Antarctica Temperature Trends Summary

Science-based analyses of America's key environmental issues

Center for Science & Public Policy

www.scienceandpolicy.org

Contact Information

209 Penn. Ave., SE
Washington, DC 20003

Tel: 202-454-5249

Fax: 202-454-5223

Robert Ferguson

Executive Director

bferguson@ff.org

Claim: Proof ("canary in the coal mine") of man-induced global warming can be found in the recent, rapid rise of Antarctic surface temperatures.

Wrong. The **temperature history of Antarctica provides no evidence** for the CO2-induced global warming hypothesis. In fact, it argues strongly against it.

The IPCC, environmentalists, the Media and recent Senate hearings have for years crafted the public focus **only** on a tiny area of the Antarctic, the **Antarctic Peninsula**, a mere **2% of the total area** of the continent. That little area has experienced a recent **natural** warming due to interaction with the Southern Ocean. However, the other **massive 98%** of the continent has been in a **cooling trend** over the last 35 years **in complete defiance of** what the man-made **theory of global warming** says should happen.

A **major blow to** the CO2-induced global warming **hypothesis** comes from the instrumental **temperature record** of the more recent past. This setback is manifested in the **contradiction between observed and model-predicted** Antarctic temperature trends of the past three decades. According to nearly all climate models, CO2-induced global warming should be most evident in earth's Polar Regions; but analyses of Antarctic near-surface and tropospheric air temperatures tell a **radically different story**.

Update: According to Turner et al., over the latter part of the 20th century, i.e., the period of time that climate alarmists claim was host to the most dramatic global warming of the past two millennia, fully 80% of the Antarctic coastal stations with sufficiently long temperature records reveal either (1) *an intensification of cooling* or (2) *a reduced rate of warming*; while four coastal sites and one interior site actually shifted from warming to cooling.

***East Antarctic Ice Sheet*. A summary of several studies suggest that even the most catastrophic warming scenario produced to date by the IPCC would have little impact on the integrity of the East Antarctic Ice Sheet.**

Doran et al (2002) report that annual temperatures (1966-2000) have been cooling in 65% of the region outside of the Peninsula (2% of land mass).

Antarctica. Comiso (2000) assembled and analyzed Antarctic temperature data obtained from **21 surface stations** and from **infrared satellites** operating since 1979. They found that for **all of Antarctica**, temperatures had **declined by 0.08℃ and 0.42℃ per decade** respectively, when assessed via these two data sets.

McMurdo Dry Valleys. Doran *et al.* (2002) examined temperature trends in this area of Antarctica over the period 1986 to 2000, reporting a **phenomenal cooling rate** of approximately **0.7℃ per decade**. This dramatic rate of cooling, they state, "reflects longer term **continental** Antarctic **cooling between 1966 and 2000**," with the largest cooling centered around the South Pole and Dome C. In addition, the **14-year temperature decline** in the dry valleys occurred in the **summer and autumn**, just as most of the **35-year cooling** over the continent as a whole also occurred in the summer and autumn. The 13 authors laid down a challenge to the climate models which predict polar warming, not the cooling actually experienced, "Continental Antarctic cooling, especially the seasonality of cooling, **poses challenges to models** of climate and ecosystem change."

East Antarctica. Cremer et al. report that nearly all available Antarctic terrestrial and marine records show the **latest thousand-year** period "is generally marked by **distinct cooling** leading to glacial re-advances, more extensive sea-ice, lower precipitation, and lower bioproductivity."

Interior. Thompson and Solomon (2002) also report a **cooling trend** for the interior of Antarctica, while sea-ice concentration has **increased** and the length of the sea-ice season has **increased** over much of eastern Antarctica and the Ross Sea."

Sea Ice. Further evidence that the Antarctic as a whole is in the midst of a **cooling trend** comes from the study of Watkins and Simmonds (2000). Reporting on trends in a number of Southern Ocean sea ice parameters over the period 1987 to 1996, they found statistically **significant increases** in sea ice area and total sea ice extent, as well as an **increase** in sea ice season length **since the 1990s**. Combining

these results with those from a previous study revealed these **trends to be consistent back to at least 1978**. And in another study of Antarctic sea ice extent, Yuan and Martinson (2000) report that the net trend in the mean Antarctic ice edge over the last 18 years has been an equatorward **expansion** of 0.011 degree of latitude per year.

Scientifically, policy advocates have a lot of explaining to do before they can expect whole societies to undergo an economically impoverishing culture shift in deference to a **theory which appears so patently wrong** on one of its key pillars.

References:

Turner, J., Colwell, S.R., Marshall, G.J., Lachlan-Cope, T.A., Carleton, A.M., Jones, P.D., Lagun, V., Reid, P.A. and Iagovkina, S. 2005. Antarctic climate change during the last 50 years. *International Journal of Climatology* **25**: 279-294

Anderson, J.B. and Andrews, J.T. 1999. Radiocarbon constraints on ice sheet advance and retreat in the Weddell Sea, Antarctica. *Geology* **27**: 179-182.

Marchant, D.R., Swisher III, C.C., Lux, D.R., West Jr., D.P. and Denton, G.H. 1993. Pliocene paleoclimate and East Antarctic Ice-Sheet history from surficial ash deposits. *Science* **260**: 667-670.

Näslund, J.O., Fastook, J.L and Holmlund, P. 2000. Numerical modeling of the ice sheet in western Dronning Maud Land, East Antarctica: impacts of present, past and future climates. *Journal of Glaciology* **46**: 54-66.

Pagani, M., Authur, M.A. and Freeman, K.H. 1999. Miocene evolution of atmospheric carbon dioxide. *Paleoceanography* **14**: 273-292.

Raymond, C.F. 2002. Ice sheets on the move. *Science* **298**: 2147-2148.

Doran, P.T., et al., 2002. Antarctic climate cooling and terrestrial ecosystem response. *Nature*, **415**, 517-520.

Full literature citations can be found at: http://www.co2science.org/subject/a/summaries/antarcticatemp.htm
http://www.john-daly.com/press/press-02a.htm#antarctic

.