ESCAP/WMO Typhoon Committee
Fiftieth Session
28 February – 3 March 2018
Ha Noi
Viet Nam

FOR PARTICIPANTS ONLY
WRD/TC.50/6.1
09 February 2018
ENGLISH ONLY

REVIEW OF THE 2017 TYPHOON SEASON

(submitted by the RSMC Tokyo – Typhoon Center)

Action Proposed

The Committee is invited to review the 2017 typhoon season.

APPENDIXES:
A) DRAFT TEXT FOR INCLUSION IN SESSION REPORT
B) Review of the 2017 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 2017 typhoon season provided by the RSMC Tokyo as provided in Appendix XX, whose summary is presented in paragraph xx(2) – xx(11).

2 In the western North Pacific and the South China Sea, 27 named tropical cyclones (TCs) formed in 2017, which was near the average number, and 11 out of them reached typhoon (TY) intensity.

3 Eight named TCs formed in July, which equalled the largest number of formation in July in 1971 since 1951 when the statistical record on TC in RSMC Tokyo – Typhoon Center started. Among the eight named TCs, four formed in South China Sea, two in the east of the Philippines and two in the East of Minamitorishima Island. During the month, the sea surface temperature was high in these areas and convections were active, partly because of the phase of the Madden-Julian Oscillation (MJO), to which the large number of TC formation could be attributed.

4 The mean genesis point of named TCs formed in summer (June to August) was 19.7˚N and 134.5˚E, with almost no deviation from the 30-year summer average (18.4˚N and 135.9˚E, averaged for 1981 – 2010 period), and that of named TCs formed in autumn (September to November) was 14.6˚N and 126.0˚E, showing a large westward deviation from the 30-year autumn average (15.9˚N and 137.8˚E), which contributes to the westward deviation of the annual average. The autumn deviation can be attributed to the higher sea surface temperature in the east of the Philippines throughout the autumn season because of the La Nina event which started in the beginning of autumn, and the active convection caused by the warm sea. In contrast, convection was not active in the middle of the Pacific Ocean, which contributed to the smaller number of TC formation in this area. As the result, more number of TCs formed around the Philippines and contributed to the westward deviation of the mean genesis point of named TCs formed in 2017.

5 The mean duration of TCs sustaining TS intensity or higher was 4.3 days, shorter than the 30-year average (5.3 days).

6 Two named TCs formed from April to June. Merbok (1702) formed over the South China Sea and hit China.

7 Eight named TCs formed in July. Nanmadol (1703) formed south of Okinawa Island and caused severe damage mainly to the western Japan. Talas (1704) formed over the South China Sea and caused severe damage to Thailand and Viet Nam. Noru (1705) formed northeast of Minamitorishima Island and took a slow unique track over the sea southeast to south of Japan. Its duration of TS intensity or higher was 19 days, which is the second longest on record. Noru made landfall in the western Japan and damaged the country in August. Roke (1707) formed around the Luzon Strait and hit China. Sonca (1708) formed over the South China Sea and damaged Lao PDR, Thailand and Viet Nam. Nesat (1709) formed east of the Philippines and Haitang (1710) formed over the South China Sea. These two TCs hit China one after another and caused severe damage to the country.

8 Six named TCs formed in August. Hato (1713) formed east of the Philippines and caused severe damage to the southern China including Hong Kong and Macau, and Lao PDR and Viet Nam. Pakhar (1714) also formed east of the Philippines and damaged China including Hong Kong. Sanvu (1715) formed around the Northern Mariana Islands and damaged the

Ogasawara Islands, Japan. Mawar (1716) formed over the South China Sea and hit China.

9 Three named TCs formed in September. Talim (1718) formed around the Northern Mariana Islands and caused severe damage to Japan. Doksuri (1719) formed over the South China Sea and caused severe damage to Lao PDR, Malaysia, Thailand and Viet Nam.

10 Three named TCs formed in October. Khanun (1720) formed northeast of Luzon Island and hit the Philippines and China. Lan (1721) formed around the Yap Islands and damaged Japan and affected Malaysia. Saola (1722) formed west of the Mariana Islands and also damaged Japan.

11 Five named TCs formed in November and December. Damrey (1723) formed over the South China Sea and caused severe damage to Viet Nam. Kai-tak (1726) formed around the sea east of the Philippines and caused severe damage to the Philippines. Tembin (1727) formed east of Mindanao Island and caused severe damage to the island.

APPENDIX B:
Review of the 2017 Typhoon Season

In the western North Pacific and the South China Sea, 27 named tropical cyclones (TCs) formed in 2017, which was near the average number, and 11 out of them reached typhoon (TY) intensity (see Table 1).

