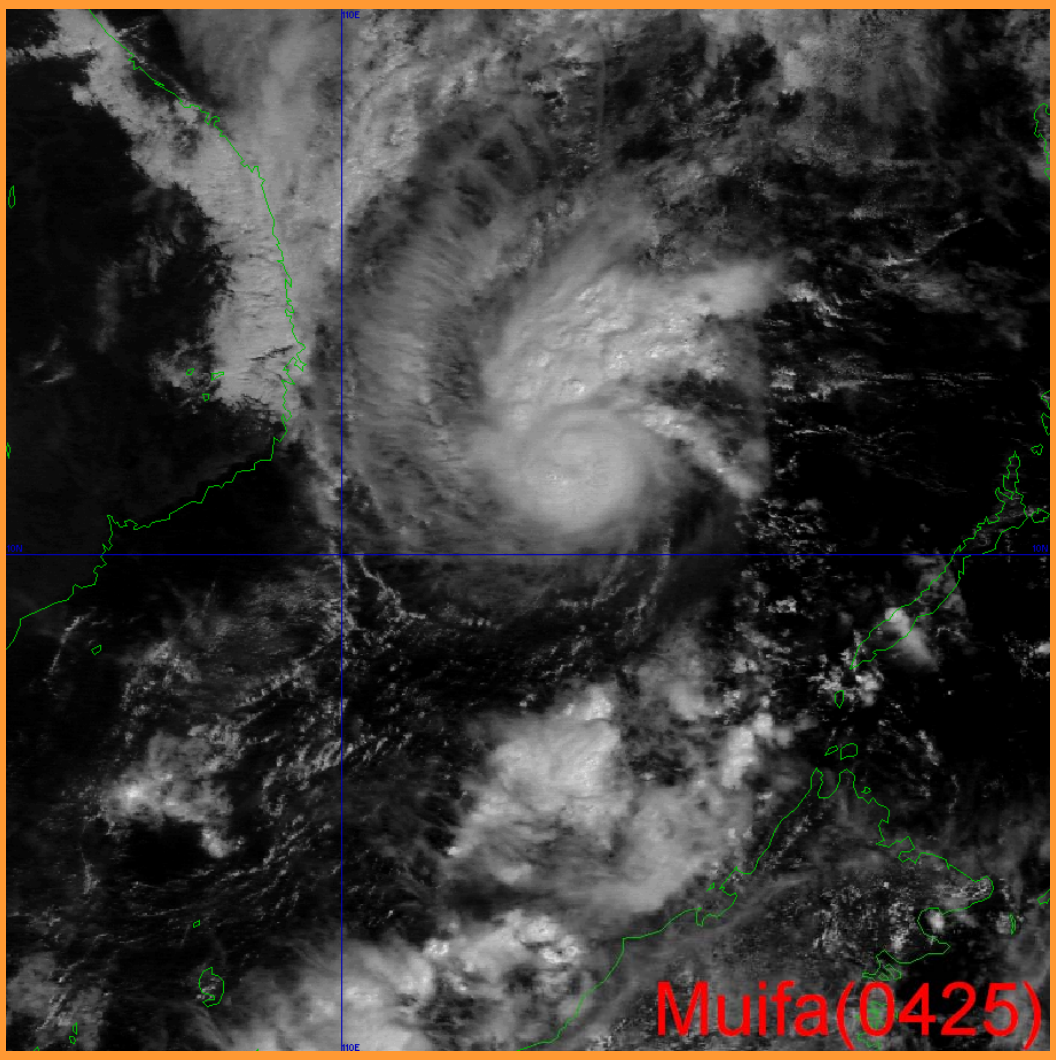
Annual Report on the Activities of the RSMC Tokyo - Typhoon Center 2004



Japan Meteorological Agency

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Introduction

The RSMC Tokyo - Typhoon Center (hereinafter referred to as "the Center") is the Regional Specialized Meteorological Centre (RSMC) with activity specialization in analysis, tracking and forecasting of western North Pacific tropical cyclones 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 the 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 tropical cyclones and associated meteorological phenomena;
(2) Preparation of information on synoptic scale atmospheric situations that affect the behavior of tropical cyclones; and
(3) Dissemination of the above information to National Meteorological Centers (NMCs), in particular to the Members of the ESCAP/WMO Typhoon Committee, in appropriate formats for operational processing.

In addition to the routine services mentioned above, the Center distributes a series of reports entitled “Annual Report on Activities of the RSMC Tokyo - Typhoon Center” to serve as operational references for the NMCs concerned. This report aims at summarizing the activities of the Center and reviewing tropical cyclones of the year.

In this 2004 issue, the outline of routine operations at the Center and its operational products are presented in **Chapter 1**. **Chapter 2** reports the major activities of the Center in 2004. **Chapter 3** describes atmospheric and oceanic conditions in the tropics and gives the highlights of tropical cyclone (TC) activities in 2004. 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 the TCs in 2004 are shown in table and chart forms in appendices. All the texts, tables, charts and appendices are included in the two CD-ROMs attached to this report.

The CD-ROMs contain 3-hourly cloud images of all the tropical cyclones in 2004 of TS intensity or higher in the area of responsibility of the Center, and software to view them. The software has various functions for analyzing satellite imagery such as animation of images, which facilitates efficient post-analysis of tropical cyclones and their environments. A setup program and a users' manual for the software are also included in the CD-ROMs. Appendix 7 shows an outline of the CD-ROMs and how to use the software.

Chapter 1

Operations at the RSMC Tokyo - Typhoon Center in 2004

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

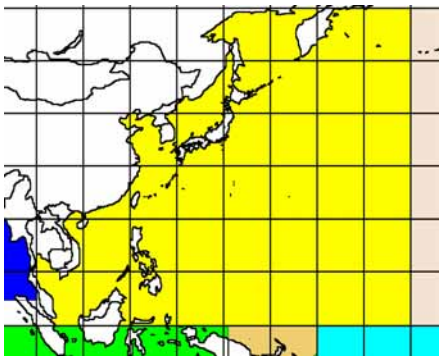


Figure 1.1
Area of responsibility of the RSMC Tokyo - Typhoon Center

1.1 Analysis

Surface analyses are performed four times a day, at 00, 06, 12 and 18 UTC. The TC analysis begins with the determination of the center position of a TC. Cloud images from the Geostationary Meteorological Satellite (GMS)* are the principal source for the determination of the center position, especially of TCs migrating over the data-sparse ocean area. The direction and speed of the movement of a TC are determined primarily from the six-hourly displacement vectors of the center position.

**GOES-9 carried out the back-up operation of GMS-5 from May 2003 to June 2005.*

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

1.2 Forecast

Predictions of two NWP models of JMA, Typhoon Model (TYM) and Global Spectral Model (GSM), are the primary bases for the forecast of TC tracks. The Persistence-Climatology method (PC method) that uses statistical techniques on the basis of linear extrapolation and climatological properties of TC movements is also adopted for TCs particularly in lower latitudes. The central pressure and the maximum sustained wind speed are forecast based on the results of Dvorak's method, the PC method and NWP.

The range into which the center of a TC is expected to move with 70% probability at each validation time is shown as probability circle. The radius of the circle is statistically determined according to the speed of TC movement. The improvement is based on verification results of the recent TC track forecasts. On 1 June 2004, The Center narrowed probability circles.

1.3 Provision of RSMC Products

The Center prepares and disseminates the following RSMC bulletins and charts via the GTS, the AFTN or the JMH 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; or
- 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 the TC keeps TS intensity or higher within the area of responsibility. **Appendix 5** denotes the code forms of the bulletins transmitted through the GTS.

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

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

Analysis	Center position of a TC Accuracy of determination of the center position Direction and speed of the movement Central pressure Maximum sustained wind speed (10-minute averaged) Radii of over 50- and 30-knot wind areas
24-, 48- and 72-hour forecasts	Center position and radius of the probability circle Direction and speed of the movement Central pressure Maximum sustained wind speed (10-minute averaged)

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

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

NWP prediction (T=06 to 84 or 90)
Center position of a TC
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 a TC analysis using satellite imagery including intensity information (CI-number) based on Dvorak's method. It is issued a half to one hour after observations at 00, 03, 06, 09, 12, 15, 18 and 21 UTC and contains:

GMS imagery analysis
Center position of a TC
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 the movement

*** These parameters are reported at 00, 06, 12 and 18 UTC while not at other times.*

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, synoptic situation of the subtropical ridge, movement and intensity of the TC, and some relevant remarks are given in plain language.

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

The RSMC Tropical Cyclone Best Track gives post-analyzed data of TC. It contains the center position, central pressure and maximum sustained wind. The Best Track for a TC is finalized usually 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 under the framework of the International Civil Aviation Organization (ICAO), provides the Tropical Cyclone Advisory for SIGMET for Meteorological Watch Offices (MWOs) concerned to support the preparation of SIGMET information on a TC. It includes the following elements in the analysis, 12-hour, 24-hour forecasts of a TC:

Analysis	Center position of a TC Direction and speed of the movement Central pressure Maximum sustained wind speed (ten-minute average)
12- and 24-hour forecasts	Center position of the TC (forecast) Maximum sustained wind speed (ten-minute average)

Analysis and Prognostic Charts of 850-hPa and 200-hPa Streamline

(AUXT85/20, FUXT852/202, FUXT854/204: via JMH)

Analysis and 24- and 48-hour prognostic charts of 850-hPa and 200-hPa streamlines are broadcast via the JMA's HF radio facsimile (JMH). These prognoses are produced with GSM at 00 and 12 UTC over the area spanning from 20°S to 60°N in latitude and from 80°E to 160°W in longitude.

1.4 RSMC Data Serving System

JMA has been operating the RSMC Data Serving System that allows NMCs concerned to retrieve NWP products such as predicted fields in grid-point-value (GPV) form and observational data through the Internet or the Integrated Service Digital Network (ISDN) since 1995. The products and data provided through the System are listed in **Appendix 6**.

1.5 RSMC Tokyo-Typhoon Center Website

RSMC Tokyo-Typhoon Center Website has been providing not only TC advisories on a real time basis but also TC analysis archive, annual report on activities of the Center and so on. The address of the website is as follows:

http://www.jma.go.jp/JMA_HP/jma/jma-eng/jma-center/rsmc-hp-pub-eg/RSMC_HP.htm

1.6 Numerical Typhoon Prediction Website

JMA launched the Numerical Typhoon Prediction (NTP) website on 1 October 2004. NTP website offers predictions of TC tracks performed by the model 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 better TC forecasting and warning services. NTP website includes:

- a data table and a chart of the latest predicted positional data of the participating NWP centers with analysis data of JMA, which have several useful functions such as deriving an ensemble mean from any combination of the centers' predictions of a user's choosing, and

- maps of the NWP models of the participating NWP centers.

Chapter 2

Major Activities of the RSMC Tokyo - Typhoon Center in 2004

2.1 Dissemination of RSMC Products

In 2004, the Center provided operational products for tropical cyclone forecasting to NMCs via the GTS, the AFTN, the JMA radio facsimile broadcast (JMH) and so on. Monthly and annual total numbers of issuance of the products are listed in Table 2.1.

Table 2.1 Monthly and annual total number of products issued by the RSMC Tokyo – Typhoon Center in 2004

Product	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
TCNA20	0	0	0	46	41	111	61	163	87	95	54	59	**717**
TCNA21	0	10	1	46	43	119	68	178	95	100	60	61	**781**
WTPQ20-25	0	20	2	95	91	241	138	364	190	205	124	126	**1596**
WTPQ30-35	0	4	1	24	22	59	36	94	48	50	31	32	**401**
FXPQ20-25	0	15	1	70	68	178	100	259	140	151	91	91	**1164**
FKPQ30-35	0	10	1	48	44	120	68	179	94	101	61	61	**787**
AXPQ20	0	0	0	0	1	2	4	2	7	6	3	3	**28**
AUXT85 **AUXT20**	62	58	48*										**120**
FUXT852 **FUXT854**	62	58	48*										**120**
FUXT202 **FUXT204**	62	58	48*										**120**

Notes:

- via the GTS or the AFTN -

SAREP	TCNA20/21 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

- via the JMH Meteorological Radio Facsimile -

Analysis of 850 and 200 hPa Streamline	AUXT85/AUXT20
Prognosis of 850 hPa Streamline	FUXT852/FUXT854
Prognosis of 200 hPa Streamline	FUXT202/FUXT204

*Disseminations of these products were ceased in late March 2004.

2.2 Publication

The Center published:

1) "Technical Review (No.7)" that contains papers entitled "Improvement to the JMA Typhoon Model by Using New Physical Processes", "Development of a Cumulus Parameterization Scheme for the Operational Global Model at JMA", "Operational Use of ATOVS Radiances in Global Data Assimilation at JMA" and "Assimilation of QSCAT/SeaWinds Ocean Surface Wind Data into the JMA Global Data Assimilation System" in March 2004; and
2) "Annual Report on Activities of the RSMC Tokyo-Typhoon Center in 2003" in November 2004.

2.3 Monitoring of Observational Data Availability

The Center carried out regular monitoring of information exchange for enhanced observations of tropical cyclones in accordance with the standard procedures stipulated in Section 6.2, Chapter 6 of "The Typhoon Committee Operational Manual (TOM) - Meteorological Component". The monitoring for the 2004 season was conducted for the following two periods:

1. from 00UTC, 9 June to 18UTC, 13 June (for TY Chanthu (0405))
2. from 00UTC, 30 June to 18UTC, 4 July (for TY Mindulle (0407))

The results were distributed to all the Typhoon Committee Members in March 2005, and are available on the 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 2004

3.1 Summary of Atmospheric and Oceanographic Conditions in the Tropics

As for sea surface temperature (SST) in the tropical Pacific, positive SST anomalies exceeding +0.5°C that had appeared in the central equatorial Pacific in May, spread and were found from 170°E to 130°W in July. These positive SST anomalies developed since July and positive anomalies exceeding +1°C occupied the area from 165°E to 155°W in September, and sustained until December. In the South China Sea, neither positive SST anomalies more than +0.5°C nor negative anomalies less than -0.5°C were were widely observed throughout the year except April when positive SST anomalies were found in the southern part.

Enhanced convection areas over the sea east of the Philippines were observed particularly in June and August, while active convection areas were not observed in the northern part of the South China Sea from September to December. Convection activities around the Philippines exhibited large month-to-month variability, in response to stronger Madden-Jullian Oscillation activity. Cyclonic circulation at lower level was continuously observed over the sea east of the Philippines from April to November.

Consequently, most of the tropical cyclones (TCs) were generated over the sea east of the Philippines, while only three TCs formed in the South China Sea.

Monthly mean streamlines at 850hPa and tropical cyclone tracks in June are presented in Figure 3.1.

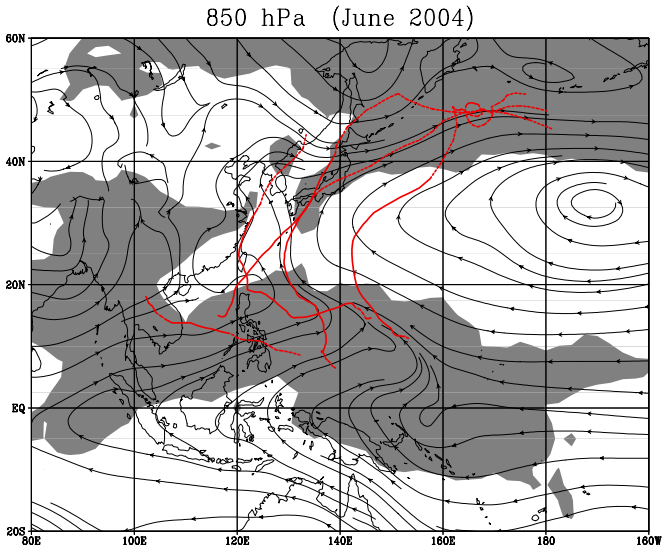


Figure 3.1 Monthly mean streamline at 850 hPa (lines with arrows) and area of less than 230 w/m^2 of OLR (shaded) in June 2004. Tracks of the five TCs formed in June are superimposed (red lines).

Charts of monthly mean SST anomalies for the western North Pacific and the South China Sea, monthly mean streamlines at 850 hPa and 200 hPa, and outgoing longwave radiation (OLR), which indicates active convection in the low latitudes, for the months from January to December are included in the attached CD-ROMs (SST Anomaly_2004.ppt and Streamline_2004.ppt).

3.2 Tropical Cyclones in 2004

In 2004, twenty-nine tropical cyclones (TCs) of tropical storm (TS) intensity or higher were tracked in the western North Pacific and the South China Sea. The total number is slightly above normal compared to the thirty-year average of 26.7 for 1971-2000. Among them, nineteen TCs out of them (66% of the total) reached typhoon (TY) intensity. The percentage of 66% is larger than normal (54%; 24-year average for 1977-2000). Three out of the remainder attained severe tropical storm (STS) intensity and the others TS intensity (see Table 3.1).

TC formation was inactive in the first quarter of the year. No TCs of TS intensity or higher formed until the generation of TY Sudal (0401) in early April. From May to June, it became very active and seven TCs of TS intensity or higher formed in total. Particularly, monthly TC formation number of five in June was the highest since 1951. Though it was not active in July, it was very active again in August and the monthly TC formation number of eight was above normal (the 30-year average of 5.5 for 1971-2000). After September, TC formation was normal.

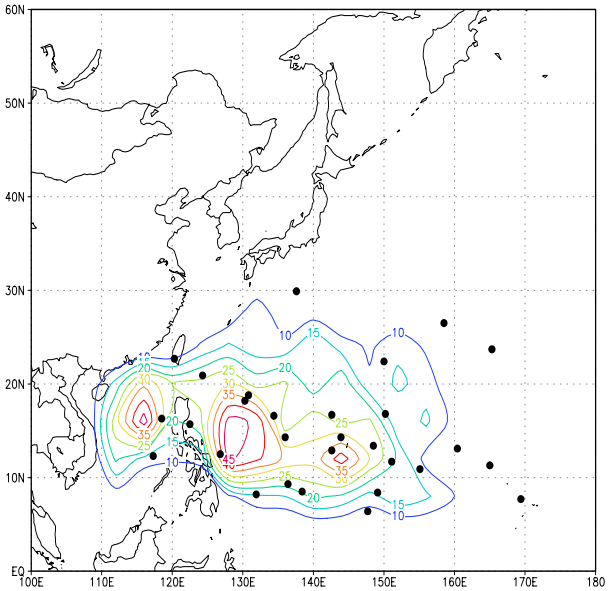


Figure 3.2 Genesis points of 29 TCs in 2004 (dots) and number of accumulated TC geneses per 4°x4° grid box for 1951-2003 (contours).

The feature of the 2004 season was that mean formation latitude* and longitude* of 15.2°N, 141.5°E was southeastern compared with the 30-year (1971-2000) average of 16.2°N, 136.9°E. (see the distribution of their formation points in Figure 3.2.)

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

Another feature was that many TCs hit China and Japan along the edge of northward shifted Pacific high compared to the normal year. Particularly, nineteen TCs of TS intensity or higher approached Japan and ten out of them made landfall on Japan. The number 19 of TCs of TS intensity or higher approaching Japan equaled the highest records in 1960 and 1966 since 1951, and the number 10 of TCs landing on Japan broke the highest records of 6 in 1990 and 1993 since 1951. In addition, a series of TCs including TY Miufa (0425), TS Merbok (0426) and TY Nanmadol (0427) hit the Philippines from late November to the beginning of December. On the other hand, only two TCs of TS intensity or higher weakened into a tropical depression (TD) west of 110°E.

RSMC best track data for the tropical cyclones in 2004 and maps of their tracks are shown in **Appendices 1** and **3**, respectively. Summary about each tropical cyclone in 2004 is also included in **Tropical Cyclones 2004**. **Appendix 4** indicates the monthly and annual frequency of tropical cyclones that attained TS intensity or higher in the western North Pacific and the South China Sea for 1951- 2004.

Table 3.1 List of the tropical cyclones which attained TS intensity or higher in 2004

Tropical Cyclones			Duration	Minimum Pressure& Max. Wind				
			UTC	Lat.	Lon.	UTC	hPa	kt
TY	SUDAL	(0401)	040500 - 041612	10.8	135.2	041000	940	90
TY	NIDA	(0402)	051400 - 052106	12.7	125.6	051612	935	95
STS	OMAIS	(0403)	051800 - 052106	11.4	133.0	051912	985	50
TY	CONSON	(0404)	060618 - 061109	23.6	123.7	060912	960	80
STS	CHANTHU	(0405)	061018 - 061306	13.8	109.8	061206	975	60
TY	DIANMU	(0406)	061312 - 062118	14.3	136.5	061600	915	100
TY	MINDULLE	(0407)	062306 - 070400	18.8	124.1	062900	940	95
TY	TINGTING	(0408)	062600 - 070406	25.8	142.3	063009	955	80
TS	KOMPASU	(0409)	071400 - 071612	20.4	121.6	071412	992	45
TY	NAMTHEUN	(0410)	072500 - 080200	27.7	146.0	072700	935	85
TS	MALOU	(0411)	080400 - 080421	30.9	136.9	080403	996	40
TY	MERANTI	(0412)	080412 - 080906	28.0	167.3	080518	960	75
TY	RANANIM	(0413)	080812 - 081300	24.4	125.2	081112	950	80
TS	MALAKAS	(0414)	081100 - 081318	30.7	162.1	081118	990	45
TY	MEGI	(0415)	081606 - 082009	28.4	125.3	081800	970	65
TY	CHABA	(0416)	081912 - 083106	17.1	141.1	082318	910	110
TY	AERE	(0417)	082000 - 082606	24.7	123.9	082400	955	80
TY	SONGDA	(0418)	082800 - 090800	24.0	131.2	090406	925	95
STS	SARIKA	(0419)	090418 - 090706	18.4	145.8	090512	980	55
TS	HAIMA	(0420)	091100 - 091306	24.4	122.1	091118	996	40
TY	MEARI	(0421)	092018 - 093000	20.1	133.3	092406	940	90
TY	MA-ON	(0422)	100406 - 101000	23.3	130.9	100718	920	100
TY	TOKAGE	(0423)	101300 - 102018	18.4	133.0	101612	940	85
TY	NOCK-TEN	(0424)	101612 - 102606	17.4	132.3	102300	945	85
TY	MUIFA	(0425)	111418 - 112512	15.8	123.9	111806	950	80
TS	MERBOK	(0426)	112206 - 112212	15.7	122.5	112206	1000	35
TY	NANMADOL	(0427)	112900 - 120406	12.5	130.5	120106	935	90
TS	TALAS	(0428)	121006 - 121906	9.7	157.3	121118	994	40
TS	NORU	(0429)	121818 - 122200	15.0	146.8	121912	990	40

Chapter 4

Verification of Forecasts in 2004

4.1 Operational Forecast

Operational forecasts of the twenty-nine tropical cyclones (TCs) of TS intensity or higher in 2004 were verified with best track data. Verified elements are 24-, 48- and 72-hour forecasts of the center position, central pressure and maximum sustained wind. Position and intensity errors of operational forecasts for each TC in 2004 are indicated in Appendix 2.

4.1.1 Center Position

Figure 4.1 shows annual mean errors of 24-hour (1982 - 2004), 48-hour (1988 - 2004) and 72-hour (1997 - 2004) forecasts of the center position. Annual mean position errors in 2004 were 125km (120km in 2004) for 24-hour forecast, 243km (222km) for 48-hour forecast and 355km (349km) for 72-hour forecast.

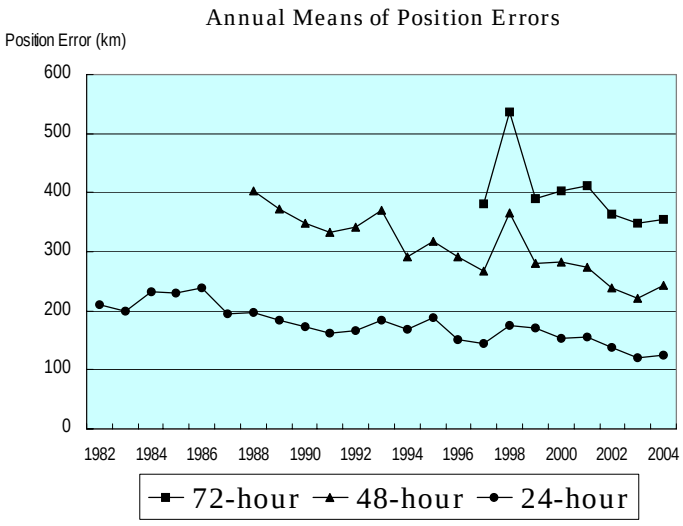


Figure 4.1 Annual means of position errors of 24-, 48- and 72-hour operational track forecasts.

Position errors of 24-, 48- and 72-hour track forecasts for each TC in this season are summarized in Table 4.1. The forecast scores of TY Namtheun (0410) and TY Nock-ten (0424), which moved northwestward over the waters south of Japan and made landfall on Japan, contributed to the scores to small extent. On the other hand, the forecasts of TY Conson (0404), which moved northeastward from the South China Sea to Japan, and TY Nanmadol (0427), which moved westward east of the Philippines and then passed the Philippines, had rather large distance errors.

Position errors were also compared with those by the persistency (PER) method. The ratios of EO (position errors of operational forecasts) to EP (position errors of PER-method forecasts) in percentage are described in Table 4.1. EO/EP smaller (greater) than 100% means that operational forecasts are better (worse) than PER-method forecasts. Annual mean EO/EPs for the 24-, 48- and 72-hour forecasts in 2004 were 54% (49% in 2003), 47% (37%) and 45% (34%), respectively.

Table 4.1 Mean position errors of 24-, 48- and 72-hour operational forecasts for each tropical cyclone in 2004

Tropical Cyclone			24-hour Forecast				48-hour Forecast				72-hour Forecast			
			Position Error & Number of Forecas				Position Error & Number of Forecas				Position Error & Number of 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	SUDAL	(0401)	107	52	42	60	236	74	38	53	343	107	34	44
TY	NIDA	(0402)	96	52	24	40	197	145	20	28	274	185	16	22
STS	OMAIS	(0403)	245	83	9	85	219	71	5	33	443	-	1	-
TY	CONSON	(0404)	229	110	15	138	780	273	10	137	1498	430	6	144
STS	CHANTHU	(0405)	236	48	6	140	361	32	2	-	-	-	0	-
TY	DIANMU	(0406)	119	65	29	49	182	85	25	32	244	173	21	29
TY	MINDULLE	(0407)	130	84	39	60	228	152	35	50	281	194	31	36
TY	TINGTING	(0408)	100	50	29	46	188	96	25	34	333	128	21	33
TS	KOMPASU	(0409)	152	133	6	19	476	137	2	-	-	-	0	-
TY	NAMTHEUN	(0410)	76	46	27	45	142	93	22	38	189	75	17	39
TS	MALOU	(0411)	-	-	0	-	-	-	0	-	-	-	0	-
TY	MERANTI	(0412)	166	86	15	108	372	153	11	135	608	152	7	226
TY	RANANIM	(0413)	140	106	14	71	333	283	10	68	580	247	6	92
TS	MALAKAS	(0414)	122	56	7	37	267	89	3	28	-	-	0	-
TY	MEGI	(0415)	183	104	13	30	320	194	9	20	1148	516	5	43
TY	CHABA	(0416)	110	70	43	55	173	114	39	42	248	178	35	42
TY	AERE	(0417)	111	85	21	65	175	144	17	42	326	169	13	51
TY	SONGDA	(0418)	117	60	40	56	254	162	36	58	376	288	32	60
STS	SARIKA	(0419)	124	46	6	97	85	-	1	-	-	-	0	-
TS	HAIMA	(0420)	62	32	4	40	-	-	0	-	-	-	0	-
TY	MEARI	(0421)	98	50	33	46	251	149	29	54	382	297	25	54
TY	MA-ON	(0422)	185	67	19	48	297	97	15	34	497	386	11	47
TY	TOKAGE	(0423)	121	105	28	36	241	165	24	31	413	324	20	40
TY	NOCK-TEN	(0424)	82	49	35	43	202	111	31	51	295	173	27	56
TY	MUIFA	(0425)	147	77	39	69	259	135	35	56	292	150	31	42
TS	MERBOK	(0426)	-	-	0	-	-	-	0	-	-	-	0	-
TY	NANMADOL	(0427)	163	74	17	66	353	101	13	68	461	116	9	66
TS	TALAS	(0428)	120	100	20	60	241	182	13	56	214	171	12	25
TS	NORU	(0429)	143	48	9	28	240	89	5	18	285	-	1	-
Annual Mean (Total)			125	80	589	54	243	166	475	47	355	290	381	45

Figure 4.2 presents the histograms of 24-, 48- and 72-hour forecast position errors. The ratio of 24-hour forecast errors smaller than 150 km was 71% (71% in 2003), the ratio of 48-hour forecast errors smaller than 300 km was 72% (79%) and the ratio of 72-hour forecast errors smaller than 450 km was 76% (75%).

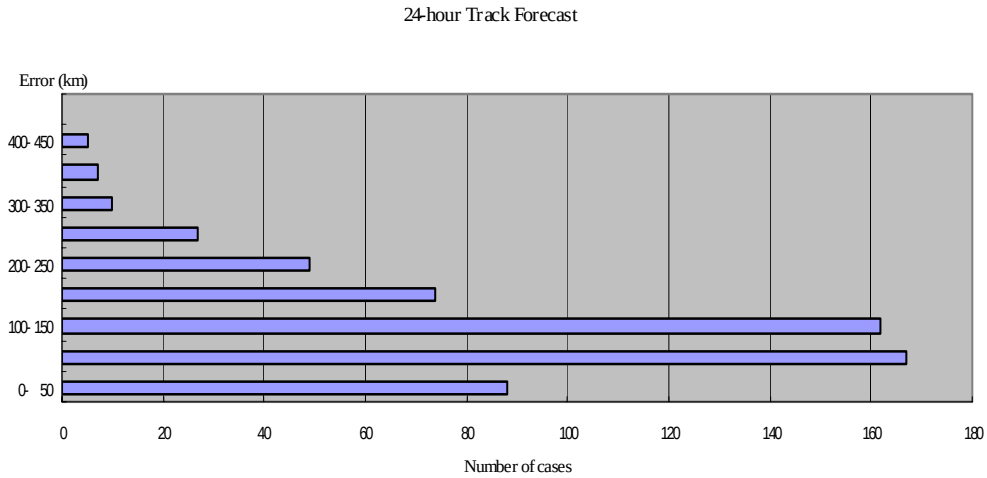


Figure 4.2 Histogram of 24-hour forecast position errors in 2004 (those for 48- and 72 hour forecasts are shown in the attached CD-ROMs).

Table 4.2 presents mean hitting ratios and radii of 70% probability circles of operational forecasts for each tropical cyclone in 2004. The annual mean radius of 70% probability circles issued with 24-hour position forecasts was 164km, and their hitting ratio was 75%. As for 48-hour forecasts, those are 288km and 70%, and for 72-hour forecasts, 432km and 73%, respectively.

After the introduction of smaller 70% probability circles on 1 June 2004, the mean radius of the circles issued with 24-hour position forecasts was 160km (189km in 2003), and their hitting ratio was 74% (85% in 2003). As for 48-hour forecasts, those are 281km (342km) and 67% (83%), and for 72-hour forecasts, 420km (502km) and 70% (79%), respectively.

Table 4.2 Mean hitting ratios (%) and radii (km) of 70% probability circles issued for 24-, 48- and 72-hour operational forecasts for each tropical cyclone in 2004

Tropical Cyclone			24-hour Forecast			48-hour Forecast			72-hour Forecast		
			Ratio (%)	Num.	Radius (km)	Ratio (%)	Num.	Radius (km)	Ratio (%)	Num.	Radius (km)
TY	SUDAL	(0401)	93	42	184	89	38	331	91	34	500
TY	NIDA	(0402)	96	24	196	90	20	339	100	16	528
STS	OMAIS	(0403)	22	9	185	100	5	319	100	1	463
TY	CONSON	(0404)	40	15	173	0	10	285	0	6	417
STS	CHANTHU	(0405)	0	6	164	0	2	278	-	0	-
TY	DIANMU	(0406)	79	29	168	92	25	284	86	21	410
TY	MINDULLE	(0407)	69	39	155	66	35	278	71	31	409
TY	TINGTING	(0408)	86	29	164	88	25	282	81	21	431
TS	KOMPASU	(0409)	67	6	148	0	2	278	-	0	-
TY	NAMTHEUN	(0410)	93	27	149	91	22	278	100	17	408
TS	MALOU	(0411)	-	0	-	-	0	-	-	0	-
TY	MERANTI	(0412)	67	15	179	45	11	291	43	7	500
TY	RANANIM	(0413)	71	14	164	60	10	285	50	6	420
TS	MALAKAS	(0414)	86	7	185	67	3	278	-	0	-
TY	MEGI	(0415)	54	13	177	56	9	299	20	5	456
TY	CHABA	(0416)	79	43	153	82	39	280	74	35	416
TY	AERE	(0417)	76	21	155	71	17	278	69	13	408
TY	SONGDA	(0418)	80	40	158	58	36	279	56	32	415
STS	SARIKA	(0419)	67	6	148	100	1	278	-	0	-
TS	HAIMA	(0420)	100	4	171	-	0	-	-	0	-
TY	MEARI	(0421)	91	33	159	69	29	282	72	25	440
TY	MA-ON	(0422)	42	19	168	40	15	283	64	11	478
TY	TOKAGE	(0423)	86	28	159	71	24	282	60	20	414
TY	NOCK-TEN	(0424)	86	35	150	81	31	279	78	27	408
TY	MUIFA	(0425)	54	39	155	54	35	278	74	31	408
TS	MERBOK	(0426)	-	0	-	-	0	-	-	0	-
TY	NANMADOL	(0427)	53	17	166	23	13	278	33	9	408
TS	TALAS	(0428)	75	20	164	69	13	284	100	12	411
TS	NORU	(0429)	89	9	175	80	5	296	100	1	500
Annual Mean (Total)			75	589	164	70	475	288	73	381	432

4.1.2 Central Pressure and Maximum Wind Speed

Table 4.3 gives root mean square errors (RMSEs) of 24-, 48- and 72-hour operational central pressure forecasts for each tropical cyclone in 2004. The RMSEs for maximum wind speed forecasts are included in the attached CD-ROMs. Annual mean RMSEs of the central pressure and the maximum wind speed for 24-hour forecasts were 11.4hPa (11.0hPa in 2003) and 5.1m/s (4.9 m/s in 2003), for 48-hour forecasts 16.1hPa (15.3hPa) and 7.1m/s (6.5m/s), and for 72-hour forecasts 18.6hPa (18.5hPa) and 8.1m/s (7.6m/s).

As for each TC, it had rather large errors in the forecasts of TY Chaba, which developed very quickly from 975hPa at 12UTC, 21 August to 930hPa at 12UTC, 22 August, and TY Ma-on, which also developed rapidly from 975hPa at 12UTC, 6 October to 930hPa at 12UTC, 7 October.

Table 4.3 Mean intensity errors of 24-, 48- and 72-hour operational central pressure forecasts for each tropical cyclone in 2004.

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	SUDAL	(0401)	3.4	8.9	42	6.6	10.1	38	10.6	13.1	34
TY	NIDA	(0402)	5.0	11.9	24	12.8	21.5	20	19.4	26.3	16
STS	OMAIS	(0403)	-2.9	8.1	9	-0.4	0.9	5	-6.0	6.0	1
TY	CONSON	(0404)	7.3	11.0	15	6.8	16.0	10	11.3	17.8	6
STS	CHANTHU	(0405)	-2.7	10.0	6	-10.5	11.9	2	-	-	0
TY	DIANMU	(0406)	1.4	12.6	29	3.4	18.2	25	-0.2	16.1	21
TY	MINDULLE	(0407)	-3.8	9.6	39	-5.4	14.2	35	-5.0	13.6	31
TY	TINGTING	(0408)	-10.2	11.8	29	-10.2	12.7	25	-9.8	12.8	21
TS	KOMPASU	(0409)	-1.3	3.3	6	5.0	5.1	2	-	-	0
TY	NAMTHEUN	(0410)	2.8	17.2	27	-2.9	20.3	22	-10.5	16.1	17
TS	MALOU	(0411)	-	-	0	-	-	0	-	-	0
TY	MERANTI	(0412)	1.8	15.1	15	-9.7	17.8	11	-16.7	22.0	7
TY	RANANIM	(0413)	-4.6	7.7	14	-5.5	10.6	10	-0.8	14.6	6
TS	MALAKAS	(0414)	-0.1	2.4	7	6.0	6.2	3	-	-	0
TY	MEGI	(0415)	0.8	5.9	13	11.3	12.5	9	11.4	12.7	5
TY	CHABA	(0416)	1.2	13.4	43	6.8	22.2	39	12.7	31.3	35
TY	AERE	(0417)	-1.7	5.5	21	-1.5	5.8	17	-3.8	8.1	13
TY	SONGDA	(0418)	3.5	12.7	40	4.6	12.3	36	8.0	16.0	32
STS	SARIKA	(0419)	1.0	7.1	6	0.0	0.0	1	-	-	0
TS	HAIMA	(0420)	-4.5	5.7	4	-	-	0	-	-	0
TY	MEARI	(0421)	2.3	8.5	33	2.6	14.4	29	4.0	18.9	25
TY	MA-ON	(0422)	3.9	16.9	19	15.2	25.3	15	25.3	35.8	11
TY	TOKAGE	(0423)	-2.5	7.2	28	-2.9	11.6	24	-3.0	13.5	20
TY	NOCK-TEN	(0424)	-3.6	9.8	35	-2.2	12.7	31	-2.3	13.4	27
TY	MUIFA	(0425)	-0.6	14.6	39	3.7	18.7	35	7.3	14.9	31
TS	MERBOK	(0426)	-	-	0	-	-	0	-	-	0
TY	NANMADOL	(0427)	2.8	12.7	17	6.4	21.0	13	-2.4	16.4	9
TS	TALAS	(0428)	-5.8	10.2	20	-16.2	17.7	13	-15.8	17.7	12
TS	NORU	(0429)	-6.4	7.7	9	-10.6	11.1	5	-9.0	9.0	1
Annual Mean (Total)			-0.1	11.4	589	1.3	16.1	475	2.7	18.6	381

Figure 4.3 presents the histogram of maximum wind speed errors for 24-, 48- and 72-hour forecasts. The ratio of absolute errors smaller than 3.75 m/s for 24-hour forecasts was 60% (57% in 2003), and 67% (69%) of total 48-hour forecasts and 63% (61%) of total 72-hour forecasts had errors smaller than 6.25 m/s. The overall performance of intensity forecasts in 2004 was almost same as that in 2003.

