

## **Polar scientists on thin ice**

*The Deniers -- Part IV*

*Lawrence Solomon, Financial Post*

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A great melt is on in Antarctica. Its northern peninsula -- a jut of land extending to about 1,200 kilometres from Chile -- has seen a drastic increase in temperature, a thinning of ice sheets and, most alarmingly, a collapse of ice shelves. The Larsen A ice shelf, 1,600 square kilometres in size, fell off in 1995. The Wilkins ice shelf, 1,100 square kilometres, fell off in 1998 and the Larsen B, 13,500 square kilometres, dropped off in 2002. Meanwhile, the northern Antarctic Peninsula's temperatures have soared by six degrees celsius in the last 50 years.

Antarctica represents the greatest threat to the globe from global warming, bar none. If Antarctica's ice melts, the world's oceans will rise, flooding low-lying lands where much of the world's population lives. Not only would their mass migration spawn hardships for the individual families retreating from the rising waters, the world would also be losing fertile deltas that feed tens of millions of people. This chilling scenario understandably sends shudders through concerned citizens around the world, and steels the resolve of those determined to stop the cataclysm of global warming.

But much confounding evidence exists. As one example, at the South Pole, where the U.S. decades ago established a station, temperatures have actually fallen since 1957. Neither is Antarctica's advance or retreat a new question raised by the spectre of global warming: This is the oldest scientific question of all about the Antarctic ice sheet.

Enter Duncan Wingham, Professor of Climate Physics at University College London and Director of the Centre for Polar Observation and Modelling. Dr. Wingham has been pursuing this polar puzzle for much of his professional life and, but for an accident in space, he might have had the answer at hand by now.

Dr. Wingham is Principal Scientist of the European Space Agency's CryoSat Satellite Mission, a \$130-million project designed to map changes in the depth of ice using ultra-precise instrumentation. Sadly for Dr. Wingham and for science as a whole, CryoSat fell into the Arctic Ocean after its launch in October, 2005, when a rocket launcher malfunctioned. Dr Wingham will now need to wait until 2009 before CryoSat-2, CryoSat's even more precise successor, can launch and begin relaying the data that should conclusively determine whether Antarctica's ice sheets are thinning or not. Apart from satellite technology, no known way exists to reliably determine changes in mass over a vast and essentially unexplorable continent covered in ice several kilometres thick.

But CryoSat was not the only satellite available to polar scientists. Dr. Wingham has been collecting satellite data for years, and arriving at startling conclusions. Early last year at a European Union Space Conference in Brussels, for example, Dr. Wingham revealed that data from a European Space Agency satellite showed Antarctic thinning was no more common than thickening, and concluded that the spectacular collapse of the ice shelves on the Antarctic Peninsula was much more likely to have followed natural current fluctuations than global warming.

"The Antarctic Peninsula is exceptional because it juts out so far north," Dr. Wingham told the press at the time. As well, scientists have been drawn to the peninsula because it is relatively accessible and its climate is moderate, allowing it to be more easily studied than the harsh interior of the continent. Because many scientists have been preoccupied with what was, in effect, the tip of the iceberg, they missed the mass of evidence that lay beneath the surface.

"One cannot be certain, because packets of heat in the atmosphere do not come conveniently labelled 'the contribution of anthropogenic warming,' " Dr. Wingham elaborated, but the evidence is not "favourable to the notion we are seeing the results of global warming".

Last summer, Dr. Wingham and three colleagues published an article in the journal of the Royal Society that casts further doubt on the notion that global warming is adversely affecting Antarctica. By studying satellite data from 1992 to 2003 that surveyed 85% of the East Antarctic ice sheet and 51% of the West Antarctic ice sheet (72% of the ice sheet covering the entire land mass), they discovered that the Antarctic ice sheet is growing at the rate of 5 millimetres per year (plus or minus 1 mm per year). That makes Antarctica a sink, not a source, of ocean water. According to their best estimates, Antarctica will "lower [authors' italics] global sea levels by 0.08 mm" per year.

If these findings are validated in future by CryoSat-2 and other developments that are able to assess the 28% of Antarctica not yet surveyed, the low-lying areas of the world will have weathered the worst of the global warming predictions: The populations of these areas -- in Bangladesh, in the Maldives, and elsewhere -- will have found that, if anything, they can look forward to a future with more nutrient-rich seacoast, not less.

#### CV OF A DENIER:

Duncan Wingham was educated at Leeds and Bath Universities where he gained a B.Sc. and PhD. in Physics. He was appointed to a chair in the Department of Space and Climate Physics in 1996, and to head of the Department of Earth Sciences in October, 2005. Prof. Wingham is a member of the National Environmental Research Council's Science and Technology Board and Earth Observation Experts Group. He is a director of the NERC Centre for Polar Observation & Modelling and principal scientist of the European Space Agency CryoSat Satellite Mission, the first ESA Earth Sciences satellite selected through open, scientific competition.

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