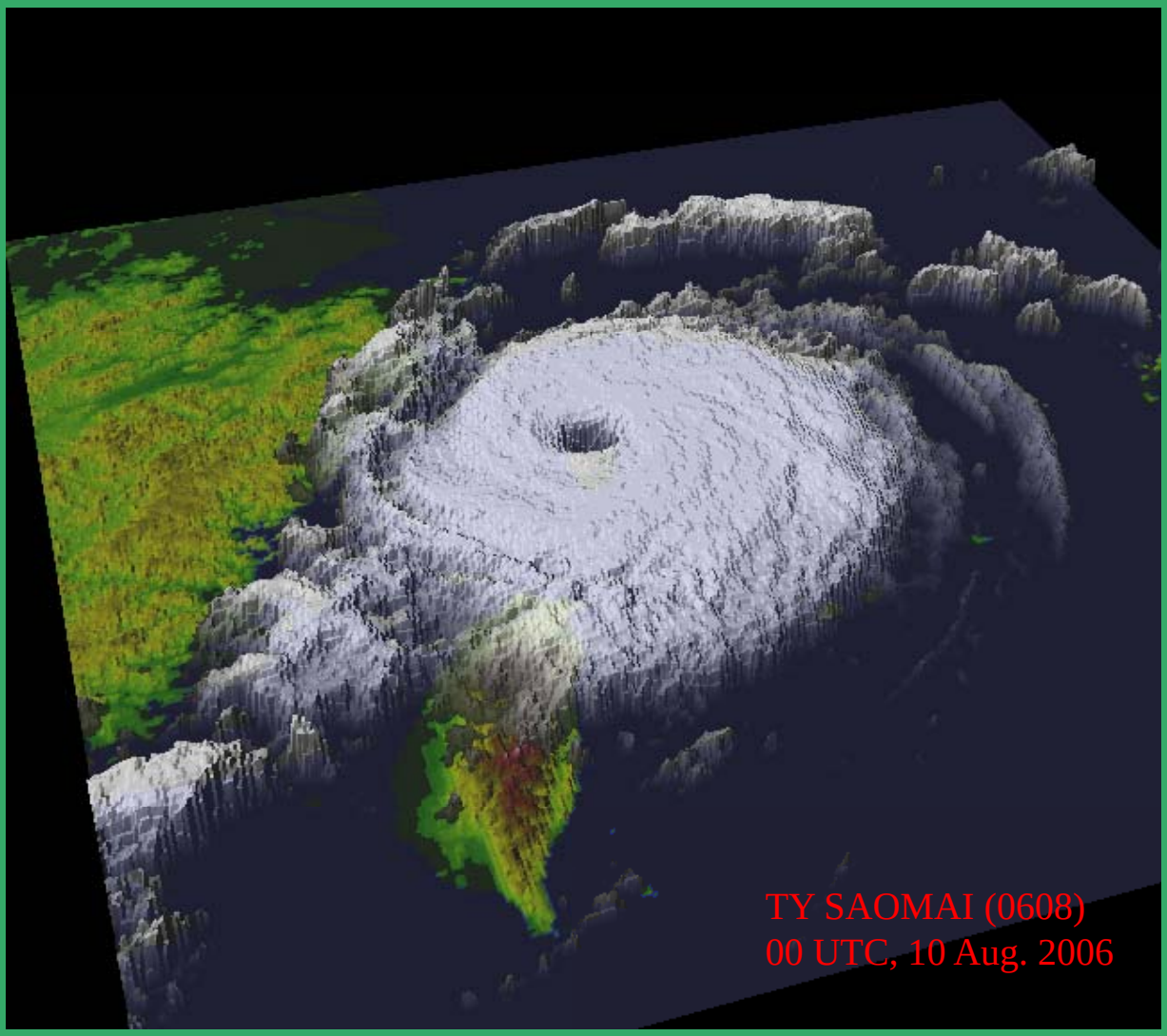
Annual Report on the Activities of the RSMC Tokyo - Typhoon Center 2006



Japan Meteorological Agency

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Introduction

The RSMC Tokyo - Typhoon Center (referred to below as *the Center*) is a Regional Specialized Meteorological Centre (RSMC) that carried out specialized activities in analysis, tracking and forecasting of western North Pacific tropical cyclones (TCs) within the framework of the World Weather Watch (WWW) Programme of the World Meteorological Organization (WMO). The Center was established at the headquarters of the Japan Meteorological Agency (JMA) in July 1989, following a designation by the WMO Executive Council at its 40th session held in Geneva in June 1988.

The Center conducts the following operations on a routine basis:

(1) Preparation of information on the formation, movement and development of TCs and associated meteorological phenomena
(2) Preparation of information on synoptic scale atmospheric situations that affect the behavior of TCs
(3) Dissemination of the above information to National Meteorological Services (NMSs) in particular to the Members of the ESCAP/WMO Typhoon Committee, in appropriate formats for operational processing

In addition to the routine services outlined above, the Center distributes a series of reports entitled *Annual Report on the Activities of the RSMC Tokyo - Typhoon Center* to serve as operational references for the NMSs concerned. The report is aimed at summarizing the activities of the Center and reviewing the TCs of the preceding year.

In this issue covering 2006, an outline of routine operations at the Center and its operational products are presented in **Chapter 1**, while **Chapter 2** reports on the major activities of the Center in 2006. **Chapter 3** describes atmospheric and oceanic conditions in the tropics and notes the highlights of TC activities in 2006. In **Chapter 4**, verification statistics of operational forecasts and predictions of the two numerical weather prediction (NWP) models of the Center are presented. The best track data for TCs in 2006 are shown in **table** and **chart** forms in the appendices. All the relevant texts, **tables**, charts and appendices are included on the CD-ROM attached to this report.

The CD-ROM also contains three-hourly cloud images of all the TCs in 2006 of TS intensity or higher within the Center's area of responsibility. Also included is the necessary viewer software, which features various functions for analyzing satellite imagery such as image animation and is expected to facilitate efficient post-analysis of TCs and their environments. A setup program and a user manual for the software are also included on the CD-ROM. **Appendix 7** shows an outline of the CD-ROM and how to use the software.

Chapter 1

Operations at the RSMC Tokyo - Typhoon Center in 2006

The Center's area of responsibility covers the western North Pacific and the South China Sea (0°-60°N, 100°-180°E) including the marginal seas and adjacent land areas (Figure 1.1). The Center carries out analyses and forecasts of tropical cyclones (TCs) when they are in or expected to move into the area. The Center provides the relevant National Meteorological Services (NMSs) with the RSMC products through such means as the GTS, the AFTN and the JMA radio facsimile broadcast (JMH).

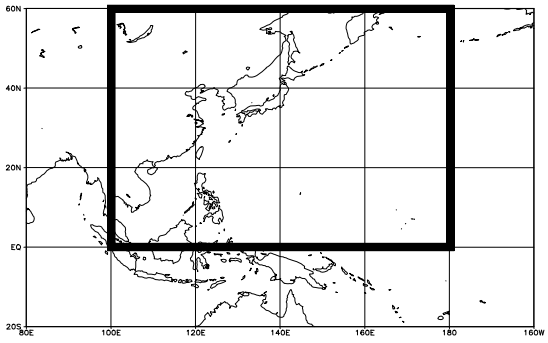


Figure 1.1
Area of responsibility of the RSMC Tokyo - Typhoon Center.

1.1 Analysis

TC analyses are performed eight times a day at 00, 03, 06, 09, 12, 15, 18 and 21 UTC, and each analysis begins with the determination of the center position of the TC. Cloud images from the Multi-functional Transport Satellite (MTSAT) are the principal source for determining this, especially for TCs migrating over data-sparse ocean areas. The TC's direction and speed of movement are determined primarily from the six-hourly displacement vectors of the center position.

The central pressure of a TC is determined mainly from the CI number, which is derived from satellite imagery using the Dvorak method. The CI number also gives the maximum sustained wind speed in the vicinity of the center. The radii of circles for the gale-force and the storm-force winds are determined mainly from surface observations, QuikSCAT observations and low-level cloud motion winds (LCW) derived from cloud motion vectors of satellite images in the vicinity of the TC.

1.2 Forecasts

Predictions of JMA's two NWP models (the Typhoon Model (TYM) and the Global Spectral Model (GSM)) provide a primary basis for TC track forecasts. The central pressure and the maximum sustained wind speed are forecasted based on the basis of results obtained using NWP and the Dvorak method.

A probability circle shows the range into which the center of a TC is expected to move with 70% probability at each validation time. The radius of the circle is statistically determined according to the speed of TC movement based on the verification results of recent TC track forecasts.

1.3 Provision of RSMC Products

The Center prepares and disseminates the RSMC bulletins and charts listed below via the GTS and the AFTN when:

- a TC of tropical storm (TS) intensity or higher exists in the area of responsibility of the Center
- a TC is expected to reach TS intensity or higher in the area within 24 hours
- a TC of TS intensity or higher is expected to move into the area within 24 hours

The RSMC products are continually issued as long as a TC keeps TS intensity or higher within the area of responsibility. **Appendix 5** denotes the code forms of the bulletins.

RSMC Tropical Cyclone Advisory (WTPQ20-25 RJTD: via GTS)

The RSMC Tropical Cyclone Advisory reports the following elements in the analysis, 24-, 48- and 72-hour forecasts of a TC respectively:

Analysis	Center position Accuracy of determination of the center position Direction and speed of movement Central pressure Maximum sustained wind speed (10-minute average) Maximum gust wind speed **(from mid-April 2007)** Radii of wind areas over 50 and 30 knot
24-, 48- and 72-hour forecasts	Center position and radius of the probability circle Direction and speed of movement Central pressure Maximum sustained wind speed (10-minute average) Maximum gust wind speed **(from mid-April 2007)**

RSMC Guidance for Forecast (FXPQ20-25 RJTD: via GTS)

The RSMC Guidance for Forecast reports the results of GSM and TYM predictions; GSM is run twice a day with initial analyses at 00 and 12 UTC, while TYM is run four times a day with initial analyses at 00, 06, 12 and 18 UTC. The Guidance presents GSM's six-hourly predictions of a TC up to 90 hours ahead for 00 and 12 UTC and TYM's six-hourly predictions up to 84 hours ahead for 00, 06, 12 and 18 UTC. It includes following elements:

NWP prediction (T=06 to 84 or 90)
Center position
Central pressure*
Maximum sustained wind speed*

** Predictions of these parameters are given as deviations from those at the initial time.*

SAREP (TCNA20/21 RJTD: via GTS)

The SAREP reports TC analysis including intensity information (i.e. the CI number) based on the Dvorak method. It is issued a half to one hour after observations at 00, 03, 06, 09, 12, 15, 18 and 21 UTC, and contains following elements:

MTSAT imagery analysis
Center position
Accuracy of determination of the center position
Mean diameter of the cloud system
CI number**
Apparent change in intensity in the last 24 hours**
Direction and speed of movement

*** These parameters are reported only at 00, 06, 12 and 18 UTC.*

In accordance with the WMO migration plan to table-driven code forms, the Center has been disseminating SAREP reports in BUFR format (IUCC10 RJTD) since November 2005 while also continuing dissemination in the existing format. BUFR/CREX templates for translation into table-driven code forms are provided on the WMO website at http://www.wmo.ch/web/www/WMOCodes.html.

RSMC Prognostic Reasoning (WTPQ30-35 RJTD: via GTS)

The RSMC Prognostic Reasoning provides a brief reasoning for a TC forecast. It is issued at 00 and 06 UTC following the issuance of the RSMC Tropical Cyclone Advisory. In the bulletin, general comments on the forecasting method, the synoptic situation of the subtropical ridge, the movement and intensity of the TC as well as relevant remarks are given in plain language.

RSMC Tropical Cyclone Best Track (AXPQ20 RJTD: via GTS)

The RSMC Tropical Cyclone Best Track provides post-analysis data on TCs of TS intensity or higher. It contains the center position, the central pressure and the maximum sustained wind speed. The best track for a TC is usually finalized one and a half months after the termination of issuance of the above RSMC bulletins for the TC.

Tropical Cyclone Advisory for SIGMET (FKPQ30-35 RJTD: via AFTN)

The Center, as one of the Tropical Cyclone Advisory Centres within the framework of the International Civil Aviation Organization (ICAO), provides Tropical Cyclone Advisory for SIGMET to Meteorological Watch Offices (MWOs) involved in supporting the preparation of SIGMET information on TCs. It includes the following elements in the analysis and the 12- and 24-hour forecasts:

Analysis	Center position Direction and speed of movement Central pressure Maximum sustained wind speed (10-minute average)
12- and 24-hour forecasts	Center position Maximum sustained wind speed (10-minute average)

1.4 RSMC Data Serving System

Since 1995, JMA has been operating the RSMC Data Serving System which allows the NMSs concerned to use the Internet to retrieve NWP products such as predicted fields in grid-point-value (GPV) form and observational data. The products and data provided through the system are listed in **Appendix 6**.

1.5 RSMC Tokyo - Typhoon Center Website

The RSMC Tokyo - Typhoon Center Website provides TC advisories on a real-time basis, as well as a wide variety of products including TC analysis archives, technical review and annual reports on the activities of the Center. The address of the website is http://www.jma.go.jp/jma/jma-eng/jma-center/rsmc-hp-pub-eg/RSMC_HP.htm.

1.6 Numerical Typhoon Prediction Website

JMA has been operated the Numerical Typhoon Prediction (NTP) website since 1 October 2004. The site provides predictions of TC tracks performed by models of eight NWP centers (BoM (Australia), CMC (Canada), DWD (Germany), ECMWF, KMA (Republic of Korea), NCEP (USA), UKMO (UK), and JMA) to assist the NMSs of the Typhoon Committee Members in improving TC forecasting and warning services. The site includes:

- data tables and a chart of the latest predicted positional data of the participating NWP centers with JMA analysis data including several useful functions such as deriving an ensemble mean from any combination of predictions by the centers

- maps of the NWP models of the participating NWP centers

Chapter 2

Major Activities of the RSMC Tokyo - Typhoon Center in 2006

2.1 Dissemination of RSMC Products

In 2006, the Center provided operational products for tropical cyclone (TC) forecasting to NMSs via such networks as the GTS and the AFTN. The monthly and annual totals of issuance of the products supplied are listed in Table 2.1.

Table 2.1 Monthly and annual total numbers of products supplied by the RSMC Tokyo - Typhoon Center in 2006.

Product	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
TCNA20	0	0	7	0	39	13	102	141	128	86	60	57	**633**
TCNA21	0	0	0	0	38	8	93	130	114	72	58	50	**563**
IUCC10	0	0	7	0	77	21	195	271	242	158	118	107	**1196**
WTPQ20-25	0	0	14	0	79	29	207	283	258	174	120	115	**1279**
WTPQ30-35	0	0	4	0	19	6	51	70	65	42	33	30	**320**
FXPQ20-25	0	0	10	0	58	20	152	196	192	127	90	84	**929**
FKPQ30-35	0	0	7	0	39	14	102	139	127	85	59	56	**628**
AXPQ20	0	0	0	0	0	0	0	6	0	3	9	2	**20**

Notes:
Names of the products and their headers via the GTS or the AFTN

SAREP	(TACs)	TCNA20/21 RJTD
	(BUFR format)	IUCC10 RJTD
RSMC Tropical Cyclone Advisory		WTPQ20-25 RJTD
RSMC Prognostic Reasoning		WTPQ30-35 RJTD
RSMC Guidance for Forecast		FXPQ20-25 RJTD
Tropical Cyclone Advisory for SIGMET		FKPQ30-35 RJTD
RSMC Tropical Cyclone Best Track		AXPQ20 RJTD

2.2 Publication

In October 2006, the Center published the *Annual Report on the Activities of the RSMC Tokyo - Typhoon Center in 2005*.

2.3 Monitoring of Observational Data Availability

The Center carried out regular monitoring of information exchange for enhanced TC observation in accordance with the standard procedures stipulated in Section 6.2, Chapter 6 of *The Typhoon Committee Operational Manual (TOM) - Meteorological Component*. Monitoring for the 2005–2006 season was conducted for the following two periods:

1. from 00UTC on 10 July to 23UTC on 14 July (for TY BILIS (0604))
2. from 00UTC on 27 September to 23UTC on 1 October (for TY XANGSANE (0615))

The results were distributed to all the Typhoon Committee Members in April 2007, and are available on JMA's Distributed Database of JMA at ftp://ddb.kishou.go.jp/pub/monitoring/.

Chapter 3

Atmospheric and Oceanographic Conditions in the Tropics and Tropical Cyclones in 2006

3.1 Summary of Atmospheric and Oceanographic Conditions in the Tropics

In terms of the sea surface temperature (SST) from May to December, SST anomalies of up to 0.5°C were widely seen over the sea east of the Philippines except for in June and September, and in the South China Sea except for in November and December.

Regarding atmospheric conditions, enhanced convection and cyclonic wind shear area in the lower troposphere were seen over the sea east of the Philippines from July to October. Definite cyclonic wind circulations were seen in particular over the sea east of Luzon Island in August. Monthly mean streamlines at 850 hPa, outgoing longwave radiation (OLR) and TC tracks in August are presented in Figure 3.1. The low OLR areas at lower latitudes indicate active convection.

Consequently, the total seven named TCs that formed in August exceeds the 30-year average* of 5.5, while the totals for other months are almost the same as or less than the 30-year average*. The monthly frequencies of named tropical cyclones (TCs) are presented in **Appendix 4**.

*The 30-year average is from 1971 to 2000.

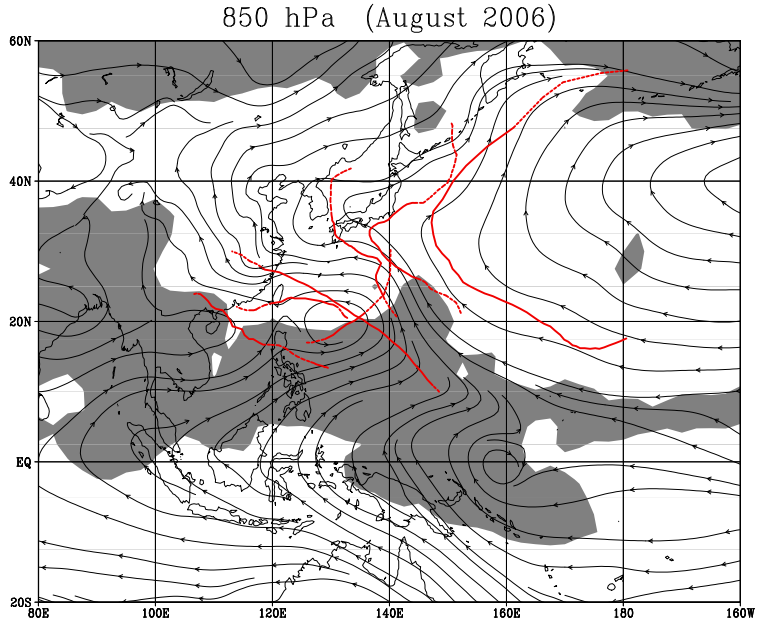


Figure 3.1 Monthly mean streamline at 850 hPa (lines with arrows) and areas of less than 230 w/m^2 of OLR (shaded) in August 2006. The tracks of the eight named TCs that formed in August are superimposed onto the figure.

The following charts are included on the attached CD-ROM: monthly mean SST anomalies for the western North Pacific and the South China Sea, monthly mean streamlines at 850 hPa and 200 hPa, and OLR for the months from January to December (**SST anomalies 2006.ppt** and **Streamline 2006.ppt**).

3.2 Tropical Cyclones in 2006

In 2006, 23 TCs of tropical storm (TS) intensity or higher formed in the western North Pacific and the South China Sea. This total is less than the 30-year average* frequency of 26.7. Out of these 23 TCs, 15 reached typhoon (TY) intensity, four reached severe tropical storm (STS) intensity, and another four reached TS intensity (Table 1).

Table 1 List of the tropical cyclones reaching TS intensity or higher in 2006

Tropical Cyclone			Duration			Minimum Central Pressure				Max Wind
			(UTC)		(UTC)	(UTC)	(N)	(E)	(hPa)	(kt)
TY	CHANCHU	(0601)	091200 May	-	190000 May	150000	14.1	115.4	930	95
TS	JELAWAT	(0602)	271200 Jun	-	290000 Jun	280600	19.6	111.8	996	40
TY	EWINIAR	(0603)	301800 Jun	-	101200 Jul	041200	16.8	132.2	930	100
STS	BILIS	(0604)	090600 Jul	-	150600 Jul	130600	23.7	123.1	970	60
TY	KAEMI	(0605)	191200 Jul	-	260000 Jul	211200	16.1	131.7	960	80
TY	PRAPIROON	(0606)	010600 Aug	-	050000 Aug	021200	19.2	113.7	970	65
TY	MARIA	(0607)	051800 Aug	-	100600 Aug	061800	28.8	139.7	975	70
TY	SAOMAI	(0608)	051200 Aug	-	110000 Aug	091200	25.4	125.3	925	105
STS	BOPHA	(0609)	061200 Aug	-	090600 Aug	080000	23.3	125.1	980	55
STS	WUKONG	(0610)	130000 Aug	-	191200 Aug	141800	27.6	138.2	980	50
TS	SONAMU	(0611)	140000 Aug	-	150600 Aug	140600	18.8	131.4	992	35
TY	IOKE	(0612)	271200 Aug	-	061800 Sep	300000	16.6	171.3	920	105
TY	SHANSHAN	(0613)	101200 Sep	-	181200 Sep	151500	23.6	123.8	919	110
TY	YAGI	(0614)	170600 Sep	-	250600 Sep	211200	21.5	146.2	910	105
TY	XANGSANE	(0615)	260000 Sep	-	020000 Oct	270600	12.9	124.6	940	85
STS	BEBINCA	(0616)	030000 Oct	-	060600 Oct	041800	23.3	133.6	980	50
TS	RUMBIA	(0617)	030600 Oct	-	060000 Oct	040600	21.9	152.5	985	45
TY	SOULIK	(0618)	091200 Oct	-	161200 Oct	140600	24.8	140.9	955	75
TY	CIMARON	(0619)	270600 Oct	-	041200 Nov	290600	16.3	123.6	920	100
TY	CHEBI	(0620)	091200 Nov	-	131200 Nov	101200	16.2	124.2	925	100
TY	DURIAN	(0621)	261200 Nov	-	050600 Dec	291200	13.3	126.4	915	105
TY	UTOR	(0622)	070800 Dec	-	140600 Dec	121200	15.5	114.0	945	85
TS	TRAMI	(0623)	171200 Dec	-	181800 Dec	171200	13.4	138.4	1000	35

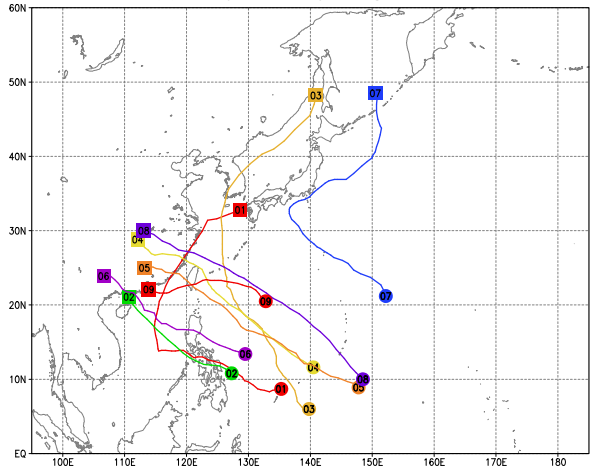
The tropical cyclone season of this year began in May with the formation of CHANCHU (0601). While convective activity was somewhat inactive around the Philippines mostly in June, it turned active over the sea east of the Philippines from late June to early August. In addition, the subtropical high was more enhanced than normal over the sea south of Japan from May to early August. Consequently, most TCs formed over the sea east of the Philippines after late June, and many of them moved westwards to China (Figure 3.2(a)). CHANCHU (0601), BILIS (0604), KAEMI (0605), PRAPIROON (0606) and SAOMAI (0608) brought damage to China, the Philippines and Vietnam. On the other hand, EWINIAR (0603) moved northwards and hit the Republic of Korea, causing damage to the country.

From late August to early September, convective activity was temporarily inactive over the sea east of the Philippines, and became active again from late September to early October accompanied by

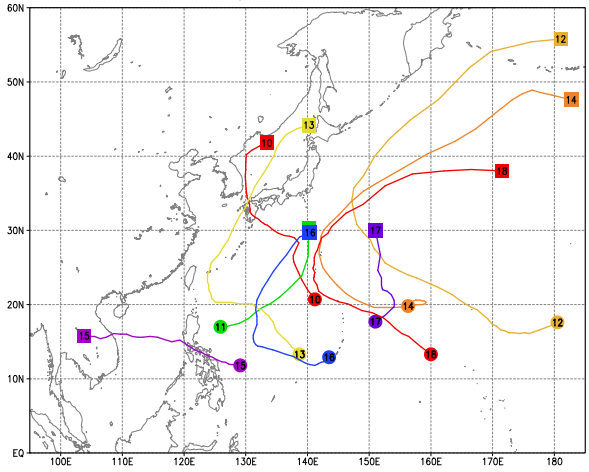
propagation of the active phase of the Madden-Julian Oscillation (MJO). Three named TCs forming in September is fewer than normal (the 30-year average* is 5.1). Additionally, the subtropical high was generally weak over the sea south of Japan from late August to early October. In this period, most of the named TCs formed over the sea east of the Philippines and moved northwards (as shown in Figure 3.2(b)). WUKONG (0610) and SHANSHAN (0613) hit Japan, causing damage to the country, while XANGSANE (0615) moved westwards in the South China Sea, bringing damage to the Philippines, Thailand and Vietnam. IOKE (0612) was the first named cyclone that formed in the central North Pacific and moved westwards across the date line after HUKO (0224).

From late October to early December, the subtropical high was normal or stronger than normal over the sea south of Japan. All five named TCs after SOULIK (0618) formed over the sea east of the Philippines and moved westwards toward the Philippines (Figure 3.2(c)). Out of these TCs, CIMARON

(a) May to early August



(b) late August to mid October



(c) late October to December

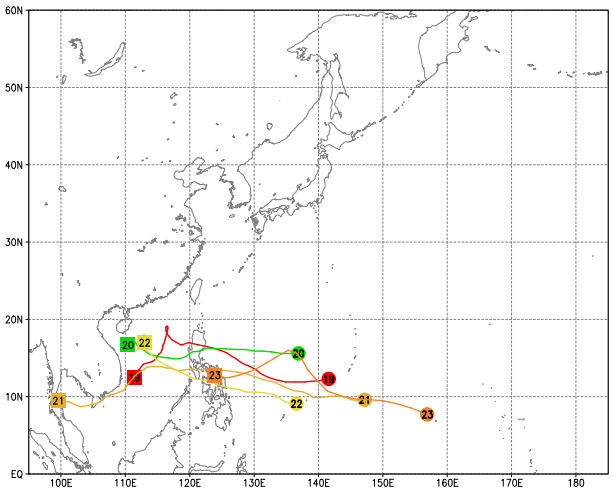


Figure 3.2 Tracks of the 23 named tropical cyclones in 2006

(0619), CHEBI (0620) and DURIAN (0621) developed rapidly off the east coast of the Philippines, reaching the peak intensity with maximum sustained wind speeds of 100kt or more before hitting the country. DURIAN (0621) caused massive landslides and brought severe damage.

In 2006, the mean formation latitude and longitude** of the 22 TCs excluding IOKE (0612) was 15.6ºN and 136.5ºE, normal compared to the 30-year averages* of 16.2ºN and 136.9ºE.

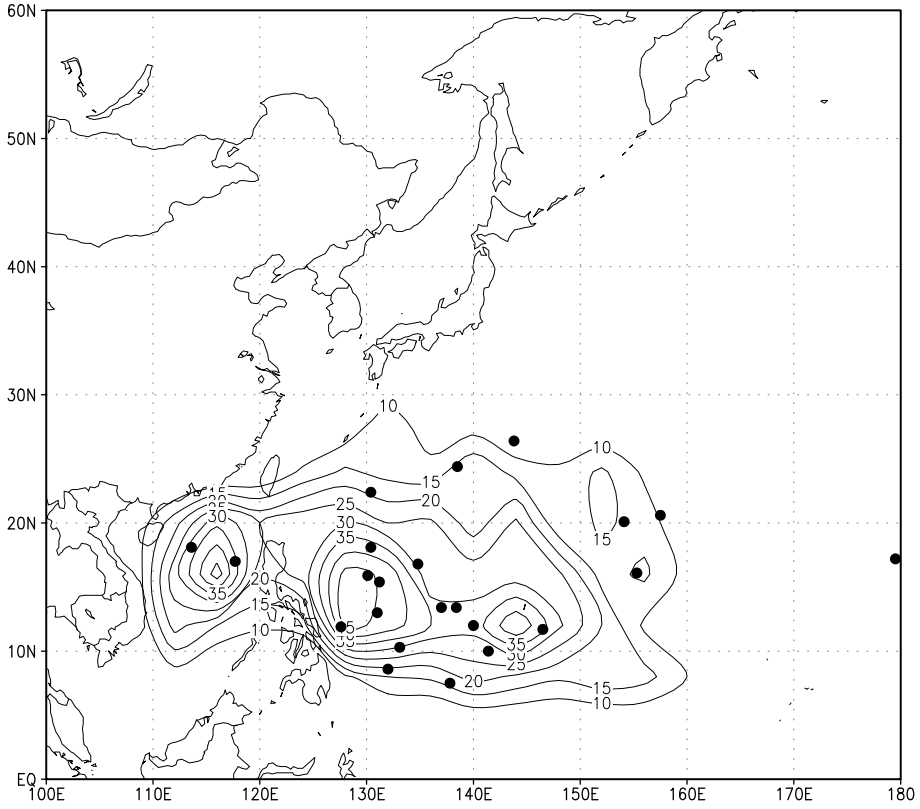


Figure 3.3 Genesis points of the 23 TCs generated in 2006 (dots) and frequency distribution of genesis points for 1951–2005 (lines)

**Mean formation latitude (longitude) here is defined as the arithmetic average of the latitudes (longitudes) of formation points of all TCs of TS intensity or higher.

Chapter 4

Verification of Forecasts in 2006

4.1 Operational Forecasts

Operational forecasts of the 23 tropical cyclones (TCs) of TS intensity or higher in 2006 were verified with the RSMC TC best track data. The verified elements are the 24-, 48- and 72-hour forecasts of the center position, central pressure and maximum sustained wind. The position and intensity errors of operational forecasts for each TC in 2006 are indicated in **Appendix 3**.

4.1.1 Center Position

Figure 4.1 shows annual mean errors of 24-hour (1982–2006), 48-hour (1988–2006) and 72-hour (1997–2006) forecasts of center position. The annual mean position errors in 2006 were 105 km (101 km in 2005) for 24-hour forecasts, 192 km (176 km) for 48-hour forecasts and 275 km (266 km) for 72-hour forecasts, all of which were the second smallest next to those in 2005.

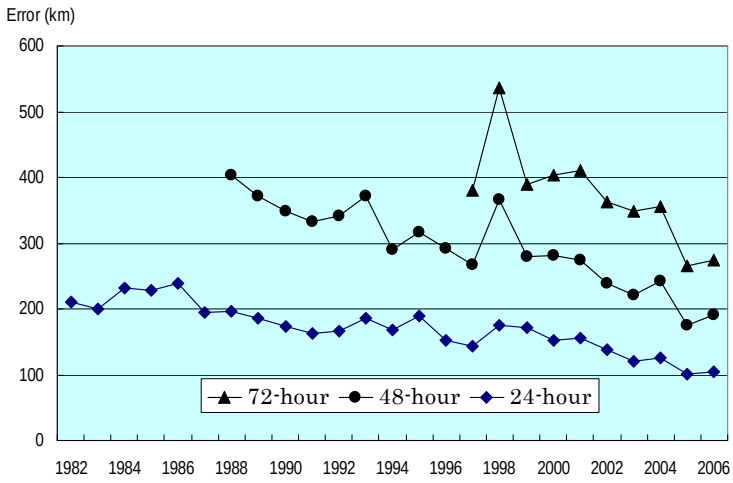


Figure 4.1 Annual means of position errors in 24-, 48- and 72-hour operational track forecasts.

The position errors of 24-, 48- and 72-hour track forecasts for each TC in this season are summarized in Table 4.1. The forecasts for XANGSANE (0615) and DURIAN (0621), which moved westwards and then made landfall in the Philippines, contained small errors. On the other hand, the 48- and 72-hour forecasts for MARIA (0607), which recurved south of Japan and moved east-northeastwards along the Pacific coast of the country, had very large errors.

The position errors were also compared with those of the persistency (PER) method*. The ratios of EO (i.e. the position errors of operational forecasts) to EP (the position errors of PER method forecasts) as percentages are also shown in Table 4.1. An EO/EP of smaller/greater than 100% indicates that the operational forecast is better/worse than the PER method forecast. The annual mean EO/EPs for the 24-, 48- and 72-hour forecasts in 2006 were 52% (53% in 2005), 42% (39%) and 36% (37%) respectively.

**The PER method is based on the assumption that a TC holds the same movement throughout the forecast period, and the linear extrapolation of the latest 12-hour track of the TC is applied to obtain the TC track forecasts. Position errors of the PER method are used to evaluate the relative performance of operational forecasts and model predictions.*

Table 4.1 Mean position errors of 24-, 48- and 72-hour operational forecasts for each TC in 2006. S.D., EO, EP, and EO/EP represents the standard deviation of operational forecast position errors, the operational forecast position error, the position error with the PER method, and the ratio of EO to EP respectively.

Tropical Cyclone			24-hour Forecast				48-hour Forecast				72-hour Forecast			
			Mean (km)	S.D. (km)	Num.	EO/EP (%)	Mean (km)	S.D. (km)	Num.	EO/EP (%)	Mean (km)	S.D. (km)	Num	EO/EP (%)
TY	CHANCHU	(0601)	90	68	34	49	181	105	30	43	225	103	26	31
TS	JELAWAT	(0602)	56	21	2	-	-	-	0	-	-	-	0	-
TY	EWINIAR	(0603)	93	58	35	61	149	92	31	42	183	106	27	34
STS	BILIS	(0604)	100	66	20	48	178	83	16	51	246	138	12	38
TY	KAEMI	(0605)	120	37	22	69	199	53	18	58	222	72	14	46
TY	PRAPIROON	(0606)	121	38	11	81	234	38	7	76	343	32	3	83
TY	MARIA	(0607)	155	92	14	71	477	109	10	73	1105	214	6	94
TY	SAOMAI	(0608)	121	84	18	95	268	185	14	108	536	181	10	124
STS	BOPHA	(0609)	168	84	7	148	326	90	3	88	-	-	0	-
STS	WUKONG	(0610)	116	62	22	45	151	63	18	35	275	101	13	41
TS	SONAMU	(0611)	190	-	1	-	-	-	0	-	-	-	0	-
TY	IOKE	(0612)	86	49	38	42	194	159	34	43	344	361	30	47
TY	SHANSHAN	(0613)	77	36	28	42	153	65	24	28	152	80	20	17
TY	YAGI	(0614)	81	41	28	24	203	76	24	21	299	187	20	17
TY	XANGSANE	(0615)	60	36	19	42	120	67	15	34	173	82	11	29
STS	BEBINCA	(0616)	332	155	9	90	437	153	5	90	392	-	1	-
TS	RUMBIA	(0617)	78	27	7	35	45	10	2	22	-	-	0	-
TY	SOULIK	(0618)	118	42	24	38	208	140	20	30	259	164	15	25
TY	CIMARON	(0619)	127	69	29	79	258	73	25	72	341	165	21	56
TY	CHEBI	(0620)	107	31	12	59	114	63	8	35	189	39	4	43
TY	DURIAN	(0621)	80	50	31	55	103	61	27	32	145	88	23	29
TY	UTOR	(0622)	93	41	22	53	182	64	18	57	287	72	14	53
TS	TRAMI	(0623)	145	-	1	-	-	-	0	-	-	-	0	-
Annual Mean (Total)			105	71	434	52	192	124	349	42	275	227	270	36

Figure 4.2 shows a histogram of 24-hour forecast position errors. About 82% (also 82% in 2005) of 24-hour forecasts, 84% (86%) of 48-hour forecasts, and 79% (87%) of 72-hour forecasts had errors of less than 150km, 300km, and 450 km respectively.

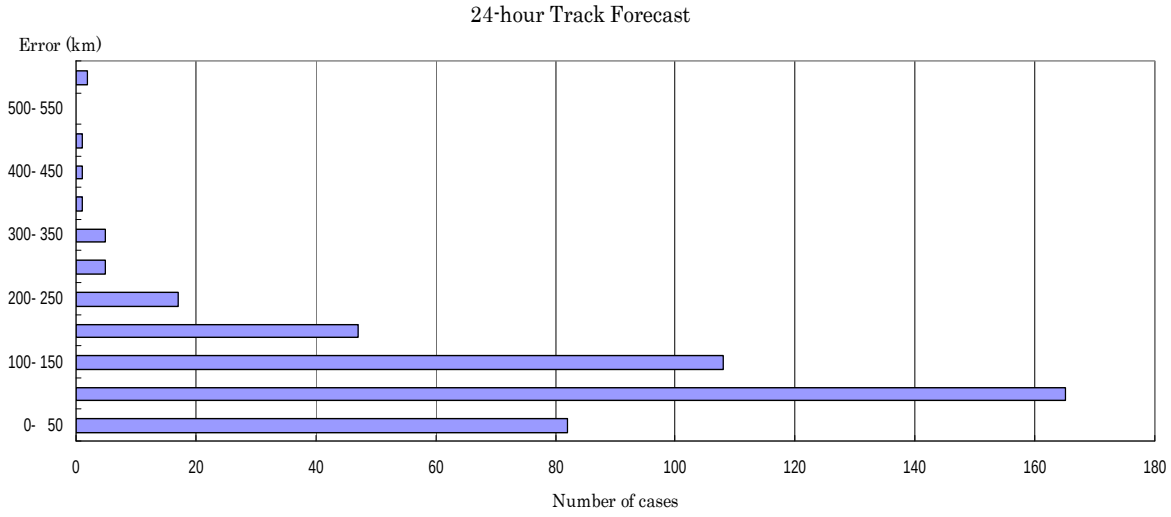


Figure 4.2 Histogram of 24-hour forecast position errors in 2006
(**Those for 48- and 72-hour forecasts** are included on the attached CD-ROM).

Table 4.2 presents the mean hitting ratios and radii of the 70% probability circles of operational forecasts for each TC in 2006. The term *hitting ratio* here is used to describe the ratio of forecasts of 70% probability circles within which the actual TC center fell compared to all six-hourly TC forecasts. The annual mean radius of the circles issued for 24-hour position forecasts was 157 km (160 km in 2005), and their hitting ratio was 83% (84%). The corresponding ones for 48-hour forecasts were 349 km (285 km in 2005) and 81% (85%), while those for 72-hour forecasts were 422 km (434 km in 2005) and 85% (87%).