A notable feature of the season is that eight named TCs formed in July, which equalled the largest number of formation in July in 1971 since 1951 when the statistical record on TC in RSMC Tokyo-Typhoon Center started. Among the eight named TCs, four formed in South China Sea, two in the east of the Philippines and two in the East of Minamitorishima Island. During the month, the sea surface temperature was high in these areas and convections were active, partly because of the phase of the Madden-Julian Oscillation (MJO), to which the large number of TC formation could be attributed. The mean genesis point of named TCs formed in summer (June to August) was 19.7˚N and 134.5˚E, with almost no deviation from the 30-year summer average* (18.4˚N and 135.9˚E), and that of named TCs formed in autumn (September to November) was 14.6˚N and 126.0˚E, showing a large westward deviation from the 30-year autumn average* (15.9˚N and 137.8˚E), which contributes to the westward deviation of the annual average. The autumn deviation can be attributed to the higher sea surface temperature in the east of the Philippines throughout the autumn season because of the La Nina event which started in the beginning of autumn, and the active convection caused by the warm sea. In contrast, convection was not active in the middle of the Pacific Ocean, which contributed to the smaller number of TC formation in this area. As the result, more number of TCs formed around the Philippines and contributed to the westward deviation of the mean genesis point of named TCs formed in 2017. The mean duration of TCs sustaining TS intensity or higher was 4.3 days, shorter than the 30-year average* (5.3 days).

Two named TCs formed from April to June (see yellow lines in Figure 3). Merbok (1702) formed over the South China Sea and hit China.

Eight named TCs formed in July (see red lines in Figure 3). Nanmadol (1703) formed south of Okinawa Island and caused severe damage mainly to the western Japan. Talas (1704) formed over the South China Sea and caused severe damage to Thailand and Viet Nam. Noru (1705) formed northeast of Minamitorishima Island and took a slow unique track over the sea southeast to south of Japan. Its duration of TS intensity or higher was 19 days, which is the second longest on record. Noru made landfall in the western Japan and damaged the country in August. Roke (1707) formed around the Luzon Strait and hit China. Sonca (1708) formed over the South China Sea and damaged Lao PDR, Thailand and Viet Nam. Nesat (1709) formed east of the Philippines and Haitang (1710) formed over the South China Sea. These two TCs hit China one after another and caused severe damage to the country.

Six named TCs formed in August (see green lines in Figure 3). Hato (1713) formed east of

the Philippines and caused severe damage to the southern China including Hong Kong and Macau, and Lao PDR and Viet Nam. Pakhar (1714) also formed east of the Philippines and damaged China including Hong Kong. Sanvu (1715) formed around the Northern Mariana Islands and damaged the Ogasawara Islands, Japan. Mawar (1716) formed over the South China Sea and hit China.

Three named TCs formed in September (see blue lines in Figure 3). Talim (1718) formed around the Northern Mariana Islands and caused severe damage to Japan. Doksuri (1719) formed over the South China Sea and caused severe damage to Lao PDR, Malaysia, Thailand and Viet Nam.

Three named TCs formed in October (see purple lines in Figure 3). Khanun (1720) formed northeast of Luzon Island and hit the Philippines and China. Lan (1721) formed around the Yap Islands and damaged Japan and affected Malaysia. Saola (1722) formed west of the Mariana Islands and also damaged Japan.

Five named TCs formed in November and December (see orange lines in Figure 3). Damrey (1723) formed over the South China Sea and caused severe damage to Viet Nam. Kai-tak (1726) formed around the sea east of the Philippines and caused severe damage to the Philippines. Tembin (1727) formed east of Mindanao Island and caused severe damage to the island.

* The 30-year averaging period is from 1981 to 2010

Table 1 List of the tropical cyclones reaching TS intensity or higher in 2017

Tropical Cyclone			Duration (UTC) (TS or higher)						Minimum Central Pressure (UTC)	lat(N)	long(E)	(hPa)	Max Wind (kt)
TS	Muifa	(1701)	251800	Apr	-	270600	Apr		251800	13.1	136.0	1002	35
STS	Merbok	(1702)	110000	Jun	-	130000	Jun		121200	22.0	114.4	985	55
STS	Nanmadol	(1703)	020000	Jul	-	050000	Jul		030600	27.7	125.0	985	55
STS	Talas	(1704)	150600	Jul	-	171200	Jul		161800	18.5	105.6	985	50
TY	Noru	(1705)	201200	Jul	-	081200	Aug		310000	22.8	140.4	935	95
TS	Kulap	(1706)	210600	Jul	-	251800	Jul		230600	30.8	166.5	1002	40
TS	Roke	(1707)	220600	Jul	-	230600	Jul		221200	21.6	117.9	1002	35
TS	Sonca	(1708)	230000	Jul	-	251200	Jul		241800	16.9	109.5	994	35
TY	Nesat	(1709)	251800	Jul	-	301200	Jul		281800	21.7	123.5	960	80
TS	Haitang	(1710)	281800	Jul	-	310600	Jul		300600	21.9	120.3	985	45
TS	Nalgae	(1711)	020000	Aug	-	051800	Aug		050600	34.2	162.1	990	45
TY	Banyan	(1712)	111200	Aug	-	170600	Aug		130000	21.0	164.1	955	80
TY	Hato	(1713)	201200	Aug	-	241200	Aug		230000	21.6	114.4	965	75
STS	Pakhar	(1714)	241800	Aug	-	271800	Aug		270000	21.8	113.4	985	55
TY	Sanvu	(1715)	280600	Aug	-	031200	Sep		312100	27.5	141.8	955	80
STS	Mawar	(1716)	311800	Aug	-	040000	Sep		020000	21.0	117.4	990	50
TS	Guchol	(1717)	051800	Sep	-	061800	Sep		051800	20.3	121.1	1000	35
TY	Talim	(1718)	091200	Sep	-	171800	Sep		140000	26.6	124.6	935	95
TY	Doksuri	(1719)	121200	Sep	-	160000	Sep		141200	17.0	109.8	955	80
TY	Khanun	(1720)	121200	Oct	-	160000	Oct		150000	20.2	114.7	955	75
TY	Lan	(1721)	151800	Oct	-	230000	Oct		211800	25.6	133.3	915	100
STS	Saola	(1722)	241200	Oct	-	291200	Oct		271800	24.2	128.3	975	60
TY	Damrey	(1723)	020000	Nov	-	041800	Nov		030600	12.7	112.6	970	70
TS	Haikui	(1724)	100000	Nov	-	120600	Nov		110000	17.6	116.2	998	40
TS	Kirogi	(1725)	180000	Nov	-	190000	Nov		180000	11.5	115.2	1000	35
TS	Kai-tak	(1726)	140000	Dec	-	211200	Dec		150600	11.7	127.8	994	40
TY	Tembin	(1727)	201800	Dec	-	251200	Dec		240000	8.1	114.7	970	70

