Impact of Extreme Weather Events in the Wartime Okinawa

Radomir Compel

長崎大学大学院多文化社会学研究科・多文化社会学部『多文化社会研究』 2023年第9号　抜刷

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Nagasaki University Radomir Compel*

Abstract

Global publics have been noticing the intensity of droughts, wildfires, melting poles, rising sea levels, and typhoons in their daily lives. Policy communities are scrutinizing the nature of the climate change, its human-induced causes and environmental effects. But the effect of climate change does not end with an account of environmental impacts. Climate change has had social and security effects too, as recent arguments on migration pressures (Dalby), resource scarcity (Homer-Dixon), access to rural land (Baechler), and intensification of conflicts (Kelley) emphasize.

This article looks back in time and argues that extreme climate and weather phenomena have influenced conflicts not only in recent decades, but relate to the past occurrences too, including the WWII. As narratives of past events tend towards anthropocentric explanations, the presence of weather and climate are often minimalized or bracketed out in favour of intentionality and human agency. Yet wars are complex phenomena, and no human agency can fully account for them. The argument here is that extreme weather events, such as heavy rains, had contributed significantly to the transformation of the battlefield in Okinawa, and to the atrocities committed on the local noncombatant population. It provides a more climate-prone explanation for the final stages of the Pacific War.

Keywords: Climate security, Pacific War, Battle of Okinawa, weather, human suffering

Introduction

Climate change is progressing and global publics have been slowly noticing the effects it has left on our living environment, especially through high-intensity disasters, such as droughts, wildfires and typhoons. Until today, most of scientific research has concentrated on measuring the extent to which our climate has changed, and on the predictions of future pathways. They have ascertained that there is a human-induced element behind such changes, and suggested the needs for redress.

* Associate Professor, School of Global Humanities and Social Sciences, Nagasaki University
cmplrad@gmail.com

But the effect of climate change does not end with an account of environmental impacts. Such global-scale transformation has had significant social and security effects too. It has intensified social, ethnic, religious, political and security challenges in various regions and localities around the globe. Worsening climate has induced social distress and led to intensifying scarcity of resources, limited access to agricultural land and water, rise in migration pressures, and aggravated disputes. Such pressures have, in turn, exacerbated societal frictions, and led to the amplification of inter-communal conflicts. In these varied ways, recent changing climate leaves a negative imprint on our societies.

This article looks back in time and argues that extreme climate events have influenced conflict not only in recent decades, but they may extend to our accounts of past events. It draws on examples from the Pacific War, and especially on the deadliest phase of it, the Battle of Okinawa. There are many different ways how extreme climate or weather phenomena, such as torrential rains, droughts and typhoons may impact human society, but an account of their effects on the battlefield is necessary, because they may amplify the scale of human suffering.

Linkages between climate and conflict

Relationship between climate and conflict is uneasy at best. The history of human concerns with climate and weather is as long as civilization itself, and it was often associated with the rise of rainmakers, shaman, astrologists, worshipers and magicians, who performed divination rituals to bring rainfalls, fend off diseases, foresee disasters, and help winning in battles. In modern societies, expertise about climate and weather has become a respectable profession of environmental scientists and meteorologists, who rely on scientific evidence and rich bodies of knowledge that support analysis, prediction, and prevention. Modernity has kept a distance from divine oracles, but its epistemologies have been partial, segmented, diffused, and contested, and far from providing humanity with unwavering guidance (Gleditsch 1998, Krause & Williams 1996, Deudney 1990).