Table 4.2 Mean hitting ratios (%) and radii (km) of 70% probability circles issued for 24-, 48- and 72-hour operational forecasts for each TC in 2006.

Tropical Cyclone			24-hour Forecast			48-hour Forecast			72-hour Forecast		
			Ratio (%)	Num.	Radius (km)	Ratio (%)	Num.	Radius (km)	Ratio (%)	Num.	Radius (km)
TY	CHANCHU	(0601)	88	34	160	73	30	282	96	26	434
TS	JELAWAT	(0602)	100	2	167	-	0	-	-	0	-
TY	EWINIAR	(0603)	89	35	162	87	31	278	96	27	408
STS	BILIS	(0604)	75	20	148	88	16	278	83	12	408
TY	KAEMI	(0605)	73	22	148	94	18	278	100	14	408
TY	PRAPIROON	(0606)	73	11	148	86	7	278	100	3	408
TY	MARIA	(0607)	71	14	161	0	10	285	0	6	408
TY	SAOMAI	(0608)	78	18	148	43	14	278	10	10	408
STS	BOPHA	(0609)	57	7	154	33	3	278	-	0	-
STS	WUKONG	(0610)	82	22	158	100	18	288	92	13	408
TS	SONAMU	(0611)	0	1	185	-	0	-	-	0	-
TY	IOKE	(0612)	87	38	160	74	34	280	73	30	421
TY	SHANSHAN	(0613)	100	28	162	100	24	286	100	20	460
TY	YAGI	(0614)	93	28	159	88	24	283	85	20	470
TY	XANGSANE	(0615)	95	19	152	100	15	278	100	11	408
STS	BEBINCA	(0616)	22	9	185	20	5	296	100	1	537
TS	RUMBIA	(0617)	100	7	175	100	2	278	-	0	-
TY	SOULIK	(0618)	83	24	166	80	20	295	87	15	442
TY	CIMARON	(0619)	69	29	151	56	25	278	67	21	408
TY	CHEBI	(0620)	83	12	148	100	8	278	100	4	408
TY	DURIAN	(0621)	90	31	151	100	27	278	100	23	408
TY	UTOR	(0622)	95	22	148	94	18	278	100	14	408
TS	TRAMI	(0623)	100	1	185	-	0	-	-	0	-
Annual Mean (Total)			83	434	157	81	349	281	85	270	422

4.1.2 Central Pressure and Maximum Wind Speed

Table 4.3 gives the root mean square errors (RMSEs) of 24-, 48- and 72-hour operational central pressure forecasts for each TC in 2006. **The RMSEs for maximum wind speed forecasts** are included on the attached CD-ROM. The annual mean RMSEs of the central pressure and the maximum wind speed for 24-hour forecasts were 14.1 hPa (12.8 hPa in 2005) and 6.1 m/s (5.7 m/s in 2005). For 48-hour forecasts, the corresponding ones were 17.1 hPa (17.0 hPa in 2005) and 7.7 m/s (7.7 m/s), while those for 72-hour forecasts were 18.6 hPa (19.0 hPa in 2005) and 8.3 m/s (10.0 m/s) respectively.

The 24-hour forecasts for central pressure and maximum wind speed in 2006 were less accurate than those in 2005. One of the main reasons for this was the difficulty of forecasting of the TCs that developed rapidly over the sea east of the Philippines and then weakened quickly over the country. A typical example of such a TC was CHEBI (0620), which deepened from 1000 hPa to 925 hPa in 24 hours by 12 UTC on 10 November and had soon weakened to 960 hPa by 12 UTC on 11 November.

Table 4.3 Mean intensity errors of 24-, 48- and 72-hour operational central pressure forecasts for each TC in 2006.

Tropical Cyclone			24-hour Forecast			48-hour Forecast			72-hour Forecast		
			Error (hPa)	RMSE (hPa)	Num.	Error (hPa)	RMSE (hPa)	Num.	Error (hPa)	RMSE (hPa)	Num.
TY	CHANCHU	(0601)	-4.1	10.9	34	-2.5	11.4	30	-0.7	14.1	26
TS	JELAWAT	(0602)	-4.0	4.0	2	-	-	0	-	-	0
TY	EWINIAR	(0603)	-6.0	16.2	35	-8.9	20.0	31	-11.9	21.4	27
STS	BILIS	(0604)	-1.6	3.1	20	-1.9	4.0	16	-1.2	6.3	12
TY	KAEMI	(0605)	-8.9	14.9	22	-4.2	15.0	18	0.4	12.0	14
TY	PRAPIROON	(0606)	-5.5	12.8	11	-9.3	13.5	7	-18.3	18.5	3
TY	MARIA	(0607)	0.6	4.6	14	-3.3	5.4	10	-13.8	14.1	6
TY	SAOMAI	(0608)	11.6	14.7	18	19.6	20.9	14	26.0	30.4	10
STS	BOPHA	(0609)	-5.7	7.1	7	-19.7	19.9	3	-	-	0
STS	WUKONG	(0610)	-0.6	4.6	22	-5.8	9.3	18	-14.6	16.1	13
TS	SONAMU	(0611)	2.0	2.0	1	-	-	0	-	-	0
TY	IOKE	(0612)	-6.8	9.5	38	-11.5	14.9	34	-12.2	16.1	30
TY	SHANSHAN	(0613)	0.4	15.5	28	0.0	19.1	24	-0.7	12.9	20
TY	YAGI	(0614)	1.5	13.9	28	6.1	22.5	24	9.5	27.1	20
TY	XANGSANE	(0615)	3.2	15.4	19	0.6	8.8	15	4.0	15.2	11
STS	BEBINCA	(0616)	4.4	5.3	9	-2.0	4.5	5	5.0	5.0	1
TS	RUMBIA	(0617)	-2.6	5.7	7	-7.5	7.9	2	-	-	0
TY	SOULIK	(0618)	-3.5	7.2	24	-4.8	10.3	20	-4.3	8.7	15
TY	CIMARON	(0619)	-5.1	20.9	29	-4.0	24.7	25	-3.6	21.2	21
TY	CHEBI	(0620)	-2.7	33.7	12	-23.6	37.9	8	-22.2	33.8	4
TY	DURIAN	(0621)	1.5	14.9	31	4.4	20.2	27	3.7	20.7	23
TY	UTOR	(0622)	-1.3	17.0	22	0.1	9.0	18	2.6	18.5	14
TS	TRAMI	(0623)	-6.0	6.0	1	-	-	0	-	-	0
Annual Mean (Total)			-2.0	14.1	434	-2.8	17.1	349	-2.5	18.6	270

Figure 4.3 shows a histogram of maximum wind speed errors for 24-hour forecasts. About 55% (also 55% in 2005) of 24-hour forecasts had errors of less than ±3.75 m/s, with figures of ±6.25 m/s for 66% (64%) of 48-hour forecasts and ±6.25 m/s for 54% (56%) of 72-hour forecasts.

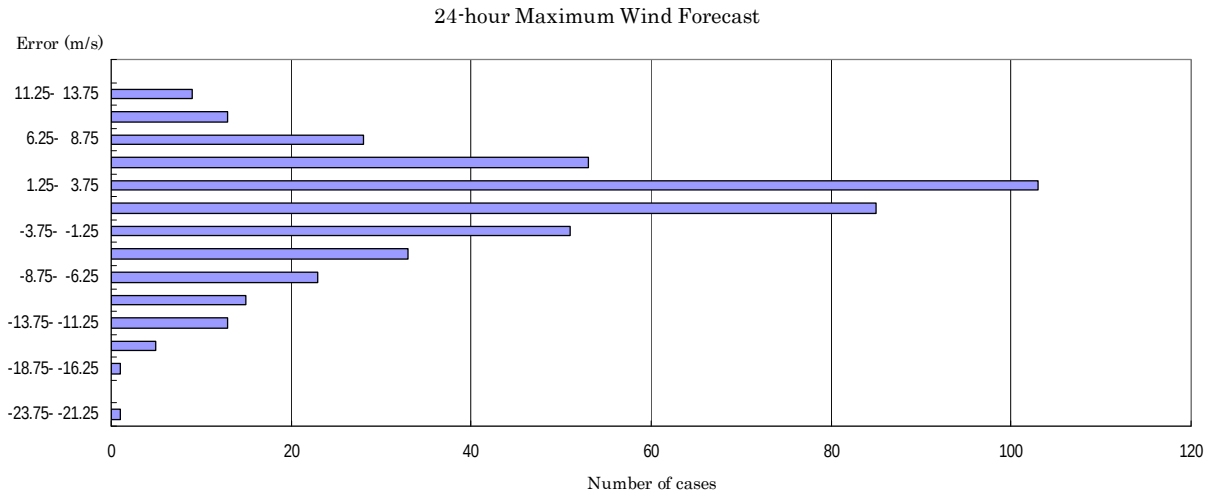


Figure 4.3 Histogram of 24-hour forecast maximum wind speed errors in 2006 (**Those for 48- and 72-hour forecasts** are shown on the attached CD-ROM).

4.2 TYM and GSM Predictions

JMA adopted the following changes to its Global Spectral Model (GSM) in 2006:

- introduction of microwave radiometer data into the Global Analysis
- revision of the assimilation method for ATOVS radiance data
- revision of the assimilation method for AMV data from geostationary satellites

TYM and GSM provide primary information for forecasters of JMA forecasters to make operational track and intensity forecasts. TYM and GSM predictions were verified with RSMC TC best track data and predictions using the persistency (PER) method.

4.2.1 TYM Predictions

1) Center Position

The annual mean position errors of TYM track predictions since 1996 are indicated in Figure 4.4. The errors for 30-*, 54-* and 78-hour* predictions in 2006 were 131 km (125 km in 2005), 220 km (199 km) and 310 km (293 km) respectively. The overall performance of TYM track predictions in 2006 was the second best next to that in 2005. The mean position errors of 18-, 30-, 42-, 54-, 66- and 78-hour predictions for each TC are also shown in Table 4.4.

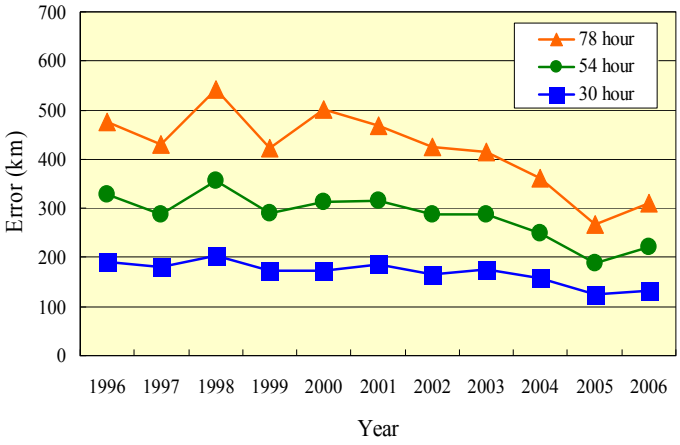


Figure 4.4 TYM annual mean position errors since 1996

** 30-, 54- and 78-hour predictions using TYM and GSM are the primary information for forecasters preparing 24-, 48- and 72-hour operational forecasts respectively.*

Table 4.4 Mean position errors (km) of TYM for each TC in 2006.
The number of samples is given in parentheses.

Tropical Cyclone			T=18		T=30		T=42		T=54		T=66		T=78	
TY	0601	CHANCHU	87.9	(36)	125.9	(34)	169.2	(32)	205.3	(30)	229.9	(28)	252.7	(26)
TS	0602	JELAWAT	93.4	(9)	108.7	(7)	148.4	(5)	147.2	(2)	-	(-)	-	(-)
TY	0603	EWINIAR	103.6	(41)	134.6	(39)	169.8	(37)	215.9	(35)	245.1	(33)	264.4	(31)
STS	0604	BILIS	142.6	(26)	163.4	(24)	183.7	(22)	227.1	(20)	284.7	(18)	348.6	(16)
TY	0605	KAEMI	91.6	(28)	129.7	(26)	172.1	(24)	228.7	(22)	264.5	(20)	284.8	(18)
TY	0606	PRAPIROON	100.9	(13)	136.1	(11)	184.3	(9)	237.7	(7)	269.0	(5)	316.7	(3)
TY	0607	MARIA	175.4	(21)	311.7	(19)	499.1	(17)	742.5	(15)	1012.0	(13)	1288.6	(9)
TY	0608	SAOMAI	91.0	(11)	170.7	(9)	280.0	(7)	413.8	(5)	607.9	(3)	672.0	(3)
STS	0609	BOPHA	123.1	(9)	198.5	(7)	237.9	(5)	413.5	(5)	534.9	(4)	399.9	(3)
STS	0610	WUKONG	78.2	(28)	135.1	(26)	193.1	(24)	247.9	(22)	320.1	(20)	385.5	(18)
TS	0611	SONAMU	186.2	(4)	451.2	(1)	-	(-)	-	(-)	-	(-)	-	(-)
TS	0612	IOKE	60.7	(40)	90.6	(38)	126.9	(36)	190.3	(34)	256.8	(32)	355.3	(30)
TY	0613	SHANSHAN	73.9	(37)	103.6	(35)	140.4	(33)	158.4	(31)	190.4	(29)	256.1	(27)
TY	0614	YAGI	64.8	(30)	91.3	(28)	115.3	(26)	162.0	(24)	213.4	(22)	244.0	(20)
TY	0615	XANGSANE	82.4	(22)	95.2	(20)	133.9	(18)	177.2	(16)	207.6	(14)	243.3	(12)
STS	0616	BEBINCA	199.5	(14)	235.2	(12)	247.5	(10)	276.5	(8)	241.0	(6)	215.3	(4)
TS	0617	RUMBIA	66.5	(9)	94.8	(7)	158.0	(5)	182.2	(3)	271.2	(1)	-	(-)
TY	0618	SOULIK	91.9	(27)	126.1	(25)	160.4	(23)	193.8	(21)	205.5	(19)	192.3	(17)
TY	0619	CIMARON	100.3	(39)	132.5	(37)	175.1	(35)	229.6	(33)	282.1	(31)	326.8	(29)
TY	0620	CHEBI	111.1	(17)	134.0	(15)	101.2	(13)	102.1	(11)	126.6	(9)	157.9	(7)
TY	0621	DURIAN	66.6	(35)	78.5	(33)	92.1	(31)	117.6	(29)	138.7	(27)	166.3	(25)
TY	0622	UTOR	83.4	(26)	100.7	(24)	142.2	(22)	180.5	(20)	223.6	(18)	297.0	(16)
TS	0623	TRAMI	207.8	(6)	295.2	(4)	296.4	(2)	-	(-)	-	(-)	-	(-)
	Annual Mean		96.4	(528)	131.3	(481)	170.0	(436)	220.4	(393)	268.3	(352)	309.5	(314)

Table 4.5 gives TYM's relative performance compared with the PER method. In this comparison, life stages of TCs were classified into the three stages of before, during and after recurvature. Each stage is defined with the direction of movement of each TC at each prediction time. The table indicates that TYM outperformed the PER method throughout the forecast period beyond 18 hours from the initial time, and that the rates of error reduction of TYM to the PER method for 18-, 30-, 42-, 54-, 66-, and 78-hour predictions were about 36% (32% in 2005), 50% (49%), 56% (59%), 58% (63%), 61% (65%), and 63% (65%) respectively. These rates were almost the same as those of 2005, and were relatively higher for the *after* stage, in which the position errors of the PER methods were larger than those for the other two stages.

About 70% (65% in 2005) of 30-hour predictions had errors of less than 150 km, while 76% (81%) of 54-hour predictions had errors of less than 300 km, and 82% (75%) of 78-hour predictions had errors of less than 450 km respectively. **Histograms of position errors for 30-, 54- and 78-hour predictions of TYM** are included on the attached CD-ROM.

Table 4.5 Mean position errors (km) of TYM and PER-method predictions for the 23 TCs in 2006 in the stages before, during and after recurvature. The number of samples is given in parentheses.

TIME	MODEL	Before	During	After	All
T=18	TYM	90.4 (339)	94.5 (101)	121.8 (88)	96.4 (528)
	PER	134.7 (339)	138.2 (101)	222.5 (88)	150.0 (528)
	IMPROV	32.9 %	31.6 %	45.3 %	35.7 %
T=30	TYM	120.4 (304)	121.8 (94)	181.9 (83)	131.3 (481)
	PER	219.5 (304)	263.2 (94)	410.8 (83)	261.1 (481)
	IMPROV	45.1 %	53.7 %	55.7 %	49.7 %
T=42	TYM	146.8 (270)	171.5 (86)	246.9 (80)	170.0 (436)
	PER	309.7 (270)	361.1 (86)	647.0 (80)	381.7 (436)
	IMPROV	52.6 %	52.5 %	61.8 %	55.5 %
T=54	TYM	186.4 (237)	211.2 (79)	334.6 (77)	220.4 (393)
	PER	417.0 (237)	474.1 (79)	899.6 (77)	523.0 (393)
	IMPROV	55.3 %	55.4 %	62.8 %	57.9 %
T=66	TYM	216.1 (208)	266.6 (69)	414.5 (75)	268.3 (352)
	PER	533.8 (208)	560.7 (69)	1203.7 (75)	681.8 (352)
	IMPROV	59.5 %	52.4 %	65.6 %	60.7 %
T=78	TYM	249.1 (179)	286.1 (64)	482.8 (71)	309.5 (314)
	PER	646.9 (179)	679.1 (64)	1451.7 (71)	835.4 (314)
	IMPROV	61.5 %	57.9 %	66.7 %	63.0 %

IMPROV: Error reduction rate of TYM compared to the PER method.

2) Central Pressure and Maximum Wind Speed

The mean errors of 30-, 54- and 78-hour central pressure predictions by TYM in 2006 were +3.1 hPa (+3.0 hPa in 2005), +2.2 hPa (+5.3 hPa) and +1.7 hPa (+6.2 hPa) respectively. Their root mean square errors (RMSEs) were 15.4 hPa (14.7 hPa in 2005) for 30-hour predictions, 16.7 hPa (18.5 hPa) for 54-hour predictions and 18.0 hPa (20.3 hPa) for 78-hour predictions. The bias for 30-, 54-, and 78-hour maximum wind speed predictions were –3.0 m/s (–2.4 m/s in 2005) with RMSE of 7.4 m/s (7.2 m/s), –3.3 m/s (–3.7 m/s) with RMSE of 8.3 m/s (9.1 m/s) and –3.4 m/s (–4.4 m/s) with RMSE of 8.8 m/s (9.8 m/s) respectively.

Figure 4.5 shows histograms of the errors for 30-hour central pressure and maximum wind speed predictions. About 39% (43% in 2005) of central pressure predictions had errors of less than ±7.5 hPa, while 43% (42%) of maximum wind speed predictions had errors less than ±3.75 m/s. For 54-hour predictions, these ratios were 58% (59% in 2005) with errors of less than ±12.5 hPa, and 62% (61%) with errors less than ±6.25 m/s respectively. The figures for 78-hour predictions were 67% (67% in 2005) with errors of less than ±17.5 hPa and 68% (72%) with errors of less than ±8.75 m/s respectively (**the figures** are shown on the attached CD-ROM).

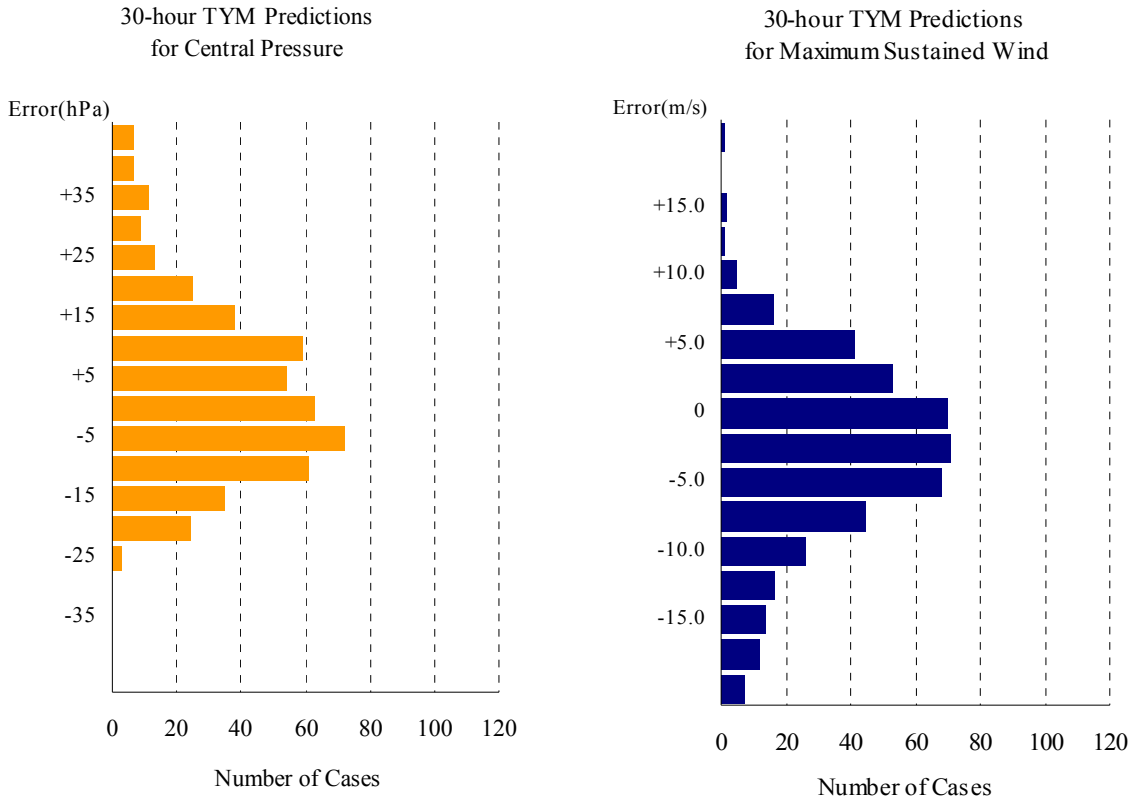


Figure 4.5 Error distributions of TYM 30-hour intensity predictions in 2006.
The figure on the left shows error distributions for central pressure, and the one on the right shows those for maximum wind speed (**the error distirutions for 54- and 78-hour predictions** are included on the attached CD-ROM).

4.2.2 GSM Predictions

1) Center Position

The GSM annual mean position errors since 1996 are presented in Figure 4.6. In 2006, the annual mean errors for 30-, 54- and 78-hour predictions were 124 km (127 km in 2005), 210 km (196 km) and 300 km (264 km) respectively. The overall performance of GSM was the second best next to that of 2005. The mean position errors of 18-, 30-, 42-, 54-, 66- and 78-hour predictions for each TC are given in Table 4.6.

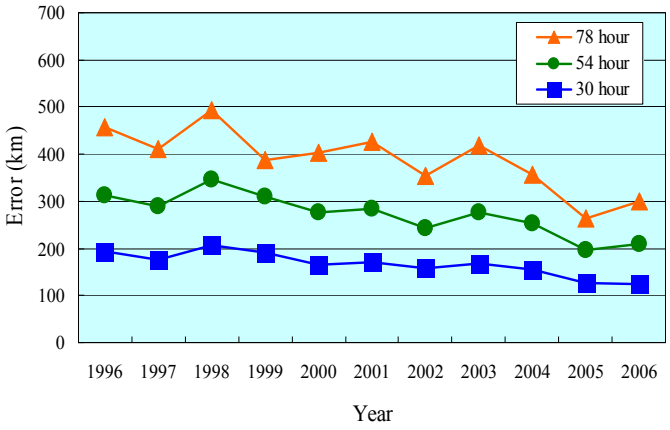


Figure 4.6 GSM annual mean position errors since 1996.

Table 4.6 Mean position errors (km) of GSM for each TC in 2006.
The number of samples is given in parentheses.

Tropical Cyclone			T=18		T=30		T=42		T=54		T=66		T=78	
TY	0601	CHANCHU	84.4	(18)	131.9	(17)	169.2	(16)	210.0	(15)	219.0	(14)	202.4	(13)
TS	0602	JELAWAT	80.7	(4)	96.5	(2)	125.1	(2)	142.7	(1)	-	(-)	-	(-)
TY	0603	EWINIAR	95.8	(20)	139.3	(19)	176.1	(18)	214.9	(17)	241.7	(16)	272.5	(15)
STS	0604	BILIS	126.1	(13)	147.9	(12)	162.0	(11)	200.3	(10)	251.1	(8)	333.0	(5)
TY	0605	KAEMI	91.6	(14)	128.9	(13)	174.9	(12)	209.5	(11)	246.6	(10)	264.3	(9)
TY	0606	PRAPIROON	88.9	(7)	106.3	(6)	147.2	(4)	203.7	(4)	248.4	(3)	305.3	(2)
TY	0607	MARIA	143.4	(11)	193.0	(9)	252.5	(6)	405.2	(4)	671.0	(3)	888.6	(2)
TY	0608	SAOMAI	64.3	(9)	106.8	(8)	170.5	(7)	232.5	(6)	349.1	(6)	486.0	(5)
STS	0609	BOPHA	67.9	(6)	88.9	(4)	153.1	(3)	253.1	(3)	263.3	(3)	357.6	(2)
STS	0610	WUKONG	61.1	(14)	95.5	(13)	143.9	(12)	182.9	(11)	258.6	(10)	351.3	(9)
TS	0611	SONAMU	206.8	(1)	342.5	(1)	-	(-)	-	(-)	-	(-)	-	(-)
TS	0612	IOKE	63.8	(20)	87.6	(19)	122.2	(18)	195.5	(17)	284.5	(16)	415.5	(15)
TY	0613	SHANSHAN	67.2	(19)	87.3	(18)	114.2	(17)	135.2	(16)	150.5	(15)	180.3	(14)
TY	0614	YAGI	89.6	(15)	117.7	(14)	176.9	(13)	237.8	(12)	246.8	(11)	267.2	(10)
TY	0615	XANGSANE	77.6	(11)	88.8	(10)	76.3	(9)	91.7	(8)	91.2	(7)	84.4	(6)
STS	0616	BEBINCA	248.7	(7)	259.8	(6)	299.0	(5)	269.9	(4)	242.4	(3)	172.2	(2)
TS	0617	RUMBIA	31.5	(4)	36.2	(3)	87.5	(2)	59.2	(1)	-	(-)	-	(-)
TY	0618	SOULIK	86.8	(14)	134.2	(13)	196.4	(12)	311.7	(11)	404.1	(10)	462.1	(9)
TY	0619	CIMARON	90.4	(20)	141.2	(19)	204.5	(18)	262.0	(17)	306.4	(16)	349.5	(15)
TY	0620	CHEBI	137.2	(8)	172.3	(7)	211.4	(6)	279.3	(5)	328.5	(4)	351.1	(2)
TY	0621	DURIAN	85.5	(17)	95.8	(16)	112.4	(15)	129.4	(14)	139.3	(13)	160.9	(12)
TY	0622	UTOR	73.2	(13)	112.2	(12)	168.8	(11)	212.3	(10)	275.3	(9)	340.7	(8)
TS	0623	TRAMI	191.3	(3)	249.9	(2)	287.3	(1)	-	(-)	-	(-)	-	(-)
	Annual Mean		92.0	(268)	124.1	(243)	162.5	(218)	209.5	(197)	254.6	(177)	300.0	(155)

Table 4.7 gives GSM's relative performance compared with the PER method. The rates of error reduction for GSM compared to the PER method were about 39% (36% in 2005), 51% (51%), 58% (64%) and 63% (68%) for 18-, 30-, 54- and 78-hour predictions respectively.

About 70% (also 70% in 2005) of 30-hour predictions had errors of less than 150 km, while 79% (82%) of 54-hour predictions had errors of less than 300 km, and 83% (86%) of 78-hour predictions had errors of less than 450 km respectively. **Histograms of the position errors of 30-, 54- and 78-hour predictions** are included on the attached CD-ROM.

Table 4.7 Mean position errors (km) of GSM and PER method predictions for the TCs in 2006 in the stages before, during and after recurvature. The number of samples is given in parentheses.

TIME	MODEL	Before	During	After	All
T=18	GSM	84.4 (172)	94.5 (55)	120.1 (41)	92.0 (268)
	PER	133.6 (172)	144.6 (55)	225.7 (41)	149.9 (268)
	IMPROV	36.8 %	34.6 %	46.8 %	38.7 %
T=30	GSM	117.0 (155)	120.6 (49)	156.6 (39)	124.1 (243)
	PER	219.3 (155)	261.0 (49)	388.8 (39)	254.9 (243)
	IMPROV	46.6 %	53.8 %	59.7 %	51.3 %
T=42	GSM	148.2 (139)	169.1 (44)	211.0 (35)	162.5 (218)
	PER	307.3 (139)	355.1 (44)	645.0 (35)	371.2 (218)
	IMPROV	51.8 %	52.4 %	67.3 %	56.2 %
T=54	GSM	182.0 (124)	216.6 (40)	304.4 (33)	209.5 (197)
	PER	404.1 (124)	491.5 (40)	887.4 (33)	502.8 (197)
	IMPROV	55.0 %	55.9 %	65.7 %	58.3 %
T=66	GSM	213.9 (111)	270.0 (34)	379.4 (32)	254.6 (177)
	PER	509.9 (111)	628.5 (34)	1184.3 (32)	654.6 (177)
	IMPROV	58.0 %	57.0 %	68.0 %	61.1 %
T=78	GSM	250.0 (92)	307.7 (32)	440.5 (31)	300.0 (155)
	PER	614.4 (92)	778.6 (32)	1413.1 (31)	808.0 (155)
	IMPROV	59.3 %	60.5 %	68.8 %	62.9 %

IMPROV: Error reduction rate of GSM to the PER method

2) Central Pressure and Maximum Wind Speed

Figure 4.7 shows histograms of the central pressure errors and the maximum wind speed errors of 30-hour GSM predictions. The figures show that in most cases GSM underestimated the intensity of TCs in its 30-hour predictions (right), and had a relatively positive bias for the central pressure prediction (left).

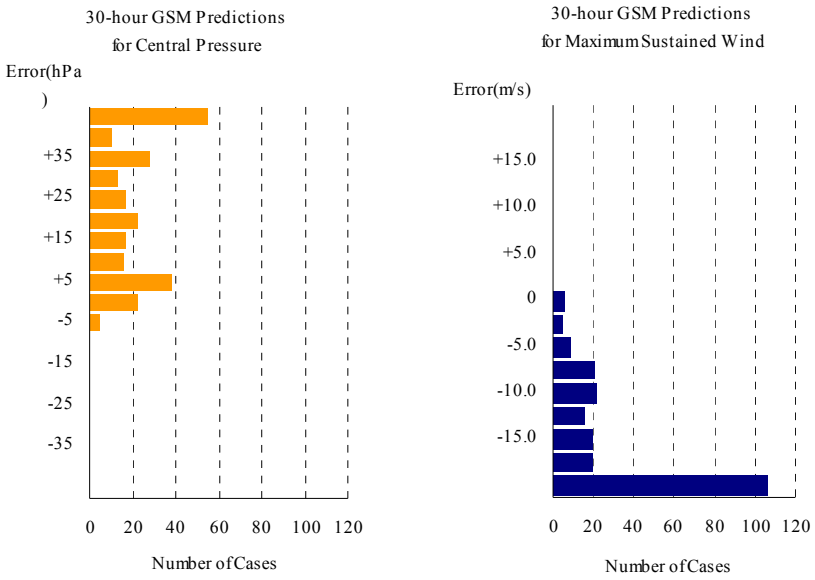
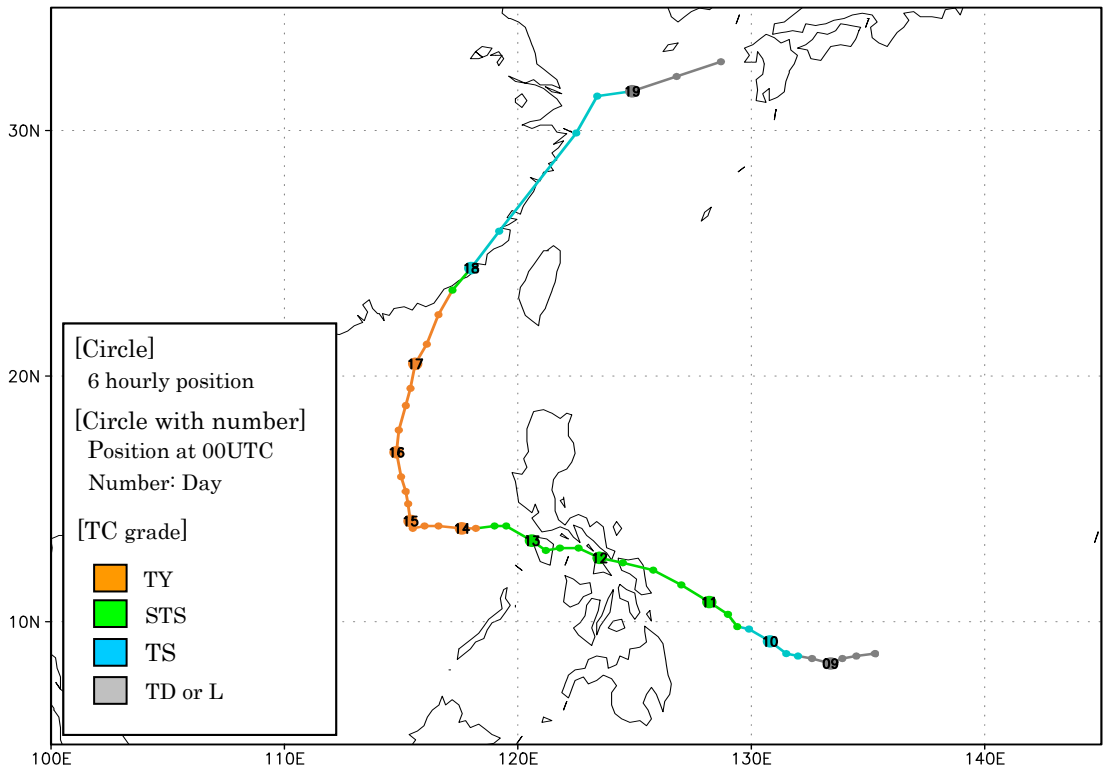


Figure 4.7 Error distributions of GSM 30-hour intensity predictions in 2006.
The figure on the left shows error distributions for central pressure, while the one on the right shows those for maximum wind speed (**the error distributions of 54- and 78-hour predictions** are included on the attached CD-ROM).

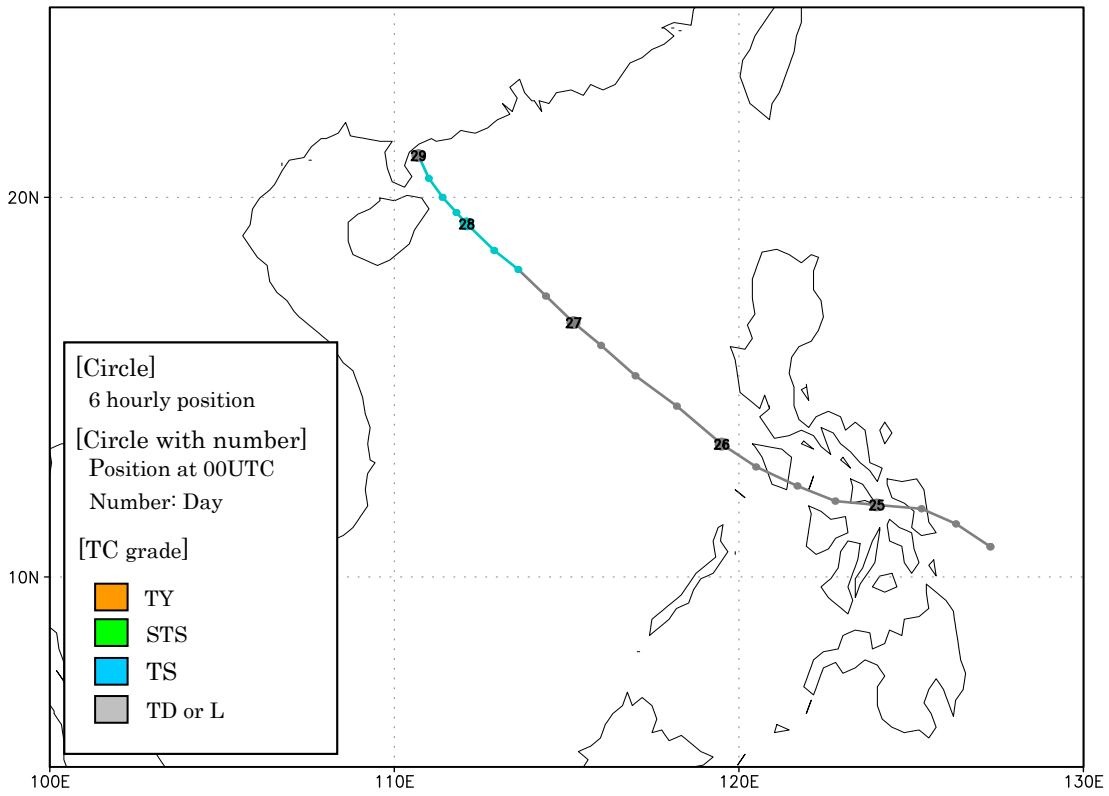
CHANCHU (0601)

CHANCHU formed as a tropical depression (TD) over the sea west of the Caroline Islands at 06UTC on 8 May 2006. Moving westward, it developed into a tropical storm (TS) over the sea east of Mindanao Island at 12UTC, 9 May. It moved to the west-northwest and then was upgraded to severe tropical storm (STS) intensity over the same waters at 12UTC, 10 May. From late 11 to 12 May, it crossed the Philippines with STS intensity. CHANCHU moved westward in the South China Sea, and was upgraded to typhoon (TY) intensity at 18UTC, 13 May. Soon after it turned abruptly to the north, it attained the peak strength with maximum sustained wind of 95kt and central pressure of 930hPa over the same waters at 00UTC, 15 May. Gradually turning to the north-northeast, it was downgraded to STS intensity over the same waters at 18UTC, 17 May. Keeping the north-northeastward track along the coast of China, it was downgraded to TS intensity at 00UTC, 18 May. Then it transformed into an extratropical cyclone in the East China Sea at 00UTC, 19 May. It moved eastwards over the same waters, and then dissipated off the west coast of Kyushu at 18UTC, 19 May.



