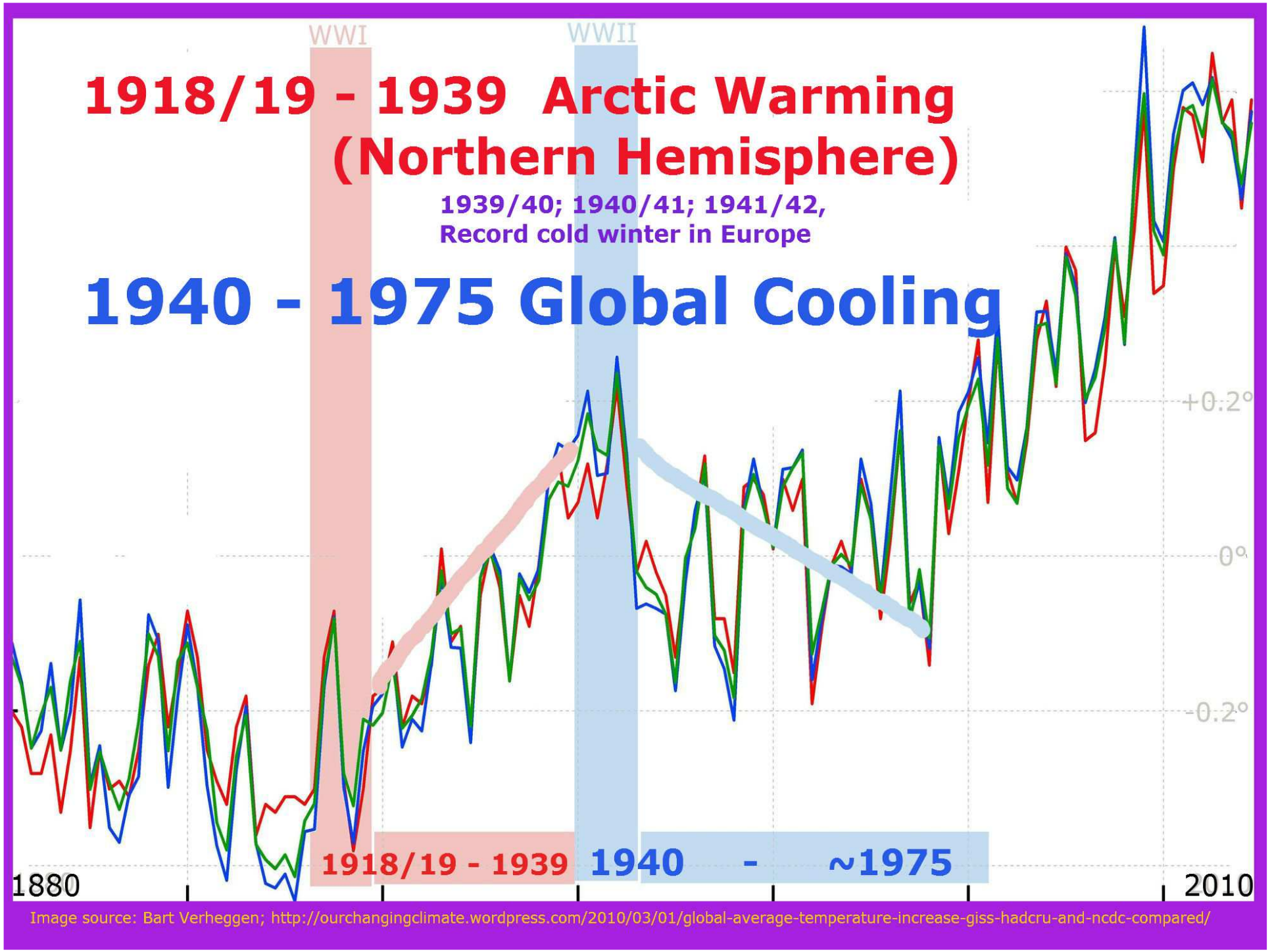
Two World Wars!
Two Climate Changes!
The Role of Naval Warfare!

By Dr. Arnd Bernaerts

October 2013

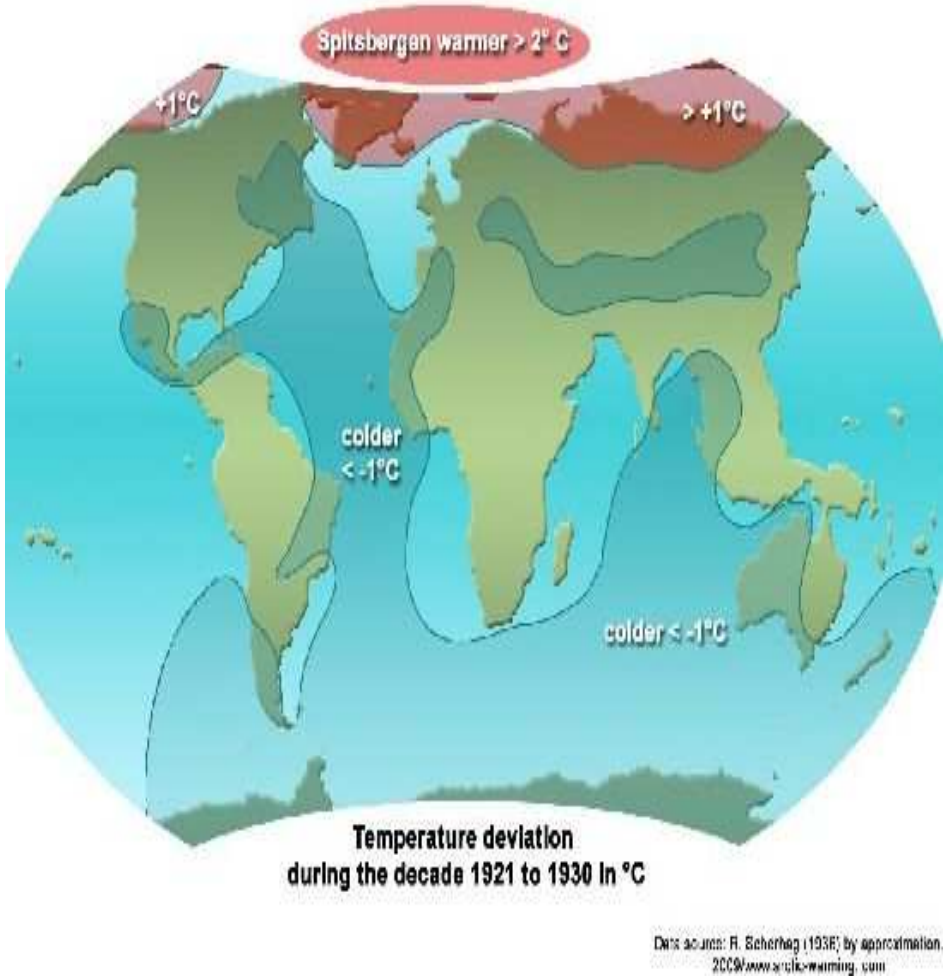
Subject to changes

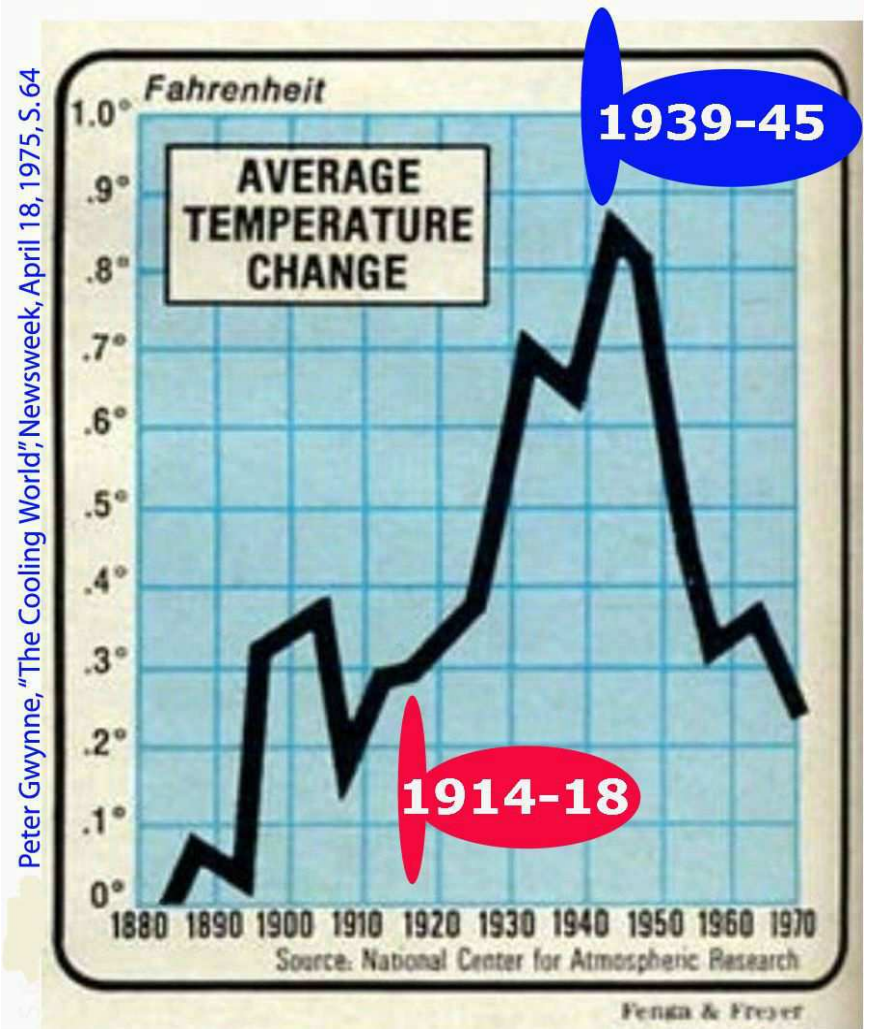
Source of images next slide


WWI
WWII
1918/19 - 1939 Arctic Warming
(Northern Hemisphere)
1939/40; 1940/41; 1941/42,
Record cold winter in Europe
1940 - 1975 Global Cooling
+0.2°
0°
-0.2°
1880
2010
1918/19 - 1939
1940 - ~1975
Image source: Bart Verheggen; http://ourchangingclimate.wordpress.com/2010/03/01/global-average-temperature-increase-giss-hadcru-and-ncdc-compared/

Focus on two time periods:

- **WWI – 1914/1918: followed by warming (1919-1939);**
- **WWII – 1939/1945: start of global cooling (1940-1975).**