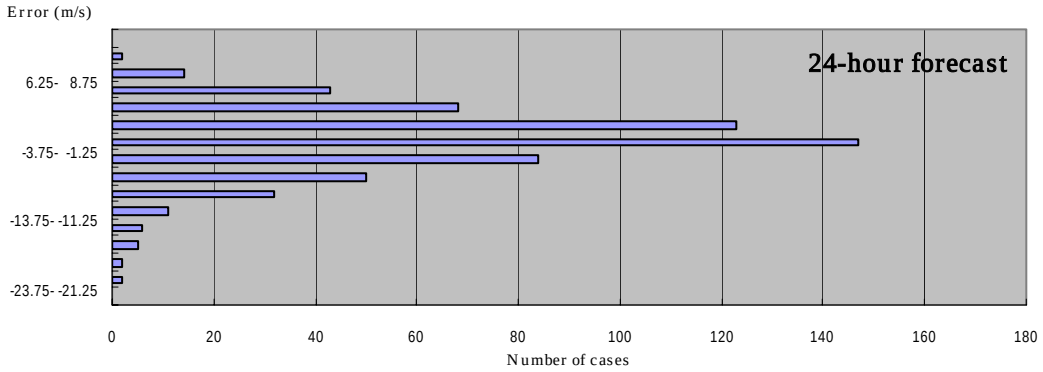


Figure 4.3 Histogram of 24-hour forecast maximum wind speed errors in 2004 (those for 48- and 72 hour forecasts are shown in the attached CD-ROMs).

4.2 TYM and GSM Predictions

JMA implemented the following changes to the JMA Global Spectral Model (GSM) and Typhoon Model (TYM) in 2004:

- Assimilation of temperature data instead of geopotential height data from radiosonde observations in April 2004, and Moderate Resolution Imaging Spectrometer (MODIS) polar winds data in May 2004

- Introduction of new parameterizaiton schemes for marine stratocumulus into GSM, including a cloud-ice-fall scheme, a subtropical maritime stratocumulus parameterization scheme and a revised low level cloud scheme in July 2004

- Direct assimilation of ATOVS level 1C data in place of level 1D data, introduction of new long-wave radiation scheme into GSM and improvement of a parameterization of absoption in short-wave radiation scheme in GSM in December 2004

TYM and GSM provide primary information for forecasters for the RSMC Tokyo - Typhoon Center to make operational track and intensity forecasts. Track predictions by TYM and GSM up to 84 and 90 hours, respectively, were verified with the best track data and predictions by the persistency (PER) method*. 30-hour, 54-hour and 78-hour intensity predictions by TYM and GSM were also verified with these data.

**The PER-method assumes that a tropical cyclone holds the same movement throughout the forecast period and forecasts are based upon the linear extrapolation of the latest 6-hour track of a tropical cyclone. Prediction errors by the PER-method are used to evaluate the relative performance of model predictions.*

4.2.1 TYM Prediction

1) Center Position

Annual mean position errors of TYM predictions from 1996 are indicated in Figure 4.4. Annual mean position errors for 30-hour*, 54-hour* and 78-hour* predictions in 2004 were 158km (175km in 2003), 249km (287km) and 361km (415km), respectively. The overall performance of the TYM track prediction in 2004 was best since 1996. Mean position errors of 18-, 30-, 42-, 54-, 66- and 78-hour predictions for each tropical cyclone are also shown in Table 4.4.

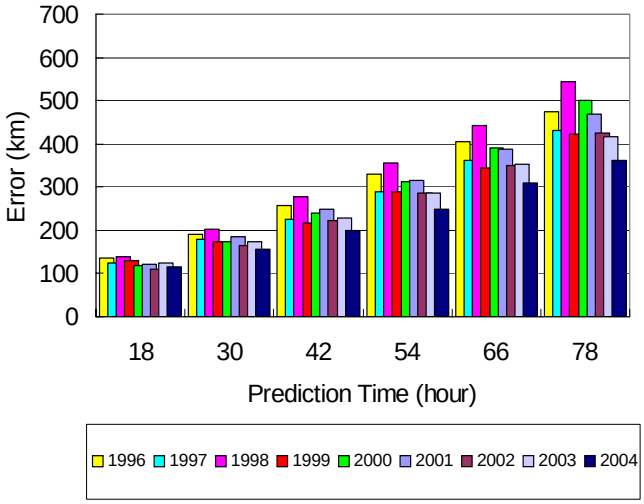


Figure 4.4 TYM annual mean position errors from 1996

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

Table 4.4 Mean position errors (km) of TYM for each tropical cyclone in 2004. Number of samples is given in parentheses.

Tropical Cyclone			T=18		T=30		T=42		T=54		T=66		T=78	
TY	0401	SUDAL	92.4	(44)	131.8	(42)	174.2	(40)	234.6	(38)	285.5	(36)	332.3	(34)
TY	0402	NIDA	103.2	(26)	141.3	(24)	184.8	(22)	243.3	(20)	308.7	(18)	334.9	(16)
STS	0403	OMAIS	234.5	(14)	341.4	(12)	503.8	(10)	570.1	(6)	638.5	(2)	-	(-)
TY	0404	CONSON	134.4	(18)	256.7	(16)	429.4	(14)	706.1	(12)	1121.2	(10)	1493.7	(8)
STS	0405	CHANTHU	173.7	(9)	277.8	(7)	379.1	(5)	487.8	(3)	565.1	(1)	-	(-)
TY	0406	DIANMU	105.9	(32)	143.8	(30)	179.8	(28)	205.6	(26)	237.3	(24)	258.4	(22)
TY	0407	MINDULLE	125.9	(40)	166.1	(38)	200.0	(36)	241.8	(34)	259.7	(32)	232.8	(30)
TY	0408	TINGTING	113.0	(31)	107.9	(29)	114.2	(27)	136.4	(25)	165.4	(23)	231.8	(21)
TS	0409	KOMPASU	163.1	(11)	265.7	(9)	149.2	(4)	97.8	(1)	-	(-)	-	(-)
TY	0410	NAMTHEUN	63.9	(28)	77.4	(26)	116.2	(24)	156.7	(22)	214.1	(20)	274.1	(18)
TS	0411	MALOU	-	(-)	-	(-)	-	(-)	-	(-)	-	(-)	-	(-)
TY	0412	MERANTI	173.8	(17)	245.3	(15)	339.1	(13)	447.5	(11)	592.8	(9)	761.8	(7)
TY	0413	RANANIM	123.7	(20)	192.7	(18)	281.3	(16)	369.6	(14)	434.0	(12)	466.9	(10)
TS	0414	MALAKAS	92.0	(9)	137.7	(7)	174.7	(5)	171.6	(3)	217.5	(1)	-	(-)
TY	0415	MEGI	130.1	(16)	182.5	(14)	206.2	(12)	239.8	(10)	400.9	(8)	484.7	(5)
TY	0416	CHABA	107.7	(46)	150.7	(44)	182.3	(42)	211.5	(40)	263.9	(38)	317.2	(36)
TY	0417	AERE	94.7	(22)	124.9	(20)	152.4	(18)	170.0	(16)	234.3	(14)	305.1	(12)
TY	0418	SONGDA	89.4	(44)	128.6	(42)	172.4	(40)	231.6	(38)	306.7	(36)	369.4	(34)
STS	0419	SARIKA	116.9	(13)	160.3	(11)	197.0	(8)	212.6	(5)	247.3	(3)	526.3	(1)
TS	0420	HAIMA	124.0	(6)	173.9	(4)	180.5	(2)	-	(-)	-	(-)	-	(-)
TY	0421	MEARI	80.2	(38)	118.1	(36)	141.2	(34)	193.5	(32)	280.2	(30)	353.4	(28)
TY	0422	MA-ON	150.2	(22)	198.4	(20)	234.1	(18)	224.2	(16)	289.9	(14)	363.7	(12)
TY	0423	TOKAGE	122.2	(31)	154.4	(29)	221.4	(27)	286.5	(25)	386.2	(23)	508.5	(21)
TY	0424	NOCK-TEN	87.7	(39)	107.7	(37)	154.8	(35)	199.3	(33)	243.3	(31)	293.7	(29)
TY	0425	MUIFA	142.1	(44)	187.7	(42)	222.2	(40)	257.7	(38)	280.7	(36)	306.1	(34)
TS	0426	MERBOK	357.1	(1)	-	(-)	-	(-)	-	(-)	-	(-)	-	(-)
TY	0427	NANMADOL	160.9	(21)	224.4	(19)	268.5	(17)	315.2	(15)	359.6	(13)	390.2	(11)
TS	0428	TALAS	100.1	(30)	129.1	(28)	182.5	(26)	246.8	(24)	310.7	(22)	377.6	(20)
TS	0429	NORU	126.4	(12)	174.1	(10)	222.6	(8)	326.8	(6)	429.3	(4)	391.7	(2)
	Annual	Mean	115.7	(684)	157.5	(629)	200.6	(571)	248.8	(513)	309.3	(460)	360.5	(411)

Table 4.5 gives TYM's relative performance compared to the PER-method. In this comparison, life stages of tropical cyclones (TCs) were classified into three categories, "Before", "During" and "After" recurvature. Each stage is defined with the direction of movement of each TC at each prediction time concerned. This table indicates that TYM outperformed the PER-method throughout the whole forecast period beyond 18 hours from the initial time, and improvement rates were roughly 28% (29% in 2003) for 18-hour, 46% (45%) for 30-hour, 53% (52%) for 42-hour, 56% (57%) for 54-hour, 57% (59%) for 66-hour and 57 (60%) for 78-hour predictions. The rates for prediction in 2004 were almost same as those in 2003. Looking at the results of respective stages, improvement rates were relatively higher in "After" stage in which position errors of PER-methods were larger compared with other two stages.

Figure 4.5 (in the attached CD-ROMs) presents histograms of position errors of 30-, 54- and 78-hour predictions of TYM. The ratio of 30-hour prediction errors smaller than 150km was 55% (56% in 2003), the ratio of 54-hour prediction errors smaller than 300km was 73% (66%) and the ratio of 78-hour prediction errors smaller than 450km was 75% (66%).

Table 4.5 Mean position errors (km) of TYM and PER predictions for the tropical cyclones in 2004 in each stage of motion. Number of samples is given in parentheses.

TIME	MODEL	Before	During	After	All
T=18	TYM	122.6 (368)	106.5 (139)	108.7 (177)	115.7 (684)
	PER	135.2 (368)	150.5 (139)	217.5 (177)	159.6 (684)
	IMPROV	9.3 %	29.2 %	50.0 %	27.5 %
T=30	TYM	160.4 (331)	147.4 (133)	159.8 (165)	157.5 (629)
	PER	236.5 (331)	260.8 (133)	419.3 (165)	289.6 (629)
	IMPROV	32.2 %	43.5 %	61.9 %	45.6 %
T=42	TYM	196.3 (293)	173.9 (121)	229.3 (157)	200.6 (571)
	PER	354.0 (293)	353.2 (121)	630.2 (157)	429.8 (571)
	IMPROV	44.5 %	50.8 %	63.6 %	53.3 %
T=54	TYM	234.2 (257)	211.1 (108)	301.8 (148)	248.8 (513)
	PER	453.0 (257)	456.0 (108)	854.6 (148)	569.5 (513)
	IMPROV	48.3 %	53.7 %	64.7 %	56.3 %
T=66	TYM	275.6 (225)	263.1 (98)	397.6 (137)	309.3 (460)
	PER	555.0 (225)	583.5 (98)	1067.5 (137)	713.7 (460)
	IMPROV	50.3 %	54.9 %	62.8 %	56.7 %
T=78	TYM	303.3 (194)	350.9 (92)	456.2 (125)	360.5 (411)
	PER	670.8 (194)	724.5 (92)	1167.8 (125)	834.0 (411)
	IMPROV	54.8 %	51.6 %	60.9 %	56.8 %

2) Central Pressure and Maximum Wind Speed

Mean errors of 30-, 54- and 78-hour central pressure predictions by TYM were +2.1hPa (+3.1hPa in 2003), +4.4hPa (+3.8hPa) and +6.4hPa (+6.8hPa), respectively in 2004. Their root mean square errors (RMSEs) were 13.3hPa (13.2hPa in 2003) for 30-hour predictions, 18.0hPa (15.8hPa) for 54-hour predictions, and 19.4hPa (18.4hPa) for 78-hour Prediction. The bias for 30-, 54-, and 78-hour maximum wind speed predictions was –2.0m/s (–1.6m/s in 2003) with a RMSE of 7.0m/s (6.3m/s), –3.4m/s (–2.1m/s) with a RMSE of 8.4m/s (7.3m/s), and
–4.4m/s (–3.6m/s) with a RSME of 9.0m/s (8.3m/s), respectively.

Figure 4.6 shows histograms of the errors of 30-hour central pressure and maximum wind speed predictions. About 40% (53% in 2003) of the central pressure predictions had errors with absolute values less than 7.5hPa, while 41% (43%) of the maximum wind speed predictions with absolute values less than 3.75m/s. As for 54-hour ones, these ratios were 56% (59%) with absolute values less than 12.5hPa and 58% (61%) with absolute values less than 6.25m/s, respectively. These ratios for 78-hour ones were 71% (69%) with absolute values less than 17.5hPa and 71% (72%) with absolute values less than 8.75m/s. (Figures are shown in the attached CD-ROMs)

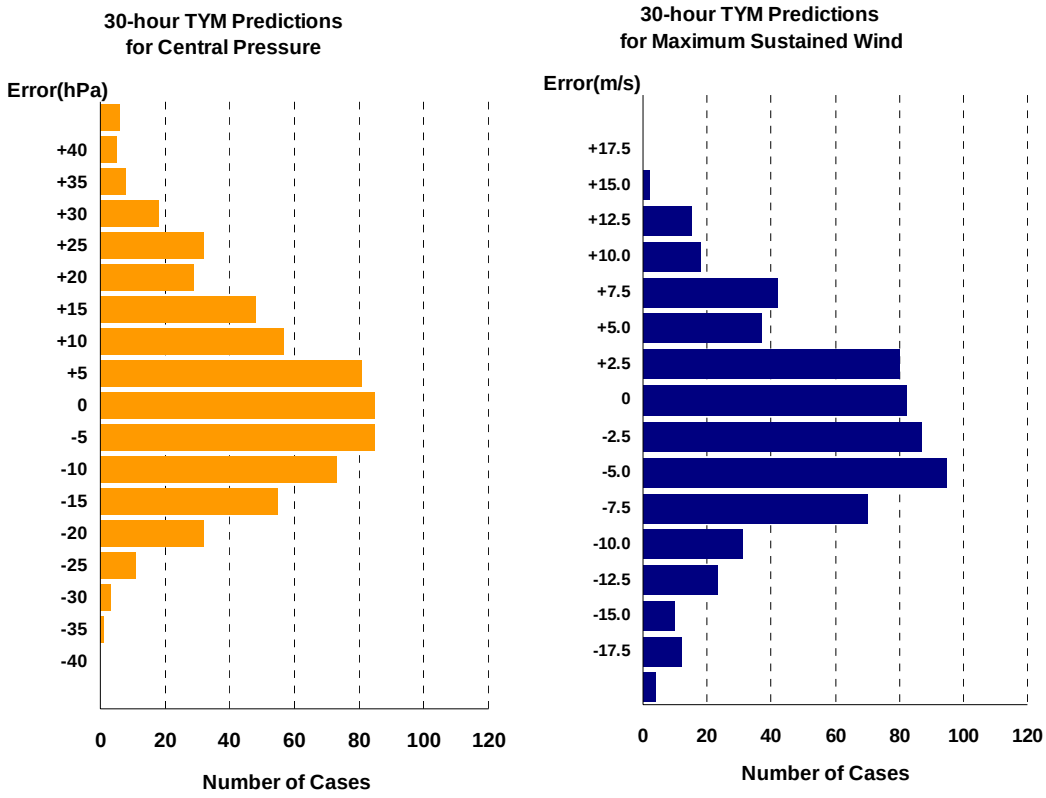


Figure 4.6 Error distribution of TYM 30-hour intensity predictions (left; for central pressure, right; for maximum wind speed, those for 54- and 78-hour predictions are included in the attached CD-ROMs).

4.2.2 GSM Prediction

1) Center Position

GSM annual mean position errors from 1996 are presented in Figure 4.7. In 2004, a total of 337 predictions were made by GSM and the errors for 30-hour, 54-hour and 78-hour predictions were 155km (167km in 2003), 252km (277km) and 358km (418km), respectively. The overall performance of GSM was better than that in 2003. Mean position errors of the 18-, 30-, 42-, 54-, 66- and 78-hour predictions for each tropical cyclone are given in Table 4.6.

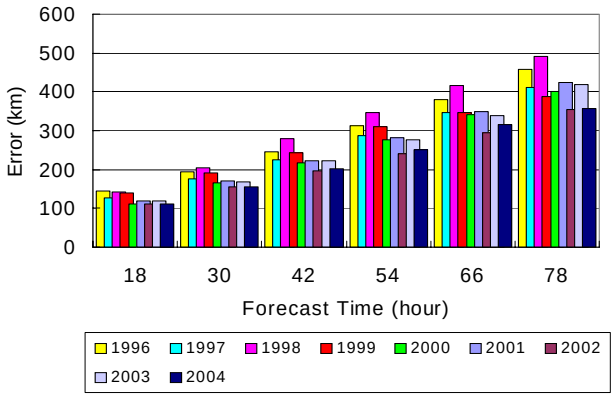


Figure 4.7 GSM annual mean position errors from 1996.

Table 4.6 Mean position errors (km) of GSM for each tropical cyclone in 2004

Tropical Cyclone			T=18		T=30		T=42		T=54		T=66		T=78	
TY	0401	SUDAL	79.4	(22)	125.4	(21)	177.4	(20)	276.0	(19)	343.8	(18)	395.8	(17)
TY	0402	NIDA	138.8	(13)	194.6	(12)	232.8	(11)	260.5	(10)	311.6	(9)	295.3	(8)
STS	0403	OMAIS	214.5	(7)	347.3	(5)	459.7	(5)	427.7	(1)	489.6	(1)	-	(-)
TY	0404	CONSON	131.2	(9)	250.7	(8)	449.9	(7)	714.1	(6)	1049.3	(5)	1202.2	(3)
STS	0405	CHANTHU	192.3	(5)	260.9	(4)	337.3	(3)	428.5	(2)	426.0	(1)	-	(-)
TY	0406	DIANMU	104.7	(16)	162.6	(15)	208.2	(14)	237.1	(13)	253.0	(12)	248.5	(11)
TY	0407	MINDULLE	136.6	(20)	167.6	(19)	212.1	(18)	242.7	(17)	282.0	(16)	270.1	(14)
TY	0408	TINGTING	106.4	(15)	121.7	(14)	124.2	(13)	146.2	(12)	186.3	(11)	231.3	(10)
TS	0409	KOMPASU	200.6	(3)	-	(-)	-	(-)	-	(-)	-	(-)	-	(-)
TY	0410	NAMTHEUN	53.3	(14)	84.3	(13)	121.5	(12)	144.6	(11)	189.0	(10)	249.2	(9)
TS	0411	MALOU	-	(-)	-	(-)	-	(-)	-	(-)	-	(-)	-	(-)
TY	0412	MERANTI	152.8	(8)	211.7	(7)	291.5	(6)	327.0	(5)	446.2	(4)	561.7	(3)
TY	0413	RANANIM	104.3	(10)	182.6	(9)	269.0	(8)	369.3	(7)	503.3	(6)	642.1	(5)
TS	0414	MALAKAS	105.4	(4)	85.3	(3)	94.7	(2)	170.7	(1)	-	(-)	-	(-)
TY	0415	MEGI	82.1	(8)	136.7	(7)	155.5	(6)	179.2	(5)	430.9	(4)	465.1	(2)
TY	0416	CHABA	102.6	(24)	153.0	(23)	200.8	(22)	237.1	(21)	282.2	(20)	336.2	(19)
TY	0417	AERE	95.2	(12)	159.1	(11)	178.4	(10)	218.5	(9)	228.4	(8)	281.1	(7)
TY	0418	SONGDA	106.9	(22)	144.2	(21)	187.5	(20)	252.7	(19)	356.9	(18)	420.4	(17)
STS	0419	SARIKA	75.9	(5)	132.0	(3)	197.1	(2)	-	(-)	-	(-)	-	(-)
TS	0420	HAIMA	80.3	(2)	171.5	(1)	289.2	(1)	-	(-)	-	(-)	-	(-)
TY	0421	MEARI	56.5	(19)	93.0	(18)	137.6	(17)	216.1	(16)	328.6	(15)	409.3	(14)
TY	0422	MA-ON	180.7	(11)	229.0	(10)	276.3	(9)	371.3	(8)	427.5	(7)	612.6	(6)
TY	0423	TOKAGE	112.7	(16)	129.5	(15)	178.5	(14)	235.4	(13)	310.4	(12)	412.0	(11)
TY	0424	NOCK-TEN	102.5	(19)	140.3	(18)	170.4	(17)	217.2	(16)	254.5	(15)	271.4	(14)
TY	0425	MUIFA	126.1	(22)	169.9	(20)	212.1	(20)	267.9	(18)	316.0	(17)	323.4	(15)
TS	0426	MERBOK	-	(-)	-	(-)	-	(-)	-	(-)	-	(-)	-	(-)
TY	0427	NANMADOL	147.6	(10)	184.4	(9)	210.6	(8)	216.4	(7)	274.2	(6)	308.2	(5)
TS	0428	TALAS	104.1	(15)	123.1	(14)	156.7	(13)	201.5	(12)	207.2	(11)	247.6	(10)
TS	0429	NORU	108.0	(6)	158.8	(5)	193.5	(4)	176.9	(3)	103.3	(2)	156.9	(1)
	Annual	Mean	111.7	(337)	155.4	(305)	202.1	(282)	252.0	(251)	315.9	(228)	357.5	(201)

Table 4.7 gives GSM's relative performance compared to the PER-method. Improvement rates were roughly 30% (35% in 2003) for 18-hour, 46% (50%) for 30-hour, and 56% (60%) for 54-hour to 78-hour predictions. These improvement rates in 2004 were worse than those in 2003. The percentage is relatively high in "After" stage.

Figure 4.8 (in the attached CD-ROMs) presents histograms of the position errors of 30-, 54- and 78-hour predictions of GSM. The ratio of 30-hour prediction errors smaller than 150km was 55% (54% in 2003), the ratio of 54-hour prediction errors smaller than 300km was 71% (69%) and the ratio of 78-hour prediction errors smaller than 450km was 76% (70%).

Table 4.7 Mean position errors (km) of GSM and PER predictions for the tropical cyclones in 2004 in each stage of motion.

TIME	MODEL	Before	During	After	All
T=18	GSM	120.3 (179)	99.2 (70)	104.3 (88)	111.7 (337)
	PER	135.5 (179)	151.9 (70)	214.7 (88)	159.5 (337)
	IMPROV	11.2 %	34.7 %	51.4 %	30.0 %
T=30	GSM	160.3 (159)	148.5 (65)	151.1 (81)	155.4 (305)
	PER	235.2 (159)	249.4 (65)	410.8 (81)	284.9 (305)
	IMPROV	31.8 %	40.5 %	63.2 %	45.5 %
T=42	GSM	194.3 (144)	187.1 (60)	228.0 (78)	202.1 (282)
	PER	358.2 (144)	334.5 (60)	623.5 (78)	426.6 (282)
	IMPROV	45.8 %	44.1 %	63.4 %	52.6 %
T=54	GSM	224.2 (125)	232.2 (56)	317.4 (70)	252.0 (251)
	PER	447.9 (125)	473.3 (56)	857.9 (70)	567.9 (251)
	IMPROV	49.9 %	50.9 %	63.0 %	55.6 %
T=66	GSM	261.5 (111)	262.6 (51)	448.6 (66)	315.9 (228)
	PER	564.6 (111)	582.3 (51)	1079.3 (66)	717.6 (228)
	IMPROV	53.7 %	54.9 %	58.4 %	56.0 %
T=78	GSM	277.6 (94)	339.7 (49)	502.1 (58)	357.5 (201)
	PER	669.9 (94)	709.5 (49)	1193.8 (58)	830.7 (201)
	IMPROV	58.6 %	52.1 %	57.9 %	57.0 %

2) Central Pressure and Maximum Wind Speed

Figure 4.9 shows histograms of central pressure errors and the maximum wind speed errors of 30-hour predictions of GSM. The histograms show that in most cases GSM underestimated the intensity of tropical cyclones in its 30-hour predictions and has a relative positive bias in the central pressure prediction.

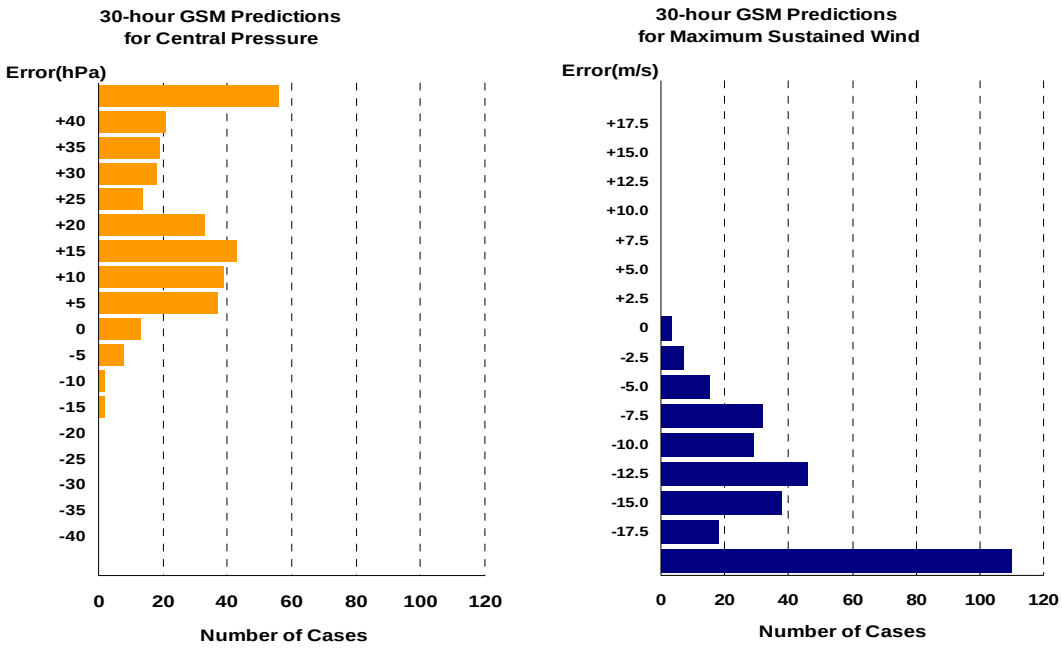
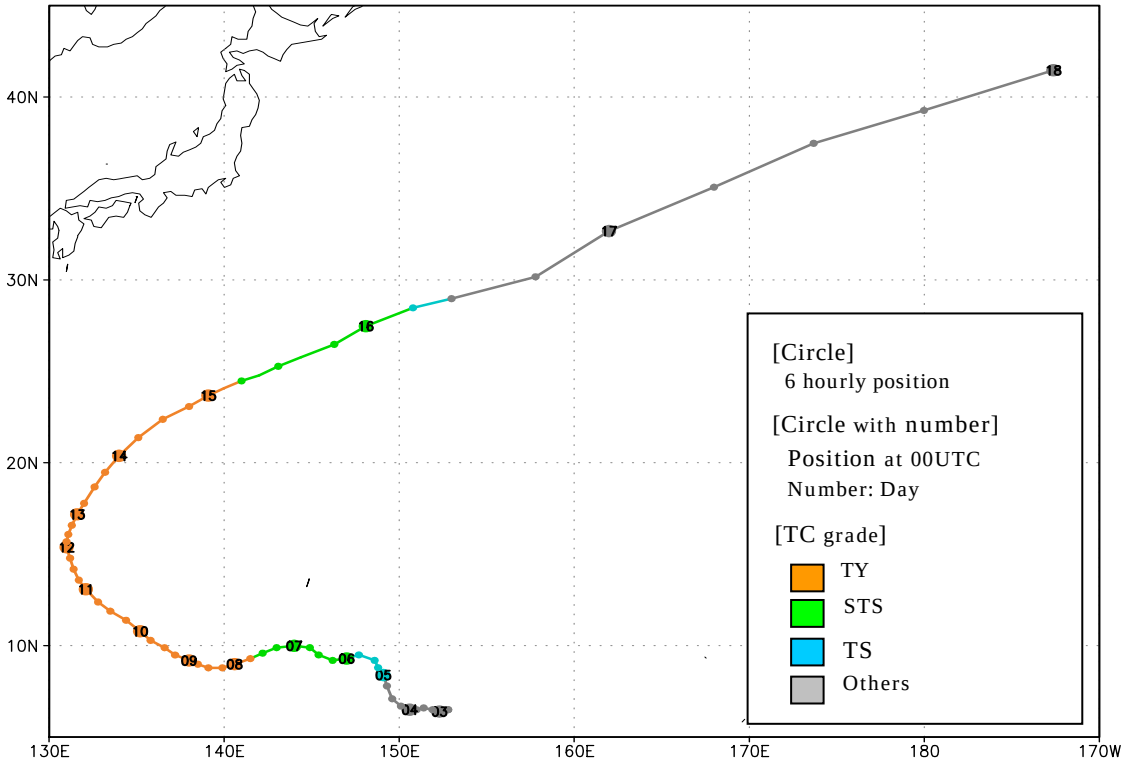


Figure 4.9 Error distribution of GSM 30-hour intensity predictions in 2004

TY Sudal (0401)

SUDAL formed as a tropical depression (TD) southeast of Truck Island at 18UTC on 2 April 2004. It moved westward, then north-northwestward and developed into a tropical storm (TS) around the Caroline Islands at 00UTC, 5 April. Moving westward with slight meanders, it was upgraded to the typhoon (TY) intensity at 18UTC, 7 April. With the gradual change of its direction to the north, it reached the peak intensity with maximum sustained wind of 90kt over the waters east of the Philippines at 00UTC on 10 April. After recurving on 12 April, SUDAL accelerated east-northeastward weakening its intensity south of Chichijima Island on 15 April. It was downgraded to the TS intensity and further transformed into an extratropical cyclone north of Minamitorishima Island at 06 and 12UTC the next day, respectively. It crossed the International Date Line south of the Aleutian Islands on 17 April.

Date/Time		Center Position		Central pressure	Max Wind	CI Number	Grade	Date/Time		Center Position		Central pressure	Max Wind	CI Number	Grade
	(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)				(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)		
Apr.	02/18	6.5	152.8	1004	-	-	TD		11/00	13.1	132.1	945	85	5.5	TY
	03/00	6.4	152.3	1004	-	-	TD		11/06	13.6	131.7	945	85	5.5	TY
	03/06	6.5	151.9	1004	-	-	TD		11/12	14.2	131.4	945	85	5.5	TY
	03/12	6.6	151.4	1004	-	-	TD		11/18	14.8	131.2	945	85	5.5	TY
	03/18	6.5	151	1002	-	-	TD		12/00	15.4	131	945	85	5.5	TY
	04/00	6.5	150.6	1002	-	-	TD		12/06	15.7	131	945	85	5.5	TY
	04/06	6.7	150.1	1000	-	-	TD		12/12	16.1	131.1	945	85	5.5	TY
	04/12	7.1	149.6	1000	-	-	TD		12/18	16.6	131.3	945	85	5.5	TY
	04/18	7.8	149.3	1000	-	-	TD		13/00	17.2	131.6	945	85	5.5	TY
	05/00	8.4	149.1	998	35	2.5	TS		13/06	17.8	132	945	85	5.5	TY
	05/06	8.8	148.8	990	40	3.0	TS		13/12	18.7	132.6	945	85	5.5	TY
	05/12	9.2	148.6	990	40	3.0	TS		13/18	19.5	133.2	945	85	5.5	TY
	05/18	9.5	147.7	985	45	3.5	TS		14/00	20.4	134	950	80	5.5	TY
	06/00	9.3	147	980	50	3.5	STS		14/06	21.4	135.1	950	80	5.5	TY
	06/06	9.2	146.2	980	50	3.5	STS		14/12	22.4	136.5	955	80	5.5	TY
	06/12	9.5	145.4	980	55	3.5	STS		14/18	23.1	138	960	75	5.0	TY
	06/18	9.9	144.9	975	60	4.0	STS		15/00	23.7	139.1	965	70	4.5	TY
	07/00	10	144	975	60	4.0	STS		15/03	24.1	140	965	65	-	TY
	07/06	9.9	143	975	60	4.0	STS		15/06	24.5	141	970	60	4.0	STS
	07/12	9.6	142.2	975	60	4.0	STS		15/09	24.8	142	970	60	-	STS
	07/18	9.3	141.5	970	65	4.0	TY		15/12	25.3	143.1	975	60	3.5	STS
	08/00	9	140.6	960	70	5.0	TY		15/15	25.8	144.4	975	60	-	STS
	08/06	8.8	139.9	955	75	5.0	TY		15/18	26.5	146.3	980	55	3.0	STS
	08/12	8.8	139.1	950	80	5.5	TY		16/00	27.5	148.1	985	50	3.0	STS
	08/18	9	138.5	950	80	5.5	TY		16/06	28.5	150.8	990	45	2.5	TS
	09/00	9.2	138	950	80	5.5	TY		16/12	29	153	996	-	-	L
	09/06	9.5	137.2	950	80	5.5	TY		16/18	30.2	157.8	992	-	-	L
	09/12	9.9	136.6	950	80	5.5	TY		17/00	32.7	162	994	-	-	L
	09/18	10.3	135.8	945	85	6.0	TY		17/06	35.1	168	994	-	-	L
	10/00	10.8	135.2	940	90	6.0	TY		17/12	37.5	173.7	996	-	-	L
	10/06	11.4	134.4	940	90	6.0	TY		17/18	39.3	180	1000	-	-	L
	10/12	11.9	133.5	940	90	6.0	TY		18/00	41.5	187.4	1008	-	-	OUT
	10/18	12.4	132.8	945	85	5.5	TY								


40N
30N
20N
10N
130E
140E
150E
160E
170E
180
170W
[Circle]
6 hourly position
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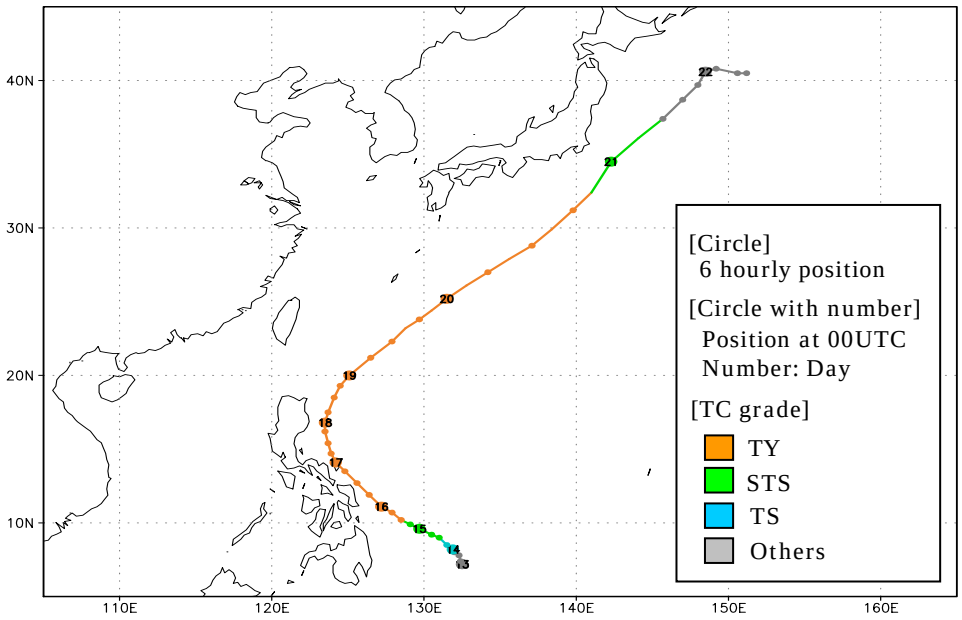
Position at 00UTC
Number: Day
[TC grade]
TY
STS
TS
Others

TY NIDA (0402)

NIDA formed as a tropical depression (TD) over the sea east of Mindanao Island at 00UTC 13 May 2004. Moving northwestward, it developed into a tropical storm (TS) over the same water at 00UTC, 14 May, and further a typhoon (TY) over the sea east of Philippines at 12UTC, 15 May. Moving in the same direction, it reached its peak intensity with maximum sustained wind of 95kt over the same water at 12UTC, 16 May. NIDA accelerated northeastward after recurved on 18 May over the sea east of Luzon Island. It passed over the sea south of Japan, nearly keeping its own intensity. After it passed south of Hachijojima Island, it weakened rapidly and transformed an extratropical cyclone at 06UTC, 21 May over the sea east of Japan and dissipated over the same water at 00UTC, 23 May.

