

The Skeptics Handbook.

A Briefing by John Lockwood written for JRI.

Introduction.

The Skeptics Handbook is an Internet based document that can be downloaded as a pdf from the supporting web site at www.joannenova.com.au. This is not a Handbook in the normal sense of the word. A Handbook is usually a reference book, especially one small enough to be carried in the hand, giving concise information on a particular subject. The topic under consideration is the evidence that atmospheric carbon dioxide controls atmospheric temperature and in particular whether adding more CO₂ to the atmosphere will make the world much warmer. There is no scientific consideration of the topic, only an ill informed and totally misleading discussion.

A flavour of the handbook can be obtained by looking at the opening and closing statements. The Handbook opens with the statement: “What evidence is there that more CO₂ forces temperatures up further?” It closes with the two statements: “Carbon doesn’t seem to have driven temperatures before; probably isn’t doing it now; things are not getting warmer; and the computer models can’t predict the weather”, and “An Emissions Trading Scheme is a bad solution to a problem that’s gone, fighting a cause that never was.....” Midway through we are told that burning coal is good for the world.

Joanne Nova, who appears to be the main author of the Handbook, is an Australian freelance science presenter and writer: professional speaker, author, and former TV host. She appears to have no refereed scientific publications or any research degrees in meteorology. The Handbook claims to have printed 164,000 copies.

Australian Politics and coal industry.

Australia is at great risk from climate change. A study by the Commonwealth Scientific and Industrial Research Organization described Australia’s ecosystems as potentially the most fragile and vulnerable to climate change, in part because its climate is already hot, dry and because of the Southern Oscillation, highly variable. Australia’s summer of 2009 has already shown record temperatures and drought in the country’s worst heat wave in history. Most of the southern portion of the country is undergoing an unprecedented 12-year drought, and agricultural productivity has decreased dramatically. Professor David Karoly of the University of Melbourne warned that, while the record heat

seems unusual, “it will become much more like the normal experience in 10 to 20 years” [1].

To understand the background to the Handbook it is necessary to consider both Australian politics and the Australian coal industry. In response to the threat of climate change, the Australian government has proposed a plan that would force Australia’s 1,000 worst polluters to buy carbon dioxide permits, covering 75 per cent of national emissions, in an attempt to cut greenhouse emissions by between 5 and 25 per cent by 2020 (Daily Telegraph, August 14, 2009). The plan was recently defeated in the Australian Senate by 42 votes to 30. The Australian Greens party wants tougher emissions targets, while on the other side some conservative opponents do not want the scheme at all. The Australian government is determined that the carbon emissions plan, which is due to start in July 2011, will be approved before the United Nations meeting on climate change in Copenhagen in December.

In 2006 Australia exported 237 million tonnes of coal, making it the world's largest exporter of coal. It also consumed over 70 million tonnes of coal domestically, of which approximately 85% is used in power generation [2]. Australia relies on coal for about 80 per cent of electricity generation, making it the largest per-capita carbon emitter in the developed world. About 97% of Australia’s total coal mining production comes from the Queensland and New South Wales coalfields. Coal mining in Queensland is in the Bowen Basin and mines at Newlands, Blair Athol, and near Brisbane. In New South Wales the bulk of the coal mined is from the Gunnedah Basin. BHP Billiton Mitsubishi Alliance (BMA), which is a 50-50 joint venture between BHP Billiton and Mitsubishi Corp. of Japan, accounts for more than one-quarter of Australia’s annual coal exports. There are around 10 new coal fired power stations proposed for construction in Australia. In the last thirty years, there has been a massive expansion of coal mining, predominantly for export but also for coal-fired power stations. In September 2008 the main climate change adviser to the Australian government, Professor Ross Garnaut, outlined the results of modeling on the impact of global climate change policy. In one of his reports to the government, he wrote that "the future of the Australian coal industry depends critically on the success of carbon capture and storage not only in Australia, but in the rest of the world, and especially in Australia’s major coal markets in Asia." [3,4]

Websites that contest The Skeptics Handbook.

Several websites have contested the conclusions of the The Skeptics Handbook. The Desmogblog (www.desmogblog.com/about-climate-

[cover](#)) comments that scientists from within the Australian fossil fuel industries' own organizations raised red flags about climate change as early as 30 years ago – and they specifically dismissed the credibility of deniers by 1995. Yet the Australian fossil fuel industry has continued to support efforts to subvert the science, attacking real scientists and promoting a cast of “skeptics” in their place. As stated in the IPCC (2007)[5] report, the world's best-qualified scientists agree that climate is changing and that the burning of fossil fuels is mostly to blame. Some public relations professionals have executed comprehensive campaigns of misinformation on behalf of industry clients, recently trying to create confusion about climate change.

False Claims in Skeptics Handbook.

Among the most authoritative and accessible Internet web sites are those operated by the British Meteorological Office (www.metoffice.gov.uk/climatechange/guide/bigpicture/). These should be consulted to find the correct explanations for many of the false claims made in the Handbook. The comments below are partly based on the Meteorological Office web site.