In 1990s, raising concerns over the widening of the ozone hole, global circulation of radioactive contaminants from Chernobyl, and urban air-pollution in the Global South, have questioned the genuineness of unchecked industrialist visions and restarted a global debate on human-induced environmental degradation and sustainable development. This trend has spread to other areas too. It didn't take long and climate-related notions have been observed in debates about security, safety and defence. Arguments in favour of

widening and deepening of security took hold of the climate discourse, and started to undermine the hard-line traditionalist logic of national security. For example, when Thomas Homer-Dixon co-authored an article on "Environmental Change and Violent Conflict" in *Scientific American*, it was picked by the U.S. national security establishment and made its way to the Clinton Administration's new national security vision called the US National Security Strategy of Engagement and Enlargement (Floyd 2010, 75). Conflicts and their causes are complex, but security communities tend to reduce them to the disputes over the distribution of scarce resources. Thus, when Homer-Dixon presented his proposition on how environmental degradation leads to resource scarcity, the argument struck the right cord in the Defense Department (Homer-Dixon et al. 1993, Homer-Dixon 1999). National security strategies of NATO members, and other countries have slowly accepted the rhetoric of security risks associated with environmental degradation and climate change. Though many security specialists have had a reserved attitude to climate change, some traditionalists do focus on the problem of water wars, energy conflicts, and food insecurities (Klare 2001, LeBillon 2004, Xenos 2010, Baechler 1999).

The mainstream of the climate security debate is still within the liberal and cosmopolitan circles, which concentrate on the themes of critical security, securitization and human security (Dalby 2009, Dietz et al. 2016, Selby 2014, Selby 2018, Adger 2010). Their discourses are far more forthcoming to the findings of scientific communities, and agreements brokered by international organizations and national environmental administrations. Among those are the UN Earth Summit in Rio de Janeiro in 1992 with the UN Framework Convention on Climate Change, the Kyoto Protocol of 1997, the Paris Agreement of 2015, and the Intergovernmental Panel on Climate Change established in 1988, which are at the core of expert warnings about carbon emissions, rising atmospheric temperatures, and the impact they have on the global climate regime. Their conclusions clarify the mechanisms behind some current unanticipated disasters, such as droughts, fires, floods, submerging ports and islands, and rising intensity of calamities (IPCC 2022, IPCC 2015).

Building on the ideas above, this article will examine the role of extreme weather events in wartime, and assess their impact on the processes in human society. Most of research on climate security has emphasized the role of humans in producing negative externalities and is calling on them to act and produce mechanisms to mitigate further global deterioration of climate. This article looks through different lenses, arguing that humans are much less capable of controlling the environment, and to the contrary, that

severe climatic phenomena can have significant impact on the fundamental structures and processes in human society in consequential ways.

The sections below highlight major developments during the battle of Okinawa, and how severe weather left an impact on the outcome of the war. They focus on the tactical moves in the battle, and later, they assess the role of extreme climatic events, the impact of which has been underestimated in the literature on the battle. Finally, the article focuses on the unbearable extent of humanitarian suffering and other long-term consequences that such extreme weather events had on the future of Okinawa.

Outline of the Battle of Okinawa

Battle of Okinawa took place at the final stages of the Pacific War and it can be divided into five phases. The first phase corresponds to the preparations for defence and invasion, including military and reconnaissance operations prior to the landing by the U. S. forces in Okinawa.

Second phase commenced at the end of March 1945 with the U.S. military landing on the Kerama Archipelago off the eastern coast of the main island of Okinawa. On April 1, the Okinawa Island proper became a target for U.S. forces. The Japanese 32nd Army, which was responsible for the defence of Okinawa, had lost its 9th Division to Taiwan in January, and because of the shortage of troops, it abandoned the dominant tactic of Japanese offensive defence (waterfront destruction) advanced by the "Operation Sho-2" in favour of the much less-preferred tactic of attrition warfare on land (ground defence) (Yahara 1972). The U.S. forces landed near Yomitan and Kadena in central Okinawa, and were able to take possession of some of the Okinawa's largest air bases (North and Central Airfields) almost instantly with little resistance (Yahara 1972, 73, Jin 1967). After the swift landing, the U.S. 10th Army directed its effort to the much less populated north, to overrun the northern part of the Okinawan Island and adjacent Ie Island.

