

**ESCAP/WMO Typhoon Committee**  
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Hong Kong  
China

FOR PARTICIPANTS ONLY  
WRD/TC.52/6.1  
5 February 2020  
ENGLISH ONLY

**REVIEW OF THE 2019 TYPHOON SEASON**

*(submitted by the RSMC Tokyo – Typhoon Center)*

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**Action Proposed**

The Committee is invited to review the 2019 typhoon season.

**APPENDIXES:**

- A) DRAFT TEXT FOR INCLUSION IN SESSION REPORT
- B) Review of the 2019 Typhoon Season

**APPENDIX A:**  
**DRAFT TEXT FOR INCLUSION IN THE SESSION REPORT**

**x.x. Summary of typhoon season in Typhoon Committee region**

- 1 The Committee noted with appreciation the review of the 2019 typhoon season provided by the RSMC Tokyo as provided in Appendix XX, whose summary is presented in paragraph xx(2) – xx(12).
- 2 In the western North Pacific and the South China Sea, 29 named tropical cyclones (TCs) formed in 2019, which was above the 30-year average, and 17 out of them reached typhoon (TY) intensity, whose ratio was larger than the 30-year average.
- 3 The first named TC formed at 06 UTC on 1 January, which was the earliest since 1951 when the statistical record on TC in RSMC Tokyo – Typhoon Center started. No named TC formed from March to mid-June due partly to suppressed convective activity in the western North Pacific associated with post-El Niño warming in SSTs in the Indian Ocean and partly to the low and delayed southwest monsoon activity. However, 26 named TCs formed after 1 July, which was above the 30-year average. Especially, among them, six named TCs formed in November, which ties with 1964 and 1991 as the largest number of formation for the month since 1951. This could be partly attributed to above-normal SSTs in the tropical Pacific east of 160°E and cyclonic vorticity generated between westerly winds along the equator and easterly winds in the tropical Pacific south of 20°N.
- 4 Four TCs recorded maximum sustained winds at a speed of 105 kt or higher (violent TY). One of these TCs was Wutip (1902); it was the earliest ever recorded to have a TC in February marking violent TY intensity. These TCs moved over the area where ocean and atmospheric conditions were favourable for the intensification of TCs, such as warm sea surface temperatures and weak vertical wind shear.
- 5 The mean genesis point of named TCs was 16.2°N and 134.4°E, showing a westward deviation from that of the 30-year average. The mean genesis point of named TCs formed in summer (June to August) was 20.4°N and 129.7°E, showing a west-northwestward deviation from that of the 30-year summer average, and that of named TCs formed in autumn (September to November) was 15.4°N and 137.4°E, which was almost the same as that of the 30-year autumn average.
- 6 The mean duration of TCs sustaining TS intensity or higher was 4.7 days, shorter than that of the 30-year average (5.3 days). The mean duration of TCs sustaining TS intensity or higher formed in summer was 4.2 days, shorter than that of the 30-year average (5.1 days), and the mean duration of TCs sustaining TS intensity or higher formed in autumn was 4.9 days, shorter than that of the 30-year average (5.6 days).
- 7 Two named TCs formed in January and February. Pabuk (1901) formed over the South China Sea and crossed the border of RSMCs Tokyo and New Delhi for the first time in around 21 years. Wutip (1902) formed around the Marshall Islands.
- 8 Five named TCs formed in June and July. Sepat (1903) formed east of the Philippines and Mun (1904) formed over the South China Sea. Danas (1905) formed over the sea north of Yap and affected several countries along its path. Nari (1906) formed over the sea north of Okinotorishima Island and hit Japan. Wipha (1907) formed over the South China Sea and caused heavy rain in Viet Nam.
- 9 Five named TCs formed in August. Francisco (1908) formed south of Minamitorishima Island and hit Japan and Korean Peninsula. Lekima (1909) formed over the sea east of the

Philippines and hit the coast of central China. Krosa (1910) formed over the sea east of Saipan and hit Japan. Bailu (1911) formed over the sea north of Palau and hit the coast of southeastern China. Podul (1912) formed around the Caroline Islands, crossed the Philippines with TD intensity, hit Viet Nam with TS intensity and weakened to TD intensity in southern Lao PDR.

- 10 Six named TCs formed in September. Lingling (1913) formed around the Caroline Islands and moved northward to the Korean Peninsula. Kajiki (1914) formed over the sea east of the Philippines, moved westward and hit Viet Nam, and turned sharply backward to the South China Sea. Faxai (1915) formed over the sea south of Wake Island and caused severe damage in Japan. Peipah (1916) formed around the Marshall Islands. Tapha (1917) formed over the sea south of Okinawa Islands and moved northward over the East China Sea with TY intensity. Mitag (1918) formed around the Chuuk Islands, moved west-northwestward, turned over the East China Sea and hit Korean Peninsula.
- 11 Four named TCs formed in October. Hagibis (1919) formed over the sea north of the Bikini Atoll and caused severe damage to Japan. Neoguri (1920) formed over the sea south of Okinotorishima Island. Bualoi (1921) formed around the Marshall Islands and affected Chichijima Island, Japan. Matmo (1922) formed over the sea northwest of Palawan Island and hit Viet Nam.
- 12 Six named TCs formed in November. Halong (1923) formed over the sea south of the Marshall Islands. Nakri (1924) formed over the South China Sea, crossed the coast of Viet Nam and weakened to TD intensity. Fengshen (1925) formed near the Marshall Islands. Kalmaegi (1926) formed over the sea east of the Philippines and hit Luzon Island of the Philippines. Fung-wong (1927) formed around the Mariana Islands. Kammuri (1928) formed around the Caroline Islands and hit the Philippines.
- 13 The last named TC formed late in December. Phanfone (1929) formed around the Chuuk Islands and passed over the central part of the Philippines with TY intensity. It weakened once but intensified again when it entered to the South China Sea. After that, it dissipated over the South China Sea.