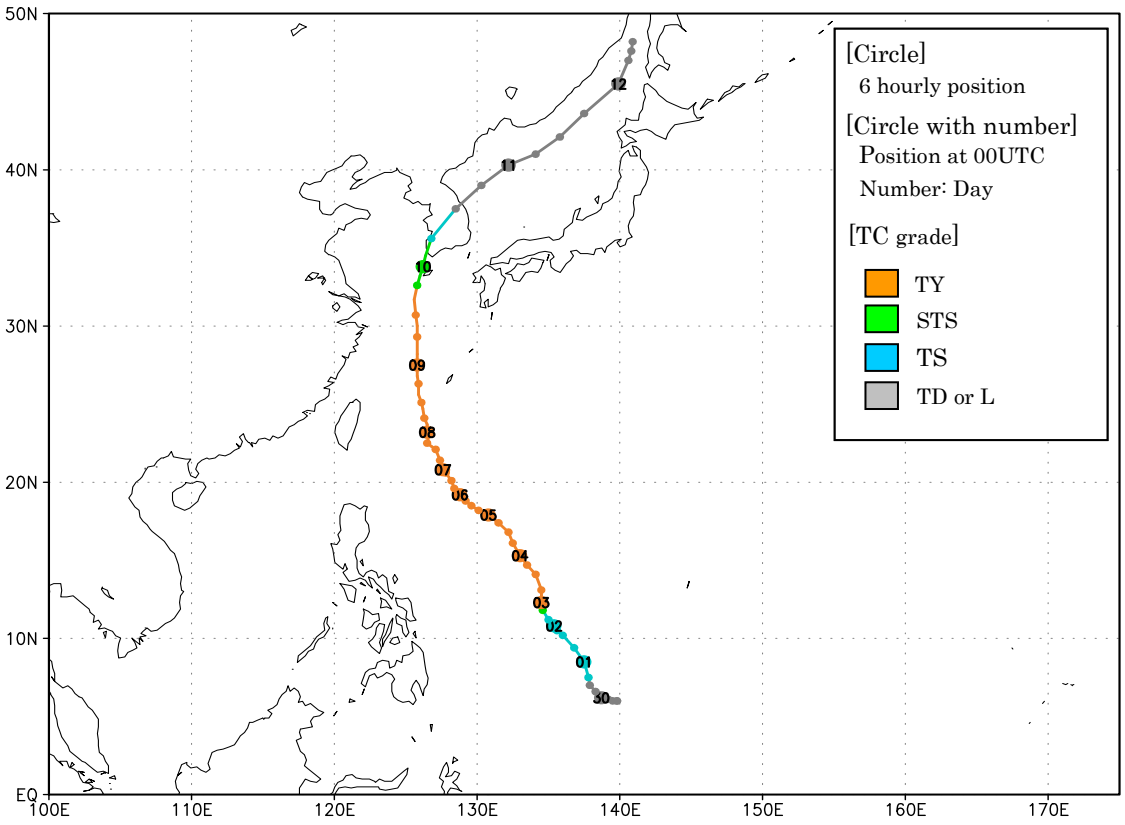
JELAWAT (0602)

JELAWAT formed as a tropical depression (TD) east of the Philippines at 06UTC on 24 June 2006. It moved west-northwestward and passed through the Philippines from 24 to 25 June. Then it turned to the northwest and developed into a tropical storm (TS) in the South China Sea at 12UTC, 27 June. Keeping the northwestward track, JELAWAT attained the peak intensity with maximum sustained wind of 40kt and central pressure of 996hPa at 06UTC, 28 June. Then it weakened into a TD and then dissipated off the coast of the southern China at 00UTC and 06UTC on the next day, respectively.



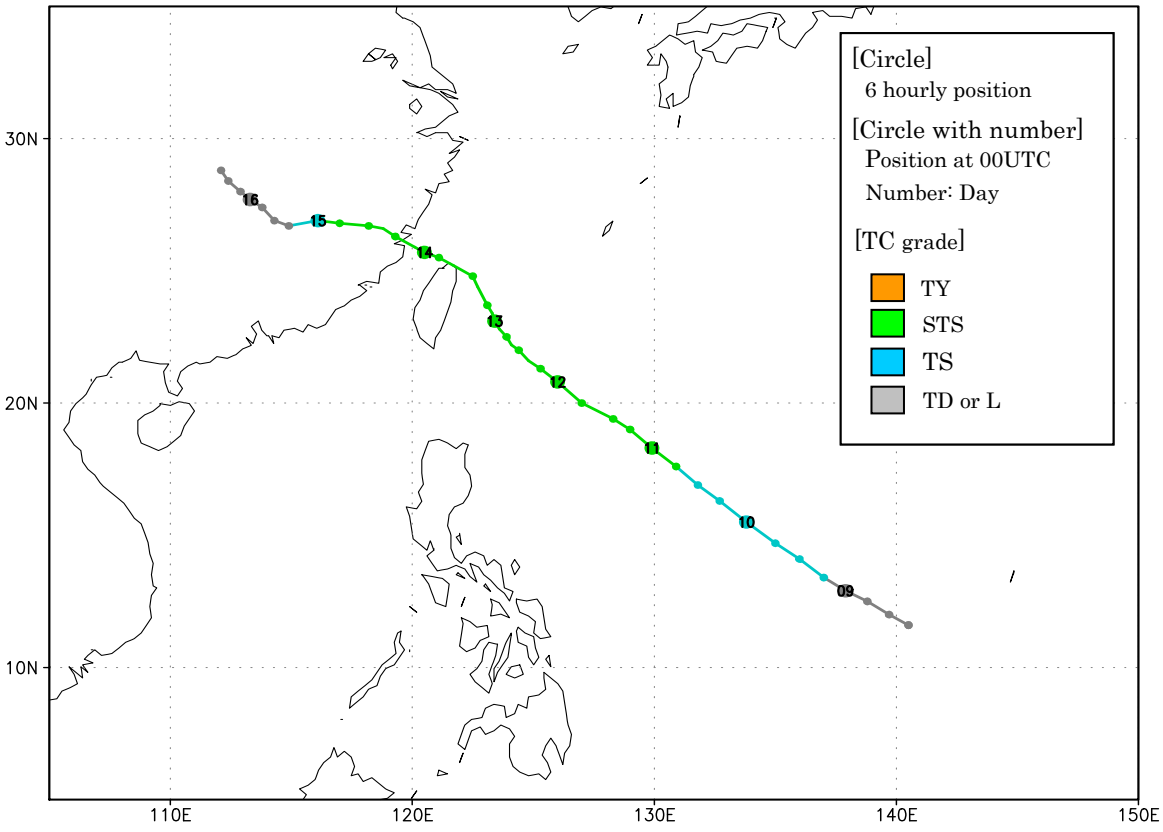
EWINIAR (0603)

EWINIAR formed as a tropical depression (TD) over the sea around the Caroline Islands at 06UTC on 29 June 2006. Moving northwestward, it developed into a tropical storm (TS) over the same waters at 18UTC, 30 June. Keeping the track to the northwest, it was upgraded to typhoon (TY) intensity and then attained the peak strength with maximum sustained wind of 100kt and central pressure of 930hPa over the sea east of the Philippines at 00UTC, 3 July and 12UTC, 4 July, respectively. EWINIAR gradually turned to the north and approached the Nansei islands with TY intensity on 8 July. It moved to the north and downgraded to severe tropical storm (STS) intensity in the East China Sea at 18UTC, 9 July. Crossing the Korean Peninsula to the northeast, it was downgraded to TS intensity and then transformed into an extratropical cyclone at 06UTC and 12UTC on the next day, respectively. It kept the track to the northeast in the Japan Sea, and dissipated over the same waters at 00UTC, 13 July.



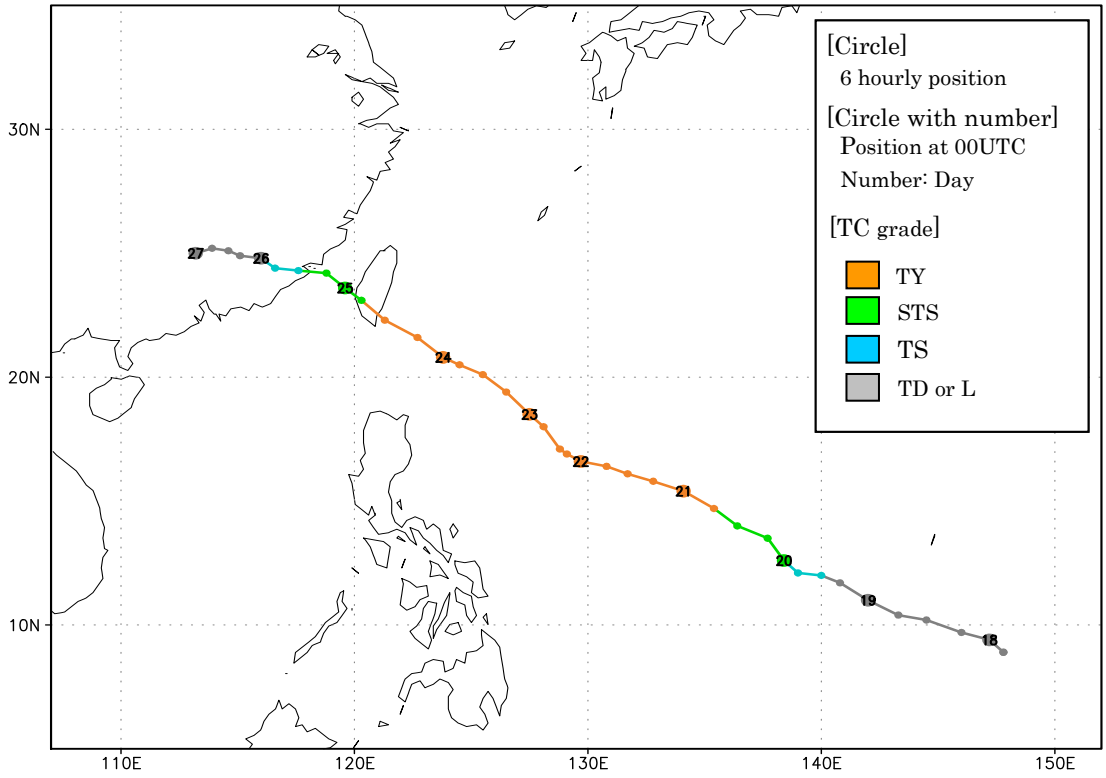
BILIS (0604)

BILIS formed as a tropical depression (TD) over the sea northeast of Yap Island at 06UTC on 8 July. It moved west-northwestwards and developed into a tropical storm (TS) over the sea north of Yap Island at 06UTC, 9 July. Keeping the track to the west-northwest, it was upgraded to severe tropical storm (STS) intensity over the waters east of the Philippines at 18UTC, 10 July. BILIS reached the peak intensity with maximum sustained wind of 60kt and central pressure of 970hPa south of Yonagunijima Island at 06UTC, 13 July. After passing off the northern coast of Taiwan Island, it made landfall on the southern China on 14 July. Keeping the same track, it weakened into a TD and dissipated in China at 06UTC, 15 July and 00UTC, 17 July, respectively.



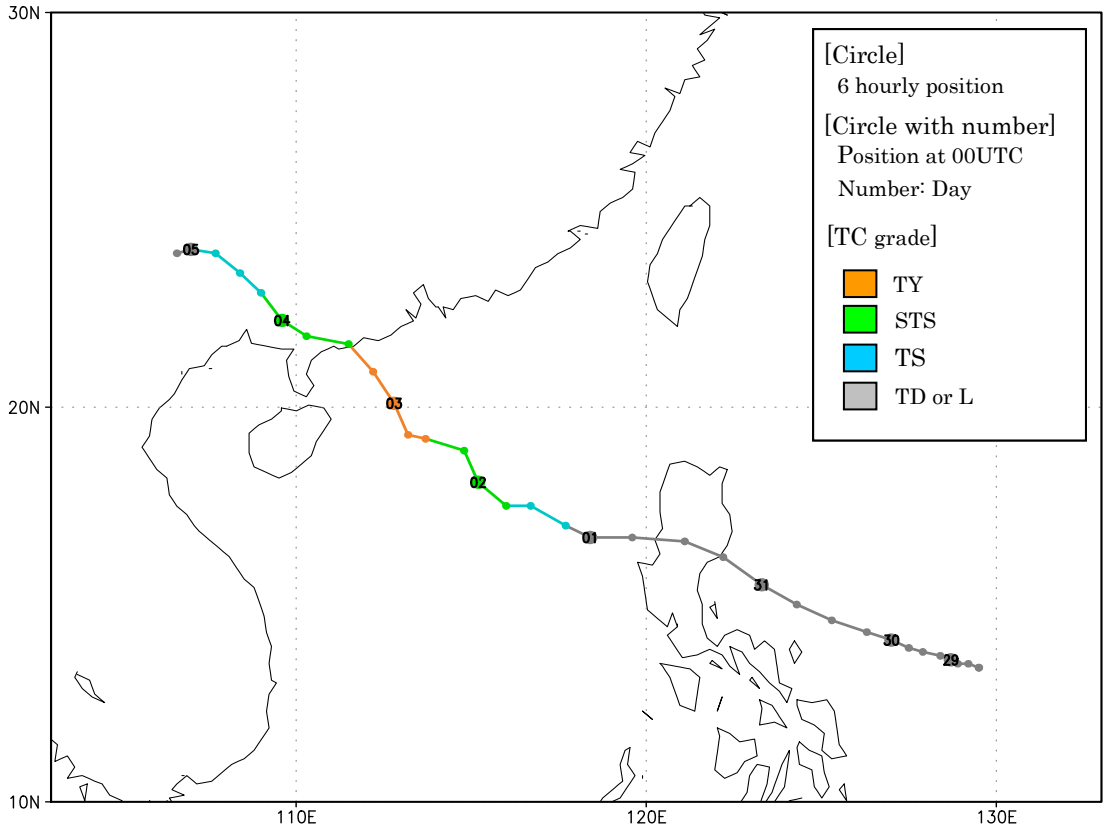
KAEMI (0605)

KAEMI formed as a tropical depression (TD) over the sea west of the Truk Islands at 18UTC on 17 July 2006. Moving west-northwestward, it developed into a tropical storm (TS) over the sea north of Yap Island at 12UTC, 19 July. Keeping the west-northwestward track, it was upgraded to typhoon (TY) intensity and then attained the peak strength with maximum sustained wind of 80kt and central pressure of 960hPa over the same waters at 18UTC, 20 July and 12UTC, 21 July, respectively. KAEMI turned to the northwest on 22 July and then hit Taiwan with TY intensity on 24 July. Crossing Taiwan, it was downgraded to severe tropical storm (STS) intensity at 18UTC, 24 July. After it made landfall on the southern China, it was downgraded to TS intensity at 12UTC on the next day. Moving to the west, KAEMI weakened into a TD and dissipated in the southern China at 00UTC, 26 July and 06UTC, 27 July, respectively.



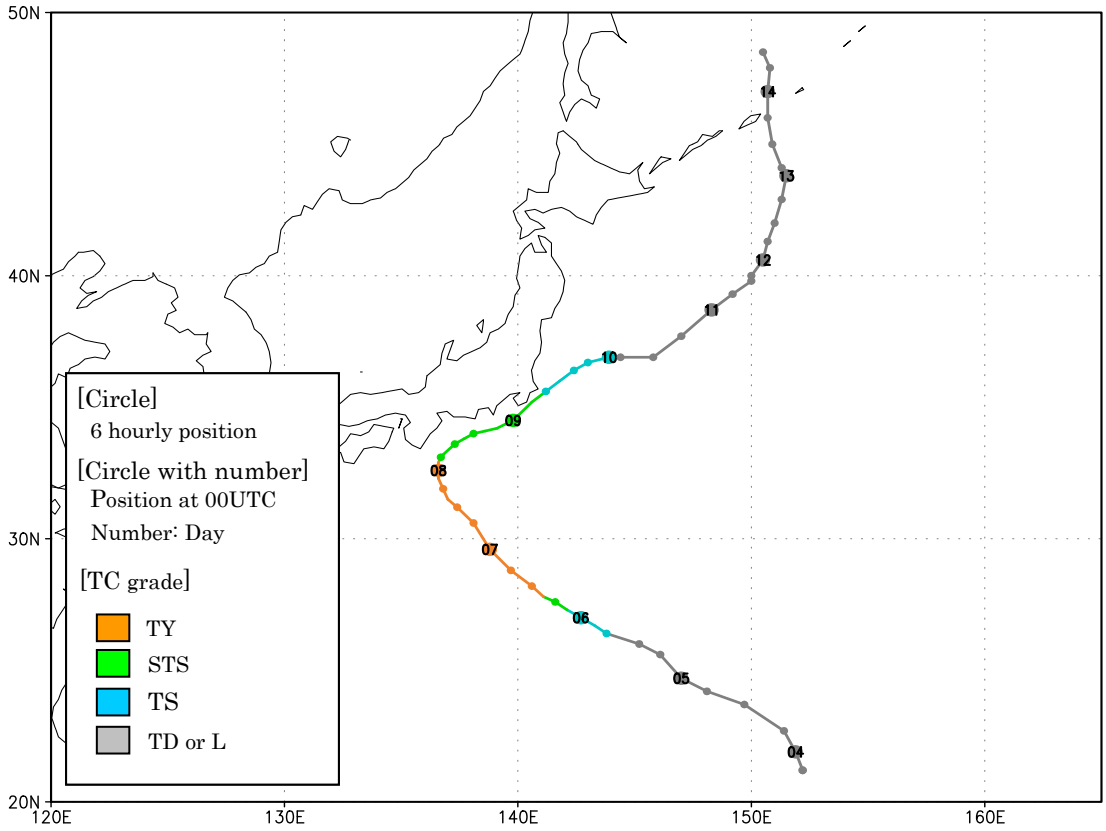
PRAPIROON (0606)

PRAPIROON formed as a tropical depression (TD) over the sea east of the Philippines at 06UTC on 28 July 2006. It moved west-northwestward and passed through Luzon Island on 31 July. Then it developed into a tropical storm (TS) in the South China Sea at 06UTC, 1 August. Gradually turning to the northwest, PRAPIROON was upgraded to typhoon (TY) intensity and attained the peak intensity with maximum sustained wind of 65kt and central pressure of 970Pa at 12UTC, 2 August. It made landfall on the southern China on 3 August with TY intensity and was quickly downgraded to severe tropical storm (STS) and TS intensity there at 12UTC, 3 August and 06UTC, 4 August, respectively. It weakened into a TD and then dissipated in the same area at 00UTC and 12UTC on the next day, respectively.



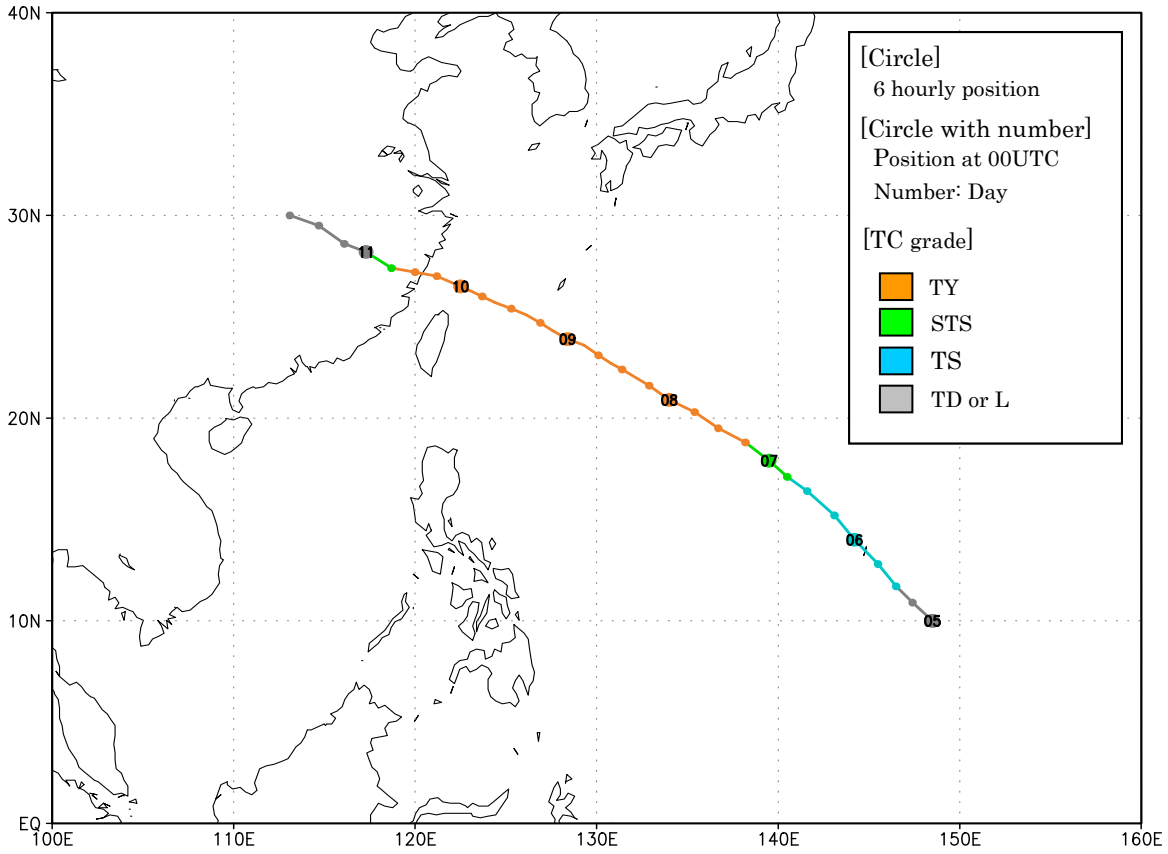
MARIA (0607)

MARIA formed as a tropical depression (TD) over the sea southwest of Minamitorishima Island at 18UTC on 3 August 2006. Moving northwestward, it developed into a tropical storm (TS) over the sea east of Chichijima Island at 18UTC, 5 August. Keeping the track to the northwest, it was upgraded to typhoon (TY) intensity and then attained the peak strength with maximum sustained wind of 70kt and central pressure of 975hPa over the sea northwest of Chichijima Island at 09UTC and 18UTC on the next day, respectively. During recurvature over the sea south of Kii Peninsula early 8 August, MARIA was downgraded to severe tropical storm (STS) intensity. Then it moved east-northeastward off the southern coast of Honshu. It weakened to TS intensity at 06UTC on the next day and then transformed into an extratropical cyclone over the sea east of Japan at 06UTC, 10 August. It turned to the north and dissipated in the sea of Okhotsk at 18UTC, 14 August.



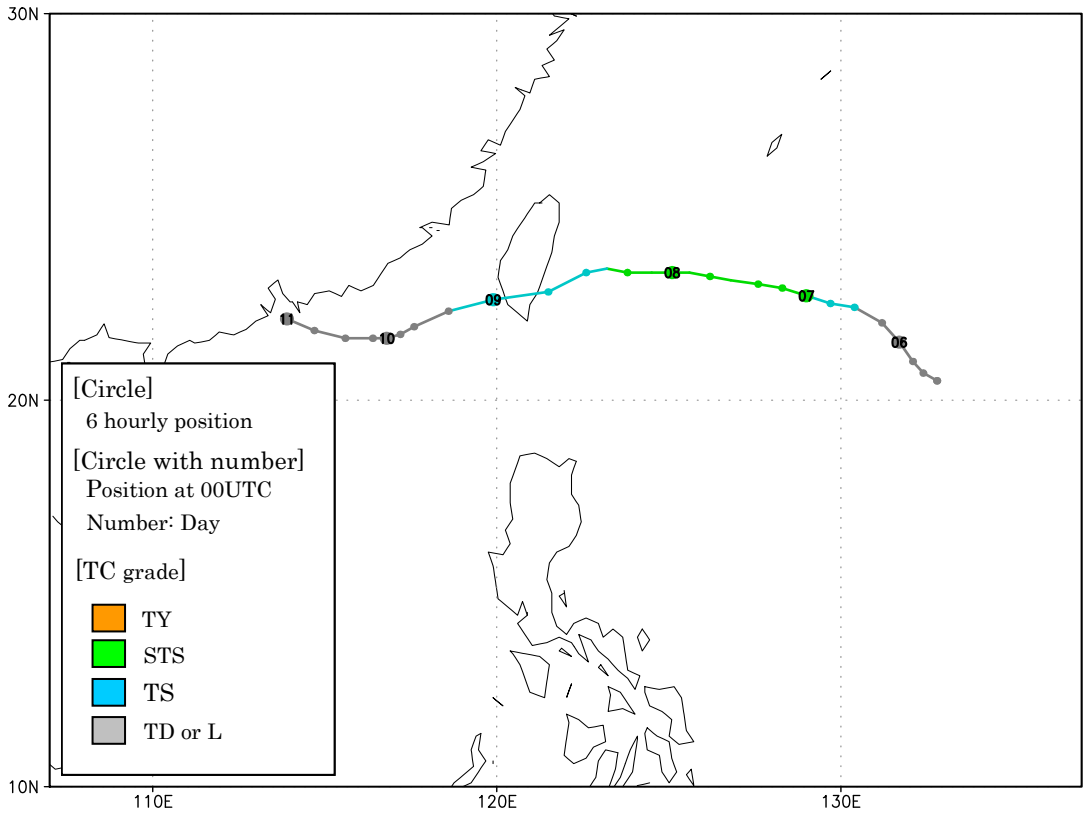
SAOMAI (0608)

SAOMAI formed as a tropical depression (TD) over the sea southeast of Guam at 00UTC on 5 August. It moved west-northwestwards and developed into a tropical storm (TS) over the same sea 12 hours later. Keeping the track to the west-northwest, it was upgraded to typhoon (TY) intensity over the waters east of the Philippines at 06UTC, 7 August, reached the peak intensity with maximum sustained wind of 105kt and central pressure of 925hPa north of Miyakojima Island at 12UTC, 9 August, and then made landfall on central China with TY intensity on the next day. Keeping the same track, it abruptly weakened into a TD and dissipated in the same area at 00UTC, 11 August and 00UTC, 12 August, respectively.



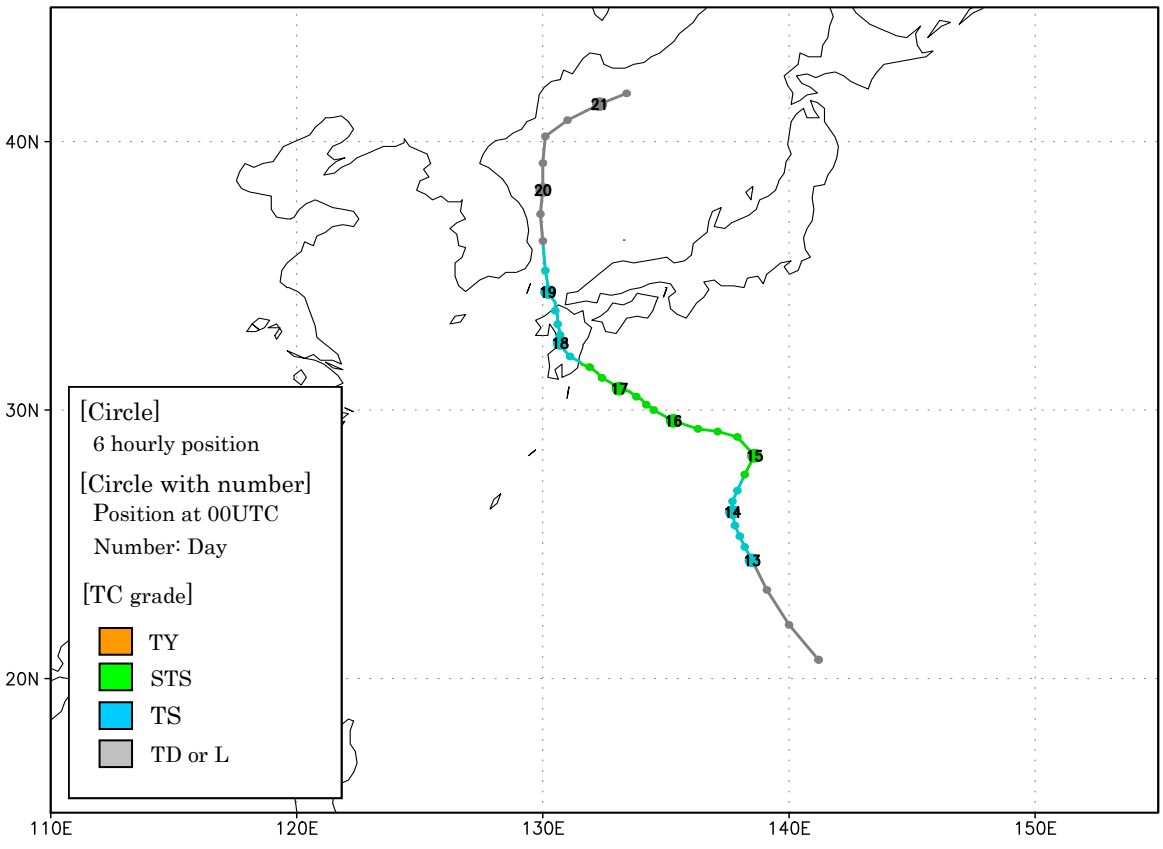
BOPHA (0609)

BOPHA formed as a tropical depression (TD) over the sea south of Minamidaitojima Island at 06UTC on 5 August 2006. Moving northwestwards, it developed into a tropical storm (TS) over the same waters at 12UTC on the next day. Then it moved to the west, it was upgraded to severe tropical storm (STS) intensity and attained the peak strength with maximum sustained wind of 55kt and central pressure of 980hPa over the sea south of the Nansei Islands at 00UTC, 7 August and 00UTC, 8 August, respectively. It moved westward with weakening the intensity over the same sea, and then hit Taiwan with TS intensity late 8 August. After it crossed the southern part of Taiwan, it weakened into a TD in the South China Sea at 06UTC on the next day. Keeping the westward track, it dissipated around the coast of the southern China at 06UTC, 11 August.



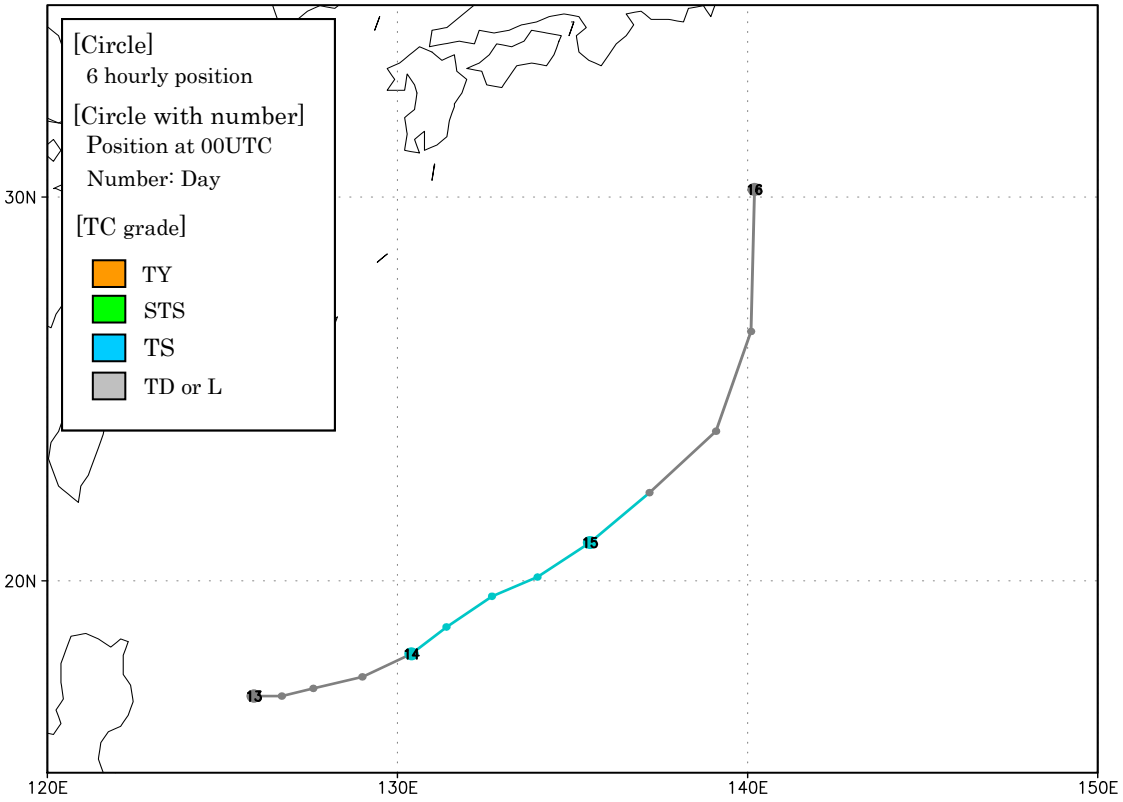
WUKONG (0610)

WUKONG formed as a tropical depression (TD) over the sea south of Chichijima Island at 06UTC on 12 August 2006. Moving to the north-northwest, it developed into a tropical storm (TS) over the waters southwest of Chichijima Island at 00UTC, 13 August. After it turned to the north-northeast, it reached the peak intensity with maximum sustained wind of 50kt and central pressure of 980hPa over the sea west of Chichijima Island at 18UTC, 14 August and then abruptly turned to the west-northwest. Turning to the northwest, WUKONG made landfall on Kyushu late 17 August. After it turned to the north, it weakened into a TD in the Japan Sea at 12UTC, 19 August. It turned to the northeast and dissipated in the same sea at 12UTC, 21 August.



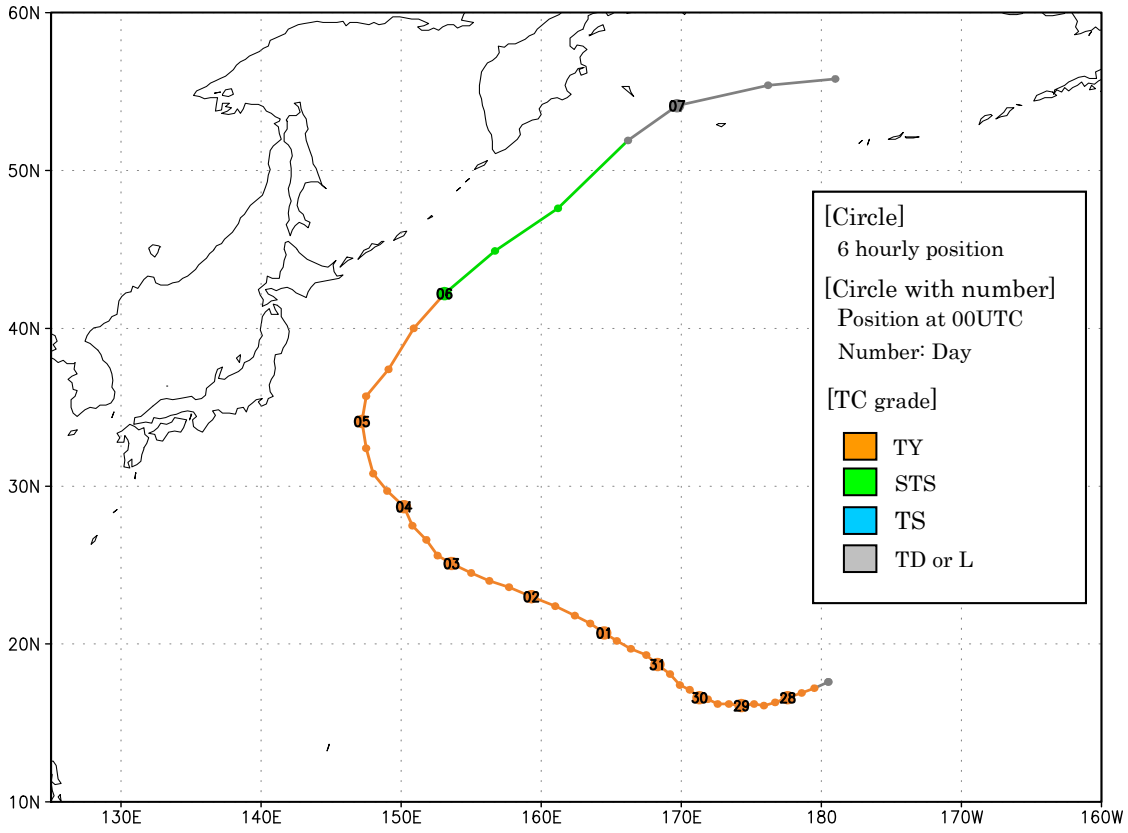
SONAMU (0611)

SONAMU formed as a tropical depression (TD) over the sea east of the Philippines at 00UTC on 13 August 2006. Moving eastward, it developed into a tropical storm (TS) over the same waters at 00UTC on the next day. It moved northeastward keeping the TS intensity, and then weakened into a TD over the sea around Okinotorishima Island at 06UTC, 15 August. Turning to the north, it dissipated over the sea south of Hachijojima Island at 15UTC, 16 August.



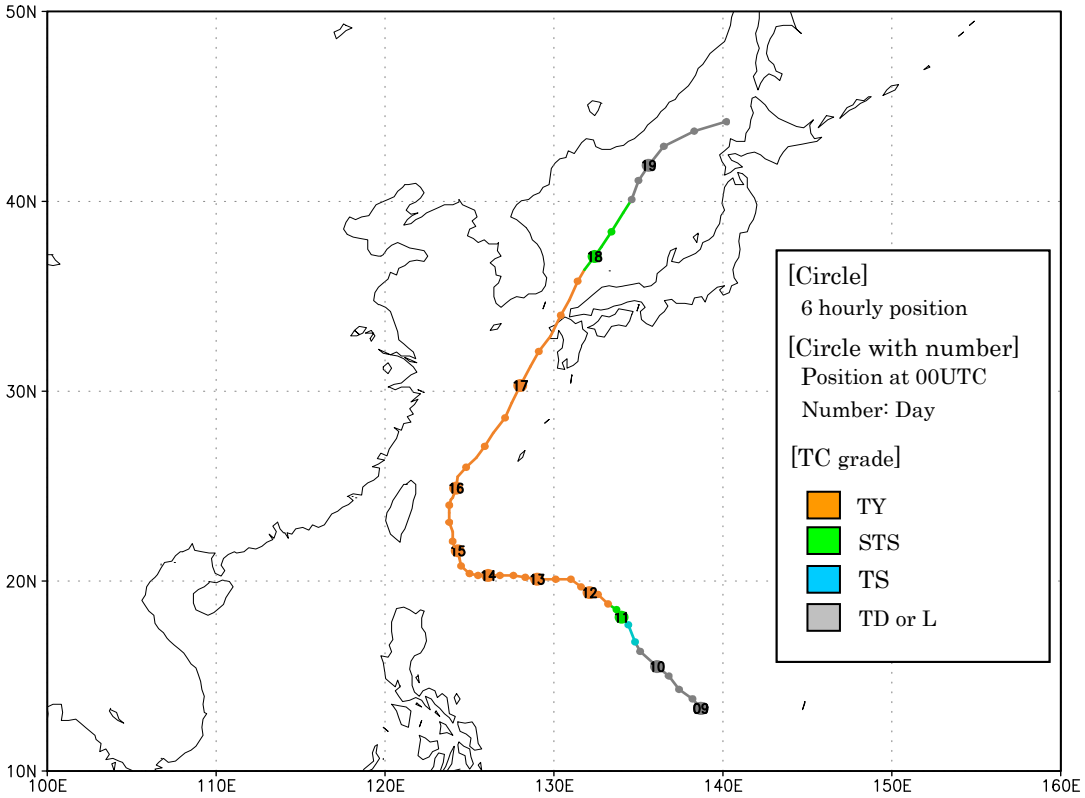
IOKE (0612)

IOKE moved west-southwestwards and crossed longitude 180 degrees east with typhoon (TY) intensity over the sea far east of Wake Island before 12UTC on 27 August 2006. It turned to the west and attained the peak intensity with maximum sustained wind of 105kt and central pressure of 920hPa over the sea southeast of Wake Island at 00UTC, 30 August. Keeping the peak intensity, it moved west-northwestwards and approached Wake Island around 12UTC on the next day. Then keeping the west-northwest track and gradually weakening the intensity, IOKE approached Minamitorishima Island before 00UTC, 3 September. After recurvature over the sea east of Japan on 5 September, it was downgraded to severe tropical storm (STS) intensity and then transformed into an extratropical cyclone at 00UTC and 18UTC, 6 September, respectively. Moving to the east-northeast, IOKE crossed longitude 180 degrees east again over the sea north of the Aleutian Islands after 06UTC on the next day.



