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Wind, Water, and Risk: Shaping a Transnational History of the Western North Pacific

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Abstract

The peoples who inhabit the states that lie in the direct paths of typhoons in the Western North Pacific share a common history of repeated dislocation, destruction, and death that delimits a zone of comparative enquiry and historiographical interest. The track left by typhoons across ocean and land perfectly outline the dimensions of a more transnational historical region encompassing the Philippines, Vietnam, China, Korea, Japan, Taiwan, and the island states of Micronesia. The peoples of these lands are bound together by a common experience of risk. Wind and water together offer a radical alternative historiography to state-centred master narratives that are revealed by pursuing issues and questions that transcend the spatial and temporal boundaries of any one state or region.

KEYWORDS: Typhoons, disasters, transnational history, Pacific

Introduction

In late September 1881, a typhoon formed somewhere east of the Philippines. With wind speeds of between 145 and 185 kph, it struck Luzon, the principal island of the archipelago on 30 September passing west-northwest through the provinces southeast of Manila "doing much damage" (Selga 1936). In Batangas, heavy rainfall added "considerably to the damage occasioned by the storm" causing localised floods and at least eleven deaths (Dechevrens 1882: 125). Heading out into open water, the typhoon intensified over the South China Sea, wrecking several steamships in its passage before curving northward to make landfall on the Tonkin coast of Vietnam on 5 October. In particular, the developing port of Haiphong, as yet unprotected by any dikes, was literally washed away as a three metre high storm surge coursed up the Red River, drowning 3,000 people and causing US$300,000 worth of damages to the rice harvest. Little was able to withstand the combined action of wind and water, a mix which in "a few minutes were sufficient…to destroy the results of years of toil, and transform into liquid plains what the night before had been flourishing gardens and rice fields" (Dechevrens 1882: 134). The typhoon then lost intensity as it tracked over southern China, Korea, and Japan before finally dissipating somewhere out in the North Pacific.

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The now celebrated *Terrific Tongkin* or *Haiphong Typhoon* of 1881 makes the point that is only too obvious and yet so often overlooked: many environmental phenomena do not stop at national borders but are 'transnational' in essence. Even the northward tracking curve of the typhoon (Figure 1) perfectly outlines the dimensions of a more transnational historical region encompassing the Philippines, Vietnam, China, Korea, Japan, and Taiwan (Formosa), to which should be added the island states of the Marianas and the Caroline Islands. The peoples of these states are bound together by a common experience of risk. Wind and water together offer a radical alternative historiography to state-centred master narratives by pursuing issues and questions that transcend the

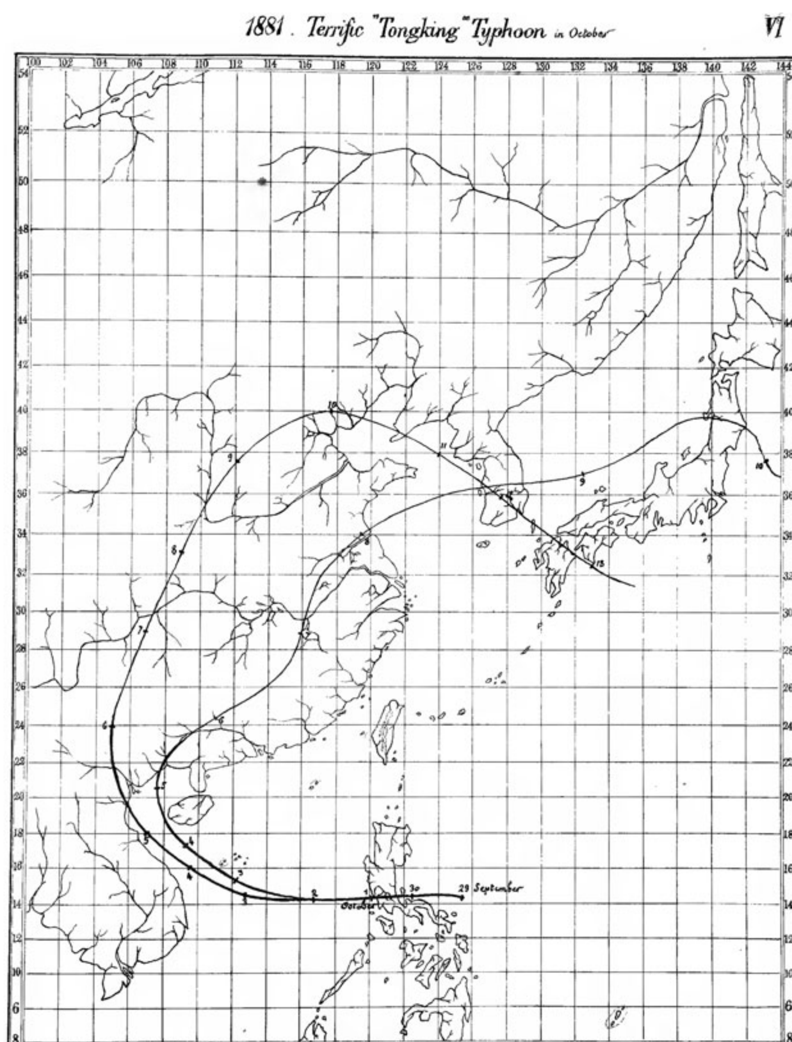

Figure 1. Supposed track of the Terrific Tongkin Typhoon of October 1881 (Typhoons were considered able to "split in two" at the time, hence the dual tracks) Source: Dechevrens 1882: Plate VI

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spatial and temporal boundaries of any one place or region. Rather than grouping peoples solely by culture or politics, a transnational history of the 'Western North Pacific' (WNP) defines a region by emphasising common risks.