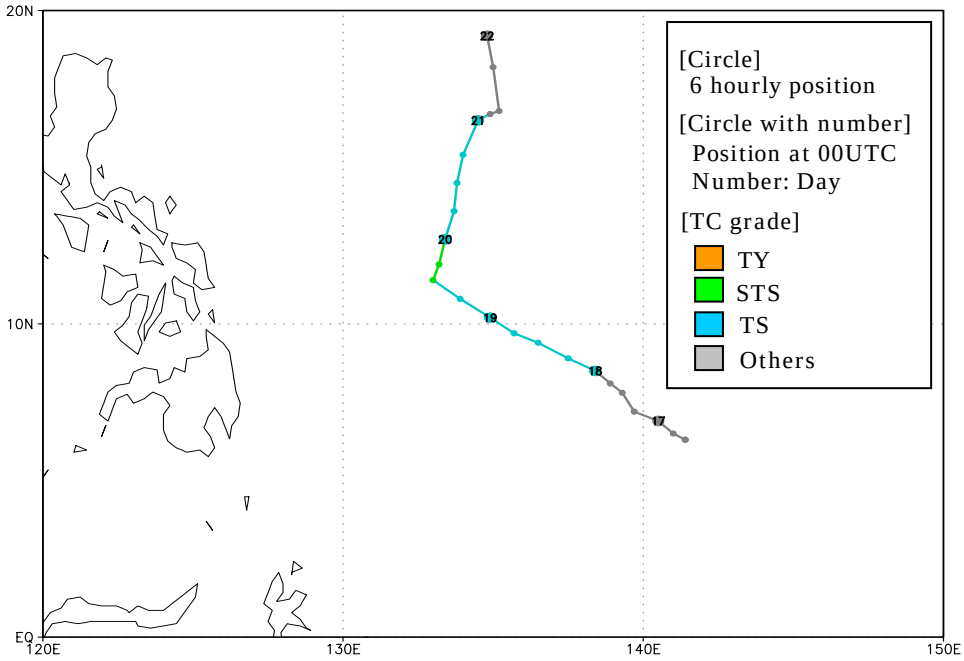
Date/Time		Center Position		Central pressure	Max Wind	CI Number	Grade	Date/Time		Center Position		Central pressure	Max Wind	CI Number	Grade
	(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)				(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)		
May	13/00	7.2	132.5	1004	-	-	TD	19/00	20.0	125.1	950	80	5.0	TY
	13/06	7.4	132.4	1002	-	-	TD	19/06	21.2	126.5	950	80	5.0	TY
	13/12	7.8	132.3	1004	-	-	TD	19/12	22.3	127.9	950	80	5.0	TY
	13/18	8.0	132.0	1000	-	-	TD	19/15	23.2	128.8	950	80	-	TY
	14/00	8.2	131.9	998	35	-	TS	19/18	23.8	129.7	950	80	5.0	TY
	14/06	8.5	131.5	990	40	3.0	TS	19/21	24.4	130.5	950	80	-	TY
	14/12	9.0	131.0	985	50	3.5	STS	20/00	25.2	131.5	955	75	5.0	TY
	14/18	9.2	130.5	985	50	3.5	STS	20/03	26.1	132.8	955	75	-	TY
	15/00	9.6	129.7	980	55	3.5	STS	20/06	27.0	134.2	960	70	4.5	TY
	15/06	9.9	129.1	975	60	4.0	STS	20/09	27.9	135.6	960	70	-	TY
	15/12	10.2	128.5	970	65	4.5	TY	20/12	28.8	137.1	960	70	4.5	TY
	15/18	10.7	127.9	955	75	5.5	TY	20/15	29.9	138.4	965	70	-	TY
	16/00	11.1	127.2	950	80	5.5	TY	20/18	31.2	139.8	970	65	4.0	TY
	16/06	11.9	126.4	945	90	6.0	TY	20/21	32.4	141.0	975	60	-	STS
	16/12	12.7	125.6	935	95	6.5	TY	21/00	34.5	142.3	980	50	3.5	STS
	16/18	13.5	124.8	935	95	6.5	TY	21/03	36.1	144.1	980	50	-	STS
	17/00	14.1	124.2	940	90	6.5	TY	21/06	37.4	145.7	984	-	-	L
	17/06	14.7	123.9	940	90	6.5	TY	21/12	38.7	147.0	986	-	-	L
	17/12	15.4	123.7	940	90	6.5	TY	21/18	39.7	148.0	992	-	-	L
	17/18	16.2	123.5	940	90	6.5	TY	22/00	40.6	148.5	996	-	-	L
	18/00	16.8	123.5	940	90	6.5	TY	22/06	40.8	149.2	1000	-	-	L
	18/06	17.5	123.7	940	90	6.5	TY	22/12	40.5	150.6	1004	-	-	L
	18/12	18.5	124.1	945	85	5.5	TY	22/18	40.5	151.2	1008	-	-	L
	18/18	19.3	124.5	945	85	5.5	TY	23/00						Dissip



STS OMAIS (0403)

OMAIS formed as a tropical depression (TD) around the Caroline Islands at 12UTC, 16 May 2004. Moving northwestward, it developed into a tropical storm (TS) over the same water at 00UTC, 18 May. Moving in the same direction, it developed into a severe tropical storm (STS) and reached its peak intensity with maximum sustained wind of 50kt over the sea east of the Philippines at 12UTC, 19 May. At the same time, OMAIS changed the direction north-northeast and gradually weakened over the same water. Over the sea south of Okinotorishima, it weakened into a tropical depression (TD) at 06UTC, 21 May and dissipated over the same water at 06UTC, 22 May.

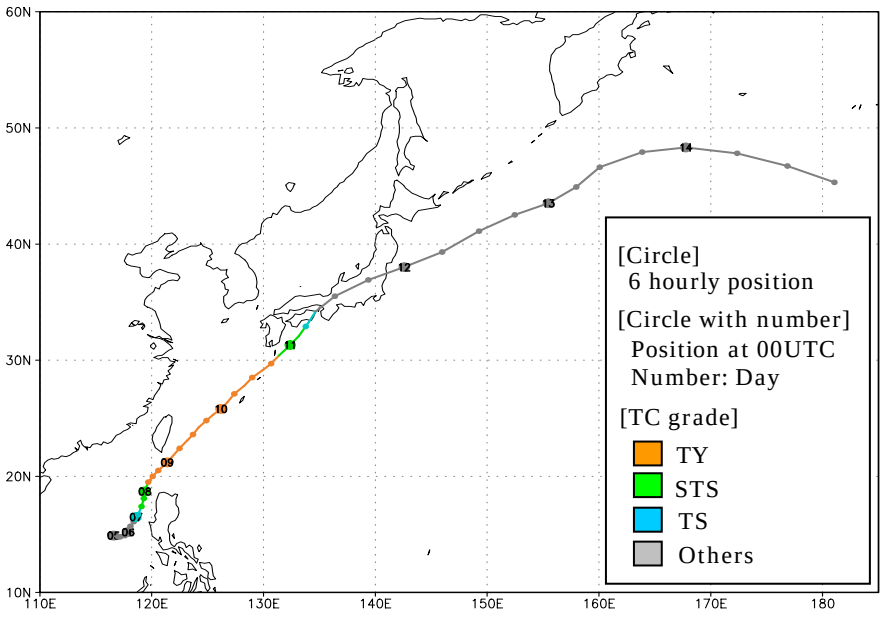
Date/Time		Center Position		Central pressure	Max Wind	CI Number	Grade	Date/Time		Center Position		Central pressure	Max Wind	CI Number	Grade
	(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)				(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)		
May	16/12	6.3	141.4	1004	-	-	TD	19/12	11.4	133.0	985	50	3.0	STS	
	16/18	6.5	141.0	1004	-	-	TD	19/18	11.9	133.2	985	50	3.0	STS	
	17/00	6.9	140.5	1004	-	-	TD	20/00	12.7	133.4	990	45	3.0	TS	
	17/06	7.2	139.7	1000	-	-	TD	20/06	13.6	133.7	990	45	3.0	TS	
	17/12	7.8	139.3	1000	-	-	TD	20/12	14.5	133.8	990	45	3.0	TS	
	17/18	8.1	138.9	1000	-	-	TD	20/18	15.4	134.0	990	40	3.0	TS	
	18/00	8.5	138.4	996	35	2.5	TS	21/00	16.5	134.5	996	35	2.5	TS	
	18/06	8.9	137.5	996	35	2.5	TS	21/06	16.7	134.9	998	-	-	TD	
	18/12	9.4	136.5	996	35	2.5	TS	21/12	16.8	135.2	1004	-	-	TD	
	18/18	9.7	135.7	996	35	2.5	TS	21/18	18.2	135.0	1004	-	-	TD	
	19/00	10.2	134.9	996	35	2.5	TS	22/00	19.2	134.8	1004	-	-	TD	
	19/06	10.8	133.9	992	40	2.5	TS	22/06						Dissip	



TY CONSON (0404)

CONSON formed as a tropical depression (TD) in the South China Sea at 18UTC on 4 June 2004. It moved eastward, then north-northeastward and developed into a tropical storm (TS) west off Luzon Island at 18UTC, 6 June. After it changed the direction to northeastward, it was upgraded to the typhoon (TY) intensity at 06UTC, 8 June. Keeping its direction to the northeast, it reached the peak intensity with maximum sustained wind of 80kt at 12UTC on 9 June. Keeping its intensity, CONSON moved northeastward along the Nansei Islands. After tracking over the water east of Tanegashima Island, it weakened its intensity gradually into the TS strength at 06 UTC, 11 June. It made landfall over Shikoku after 07UTC, the same day. It transformed into an extratropical cyclone at 09 UTC, 11 June, and crossed the International Date Line south of the Aleutian Islands on 14 June.

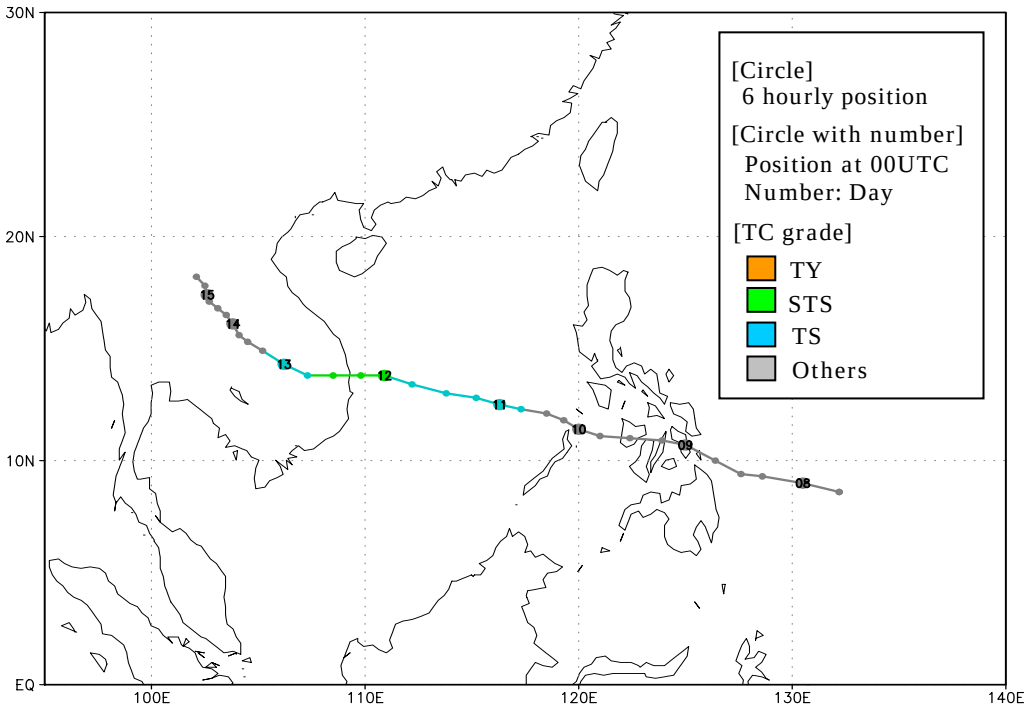
Date/Time		Center Position		Central pressure	Max Wind	CI Number	Grade	Date/Time		Center Position		Central pressure	Max Wind	CI Number	Grade
	(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)				(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)		
June	04/18	15.0	116.3	1004	-	-	TD	10/06	27.1	127.4	960	75	5.0	TY
	05/00	14.9	116.6	1002	-	-	TD	10/09	27.8	128.3	960	75	-	TY
	05/06	14.8	117.0	1002	-	-	TD	10/12	28.5	129.0	965	70	5.0	TY
	05/12	14.8	117.2	1002	-	-	TD	10/15	29.1	129.9	965	70	-	TY
	05/18	14.9	117.6	1000	-	-	TD	10/18	29.7	130.7	970	65	4.5	TY
	06/00	15.2	117.9	1000	-	-	TD	10/21	30.4	131.4	975	60	-	STS
	06/06	15.7	118.1	1000	-	-	TD	11/00	31.3	132.4	980	55	4.0	STS
	06/12	16.1	118.4	1000	-	-	TD	11/03	32.1	133.2	985	50	-	STS
	06/18	16.3	118.5	998	35	2.5	TS	11/06	32.9	133.8	992	40	3.5	TS
	07/00	16.5	118.6	992	40	3.0	TS	11/07	33.3	134.1	994	35	-	TS
	07/06	16.7	118.8	985	45	3.0	TS	11/09	34.2	134.7	1004	-	-	L
	07/12	17.4	119.1	985	50	3.0	STS	11/12	35.5	136.4	1008	-	-	L
	07/18	18.1	119.3	980	50	3.0	STS	11/18	36.9	139.4	1008	-	-	L
	08/00	18.7	119.4	975	60	4.0	STS	12/00	38.0	142.6	1008	-	-	L
	08/06	19.5	119.7	970	65	4.5	TY	12/06	39.3	146.0	1008	-	-	L
	08/12	20.0	120.1	965	70	5.0	TY	12/12	41.1	149.3	1006	-	-	L
	08/18	20.5	120.6	965	70	5.0	TY	12/18	42.5	152.5	1004	-	-	L
	09/00	21.2	121.4	965	70	5.0	TY	13/00	43.5	155.5	1004	-	-	L
	09/06	22.4	122.5	960	75	5.0	TY	13/06	44.9	158.0	1006	-	-	L
	09/09	23.1	123.2	960	75	-	TY	13/12	46.6	160.1	1006	-	-	L
	09/12	23.6	123.7	960	80	5.5	TY	13/18	47.9	163.9	1008	-	-	L
	09/15	24.2	124.2	960	80	-	TY	14/00	48.3	167.8	1008	-	-	L
	09/18	24.8	124.9	960	80	5.5	TY	14/06	47.8	172.4	1012	-	-	L
	09/21	25.3	125.5	960	80	-	TY	14/12	46.7	176.9	1016	-	-	L
	10/00	25.8	126.2	960	80	5.5	TY	14/18	45.3	181.1	1016	-	-	OUT
	10/03	26.4	126.8	960	80	-	TY							



STS CHANTHU (0405)

CHANTHU formed as a tropical depression (TD) east of the Philippines at 18UTC on 7 June 2004. It moved west-northwestward and passed through the Philippines. CHANTHU kept moving west-northwestward and developed into the typhoon (TY) force at 18UTC, 10 June in the South China Sea. Soon after attained the peak strength with maximum sustained wind of 60kt at 06UTC on 12 June, it started to weaken its intensity gradually. After making landfall over Vietnam on 12 June, it changed the direction to northwestward. It weakened into a TD at 06UTC, 13 June, and dissipated on 15 June around the northern part of Thailand.

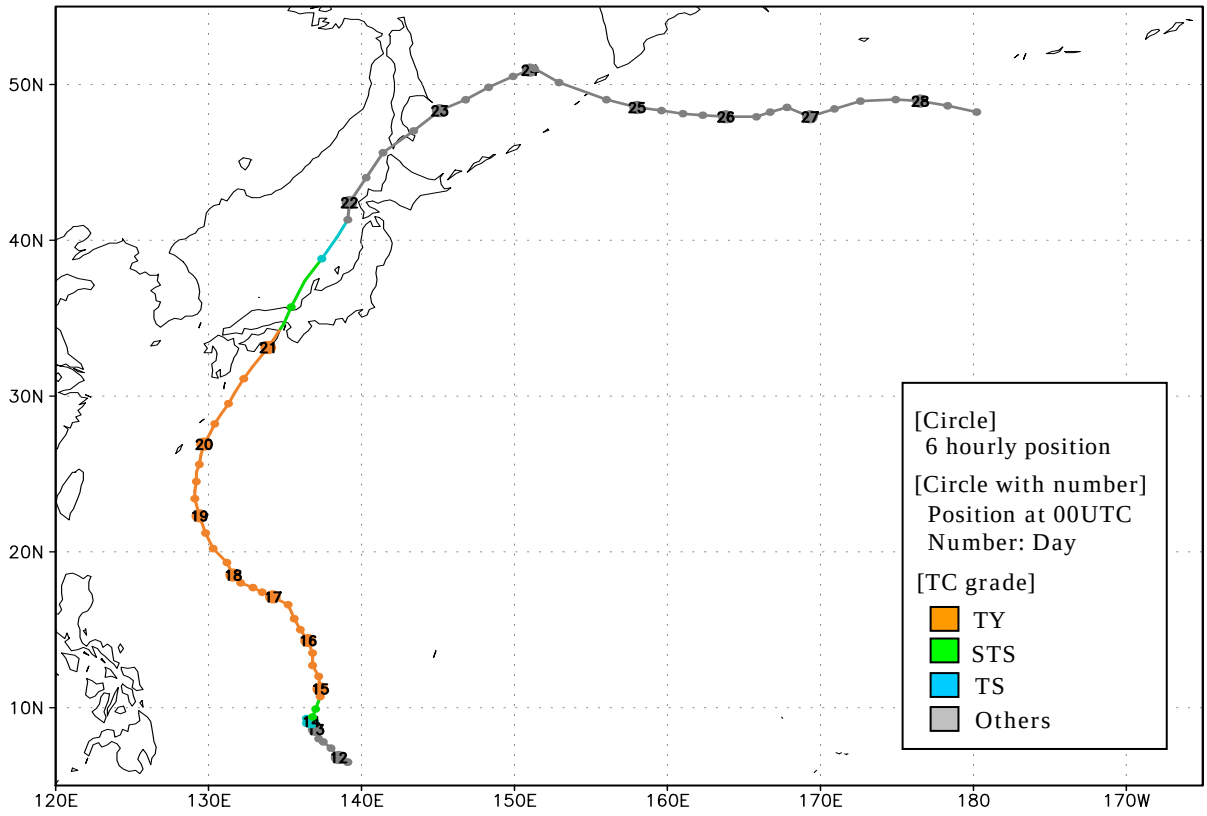
Date/Time		Center Position		Central pressure	Max Wind	CI Number	Grade	Date/Time		Center Position		Central pressure	Max Wind	CI Number	Grade
	(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)				(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)		
June	07/18	8.6	132.2	1008	-	-	TD	11/18	13.4	112.2	990	45	3.0	TS
	08/00	9.0	130.5	1008	-	-	TD	12/00	13.8	110.9	985	55	3.5	STS
	08/06	9.3	128.6	1006	-	-	TD	12/06	13.8	109.8	975	60	4.0	STS
	08/12	9.4	127.6	1006	-	-	TD	12/12	13.8	108.5	980	55	3.5	STS
	08/18	10.0	126.4	1006	-	-	TD	12/18	13.8	107.3	990	45	3.0	TS
	09/00	10.7	125.0	1006	-	-	TD	13/00	14.3	106.2	996	35	2.5	TS
	09/06	10.9	123.9	1004	-	-	TD	13/06	14.9	105.2	1000	-	-	TD
	09/12	11.0	122.4	1006	-	-	TD	13/12	15.3	104.5	1002	-	-	TD
	09/18	11.1	121.0	1004	-	-	TD	13/18	15.6	104.1	1002	-	-	TD
	10/00	11.4	120.0	1004	-	-	TD	14/00	16.1	103.8	1002	-	-	TD
	10/06	11.8	119.3	1002	-	-	TD	14/06	16.5	103.5	1002	-	-	TD
	10/12	12.1	118.5	1002	-	-	TD	14/12	16.8	103.1	1002	-	-	TD
	10/18	12.3	117.3	998	35	2.5	TS	14/18	17.1	102.7	1002	-	-	TD
	11/00	12.5	116.3	996	35	2.5	TS	15/00	17.4	102.6	1002	-	-	TD
	11/06	12.8	115.2	996	35	2.5	TS	15/06	17.8	102.5	1002	-	-	TD
	11/12	13.0	113.8	994	35	2.5	TS	15/12	18.2	102.1	1002	-	-	Dissip.



TY DIANMU (0406)

DIANMU formed as a tropical depression (TD) at 18UTC over the sea near the Caroline Islands on 11 June 2004. Moving northwestward, it developed into a tropical storm (TS) over the same waters at 12UTC, 13 June. Changing the direction from the north to the northwest, DIANMU intensified quickly into a typhoon (TY) at 18UTC 14 June, and further reached the peak strength with central pressure of 915hPa and maximum sustained wind of 100kt at 00UTC on 16 June. After its recurvature south of Okinawa on 19 June, it moved to the northeast with gradually weakening. Soon after making landfall on Shikoku on 21 June, it was downgraded to the STS intensity. DIANMU weakened into a TS and then transformed into an extratropical cyclone in the Japan Sea at 12UTC and 18UTC, 21 June, respectively. It crossed the International Date Line south of the Aleutian Islands on 28 June.

Date/Time	Center Position		Central pressure	Max Wind	CI Number	Grade	Date/Time	Center Position		Central pressure	Max Wind	CI Number	Grade
(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)			(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)		
11/18	6.5	139.1	1006	-	-	TD	20/12	29.5	131.3	955	75	4.5	TY
12/00	6.8	138.5	1006	-	-	TD	20/15	30.2	131.7	955	75	-	TY
12/06	7.4	138.0	1006	-	-	TD	20/18	31.1	132.3	960	70	4.0	TY
12/12	7.8	137.5	1006	-	-	TD	20/21	31.9	132.9	960	70	-	TY
12/18	8.0	137.2	1004	-	-	TD	21/00	33.1	133.9	965	70	4.0	TY
13/00	8.6	137.0	1004	-	-	TD	21/03	34.3	134.7	970	60	-	STS
13/06	9.1	136.6	1000	-	-	TD	21/04	34.6	134.9	970	60	-	STS
13/12	9.3	136.4	998	35	2.5	TS	21/06	35.7	135.4	975	55	3.5	STS
13/18	9.0	136.4	994	40	3.0	TS	21/09	37.4	136.3	980	50	-	STS
14/00	9.1	136.7	990	45	3.0	TS	21/12	38.8	137.4	985	45	3.0	TS
14/06	9.4	136.8	985	50	3.5	STS	21/15	40.2	138.4	985	45	-	TS
14/12	9.9	137.0	980	55	3.5	STS	21/18	41.3	139.1	986	-	-	L
14/18	10.7	137.3	970	65	4.5	TY	22/00	42.4	139.2	988	-	-	L
15/00	11.2	137.3	960	70	5.0	TY	22/06	44.0	140.3	990	-	-	L
15/06	12.0	137.2	950	80	5.5	TY	22/12	45.6	141.4	990	-	-	L
15/12	12.7	136.8	935	90	6.0	TY	22/18	47.0	143.4	990	-	-	L
15/18	13.5	136.8	925	95	6.5	TY	23/00	48.3	145.1	990	-	-	L
16/00	14.3	136.5	915	100	7.0	TY	23/06	49.0	146.8	990	-	-	L
16/06	15.0	136.0	915	100	7.0	TY	23/12	49.8	148.3	992	-	-	L
16/12	15.7	135.6	915	100	7.0	TY	23/18	50.5	149.9	994	-	-	L
16/18	16.6	135.2	915	100	7.0	TY	24/00	50.9	151.0	996	-	-	L
17/00	17.1	134.2	915	100	7.0	TY	24/06	51.0	151.3	996	-	-	L
17/06	17.4	133.5	915	100	7.0	TY	24/12	50.1	152.9	1000	-	-	L
17/12	17.7	132.9	925	95	6.5	TY	24/18	49.0	156.0	1002	-	-	L
17/18	18.0	132.1	930	95	6.0	TY	25/00	48.5	158.0	1002	-	-	L
18/00	18.5	131.6	930	95	6.0	TY	25/06	48.3	159.6	1004	-	-	L
18/06	19.3	131.2	925	95	6.5	TY	25/12	48.1	161.0	1006	-	-	L
18/12	20.2	130.3	925	95	6.5	TY	25/18	48.0	162.3	1006	-	-	L
18/18	21.2	129.8	925	95	6.5	TY	26/00	47.9	163.8	1008	-	-	L
19/00	22.3	129.4	930	95	6.0	TY	26/06	47.9	165.8	1008	-	-	L
19/06	23.4	129.1	935	90	6.0	TY	26/12	48.2	166.7	1008	-	-	L
19/09	23.9	129.1	935	90	-	TY	26/18	48.5	167.8	1006	-	-	L
19/12	24.5	129.2	940	90	5.5	TY	27/00	47.9	169.3	1004	-	-	L
19/15	25.1	129.2	940	90	-	TY	27/06	48.4	170.9	1000	-	-	L
19/18	25.6	129.4	945	85	5.0	TY	27/12	48.9	172.6	996	-	-	L
19/21	26.2	129.5	945	85	-	TY	27/18	49.0	174.9	996	-	-	L
20/00	26.9	129.7	945	85	5.0	TY	28/00	48.9	176.5	996	-	-	L
20/03	27.6	130.1	945	85	-	TY	28/06	48.6	178.3	996	-	-	L
20/06	28.2	130.4	955	75	4.5	TY	28/12	48.2	180.2	996	-	-	OUT
20/09	28.8	130.8	955	75	-	TY							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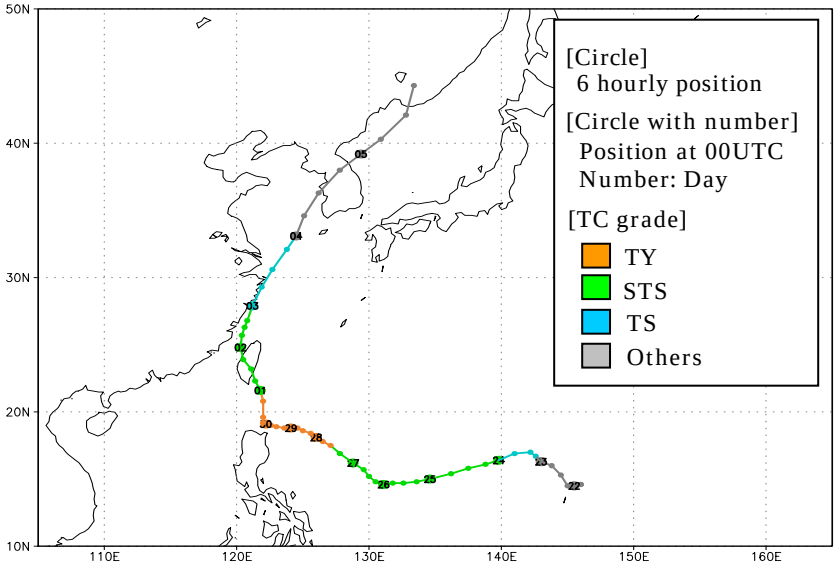
TY MINDULLE (0407)

MINDULLE formed as a tropical depression (TD) off south of Saipan at 18UTC, 21 June 2004. Moving northwestward, it developed to the tropical storm (TS) intensity northwest of Saipan at 06UTC, 23 June. Moving westward and then northwestward, it developed into a typhoon (TY) east of Philippines at 12UTC, 27 June, and further reached the peak strength with central pressure of maximum sustained wind of 95kt on 29 June. Turning sharply from the west to the north off the north coast of Luzon Island, MINDULLE moved with weakening, and made a landfall on Taiwan Island on 1 July 2004. After recurving in the East China Sea on 2 July, it was downgraded to the TS intensity at 00UTC, 3 July. MINDULLE transformed into an extratropical cyclone at 00UTC, 4 June. It moved through the Korea Peninsula and the Japan Sea, and dissipated north of Vladibostok at 00UTC, 6 July.

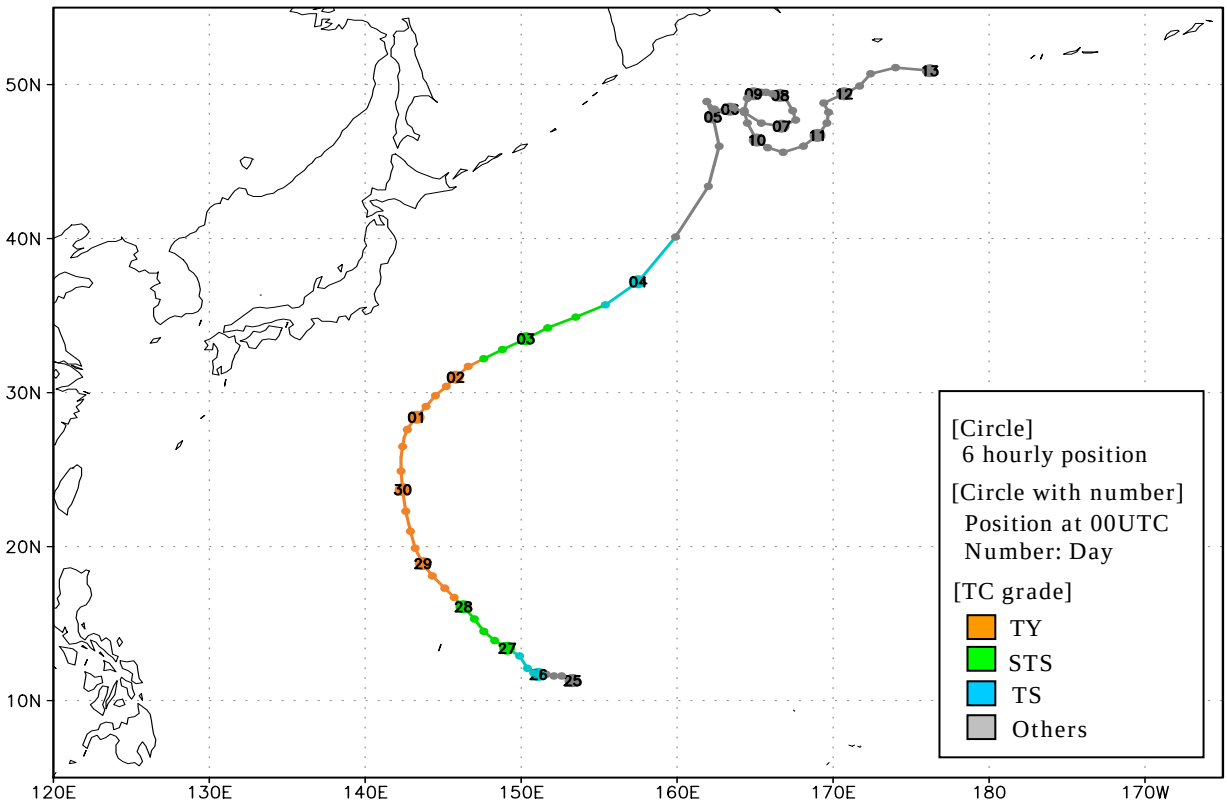
Date/Time		Center Position		Central pressure	Max Wind	CI Number	Grade	Date/Time		Center Position		Central pressure	Max Wind	CI Number	Grade
	(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)				(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)		
June	21/18	14.6	146.0	1004	-	-	TD		29/00	18.8	124.1	940	95	6.0	TY
	22/00	14.5	145.5	1004	-	-	TD		29/06	18.8	123.6	940	95	6.0	TY
	22/06	14.5	145.0	1002	-	-	TD		29/12	18.9	123.0	940	95	6.0	TY
	22/12	15.3	144.5	1002	-	-	TD		29/18	19.0	122.6	945	90	5.5	TY
	22/18	16.0	143.8	1002	-	-	TD		30/00	19.1	122.2	950	85	5.0	TY
	23/00	16.3	143.0	1000	-	-	TD		30/06	19.2	122.0	960	75	4.5	TY
	23/06	16.7	142.6	998	35	2.5	TS		30/12	19.6	122.0	965	70	4.5	TY
	23/12	17.0	142.2	996	35	2.5	TS		30/18	20.8	122.0	970	65	4.0	TY
	23/18	16.9	141.0	990	45	3.0	TS	July	01/00	21.6	121.8	975	60	4.0	STS
	24/00	16.4	139.8	985	50	3.5	STS		01/06	22.3	121.4	975	60	4.0	STS
	24/06	16.1	138.8	980	55	3.5	STS		01/12	23.2	121.1	975	60	4.0	STS
	24/12	15.8	137.5	980	55	3.5	STS		01/18	23.9	120.5	980	55	4.0	STS
	24/18	15.4	136.2	980	55	3.5	STS		02/00	24.8	120.3	980	55	3.5	STS
	25/00	15.0	134.6	980	55	3.5	STS		02/06	25.7	120.4	980	55	3.5	STS
	25/06	14.8	133.6	980	55	3.5	STS		02/12	26.3	120.6	985	50	3.0	STS
	25/12	14.7	132.6	980	55	3.5	STS		02/18	26.8	120.8	985	50	3.0	STS
	25/18	14.7	131.8	980	55	3.5	STS		03/00	27.9	121.2	985	45	2.5	TS
	26/00	14.6	131.1	980	55	3.5	STS		03/06	29.3	121.9	985	45	2.5	TS
	26/06	14.8	130.5	980	55	3.5	STS		03/12	30.6	122.7	985	45	2.0	TS
	26/12	15.2	130.0	980	55	3.5	STS		03/18	32.1	123.8	985	45	2.0	TS
	26/18	15.7	129.6	980	55	3.5	STS		04/00	33.1	124.5	984	-	-	L
	27/00	16.2	128.8	980	55	3.5	STS		04/06	34.6	125.1	984	-	-	L
	27/06	16.9	127.8	975	60	4.0	STS		04/12	36.3	126.2	986	-	-	L
	27/12	17.5	127.1	965	70	4.5	TY		04/18	38.0	127.8	988	-	-	L
	27/18	17.8	126.5	955	80	5.0	TY		05/00	39.2	129.4	992	-	-	L
	28/00	18.1	126.0	950	85	5.5	TY		05/06	40.3	130.9	994	-	-	L
	28/06	18.4	125.6	950	85	5.5	TY		05/12	42.1	132.8	996	-	-	L
	28/12	18.6	125.0	950	85	5.5	TY		05/18	44.3	133.4	1000	-	-	L
	28/18	18.8	124.6	945	90	5.5	TY		06/00						Dissip.



TY TINGTING (0408)

TINGTING formed as a tropical depression (TD) north of the Truk Islands at 00UTC, 25 June 2004. Moving westward, it developed into a tropical storm (TS) at 00UTC, 26 June. It changed the track on the northwest to develop into a severe tropical storm (STS) and a typhoon (TY) over the sea around the Mariana Islands at 00UTC, 27 June, and 06UTC, 28 June, respectively. At 06UTC, 30 June, TINGTING reached the peak intensity with maximum sustained wind of 80kt over the waters south of Chichijima Island. It approached Chichijima Island on the northerly course, and then moved toward the northeast with gradually weakening. It was downgraded to the STS intensity and a TS east of Japan at 12UTC, 2 July, and 18, 3 July, respectively. TINGTING transformed into an extratropical cyclone far east of Japan at 06UTC, 4 July, and dissipated south of the Aleutian Islands at 06UTC, 13 July.

Date/Time		Center Position		Central pressure	Max Wind	CI Number	Grade	Date/Time		Center Position		Central pressure	Max Wind	CI Number	Grade
	(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)				(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)		
June	25/00	11.3	153.3	1002	-	-	TD	04/00	37.2	157.5	990	45	2.5	TS
	25/06	11.6	152.6	1002	-	-	TD	04/06	40.1	159.9	990	-	-	L
	25/12	11.6	152.1	1002	-	-	TD	04/12	43.4	162	990	-	-	L
	25/18	11.7	151.6	1000	-	-	TD	04/18	46	162.7	990	-	-	L
	26/00	11.7	151.1	996	35	2.0	TS	05/00	47.9	162.3	986	-	-	L
	26/06	11.8	150.8	990	40	2.5	TS	05/06	48.9	161.9	984	-	-	L
	26/12	12.1	150.4	990	45	3.0	TS	05/12	48.4	162.4	984	-	-	L
	26/18	12.9	149.9	990	45	3.0	TS	05/18	48.3	163	986	-	-	L
	27/00	13.4	149.1	990	50	3.0	STS	06/00	48.4	163.4	988	-	-	L
	27/06	13.9	148.3	990	50	3.0	STS	06/06	48.5	163.6	992	-	-	L
	27/12	14.5	147.6	985	55	3.0	STS	06/12	48.2	164.3	994	-	-	L
	27/18	15.3	147	980	60	3.5	STS	06/18	47.5	165.4	996	-	-	L
	28/00	16.1	146.3	980	60	3.5	STS	07/00	47.3	166.7	996	-	-	L
	28/06	16.7	145.7	975	65	4.0	TY	07/06	47.7	167.6	996	-	-	L
	28/12	17.3	145.1	975	65	4.0	TY	07/12	48.3	167.4	996	-	-	L
	28/18	18.1	144.3	970	65	4.0	TY	07/18	49.2	166.9	996	-	-	L
	29/00	18.9	143.7	970	65	4.0	TY	08/00	49.3	166.6	996	-	-	L
	29/06	19.9	143.2	970	70	4.0	TY	08/06	49.4	166.1	996	-	-	L
	29/12	21	142.9	970	70	4.0	TY	08/12	49.5	165.7	996	-	-	L
	29/18	22.3	142.6	965	75	4.5	TY	08/18	49.5	165.4	996	-	-	L
	30/00	23.7	142.4	965	75	4.5	TY	09/00	49.4	164.9	996	-	-	L
	30/06	24.9	142.3	960	80	4.5	TY	09/06	49.1	164.5	996	-	-	L
	30/09	25.8	142.3	955	80	-	TY	09/12	48.3	164.3	994	-	-	L
	30/12	26.5	142.4	955	80	4.5	TY	09/18	47.5	164.5	994	-	-	L
	30/15	27.1	142.5	955	80	-	TY	10/00	46.4	165.1	994	-	-	L
	30/18	27.6	142.7	960	80	4.5	TY	10/06	45.9	165.8	992	-	-	L
	30/21	27.8	142.8	960	80	-	TY	10/12	45.6	166.8	996	-	-	L
July	01/00	28.4	143.3	970	70	4.0	TY	10/18	46	168.1	996	-	-	L
	01/06	29.1	143.9	970	70	4.0	TY	11/00	46.7	169	996	-	-	L
	01/12	29.8	144.5	970	70	4.0	TY	11/06	47.5	169.6	996	-	-	L
	01/18	30.4	145.2	975	65	4.0	TY	11/12	48.2	169.7	998	-	-	L
	02/00	31	145.8	975	65	4.0	TY	11/18	48.8	169.4	998	-	-	L
	02/06	31.7	146.6	975	65	4.0	TY	12/00	49.4	170.7	1000	-	-	L
	02/12	32.2	147.6	980	60	3.5	STS	12/06	49.9	171.7	1004	-	-	L
	02/18	32.8	148.8	985	55	3.0	STS	12/12	50.7	172.4	1006	-	-	L
	03/00	33.5	150.3	985	55	3.0	STS	12/18	51.1	174	1008	-	-	L
	03/06	34.2	151.7	985	55	3.0	STS	13/00	50.9	176.2	1008	-	-	L
	03/12	34.9	153.5	990	50	3.0	STS	13/06						Dissip.
	03/18	35.7	155.4	990	45	3.0	TS							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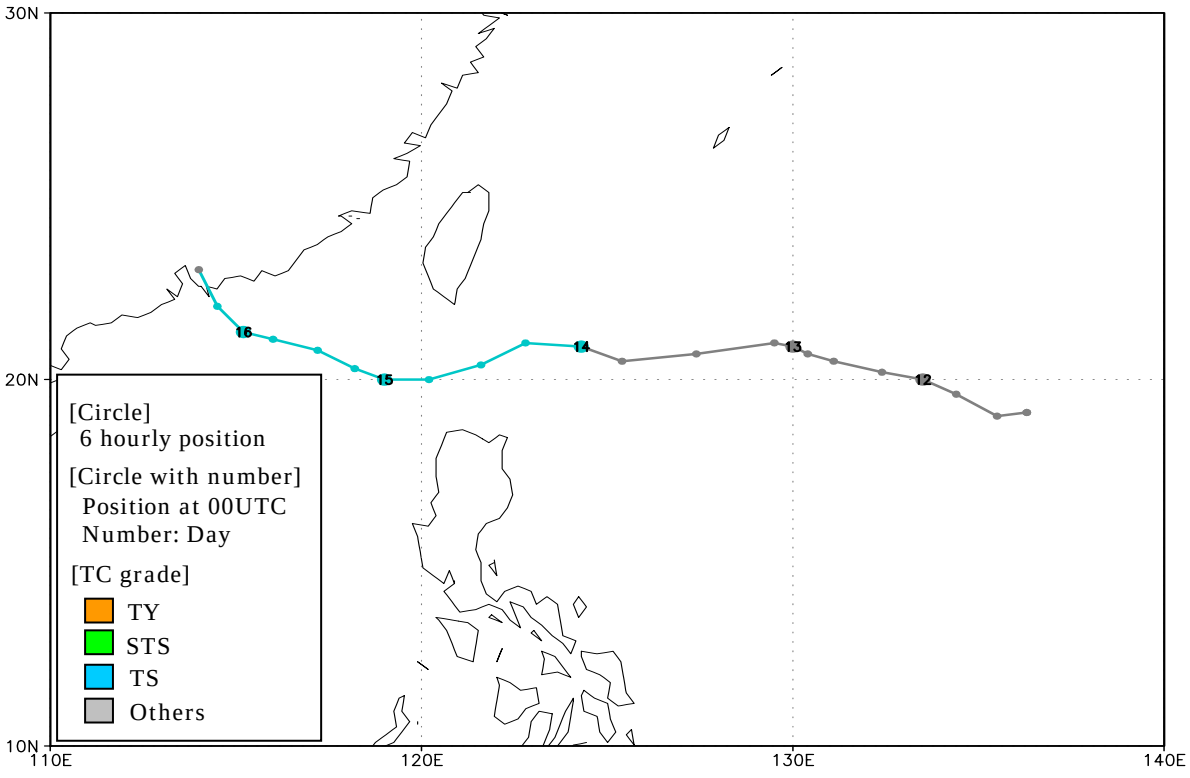
TS KOMPASU (0409)

KOMPASU formed as a tropical depression (TD) over the sea far east of Philippine at 06UTC, 11 July 2004. Moving westward, it developed into a tropical storm (TS) over the waters northeast of Luzon Island at 00UTC, 14 July. Moving in the same direction, it reached its peak intensity with maximum sustained wind of 45kt around the Straits of Luzon at 12UTC, 14 July. Until it reached off the coast of Hong Kong, it maintained almost same intensity. Then it turned to the northwest over the waters southeast of Hong Kong and made landfall on Hong Kong on 16 July. After landing, it weakened into a tropical depression (TD) at 12UTC, 16 July and dissipated around the north of Hong Kong on the same day.

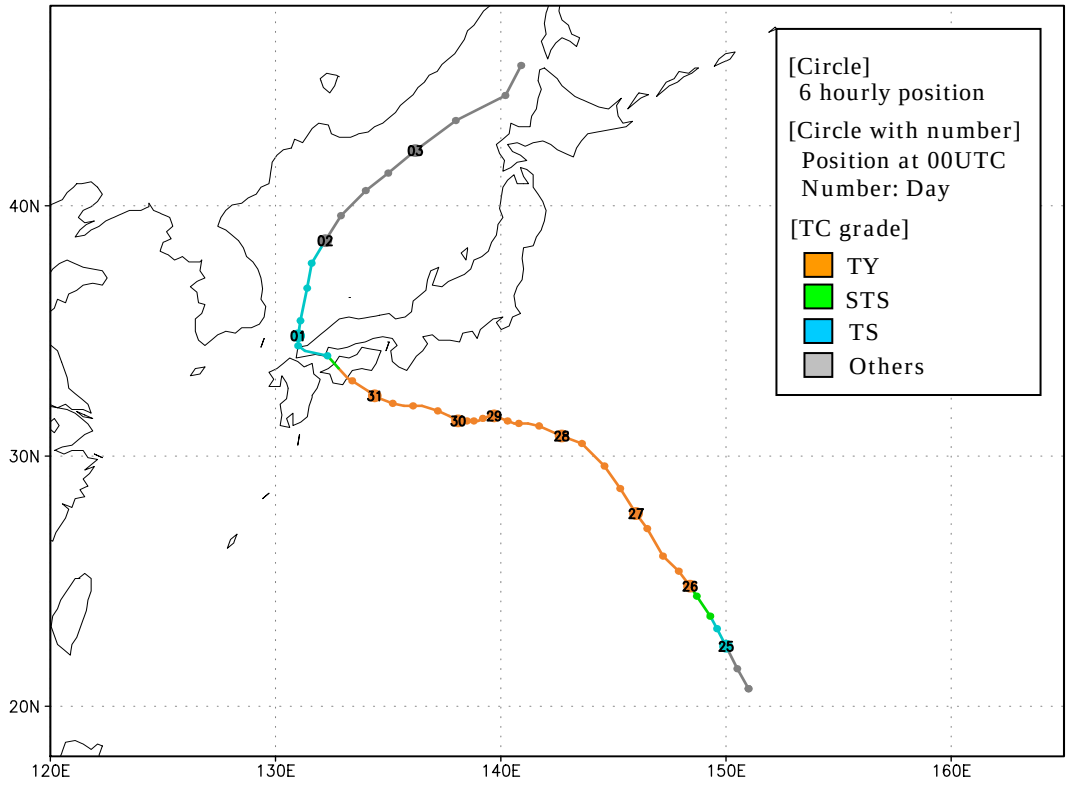
	Date/Time	Center Position		Central pressure	Max Wind	CI Number	Grade	Date/Time	Center Position		Central pressure	Max Wind	CI Number	Grade
	(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)			(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)		
July	11/06	19.1	136.3	1008	-	-	TD	14/06	21	122.8	996	40	3.0	TS
	11/12	19	135.5	1008	-	-	TD	14/12	20.4	121.6	992	45	3.0	TS
	11/18	19.6	134.4	1008	-	-	TD	14/18	20	120.2	992	45	3.0	TS
	12/00	20	133.5	1008	-	-	TD	15/00	20	119	992	45	3.0	TS
	12/06	20.2	132.4	1008	-	-	TD	15/06	20.3	118.2	992	45	3.0	TS
	12/12	20.5	131.1	1008	-	-	TD	15/12	20.8	117.2	992	45	3.0	TS
	12/18	20.7	130.4	1008	-	-	TD	15/18	21.1	116	992	45	3.0	TS
	13/00	20.9	130	1008	-	-	TD	16/00	21.3	115.2	992	45	3.0	TS
	13/06	21	129.5	1006	-	-	TD	16/06	22	114.5	996	45	3.0	TS
	13/12	20.7	127.4	1004	-	-	TD	16/12	23	114	1004	-	-	TD
	13/18	20.5	125.4	1000	-	-	TD	16/18						Dissip.
	14/00	20.9	124.3	998	35	2.5	TS							



TY NAMTHEUN (0410)

NAMTHEUN formed as a tropical depression (TD) over the sea southwest of Minamitorishima Island at 12UTC, 24 July. It moved to the northwest and developed rapidly into a tropical storm (TS) at 00UTC on the following day, a severe tropical storm (STS) twelve hours later and a typhoon (TY) another twelve hours later. NAMTHEUN attained the peak intensity with maximum sustained wind of 85kt east of Chichijima Island at 12UTC, 26 July. Then it turned to the west-northwest and made landfall on Shikoku after 07UTC, 31 July with slowly weakening its strength. After landfall, NAMTHEUN moved through the western Japan and weakened into a STS at 09UTC on that day and a TS another three hours later. It entered the Japan Sea changing the track abruptly to the north on 1 August. Turning gradually toward the northeast, it weakened into a TD in the Japan Sea at 00UTC, 2 August, transformed into an extratropical cyclone at 06UTC, 3 August, and dissipated over the waters west of Hokkaido at 00UTC, 4 August.

Date/Time		Center Position		Central pressure	Max Wind	CI Number	Grade	Date/Time		Center Position		Central pressure	Max Wind	CI Number	Grade
	(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)				(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)		
July	24/12	20.7	151.0	1006	-	-	TD		30/03	31.6	137.7	960	75	-	TY
	24/18	21.5	150.5	1002	-	-	TD		30/06	31.8	137.2	965	70	4.5	TY
	25/00	22.4	150.0	996	35	2.5	TS		30/09	32.0	136.5	965	70	-	TY
	25/06	23.1	149.6	990	40	3.0	TS		30/12	32.0	136.1	965	70	4.5	TY
	25/12	23.6	149.3	985	50	3.5	STS		30/15	32.0	135.7	965	70	-	TY
	25/18	24.4	148.7	975	60	4.0	STS		30/18	32.1	135.2	965	70	4.5	TY
	26/00	24.8	148.4	965	70	5.0	TY		30/21	32.3	134.6	970	65	-	TY
	26/06	25.4	147.9	955	80	5.5	TY		31/00	32.4	134.4	970	65	4.5	TY
	26/12	26.0	147.2	945	85	6.0	TY		31/03	32.6	134.1	970	65	-	TY
	26/18	27.1	146.5	940	85	6.0	TY		31/06	33.0	133.4	975	65	4.0	TY
	27/00	27.7	146.0	935	85	6.0	TY		31/07	33.1	133.2	980	65	-	TY
	27/06	28.7	145.3	935	85	6.0	TY		31/09	33.5	132.8	985	55	-	STS
	27/12	29.6	144.6	940	85	5.5	TY		31/12	34.0	132.3	992	45	3.5	TS
	27/18	30.5	143.6	945	80	5.0	TY		31/15	34.2	131.3	996	40	-	TS
	28/00	30.8	142.7	950	80	5.0	TY		31/18	34.4	131.0	996	35	3.0	TS
	28/06	31.2	141.7	950	80	5.0	TY		31/21	34.7	131.0	996	35	-	TS
	28/09	31.3	141.2	950	80	-	TY	Aug	01/00	34.8	131.0	996	35	2.5	TS
	28/12	31.3	140.8	960	75	4.5	TY		01/06	35.4	131.1	996	35	2.5	TS
	28/15	31.3	140.6	960	75	-	TY		01/12	36.7	131.4	998	35	2.0	TS
	28/18	31.4	140.3	960	75	4.5	TY		01/18	37.7	131.6	998	35	-	TS
	28/21	31.5	140.0	960	75	-	TY		02/00	38.6	132.2	1000	-	-	TD
	29/00	31.6	139.7	960	75	4.5	TY		02/06	39.6	132.9	1000	-	-	TD
	29/03	31.6	139.5	960	75	-	TY		02/12	40.6	134.0	1000	-	-	TD
	29/06	31.5	139.2	960	75	4.5	TY		02/18	41.3	135.0	1002	-	-	TD
	29/09	31.4	139.0	960	75	-	TY		03/00	42.2	136.2	1002	-	-	TD
	29/12	31.4	138.8	960	75	4.5	TY		03/06	43.4	138.0	1002	-	-	L
	29/15	31.4	138.7	960	75	-	TY		03/12	44.4	140.2	1004	-	-	L
	29/18	31.4	138.5	960	75	4.5	TY		03/18	45.6	140.9	1004	-	-	L
	29/21	31.4	138.3	960	75	-	TY		04/00						Dissip.
	30/00	31.4	138.1	960	75	4.5	TY								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Number: Day
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TY
STS
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40N
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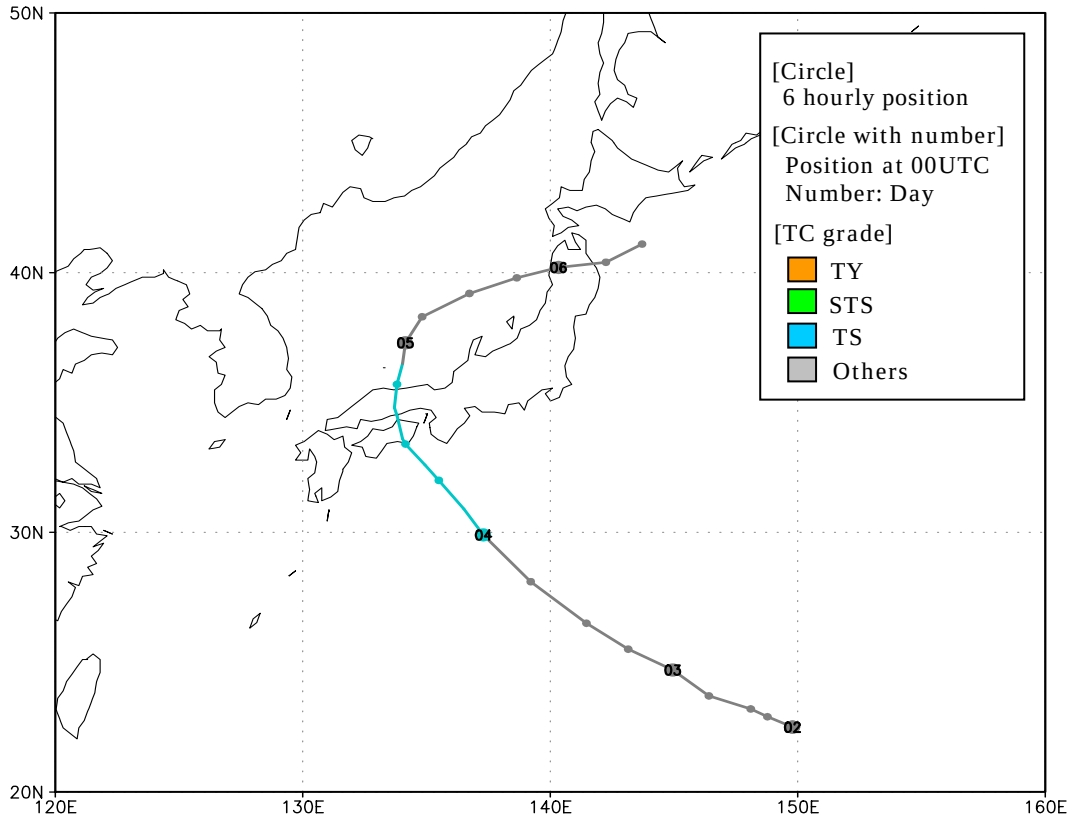
TS MALOU (0411)

MALOU generated as a tropical depression (TD) over the waters southeast of Chichijima Island at 00UTC, 2 August 2004. Advancing to the northwest, it developed into a tropical storm (TS) over the sea south of Honshu at 00UTC, 4 August, and reached the peak intensity with maximum sustained wind of 40kt three hours later. It made landfall over the western Japan on the night. MALOU weakened into a tropical depression (TD) on the Japan Sea at 21UTC, 4 August, soon after crossing the Honshu. It changed the track from the north to the east-northeast, and then passed through the northern part of Japan, and finally dissipated over the waters south of Hokkaido at 18UTC, 6 August.

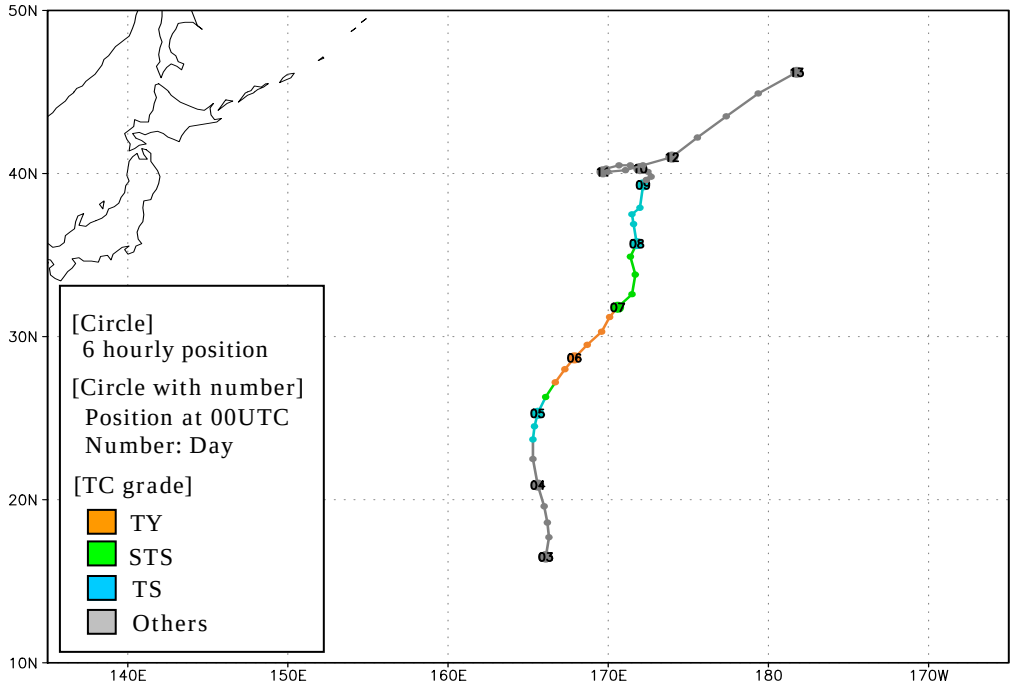
	Date/Time (UTC)	Center Position Lat (N)	Lon (E)	Central pressure (hPa)	Max Wind (kt)	CI Number	Grade	Date/Time (UTC)	Center Position Lat (N)	Lon (E)	Central pressure (hPa)	Max Wind (kt)	CI Number	Grade
Aug	02/00	22.5	148.7	1002	-	-	TD	04/13	33.6	134.7	996	40	-	TS
	02/06	22.9	147.8	1002	-	-	TD	04/15	34.5	134.5	998	35	-	TS
	02/12	23.2	147.2	1002	-	-	TD	04/16	34.8	134.4	998	35	-	TS
	02/18	23.7	145.7	1002	-	-	TD	04/18	35.7	134.5	1000	35	2.5	TS
	03/00	24.7	144.4	1002	-	-	TD	04/21	36.5	134.7	1002	-	-	TD
	03/06	25.5	142.8	1000	-	-	TD	05/00	37.3	134.8	1004	-	-	TD
	03/12	26.5	141.3	1000	-	-	TD	05/06	38.3	135.4	1006	-	-	TD
	03/18	28.1	139.3	1000	-	-	TD	05/12	39.2	137.1	1008	-	-	TD
	04/00	29.9	137.6	998	35	-	TS	05/18	39.8	138.8	1008	-	-	TD
	04/03	30.9	136.9	996	40	-	TS	06/00	40.2	140.3	1010	-	-	TD
	04/06	32.0	136.0	996	40	2.5	TS	06/06	40.4	142.0	1010	-	-	TD
	04/09	32.6	135.5	996	40	-	TS	06/12	41.1	143.3	1010	-	-	TD
	04/12	33.4	134.8	996	40	2.5	TS	06/18						Dissip



TY MERANTI (0412)

ERANTI formed as a tropical depression (TD) over the sea around the Marshall Islands at 00UTC, 3 August 2004. It moved northward and developed into a tropical storm (TS) over the waters north of Wake Island at 12UTC, 4 August. Changing the track to the northeastward, MERANTI deepened quickly to the typhoon (TY) strength at 12UTC, 5 August. After it attained the peak intensity with maximum sustained wind of 75kt at 18UTC, 5 August, it gradually weakened into a severe tropical storm (STS) and then a tropical storm (TS) at 00UTC, 7 August and 00UTC, the next day, respectively. It transformed into an extratropical cyclone south of the Aleutian Islands at 06UTC, 9 August, and passed the International Date Line on 13 August.

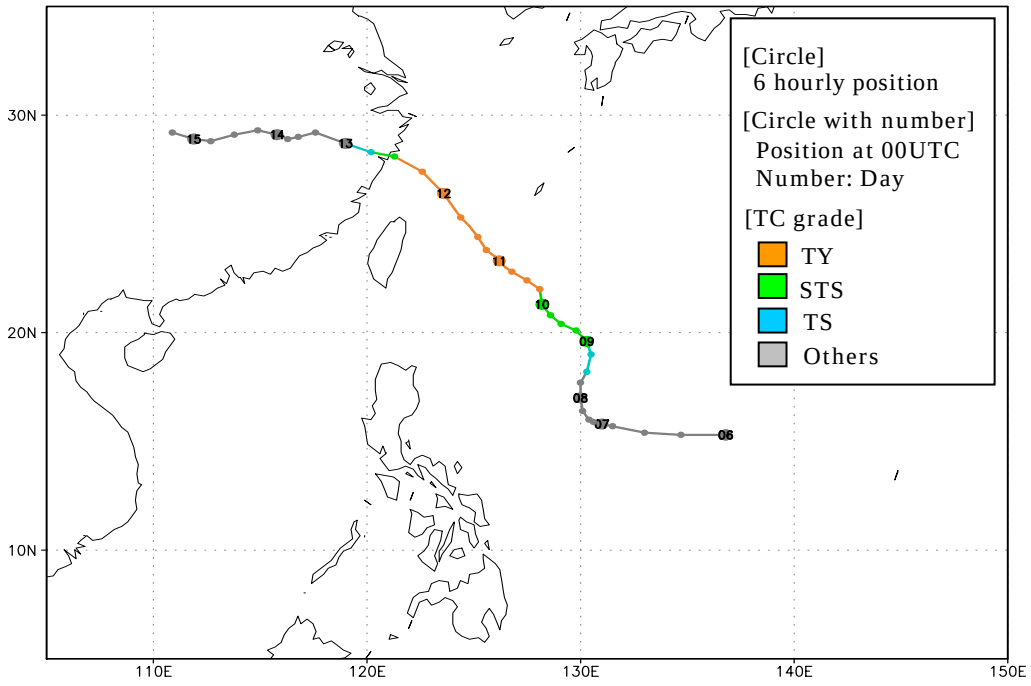
Date/Time		Center Position		Central pressure	Max Wind	CI Number	Grade	Date/Time	Center Position		Central pressure	Max Wind	CI Number	Grade
	(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)			(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)		
Aug	03/00	16.5	166.1	1004	-	-	TD	08/06	36.9	171.6	990	45	3.0	TS
	03/06	17.7	166.3	1004	-	-	TD	08/12	37.5	171.5	992	40	2.5	TS
	03/12	18.6	166.2	1004	-	-	TD	08/18	37.9	172.0	994	40	2.5	TS
	03/18	19.6	166.0	1002	-	-	TD	09/00	39.3	172.2	996	40	2.0	TS
	04/00	20.9	165.6	1002	-	-	TD	09/06	39.6	172.4	998	-	-	L
	04/06	22.5	165.3	1000	-	-	TD	09/12	39.8	172.7	1002	-	-	L
	04/12	23.7	165.3	998	35	2.0	TS	09/18	40.1	172.5	1002	-	-	L
	04/18	24.5	165.4	996	40	2.5	TS	10/00	40.3	172.0	1004	-	-	L
	05/00	25.3	165.6	990	45	3.0	TS	10/06	40.5	171.4	1004	-	-	L
	05/06	26.3	166.1	980	55	3.5	STS	10/12	40.5	170.7	1004	-	-	L
	05/12	27.2	166.7	970	70	4.5	TY	10/18	40.3	169.9	1004	-	-	L
	05/18	28.0	167.3	960	75	5.0	TY	11/00	40.1	169.7	1000	-	-	L
	06/00	28.7	167.9	960	75	5.0	TY	11/06	40.1	170.0	1000	-	-	L
	06/06	29.5	168.7	960	75	5.0	TY	11/12	40.2	171.1	1000	-	-	L
	06/12	30.3	169.6	965	70	4.5	TY	11/18	40.5	172.2	1000	-	-	L
	06/18	31.2	170.1	975	65	4.0	TY	12/00	41.0	174.0	1000	-	-	L
	07/00	31.8	170.6	975	60	4.0	STS	12/06	42.2	175.6	996	-	-	L
	07/06	32.6	171.5	980	55	3.5	STS	12/12	43.5	177.4	1000	-	-	L
	07/12	33.8	171.7	980	55	3.5	STS	12/18	44.9	179.4	998	-	-	L
	07/18	34.9	171.4	985	50	3.0	STS	13/00	46.2	181.8	1002	-	-	L
	08/00	35.7	171.8	990	45	3.0	TS	13/06						OUT



TY RANANIM (0413)

RANANIM formed as a tropical depression (TD) over the sea far east of the Philippines at 00UTC, 6 August 2004. Changing the track from the westward to northward, it developed into a tropical storm (TS) over the same waters at 12UTC, 8 August. After developing into a severe tropical storm (STS) at 00UTC, 9 August, RANANIM kept moving to the northwest. It became a typhoon (TY) at 06UTC, 10 August, and further attained the peak intensity with maximum sustained wind of 80kt at 12UTC, 11 August when it approached near Miyako Island. After landfall on China on 12 August keeping its intensity, it changed the direction to the westward. It weakened rapidly into a TD at 00UTC, 13 August and it dissipated over the central part of China at 12UTC, 15 August.

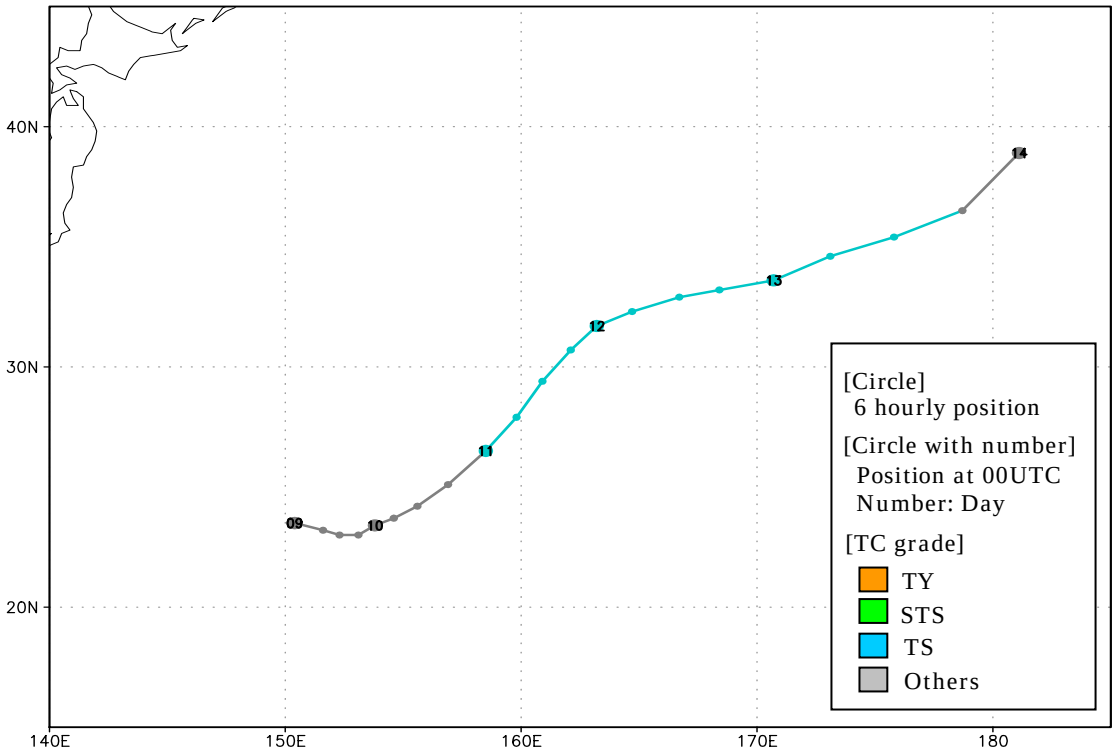
	Date/Time	Center Position		Central pressure	Max Wind	CI Number	Grade	Date/Time	Center Position		Central pressure	Max Wind	CI Number	Grade
	(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)			(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)		
Aug	06/00	15.3	136.8	1002	-	-	TD	11/03	23.5	126.0	965	70	-	TY
	06/06	15.3	134.7	1000	-	-	TD	11/06	23.8	125.6	960	75	5.0	TY
	06/12	15.4	133.0	1000	-	-	TD	11/09	24.1	125.4	955	75	-	TY
	06/18	15.7	131.5	998	-	-	TD	11/12	24.4	125.2	950	80	5.0	TY
	07/00	15.8	131.0	998	-	-	TD	11/15	24.9	124.8	950	80	-	TY
	07/06	15.9	130.6	998	-	-	TD	11/18	25.3	124.4	950	80	5.0	TY
	07/12	16.0	130.4	998	-	-	TD	11/21	25.7	124.1	950	80	-	TY
	07/18	16.4	130.1	996	-	-	TD	12/00	26.4	123.6	950	80	5.0	TY
	08/00	17.0	130.0	996	-	-	TD	12/06	27.4	122.6	950	80	5.0	TY
	08/06	17.7	130.0	994	-	-	TD	12/12	28.1	121.3	960	60	5.0	STS
	08/12	18.2	130.3	992	35	2.5	TS	12/18	28.3	120.2	975	40	4.5	TS
	08/18	19.0	130.5	990	45	3.0	TS	13/00	28.7	119.0	986	-	-	TD
	09/00	19.6	130.3	985	50	3.0	STS	13/06	29.2	117.6	992	-	-	TD
	09/06	20.1	129.8	980	55	3.5	STS	13/12	29.0	116.8	996	-	-	TD
	09/12	20.4	129.1	980	55	3.5	STS	13/18	28.9	116.3	996	-	-	TD
	09/18	20.8	128.6	980	55	3.5	STS	14/00	29.1	115.8	996	-	-	TD
	10/00	21.3	128.2	975	60	3.5	STS	14/06	29.3	114.9	998	-	-	TD
	10/06	22.0	128.1	970	65	4.0	TY	14/12	29.1	113.8	1000	-	-	TD
	10/12	22.4	127.5	970	65	4.0	TY	14/18	28.8	112.7	1002	-	-	TD
	10/18	22.8	126.8	965	70	4.5	TY	15/00	28.9	111.9	1004	-	-	TD
	10/21	23.0	126.5	965	70	-	TY	15/06	29.2	110.9	1004	-	-	TD
	11/00	23.3	126.2	965	70	4.5	TY	15/12						Dissip



TS MARAKAS (0414)

MARAKAS formed as a tropical depression (TD) over the waters west of Minamitorishima Island at 00UTC, 9 August 2004. Moving the eastward and later northeastward, it became a tropical storm (TS) over the sea northeast of Minamitorishima Island at 00UTC, 11 August. After attained the peak intensity with maximum sustained wind of 45kt at 18UTC, 11 August, MARAKAS kept almost the same intensity. Continuing on a northeast track, it weakened into a TD and crossed the International Date Line at 18UTC, 13 August and 00UTC, 14 August, respectively.

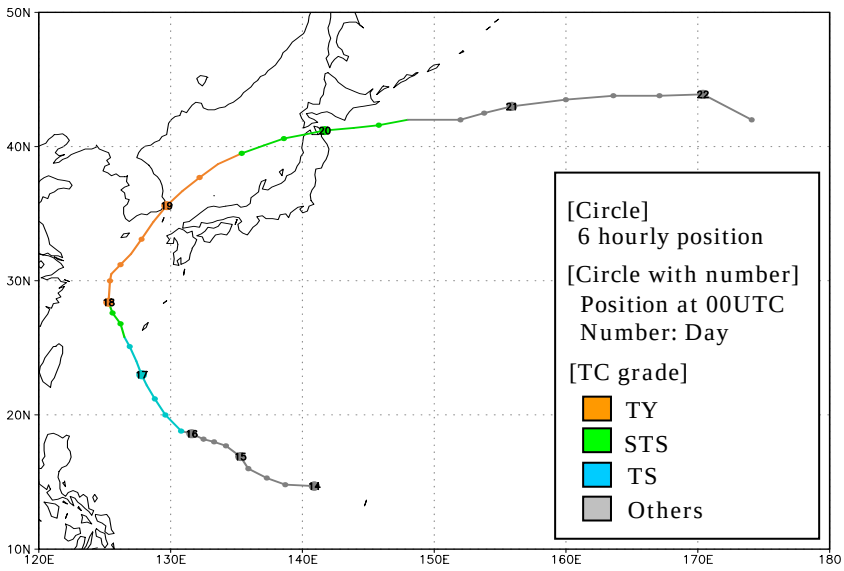
Date/Time (UTC)	Center Position Lat (N)	Lon (E)	Central pressure (hPa)	Max Wind (kt)	CI Number	Grade	Date/Time (UTC)	Center Position Lat (N)	Lon (E)	Central pressure (hPa)	Max Wind (kt)	CI Number	Grade
Aug. 09/00	23.5	150.4	1004	-	-	TD	11/18	30.7	162.1	990	45	3.0	TS
09/06	23.2	151.6	1004	-	-	TD	12/00	31.7	163.2	990	45	3.0	TS
09/12	23.0	152.3	1004	-	-	TD	12/06	32.3	164.7	992	40	3.0	TS
09/18	23.0	153.1	1000	-	-	TD	12/12	32.9	166.7	992	40	3.0	TS
10/00	23.4	153.8	1000	-	-	TD	12/18	33.2	168.4	992	40	3.0	TS
10/06	23.7	154.6	998	-	-	TD	13/00	33.6	170.7	992	40	3.0	TS
10/12	24.2	155.6	998	-	-	TD	13/06	34.6	173.1	992	40	3.0	TS
10/18	25.1	156.9	996	-	-	TD	13/12	35.4	175.8	994	35	2.5	TS
11/00	26.5	158.5	994	35	2.5	TS	13/18	36.5	178.7	998	-	-	TD
11/06	27.9	159.8	992	40	2.5	TS	14/00	38.9	181.1	998	-	-	TD
11/12	29.4	160.9	992	40	2.5	TS	14/06						OUT



TY MEGI (0415)

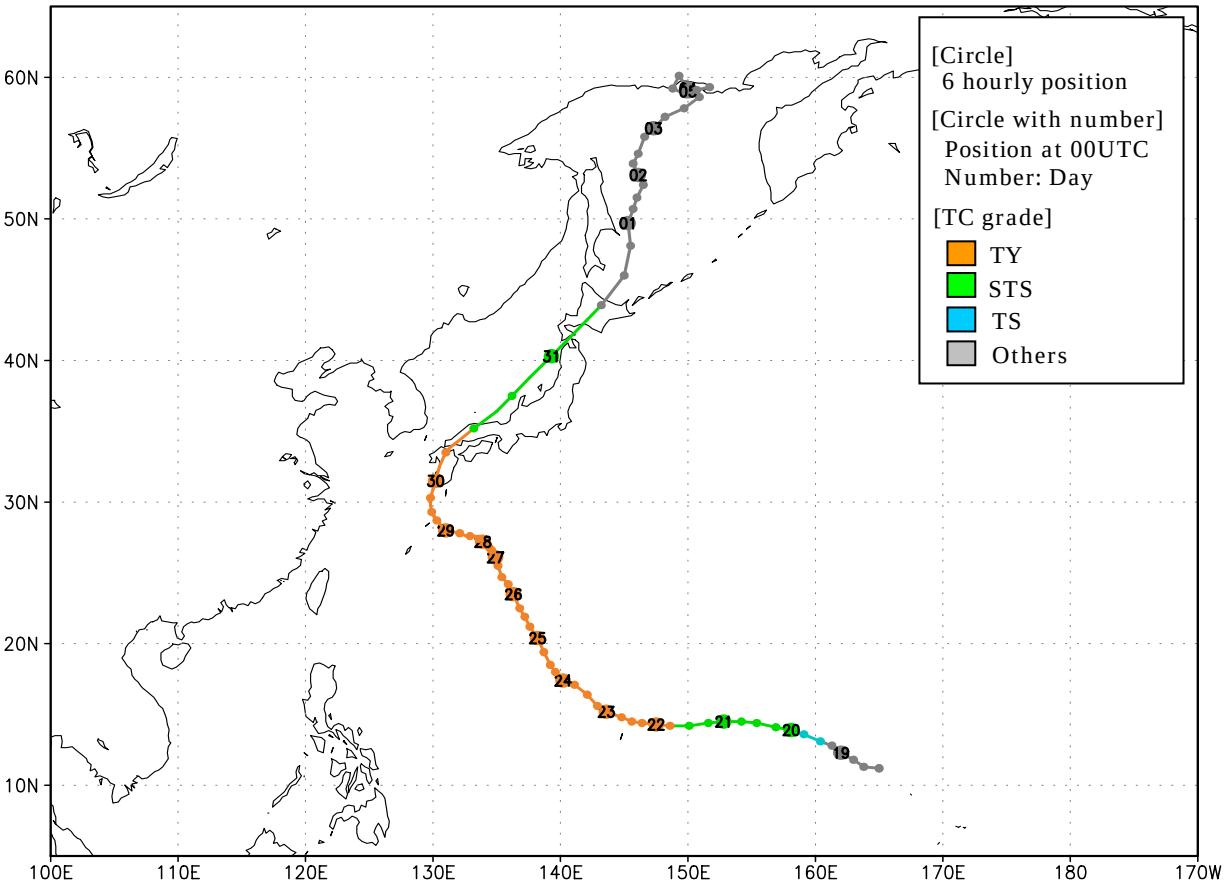
MEGI formed as a tropical depression (TD) over the sea west of the Mariana Islands at 00UTC, 14 August. Moving to the west and then gradually to the northwest, it became a tropical storm (TS) over the waters east of the Philippines at 06UTC, 16 August. It was upgraded to the severe tropical storm (STS) intensity on 17 August when it approached Okinawa. MEGI developed into a typhoon (TY) and attained the peak strength with maximum sustained wind of 65kt during its recurvature on 18 August. Keeping its intensity, it went through the Korea Strait and moved in the Japan Sea on northeasterly course. MEGI made landfall on the northern part of Japan on 19 August and then transformed into an extratropical cyclone over the sea southeast of Hokkaido at 09UTC, 20 August. It finally dissipated over the waters south of the Aleutians at 12 UTC, 22 August.

Date/Time	Center Position		Central pressure	Max Wind	CI Number	Grade	Date/Time	Center Position		Central pressure	Max Wind	CI Number	Grade
(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)			(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)		
14/00	14.7	140.9	1002	-	-	TD	18/18	33.1	127.8	970	65	3.5	TY
14/06	14.8	138.7	1000	-	-	TD	18/21	34.4	128.7	970	65	-	TY
14/12	15.3	137.3	1000	-	-	TD	19/00	35.6	129.7	970	65	3.5	TY
14/18	16.0	135.9	1000	-	-	TD	19/03	36.7	130.9	970	65	-	TY
15/00	16.9	135.3	1000	-	-	TD	19/06	37.7	132.2	970	65	3.5	TY
15/06	17.7	134.2	996	-	-	TD	19/09	38.7	133.6	970	65	-	TY
15/12	18.0	133.3	996	-	-	TD	19/12	39.5	135.4	975	60	3.0	STS
15/18	18.2	132.5	996	-	-	TD	19/15	40.1	137.1	975	60	-	STS
16/00	18.6	131.6	996	-	-	TD	19/18	40.6	138.6	975	60	2.5	STS
16/06	18.8	130.8	992	35	2.5	TS	19/21	40.9	140.2	980	60	-	STS
16/12	20.0	129.6	992	35	2.5	TS	20/00	41.2	141.7	980	55	2.5	STS
16/18	21.2	128.8	992	35	2.5	TS	20/03	41.4	143.9	980	55	-	STS
16/21	22.2	128.2	990	40	-	TS	20/06	41.6	145.8	985	50	2.0	STS
17/00	23.0	127.8	990	40	2.5	TS	20/09	42.0	148.0	984	-	-	L
17/03	24.0	127.4	990	40	-	TS	20/12	42.0	152.0	984	-	-	L
17/06	25.1	126.9	985	45	2.5	TS	20/18	42.5	153.8	984	-	-	L
17/09	25.8	126.5	980	50	-	STS	21/00	43.0	155.9	984	-	-	L
17/12	26.8	126.2	980	50	3.0	STS	21/06	43.5	160.0	986	-	-	L
17/18	27.6	125.6	975	60	3.5	STS	21/12	43.8	163.6	986	-	-	L
18/00	28.4	125.3	970	65	4.0	TY	21/18	43.8	167.1	988	-	-	L
18/06	30.0	125.4	970	65	4.0	TY	22/00	43.9	170.4	988	-	-	L
18/09	30.5	125.5	970	65	-	TY	22/06	42.0	174.1	992	-	-	L
18/12	31.2	126.2	970	65	4.0	TY	22/12						Dissip.
18/15	32.0	127.0	970	65	-	TY							



TY CHABA (0416)

CHABA formed as a tropical depression (TD) over the sea around the Marshall Islands at 06UTC, 18 August. It developed into a tropical storm (TS), moving in the westerly direction, over the same sea at 12UTC, 19 August. Holding the track to the west, it was upgraded to the severe tropical storm (STS) intensity over waters south of Minamitorishima Island at 00UTC, 20 August and then a typhoon (TY) east of the Mariana Islands at 18UTC on the following day. Turning gradually to the northwest, CHABA reached the peak strength with central pressure of 910hPa and maximum sustained wind of 110kt over the sea west of the Mariana Islands at 18UTC, 23 August. After the recurvature over the sea west of the Nansei Islands, it made landfall on Kyushu, went northeastwards through the western part of Japan, and entered the Japan Sea on 30 August. Keeping the northeasterly track, it also made landfall on Hokkaido after 03UTC on the following day. After transforming into an extratropical cyclone in the northeastern part of Hokkaido at 06UTC on that day, it entered the Sea of Okhotsk on the following day, and then dissipated in the Sea at 18UTC, 5 September.

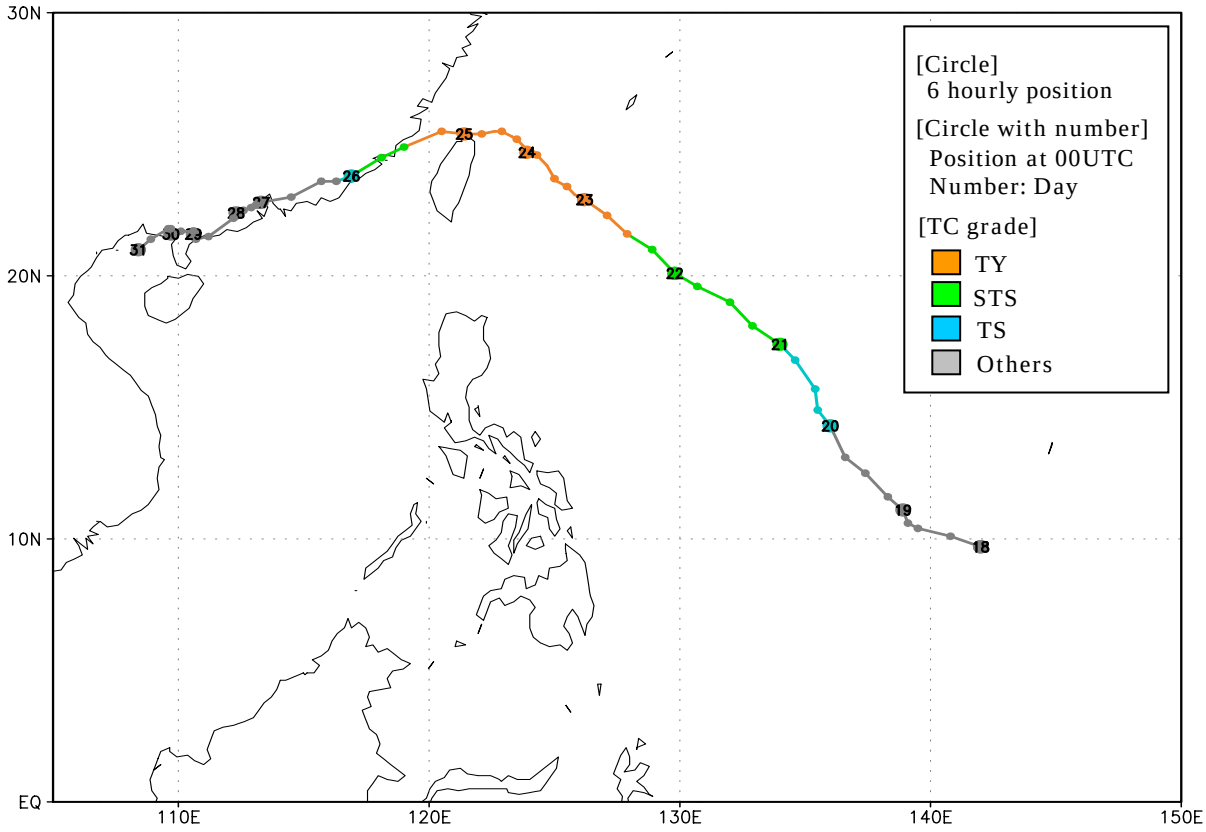


Date/Time	Center Position		Central pressure	Max Wind	CI Number	Grade	Date/Time	Center Position		Central pressure	Max Wind	CI Number	Grade
(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)			(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)		
18/06	11.2	165.0	1004	-	-	TD	28/18	27.8	132.1	940	85	5.5	TY
18/12	11.3	163.8	1004	-	-	TD	28/21	27.9	131.6	940	85	-	TY
18/18	11.8	163.0	1002	-	-	TD	29/00	28.0	131.0	940	85	5.5	TY
19/00	12.3	162.0	1002	-	-	TD	29/03	28.3	130.7	940	85	-	TY
19/06	12.8	161.3	1000	-	-	TD	29/06	28.7	130.3	940	85	5.5	TY
19/12	13.1	160.4	996	35	2.5	TS	29/09	29.0	130.1	940	85	-	TY
19/18	13.6	159.1	990	45	3.0	TS	29/12	29.3	129.9	940	80	5.0	TY
20/00	13.9	158.1	990	50	3.0	STS	29/15	29.8	129.8	945	80	-	TY
20/06	14.1	156.9	990	50	3.0	STS	29/18	30.3	129.8	945	80	5.0	TY
20/12	14.4	155.4	985	50	3.0	STS	29/21	30.9	130.0	950	80	-	TY
20/18	14.5	154.2	985	50	3.0	STS	30/00	31.5	130.2	950	80	5.0	TY
21/00	14.5	152.8	985	50	3.0	STS	30/03	32.5	130.5	955	80	-	TY
21/06	14.4	151.6	985	50	3.5	STS	30/06	33.5	131.0	965	70	4.5	TY
21/12	14.2	150.1	975	60	4.0	STS	30/08	33.9	131.4	965	70	-	TY
21/18	14.2	148.6	960	75	5.0	TY	30/09	34.1	131.7	965	70	-	TY
22/00	14.3	147.5	955	75	5.0	TY	30/12	35.2	133.2	970	60	4.0	STS
22/06	14.4	146.4	950	80	6.0	TY	30/15	36.4	135.0	970	60	-	STS
22/12	14.5	145.6	930	100	6.5	TY	30/18	37.5	136.2	975	60	4.0	STS
22/18	14.8	144.8	920	110	7.0	TY	30/21	38.8	137.6	975	60	-	STS
23/00	15.2	143.6	920	110	7.0	TY	31/00	40.3	139.3	975	60	3.5	STS
23/06	15.6	142.9	915	110	7.0	TY	31/03	41.4	140.5	975	60	-	STS
23/12	16.4	142.1	915	110	7.0	TY	31/06	43.9	143.2	976	-	-	L
23/18	17.1	141.1	910	110	7.0	TY	31/12	46.0	145.0	976	-	-	L
24/00	17.4	140.2	910	110	7.0	TY	31/18	48.1	145.5	980	-	-	L
24/06	18.0	139.6	910	110	7.0	TY	01/00	49.7	145.3	980	-	-	L
24/12	18.5	139.2	910	110	7.0	TY	01/06	50.7	145.7	976	-	-	L
24/18	19.4	138.7	910	110	7.0	TY	01/12	51.5	146.0	984	-	-	L
25/00	20.4	138.2	910	110	7.0	TY	01/18	52.4	146.5	984	-	-	L
25/06	21.2	137.6	910	110	7.0	TY	02/00	53.1	146.1	986	-	-	L
25/12	21.9	137.2	910	110	7.0	TY	02/06	53.9	145.7	988	-	-	L
25/18	22.5	136.8	910	110	7.0	TY	02/12	54.6	146.1	990	-	-	L
26/00	23.5	136.3	915	100	6.0	TY	02/18	55.8	146.6	990	-	-	L
26/06	24.2	135.9	920	100	6.0	TY	03/00	56.4	147.3	990	-	-	L
26/12	24.7	135.4	925	90	5.0	TY	03/06	57.2	148.2	990	-	-	L
26/18	25.5	135.1	930	80	5.0	TY	03/12	57.8	149.7	992	-	-	L
27/00	26.1	134.9	940	80	5.0	TY	03/18	58.6	150.9	994	-	-	L
27/06	26.6	134.6	940	80	5.0	TY	04/00	59.2	150.0	994	-	-	L
27/12	26.8	134.4	940	80	5.0	TY	04/06	60.1	149.3	996	-	-	L
27/18	27.1	134.2	935	90	6.0	TY	04/12	59.2	148.8	998	-	-	L
28/00	27.2	133.9	935	90	6.0	TY	04/18	58.8	149.8	998	-	-	L
28/03	27.3	133.7	935	90	-	TY	05/00	59.0	150.0	1000	-	-	L
28/06	27.4	133.6	935	90	6.0	TY	05/06	59.1	150.7	1002	-	-	L
28/09	27.6	133.3	935	90	-	TY	05/12	59.3	151.7	1006	-	-	L
28/12	27.6	132.9	940	85	5.5	TY	05/18						Dissip.
28/15	27.6	132.6	940	85	-	TY							

TY AERE (0417)

AERE formed as a tropical depression (TD) over the sea around the Caroline Islands at 00UTC, 18 August. It moved northwestwards and became a tropical storm (TS) over the waters east of the Philippines at 00UTC, 20 August. Keeping the track to the northwest, it was upgraded to the severe tropical storm (STS) intensity over the same area at 00UTC, 21 August and then a typhoon (TY) over the sea south of Okinawa at 12UTC, 22 August. AERE reached the peak intensity with maximum sustained wind of 80kt near Ishigakijima Island at 00UTC, 24 August. After passing off the northern coast of Taiwan Island, it turned to the west-southwest. AERE made landfall on the southern part of China on 25 August and weakened rapidly into a TD at 06UTC, 26 August. Keeping the track to the west-southwest, it moved along the coast of the southern China, and dissipated in the Gulf of Tongking at 00UTC, 31 August.

Date/Time	Center Position		Central pressure	Max Wind	CI Number	Grade	Date/Time	Center Position		Central pressure	Max Wind	CI Number	Grade
(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)			(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)		
Aug 18/00	9.7	142.0	1004	-	-	TD	24/09	25.3	123.3	955	80	-	TY
18/06	10.1	140.8	1004	-	-	TD	24/12	25.5	122.9	955	80	5.0	TY
18/12	10.4	139.5	1004	-	-	TD	24/15	25.5	122.6	955	80	-	TY
18/18	10.6	139.1	1002	-	-	TD	24/18	25.4	122.1	960	75	5.0	TY
19/00	11.1	138.9	1002	-	-	TD	24/21	25.4	121.7	960	75	-	TY
19/06	11.6	138.3	1000	-	-	TD	25/00	25.4	121.4	960	75	5.0	TY
19/12	12.5	137.4	1000	-	-	TD	25/06	25.5	120.5	965	70	4.5	TY
19/18	13.1	136.6	998	-	-	TD	25/12	24.9	119.0	975	60	4.5	STS
20/00	14.3	136.0	996	35	2.0	TS	25/18	24.5	118.1	985	50	4.0	STS
20/06	14.9	135.5	994	40	2.0	TS	26/00	23.8	116.9	990	35	3.5	TS
20/12	15.7	135.4	992	45	2.5	TS	26/06	23.6	116.3	990	-	-	TD
20/18	16.8	134.6	990	45	3.0	TS	26/12	23.6	115.7	992	-	-	TD
21/00	17.4	134.0	985	50	3.0	STS	26/18	23.0	114.5	992	-	-	TD
21/06	18.1	132.9	980	55	3.5	STS	27/00	22.8	113.3	994	-	-	TD
21/12	19.0	132.0	980	55	3.5	STS	27/06	22.7	113.1	994	-	-	TD
21/18	19.6	130.7	975	60	4.0	STS	27/12	22.6	112.9	994	-	-	TD
22/00	20.1	129.8	975	60	4.0	STS	27/18	22.5	112.6	996	-	-	TD
22/06	21.0	128.9	975	60	4.0	STS	28/00	22.4	112.3	996	-	-	TD
22/12	21.6	127.9	970	65	4.0	TY	28/06	22.2	112.2	996	-	-	TD
22/18	22.3	127.1	970	65	4.0	TY	28/12	21.5	111.2	996	-	-	TD
22/21	22.5	126.8	970	65	-	TY	28/18	21.4	110.7	996	-	-	TD
23/00	22.9	126.2	970	65	4.0	TY	29/00	21.6	110.6	996	-	-	TD
23/03	23.1	125.8	970	65	-	TY	29/06	21.7	110.6	996	-	-	TD
23/06	23.4	125.5	965	70	4.5	TY	29/12	21.7	110.1	996	-	-	TD
23/09	23.6	125.1	965	70	-	TY	29/18	21.6	109.7	996	-	-	TD
23/12	23.7	125.0	965	70	4.5	TY	30/00	21.6	109.7	996	-	-	TD
23/15	24.2	124.7	960	75	-	TY	30/06	21.8	109.7	996	-	-	TD
23/18	24.6	124.3	960	75	5.0	TY	30/12	21.8	109.6	998	-	-	TD
23/21	24.8	124.1	960	75	-	TY	30/18	21.4	108.9	1002	-	-	TD
24/00	24.7	123.9	955	80	5.0	TY	31/00	21.0	108.4	1002	-	-	TD
24/03	24.9	123.8	955	80	-	TY	31/06						Dissip.
24/06	25.2	123.5	955	80	5.0	TY							


30N
20N
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140E
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6 hourly position
[Circle with number]
Position at 00UTC
Number: Day
[TC grade]
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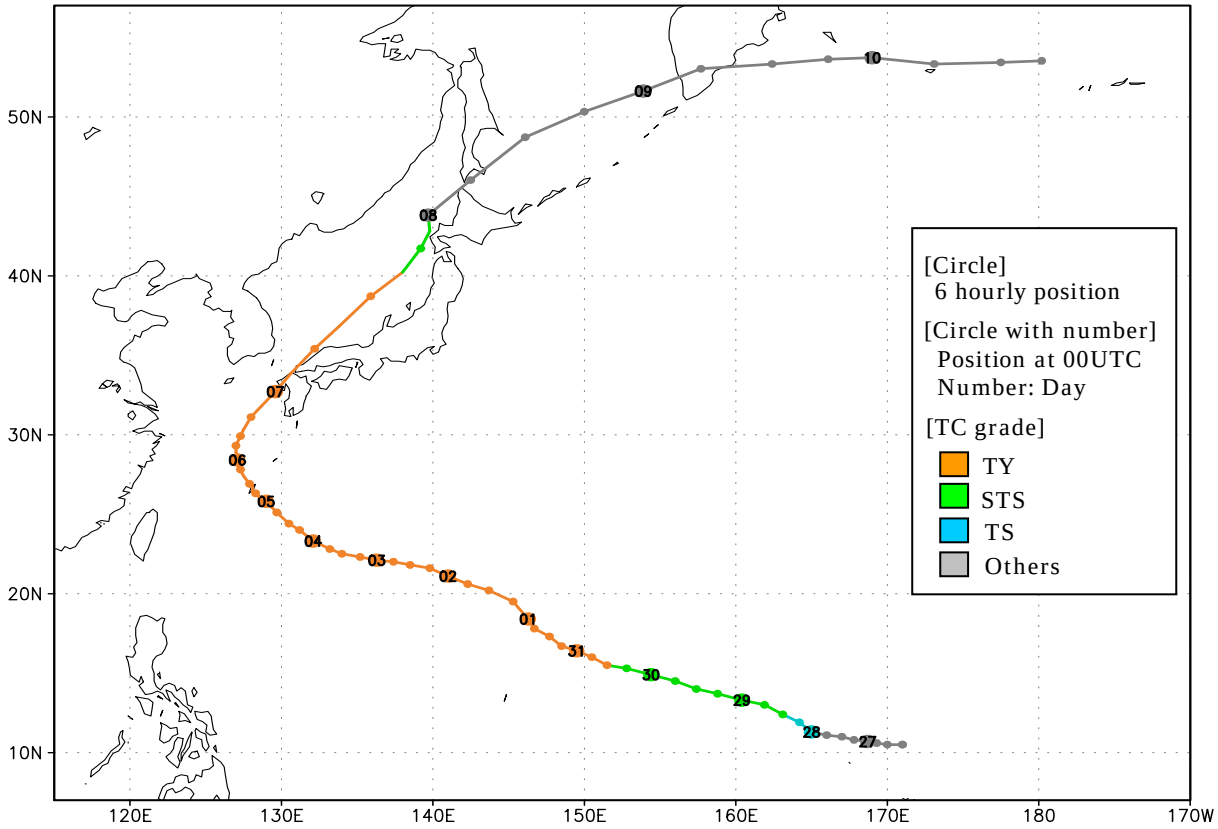
TY SONGDA (0418)

SONGDA formed as a tropical depression (TD) over the sea around the Marshall Islands at 06UTC, 26 August. It moved in the westerly direction, and developed a tropical storm (TS) at 00UTC, 28 August over the same waters. Changing the track to the west-northwest, it developed into a severe tropical storm (STS) at 12UTC, 28 August and then a typhoon (TY) on the sea east of Saipan at 12UTC, 30 August. SONGDA kept the track toward west-northwest and attained the strength with maximum sustained wind of 90kt over the waters northeast of Saipan at 06UTC, the following day. Though it weakened slightly over the sea north of Okinotorishima Island, it developed again to reach the peak intensity with maximum sustained wind of 95kt southwest of Okinawa at 06UTC, 4 September. After going through Okinawa, it recurved to the northeast in the East China Sea with weakening its intensity on 6 September. SONGDA made landfall on Kyushu after 00UTC, the following day and then enter the Japan Sea keeping the track to the northeast. Moving close to the western coast of Hokkaido, it transformed into an extratropical cyclone over La Pérouse Strait at 00UTC, 8 September. Changing the track gradually to the east, it passed Kamchatka Peninsula and then crossed the International Date Line on 10 September.

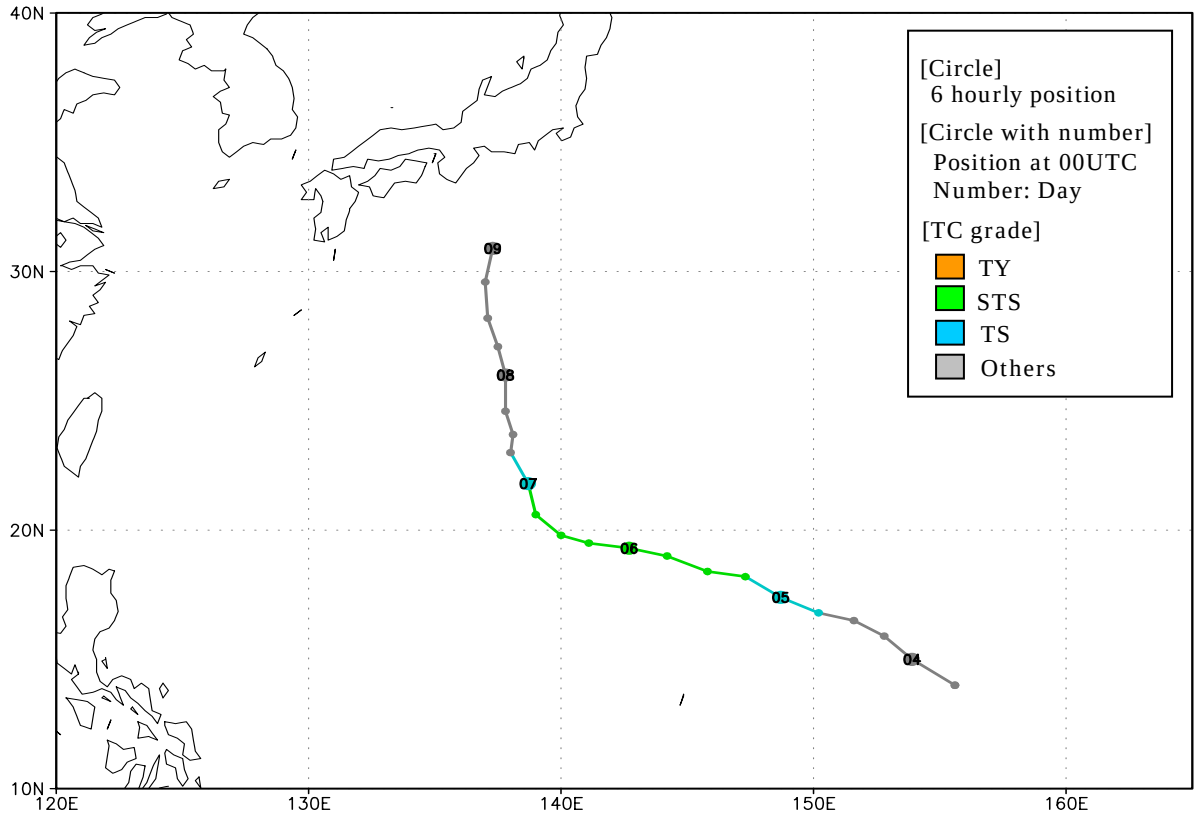


Date/Time	Center Position		Central pressure	Max Wind	CI Number	Grade	Date/Time	Center Position		Central pressure	Max Wind	CI Number	Grade
(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)			(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)		
Aug. 26/06	10.5	171.0	1008	-	-	TD	04/21	25.4	129.4	925	95	-	TY
26/12	10.5	170.0	1008	-	-	TD	05/00	25.8	129.0	925	95	6.0	TY
26/18	10.6	169.3	1008	-	-	TD	05/03	26.1	128.5	925	95	-	TY
27/00	10.7	168.7	1008	-	-	TD	05/06	26.3	128.3	925	95	5.5	TY
27/06	10.8	167.8	1004	-	-	TD	05/08	26.4	128.1	925	95	-	TY
27/12	11.0	167.0	1004	-	-	TD	05/09	26.7	128.1	925	95	-	TY
27/18	11.1	166.0	1000	-	-	TD	05/12	26.9	127.9	930	90	5.0	TY
28/00	11.3	165.0	998	35	2.0	TS	05/15	27.4	127.5	930	90	-	TY
28/06	11.9	164.2	992	40	2.5	TS	05/18	27.8	127.3	930	90	5.0	TY
28/12	12.4	163.1	985	50	3.0	STS	05/21	28.0	127.2	935	85	-	TY
28/18	13.0	161.9	980	55	3.5	STS	06/00	28.4	127.1	935	85	5.0	TY
29/00	13.3	160.4	980	55	3.5	STS	06/03	28.9	127.0	935	85	-	TY
29/06	13.7	158.8	980	55	3.5	STS	06/06	29.3	127.0	940	80	5.0	TY
29/12	14.0	157.4	980	55	3.5	STS	06/09	29.5	127.1	940	80	-	TY
29/18	14.5	156.0	980	55	3.5	STS	06/12	29.9	127.3	940	80	5.0	TY
30/00	14.9	154.4	975	60	4.0	STS	06/15	30.3	127.5	940	80	-	TY
30/06	15.3	152.8	975	60	4.0	STS	06/18	31.1	128.0	945	75	5.0	TY
30/12	15.5	151.5	965	65	4.5	TY	06/21	31.8	128.7	945	75	-	TY
30/18	16.0	150.5	955	75	5.0	TY	07/00	32.7	129.6	945	75	5.0	TY
31/00	16.4	149.5	940	85	5.5	TY	07/03	33.9	130.7	945	75	-	TY
31/06	16.7	148.5	925	90	6.0	TY	07/06	35.4	132.2	950	75	4.5	TY
31/12	17.3	147.7	925	90	6.0	TY	07/09	36.8	133.8	955	70	-	TY
31/18	17.8	146.7	925	90	6.0	TY	07/12	38.7	135.9	960	65	4.0	TY
Sep. 01/00	18.4	146.3	925	90	6.0	TY	07/15	40.2	138.0	965	60	-	STS
01/06	19.5	145.3	925	90	6.0	TY	07/18	41.7	139.2	970	55	3.5	STS
01/12	20.2	143.7	925	90	6.0	TY	07/21	42.8	139.8	970	55	-	STS
01/18	20.6	142.3	925	90	6.0	TY	08/00	43.8	139.7	968	-	-	L
02/00	21.1	141.0	925	90	6.0	TY	08/06	46.0	142.5	960	-	-	L
02/06	21.6	139.8	925	90	6.0	TY	08/12	48.7	146.1	968	-	-	L
02/12	21.8	138.5	935	85	5.5	TY	08/18	50.3	150.0	972	-	-	L
02/18	22.0	137.4	935	85	5.5	TY	09/00	51.6	153.9	974	-	-	L
03/00	22.1	136.3	935	85	5.5	TY	09/06	53.0	157.7	976	-	-	L
03/06	22.3	135.2	935	85	5.5	TY	09/12	53.3	162.4	978	-	-	L
03/12	22.5	134.0	935	85	5.5	TY	09/18	53.6	166.1	980	-	-	L
03/18	22.8	133.2	935	85	5.5	TY	10/00	53.7	169.0	984	-	-	L
04/00	23.3	132.1	935	85	5.5	TY	10/06	53.3	173.1	986	-	-	L
04/06	24.0	131.2	925	95	6.0	TY	10/12	53.4	177.5	988	-	-	L
04/12	24.4	130.5	925	95	6.0	TY	10/18	53.5	180.2	988	-	-	L
04/18	25.1	129.7	925	95	6.0	TY	11/00						OUT

STS SARIKA (0419)

SARIKA formed as a tropical depression (TD) over the sea northwest of the Marshall Islands at 18UTC, 3 September. Moving to the west-northwest, it developed into a tropical storm (TS) east of Saipan at 18UTC, 4 September and then into a severe tropical storm (STS) with the peak intensity with maximum sustained wind of 55kt over the sea northwest of Saipan at 12UTC, the following day. After changing the track to the north over the sea east of Okinotorishima Island on 6 September, it weakened into a TS and then a TD over the waters southwest of Iwojima Island at 00UTC and 06UTC, 7 September, respectively. It dissipated over the waters south of Honshu at 06UTC, 9 September.

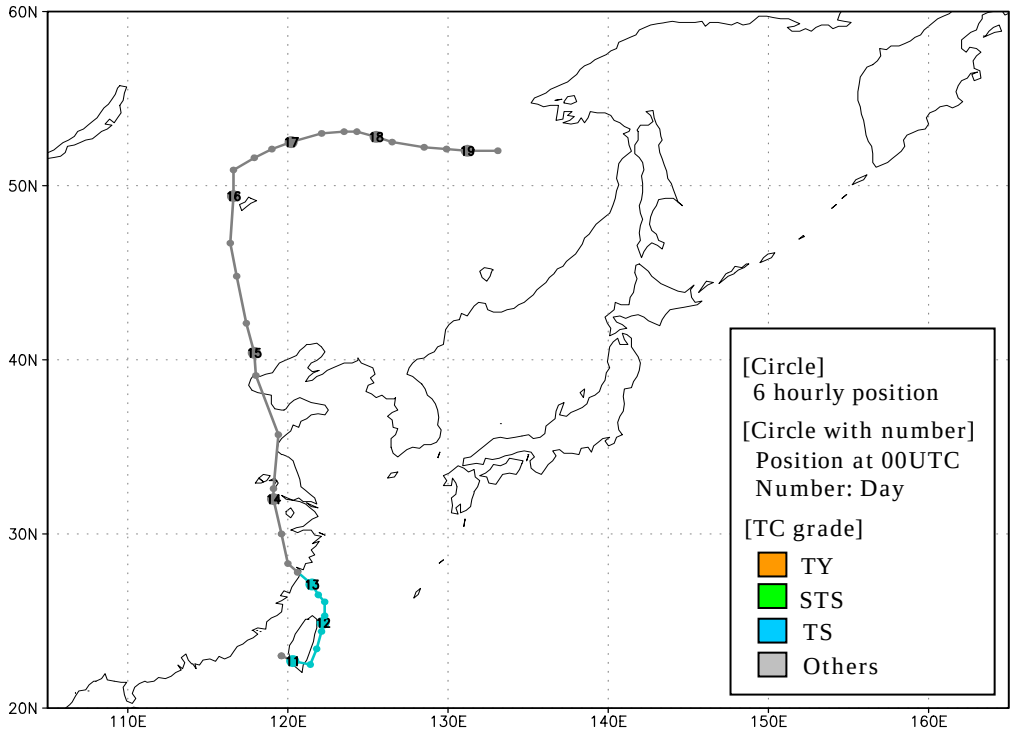
Date/Time		Center Position		Central pressure	Max Wind	CI Number	Grade	Date/Time		Center Position		Central pressure	Max Wind	CI Number	Grade
	(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)				(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)		
Sep.	03/18	14.0	155.6	1008	-	-	TD	06/18	20.6	139.0	985	50	3.5	STS	
	04/00	15.0	153.9	1008	-	-	TD	07/00	21.8	138.7	985	45	3.5	TS	
	04/06	15.9	152.8	1004	-	-	TD	07/06	23.0	138.0	998	-	-	TD	
	04/12	16.5	151.6	1004	-	-	TD	07/12	23.7	138.1	998	-	-	TD	
	04/18	16.8	150.2	1000	35	2.5	TS	07/18	24.6	137.8	1000	-	-	TD	
	05/00	17.4	148.7	990	45	3.0	TS	08/00	26.0	137.8	1004	-	-	TD	
	05/06	18.2	147.3	985	50	3.0	STS	08/06	27.1	137.5	1008	-	-	TD	
	05/12	18.4	145.8	980	55	3.5	STS	08/12	28.2	137.1	1010	-	-	TD	
	05/18	19.0	144.2	980	55	3.5	STS	08/18	29.6	137.0	1010	-	-	TD	
	06/00	19.3	142.7	985	50	3.5	STS	09/00	30.9	137.3	1012	-	-	TD	
	06/06	19.5	141.1	985	50	3.5	STS	09/06						Dissip.	
	06/12	19.8	140.0	985	50	3.5	STS								



TS HAIMA (0420)

HAIMA formed as a tropical depression (TD) over Taiwan Strait at 18UTC, 10 September. It moved to the east and developed into a tropical storm (TS) around the southwest coast of Taiwan Island at 00UTC, 11 September. After it turned to the north off the southeast coast of Taiwan Island, it reached the peak intensity with maximum sustained wind of 40kt off the northeast coast of Taiwan Island at 18UTC on that day. Changing the track to the northwest, HAIMA weakened into a TD around the coast south of Shanghai at 06UTC, 13 September. Moving to the north, it transformed into an extratropical cyclone west of Shanghai at 18UTC on that day. After it turned to the east around upper waters of the Amur on 16 September, it dissipated north of Khabarovsk at 12UTC, 19 September.

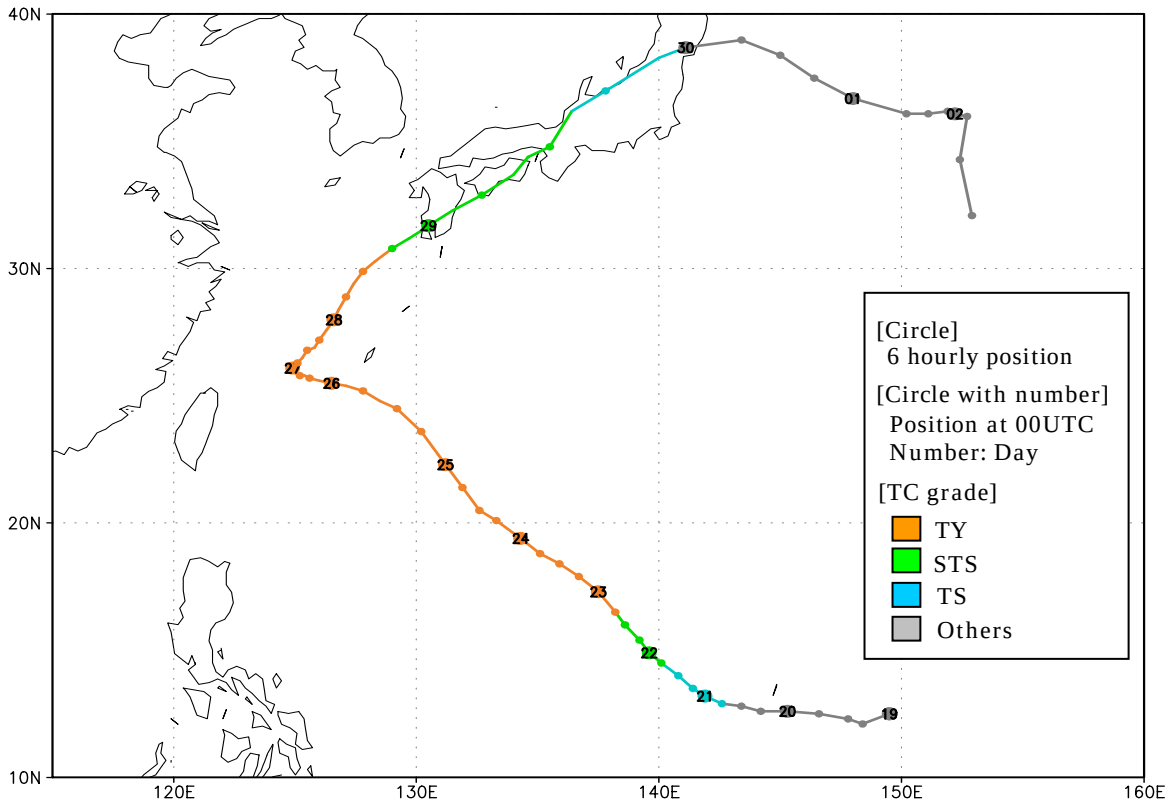
Date/Time		Center Position		Central pressure	Max Wind	CI Number	Grade	Date/Time		Center Position		Central pressure	Max Wind	CI Number	Grade
	(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)				(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)		
Sep.	10/18	23.0	119.6	1002	-	-	TD		15/06	42.1	117.4	1004	-	-	L
	11/00	22.7	120.3	1000	35	-	TS		15/12	44.8	116.8	1004	-	-	L
	11/06	22.5	121.4	998	35	1.5	TS		15/18	46.7	116.4	1000	-	-	L
	11/12	23.4	121.8	998	35	2.0	TS		16/00	49.4	116.6	998	-	-	L
	11/18	24.4	122.1	996	40	2.5	TS		16/06	50.9	116.6	994	-	-	L
	12/00	24.9	122.2	996	40	2.5	TS		16/12	51.6	117.9	994	-	-	L
	12/06	25.3	122.3	996	40	2.5	TS		16/18	52.1	119.0	994	-	-	L
	12/12	26.1	122.3	998	35	2.0	TS		17/00	52.5	120.2	994	-	-	L
	12/18	26.5	121.9	998	35	2.0	TS		17/06	53.0	122.1	992	-	-	L
	13/00	27.1	121.5	1000	35	2.0	TS		17/12	53.1	123.5	996	-	-	L
	13/06	27.8	120.6	1004	-	-	TD		17/18	53.1	124.3	996	-	-	L
	13/12	28.3	120.0	1010	-	-	TD		18/00	52.8	125.5	998	-	-	L
	13/18	30.0	119.6	1010	-	-	L		18/06	52.5	126.5	998	-	-	L
	14/00	32.0	119.1	1008	-	-	L		18/12	52.2	128.5	998	-	-	L
	14/06	32.6	119.1	1008	-	-	L		18/18	52.1	129.9	998	-	-	L
	14/12	35.7	119.4	1008	-	-	L		19/00	52.0	131.2	998	-	-	L
	14/18	39.1	118.0	1004	-	-	L		19/06	52.0	133.1	998	-	-	L
	15/00	40.4	117.9	1004	-	-	L		19/12						Dissip.



TY MEARI (0421)

MEARI formed as a tropical depression (TD) over the sea around the Mariana Islands at 00UTC, 19 September. It moved in the westerly direction, and developed into a tropical storm (TS) at 18UTC, 20 September over the same waters. Changing the track to the northwest, it developed into a severe tropical storm (STS) at 18UTC, 21 September and then a typhoon (TY) over the sea southeast of Okinotorishima Island at 18UTC, 22 September. MEARI kept the track toward northwest and attained the peak strength with maximum sustained wind of 90kt over the waters west of Okinotorishima Island at 06UTC, 24 September. After going through Okinawa, it turned abruptly to the northeast in the East China Sea with weakening its intensity. It made landfall on Kyushu around 2330UTC, 28 September. Moving northeastwards on Honshu, it transformed into an extratropical cyclone at 00UTC, 30 September. Changing the track gradually to the east and southeast, it dissipated over the sea east of Japan at 00UTC, 3 October.

