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Climatic Change 1939-1945 - A Matter Of War At Sea?

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Little is known as to whether war at sea is not only destructive to ships and men but to climate as well. With the start of the Second World War average air temperature decreased suddenly and unexpectedly, only to pick up again in the late 1960s. Since the First World War the atmosphere had been growing constantly warmer. The Atlantic Gulf was warmer than ever at the beginning of war in summer 1939. Based on this thesis that a warm Gulf stream would result in a warm Winter in Europe, the Norwegian scientist J.W. Sandström predicted a further winter as mild as the previous winters. But the opposite occurred. Germany experienced the coldest winter for 110 years, it was Norway's turn a year later and Stockholm had not had a winter since 1788/89 and 1808/09. And during these winters the Baltic Sea was covered with ice to an extent never recorded for three successive winters. Mere coincidence?

In 1950 William Mandel observed that low temperatures were experienced in the winter campaigns around Leningrad during the Soviet-Finnish combat of 1939/40 and around Moscow and Leningrad in 1941/42. In late 1939 and 1941 the Baltic was the side of extensive naval battles. But the story, which may have caused climatic changes, requires a more detailed discussion:

The sea dominates the atmosphere and is the blueprint of climate (see «Peace to the Oceans» Bulletin, No 7-8.1994, pp. 108-110). Due to the effects of the sun, the uppermost layer of the sea is warmer than deeper layers. Currents may change this partially. However, in the shallow waters of the Baltic and North Seas the most significant changes in temperature structure is their low temperature by mid February each year; and their considerable warming up to a depth of about 40 metres during the following summer. Thus the waters in Northern Europe give off considerable heat to the atmosphere until February. Once these seas are stirred or turned like the soup in a cup, the water releases its heat many weeks earlier than usual. As soon as the heat is gone, cold continental or polar air can old reign and the warmer moistened oceanic air is denied access to this region. A similar effect will occur by turning water «upside-down» in the Atlantic, the Norwegian or Barents Seas in bringing cold water to the surface in exchange for warmer surface water. And the war at sea since the end of August 1939 used many means to «stir» the seas by explosives and other activities above, on, and under the sea surface.

The area most affected during the first months of war was the southern Baltic Sea and the North Sea, in particular the German Bight, culminating in the fighting between Finland and Russia in the Gulf of Finland through December 1939. To this extent it should not be so much of a surprise that northern Germany, and in particular Hamburg, a city close to the Baltic and the North Sea, was faced with extremely cold air in December and an unusually early ice formation on rivers. Meanwhile the weather conditions further north followed usual conditions supporting Sandström's prediction of another mild winter.

The next winter 1940/41 saw slightly less ice in the Baltic but was the coldest winter observed in Norway. According to Hesselberg and Birkeland: «The coldest periods were 1-3, 16-20 January 1941. Some of the minimum temperatures in January 1941 are the coldest ever observed: » By that time the war at sea had accelerated considerably and many warfare activities took place throughout the North Sea, in the Norwegian Sea up to the Arctic ice. Norway could possibly trace the reason for these extremely cold winters back to these water turning events.

But the worst was still to come. When Hitler unleashed a full ranged war against Russia in June 1941 the Central Baltic immediately became a fierce naval battle ground for the rast of the year. Erkii Paosuo wrote in 1953: «The shallow bays froze in the middle of October as a result of the first frost which came then. But the freezing over was quite exceptionally early in the south, in the region of the Gulf of Finland; during the following frost period, at the end of October, ice formed in the coastal bays. During the third frost period which came in the middle of November, ice covered the inner archipelago of the Gulf of Finland. It was exceptional to have three periods of frost as early as this. »This should be not so much a surprise. The Central Baltic and the Gulf of Finland were places most heavily mined and subject to numerous air raids, troop movements and naval battles. However, the foundation was laid for Arctic air pushing southward over Finland on January 6, reaching Germany by January 15. Thus a period of severe frost had begun resulting in extreme ice conditions and one of the most severe winters all over Northern Europe. For Stockholm the mean temperature for three months (Jan., Feb., March) was the coldest ever recorded. Furthermore, for Stockholm three consecutive cold winters are extremely unusual and there was nothing like the period 1939-1942 ever before.
Although the Baltic and the North Sea represent only a very small area of the Northern hemisphere they can play a key role nevertheless in keeping Arctic or continental air out of Europe and supporting the inflow of air from the Gulf current or vice versa. In addition, fighting at sea took place in other areas es well. The East Atlantic, the Norwegian Sea, the Barents Sea and the Arctic Sea were the main war theatre until 1942 while the whole North Atlantic up to the shores of the United States served as a battleground up to the end of the war in 1945. Any of these uncountable warfare events whether mines, air bombs, torpedoes, depth charges, or ship artilleries may have contributed to the obvious climatic changes since the outbreak of war. And there are a number of further unusual incidents supporting this thesis. There is even an explanation for the fact, that only the first three winters were extremely cold for Northern Europe.

Understanding climate, the reasons for climatic changes and the impact of past and present anthropogenic activities on the sea more attention should be given to the impact of war at sea: