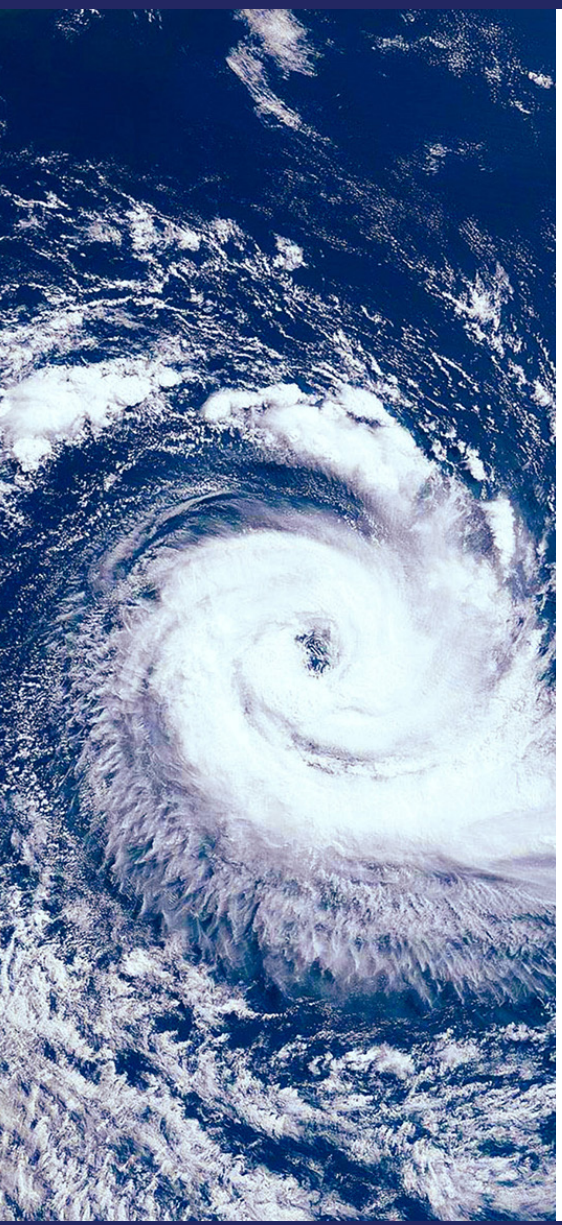
INTERNATIONAL SOS

INSIGHT REPORT

Asia: Preparing for typhoon season in the North-west Pacific region

JULY 2021



- Tropical cyclones mostly occur between May and November in the North-west Pacific region. The 2021 typhoon season is forecast to be slightly below average, with an expected yield of 24 tropical storms, 15 typhoons and nine intense typhoons.
- Although typhoons can affect multiple countries in the region, the Philippines is usually the most impacted, followed by China and Japan, and to a lesser extent South Korea and Vietnam.
- Typhoons can cause travel disruption, casualties and significant infrastructural damage. Aside from a storm's intensity, a country's level of resilience (preparation, supporting infrastructure and response capabilities) determines how it will ultimately be impacted. Response capabilities may also be strained by the ongoing COVID-19 pandemic.
- Managers with operations in areas at risk from typhoons should ensure they have comprehensive business continuity plans in place. They should also account for scenarios that may require evacuation or relocation of workforce, potential disruption to essential services, and constraints relating to ongoing COVID-19 containment efforts.
- It is essential to have a clear structure for communication of decision points and actions throughout the organisation, both locally and internationally (see Appendix 1 for a summary of preparatory and post-event decisions and actions).

OVERVIEW

The North-west Pacific region experiences the greatest number of tropical cyclones worldwide. Although storms impact the region throughout the year, their frequency and intensity typically increase between May and November. This period also coincides with the monsoon season in some countries.