Date/Time	Center Position		Central pressure	Max Wind	CI Number	Grade	Date/Time	Center Position		Central pressure	Max Wind	CI Number	Grade
(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)			(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)		
Sep. 19/00	12.5	149.5	1008	-	-	TD	27/03	26.2	125.0	945	85	-	TY
19/06	12.1	148.4	1006	-	-	TD	27/06	26.3	125.1	945	85	5.5	TY
19/12	12.3	147.8	1006	-	-	TD	27/09	26.5	125.3	945	80	-	TY
19/18	12.5	146.6	1006	-	-	TD	27/12	26.8	125.5	950	80	5.0	TY
20/00	12.6	145.3	1004	-	-	TD	27/15	26.9	125.8	950	80	-	TY
20/06	12.6	144.2	1002	-	-	TD	27/18	27.2	126.0	955	75	4.5	TY
20/12	12.8	143.4	1000	-	-	TD	27/21	27.6	126.3	955	75	-	TY
20/18	12.9	142.6	998	35	2.5	TS	28/00	28.0	126.6	960	70	4.5	TY
21/00	13.2	141.9	998	35	2.5	TS	28/03	28.4	126.8	960	70	-	TY
21/06	13.5	141.4	994	40	3.0	TS	28/06	28.9	127.1	965	65	4.5	TY
21/12	14.0	140.8	990	45	3.5	TS	28/09	29.4	127.4	965	65	-	TY
21/18	14.5	140.1	985	50	3.5	STS	28/12	29.9	127.8	965	65	4.5	TY
22/00	14.9	139.6	980	50	3.5	STS	28/15	30.3	128.3	965	65	-	TY
22/06	15.4	139.2	980	50	3.5	STS	28/18	30.8	129.0	970	60	4.0	STS
22/12	16.0	138.6	975	55	4.0	STS	28/21	31.2	129.7	970	60	-	STS
22/18	16.5	138.2	975	65	4.0	TY	28/23	31.5	130.2	970	60	-	STS
23/00	17.3	137.5	970	65	4.5	TY	29/00	31.7	130.5	970	60	4.0	STS
23/06	17.9	136.7	960	75	5.0	TY	29/03	32.3	131.5	975	60	-	STS
23/12	18.4	135.9	960	75	5.0	TY	29/06	32.9	132.7	980	55	4.0	STS
23/18	18.8	135.1	950	80	5.5	TY	29/09	33.7	134.0	985	55	-	STS
24/00	19.4	134.3	945	85	5.5	TY	29/11	34.4	134.6	990	50	-	STS
24/06	20.1	133.3	940	90	6.0	TY	29/12	34.8	135.5	990	50	3.5	STS
24/12	20.5	132.6	940	90	6.0	TY	29/15	36.2	136.4	992	45	-	TS
24/18	21.4	131.9	940	90	6.0	TY	29/18	37.0	137.8	994	45	3.0	TS
25/00	22.3	131.2	940	90	6.0	TY	29/21	38.3	140.0	994	45	-	TS
25/06	23.6	130.2	945	85	5.0	TY	30/00	38.7	141.1	996	-	-	L
25/12	24.5	129.2	950	80	5.0	TY	30/06	39.0	143.4	1000	-	-	L
25/15	24.8	128.5	950	80	-	TY	30/12	38.4	145.0	1002	-	-	L
25/18	25.2	127.8	950	80	5.0	TY	30/18	37.5	146.4	1004	-	-	L
25/21	25.4	127.1	950	80	-	TY	Oct. 01/00	36.7	148.0	1004	-	-	L
26/00	25.5	126.5	950	80	5.0	TY	01/06	36.1	150.2	1004	-	-	L
26/03	25.6	126.0	950	80	-	TY	01/12	36.1	151.1	1006	-	-	L
26/06	25.7	125.6	945	85	5.5	TY	01/18	36.2	151.9	1006	-	-	L
26/09	25.8	125.4	945	85	-	TY	02/00	36.1	152.2	1008	-	-	L
26/12	25.8	125.2	945	85	5.5	TY	02/06	36.0	152.7	1012	-	-	L
26/15	25.9	125.0	945	85	-	TY	02/12	34.3	152.4	1014	-	-	L
26/18	26.0	124.8	945	85	5.5	TY	02/18	32.1	152.9	1014	-	-	L
26/21	26.1	124.9	945	85	-	TY	03/00						dissip.
27/00	26.1	124.9	945	85	5.5	TY							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Position at 00UTC
Number: Day
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STS
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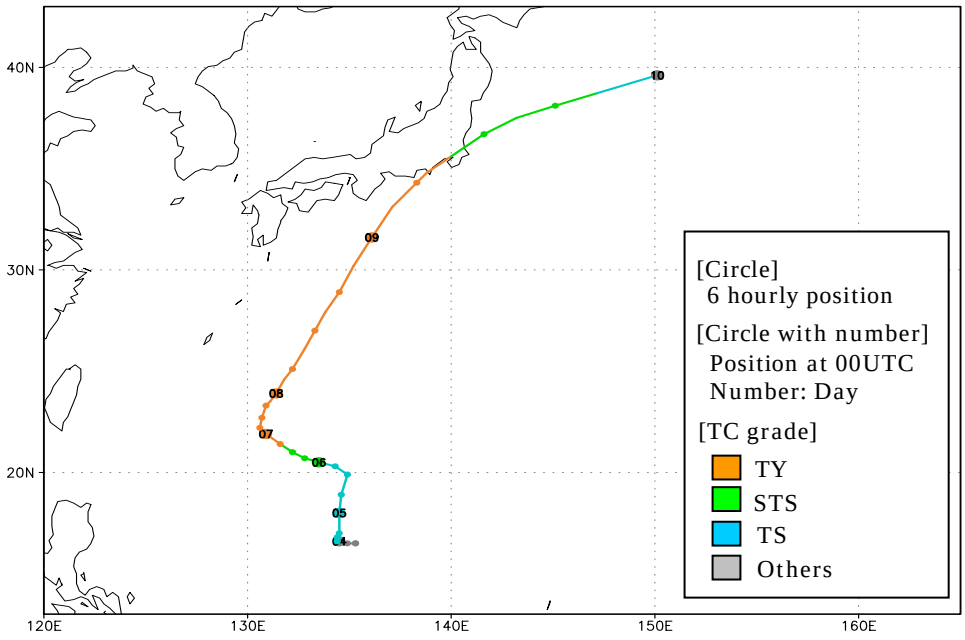
Others

TY MA-ON (0422)

MA-ON formed as a tropical depression (TD) over the sea east of Philippine at 06UTC, 3 October. It moved westward at first and then developed into a tropical storm (TS) at 06UTC, 4 October over the same water, changing the direction toward the north. It made an abrupt turn towards the northwest at 12UTC, 5 October. Moving to the northwest, it developed into a severe tropical storm (STS) at 00UTC, 6 October and then a typhoon (TY) over the sea northwest of Okinotorishima Island at 18UTC, 6 October. After recurvature at the same water, MA-ON attained the peak strength with maximum sustained wind of 100kt over the waters southeast of Okinawa Island at 18UTC, 7 October. Moving toward the north-northeast over the sea south of Japanese Islands, it made landfall on Honshu around 07UTC, 9 October. After leaving Honshu, it moved toward the northeast and transformed into an extratropical cyclone at 00UTC, 10 October and dissipated over the sea east of Japan at 06UTC, 10 October.

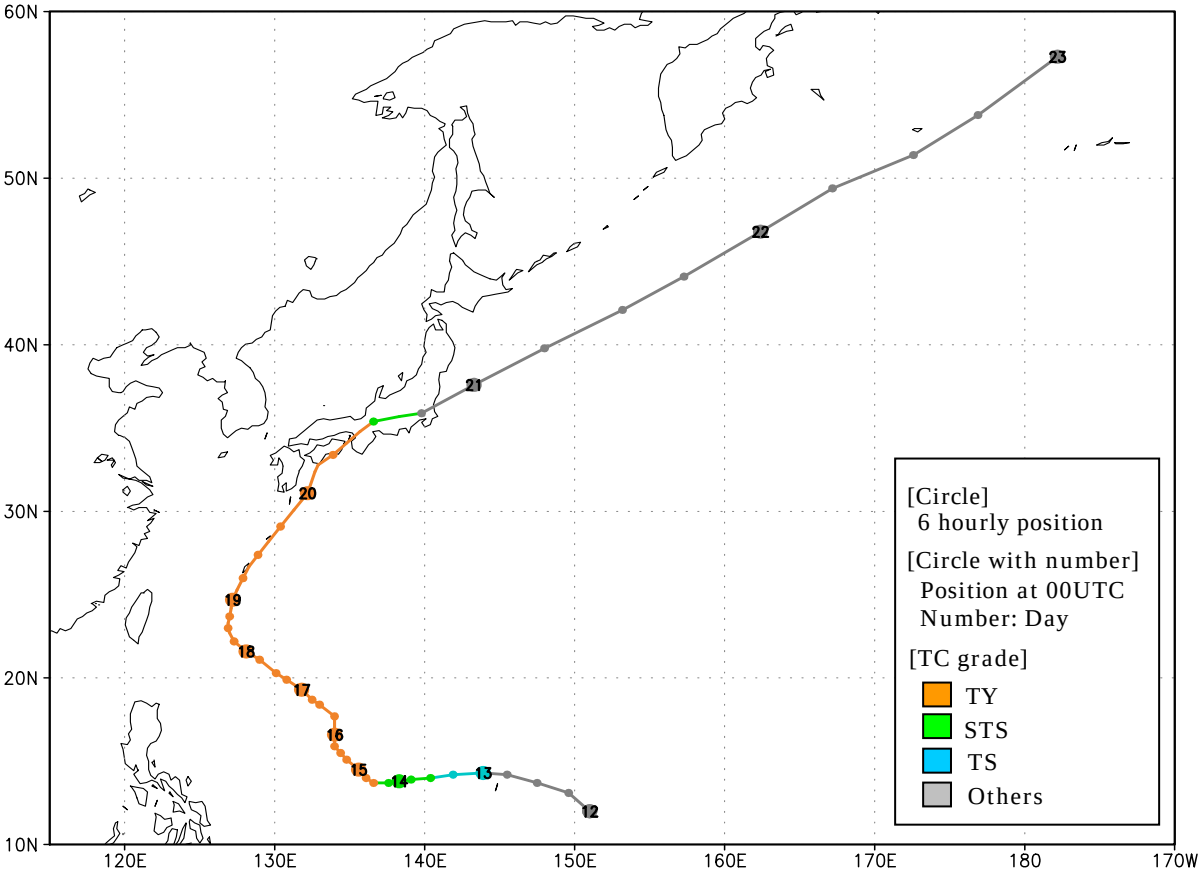
Date/Time		Center Position		Central pressure	Max Wind	CI Number	Grade	Date/Time		Center Position		Central pressure	Max Wind	CI Number	Grade
	(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)				(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)		
Oct.	03/06	16.5	135.3	1002	-	-	TD	07/21	23.5	131.1	920	100	-	TY	
	03/12	16.5	134.9	1002	-	-	TD	08/00	23.9	131.4	920	100	7.0	TY	
	03/18	16.6	134.6	1002	-	-	TD	08/03	24.6	131.8	920	100	-	TY	
	04/00	16.6	134.5	1000	-	-	TD	08/06	25.1	132.2	920	100	7.0	TY	
	04/06	16.6	134.4	996	40	2.5	TS	08/09	26.1	132.8	920	100	-	TY	
	04/12	16.8	134.4	994	40	2.5	TS	08/12	27.0	133.3	925	100	7.0	TY	
	04/18	17.0	134.5	994	40	2.5	TS	08/15	27.9	133.8	930	100	-	TY	
	05/00	18.0	134.5	994	40	2.5	TS	08/18	28.9	134.5	935	95	6.0	TY	
	05/06	18.9	134.6	990	45	3.0	TS	08/21	30.2	135.2	940	90	-	TY	
	05/12	19.9	134.9	990	45	3.0	TS	09/00	31.6	136.1	945	85	5.5	TY	
	05/18	20.3	134.3	990	45	3.0	TS	09/03	33.1	137.1	950	80	-	TY	
	06/00	20.5	133.5	985	50	3.5	STS	09/06	34.3	138.3	950	80	5.0	TY	
	06/06	20.7	132.8	980	55	3.5	STS	09/07	34.8	138.8	950	80	-	TY	
	06/12	21.0	132.2	975	60	4.0	STS	09/09	35.6	140.0	980	60	-	STS	
	06/18	21.4	131.6	965	70	4.5	TY	09/12	36.7	141.6	985	55	5.0	STS	
	07/00	21.9	130.9	955	75	5.0	TY	09/15	37.5	143.2	990	55	-	STS	
	07/06	22.2	130.6	940	90	6.0	TY	09/18	38.1	145.1	992	50	4.5	STS	
	07/12	22.7	130.7	930	95	6.5	TY	09/21	38.7	147.1	994	45	-	TS	
	07/15	23.0	130.8	925	95	-	TY	10/00	39.6	150.1	996	-	-	L	
	07/18	23.3	130.9	920	100	7.0	TY	10/06						dissip.	



TY TOKAGE (0423)

TOKAGE formed as a tropical depression (TD) over the sea north of Truk Island at 00UTC, 12 October. Moving toward the west, it developed into a tropical storm (TS) at 00UTC, 13 October over the sea northwest of Guam Island. Moving to the same direction, it developed into a severe tropical storm (STS) at 12UTC, 13 October and then a typhoon (TY) over the sea east of Philippine at 12UTC, 14 October. Then it changed the direction to the northwest ward, and attained the peak strength with maximum sustained wind of 85kt over the same waters at 06UTC, 16 October. After recurvature at the over the sea south of Okinawa, it moved northeastward and made landfall on Shikoku around 04UTC, 20 October. Passing through Honshu, it transformed into an extratropical cyclone at 18UTC, 20 October. It crossed International Date Line around 00UTC, 23 October.

Date/Time		Center Position		Central pressure	Max Wind	CI Number	Grade	Date/Time		Center Position		Central pressure	Max Wind	CI Number	Grade
	(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)				(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)		
Oct.	12/00	12.0	151.0	1004	-	-	TD	18/18	23.7	127.0	950	80	5.0	TY
	12/06	13.1	149.6	1002	-	-	TD	18/21	24.2	127.1	950	80	-	TY
	12/12	13.7	147.5	1000	-	-	TD	19/00	24.7	127.2	950	80	5.0	TY
	12/18	14.2	145.5	998	-	-	TD	19/03	25.3	127.5	950	80	-	TY
	13/00	14.3	143.9	994	40	2.5	TS	19/06	26.0	127.9	950	80	5.0	TY
	13/06	14.2	141.9	985	45	3.0	TS	19/09	26.7	128.3	950	80	-	TY
	13/12	14.0	140.4	985	50	3.0	STS	19/12	27.4	128.9	950	80	5.0	TY
	13/18	13.9	139.1	980	55	3.0	STS	19/15	28.2	129.6	950	80	-	TY
	14/00	13.8	138.3	980	55	3.0	STS	19/18	29.1	130.4	950	80	4.5	TY
	14/06	13.7	137.6	975	60	3.5	STS	19/21	30.1	131.3	950	80	-	TY
	14/12	13.7	136.6	970	65	4.0	TY	20/00	31.1	132.2	950	80	4.5	TY
	14/18	14.0	136.1	965	70	4.5	TY	20/03	32.4	132.7	950	80	-	TY
	15/00	14.5	135.6	955	75	5.0	TY	20/04	32.8	132.9	955	75	-	TY
	15/06	15.1	134.8	955	75	5.0	TY	20/06	33.4	133.9	955	75	4.0	TY
	15/12	15.5	134.4	955	75	5.0	TY	20/08	34.1	134.8	960	70	-	TY
	15/18	15.9	134.0	955	75	5.0	TY	20/09	34.8	135.7	970	70	3.5	TY
	16/00	16.6	134.0	955	75	5.0	TY	20/12	35.4	136.6	980	60	-	STS
	16/06	17.7	134.0	945	85	5.5	TY	20/15	35.7	138.3	985	50	-	STS
	16/12	18.4	133.0	940	85	5.5	TY	20/18	35.9	139.8	990	-	-	L
	16/18	18.7	132.5	940	85	5.5	TY	21/00	37.6	143.3	992	-	-	L
	17/00	19.3	131.8	940	85	5.5	TY	21/06	39.8	148.0	992	-	-	L
	17/06	19.9	130.8	940	85	5.5	TY	21/12	42.1	153.2	994	-	-	L
	17/12	20.3	130.1	940	85	5.5	TY	21/18	44.1	157.3	992	-	-	L
	17/18	21.1	129.0	940	85	5.5	TY	22/00	46.8	162.4	990	-	-	L
	18/00	21.6	128.1	945	85	5.5	TY	22/06	49.4	167.2	990	-	-	L
	18/06	22.2	127.3	945	85	5.0	TY	22/12	51.4	172.6	988	-	-	L
	18/09	22.7	127.0	950	80	-	TY	22/18	53.8	176.9	988	-	-	L
	18/12	23.0	126.9	950	80	5.0	TY	23/00	57.3	182.2	986	-	-	L
	18/15	23.3	126.9	950	80	-	TY	23/06						OUT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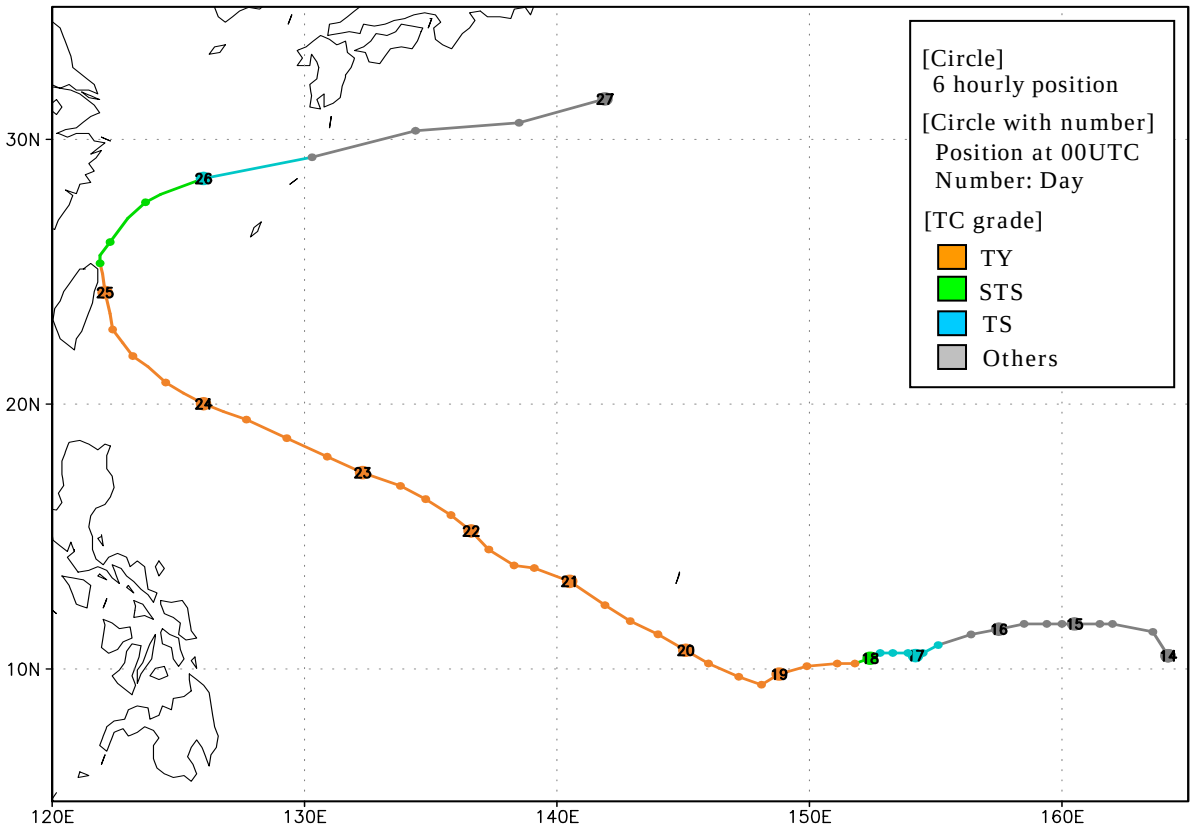
Others

TY NOCK-TEN (0424)

NOCK-TEN formed as a tropical depression (TD) around the Marshall Islands at 00UTC, 14 October. Moving toward the west, it developed into a tropical storm (TS) at 12UTC, 16 October over the sea northeast of Truk Island. Moving to the same direction, it developed into a severe tropical storm (STS) at 00UTC, 18 October and a typhoon (TY) at 06UTC, 18 October. Then it changed the direction to the northwest at 06UTC, 19 October over the sea southeast of Guam. Moving northwestward, NOCK-TEN attained the peak strength with maximum sustained wind of 85kt over the sea east of Philippines at 00UTC, 23 October. When it reached over the sea east of Taiwan, it recurved around 25 October. After recurvature it moved eastward and transformed into an extratropical cyclone at 06UTC, 26 October over the sea south of Kyusyu. It dissipated over the sea south of Honshu at 06UTC, 27 October.

Date/Time	Center Position		Central pressure	Max Wind	CI Number	Grade	Date/Time	Center Position		Central pressure	Max Wind	CI Number	Grade
(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)			(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)		
Oct. 14/00	10.5	164.2	1008	-	-	TD	22/00	15.2	136.6	960	70	5.0	TY
14/06	11.4	163.6	1004	-	-	TD	22/06	15.8	135.8	960	75	5.0	TY
14/12	11.7	162.0	1002	-	-	TD	22/12	16.4	134.8	955	75	5.5	TY
14/18	11.7	161.5	1002	-	-	TD	22/18	16.9	133.8	955	75	5.5	TY
15/00	11.7	160.5	1002	-	-	TD	23/00	17.4	132.3	945	85	6.0	TY
15/06	11.7	160.0	1002	-	-	TD	23/06	18.0	130.9	945	85	6.0	TY
15/12	11.7	159.4	1002	-	-	TD	23/12	18.7	129.3	945	85	6.0	TY
15/18	11.7	158.5	1000	-	-	TD	23/18	19.4	127.7	945	85	6.0	TY
16/00	11.5	157.5	1000	-	-	TD	23/21	19.7	126.8	945	85	-	TY
16/06	11.3	156.4	1000	-	-	TD	24/00	20.0	126.0	945	85	6.0	TY
16/12	10.9	155.1	996	35	2.5	TS	24/03	20.4	125.2	945	85	-	TY
16/18	10.6	154.5	990	45	3.0	TS	24/06	20.8	124.5	945	85	6.0	TY
17/00	10.5	154.2	990	45	3.0	TS	24/09	21.4	123.8	945	85	-	TY
17/06	10.6	153.9	990	45	3.0	TS	24/12	21.8	123.2	945	80	6.0	TY
17/12	10.6	153.3	990	45	3.0	TS	24/15	22.3	122.8	945	80	-	TY
17/18	10.6	152.8	990	45	3.5	TS	24/18	22.8	122.4	950	80	6.0	TY
18/00	10.4	152.4	980	50	4.0	STS	24/21	23.4	122.3	960	70	-	TY
18/06	10.2	151.8	970	65	5.0	TY	25/00	24.2	122.1	970	70	5.0	TY
18/12	10.2	151.1	965	70	5.0	TY	25/03	24.9	122.0	975	65	-	TY
18/18	10.1	149.9	965	70	5.0	TY	25/06	25.3	121.9	985	60	5.0	STS
19/00	9.8	148.8	965	70	5.0	TY	25/09	25.6	121.9	990	60	-	STS
19/06	9.4	148.1	965	70	5.0	TY	25/12	26.1	122.3	992	55	4.5	STS
19/12	9.7	147.2	965	70	5.0	TY	25/15	27.0	123.0	992	55	-	STS
19/18	10.2	146.0	965	70	5.0	TY	25/18	27.6	123.7	994	50	4.0	STS
20/00	10.7	145.1	955	75	5.5	TY	25/21	27.9	124.3	996	50	-	STS
20/06	11.3	144.0	955	75	5.5	TY	26/00	28.5	126.0	996	45	3.5	TS
20/12	11.8	142.9	955	75	5.5	TY	26/06	29.3	130.3	1002	-	-	L
20/18	12.4	141.9	955	75	5.5	TY	26/12	30.3	134.4	1004	-	-	L
21/00	13.3	140.5	960	75	5.0	TY	26/18	30.6	138.5	1006	-	-	L
21/06	13.8	139.1	960	70	5.0	TY	27/00	31.5	141.9	1010	-	-	L
21/12	13.9	138.3	960	70	5.0	TY	27/06						dissip.
21/18	14.5	137.3	960	70	5.0	TY							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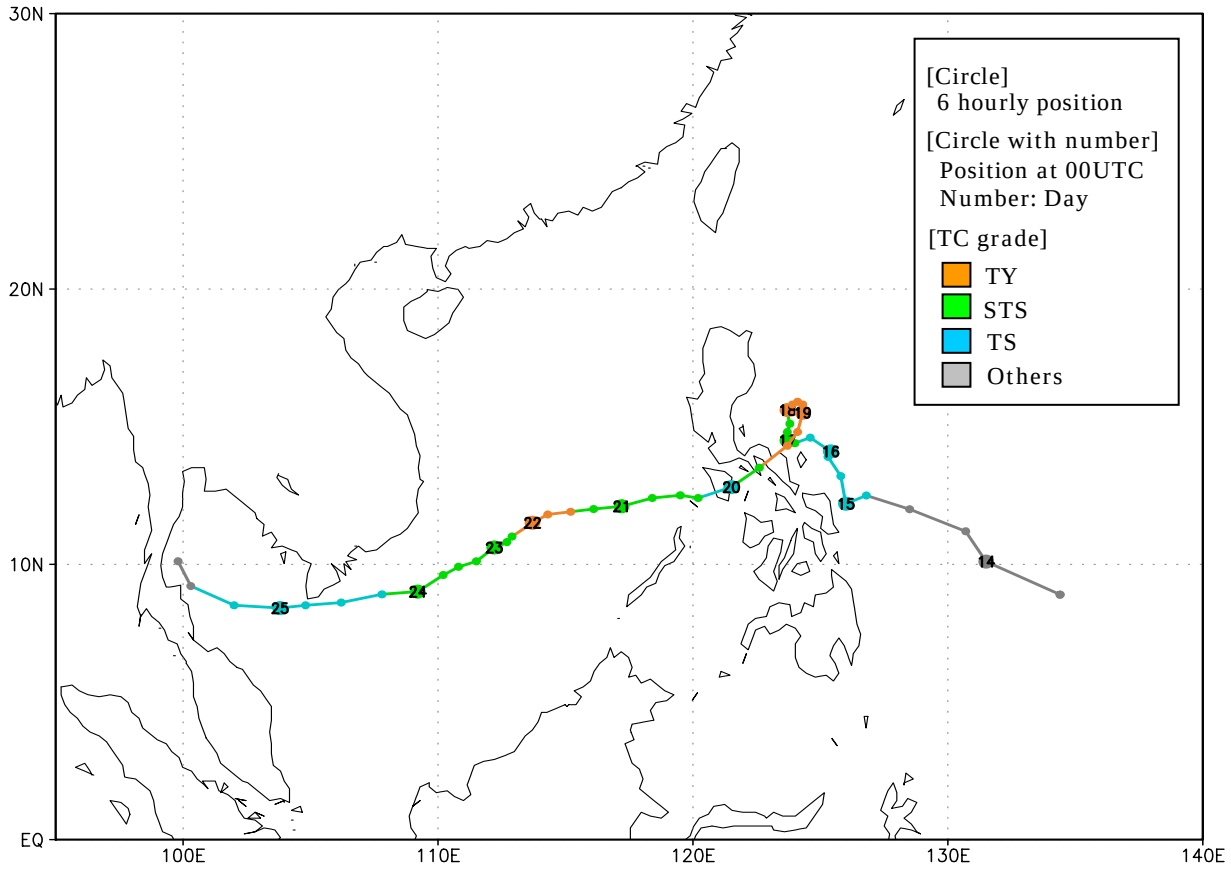
TY MUIFA (0425)

MUIFA formed as a tropical depression (TD) around the Caroline Islands at 18UTC, 13 November. Moving toward the west-northwest, it developed into a tropical storm (TS) at 18UTC, 14 November over the sea near east of the Philippines. Soon it made an abrupt turn toward the north. When MUIFA reached over the sea east of Luzon Island, it developed into a severe tropical storm (STS) at 12UTC, 16 November. Then, making a clockwise circular track at the same waters, it developed into a typhoon (TY) at 18UTC, 17 November, and attained the peak strength with maximum sustained wind of 80kt at 06UTC, 18 November. After it crossed Luzon Island toward the west-southwest to weaken into a TS, it developed again into a TY in the South China Sea. Moving westward, it weakened into a TS at 06UTC, 24 November over the sea south of Vietnam. While it was crossing the Gulf of Thailand, MUIFA weakened into a TD and crossed the 100 deg. E. longitudes at 18UTC, 25 November.

Date/Time	Center Position		Central pressure	Max Wind	CI Number	Grade	Date/Time	Center Position		Central pressure	Max Wind	CI Number	Grade
(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)			(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)		
Nov. 13/18	8.9	134.4	1004	-	-	TD	20/00	12.8	121.5	990	45	4.5	TS
14/00	10.1	131.5	1004	-	-	TD	20/06	12.4	120.2	980	55	4.5	STS
14/06	11.2	130.7	1000	-	-	TD	20/12	12.5	119.5	980	55	4.5	STS
14/12	12.0	128.5	1000	-	-	TD	20/18	12.4	118.4	980	55	4.0	STS
14/18	12.5	126.8	996	35	2.5	TS	21/00	12.1	117.2	980	55	4.0	STS
15/00	12.2	126.0	996	35	2.5	TS	21/06	12.0	116.1	975	60	4.0	STS
15/06	13.2	125.8	996	35	2.5	TS	21/12	11.9	115.2	965	65	5.0	TY
15/12	13.9	125.3	996	35	2.5	TS	21/18	11.8	114.3	965	65	5.0	TY
15/18	14.0	125.4	996	35	2.5	TS	22/00	11.5	113.7	965	65	5.0	TY
16/00	14.1	125.4	994	35	2.5	TS	22/06	11.0	112.9	975	60	4.5	STS
16/06	14.6	124.6	990	45	3.0	TS	22/12	10.8	112.7	975	60	4.5	STS
16/12	14.4	124.0	990	50	3.5	STS	22/18	10.6	112.3	975	60	4.5	STS
16/18	14.4	123.8	990	50	3.5	STS	23/00	10.6	112.2	980	55	4.0	STS
17/00	14.5	123.7	985	50	4.0	STS	23/06	10.1	111.5	985	55	3.5	STS
17/06	14.8	123.7	985	50	4.0	STS	23/12	9.9	110.8	985	55	3.5	STS
17/12	15.1	123.8	975	55	4.5	STS	23/18	9.6	110.2	990	50	3.0	STS
17/18	15.5	123.7	960	65	5.5	TY	24/00	9.0	109.2	990	50	3.0	STS
18/00	15.6	123.7	960	75	5.5	TY	24/06	8.9	107.8	994	45	2.5	TS
18/06	15.8	123.9	950	80	6.0	TY	24/12	8.6	106.2	998	35	2.0	TS
18/12	15.9	124.1	950	80	6.0	TY	24/18	8.5	104.8	998	35	2.0	TS
18/18	15.8	124.3	955	75	6.0	TY	25/00	8.4	103.8	998	35	2.0	TS
19/00	15.5	124.3	960	70	5.5	TY	25/06	8.5	102.0	1000	35	2.0	TS
19/06	14.8	124.1	960	70	5.5	TY	25/12	9.2	100.3	1004	-	-	TD
19/12	14.3	123.7	965	65	5.5	TY	25/18	10.1	99.8	1008	-	-	TD
19/18	13.5	122.6	985	50	5.0	STS	26/00						out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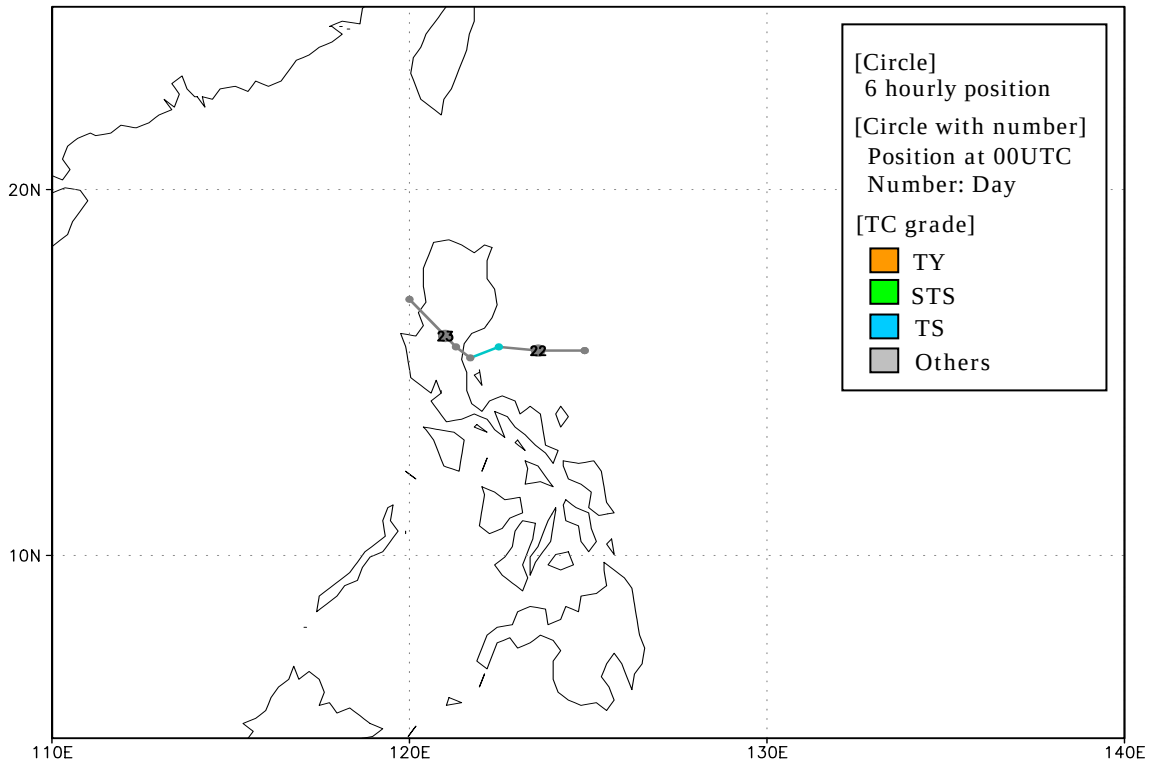
TS MERBOK (0426)

MERBOK formed as a tropical depression (TD) over the sea east of Luzon Island at 18UTC, 21 November. Moving toward the west, it developed into a tropical storm (TS) at 06UTC, 22 November. But it weakened into a TD only 6 hours later over the sea near east of Luzon Island. Soon after crossing Luzon Island, it dissipated at 12UTC, 23 November in the South China Sea.

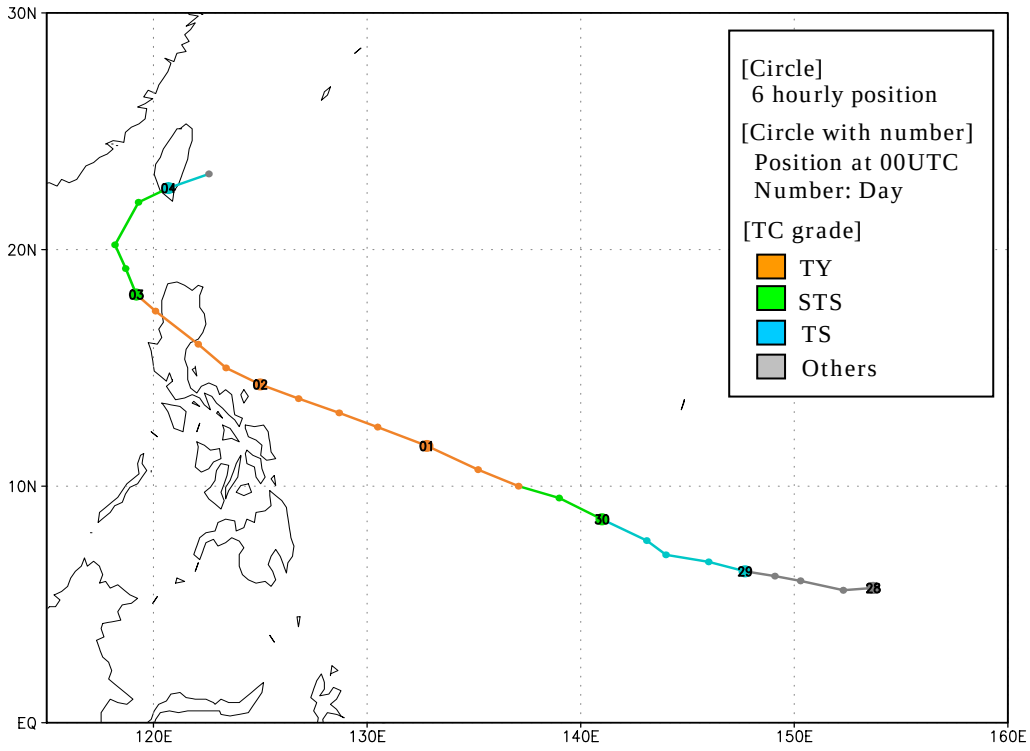
Date/Time		Center Position		Central pressure	Max Wind	CI Number	Grade	Date/Time		Center Position		Central pressure	Max Wind	CI Number	Grade
	(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)				(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)		
Nov.	21/18	15.6	124.9	1006	-	-	TD	22/18	15.7	121.3	1004	-	-	TD
	22/00	15.6	123.6	1004	-	-	TD	23/00	16.0	121.0	1004	-	-	TD
	22/06	15.7	122.5	1000	35	-	TS	23/06	17.0	120.0	1004	-	-	TD
	22/12	15.4	121.7	1004	-	-	TD	23/12							dissip.



TY NANMADOL (0427)

NANMADOL formed as a tropical depression (TD) around Truk Islands at 00UTC, 28 November. Moving toward west, it developed into a tropical storm (TS) at 00UTC, 29 November over the sea west of Truk Island. Then it changed the direction to the west-northwest, NANMADOL developed into a severe tropical storm (STS) at 00UTC, 30 November and a typhoon (TY) at 12UTC, 30 November around the Caroline Islands. It attained the peak strength with maximum sustained wind of 90kt at 06UTC, 1 December over the sea east of the Philippines. After NANMADOL crossed Luzon Island on 2 December, it made a recurvature in the South China Sea and then crossed the south part of Taiwan. It transformed into an extratropical cyclone at 06UTC, 4 November and dissipated at 12UTC, 4 November.