## **APPENDIX B:**

### **Review of the 2019 Typhoon Season**

In the western North Pacific and the South China Sea, 29 named tropical cyclones (TCs) formed in 2019, which was above the 30-year average (25.6, averaged for 1981 – 2010 period), and 17 out of them reached typhoon (TY) intensity, whose ratio was also above the 30-year average (see Table 1).

The year 2019 started with TC Pabuk that formed at 06 UTC on 1 January. It was the earliest formation since 1951, when the statistical record on TC in RSMC Tokyo – Typhoon Center started. TC Pabuk crossed the border of RSMCs Tokyo and New Delhi moving to the west for the first time in around 21 years.

A notable feature of the season is that no named TC formed from March to mid-June but instead, 26 named TCs formed after July 1; especially, six out of them formed in November which ties with 1964 and 1991 as the largest number of formation for the month since 1951 (see Figure 1). During the months with no named TC, convective activity in the western North Pacific remained suppressed in association with post-El Niño warming in SSTs over the Indian Ocean and southwest monsoon activity was low and delayed. This environmental condition resulted in no formation of TCs. On the other hand, in November, as many as six named TCs formed under favorable atmospheric and oceanic conditions including: above-normal sea surface temperatures (SSTs) in the tropical Pacific east of 160°E; enhanced cyclonic vorticity between westerly winds along the equator associated with an active MJO phase and equatorial waves and easterly winds in the tropical Pacific south of 20°N.

The mean genesis point of named TCs was 16.2°N and 134.4°E, which showed a westward deviation from that of the 30-year average (16.2°N and 136.7°E) (see Figure 2). The mean genesis point of named TCs formed in summer (June to August) was 20.4°N and 129.7°E, with a west-northwestward deviation from that of the 30-year summer average (18.4°N and 134.9°E), and that of named TCs formed in autumn (September to November) was 15.4°N and 137.4°E, which was almost the same as that of the 30-year autumn average (15.9°N and 137.4°E). The autumn deviation could be partly attributed to above-normal SSTs in the tropical Pacific east of 160°E and cyclonic vorticity generated between westerly winds along the equator and easterly winds in the tropical Pacific south of 20°N.

The mean duration of TCs sustaining TS intensity or higher was 4.7 days, shorter than that of the 30-year average (5.3 days). The mean duration of TCs sustaining TS intensity or higher formed in summer was 4.2 days, shorter than that of the 30-year average (5.1 days), and the mean duration of TCs sustaining TS intensity or higher formed in autumn was 4.9 days, shorter than that of the 30-year average (5.6 days).

Two named TCs formed in January and February (see red lines in Figure 3). Pabuk (1901) formed over the South China Sea and crossed the border of RSMCs Tokyo and New Delhi for

the first time in around 21 years. Wutip (1902) formed around the Marshall Islands.

Five named TCs formed in June and July (see blue lines in Figure 3). Sepat (1903) formed east of the Philippines and Mun (1904) formed over the South China Sea. Danas (1905) formed over the sea north of Yap and affected several countries along its path. Nari (1906) formed over the sea north of Okinotorishima Island and hit Japan. Wipha (1907) formed over the South China Sea and caused heavy rain in Viet Nam.

Five named TCs formed in August (see pink lines in Figure 3). Francisco (1908) formed south of Minamitorishima Island and hit Japan and Korean Peninsula. Lekima (1909) formed over the sea east of the Philippines and hit the coast of central China. Krosa (1910) formed over the sea east of Saipan and hit Japan. Bailu (1911) formed over the sea north of Palau and hit the coast of southeastern China. Podul (1912) formed around the Caroline Islands, crossed the Philippines with TD intensity, hit Viet Nam with TS intensity and weakened to TD intensity in southern Lao PDR.

Six named TCs formed in September (see orange lines in Figure 3). Lingling (1913) formed around the Caroline Islands and moved northward to the Korean Peninsula. Kajiki (1914) formed over the sea east of the Philippines, moved westward and hit Viet Nam, and turned sharply backward to the South China Sea. Faxai (1915) formed over the sea south of Wake Island and caused severe damage in Japan. Peipah (1916) formed around the Marshall Islands. Tapha (1917) formed over the sea south of Okinawa Islands and moved northward over the East China Sea with TY intensity. Mitag (1918) formed around the Chuuk Islands, moved west-northwestward, turned over the East China Sea and hit Korean Peninsula.

Four named TCs formed in October (see green lines in Figure 3). Hagibis (1919) formed over the sea north of the Bikini Atoll and caused severe damage to Japan. Neoguri (1920) formed over the sea south of Okinotorishima Island. Bualoi (1921) formed around the Marshall Islands and affected Chichijima Island, Japan. Matmo (1922) formed over the sea northwest of Palawan Island and hit Viet Nam.

Six named TCs formed in November (see purple lines in Figure 3). Halong (1923) formed over the sea south of the Marshall Islands. Nakri (1924) formed over the South China Sea, crossed the coast of Viet Nam and weakened to TD intensity. Fengshen (1925) formed near the Marshall Islands. Kalmaegi (1926) formed over the sea east of the Philippines and hit Luzon Island of the Philippines. Fung-wong (1927) formed around the Mariana Islands. Kammuri (1928) formed around the Caroline Islands and hit the Philippines.