Towards a Transnational History

Since the 1990s, there has been a 'turn' in historiography towards the global or transnational in an attempt to come to terms with the difficulty of writing history in a globalised age. The problem became particularly acute in the final decade of last century when historians expressed dissatisfaction with treating the growing integration of the world in terms of a single region, the culmination of the long rise of the West, more specifically the United States (Geyer and Bright 1995: 1043). History as a discipline has been called "the child of the nation-state" (White 1999: 979) and since the nation state took the stage in the early modern era historians have mainly resorted to political, military, and economic criteria to determine the boundaries of their preferred unit of research (Anderson 1998). In reacting against a preoccupation with the nation state and national 'exceptionalism', historians began to call for a more inclusive, transnational history (Tyrrell 1991). This history was to be more than simply international and deal with the multiplicity of forces and themes that are cross-national. Indeed, some scholars have argued that transnational history can really only begin in the nineteenth century (Iriye 2007: 376). A transnational history or perspective frames its study by examining units that "spill over and seep through national borders" (Seigel 2005:63) and explores "the connections across national boundaries and the circulation of ideas, people and products these enable" (Heilbron *et al.* 2008: 147).

It might be expected that such a history would have a strong environmental bias in terms of both subject and method. While ecologies might be subnational or national, the environment *per se* and its principal manifestations such as climate, physical geography and hydrography are inherently global or, at least, cross-national in scale. Indeed, the environment is one of the central underlying themes of the precursor of all such histories, the *longue-durée* of Fernand Braudel, whose work clearly set out to examine the relationship between agency and environment over the centuries (Braudel 1949). Arguably, too, one of the earliest attempts at transnational history, the concept of Atlantic history or the Atlantic world, might seem to be one of the few historical categories that has "an inbuilt geography" (Armitage 2009: 11). In fact, David Armitage went on to elaborate a threefold typology of Atlantic history: *circum*-Atlantic history as the history of the ocean as an arena or zone of exchange, interchange, circulation, and transmission; *trans*-Atlantic history or the history of meaningful comparisons between otherwise distinct histories; and *cis*-Atlantic history or the history of any particular place (nation, state, region, specific institution etc.) in relation to the wider Atlantic world (Armitage 2009). Some historians have even gone so far as to suggest "planetarity" or envisaging human history in the context of planetary and cosmic evolution (Iriye 2013: 79–80).

Yet, the environment has rarely figured so far in transnational histories. And this is true even though environmental histories of change that had little to do with national borders were one of the original examples offered by Ian Tyrrell as a fruitful direction for further research (Tyrrell 1991). Even if there has been an increasing interest in the notion of space and particularly the relationship between transnational spaces and politically-bounded territories (Müller and Torp 2009: 614), environmental historians have mainly written histories that parallel the history of nation states even if it was hard to see how nature did (White 1999: 976). There are important exceptions to this neglect, of course, there are works that could be considered as incipient transnational histories based on the environment even if their authors did not identify them as such at the time (Crosby 1986; Grove 1995; Lamb 1982).

Even so, these histories are still only nominally transnational in subject, comparatively examining environmental themes between countries, rather than attempting to become transnational in method as well, using the environment to determine which nations or sub-national areas constitute the unit of research. A truly transnational history, instead, utilises environmental phenomena to frame the comparisons. By tracing the path of tropical cyclones from their inception in the WNP to their diminishment over mainland Asia, this paper escapes from both the 'stifling' confines of the nation state and from truncating environmental phenomena to national borders. Instead, the contours of a new regional comparison begin to emerge that embrace nations of distinct geo-political regions (Pacific, East Asia, Southeast Asia) and of completely different scalar qualities from small island states to continental-wide nations.

Typhoons of the Western North Pacific (WNP)

Tropical cyclones are among the most destructive of natural hazards and the WNP is the most active tropical cyclone region in the world.[1] About one third of the world's tropical cyclones originate in this region (Elsner and Liu 2003). On average about 25 cyclones each year reach tropical storm intensity or higher (Japan Meteorological Agency 2014). The physical mechanisms responsible for their cyclogenesis are complex but are known to require high sea-surface temperatures, a moderate Coriolis force, a pre-existing synoptic perturbation (such as a monsoon trough), and low wind shear (Ribera *et al.* 2008: 194). WNP typhoons are also sensitive to the El Niño-Southern Oscillation (ENSO) and the Quasi-biennial Oscillation (QBO).[2] In particular, there are fewer tropical

[1] Depending on its location and strength, tropical cyclones are referred to as hurricanes in the Atlantic, typhoons in the Pacific, and cyclones in the Indian Ocean.
[2] ENSO is an irregularly periodical climate change caused by variations in sea surface temperatures over the tropical eastern Pacific Ocean and has two aspects, a warming phase known as El Niño and

cyclones during La Niña years and a greater number of higher intensity and longer lived ones during El Niño years (Camargo and Sobel 2005). ENSO and QBO may also be responsible for the marked inter-decadal changes in tropical cyclone trajectories and numbers. Using data based on the Chinese documentary record of landfalls in Guangdong province that stretch back over a thousand years, typhoons are shown to have both centennial (140–210 year) and decadal (30–60 year) oscillations (Chan and Shi 2000: 189). In more recent centuries, the analysis of this historical record has allowed the identification of cyclical periods of cyclonic storm activity, with peaks in particular between 1660-1680 and 1850–1880 (Liu *et al.* 2001: 459).

Tropical cyclones with wind speeds in excess of 119 kph are called typhoons in the Western North Pacific and *bagyos* in the Philippines (Hirth 1880). Such phenomena occur most frequently in the warm, western sectors of all oceans during the summer and autumn months especially close to the equator. A mature typhoon is a formidable thermodynamic engine consisting of an asymmetrical array of intense squall lines, spiralling inward to a common eye some 25–50 kms in diameter. Surface winds blow inward with ever increasing velocity being diverted initially upward and then outward with the resulting cloud crown spreading out for hundreds of kilometres. Typhoons depend for energy upon these inwardly spiralling winds which extract surface moisture and heat from the surrounding ocean. As a typhoon passes over cooler water or dry land, it rapidly runs down its heat reservoir and loses energy but will quickly rejuvenate if it moves over warmer seas again. During its early phases, a typhoon moves slowly westward with the prevailing easterlies. As it grows in strength, however, the Coriolis force exerts a pole-ward influence and a typhoon's subsequent track depends upon the prevailing mean pressure gradients along its path, bearing it northwards and then eastward around the prevailing oceanic high-pressure centres. In the autumn, when equatorial waters are warmer, typhoons tend to parallel the inter-tropical convergence (ITC) zone. However, there are numerous exceptions and typhoons are often characterised by their erratic paths. Statistically, the densest concentration of typhoon tracks in the world lies between Manila and southern Japan, a distance of about 1600 km and colloquially known as Typhoon Alley.[3]