Tropical Storm Risk (TSR) has forecast that typhoon activity will be slightly below normal this year, with an estimated 24 tropical storms, 15 typhoons and nine intense typhoons (see tropical cyclone intensity scales in Tables 1 and 2). Typhoon Surigae is the only typhoon to have formed thus far into the 2021 season. While the storm did not make landfall over the Philippines, flash flooding and associated transport disruption, as well as power outages, were reported in parts of southern Luzon and Visayas islands (both Philippines).

Table 1. General intensity scale for tropical cyclones in the North-west Pacific region

Category	Sustained winds
Typhoon	>73 miles per hour (>117kph)
Severe Topical Storm	55-73 miles per hour (88-117kph)
Tropical Storm	39-54 miles per hour (63-87kph)
Tropical Depression	19-38 miles per hour (31-62kph)

Source: World Meteorological Organisation

Table 2. Regional intensity scale for tropical cyclones

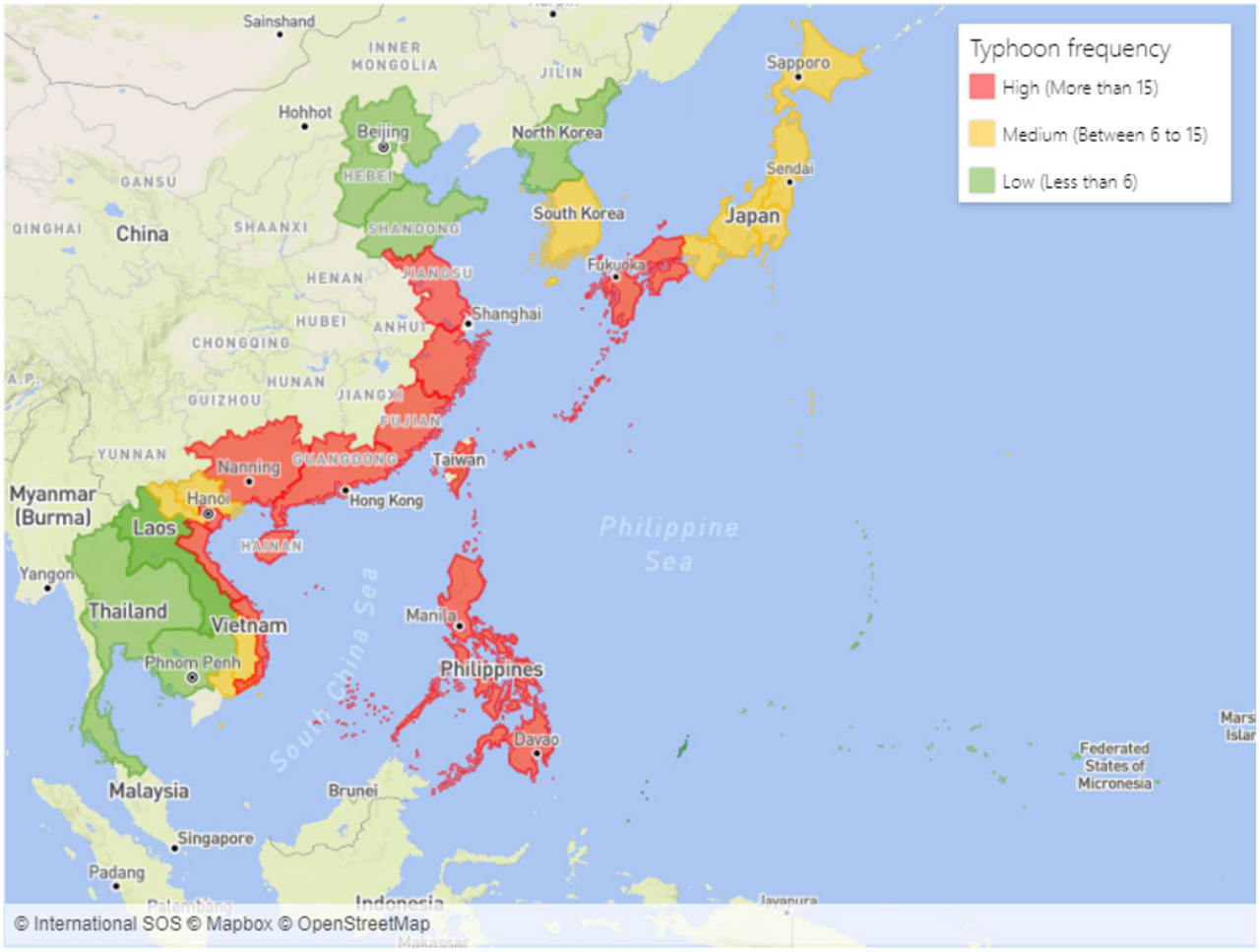
<table>
<tr><th colspan="3">Maximum sustained winds near centre of tropical cyclone</th><th rowspan="2">China</th><th rowspan="2">Japan</th><th rowspan="2">Philippines</th><th rowspan="2">South Korea</th></tr>
<tr><th>knots (kt)</th><th>kph</th><th>miles per hour</th></tr>
<tr><td><34</td><td>31-62</td><td>19-38</td><td colspan="4">Tropical Depression</td></tr>
<tr><td>34-47</td><td>63-87</td><td>39-54</td><td colspan="4">Tropical Storm</td></tr>
<tr><td>48-63</td><td>88-117</td><td>55-73</td><td colspan="4">Severe Tropical Storm</td></tr>
<tr><td>64-80</td><td>118-149</td><td>74-92</td><td>Typhoon</td><td>Typhoon 64-84 kt</td><td rowspan="2">Typhoon 64-120 kt</td><td>Typhoon 64-84 kt</td></tr>
<tr><td>81-99</td><td>150-184</td><td>93-114</td><td>Severe Typhoon</td><td>Very Strong Typhoon 85-104 kt</td><td>Very Strong Typhoon 85-104 kt</td></tr>
<tr><td>99-120</td><td>185-220</td><td>115-136</td><td rowspan="2">Super Typhoon</td><td rowspan="2">Violent Typhoon >104 kt</td><td rowspan="2">Violent Typhoon >104 kt</td></tr>
<tr><td>>120</td><td>>220</td><td>>137</td><td>Super Typhoon >120 kt</td></tr>
</table>

Sources: China Meteorological Administration; Japan Meteorological Agency; Philippines Atmospheric, Geophysical and Astronomical Services Administration; Korea Meteorological Administration

Typhoons tend to impact multiple countries in the North-west Pacific region. Of these, the Philippines is the most affected, with an average 70% of typhoons hitting the country between July and October. These storms typically weaken and become tropical depressions before reaching countries such as Cambodia, Laos, and Thailand.

Typhoons occur an average of 20 times annually in the Philippine Area of Responsibility. The Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA) has forecast that the 2021 season will see approximately 11 to 19 tropical cyclones entering or developing within this region. Meanwhile, Japan experiences an average of 11 to 12 typhoons annually, of which only around three typically make landfall on Japan's main islands (Hokkaido, Honshu, Kyushu and Shikoku). In China, around ten typhoons affect the coastal regions annually, while Vietnam and South Korea see an annual average of four to six and two to three typhoons, respectively. The map below (Figure 1) shows areas directly impacted by typhoons between 2015 and 2020.

Figure 1. Typhoon activity in the North-west Pacific region between 2015 and 2020



OUTLOOK

Travel disruption is the most common impact of storms, as consequent flooding can result in road closures, flight suspensions and, in some cases, airport closures. Disruption to essential services, including the provision of electricity, food and water, is also possible. The extent of disruption and humanitarian impact of a tropical cyclone varies depending on the size and path of the storm, as well as the country's level of resilience.

