

Chapter C. The three years cold package & the war

The unexpected return of the Little Ice Age

One cold winter isn't enough to convince everyone that naval war can be as destructive to climate as a major natural event. Therefore, we will analyse here the first three war winters and will demonstrate that there is an important connection between the arctic war winter and the naval warfare.

Every of these three winters can clearly stand-alone for the anthropogenic influences on weather modifications, but it's their succession as a whole which offers an even more pronounced image of our thesis. Already in 1942, the Swedish meteorologist Gösta Liljequist¹ stressed that the phenomenon of three successive extreme winters happens very seldom in Northern Europe. The three war winters easily took the leading position among all temperature observation done in the last 250 years.

Liljequist's remark seems logical and easy to follow and to explain. North-Western Europe is half-continent, half-water. Due to winds, waters release more heat during the winter season. Once cooled down, wind ceases due to the replacement of the cyclone activities by dry, cold air coming with high pressure (anti-cyclones). The less sea surface is disturbed, the less heat is released until the sea ice appears that stops process almost completely. In other words, any cold but calm winter situation results in sustaining a heat reservoir, stored at deeper sea level during the winter season and available during the next winter.

Naval warfare interferes and breaks down the natural process. Whether sea surface water is warm or cold, navigation and warfare can still have harmful effects. Seawater is churned and turned with no regard that the North and Baltic Seas can sustain maritime winter only when they are able to release a heat quantity according to statistical average. That was tremendously overturned during the first three war winters. Since 1942, when naval war became global, Europe's sea areas lost their winter weather impetus. Naval war in the North Atlantic and the Pacific Oceans easily overruled any special impact of the North and Baltic Seas during the three-year series.

Actually, the statistics for the war winter temperatures between 1939 and 1942 is nothing less than a "Big Bang". In five out of six locations nothing comparable has ever happened since temperature observations have been made and, in only one case, the exception Wiesbaden, near Frankfurt am Main, happened 100 years ago. In the same locations, temperatures were with approximately 2 degrees lower per winter month than they were during the next three-year series. This applies for the main three winter months

December, January and February as well. The distinction between the near-coast location and the inland location deserves our particular attention, too.

Near Seaside Location

*Figures show monthly mean temperatures over a three years period
[Mean of six (Jan/Feb) respectively nine (Dec, Jan & Feb) months]*

**De Bilt/The Netherlands
Period 1706 -1993**

**Oslo/Norway
Period 1816 -1988**

3 years	Jan& Feb	Dec-Feb.	3 years	Jan&Feb	Dec-Feb
Long term	+ 4,5°C	+ 5,3°C	Long term	- 3,6°C	- 3,4°C
1716-18	- 0,7°C	- 0,12°C	1845-47	- 6,8°	- 6,9°C
1829-31	- 0,86°C	- 0,45°C	1879-81	- 6,5°C	- 6,5°C
1940-42	-2,46°C	- 1,32°C	1940-42	-9,55°C	- 7,86°C

**Stockholm/Sweden
Period 1756 –1988**

3 years	Jan. & Feb.	Dec.- Feb.
Long-term	- 3°C	- 2,5°C
1766-1768	- 6,23°C	- 5,2°C
1803-1805	- 6,73°C	- 6,3°C
1940-1942	- 9,11°C	- 6,8°C

It is astonishing that war winter 1940-1942 did not only break all the records but left the next coldest three-year winter package far behind. This happened particularly during the main winter months: January and February. Each of these six winter months was colder with 1,6°C (De Bilt), 2,7°C (Oslo), and 2,4°C (Stockholm) than any previous ‘three cold winter’ series, while the difference between the 2nd and the 3rd rank was insignificant (less than 0,5°C). The temperature figure for 1940/42 is as unbelievable as a story about a 100-meter sprinter who would have broken the 10 seconds world record in only 8 seconds.

