

War-Front sideline – The major battlefield of the climate

Immediately, the Baltic Sea became a battleground and was churned and turned all over its eastern part, from Gdansk to Leningrad. The operation 'Barbarossa' was a fringe war operation area. In climatic, terms it was a major theatre of regional weather modification.

The Germans mobilised about one hundred naval vessels: 10 large mine layers, 28 torpedo boats, and 2-3 dozen minesweepers. Air support was entrusted to the Luftwaffe. Russians had six big war ships, 21 destroyers, 65 submarines, six minelayers, 48 torpedo cutters and 700 airplanes. The considerable number of ships and airplanes were active in six months. The Kriegsmarine lost 35 ships. Russia alone lost 50 naval vessels when evacuating the Reval naval base. The total number of ships, which sank in the Baltic Sea during the second half of 1941, is of about 370, which may sum up 500,000 tons.

Sea mines were a considerable threat. Around 20,000 mines were laid, out of which many thousands were swept and destroyed. Although many of the Russian mines weighted less than 100 kg, the Soviet Baltic Sea Fleet alone laid at least 10,000 mines in the Finnish Gulf and outside the Soviet Ports, in the Baltic Sea (e.g. Riga and Reval). In early August, a dozen of Russian naval vessels laid mines as far away as the west of Bornholm. Probably the last Russian distant operation was a mining operation close to Gdansk, which lasted from the 20th of October until the 15th of November.

Many hundreds of daily naval activities caused a great Baltic 'turning and churning' experiment. One devastating experience determined the Russians Baltic Fleet to evacuate their fleet bases at Reval (Tallinn) by the end of August. More than 200 ships had been moved to Kronshtadt, not far away from Leningrad. More than 4,000 mines were laid on the way out, some of them placed so close together that the distance between two individual mines was sometimes of only 30 feet. Once the ships were out of the harbour, the convoys were bombed or torpedoed while crossing these minefields. This repositioning operation meant the loss of over 50 ships and some 36 transporters and auxiliaries for the Baltic Fleet, not to mention the total loss of lives (at least 6,000 men were lost).

Another significant event occurred in early December 1941, when the Baltic Fleet desperately tried to evacuate the Finnish island of Hangoe, which they had occupied in December 1939. During its sailing, the 7,500-tons ship *Josif Stalin*, carrying ammunition and military personnel, was hit by four mines that initiated a tremendous detonation, killing four thousand of the troops aboard. 2,000 men survived. Since evacuation from Hangoe started on the 31st of October, the Baltic fleet lost, in half a dozen evacuation missions, three destroyers, three fast mine sweepers and other craft and transporters (*Josif Stalin*, *Andrey Zdanov*), the icebreaker *October* plus a host of smaller vessels.

The 'Barbarossa' operation has definitely played a major part in the remodelling of the Baltic seawater body during the autumn of 1941. The new water structure had been never experienced before, particularly the phenomenon of "squeezing" summer-stored heat at such an early date. For the occupation of the vast Russian territory, this may have been hardly more than a small contribution. But for regional weather modification, it was a substantial and highly effective phenomenon. This became evident at Malgoviks primary school in Norrland/Sweden (64° 37' North, 16° 25' East) where temperatures lower than minus 50°C were recorded on the 13th of December 1941 and registered in the Annual of the Swedish Meteorological Service. The sheer coincidence with the attack on Pearl Harbour only six days earlier shall be also taken into account.