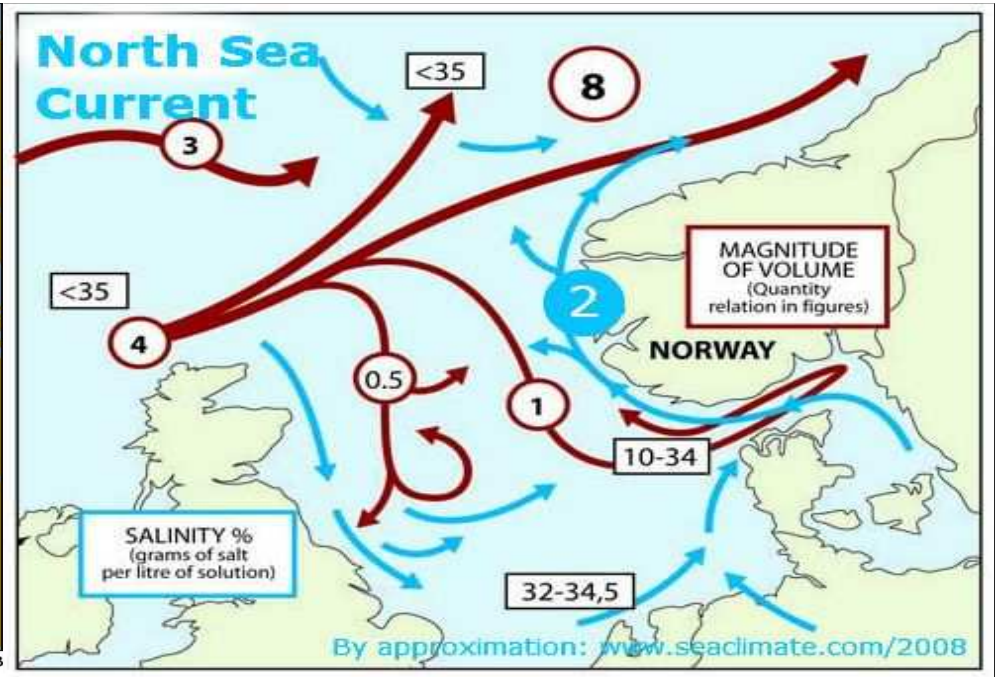


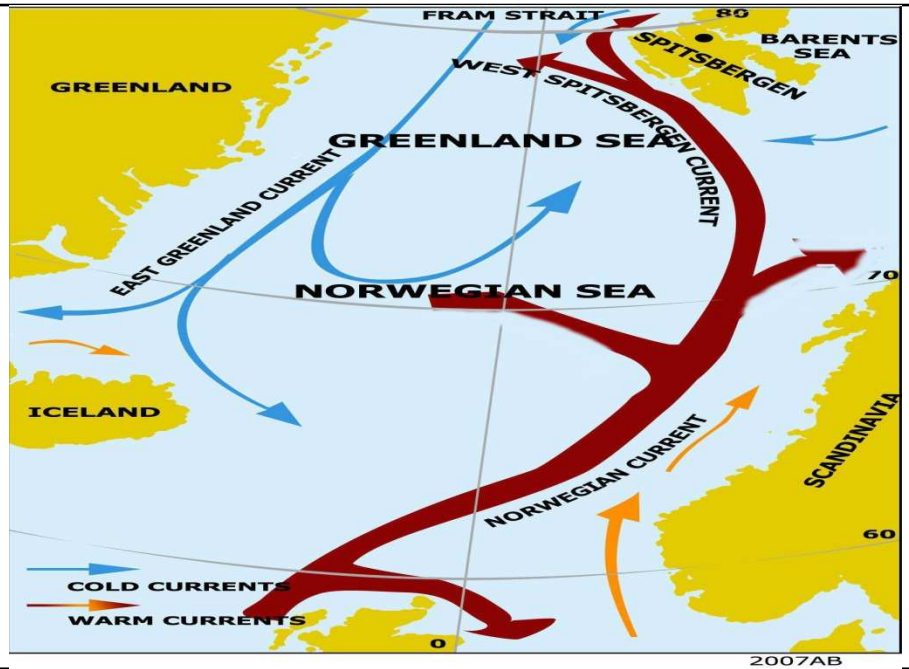


Potential relationship between naval war and sea conditions and climate!

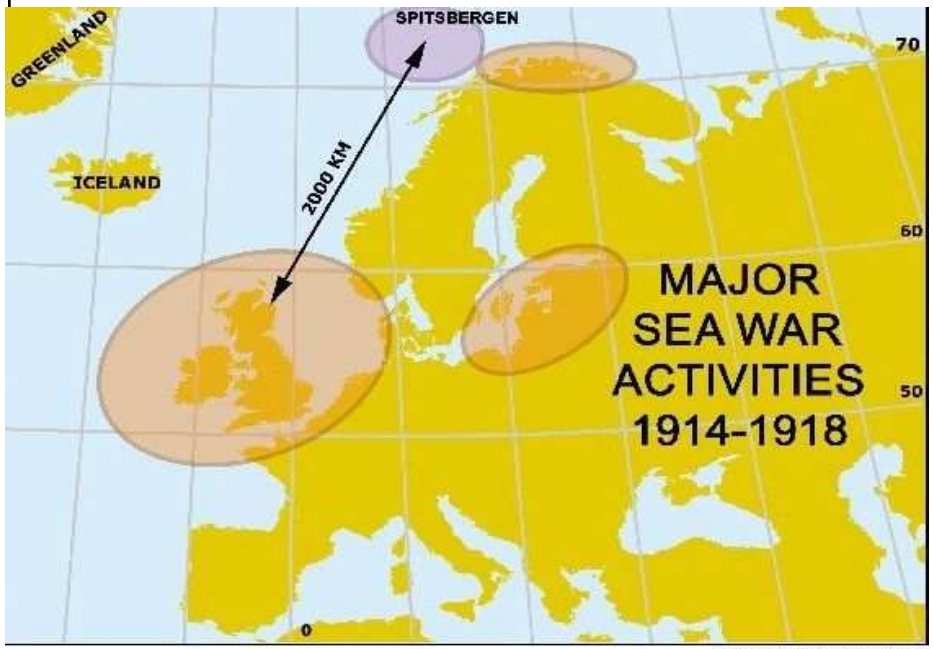
Region/Time	Causual impact		Contribution; > 20%	Extent of explanation
Arctic warming since 1918/19	__Change in water structure around Britain __ Impact at Spitzbergen & in the Arctic		90%	5 slides
Three extreme European winters 1939/40, 1940/41, 1941/42	**Loss of heat due to naval war during fall, particulary in Northsea and Baltic areas.**		100%	none
North Atlantic (1939-1945)	__Vertical water exchange (warm down, cold up) __Impact/change in temperature & salinity structure __Intrusion in ocean current system	From Florida to Spitzbergen particulary with regard to Golf Current	80%	7 slides
Nordpazifik 1942 - 1945			80%	11 slides