This means that areas with greater socio-economic inequality, such as the Philippines and Vietnam, are generally more vulnerable to tropical cyclones. Poor infrastructure and road networks combined with flash flooding and landslides in the aftermath of a typhoon can cut off access to towns and cause major disruption to essential services. In addition, these factors may pose further challenges to evacuation, emergency response, relief and aid efforts. The level of damage and disruption is often more severe, and recovery periods therefore more protracted, in these areas.

The ongoing COVID-19 pandemic and related travel restrictions will likely exacerbate the situation faced by affected communities, as well as complicate disaster response and recovery operations. COVID-19 containment efforts have also strained key resources and infrastructure normally used in disaster responses. For instance, access to temporary shelters or evacuation centres such as schools and public facilities may be limited due to their ongoing utilisation as part of COVID-19 containment efforts. The capacity of such facilities may also be reduced because of social-distancing measures. This was evident when Typhoon Vongfong struck the Philippines in May 2020. Many evacuation shelters were already being used as isolation facilities and some local governments had ordered them to only be half-filled for social-distancing purposes.

The social and economic impact of COVID-19, such as increased unemployment and logistical challenges, can intensify existing grievances over perceived slow or insufficient government relief efforts, as well as shortages of essential supplies. This may result in secondary security implications. While a notable deterioration in the security environment has not been observed in the Philippines in recent years, various groups have staged protests over perceived inadequate government preparation and response to the COVID-19 pandemic and typhoons in November 2020. Moreover, President Rodrigo Duterte's absence from public eye and lack of government relief efforts have been widely criticised on social media platforms. Growing frustration over the Duterte administration has resulted in calls for his ouster, two years ahead of the 2022 presidential election.

CASE STUDIES

Typhoon Goni

Typhoon Goni made landfall on the Philippines' Catanduanes island on 1 November 2020 as a Category 5 tropical cyclone (highest on a five-tier scale). It then rapidly weakened while moving over the Philippines and across the South China Sea, before making landfall a second time in central Vietnam as a tropical depression. Goni was the strongest landfalling tropical cyclone of 2020, and among the strongest to hit the Philippines since Typhoon Haiyan in 2013. The PAGASA issued a Tropical Cyclone Wind Signal 5 (highest on a five-tier scale) for areas in the storm's path.

Consequent flooding and landslides caused extensive damage to property and roads in the Philippines, as well as disruption to power and communications networks in the affected areas. In addition, flight operations were temporarily suspended for 24 hours on 1 November at the capital Manila's Ninoy Aquino International Airport (MNL). The storm ultimately affected more than 2m people in the Philippines, including 25 who were killed in associated incidents. The cost of damage from Goni was estimated at $230m.

Typhoon Vamco

While recovery from Typhoon Goni was still ongoing in the Philippines, Typhoon Vamco affected similar areas of Luzon island when it made landfall in Quezon province less than two weeks later on 11 November 2020 as a Category 4 tropical cyclone (second-highest). This exacerbated pre-existing infrastructural damage and hampered ongoing relief efforts in the country. For instance, prolonged disruption to water supply was reported in several areas of the Cagayan Valley region (Philippines) for almost two months after both storms had passed.

Notably, Vamco caused the most disruptive flooding seen in Metro Manila (Philippines) in years, while widespread power outages and road closures were reported across Luzon island. More than 3m people were affected by power outages, and many government offices and public schools were closed in the region. The typhoon also resulted in travel disruption, including flight cancellations at several airports. Some 5m people were impacted by the storm, including 101 who were killed in associated incidents. The storm caused an estimated $400m in damage.

Some disruption to rail and ferry services were reported when Vamco subsequently passed south of Hainan island (China) on 15 November, before making landfall near Ha Tinh province (Vietnam) the same day. Damage to roads, bridges and at least 1,500 properties, and power outages, were reported in the affected areas. Flights were also suspended at several airports. Vamco's passage had complicated Vietnam's restoration efforts in the wake of previous storms since October.

