The Wilkins Ice Shelf Con Job

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On 25 March the US National Snow and Ice Data Center (NSIDC) and the British Antarctic Survey (BAS) jointly published a press statement declaring that the Wilkins Ice Shelf "*has begun to collapse because of rapid climate change in a fast-warming region of Antarctica*."

I've looked at relevant public data and I'm undecided whether this statement was a gross exaggeration, an inept interpretation of the evidence or borderline fraud, because I can see nothing about the collapse to indicate that it was anything but a natural event.

Firstly, there were no other reports of recent collapses in this part of the Antarctic during what the end of the (southern) summer melt period. If climate was the major cause then surely we would have seen other instances of ice shelf disintegration, shelves such as the nearby King George IV shelf or the several shelves along the Bellinghausen Sea just 500km to the west.

Secondly and more importantly, there is nothing in the observational data to suggest a dramatic recent change in climatic conditions.

The NSIDC/BAS press statement, grandly titled "Antarctic Ice Shelf Disintegration Underscores a Warming World", said "*In the past 50 years, the western Antarctic Peninsula has experienced the biggest temperature increase on Earth, rising by 0.5 degree Celsius (0.9 degree Fahrenheit) per decade.*"

By accident or design that press release omitted some very vital details about that increase, details that show the warming to have very minor effect and that the likely cause of recent temperature change is quite natural.

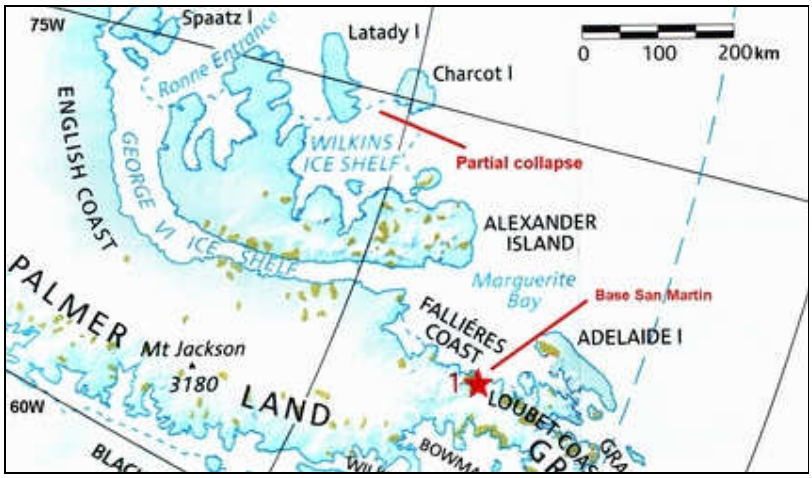


Figure 1 - Location of Ice shelf and nearest station for meteorological observations[1]

[1] Extract of larger map from International Antarctic Centre, Christchurch, New Zealand

The Wilkins Ice Shelf is located about half way along the western (i.e. Pacific) side of the Antarctic Peninsula, that tongue of land stretching towards South America and reaching latitudes comparable with central Alaska (or for European readers, the Finnish city of Oulu). The ice shelf is partly surrounded by three islands, one large island to the east and south and two smaller islands to the west (see Figure 1), and the total area of the shelf is about 13,500 square kilometres (or 5,300 sq. miles).

The nearest research station for meteorological observations is San Martin, almost 400km away, operated by Argentina. The monthly average temperature record[2] for this base is shown in Figure 2.