Furthermore, it is revealing that, from this group of three, Oslo (the most Atlantic location, at least from the distance point of view) is taking the lead, presumably due to the very cold sub-surface water that is 700-meter deep at Skagerrak. It is not a coincidence that the coldest January in Oslo is January 1941. Only half a year earlier, since April 1940, Germany had occupied Norway and had carried on naval activities of huge proportions along the Norwegian coasts. We cannot ignore the fact that the three coldest months of January in all the Oslo series in almost 200 years occurred during the war, more precisely in 1941 (-13°C), 1942 (-12,1°C) and January 1917, with -11,6°C (during World War I, winter which should be carefully analysed)ⁱⁱ.

The three described winters, which are a true record-breaking series, are a strong indication of the role the naval warfare has played. The impact of the naval war is obvious and it is proved by the fact that in the seaside locations the temperature record had been broken at a much higher degree than in inland locations, as the following table proves it:

Inland Location

*Figures show monthly mean temperatures over a three-year period
[Mean of six (Jan/Feb) respectively nine (Dec, Jan & Feb) months]*

**Paris/ France
Period 1757 -1993**

3 years	Jan&Feb	Dec-Feb
longterm	+3,8°C	+4°C
1829-31	+ 1,5°C	+1,4°C
1879-81	+ 1,8°C	+1,2°C
194042	+ 0,6°C	+1,1°C

**Wiesbaden/Germany
Period 1757 –1961**

3 years	Jan& Feb	Dec-Feb
longterm	+1,5°C	+1,8°C
1829-31	- 3,6°C	- 2,7°C
1840-42	- 1,4°C	-0,7°C
1940-42	- 3,3°C	- 2,0°C

**Basel/Switzerland
Period 1755 – 1970**

3 years	Jan& Feb	Dec-Feb
long-term mean	+ 1,5°C	+ 1,7°C
1766-1768	- 2,2°C	- 2,1°C
1829-1831	- 2,8°C	- 2,2°C
1940-1942	- 2,9°C	- 2,2°C

Even Paris, which is not so far away from the sea, blames the war at sea for the temperature modifications. With about one degree Celsius colder temperatures during main winter months, Paris is placed between seacoast and inland. In Wiesbaden (near Frankfurt) winters 1829-1831 kept the lead of the negative temperatures. Even two weather stations from Great Britain confirmed the January/February record war series 1940-1942, namely Oxford and Edinburgh. Edinburgh has the smallest negative deviation, with 0,17°C per month, presumably due to the fact that the warm Atlantic current flows into the North Sea in considerable quantities at any time of the year, and the Atlantic is not far away anyhow, while Oxford deviated with 0,7°C per month as compared to the next coldest series.

**Oxford
Period 1828-1980**

	Sum Jan&Feb
1940-42	+ 7,6°C
1879-81	+ 11,8°C
1829-31	+ 12,2°C

**Edinburgh
Period 1764 – 1960**

	Sum Jan& Feb
1940-42	+ 7,6°C
1836-39	+ 8,6°C
1774-76	+ 10,4°C

All the proofs demonstrate that negative temperature records are far away from being a mere coincidence. Sunrays played a minor role during the main winter months, while the North and Baltic Seas can contribute to the winter air temperature only through their available heat reservoir. If that has been reduced too early, then the regional temperature will drop below statistical averages, and records can fall. 1000 naval vessels crossing sensitive seas in combat missions day and night are as dangerous as a hurricane squeezing heat out of the sea. And if a hurricane goes by after a day or two, naval warfare was a constant presence, since the 1st of September 1939.

The following sections will focus, in detail, on each of the three initial war winters: 1939/40, 1940/41, and 1941/42.

i Liljequist, Gösta H., 'Isintern 1941/42'; in: *Statens Meteorologisk-Hydrografiska Anstalt*, No.4, 1942, pp.2-15.

ii It should not be so much a surprise that the third coldest January occurred during WWI. There were also a lot of naval activities in all North Sea regions. Since late 1916 naval warfare stepped into a new age of destruction, due newly developed sea mines, submarines and depth charges (see chapter on WWI, below). In so far it might be not too far fetched to assume any link between the biggest naval encounter ever, the Battle of Jutland on 31st May 1916 and the record January 1941.