Typhoons originate in the WNP every year particularly between April and December. Early-season storms mainly form in the Philippine Sea south of latitude 10° N and move in a linear fashion parallel to the ITC. While these early storms have less intense winds, they often carry greater amounts of rain that cause serious flooding on landfall. Late-season typhoons are generally much larger and develop further north and further out in the North Pacific. Their

a cooling phase known as La Niña. The QBO is a inter-annual oscillation of the tropical stratospheric zonal winds between easterlies and westerlies.

[3]The discussion of the anatomy of typhoons is drawn from William G. van Dorn, *Oceanography and Seamanship* (1974:80–83).

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paths may take them 5,000 km over open, sun-drenched ocean before making landfall, allowing them to grow into "heat-driven machines of enormous destructive potential" (Longshore 1998: 317).

These late-season storms also incline to a more north-westerly trajectory. The peoples who inhabit the states that lie in the direct paths of these storms, island populations and residents of coastal areas and their immediate hinterlands, share a common history of repeated dislocation, destruction, and death that delimits a zone of comparative enquiry and historiographical interest. Not only have people needed to find ways to adapt their societies to perennial risk, but the very paths of the storms weave these countries together with an Aeolian thread.

Wind

Reconstructing the histories of typhoons in the WNP prior to the late nineteenth century is patchy; observatories like those at Manila and Hong Kong were only founded in 1865 and 1883 respectively. With their establishment, regular statistics on wind velocities and precipitation levels were issued and forecasts of typhoon activity made available to shipping and coastal authorities. The staff of such observatories, many of them Jesuit priests, however, were more than simply collators of data, they were pioneers in instrument improvement and design for tropical locations. A striking feature of the Jesuits working in the Manila Observatory, for example, was their innovation in adapting precision instruments imported from Europe to local conditions. This innovation began with the simple modification of an aneroid barometer in 1885, included combining a barometer and a cyclonometer in one instrument (barocyclonometer) in 1897, and culminated in the invention of a refraction nephoscope able to determine cloud direction and velocity in 1900 (Solá 1903: 19–23, 27–28).

The most complete record of tropical cyclones prior to the second half of the nineteenth century exists for China and is based on the official gazettes of the southern coastal counties and dates from the Northern Song Dynasty (AD 960–1126). This record is approximately twice as long as the equivalent documentary data for North Atlantic hurricanes. However, it is only from the Ming Dynasty (after 1470) that the data are sufficiently reliable to analyse. Like all such pre-instrumental records, the data are only of typhoons that make landfall. Data for Guangdong province post-1400 indicates a frequency of 11 typhoons per decade or an average of approximately one strike per year, much lower than the average four strikes per year during the twentieth century. Despite the incompleteness of the data, however, the record is systematic enough to identify peaks and troughs in the number of typhoons making landfall over the province suggesting a relationship with major fluctuations in the atmospheric circulation. Stronger westerlies, a southward shift of the subtropical anticyclone and consequently lower sea surface temperatures in the mid-latitude of the WNP may have displaced storms to the south with the result that more typhoons struck Guangdong province while fewer reached the coast further north or struck

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Korea and Japan. Such a pattern is apparent in the second half of the seventeenth century and again during the second half of the nineteenth century, while the eighteenth century appears to have been a period of relative calm, with fewer typhoons making landfall in this part of China (Liu *et al.* 2001: 416–461).

This early documentary record for China is unusual in respect to its detail but sources also exist for other parts of the WNP. Most notable among these is the chronicle compiled by Miguel Selga, the Jesuit director of the Manila Observatory between 1926 and 1946. Selga collated data from the Spanish records to effectively produce a chronology of typhoons in the Philippines from 1566 to 1934. The Spanish material is unusual as prior to the nineteenth century it mainly concerns reports on the loss of ships at sea and does not provide such a detailed record of typhoon landfalls. Thus Fr. Diego Aduarte, on board an expedition dispatched to aid the King of Cambodia in 1598, describes his terror at being caught by the fury of the wind at sea and how "the planks of the vessel played like the keys of an organ" and all efforts to shore up the vessel against the damage wrought by "the mountainous seas" were like "the attempt of a child to check the fury of a brave bull" (Selga 1936). During the Napoleonic Wars, an entire Spanish fleet on course to intercept an English convoy was wrecked on the night of 22 April 1797 (Selga 1936). Nor were typhoons only of concern to sailing vessels: Typhoon Cobra's strong winds and high seas seriously degraded the US Navy task force *en route* to "liberate" the Philippines from the Japanese on 18 December 1944, sinking three destroyers and damaging nine other warships (Morison 2012: 65-81).

Verification of Selga's data suggests that, though incomplete, the series does provide accurate information on the path of typhoons that match present-day variability and monthly distribution (García-Herrera *et al.* 2007: 10). The most common path described by Selga is for typhoons to form near Guam, move in an extended arc westward to Luzon and from their split into two, one track curving further northward towards Japan and Korea, and the other continuing on westward across the South China Sea (Ribera *et al.* 2005: 89). The northern part of Luzon and the Batanes islands are the most frequently exposed region of the archipelago. Selga's chronicle depicts an early colonial society beset by typhoons like that of July 1717 that is described as "the fiercest typhoon ever experienced in these islands and hardly a house remains undestroyed however strong it was" (Selga 1936). The chronicle also provides some estimates of fatalities especially where these figures were exceptional: 1,800 in Manila and along the north coast in September 1867; and 1,500 in Samar and Leyte in October 1897. These figures are also considered to be conservative (Ribera *et al.* 2008: 196–197). More recent data from the second half of the twentieth century suggest that on average eight or nine typhoons make landfall over the Philippines each year (Brown 2013).