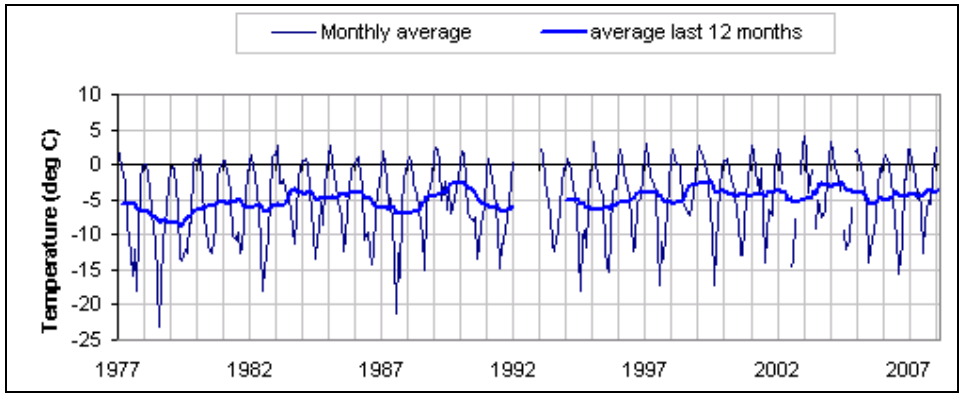


Figure 2 - Temperatures at San Martin base

The NSIDC/BAS press statement spoke of a temperature increase of 0.5℃ per decade on the Antarctic Peninsula but there's not much sign of any change at San Martin.

The range of temperatures at San Martin base in January across the period 1972 to 2008 was just 4.2℃. In contrast the July temperatures varied by as much as 19.8℃ from 1971 to 2007 (-23.1℃ in 1978 to -3.3℃ in 1989). For all intents and purposes the snow and ice at -23.1℃ will still be snow and ice at -3.3℃; it's not like a variation from -10℃ to almost +10℃.

(This pattern is not some local phenomenon because a similar situation was recorded at Rothera base some 300km further north along the Peninsula.)

These variations in winter temperatures will have a major influence on the annual averages but the cause of the variation is most is likely to be changes in wind and cloud cover (see Figure 3)[3]

Do the NSIDC and BAS seriously believe that human activity caused irregular variations in prevailing winter winds, or changes in cloud cover such as the abrupt shift in 1998?

[2] data obtained via http://data.giss.nasa.gov/gistemp/station_data/

[3] see http://mclean.ch/climate/Cloud_Antarctic_Pen.htm) for more graphs of cloud over the Antarctic Peninsula (using data from ISCCP).

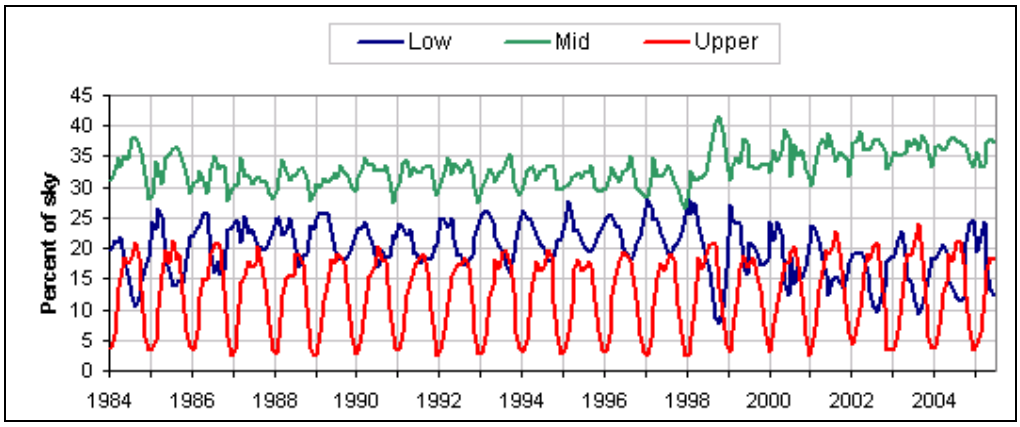


Figure 3 - Monthly cloud cover over Antarctic Peninsula (60-80S, 40-80W)

The temperature of the sea-surface to the north and west of Wilkins Ice Shelf shows a similar absence of any significant warming.