2007AB

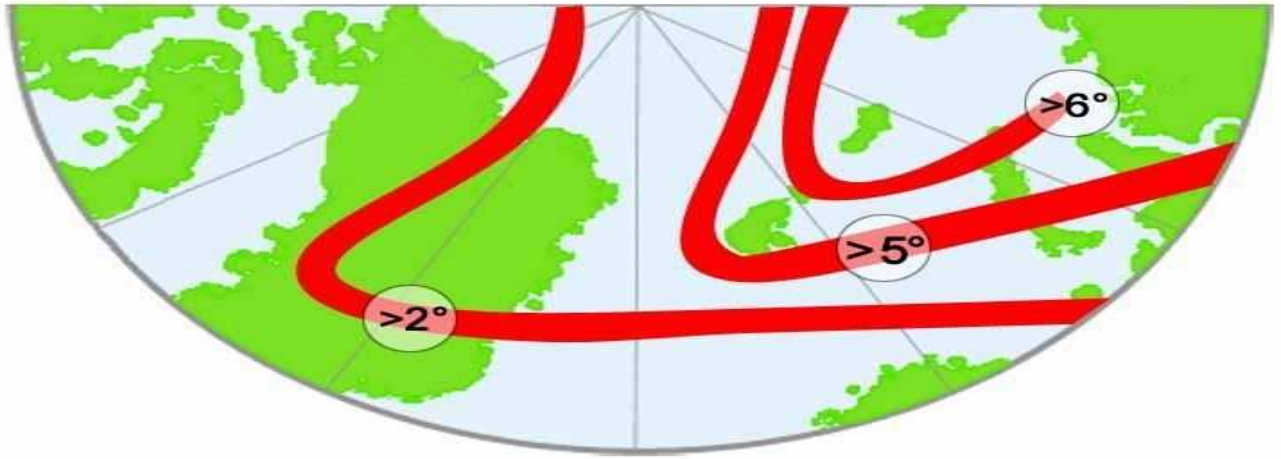




2007AB



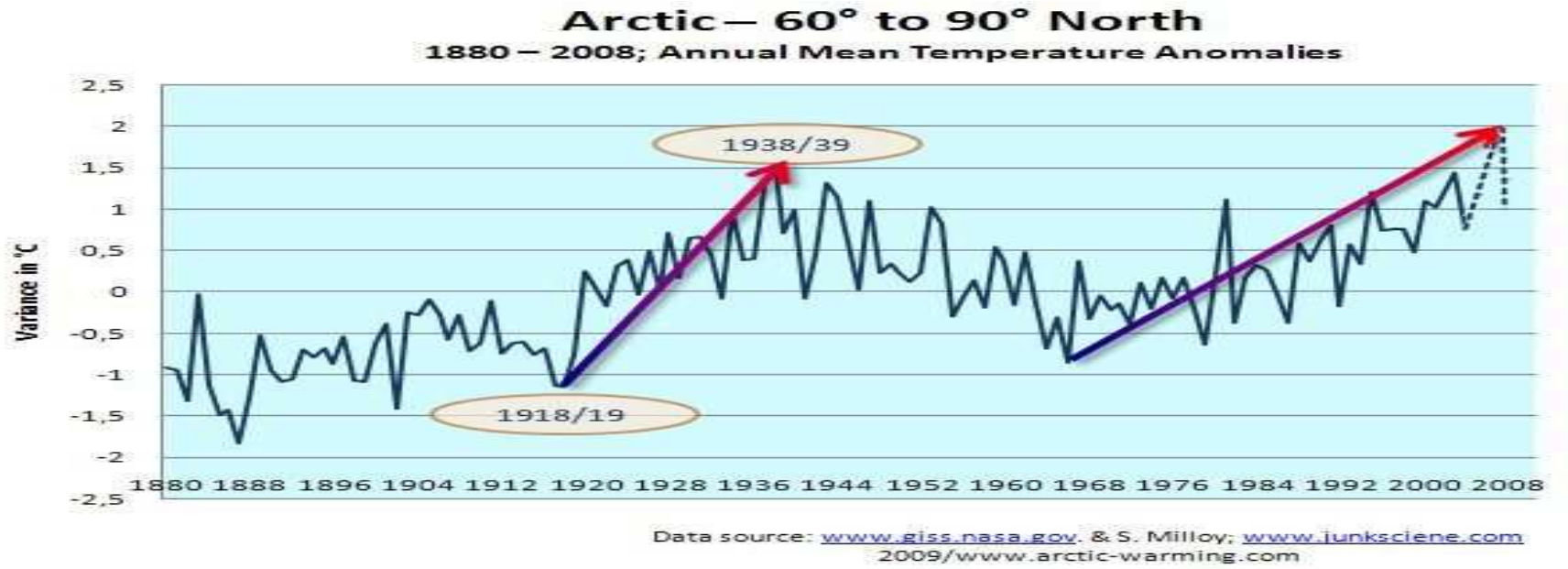
2007/www.arctic-warming.com



Winter temperature difference 1921-1930 minus 1911-1920

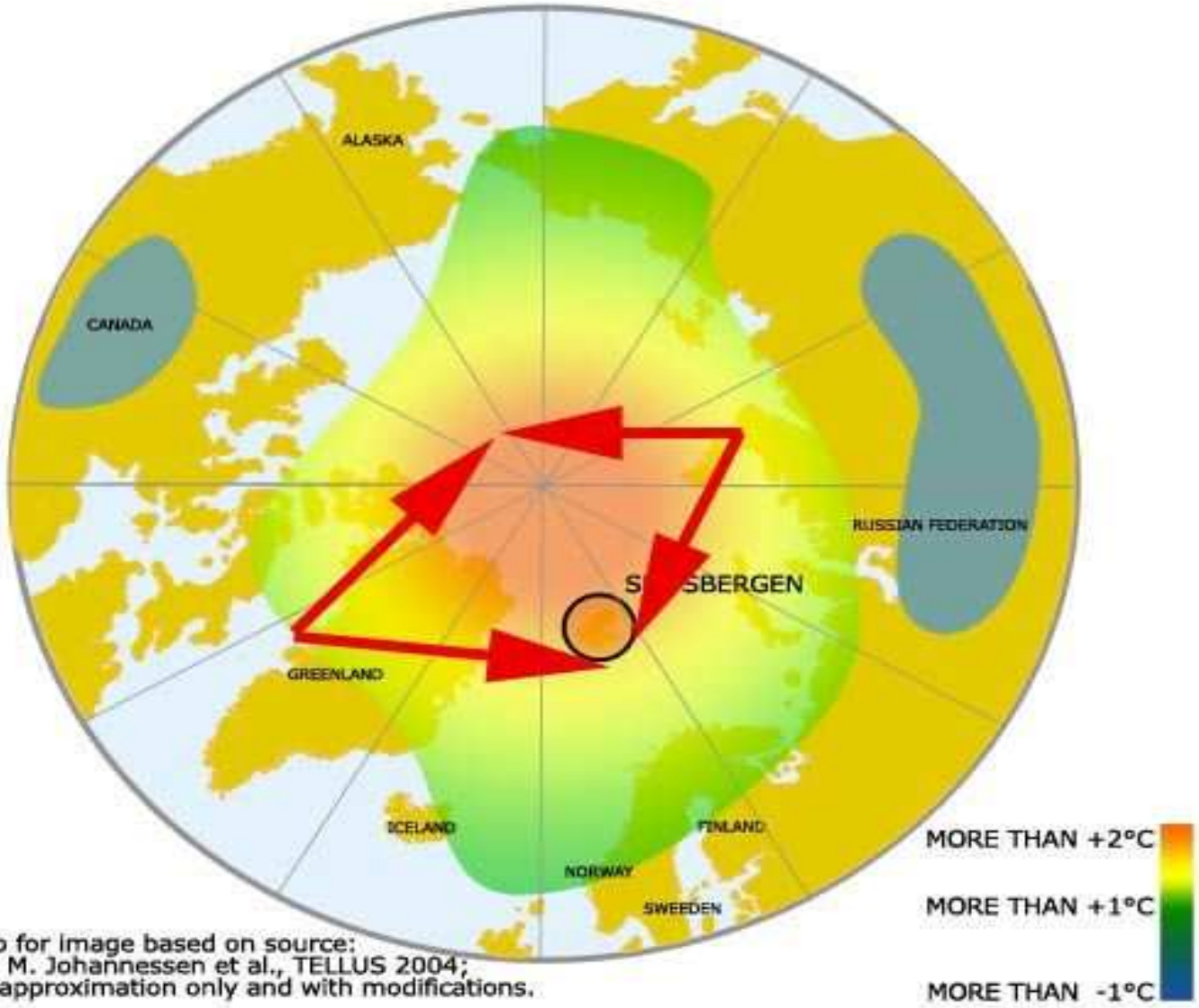
Data info source: H.H. Lamp; in: "The Arctic Ocean" (1982), Fig.7.10a.
- By approximation only - 2007AB

www.arctic-warming.com



Data source: www.giss.nasa.gov. & S. Milloy; www.junksciene.com
2009/www.arctic-warming.com

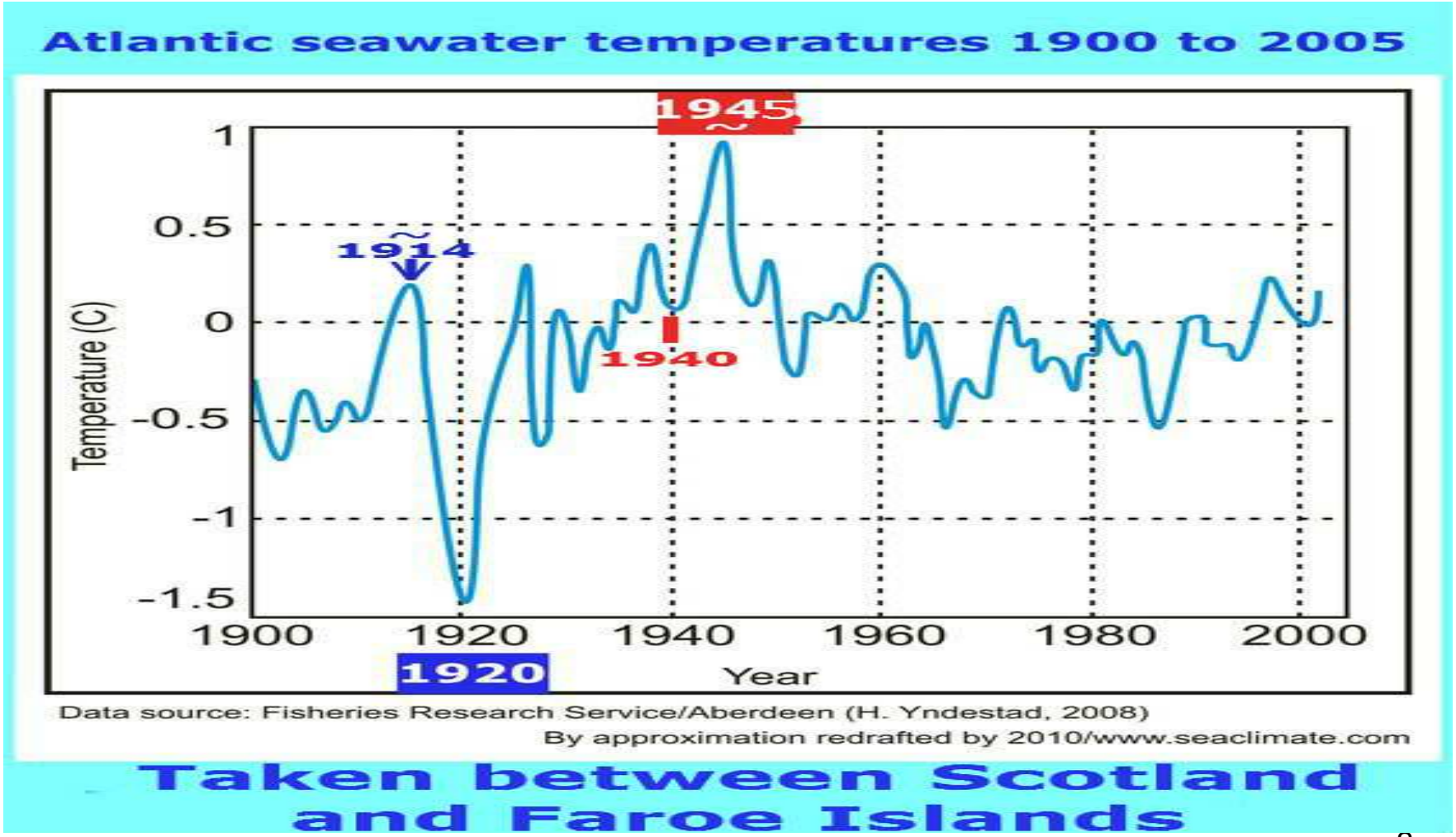
WINTER HALF-YEAR SURFACE TEMPERATURES TREND, 1920-1939



Info for image based on source:
Ola M. Johannessen et al., TELLUS 2004;
By approximation only and with modifications.

The pronounced Arctic warming over two decades (1920-1939) was restricted to an area not larger than ca. 1/3 of the whole Arctic Ocean. 2007AB

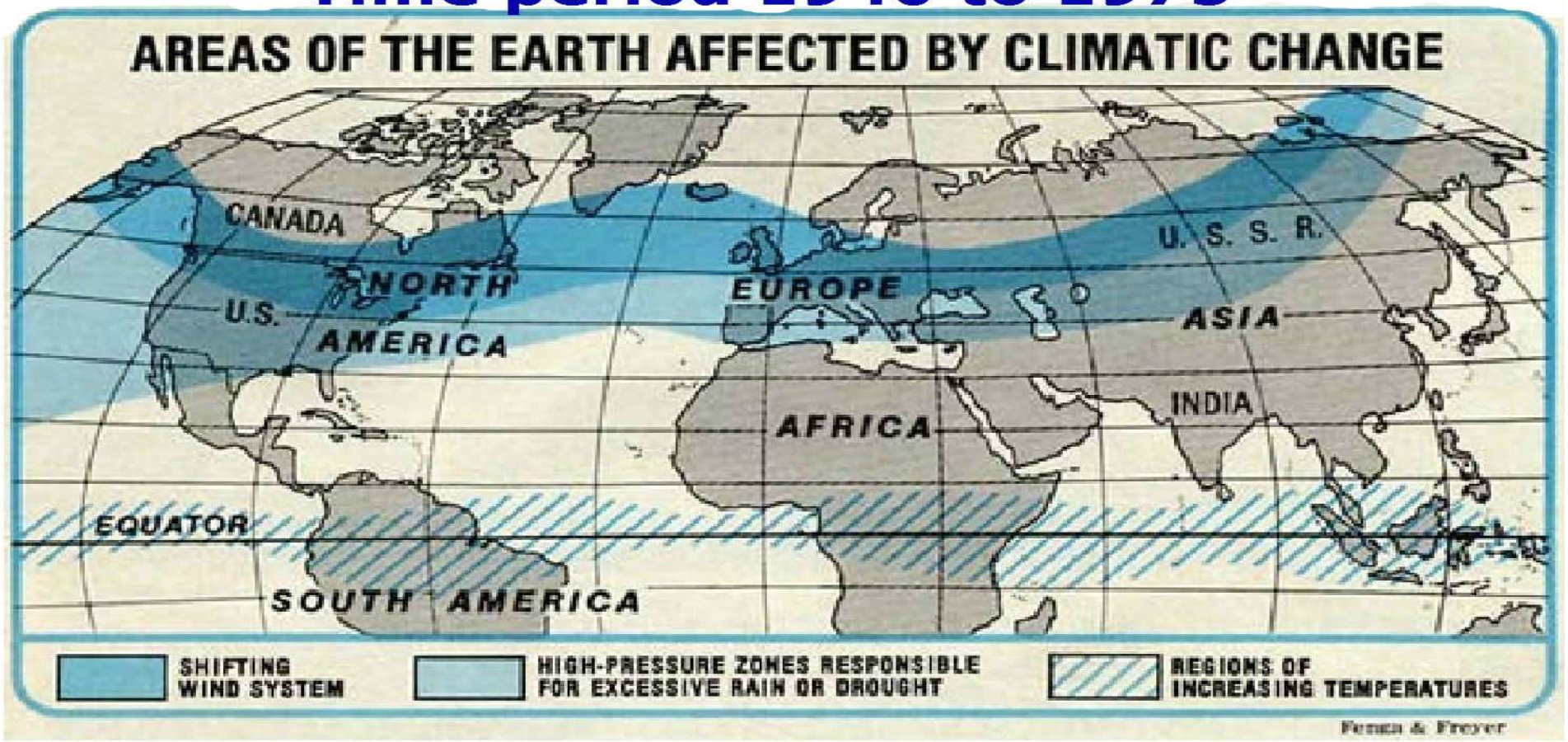
A mere freak of nature during WWI & WWII, or a matter to seriously investigate and explain?



Global Cooling 1940 to ~1975!