Typhoon Haishen

Typhoon Haishen passed near Japan's Kyushu island on 6 September 2020. While it did not make landfall in Japan, it brought heavy rain and strong winds to south-western parts of the country. Its passage caused disruption to flights and train services, as well as power outages affecting nearly 430,000 households. Two deaths were reported, while 108 people were injured in weather-related incidents. Evacuation orders were issued for more than 1.8m people across several cities.

After leaving Japan, Haishen made landfall in Ulsan city (South Korea) on 7 September. The storm caused power outages affecting around 70,000 households in North and South Gyeongsang provinces (both South Korea), as well as flooding that resulted in multiple road closures. More than 300 flights at ten airports across the country were cancelled and some national train services were suspended on the day of the storm's arrival. Incheon Port (South Korea) had also closed ferry routes to islands located in the Yellow Sea (West Sea) as a precaution. Two people were killed and multiple others injured in flood-related incidents.

RECOMMENDATIONS TO SECURITY MANAGERS

Managers with operations in areas at risk from typhoon-related damage and disruption should ensure they have comprehensive business continuity plans in place. Plans should take into account business-as-usual (BAU) processes, as well as more extreme scenarios such as evacuation or relocation of workforce. At the same time, plans should factor in potential disruption to essential services, including communications, power and transport, as well as the ongoing constraints posed by COVID-19 restrictions or containment efforts.

Reviewing business continuity plans

Managers should review and update their crisis management and business continuity plans according to the expected impact of the ongoing typhoon season. These plans and relevant updates should be communicated across the organisation. Both management and individuals should have a clear understanding of their roles and responsibilities, as well as appropriate responses during a disaster. Training and drills will aid in the preparation of such situations. Organisations should encourage their workforce to understand their vulnerability and to adopt appropriate preparedness at their residence, both for a potential evacuation and stand-fast period.

Preparation ahead of a typhoon

Once you receive notification that a typhoon will impact your area of operations, confirm the number of workforce (local employees, business travellers and expatriates) in areas expected to be affected and determine if relocation or evacuation is needed.

In addition, you should identify the likely assistance requirements and ensure that workforce have clearly defined roles and responsibilities and are aware of what needs to be done. You should review the available support infrastructure and resources in the country and identify if there are any additional constraints due to COVID-19. Do not rely solely on local emergency response services, as their resources may be overstretched.

Several factors should be considered when making decisions on whether to evacuate or relocate workforce:

- The ability to gather reliable information on the situation and any emerging threats, as well as to communicate effectively within your organisation and externally.
- The likely impact on essential infrastructure, such as power, water, telecommunications, and roads. Safety concerns should also include assessing the integrity of structures that may be affected during a typhoon, including by heavy flooding, high winds, and debris.
- The ability to stay in the affected areas for an extended period, including the amount of stockpile and the ability to procure essential supplies or receive relief/support.
- The impact on workforce. Are they likely to be directly affected? How can you account for and maintain communication with them? Is there a requirement for medical support?
- The impact on the security environment.
- The capabilities of the authorities. What are their response capabilities in terms of emergency and relief delivery? Should the security situation deteriorate, would they be able to regain control of the situation?
- The impact on business operations.

Ensure situational awareness

Managers should monitor information on natural hazards, the assessment of damage and disruption and where to get aid for workforce, as well as the outlook, in a structured manner. They may refer to local government departments on disaster response, as well as published disaster-related information by local government or research institutions. It is essential to keep track of the latest policies and regulations to understand the implications for both organisations and individuals in the preparation phase.

Stand-fast preparedness

During some natural disasters, relocating may prove unfeasible, and standing fast and allowing the situation to stabilise may be the only viable option. This is especially the case during the acute phase of a disaster, when information is limited and the feasibility of movement is unclear. Organisations and workforce should be prepared to stand fast for an extended period. In some instances, workforce may need to be accommodated at the company premises if stranded. To support this, the compound should be equipped with essential supplies such as food, water, tents and alternative devices, as well as masks, hand sanitisers, thermometers, disinfectant wipes/wet tissues and hand soap in light of the ongoing COVID-19 pandemic.