Third phase of the battle began on April 18th, with the reopening of the U.S. advance to the south of the Okinawa Island, where the three main cities of Naha, Shuri and Yonabaru are located, and which had been heavily fortified by Japanese forces hiding in caves. It was just three weeks after the start of the invasion of Okinawa, and the U.S. had already controlled 70% of the whole island. But the main battle was still ahead. The phase took the form of a regular frontal attack. Commander of the 10th Army, Lieutenant General Simon B. Buckner, Jr. began to move southward with four divisions distributed

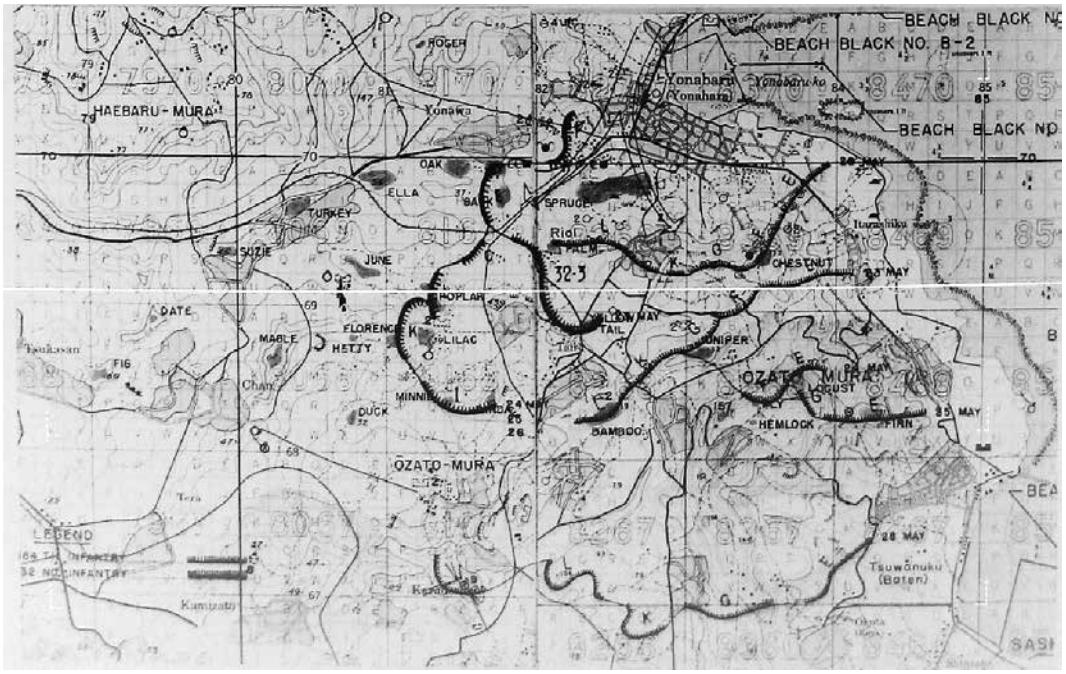
along a straight line, directly confronting the Japanese defences with large numbers of field artillery and tanks that were pouring onto the front (Belote and Belote 1970, 262). The Japanese forces met the U.S. assault by endurance warfare from reinforced bunkers and caves built along the expected frontline, but twice they launched unsuccessful surprise offensives to penetrate into the US held areas. Japanese defence was supported by the naval long-distance suicide air attacks in accordance with the Japanese air operation "Ten-go". In contrast with the swift moves of the previous two phases, the third phase was characterized by very slow U.S. progress and fierce resistance of the Japanese defence with locally recruited defence corps. While there were conflicts over tactics and strategy on both sides during the first three phases, the watershed moment came with the fourth phase in late May.

Defence of Shuri and Changing Battle Tactics

For Buckner, the war at the end of May took an unexpected turn and it was the defining characteristic of the fourth phase. As the U.S. forces approached the Japanese last defence line below the command headquarters in Shuri, they advanced along a straight frontline. In the second half of May, the U.S. initiated flank moves, bringing in new units from both the left and right ends of the straight frontline. On the right flank, or west side of the island, the 6th Marine Division was deployed to swiftly overtake the city of Naha, the prefectural capital which was laying in shambles since October 1944 when it was destroyed by U.S. carpet bombardment (Frank and Shaw 1968, 274). The Marines were supposed to swiftly override the vacated city and advance to the east from Asato to meet the Japanese last defence line before Shuri. In concert with the new tactic, the 7th Division, which was deployed to the left (eastern side) of the frontline made a flank inroad into Yonabaru, and quickly overran the Yonabaru Air Base, and the Yonabaru City with little resistance. Although not as large as Naha, Yonabaru is the third largest city on the main island, and the 7th Division's control of Yonabaru was also highly praised by Buckner. The speedy flank inroads from the east and west disrupted the frontline which was moving at a snail's pace for almost a month. The U.S. now was in hold of the two major cities of Naha and Yonabaru behind the Shuri defense lines and linked by a prefectural road and a railroad. The distance between the two forces was about 10 km, and connecting them would encircle the Japanese main camp and lead to a quick end of the battle. These were the expectations of the U.S. media and the public, which was growing dissatisfied with the