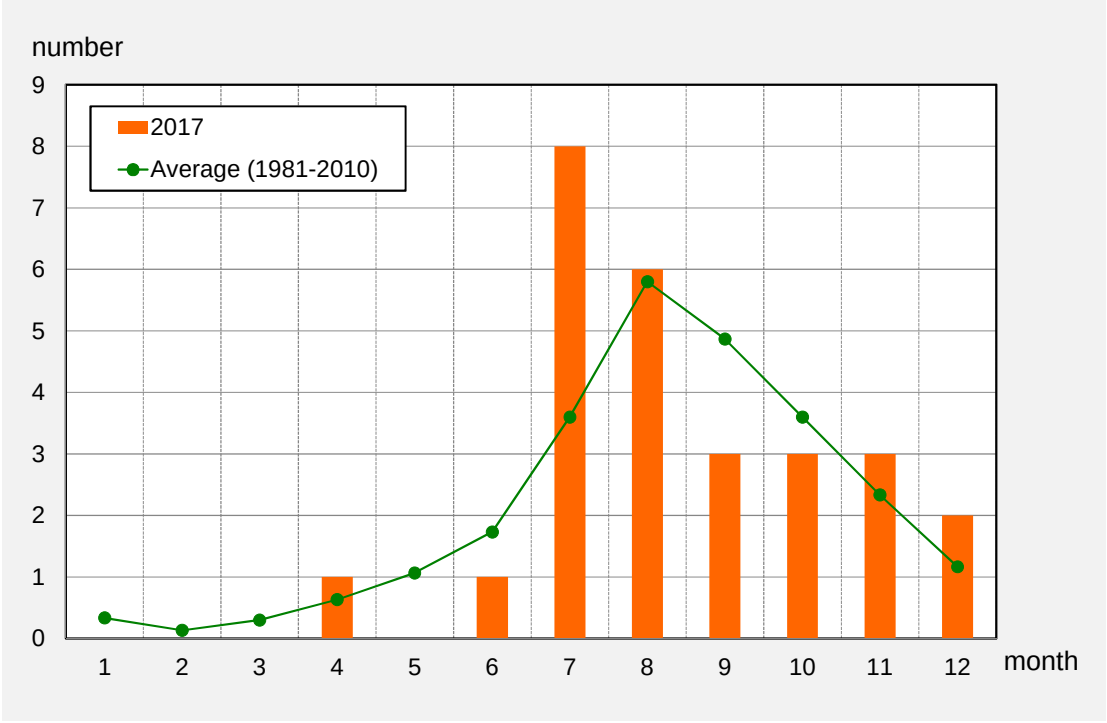

Figure 1 Monthly formation number of named TCs in 2017

Orange bar: formation number in 2017, green line: 30-year average from 1981 to 2010