The last named TC formed late in December (see yellow line in Figure 3). Phanfone (1929) formed around the Chuuk Islands and passed over the central part of the Philippines with TY intensity. It weakened once but intensified again when it entered to the South China Sea. After that, it dissipated over the South China Sea.

Table 1 List of named TCs in 2019

Tropical Cyclone	Duration (UTC)				Minimum Central Pressure			Max Wind (kt)		
	(TS or higher)				(UTC)	lat(N)	long(E) (hPa)			
TS Pabuk (1901)	010600	Jan	-	041800	Jan	031800	7.5	102.5	996	45
TY Wutip (1902)	191800	Feb	-	280600	Feb	231200	12.0	142.8	920	105
TS Sepat (1903)	271200	Jun	-	280600	Jun	280000	35.2	141.6	994	40
TS Mun (1904)	020600	Jul	-	040600	Jul	030600	19.5	108.4	992	35
TS Danas (1905)	160600	Jul	-	201800	Jul	181800	27.8	124.0	985	45
TS Nari (1906)	251800	Jul	-	270600	Jul	261800	33.4	135.9	998	35
TS Wipha (1907)	301800	Jul	-	031200	Aug	020600	21.1	109.0	985	45
TY Francisco (1908)	021200	Aug	-	070000	Aug	051200	31.2	133.0	970	70
TY Lekima (1909)	040600	Aug	-	121800	Aug	081200	24.3	125.0	925	105
TY Krosa (1910)	060600	Aug	-	161200	Aug	080600	22.1	140.6	965	75
STS Bailu (1911)	210600	Aug	-	251800	Aug	221800	17.2	127.3	985	50
TS Podul (1912)	280000	Aug	-	300000	Aug	290600	17.5	109.1	992	40
TY Lingling (1913)	020000	Sep	-	080000	Sep	050600	24.9	125.3	940	95
TS Kajiki (1914)	021200	Sep	-	031200	Sep	021200	17.2	108.4	996	35
TY Faxai (1915)	041800	Sep	-	100000	Sep	071800	30.2	140.5	955	85
TS Peipah (1916)	150000	Sep	-	161200	Sep	150000	15.4	149.7	1000	35
TY Tapah (1917)	190000	Sep	-	230000	Sep	201800	25.0	126.4	970	65
TY Mitag (1918)	280000	Sep	-	030600	Oct	301200	24.6	122.9	965	75
TY Hagibis (1919)	051800	Oct	-	130300	Oct	071200	16.1	146.6	915	105
TY Neoguri (1920)	170000	Oct	-	211200	Oct	191800	22.6	127.5	970	75
TY Bualoi (1921)	190600	Oct	-	251200	Oct	220600	18.2	144.4	935	100
STS Matmo (1922)	291800	Oct	-	310600	Oct	300600	13.2	110.7	992	50
TY Halong (1923)	021200	Nov	-	090000	Nov	051200	19.9	150.8	905	115
TY Nakri (1924)	051800	Nov	-	110000	Nov	080600	12.6	116.4	975	65
TY Fengshen (1925)	120000	Nov	-	171200	Nov	150600	20.1	142.7	965	85
TY Kalmaegi (1926)	141200	Nov	-	200000	Nov	181800	19.1	122.7	975	70
STS Fung-wong (1927)	200000	Nov	-	221200	Nov	210000	20.2	125.0	990	55
TY Kammuri (1928)	260000	Nov	-	051800	Dec	021200	12.9	124.7	950	90
TY Phanfone (1929)	221200	Dec	-	280000	Dec	241800	11.8	123.4	970	80

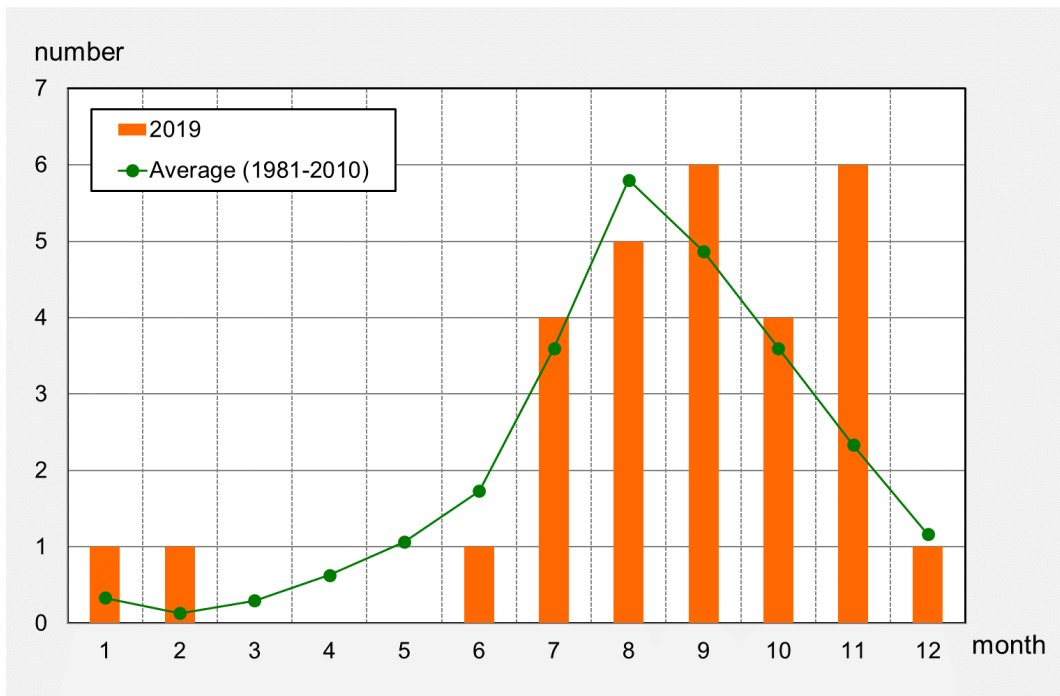


Figure 1 Monthly formation number of named TCs in 2019

Orange bar: formation number in 2019, green line: 30-year average from 1981 to 2010