Historical data prior to the late nineteenth century for other countries affected regularly by typhoons in the WNP are currently not available, though archival records do exist for the construction of a more comprehensive chronology. The number of typhoons striking the coastal provinces of northern and central Vietnam each year post-1884 varies from one a year to as many as twelve, but the data are unreliable prior to 1950 and so variations in frequency are difficult to reliably determine. However, 348 typhoons made landfall over Vietnam between 1950 and 1999, an average of seven a year, the majority of which struck the central coastal areas of the country. The number of typhoons is also rising with each decade. (Kleinen 2007: 524–525). On occasion, too, the archival record from one country provides information on a neighbour. For example, records held in the Manila Observatory contain a report on the Tongkin (Haiphong) Typhoon of September-October 1881 that crossed over Luzon before generating a storm surge that allegedly drowned 20,000 people along the coast of Vietnam – a hugely exaggerated figure in the event (AMO Box-9, 35).

John Kleinen has reconstructed the historical experience of people living in the Red River Delta from the late nineteenth century and reveals the devastation typhoons caused coastal locations in Vietnam. His work describes how, for instance, the province of Nam Dinh was struck by four typhoons in just eight weeks between September and November 1897; and further describes how six typhoons in 1927–1928 wiped several villages off the map, killing hundreds, and destroying brick houses and factories in the provincial capital. In three memorable years, 1948, 1949, and 1953, the province was struck by at least ten typhoons (Kleinen 2007: 528-9). All told, 45 typhoons are recorded as striking the northern part of Vietnam between 1910 and 1934 (Gourou 1936 as cited by Kleinen 2007: 528).

The same difficulties are faced when reconstructing the historical record of typhoons for Japan and Korea. No instrumental record of typhoons exists for Japan prior to the Meiji Restoration and the establishment of the Imperial Meteorological Observatory in 1875. In fact, no clear definition of what constituted a tropical cyclone was recognised before 1868 and the word 'typhoon' was not used until the late nineteenth century. Severe storms are referred to in early Japanese historical texts as *bōfū* ('strong wind') and the earliest reported mention of one is for the year AD 775 in Kyushu and Yamaguchi Prefectures (Grossman and Zaiki 2013: 102–103). Prior to the publication of daily weather maps in 1883, ship log books, newspapers, and other published material have been used to compile data covering the earlier part of the nineteenth century. Between 1860 and 1899, 138 typhoons struck Japan or an average of 3.45 per year but with the frequency nearly doubling in the last 20 years (Grossman and Zaiki 2013: 112). Marc Dechevrens cites an eyewitness description of a typhoon striking Nagasaki on 27 September 1881 and later published in the *Shanghai Courier*: "Tiles were flying about indiscriminately, sheet iron roofs were flapping in all direction, buildings were blown in, roofs taken off, fences flying right and left, flagpoles falling, and people were pretty much scared", and added, "I felt unsafe myself in one house which swayed and rocked as though an earthquake were shaking it up generally" (Dechevrens 1882: 119). The late nineteenth century was evidently a period of increased cyclonic activity compared to the period post-1951 when the number of typhoons making landfall dropped to less than three per year (Grossman and Zaiki 2009, 2013:112).

Historical data for the Korean peninsula and Taiwan are also scarce. Both countries became Japanese colonies around the turn of the twentieth century and came under the purview of the Imperial Metrological Observatory. On average three typhoons pass over the Korean peninsula each year in the period since World War Two, one of which is of a magnitude to cause serious damage. In fact, tropical cyclones account for approximately 65 per cent of all the damage caused by natural hazards in the peninsula (Kim and Choi 2007). The frequency of typhoons passing over Korea changes in relation to atmospheric circulation. Thus the frequency was higher in the 1950s and early 1960s and again after 1986, but there were relatively few typhoons between 1965 and 1985 (Choi *et al.* 2010: 1476). There is also a marked decadal variation with tropical cyclones in the past mainly passing through the middle and northern regions of the peninsula and those in recent years often making landfall on the south coast and then tracking eastward. Now the majority of tropical cyclones come straight off the East China Sea while formerly they had passed first over mainland China before striking the Korean peninsula (Kim and Choi 2007). Typhoons strike Taiwan on average three or four times each year, producing heavy rainfall and strong winds that cause severe damage to agriculture and industry, and often result in serious loss of human life. A characteristic of tropical cyclones approaching Taiwan is the effect the island's Central Mountain Range poses for forecasting wind speeds and rainfall around the island (Wu and Kuo 1999: 68).

The islands of the WNP that comprise the spawning ground for so many of these typhoons, also form an integral part of this Aeolian region. Guam and the northern Marianas, and the islands of Truk, Yap, and Ponape were periodically, if less frequently, hit by severe cyclones. At least one typhoon a year passes over Guam, medium intensity storms occur every six to ten years, and a really destructive one happens about every 18 to 20 years. The typhoon of 1670, the first after Spain's occupation of the Marianas, was so severe that it was said to have destroyed the greater part of Guam and to have been regarded by the indigenous Chamorro population as a sign of the Christian god's displeasure at their continuing resistance (AMO Box 10-41). Similarly, the typhoon that struck the island on 23 September 1855 unleashed winds of such intensity that "they picked up rocks and flung them about" and "threatened to leave nothing left afoot over the surface of the entire island". All the native houses were destroyed without exception. "According to public opinion", reported the governor of the island to his superiors in Manila, "the typhoon experienced now has caused more damage than all the others this century". Nor was this the end of it and further destructive typhoons were experienced in 1871, 1872, 1876, 1884, 1885, 1891, and 1895 (Ibáñez del Carmen and Resano del Corazón de Jesús 1998: 8-10). Another severe storm on 18 March 1923 caused much damage to the plantations and roads of southern Guam (Selga 1936). Typhoons were proportionately even more devastating to the smaller Pacific islands. Destructive winds that struck the Caroline Islands in 1815 deprived islanders of all means of sustenance with the result that boat-loads of refugees made their way to Saipan where they sought permission from the Spanish authorities to settle (AMO Box 10-41). Similarly, the tropical cyclone that struck the island of Yap on 15-25 December 1920 was deemed "the worst typhoon they had ever experienced" and caused sea levels to rise by about four metres, seriously damaging or destroying more than 1,500 houses (Selga 1936).