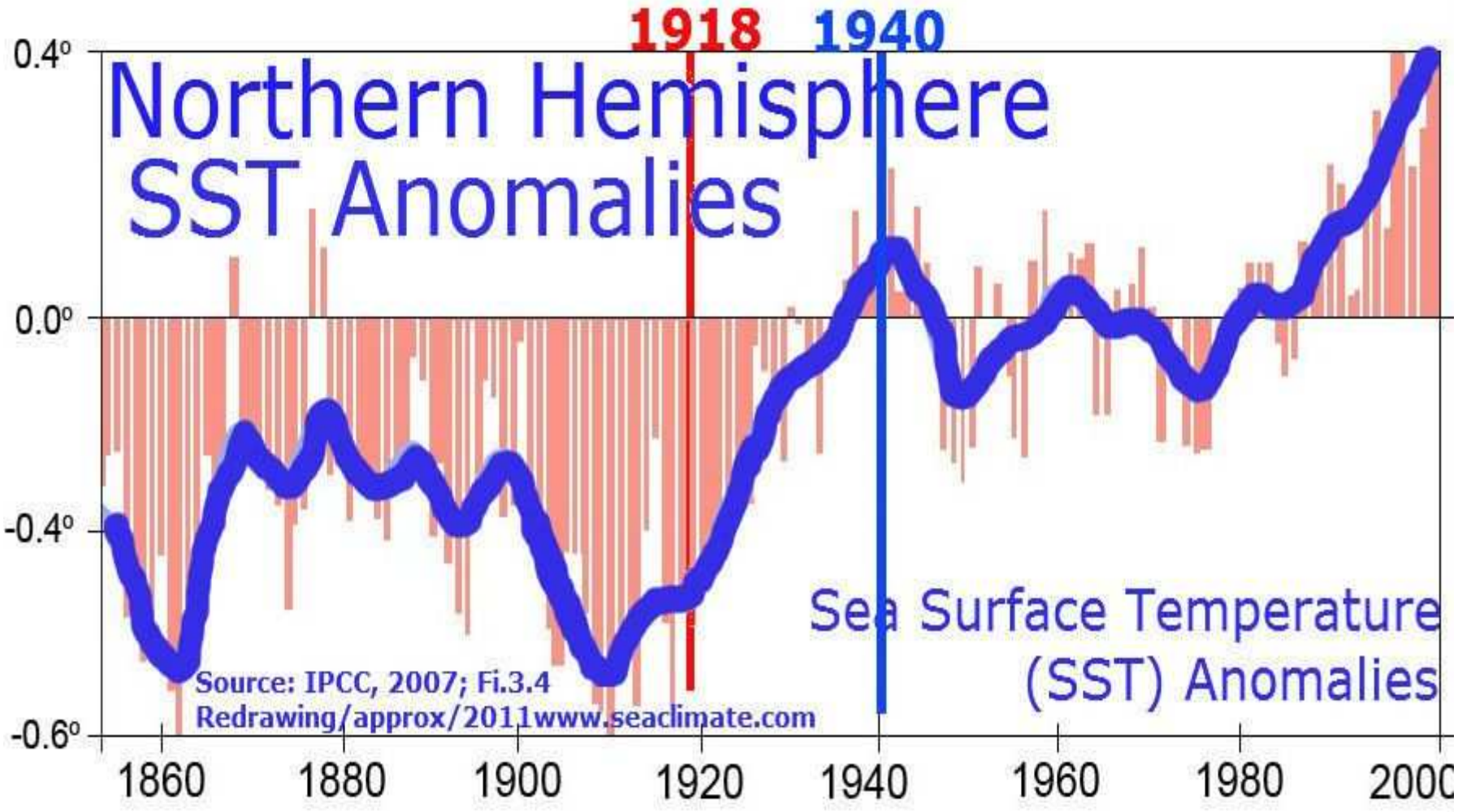
Naval war impact on Northern Hemisphere oceans.

Time period 1940 to 1975

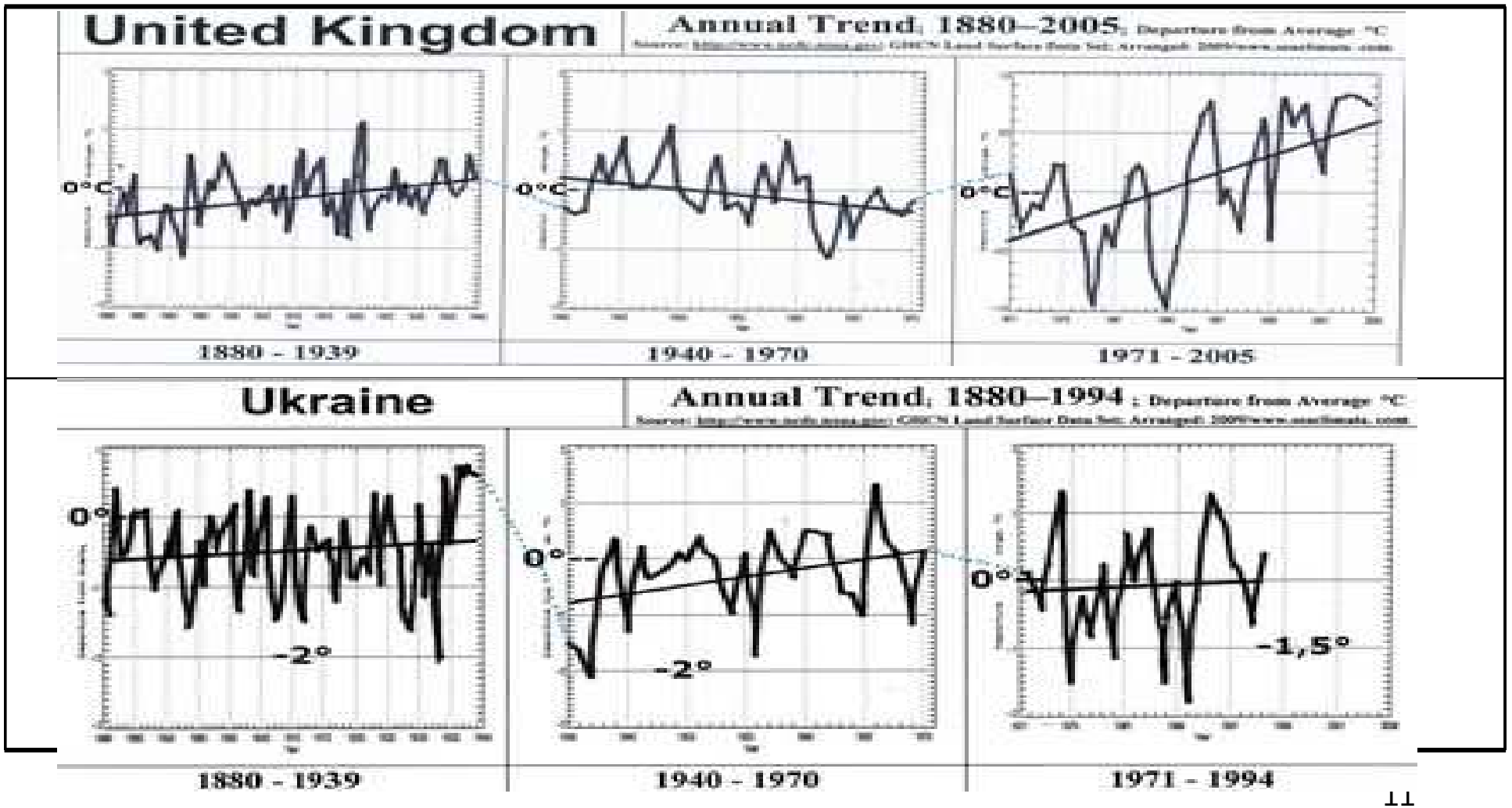


Source: Peter Gwynne, "The Cooling World", Newsweek, April 18, 1975, S. 64

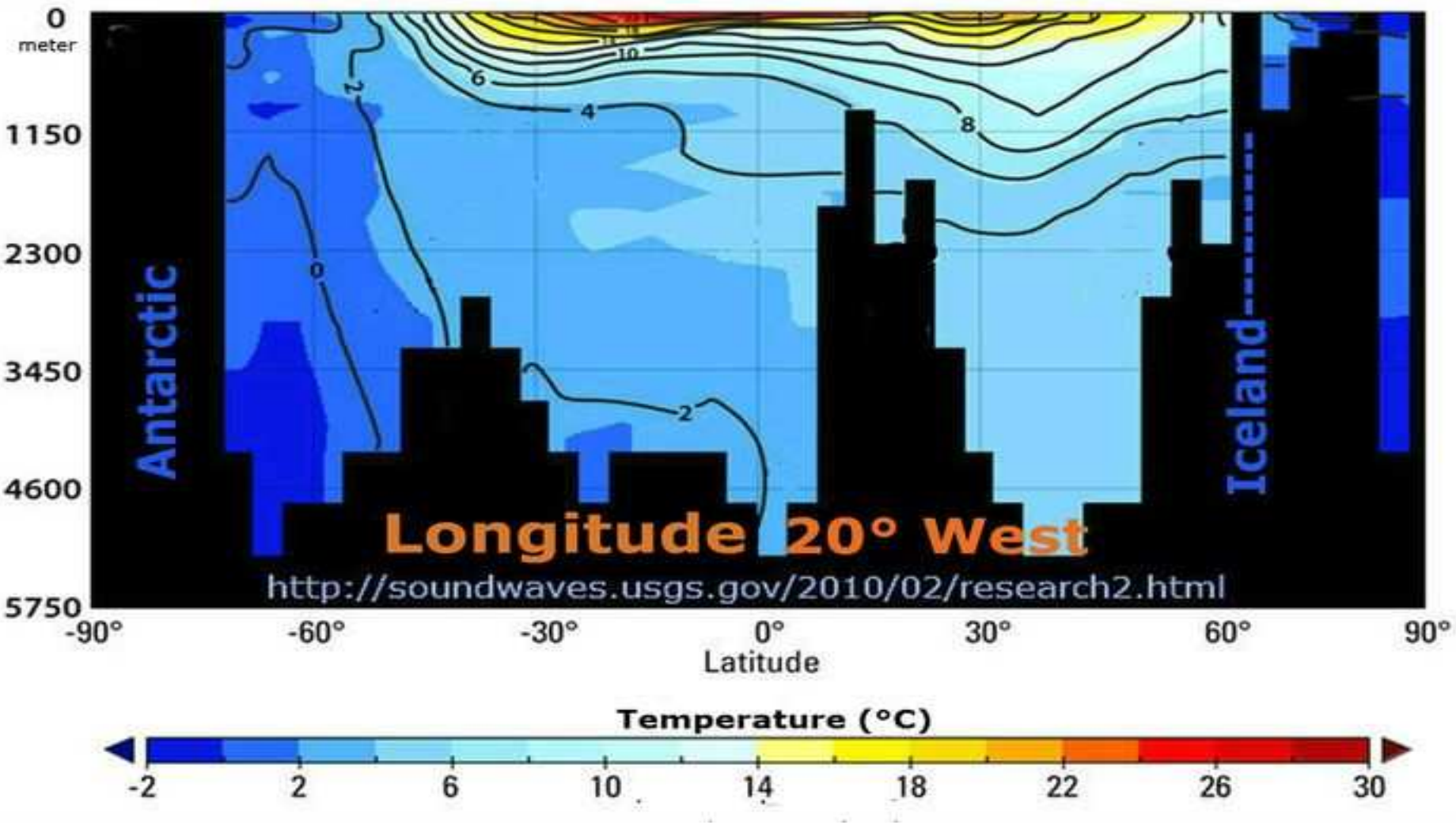
Taking SST into account the global situation is:



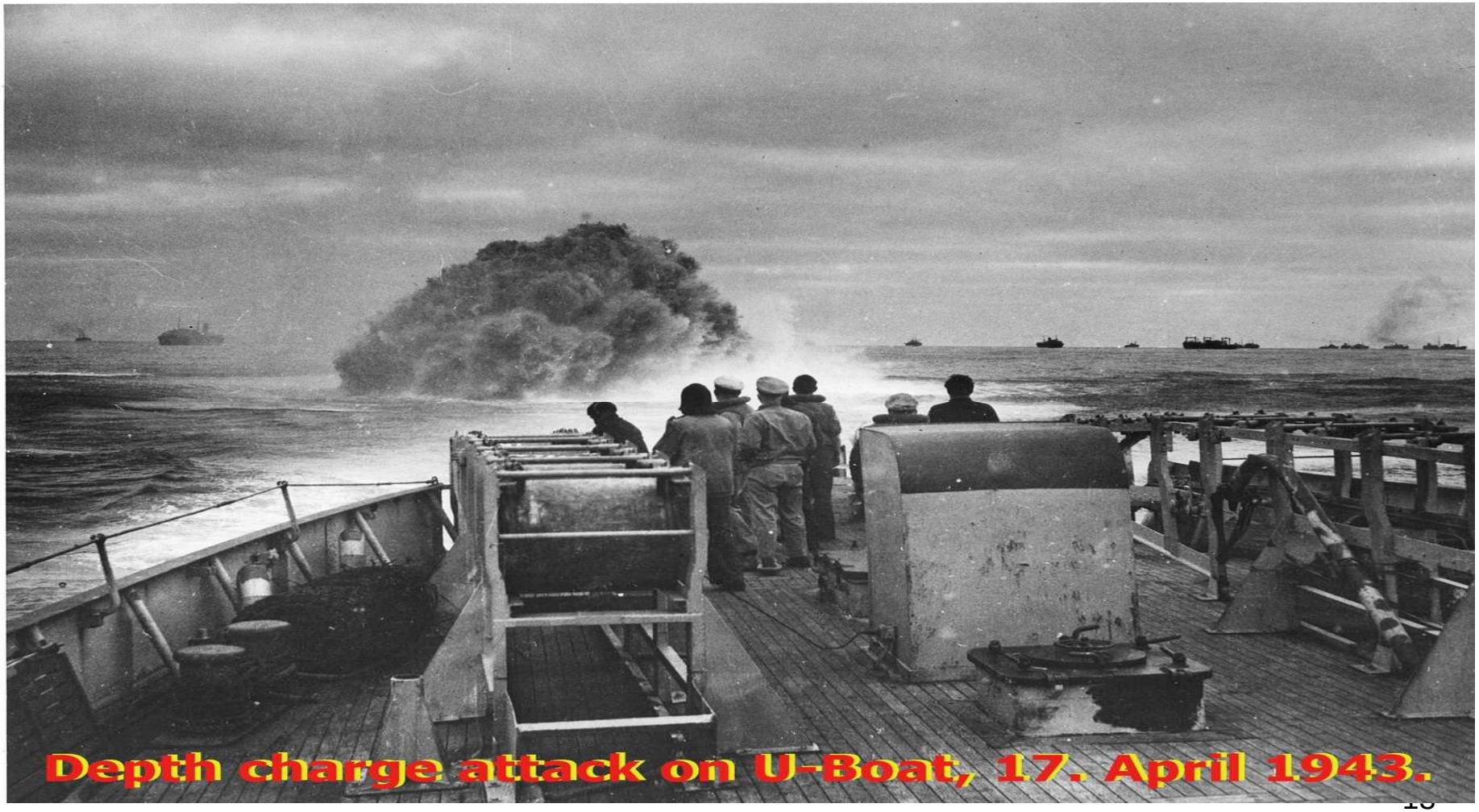
Source of cooling in Europe is the North Atlantic:
Trend example: **UK = colder**; Ukraine = warmer