Figure 4 shows the sea surface temperature[4] in the region 67-72S and 73-80W with temperatures over land and ice areas excluded. The anomalies shown in the graph were calculated as variations from the average for the same month across the period for which data is available. (NOAA calculates its anomalies from the average from 1971 to 2000 but only provides data from 1982.)

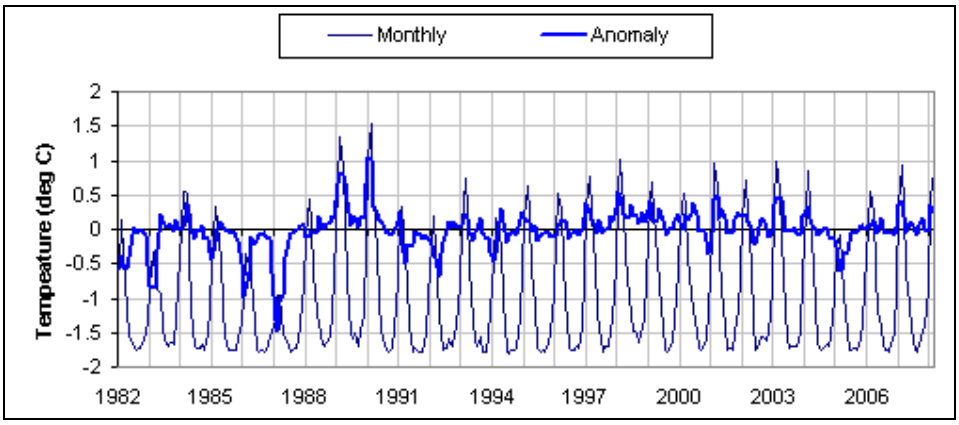


Figure 4 - Sea surface temperatures near Wilkins Ice Shelf

(Sea-water freezes at about -1.9℃ depending on sal inity, which explains why Figure 4 shows temperatures below zero.)

Figure 4 shows some abrupt spikes in sea surface temperature, particularly during the southern summer and a slightly warmer period from 1998 to 2004 but as before, variations in wind and cloud cover are likely causes of these situations.

[4] data obtained via http://www.emc.ncep.noaa.gov/research/cmb/sst_analysis/

The NSIDC photographs of the Wilkins Ice Shelf give a clear indication of the normal cycle of events and show a lot about the collapse. The press statement was accompanied by the image in figure 5.

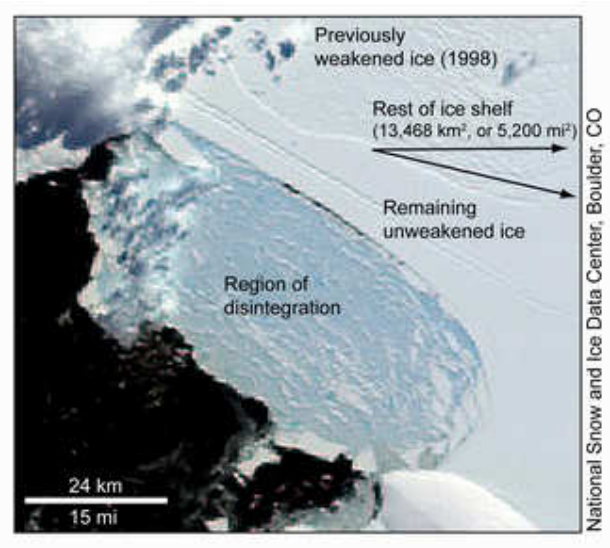


Figure 5 - NSIDC image of the collapsed edge of the ice shelf

Figure 5 is at right angles to the map in Figure 1 so the annotated image (Figure 6) from NSIDC should make the situation clearer. Charcot Island and Latady Island are easily identified in both figures 1 and 6.