Water

The intensity of typhoons may be categorised by wind velocity, but tropical cyclones and storms are also responsible for much of the precipitation over the WNP. Spiral rain bands form an integral part of an approaching typhoon and landfall often induces torrential downfalls and flooding. Nor does the centre of a tropical cyclone have to pass directly over a country to provoke heavy rainfall. So important are typhoons in this respect that cyclical fluctuations in their number may account for inter-decadal variations in national rainfall levels (Kim *et al.* 2006). The strong winds associated with tropical cyclones also cause water to pile up against shallow coastal areas often sending a storm surge several miles inland.

Historically, it is difficult to determine how much rainfall and associated flooding was due to the passage of typhoons. It is fortunate, therefore, that material held by the Archive of the Manila Observatory (AMO) gives some indication. A list drawn up from the minutes of local town chronicles constitutes a record of major floods that occurred in the Spanish occupied islands of the archipelago between 1691 and 1900.[4] While almost certainly incomplete, the list does provide an indication of the primary causes, geographical predisposition, and even the frequency of notable floods in specific areas. In particular, the chronicles frequently refer to flooding in connection to the passage of tropical cyclones. Extrapolating from the latter indicates that over 56 per cent of all recorded floods were directly attributable to typhoons during this period (Figure 2).

The chronicles often provide graphic accounts of such events. A tropical cyclone was responsible for the "sudden rise" of the Abra River that caused "the angry waters" to destroy many roads and houses throughout the region, drowning a large number of domestic animals, and submerging some rice fields and villages to a depth of 20 metres" (AMO Box-9, 35). The floods that the typhoon of October 1871 brought about were regarded as a national calamity and inflicted enormous material losses in Central Luzon, the Ilocos provinces and in the Cagayan valley:

> "The historian of Candaba, after pronouncing the flood the greatest in the memory of living inhabitants, states that the water rose one metre

[4]The list is simply entitled *Floods in the Philippines 1691–1911*. It does not seem to have been composed by Miguel Selga but makes frequent reference to his works and so presumably post-dates him.

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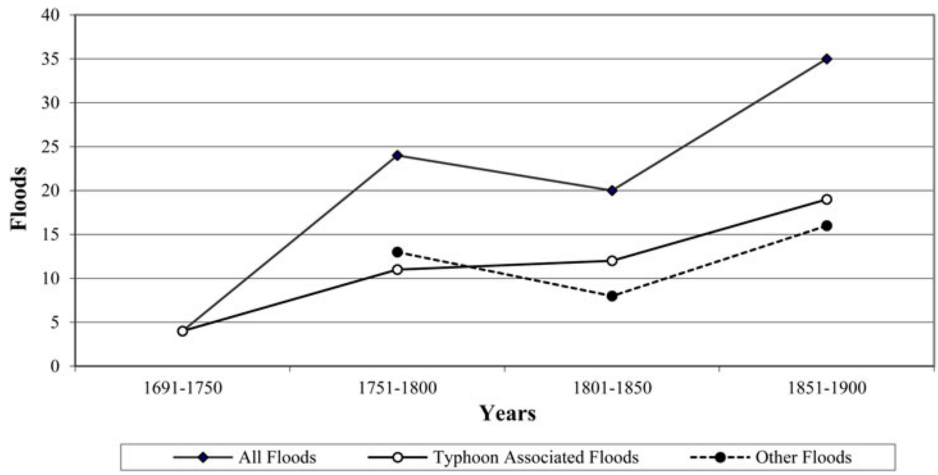

Figure 2. Major floods caused by passing typhoons in the Philippines 1691–1900
Source: Floods in the Philippines (*Archive of the Manila Observatory* Box-10, 37)

> above the highest spot of the town. The chronicler of Santo Thomas and Santa Ana, both in Pampanga, admit that the flood carried away many houses and destroyed many crops. In the mind of the historian of Barasoain this flood was one of the greatest ever recorded in Bulacan. In Lingayen the water reached the height of eight feet above the level of the town." (AMO Box-9, 35)

Modern estimates credit tropical cyclones for 47 per cent of the average annual rainfall in the archipelago (Rantucci 1994: 28). This close correlation between rainfall, floods, and typhoons suggests seasonality in their occurrence that corresponds to the greater frequency of tropical cyclones between July and November, the *tag-ulan* or rainy season. It may be that tropical cyclones exerted an influence on communities in the Philippines that is greater than other hazards because it creates a complex web of relationships that oscillates between disasters on the one hand and the timely need for rainfall on the other.

Similar reports of devastating floods caused by the passage of typhoons, often quite far inland, can be found for China. Thus a powerful typhoon in September 1618 brought heavy rain to six counties in eastern Guangdong province causing water levels to rise quickly and overtop the gates of the walled city of Chaozhou. In all, it was reported that more than 12,500 persons were drowned and 30,000 houses destroyed (Liu *et al.* 2001: 455). The Rev. Rougé, a Catholic missionary in the province of Jiangxi (Kangsi), left an eye-witness account of the floods caused by a passing typhoon in August 1881, noting how:

> "in a few moments, the smallest water-causes became torrents, torrents became wide impetuous rivers, and rivers again swollen by the influx of so many streams, rose to a prodigious height, and bursts forth over the

> country, carrying away not only the harvest, but even the very soil of the rice fields…Hundreds were either carried away by the floods or crushed to death under the ruins of their houses." (Dechevrens 1882: 46)

The rainfall associated with typhoons continued to pose a considerable problem for cities in China right into the twentieth century. Tropical cyclones have been a major cause of death in Hong Kong since the port's founding as a colonial entrepôt in 1842. Newspapers report typhoons striking the settlement in 1867, 1870, and 1874, with the latter storm responsible for over 2,000 deaths. Only with the establishment of the Hong Kong Observatory in 1883 is the full impact that tropical cyclones and heavy rainstorms had on the city revealed. Each year, the city is struck by five or six typhoons, one of which, every five to seven years, is categorised as severe, requiring the hoisting of a No. 10 warning signal indicating the need for the highest state of readiness. A number of these severe typhoons have caused serious loss of life, particularly in 1906 when over 10,000 fatalities were recorded equivalent to five per cent of the population; and in 1937 when more than 11,000 people, or one percent of the population, died (Ho 2003: 64, 74, 76).