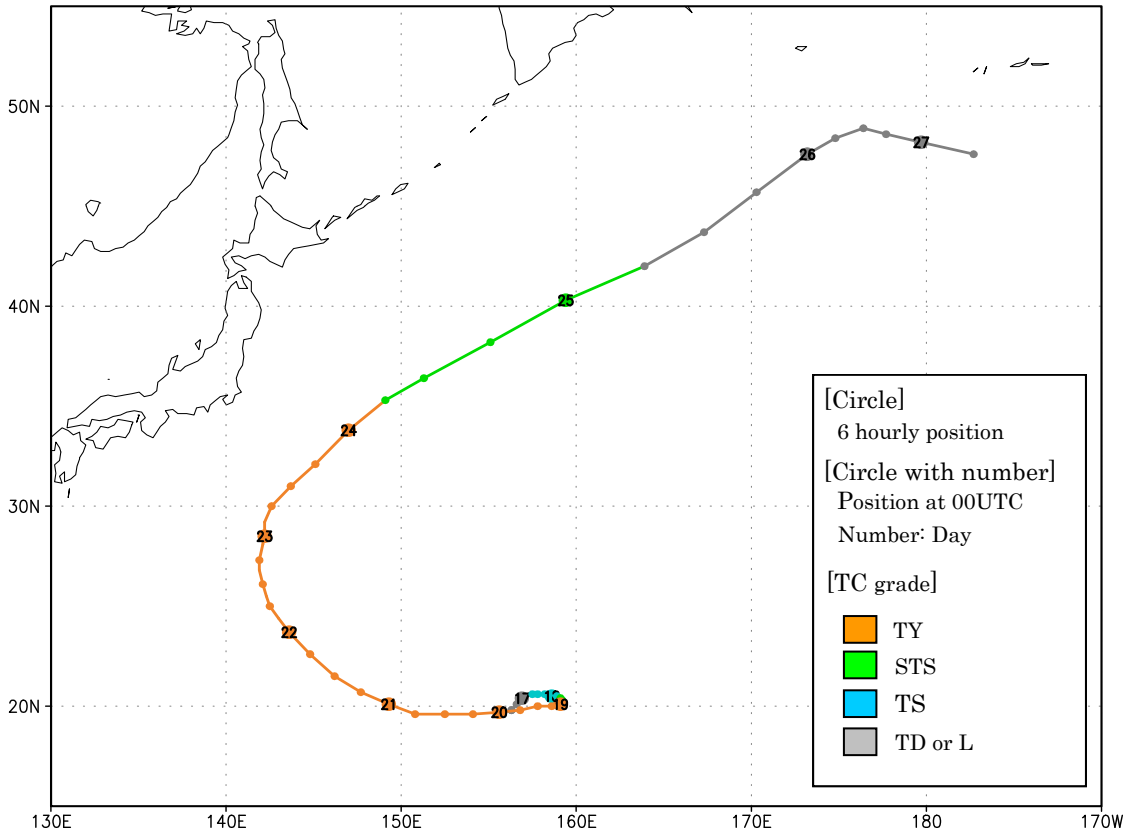
SHANSHAN (0613)

SHANSHAN formed as a tropical depression (TD) over the sea north of Yap Island at 00UTC on 9 September 2006. Moving northwestwards, it developed into a tropical storm (TS) over the sea east of the Philippines at 12UTC on the next day. Keeping the northwestward track, it was upgraded to typhoon (TY) intensity over the same waters at 12 UTC, 11 September. Then SHANSHAN moved westwards keeping TY intensity south of Okinawa Island. Turning to the north, it developed again and attained the peak intensity with maximum sustained wind of 110kt and central pressure of 919hPa before it approached Iriomotejima Island late 15 September. After recurvature, it gradually weakened the intensity in the East China Sea and made landfall on Kyushu with TY intensity around 09UTC, 17 September. Keeping the northeastward track, SHANSHAN entered into the Japan Sea, was downgraded to severe tropical storm (STS) intensity late on the same day, and then transformed into an extratropical cyclone there at 12UTC on the next day. Moving to the east-northeast, it dissipated over the sea west of Hokkaido at 00UTC, 20 September.



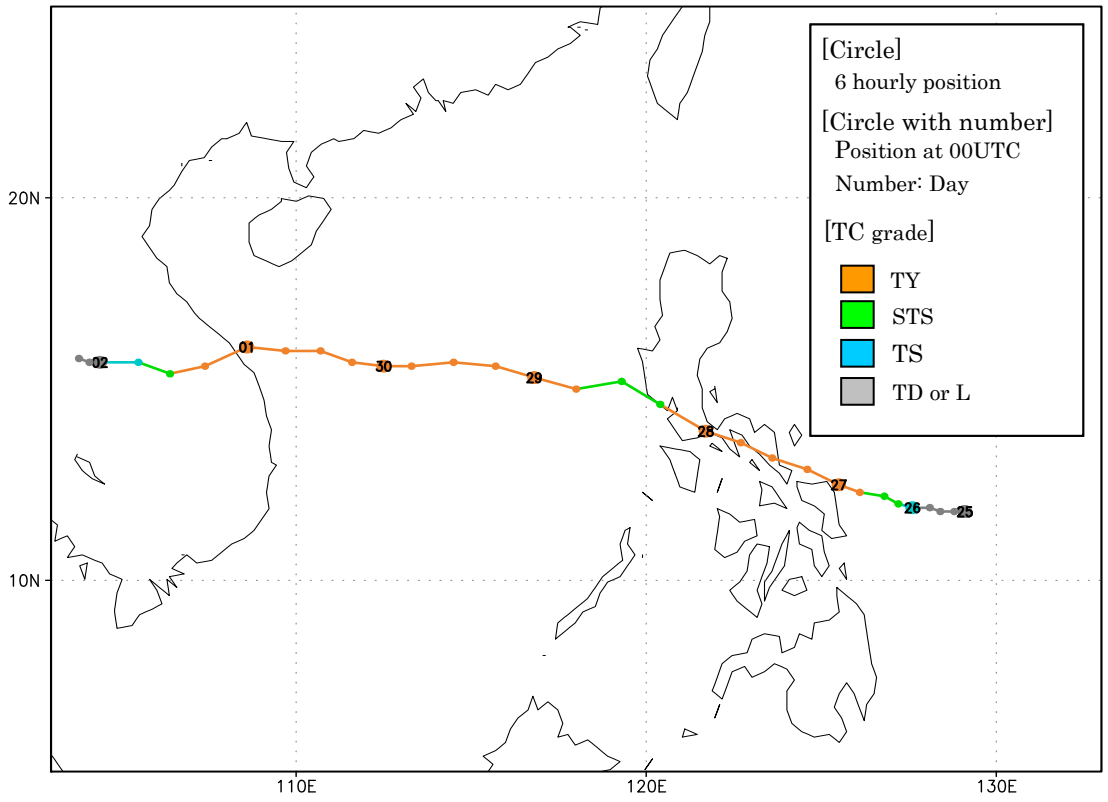
YAGI (0614)

YAGI formed as a tropical depression (TD) over the sea southeast of Minamitorishima Island at 12UTC on 16 September 2006. Moving to the east, it developed into a tropical storm (TS) over the same sea at 06UTC, 17 September. After it changed the track from the east to the west, it was upgraded to typhoon (TY) intensity over the same sea at 00UTC, 19 September. Turning to the northwest, it attained the peak intensity with maximum sustained wind of 105kt and central pressure of 910hPa over the sea southeast of Chichijima Island at 12UTC, 21 September. During recuvature, it approached Chichijima Island with TY intensity late on the next day. Moving northeastwards, YAGI was downgraded to severe tropical storm (STS) intensity and then transformed into an extratropical cyclone over the sea east of Japan at 06UTC, 24 September and 06UTC, 25 September 2006, respectively. After it moved northeastwards and then abruptly turned to the east-southeast, it crossed longitude 180 degrees east over the sea south of the Aleutian Islands after 00UTC, 27 September.



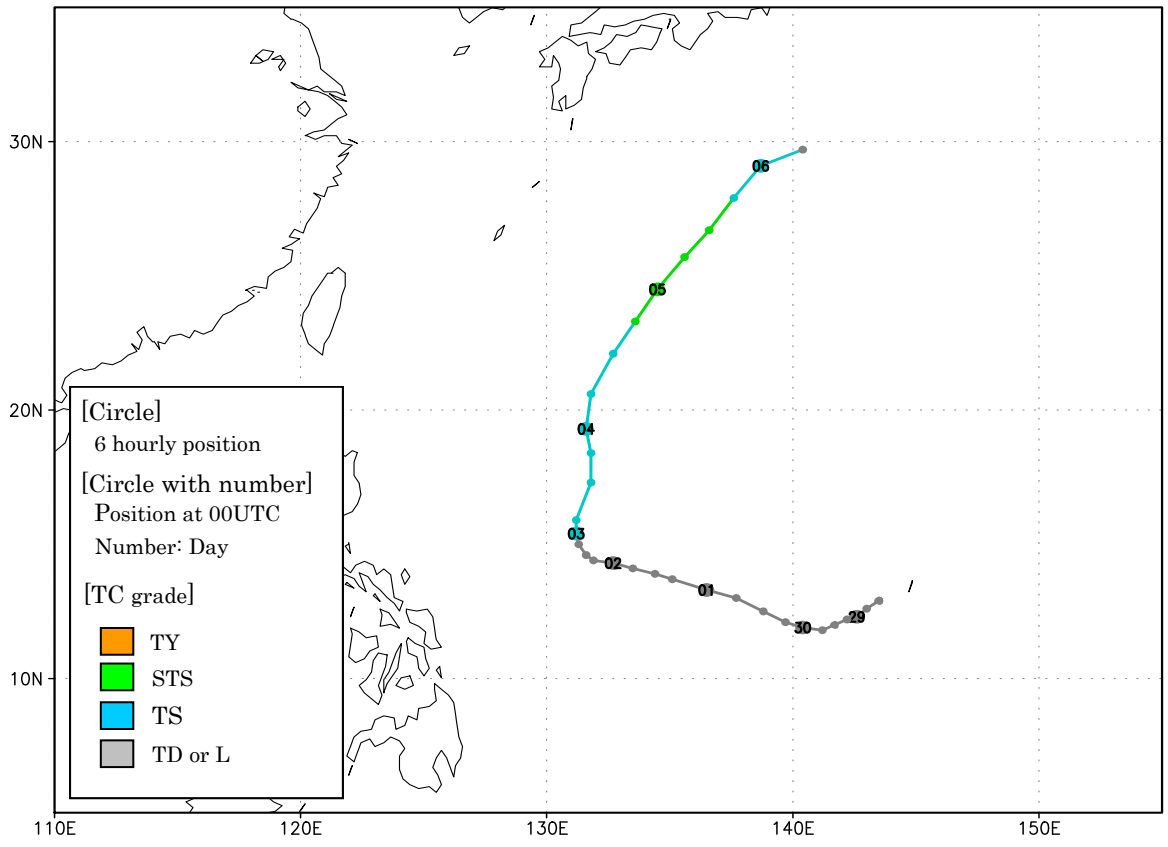
XANGSANE (0615)

XANGSANE formed as a tropical depression (TD) over the sea east of Samar Island at 00UTC on 25 September 2006. It moved westward and developed into a tropical storm (TS) over the same waters at 00UTC, 26 September. Turning to the west-northwestward, it was rapidly upgraded to typhoon (TY) intensity and attained the peak intensity with maximum sustained wind of 85kt and central pressure of 940hPa over the same waters at 18UTC, 26 September and 06UTC, 27 September, respectively. XANGSANE hit the Philippines with TY intensity around 12UTC on the same day. During its crossing of the Philippines, it was downgraded to severe tropical storm (STS) intensity near Manila at 06UTC on the next day. After it moved toward the South China Sea, it turned to the west. Then it was upgraded to TY intensity again and attained the intensity with maximum sustained wind of 80kt at 18UTC, 28 September and 18UTC, 29 September, respectively. Keeping the westward track and the almost same intensity, it made landfall on Vietnam on 1 October. XANGSANE was rapidly downgraded to TS intensity at 18UTC, 1 October. It weakened into a TD and dissipated in Thailand at 00UTC and 18UTC, 2 October, respectively.



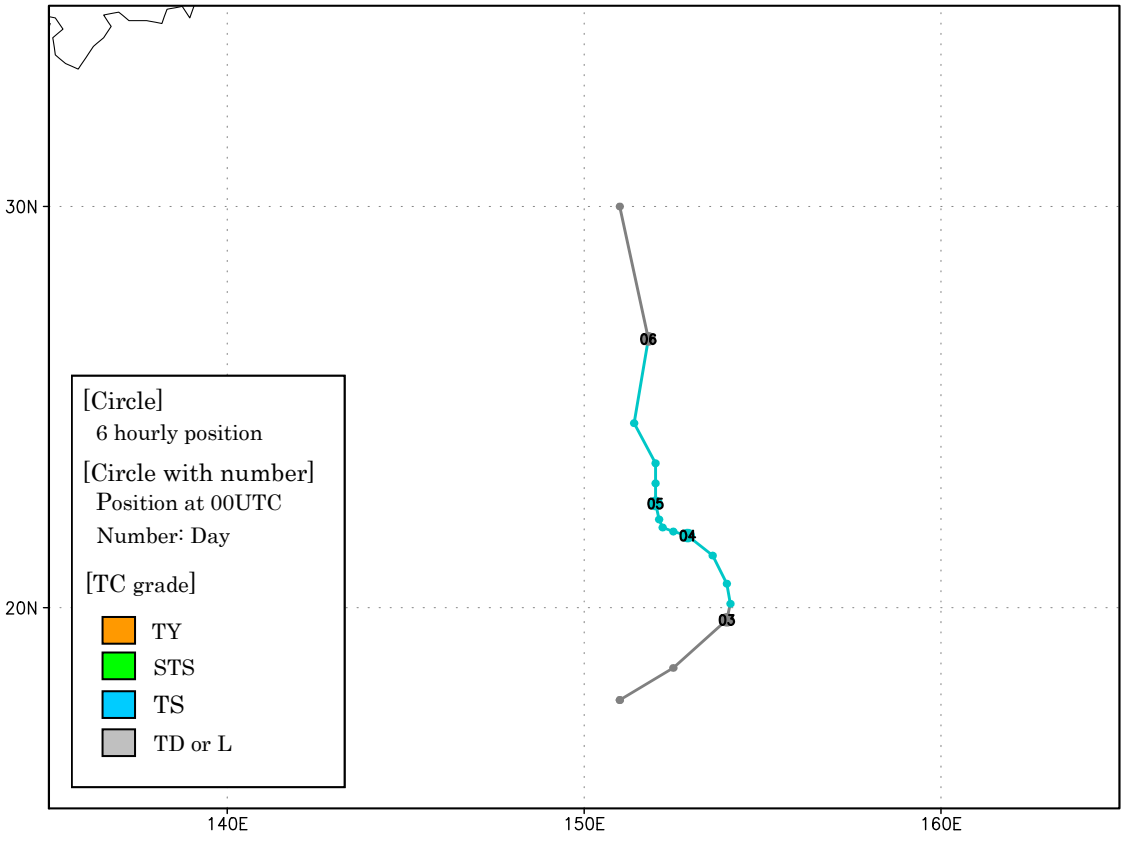
BEBINCA (0616)

BEBINCA formed as a tropical depression (TD) over the sea west- southwest of Guam at 12UTC on 28 September 2006. It moved west-southwestward and turned to the west-northwest on the next day. From 30 September to 1 October, it moved west-northwestward with TD intensity over the sea far east of the Philippines. After it turned to the north late on 2 October, it developed into a tropical storm (TS) over the sea far east of the Philippines at 00UTC, 3 October. Turning to the northeast, it was upgraded to severe tropical storm (STS) intensity and also attained the peak intensity with maximum sustained wind of 50kt and central pressure of 980hPa over the waters south of Japan at 18UTC on the next day. Keeping the northeast track, BEBINCA was downgraded to TS intensity and weakened into a TD over the same waters at 18UTC, 5 October and 06UTC, 6 October, respectively. It dissipated over the sea north-northwest of Chichijima Island at 12UTC, 6 October.



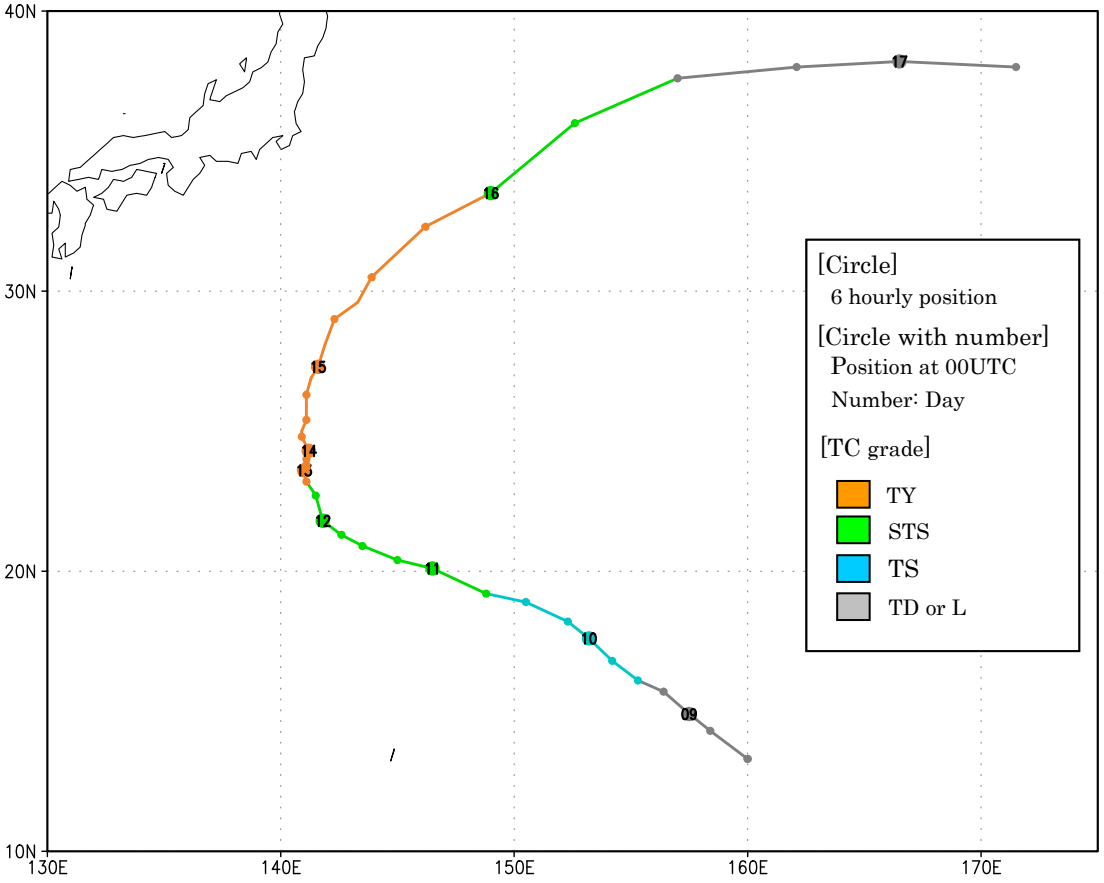
RUMBIA (0617)

RUMBIA formed as a tropical depression (TD) over the sea south-southwest of Minamitorishima Island at 12UTC on 2 October 2006. It moved to the east-northeastward on the same day. Turning to the northwest, it developed into a tropical storm (TS) and attained the peak intensity with maximum sustained wind of 45kt and central pressure of 985hPa over the sea south of Minamitorishima Island at 06UTC, 3 October and 00UTC, 4 October, respectively. After it turned to the north late on the same day, it weakened into a TD and dissipated over the sea north of Minamitorishima Island at 00UTC and 12UTC, 6 October, respectively.



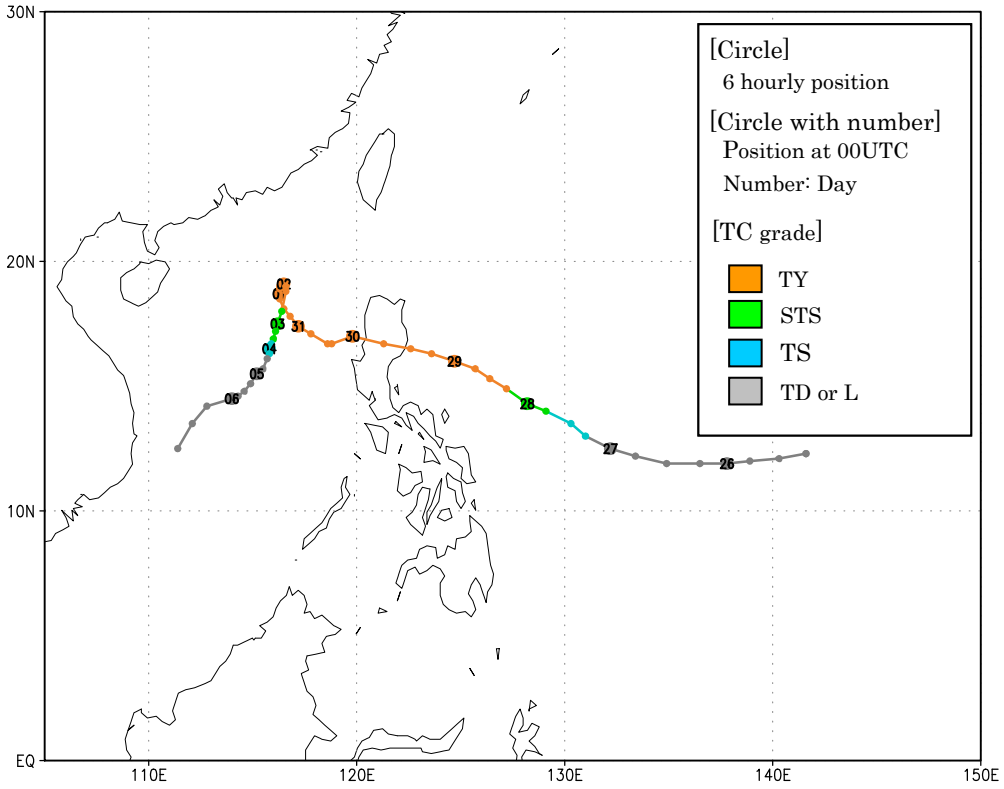
SOULIK (0618)

SOULIK formed as a tropical depression (TD) over the sea far southeast of Minamitorishima Island at 12UTC on 8 October 2006. It moved west-northwestward and developed into a tropical storm (TS) over the sea south of Minamitorishima Island at 12UTC, 9 October. During its recurvature, it was upgrade to typhoon (TY) intensity and attained the peak intensity with maximum sustained wind of 75kt and central pressure of 955hPa over the sea around Iwojima at 12UTC, 12 October and 06UTC, 14 October, respectively. Moving to the northeast, SOULIK was downgraded to severe tropical storm (STS) intensity and then transformed into an extratropical cyclone over the sea far east of Japan at 00UTC and 12UTC, 16 October, respectively. It moved eastward and dissipated over the sea south of the Aleutian Islands at 12UTC, 17 October.



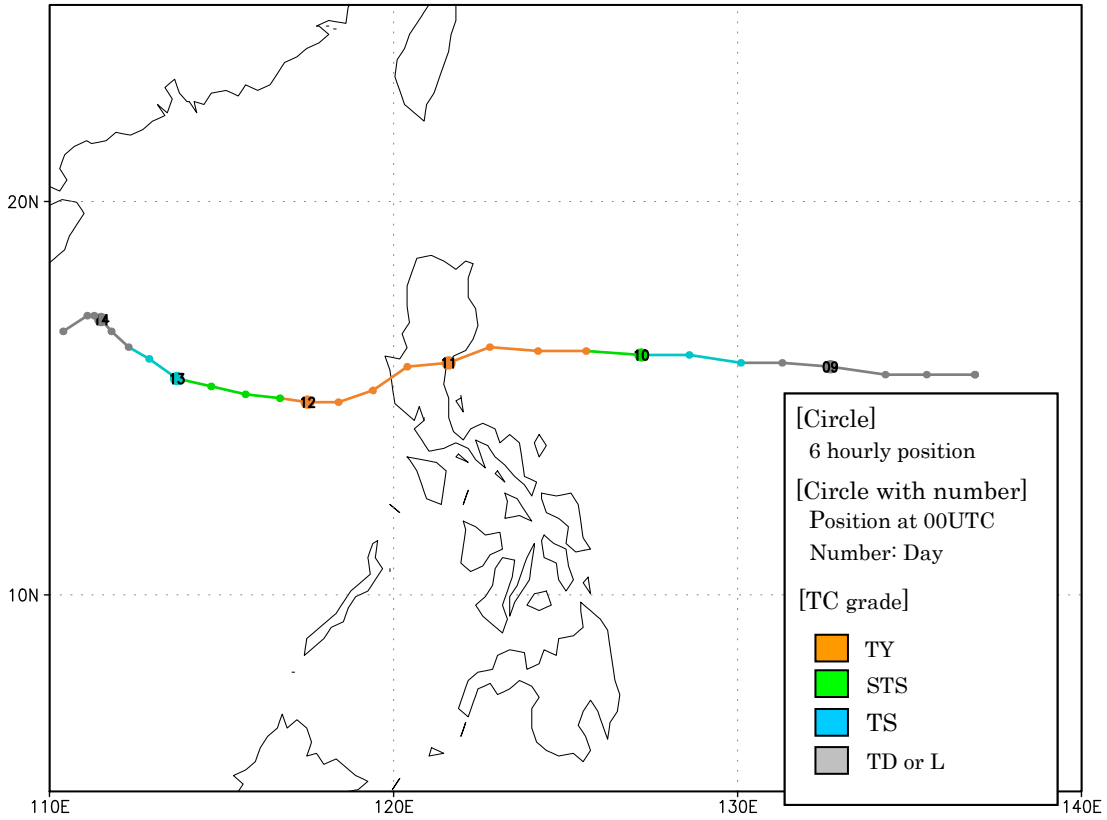
CIMARON (0619)

CIMARON formed as a tropical depression (TD) over the sea west of Guam Island 06UTC on 25 October 2006. It moved westward and developed into a tropical storm (TS) over the sea far east of the Philippines at 06UTC, 27 October. Moving to the west-northwest, it was upgraded to typhoon (TY) intensity over the sea east of the Philippines at 06UTC, 28 October. Keeping the west-northwestward track, it developed rapidly to attain the peak intensity with maximum sustained wind of 100kt and central pressure of 920hPa over the sea east of Luzon Island at 06UTC on the next day. CIMARON hit Luzon Island keeping the peak intensity after 12UTC on the same day. While it crossed of Luzon Island and moved toward the South China Sea, it slightly weakened. But it developed again and attained the intensity with maximum sustained wind of 90kt and central pressure of 945hPa at 12UTC, 1 November during the clockwise turn to make a circular track over the sea west of Luzon Island. Moving slowly to the southwest, CIMARON was downgraded to TS intensity and weakened into a topical depression (TD) in the South China Sea at 18UTC, 3 November and 12UTC, 4 November, respectively. It kept the southwest track and dissipated over the sea east of Vietnam at 00UTC, 7 November.



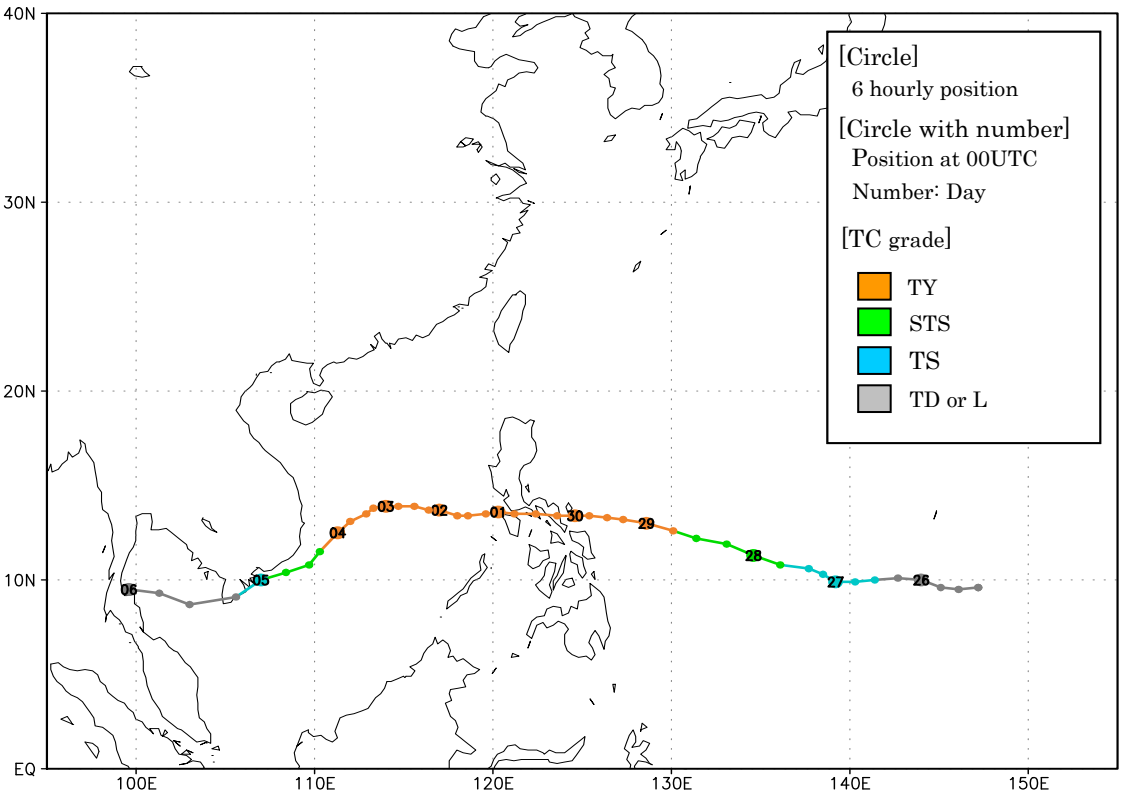
CHEBI (0620)

CHEBI formed as a tropical depression (TD) over the sea far east of the Philippines at 06UTC on 8 November 2006. It moved westward and developed into a tropical storm (TS) over the same waters at 12UTC, 9 November. Keeping the west track, it was very rapidly upgraded to typhoon (TY) intensity and attained the peak intensity with maximum sustained wind of 100kt and central pressure of 925hPa over the sea east of Luzon Island at 06UTC and 12UTC on the next day, respectively. CHEBI hit Luzon Island keeping almost the same intensity before 00UTC, 11 November. After crossing Luzon Island early on the same day, it was downgraded to STS and then TS intensity in the South China Sea at 06UTC, 12 November and 00UTC, 13 November, respectively. Turning to the northwest, it weakened into a tropical depression (TD) southeast of Hainan Island at 12UTC, 13 November. It dissipated south of Hainan Island at 00UTC, 15 November.



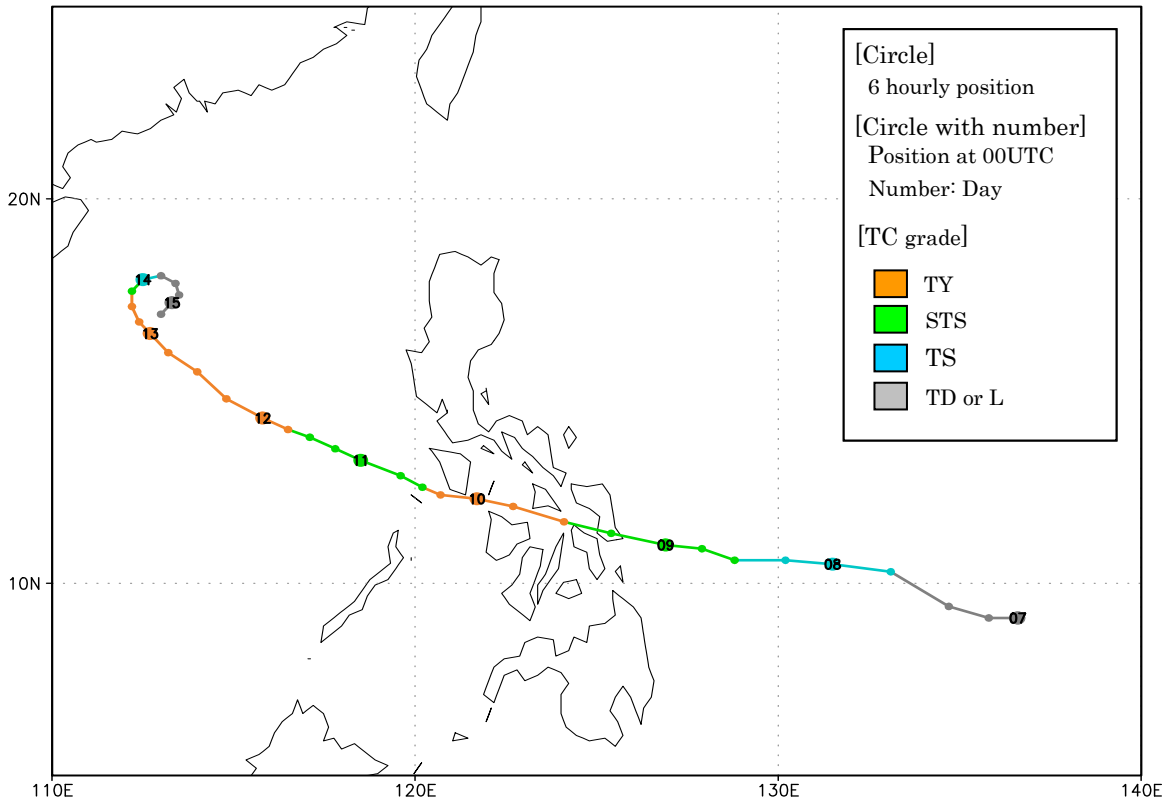
DURIAN (0621)

Durian formed as a tropical depression (TD) over the sea around the Caroline Islands at 06UTC on 25 November 2006. Moving to the west, it developed into a tropical storm (TS) over the sea east of Yap Island at 12UTC, 26 November. After it changed the track to the west-northwest, it was upgraded to typhoon (TY) intensity over the sea east of the Philippines at 18UTC, 28 November. Turning to the west, Durian still developed rapidly to attain the peak intensity with maximum sustained wind of 105kt and central pressure of 915hPa over the sea east of Luzon Island at 12UTC, 29 November. Weakening the intensity gradually, it hit the southern part of Luzon Island with TY intensity on the next day. In days after it passed through the Philippines, it kept the westward track and TY intensity in the South China Sea. On 3 December Durian turned to the southwest, and was then downgraded to TS intensity off the coast of the southern Vietnam at 00UTC, 5 December. Turning to the west again, it weakened into a TD around the Mouths of the Mekong at 06UTC, 5 December, and then crossed the 100-deg. E. longitude in the Gulf of Thailand before 00UTC on the next day.



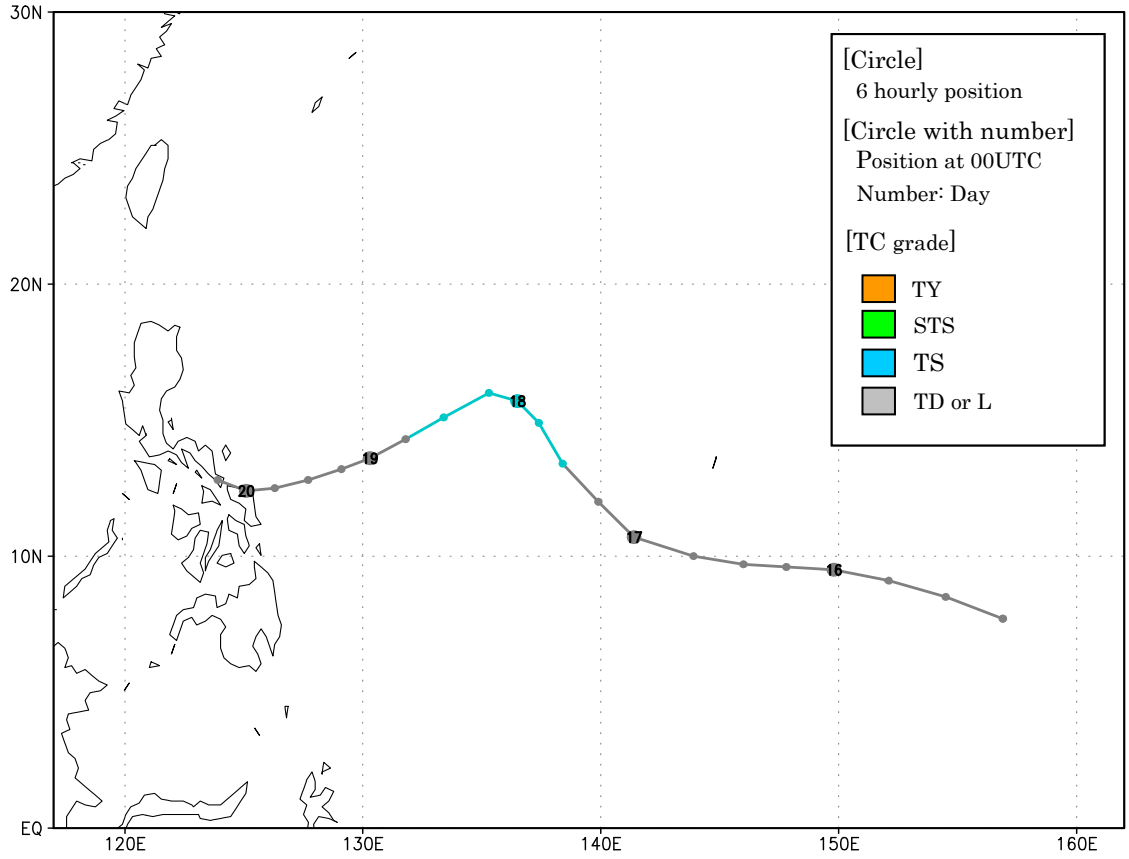
UTOR (0622)

UTOR formed as a tropical depression (TD) over the sea west of Yap Island at 00UTC on 7 December 2006. It moved west-northwestwards and then developed into a tropical storm (TS) over the sea far east of the Philippines at 18UTC on the same day. Moving to the west, it was upgraded to typhoon (TY) intensity in the Sea of Visayan at 12UTC, 9 December. Keeping the westward track in the Sea of Sibuyan, it attained the first peak intensity with maximum sustained wind of 75kt and central pressure of 955hPa at 00UTC, 10 December. Then turning to the northwest, UTOR was downgraded to STS intensity around the Mindoro Straits at 12UTC on the same day. Moving to the northwest, it was upgraded to TY intensity again and then attained the second peak intensity with maximum sustained wind of 85kt and central pressure of 945hPa in the South China Sea at 18UTC, 11 December and 12UTC, 12 December, respectively. Turning in the clockwise direction with slowdown, it was downgraded to TS intensity, weakened into a TD and then dissipated over the sea southeast of Hainan Island at 00UTC and 06UTC, 14 December and 12UTC, 15 December, respectively.