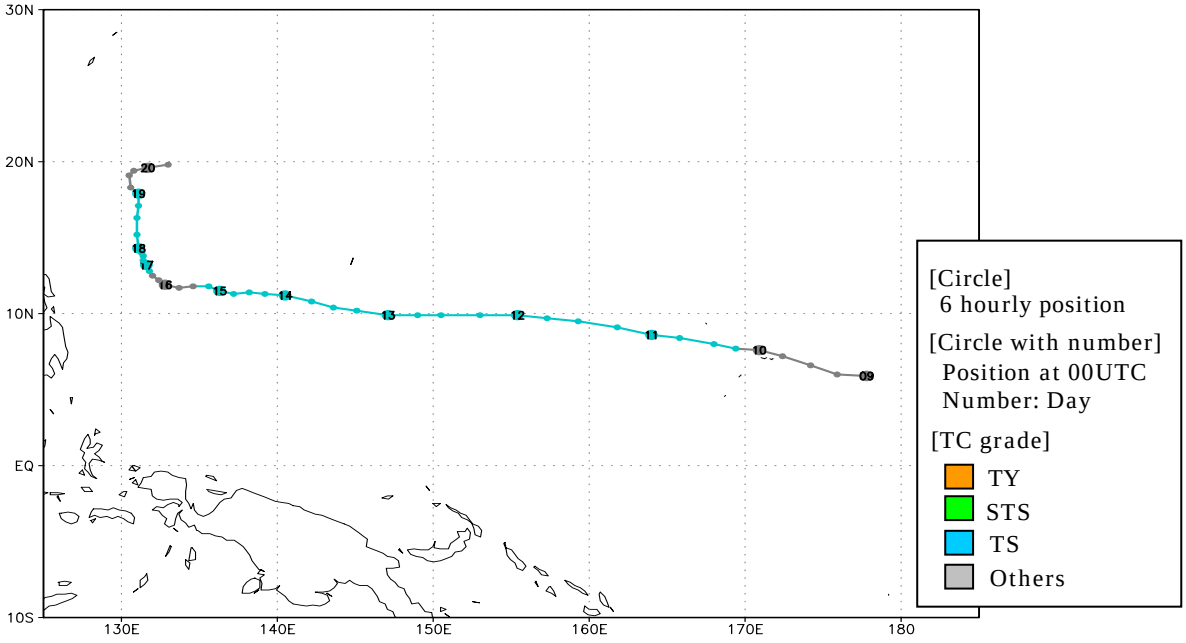
Date/Time		Center Position		Central pressure	Max Wind	CI Number	Grade	Date/Time		Center Position		Central pressure	Max Wind	CI Number	Grade
	(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)				(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)		
Nov.	28/00	5.7	153.7	1006	-	-	TD	01/12	13.1	128.7	935	90	6.5	TY
	28/06	5.6	152.3	1002	-	-	TD	01/18	13.7	126.8	935	90	6.5	TY
	28/12	6.0	150.3	1000	-	-	TD	02/00	14.3	125.0	945	80	6.0	TY
	28/18	6.2	149.1	1000	-	-	TD	02/06	15.0	123.4	945	80	6.0	TY
	29/00	6.4	147.7	992	35	2.5	TS	02/12	16.0	122.1	955	75	5.0	TY
	29/06	6.8	146.0	992	35	2.5	TS	02/18	17.4	120.1	965	70	5.0	TY
	29/12	7.1	144.0	990	40	3.0	TS	03/00	18.1	119.2	970	60	4.5	STS
	29/18	7.7	143.1	985	45	3.5	TS	03/06	19.2	118.7	980	55	4.0	STS
	30/00	8.6	141.0	980	50	4.0	STS	03/12	20.2	118.2	985	50	3.5	STS
	30/06	9.5	139.0	975	60	5.0	STS	03/18	22.0	119.3	985	50	3.5	STS
	30/12	10.0	137.1	960	75	5.0	TY	04/00	22.6	120.7	992	45	3.0	TS
	30/18	10.7	135.2	955	75	5.0	TY	04/06	23.2	122.6	1000	-	2.5	L
Dec.	01/00	11.7	132.8	940	85	6.0	TY	04/12						dissip.
	01/06	12.5	130.5	935	90	6.5	TY							



TS TALAS (0428)

TALAS formed as a tropical depression (TD) over the waters east of the Marshall Islands at 00UTC, 9 December 2004. Moving westward around the Marshall Islands, it became a tropical storm (TS) at 06UTC, 10 December and attained the peak strength with central pressure of 994hPa and maximum sustained wind of 40kt at 18UTC, 11 December. Keeping its westerly track, it weakened into a TD over the sea far east of the Philippines at 12UTC, 15 December. Changing the direction to the north, TALAS developed again into a TS over the same waters at 18UTC, 16 December. Then it moved to the north and weakened into a TD at 06UTC, 19 December. Turning to the east, it dissipated over the same waters at 12UTC, 20 December.

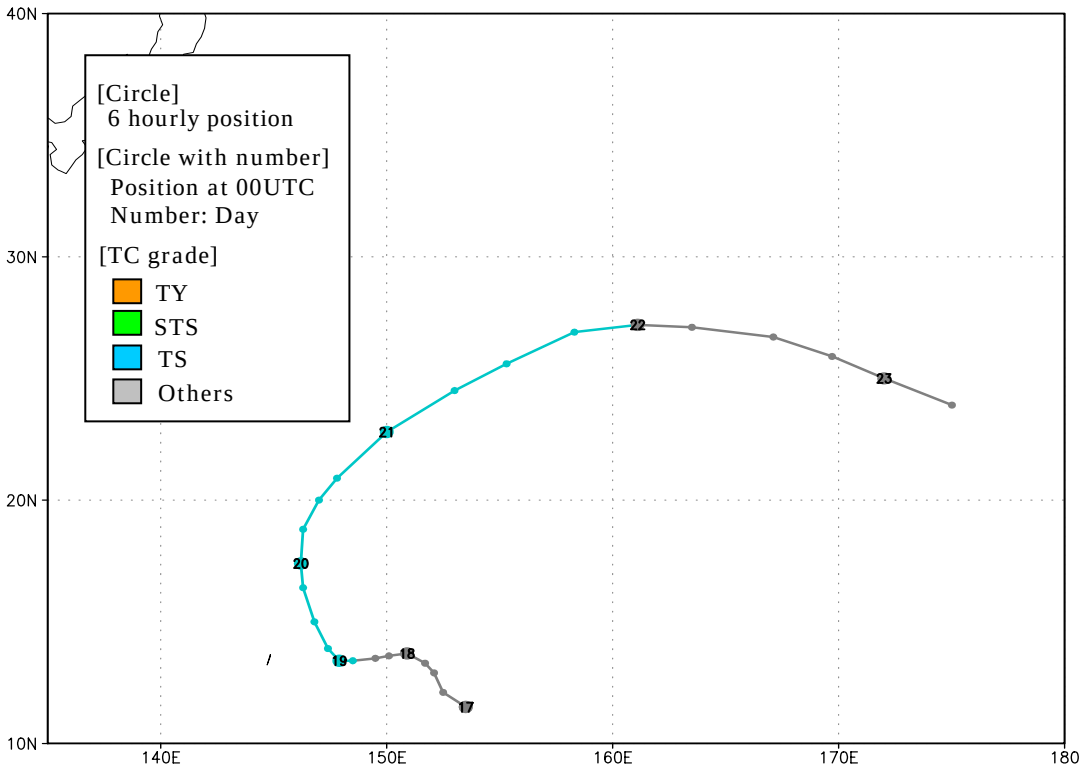
Date/Time		Center Position		Central pressure	Max Wind	CI Number	Grade	Date/Time		Center Position		Central pressure	Max Wind	CI Number	Grade
	(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)				(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)		
Dec.	09/00	5.9	177.8	1006	-	-	TD		15/00	11.5	136.3	994	40	3.0	TS
	09/06	6.0	175.9	1004	-	-	TD		15/06	11.8	135.6	996	35	3.0	TS
	09/12	6.6	174.2	1004	-	-	TD		15/12	11.8	134.6	1000	-	3.0	TD
	09/18	7.2	172.4	1004	-	-	TD		15/18	11.7	133.7	1000	-	2.5	TD
	10/00	7.6	170.9	1004	-	-	TD		16/00	11.9	132.8	1000	-	2.5	TD
	10/06	7.7	169.4	1000	35	-	TS		16/06	12.2	132.4	1000	-	2.5	TD
	10/12	8.0	168.0	998	40	-	TS		16/12	12.5	132.0	1000	-	2.5	TD
	10/18	8.4	165.8	998	40	-	TS		16/18	12.8	131.8	998	35	2.5	TS
	11/00	8.6	164.0	998	40	-	TS		17/00	13.2	131.6	996	35	2.5	TS
	11/06	9.1	161.8	996	40	2.5	TS		17/06	13.5	131.4	996	35	2.5	TS
	11/12	9.5	159.3	996	40	2.5	TS		17/12	13.8	131.4	996	35	2.5	TS
	11/18	9.7	157.3	994	40	3.0	TS		17/18	14.0	131.3	996	35	2.5	TS
	12/00	9.9	155.4	994	40	3.0	TS		18/00	14.3	131.1	996	35	2.5	TS
	12/06	9.9	153.0	994	40	3.0	TS		18/06	15.2	131.0	996	35	2.5	TS
	12/12	9.9	150.5	994	40	3.0	TS		18/12	16.3	131.0	998	35	2.5	TS
	12/18	9.9	149.0	994	40	3.0	TS		18/18	17.1	131.1	998	35	2.5	TS
	13/00	9.9	147.1	994	40	3.0	TS		19/00	17.9	131.1	998	35	2.5	TS
	13/06	10.2	145.1	994	40	3.0	TS		19/06	18.3	130.6	1000	-	-	TD
	13/12	10.4	143.6	994	40	3.0	TS		19/12	19.1	130.5	1004	-	-	TD
	13/18	10.8	142.2	994	40	3.0	TS		19/18	19.4	130.8	1004	-	-	TD
	14/00	11.2	140.5	994	40	3.0	TS		20/00	19.6	131.7	1004	-	-	TD
	14/06	11.3	139.2	994	40	3.0	TS		20/06	19.8	133.0	1004	-	-	TD
	14/12	11.4	138.2	994	40	3.0	TS		20/12						Dissip.
	14/18	11.3	137.2	994	40	3.0	TS								



TS NORU (0429)

NORU formed as a tropical depression (TD) over the sea north of Truk Island at 00UTC, 17 December 2004. Moving northwestward and later westward, it developed into a tropical storm (TS) over the sea east of Guam at 18UTC, 18 December. After NORU attained the peak strength with maximum sustained wind of 40kt at 12UTC, 19 December, it recurved over the sea north of Saipan the next day. It moved east-northeastward and then transformed into an extratropical cyclone over the sea northwest of Wake Island at 00UTC, 22 December. Moving to the east, it dissipated over the sea northeast of Wake Island at 12UTC, 23 December.

	Date/Time	Center Position		Central pressure	Max Wind	CI Number	Grade	Date/Time	Center Position		Central pressure	Max Wind	CI Number	Grade
	(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)			(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)		
Dec.	17/00	11.5	153.5	1006	-	-	TD	20/12	20.0	147.0	990	40	3.0	TS
	17/06	12.1	152.5	1004	-	-	TD	20/18	20.9	147.8	990	40	3.0	TS
	17/12	12.9	152.1	1004	-	-	TD	21/00	22.8	150.0	990	40	3.0	TS
	17/18	13.3	151.7	1004	-	-	TD	21/06	24.5	153.0	990	40	3.0	TS
	18/00	13.7	150.9	1000	-	-	TD	21/12	25.6	155.3	994	40	2.5	TS
	18/06	13.6	150.1	1000	-	-	TD	21/18	26.9	158.3	994	40	2.0	TS
	18/12	13.5	149.5	998	-	-	TD	22/00	27.2	161.1	994	-	-	L
	18/18	13.4	148.5	996	35	2.5	TS	22/06	27.1	163.5	996	-	-	L
	19/00	13.4	147.9	996	35	2.5	TS	22/12	26.7	167.1	998	-	-	L
	19/06	13.9	147.4	996	35	2.5	TS	22/18	25.9	169.7	998	-	-	L
	19/12	15.0	146.8	990	40	3.0	TS	23/00	25.0	172.0	1000	-	-	L
	19/18	16.4	146.3	990	40	3.0	TS	23/06	23.9	175.0	1002	-	-	L
	20/00	17.4	146.2	990	40	3.0	TS	23/12						Dissip.
	20/06	18.8	146.3	990	40	3.0	TS							



RSMC Tropical Cyclone Best Tracks in 2004

TY SUDAL (0401)

2 Apr - 18 Apr

Date/Time (UTC)	Center Position Lat (N)	Lon (E)	Central pressure (hPa)	Max Wind (kt)	CI Number	Grade
Apr 02/18	6.5	152.8	1004	-	-	TD
03/00	6.4	152.3	1004	-	-	TD
03/06	6.5	151.9	1004	-	-	TD
03/12	6.6	151.4	1004	-	-	TD
03/18	6.5	151	1002	-	-	TD
04/00	6.5	150.6	1002	-	-	TD
04/06	6.7	150.1	1000	-	-	TD
04/12	7.1	149.6	1000	-	-	TD
04/18	7.8	149.3	1000	-	-	TD
05/00	8.4	149.1	998	35	2.5	TS
05/06	8.8	148.8	990	40	3.0	TS
05/12	9.2	148.6	990	40	3.0	TS
05/18	9.5	147.7	985	45	3.5	TS
06/00	9.3	147	980	50	3.5	STS
06/06	9.2	146.2	980	50	3.5	STS
06/12	9.5	145.4	980	55	3.5	STS
06/18	9.9	144.9	975	60	4.0	STS
07/00	10	144	975	60	4.0	STS
07/06	9.9	143	975	60	4.0	STS
07/12	9.6	142.2	975	60	4.0	STS
07/18	9.3	141.5	970	65	4.0	TY
08/00	9	140.6	960	70	5.0	TY
08/06	8.8	139.9	955	75	5.0	TY
08/12	8.8	139.1	950	80	5.5	TY
08/18	9	138.5	950	80	5.5	TY
09/00	9.2	138	950	80	5.5	TY
09/06	9.5	137.2	950	80	5.5	TY
09/12	9.9	136.6	950	80	5.5	TY
09/18	10.3	135.8	945	85	6.0	TY
10/00	10.8	135.2	940	90	6.0	TY
10/06	11.4	134.4	940	90	6.0	TY
10/12	11.9	133.5	940	90	6.0	TY
10/18	12.4	132.8	945	85	5.5	TY
11/00	13.1	132.1	945	85	5.5	TY
11/06	13.6	131.7	945	85	5.5	TY
11/12	14.2	131.4	945	85	5.5	TY
11/18	14.8	131.2	945	85	5.5	TY
12/00	15.4	131	945	85	5.5	TY
12/06	15.7	131	945	85	5.5	TY
12/12	16.1	131.1	945	85	5.5	TY
12/18	16.6	131.3	945	85	5.5	TY
13/00	17.2	131.6	945	85	5.5	TY
13/06	17.8	132	945	85	5.5	TY
13/12	18.7	132.6	945	85	5.5	TY
13/18	19.5	133.2	945	85	5.5	TY
14/00	20.4	134	950	80	5.5	TY
14/06	21.4	135.1	950	80	5.5	TY
14/12	22.4	136.5	955	80	5.5	TY
14/18	23.1	138	960	75	5.0	TY
15/00	23.7	139.1	965	70	4.5	TY
15/03	24.1	140	965	65	-	TY
15/06	24.5	141	970	60	4.0	STS
15/09	24.8	142	970	60	-	STS
15/12	25.3	143.1	975	60	3.5	STS
15/15	25.8	144.4	975	60	-	STS
15/18	26.5	146.3	980	55	3.0	STS
16/00	27.5	148.1	985	50	3.0	STS
16/06	28.5	150.8	990	45	2.5	TS
16/12	29	153	996	-	-	L
16/18	30.2	157.8	992	-	-	L
17/00	32.7	162	994	-	-	L
17/06	35.1	168	994	-	-	L
17/12	37.5	173.7	996	-	-	L
17/18	39.3	180	1000	-	-	L
18/00	41.5	187.4	1008	-	-	OUT

TY NIDA (0402)

13 May - 22 May

Date/Time (UTC)	Center Position Lat (N)	Lon (E)	Central pressure (hPa)	Max Wind (kt)	CI Number	Grade
May 13/00	7.2	132.5	1004	-	-	TD
13/06	7.4	132.4	1002	-	-	TD
13/12	7.8	132.3	1004	-	-	TD
13/18	8.0	132.0	1000	-	-	TD
14/00	8.2	131.9	998	35	-	TS
14/06	8.5	131.5	990	40	3.0	TS
14/12	9.0	131.0	985	50	3.5	STS
14/18	9.2	130.5	985	50	3.5	STS
15/00	9.6	129.7	980	55	3.5	STS
15/06	9.9	129.1	975	60	4.0	STS
15/12	10.2	128.5	970	65	4.5	TY
15/18	10.7	127.9	955	75	5.5	TY
16/00	11.1	127.2	950	80	5.5	TY
16/06	11.9	126.4	945	90	6.0	TY
16/12	12.7	125.6	935	95	6.5	TY
16/18	13.5	124.8	935	95	6.5	TY
17/00	14.1	124.2	940	90	6.5	TY
17/06	14.7	123.9	940	90	6.5	TY
17/12	15.4	123.7	940	90	6.5	TY
17/18	16.2	123.5	940	90	6.5	TY
18/00	16.8	123.5	940	90	6.5	TY
18/06	17.5	123.7	940	90	6.5	TY
18/12	18.5	124.1	945	85	5.5	TY
18/18	19.3	124.5	945	85	5.5	TY
19/00	20.0	125.1	950	80	5.0	TY
19/06	21.2	126.5	950	80	5.0	TY
19/12	22.3	127.9	950	80	5.0	TY
19/15	23.2	128.8	950	80	-	TY
19/18	23.8	129.7	950	80	5.0	TY
19/21	24.4	130.5	950	80	-	TY
20/00	25.2	131.5	955	75	5.0	TY
20/03	26.1	132.8	955	75	-	TY
20/06	27.0	134.2	960	70	4.5	TY
20/09	27.9	135.6	960	70	-	TY
20/12	28.8	137.1	960	70	4.5	TY
20/15	29.9	138.4	965	70	-	TY
20/18	31.2	139.8	970	65	4.0	TY
20/21	32.4	141.0	975	60	-	STS
21/00	34.5	142.3	980	50	3.5	STS
21/03	36.1	144.1	980	50	-	STS
21/06	37.4	145.7	984	-	-	L
21/12	38.7	147.0	986	-	-	L
21/18	39.7	148.0	992	-	-	L
22/00	40.6	148.5	996	-	-	L
22/06	40.8	149.2	1000	-	-	L
22/12	40.5	150.6	1004	-	-	L
22/18	40.5	151.2	1008	-	-	L
23/00						Dissip

STS CHANTHU (0405)

7 June - 15 June

Date/Time (UTC)	Center Position Lat (N)	Lon (E)	Central pressure (hPa)	Max Wind (kt)	CI Number	Grade
June 07/18	8.6	132.2	1008	-	-	TD
08/00	9.0	130.5	1008	-	-	TD
08/06	9.3	128.6	1006	-	-	TD
08/12	9.4	127.6	1006	-	-	TD
08/18	10.0	126.4	1006	-	-	TD
09/00	10.7	125.0	1006	-	-	TD
09/06	10.9	123.9	1004	-	-	TD
09/12	11.0	122.4	1006	-	-	TD
09/18	11.1	121.0	1004	-	-	TD
10/00	11.4	120.0	1004	-	-	TD
10/06	11.8	119.3	1002	-	-	TD
10/12	12.1	118.5	1002	-	-	TD
10/18	12.3	117.3	998	35	2.5	TS
11/00	12.5	116.3	996	35	2.5	TS
11/06	12.8	115.2	996	35	2.5	TS
11/12	13.0	113.8	994	35	2.5	TS
11/18	13.4	112.2	990	45	3.0	TS
12/00	13.8	110.9	985	55	3.5	STS
12/06	13.8	109.8	975	60	4.0	STS
12/12	13.8	108.5	980	55	3.5	STS
12/18	13.8	107.3	990	45	3.0	TS
13/00	14.3	106.2	996	35	2.5	TS
13/06	14.9	105.2	1000	-	-	TD
13/12	15.3	104.5	1002	-	-	TD
13/18	15.6	104.1	1002	-	-	TD
14/00	16.1	103.8	1002	-	-	TD
14/06	16.5	103.5	1002	-	-	TD
14/12	16.8	103.1	1002	-	-	TD
14/18	17.1	102.7	1002	-	-	TD
15/00	17.4	102.6	1002	-	-	TD
15/06	17.8	102.5	1002	-	-	TD
15/12	18.2	102.1	1002	-	-	Dissip.

STS OMAIS (0403)

16 May - 22 May

Date/Time (UTC)	Center Position Lat (N)	Lon (E)	Central pressure (hPa)	Max Wind (kt)	CI Number	Grade
May 16/12	6.3	141.4	1004	-	-	TD
16/18	6.5	141.0	1004	-	-	TD
17/00	6.9	140.5	1004	-	-	TD
17/06	7.2	139.7	1000	-	-	TD
17/12	7.8	139.3	1000	-	-	TD
17/18	8.1	138.9	1000	-	-	TD
18/00	8.5	138.4	996	35	2.5	TS
18/06	8.9	137.5	996	35	2.5	TS
18/12	9.4	136.5	996	35	2.5	TS
18/18	9.7	135.7	996	35	2.5	TS
19/00	10.2	134.9	996	35	2.5	TS
19/06	10.8	133.9	992	40	2.5	TS
19/12	11.4	133.0	985	50	3.0	STS
19/18	11.9	133.2	985	50	3.0	STS
20/00	12.7	133.4	990	45	3.0	TS
20/06	13.6	133.7	990	45	3.0	TS
20/12	14.5	133.8	990	45	3.0	TS
20/18	15.4	134.0	990	40	3.0	TS
21/00	16.5	134.5	996	35	2.5	TS
21/06	16.7	134.9	998	-	-	TD
21/12	16.8	135.2	1004	-	-	TD
21/18	18.2	135.0	1004	-	-	TD
22/00	19.2	134.8	1004	-	-	TD
22/06						Dissip

TY CONSON (0404)

4 June - 14 Apr

Date/Time (UTC)	Center Position Lat (N)	Lon (E)	Central pressure (hPa)	Max Wind (kt)	CI Number	Grade
June 04/18	15.0	116.3	1004	-	-	TD
05/00	14.9	116.6	1002	-	-	TD
05/06	14.8	117.0	1002	-	-	TD
05/12	14.8	117.2	1002	-	-	TD
05/18	14.9	117.6	1000	-	-	TD
06/00	15.2	117.9	1000	-	-	TD
06/06	15.7	118.1	1000	-	-	TD
06/12	16.1	118.4	1000	-	-	TD
06/18	16.3	118.5	998	35	2.5	TS
07/00	16.5	118.6	992	40	3.0	TS
07/06	16.7	118.8	985	45	3.0	TS
07/12	17.4	119.1	985	50	3.0	STS
07/18	18.1	119.3	980	50	3.0	STS
08/00	18.7	119.4	975	60	4.0	STS
08/06	19.5	119.7	970	65	4.5	TY
08/12	20.0	120.1	965	70	5.0	TY
08/18	20.5	120.6	965	70	5.0	TY
09/00	21.2	121.4	965	70	5.0	TY
09/06	22.4	122.5	960	75	5.0	TY
09/09	23.1	123.2	960	75	-	TY
09/12	23.6	123.7	960	80	5.5	TY
09/15	24.2	124.2	960	80	-	TY
09/18	24.8	124.9	960	80	5.5	TY
09/21	25.3	125.5	960	80	-	TY
10/00	25.8	126.2	960	80	5.5	TY
10/03	26.4	126.8	960	80	-	TY
10/06	27.1	127.4	960	75	5.0	TY
10/09	27.8	128.3	960	75	-	TY
10/12	28.5	129.0	965	70	5.0	TY
10/15	29.1	129.9	965	70	-	TY
10/18	29.7	130.7	970	65	4.5	TY
10/21	30.4	131.4	975	60	-	STS
11/00	31.3	132.4	980	55	4.0	STS
11/03	32.1	133.2	985	50	-	STS
11/06	32.9	133.8	992	40	3.5	TS
11/07	33.3	134.1	994	35	-	TS
11/09	34.2	134.7	1004	-	-	L
11/12	35.5	136.4	1008	-	-	L
11/18	36.9	139.4	1008	-	-	L
12/00	38.0	142.6	1008	-	-	L
12/06	39.3	146.0	1008	-	-	L
12/12	41.1	149.3	1006	-	-	L
12/18	42.5	152.5	1004	-	-	L
13/00	43.5	155.5	1004	-	-	L
13/06	44.9	158.0	1006	-	-	L
13/12	46.6	160.1	1006	-	-	L
13/18	47.9	163.9	1008	-	-	L
14/00	48.3	167.8	1008	-	-	L
14/06	47.8	172.4	1012	-	-	L
14/12	46.7	176.9	1016	-	-	L
14/18	45.3	181.1	1016	-	-	OUT

TY Dianmu (0406)

11 June - 28 June

Date/Time (UTC)	Center Position Lat (N)	Lon (E)	Central pressure (hPa)	Max Wind (kt)	CI Number	Grade
June 11/18	6.5	139.1	1006	-	-	TD
12/00	6.8	138.5	1006	-	-	TD
12/06	7.4	138.0	1006	-	-	TD
12/12	7.8	137.5	1006	-	-	TD
12/18	8.0	137.2	1004	-	-	TD
13/00	8.6	137.0	1004	-	-	TD
13/06	9.1	136.6	1000	-	-	TD
13/12	9.3	136.4	998	35	2.5	TS
13/18	9.0	136.4	994	40	3.0	TS
14/00	9.1	136.7	990	45	3.0	TS
14/06	9.4	136.8	985	50	3.5	STS
14/12	9.9	137.0	980	55	3.5	STS
14/18	10.7	137.3	970	65	4.5	TY
15/00	11.2	137.3	960	70	5.0	TY
15/06	12.0	137.2	950	80	5.5	TY
15/12	12.7	136.8	935	90	6.0	TY
15/18	13.5	136.8	925	95	6.5	TY
16/00	14.3	136.5	915	100	7.0	TY
16/06	15.0	136.0	915	100	7.0	TY
16/12	15.7	135.6	915	100	7.0	TY
16/18	16.6	135.2	915	100	7.0	TY
17/00	17.1	134.2	915	100	7.0	TY
17/06	17.4	133.5	915	100	7.0	TY
17/12	17.7	132.9	925	95	6.5	TY
17/18	18.0	132.1	930	95	6.0	TY
18/00	18.5	131.6	930	95	6.0	TY
18/06	19.3	131.2	925	95	6.5	TY
18/12	20.2	130.3	925	95	6.5	TY
18/18	21.2	129.8	925	95	6.5	TY
19/00	22.3	129.4	930	95	6.0	TY
19/06	23.4	129.1	935	90	6.0	TY
19/09	23.9	129.1	935	90	-	TY
19/12	24.5	129.2	940	90	5.5	TY
19/15	25.1	129.2	940	90	-	TY
19/18	25.6	129.4	945	85	5.0	TY
19/21	26.2	129.5	945	85	-	TY
20/00	26.9	129.7	945	85	5.0	TY
20/03	27.6	130.1	945	85	-	TY
20/06	28.2	130.4	955	75	4.5	TY
20/09	28.8	130.8	955	75	-	TY
20/12	29.5	131.3	955	75	4.5	TY
20/15	30.2	131.7	955	75	-	TY
20/18	31.1	132.3	960	70	4.0	TY
20/21	31.9	132.9	960	70	-	TY
21/00	33.1	133.9	965	70	4.0	TY
21/03	34.3	134.7	970	60	-	STS
21/04	34.6	134.9	970	60	-	STS
21/06	35.7	135.4	975	55	3.5	STS
21/09	37.4	136.3	980	50	-	STS
21/12	38.8	137.4	985	45	3.0	TS
21/15	40.2	138.4	985	45	-	TS
21/18	41.3	139.1	986	-	-	L
22/00	42.4	139.2	988	-	-	L
22/06	44.0	140.3	990	-	-	L
22/12	45.6	141.4	990	-	-	L
22/18	47.0	143.4	990	-	-	L
23/00	48.3	145.1	990	-	-	L
23/06	49.0	146.8	990	-	-	L
23/12	49.8	148.3	992	-	-	L
23/18	50.5	149.9	994	-	-	L
24/00	50.9	151.0	996	-	-	L
24/06	51.0	151.3	996	-	-	L
24/12	50.1	152.9	1000	-	-	L
24/18	49.0	156.0	1002	-	-	L
25/00	48.5	158.0	1002	-	-	L
25/06	48.3	159.6	1004	-	-	L
25/12	48.1	161.0	1006	-	-	L
25/18	48.0	162.3	1006	-	-	L
26/00	47.9	163.8	1008	-	-	L
26/06	47.9	165.8	1008	-	-	L
26/12	48.2	166.7	1008	-	-	L
26/18	48.5	167.8	1006	-	-	L
27/00	47.9	169.3	1004	-	-	L
27/06	48.4	170.9	1000	-	-	L
27/12	48.9	172.6	996	-	-	L
27/18	49.0	174.9	996	-	-	L
28/00	48.9	176.5	996	-	-	L
28/06	48.6	178.3	996	-	-	L
28/12	48.2	180.2	996	-	-	OUT

TY MINDULLE (0407)

21 June - 5 July

Date/Time (UTC)	Center Position Lat (N)	Lon (E)	Central pressure (hPa)	Max Wind (kt)	CI Number	Grade
June 21/18	14.6	146.0	1004	-	-	TD
22/00	14.5	145.5	1004	-	-	TD
22/06	14.5	145.0	1002	-	-	TD
22/12	15.3	144.5	1002	-	-	TD
22/18	16.0	143.8	1002	-	-	TD
23/00	16.3	143.0	1000	-	-	TD
23/06	16.7	142.6	998	35	2.5	TS
23/12	17.0	142.2	996	35	2.5	TS
23/18	16.9	141.0	990	45	3.0	TS
24/00	16.4	139.8	985	50	3.5	STS
24/06	16.1	138.8	980	55	3.5	STS
24/12	15.8	137.5	980	55	3.5	STS
24/18	15.4	136.2	980	55	3.5	STS
25/00	15.0	134.6	980	55	3.5	STS
25/06	14.8	133.6	980	55	3.5	STS
25/12	14.7	132.6	980	55	3.5	STS
25/18	14.7	131.8	980	55	3.5	STS
26/00	14.6	131.1	980	55	3.5	STS
26/06	14.8	130.5	980	55	3.5	STS
26/12	15.2	130.0	980	55	3.5	STS
26/18	15.7	129.6	980	55	3.5	STS
27/00	16.2	128.8	980	55	3.5	STS
27/06	16.9	127.8	975	60	4.0	STS
27/12	17.5	127.1	965	70	4.5	TY
27/18	17.8	126.5	955	80	5.0	TY
28/00	18.1	126.0	950	85	5.5	TY
28/06	18.4	125.6	950	85	5.5	TY
28/12	18.6	125.0	950	85	5.5	TY
28/18	18.8	124.6	945	90	5.5	TY
29/00	18.8	124.1	940	95	6.0	TY
29/06	18.8	123.6	940	95	6.0	TY
29/12	18.9	123.0	940	95	6.0	TY
29/18	19.0	122.6	945	90	5.5	TY
30/00	19.1	122.2	950	85	5.0	TY
30/06	19.2	122.0	960	75	4.5	TY
30/12	19.6	122.0	965	70	4.5	TY
30/18	20.8	122.0	970	65	4.0	TY
July 01/00	21.6	121.8	975	60	4.0	STS
01/06	22.3	121.4	975	60	4.0	STS
01/12	23.2	121.1	975	60	4.0	STS
01/18	23.9	120.5	980	55	4.0	STS
02/00	24.8	120.3	980	55	3.5	STS
02/06	25.7	120.4	980	55	3.5	STS
02/12	26.3	120.6	985	50	3.0	STS
02/18	26.8	120.8	985	50	3.0	STS
03/00	27.9	121.2	985	45	2.5	TS
03/06	29.3	121.9	985	45	2.5	TS
03/12	30.6	122.7	985	45	2.0	TS
03/18	32.1	123.8	985	45	2.0	TS
04/00	33.1	124.5	984	-	-	L
04/06	34.6	125.1	984	-	-	L
04/12	36.3	126.2	986	-	-	L
04/18	38.0	127.8	988	-	-	L
05/00	39.2	129.4	992	-	-	L
05/06	40.3	130.9	994	-	-	L
05/12	42.1	132.8	996	-	-	L
05/18	44.3	133.4	1000	-	-	L
06/00						Dissip.

TS Kompasu (0409)

11 July - 16 July

Date/Time (UTC)	Center Position Lat (N)	Lon (E)	Central pressure (hPa)	Max Wind (kt)	CI Number	Grade
July 11/06	19.1	136.3	1008	-	-	TD
11/12	19	135.5	1008	-	-	TD
11/18	19.6	134.4	1008	-	-	TD
12/00	20	133.5	1008	-	-	TD
12/06	20.2	132.4	1008	-	-	TD
12/12	20.5	131.1	1008	-	-	TD
12/18	20.7	130.4	1008	-	-	TD
13/00	20.9	130	1008	-	-	TD
13/06	21	129.5	1006	-	-	TD
13/12	20.7	127.4	1004	-	-	TD
13/18	20.5	125.4	1000	-	-	TD
14/00	20.9	124.3	998	35	2.5	TS
14/06	21	122.8	996	40	3.0	TS
14/12	20.4	121.6	992	45	3.0	TS
14/18	20	120.2	992	45	3.0	TS
15/00	20	119	992	45	3.0	TS
15/06	20.3	118.2	992	45	3.0	TS
15/12	20.8	117.2	992	45	3.0	TS
15/18	21.1	116	992	45	3.0	TS
16/00	21.3	115.2	992	45	3.0	TS
16/06	22	114.5	996	45	3.0	TS
16/12	23	114	1004	-	-	TD
16/18						Dissip.

TY TINGTING (0408)

25 June - 13 July

Date/Time (UTC)	Center Position Lat (N)	Lon (E)	Central pressure (hPa)	Max Wind (kt)	CI Number	Grade
June 25/00	11.3	153.3	1002	-	-	TD
25/06	11.6	152.6	1002	-	-	TD
25/12	11.6	152.1	1002	-	-	TD
25/18	11.7	151.6	1000	-	-	TD
26/00	11.7	151.1	996	35	2.0	TS
26/06	11.8	150.8	990	40	2.5	TS
26/12	12.1	150.4	990	45	3.0	TS
26/18	12.9	149.9	990	45	3.0	TS
27/00	13.4	149.1	990	50	3.0	STS
27/06	13.9	148.3	990	50	3.0	STS
27/12	14.5	147.6	985	55	3.0	STS
27/18	15.3	147	980	60	3.5	STS
28/00	16.1	146.3	980	60	3.5	STS
28/06	16.7	145.7	975	65	4.0	TY
28/12	17.3	145.1	975	65	4.0	TY
28/18	18.1	144.3	970	65	4.0	TY
29/00	18.9	143.7	970	65	4.0	TY
29/06	19.9	143.2	970	70	4.0	TY
29/12	21	142.9	970	70	4.0	TY
29/18	22.3	142.6	965	75	4.5	TY
30/00	23.7	142.4	965	75	4.5	TY
30/06	24.9	142.3	960	80	4.5	TY
30/09	25.8	142.3	955	80	-	TY
30/12	26.5	142.4	955	80	4.5	TY
30/15	27.1	142.5	955	80	-	TY
30/18	27.6	142.7	960	80	4.5	TY
30/21	27.8	142.8	960	80	-	TY
July 01/00	28.4	143.3	970	70	4.0	TY
01/06	29.1	143.9	970	70	4.0	TY
01/12	29.8	144.5	970	70	4.0	TY
01/18	30.4	145.2	975	65	4.0	TY
02/00	31	145.8	975	65	4.0	TY
02/06	31.7	146.6	975	65	4.0	TY
02/12	32.2	147.6	980	60	3.5	STS
02/18	32.8	148.8	985	55	3.0	STS
03/00	33.5	150.3	985	55	3.0	STS
03/06	34.2	151.7	985	55	3.0	STS
03/12	34.9	153.5	990	50	3.0	STS
03/18	35.7	155.4	990	45	3.0	TS
04/00	37.2	157.5	990	45	2.5	TS
04/06	40.1	159.9	990	-	-	L
04/12	43.4	162	990	-	-	L
04/18	46	162.7	990	-	-	L
05/00	47.9	162.3	986	-	-	L
05/06	48.9	161.9	984	-	-	L
05/12	48.4	162.4	984	-	-	L
05/18	48.3	163	986	-	-	L
06/00	48.4	163.4	988	-	-	L
06/06	48.5	163.6	992	-	-	L
06/12	48.2	164.3	994	-	-	L
06/18	47.5	165.4	996	-	-	L
07/00	47.3	166.7	996	-	-	L
07/06	47.7	167.6	996	-	-	L
07/12	48.3	167.4	996	-	-	L
07/18	49.2	166.9	996	-	-	L
08/00	49.3	166.6	996	-	-	L
08/06	49.4	166.1	996	-	-	L
08/12	49.5	165.7	996	-	-	L
08/18	49.5	165.4	996	-	-	L
09/00	49.4	164.9	996	-	-	L
09/06	49.1	164.5	996	-	-	L
09/12	48.3	164.3	994	-	-	L
09/18	47.5	164.5	994	-	-	L
10/00	46.4	165.1	994	-	-	L
10/06	45.9	165.8	992	-	-	L
10/12	45.6	166.8	996	-	-	L
10/18	46	168.1	996	-	-	L
11/00	46.7	169	996	-	-	L
11/06	47.5	169.6	996	-	-	L
11/12	48.2	169.7	998	-	-	L
11/18	48.8	169.4	998	-	-	L
12/00	49.4	170.7	1000	-	-	L
12/06	49.9	171.7	1004	-	-	L
12/12	50.7	172.4	1006	-	-	L
12/18	51.1	174	1008	-	-	L
13/00	50.9	176.2	1008	-	-	L
13/06						Dissip.