Most rainfall in Hong Kong occurs between May and September, those months when tropical cyclones are more frequent. Heavy rainfall is particularly associated with their passage over the city. Historically, on at least two occasions, on 30 May 1889 and 19 July 1926, tropical storms were responsible for daily rainfall in excess of 500 mm. The highest daily rainfall attributable to a typhoon fell on 20 May 1989 when 323 mm were recorded. Rainfall of this intensity often resulted in a large number of deaths especially when exacerbated by human activities such as reckless land development, large-scale soil excavation, and construction on unstable slopes (Ho 2003: 111–112). A particularly aggravating feature of Hong Kong topography is that 60 per cent of the land area is made up of hill slopes. Heavy rainfall causes the wind-eroded loose materials on these slopes to quickly slide down as loose rubble. This can cause the collapse of large areas of rock surfaces burying the densely populated but flimsily built wooden houses below. Between 1947 and 2002, 470 people lost their lives in landslides. Up to 90 per cent of the houses destroyed in this manner were located in squatter settlements mainly inhabited by low paid "coolie" labourers and their families, lending to typhoons a noticeable class signature (Ho 2003: 104, 112, 116, 123). Heavy rainstorms continued to be responsible for multiple fatalities until the 1980s when the adoption of preventive measures by the government and the public alike greatly reduced the number and scale of landslides. Now such storms are mainly a cause of disruption and inconvenience to the city's population.

Heavy rainfall associated with typhoons affects all countries along Typhoon Alley directly influencing the intensity and seasonality of precipitation rates and having a significant impact on human societies and their activities. At times, rainfall levels are exacerbated by the local topography such as in the case of the Central Mountain Range of Taiwan. During the passage of Typhoon Herb over the island in July 1996, 1,987 mm fell on Mount A-Li in a two-day period. Hourly rainfall exceeded 80 mm for over 14 consecutive hours (Wu 1999: 73). But the principal threat of typhoons is not simply their moisture-laden cloud bands but the storm surges that sometimes accompany them. A twelve-foot storm surge generated by a slow-moving mid-season typhoon slammed into the nascent colony of Hong Kong on the night of 21–22 July 1841 reportedly killing a thousand people (Longshore 1998: 69). The storm surge caused by Typhoon Kathleen in September 1947 drowned more than 2,300 residents living in lightly-timbered houses along Tokyo Bay (Longshore 1998: 209). In fact, some 80 per cent of all deaths due to tropical cyclones are caused by drowning (Longshore 1998: 92).

Low-lying coastal communities are particularly at risk. Reference has already been made to the *Terrific Tongkin* or *Haiphong Typhoon* of October 1881 but much of the coastal areas of central and northern Vietnam are highly susceptible to storm surges. The height of these waves varies significantly, ranging between one and three metres along northern coasts but rarely exceeding one metre in central areas and barely half a metre in the south where there are few typhoons. All along the coast, however, the combination of a high tide with a storm surge is the most dangerous situation (Pilarczyk and Nguyen 2005: 117). People have historically responded to this threat by building extensive estuarine dikes to protect against flooding. These dikes are essential to protect agriculture and aquaculture from the intrusion of seawater but have to be continually maintained and repaired after every typhoon. As the shallow foreshore is gradually eroded, the water depth in front of a dike increases allowing the development of still higher waves that overwhelm the structure in time. Eventually, the dike is abandoned and a new one erected further inland (Pilarczyk and Nguyen 2005: 114-116). Over the centuries, this strategy of reclamation and retreat has markedly shaped the coastline of Vietnam (Li forthcoming 2015).

The Winds That Bind

Just as Paul Mus (1975) conceives of Monsoon Asia as a broad area sharing a common geography and climate which stretches from southern China across Southeast Asia to southern India, Pierre Gourou (1975) talks about the "climatic unity" that binds together the coastal zones of the WNP. Especially during the summer months, the disposition of the coastline and the action of ocean currents causes the inter-tropical convergence to shift far to the north and east, thus opening up the entire region to a general flow of warm, humid oceanic air from the South (Gourou 1975: 6–21). It also provides the conditions that generate typhoons. Wind and water, flood and storm surge expose the population of

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this region to a common risk from sky and sea. Moreover, the tracks of these typhoons as they spiral their way westward from mid-ocean inception to diminishment over land weaves a common path of destruction that links peoples and states together. The historical profile of these tropical cyclones can only be properly reconstructed from the late nineteenth century after the establishment of observatories in the surrounding countries and the collation and publication of regular meteorological data.