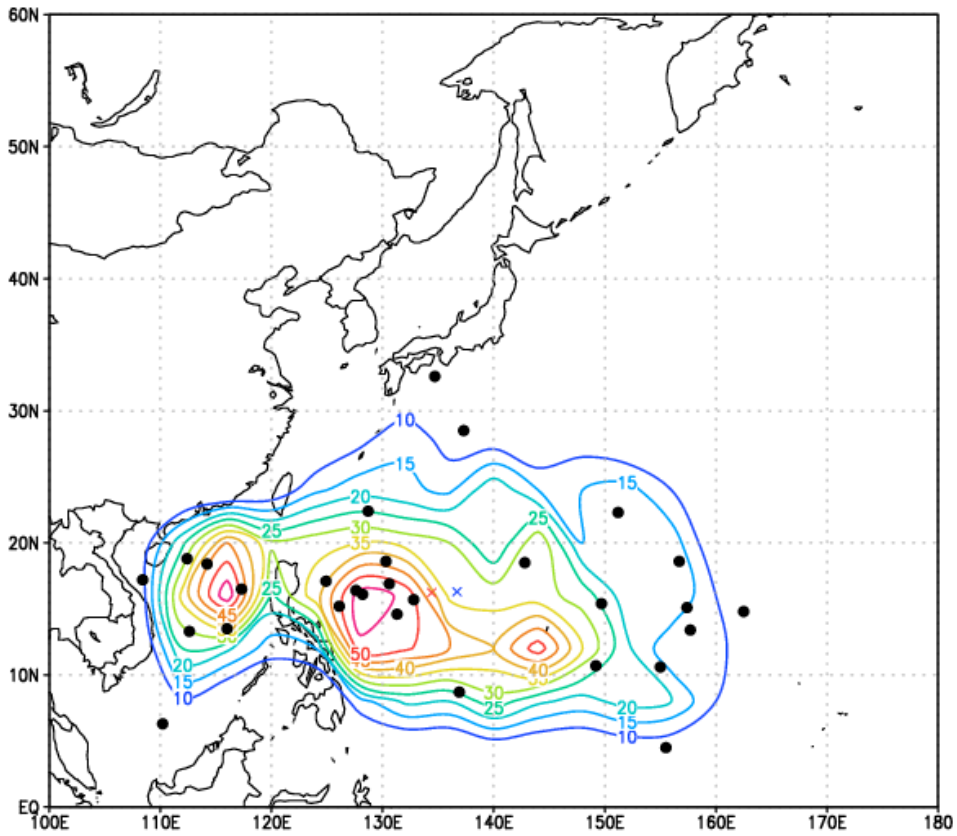


Figure 2 Genesis points of named TCs in 2019 (dots) and frequency distribution of genesis points for 1951-2018 (lines)  
 Red and blue crosses show the mean genesis points of named TCs in 2019 and the 30-year average period (1981 – 2010), respectively.

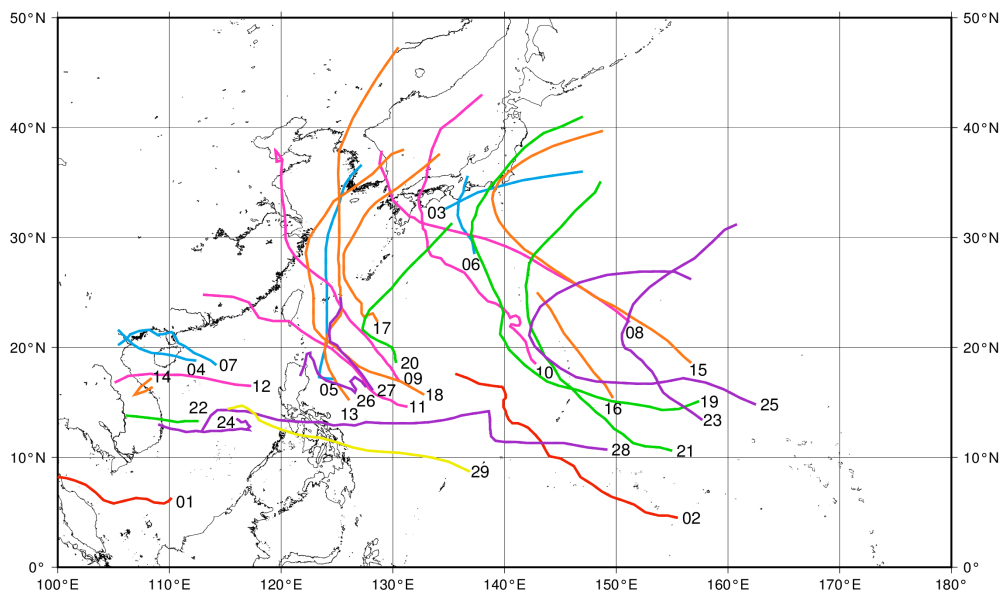


Figure 3 Tracks of named TCs in 2019  
 The numbers represent the genesis points of named TCs (the last two digits of their identification numbers) and dotted line shows the duration of tropical depression.

