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**ROLE OF THE ATMOSPHERIC PHENOMENON
IN WORLD WAR 2**

Rola warunków pogodowych w II wojnie światowej

Streszczenie. Celem tego artykułu było przeanalizowanie roli warunków meteorologicznych w przebiegu kilku wydarzeń II wojny światowej. Analizą objęto wpływ następujących elementów i zjawisk meteorologicznych: temperaturę, zachmurzenie i opady, wiatr oraz korzystne warunki dla działań zbrojnych. Wykazano zależność losów działań lądowych, powietrznych i morskich od danych czynników. Ich wpływ często rozstrzygał losy bitew, a nawet całych operacji wojskowych. Szczególnie groźne, ale i odpowiednio wykorzystane zjawiska meteorologiczne wpłynęły na wynik całej wojny. Zależność ta jest najbardziej widoczna na froncie wschodnim. Zauważono też, że to warunki meteorologiczne „wyznaczyły” miejsce i czas pierwszych i jedynek ataków atomowych.

Słowa kluczowe: Druga wojna światowa, pogoda

Key words: World War 2, weather

INTRODUCTION

Weather conditions have always influenced human civilization, especially in military conflicts. Even in the ancient times they determined the fate of battles, and thus the fate of thousands of people or even whole countries. Despite the technological advance the role of weather was still very important. It was no different in the case of the Second World War.

The graph (Fig. 1) shows, that especially in early years of WW2 average year temperature is clearly lower than in the previous and following years – this war-age minimum is easily noticeable. There was also no big difference during

summers, but winters were especially cold. The following examples of the role of temperature in battling, after analyzing the graph, show how difficult was the Germans' situation on the Eastern Front. They had chosen the worst time for attacking USSR. The 4 following winters (1939–1940, 1940–41, 1941–42 & 1942–43) were very harsh. Especially the winter 1942–43 was very important for warfare – neglecting a myth and probably changing the final result of this war.

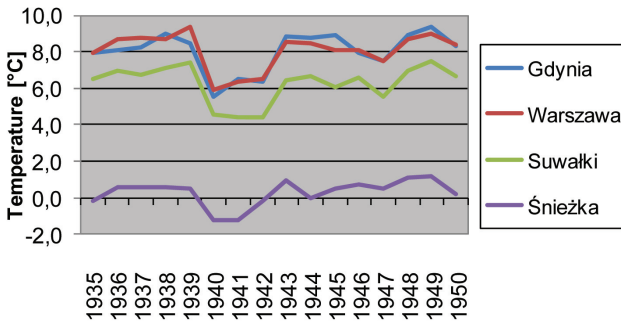


Fig. 1. Average year temperature in some Polish stations during the period 1935–1950
Ryc. 1. Średnia roczna temperatura na niektórych stacjach w Polsce w latach 1935–1950

BATTLE OF MOSCOW

The role of air temperature was the most notable during the first years of WW2 in the Eastern Front, especially in the Battle of Moscow. In the November 1941 the German forces were very close to Kremlin. Then, temperature decreased about 40 degrees. Soviet tanks and planes were still usable in such conditions, but the German ones were not. To run their tanks Panzerwaffe soldiers had to light the fire under its engine, because the lubricants became being as hard as ceramics. Only a few planes were able to fly. But the Soviet armament, planned for such conditions were functioning normally. The next problem were the uniforms. German HQs had not prepared proper clothes. Even when a unit received supplies for winter, the uniforms were designed for German, “oceanic” winter. Because of such temperature not only the technique, but also men were failing. That’s why the Soviet counter-strike, begun on December 5th pulled back Wehrmacht about 200 km. It was not only a tactical defeat, but also a strategic one. It made the next Blitzkrieg impossible to succeed, forcing Germans to fight the long, exhausting war. Both sides were also shown, that Wehrmacht is not invincible.

In case of this battle, the influence of weather and temperature is obvious. The result of the clash could have been completely different, if the wave of frosts

hadn't come. Moreover it's possible, that fall of the soviet capital could resulted in fall of whole USSR's defence system and completely different fates of WW2.