1. The ice core climate record shows no evidence of being driven by changes in atmospheric carbon dioxide content.

Over the eight hundred thousand years covered by the ice core record, the temperature changes were primarily driven by changes in the Earth's orbit around the Sun, the so-called Milankovitch mechanism, which is not mentioned in the Handbook. Over this period, changes in atmospheric temperature and carbon dioxide content varied in phase with the Earth's orbital eccentricity, while changes in global ice volume (ice ages) lagged orbital eccentricity. It appears that the orbital changes caused changes in the Earth's carbon cycle, which fed into the atmospheric carbon dioxide concentration and modified climate. Since the Industrial Revolution (over the last 100 years), CO₂ concentrations have increased by 30% due to human-induced emissions from fossil fuels. The bottom line is that temperature and CO₂ concentrations are linked. In recent ice ages, natural changes in the climate, such as those due to orbit changes, led to a cooling of the climate system. This caused a fall in CO₂ concentrations, which weakened the greenhouse effect and amplified the cooling. Now the link between temperature and CO₂ is working in the opposite direction. Human-induced increases in CO₂ are strengthening the greenhouse effect and causing the recent warming.

2. Average long-term global temperatures have stopped rising.

There is general agreement that the coldest conditions of the past 500 years were in the late seventeenth and early nineteenth centuries. The early nineteenth century was especially cold and can be considered as the 'climatic pessimism' of the past 1000 years. Global temperature has increased since the climatic pessimism, but not in a uniform manner. The Meteorological web site states that

the rise in global surface temperature has averaged more than 0.15 °C per decade since the mid-1970s. Warming has been unprecedented in at least the last 40 years, and the 17 warmest years in the meteorological record have all occurred in the last 20 years. This does not mean that next year will necessarily be warmer than last year, but the long-term trend is for rising temperatures. A simple mathematical calculation of the temperature change over the latest decade (1998-2007) alone shows a continued warming of 0.1 °C per decade. A slight slowing of the warming in recent years is due to a shift towards more-frequent La Niña conditions in the Pacific since 1998. These bring cool water up from the depths of the Pacific Ocean, cooling global temperatures.

3 The Earth is Cooling.

The El Niño phenomenon occurs when every few years the tropical Pacific Ocean off the coasts of Peru and Ecuador occasionally becomes much warmer than average for periods of several months. Under El Niño conditions the equatorial atmosphere circulations become reversed, resulting in heavy rain in the normally arid areas of Peru, and drought in the western Pacific. Under El Niño conditions the atmosphere becomes slightly warmer than average. The complementary phase is termed La Niña: under these conditions the atmosphere becomes slightly colder than average (Lockwood 2009)[6]. The El Niño Southern Oscillation or ENSO is important climatologically for two main reasons. First, it is one of the most striking examples of interannual climatic variability on an almost global scale. Second, in the Pacific it is associated with considerable fluctuations in rainfall and sea-surface temperature, and also with extreme weather events around the world. A significant drop in global average temperature in January 2008 led to speculation that the Earth was experiencing a period of sustained cooling. The Meteorological Office web site explains this as follows. A brief look at any graph depicting January global average temperatures reveals large variability from year-to-year, but with an underlying rise over the longer term almost certainly caused by man-made emissions of greenhouse gases. There are a number of natural factors contributing to so-called interannual variability, the single most important being the ENSO. In 2007-2008 the global climate was influenced by the cold phase of this oscillation, known as La Niña. The La Niña began to develop in early 2007, having a significant cooling effect on the global average temperature. Despite this, 2007 was one of the ten warmest years since global records began

in 1850 with a temperature some 0.4 °C above average.

The La Niña strengthened further during early 2008 and became the strongest since 1988/89, significantly contributing to a lower January temperature in 2008, compared to recent years. In addition, very cold land temperatures in parts of the northern hemisphere and extensive snow cover influenced global average temperature. January 2008 may have seem particularly cold compared to January 2007 - the warmest January on record and largely due to the warming phenomenon El Niño - but this merely demonstrates the year- to-year natural variations in our climate. In future, while the trend in global temperatures is predicted to remain upwards, we will continue to see inherent variability of this kind.

Closing Advice.

The World Wide Web and Internet sites in general are not regulated, so it is a case of users beware. As far as meteorological information is

concerned it is only safe to use web sites belonging to recognized organizations, such as national meteorological organizations. The British Meteorological Office, The Royal Meteorological Society, The American Meteorological Society, and various United States Federal Government Agencies organize such sites. Treat other sites with the uttermost caution.

John Lockwood.

Further Reading and References.

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2. Pui-Kwan Tse, *The Mineral Industry of Australia: 2006* (<http://minerals.usgs.gov/minerals/pubs/country/2006/myb3-2006-as.pdf>), U.S. Department of the Interior, U.S. Geological Survey, May 2008.
3. Ross Garnaut, "Targets and trajectories: Supplementary Draft Report" (<http://www.garnautreport.org.au/>) , Garnaut Climate Change Review, September 2008, pages 14-15.
4. ABARE Australian commodity statistics 2007: Coal (http://www.abareconomics.com/interactive/acs_dec07/excel/Coal.xls) Excel Spreadsheet.
5. IPCC (2007) *Climate Change 2007: The Physical Science Basis. Contribution of Working Group 1 to the Fourth Assessment Report of the Inter-governmental Panel on Climate Change* (Eds. S. Solomon, D Qin, M Manning, et al). Cambridge University Press, Cambridge.
6. Lockwood, J. G. (2009) *The climate of the Earth*. In *Atmospheric Science for Environmental Sciences* (Eds C.N. Hewitt and A.V. Jackson) Wiley-Blackwell, Chichester. Pp 1-25.