## **Narrative Accounts of the 29 Named Tropical Cyclones in 2019**

### **TS PABUK (1901)**

PABUK formed as a tropical depression (TD) over the South China Sea at 06 UTC on 31 December 2018 and moved west-southwestward. It was upgraded to tropical storm (TS) intensity over the same waters at 06 UTC on 1 January 2019. After moving west-northwestward, PABUK reached its peak intensity with maximum sustained winds of 45 kt and a central pressure of 996 hPa over the Gulf of Thailand at 18 UTC on 3 January. After hitting the Malay Peninsula at 12 UTC on 4 January, it crossed longitude 100 degrees east 6 hours later.

### **TY WUTIP (1902)**

WUTIP formed as a TD around the Marshall Islands at 12 UTC on 18 February 2019 and moved westward. WUTIP was upgraded to TS intensity over the same waters at 18 UTC on 19 February before it turned northwestward. WUTIP was upgraded to typhoon (TY) intensity around the Chuuk Lagoon at 18 UTC on 20 February. WUTIP reached its peak intensity with maximum sustained winds of 105 kt and a central pressure of 920 hPa over the sea southwest of Guam Island at 12 UTC on 23 February. Subsequently it slowed its speed and drifted northward. WUTIP weakened to TD intensity east of the Philippines at 06 UTC on 28 February and dissipated over the same waters at 12 UTC on 02 March.

### **TS SEPAT (1903)**

SEPAT formed as a TD east of the Philippines at 12 UTC on 24 June 2019, and moved north-northeastward. After turning east-northeastward, it was upgraded to TS intensity to the south of Cape Muroto at 12 UTC on 27 June, then reached its peak intensity with maximum sustained winds of 40 kt and a central pressure of 996 hPa off the coast of central Japan 6 hours later. Keeping on its east-northeastward track, SEPAT transformed into an extratropical cyclone east of Japan at 06 UTC on 28 June. After turning north-northeastward, it crossed the longitude 180 degrees eastward over the Bering Sea by 12 UTC on 2 July.

### **TS MUN (1904)**

MUN formed as a TD in the South China Sea at 18 UTC on 1 July 2019 and moved west north-westward. MUN was upgraded to TS intensity east of Hainan Island at 06 UTC on 2 July and hit the island with TS intensity on 2 July. It reached its peak intensity with maximum sustained winds of 35 kt and a central pressure of 992 hPa in Tonkin Bay at 06 UTC on 3 July. MUN turned northwest and hit the coast of northern Vietnam on 3 July. MUN weakened to TD intensity in inland northern Vietnam at 06 UTC on 4 July and dissipated at 00UTC next day.

### **TS DANAS (1905)**

DANAS formed as a TD over the sea north of Yap at 00 UTC on 14 July 2019. It initially moved northwestward and gradually turned westward before being upgraded to TS intensity over the sea east



of Luzon at 06 UTC on 16 July. DANAS took a sudden turn over the same waters and started to head due north. DANAS passed through the narrow strait between the two islands of Iriomote and Ishigaki and entered the East China Sea, where it reached its peak intensity with maximum sustained winds of 45 kt and a central pressure of 985 hPa at 18 UTC on 18 July. DANAS continued to move northward and was downgraded to TD intensity at 18 UTC on 20 July just after crossing the western coast of the Korean Peninsula. It transformed into an extratropical cyclone at 12 UTC on 21 July over the Sea of Japan and dissipated at 12 UTC on 23 July over the same waters.

#### **TS NARI (1906)**

NARI formed as a TD over the sea north of Okinotorishima Island at 00 UTC on 24 July 2019. NARI initially moved northeastward and soon turned northward. It was upgraded to TS intensity over the sea west of the Ogasawara Islands at 18 UTC on the next day with maximum sustained winds of 35 kt. This was NARI's peak intensity. Keeping its northward track NARI maintained its intensity, while its central pressure decreased from 1002 hPa to the lifetime lowest of 998 hPa at 18 UTC on 26 July. It made landfall on the southern part of Mie Prefecture around 22 UTC on 26 July. NARI weakened to TD intensity on the Honshu Island at 06 UTC on 27 July. After turning east-northeastward, it transformed into an extratropical cyclone over the sea east of Japan at 00 UTC on 28 July. Keeping its east-northeastward track, it dissipated over the sea far east of Japan at 18 UTC on the next day.

#### **TS WIPHA (1907)**

WIPHA formed as a TD over the South China Sea at 00 UTC on 30 July 2019 and moved northwestward. It was upgraded to TS intensity over the same water 18 hours later. Keeping its northwestward track, WIPHA crossed the Leizhou Peninsula and entered the Gulf of Tonkin at 18 UTC on 01 August. It reached its peak intensity with maximum sustained winds of 45 kt and a central pressure of 985 hPa 12 hours later. After crossing the coast line of southern China late on 02 August, it gradually weakened and turned west-southwestward. WIPHA weakened to TD intensity in northern Viet Nam at 12 UTC on 03 August and dissipated in Laos 24 hours later.

#### **TY FRANCISCO (1908)**

FRANCISCO formed as a TD south of Minamitorishima Island at 00 UTC on 1 August 2019 and moved northwestward. It was upgraded to TS intensity southwest of the same island at 12 UTC the next day. Keeping its northwestward track, FRANCISCO was upgraded to TY intensity south of Shikoku at 09 UTC on 05 August, and it reached its peak intensity with maximum sustained winds of 70 kt and a central pressure of 970 hPa over the same waters 3 hours later. Maintaining TY intensity, FRANCISCO made landfall on Miyazaki City, Miyazaki Prefecture about 20 UTC on 5 August. After turning northward and passing over the Korean Peninsula, it weakened to TD intensity over the Sea of Japan at 00 UTC on 7 August. FRANCISCO started to recurve and accelerated eastward before it transformed into an extratropical cyclone at 18UTC over the same waters on 8 August, and dissipated south of the Aleutian Islands at 12 UTC on 11 August.