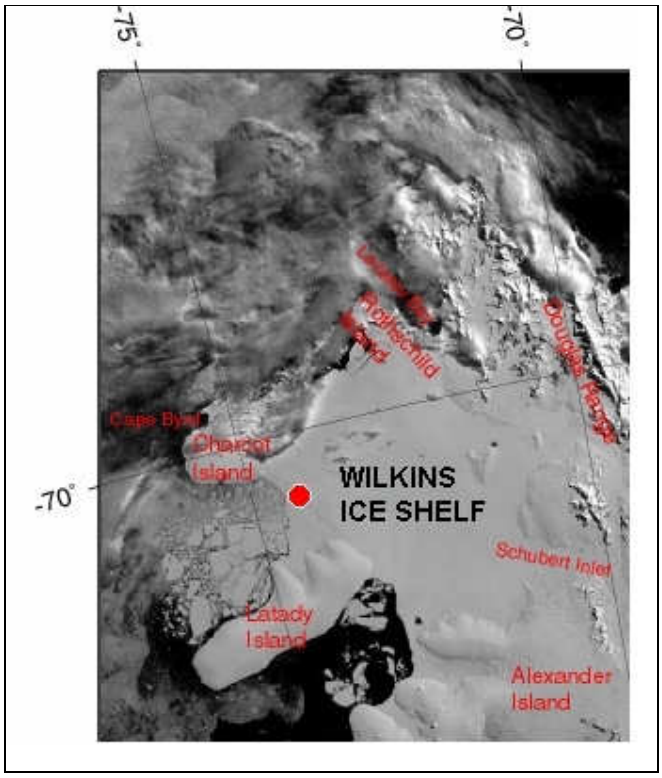


Figure 6 - Annotated photograph of Wilkins Ice Shelf. (The red dot indicates region of breakup)

The following series of satellite images[5] are in reverse chronological order. All are extracts from NSIDC images of Wilkins Ice Shelf and most have been enhanced (brightness, contrast, color reversal) to make the detail clearer.

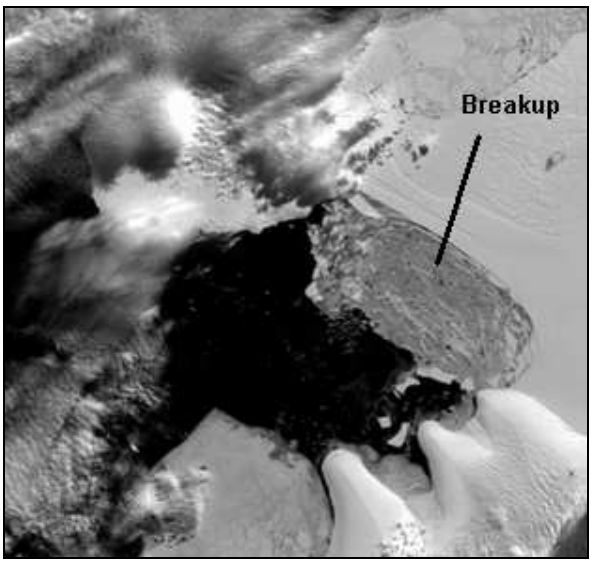


Figure 7(a) - Mar 6, 2008 - after the collapse.

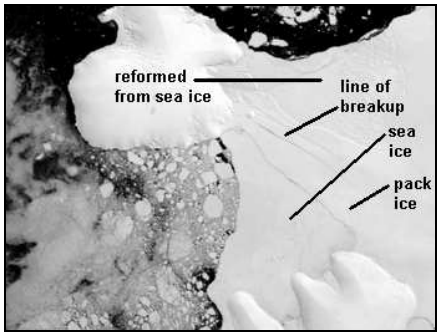


Figure 7(b) - Jan 15, 2008 - The line of breakup is clearly seen. The distinct line indicates the natural boundary of thicker pack ice and thinner sea ice. (The area indicated as being reformed appears to be part of an old collapse that sea ice has progressively filled. The ice in this region is rougher than the long-term pack ice and can be clearly seen in figure 5.)