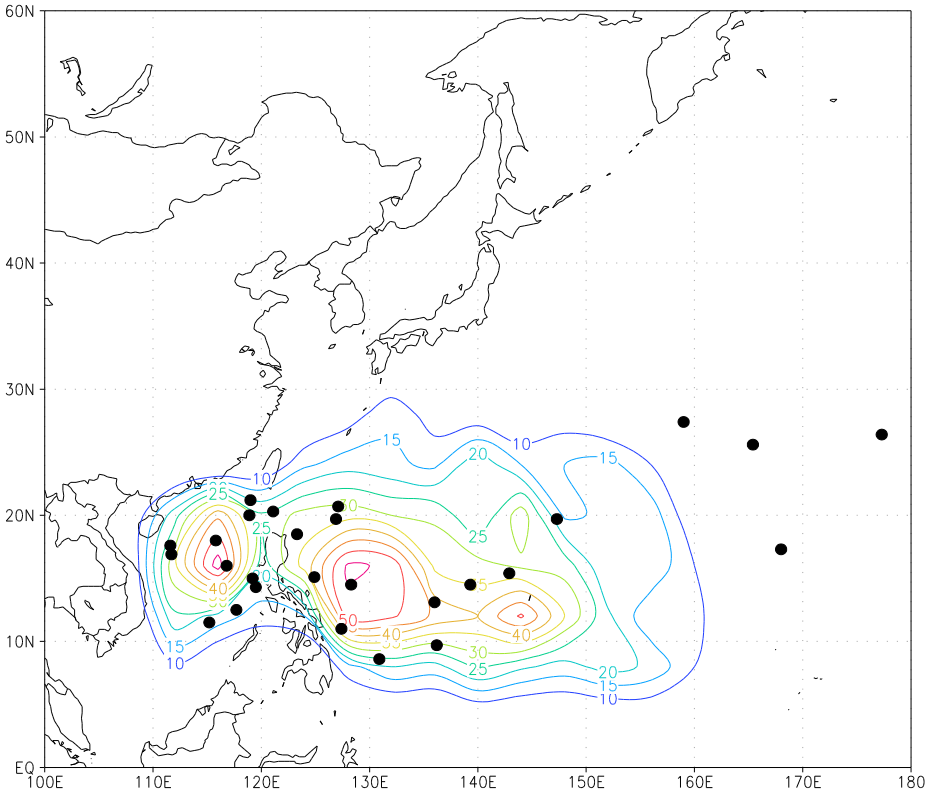

Figure 2 Genesis points of Tropical Cyclones in 2017 (dots) and frequency distribution of genesis points for 1951-2016 (lines)

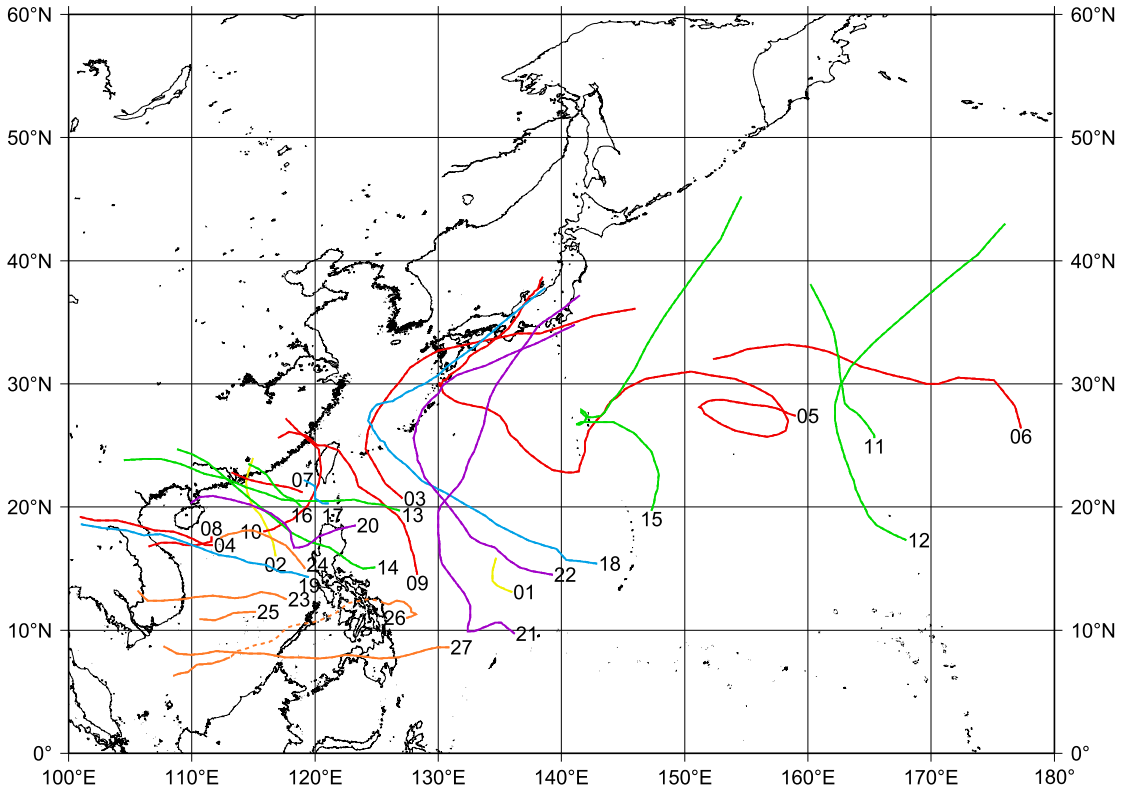

Figure 3 Tracks of Tropical Cyclones in 2017

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 27 Named Tropical Cyclones in 2017

TS MUIFA (1701)

MUIFA formed as a tropical depression (TD) around the Caroline Islands at 18 UTC on 22 April 2017 and moved west-northwestward. It was upgraded to tropical storm (TS) intensity and reached its peak intensity with maximum sustained winds of 35 kt and a central pressure of 1002 hPa around the sea east of the Philippines at 18 UTC on 25 April. After turning northward, MUIFA weakened to TD intensity over the same waters at 06 UTC on 27 April. It turned northeastward and dissipated south of the Ogasawara Islands at 12 UTC on 29 April.