TRAMI (0623)

TRAMI formed as a tropical depression (TD) over the sea west of Pohnpei Island at 06UTC on 15 December 2006. Moving to the west-northwest and then to northwest, it developed into a tropical storm (TS) which attained the peak intensity with maximum sustained wind of 35kt and central pressure of 1000hPa over the sea far east of the Philippines at 12UTC, 17 December. After it turned to the west-southwest, TRAMI weakened into a TD over the same waters at 18UTC on the next day. Turning to west, it hit Samar Island early 20 December. It dissipated around the southern part of Luzon Island at 12UTC on the day.



RSMC Tropical Cyclone Best Track Data in 2006

TY CHANCHU (0601)

8 May - 19 May

	Date/Time (UTC)	Center Position Lat (N)	Lon (E)	Central pressure (hPa)	Max Wind (kt)	CI number	Grade
May	08/06	8.7	135.3	1004	-	-	TD
	08/12	8.6	134.5	1006	-	-	TD
	08/18	8.5	133.9	1004	-	-	TD
	09/00	8.3	133.4	1006	-	-	TD
	09/06	8.5	132.6	1004	-	-	TD
	09/12	8.6	132	1000	35	2.0	TS
	09/18	8.7	131.5	1000	35	2.5	TS
	10/00	9.2	130.8	996	40	2.5	TS
	10/06	9.7	129.9	990	45	3.0	TS
	10/12	9.8	129.4	985	50	3.0	STS
	10/18	10.3	129	985	50	3.0	STS
	11/00	10.8	128.2	985	50	3.0	STS
	11/06	11.5	127	985	50	3.5	STS
	11/12	12.1	125.8	980	55	3.5	STS
	11/18	12.4	124.5	985	50	3.5	STS
	12/00	12.6	123.5	985	50	3.5	STS
	12/06	13	122.6	980	55	3.5	STS
	12/12	13	121.8	980	55	4.0	STS
	12/18	12.9	121.2	985	50	4.0	STS
	13/00	13.3	120.6	985	50	4.0	STS
	13/06	13.9	119.5	980	55	4.0	STS
	13/12	13.9	119	975	60	4.0	STS
	13/18	13.8	118.2	970	65	4.0	TY
	14/00	13.8	117.6	960	75	5.0	TY
	14/06	13.9	116.6	950	80	5.5	TY
	14/12	13.9	116	940	85	6.0	TY
	14/18	13.8	115.5	935	90	6.0	TY
	15/00	14.1	115.4	930	95	6.5	TY
	15/06	14.8	115.3	930	95	6.5	TY
	15/12	15.3	115.2	930	95	6.5	TY
	15/18	15.9	115	930	95	6.5	TY
	16/00	16.9	114.8	930	95	6.5	TY
	16/06	17.8	114.9	935	90	6.0	TY
	16/12	18.8	115.2	940	85	6.0	TY
	16/18	19.5	115.4	940	85	6.0	TY
	17/00	20.5	115.6	945	85	5.5	TY
	17/06	21.3	116.1	950	80	4.5	TY
	17/12	22.5	116.6	960	75	4.5	TY
	17/18	23.5	117.2	975	60	4.0	STS
	18/00	24.4	118	992	45	3.5	TS
	18/06	25.9	119.2	996	40	3.0	TS
	18/12	29.9	122.5	998	40	-	TS
	18/18	31.4	123.4	998	40	-	TS
	19/00	31.6	124.9	996	-	-	L
	19/06	32.2	126.8	996	-	-	L
	19/12	32.8	128.7	1000	-	-	L
	19/18						Dissip.

TY BILIS (0604)

8 Jul. - 16 Jul.

	Date/Time (UTC)	Center Position Lat (N)	Lon (E)	Central pressure (hPa)	Max Wind (kt)	CI number	Grade
Jul.	08/06	11.6	140.5	1000	-	-	TD
	08/12	12.0	139.7	1000	-	1.5	TD
	08/18	12.5	138.8	1000	-	2.0	TD
	09/00	12.9	137.9	1000	-	2.0	TD
	09/06	13.4	137.0	998	35	2.0	TS
	09/12	14.1	136.0	998	35	2.0	TS
	09/18	14.7	135.0	996	35	2.0	TS
	10/00	15.5	133.8	996	35	2.0	TS
	10/06	16.3	132.7	994	40	2.0	TS
	10/12	16.9	131.8	992	45	2.0	TS
	10/18	17.6	130.9	990	50	2.5	STS
	11/00	18.3	129.9	990	55	3.0	STS
	11/06	19.0	129.0	990	55	3.0	STS
	11/12	19.4	128.3	985	55	3.0	STS
	11/18	20.0	127.0	985	55	3.0	STS
	12/00	20.8	126.0	980	55	3.0	STS
	12/06	21.3	125.3	980	55	2.5	STS
	12/09	21.6	124.8	975	55	-	STS
	12/12	22.0	124.4	975	55	2.5	STS
	12/15	22.2	124.1	975	55	-	STS
	12/18	22.5	123.9	975	55	2.5	STS
	12/21	22.8	123.6	975	60	-	STS
	13/00	23.1	123.4	975	60	2.5	STS
	13/03	23.4	123.3	975	60	-	STS
	13/06	23.7	123.1	970	60	3.0	STS
	13/09	24.4	122.7	970	60	-	STS
	13/12	24.8	122.5	975	55	3.0	STS
	13/15	25.2	121.7	975	55	-	STS
	13/18	25.5	121.1	975	55	3.0	STS
	13/21	25.6	120.8	975	55	-	STS
	14/00	25.7	120.5	975	55	3.0	STS
	14/03	25.9	120.1	975	55	-	STS
	14/06	26.3	119.3	980	55	2.5	STS
	14/09	26.6	118.8	980	55	-	STS
	14/12	26.7	118.2	985	50	2.0	STS
	14/18	26.8	117.0	985	50	2.0	STS
	15/00	26.9	116.1	990	40	2.0	TS
	15/06	26.7	114.9	990	-	2.0	TD
	15/12	26.9	114.3	990	-	-	TD
	15/18	27.4	113.8	992	-	-	TD
	16/00	27.7	113.3	994	-	-	TD
	16/06	28.0	112.9	994	-	-	TD
	16/12	28.4	112.4	996	-	-	TD
	16/18	28.8	112.1	996	-	-	TD

TY JELAWAT (0602)

24 Jun. - 29 Jun.

	Date/Time (UTC)	Center Position Lat (N)	Lon (E)	Central pressure (hPa)	Max Wind (kt)	CI number	Grade
Jun.	24/06	10.8	127.3	1006	-	-	TD
	24/12	11.4	126.3	1006	-	-	TD
	24/18	11.8	125.3	1006	-	-	TD
	25/00	11.9	124.0	1008	-	-	TD
	25/06	12.0	122.8	1006	-	-	TD
	25/12	12.4	121.7	1008	-	-	TD
	25/18	12.9	120.5	1008	-	-	TD
	26/00	13.5	119.5	1006	-	-	TD
	26/06	14.5	118.2	1004	-	-	TD
	26/12	15.3	117.0	1004	-	1.5	TD
	26/18	16.1	116.0	1004	-	1.5	TD
	27/00	16.7	115.2	1002	-	2.0	TD
	27/06	17.4	114.4	1002	-	2.0	TD
	27/12	18.1	113.6	1000	35	2.5	TS
	27/18	18.6	112.9	998	35	2.5	TS
	28/00	19.3	112.1	998	35	2.5	TS
	28/06	19.6	111.8	996	40	2.5	TS
	28/12	20.0	111.4	996	40	2.0	TS
	28/18	20.5	111.0	996	35	2.0	TS
	29/00	21.1	110.7	998	-	2.0	TD
	29/06						Dissip.

TY EWINAR (0603)

29 Jun. - 13 Jul.

	Date/Time (UTC)	Center Position Lat (N)	Lon (E)	Central pressure (hPa)	Max Wind (kt)	CI number	Grade
Jun.	29/06	6.0	139.8	1006	-	-	TD
	29/12	6.0	139.5	1008	-	-	TD
	29/18	6.1	139.2	1006	-	-	TD
	30/00	6.2	138.7	1006	-	-	TD
	30/06	6.6	138.3	1004	-	-	TD
	30/12	7.0	137.9	1002	-	2.0	TD
	30/18	7.5	137.8	1000	35	2.5	TS
Jul.	01/00	8.5	137.5	998	35	2.5	TS
	01/06	9.4	136.8	994	35	2.5	TS
	01/12	10.2	136.0	992	40	2.5	TS
	01/18	10.5	135.6	992	40	2.5	TS
	02/00	10.8	135.4	990	45	3.0	TS
	02/06	11.2	135.0	990	45	3.0	TS
	02/12	11.8	134.6	985	50	3.5	STS
	02/18	12.1	134.5	980	60	4.0	STS
	03/00	12.3	134.5	975	65	4.5	TY
	03/06	13.1	134.5	960	80	5.5	TY
	03/12	14.1	134.1	950	85	6.0	TY
	03/18	14.7	133.5	950	85	6.0	TY
	04/00	15.3	133.0	950	85	6.0	TY
	04/06	16.1	132.5	945	90	6.0	TY
	04/12	16.8	132.2	930	100	7.0	TY
	04/18	17.4	131.5	930	100	7.0	TY
	05/00	17.9	130.8	930	100	7.0	TY
	05/06	18.2	130.1	940	90	6.0	TY
	05/12	18.5	129.6	950	85	5.5	TY
	05/18	18.8	129.2	955	80	5.0	TY
	06/00	19.2	128.8	955	80	5.0	TY
	06/06	19.6	128.4	955	80	5.0	TY
	06/12	20.1	128.2	955	80	5.0	TY
	06/18	20.6	127.8	955	80	5.0	TY
	07/00	20.8	127.6	955	80	5.0	TY
	07/06	21.4	127.4	955	80	5.0	TY
	07/12	22.1	127.1	955	80	5.0	TY
	07/15	22.3	126.8	955	80	-	TY
	07/18	22.5	126.5	950	80	5.0	TY
	07/21	22.9	126.6	950	80	-	TY
	08/00	23.2	126.5	950	80	5.0	TY
	08/03	23.7	126.5	950	80	-	TY
	08/06	24.1	126.3	950	80	5.0	TY
	08/09	24.7	126.2	950	80	-	TY
	08/12	25.1	126.1	955	80	5.0	TY
	08/15	25.6	125.9	955	80	-	TY
	08/18	26.3	125.9	960	75	5.0	TY
	08/21	26.8	125.8	960	75	-	TY
	09/00	27.5	125.8	960	75	5.0	TY
	09/03	28.2	125.8	960	75	-	TY
	09/06	29.3	125.8	965	70	4.5	TY
	09/09	30.0	125.8	965	70	-	TY
	09/12	30.7	125.7	970	65	4.0	TY
	09/15	31.7	125.6	970	65	-	TY
	09/18	32.6	125.8	975	60	3.5	STS
	09/21	33.2	126.0	975	60	-	STS
	10/00	33.8	126.2	975	60	3.5	STS
	10/03	34.5	126.4	980	55	-	STS
	10/06	35.6	126.8	985	45	3.0	TS
	10/12	37.5	128.5	996	-	2.5	L
	10/18	39.0	130.3	996	-	2.5	L
	11/00	40.3	132.2	996	-	2.0	L
	11/06	41.0	134.1	998	-	2.0	L
	11/12	42.1	135.8	1000	-	-	L
	11/18	43.6	137.5	1000	-	-	L
	12/00	45.5	139.9	1000	-	-	L
	12/06	47.0	140.6	998	-	-	L
	12/12	47.6	140.8	998	-	-	L
	12/18	48.2	140.9	998	-	-	L
	13/00						Dissip.

TY KAEMI (0605)

17 Jul. - 27 Jul.

	Date/Time (UTC)	Center Position Lat (N)	Lon (E)	Central pressure (hPa)	Max Wind (kt)	CI number	Grade
Jul.	17/18	8.9	147.8	1006	-	-	TD
	18/00	9.4	147.2	1006	-	-	TD
	18/06	9.7	146.0	1004	-	-	TD
	18/12	10.2	144.5	1004	-	1.5	TD
	18/18	10.4	143.3	1004	-	1.5	TD
	19/00	11.0	142.0	1004	-	2.0	TD
	19/06	11.7	140.8	1002	-	2.0	TD
	19/12	12.0	140.0	998	35	2.5	TS
	19/18	12.1	139.0	994	40	3.0	TS
	20/00	12.6	138.4	992	50	3.0	STS
	20/06	13.5	137.7	985	55	3.5	STS
	20/12	14.0	136.4	980	60	4.0	STS
	20/18	14.7	135.4	975	65	4.5	TY
	21/00	15.4	134.1	970	70	4.5	TY
	21/06	15.8	132.8	965	75	5.0	TY
	21/12	16.1	131.7	960	80	5.0	TY
	21/18	16.4	130.8	960	80	5.0	TY
	22/00	16.6	129.7	960	80	5.0	TY
	22/06	16.9	129.1	960	80	5.0	TY
	22/12	17.1	128.8	960	80	5.0	TY
	22/18	18.0	128.1	960	80	5.0	TY
	23/00	18.5	127.5	960	80	5.0	TY
	23/06	19.4	126.5	960	80	5.0	TY
	23/12	20.1	125.5	965	75	5.0	TY
	23/18	20.5	124.5	965	75	5.0	TY
	24/00	20.8	123.8	970	70	5.0	TY
	24/06	21.6	122.7	970	70	5.0	TY
	24/12	22.3	121.3	975	65	5.0	TY
	24/18	23.1	120.3	985	60	5.0	STS
	25/00	23.6	119.6	985	55	4.5	STS
	25/06	24.2	118.8	985	50	4.0	STS
	25/12	24.3	117.6	990	45	3.5	TS
	25/18	24.4	116.6	990	40	3.0	TS
	26/00	24.8	116.0	992	-	2.5	TD
	26/06	24.9	115.1	994	-	2.5	TD
	26/12	25.1	114.6	996	-	-	TD
	26/18	25.2	113.9	998	-	-	TD
	27/00	25.0	113.2	1000	-	-	TD
	27/06						Dissip.

TY SAOMAI (0608)

5 Aug. - 11 Aug.

	Date/Time (UTC)	Center Position Lat (N)	Lon (E)	Central pressure (hPa)	Max Wind (kt)	CI number	Grade
Aug.	05/00	10.0	148.5	1004	-	-	TD
	05/06	10.9	147.4	1000	-	-	TD
	05/12	11.7	146.5	998	35	2.5	TS
	05/18	12.8	145.5	996	40	2.5	TS
	06/00	14.0	144.2	996	40	2.5	TS
	06/06	15.2	143.1	992	45	3.0	TS
	06/12	16.4	141.6	992	45	3.0	TS
	06/18	17.1	140.5	985	50	4.0	STS
	07/00	17.9	139.5	975	60	4.5	STS
	07/06	18.8	138.2	970	70	4.5	TY
	07/12	19.5	136.7	970	75	4.5	TY
	07/18	20.3	135.4	965	75	5.0	TY
	08/00	20.9	134.0	960	80	5.0	TY
	08/06	21.6	132.9	960	80	5.0	TY
	08/12	22.4	131.4	955	85	5.0	TY
	08/15	22.7	130.8	955	85	-	TY
	08/18	23.1	130.1	950	90	5.0	TY
	08/21	23.6	129.3	945	90	-	TY
	09/00	23.9	128.4	940	95	6.0	TY
	09/03	24.3	127.6	935	95	-	TY
	09/06	24.7	126.9	930	100	6.5	TY
	09/09	25.1	126.1	930	100	-	TY
	09/12	25.4	125.3	925	105	7.0	TY
	09/15	25.7	124.4	925	105	-	TY
	09/18	26.0	123.7	925	105	7.0	TY
	09/21	26.3	123.0	930	105	-	TY
	10/00	26.5	122.5	930	100	7.0	TY
	10/06	27.0	121.2	935	100	6.5	TY
	10/12	27.2	120.0	950	90	6.0	TY
	10/18	27.4	118.7	980	50	5.5	STS
	11/00	28.2	117.3	996	-	5.0	TD
	11/06	28.6	116.1	1000	-	-	TD
	11/12	29.5	114.7	1002	-	-	TD
	11/18	30.0	113.1	1002	-	-	TD
	12/00						Dissip.

TY PRAPIROON (0606)

6 Jul. - 5 Aug.

	Date/Time (UTC)	Center Position Lat (N)	Lon (E)	Central pressure (hPa)	Max Wind (kt)	CI number	Grade
Jul.	28/06	13.4	129.5	1004	-	-	TD
	28/12	13.5	129.2	1004	-	-	TD
	28/18	13.5	128.9	1004	-	-	TD
	29/00	13.6	128.7	1004	-	-	TD
	29/06	13.7	128.4	1004	-	-	TD
	29/12	13.8	127.9	1004	-	-	TD
	29/18	13.9	127.5	1004	-	-	TD
	30/00	14.1	127.0	1004	-	-	TD
	30/06	14.3	126.3	1004	-	-	TD
	30/12	14.6	125.3	1004	-	-	TD
	30/18	15.0	124.3	1004	-	-	TD
	31/00	15.5	123.3	1004	-	-	TD
	31/06	16.2	122.2	1002	-	-	TD
	31/12	16.6	121.1	1002	-	-	TD
	31/18	16.7	119.6	1002	-	-	TD
	01/00	16.7	118.4	1000	-	-	TD
	01/06	17.0	117.7	998	35	2.5	TS
	01/12	17.5	116.7	994	40	2.5	TS
	01/18	17.5	116.0	985	50	3.0	STS
	02/00	18.1	115.2	980	55	3.0	STS
	02/06	18.9	114.8	975	60	3.5	STS
	02/12	19.2	113.7	970	65	4.5	TY
	02/18	19.3	113.2	970	65	4.5	TY
	03/00	20.1	112.8	970	65	4.5	TY
	03/06	20.9	112.2	970	65	4.0	TY
	03/12	21.6	111.5	975	60	4.0	STS
	03/18	21.8	110.3	980	60	3.5	STS
	04/00	22.2	109.6	985	50	3.0	STS
	04/06	22.9	109.0	990	45	2.5	TS
	04/12	23.4	108.4	994	40	2.0	TS
	04/18	23.9	107.7	996	35	1.5	TS
	05/00	24.0	107.0	998	-	1.5	TD
	05/06	23.9	106.6	1002	-	-	TD
	05/12						Dissip.

TY WUKONG (0610)

12 Aug. - 21 Aug.

	Date/Time (UTC)	Center Position Lat (N)	Lon (E)	Central pressure (hPa)	Max Wind (kt)	CI number	Grade
Aug.	12/06	20.7	141.2	1000	-	-	TD
	12/12	22.0	140.0	1000	-	-	TD
	12/18	23.3	139.1	994	-	2.0	TD
	13/00	24.4	138.5	992	35	2.0	TS
	13/06	24.9	138.2	992	35	2.0	TS
	13/12	25.3	138.0	990	40	2.5	TS
	13/18	25.7	137.8	985	45	2.5	TS
	14/00	26.2	137.7	985	45	2.5	TS
	14/06	26.6	137.7	985	45	2.5	TS
	14/12	27.0	137.9	985	45	2.5	TS
	14/18	27.6	138.2	980	50	3.0	STS
	15/00	28.3	138.6	980	50	3.0	STS
	15/06	29.0	137.9	980	50	3.0	STS
	15/12	29.2	137.1	980	50	3.0	STS
	15/18	29.3	136.3	980	50	3.0	STS
	16/00	29.6	135.3	980	50	3.0	STS
	16/06	30.0	134.5	980	50	3.0	STS
	16/09	30.1	134.4	980	50	-	STS
	16/12	30.2	134.2	980	50	3.0	STS
	16/15	30.4	134.0	980	50	-	STS
	16/18	30.5	133.8	980	50	3.0	STS
	16/21	30.7	133.5	980	50	-	STS
	17/00	30.8	133.1	980	50	3.0	STS
	17/03	31.0	132.8	980	50	-	STS
	17/06	31.2	132.4	980	50	3.0	STS
	17/09	31.4	132.2	980	50	-	STS
	17/12	31.6	131.9	980	50	3.0	STS
	17/15	31.7	131.6	980	50	-	STS
	17/16	31.8	131.5	980	45	-	TS
	17/18	32.0	131.1	980	45	3.5	TS
	17/21	32.2	130.9	980	45	-	TS
	18/00	32.5	130.7	982	45	3.0	TS
	18/03	32.7	130.7	982	45	-	TS
	18/06	32.8	130.7	984	45	2.5	TS
	18/09	32.9	130.7	984	45	-	TS
	18/12	33.2	130.6	988	45	2.0	TS
	18/15	33.5	130.6	988	40	-	TS
	18/18	33.7	130.5	990	40	1.5	TS
	18/21	34.0	130.5	990	40	-	TS
	19/00	34.4	130.2	992	40	1.5	TS
	19/03	34.7	130.2	992	40	-	TS
	19/06	35.2	130.1	994	35	2.0	TS
	19/12	36.3	130.0	1000	-	2.0	TD
	19/18	37.3	129.9	1002	-	2.0	TD
	20/00	38.2	130.0	1004	-	1.5	TD
	20/06	39.2	130.0	1004	-	-	TD
	20/12	40.2	130.1	1006	-	-	TD
	20/18	40.8	131.0	1006	-	-	TD
	21/00	41.4	132.3	1006	-	-	TD
	21/06	41.8	133.4	1006	-	-	TD
	21/12						Dissip.

TY MARIA (0607)

3 Aug. - 14 Aug.

	Date/Time (UTC)	Center Position Lat (N)	Lon (E)	Central pressure (hPa)	Max Wind (kt)	CI number	Grade
Aug.	03/18	21.2	152.2	1006	-	-	TD
	04/00	21.9	151.9	1006	-	-	TD
	04/06	22.7	151.4	1006	-	-	TD
	04/12	23.7	149.7	1006	-	-	TD
	04/18	24.2	148.1	1004	-	-	TD
	05/00	24.7	147.0	1002	-	-	TD
	05/06	25.6	146.1	1002	-	2.0	TD
	05/12	26.0	145.2	1000	-	2.0	TD
	05/18	26.4	143.8	998	35	2.5	TS
	05/21	26.7	143.3	994	40	-	TS
	06/00	27.0	142.7	990	45	3.0	TS
	06/03	27.3	142.1	985	50	-	STS
	06/06	27.6	141.6	980	60	4.0	STS
	06/09	27.8	141.1	980	65	-	TY
	06/12	28.2	140.6	980	65	4.0	TY
	06/18	28.8	139.7	975	70	4.5	TY
	07/00	29.6	138.8	975	70	4.5	TY
	07/06	30.6	138.1	975	70	4.5	TY
	07/12	31.2	137.4	975	70	4.5	TY
	07/15	31.5	137.0	975	70	-	TY
	07/18	31.9	136.8	975	70	4.5	TY
	07/21	32.3	136.6	975	70	-	TY
	08/00	32.6	136.6	980	65	4.0	TY
	08/03	32.9	136.6	980	65	-	TY
	08/06	33.1	136.7	980	60	4.0	STS
	08/09	33.2	136.8	980	60	-	STS
	08/12	33.6	137.3	985	55	3.5	STS
	08/15	33.8	137.7	985	55	-	STS
	08/18	34.0	138.1	990	50	3.0	STS
	08/21	34.1	138.6	990	50	-	STS
	08/22	34.2	139.1	992	50	-	STS
	09/00	34.5	139.8	994	50	3.0	STS
	09/03	35.2	140.6	996	50	-	STS
	09/06	35.6	141.2	996	45	3.0	TS
	09/09	36.0	141.8	998	45	-	TS
	09/12	36.4	142.4	998	40	2.5	TS
	09/18	36.7	143.0	1000	40	2.0	TS
	10/00	36.9	143.9	1000	40	2.0	TS
	10/06	36.9	144.4	1000	-	2.0	L
	10/12	36.9	145.8	1000	-	2.0	L
	10/18	37.7	147.0	1000	-	2.0	L
	11/00	38.7	148.3	1000	-	1.5	L
	11/06	39.3	149.2	1000	-	-	L
	11/12	39.8	150.0	1000	-	-	L
	11/18	40.0	150.0	1000	-	-	L
	12/00	40.6	150.5	998	-	-	L
	12/06	41.3	150.7	1000	-	-	L
	12/12	42.0	151.0	1000	-	-	L
	12/18	42.9	151.3	1002	-	-	L
	13/00	43.8	151.5	1004	-	-	L
	13/06	44.1	151.3	1004	-	-	L
	13/12	45.0	150.9	1004	-	-	L
	13/18	46.0	150.7	1006	-	-	L
	14/00	47.0	150.7	1008	-	-	L
	14/06	47.9	150.8	1008	-	-	L
	14/12	48.5	150.5	1008	-	-	L
	14/18						Dissip.

STS BOPHA(0609)

3 Aug. - 14 Aug.

	Date/Time (UTC)	Center Position Lat (N)	Lon (E)	Central pressure (hPa)	Max Wind (kt)	CI number	Grade
Aug.	05/06	20.5	132.8	1006	-	-	TD
	05/12	20.7	132.4	1004	-	-	TD
	05/18	21.0	132.1	1002	-	-	TD
	06/00	21.5	131.7	1002	-	-	TD
	06/06	22.0	131.2	1002	-	2.0	TD
	06/12	22.4	130.4	998	35	2.5	TS
	06/18	22.5	129.7	994	45	2.5	TS
	07/00	22.7	129.0	990	50	3.0	STS
	07/06	22.9	128.3	990	50	3.0	STS
	07/12	23.0	127.6	990	50	3.0	STS
	07/15	23.1	126.8	990	50	3.0	STS
	07/18	23.2	126.2	990	50	3.0	STS
	07/21	23.3	125.6	985	55	3.5	STS
	08/00	23.3	125.1	980	55	3.5	STS
	08/03	23.3	124.5	980	55	3.5	STS
	08/06	23.3	123.8	985	50	3.5	STS
	08/09	23.4	123.2	990	45	3.5	TS
	08/12	23.3	122.6	990	45	3.0	TS
	08/18	22.8	121.5	992	40	3.0	TS
	09/00	22.6	119.9	992	35	2.5	TS
	09/06	22.3	118.6	994	-	2.0	TD
	09/12	21.9	117.6	994	-	-	TD
	09/18	21.7	117.2	994	-	-	TD
	10/00	21.6	116.8	996	-	-	TD
	10/06	21.6	116.4	998	-	-	TD
	10/12	21.6	115.6	998	-	-	TD
	10/18	21.8	114.7	998	-	-	TD
	11/00	22.1	113.9	1000	-	-	TD
	11/06						Dissip.

TS SONAMU(0611)

13 Aug. - 16 Aug.

Date/Time		Center Position		Central pressure	Max Wind	CI number	Grade
	(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)		
Aug.	13/00	17.0	125.9	1000	-	-	TD
	13/06	17.0	126.7	1000	-	-	TD
	13/12	17.2	127.6	1000	-	-	TD
	13/18	17.5	129.0	996	-	-	TD
	14/00	18.1	130.4	994	35	2.5	TS
	14/06	18.8	131.4	992	35	2.5	TS
	14/12	19.6	132.7	992	35	2.5	TS
	14/18	20.1	134.0	992	35	2.5	TS
	15/00	21.0	135.5	992	35	2.5	TS
	15/06	22.3	137.2	994	-	2.0	TD
	15/12	23.9	139.1	994	-	2.0	TD
	15/18	26.5	140.1	994	-	1.5	TD
	16/00	30.2	140.2	996	-	1.5	TD
	16/06						Dissip.

TY YAGI (0614)

16 Sep. - 27 Sep.

Date/Time		Center Position		Central pressure	Max Wind	CI number	Grade
	(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)		
Sep.	16/12	19.8	156.3	1008	-	-	TD
	16/18	20.1	156.6	1006	-	-	TD
	17/00	20.4	156.9	1006	-	-	TD
	17/06	20.6	157.5	1002	35	2.5	TS
	17/12	20.6	157.8	1000	35	2.5	TS
	17/18	20.6	158.2	994	40	2.5	TS
	18/00	20.5	158.6	990	45	3.0	TS
	18/06	20.5	158.9	990	45	3.0	TS
	18/12	20.4	159.1	985	50	3.5	STS
	18/18	20.3	159.2	980	55	4.0	STS
	19/00	20.1	159.1	970	65	4.5	TY
	19/06	20.0	158.6	960	75	5.0	TY
	19/12	20.0	157.8	960	75	5.0	TY
	19/18	19.8	156.8	950	85	5.5	TY
	20/00	19.7	155.6	940	90	6.0	TY
	20/06	19.6	154.1	940	90	6.0	TY
	20/12	19.6	152.5	940	90	6.0	TY
	20/18	19.6	150.8	940	90	6.0	TY
	21/00	20.1	149.3	940	90	6.0	TY
	21/06	20.7	147.7	930	90	6.0	TY
	21/12	21.5	146.2	910	105	7.0	TY
	21/18	22.6	144.8	910	105	7.0	TY
	22/00	23.7	143.6	915	100	7.0	TY
	22/03	24.4	143.0	915	100	-	TY
	22/06	25.0	142.5	915	100	7.0	TY
	22/09	25.5	142.3	915	100	-	TY
	22/12	26.1	142.1	925	95	6.5	TY
	22/15	26.8	141.9	930	90	-	TY
	22/18	27.3	141.9	940	85	6.5	TY
	22/21	28.1	142.1	945	85	-	TY
	23/00	28.5	142.2	950	80	5.5	TY
	23/03	29.2	142.2	950	80	-	TY
	23/06	30.0	142.6	950	80	5.0	TY
	23/12	31.0	143.7	955	75	5.0	TY
	23/18	32.1	145.1	955	75	5.0	TY
	24/00	33.8	147.0	965	70	4.5	TY
	24/06	35.3	149.1	975	60	4.0	STS
	24/12	36.4	151.3	980	55	3.5	STS
	24/18	38.2	155.1	985	50	3.0	STS
	25/00	40.3	159.4	985	50	2.5	STS
	25/06	42.0	163.9	984	-	2.0	L
	25/12	43.7	167.3	980	-	-	L
	25/18	45.7	170.3	976	-	-	L
	26/00	47.6	173.2	972	-	-	L
	26/06	48.4	174.8	968	-	-	L
	26/12	48.9	176.4	970	-	-	L
	26/18	48.6	177.7	974	-	-	L
	27/00	48.2	179.7	978	-	-	L
	27/06	47.6	182.7	980	-	-	Out

TY IOKE (0612)

27 Aug. - 7 Sep.

Date/Time		Center Position		Central pressure	Max Wind	CI number	Grade
	(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)		
Aug.	27/06	17.6	180.5	925	100	6.5	Out
	27/12	17.2	179.5	925	100	6.0	TY
	27/18	16.9	178.6	925	100	6.5	TY
	28/00	16.6	177.6	925	100	6.5	TY
	28/06	16.3	176.7	925	100	6.5	TY
	28/12	16.1	175.9	925	100	6.5	TY
	28/18	16.2	175.2	925	100	6.5	TY
	29/00	16.1	174.3	925	100	6.5	TY
	29/06	16.2	173.4	925	100	6.5	TY
	29/12	16.2	172.6	925	100	6.5	TY
	29/18	16.5	171.9	925	100	6.5	TY
	30/00	16.6	171.3	920	105	6.5	TY
	30/06	17.1	170.6	920	105	6.5	TY
	30/12	17.4	169.9	920	105	6.5	TY
	30/18	18.1	169.2	920	105	6.5	TY
	31/00	18.7	168.3	920	105	6.5	TY
	31/06	19.3	167.5	920	105	6.5	TY
	31/12	19.7	166.4	925	100	6.5	TY
	31/18	20.2	165.4	925	100	6.5	TY
Sep.	01/00	20.7	164.5	925	100	6.5	TY
	01/06	21.3	163.5	925	100	5.5	TY
	01/12	21.8	162.4	930	100	5.5	TY
	01/18	22.4	161.0	935	95	5.5	TY
	02/00	23.0	159.3	940	95	5.5	TY
	02/06	23.6	157.7	945	90	5.5	TY
	02/12	24.0	156.3	945	85	5.5	TY
	02/18	24.5	155.0	945	85	5.0	TY
	03/00	25.1	153.6	945	85	5.0	TY
	03/06	25.6	152.6	945	85	5.0	TY
	03/12	26.6	151.8	950	85	5.0	TY
	03/18	27.5	150.8	950	85	5.0	TY
	04/00	28.7	150.2	955	80	4.5	TY
	04/06	29.7	149.0	955	80	4.5	TY
	04/12	30.8	148.0	960	75	4.0	TY
	04/18	32.4	147.5	960	70	4.0	TY
	05/00	34.1	147.2	965	65	3.5	TY
	05/06	35.7	147.5	965	65	3.5	TY
	05/12	37.4	149.1	965	65	3.5	TY
	05/18	40.0	150.9	970	65	3.0	TY
	06/00	42.2	153.1	975	60	2.5	STS
	06/06	44.9	156.7	980	55	2.0	STS
	06/12	47.6	161.2	980	55	1.5	STS
	06/18	51.9	166.2	982	-	1.5	L
	07/00	54.1	169.7	976	-	1.5	L
	07/06	55.4	176.2	974	-	-	L
	07/12	55.8	181.0	970	-	-	Out

STS BEBINCA (0616)

28 Sep. - 6 Oct.

Date/Time		Center Position		Central pressure	Max Wind	CI number	Grade
	(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)		
Sep.	28/12	12.9	143.5	1004	-	-	TD
	28/18	12.6	143.0	1002	-	-	TD
	29/00	12.3	142.6	1002	-	-	TD
	29/06	12.2	142.2	1002	-	-	TD
	29/12	12.0	141.7	1002	-	-	TD
	29/18	11.8	141.2	1000	-	-	TD
	30/00	11.9	140.4	1002	-	-	TD
	30/06	12.1	139.7	1000	-	-	TD
	30/12	12.5	138.8	1000	-	-	TD
	30/18	13.0	137.7	998	-	-	TD
Oct.	01/00	13.3	136.5	998	-	-	TD
	01/06	13.7	135.1	996	-	-	TD
	01/12	13.9	134.4	996	-	-	TD
	01/18	14.1	133.5	994	-	-	TD
	02/00	14.3	132.7	994	-	1.5	TD
	02/06	14.4	131.9	992	-	1.5	TD
	02/12	14.6	131.6	992	-	1.5	TD
	02/18	15.0	131.3	992	-	1.5	TD
	03/00	15.4	131.2	992	35	1.5	TS
	03/06	15.9	131.2	990	35	1.5	TS
	03/12	17.3	131.8	990	35	2.0	TS
	03/18	18.4	131.8	985	40	2.5	TS
	04/00	19.3	131.6	985	40	2.5	TS
	04/06	20.6	131.8	985	45	2.5	TS
	04/12	22.1	132.7	985	45	2.5	TS
	04/18	23.3	133.6	980	50	2.5	STS
	05/00	24.5	134.5	980	50	2.5	STS
	05/06	25.7	135.6	980	50	2.5	STS
	05/12	26.7	136.6	980	50	2.5	STS
	05/18	27.9	137.6	980	45	2.0	TS
	06/00	29.1	138.7	980	40	2.0	TS
	06/06	29.7	140.4	982	-	-	TD
	06/12						Dissip.

TY SHANSHAN (0613)

9 Sep. - 23 Sep.

Date/Time		Center Position		Central pressure	Max Wind	CI number	Grade
	(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)		
Sep.	09/00	13.3	138.7	1006	-	-	TD
	09/06	13.8	138.2	1004	-	-	TD
	09/12	14.3	137.4	1004	-	-	TD
	09/18	15.0	136.8	1004	-	-	TD
	10/00	15.5	136.1	1004	-	-	TD
	10/06	16.3	135.1	1002	-	2.0	TD
	10/12	16.8	134.8	998	35	2.5	TS
	10/18	17.7	134.4	994	40	3.0	TS
	11/00	18.1	134.0	990	50	3.0	STS
	11/06	18.5	133.7	985	55	3.5	STS
	11/12	18.8	133.2	975	65	4.0	TY
	11/18	19.3	132.6	960	80	4.5	TY
	12/00	19.4	132.1	950	85	5.5	TY
	12/06	19.7	131.6	950	85	5.5	TY
	12/12	20.1	131.0	950	85	5.5	TY
	12/18	20.1	130.1	950	85	5.5	TY
	13/00	20.1	129.0	950	85	5.5	TY
	13/06	20.2	128.3	950	85	5.5	TY
	13/12	20.3	127.6	950	85	5.5	TY
	13/18	20.3	126.8	950	85	5.5	TY
	14/00	20.3	126.1	950	85	5.5	TY
	14/06	20.3	125.5	950	85	5.5	TY
	14/12	20.4	125.0	950	85	5.5	TY
	14/18	20.8	124.5	950	85	5.5	TY
	14/21	21.2	124.4	945	90	-	TY
	15/00	21.6	124.3	945	90	5.5	TY
	15/03	21.8	124.1	940	90	-	TY
	15/06	22.1	124.0	935	95	6.0	TY
	15/09	22.6	124.0	930	100	-	TY
	15/12	23.1	123.8	925	105	6.5	TY
	15/15	23.6	123.8	919	110	-	TY
	15/18	24.0	123.8	919	110	6.5	TY
	15/20	24.3	123.9	919	110	-	TY
	15/21	24.4	124.0	919	110	-	TY
	16/00	24.9	124.2	925	105	6.5	TY
	16/03	25.5	124.3	925	105	-	TY
	16/06	26.0	124.8	925	105	6.5	TY
	16/09	26.5	125.4	925	105	-	TY
	16/12	27.1	125.9	930	100	6.5	TY
	16/15	27.8	126.4	935	95	-	TY
	16/18	28.6	127.1	945	85	5.5	TY
	16/21	29.4	127.5	945	85	-	TY
	17/00	30.3	128.0	945	85	5.5	TY
	17/03	31.3	128.6	945	85	-	TY
	17/06	32.1	129.1	950	80	5.0	TY
	17/09	32.9	129.8	950	80	-	TY
	17/12	34.0	130.4	965	70	4.5	TY
	17/15	34.8	130.9	970	65	-	TY
	17/18	35.8	131.4	975	60	4.0	TY
	17/21	36.4	131.8	975	60	-	STS
	18/00	37.1	132.4	980	55	3.5	STS
	18/03	37.6	132.8	980	55	-	STS
	18/06	38.4	133.4	985	50	3.0	STS
	18/09	39.4	134.1	985	50	-	STS
	18/12	40.1	134.6	986	-	2.5	L
	18/18	41.1	135.0	988	-	2.0	L
	19/00	41.9	135.6	990	-	2.0	L
	19/06	42.9	136.5	992	-	2.0	L
	19/12	43.7	138.3	992	-	2.0	L
	19/18	44.2	140.2	992	-	2.0	L
	20/00					2.0	Dissip.