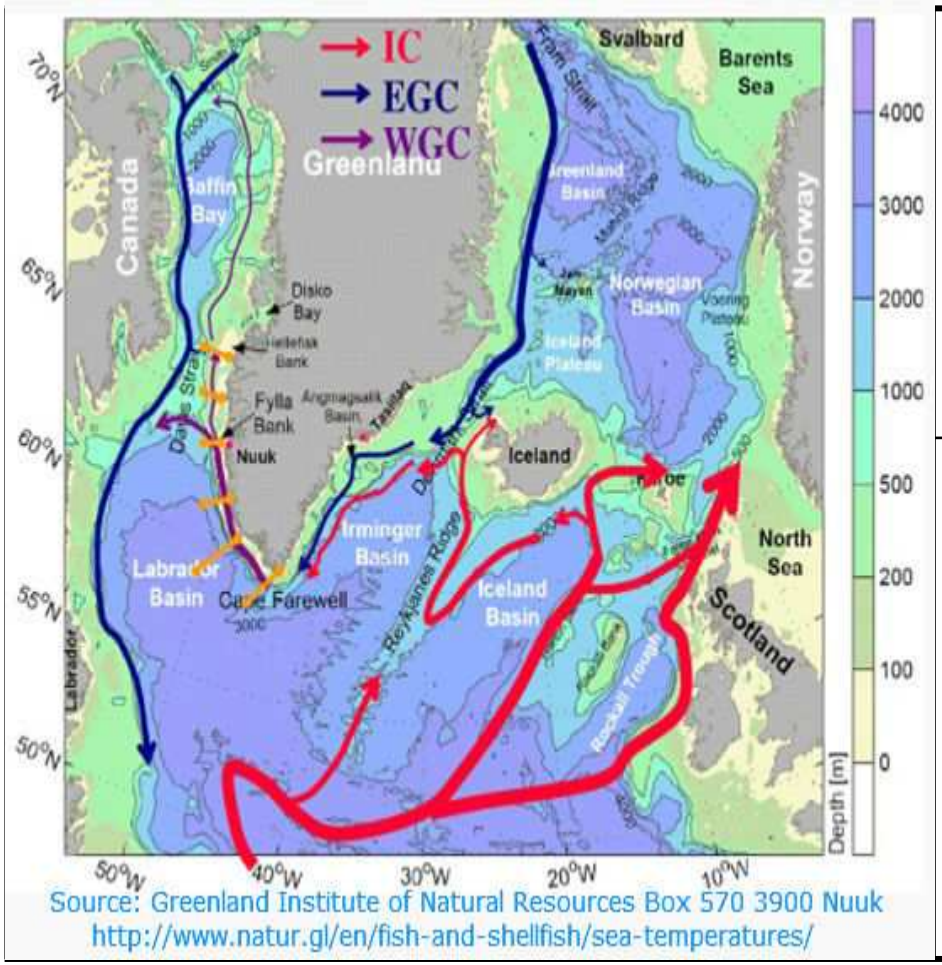
North Atlantic Profile – From Iceland southwards

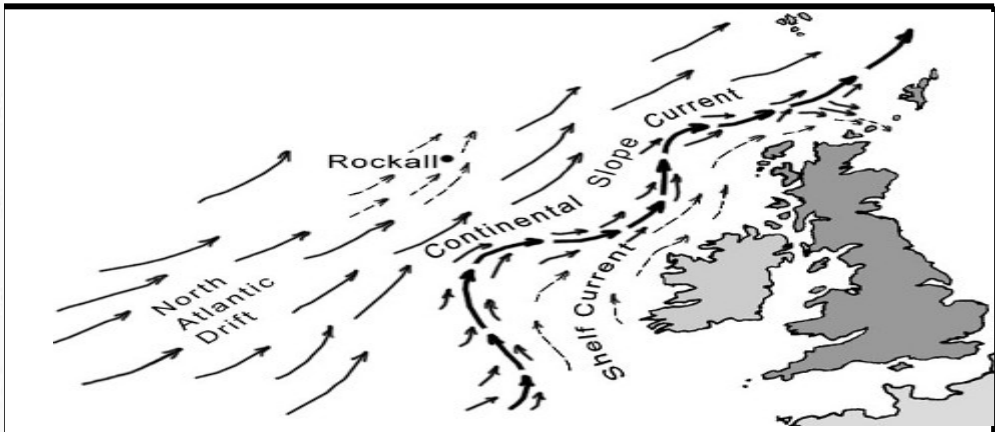


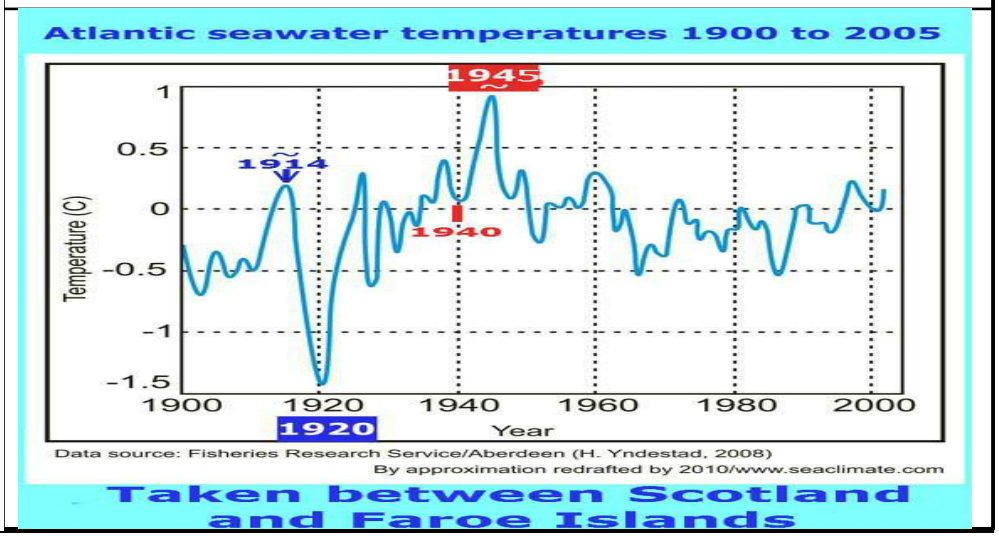
How much penetration & bombing can the ocean take without changing?



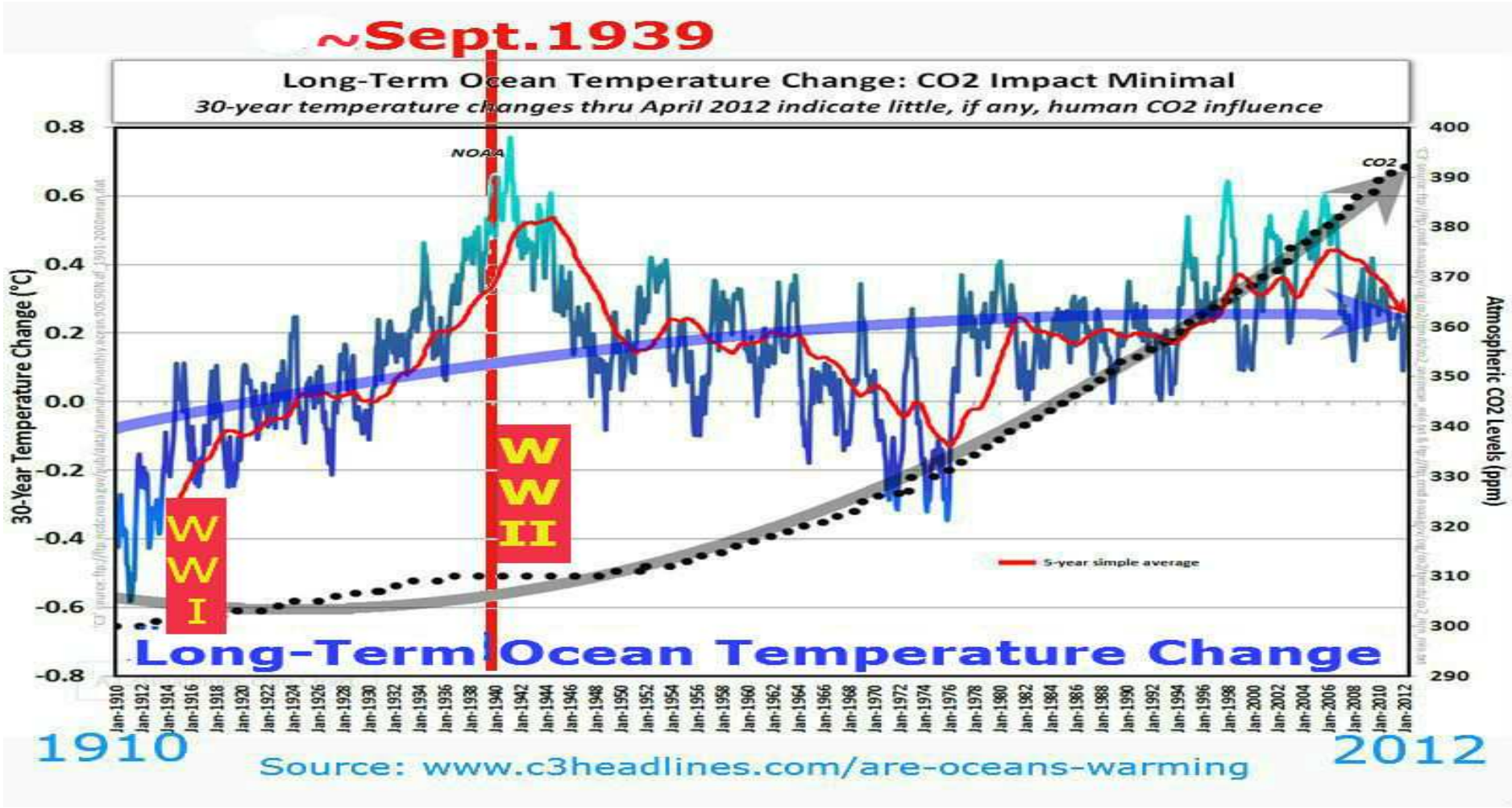
A highly complex environment will react to any intrusion!