STS MERBOK (1702)

MERBOK formed as a tropical depression (TD) over the South China Sea at 00 UTC on 10 June 2017. After moving north-northwestward, it was upgraded to tropical storm (TS) intensity over the same waters at 00 UTC on the next day. Keeping its north-northwestward track, MERBOK reached its peak intensity with maximum sustained winds of 55 kt and a central pressure of 985 hPa southeast of Hong Kong at 12 UTC on 12 June. After turning north-northeastward and crossing the coast line of the southern part of China with STS intensity, it downgraded to TS intensity on 18 UTC the same day and weakened to TD intensity in the same area 6 hours later. MERBOK dissipated there at 12 UTC on 13 June.

STS NANMADOL (1703)

NANMADOL formed as a tropical depression (TD) around the sea east of the Philippines at 06 UTC on 1 July 2017. Moving northwestward, it was upgraded to tropical storm (TS) intensity around the sea south of Okinawa Island at 00 UTC on 02 July. NANMADOL gradually turned northeastward and reached its peak intensity with maximum sustained winds of 55 kt and a central pressure of 985 hPa over the East China Sea at 06 UTC on 03 July. NANMADOL made a landfall on Nagasaki City, Nagasaki Prefecture around 2300 UTC on 3 July and made landfall on Uwazima City, Ehime Prefecture after 0300 UTC the next day. After making landfall on Tanabe City, Wakayama Prefecture before 0800 UTC on 4 July, NANMADOL transformed into an extratropical cyclone around the sea east of Japan at 00 UTC on 5 July. It moved northeastward and crossed longitude 180 degrees east at 12 UTC on 8 July.

STS TALAS (1704)

TALAS formed as a tropical depression (TD) over the South China Sea at 00 UTC on 14 July 2017. Moving west-northwestward, it was upgraded to tropical storm (TS) intensity over the same waters at 06 UTC on 15 July. Shortly after hitting the northern part of Viet Nam, TALAS reached its peak intensity as a severe tropical storm (STS) with maximum sustained winds of 50 kt and a central pressure of 985 hPa on 18 UTC on 16 July. TALAS weakened to TD intensity in Thailand at 12 UTC on 17 July and dissipated 12 hours later.

TY NORU (1705)

NORU formed as a tropical depression (TD) over the sea east of Minamitorishima Island at 06 UTC on 19 July 2017. Moving westward, it was upgraded to tropical storm (TS) intensity northeast of the same island at 12 UTC on the next day. Shortly after turning in a counterclockwise direction, NORU was upgraded to typhoon (TY) intensity northwest of Minamitorishima Island at 12 UTC on 23 July. Gradually turning southwestward, it weakened to severe tropical storm (STS) intensity northeast of Chichijima Island.at 00 UTC on 28 July. Keeping its southwestward track, NORU gradually developed and was upgraded to TY intensity again at 00 UTC on 30 July. Gradually turning northwestward, it reached its peak intensity with maximum sustained winds of 95 kt and a central pressure of 935 hPa south-southwest of Chichijima Island at 00 UTC on 31 July. After that NORU remained almost stationary over the sea west of Yakushima Island on 5 August and weakened to STS intensity at 12 UTC on the same day. After moving northeastward, it passed over Yakushima Island with STS intensity after 17 UTC on 5 August, and passed over Tanegashima Island with STS intensity around 0030 UTC on the next day. After passing around Cape Muroto before 01 UTC on 7 August, Noru made landfall in the northern part of Wakayama Prefecture with STS intensity after 06 UTC on the same day. Keeping its northeastward track, NORU crossed the central Honshu Island and entered the Sea of Japan on 8 August. It transformed into an extratropical cyclone over the same waters at 12 UTC on the same day. Noru dissipated over the Sea of Japan at 12 UTC on 9 August.

TS KULAP (1706)

KULAP formed as a tropical depression (TD) over the sea southwest of the Midway Islands at 00 UTC on 20 July 2017. Moving northward, it was upgraded to tropical storm (TS) intensity over the sea west of the Midway Islands at 06 UTC the next day. Turning westward, KULAP reached its peak intensity with maximum sustained winds of 40 kt and a central pressure of 1002 hPa far east of Japan at 18 UTC on 06 UTC on 23 July. Keeping its westward track, KULAP was downgraded to TD intensity over the sea east of Japan at 18 UTC on 25 July. It dissipated over the sea east of the Ogasawara Islands at 06UTC on 28 July.

TS ROKE (1707)

ROKE formed as a tropical depression (TD) around the sea south-southwest of Okinawa Island at 06 UTC on 21 July 2017. After moving west-northwestward, it was upgraded to tropical storm (TS) intensity around the Luzon Strait at 06 UTC on 22 July and reached its peak intensity with maximum sustained winds of 35 kt and a central pressure of 1002 hPa over the South China Sea six hours later. Keeping its west-northwestward track, ROKE crossed the coast line of the southern part of China with TS intensity early on 23 July. It weakened to TD intensity there at 06 UTC on 23 July and dissipated 12 hours later.