[5] All images available via http://nsidc.org/data/iceshelves_images/wilkins.html

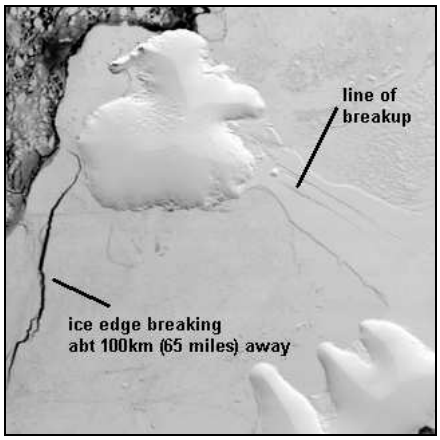
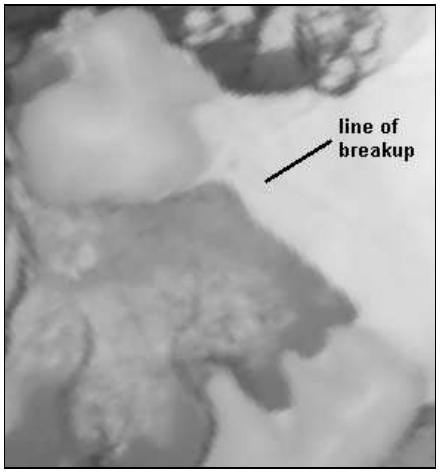
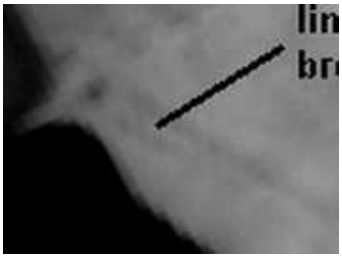


Figure 7(c) - Oct 17, 2007 - The line of breakup is forming even while the ice edge is about 100km away.





Figures 7(d) & (e) - Jul 14, 2007 - The line of breakup is barely visible on this *reverse* thermal image of the region (left) but is clear in the enhanced version (right). In these two image black indicates warmer and white colder, which is more in keeping with the above images.

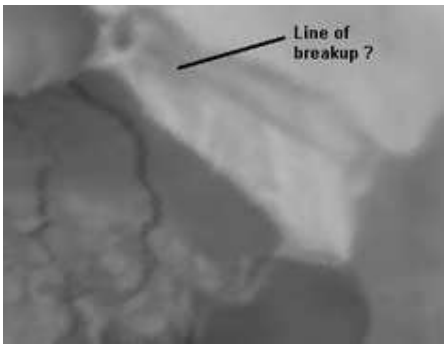


Figure 7(f) - Jun 24, 2007 - A reverse thermal image. Is this the start of the development of the fissure? And are the dark lines on the ice an indication of crevasses below the level of Antarctic winds or are they fissures from below that allow the transmission of the heat from warmer ocean waters?

Figure 7(g) - Mar 6, 2007 - Almost 12 months prior to the collapse and there is no visible indication of the line along which the break occurred.

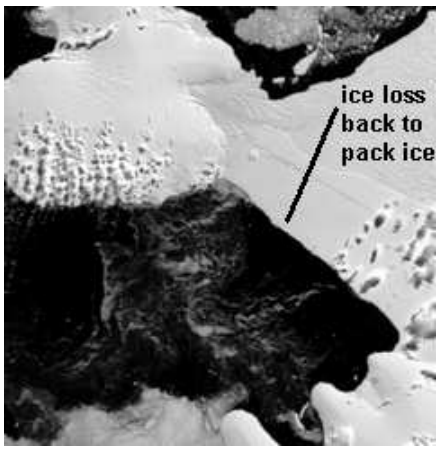


Figure 7 (h) - Feb 17, 2004 - This image from about 3 years earlier shows that the summer melt extended right up to the pack ice.