The 'Shanghai Typhoon' of 10–26 July 1881 shows how recent developments made it possible to track the entire 'life' of a tropical cyclone. In reconstructing the history of this typhoon, Marc Dechevrens, director of the Jesuit Observatory at Zikawei outside Shanghai was able to assemble hourly or three-hourly observations from stations in the Philippines (Manila and Tuguegarao), Formosa (Tai-wan-fou, Tamsui and Twatutia [Dadaocheng]), the Chinese mainland (Wenzhou, Ningpo, Zi-ka-wei [Xujiahui], Chingkiang [Zhenjiang], Chefoo [Yantai], and the Cape Shandong lighthouse), Japan (Tokyo, Kyoto, Hiroshima and Nagasaki), and the captains' log books from nearly 40 vessels in the China Seas. The typhoon in question originated to the east of Mindanao, tracked up the eastern coastline of the Philippines causing rain to fall "abundantly" in the high mountain ranges of Luzon, passed over the north-eastern tip of that island before bearing straight for Taiwan. Tracking in a north-westerly direction to the east of the Central Mountain Range, the typhoon made landfall close to Dadaocheng damaging many junks in the harbour. Some of these vessels lost their masts, others were swept clean to their topside decks, and a few had their sterns carried away including their rudders. As the harbourmaster at Tamsui observed: "In many cases the crews were seen with their bags and bones and leaving the vessels to their fate, seeking safety on shore" (Dechevrens 1882: 24–28). The log books of several European vessels subsequently charted the typhoon's progress across the East China Sea before striking the mainland. Two of these vessels, the British barque *Aberdonian* and the American brigantine *Annie S. Hall* were sunk with the loss of twenty lives on the night of 16 July. Dechevrens himself then records the cyclone's track across China. At Shanghai, the steamers and larger vessels suffered little harm but the junks, sampans and smaller craft were not so fortunate, and many bodies were subsequently seen floating down river. Other coastal areas also bore the brunt of the typhoon before it swung out to sea again close to the Shandong peninsula, rapidly traversed Korea and circled three times over Japan before disappearing into the far Northeast Pacific (Dechevrens 1882: 28–31).

Tropical cyclones and the observatories, meteorological stations, and ships' logs that recorded their passage increasingly bound the countries of the WNP together despite their cultural and ethnic diversity. Nor was this connection only metaphorical, it was increasingly a literal one as regional telegraph networks and undersea cables linked the main centres of typhoon monitoring to one another, allowing rapid communication and a timely exchange of information.

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Similar developments were taking place in the Caribbean and in North America (Cushman 2013). The seas that lay betwixt these lands were just as much part of the region as the landmasses that bordered it. Nor were these ocean spaces deserted: The Philippine Sea, the South China Sea, the East China Sea, the Yellow Sea, the Bohai Sea and the Sea of Japan were alive with maritime activity, and the denizens of these ships were equally at risk from strong winds and high seas. In fact, some typhoons were actually called after the unhappy vessel that happened to flounder during such events. One such case is the '*Bokhara* Typhoon' of 8–12 October 1892 named after the English steamer of that name that sank off the South Cape of Formosa (Taiwan) with the loss of 125 lives on the night of 10 October.[5] This tropical cyclone, too, originated in the Philippine Sea but did not pass over the archipelago and so the Manila Observatory was unable to correctly determine its path. Nevertheless, telegrams were dispatched to neighbouring countries warning them of an approaching typhoon. The confusion about its direction, however, resulted in a delay in hoisting a signal flag in Shanghai and so allowed the *Bokhara* to leave port with inaccurate information. When struck by the full force of the wind, the captain chose to heave to but was driven onto a reef and wrecked. As the ship began to flounder, the captain of the vessel bid his officers and crew farewell with the words: "Good-bye, we have done our best to save ship and there is nothing more that we can do". An Austrian corvette in the same general area, the *Fasana*, whose commander chose to run before the storm under steam, suffered only minor damages (Chevalier 1893: 9, 19–21). Unfortunately, the fate of the *Bokhara* was repeated all too often with many a sunken ship lending their name to a tropical cyclone. Examples include vessels such as the *Quantico*, the largest inter-island steamer in the Philippines, wrecked on the northern coast of Tablas with loss of life in December 1918, and the Japanese cruiser *Niitaka* that capsized off the west coast of Kamchatka in August 1922 with the loss of all its offices and most of the crew (Selga 1936).

With advances in meteorological observations and telecommunications during the twentieth century, accounts of tropical cyclones become more accurate and detailed, binding the people of the WNP closer together even as the common risk increased in proportion to the rapid rise in coastal populations and urban areas in the region. As the twentieth century unfolded, so, too, did death tolls climb. Coastal areas of Vietnam were visited by "ruin and destruction" in June 1903 after the Capiz Typhoon swept through the Visayas to strike Nam Dinh and western Tonkin causing the death of more than 2000 people. Another typhoon destroyed almost 95 per cent of the houses around Tourane (modern day Danang) in central Annam in October 1915. The southern coastline of China was often the final destination of many of these typhoons as in the case of the typhoon that slammed into the British colony of Hong Kong causing over 200 houses to collapse in July 1908. Taiwan (Formosa) was another frequent

[5]The Norwegian steamer *Normand* was also wrecked on the same night.

target: a severe tropical cyclone struck the island in late August 1912, destroying more than 6,700 houses, damaging many more, and killing 70 people (Selga 1936).

Japan, too, did not escape these ravages. The typhoon of 14–23 September 1912, reputedly the worst experienced for the last fifty years, swept through "the whole extent of the Japanese Empire" causing over 40 million pesos worth of damage (Selga 1936). Even more devastating was the Great Tokyo Typhoon of 29 September – 1 October 1918 that destroyed 200,000 homes and made 100,000 people homeless in Tokyo alone. The death toll was estimated at 1,500-2,100 people. In particular, fishing villages along the shore of Tokyo Bay were at risk: eddies of wind caught the overhanging eaves of houses, prying the roofs away from exterior walls, and folding the structures in on themselves (Longshore 1998: 156). The disaster was held to be unprecedented until the typhoon of 13–22 September 1934 struck central Japan, killing more than 2,500 people, injuring 13,000 and destroying 34,000 houses in Osaka, Kobe, and Kyoto. This typhoon was said to have caused more material damage in southern and central Japan "than any recent natural agency other than the great earthquake of 1923" (Longshore 1998: 155). The Philippines, too, more often than not bore the initial brunt of many typhoons. The scale of this destruction on occasion can be gauged by the tropical cyclone that struck the Sulu Archipelago between 29 April–5 May 1932 killing 147 persons, rendering 2,500 people homeless and making a further 2,835 destitute out of an estimated 7,000 population in the municipal district of Jolo alone. It then crossed the South China Sea causing 500 more fatalities in Indochina (Selga 1936).