BATTLE OF STALINGRAD

Another example of the influence of weather conditions is the battle of Stalingrad. The Germans, during the summer of 1942, focused all their efforts on the southern part of the Eastern Front. After the defeat at the Don river, Soviet troops withdrew to Stalingrad. The city was prepared for defence. This time Russians deliberately intended to bleed the Germans, and then use the approaching winter for counteroffensive. Prevailing, since mid-October, a strong frosts combined with alternating abundant snowfall hampered the fight for German soldiers, and paralyzed supplies as well as air support. At the same time Volga river became covered with a thick layer of ice, that the Russians could lay the railroad tracks directly on it.

In the second half of November 1942, the influx over Stalingrad particularly strong cold – below -40°C . This paralyzed all German, it is highly facilitated the Soviet counteroffensive taken Nov. 19th to the north and south of the city. Army fighting in Stalingrad, soon found themselves in besetment. Frosts typical for Volga river and the blizzards paralyzed trials to rescue the encircled troops and to supply them with air. The same frosts had also a significant impact on the defense of the VI Army, which soldiers were freezing to death.

Stalingrad finally shattered Hitler's chances of victory over the Soviet Union, again contributed to accurate forecasts of the Russians and familiarization to such weather.

BATTLE OF BULGE

An example of the impact of weather on the course of military operations is also a German offensive in the Ardennes, launched 16.12.1944. For this purpose they were gathering forces since October 1944. Being aware of the huge Allied air superiority, the Germans attached great importance to meteorological support for this action. On the Atlantic submarines built up a network of mobile weather stations, all the secret stations in the Far North were activated. Experts forecasted that from early December over the Ardennes the weather will be cloudy and foggy over the Benelux countries – that is unfavorable for any aviation activity. From December 4th the whole area of the Western Front had been covered by dense low cloud, giving the heavy snow-

fall. Thanks to that, the Germans have moved large forces to the front and the offensive began on Dec. 16. Surprise and superiority of the German armor in the absence of allied air support initially brought success. However, after several days of the offensive it slowed. Weather was the main reason. The conditions conducive to the Germans, turned against them. Heavy snowfall, all filling the roads, significantly hampered the German supplies. On December 24th there was – earlier than expected – improvement of weather conditions. That day 500 Allied aircraft took the intervention. From that day the number of allied aircraft used daily exceeded 2000, and on December 27th the German attack broke down. Using the back snowstorms Germany attempted to resume the offensive January 1st, but re-improvement of the weather finally broke the offensive capabilities of the German army. On January 7th the Allied counter-attack began and on Jan. 31st frontline was restored.

If weather conditions had not occurred – German troops would have been destroyed from the air at the time of concentration. If “bad” weather had maintained longer as provided by meteorological service of the Third Reich – Wehrmacht would have taken a large and important area, which significantly inhibits the subsequent Allied advance in 1945.

BOMBARDMENT OF THE TERRITORY OF CONTINENTAL U.S.

A not known incident of World War II was bombing the indigenous territory of America. U.S. assumed that such an attack was impossible. Indeed, neither the Japanese carrier-based aircrafts, nor the German long-range bombers had never taken such attempt. However, such attack was carried out twice in fact – on 9 and 29.09.1942 by Japanese aircraft E-14 taking off from a submarine catapult. This was possible only due to “submarine cruisers”. It could send an aircraft with two incendiary bombs, intended to start fires in the forests of Oregon. In September, typical of this region was strong western winds, could cause a large expansion of fires. The aim was not only the material damage, but also to cause a panic among the civilian population. Such an action was also reinforced by the fact, that in January 1942, the Japanese captured Wake Island and a full set of secret weather maps for the north-east Pacific area.

Well-planned action was accompanied by its great misfortune. The plane took off successfully and dropped the bombs in the scheduled area. But heavy rainfalls on the previous night, unusual during this period, made the bombs went off immediately after the explosion. Because of this, raid was repeated on 29 September. But the situation repeated itself – the night before the attack rainfalls occurred again and only one bomb caused only a small, local fire.

Extremely rare, unusual accumulation for this time of year in this region precipitations shattered the Japanese plans. If the plan is fully successful, could have a major impact on the course of the war in the Pacific.