### **TY LEKIMA (1909)**

LEKIMA formed as a TD over the sea east of the Philippines at 06 UTC on 02 August 2019. It moved initially westward and soon turned north-northwestward. LEKIMA was upgraded to TS intensity over the same waters at 06 UTC on 04 August. From 05 August, LEKIMA developed rapidly and was upgraded to TY intensity over the sea east of Luzon at 12 UTC on 06 August. LEKIMA continued to develop and reached its peak intensity with maximum sustained winds of 105 kt and a central pressure of 925 hPa around Ishigaki Island at 12 UTC on 08 August. Keeping its north-northwestward track, LEKIMA weakened slowly in the East China Sea. LEKIMA hit the coast of central China around 18UTC on 09 August before it turned northward. LEKIMA made a counterclockwise loop over the Shandong Peninsula on 12 August and soon weakened to TD intensity at 18UTC on the same day. LEKIMA transformed into an extratropical cyclone around the Liaodong Peninsula 00UTC on 14 August and dissipated in the Yellow Sea at 00 UTC on 15 August.

### **TY KROSA (1910)**

KROSA formed as a TD over the sea east of Saipan at 00 UTC on 5 August 2019. It initially moved northwestward and was upgraded to TS intensity over the eastern part of the Philippines Sea at 06 UTC on 6 August. KROSA reduced its speed before attaining TY intensity and soon reaching its peak intensity with maximum sustained winds of 75 kt and a central pressure of 965 hPa at 06 UTC on 8 August. It made a partial cyclonic loop before getting back on a northwesterly track. Subsequently KROSA turned northward far to the east of the Amami Islands, passed through the narrow strait between Japan's two main islands of Shikoku and Kyushu and eventually made landfall on Kure City, Hiroshima Prefecture around 06 UTC on 15 August. KROSA entered the Sea of Japan and transformed into an extratropical cyclone at 12 UTC on 16 August. It dissipated at 18 UTC on 17 August off the western coast of northern Hokkaido.

### **STS BAILU (1911)**

BAILU formed as a TD over the sea north of Palau at 12 UTC on 19 August 2019, and moved northwestward slowly. It was upgraded to TS intensity over the same waters at 06 UTC on 21 August and continued to move northwestward. BAILU was upgraded to severe tropical storm (STS) intensity over the sea east of Luzon at 18 UTC next day with maximum sustained winds of 50 kt and a central pressure of 985 hPa. This was its peak intensity. After gradually turning west-northwestward, it crossed Taiwan on 24 August. Keeping its west-northwestward track BAILU hit the coast of southeastern China at around 00 UTC on 25 August and weakened to a TD at 18 UTC on the same day. It dissipated over southern China at 12 UTC next day.

### **TS PODUL (1912)**

PODUL formed as a TD around the Caroline Islands at 06 UTC on 24 August 2019 and moved westward. After crossing the Luzon Island, it was upgraded to TS intensity over the South China Sea at 00 UTC on 28 August. PODUL reached its peak intensity over the same water six hours later with maximum

sustained winds of 40 kt and a central pressure of 996 hPa. Having maintained its peak intensity for 30 hours until it crossed the coastline of Viet Nam, PODUL weakened to TD intensity in southern Laos at 00 UTC on 30 August and dissipated in northern Thailand 30 hours later.

#### **TY LINGLING (1913)**

LINGLING formed as a TD around the Caroline Islands at 00 UTC on 31 August 2019. It moved initially northwestward. LINGLING was upgraded to TS intensity east of the Philippines at 00 UTC on 02 September and it turned northward. LINGLING decelerated over the sea south of the Okinawa Islands and it was upgraded to TY intensity over the same water at 18 UTC on 03 September. LINGLING reached its peak intensity with maximum sustained winds of 95 kt and a central pressure of 940 hPa in the proximity of Miyakojima Island at 06 UTC on 05 September. It accelerated northward in the East China Sea and hit the Korean Peninsula on 07 September. Having transformed into an extratropical cyclone in northeast China at 00 UTC on 08 September, it gradually turned eastward. LINGLING entered the Bering Sea and crossed the longitude of 180 degrees by 00 UTC on 12 September.

#### **TS KAJIKI (1914)**

KAJIKI formed as a TD over the sea east of the Philippines at 00 UTC on 30 August 2019. Moving westward, it was upgraded to TS intensity off the coast of Viet Nam at 12 UTC on 2 September and hit Viet Nam later on the same day with maximum sustained winds of 35 kt and a central pressure of 996 hPa. This was KAJIKI's peak intensity. It turned sharply backward and entered the South China Sea again. KAJIKI weakened to TD intensity off the coast of Viet Nam at 12 UTC on 03 September. Moving northeastward, it dissipated to the east of Hainan Island at 12 UTC on 06 September.

#### **TY FAXAI (1915)**

FAXAI formed as a TD over the sea south of Wake Island at 00 UTC on 2 September 2019 and moved west-northwestward. It was upgraded to TS intensity at 18 UTC on 4 September over the sea southeast of Minamitorishima Island and turned northwestward. Keeping its northwestward track, FAXAI rapidly intensified and was upgraded to TY intensity around the Ogasawara Islands at 00 UTC on 7 September. It reached its peak intensity with maximum sustained winds of 85 kt and a central pressure of 955 hPa south of Hachijojima Island at 18 UTC on the same day and turned north-northwestward. Sustaining TY intensity, FAXAI recurved north-northeastward and passed over Miura Peninsula before 18 UTC on 8 September and made landfall around Chiba City, Chiba Prefecture before 20 UTC on the same day. It moved northeastward over the sea east of eastern Japan and transitioned into an extratropical cyclone by 00 UTC on 10 September. FAXAI accelerated east-northeastward and dissipated south of the Aleutian Islands at 18UTC on 11 September.

