

## Thinning Arctic Ice; More Al Gore Aided and Abetted Misinformation?

- by Prof Tim Ball copied to WeatherAction site as WANews13No11 to help the Arctic ice debate and as reference for information at <http://bit.ly/10kAvgn>

Al Gore did more to bring melting Arctic ice to global attention and concern than anyone. Polar bears became victims and poster animals for destructive human production of CO<sub>2</sub>. He's done more than most in creating false ideas and images for his political and economic agenda.

When asked what's wrong with global warming people usually hesitate for some time, then say glaciers will melt and sea level will rise. That's probably why Gore made it a major part of his movie. To add emotion to fear the demise of polar bears was threatened. People were easily fooled because few know anything about the Arctic Ocean and the ice conditions.

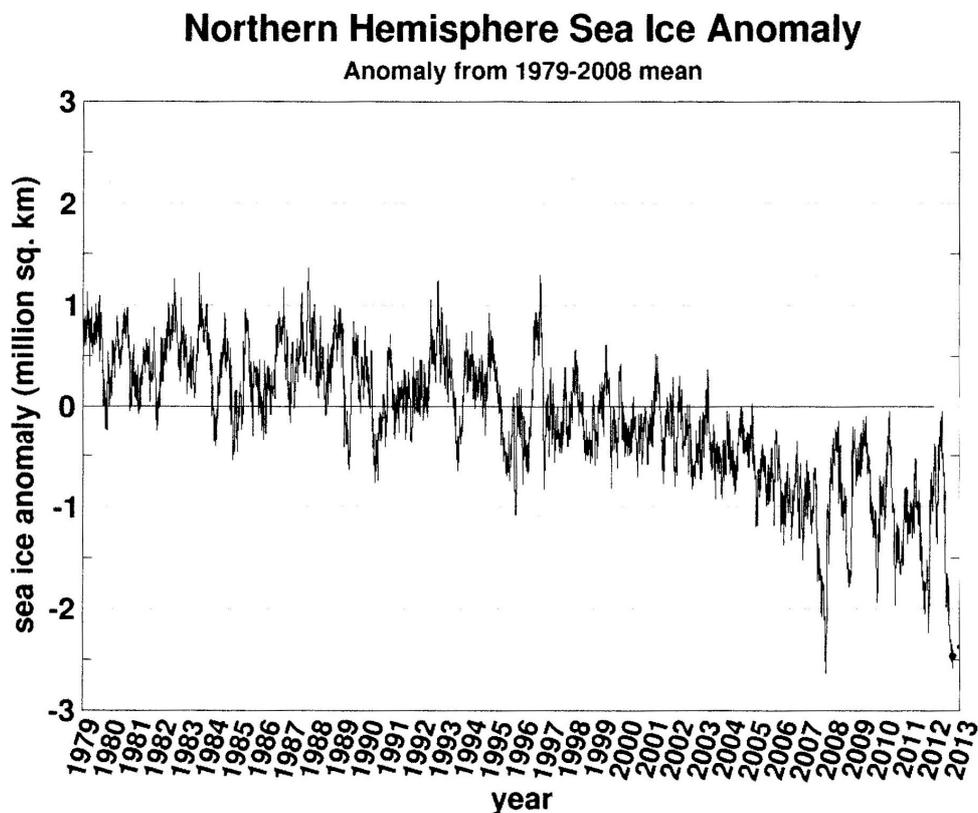
The Arctic Ocean, a thin line across the top of most world maps is over 14 million km<sup>2</sup> (compare US 9.8 million km<sup>2</sup>). Every year an area equal to the US **melts and refreezes** and based on a record that began in 1980 (satellite launch 1978 but useable data took 2 years) we presumably can determine the true amount and variations. Gore likely knew people wouldn't grasp the size of areas involved so added polar bears and the threat of thinning - "thin ice" is a well known danger sign.



Now alarmists use summer 2012 melt to bolster their failed anthropogenic global warming (AGW) hypothesis. As usual information is selective, limited and mostly wrong. Only the lowest area estimate was reported when the range from different agencies was over 1 million km<sup>2</sup> or 25 percent. Again thinning was added for increased emphasis. They claimed air temperatures were higher, but it depends on what sector; [Alaska](#) and the [Bering Sea](#) had record winds, ice and cold. Even the [Arctic Climate Impact Assessment](#) (ACIA), the primary source of information for the Intergovernmental Panel on Climate Change (IPCC) said a [four sector](#) approach was necessary.