THE SECOND BATTLE OF SIRT

At the turn of 1941 and 1942 the defense of Malta was significant in the Mediterranean region. The island was paralyzing Italian convoys, but the same time it required delivery of supply itself. In spring of 1942, the situation of constantly bombarded island became critical – the last convoy arrived on beginning of February. In this situation, another convoy that came out of Alexandria on March 20th, determined the survival of Malta. Transports were protected by 4 cruisers and 16 destroyers – the forces were serious, but too weak against the Italians. The convoy commander – admiral Vian – had been always estimating the role of weather.

On March 21st the convoy was spotted by an German aircraft. The same day strong Italian fleet left the ports. Adm. Vian was aware of the enemy advantage, but also of the dramatic situation of Malta. The plan to defend the convoy was based on the weather forecasts of the low, steady SE wind in the region east to Malta, and then a quickly coming storm from the south. Having spotted the Italians, British destroyers laid the dense smoke screen, which, not dispersed by the wind but pushed by him, ran towards the enemy. Italian ships were not able to aim the transports and decided to retreat due to the fear of torpedo attacks. The English managed to drag until sunset. Around 7 p.m. the wind changed direction to the south, turned into a storm and prompted the Italian fleet to withdraw. Transports have reached its destination, the danger threatening the island was averted. Weaker British forces defended the convoy through the skillful use of appropriately provided meteorological conditions.

OPERATION OVERLORD

In the spring of 1944, the massive Allied force were concentrated in England, ready to invade the continent. HQ feared the most the transit across the English Channel and landing on the beaches. May 1944 was stormy and cloudy – these conditions were not conducive to landing crafts and planes. On June 4th General Eisenhower received report about an atmospheric front quickly moving from the Bay of Biscay towards the English Channel, which should provide a relatively clear skies over Normandy – the planned invasion region. Improving weather would last until June 6th. Then again could be worse.

On this basis, the commander of Allied forces ordered the start of Operation Overlord at dawn on June 6th, 1944. Thanks to such weather, it was possible to continue supplying the captured outposts and paralyzing German counterstrikes. When the “bad weather” came, outposts were already well fortified. The offensive into France was possible. If the “weather window” had not been accurately foreseen, the invasion would have been postponed for a month, which could have caused military and political trouble. This would also strongly influence the post-war European political shape.

DROPPING THE ATOMIC BOMB ON HIROSHIMA

After the capitulation of the Third Reich the defending Japan still remained. US Command feared invasion of Japan, being afraid of the fanatical resistance. They also knew about the nuclear test carried out successfully on July 16th 1945 in Alamogordo. The postulate to use that new weapon against Japan and widely demonstrate its power was obvious. Two bombs were delivered to the base of Tinian in the Marianas. President Truman in the last days of July gave top-secret order to drop the first bomb as soon as the weather allows, on one of four targets: Kokura, Niigata, Hiroshima and Nagasaki.

On August 6th, before the dawn, four B-29 bombers took off to fly over above that cities – each with a meteorologist on board. About 7 a.m. all the aircrafts were over their targets. Report from Kokura was telling about a high cloud cover (9/10), as well as the one from Niigata (8/10). Airplane over Nagasaki had trouble with a radio, but about 7:15 a report came from Hiroshima: 2/10 – good conditions. Base commander announced: “We’ve got a target” About 7:40 ready for action B-29 “Enola Gay” took off. Over Hiroshima appeared at about 8 a.m. local time. At about 8:15 it dropped a 4-ton cylinder, which a few seconds later brought the world into the nuclear warfare era. The annihilation of the city was decided only by the weather. The number of victims is estimated at 120 000, and its effects are still noticeable.

CONCLUSIONS

These examples of battles during the greatest conflict in human history well illustrate the relationship between meteorological conditions and the results of military operations.

Unusual arrangement of three extremely cold winters in Europe proved to be deadly even for such power as Hitler’s armies. The Germans were close to

success and it can be assumed that, given the vast resources available in Eastern Europe – could have won World War II.

These examples show clearly that the weather can literally could shape the destiny of the world – even today. War in Korea, Vietnam or clashes in the Middle East brightly prove it.

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