TS SONCA (1708)

SONCA formed as a tropical depression (TD) over the South China Sea at 00 UTC on 21 July 2017. After

moving westward, it was upgraded to tropical storm (TS) intensity over the same waters at 00 UTC on 23 July and reached its peak intensity with maximum sustained winds of 35 kt and a central pressure of 994 hPa off the eastern coast of Viet Nam on 18UTC on 24 July. Moving westward, SONCA hit the central part of Viet Nam with TS intensity on the next day. It weakened to TD intensity in Laos at 12 UTC on 25 July and dissipated in Thailand on 18UTC on 29 July.

TY NESAT (1709)

NESAT formed as a tropical depression (TD) over the sea east of the Philippines at 06 UTC on 25 July 2017 and moved north-northwestward. NESAT was upgraded to tropical storm (TS) intensity at 18 UTC on the same day over the same waters and was upgraded to typhoon (TY) intensity at 06 UTC on 28 July over the sea southeast of Taiwan Island. It reached its peak intensity with maximum sustained winds of 80 kt and a central pressure of 960 hPa southeast of Taiwan Island at 18 UTC on 28 July. NESAT crossed Taiwan Island on 29 July and then turned west-northwestward. After entering the Taiwan Strait, it hit the coast of southeastern China at around 00 UTC on 30 July and weakened to a TD at 12 UTC on the same day. NESAT dissipated on southeastern China at 00 UTC on 31 July.

TS HAITANG (1710)

HAITANG formed as a tropical depression (TD) over the South China Sea at 12 UTC on 27 July 2017. Turning in a counterclockwise direction to circle, it was upgraded to tropical storm (TS) intensity over the same waters at 18 UTC on 28 July. HAITANG reached its peak intensity with maximum sustained winds of 45 kt and a central pressure of 985 hPa south of Taiwan Island at 06 UTC on 30 July. After crossing Taiwan Island, it hit southeast of China late on the same day. HAITANG weakened to TD intensity in the same area at 06 UTC on 31 July. It transformed into an extratropical cyclone around the lower Yangtze River at 06 UTC on 1 August and moved northward. It dissipated around the lower Yellow River at 00 UTC on 3 August.

TS NALGAE (1711)

NALGAE formed as a tropical depression (TD) northeast of Minamitorishima Island at 06 UTC on 31 July 2017 and moved eastward. It was upgraded to tropical storm (TS) intensity north of Wake Island at 00 UTC on 2 August. NALGAE turned sharply north-northwestward and reached its peak intensity with maximum sustained winds of 45 kt and a central pressure of 990 hPa far east of Japan at 06 UTC on 5 August. It transformed into an extratropical cyclone over the same waters 12 hours later. After drawing a counterclockwise loop east of the Chishima Islands, NALGAE turned west-southwestward and dissipated around the same waters at 12 UTC on 9 August.

TY BANYAN (1712)

BANYAN formed as a tropical depression (TD) southeast of Wake Island at 18 UTC on 10 August 2017. After moving northwestward, it was upgraded to tropical storm (TS) intensity over the same waters at 12 UTC the next day. Turning north-northwestward, BANYAN was upgraded to typhoon (TY) intensity

northwest of Wake Island at 12 UTC on 12 August, and reached its peak intensity with maximum sustained winds of 80 kt and a central pressure of 955 hPa over the same waters 12 hours later. After accelerating northeastward, BANYAN transformed into an extratropical cyclone around sea south of the Aleutian Islands at 06 UTC on 17 August, and crossed longitude 180 degrees east over the same waters before 00 UTC the next day.

TY HATO (1713)

HATO formed as a tropical depression (TD) over the sea east of the Philippines at 12 UTC on 19 August 2017 and moved westward. It was upgraded to tropical storm (TS) intensity over the same waters at 12 UTC on 20 August. After passing the Luzon Strait, HATO was upgraded to typhoon (TY) intensity over the northern part of the South China Sea at 18 UTC on 22 August. It reached its peak intensity with maximum sustained winds of 75 kt and a central pressure of 965 hPa over the same waters 6 hours later. After hitting the southern part of China with TY intensity early on 23 August, HATO rapidly weakened to TD intensity there at 12 UTC on 24 August and crossed longitude 100 degrees east at 00 UTC on the next day.

STS PAKHAR (1714)

PAKHAR formed as a tropical depression (TD) around sea east of the Philippines at 00 UTC on 24 August 2017. Moving westward, it was upgraded to tropical storm (TS) intensity east of Luzon Island at 18 UTC on the same day. Turning northwestward, it crossed the island late on 25 August and entered the South China Sea. PAKHAR was upgraded to severe tropical storm (STS) intensity at 18 UTC on 26 August, and reached its peak intensity with maximum sustained winds of 55 kt and a central pressure of 985 hPa over the same waters 6 hours later. After hitting the southern part of China, it weakened to TD intensity there at 18 UTC on 27 August and dissipated at 06 UTC on the next day.