But which ice is thinner this year and why? Is it the 10 million km<sup>2</sup> of new ice formed every year or the old or semi-permanent pack ice? What determines ice thickness?

The entire pack slowly rotates round the Pole driven by the polar easterlies, but location and break up are affected by wind patterns, which some already knew, but NASA finally acknowledged caused the [changes in 2007](#) and again in 2012. This resulted in greater variation of ice amounts from 2007 on as the anomaly diagram shows, although the rate of loss leveled.



Source:

(After)

<http://arctic.atmos.uiuc.edu/cryosphere/IMAGES/seaice.anomaly.arctic.png>

The original claim of thinner ice was determined by comparing two Sets of submarine derived measures. The first Set was from USS Nautilus in August 1958 to HMS Sovereign in 1976. Then in 1992, as the global warming scare was growing, more under-ice runs were obtained. It was done to provide further evidence of the AGW hypothesis. However, in both Sets they weren't measuring thickness. The scientists had no say in the data and how it was recorded. They had to take what the submariners were recording and like pilots need to know the height of the land they need to know how far down the ice extended.



Source: <http://ocean.si.edu/ocean-stories/under-arctic-ice>

The photo of the bottom of Arctic ice shows it's not level as most expect. In the study downward extending ice was called [a keel](#). *"To qualify as a keel, an ice draft must be at least twice as deep as the local minimum draft measured from an the undeformed (sic) ice, it must be the deepest draft among all local drafts, and it must be deeper than 5.0 m."* They concluded, *"Several errors can occur because of the limitations of the data, collection hardware, and methods selected to do the processing. Studies of the magnitude of errors in data gathered by upward-looking sonar systems indicate a 5% cumulative error and an absolute error of 0.3 to 0.5m."*

These are only part of the problem;

*“A substantial effort was spent filtering and attempting to recover useful information from these data sets. The data had frequent 'dropouts' or sections of missing data. Additionally, the speed information which was critical for determining distance was often corrupted. Obvious errors were removed but questionable data remained which could effect the results.”*

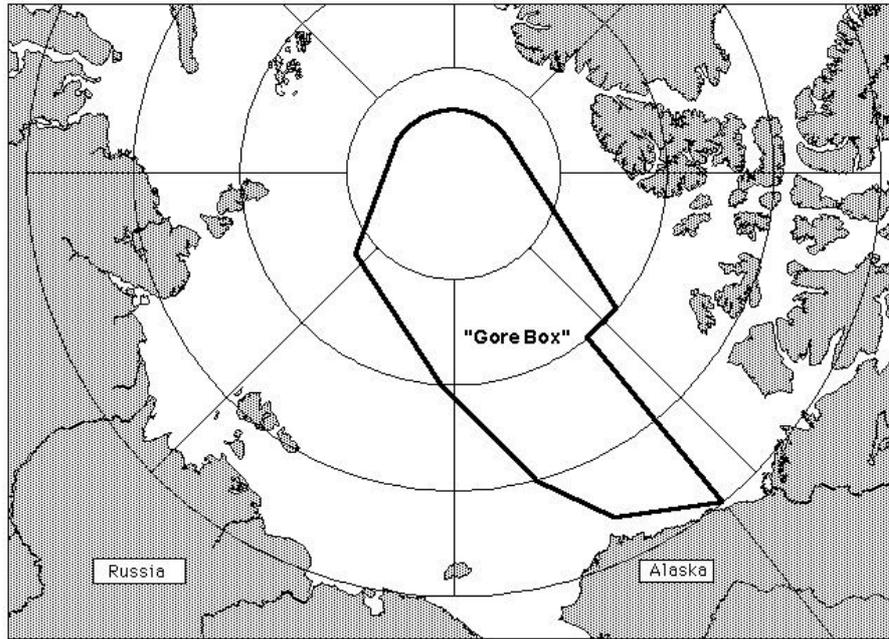
But what do they conclude?

*"In summary, ice draft in the 1990s is over a meter thinner than two to four decades earlier. The mean draft has decreased from over 3 meters to under 2 meters".* It's approximately a 1 meter change, but the error is 0.5 meter.