TY XANGSANE (0615)

25 Sep. - 2 Oct.

Date/Time		Center Position		Central pressure	Max Wind	CI number	Grade
	(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)		
Sep.	25/00	11.8	129.1	1008	-	-	TD
	25/06	11.8	128.8	1006	-	-	TD
	25/12	11.8	128.4	1004	-	-	TD
	25/18	11.9	128.1	1002	-	-	TD
	26/00	11.9	127.6	1000	35	3.0	TS
	26/06	12.0	127.2	985	50	4.0	STS
	26/12	12.2	126.8	975	60	4.5	STS
	26/18	12.3	126.1	970	65	5.0	TY
	27/00	12.5	125.5	960	75	5.5	TY
	27/06	12.9	124.6	940	85	6.5	TY
	27/12	13.2	123.6	950	75	6.5	TY
	27/18	13.6	122.7	960	70	5.5	TY
	28/00	13.9	121.7	970	65	5.0	TY
	28/06	14.6	120.4	975	60	4.5	STS
	28/12	15.2	119.3	975	60	4.0	STS
	28/18	15.0	118.0	965	65	4.5	TY
	29/00	15.3	116.8	960	70	5.0	TY
	29/06	15.6	115.7	960	75	5.0	TY
	29/12	15.7	114.5	955	75	5.0	TY
	29/18	15.6	113.3	950	80	5.5	TY
	30/00	15.6	112.5	950	80	5.5	TY
	30/06	15.7	111.6	950	80	5.5	TY
	30/12	16.0	110.7	960	75	5.5	TY
	30/18	16.0	109.7	965	75	5.5	TY
Oct.	01/00	16.1	108.6	965	70	5.5	TY
	01/06	15.6	107.4	970	65	5.0	TY
	01/12	15.4	106.4	980	55	4.5	STS
	01/18	15.7	105.5	996	40	4.0	TS
	02/00	15.7	104.4	1000	-	4.0	TD
	02/06	15.7	104.1	1000	-	-	TD
	02/12	15.8	103.8	1002			TD

TS RUMBIA (0617)

2 Oct. - 6 Oct.

Date/Time	(UTC)	Center Position Lat (N)	Lon (E)	Central pressure (hPa)	Max Wind (kt)	CI number	Grade
Oct.	02/12	17.7	151.0	998	-	-	TD
	02/18	18.5	152.5	996	-	-	TD
	03/00	19.7	154.0	996	-	-	TD
	03/06	20.1	154.1	994	35	-	TS
	03/12	20.6	154.0	992	35	2.0	TS
	03/18	21.3	153.6	990	40	2.5	TS
	04/00	21.8	152.9	990	45	2.5	TS
	04/06	21.9	152.5	985	45	2.5	TS
	04/12	22.0	152.2	985	45	2.5	TS
	04/18	22.2	152.1	985	45	2.5	TS
	05/00	22.6	152.0	985	45	2.5	TS
	05/06	23.1	152.0	985	45	2.5	TS
	05/12	23.6	152.0	985	45	2.5	TS
	05/18	24.6	151.4	990	35	2.0	TS
	06/00	26.7	151.8	992	-	1.5	TD
	06/06	30.0	151.0	992	-	1.0	TD
	06/12						Dissip.

TY UTOR (0622)

7 Dec. - 15 Dec.

Date/Time	(UTC)	Center Position Lat (N)	Lon (E)	Central pressure (hPa)	Max Wind (kt)	CI number	Grade
Dec.	07/00	9.1	136.6	1006	-	-	TD
	07/06	9.1	135.8	1004	-	1.5	TD
	07/12	9.4	134.7	1004	-	2.0	TD
	07/18	10.3	133.1	998	35	2.5	TS
	08/00	10.5	131.5	994	40	2.5	TS
	08/06	10.6	130.2	990	45	3.0	TS
	08/12	10.6	128.8	980	55	3.5	STS
	08/18	10.9	127.9	975	60	4.0	STS
	09/00	11.0	126.9	975	60	4.0	STS
	09/06	11.3	125.4	975	60	4.0	STS
	09/12	11.6	124.1	970	65	4.5	TY
	09/18	12.0	122.7	965	70	5.0	TY
	10/00	12.2	121.7	955	75	5.5	TY
	10/06	12.3	120.7	970	65	5.0	TY
	10/12	12.5	120.2	980	60	4.0	STS
	10/18	12.8	119.6	985	55	4.0	STS
	11/00	13.2	118.5	985	55	4.0	STS
	11/06	13.5	117.8	985	55	4.5	STS
	11/12	13.8	117.1	980	60	5.0	STS
	11/18	14.0	116.5	970	65	5.0	TY
	12/00	14.3	115.8	960	70	5.0	TY
	12/06	14.8	114.8	955	80	6.0	TY
	12/12	15.5	114.0	945	85	6.0	TY
	12/18	16.0	113.2	945	85	6.0	TY
	13/00	16.5	112.7	955	80	6.0	TY
	13/06	16.8	112.4	970	70	6.0	TY
	13/12	17.2	112.2	975	65	5.5	TY
	13/18	17.6	112.2	985	55	5.0	STS
	14/00	17.9	112.5	998	40	5.0	TS
	14/06	18.0	113.0	1006	-	4.5	TD
	14/12	17.8	113.4	1008	-	-	TD
	14/18	17.5	113.5	1010	-	-	TD
	15/00	17.3	113.3	1012	-	-	TD
	15/06	17.0	113.0	1010	-	-	TD
	15/12						Dissip.

TY TRAMI (0623)

15 Dec. - 6 Dec.

Date/Time	(UTC)	Center Position Lat (N)	Lon (E)	Central pressure (hPa)	Max Wind (kt)	CI number	Grade
Dec.	15/06	7.7	156.9	1006	-	-	TD
	15/12	8.5	154.5	1008	-	-	TD
	15/18	9.1	152.1	1008	-	-	TD
	16/00	9.5	149.8	1008	-	-	TD
	16/06	9.6	147.8	1006	-	-	TD
	16/12	9.7	146.0	1008	-	-	TD
	16/18	10.0	143.9	1006	-	-	TD
	17/00	10.7	141.4	1006	-	2.0	TD
	17/06	12.0	139.9	1004	-	2.0	TD
	17/12	13.4	138.4	1000	35	2.5	TS
	17/18	14.9	137.4	1000	35	2.5	TS
	18/00	15.7	136.5	1000	35	2.5	TS
	18/06	16.0	135.3	1000	35	2.5	TS
	18/12	15.1	133.4	1000	35	2.5	TS
	18/18	14.3	131.8	1004	-	2.0	TD
	19/00	13.6	130.3	1008	-	1.5	TD
	19/06	13.2	129.1	1008	-	-	TD
	19/12	12.8	127.7	1008	-	-	TD
	19/18	12.5	126.3	1008	-	-	TD
	20/00	12.4	125.1	1010	-	-	TD
	20/06	12.8	123.9	1008	-	-	TD
	20/12						Dissip.

TY SOULIK (0618)

8 Oct. - 17 Oct.

Date/Time	(UTC)	Center Position Lat (N)	Lon (E)	Central pressure (hPa)	Max Wind (kt)	CI number	Grade
Oct.	08/12	13.3	160.0	1004	-	-	TD
	08/18	14.3	158.4	1004	-	-	TD
	09/00	14.9	157.5	1002	-	-	TD
	09/06	15.7	156.4	1002	-	1.5	TD
	09/12	16.1	155.3	1002	35	2.0	TS
	09/18	16.8	154.2	1000	35	2.5	TS
	10/00	17.6	153.2	1000	35	2.5	TS
	10/06	18.2	152.3	996	35	3.0	TS
	10/12	18.9	150.5	994	40	3.0	TS
	10/18	19.2	148.8	985	50	3.0	STS
	11/00	20.1	146.5	985	50	3.5	STS
	11/06	20.4	145.0	980	55	4.0	STS
	11/12	20.9	143.5	975	60	4.0	STS
	11/18	21.3	142.6	975	60	4.0	STS
	12/00	21.8	141.8	975	60	4.0	STS
	12/06	22.7	141.5	975	60	4.0	STS
	12/12	23.2	141.1	970	65	4.0	TY
	12/18	23.5	141.0	970	65	4.0	TY
	13/00	23.6	141.0	965	65	4.0	TY
	13/06	23.7	141.1	960	70	4.5	TY
	13/12	23.8	141.1	960	70	5.0	TY
	13/18	24.0	141.1	960	70	5.0	TY
	14/00	24.3	141.2	960	70	5.0	TY
	14/06	24.8	140.9	955	75	5.0	TY
	14/09	25.0	140.9	955	75	-	TY
	14/12	25.4	141.1	960	75	5.0	TY
	14/15	25.9	141.1	960	75	-	TY
	14/18	26.3	141.1	960	75	5.0	TY
	14/21	26.9	141.3	965	75	-	TY
	15/00	27.3	141.6	965	70	5.0	TY
	15/03	28.1	141.9	965	70	-	TY
	15/06	29.0	142.3	965	70	4.5	TY
	15/09	29.6	143.3	965	70	-	TY
	15/12	30.5	143.9	965	70	4.5	TY
	15/18	32.3	146.2	970	65	4.0	TY
	16/00	33.5	149.0	975	60	3.5	STS
	16/06	36.0	152.6	975	55	3.0	STS
	16/12	37.6	157.0	982	-	2.5	L
	16/18	38.0	162.1	984	-	-	L
	17/00	38.2	166.5	992	-	-	L
	17/06	38.0	171.5	996	-	-	L
	17/12						Dissip.

TY DURIAN (0621)

25 Nov. - 6 Dec.

Date/Time	(UTC)	Center Position Lat (N)	Lon (E)	Central pressure (hPa)	Max Wind (kt)	CI number	Grade
Nov.	25/06	9.6	147.2	1004	-	-	TD
	25/12	9.5	146.1	1004	-	-	TD
	25/18	9.6	145.1	1004	-	-	TD
	26/00	10.0	144.0	1002	-	-	TD
	26/06	10.1	142.7	1002	-	2.5	TD
	26/12	10.0	141.4	1000	35	2.5	TS
	26/18	9.9	140.3	1000	35	2.5	TS
	27/00	9.9	139.2	1000	40	2.5	TS
	27/06	10.3	138.5	998	40	2.5	TS
	27/12	10.6	137.7	994	45	3.0	TS
	27/18	10.8	136.1	990	50	3.0	STS
	28/00	11.3	134.6	985	50	3.5	STS
	28/06	11.9	133.1	980	55	4.5	STS
	28/12	12.2	131.4	975	60	5.0	STS
	28/18	12.6	130.1	965	70	5.5	TY
	29/00	13.0	128.6	950	80	6.0	TY
	29/06	13.2	127.3	925	100	7.0	TY
	29/12	13.3	126.4	915	105	7.0	TY
	29/18	13.4	125.4	925	100	7.0	TY
	30/00	13.4	124.6	940	90	7.0	TY
	30/06	13.4	123.6	940	90	6.0	TY
	30/12	13.5	122.4	950	80	6.0	TY
	30/18	13.5	121.2	960	75	5.5	TY
Dec.	01/00	13.6	120.3	960	75	5.0	TY
	01/06	13.5	119.6	965	70	4.5	TY
	01/12	13.4	118.6	965	70	4.5	TY
	01/18	13.4	118.0	965	70	4.5	TY
	02/00	13.7	117.0	965	70	4.5	TY
	02/06	13.7	116.4	965	70	4.5	TY
	02/12	13.9	115.6	965	70	4.5	TY
	02/18	13.9	114.7	960	75	5.0	TY
	03/00	13.9	114.0	955	75	5.0	TY
	03/06	13.8	113.3	955	75	5.0	TY
	03/12	13.5	112.9	955	75	5.5	TY
	03/18	13.1	112.0	960	75	5.5	TY
	04/00	12.5	111.3	970	65	5.5	TY
	04/06	11.5	110.3	980	60	5.0	STS
	04/12	10.8	109.7	980	60	5.0	STS
	04/18	10.4	108.4	980	60	5.0	STS
	05/00	10.0	107.0	990	45	4.5	TS
	05/06	9.1	105.6	1004	-	4.0	TD
	05/12	8.7	103.0	1006	-	3.5	TD
	05/18	9.3	101.3	1008	-	-	TD
							Out

TY CIMARON (0619)

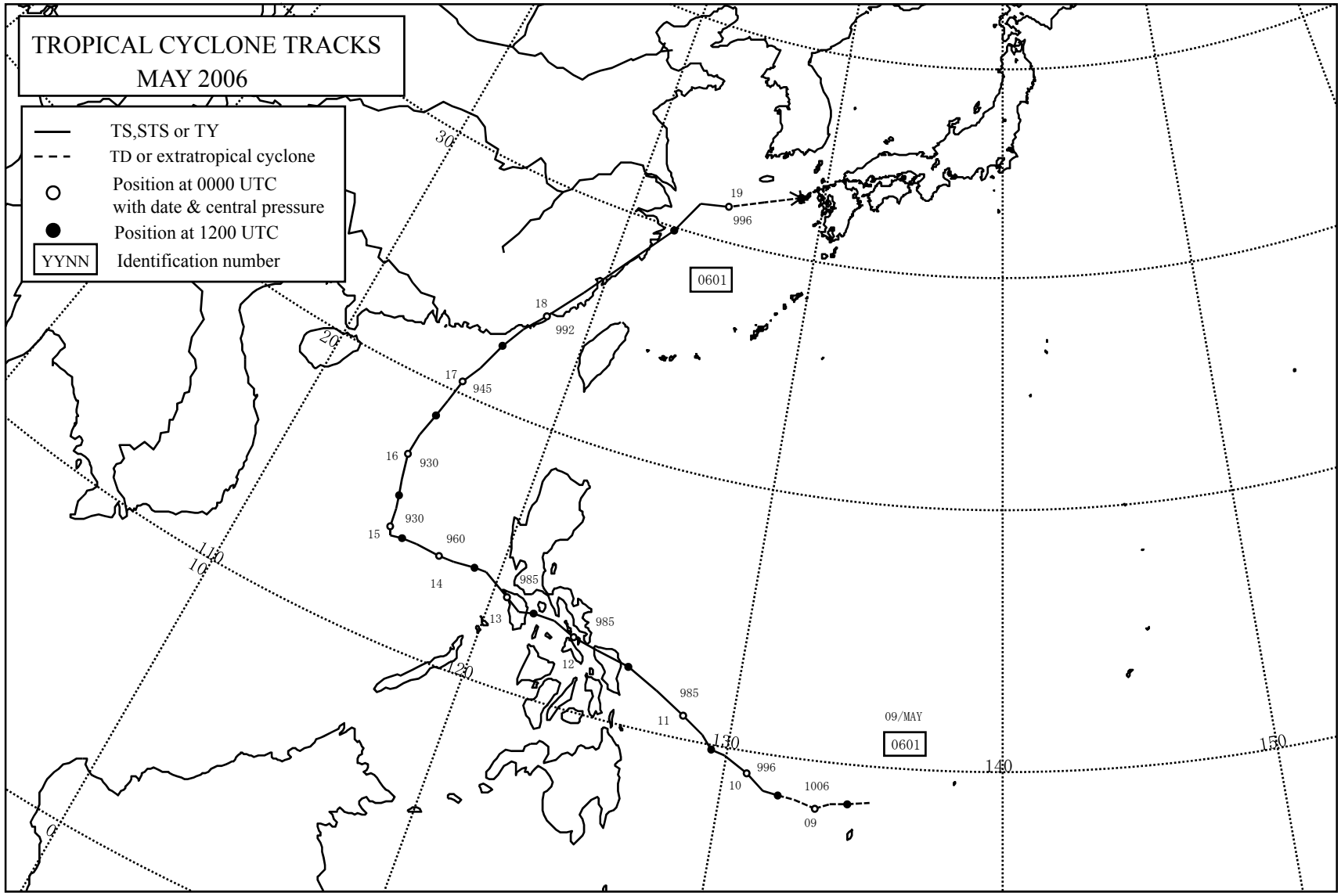
25 Oct. - 6 Nov.

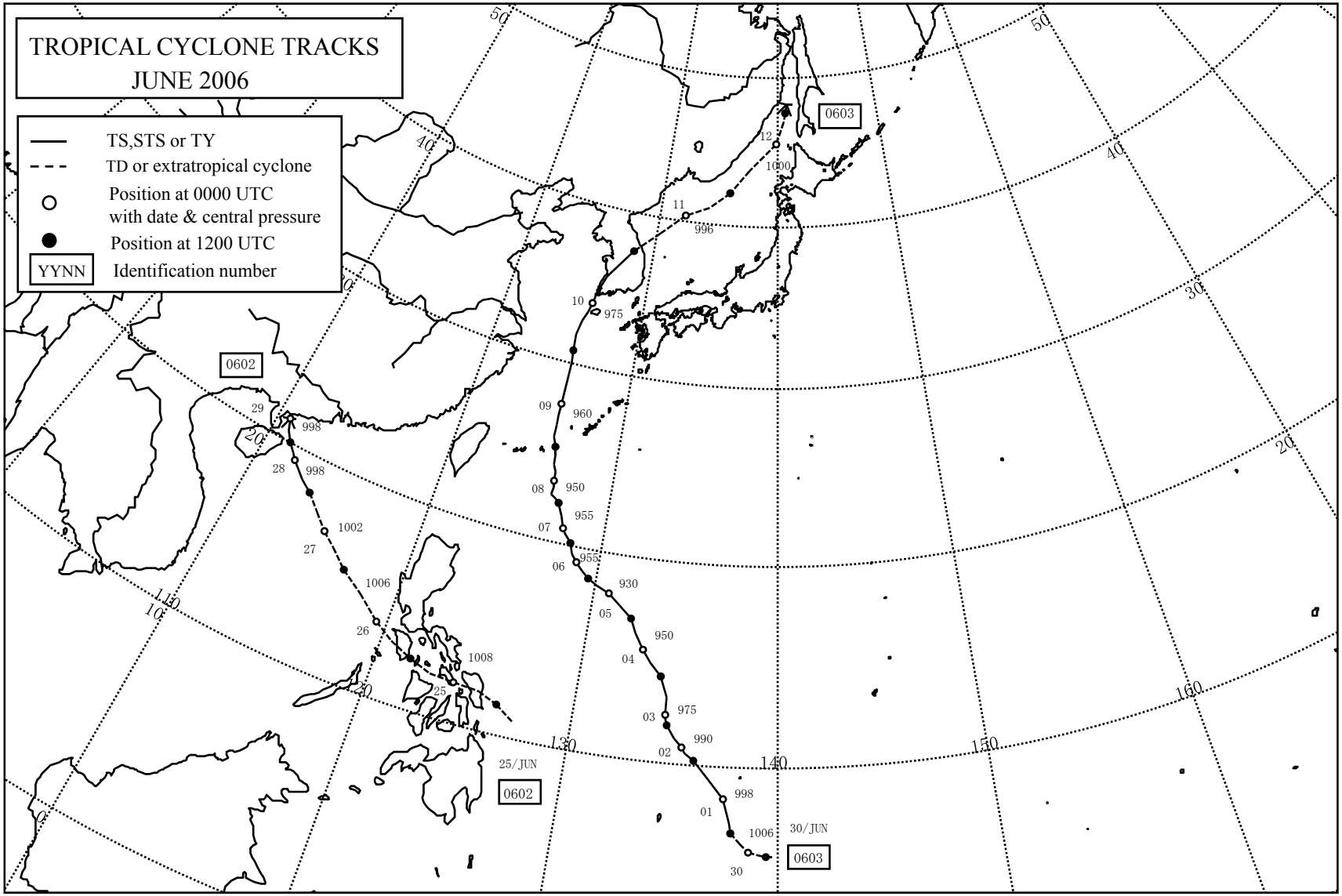
Date/Time	(UTC)	Center Position Lat (N)	Lon (E)	Central pressure (hPa)	Max Wind (kt)	CI number	Grade
Oct.	25/06	12.3	141.6	1006	-	-	TD
	25/12	12.1	140.3	1008	-	-	TD
	25/18	12.0	138.9	1006	-	-	TD
	26/00	11.9	137.8	1008	-	-	TD
	26/06	11.9	136.5	1006	-	-	TD
	26/12	11.9	134.9	1006	-	-	TD
	26/18	12.2	133.4	1006	-	-	TD
	27/00	12.5	132.2	1004	-	-	TD
	27/06	13.0	131.0	1000	35	-	TS
	27/12	13.5	130.3	992	45	4.0	TS
	27/18	14.0	129.1	985	50	4.5	STS
	28/00	14.3	128.2	980	55	5.0	STS
	28/06	14.9	127.2	975	65	5.5	TY
	28/12	15.3	126.4	960	75	6.0	TY
	28/18	15.7	125.7	950	90	7.0	TY
	29/00	16.0	124.7	930	95	7.5	TY
	29/06	16.3	123.6	920	100	7.5	TY
	29/12	16.5	122.6	920	100	7.5	TY
	29/18	16.7	121.3	945	90	6.5	TY
	30/00	17.0	119.8	955	80	6.0	TY
	30/06	16.7	118.8	960	80	5.5	TY
	30/12	16.7	118.6	965	80	5.5	TY
	30/18	17.1	117.8	965	80	5.5	TY
	31/00	17.4	117.2	965	80	5.5	TY
	31/06	17.8	116.8	965	80	5.5	TY
	31/12	18.1	116.5	965	80	5.5	TY
	31/18	18.5	116.3	965	80	5.5	TY
Nov.	01/00	18.7	116.3	955	80	5.5	TY
	01/06	18.9	116.3	950	85	6.0	TY
	01/12	19.0	116.3	945	90	6.0	TY
	01/18	19.1	116.4	945	90	6.0	TY
	02/00	19.1	116.5	950	85	6.0	TY
	02/06	19.0	116.6	960	75	4.5	TY
	02/12	18.8	116.6	965	65	4.5	TY
	02/18	18.0	116.4	970	60	4.0	STS
	03/00	17.5	116.2	975	55	3.5	STS
	03/06	17.2	116.1	980	55	3.0	STS
	03/12	16.9	116.0	985	50	2.5	STS
	03/18	16.7	115.9	990	45	2.5	TS
	04/00	16.5	115.8	996	40	2.5	TS
	04/06	16.3	115.8	1000	35	2.5	TS
	04/12	16.1	115.7	1002	-	2.5	TD
	04/18	15.7	115.5	1002	-	2.5	TD
	05/00	15.5	115.2	1002	-	2.5	TD
	05/06	15.1	114.9	1002	-	2.5	TD
	05/12	14.8	114.6	1002	-	2.5	TD
	05/18	14.6	114.3	1002	-	2.5	TD
	06/00	14.5	114.0	1002	-	2.0	TD
	06/06	14.2	112.8	1004	-	-	TD
	06/12	13.5	112.1	1006	-	-	TD
	06/18	12.5	111.4	1008	-	-	TD
	07/00						Dissip.

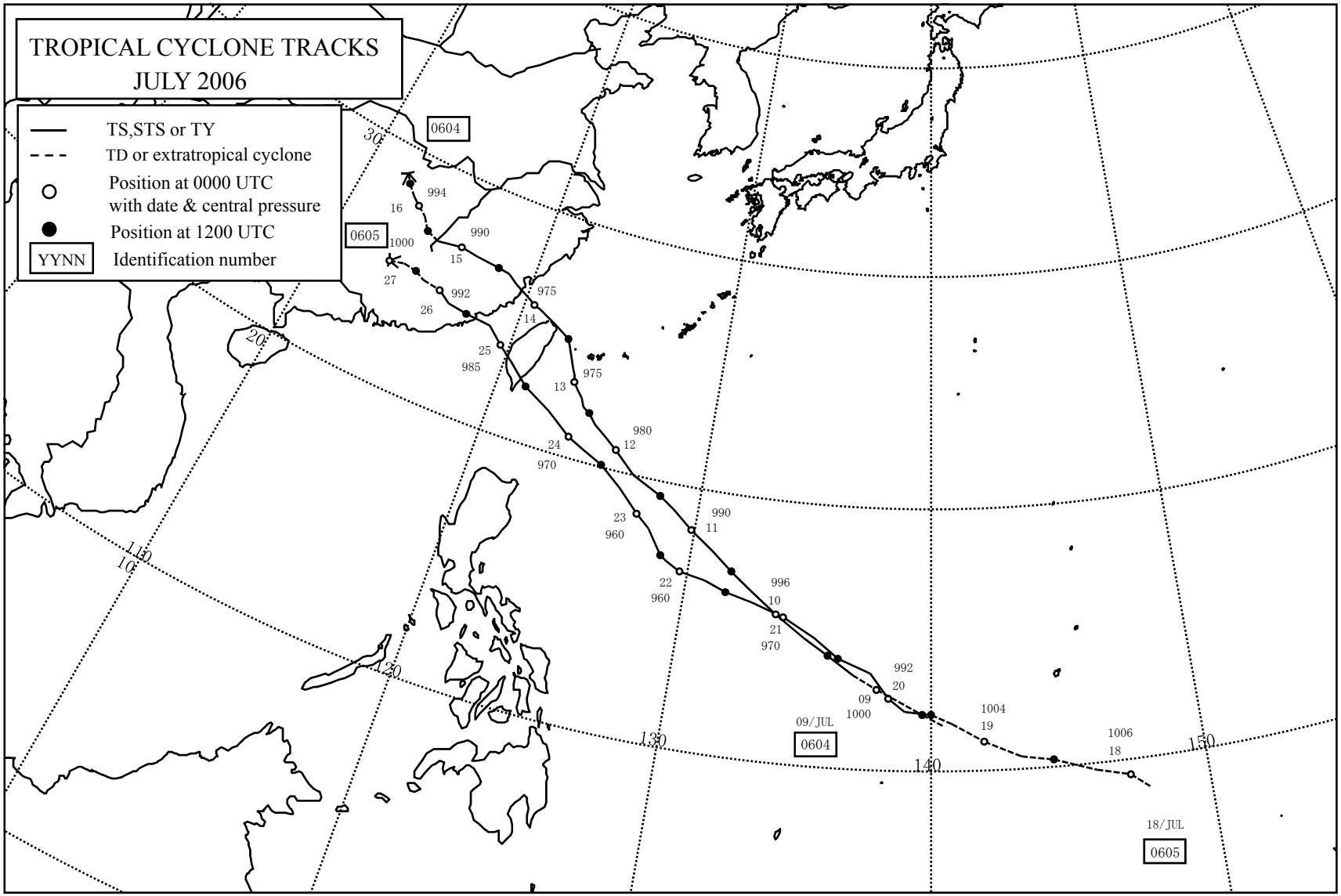
TY CHEBI (0620)

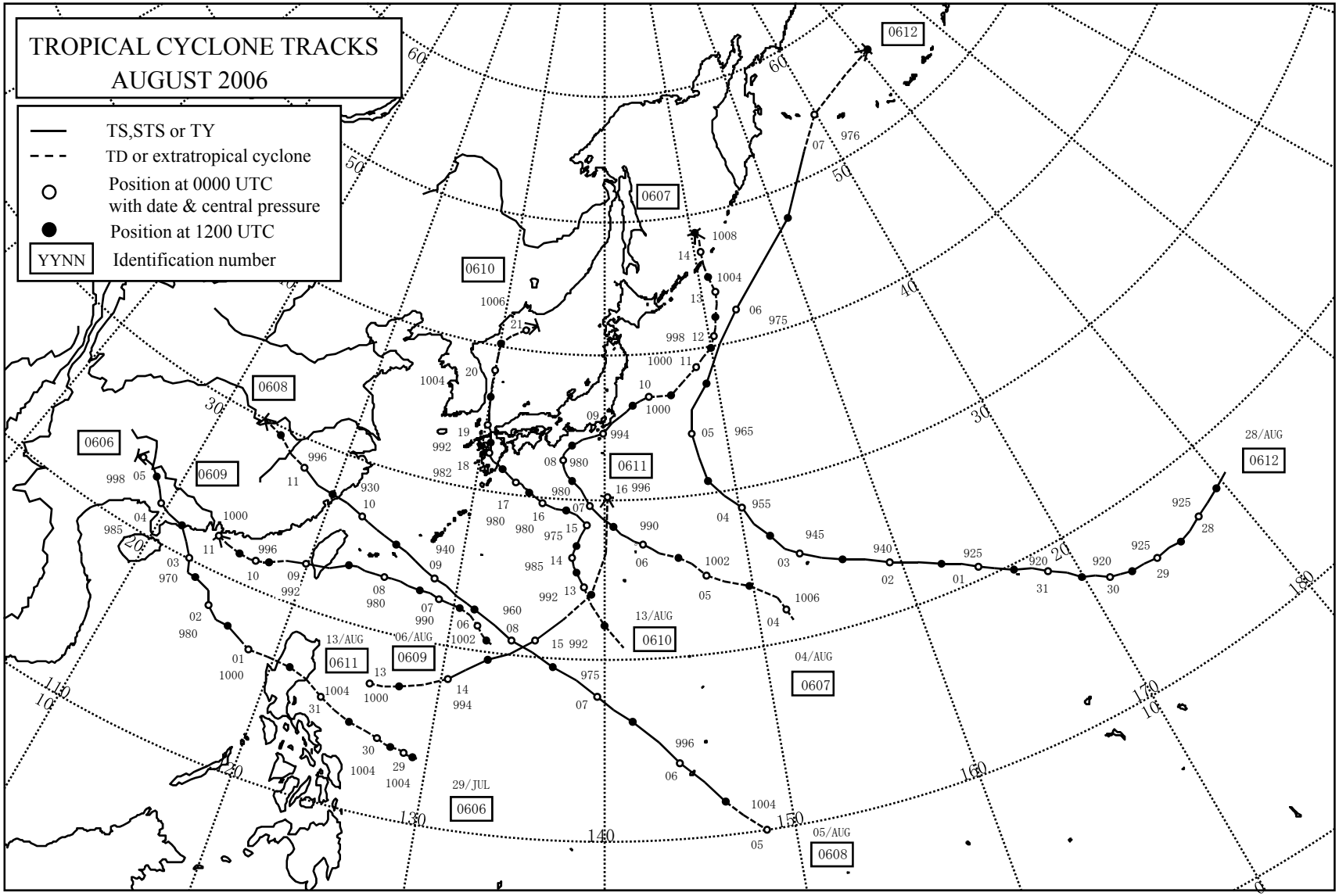
8 Nov. - 14 Nov.

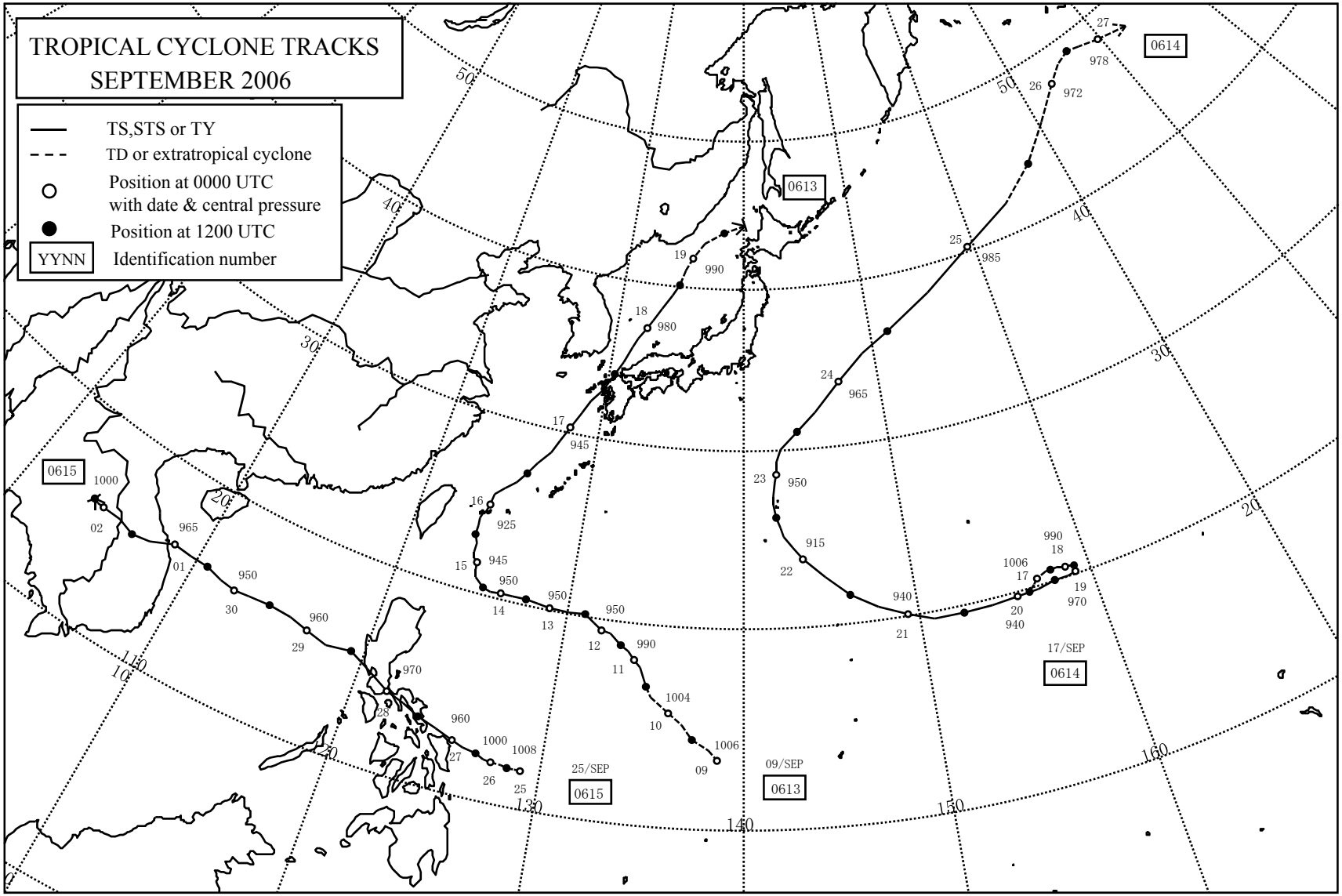
Date/Time	(UTC)	Center Position Lat (N)	Lon (E)	Central pressure (hPa)	Max Wind (kt)	CI number	Grade
Nov.	08/06	15.6	136.9	1008	-	-	TD
	08/12	15.6	135.5	1008	-	-	TD
	08/18	15.6	134.3	1008	-	-	TD
	09/00	15.8	132.7	1008	-	-	TD
	09/06	15.9	131.3	1006	-	-	TD
	09/12	15.9	130.1	1000	35	5.0	TS
	09/18	16.1	128.6	994	45	5.5	TS
	10/00	16.1	127.2	985	55	6.0	STS
	10/06	16.2	125.6	945	90	7.0	TY
	10/12	16.2	124.2	925	100	7.0	TY
	10/18	16.3	122.8	930	95	7.0	TY
	11/00	15.9	121.6	940	90	6.0	TY
	11/06	15.8	120.4	960	80	5.5	TY
	11/12	15.2	119.4	960	80	5.5	TY
	11/18	14.9	118.4	975	65	5.0	TY
	12/00	14.9	117.5	975	65	4.5	TY
	12/06	15.0	116.7	985	55	4.0	STS
	12/12	15.1	115.7	985	55	3.5	STS
	12/18	15.3	114.7	990	50	3.0	STS
	13/00	15.5	113.7	990	40	3.0	TS
	13/06	16.0	112.9	1000	35	3.0	TS
	13/12	16.3	112.3	1006	-	3.0	TD
	13/18	16.7	111.8	1008	-	2.5	TD
	14/00	17.0	111.5	1010	-	2.5	TD
	14/06	17.1	111.3	1010	-	2.5	TD
	14/12	17.1	111.1	1010	-	-	TD
	14/18	16.7	110.4	1012	-	-	TD
	15/00						Dissip.