Often as much damage was done by water as by wind. An unusually southern tracking typhoon that remained almost stationary over the island of Mindanao on 16-24 January 1916 caused heavy flooding. Rivers rose rapidly six to eight metres above their banks destroying houses, livestock, crops, and roads. Agusan province suffered most as a large area was transformed into a great lake where only the tops of trees were visible. Similarly, disastrous floods led to great loss of life and property in Taiwan at the end of August 1920. Coastal settlements were constantly at risk from storm surges like the one that engulfed the town of Hainan at the end of August 1920. The storm surge generated by the Swatow (Shantou) Typhoon 27 July–3 August 1922 rose four metres above high water and reportedly cost the lives of 100,000 people in coastal areas of southern China, half of whom perished in the city itself. It was considered "one of the worst typhoons that ever visited the Far East". Advances in technology allowed for more detailed (and more graphic) assessment of the causes and extent of the damages but did little at first to ameliorate their impact. An army hydroplane enabled a rapid survey of the worst affected areas of southern Luzon after a particularly severe typhoon in November 1934. The loss of life was attributed to torrential rainfall lasting eighteen hours over the watershed of the Maapon and Bato rivers that rose two and a half metres over their mean level, drowning 66 people (Selga 1936).

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To most people, however, it was not the structural damage caused by wind and water, or even the immediate loss of life, rather it was the effect typhoons had on agriculture and the consequent threat of famine that was the real cause of concern. Wind stripped the crops of foliage during the typhoon that hit Guam on 23 September 1855 and left them looking "as though they had been burnt". Trees were uprooted and even coconuts had their fruit rendered useless (Ibáñez del Carmen and Resano del Corazón de Jesús 1998: 8–10). The wind and rain that accompanied the typhoon of 13–22 September 1934 caused the partial destruction of the rice crop in central Japan and was considered a national calamity. The damage to agriculture and the economy of southern Luzon by the "heavy rains and strong winds" of the typhoon of 19–21 October 1934 were considerable: rice fields within ten kilometres of Naga City were submerged under a metre of water for more than a week with a total loss of the crop. The flowers and young nuts of coconut trees were also ruined in the provinces of Tayabas and Laguna, depriving farmers of income for at least a year (Selga 1936).

Despite satellite warning of approaching tropical cyclones, better prediction of their paths, and the greater capacity of authorities to prepare for and mitigate their worst effects since World War II, this region still remains very much at risk from typhoons. If anything, the exponential rise in population in Eastern Asia, continuous migration seaward, and the growth of coastal cities with ever denser infrastructure renders people even more vulnerable than previously (Swiss Re 2013). In recent decades, too, the effect of rising sea surface temperatures as a consequence of global warming may even be affecting the intensity, if not the frequency, of tropical cyclones with models predicting more severe storms in the future (IPCC 2014). In any event, so-called super typhoons of the intensity of Ike (26 August–6 September 1984) with its 217 kph winds, and Angela (25 October–6 November 1995) with its 225 kph winds are happening more often.

Typhoon Ike generated a storm surge of up to four and a half metres as it passed over the central Philippines damaging or destroying more than 100,000 buildings, blighting 90 per cent of the rice and sugar harvests on Mindanao, and leaving an estimated 1,363 persons dead. Once over the South China Sea, the cyclone veered north-westward towards the Chinese mainland killing an additional 46 people in Guangxi and Zhuang provinces. The death toll might have been much higher but for the fact that the Chinese government evacuated hundreds of thousands of residents from coastal areas before the typhoon crashed ashore near the port city of Beihai. Apart from the death toll, Typhoon Ike is also estimated to have caused nearly US $1 billion in property losses. So extensive was the devastation the typhoon wrought that the World Meteorological Organisation decided to temporarily retire the name from its rotating list of storms for the next 25 years (Longshore 1998: 184–186). Super Typhoon Angela, on the other hand, after slamming into the central and northern provinces of the Philippines killing 740 and leaving some 640,000 people homeless, finally broke apart over central Vietnam but only after claiming an additional 20 lives. Again the death toll might have been much higher if Filipino authorities had not heeded forecasts and evacuated vulnerable residents of shoreline communities to storm shelters further inland (Longshore 1998: 12–13). Despite such warnings, coastal residents all too often ignore such advice as witnessed recently when Typhoon Haiyan (Yolanda), a Category 5 storm with wind speeds in excess of 300 kph and a storm surge as high as six metres, tore through coastal and island communities in the central Philippines on 8 November 2013 leaving nearly 7,000 dead and affecting over four million people in 270 towns and cities. In Vietnam, where the cyclone preceded to next, 600,000 people had to be evacuated from low-lying coastal areas but there were no reported fatalities (*The National* 10 November 2013).

Often these typhoons continue to bind peoples and nations together in unlikely ways. Typhoon Patsy (Yoling) destroyed 32,000 buildings and claimed over a thousand lives in the greater Manila area alone in November 1970 before heading across the South China Sea towards a Vietnam at war with itself. As it approached the coastline around the demilitarised zone bordering the North from the South, authorities in both countries speculated on the strategic and propaganda value of a direct strike on the enemy's territory, diligently tracking the typhoon "in a hail of anxious hopes and destructive dreams". In the event, Typhoon Patsy made landfall near the fishing village of Co Lien in the Democratic Republic of Vietnam and subsequently passed out of history. No casualties or damage reports were ever released, leading to speculation that the Communist government had withheld embarrassingly high death tolls to prevent their use in South Vietnamese propaganda (Longshore 1998: 260). In this sense, the winds that bind can just as easily divide, as typhoons are used to further diplomatic and political agendas that reflect ideological differences and international rivalries.

This article has only attempted to outline the framework of a more transnational history of the WNP. It shows how tropical cyclones might constitute the dynamics that unite the peoples and countries of this region together through a common experience of risk and a shared adaptation to the threats from wind and water. As might be expected in such an environmental history, the nation state is not necessarily a wholly appropriate unit of analysis. A truly transnational history of the WNP might begin by accepting the framework outlined here and then move on to a deeper historical inquiry that integrates the role of human agency in the generation and mitigation of a common risk.

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