Early evacuation

Given the constraints, the activation of crisis management plans and decisions relating to an evacuation should be made as early as possible. Evacuation options have been limited by COVID-19-related restrictions and precautionary suspensions of transport services. Travel in and out of the areas affected by typhoons should only be undertaken with careful risk assessment and considerations such as a likely shortage of essential services, commodities, accommodation and transport. Airports may also be closed at short notice, either as a precautionary measure or due to damage, while commercial flights may by cancelled or limited due to the pandemic.

APPENDIX 1: SUMMARY OF PRE- AND POST-EVENT DECISIONS AND ACTIONS

Ahead of a tropical cyclone	**Stay informed**	Monitor the latest developments and directions from the authorities.
	Prepare your property	Identify a safe room, ideally a small, windowless room in the centre of your accommodation. Secure outdoor furniture and other loose items.
	Consider relocation/ evacuation options	Identify alternative accommodation in case evacuation becomes necessary. This can include friends' or relatives' homes in other towns, public shelters, or hotels. Factor COVID-19-related guidelines issued by local authorities into your planning, as occupancy at public shelters may be limited due to social-distancing requirements. Register related contact numbers into your mobile phone. Ensure you know how to reach your pre-identified accommodation and be ready to take alternative routes if roads are closed or congested.
	Know whom to contact	Ensure you save contact numbers of the police/emergency services, your nearest Assistance Centre and other local numbers that could be helpful in an emergency. Write down these details in case your phone runs out of power and is unable to be recharged.
During a tropical cyclone	**Know what to expect**	The worst part of the storm is when the eye passes over and winds blow from the opposite direction. Trees, buildings and objects damaged by the first winds can be broken or destroyed by the second winds.
	Shelter	If you are not advised to evacuate, stay indoors and away from windows.
		The safest place to be is an underground shelter, basement, or safe room. If no such location is available, a small, windowless interior room or hallway on the lowest level of a sturdy building is the safest alternative.
		If caught outside, immediately get into a vehicle, buckle your seat belt and drive to the closest sturdy shelter. If flying debris is present, pull over and park. Stay in the car with the seat belt on. Put your head down below the windows and cover it with your hands and a blanket, if possible. If able to get lower than the level of the roadway, exit the vehicle and lie in that area, covering your head with your hands.
In the aftermath of a tropical cyclone	**Safety considerations**	Put out any fire and monitor the building for smoke for several hours. Clean up spilled medication, bleach, petrol or other flammable liquids that could become a fire hazard.
		Gas leaks are possible due to damaged infrastructure; do not use candles, matches or lighters. Turn off the building's gas supply. Do not operate light switches if you suspect that there has been a gas leak. If you smell gas or hear a blowing or hissing noise, open a window and get everyone out of the building quickly; call the gas company or local fire service.
	Essential services	Use the telephone only for emergency calls, and ensure that any mobile phones are kept charged. Where there are multiple phones, use one phone at a time, while keeping the others charged.
		During a blackout, turn off any electrical equipment that was in use when the power went out. If you use a generator, connect equipment that you want to power directly to the outlets on the generator. Never connect a generator to a building's electrical supply.
	Travel	Roads may be blocked or subject to closure by the authorities. Ensure that your vehicle is adequately equipped with full spare tyres, supplies, life-safety equipment, and enough fuel to complete your return journey.
	Security environment	In a major disaster, the security environment may become more complex, with the risk of looting, robbery and burglary increasing. Grievances can also lead to demonstrations against authorities. Ensure that movement through severely affected areas is safe prior to setting out.

ACTIONABLE INSIGHTS AND UNPARALLELED SERVICES

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