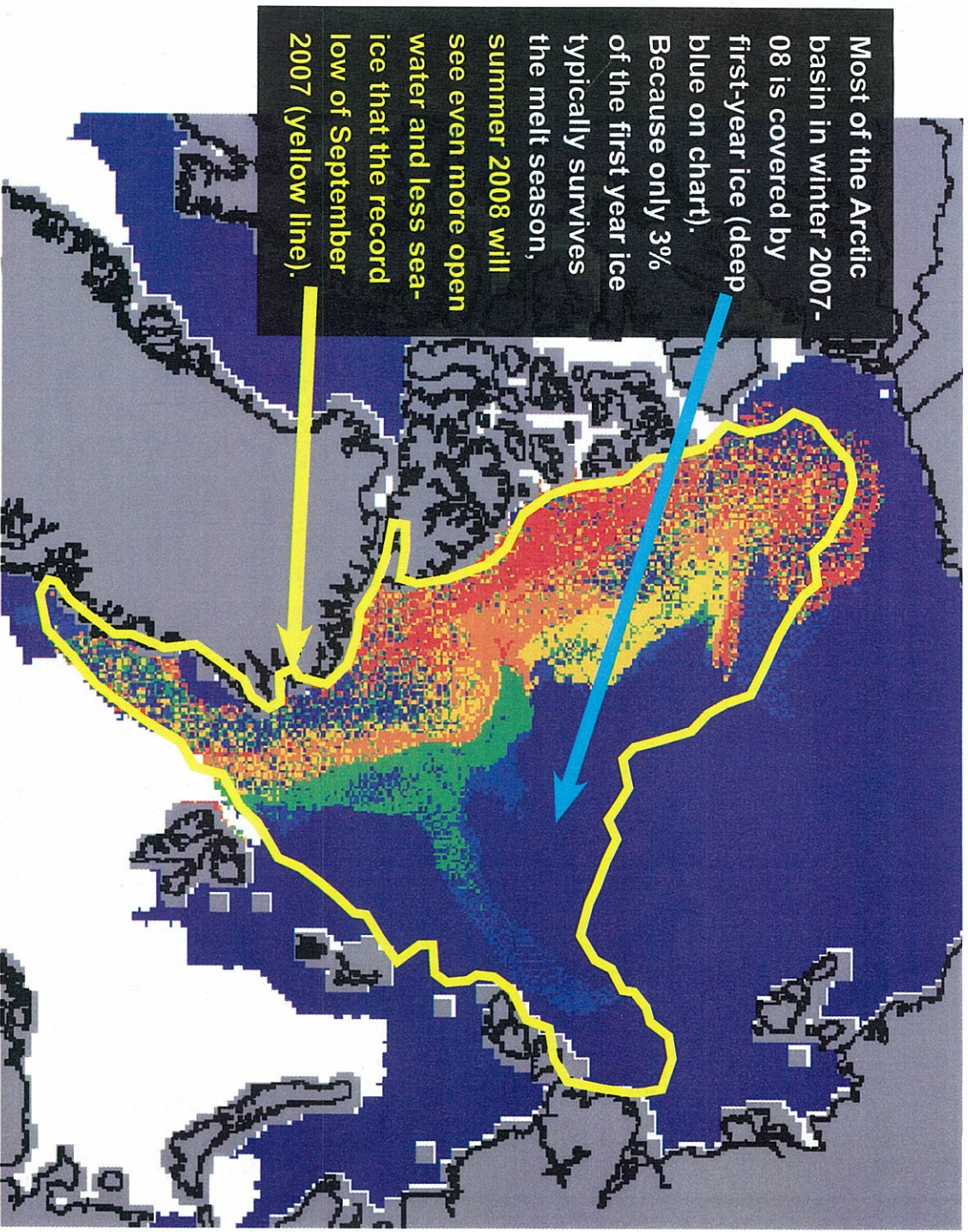


ARCTIC SEA-ICE: HOW FAST WILL IT BE LOST?



Arctic sea ice, 3rd week February 2008

- 63% of the Arctic Ocean is presently covered by younger than average ice (and only 2% is covered by older than average ice).
- Most of the Arctic Basin is covered by first-year ice, including near the North Pole.
- Only 3% of the first year ice typically survives the melt season, so summer 2008 will see even more open water than 2007, a new record low.