#### **TS PEIPAH (1916)**

PEIPAH formed as a TD around the Marshall Islands at 18 UTC on 12 September 2019. It moved initially westward and gradually turned northwestward. PEIPAH was upgraded to TS intensity over the sea east

of the Mariana Islands at 00 UTC on 15 September with maximum sustained winds of 35kt and central pressure of 1000 hPa. This was its peak intensity. PEIPAH weakened to TD intensity around the Ogasawara Islands at 12 UTC on 16 September. Having turned northward, PEIPAH dissipated around Chichijima at 06 UTC on 17 September.

#### **TY TAPAH (1917)**

TAPAH formed as a TD over the sea south of Okinawa Islands 00 UTC on 17 September 2019 and moved slowly northward. It was upgraded to TS intensity at 00 UTC on 19 September on the same waters and turned northwestward. TAPAH was upgraded to TY intensity with maximum sustained winds of 65 kt and a central pressure of 970 hPa around Miyakojima Island at 18 UTC on 20 September. This was its peak intensity. It maintained its intensity while moving northward over the East China Sea. TAPAH turned northeastward and weakened gradually. It transitioned into an extratropical cyclone over the Sea of Japan by 00 UTC on 23 September and dissipated off the western coast of northern Japan at 18 UTC on the same day.

#### **TY MITAG (1918)**

MITAG formed as a TD around the Chuuk Islands at 12 UTC on 24 September 2019 and moved initially west-northwestward and later northwestward. MITAG was upgraded to TS intensity at 00 UTC on 28 September to the east of the Philippines. It turned northward after it attained TY intensity over the Bashi Channel at 00 UTC on 30 September. MITAG reached its peak intensity with maximum sustained winds of 75 kt and a central pressure of 965 hPa to the west of Yonagunijima at 12 UTC on 30 September. It turned northeastward and hit the Korean Peninsula after 12UTC on 02 October. MITAG transitioned into an extratropical cyclone over the Sea of Japan by 06 UTC on 03 October and dissipated over the sea east of Japan at 18 UTC on 05 October.

#### **TY HAGIBIS (1919)**

HAGIBIS formed as a TD over the sea south of the Wake Island at 18 UTC on 4 October 2019. It initially moved westward and was upgraded to TS intensity to the south of the Minamitorishima Island 24 hours later. HAGIBIS started to rapidly intensify and attained TY intensity over the same waters at 12 UTC on 6 October. It reached its peak intensity with maximum sustained winds of 105 kt and a central pressure of 915 hPa over the waters near the Mariana Islands at 12 UTC the next day. Meanwhile HAGIBIS gradually turned north and continued on a largely northward track before it made landfall on the Izu Peninsula, Shizuoka Prefecture before 10 UTC on 12 October. HAGIBIS passed over the Greater Tokyo Area, went out to the Pacific Ocean and transitioned into an extratropical cyclone to the southeast of Hokkaido by 03 UTC on 13 October. It crossed the date line and entered the Western Hemisphere by 18 UTC on 14 October.

#### **TY NEOGURI (1920)**

NEOGURI formed as a TD over the sea south of Okinotorishima Island at 00 UTC on 15 October 2019.

It moved west-northwestward and was upgraded to TS intensity to the west of the Okinotorishima Island at 00 UTC on 17 October. NEOGURI attained TY intensity to the south of the Okinawa Island at 12 UTC on 19 October. It reached its peak intensity with maximum sustained winds of 75 kt and a central pressure of 970 hPa over the same waters 6 hours later. NEOGURI gradually turned northeastward and accelerated in that direction. It transitioned into an extratropical cyclone to the south of Honshu by 12 UTC on 21 October and dissipated over the same waters at 06 UTC on the next day.

#### **TY BUALOI (1921)**

BUALOI formed as a TD around the Marshall Islands at 06 UTC on 18 October 2019 and moved west-northwestward. It was upgraded to TS intensity over the sea northwest of the Pohnpei Island 24 hours later. Gradually turning northwestward, BUALOI attained TY intensity over the sea east of the Mariana Islands at 12 UTC on 20 October, and reached its peak intensity 42 hours later with maximum sustained winds of 100 kt and a central pressure of 935 hPa. BUALOI maintained TY intensity while it turned northward and passed over the waters off the Chichijima Island around 00 UTC on 24 October. After accelerating northeastward, BUALOI transitioned into an extratropical cyclone over the sea east of Japan by 12 UTC on 25 October and dissipated 18 hours later.

#### **STS MATMO (1922)**

MATMO formed as a TD over the sea northwest of Palawan Island at 18 UTC on 28 October 2019. It initially moved west-northwestward and later westward over the South China Sea, and was upgraded to TS intensity at 18 UTC on 29 October over the same water. MATMO reached its peak intensity with maximum sustained winds of 50 kt and a central pressure of 992 hPa at 06 UTC on 30 October. It crossed the coastline of Viet Nam late on the same day, weakened to TD intensity at 06 UTC on 31 October and dissipated at 00 UTC on 1 November.

#### **TY HALONG (1923)**

HALONG formed as a TD over the sea south of the Marshall Islands at 12 UTC on 1 November 2019. It moved northwestward and was upgraded to TS intensity over the same waters at 12 UTC on the next day. HALONG attained TY intensity to the south of the Minamitorishima Island at 06 UTC on 4 November. It reached its peak intensity with maximum sustained winds of 115 kt and a central pressure of 905 hPa over the same waters at 12 UTC on 5 November. HALONG gradually turned northeastward and accelerated in that direction. It transitioned into an extratropical cyclone over the sea far east of Japan by 00 UTC on 9 November and dissipated over the same waters at 12 UTC on the next day.