slow progress of the main frontline.

The attempted encirclement from both sides alarmed Commander Ushijima of the 32nd Army (Yahara 1972, 297). It was self-evident that if the 6th Marine Division and 7th Infantry Division were to combine their forces along the Naha-Yonabaru railroad, Shuri would be attacked from four sides and the Japanese forces would have nowhere to go. Ushijima hastily ordered the 24th Division to intercept the U.S. 7th Division standing in Yonabaru. The U.S. took a puzzling action. The 7th Division consisted of three regiments 32nd, 184th, and 17th. The 32nd Infantry Regiment tried to advance westward toward Naha, while the remaining regiments, the 184th and 17th Infantry Regiments, started heading south (Gueller 1946, 298). The 32nd Regiment had three battalions, two of which changed their direction, and began advancing southwards toward the Chinen Peninsula. Suddenly, only one battalion and three supporting companies remained advancing westward, while the other units were headed south. The probable reason why the 10th Army chose to advance south rather than west toward Naha at such a critical juncture was that the 24th Division and other Japanese auxiliary forces, caught by surprise in



Map 1. US advances around Yonabaru at the start of Japanese withdrawal southward, 28 May 1945. [1]

[1] Gueller 1946, 308a.

Yonabaru, had come up against them, and Buckner had given priority to consolidating his position in Yonabaru rather than hastening the advance westward (Gueller 1946, 294). As the U.S. had only the 3rd Battalion of the 32nd Regiment advancing westward, the Japanese resistance increased rapidly, and the regiment's advance was halted in the vicinity of the Koganemori hill of Haebaru (Nakamoto 2018, 12).

By the end of May, Japanese main defence forces were still encamped in Shuri, and since the U.S. launched unexpected manoeuvres from the two flanks, they faced a decision whether to stay in Shuri or withdraw and fight a cave battle in the south of the island. On May 22, Ushijima decided for retreat. But the retreat was hampered by speedily advancing U.S. forces, especially those from Yonabaru. By 29th May, the gap between the U.S. forces from the east and west was as narrow as 3-kilometers in the zone around Tsukazan. The Japanese retreat took place literally right under the noses of the U.S. forces, and diversion of the three regiments of the 7th Infantry Division from their move westwards proved to have far-reaching consequences (Gueller 1946, 358).

For Buckner, the Japanese withdrawal came as a bolt out of the blue, as newspapers across the country in late May reported extensively on the slow progress of U.S. forces in the battle for Okinawa (Boeicho 1968, 559). Many assumed that the battle on a relatively small island like Okinawa would last about a month, especially after an uneventful landing, and almost anyone expected the battle to be over by the end of May. But U.S. military's decision to let the Japanese forces escape before their eyes was incomprehensible both to the media reporters in the field and to the American public (Sarantakes 2000, 12).

