced, continued warming is inevitable. CSIRO foretells summer warming in 2030 for ten regions of Australia. In every case, not even the bottom of the range foretells cooling. Can this be science?

3. Sun-climate-connection hypothesis predicts next cool period. The irregular orbit of the Sun about the centre-of-mass of the solar system is driven by the combined angular momentum of the giant outer planets. Thus, widely-variable solar eruptive activity is the electromagnetic outcome of an inertial driver. Predicted return of a “quiet Sun” means the next Little Ice Age cold period should be fully-developed by 2030. The small inner planets orbit the Sun; and it is Mercury's 88-day year which orchestrates solar resonance. Thus, from the millennial to the quotidian, planets drive solar-wind blasts. The Pacific Decadal Oscillation is one outcome; and the next PDO cool-phase is due by 2008 – reversing the Great Pacific Climate Shift of 75/6. Change in cloudiness, and in Earth's ability to reflect little-varying solar irradiance, is another.

4. Bad and good news about carbon dioxide. IPCC finds CO₂ to be the main anthropogenic greenhouse gas, with an increased radiative forcing (warming effect) of 1.56 W/m² since 1750. Methane is 0.48 W/m²; and CH₄ concentration has stabilised since demise of the Soviet Union. (IPCC allows the Sun but a minuscule 0.12 W/m² of extra forcing.) Coal is the main source of CO₂ from fuel-burning; and use grew 29% from 1990 to 2005. In China it doubled – accounting for 80% of world growth. Back in the Eocene abundance, when many of our plant families evolved, atmospheric CO₂ concentration was x5 that of today. This trace-gas is THE vital plant food; and plants also better utilise water – a limiting factor in growth – with more CO₂ in the air. Happily, global warming potential of CO₂

is logarithmic with concentration – a rise from 0.04 to 0.08% would have the same theoretical impact as did 0.02 to 0.04%. This is good news.

5. Bad and bad economics. For IPCC's low/high (B1/FI) scenarios, warming from 1990 is 1.1-6.4°C by 2099 – invoking implausible/unimaginable Third World economic growth. A genuine low-end is absent. The impact of exaggerated per-capita GDP growth, eg. South Africa – most coal-intensive nation – (in 1990 US\$ '000s: 2.8 in 1990 and 364-470 in 2100), is compounded in the 2006 *Stern Review*. Sir Nicholas Stern's base-case accepts 15 billion people in 2100! His proposal to spend 1% of world GDP (say, US\$400 billion/yr) “fighting global warming” should be deferred. Until Time reveals Truth, we should plan for warming or cooling ahead. For now at least, (lesser) spending on health and education in deprived regions is the better way to go.

BOB FOSTER

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this matter 'amongst atmospheric and climate scientists is long since over'. Those statements do not reflect the views of many geologists and other scientists who are familiar with recent climate and sea-level changes and who question the credibility of the campaign being waged on CO₂-induced climate change. For those who are not already familiar with recent and Pleistocene climate changes I can summarise them as follows.

The world's climate fluctuates continuously in response to purely natural causes, and has done so throughout geological time. Quite apart from evidence in the geological record, there were the Medieval Warm period (10th to 14th centuries, when the Norsemen settled Greenland) and the Little Ice Age (16th to mid 19th centuries, when Greenland was abandoned). The Maunder Minimum, a time of diminished sun radiance associated with little or no sunspot activity and falling temperatures, occurred during the Little Ice Age. Moreover, a global cooling phase marked the 1940s to the mid 1970s, despite rising CO₂ emissions, and concern was then being expressed by some scientists that the world might be entering a new ice age. It is clear that those recent climate changes had nothing to do with human activities.

Throughout the Pleistocene, the Earth experienced a succession of ice ages, during which much of Europe and North America was covered by thick ice sheets. The glacial-interglacial cycles, with periodicities of about 100,000 years, are probably linked with regular changes in the orbital elements of the Earth, causing fluctuations in solar radiation. The last ice age began about 100,000 years ago and ended about 10,000 years ago. Abrupt melting of the major ice caps began 18,000 years ago, causing sea level to rise more than 120 m over the next 12,000 years, at a rate of about a centimetre a year.

There can be little doubt that the world will eventually enter a new ice age (probably during the next few tens to thousands of years). Areas that are now major centres of population in North America, Europe, and Asia can then expect to be covered by a continental ice

sheet. Such an event would have enormous consequences for the human race.

Ice cores from Antarctica show that levels of CO₂ in the atmosphere began to rise some 800 years after the onset of the global warming that heralded the close of the last glacial age, and CO₂ levels continued rising into the succeeding Holocene interglacial period. This suggests that the rising CO₂ levels were a consequence of global warming, not the other way around.

Scientists agree that CO₂ emissions must have raised world temperatures to some extent, but there is continuing debate as to how much of the present warming phase is due to those emissions and how much to changing radiation from the sun or other factors. Some maintain that the CO₂-induced effects are minor and it is foolish or naïve to believe that actions to reduce greenhouse-gas emissions can significantly influence global climates. Nevertheless, even if the effects of rising CO₂ levels are proved to be relatively benign, it will still be extremely important to minimize the environmental pollution that results from our rising energy needs.

Members of the Geological Society of Australia should maintain an open mind on the CO₂ issue. The current political and media campaign presents an unambiguous view that the current global warming phase is entirely human induced, while ignoring evidence from the historical and geological records. However, the scientific debate is far from over. Geologists need to keep the public informed on geological perspectives of the debate, as past climates and their causes are surely keys to the prediction of future trends.

PHILLIP PLAYFORD

It was disappointing to read the comments by the President of the Geological Society of Australia on the issue of global climate change (TAG March 2007, p. 2). He claimed that 'the principle (*sic*) culprit in global warming is CO₂ emissions from fossil fuel burning' and that debate on