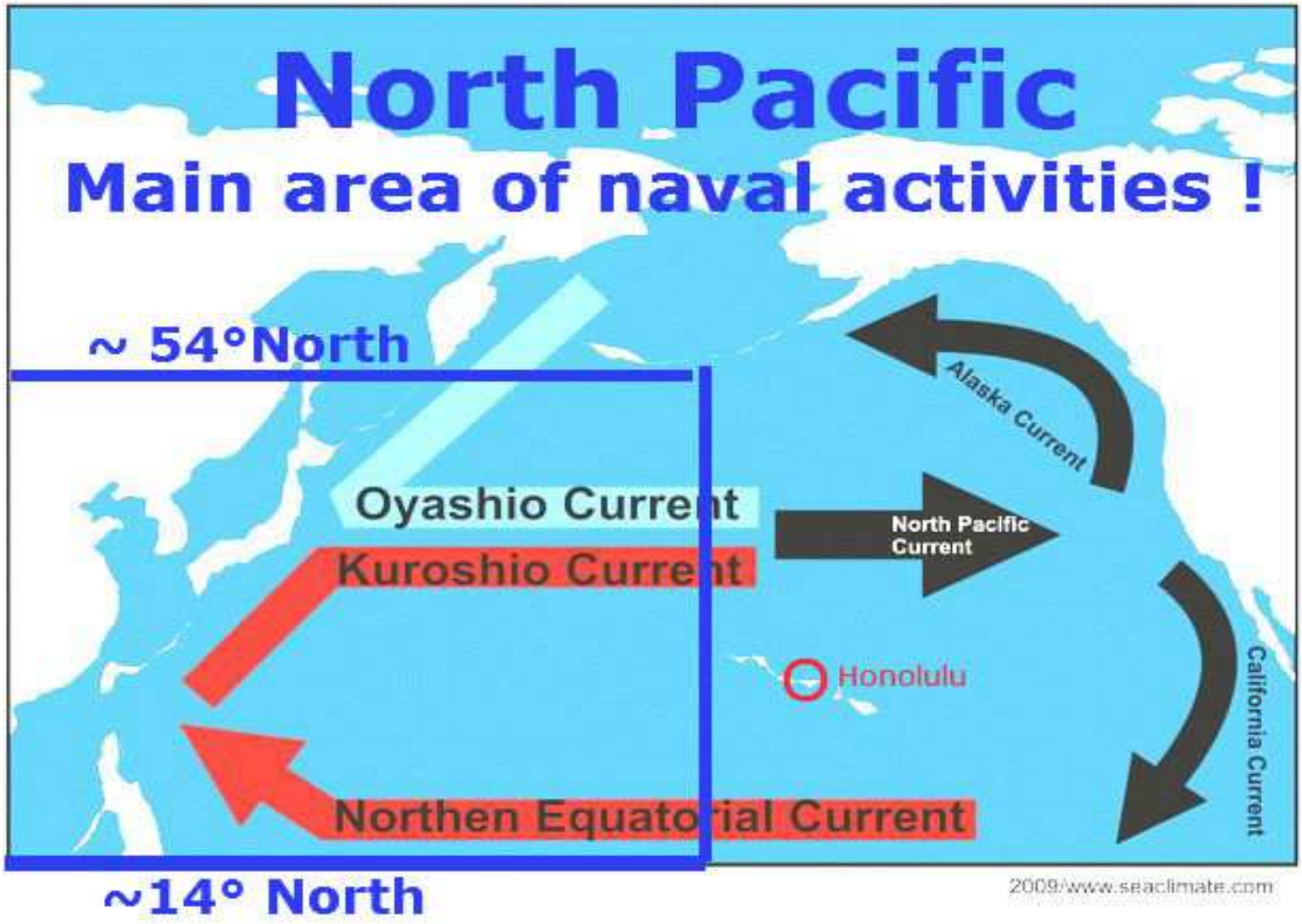




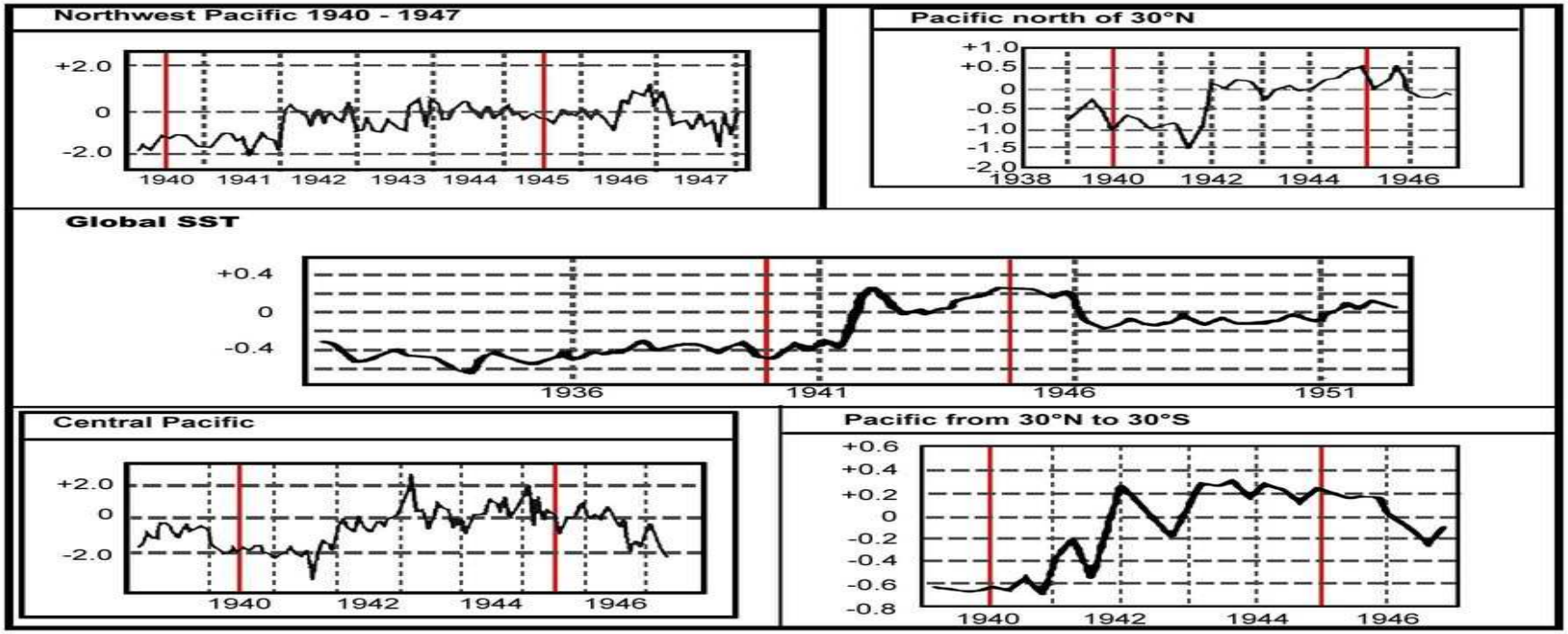


Atlantic and Pacific reacted to naval warfare significantly!




North Pacific
Main area of naval activities !
~ 54°North
Alaska Current
Oyashio Current
North Pacific Current
Kuroshio Current
Honolulu
California Current
Northen Equatorial Current
~14° North
2009/www.seaclimate.com

Completely unreliable sea surface temperature data (SST) between 1939 and 1945*)

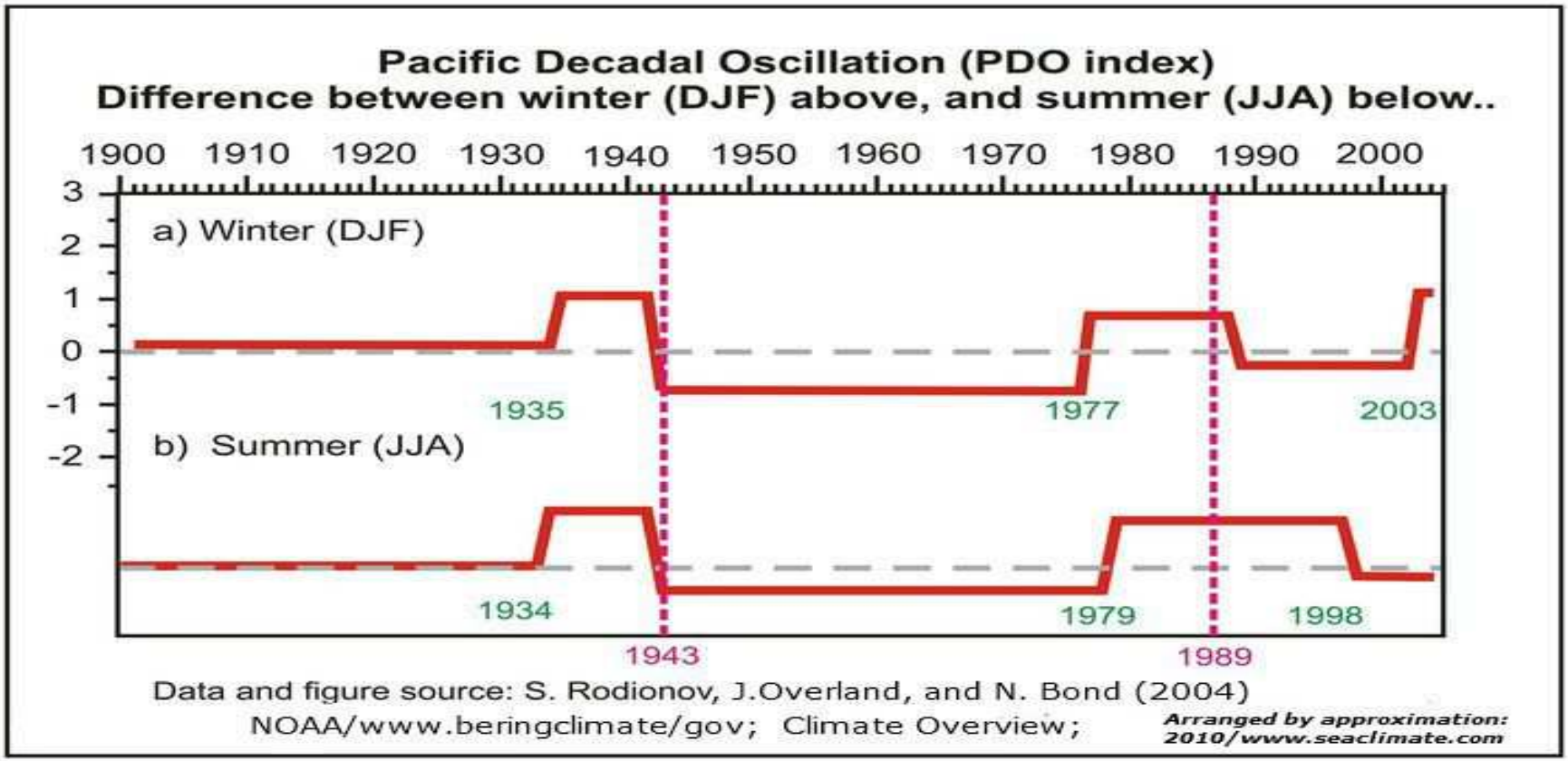


*) **"Reliability of Sea-Surface Temperature Data Taken during War time in the Pacific"**