'The frightening models [of Arctic sea-ice loss] we didn't even dare to talk about before are now proving to be true.' According to these models, there will be no sea ice left in the summer in the Arctic Ocean somewhere between 2010 and 2015. **'And it's probably going to happen even faster than that.'**

— Louis Fortier, scientific director of the Canadian research network ArcticNet

Source: Marianne White, CanWest News Service, in 'Times Colonist' (Canada), 16 November 2007

ARCTIC – ACCELERATING SEA-ICE LOSS

EXTENT LOSS: On 16 September 2007, the Arctic sea-ice minimum fell to a record low of 4.13 million square kilometres, compared to the previous record low of 5.32 million square kilometres in 2005, representing a precipitous decline of 22 per cent in two years. The loss was '1.19 million square kilometers... roughly the size of Texas and California combined, or nearly five United Kingdoms,' according to the National Snow and Ice Data Centre at the University of Colorado. The 2007 summer extent was only half the pre-1980 average. Source: nsidc.org/news/press/2007_seaiceminimum/20070810_index.html

ICE THICKNESS: In the early 1960s the ice was 3.5 metres thick; by the late 1980s it was down to 2.5 metres, and now in 2008 large areas are only one metre thick. This thinning is accelerating, half of it occurring in the last seven years.

Source: Maslowski, W. 'Causes of changes in Arctic sea ice', AMS ESSS Seminar, 3 May 2006
Bjornes, C. 'International polar day, 21 September 2007: sea ice', www.cicero.uio.no/webnews/index_e.aspx?id=10868

ICE VOLUME: Taken together, the shrinking ice area and the declining ice thickness mean that the **total mass** of summer sea-ice has dropped to **less than twenty per cent** of the volume thirty years ago. As the summer extent shrinks, more of the reset winter ice is new.

NEW WINTER ICE WILL NOT SURVIVE FOLLOWING SUMMER: In the northern winter of 2007-08, perennial ice covers less than 30 percent of the Arctic, the balance is new (first-year) ice. **Only three per cent** of the first-year ice typically survives the following melt season. The first-year ice is in a highly vulnerable state, so the northern summer of 2008 will see even more open water.

Source: Julienne Sirove (NSIDC), 11 March 2008, personal communication; 'Researchers say Arctic sea ice still at risk despite cold winter', 18 March 2008, www.nasa.gov/topics/earth/features/seaice_conditions_feature.html

PREDICTION: The **summer ice is likely to be entirely gone in the next two to four years**. Here's what he experts say...

◆ 'The frightening models [of Arctic sea-ice loss] we didn't even dare to talk about before are now proving to be true.' According to these models, there will be no sea ice left in the summer in the Arctic Ocean somewhere between 2010 and 2015. **'A...J it's probably going to happen even faster than that.'**

— Louis Fortier, scientific director of the Canadian research network ArcticNet
Source: Marianne White, CanWest News Service, in 'Times Colonist' (Canada), 16 November 2007

◆ 'Our projection of 2013 for the removal of ice in summer is not accounting for the last two minima, in 2005 and 2007... So given that fact, you can argue that may be **our projection of 2013 is already too conservative'**

— Professor Wieslaw Maslowski, Naval Postgraduate School, California

Source: Jonathan Amos, 'Arctic summers ice-free 'by 2013'', BBC News, 12 December 2007

◆ 'The Arctic Ocean could be **nearly ice-free at the end of summer by 2012'**

— Dr Jay Zwally, glaciologist, NASA Goddard Space Flight Center

Source: Amanda Beck "Arctic's record melt", Sydney Morning Herald, 14 December 2007

◆ 'I think the tipping point for perennial sea-ice has already passed... It looks like [it] will continue to decline and **there's no hope for it to recover**' in the near period.

— Dr Josefino Comiso, senior research scientist, NASA Goddard Space Centre

Source: Mason Inman, 'Global warming 'tipping points' reached, scientist says', National Geog. News, 14 December 2007

◆ 'Because of the usual pattern of winds and currents we can expect [to] start the spring melt with only one-year ice in Eastern Arctic Ocean. This has never happened before in the period that humans have been up there. Starting the summer with only relatively thin ice means that **a summer like last year will break this up even much more than in 2007.**

— Professor Olav Orheim, University of Bergen from 1989 to 2005, Senior Adviser to the Norwegian Ministry of Environment, Executive Secretary for the International Polar Year Secretariat, Research Council of Norway private communication, 10 March 2008

◆ 'What happens there [the Arctic], matters here.. **Climate for the period of human record has depended on the ice being there.'** — Waleed Abdalati, chief ice scientist, NASA Goddard Space Flight Center.
Source: MSNBC News Services, 18 March 2008

◆ 'The Arctic is often cited as the canary in the coal mine for climate warming... and now as a sign of climate warming, **the canary has died.'** — Dr Jay Zwally, glaciologist, NASA Goddard Space Flight Center
Source: Seth Borenstein, 'Arctic sea ice gone in summer within five years?', Associated Press, 12 December 2007.