Discussion

According to the NSIDC, 405 of 13,680 square kilometres (or 160 of 5282 sq miles) of the Wilkins Ice Shelf collapsed, or around 3% of the total area of the shelf. That's a very small fraction of the total variation of ice in that region.

The claim that this breakup was an indication of "rapid climate change" cannot be sustained because contrary to reports, there has been very little climate change in that region. The shift in temperatures is dominated by short-term influences during the (southern) winter but in practical terms the difference is "extremely cold" to "not so extremely cold". The winter temperatures have not risen above zero degrees but even if they did it would be rash to assign any special meaning when winter temperatures already vary so markedly.

The line of breakup for the edge of this ice shelf appears to have started to form some time between March and July of 2007. Sea surface temperatures slipped below 0C (the ocean freezes around -1.9℃ depending on salinity) and followed the typical annual cycle. At San Martin base the average air temperature in April, as the ice was forming, but then unusually rose slightly in May. The June average temperature of -6.5℃ was followed by July's -12.5℃, which suggests a cold snap.

In other words, the NSIDC and BAS would have us believe that during typically cold weather, with air and sea temperatures in their normal ranges, the crack in the pack ice on Wilkins Ice Shelf developed due to "rapid climate change", a term which by now is short-hand for "man-made warming".

The press statement even said " *... warm air and exposure to ocean waves are causing a break-up*". On the one hand you have to wonder what warm air they are talking about when the greatest variations in temperature have taken place in mid-winter and on the other you have to wonder about these miracle ocean waves ("new and improved"?) that somehow might be having an effect on one ice shelf but not others.

The NSIDC/BAS press statement continued "*The edge of the shelf crumbled into the sky-blue pattern of exposed deep glacial ice that has become characteristic of climate-induced ice shelf break-ups such as the Larsen B in 2002.*" What risible hype! Climate-induced break-ups have doubtless taken place for millions (or billions) of years, with or without any human influence, but forces within the ice can cause also breakups, as can wave action and ocean currents. It's not as if the undersides of all ice shelves have been carefully surveyed and lines of weakness been clearly identified,

A plausible hypothesis is that wind and wave conditions during the second quarter of 2007 caused internal forces that opened an old weakness in the ice. Perhaps that weakness was caused by undercutting wave action back in 2004 and the sea ice has until now had braced the pack ice.

The hypothesis of previous bracing is supported by the press statement, which said "*Satellite images indicate that the Wilkins began its collapse on February 28; data revealed that a large iceberg, 41 by 2.5 kilometers (25.5 by 1.5 miles), fell away from the ice shelf's southwestern front, triggering a runaway disintegration of 405 square kilometers (160 square miles) of the shelf interior...* ". One collapse apparently triggered another, which is what we'd expect from bracing. This begs the question of when the Wilkins Ice Shelf last lost ice from its south-western edge and whether the recent collapse was not some kind of "catch up" of natural processes.

Conclusions

The more closely I investigated the loss of a sliver of the edge of the Wilkins Ice Shelf the more I wondered why anyone had made claims about rapid climate change when there is so little evidence to support such statements.

We are expected to believe that late in the southern autumn or early in the southern winter ... but NSIDC and BAS didn't make that timing clear, did they? ... some mysterious and unobserved warming caused a fracture in the ice shelf. Give us a break!

There are many possible causes for this loss of ice, which in itself is hardly a momentous and unknown event, but it seems that neither NSIDC nor BAS were inclined to look beyond the reasons that we all recognize as being likely to interest the news media.

If NSIDC or BAS have evidence that the ice shelf collapsed due to man-made warming then they need to produce it very quickly. Until that happens I will continue to believe that their great hype about man-made climate change is no more than a con job.

It grabbed some brief media attention but now we can go back to observing falling temperatures and a very poor correlation between temperature and carbon dioxide concentration, two factors that unfortunately for many believers threaten to undermine the claims of man-made warming.

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