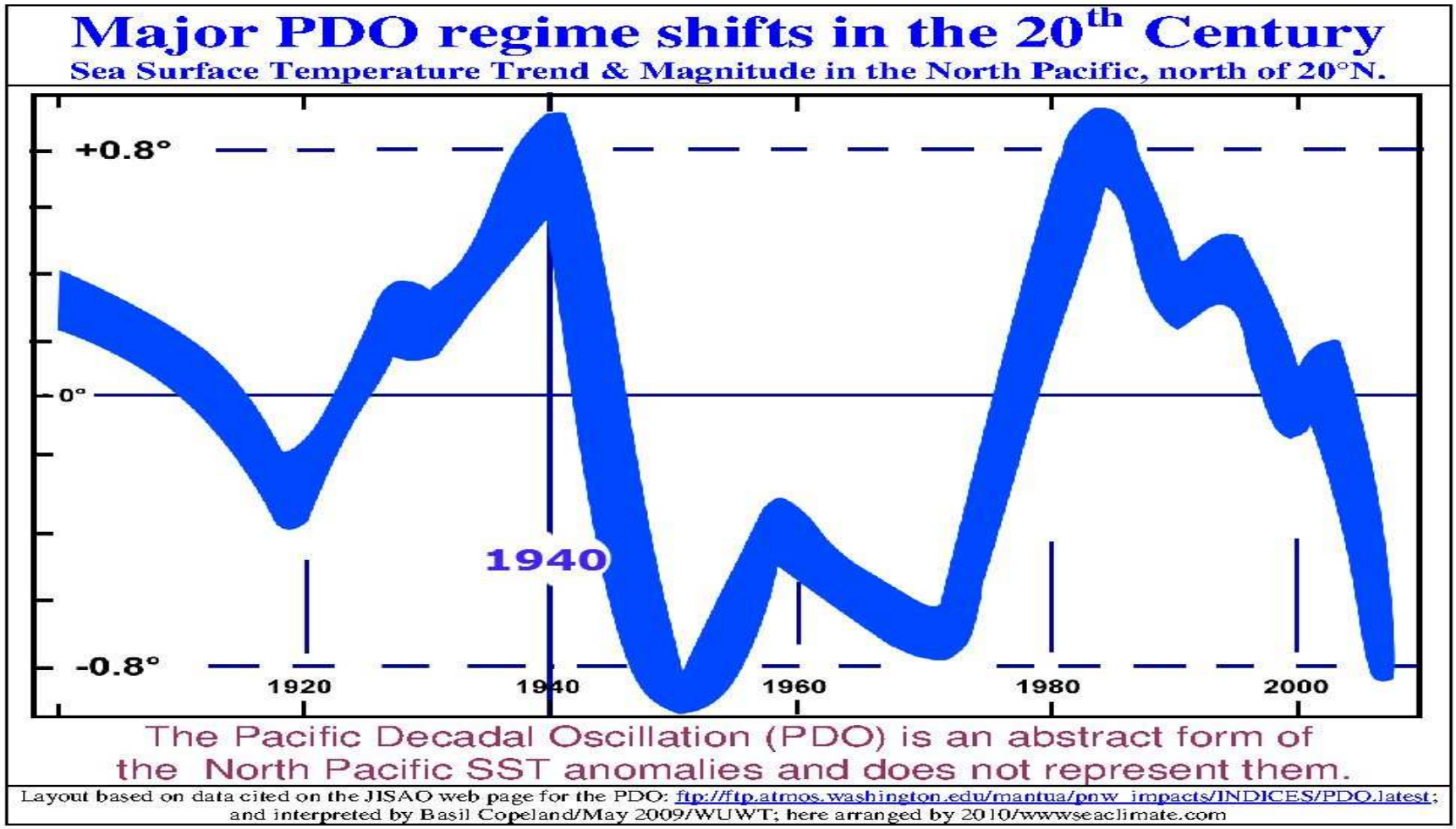
By Dr. Arnd Bernaerts

Presented at: Symposium on Resources Development Environment Issues and the Sustainable Development of Costal Waters August 8-9,1997 , "The Chinese University of Hong Kong"; Published by: PACON 1997 Proceedings October 1997 pp. 240-250; http://www.oceanclimate.de (right column "Pacific SST, 1997")

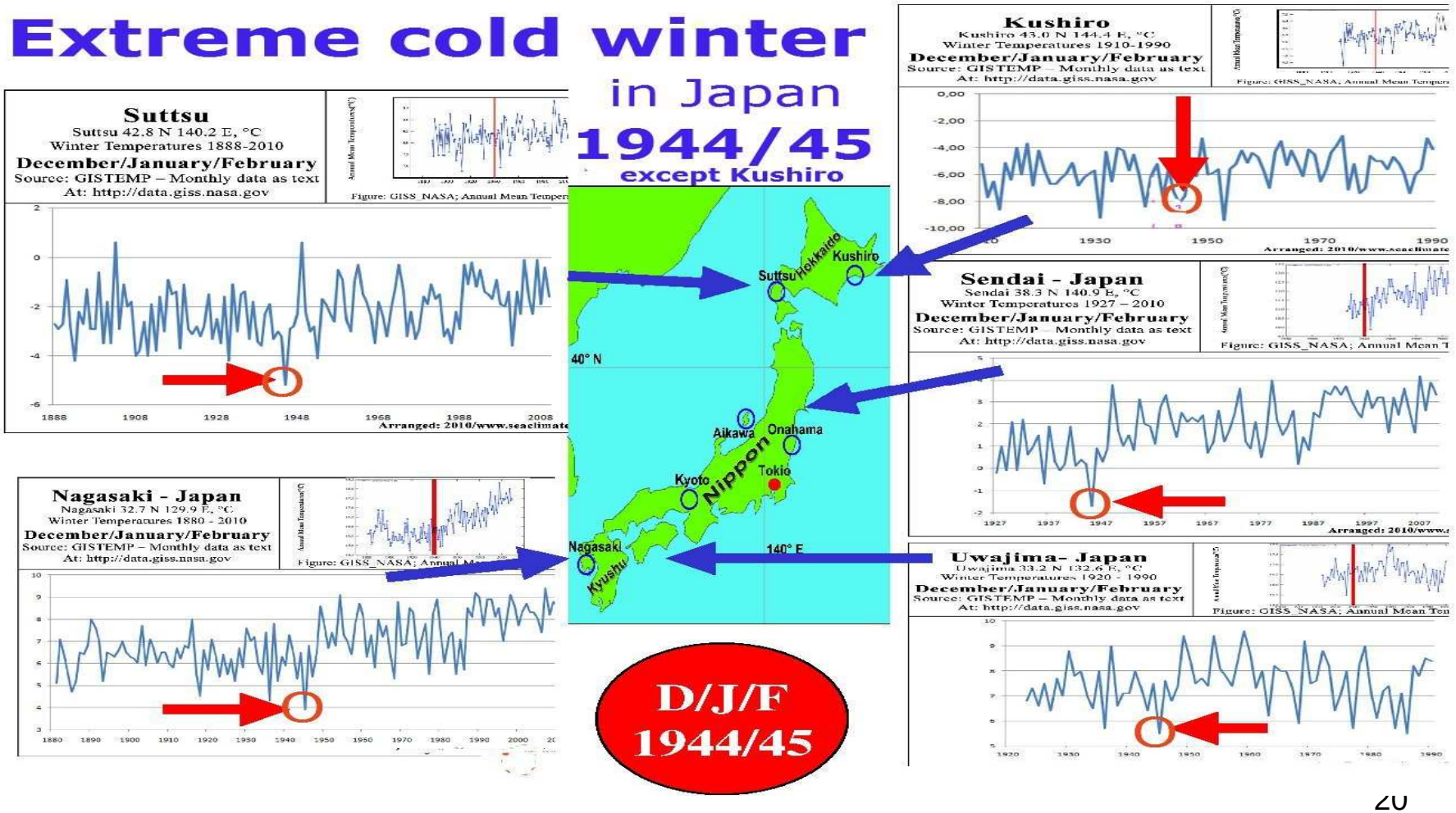
The Pacific Decadal Oscillation (PDO) shift between 1943/45 is different from the next shift and indicates a particular (presumably anthropogenic) forcing!



Difference between 1940+ and 1985+ is remarkable!

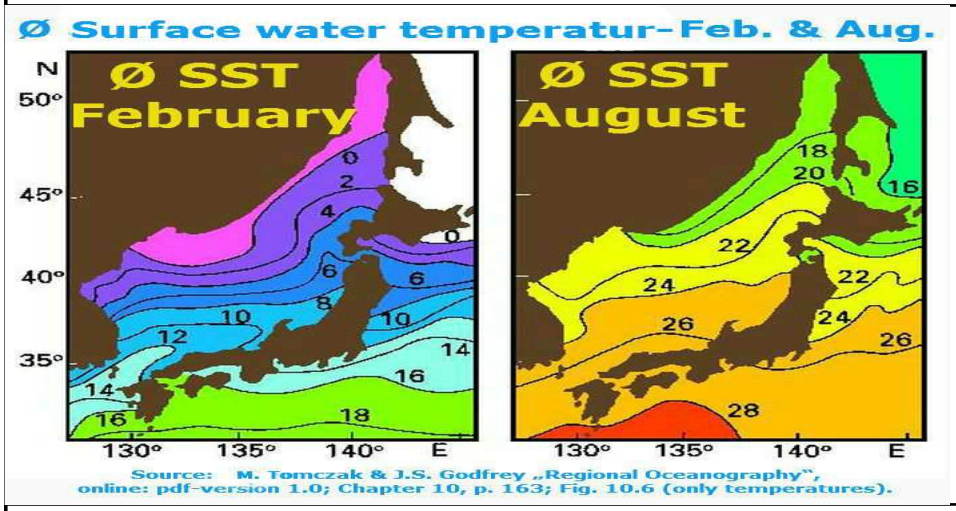


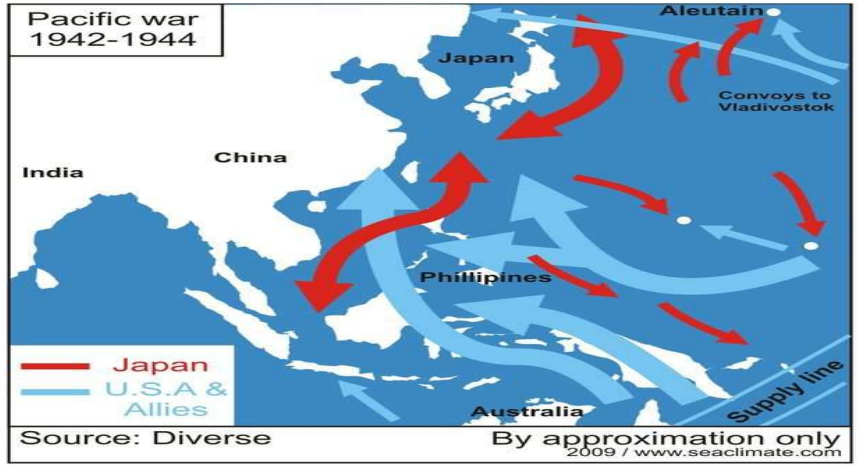
Impact of naval war is evident in Japan‘s record temperatures in 1945