The Japanese Army's Withdrawal to the South

How did the Japanese military view the withdrawal from Shuri? The postwar compilation of *Senshi Sosho* (Military History Series, Boeicho, 102 volumes) and The Complete History of the Greater East Asia War, edited by Takushiro Hattori (1966), give high marks to the Japanese Army's withdrawal. Shuri was a naturally formed plateau and a strategically important area since the times of the formation of the Ryukyu Kingdom, and it was the site of the royal palace. However, the original headquarters of the 32nd Army were not located in Shuri Castle. It was a cultural and historical heritage, and local population might turn critical to the early military build-up efforts. The original headquarters were, therefore, located on Tsukazan a small hill in Haebaru, about 3 km south of Shuri. Tsukazan was a fortress built to support the 32nd Army's early headquarters,

with tunnels dug into the mountain, and rooms to accommodate the general staff, hospitals, communications, and other facilities. Japanese core military strength, the 62nd and 24th Divisions also built their camps in the south of the island, but were more flexible as the Japanese defence plans were being revised several times. The situation changed after the fall of Saipan, and the incoming 9th Division took up the Shuri hill with the Royal Castle. The sense of emergency and a new strategy took precedence over cultural heritage. But things changed again, and the Division was ordered to move to Taiwan, and the 32nd Army command swiftly moved in, vacating their old headquarters in Tsukazan. As the Shuri battle intensified, all Japanese forces changed their positions closer to the frontline north of Shuri to intercept the U.S. troops. Both divisions were on the Shuri front during the May battle, but they kept their cave command posts in the south for retreat. This readiness to withdraw was one reason for a fairly smooth move which shocked the U.S. at the end of May.

Commander Mitsuru Ushijima of the 32nd Army gathered the military leaders on the night of 22nd May and held a tactical planning meeting on the final phase of the campaign against the U.S., just as the U.S. forces were advancing up to the defence line at Shuri. At this meeting, the following three proposals were discussed (Yahara 1972, 288, Boeicho 1970, 530, Yahara, 1995, 214). The first plan was to launch a final offensive at Shuri and wait until the inevitable end; the second was to move out to the hilly Chinen Peninsula in the eastern part of the southern Okinawa; and the third was to move out to Kyan in the western part. The second option, the Chinen Peninsula, was the southern base of the 44th Independent Mixed Brigade and was supported by the Brigade staff. But the Chinen Peninsula was hilly and movement there was not easy. The third option relied on the caves, quays and cliffs near Kyan and Mabuni, and on the highlands of Yaese and Yoza which formed a natural barrier to the advancing enemy. The third plan was adopted with the support of most general staff members, and the subsequent movement of troops was only a matter of time.

The decision of the Japanese forces to withdraw to southern Okinawa was timed roughly to coincide with the U.S. forces' advance on Naha and the offensive on Yonabaru. The flanking attack from the east and west beyond the frontlines threw the Japanese forces into a state of shock. The Japanese were unable to mount any significant resistance, and the flanking moves quickly shifted the defence lines to a small perimeter around Shuri. Following the decision on 22 May, the Japanese Army command solidified the withdrawal process. The withdrawal schedule was fixed for 27 May. Garrison forces had

to hold their fighting posture in Shuri for another week, and keep the U.S. from closing the escape routes from below the hill. Ushijima ordered part of the 24th Division and supporting units to engage the advancing U.S. 7th Division. Their priority was to secure a withdrawal route through Tsukazan without letting the advancing U.S. forces find about it. The closer the U.S. approached to Tsukazan, the more intense the fears grew over a sudden collapse.

From hindsight, Hattori and other Japanese military historians highly praised the shrewd move of Japanese forces out of Shuri (Boeicho 1968, 561, Hattori 1966, 809, Ota 1979). The withdrawal disrupted the U.S. combat schedule, forcing Buckner to re-evaluate his combat tactics toward the Japanese. Washington ordered an urgent Tenth Army audit, U.S. media paid a new wave of criticism, and General MacArthur, who was soon going to take over the command, was considering replacing Buckner (Sarantakes 2000, 13). Hattori praises the skilled planning and execution of Ushijima. Keeping secrecy about the escape routes contributed to the rare success of the Japanese Army, which was seriously depleted in armaments and combat strength. Also, solid fortification of the former headquarters at Tsukazan was consequential to provide support to the retreating troops and check the advancing enemy. Finally, Japanese air support, which turned to waves of suicide pilots had some effects, despite their enormous human and material losses. Shortly prior to the withdrawal from Shuri, the Japanese Army Air Forces assembled a group of officers trained in guerrilla warfare at the Army's Nakano School formed the Giretsu Airborne Corps, and on the night of May 24, the Corps made a forced landing at Yomitan, in which only a single plane reached the airfield, but the crew destroyed and damaged several U.S. aircraft before being caught (Appleman 1948, 362). Flight operations from Yomitan Airfield were restricted for several critical days. The advance of the Giretsu mission and a series of suicide attacks the next day diluted the U.S. air reconnaissance of the Shuri front and air support in Haebaru, and thus distracted the U.S. forces from preparing for the possible Japanese escape to the south (Appleman 1945, 400). Japanese military historians have little to appreciate about the strategy and tactics of the Japanese forces in Okinawa, and that little has generally been the retreat to the south, but as we will see below, even that move can be questioned.