TY SANVU (1715)

SANVU formed as a tropical depression (TD) around the sea east of the Northern Mariana Islands at 18 UTC on 26 August 2017. After moving northward, it was upgraded to tropical storm (TS) intensity over the same waters at 06 UTC on 28 August. After gradually turned westward, SANVU was upgraded to typhoon (TY) intensity at 12 UTC on 31 August during its turning in a counterclockwise direction to circle twice around the Ogasawara Islands. SANVU reached its peak intensity with maximum sustained winds of 80 kt and a central pressure of 955 hPa over the same waters at 00 UTC on 1 September. SANVU turned north-eastward and transformed into an extratropical cyclone over the sea east of the Chishima Islands at 12 UTC on 3 September. It crossed longitude 180 degrees east over the sea around the Aleutian Islands before 12 UTC on 6 September.

STS MAWAR (1716)

MAWAR formed as a tropical depression (TD) over the Balintang Channel at 06 UTC on 30 August 2017. Moving northwestward, it was upgraded to tropical storm (TS) intensity over the South China Sea at 18

UTC on 31 August. MAWAR was upgraded to severe tropical storm (STS) intensity and reached its peak intensity with maximum sustained winds of 50 kt and a central pressure of 990 hPa over the same waters at 00 UTC on 2 September. MAWAR hit the coast of southern China late on 3 September before weakening to TD intensity at 00 UTC on 4 September, and dissipated over southern China at 12 UTC on the same day.

TS GUCHOL (1717)

GUCHOL formed as a tropical depression (TD) around the sea east of the Philippines at 12 UTC on 3 September 2017, and moved westward. After turning northwestward, it was upgraded to tropical storm (TS) intensity around the Luzon Strait and reached its peak intensity with maximum sustained winds of 35 kt and a central pressure of 1000 hPa at 18 UTC on 5 September. After turning north-northwestward, GUCHOL was downgraded to TD intensity around the Taiwan Strait at 18 UTC on 6 September. Moving northward, it dissipated at 18 UTC the next day.

TY TALIM (1718)

TALIM formed as a tropical depression (TD) over the sea northeast of Guam Island at 12 UTC on 8 September 2017. Moving west-northwestward, it was upgraded to tropical storm (TS) intensity northwest of Guam Island at 12 UTC the next day. Keeping its west-northwestward track, TALIM was upgraded to typhoon (TY) intensity east of the Philippines at 18 UTC on 11 September. It reached its peak intensity with maximum sustained winds of 95 kt and a central pressure of 935 hPa north of Ishigakijima Island at 00 UTC on 14 September. After turning northeastward, TALIM was downgraded to severe tropical storm (STS) intensity west of Okinoerabu Island at 21 UTC on 16 September. Keeping its northeastward track, TALIM crossed the Satsuma Peninsula, Kagoshima Prefecture around 0230 UTC on 17 September and made landfall on Tarumizu City, Kagoshima Prefecture around 0300 UTC the same day. It made landfall again on the western part of Kochi Prefecture around 0730 UTC and around Akashi City, Hyogo Prefecture around 1300 UTC the same day. TALIM entered the Sea of Japan and transformed into an extratropical cyclone around Sado Island at 18 UTC the same day. It accelerated north-northeastward and dissipated over the Sea of Okhotsk at 00 UTC on 23 September.

TY DOKSURI (1719)

DOKSURI formed as a tropical depression (TD) over the sea east of the Philippines at 00 UTC on 10 September 2017. Moving westward and hitting Luzon Island after 00 UTC on 12 September, DOKSURI was upgraded to tropical storm (TS) intensity at 12 UTC on 12 September over the South China Sea. After turning west-northwestward, it was upgraded to typhoon (TY) intensity at 06 UTC on 14 September. It reached its peak intensity with maximum sustained winds of 80 kt and a central pressure of 955 hPa at 12 UTC the same day. DOKSURI hit the coast of Vietnam with TY intensity after 00 UTC on 15 September and was downgraded to TS intensity at 18 UTC the same day. After moving westward, DOKSURI weakened to TD intensity in Thailand at 00 UTC on 16 September and dissipated there at 06 UTC the same day.

TY KHANUN (1720)

KHANUN formed as a tropical depression (TD) around the sea east of the Philippines at 00 UTC on 11 October 2017 and moved west-northwestward. After turning west-southwestward, it was upgraded to tropical storm (TS) intensity northeast of Luzon Island at 12 UTC on 12 October. KHANUN hit Luzon Island with TS intensity late on 12 October and entered the South China Sea. After turning northwestward, it was upgraded to typhoon (TY) intensity over the South China Sea at 18 UTC on 14 October. KHANUN reached its peak intensity with maximum sustained winds of 75 kt and a central pressure of 955 hPa over the same waters 6 hours later. It moved westward and weakened to TD intensity around the Gulf of Tonkin at 00 UTC on 16 October. KHANUN dissipated there 12 hours later.