However, they're not measuring ice thickness but ice draft, the amount of ice below the water line. This varies with snow load, which is reportedly higher because of the warmer open water area in 2012. Other problems include that the first Set was done in the cold period from 1940 to 1975 the second in the warmer period of the 1990s. Measurements were taken in different months, in different areas, with different equipment, one with narrow and the other wide beam sonar. But how did they get the second Set of data when, because of Cold War activities, especially Soviet submarines tracking under the ice, data gathered by US submarines was top secret and inaccessible?

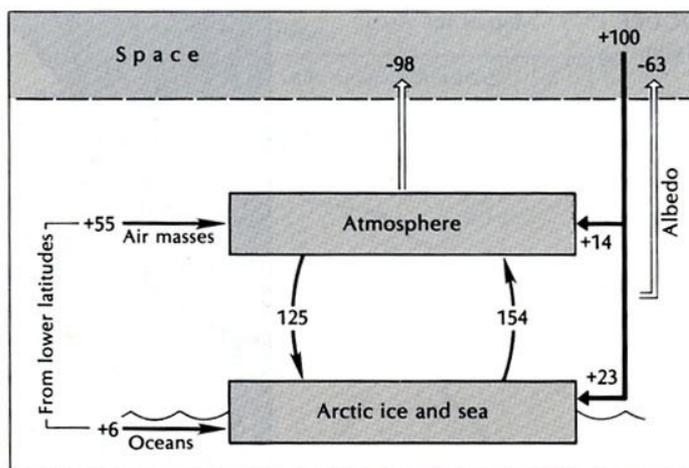
The key was Senator Al Gore, a powerful politician totally committed to the global warming scam since he arranged NASA GISS director James Hansen's appearance before Congress in 1988. By 1992 he was Chair of the House Committee on Science and Technology responsible for NASA and apparently with authority to create another deceptive piece in the global warming puzzle.

In 1992 the US Navy (USN) approved the boundaries of an area within which environmental data from Arctic submarine exercises could be released. It was called the “Gore Box” by the USN, so there is little doubt of the origin.



[The Gore Box](#)

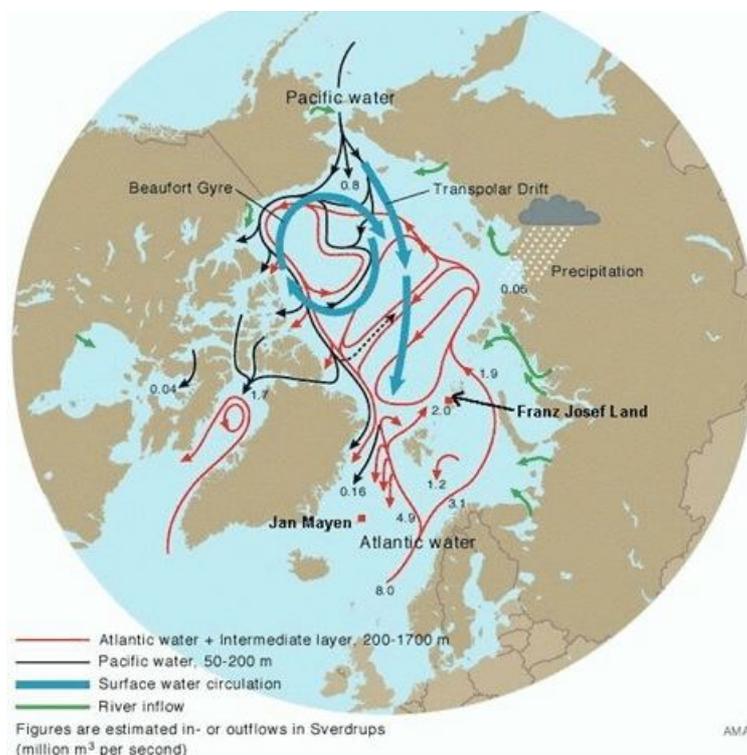
Water temperature is more important than air temperature in determining ice formation and thickness, but it's also a factor in determining the overlying air temperature. Arctic air receives heat energy passing through the ice from the water that never drops below  $-1.6^{\circ}\text{C}$ , as illustrated in the approximate energy budget schematic.



Source: Oliver and Hidore, *Climatology: An Introduction* (1984).