Severe Weather and Revisiting the Narrative of the Battle

American negligence and Japanese distraction were not the only reasons that aided the Japanese garrisons to escape southwards at the verge of American victory in Shuri

(Appleman 1945, 432). The other reason was the start of heavy torrential rainfall from 19 May, shortly after the U.S. started the flanking manoeuvres (Milford and Rogers 1945, 107). Rainy weather made it easier for the American troops to enter Naha and Yonabaru, both of which were not heavily defended, but the rains impeded American further advance on Shuri, where the Japanese were garrisoned and waiting (Yazaki 2004, Tsutsui 2003, Tamura 2016, Ryufukai 1998, Okinawa Meteorological Observatory 1990, 1992). U.S. troops had to climb slippery hills such as the Chocolate Drop (Ishimine), and Conical Hill (Untamamori) against the rain, bullets and shells. As the rainwater soaked into the soil, fields and muddy roads became inaccessible to tanks and heavy artillery, and U.S. soldiers were not eager to move on foot without close artillery support in the enemy infested environment (Gueller 1946, 342). American move had slowed down and infantrymen were waiting for more convenient weather. Also, after the flanking manoeuvres, the supply lines through the newly occupied Yonabaru and Naha were getting overstretched and heavy rains had almost stopped the arrival of new munitions and other supplies to the front.

Low lying clouds, fogs, and heavy rains made the reconnaissance of enemy lines by airplanes difficult if not totally impossible (Gueller 1946, 354). U.S. had to reduce the number of reconnaissance flights to the bare minimum, and it thus diminished the likelihood that the Army, Naval, and Marine Air units could detect the massive escape of the Japanese forces on the great move southwards (Appleman 1945, 463). Furthermore, the 7th Division's 32nd Regiment and 184th Regiment, which were at the forefront of the American advance, were in the position to stop the Japanese retreat and engage the fleeing Japanese units on their route through the old Tsukazan headquarters. They were dispatching their reconnaissance units to the vicinity of Tsukazan to inspect the enemy situation since around May 26 (Gueller 1946, 359). However, heavy rains prevented the reconnaissance from progressing smoothly, and the information that the scouting party gathered was ambiguous and contradictory. The reconnaissance reported of only a handful of wandering Japanese soldiers going back and forth without a clear direction. At least for a while, it seemed the most vigorous enemy of American troops were not the Japanese, but the heavy rainfall to which they were losing their positions.

Japanese and U.S. troops were not the only ones on the island. All the battle, and especially its later stages were set in the most highly populated areas, including Shuri, the suburbs of Naha, Yonabaru, and cities and towns along the routes linking these three main population centres. Well before the start of the battle, Japanese government provided for some limited evacuation from Okinawa to the mainland Japan, especially of small children.

However, waters around Japan were frequented by U.S. submarines, and ships carrying war material or troops were often attacked. Mass evacuation was turning increasingly dangerous (Davidson et al. 1947, 168). The Japanese government also needed civilian population on Okinawa to provide labour, support, and reservists for the military garrisons. Thus, people were suggested to evacuate those eligible to the underpopulated mountainous Yanbaru region in the north of the Okinawa island. However, as the region was without sufficient food resources and refugees could not carry much to provide for themselves, many people chose to stay in their homes in the south. When the U.S. invasion started and split the island in half, most of its population was still concentrated in the southern area.