TY LAN (1721)

LAN formed as a tropical depression (TD) over the sea around the Yap Islands at 06 UTC on 15 October 2017 and moved northwestward. It was upgraded to tropical storm (TS) intensity over the same waters 12 hours later and turned west-southwestward. After turning northward sharply, LAN was upgraded to typhoon (TY) intensity around the sea east of the Philippines at 18 UTC on 17 October and turned northwestward. After turning northeastward, it accelerated gradually and reached its peak intensity with maximum sustained winds of 100 kt and a central pressure of 915 hPa east of Minamidaitojima Island at 18 UTC on 21 October. LAN made landfall on around Kakegawa City in Shizuoka Prefecture around 18 UTC on 22 October with TY intensity. After crossing the Kanto region, it transformed into an extratropical cyclone around the sea east of Japan at 00 UTC on 23 October and dissipated around the Kuril Islands 24 hours later.

STS SAOLA (1722)

SAOLA formed as a tropical depression (TD) over the sea west of the Chuuk Islands at 06 UTC on 22 October 2017 and moved northwestward. It was upgraded to tropical storm (TS) intensity west of the Mariana Islands at 12 UTC on 24 October. Keeping the northwestward track, SAOLA was upgraded to severe tropical storm (STS) intensity south of Okinawa Island at 00 UTC on 27 October. After turning northward, it reached its peak intensity with maximum sustained winds of 60 kt and a central pressure of 975 hPa south of Okinawa Island at 18 UTC on the same day. SAOLA turned northeastward and passed over Okinawa Island before 05 UTC on 28 October. It transformed into an extratropical cyclone off the southeastern coast of Chiba Prefecture at 12 UTC on 29 October and dissipated 6 hours later.

TY DAMREY (1723)

DAMREY formed as a tropical depression (TD) over the sea east of the Philippines at 00 UTC on 31 October 2017 and moved westward. After crossing islands of the Philippines, it was upgraded to tropical storm (TS) intensity over the South China Sea at 00 UTC on 2 November and was also upgraded to typhoon (TY) intensity over the same waters 24 hours later. DAMREY reached its peak intensity with maximum sustained winds of 70 kt and a central pressure of 970 hPa at 06 UTC on 3 November. It hit

the south coast of Vietnam with TY intensity just before 00 UTC on 04 November and was downgraded to TS intensity in Cambodia at 12 UTC the same day. After moving northwestward, DAMREY weakened to TD intensity at 18 UTC on 4 November and dissipated there 6 hours later.

TS HAIKUI (1724)

HAIKUI formed as a tropical depression (TD) around the sea east of the Philippines at 12 UTC on 7 November 2017, and moved west-northwestward. After crossing Samar Island and Luzon Island with TD intensity, it entered the South China Sea late on 9 November. HAIKUI was upgraded to tropical storm (TS) intensity over the same waters at 00 UTC on 10 November and reached its peak intensity with maximum sustained winds of 40 kt and a central pressure of 998 hPa at 00 UTC the next day. After turning westward, HAIKUI was weakened to TD intensity southeast of Hainan Island at 06 UTC on 12 November and dissipated south of the island at 06 UTC the next day.

TS KIROGI (1725)

KIROGI formed as a tropical depression (TD) over the sea to the immediate south of Mindanao Island at 12 UTC on 16 November 2017 and moved west-northwestward. It was upgraded to tropical storm (TS) intensity and also reached its peak intensity with maximum sustained winds of 35 kt and a central pressure of 1000 hPa over the South China Sea at 00 UTC on 18 November. Having moved westward over the same waters, KIROGI weakened to tropical depression (TD) intensity over the sea east of Viet Nam at 00 UTC on 19 November and dissipated there 12 hours later.

TS KAI-TAK (1726)

KAI-TAK formed as a tropical depression (TD) around the sea east of the Philippines at 18 UTC on 13 December 2017 and moved east-northeastward. It was upgraded to tropical storm (TS) intensity over the same waters six hours later. Remaining almost stationary there, it reached its first peak intensity with maximum sustained winds of 40 kt and a central pressure of 994 hPa at 06 UTC on 15 December. After moving westward, KAI-TAK weakened to TD intensity off the eastern coast of Samar Island at 12 UTC on 16 December. Keeping its TD intensity and west-southwestward track, KAI-TAK crossed several islands of the Philippines and entered the South China Sea. Moving west-southwestward in the South China Sea, it was re-upgraded to TS intensity at 00 UTC on 20 December and reached its second peak intensity with maximum sustained winds of 40 kt and a central pressure of 996 hPa 12 hours later. KAI-TAK downgraded to TD intensity over the South China Sea at 12 UTC on 21 December. After holding its TD intensity more than 2 days, KAI-TAK dissipated off the eastern coast of the Malay Peninsula at 00 UTC on 24 December.

TY TEMBIN (1727)

TEMBIN formed as a tropical depression (TD) north of the Palau Islands at 00 UTC on 20 December 2017. Moving westward, it was upgraded to tropical storm (TS) intensity east of Mindanao Island 18 hours later. After crossing Mindanao Island, TEMBIN gradually developed and was upgraded to

typhoon (TY) intensity over the Sulu Sea at 12 UTC on 23 December It reached its peak intensity with maximum sustained winds of 70 kt and a central pressure of 970 hPa over the South China Sea 12 hours later. TEMBIN weakened to TD intensity south of Viet Nam at 12 UTC on 25 December and dissipated south of Cambodia 24 hours later.