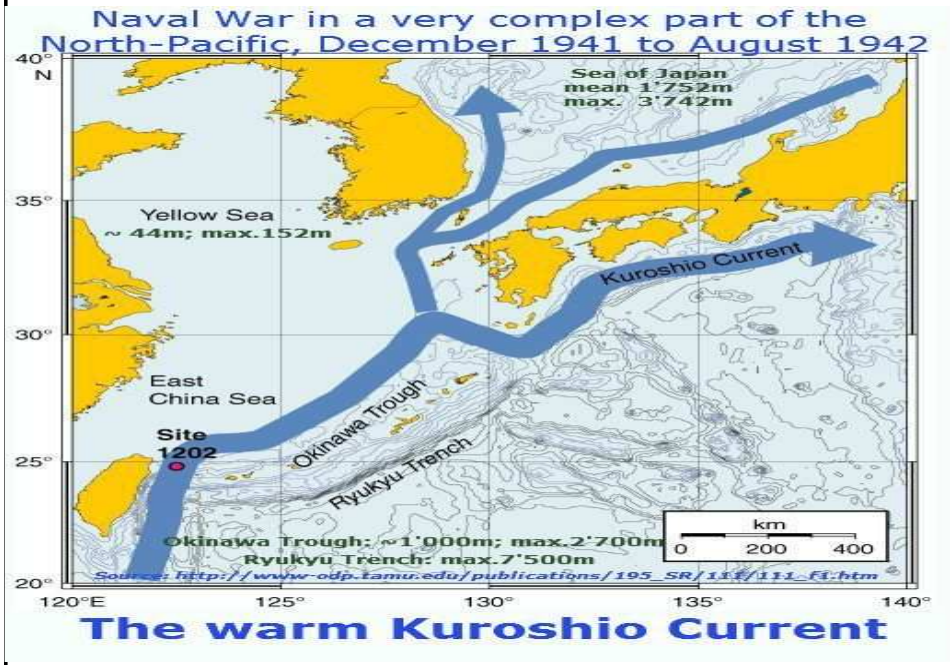


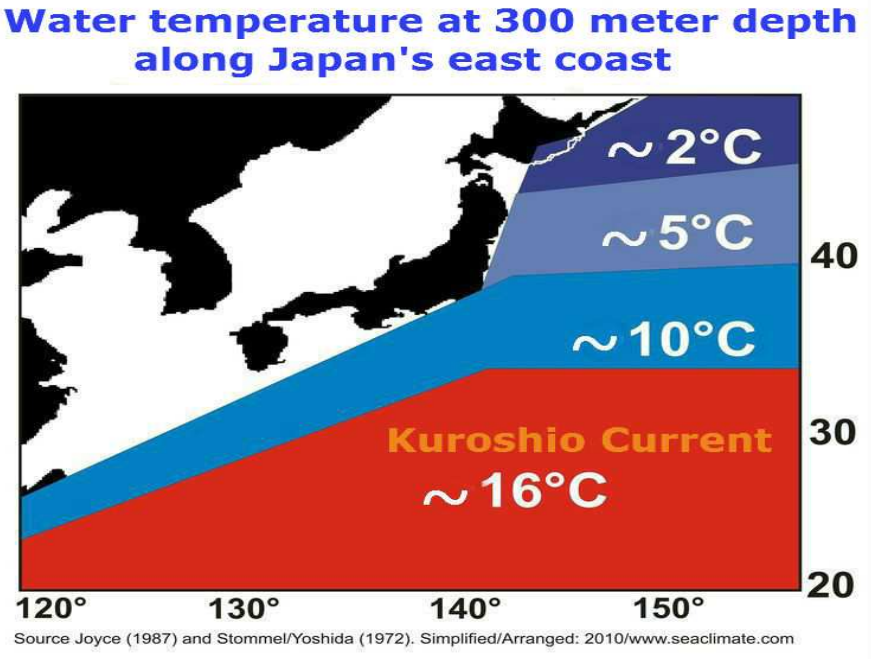
The mechanism is simple and war related!

High naval activities push cold water to the surface!

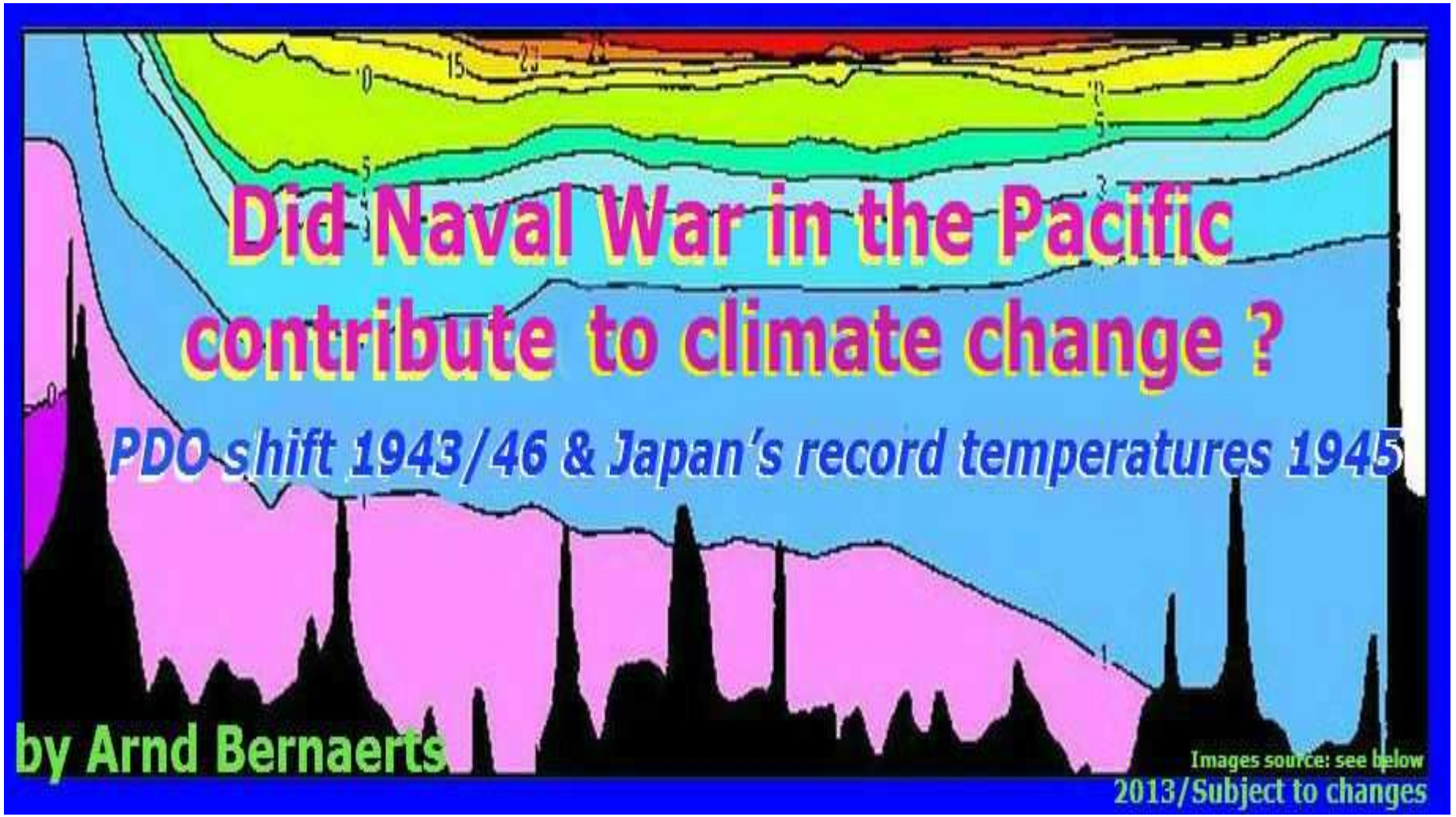




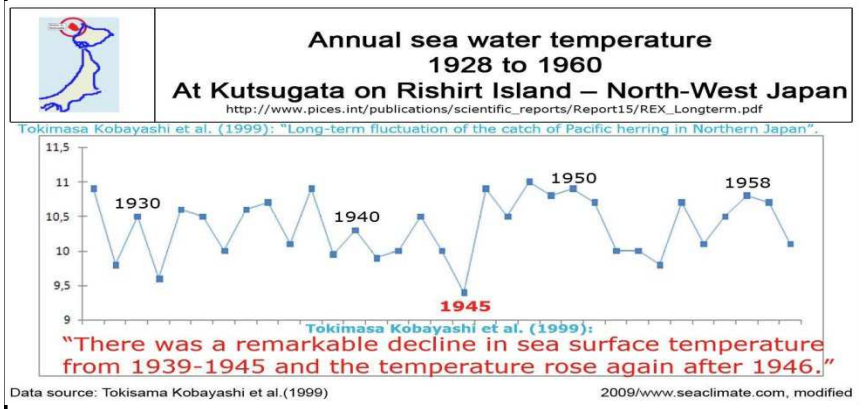


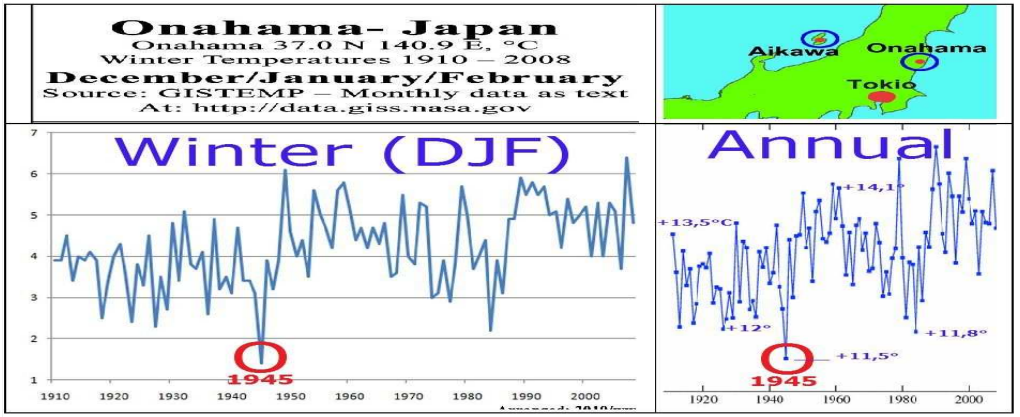


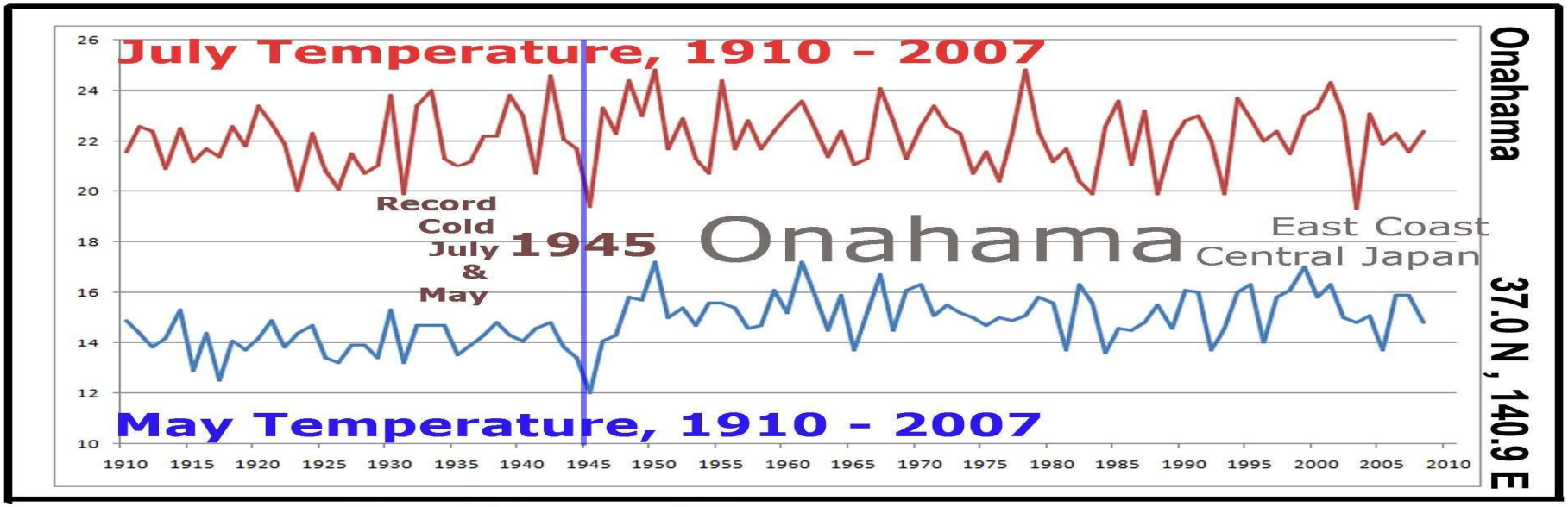
For more Pacific war details:



Overhelming evidence that naval war caused record cold water-, winter-, and summer temperatures in Japan at the end of WWII!





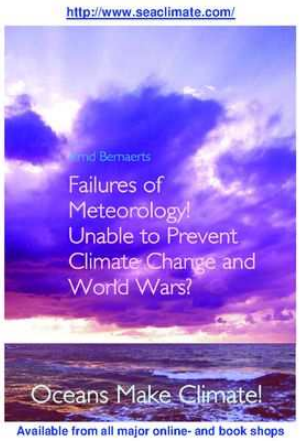


SUMMARY

Two naval wars provide numerous indications that they have had profound impact on weather/climatic events!

Many thanks for

Your kind interest!



The lecture is based on the book:

Failures of Meteorology! Unable to Prevent Climate Change and World Wars?
Oceans Make Climate!

Pages: 232, about 200 figures and images, 14 color pages.Book on Demand/BoD; ISBN 978-3-8448-1284-8
online available at: http://www.seaclimate.com/

And in online-book shops, e.g. **http://www.amazon.co.uk**

More related lectures are published at: http://climate-ocean.com/