



Did the naval wars in the North Atlantic and adjacent North and Baltic Sea during WWI and WWII played a significant role in the two climatic shifts of the 20th Century, the Arctic warming (1919 to 1939) and the global cooling (1940 to mid 1970)?

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A better understanding of the perfect time correlation between the two most devastating naval wars during the last century, and the most prominent climatic changes in the Northern Hemisphere, the first at the end of WWI, and the second immediately after WWII commencement, could highlight the role of the ocean and adjacent seas in climate change matters, and of anthropogenic activities in the marine environment.

The study provides an overview of decisive links between naval activities and a change of air temperatures, showing that the Arctic warming (1919 to 1939) was based on a different mechanism as the cooling period (1940 to mid 1970), which needs to be subdivided in two distinct periods, and three main regions. From autumn 1939 to winter 1941/42 naval war was primarily fought in the North- and Baltic Sea and the most eastern part of the Northern North Atlantic. Only after the U.S.A. became a war party in December 1941, the naval war took place everywhere in the North Atlantic for more than two years, and with increasing intensity in the Western North Pacific from 1942 to August 1945.

Particular attention is given to the role of the North and Baltic Sea concerning the three extreme cold winters in Europe 1939/40, 1940/41 and 1941/42 that marked the start of a three decade long global cooling, and had been the coldest for more than 100 years. The most affected locations lay close to those sea areas with the highest naval activities, e.g. the North Sea section from The Netherlands to Denmark, and in the Southern and Central Baltic Sea in winter 1939/40. Similar observations can be made for the two subsequent war winters. After the invasion of Norway in 1940 the Skagerrak region experienced a record cold winter. The next most severe winter conditions in 1941/42 can be attributed to the realm of the Eastern Baltic Sea where naval force had been active since Germany had attacked Russia in June 1941. A significant fact of the three extreme winters is their appearance in succession, which is rare in the region, as a Swedish scientist noted already in 1942. Such three cold winter have never been observed before or after WWII. The sudden increase of human activities in the marine environment could have worked like a huge field experiment, and any confirmation of the naval war thesis, or evident exclusion would enhance ocean science on climatic matters.

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