Melt on the underside of the ice mostly determines thickness and varies with water temperature. This is transported into the Arctic Basin primarily

by the North Atlantic Drift with an estimated 8 Sverdrups (8 million m<sup>3</sup> per second).

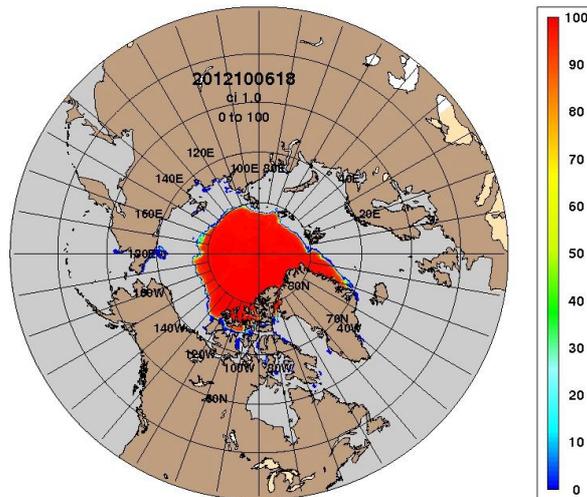


Source: *SEARCH Science Steering Committee, Draft SEARCH Science Plan, Polar Science Center, University of Washington, Seattle, 2000.*

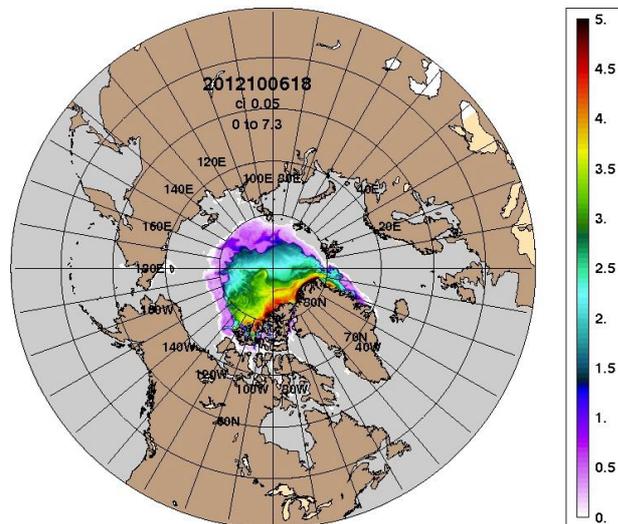
In recent years increasing meridional flow caused more north/south flow. As a result there was a greater influx of warmer water, especially in 2012 in the sector affected by the North Atlantic drift. The heavy ice blocking the Bering Straits would also have kept more of the warmer water within the Arctic Basin.

The so-called permanent pack ice for late summer 2012 shows how it is protected by the Greenland and the Canadian archipelago. The amount of thinning showed the effect of influx of warmer water.

ARCc0.08-03.5 Ice Concentration: 20121012



ARCc0.08-03.5 Ice Thickness: 20121012



The pattern and extent of ice and thinning reflects the warm water influx.

Source: <http://wattsupwiththat.com/reference-pages/sea-ice-page/>

There are similar, albeit more extreme, examples in the historic record. On November 20th, 1817 the President of the Royal Society, London, wrote to the Admiralty:

*"It will without doubt have come to your Lordship's knowledge that a considerable change of climate, inexplicable at present to us, must have taken place in the Circumpolar Regions, by which the severity of the cold that has for centuries past enclosed the seas in the high northern latitudes in an impenetrable barrier of ice has been during the last two years, greatly abated."*

This remark was made two years after the 1815 eruption of Mount Tambora and in the middle of the Dalton Minimum (1790-1830). In 1992 we organized a conference titled, *The Year Without a Summer? World Climate in 1816* at the National Museum of Natural Sciences, Ottawa to examine the eruption, its impact on circulation and resulting weather patterns. Global temperatures were reduced, but not uniformly because an extreme meridional north/south wind pattern developed. It explains the ice conditions reported by the Royal Society that parallel those from 2007 but more dramatically in 2012. There is little doubt the ice would have been thinner because it's primarily a function of wind and the influx of warm water, not the temperature. Maybe Al Gore, whose credibility is on very thin ice, can explain how polar bears survived the 1817 conditions or any of the other variations of weather and ice in the historic record.