As heavy rains hit Okinawa in May, they matched the U.S. changing offensive with the flank move from the east and west. Shuri and surrounding areas were the targets of concentrated shelling and the last civilian population which was still staying there started to leave southward. Naval artillery bombarded Haebaru and other areas below Shuri in support of the new military operations. Together with heavy rains, the rains of shells and bullets were pouring down on escaping inhabitants, and the narrowing escape routes around Hitotsubashi and Tsukazan were sown with piling dead bodies of civilians. Japanese military did not give the civilians any clue about where to escape, and many people were wondering around aimlessly, relying on hearsay and sounds of the incoming artillery fire (Teruya 1994, 57). After the Japanese garrisons decided to escape southwards, they began rounding up civilians to help carry the military equipment and supplies to the south. Using civilians or civilian disguise for military operations is prohibited by international law, but there are reports of both during the Japanese retreat. Aided by bad weather, such disguise was instrumental in fooling the enemy, but it also compounded to the American animosity and lack of moderation when clearing the caves and hideouts in the south, where most of the civilian refugees were seeking protection. People were aware of the Japanese military's disregard for the plight of civilians, especially because of circulating rumours about military's mistreatment of some locals (Haebaru 330, 242, 214). This resentment culminated when the military started to procure the last food people had, and oust civilians out of caves into open fields and heavy rains (Kyan 1984, Arakawa 1994, 54). Roads and fields in the south were muddy and made walking difficult, which compounded to the danger of becoming targets of enemy fire. Wet and dirty environment was conducive to infections such as dysentery, tetanus, athlete's foot, and maggot infestation (Haebaru 214, 182, 347, 348). Some refugees recollect refusing to drink dirty water that was plentiful around them and rather withstood the thirst (Yonaha 1992, 42). People could rarely sleep in dry clothes.

Dirty rainwater poured into caves and hideouts and provided permanent discomfort and lack of hygiene (Haebaru 313). Even in detainment camps with tents and wooden flooring, the floors were soaked wet and were hard to sleep on. Also, in such damp days and nights, one never knew when the deadly *habu* snakes would appear (Teruya 1994, 65). Some left their elder relatives in Shuri or surroundings to the fire and mercy of the enemy. Many others carried their parents and grandparents on their backs and shoulders. Exposed to heavy rains, muds, dirt, and constant shelling, some elder did not survive such a move and died on the way (Yamakawa 1994, 57, Yonaha 1992, 57).

Heavy rains complicated escape routes to the Japanese military, but they made the escape even more trying to the fleeing civilian population (Kaneshiro 1985, Miyagi 1987, Nanjoshi 2020, Tamagusuku 2004, Tsukazan 1988). The Japanese military command must have been well aware of this fact when it considered their own withdrawal plan. When the 32nd Army left Shuri, it blended with the evacuating population, and procured their labour. In preparation for the withdrawal, the residents were called upon to carry military supplies. The U.S. aerial and ground reconnaissance teams were aware of this possibility and reported on any such moves. But heavy rains prevented its close observation, and American reports indicated people carrying supplies in both directions. In other words, U.S. military reports mentioned civilians fleeing the front lines, but also those returning to the Shuri area, and confirmed that military personnel were among them (Appleman 1945, 168). Based on such fragmentary reports, Buckner saw confusion in the Japanese forces, and decided that the Japanese command would not dare to move southward in mass.

Another major problem with the 32nd Army was, that it did not inform the evacuating population that it planned to make the Kyan Peninsula on the southwestern coast of Okinawa its final destination (Tomigusuku 2001, 252). Supposedly this was done to keep the secrecy of its plans for mass military withdrawal, but, such a decision sounds nothing less than ruthless, considering that the military could save many lives of their own fellow citizen, by directing them early on to go to the safe havens in the Chinen Peninsula. The local unit commanders, after safely fleeing under the civilian cover and with civilian aid to their destinations in the south, changed their attitude to the population, and started forcibly evicting them from caves. Civilians were no longer of any use, and became an obstacle to the fighting. At this time, however, the road to the Chinen Peninsula on the east side was blocked by the U.S. forces moving south, and the residents were caught between their friendly forces, and flamethrowers and artillery fire of the enemy. The residents were held hostage to the conflict, and rainy weather contributed to their

enormous losses during the flight.