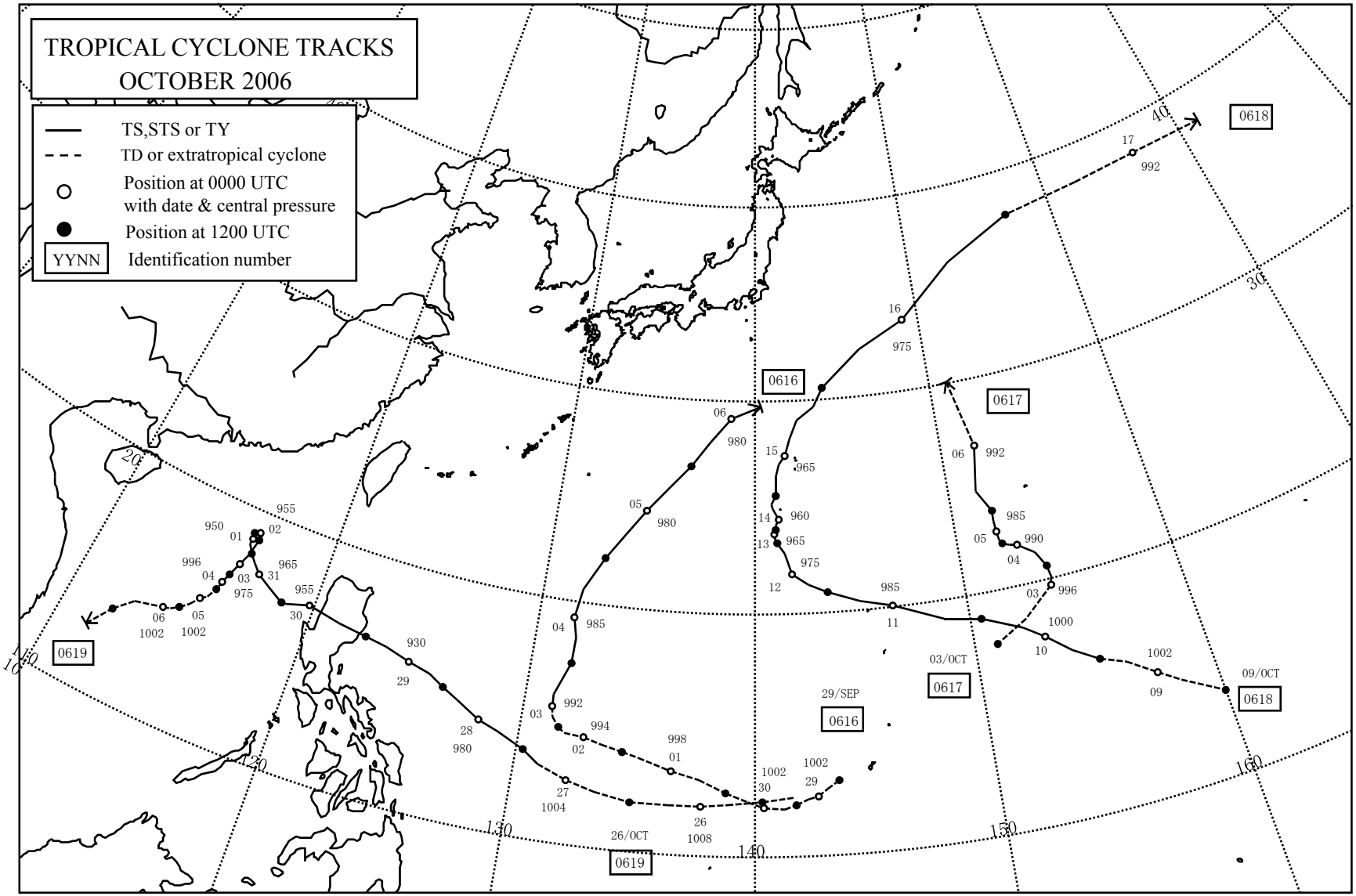

TROPICAL CYCLONE TRACKS
MAY 2006
TS,STS or TY
TD or extratropical cyclone
Position at 0000 UTC
with date & central pressure
Position at 1200 UTC
YYNN
Identification number
0601
0601
09/MAY
19
996
18
992
17
945
16
930
15
930
960
14
985
13
985
12
985
11
996
10
1006
09
30
20
110
10
120
130
140
150
0

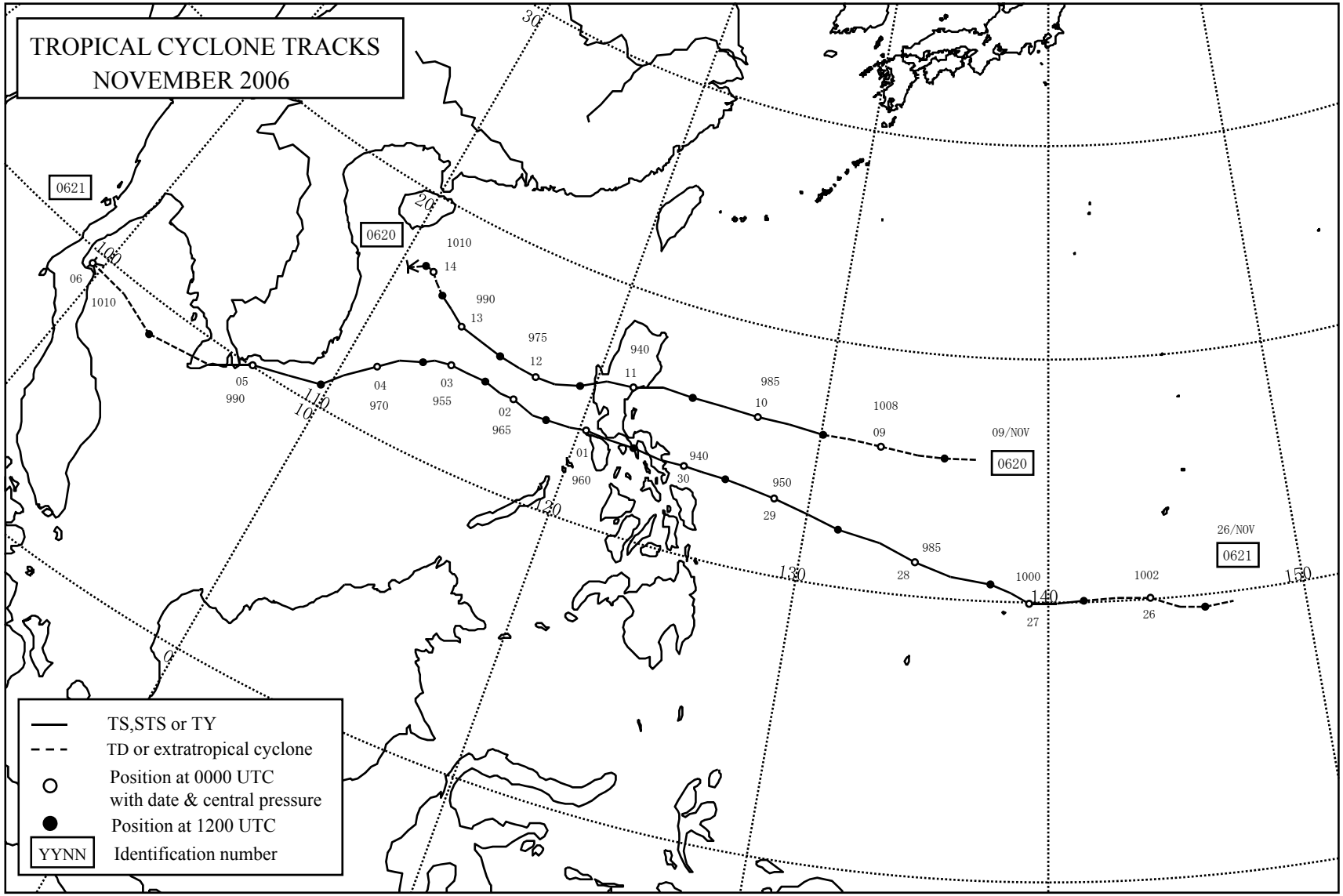

TROPICAL CYCLONE TRACKS
JUNE 2006
TS,STS or TY
TD or extratropical cyclone
Position at 0000 UTC
with date & central pressure
Position at 1200 UTC
YYNN Identification number
0602
0603
0602
0603
25/JUN
30/JUN
50
40
30
20
10
110
120
130
140
150
160
29 998
28 998
1002
27
1006
26
1008
25
09 960
08 950
955
07
955
06
930
05
950
04
975
03
990
02
998
01
1006
30
10 975
11 996
12 1000

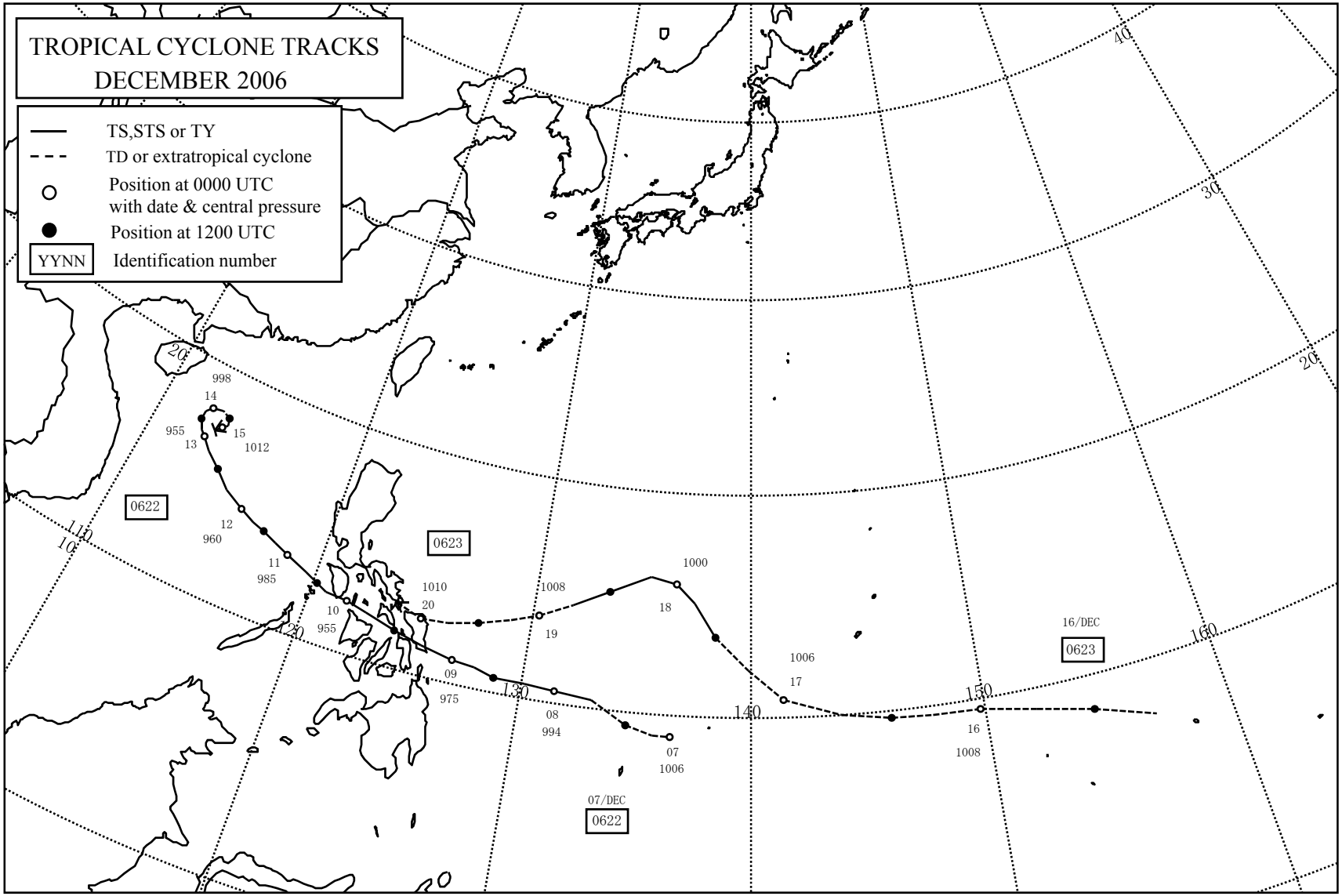

TROPICAL CYCLONE TRACKS
JULY 2006
TS,STS or TY
TD or extratropical cyclone
Position at 0000 UTC
with date & central pressure
Position at 1200 UTC
YYNN
Identification number
0604
0605
994
16
990
1000
15
27
992
975
26
14
25
985
975
13
980
24
12
970
990
23
11
960
996
22
10
960
21
970
992
20
09
1000
1004
19
1006
18
09/JUL
0604
18/JUL
0605
30
20
110
120
130
140
150


TROPICAL CYCLONE TRACKS
AUGUST 2006
TS,STS or TY
TD or extratropical cyclone
Position at 0000 UTC
with date & central pressure
Position at 1200 UTC
YYNN Identification number
0606
0607
0608
0609
0610
0611
0612
28/AUG
13/AUG
06/AUG
29/JUL
04/AUG
05/AUG
60
50
40
30
20
10
110
120
130
140
150
160
170
180


TROPICAL CYCLONE TRACKS
SEPTEMBER 2006
TS,STS or TY
TD or extratropical cyclone
Position at 0000 UTC
with date & central pressure
Position at 1200 UTC
YYNN Identification number
0615
0613
0614
25/SEP
09/SEP
17/SEP
10
20
30
40
50
110
120
130
140
150
160


TROPICAL CYCLONE TRACKS
OCTOBER 2006
TS,STS or TY
TD or extratropical cyclone
Position at 0000 UTC
with date & central pressure
Position at 1200 UTC
YYNN Identification number
0618
0616
0617
0619
0617
0618
0616
0619
03/OCT
09/OCT
29/SEP
26/OCT
40
30
20
10
120
130
140
150
160


TROPICAL CYCLONE TRACKS
NOVEMBER 2006
0621
0620
06
1010
05
990
04
970
03
955
02
965
01
960
1010
14
990
13
975
12
940
11
985
10
1008
09
09/NOV
0620
940
30
950
29
985
28
1000
27
1002
26
26/NOV
0621
30
20
10
0
110
120
130
140
150
TS,STS or TY
TD or extratropical cyclone
Position at 0000 UTC
with date & central pressure
Position at 1200 UTC
YYNN
Identification number


TROPICAL CYCLONE TRACKS
DECEMBER 2006
TS,STS or TY
TD or extratropical cyclone
Position at 0000 UTC
with date & central pressure
Position at 1200 UTC
YYNN
Identification number
0622
0623
0622
0623
07/DEC
16/DEC
998
955
1012
960
985
955
1010
1008
1000
1006
994
975
1008
1006
14
15
13
12
11
10
09
08
07
20
19
18
17
16
40
30
20
110
120
130
140
150
160

Track and Intensity Analysis and Forecast Errors for Each Tropical Cyclone in 2006

TY CHANCHU (0601)

Date/Time (UTC)	Center Position T=00(km)	T=24(km)	T=48(km)	T=72(km)	Central Pressure T=24(hPa)	T=48(hPa)	T=72(hPa)	Max. Wind T=24(kt)	T=48(kt)	T=72(kt)
May 09/12	33	90	218	249	7	0	0	-5	0	0
09/18	0	65	171	34	7	-5	-5	-5	5	5
10/00	22	35	132	70	0	-5	-5	0	5	5
10/06	25	88	54	238	-5	-5	-5	5	5	5
10/12	0	93	350	427	-5	-5	0	5	5	0
10/18	0	46	279	232	-10	-10	0	10	10	0
11/00	22	67	249	250	-10	-10	5	10	10	-5
11/06	0	127	320	310	-5	-5	10	5	5	-5
11/12	0	195	344	317	-5	-5	20	5	5	-10
11/18	0	260	378	341	-15	-10	15	15	10	-10
12/00	11	200	331	386	-5	5	20	10	-5	-15
12/06	0	124	299	341	0	15	20	5	-10	-15
12/12	0	55	125	209	-10	10	10	10	-5	-10
12/18	0	83	85	207	-10	10	10	10	-10	-10
13/00	0	55	78	128	5	20	15	-5	-15	-15
13/06	22	94	78	149	5	10	5	-5	-10	-5
13/12	11	60	72	186	15	10	0	-10	-10	0
13/18	11	68	70	134	15	10	0	-10	-10	0
14/00	0	49	49	171	15	10	-5	-15	-10	0
14/06	11	48	88	177	10	5	0	-10	-5	0
14/12	0	34	95	178	0	0	-10	-5	0	5
14/18	0	21	94	134	-10	0	-20	0	0	15
15/00	0	11	73	158	-15	-15	-32	5	5	30
15/06	0	69	141	146	-20	-15	-26	10	5	25
15/12	0	95	115	455	-15	-20	-23	10	10	20
15/18	0	99	164	213	-10	-30	-18	5	20	15
16/00	0	92	224	0	-5	-17		0	15	
16/06	0	109	158	0	5	-6		-5	5	
16/12	0	47	286	0	0	-8		-5	5	
16/18	0	46	318	0	-15	-8		10	5	
17/00	0	30	0	0	-22			20		
17/06	0	20	0	0	-21			20		
17/12	0	329	0	0	-8			5		
17/18	20	144	0	0	-4			0		
18/00	10	0	0	0						
18/06	24	0	0	0						
18/12	194	0	0	0						
18/18	11	0	0	0						

STS BILIS (0604)

Date/Time (UTC)	Center Position T=00(km)	T=24(km)	T=48(km)	T=72(km)	Central Pressure T=24(hPa)	T=48(hPa)	T=72(hPa)	Max. Wind T=24(kt)	T=48(kt)	T=72(kt)
Jul. 09/06	0	174	232	447	-4	-5	0	5	-5	0
09/12	45	138	217	477	-2	0	5	0	-5	0
09/18	76	25	148	226	0	0	5	-5	-5	0
10/00	0	122	256	304	0	5	5	-10	-5	-5
10/06	39	54	81	92	0	0	5	-10	0	0
10/12	53	11	105	90	0	0	-5	-5	5	10
10/18	91	39	85	216	-5	-5	-15	0	10	20
11/00	70	53	62	202	0	-10	-10	0	10	15
11/06	0	91	112	49	0	0	-5	0	5	5
11/12	25	76	162	134	-5	-5	0	10	10	0
11/18	0	63	211	317	-5	-5	0	10	10	0
12/00	0	174	363	396	-10	0	0	5	-5	-40
12/06	0	235	298	0	0	0		0	-10	
12/12	54	244	228	0	0	0		0	-5	
12/18	69	161	102	0	0	0		0	-5	
13/00	52	90	179	0	0	-5		0	5	
13/06	0	94	0	0	0			-5		
13/12	0	37	0	0	0			0		
13/18	0	78	0	0	0			-10		
14/00	0	46	0	0	0			0		
14/06	0	0	0	0						
14/12	0	0	0	0						
14/18	0	0	0	0						
15/00	53	0	0	0						

TY KAEMI (0605)

Date/Time (UTC)	Center Position T=00(km)	T=24(km)	T=48(km)	T=72(km)	Central Pressure T=24(hPa)	T=48(hPa)	T=72(hPa)	Max. Wind T=24(kt)	T=48(kt)	T=72(kt)
Jul. 19/12	0	92	221	238	5	20	20	-10	-25	-25
19/18	0	46	144	135	5	15	15	-10	-20	-20
20/00	22	143	240	145	10	15	15	-15	-20	-20
20/06	0	154	247	147	10	15	15	-15	-20	-20
20/12	0	171	239	152	10	10	5	-15	-15	-10
20/18	56	125	146	148	0	0	5	-5	-5	-10
21/00	0	153	168	159	0	0	0	-5	-5	-5
21/06	0	134	135	336	0	0	0	-5	-5	-5
21/12	11	169	108	263	-10	-5	-5	0	0	0
21/18	0	77	147	302	-10	-5	-15	0	0	5
22/00	0	105	150	251	-10	-10	-10	0	5	5
22/06	0	77	196	212	-10	-10	-10	0	5	10
22/12	0	64	216	297	-15	-15	-15	5	10	15
22/18	0	136	297	323	-15	-25	-15	5	15	20
23/00	0	149	276	0	-20	-25		10	20	
23/06	44	155	232	0	-20	-20		10	20	
23/12	0	136	253	0	-25	-25		15	20	
23/18	24	135	174	0	-30	-10		15	15	
24/00	22	126	0	0	-25			20		
24/06	46	137	0	0	-20			20		
24/12	98	97	0	0	-15			15		
24/18	79	52	0	0	-10			15		
25/00	10	0	0	0						
25/06	15	0	0	0						
25/12	0	0	0	0						
25/18	0	0	0	0						

TS JELAWAT (0602)

Date/Time (UTC)	Center Position T=00(km)	T=24(km)	T=48(km)	T=72(km)	Central Pressure T=24(hPa)	T=48(hPa)	T=72(hPa)	Max. Wind T=24(kt)	T=48(kt)	T=72(kt)
Jun. 27/12	39	76	0	0	-4			5		
27/18	57	35	0	0	-4			10		
28/00	84	0	0	0						
28/06	68	0	0	0						
28/12	22	0	0	0						
28/18	46	0	0	0						

TY EWINIAR (0603)

Date/Time (UTC)	Center Position T=00(km)	T=24(km)	T=48(km)	T=72(km)	Central Pressure T=24(hPa)	T=48(hPa)	T=72(hPa)	Max. Wind T=24(kt)	T=48(kt)	T=72(kt)
Jun. 30/18	0	250	294	337	0	0	15	5	-5	-15
Jul. 01/00	11	218	253	324	0	0	10	0	-5	-10
01/06	35	128	190	285	-10	5	10	10	-10	-15
01/12	77	110	122	212	-10	10	20	10	-10	-20
01/18	80	116	89	115	-5	10	20	0	-10	-20
02/00	55	90	57	101	0	10	20	-5	-10	-20
02/06	22	76	25	121	15	10	10	-20	-15	-10
02/12	0	108	68	86	25	25	0	-25	-25	-5
02/18	0	58	79	116	25	25	-5	-25	-25	0
03/00	0	102	170	143	15	25	-10	-15	-25	0
03/06	0	54	153	126	10	10	-10	-15	-10	0
03/12	0	53	149	120	5	-20	-25	-10	5	10
03/18	0	46	138	142	5	-25	-25	-10	10	10
04/00	0	109	148	151	5	-25	-25	-10	10	10
04/06	0	32	169	328	-5	-25	-25	0	10	10
04/12	0	84	183	324	-30	-35	-35	15	20	20
04/18	0	109	200	357	-35	-35	-30	20	20	20
05/00	0	130	212	282	-35	-35	-30	20	20	20
05/06	0	44	84	126	-35	-35	-30	20	20	20
05/12	0	11	82	91	-25	-25	-25	10	10	10
05/18	0	76	137	114	-20	-15	-25	5	5	10
06/00	0	59	56	56	-20	-15	-25	5	5	10
06/06	0	0	11	104	-20	-15	-30	5	5	15
06/12	10	15	73	97	-15	-15	-20	5	5	15
06/18	0	49	10	107	-10	-20	-20	5	10	15
07/00	0	30	35	130	0	-10	-15	0	5	15
07/06	0	38	217	453	0	-15	-15	0	10	20
07/12	0	60	229	0	-5	-20		0	15	
07/18	0	122	337	0	-5	-10		0	10	
08/00	15	151	329	0	-5	0		0	0	
08/06	0	154	309	0	-10	-10		5	15	
08/12	0	164	0	0	-5			5		
08/18	0	175	0	0	-10			10		
09/00	0	171	0	0	5			-5		
09/06	0	76	0	0	-5			10		
09/12	15	0	0	0						
09/18	112	0	0	0						
10/00	22	0	0	0						
10/06	29	0	0	0						

TY PRAPIROON (0606)

Date/Time (UTC)	Center Position T=00(km)	T=24(km)	T=48(km)	T=72(km)	Central Pressure T=24(hPa)	T=48(hPa)	T=72(hPa)	Max. Wind T=24(kt)	T=48(kt)	T=72(kt)
Aug. 01/06	0	112	237	378	15	10	-15	-15	-10	15
01/12	0	109	236	300	15	0	-19	-15	0	20
01/18	0	100	245	352	5	-10	-21	-5	5	25
02/00	55	123	240	0	-5	-15		5	15	
02/06	0	122	159	0	-10	-20		10	20	
02/12	0	182	223	0	-15	-14		15	15	
02/18	0	175	300	0	-20	-16		15	20	
03/00	0	152	0	0	-15			15		
03/06	0	121	0	0	-15			15		
03/12	0	33	0	0	-9			10		
03/18	0	108	0	0	-6			10		
04/00	0	0	0	0						
04/06	0	0	0	0						
04/12	0	0	0	0						
04/18	0	0	0	0						

TY MARIA (0607)

Date/Time (UTC)	Center Position T=00(km)	T=24(km)	T=48(km)	T=72(km)	Central Pressure T=24(hPa)	T=48(hPa)	T=72(hPa)	Max. Wind T=24(kt)	T=48(kt)	T=72(kt)
Aug. 05/18	0	67	281	736	10	5	-10	-20	-15	5
06/00	11	103	339	1041	5	0	-14	-15	-10	5
06/06	0	87	346	1215	5	0	-16	-15	-5	10
06/12	0	116	540	1452	5	-5	-18	-15	0	15
06/18	0	125	516	1059	5	-10	-15	-15	5	10
07/00	0	130	632	1127	0	-9	-10	-10	0	5
07/06	0	143	524	0	0	-6		-5	-5	
07/12	48	90	548	0	-5	-2		0	-5	
07/18	57	98	484	0	-5	-4		5	-5	
08/00	19	287	557	0	-4	-2		0	-5	
08/06	19	367	0	0	0			-5		
08/12	24	222	0	0	-2			0		
08/18	18	285	0	0	-4			-5		
09/00	0	57	0	0	-2			0		
09/06	18	0	0	0						
09/12	0	0	0	0						
09/18	24	0	0	0						
10/00	0	0	0	0						

Date/Time	Center Position				Central Pressure			Max. Wind		
(UTC)	T=00(km)	T=24(km)	T=48(km)	T=72(km)	T=24(hPa)	T=48(hPa)	T=72(hPa)	T=24(kt)	T=48(kt)	T=72(kt)
TY SAOMAI (0608)										
Aug. 05/12	0	403	710	762	-2	15	25	0	-25	-30
05/18	0	233	410	618	0	10	20	0	-15	-25
06/00	0	162	451	695	10	15	30	-10	-20	-30
06/06	0	95	292	535	10	15	40	-15	-20	-35
06/12	0	157	321	552	10	20	45	-20	-25	-40
06/18	0	137	245	511	15	25	45	-20	-30	-40
07/00	0	137	381	575	10	25	35	-15	-25	-30
07/06	0	106	291	526	0	25	20	-10	-25	-25
07/12	0	108	333	534	5	30	5	-15	-30	-15
07/18	0	67	68	46	5	30	-5	-15	-30	10
08/00	0	132	75	0	15	20		-20	-20	
08/06	0	56	32	0	25	15		-25	-20	
08/12	0	81	98	0	25	25		-25	-30	
08/18	0	15	49	0	30	5		-30	5	
09/00	0	52	0	0	15			-15		
09/06	0	69	0	0	15			-20		
09/12	0	68	0	0	20			-25		
09/18	0	98	0	0	0			5		
10/00	0	0	0	0						
10/06	0	0	0	0						
10/12	0	0	0	0						
10/18	45	0	0	0						

Date/Time	Center Position				Central Pressure			Max. Wind		
(UTC)	T=00(km)	T=24(km)	T=48(km)	T=72(km)	T=24(hPa)	T=48(hPa)	T=72(hPa)	T=24(kt)	T=48(kt)	T=72(kt)
TY WUKONG (0610)										
Aug. 13/00	121	140	39	0	7	10		-5	-5	
13/06	91	233	179	67	0	0	-5	0	0	5
13/12	98	215	142	80	0	0	-5	0	0	5
13/18	54	23	89	235	0	-10	-20	0	5	15
14/00	37	99	121	262	0	-10	-20	0	5	15
14/06	0	90	156	315	-5	-15	-25	5	10	20
14/12	33	74	160	343	-5	-15	-25	5	10	20
14/18	94	124	164	230	-5	-15	-15	5	10	15
15/00	59	242	258	328	-5	-15	-17	5	10	15
15/06	31	231	193	295	-5	-15	-19	5	10	15
15/12	107	145	255	364	0	-5	-13	0	5	10
15/18	106	40	91	277	5	0	-10	-5	5	10
16/00	0	117	204	440	5	3	-7	-5	0	5
16/06	0	116	193	335	5	1	-9	-5	0	10
16/12	48	101	174	0	5	-3		-5	0	
16/18	67	67	90	0	5	-5		0	5	
17/00	22	67	30	0	3	-7		0	5	
17/06	0	89	180	0	1	-4		0	5	
17/12	0	107	0	0	-3			0		
17/18	0	89	0	0	-5			5		
18/00	11	114	0	0	-7			5		
18/06	29	35	0	0	-9			5		
18/12	0	0	0	0						
18/18	14	0	0	0						
19/00	0	0	0	0						
19/06	0	0	0	0						

Date/Time	Center Position				Central Pressure			Max. Wind		
(UTC)	T=00(km)	T=24(km)	T=48(km)	T=72(km)	T=24(hPa)	T=48(hPa)	T=72(hPa)	T=24(kt)	T=48(kt)	T=72(kt)
TY SHANGSHANG (0613)										
Sep. 10/12	0	42	71	35	19	35	20	-25	-35	-20
10/18	0	142	229	156	25	15	5	-30	-15	-10
11/00	0	122	94	84	25	10	0	-25	-10	-5
11/06	0	33	64	92	20	10	0	-20	-10	-5
11/12	0	74	226	287	10	0	-10	-10	-5	0
11/18	0	85	221	290	0	-10	-20	-5	0	5
12/00	0	69	168	161	-10	-20	-20	0	5	5
12/06	0	74	185	175	-15	-20	-10	5	10	0
12/12	0	86	203	218	-15	-20	0	5	10	-10
12/18	11	74	192	213	-15	-20	11	5	10	-15
13/00	0	33	99	202	-10	-5	15	5	0	-15
13/06	0	53	56	94	-5	10	20	0	-10	-20
13/12	0	39	23	89	-5	20	15	0	-20	-15
13/18	0	81	174	129	-5	26	0	0	-25	0
14/00	15	46	158	102	10	30	10	-10	-25	-5
14/06	0	56	141	201	10	20	5	-10	-20	0
14/12	10	94	161	44	20	15	-10	-20	-15	10
14/18	0	88	128	143	26	0	-20	-25	0	20
15/00	0	98	113	37	20	5	-10	-20	-5	10
15/06	0	37	109	293	15	0	-15	-15	0	15
15/12	0	60	183	0	0	-15		0	10	
15/18	0	121	261	0	-15	-25		15	20	
16/00	0	177	279	0	-20	-30		15	25	
16/06	0	128	138	0	-15	-30		10	30	
16/12	0	45	0	0	-15			10		
16/18	0	93	0	0	-15			15		
17/00	0	66	0	0	-15			15		
17/06	15	28	0	0	-15			15		
17/12	9	0	0	0						
17/18	18	0	0	0						
18/00	37	0	0	0						
18/06	0	0	0	0						

Date/Time	Center Position				Central Pressure			Max. Wind		
(UTC)	T=00(km)	T=24(km)	T=48(km)	T=72(km)	T=24(hPa)	T=48(hPa)	T=72(hPa)	T=24(kt)	T=48(kt)	T=72(kt)
STS BOPHA (0609)										
Aug. 06/12	0	144	428	0	-10	-15		5	15	
06/18	31	93	209	0	-10	-22		5	25	
07/00	0	115	341	0	-5	-22		5	30	
07/06	72	85	0	0	-10			10		
07/12	31	181	0	0	-5			5		
07/18	20	219	0	0	0			0		
08/00	0	343	0	0	0			5		
08/06	24	0	0	0						
08/12	0	0	0	0						
08/18	20	0	0	0						
09/00	49	0	0	0						

Date/Time	Center Position				Central Pressure			Max. Wind		
(UTC)	T=00(km)	T=24(km)	T=48(km)	T=72(km)	T=24(hPa)	T=48(hPa)	T=72(hPa)	T=24(kt)	T=48(kt)	T=72(kt)
TS SONAMU (0611)										
Aug. 14/00	74	190	0	0	2			5		
14/06	11	0	0	0						
14/12	57	0	0	0						
14/18	53	0	0	0						
15/00	0	0	0	0						

Date/Time	Center Position				Central Pressure			Max. Wind		
(UTC)	T=00(km)	T=24(km)	T=48(km)	T=72(km)	T=24(hPa)	T=48(hPa)	T=72(hPa)	T=24(kt)	T=48(kt)	T=72(kt)
TY IOKE (0612)										
Aug. 27/06	54	56	11	25	-5	-5	0	5	5	0
27/12	0	85	88	74	-5	-5	0	5	5	0
27/18	0	31	24	147	-5	-5	0	5	5	0
28/00	0	35	64	191	-5	0	0	5	0	0
28/06	0	25	43	39	-5	0	0	5	0	0
28/12	0	33	65	57	-5	0	-5	5	0	5
28/18	0	49	117	15	-5	0	-5	5	0	5
29/00	0	55	71	46	5	5	0	-5	-5	0
29/06	0	44	42	94	5	5	10	-5	-5	-5
29/12	0	25	133	118	5	0	5	-5	0	-5
29/18	0	31	84	94	5	0	0	-5	0	0
30/00	0	56	103	166	0	-5	-10	0	5	5
30/06	0	81	133	209	0	-5	-15	0	5	10
30/12	0	85	168	210	-5	-10	-15	5	5	15
30/18	0	64	84	100	-5	-15	-15	5	10	15
31/00	0	38	105	145	-5	-20	-15	5	10	15
31/06	0	38	128	132	-5	-25	-15	5	15	15
31/12	0	46	99	153	-10	-25	-20	5	20	15
31/18	0	79	118	205	-15	-25	-20	10	20	15
Sep. 01/00	0	136	147	330	-20	-25	-25	10	20	20
01/06	0	106	78	348	-25	-25	-25	15	20	20
01/12	0	102	126	342	-15	-15	-20	15	10	15
01/18	0	125	185	490	-15	-15	-20	15	10	20
02/00	0	54	252	669	-15	-20	-25	15	15	25
02/06	0	67	323	736	-10	-20	-25	10	15	25
02/12	0	94	300	809	-15	-25	-25	10	20	25
02/18	0	104	356	964	-5	-15	-20	0	15	15
03/00	0	116	366	973	-10	-20	-25	5	20	20
03/06	0	164	443	1126	-10	-15	-20	5	15	20
03/12	0	168	489	1323	-10	-10	-15	5	10	15
03/18	0	167	540	0	-10	-10		10	10	
04/00	0	200	442	0	-5	-10		10	10	
04/06	0	105	266	0	-5	-20		10	20	
04/12	0	196	609	0	0	-10		5	10	
04/18	0	96	0	0	-5			5		
05/00	0	56	0	0	-5			5		
05/06	0	86	0	0	-10			10		
05/12	0	155	0	0	-10			10		
05/18	93	0	0	0						
06/00	0	0	0	0						
06/06	0	0	0	0						
06/12	0	0	0	0						

Date/Time	Center Position				Central Pressure			Max. Wind		
(UTC)	T=00(km)	T=24(km)	T=48(km)	T=72(km)	T=24(hPa)	T=48(hPa)	T=72(hPa)	T=24(kt)	T=48(kt)	T=72(kt)
TY YAGI (0614)										
Sep. 17/06	57	157	245	336	8	32	45	-5	-30	-40
17/12	38	127	167	336	11	30	40	-10	-30	-35
17/18	47	42	168	473	12	35	30	-10	-35	-25
18/00	39	15	201	324	15	35	25	-15	-30	-20
18/06	22	38	86	130	25	35	35	-25	-30	-20
18/12	46	130	250	259	10	20	45	-10	-20	-30
18/18	42	100	175	98	15	15	40	-15	-15	-25
19/00	15	68	39	53	15	10	35	-15	-10	-20
19/06	0	116	166	93	5	10	25	-5	0	-10
19/12	0	54	115	15	5	30	15	-5	-15	-5
19/18	0	76	167	179	0	30	0	0	-15	5
20/00	0	59	237	251	-10	15	-10	5	-5	10
20/06	0	79	201	355	0	15	-10	5	-5	10
20/12	0	91	165	307	20	5	-15	-10	0	15
20/18	0	113	222	174	20	-10	-10	-10	10	10
21/00	0	168	310	441	15	-20	-15	-5	15	10
21/06	0	123	274	394	15	-20	-25	-5	15	20
21/12	0	143	258	390	-15	-25	-20	15	20	20
21/18	0	67	188	567	-20	-20	-25	15	15	25
22/00	0	90	257	816	-25	-20	-15	15	15	15
22/06	0	10	171	0	-20	-25		10	20	
22/12	0	38	113	0	-15	-20		10	20	
22/18	0	61	307	0	-10	-10		5	10	
23/00	0	73	390	0	-15	0		10	0	
23/06	0	52	0	0	-5			5		
23/12	0	21	0	0	-5			5		
23/18	0	96	0	0	-5			5		
24/00	0	71	0	0	-5			5		
24/06	0	0	0	0						
24/12	0	0	0	0						
24/18	89	0	0	0						
25/00	0	0	0	0						

Date/Time		Center Position				Central Pressure			Max. Wind		
	(UTC)	T=00(km)	T=24(km)	T=48(km)	T=72(km)	T=24(hPa)	T=48(hPa)	T=72(hPa)	T=24(kt)	T=48(kt)	T=72(kt)
TY XANGSANE (0615)											
Sep.	26/06	0	70	226	215	45	5	25	-35	-5	-25
	26/12	0	47	165	258	25	5	20	-15	-5	-15
	26/18	0	76	175	300	15	15	25	-10	-10	-20
	27/00	0	168	272	300	-10	0	5	5	0	-5
	27/06	0	110	161	166	-35	-20	-15	25	10	10
	27/12	0	58	116	129	-5	5	-10	5	0	5
	27/18	0	64	70	100	5	5	-15	5	0	5
	28/00	0	70	84	60	0	0	-5	5	5	5
	28/06	0	46	31	68	0	5	15	0	0	-15
	28/12	49	46	123	181	0	-5	5	5	5	-5
	28/18	68	64	120	126	0	-15	-6	5	10	5
	29/00	24	11	102	0	0	-5		5	5	
	29/06	0	15	70	0	0	0		5	0	
	29/12	0	15	33	0	-5	12		5	-15	
	29/18	0	31	55	0	0	2		0	-40	
	30/00	0	57	0	0	5			0		
	30/06	0	33	0	0	10			-10		
	30/12	0	91	0	0	10			-5		
	30/18	0	62	0	0	0			-5		
Oct.	01/00	0	0	0	0						
	01/06	0	0	0	0						
	01/12	0	0	0	0						
	01/18	76	0	0	0						

Date/Time		Center Position				Central Pressure			Max. Wind		
	(UTC)	T=00(km)	T=24(km)	T=48(km)	T=72(km)	T=24(hPa)	T=48(hPa)	T=72(hPa)	T=24(kt)	T=48(kt)	T=72(kt)
TS RUMBIA (0617)											
Oct.	03/06	33	73	0	0	7			-10		
	03/12	0	106	35	0	0	-5		0	5	
	03/18	0	59	56	0	0	-10		0	15	
	04/00	43	67	0	0	-5			5		
	04/06	0	62	0	0	-5			5		
	04/12	0	131	0	0	-5			5		
	04/18	0	49	0	0	-10			15		
	05/00	30	0	0	0						
	05/06	42	0	0	0						
	05/12	0	0	0	0						
	05/18	0	0	0	0						