#### **TY NAKRI (1924)**

NAKRI formed as a tropical depression (TD) over the South China Sea at 00 UTC on 4 November 2019 and moved northeastward. NAKRI was upgraded to tropical storm (TS) intensity at 18 UTC the next day

over the same waters and moved slowly eastward. After turning to the west, NAKRI was upgraded to typhoon (TY) intensity with maximum sustained winds of 65 kt and a central pressure of 975 hPa over the same waters at 06 UTC on 8 November. This was its peak intensity. After crossing the coast of Vietnam, NAKRI weakened to TD intensity at 00 UTC on 11 November and dissipated 12 hours later.

#### **TY FENGSHEN (1925)**

FENGSHEN formed as a tropical depression (TD) near the Marshall Islands at 18 UTC on 9 November 2019. It moved initially west-northwestward and was upgraded to tropical storm (TS) intensity over the same waters at 00 UTC on 12 November. Keeping its west-northwestward track, FENGSHEN continued to intensify for around two days. Turning gradually to the north, it started to rapidly intensify and was upgraded to typhoon (TY) intensity near the Mariana Islands at 00UTC on 15 November. It reached its peak intensity with maximum sustained winds of 85 kt and a central pressure of 965 hPa to the south of Chichijima Island at 06 UTC on 15 November. It turned gradually northeastward and kept this peak intensity until 12 UTC on 16 November. Having turned eastward, FENGSHEN weakened and transitioned into an extratropical cyclone over the sea northeast of Minamitorishima Island by 12 UTC on 17 November. It moved southeastward and dissipated to the east of Minamitorishima Island at 06 UTC on 18 November.

#### **TY KALMAEGI (1926)**

KALMAEGI formed as a tropical depression (TD) over the sea east of the Philippines at 18 UTC on 09 November 2019. It moved southwestward initially, and turned northwestward on 12 November. KALMAEGI was upgraded to tropical storm (TS) intensity over the same waters at 12 UTC on 14 November while drifting northwestward. It was upgraded to typhoon (TY) intensity around the Luzon Strait at 12 UTC on 18 November and reached its peak intensity six hours later with maximum sustained winds of 70 kt and a central pressure of 975 hPa. After maintaining the TY intensity for the subsequent 24 hours, KALMAEGI turned sharply southward and began to weaken rapidly. KALMAEGI hit Luzon Island late on 19 November and weakened to TD intensity at 00 UTC on the next day. It moved southwestward over the South China Sea and dissipated at 06 UTC on 22 November.

#### **STS FUNG-WONG (1927)**

FUNG-WONG formed as a tropical depression (TD) around the Mariana Islands at 12 UTC on 17 November 2019. It moved west-northwestward initially. FUNG-WONG was upgraded to tropical storm (TS) intensity over the sea east of the Philippines at 00 UTC on 20 November. FUNG-WONG reached its peak intensity with maximum sustained winds of 55 kt and a central pressure of 990 hPa to the south of the Yaeyama Islands at 00 UTC on 21 November. It turned to the north and soon to the north-northeast while beginning to weaken rapidly. FUNG-WONG weakened to TD intensity at 12 UTC on 22 November around Miyakojima Island. FUNG-WONG transitioned into an extra tropical cyclone by 18 UTC 23 November in the East China Sea and it turned to the east-northeast. FUNG-WONG dissipated at 06 UTC on 25 November off the coast of the Kii peninsula.

### **TY KAMMURI (1928)**

KAMMURI formed as a tropical depression (TD) around the Caroline Islands at 12 UTC on 24 November 2019. It moved westward and was upgraded to tropical storm (TS) intensity at 00 UTC on 26 November. Continuing on its westward track, KAMMURI reached severe tropical storm (STS) intensity at 00 UTC on 27 November. It developed further and attained Typhoon (TY) intensity 24 hours later when it turned northward over the sea west of the Mariana Islands. KAMMURI continued on the northward track until 18 UTC on 28 November, and started to move westward again. It reached the peak intensity with maximum sustained winds of 90 kt and a central pressure of 950 hPa over the sea east of the Philippines at 12 UTC on 2 December shortly before hitting the Philippines. After crossing the Philippines, KAMMURI was downgraded to STS intensity at 18 UTC on 3 December, and further weakened to TS intensity over the South China Sea at 12 UTC on 4 December. Finally, it weakened to TD intensity at 18 UTC 5 December and dissipated at 06 UTC on 6 December over the same water.

### **TY PHANFONE (1929)**

PHANFONE formed as a tropical depression (TD) around the Chuuk Islands at 12 UTC on 19 December 2019. It moved westward initially. PHANFONE turned to the west-northwest on 21 December and it was upgraded to tropical storm (TS) intensity around Yap Island at 12 UTC on 22 December. PHANFONE was upgraded to typhoon (TY) intensity east of the Philippines at 00UTC on 24 December and it passed over the central part of the Philippines from that day to the next. PHANFONE reached its peak intensity with maximum sustained winds of 80 kt and a central pressure of 970 hPa around Panay Island at 18 UTC on 24 December. Soon after it reached its peak intensity, PHANFONE started to weaken and entered the South China Sea on 25 December. PHANFONE intensified again over the South China Sea until 06 UTC on 26 December. After that it weakened rapidly and turned to the west next day. PHANFONE weakened to TD intensity over the same waters at 00 UTC on 28 December and it dissipated off the coast of Vietnam at 06 UTC on 29 December.