What consequences did the Japanese garrison retreat from Shuri during heavy rains bring? The number of Japanese casualties in the first four phases of the war, that is up until the escape in the end of May, were limited mainly to the military personnel and local defence corps. From the beginning of the war until 20 May, the casualties were around 50 thousand, which is consistent with the reduction of the Japanese war-fighting strength (the weekly press release for May 20 was 48,103 deaths from the beginning of the war). By the next 10 days, the reported number rose to 60 thousand. But because of the southward escape compounded by heavy rains, the divide between the numbers of reported and estimated deaths increased significantly. The U.S. Army estimate shows 81,720 deaths by 9 June, which is almost the double to that of the 20 May (Tenth Army 1945, 9-II-2). The number of estimated deaths rose drastically especially at the time when it became more difficult to differentiate between civilians and the military, and that led to a steep rise in civilian casualties (Hayashi 2001, 138). After the Americans relocated their troops to the south, during the final fifth phase of the battle, the death toll surged again by over 40 thousand, to the estimated 131,303 dead (Tenth Army 1945, 9-II-2). These numbers show radical rise in the deaths of ordinary civilians who became the unnecessary victims of their command's fatal and careless decision for retreat in heavy rains.

As of June 26, 2022, the Okinawa Prefectural Government reported that from the total number of war dead, 149,584 were from Okinawa Prefecture, and 77,448 were from outside of the Prefecture (Okinawa Prefecture 2022). According to the Okinawa Prefectural History, the largest number of victims were the residents of Naha, Shuri, Mawashi, and Oroku, who fled to Itoman and other parts of the southern Okinawa (Itoman 2003, Ota 1982, Okinawa Prefecture 2012, Okinawa Prefecture 2017, 187). The percentage of war dead in Shuri City was particularly high at 42% of the city's total population.

These figures indicate that the most atrocious phases of the Battle of Okinawa were the days during and after the retreat of the Japanese garrisons from Shuri. Out of the battle deaths in the south, the overwhelming majority were non-combatants who lost their lives because of the carelessness of their own garrison forces, and because of the increased American urge to end the battle soon. The decision of Japanese military to retreat has been appreciated highly by some military historians, but such appreciations are misplaced as the retreat lead to the failure to protect their own non-combatant citizen, and to the loss of face before the Okinawan public, which is continuing until today.

Conclusion

Conflicts and wars are often narrated around the human subject. Oxford English Dictionary has 7 densely filled pages describing the contested meaning of war. In common sense it refers to the "hostile contention(s) by means of armed forces between … parties". Parties are groups of people, such as states, nations, rulers, and that is human subjects who consciously chose to go to conflict.

Yet, wars are complex phenomena, which include more than the interplay between human subjects. Wars rarely follow the trajectory that humans were expecting them to take. Wars are assemblages of trained soldiers, and instruments with which to fight. But they are also assemblages of non-combatants, geographies, boundaries, cemeteries, diseases, words, extended meanings, and also of weather and climate. We know very little about the weather and its relationship to human conflicts. Meteorology collects data on weather systems and attempts to make predictive models for the future. But weather and climate are much more complex and comprehensive than any data we collect about them and any models we build.

As seen in the account of the battle of Okinawa, the arrival of heavy rains changed the topology of the whole conflict, which turned from frontal warfare to an atrocious carnage of noncombatant population. Some might attribute such a change to human decisions. But nature, in the form of extreme weather phenomena, had its stake in the battle and made some human decisions more likely than others. Heavy rains transformed the conflict. As the witness accounts have it, for some two weeks the combat between the Japanese and Americans became not only the rain of shells and bullets, but also of water droplets (Haebaru 2013). It also turned into a battle where the Japanese and Americans were fighting not only against each other, but they were also fighting side-by-side, against the clouds, showers and mud. This transformation does not exempt the Japanese and Americans from their responsibility to answer to their publics about the atrocities they caused, but it throws a more climate-friendly light at the accounts on the greatest battle of the Pacific War.

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