Date/Time		Center Position				Central Pressure			Max. Wind		
	(UTC)	T=00(km)	T=24(km)	T=48(km)	T=72(km)	T=24(hPa)	T=48(hPa)	T=72(hPa)	T=24(kt)	T=48(kt)	T=72(kt)
TY CIMARON (0619)											
Oct.	27/06	0	68	93	160	17	60	20	-20	-45	-25
	27/12	56	130	141	70	20	50	15	-20	-35	-25
	27/18	25	77	225	181	20	20	15	-25	-20	-25
	28/00	0	107	298	163	40	10	15	-30	-10	-25
	28/06	0	99	303	182	40	15	15	-25	-20	-25
	28/12	0	149	278	175	35	10	10	-20	-20	-20
	28/18	0	251	338	280	-5	5	5	0	-10	-10
	29/00	0	334	267	197	-35	-5	0	20	-5	0
	29/06	0	236	144	186	-20	-5	5	5	-5	-5
	29/12	0	21	183	422	0	-5	15	-10	-5	-15
	29/18	0	57	218	407	-5	-10	10	-5	0	-10
	30/00	0	99	314	568	-25	-5	10	10	0	-10
	30/06	44	123	370	632	-25	0	0	10	-5	0
	30/12	22	140	381	614	-25	5	0	10	-10	5
	30/18	39	164	360	537	-25	5	-10	10	-10	15
	31/00	34	153	346	509	-15	0	-15	5	-5	20
	31/06	0	140	248	315	-10	-20	-40	0	10	30
	31/12	25	92	253	444	-5	-25	-45	-5	20	35
	31/18	24	15	172	390	5	-10	-25	-10	15	25
Nov.	01/00	25	54	229	405	5	-15	-31	-10	15	30
	01/06	11	63	215	318	-15	-30	-45	10	25	40
	01/12	15	77	248	0	-25	-40		25	35	
	01/18	31	113	247	0	-25	-40		25	35	
	02/00	0	178	300	0	-25	-41		25	35	
	02/06	11	189	278	0	-15	-30		15	30	
	02/12	22	212	0	0	-10			10		
	02/18	68	126	0	0	-5			5		
	03/00	53	130	0	0	-6			5		
	03/06	34	86	0	0	-10			10		
	03/12	39	0	0	0						
	03/18	0	0	0	0						
	04/00	56	0	0	0						
	04/06	56	0	0	0						

Date/Time		Center Position				Central Pressure			Max. Wind		
	(UTC)	T=00(km)	T=24(km)	T=48(km)	T=72(km)	T=24(hPa)	T=48(hPa)	T=72(hPa)	T=24(kt)	T=48(kt)	T=72(kt)
STS BEBINCA (0616)											
Oct.	03/00	86	267	336	392	5	5	5	0	-5	5
	03/06	64	113	289	0	0	0		0	0	
	03/12	65	156	338	0	0	-5		0	5	
	03/18	85	241	530	0	5	-5		-5	10	
	04/00	71	323	694	0	5	-5		-5	15	
	04/06	157	473	0	0	5			-5		
	04/12	253	560	0	0	5			-5		
	04/18	249	557	0	0	5			0		
	05/00	0	302	0	0	10			0		
	05/06	81	0	0	0						
	05/12	68	0	0	0						
	05/18	59	0	0	0						
	06/00	31	0	0	0						

Date/Time		Center Position				Central Pressure			Max. Wind		
	(UTC)	T=00(km)	T=24(km)	T=48(km)	T=72(km)	T=24(hPa)	T=48(hPa)	T=72(hPa)	T=24(kt)	T=48(kt)	T=72(kt)
TY SOULIK (0618)											
Oct.	09/12	93	170	279	0	4	19		-5	-20	
	09/18	81	64	207	30	7	5	0	-5	-5	0
	10/00	0	123	114	98	5	5	5	-5	-5	0
	10/06	0	186	146	88	5	0	5	-5	0	0
	10/12	0	177	158	56	5	0	5	-5	0	0
	10/18	0	152	63	205	0	-5	0	0	5	5
	11/00	0	56	195	284	-5	0	0	5	5	5
	11/06	0	99	224	287	-5	0	5	5	5	0
	11/12	0	129	198	339	-10	-5	-5	10	5	0
	11/18	0	137	168	391	-10	-5	-5	10	5	0
	12/00	0	78	90	337	-5	-5	-10	5	5	5
	12/06	0	98	107	423	0	0	-10	0	0	5
	12/12	0	112	22	254	-5	-5	-10	5	0	5
	12/18	0	112	32	202	-5	-5	-15	5	0	10
	13/00	53	124	70	196	-5	-10	-15	5	5	10
	13/06	45	75	292	690	-5	-15	-15	5	10	15
	13/12	0	161	440	0	-10	-15		5	10	
	13/18	0	159	447	0	-10	-20		5	15	
	14/00	0	185	475	0	-15	-20		10	15	
	14/06	0	124	431	0	-15	-15		10	15	
	14/12	0	100	0	0	-5			5		
	14/18	0	35	0	0	-5			5		
	15/00	0	58	0	0	0			0		
	15/06	0	122	0	0	5			0		
	15/12	0	0	0	0						
	15/18	0	0	0	0						
	16/00	0	0	0	0						
	16/06	0	0	0	0						

Date/Time		Center Position				Central Pressure			Max. Wind		
	(UTC)	T=00(km)	T=24(km)	T=48(km)	T=72(km)	T=24(hPa)	T=48(hPa)	T=72(hPa)	T=24(kt)	T=48(kt)	T=72(kt)
TY CHEBI (0620)											
Nov.	09/12	0	94	119	140	73	36	11	-65	-40	-15
	09/18	0	123	87	168	55	5	-15	-45	-10	10
	10/00	0	101	124	201	30	-5	-25	-25	0	30
	10/06	0	84	89	245	-15	-45	-60	15	40	60
	10/12	0	85	87	0	-10	-45		5	40	
	10/18	0	91	11	0	-25	-50		20	45	
	11/00	0	163	150	0	-20	-45		15	45	
	11/06	35	131	248	0	-30	-40		25	40	
	11/12	109	77	0	0	-30			25		
	11/18	108	58	0	0	-25			20		
	12/00	48	108	0	0	-20			25		
	12/06	0	163	0	0	-15			20		
	12/12	76	0	0	0						
	12/18	97	0	0	0						
	13/00	25	0	0	0						
	13/06	34	0	0	0						

Date/Time		Center Position				Central Pressure			Max. Wind		
	(UTC)	T=00(km)	T=24(km)	T=48(km)	T=72(km)	T=24(hPa)	T=48(hPa)	T=72(hPa)	T=24(kt)	T=48(kt)	T=72(kt)
TY DURIAN (0621)											
Nov.	26/12	67	79	122	152	-4	0	50	0	0	-35
	26/18	122	111	179	127	-5	10	50	0	-10	-40
	27/00	155	247	250	148	0	25	35	0	-20	-30
	27/06	101	195	110	84	0	45	35	0	-35	-30
	27/12	0	94	11	16	5	55	25	-5	-40	-20
	27/18	0	57	24	97	10	45	15	-10	-35	-15
	28/00	0	49	79	73	20	20	10	-15	-15	-10
	28/06	0	77	79	102	40	20	0	-30	-15	0
	28/12	0	47	16	31	45	20	-5	-30	-15	5
	28/18	0	34	55	103	35	10	-5	-25	-10	5
	29/00	0	49	56	79	-5	0	-5	0	0	5
	29/06	0	35	79	78	-5	-5	-5	0	5	5
	29/12	0	16	57	90	0	-5	-15	0	5	10
	29/18	0	49	68	150	0	-5	-10	0	5	5
	30/00	0	35	49	123	0	-15	-5	0	10	5
	30/06	0	55	171	349	-5	-15	-5	5	10	5
	30/12	0	79	171	315	-5	-15	-5	5	10	5
	30/18	0	60	165	293	-15	-10	-10	10	5	5
	01/00	32	11	55	197	-15	-5	-10	10	5	10
	01/06	89	130	83	212	-5	5	-15	5	0	10
	01/12	33	78	43	280	-5	5	-15	5	0	10
	01/18	64	78	107	111	0	0	-10	0	0	5
	02/00	0	93	98	134	5	-10	-15	0	10	15
	02/06	0	47	113	0	5	-20		0	15	
	02/12	0	58	200	0	5	-20		0	15	
	02/18	0	59	154	0	0	-5		0	0	
	03/00	0	97	181	0	-10	-10		10	10	
	03/06	0	102	0	0	-20			15		
	03/12	0	89	0	0	-15			10		
	03/18	0	113	0	0	-5			0		
	04/00	35	169	0	0	-5			5		
	04/06	31	0	0	0						
	04/12	0	0	0	0						
	04/18	0	0	0	0						
	05/00	0	0	0	0						

Date/Time		Center Position				Central Pressure			Max. Wind		
	(UTC)	T=00(km)	T=24(km)	T=48(km)	T=72(km)	T=24(hPa)	T=48(hPa)	T=72(hPa)	T=24(kt)	T=48(kt)	T=72(kt)
TY UTOR (0622)											
Dec.	07/18	88	219	340	388	10	5	-10	-10	-5	5
	08/00	25	16	74	148	0	25	0	0	-20	-5
	08/06	0	83	127	221	5	15	0	-5	-15	-5
	08/12	44	93	165	268	5	0	0	-5	-5	-5
	08/18	49	89	193	311	10	-5	10	-10	0	-10
	09/00	40	119	249	387	25	-5	15	-20	0	-10
	09/06	0	116	257	345	10	-5	20	-10	0	-20
	09/12	0	102	246	323	5	0	30	-5	0	-20
	09/18	11	80	158	320	-5	5	30	5	0	-20
	10/00	11	92	163	281	-30	-5	15	25	10	-15
	10/06	47	107	181	339	-30	0	0	25	0	-5
	10/12	88	88	160	285	-30	5	-15	20	-5	10
	10/18	93	93	196	234	-20	5	-25	15	-5	20
	11/00	0	90	146	162	-5	0	-33	10	0	30
	11/06	0	60	102	0	0	-10		0	5	
	11/12	24	111	96	0	15	-10		-10	5	
	11/18	39	134	210	0	30	-5		-20	5	
	12/00	25	90	216	0	20	-13		-20	10	
	12/06	0	119	0	0	0			0		
	12/12	0	11	0	0	-10			5		
	12/18	0	39	0	0	-15			10		
	13/00	0	88	0	0	-18			20		
	13/06	0	0	0	0						
	13/12	15	0	0	0						
	13/18	35	0	0	0						
	14/00	35	0	0	0						

Date/Time		Center Position				Central Pressure			Max. Wind		
	(UTC)	T=00(km)	T=24(km)	T=48(km)	T=72(km)	T=24(hPa)	T=48(hPa)	T=72(hPa)	T=24(kt)	T=48(kt)	T=72(kt)
TY TRAMI (0623)											
	17/12	40	145	0	0	-6			5		
	17/18	0	0	0	0						
	18/00	0	0	0	0						
	18/06	0	0	0	0						
	18/12	195	0	0	0						

Monthly and Annual Frequencies of Tropical Cyclones

Monthly and annual frequencies of tropical cyclones that attained TS intensity or higher in the western North Pacific and the South China Sea for 1951 - 2006

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1951		1	1	2	1	1	3	3	2	4	1	2	21
1952						3	3	5	3	6	3	4	27
1953		1			1	2	1	6	3	5	3	1	23
1954			1		1		1	5	5	4	3	1	21
1955	1	1	1	1		2	7	6	4	3	1	1	28
1956			1	2		1	2	5	6	1	4	1	23
1957	2			1	1	1	1	4	5	4	3		22
1958	1			1	1	4	7	5	5	3	2	2	31
1959		1	1	1			2	5	5	4	2	2	23
1960				1	1	3	3	10	3	4	1	1	27
1961	1		1		2	3	4	6	6	4	1	1	29
1962		1		1	2		5	8	4	5	3	1	30
1963				1		4	4	3	5	4		3	24
1964					2	2	7	5	6	5	6	1	34
1965	2	1	1	1	2	3	5	6	7	2	2		32
1966				1	2	1	4	10	9	5	2	1	35
1967		1	2	1	1	1	7	9	9	4	3	1	39
1968				1	1	1	3	8	3	5	5		27
1969	1		1	1			3	4	3	3	2	1	19
1970		1				2	3	6	5	5	4		26
1971	1		1	3	4	2	8	5	6	4	2		36
1972	1				1	3	7	5	4	5	3	2	31
1973							7	5	2	4	3		21
1974	1		1	1	1	4	4	5	5	4	4	2	32
1975	1						2	4	5	5	3	1	21
1976	1	1		2	2	2	4	4	5	1	1	2	25
1977			1			1	3	3	5	5	1	2	21
1978	1			1		3	4	8	5	4	4		30
1979	1		1	1	2		4	2	6	3	2	2	24
1980				1	4	1	4	2	6	4	1	1	24
1981			1	2		3	4	8	4	2	3	2	29
1982			3		1	3	3	5	5	3	1	1	25
1983						1	3	5	2	5	5	2	23
1984						2	5	5	4	7	3	1	27
1985	2				1	3	1	8	5	4	1	2	27
1986		1		1	2	2	4	4	3	5	4	3	29
1987	1			1		2	4	4	6	2	2	1	23
1988	1				1	3	2	8	8	5	2	1	31
1989	1			1	2	2	7	5	6	4	3	1	32
1990	1			1	1	3	4	6	4	4	4	1	29
1991			2	1	1	1	4	5	6	3	6		29
1992	1	1				2	4	8	5	7	3		31
1993			1			1	4	7	5	5	2	3	28
1994				1	1	2	7	9	8	6		2	36
1995				1		1	2	6	5	6	1	1	23
1996		1		1	2		6	5	6	2	2	1	26
1997				2	3	3	4	6	4	3	2	1	28
1998							1	3	5	2	3	2	16
1999				2		1	4	6	6	2	1		22
2000					2		5	6	5	2	2	1	23
2001					1	2	5	6	5	3	1	3	26
2002	1	1			1	3	5	6	4	2	2	1	26
2003	1			1	2	2	2	5	3	3	2		21
2004				1	2	5	2	8	3	3	3	2	29
2005	1		1	1	1		5	5	5	2	2		23
2006					1	1	3	7	3	4	2	2	23
Normal 1971-2000	0.5	0.1	0.4	0.8	1.0	1.7	4.2	5.4	5.0	3.9	2.5	1.3	26.7

Code Forms of RSMC Products

(a) RSMC Tropical Cyclone Advisory (WTPQ20-25 RJTD)

WTPQ i i RJTD YYGGgg
RSMC TROPICAL CYCLONE ADVISORY
NAME class ty-No. name (common-No.)
ANALYSIS
PSTN YYGGgg UTC LaLa.La N LoLoLo.Lo E (or W) confidence
MOVE direction SpSpSp KT
PRES PPPP HPA
MXWD VmVmVm KT
GUST VgVgVg KT*
50KT RdRdRd NM (or 50KT RdRdRd NM octant RdRdRd NM octant)
30KT RdRdRd NM (or 30KT RdRdRd NM octant RdRdRd NM octant)
FORECAST
24HF YYGGgg$_F$ UTC LaLa.La$_F$ N LoLoLo.Lo$_F$ E (or W) FrFrFr NM 70%
MOVE direction SpSpSp KT
PRES PPPP HPA
MXWD VmVmVm KT
GUST VgVgVg KT*
Ft1Ft1HF YYGGgg$_F$ UTC LaLa.La$_F$ N LoLoLo.Lo$_F$ E (or W) FrFrFr NM 70%
MOVE direction SpSpSp KT
PRES PPPP HPA
GUST VgVgVg KT*
MXWD VmVmVm KT
Ft2Ft2HF YYGGgg$_F$ UTC LaLa.La$_F$ N LoLoLo.Lo$_F$ E (or W) FrFrFr NM 70%
MOVE direction SpSpSp KT
PRES PPPP HPA
MXWD VmVmVm KT
GUST VgVgVg KT* =

***Maximum gust winds are added in this information from mid April 2007.**

Notes:

a. Underlined parts are fixed.

b. Abbreviations

PSTN	:	Position
MOVE	:	Movement
PRES	:	Pressure
MXWD	:	Maximum wind
HF	:	Hour forecast

c. Symbolic letters

i i	:	'20', '21', '22', '23', '24' or '25'
YYGGgg	:	Time of observation submitting the data for analysis in UTC
class	:	Intensity classification of the tropical cyclone 'TY', 'STS', 'TS' or 'TD'
ty-No.	:	Domestic identification number of the tropical cyclone adopted in Japan given in four digits (same as the international identification number)
name	:	Name assigned to the tropical cyclone from the name list prepared by the Typhoon Committee
common-No.	:	International identification number of the tropical cyclones given in four digits
LaLa.La	:	Latitude of the center position in "ANALYSIS" part
LoLoLo.Lo	:	Longitude of the center position in "ANALYSIS" part
confidence	:	Confidence of the center position. 'GOOD', 'FAIR' or 'POOR'
direction	:	Direction of movement given in 16 azimuthal direction such as 'N', 'NNE', 'NE' and 'ENE'
SpSpSp	:	Speed of movement

PPPP	:	Central pressure
VmVmVm	:	Maximum sustained wind
VgVgVg	:	Maximum gust wind
RdRdRd	:	Radii of 30knots and 50knots wind
octant	:	Eccentric distribution of wind given in 8 azimuthal direction such as 'NORTH', 'NORTHEAST' and 'EAST'
Ft1Ft1	:	48 (00, 06, 12 and 18 UTC) or 45 (03, 09, 15 and 21 UTC)
Ft2Ft2	:	72 (00, 06, 12 and 18 UTC) or 69 (03, 09, 15 and 21 UTC)
$YYGGgg_F$	:	Time in UTC on which the forecast is valid
$LaLa.La_F$	:	Latitude of the center of 70% probability circle in "FORECAST" part
$LoLoLo.Lo_F$	:	Longitude of the center of 70% probability circle in "FORECAST" part
FrFrFr	:	Radius of 70% probability circle

d. MOVE is optionally described as 'ALMOST STATIONARY' or '(direction) SLOWLY', depending on the speed of movement.

Example:

WTPQ20 RJTD 150000
RSMC TROPICAL CYCLONE ADVISORY
NAME STS 0320 NEPARTAK (0320)
ANALYSIS
PSTN 150000UTC 12.6N 117.8E FAIR
MOVE WNW 13KT
PRES 980HPA
MXWD 055KT
GUST 080KT
50KT 40NM
30KT 240NM NORTHEAST 160NM SOUTHWEST
FORECAST
24HF 160000UTC 14.7N 113.7E 110NM 70%
MOVE WNW 11KT
PRES 965HPA
MXWD 070KT
GUST 100KT
48HF 170000UTC 16.0N 111.0E 170NM 70%
MOVE WNW 07KT
PRES 970HPA
MXWD 065KT
GUST 095KT
72HF 180000UTC 19.5N 110.0E 250NM 70%
MOVE NNW 09KT
PRES 985HPA
MXWD 050KT
GUST 070KT =

(b) RSMC Guidance for Forecast (FXPQ20-25 RJTD)

FXPQ i i RJTD YYGGgg
RSMC GUIDANCE FOR FORECAST
NAME class ty-No. name (common-No.)
PSTN YYGGgg UTC LaLa.La N LoLoLo.Lo E (or W)
PRES PPPP HPA
MXWD WWW KT
FORECAST BY TYPHOON (or GLOBAL) MODEL
TIME PSTN PRES MXWD
(CHANGE FROM T=0)
T=06 LaLa.La N LoLoLo.Lo E (or W) appp HPA awww KT
T=12 LaLa.La N LoLoLo.Lo E (or W) appp HPA awww KT
T=18 LaLa.La N LoLoLo.Lo E (or W) appp HPA awww KT
:
:
T=78 (or 84) LaLa.La N LoLoLo.Lo E (or W) appp HPA awww KT=

Notes:

a. Underlined parts are fixed.

b. Symbolic letters

i i	:	'20', '21', '22', '23', '24' or '25'
YYGGgg	:	Initial time of the model in UTC
class	:	Intensity classification of the tropical cyclone 'T', 'STS', 'TS' or 'TD'
PPPP	:	Central pressure in hPa
WWW	:	Maximum wind speed in knots
a	:	Sign of ppp and www (+, - or blank)
ppp	:	Absolute value of change in central pressure from T=0, in hPa
www	:	Absolute value of change in maximum wind speed from T=0, in knots

c. The prediction terminates in T=78 for Typhoon Model and in T=84 for Global Model.

Example:

```
FXPQ20 RJTD 180600
RSMC GUIDANCE FOR FORECAST
NAME TY 0001DAMREY (0001)
PSTN 180000UTC 15.2N 126.3E
PRES   905HPA
MXWD   105KT
FORECAST BY GLOBAL MODEL
TIME      PSTN       PRES       MXWD
                  (CHANGE FROM T=0)
T=06 15.4N 125.8E +018HPA -008KT
T=12 15.5N 125.6E +011HPA -011KT
T=18 15.8N 125.7E +027HPA -028KT
                  :
                  :
T=78 20.7N 128.8E +021HPA -022KT=
```

(c) SAREP (TCNA20/21 RJTD)

TCNA i i RJTD YYGGgg
CCAA YYGGg 47644 name (common-No.) nt nt LaLaLa Qc LoLoLoLo 1At Wt at tm
2St St // (9ds ds fs fs)=

Notes:

a. Underlined is fixed.

b. Symbolic letters

i i	:	20 for the observation at 03, 09, 15 and 21 UTC 21 for the observation at 00, 06, 12 and 18 UTC
YYGGg	:	Time of observation submitting the data for analysis in UTC
nt nt	:	Serial number of the tropical cyclone in order of its formation in the year given in '01' - '99'
LaLaLa	:	Latitude given in 0.1°
Qc	:	Quadrant of the earth. 1: N/E, 2: S/E, 3: S/W and 4: N/W
LoLoLoLo	:	Longitude in 0.1°
At:		Confidence 0: =<10km 1: =<20km 2: =<50km 3: =<100km 4: =<200km 5: =<300km /: unable to determine
Wt	:	Mean diameter (d: degree in latitude) of cloud system 0: d<1° 1: 1°=<d<2° 2: 2°=<d<3° 3: 3°=<d<4° 4: 4°=<d<5° 5: 5°=<d<6° 6: 6°=<d<7° 7: 7°=<d<8° 8: 8°=<d<9° 9: 9°=<d /: unable to determine
at	:	24-hour intensity inclination 0: further weakening 1: weakening 2: no change 3: intensifying 4: further intensifying 9: no former observation /: unable to determine
tm	:	Time interval (t: hour) for determination of movement 0: t<1 1: 1=<t<2 2: 2=<t<3 3: 3=<t<6 4: 6=<t<9 5: 9=<t<12 6: 12=<t<15 7: 15=<t<18 8: 18=<t<21 9: 21=<t<30 /: no (9dsdsfsfs) group
StSt	:	Intensity

00: weakening 15, 20, 25 … 80: CI-number (in 0.1)
99: under extratropical transformation //: unable to determine

dsds : Direction of movement (in 10°)
fsfs : Speed of movement (in knots)

Example:

TCNA21 RJTD 180000
CCAA 18000 47644 DAMREY(0001) 29149 11272 11334 275// 92811=

(d) RSMC Prognostic Reasoning (WTPQ30-35 RJTD)

Example:

WTPQ30 RJTD 180000

RSMC TROPICAL CYCLONE PROGNOSTIC REASONING
REASONING NO. 9 FOR TY 0001 DAMREY (0001)
1.GENERAL COMMENTS
REASONING OF PROGNOSIS THIS TIME IS SIMILAR TO PREVIOUS ONE.
POSITION FORECAST IS MAINLY BASED ON NWP AND PERSISTENCY.
2.SYNOPTIC SITUATION
SUBTROPICAL RIDGE WILL NOT CHANGE ITS LOCATION AND STRENGTH FOR THE NEXT 24 HOURS.
3.MOTION FORECAST
POSITION ACCURACY AT 180000 UTC IS GOOD.
TY WILL DECELERATE FOR THE NEXT 12 HOURS.
TY WILL RECURVE WITHIN 60 HOURS FROM 180000 UTC.
TY WILL MOVE WEST FOR THE NEXT 12 HOURS THEN MOVE GRADUALLY TO WEST-NORTHWEST.
4.INTENSITY FORECAST
TY WILL KEEP PRESENT INTENSITY FOR NEXT 24 HOURS.
FI-NUMBER WILL BE 7.0 AFTER 24 HOURS.=

(e) Tropical Cyclone Advisory for SIGMET (FKPQ30-35 RJTD)

FKPQ i i RJTD YYGGgg	
TC ADVISORY	
DTG:	yyyymmdd/time Z
TCAC:	TOKYO
TC:	name
NR:	number
PSN:	N LaLa.LaLa E LoLoLo.LoLo
MOV:	direction SpSpSp KT
C:	PPPP HPA
MAX WIND:	WWW KT
FCST PSN +12HR:	YY/GGgg Z NLaLa.LaLa ELoLoLo.LoLo
FCST MAX WIND +12HR:	WWW KT
FCST PSN +18HR:	NIL
FCST MAX WIND +18HR:	NIL
FCST PSN +24HR:	YY/GGgg Z N LaLa.LaLa E LoLoLo.LoLo
FCST MAX WIND +24HR:	WWW KT
NXT MSG:	yyyymmdd/time Z=

Notes:

a. Underlined parts are fixed.

b. Abbreviations

DTG : Date and time
TCAC : Tropical Cyclone Advisory Centre
TC : Tropical Cyclone
NR : Number
PSN : Position

MOV	:	Movement
C	:	Central pressure
MAX WIND	:	Maximum wind
FCST	:	Forecast
NXT MSG	:	Next message

c. Symbolic letters

i i	:	'30', '31', '32', '33', '34' or '35'
YYGGgg	:	Date(YY), hour(GG) and minute(gg) in UTC (Using "Z")
yyyymmdd/time	:	Year(yyyy), month(mm), date(dd), hour and minute (time) in UTC (Using "Z")
name	:	Name assigned to the tropical cyclone by RSMC Tokyo-Typhoon Center
Number	:	Advisory number (starting with "01" for each cyclone)
LaLa.LaLa	:	Latitude of the center position
LoLoLo.LoLo	:	Longitude of the center position
direction	:	Direction of movement given in 16 azimuthal direction such as 'N', 'NNE', 'NE' and 'ENE'
SpSpSp	:	Speed of movement
PPPP	:	Central pressure
WWW	:	Maximum sustained wind

Example:

FKPQ30 RJTD 160600
TC ADVISORY

DTG:	20040416/0600Z
TCAC:	TOKYO
TC:	SUDAL
NR:	47
PSN:	N2830 E15855
MOV:	ENE 25KT
C:	985HPA
MAX WIND:	50KT
FCST PSN +12HR:	16/1800Z N3150 E15855
FCST MAX WIND 12HR:	50KT
FCST PSN +18HR:	NIL
FCST MAX WIND 18HR:	NIL
FCST PSN +24HR:	17/0600Z N3500 E16700
FCST MAX WIND 24HR:	45KT
NXT MSG:	20040416/1200Z =

(f) RSMC Tropical Cyclone Best Track (AXPQ20 RJTD)

AXPQ20 RJTD YYGGgg
RSMC TROPICAL CYCLONE BEST TRACK
NAME ty-No. name (common-No.)
PERIOD FROM MMMDDTTUTC TO MMMDDTTUTC
DDTT LaLa.LaN LoLoLo.LoE PPPHPA WWWKT DDTT LaLa.LaN LoLoLo.LoE PPPHPA WWWKT
DDTT LaLa.LaN LoLoLo.LoE PPPHPA WWWKT DDTT LaLa.LaN LoLoLo.LoE PPPHPA WWWKT
:
:
DDTT LaLa.LaN LoLoLo.LoE PPPHPA WWWKT DDTT LaLa.LaN LoLoLo.LoE PPPHPA WWWKT
REMARKS[1)]
TD FORMATION AT MMMDDTTUTC
FROM TD TO TS AT MMMDDTTUTC
:
:
DISSIPATION AT MMMDDTTUTC=

Notes:

a. Underlined parts are fixed.

b. [1)] REMARKS is given optionally.

c. Symbolic letters

MMM	:	Month in UTC given such as 'JAN' and 'FEB'
DD	:	Date in UTC
TT	:	Hour in UTC
PPP	:	Central pressure
WWW	:	Maximum wind speed

Example:

```
AXPQ20 RJTD 020600

RSMC TROPICAL CYCLONE BEST TRACK
NAME 0001 DAMREY (0001)
PERIOD FROM OCT1300UTC TO OCT2618UTC
1300 10.8N 155.5E 1008HPA   //KT   1306 10.9N 153.6E 1006HPA   //KT
1312 11.1N 151.5E 1004HPA   //KT   1318 11.5N 149.8E 1002HPA   //KT
1400 11.9N 148.5E 1000HPA   //KT   1406 12.0N 146.8E   998HPA   35KT
                              :
                              :
1712 14.6N 129.5E   905HPA 105KT   1718 14.7N 128.3E   905HPA 105KT
                              :
                              :
2612 32.6N 154.0E 1000HPA   //KT   2618 33.8N 157.4E 1010HPA   //KT
REMARKS
TD    FORMATION   AT OCT1300UTC
FROM TD   TO TS   AT OCT1406UTC
FROM TS   TO STS AT OCT1512UTC
FROM STS TO TY   AT OCT1600UTC
FROM TY   TO STS AT OCT2100UTC
FROM STS TO TS   AT OCT2112UTC
FROM TS   TO L    AT OCT2506UTC
DISSIPATION       AT OCT2700UTC=
```

Appendix 6

List of GPV products and data on the RSMC Data Serving System

Area	20S-60N, 80E-160W	20S-60N, 60E-160W
Resolution	2.5×2.5 degrees	1.25×1.25 degrees
Levels and elements	Surface (P, U, V, T, TTd, R) 850hPa (Z, U, V, T, TTd, ω) 700hPa (Z, U, V, T, TTd, ω) 500hPa (Z, U, V, T, TTd, ζ) 300hPa (Z, U, V, T) 250hPa (Z, U, V, T) 200hPa (Z, U, V, T) 150hPa (Z, U, V, T) 100hPa (Z, U, V, T)	Surface (P, U, V, T, TTd, R)** 1000hPa (Z, U, V, T, TTd) 925hPa (Z, U, V, T, TTd, ω) 850hPa (Z*, U*, V*,T*, TTd*, ω, ψ, χ) 700hPa (Z*, U*, V*,T*, TTd*, ω) 500hPa (Z*, U*, V*,T*, TTd*, ζ) 400hPa (Z, U, V, T, TTd) 300hPa (Z, U, V, T, TTd) 250hPa (Z, U, V, T) 200hPa (Z*, U*, V*, T*, ψ, χ) 150hPa (Z, U, V, T) 100hPa (Z, U, V, T) 70hPa (Z, U, V, T) 50hPa (Z, U, V, T) 30hPa (Z, U, V, T) 20hPa (Z, U, V, T) 10hPa (Z, U, V, T)
Forecast hours	For 00 and 12 UTC: 0, 6, 12, 18, 24, 30, 36, 48, 60 and 72 hours	For 00 and 12 UTC: 0 – 84 (every 6 hours) For 12 UTC only: * 96, 120, 144, 168 and 192 hours ** 90 – 192 (every 6 hours)
Frequency (initial times)	Twice a day (00 and 12 UTC)	Twice a day (00 and 12 UTC)

Area	Globe		Globe
Resolution	2.5×2.5 degrees		1.25×1.25 degrees
Levels and elements	Surface (P, R, U, V, T) 1000hPa (Z) 850hPa (Z, U, V, T, TTd) 700hPa (Z, U, V, T, TTd) 500hPa (Z,U,V, T) 300hPa (Z,U,V, T) 250hPa (Z,U,V, T)* 200hPa (Z,U,V, T) 100hPa (Z,U,V, T)* 70hPa (Z,U,V, T)* 50hPa (Z,U,V, T)* 30hPa (Z,U,V, T)*	Surface (P, U, V, T, TTd*) 1000hPa (Z, U, V, T, TTd*) 850hPa (Z, U, V, T, TTd) 700hPa (Z, U, V, T, TTd) 500hPa (Z, U, V, T, TTd*) 400hPa (Z, U, V, T, TTd*) 300hPa (Z, U, V, T, TTd*) 250hPa (Z, U, V, T) 200hPa (Z, U, V, T) 150hPa (Z, U, V, T) 100hPa (Z, U, V, T) 70hPa (Z, U, V, T) 50hPa (Z, U, V, T) 30hPa (Z, U, V, T) 20hPa (Z, U, V, T) 10hPa (Z, U, V, T)	Surface (P, U, V, T, RH, R) 1000hPa (Z, U, V, T, RH, ω) 925hPa (Z, U, V, T, RH, ω) 850hPa (Z, U, V, T, RH, ω, ψ, χ) 700hPa (Z, U, V, T, RH, ω) 600hPa (Z, U, V, T, RH, ω) 500hPa (Z, U, V, T, RH, ω, ζ) 400hPa (Z, U, V, T, RH, ω) 300hPa (Z, U, V, T, RH, ω) 250hPa (Z, U, V, T) 200hPa (Z, U, V, T, ψ, χ) 150hPa (Z, U, V, T) 100hPa (Z, U, V, T) 70hPa (Z, U, V, T) 50hPa (Z, U, V, T) 30hPa (Z, U, V, T) 20hPa (Z, U, V, T) 10hPa (Z, U, V, T)
Forecast hours	For 00 and 12 UTC: 24, 48 and 72 hours For 12 UTC only: 96 – 192 (every 24 hours) * 96 and 120 only	For 00 and 12 UTC: 0 hours (analysis) * 00UTC only	For 00 and 12 UTC: 0 – 84 (every 6 hours) For 12 UTC only: 96 – 192 (every 12 hours)
Frequency (initial times)	Twice a day (00 and 12 UTC)		Twice a day (00 and 12 UTC)

Area	Globe
Resolution	2.5×2.5 degrees
Levels and elements	Surface (P) 1000hPa (Z) 850hPa (T, U, V) 500hPa (Z) 250hPa (U, V) *Above GPVs consists of ensemble mean and standard deviation of ensemble forecast members.
Forecast hours	0 – 192 hours (every 12 hours)
Frequency (initial times)	Once a day (12 UTC)

Notes: P: pressure reduced to mean sea level R: total precipitation RH: relative humidity
T: temperature TTd: dew point depression U: u-component of wind
V: v-component of wind Z: geopotential height ζ: relative vorticity
χ: velocity potential ψ: stream function ω: vertical velocity

Products/ Data	Satellite data	Typhoon Information	Global Wave Model	Observational data
Contents	MTSAT-1R data (GRIB) • High density atmospheric motion vector (VIS, IR, WV)	Tropical cyclone related information (BUFR) • tropical cyclone analysis data	• Significant wave height • Prevailing wave period • Prevailing wave direction (GRIB) Forecast hours: 0, 6, 12, 18, 24, 30, 36, 42, 48, 54, 60, 66, 72, 78, 84 (for 00 and 12 UTC); 96, 108, 120, 132, 144, 156, 168 ,180 and 192 hours (for 12 UTC)	(a) Surface data (SYNOP, SHIP) (b) Upper-air data (TEMP, parts A-D) (PILOT, parts A-D)
Frequency (initial times)	VIS: twice a day (00 and 06UTC) IR and WV: 4 times a day (00, 06, 12 and 18UTC)	4 times a day (00, 06, 12 and 18 UTC)	Twice a day (00 and 12 UTC)	(a) Mostly 4 times a day (b) Mostly 2 times a day

Appendix 7

User's Guide to the Attached CD-ROM

Preface

This CD-ROM contains all the texts, tables and charts of the RSMC Annual Report 2006 along with satellite images of the tropical cyclones that attained TS intensity or higher in the western North Pacific and the South China Sea in 2006. This document is a brief user's guide for to the CD-ROM, which was mastered in ISO-9660 format.

Directory and File layout

[Root]
|------ar405eng.exe (Acrobat Reader Installer)
|------Readme.txt (brief explanation of the CD-ROM)
|------TopMenu.exe (start menu setup program)
|------SATAIDmanual.pdf (user manual for the satellite image viewer)
|------Annual_Report
        |---Text (text of Annual Report 2006 in PDF)
        |---Figure (figures for MS PowerPoint)
        |---Table (tables for MS Excel)
        |---Appendix (appendices for MS Excel and PowerPoint)
|------Programs
        |---Gmslpd
                |--Gmslpd.exe (viewer; tropical cyclone version in English)
                |--Gsetup.exe (setup programs)
|------Satellite_Image_Data
        |---T0601 (three-hourly satellite image data)
        |---T0602 (three-hourly satellite image data)
                :
        |---T0623 (three-hourly satellite image data)
|------Andata
        |--Besttrack
                |--E_BST_2006.txt (best track data for 2006)
                |--E_BST_200605.txt (best track data for TCs generated in May 2006)
                        :
                |--E_BST_200612.txt (best track data for TCs generated in December 2006)

How to use the CD-ROM

When the CD-ROM runs, a start menu automatically appears displaying a panel with buttons marked *Annual Report 2006*, *MTSAT Satellite Image*, *About CD-ROM* and *Close* as well as a file list box for a number of introductory documents. Click the button or the file name of the content you wish to see and follow the instructions on the display.

Hardware/OS requirements for using the CD-ROM:

Hardware : PC/AT compatible
OS : Microsoft Windows Ver. 3.1 or later

< Annual Report 2006 >

Annual Report 2006 is provided in two formats as PDF files and MS Word/Excel/PowerPoint files.

- PDF files:

Click the *Annual Report 2006* button to open the text in PDF. If you cannot open the PDF file, install Adobe Acrobat Reader using the installer (ar405eng.exe) in the file list box of the start menu window and try again. Adobe Acrobat Reader (or Adobe Acrobat) is required to view PDF files.

- Word/Excel/PowerPoint files:

The original figures and tables prepared with Microsoft Word, Excel or PowerPoint are contained in the Annual Report folder of the CD-ROM.

< MTSAT Satellite Image >

- Installation of the program for displaying satellite images

Click the *MTSAT Satellite Image* button to run the setup program (Gsetup.exe) for the satellite image viewer. Follow the instructions, and the satellite image viewer *Gmslpd.exe* will be installed onto the computer's hard disk. A list of the tropical cyclones occurring in 2006 is displayed in the selection window of the satellite images for tropical cyclones.

- Displaying satellite images

Choose and click a tropical cyclone from the list to see three-hourly satellite images of it. You can also display the track of the tropical cyclone superimposed onto the satellite image and measure its intensity using the Dvorak method.

- User manual for the viewer

Besides the above features, the viewer has many other useful functions. See the User Manual (SATAIDmanual.pdf) for further details on its use.

- Explanation of satellite image data

Period : From the generation stage to the weakening stage of each tropical cyclone

Images	: Infrared images (at 00, 03, 06, 09, 12, 15, 18 and 21 UTC) Visible images (at 00, 03, 06, 09 and 21 UTC)
Range	: 40 degrees in both latitude and longitude (The image window moves to follow the track of the tropical cyclone so that its center remains in the middle of the window.)
Time interval	: Three-hourly
Resolution	: 0.08 degrees in both latitude and longitude
Compression of file	: Compressed using the *compress.exe* command of Microsoft Windows

< About CD-ROM >

Click the *About CD-ROM* button to open the *Readme.txt* file.

< Close >

Click the *Close* button to close the start menu window.

< File list box >

Document files can be opened from the file list box in the start menu window. Choose a file and click the *Open* button, or simply double-click the file name.

For further information, please contact:

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