TY NAMTHEUN (0410)

24 July - 3 August

Date/Time (UTC)	Center Position Lat (N)	Lon (E)	Central pressure (hPa)	Max Wind (kt)	CI Number	Grade
July 24/12	20.7	151.0	1006	-	-	TD
24/18	21.5	150.5	1002	-	-	TD
25/00	22.4	150.0	996	35	2.5	TS
25/06	23.1	149.6	990	40	3.0	TS
25/12	23.6	149.3	985	50	3.5	STS
25/18	24.4	148.7	975	60	4.0	STS
26/00	24.8	148.4	965	70	5.0	TY
26/06	25.4	147.9	955	80	5.5	TY
26/12	26.0	147.2	945	85	6.0	TY
26/18	27.1	146.5	940	85	6.0	TY
27/00	27.7	146.0	935	85	6.0	TY
27/06	28.7	145.3	935	85	6.0	TY
27/12	29.6	144.6	940	85	5.5	TY
27/18	30.5	143.6	945	80	5.0	TY
28/00	30.8	142.7	950	80	5.0	TY
28/06	31.2	141.7	950	80	5.0	TY
28/09	31.3	141.2	950	80	-	TY
28/12	31.3	140.8	960	75	4.5	TY
28/15	31.3	140.6	960	75	-	TY
28/18	31.4	140.3	960	75	4.5	TY
28/21	31.5	140.0	960	75	-	TY
29/00	31.6	139.7	960	75	4.5	TY
29/03	31.6	139.5	960	75	-	TY
29/06	31.5	139.2	960	75	4.5	TY
29/09	31.4	139.0	960	75	-	TY
29/12	31.4	138.8	960	75	4.5	TY
29/15	31.4	138.7	960	75	-	TY
29/18	31.4	138.5	960	75	4.5	TY
29/21	31.4	138.3	960	75	-	TY
30/00	31.4	138.1	960	75	4.5	TY
30/03	31.6	137.7	960	75	-	TY
30/06	31.8	137.2	965	70	4.5	TY
30/09	32.0	136.5	965	70	-	TY
30/12	32.0	136.1	965	70	4.5	TY
30/15	32.0	135.7	965	70	-	TY
30/18	32.1	135.2	965	70	4.5	TY
30/21	32.3	134.6	970	65	-	TY
31/00	32.4	134.4	970	65	4.5	TY
31/03	32.6	134.1	970	65	-	TY
31/06	33.0	133.4	975	65	4.0	TY
31/07	33.1	133.2	980	65	-	TY
31/09	33.5	132.8	985	55	-	STS
31/12	34.0	132.3	992	45	3.5	TS
31/15	34.2	131.3	996	40	-	TS
31/18	34.4	131.0	996	35	3.0	TS
31/21	34.7	131.0	996	35	-	TS
Aug. 01/00	34.8	131.0	996	35	2.5	TS
01/06	35.4	131.1	996	35	2.5	TS
01/12	36.7	131.4	998	35	2.0	TS
01/18	37.7	131.6	998	35	-	TS
02/00	38.6	132.2	1000	-	-	TD
02/06	39.6	132.9	1000	-	-	TD
02/12	40.6	134.0	1000	-	-	TD
02/18	41.3	135.0	1002	-	-	TD
03/00	42.2	136.2	1002	-	-	TD
03/06	43.4	138.0	1002	-	-	L
03/12	44.4	140.2	1004	-	-	L
03/18	45.6	140.9	1004	-	-	L
04/00						Dissip.

TS MALOU (0411)

2 Aug - 6 Aug

Date/Time (UTC)	Center Position Lat (N)	Lon (E)	Central pressure (hPa)	Max Wind (kt)	CI Number	Grade
Aug. 02/00	22.5	148.7	1002	-	-	TD
02/06	22.9	147.8	1002	-	-	TD
02/12	23.2	147.2	1002	-	-	TD
02/18	23.7	145.7	1002	-	-	TD
03/00	24.7	144.4	1002	-	-	TD
03/06	25.5	142.8	1000	-	-	TD
03/12	26.5	141.3	1000	-	-	TD
03/18	28.1	139.3	1000	-	-	TD
04/00	29.9	137.6	998	35	-	TS
04/03	30.9	136.9	996	40	-	TS
04/06	32.0	136.0	996	40	2.5	TS
04/09	32.6	135.5	996	40	-	TS
04/12	33.4	134.8	996	40	2.5	TS
04/13	33.6	134.7	996	40	-	TS
04/15	34.5	134.5	998	35	-	TS
04/16	34.8	134.4	998	35	-	TS
04/18	35.7	134.5	1000	35	2.5	TS
04/21	36.5	134.7	1002	-	-	TD
05/00	37.3	134.8	1004	-	-	TD
05/06	38.3	135.4	1006	-	-	TD
05/12	39.2	137.1	1008	-	-	TD
05/18	39.8	138.8	1008	-	-	TD
06/00	40.2	140.3	1010	-	-	TD
06/06	40.4	142.0	1010	-	-	TD
06/12	41.1	143.3	1010	-	-	TD
06/18						Dissip

TY RANANIM (0413)

6 Aug. - 15 Aug.

Date/Time (UTC)	Center Position Lat (N)	Lon (E)	Central pressure (hPa)	Max Wind (kt)	CI Number	Grade
Aug. 06/00	15.3	136.8	1002	-	-	TD
06/06	15.3	134.7	1000	-	-	TD
06/12	15.4	133.0	1000	-	-	TD
06/18	15.7	131.5	998	-	-	TD
07/00	15.8	131.0	998	-	-	TD
07/06	15.9	130.6	998	-	-	TD
07/12	16.0	130.4	998	-	-	TD
07/18	16.4	130.1	996	-	-	TD
08/00	17.0	130.0	996	-	-	TD
08/06	17.7	130.0	994	-	-	TD
08/12	18.2	130.3	992	35	2.5	TS
08/18	19.0	130.5	990	45	3.0	TS
09/00	19.6	130.3	985	50	3.0	STS
09/06	20.1	129.8	980	55	3.5	STS
09/12	20.4	129.1	980	55	3.5	STS
09/18	20.8	128.6	980	55	3.5	STS
10/00	21.3	128.2	975	60	3.5	STS
10/06	22.0	128.1	970	65	4.0	TY
10/12	22.4	127.5	970	65	4.0	TY
10/18	22.8	126.8	965	70	4.5	TY
10/21	23.0	126.5	965	70	-	TY
11/00	23.3	126.2	965	70	4.5	TY
11/03	23.5	126.0	965	70	-	TY
11/06	23.8	125.6	960	75	5.0	TY
11/09	24.1	125.4	955	75	-	TY
11/12	24.4	125.2	950	80	5.0	TY
11/15	24.9	124.8	950	80	-	TY
11/18	25.3	124.4	950	80	5.0	TY
11/21	25.7	124.1	950	80	-	TY
12/00	26.4	123.6	950	80	5.0	TY
12/06	27.4	122.6	950	80	5.0	TY
12/12	28.1	121.3	960	60	5.0	STS
12/18	28.3	120.2	975	40	4.5	TS
13/00	28.7	119.0	986	-	-	TD
13/06	29.2	117.6	992	-	-	TD
13/12	29.0	116.8	996	-	-	TD
13/18	28.9	116.3	996	-	-	TD
14/00	29.1	115.8	996	-	-	TD
14/06	29.3	114.9	998	-	-	TD
14/12	29.1	113.8	1000	-	-	TD
14/18	28.8	112.7	1002	-	-	TD
15/00	28.9	111.9	1004	-	-	TD
15/06	29.2	110.9	1004	-	-	TD
15/12						Dissip

TY MERANTI (0412)

3 Aug - 13 Aug

Date/Time (UTC)	Center Position Lat (N)	Lon (E)	Central pressure (hPa)	Max Wind (kt)	CI Number	Grade
Aug. 03/00	16.5	166.1	1004	-	-	TD
03/06	17.7	166.3	1004	-	-	TD
03/12	18.6	166.2	1004	-	-	TD
03/18	19.6	166.0	1002	-	-	TD
04/00	20.9	165.6	1002	-	-	TD
04/06	22.5	165.3	1000	-	-	TD
04/12	23.7	165.3	998	35	2.0	TS
04/18	24.5	165.4	996	40	2.5	TS
05/00	25.3	165.6	990	45	3.0	TS
05/06	26.3	166.1	980	55	3.5	STS
05/12	27.2	166.7	970	70	4.5	TY
05/18	28.0	167.3	960	75	5.0	TY
06/00	28.7	167.9	960	75	5.0	TY
06/06	29.5	168.7	960	75	5.0	TY
06/12	30.3	169.6	965	70	4.5	TY
06/18	31.2	170.1	975	65	4.0	TY
07/00	31.8	170.6	975	60	4.0	STS
07/06	32.6	171.5	980	55	3.5	STS
07/12	33.8	171.7	980	55	3.5	STS
07/18	34.9	171.4	985	50	3.0	STS
08/00	35.7	171.8	990	45	3.0	TS
08/06	36.9	171.6	990	45	3.0	TS
08/12	37.5	171.5	992	40	2.5	TS
08/18	37.9	172.0	994	40	2.5	TS
09/00	39.3	172.2	996	40	2.0	TS
09/06	39.6	172.4	998	-	-	L
09/12	39.8	172.7	1002	-	-	L
09/18	40.1	172.5	1002	-	-	L
10/00	40.3	172.0	1004	-	-	L
10/06	40.5	171.4	1004	-	-	L
10/12	40.5	170.7	1004	-	-	L
10/18	40.3	169.9	1004	-	-	L
11/00	40.1	169.7	1000	-	-	L
11/06	40.1	170.0	1000	-	-	L
11/12	40.2	171.1	1000	-	-	L
11/18	40.5	172.2	1000	-	-	L
12/00	41.0	174.0	1000	-	-	L
12/06	42.2	175.6	996	-	-	L
12/12	43.5	177.4	1000	-	-	L
12/18	44.9	179.4	998	-	-	L
13/00	46.2	181.8	1002	-	-	L
13/06						OUT

TS MALAKAS(0414)

9 Aug. - 14 Aug.

Date/Time (UTC)	Center Position Lat (N)	Lon (E)	Central pressure (hPa)	Max Wind (kt)	CI Number	Grade
Aug. 09/00	23.5	150.4	1004	-	-	TD
09/06	23.2	151.6	1004	-	-	TD
09/12	23.0	152.3	1004	-	-	TD
09/18	23.0	153.1	1000	-	-	TD
10/00	23.4	153.8	1000	-	-	TD
10/06	23.7	154.6	998	-	-	TD
10/12	24.2	155.6	998	-	-	TD
10/18	25.1	156.9	996	-	-	TD
11/00	26.5	158.5	994	35	2.5	TS
11/06	27.9	159.8	992	40	2.5	TS
11/12	29.4	160.9	992	40	2.5	TS
11/18	30.7	162.1	990	45	3.0	TS
12/00	31.7	163.2	990	45	3.0	TS
12/06	32.3	164.7	992	40	3.0	TS
12/12	32.9	166.7	992	40	3.0	TS
12/18	33.2	168.4	992	40	3.0	TS
13/00	33.6	170.7	992	40	3.0	TS
13/06	34.6	173.1	992	40	3.0	TS
13/12	35.4	175.8	994	35	2.5	TS
13/18	36.5	178.7	998	-	-	TD
14/00	38.9	181.1	998	-	-	TD
14/06						OUT

TY MEGI (0415)

14 Aug - 22 Aug

Date/Time (UTC)	Center Position Lat (N)	Lon (E)	Central pressure (hPa)	Max Wind (kt)	CI Number	Grade
Aug. 14/00	14.7	140.9	1002	-	-	TD
14/06	14.8	138.7	1000	-	-	TD
14/12	15.3	137.3	1000	-	-	TD
14/18	16.0	135.9	1000	-	-	TD
15/00	16.9	135.3	1000	-	-	TD
15/06	17.7	134.2	996	-	-	TD
15/12	18.0	133.3	996	-	-	TD
15/18	18.2	132.5	996	-	-	TD
16/00	18.6	131.6	996	-	-	TD
16/06	18.8	130.8	992	35	2.5	TS
16/12	20.0	129.6	992	35	2.5	TS
16/18	21.2	128.8	992	35	2.5	TS
16/21	22.2	128.2	990	40	-	TS
17/00	23.0	127.8	990	40	2.5	TS
17/03	24.0	127.4	990	40	-	TS
17/06	25.1	126.9	985	45	2.5	TS
17/09	25.8	126.5	980	50	-	STS
17/12	26.8	126.2	980	50	3.0	STS
17/18	27.6	125.6	975	60	3.5	STS
18/00	28.4	125.3	970	65	4.0	TY
18/06	30.0	125.4	970	65	4.0	TY
18/09	30.5	125.5	970	65	-	TY
18/12	31.2	126.2	970	65	4.0	TY
18/15	32.0	127.0	970	65	-	TY
18/18	33.1	127.8	970	65	3.5	TY
18/21	34.4	128.7	970	65	-	TY
19/00	35.6	129.7	970	65	3.5	TY
19/03	36.7	130.9	970	65	-	TY
19/06	37.7	132.2	970	65	3.5	TY
19/09	38.7	133.6	970	65	-	TY
19/12	39.5	135.4	975	60	3.0	STS
19/15	40.1	137.1	975	60	-	STS
19/18	40.6	138.6	975	60	2.5	STS
19/21	40.9	140.2	980	60	-	STS
20/00	41.2	141.7	980	55	2.5	STS
20/03	41.4	143.9	980	55	-	STS
20/06	41.6	145.8	985	50	2.0	STS
20/09	42.0	148.0	984	-	-	L
20/12	42.0	152.0	984	-	-	L
20/18	42.5	153.8	984	-	-	L
21/00	43.0	155.9	984	-	-	L
21/06	43.5	160.0	986	-	-	L
21/12	43.8	163.6	986	-	-	L
21/18	43.8	167.1	988	-	-	L
22/00	43.9	170.4	988	-	-	L
22/06	42.0	174.1	992	-	-	L
22/12						Dissip.

TY CHABA (0416)

18 Aug - 05 Sep

Date/Time (UTC)	Center Position Lat (N)	Lon (E)	Central pressure (hPa)	Max Wind (kt)	CI Number	Grade
Aug. 18/06	11.2	165.0	1004	-	-	TD
18/12	11.3	163.8	1004	-	-	TD
18/18	11.8	163.0	1002	-	-	TD
19/00	12.3	162.0	1002	-	-	TD
19/06	12.8	161.3	1000	-	-	TD
19/12	13.1	160.4	996	35	2.5	TS
19/18	13.6	159.1	990	45	3.0	TS
20/00	13.9	158.1	990	50	3.0	STS
20/06	14.1	156.9	990	50	3.0	STS
20/12	14.4	155.4	985	50	3.0	STS
20/18	14.5	154.2	985	50	3.0	STS
21/00	14.5	152.8	985	50	3.0	STS
21/06	14.4	151.6	985	50	3.5	STS
21/12	14.2	150.1	975	60	4.0	STS
21/18	14.2	148.6	960	75	5.0	TY
22/00	14.3	147.5	955	75	5.0	TY
22/06	14.4	146.4	950	80	6.0	TY
22/12	14.5	145.6	930	100	6.5	TY
22/18	14.8	144.8	920	110	7.0	TY
23/00	15.2	143.6	920	110	7.0	TY
23/06	15.6	142.9	915	110	7.0	TY
23/12	16.4	142.1	915	110	7.0	TY
23/18	17.1	141.1	910	110	7.0	TY
24/00	17.4	140.2	910	110	7.0	TY
24/06	18.0	139.6	910	110	7.0	TY
24/12	18.5	139.2	910	110	7.0	TY
24/18	19.4	138.7	910	110	7.0	TY
25/00	20.4	138.2	910	110	7.0	TY
25/06	21.2	137.6	910	110	7.0	TY
25/12	21.9	137.2	910	110	7.0	TY
25/18	22.5	136.8	910	110	7.0	TY
26/00	23.5	136.3	915	100	6.0	TY
26/06	24.2	135.9	920	100	6.0	TY
26/12	24.7	135.4	925	90	5.0	TY
26/18	25.5	135.1	930	80	5.0	TY
27/00	26.1	134.9	940	80	5.0	TY
27/06	26.6	134.6	940	80	5.0	TY
27/12	26.8	134.4	940	80	5.0	TY
27/18	27.1	134.2	935	90	6.0	TY
28/00	27.2	133.9	935	90	6.0	TY
28/03	27.3	133.7	935	90	-	TY
28/06	27.4	133.6	935	90	6.0	TY
28/09	27.6	133.3	935	90	-	TY
28/12	27.6	132.9	940	85	5.5	TY
28/15	27.6	132.6	940	85	-	TY
28/18	27.8	132.1	940	85	5.5	TY
28/21	27.9	131.6	940	85	-	TY
29/00	28.0	131.0	940	85	5.5	TY
29/03	28.3	130.7	940	85	-	TY
29/06	28.7	130.3	940	85	5.5	TY
29/09	29.0	130.1	940	85	-	TY
29/12	29.3	129.9	940	80	5.0	TY
29/15	29.8	129.8	945	80	-	TY
29/18	30.3	129.8	945	80	5.0	TY
29/21	30.9	130.0	950	80	-	TY
30/00	31.5	130.2	950	80	5.0	TY
30/03	32.5	130.5	955	80	-	TY
30/06	33.5	131.0	965	70	4.5	TY
30/08	33.9	131.4	965	70	-	TY
30/09	34.1	131.7	965	70	-	TY
30/12	35.2	133.2	970	60	4.0	STS
30/15	36.4	135.0	970	60	-	STS
30/18	37.5	136.2	975	60	4.0	STS
30/21	38.8	137.6	975	60	-	STS
31/00	40.3	139.3	975	60	3.5	STS
31/03	41.4	140.5	975	60	-	STS
31/06	43.9	143.2	976	-	-	L
31/12	46.0	145.0	976	-	-	L
31/18	48.1	145.5	980	-	-	L
Sep. 01/00	49.7	145.3	980	-	-	L
01/06	50.7	145.7	976	-	-	L
01/12	51.5	146.0	984	-	-	L
01/18	52.4	146.5	984	-	-	L
02/00	53.1	146.1	986	-	-	L
02/06	53.9	145.7	988	-	-	L
02/12	54.6	146.1	990	-	-	L
02/18	55.8	146.6	990	-	-	L
03/00	56.4	147.3	990	-	-	L
03/06	57.2	148.2	990	-	-	L
03/12	57.8	149.7	992	-	-	L
03/18	58.6	150.9	994	-	-	L
04/00	59.2	150.0	994	-	-	L
04/06	60.1	149.3	996	-	-	L
04/12	59.2	148.8	998	-	-	L
04/18	58.8	149.8	998	-	-	L
05/00	59.0	150.0	1000	-	-	L
05/06	59.1	150.7	1002	-	-	L
05/12	59.3	151.7	1006	-	-	L
05/18						Dissip.

TY AERE (0417)

18 Aug - 31 Aug

Date/Time (UTC)	Center Position Lat (N)	Lon (E)	Central pressure (hPa)	Max Wind (kt)	CI Number	Grade
Aug. 18/00	9.7	142.0	1004	-	-	TD
18/06	10.1	140.8	1004	-	-	TD
18/12	10.4	139.5	1004	-	-	TD
18/18	10.6	139.1	1002	-	-	TD
19/00	11.1	138.9	1002	-	-	TD
19/06	11.6	138.3	1000	-	-	TD
19/12	12.5	137.4	1000	-	-	TD
19/18	13.1	136.6	998	-	-	TD
20/00	14.3	136.0	996	35	2.0	TS
20/06	14.9	135.5	994	40	2.0	TS
20/12	15.7	135.4	992	45	2.5	TS
20/18	16.8	134.6	990	45	3.0	TS
21/00	17.4	134.0	985	50	3.0	STS
21/06	18.1	132.9	980	55	3.5	STS
21/12	19.0	132.0	980	55	3.5	STS
21/18	19.6	130.7	975	60	4.0	STS
22/00	20.1	129.8	975	60	4.0	STS
22/06	21.0	128.9	975	60	4.0	STS
22/12	21.6	127.9	970	65	4.0	TY
22/18	22.3	127.1	970	65	4.0	TY
22/21	22.5	126.8	970	65	-	TY
23/00	22.9	126.2	970	65	4.0	TY
23/03	23.1	125.8	970	65	-	TY
23/06	23.4	125.5	965	70	4.5	TY
23/09	23.6	125.1	965	70	-	TY
23/12	23.7	125.0	965	70	4.5	TY
23/15	24.2	124.7	960	75	-	TY
23/18	24.6	124.3	960	75	5.0	TY
23/21	24.8	124.1	960	75	-	TY
24/00	24.7	123.9	955	80	5.0	TY
24/03	24.9	123.8	955	80	-	TY
24/06	25.2	123.5	955	80	5.0	TY
24/09	25.3	123.3	955	80	-	TY
24/12	25.5	122.9	955	80	5.0	TY
24/15	25.5	122.6	955	80	-	TY
24/18	25.4	122.1	960	75	5.0	TY
24/21	25.4	121.7	960	75	-	TY
25/00	25.4	121.4	960	75	5.0	TY
25/06	25.5	120.5	965	70	4.5	TY
25/12	24.9	119.0	975	60	4.5	STS
25/18	24.5	118.1	985	50	4.0	STS
26/00	23.8	116.9	990	35	3.5	TS
26/06	23.6	116.3	990	-	-	TD
26/12	23.6	115.7	992	-	-	TD
26/18	23.0	114.5	992	-	-	TD
27/00	22.8	113.3	994	-	-	TD
27/06	22.7	113.1	994	-	-	TD
27/12	22.6	112.9	994	-	-	TD
27/18	22.5	112.6	996	-	-	TD
28/00	22.4	112.3	996	-	-	TD
28/06	22.2	112.2	996	-	-	TD
28/12	21.5	111.2	996	-	-	TD
28/18	21.4	110.7	996	-	-	TD
29/00	21.6	110.6	996	-	-	TD
29/06	21.7	110.6	996	-	-	TD
29/12	21.7	110.1	996	-	-	TD
29/18	21.6	109.7	996	-	-	TD
30/00	21.6	109.7	996	-	-	TD
30/06	21.8	109.7	996	-	-	TD
30/12	21.8	109.6	998	-	-	TD
30/18	21.4	108.9	1002	-	-	TD
31/00	21.0	108.4	1002	-	-	TD
31/06						Dissip.

TY SONGDA (0418)

26 Aug - 10 Sep

Date/Time		Center Position		Central pressure	Max Wind	CI Number	Grade
	(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)		
Aug.	26/06	10.5	171.0	1008	-	-	TD
	26/12	10.5	170.0	1008	-	-	TD
	26/18	10.6	169.3	1008	-	-	TD
	27/00	10.7	168.7	1008	-	-	TD
	27/06	10.8	167.8	1004	-	-	TD
	27/12	11.0	167.0	1004	-	-	TD
	27/18	11.1	166.0	1000	-	-	TD
	28/00	11.3	165.0	998	35	2.0	TS
	28/06	11.9	164.2	992	40	2.5	TS
	28/12	12.4	163.1	985	50	3.0	STS
	28/18	13.0	161.9	980	55	3.5	STS
	29/00	13.3	160.4	980	55	3.5	STS
	29/06	13.7	158.8	980	55	3.5	STS
	29/12	14.0	157.4	980	55	3.5	STS
	29/18	14.5	156.0	980	55	3.5	STS
	30/00	14.9	154.4	975	60	4.0	STS
	30/06	15.3	152.8	975	60	4.0	STS
	30/12	15.5	151.5	965	65	4.5	TY
	30/18	16.0	150.5	955	75	5.0	TY
	31/00	16.4	149.5	940	85	5.5	TY
	31/06	16.7	148.5	925	90	6.0	TY
	31/12	17.3	147.7	925	90	6.0	TY
	31/18	17.8	146.7	925	90	6.0	TY
Sep.	01/00	18.4	146.3	925	90	6.0	TY
	01/06	19.5	145.3	925	90	6.0	TY
	01/12	20.2	143.7	925	90	6.0	TY
	01/18	20.6	142.3	925	90	6.0	TY
	02/00	21.1	141.0	925	90	6.0	TY
	02/06	21.6	139.8	925	90	6.0	TY
	02/12	21.8	138.5	935	85	5.5	TY
	02/18	22.0	137.4	935	85	5.5	TY
	03/00	22.1	136.3	935	85	5.5	TY
	03/06	22.3	135.2	935	85	5.5	TY
	03/12	22.5	134.0	935	85	5.5	TY
	03/18	22.8	133.2	935	85	5.5	TY
	04/00	23.3	132.1	935	85	5.5	TY
	04/06	24.0	131.2	925	95	6.0	TY
	04/12	24.4	130.5	925	95	6.0	TY
	04/18	25.1	129.7	925	95	6.0	TY
	04/21	25.4	129.4	925	95	-	TY
	05/00	25.8	129.0	925	95	6.0	TY
	05/03	26.1	128.5	925	95	-	TY
	05/06	26.3	128.3	925	95	5.5	TY
	05/08	26.4	128.1	925	95	-	TY
	05/09	26.7	128.1	925	95	-	TY
	05/12	26.9	127.9	930	90	5.0	TY
	05/15	27.4	127.5	930	90	-	TY
	05/18	27.8	127.3	930	90	5.0	TY
	05/21	28.0	127.2	935	85	-	TY
	06/00	28.4	127.1	935	85	5.0	TY
	06/03	28.9	127.0	935	85	-	TY
	06/06	29.3	127.0	940	80	5.0	TY
	06/09	29.5	127.1	940	80	-	TY
	06/12	29.9	127.3	940	80	5.0	TY
	06/15	30.3	127.5	940	80	-	TY
	06/18	31.1	128.0	945	75	5.0	TY
	06/21	31.8	128.7	945	75	-	TY
	07/00	32.7	129.6	945	75	5.0	TY
	07/03	33.9	130.7	945	75	-	TY
	07/06	35.4	132.2	950	75	4.5	TY
	07/09	36.8	133.8	955	70	-	TY
	07/12	38.7	135.9	960	65	4.0	TY
	07/15	40.2	138.0	965	60	-	STS
	07/18	41.7	139.2	970	55	3.5	STS
	07/21	42.8	139.8	970	55	-	STS
	08/00	43.8	139.7	968	-	-	L
	08/06	46.0	142.5	960	-	-	L
	08/12	48.7	146.1	968	-	-	L
	08/18	50.3	150.0	972	-	-	L
	09/00	51.6	153.9	974	-	-	L
	09/06	53.0	157.7	976	-	-	L
	09/12	53.3	162.4	978	-	-	L
	09/18	53.6	166.1	980	-	-	L
	10/00	53.7	169.0	984	-	-	L
	10/06	53.3	173.1	986	-	-	L
	10/12	53.4	177.5	988	-	-	L
	10/18	53.5	180.2	988	-	-	L
	11/00						OUT

STS SARIKA (0419)

3 Sep - 9 Sep

Date/Time		Center Position		Central pressure	Max Wind	CI Number	Grade
	(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)		
Sep.	03/18	14.0	155.6	1008	-	-	TD
	04/00	15.0	153.9	1008	-	-	TD
	04/06	15.9	152.8	1004	-	-	TD
	04/12	16.5	151.6	1004	-	-	TD
	04/18	16.8	150.2	1000	35	2.5	TS
	05/00	17.4	148.7	990	45	3.0	TS
	05/06	18.2	147.3	985	50	3.0	STS
	05/12	18.4	145.8	980	55	3.5	STS
	05/18	19.0	144.2	980	55	3.5	STS
	06/00	19.3	142.7	985	50	3.5	STS
	06/06	19.5	141.1	985	50	3.5	STS
	06/12	19.8	140.0	985	50	3.5	STS
	06/18	20.6	139.0	985	50	3.5	STS
	07/00	21.8	138.7	985	45	3.5	TS
	07/06	23.0	138.0	998	-	-	TD
	07/12	23.7	138.1	998	-	-	TD
	07/18	24.6	137.8	1000	-	-	TD
	08/00	26.0	137.8	1004	-	-	TD
	08/06	27.1	137.5	1008	-	-	TD
	08/12	28.2	137.1	1010	-	-	TD
	08/18	29.6	137.0	1010	-	-	TD
	09/00	30.9	137.3	1012	-	-	TD
	09/06						Dissip.

TS HAIMA (0420)

10 Sep - 19 Sep

Date/Time		Center Position		Central pressure	Max Wind	CI Number	Grade
	(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)		
Sep.	10/18	23.0	119.6	1002	-	-	TD
	11/00	22.7	120.3	1000	35	-	TS
	11/06	22.5	121.4	998	35	1.5	TS
	11/12	23.4	121.8	998	35	2.0	TS
	11/18	24.4	122.1	996	40	2.5	TS
	12/00	24.9	122.2	996	40	2.5	TS
	12/06	25.3	122.3	996	40	2.5	TS
	12/12	26.1	122.3	998	35	2.0	TS
	12/18	26.5	121.9	998	35	2.0	TS
	13/00	27.1	121.5	1000	35	2.0	TS
	13/06	27.8	120.6	1004	-	-	TD
	13/12	28.3	120.0	1010	-	-	TD
	13/18	30.0	119.6	1010	-	-	L
	14/00	32.0	119.1	1008	-	-	L
	14/06	32.6	119.1	1008	-	-	L
	14/12	35.7	119.4	1008	-	-	L
	14/18	39.1	118.0	1004	-	-	L
	15/00	40.4	117.9	1004	-	-	L
	15/06	42.1	117.4	1004	-	-	L
	15/12	44.8	116.8	1004	-	-	L
	15/18	46.7	116.4	1000	-	-	L
	16/00	49.4	116.6	998	-	-	L
	16/06	50.9	116.6	994	-	-	L
	16/12	51.6	117.9	994	-	-	L
	16/18	52.1	119.0	994	-	-	L
	17/00	52.5	120.2	994	-	-	L
	17/06	53.0	122.1	992	-	-	L
	17/12	53.1	123.5	996	-	-	L
	17/18	53.1	124.3	996	-	-	L
	18/00	52.8	125.5	998	-	-	L
	18/06	52.5	126.5	998	-	-	L
	18/12	52.2	128.5	998	-	-	L
	18/18	52.1	129.9	998	-	-	L
	19/00	52.0	131.2	998	-	-	L
	19/06	52.0	133.1	998	-	-	L
	19/12						Dissip.

TY MEARI (0421)

19 Sep - 2 Oct

Date/Time (UTC)	Center Position Lat (N)	Lon (E)	Central pressure (hPa)	Max Wind (kt)	CI Number	Grade
Sep. 19/00	12.5	149.5	1008	-	-	TD
19/06	12.1	148.4	1006	-	-	TD
19/12	12.3	147.8	1006	-	-	TD
19/18	12.5	146.6	1006	-	-	TD
20/00	12.6	145.3	1004	-	-	TD
20/06	12.6	144.2	1002	-	-	TD
20/12	12.8	143.4	1000	-	-	TD
20/18	12.9	142.6	998	35	2.5	TS
21/00	13.2	141.9	998	35	2.5	TS
21/06	13.5	141.4	994	40	3.0	TS
21/12	14.0	140.8	990	45	3.5	TS
21/18	14.5	140.1	985	50	3.5	STS
22/00	14.9	139.6	980	50	3.5	STS
22/06	15.4	139.2	980	50	3.5	STS
22/12	16.0	138.6	975	55	4.0	STS
22/18	16.5	138.2	975	65	4.0	TY
23/00	17.3	137.5	970	65	4.5	TY
23/06	17.9	136.7	960	75	5.0	TY
23/12	18.4	135.9	960	75	5.0	TY
23/18	18.8	135.1	950	80	5.5	TY
24/00	19.4	134.3	945	85	5.5	TY
24/06	20.1	133.3	940	90	6.0	TY
24/12	20.5	132.6	940	90	6.0	TY
24/18	21.4	131.9	940	90	6.0	TY
25/00	22.3	131.2	940	90	6.0	TY
25/06	23.6	130.2	945	85	5.0	TY
25/12	24.5	129.2	950	80	5.0	TY
25/15	24.8	128.5	950	80	-	TY
25/18	25.2	127.8	950	80	5.0	TY
25/21	25.4	127.1	950	80	-	TY
26/00	25.5	126.5	950	80	5.0	TY
26/03	25.6	126.0	950	80	-	TY
26/06	25.7	125.6	945	85	5.5	TY
26/09	25.8	125.4	945	85	-	TY
26/12	25.8	125.2	945	85	5.5	TY
26/15	25.9	125.0	945	85	-	TY
26/18	26.0	124.8	945	85	5.5	TY
26/21	26.1	124.9	945	85	-	TY
27/00	26.1	124.9	945	85	5.5	TY
27/03	26.2	125.0	945	85	-	TY
27/06	26.3	125.1	945	85	5.5	TY
27/09	26.5	125.3	945	80	-	TY
27/12	26.8	125.5	950	80	5.0	TY
27/15	26.9	125.8	950	80	-	TY
27/18	27.2	126.0	955	75	4.5	TY
27/21	27.6	126.3	955	75	-	TY
28/00	28.0	126.6	960	70	4.5	TY
28/03	28.4	126.8	960	70	-	TY
28/06	28.9	127.1	965	65	4.5	TY
28/09	29.4	127.4	965	65	-	TY
28/12	29.9	127.8	965	65	4.5	TY
28/15	30.3	128.3	965	65	-	TY
28/18	30.8	129.0	970	60	4.0	STS
28/21	31.2	129.7	970	60	-	STS
28/23	31.5	130.2	970	60	-	STS
29/00	31.7	130.5	970	60	4.0	STS
29/03	32.3	131.5	975	60	-	STS
29/06	32.9	132.7	980	55	4.0	STS
29/09	33.7	134.0	985	55	-	STS
29/11	34.4	134.6	990	50	-	STS
29/12	34.8	135.5	990	50	3.5	STS
29/15	36.2	136.4	992	45	-	TS
29/18	37.0	137.8	994	45	3.0	TS
29/21	38.3	140.0	994	45	-	TS
30/00	38.7	141.1	996	-	-	L
30/06	39.0	143.4	1000	-	-	L
30/12	38.4	145.0	1002	-	-	L
30/18	37.5	146.4	1004	-	-	L
Oct. 01/00	36.7	148.0	1004	-	-	L
01/06	36.1	150.2	1004	-	-	L
01/12	36.1	151.1	1006	-	-	L
01/18	36.2	151.9	1006	-	-	L
02/00	36.1	152.2	1008	-	-	L
02/06	36.0	152.7	1012	-	-	L
02/12	34.3	152.4	1014	-	-	L
02/18	32.1	152.9	1014	-	-	L
03/00						dissip.

TY MA-ON (0422)

3 Oct - 10 Oct

Date/Time (UTC)	Center Position Lat (N)	Lon (E)	Central pressure (hPa)	Max Wind (kt)	CI Number	Grade
Oct. 03/06	16.5	135.3	1002	-	-	TD
03/12	16.5	134.9	1002	-	-	TD
03/18	16.6	134.6	1002	-	-	TD
04/00	16.6	134.5	1000	-	-	TD
04/06	16.6	134.4	996	40	2.5	TS
04/12	16.8	134.4	994	40	2.5	TS
04/18	17.0	134.5	994	40	2.5	TS
05/00	18.0	134.5	994	40	2.5	TS
05/06	18.9	134.6	990	45	3.0	TS
05/12	19.9	134.9	990	45	3.0	TS
05/18	20.3	134.3	990	45	3.0	TS
06/00	20.5	133.5	985	50	3.5	STS
06/06	20.7	132.8	980	55	3.5	STS
06/12	21.0	132.2	975	60	4.0	STS
06/18	21.4	131.6	965	70	4.5	TY
07/00	21.9	130.9	955	75	5.0	TY
07/06	22.2	130.6	940	90	6.0	TY
07/12	22.7	130.7	930	95	6.5	TY
07/15	23.0	130.8	925	95	-	TY
07/18	23.3	130.9	920	100	7.0	TY
07/21	23.5	131.1	920	100	-	TY
08/00	23.9	131.4	920	100	7.0	TY
08/03	24.6	131.8	920	100	-	TY
08/06	25.1	132.2	920	100	7.0	TY
08/09	26.1	132.8	920	100	-	TY
08/12	27.0	133.3	925	100	7.0	TY
08/15	27.9	133.8	930	100	-	TY
08/18	28.9	134.5	935	95	6.0	TY
08/21	30.2	135.2	940	90	-	TY
09/00	31.6	136.1	945	85	5.5	TY
09/03	33.1	137.1	950	80	-	TY
09/06	34.3	138.3	950	80	5.0	TY
09/07	34.8	138.8	950	80	-	TY
09/09	35.6	140.0	980	60	-	STS
09/12	36.7	141.6	985	55	5.0	STS
09/15	37.5	143.2	990	55	-	STS
09/18	38.1	145.1	992	50	4.5	STS
09/21	38.7	147.1	994	45	-	TS
10/00	39.6	150.1	996	-	-	L
10/06						dissip.

TY NOCK-TEN (0424)

14 Oct - 27 Oct

Date/Time (UTC)	Center Position Lat (N)	Lon (E)	Central pressure (hPa)	Max Wind (kt)	CI Number	Grade
Oct. 14/00	10.5	164.2	1008	-	-	TD
14/06	11.4	163.6	1004	-	-	TD
14/12	11.7	162.0	1002	-	-	TD
14/18	11.7	161.5	1002	-	-	TD
15/00	11.7	160.5	1002	-	-	TD
15/06	11.7	160.0	1002	-	-	TD
15/12	11.7	159.4	1002	-	-	TD
15/18	11.7	158.5	1000	-	-	TD
16/00	11.5	157.5	1000	-	-	TD
16/06	11.3	156.4	1000	-	-	TD
16/12	10.9	155.1	996	35	2.5	TS
16/18	10.6	154.5	990	45	3.0	TS
17/00	10.5	154.2	990	45	3.0	TS
17/06	10.6	153.9	990	45	3.0	TS
17/12	10.6	153.3	990	45	3.0	TS
17/18	10.6	152.8	990	45	3.5	TS
18/00	10.4	152.4	980	50	4.0	STS
18/06	10.2	151.8	970	65	5.0	TY
18/12	10.2	151.1	965	70	5.0	TY
18/18	10.1	149.9	965	70	5.0	TY
19/00	9.8	148.8	965	70	5.0	TY
19/06	9.4	148.1	965	70	5.0	TY
19/12	9.7	147.2	965	70	5.0	TY
19/18	10.2	146.0	965	70	5.0	TY
20/00	10.7	145.1	955	75	5.5	TY
20/06	11.3	144.0	955	75	5.5	TY
20/12	11.8	142.9	955	75	5.5	TY
20/18	12.4	141.9	955	75	5.5	TY
21/00	13.3	140.5	960	75	5.0	TY
21/06	13.8	139.1	960	70	5.0	TY
21/12	13.9	138.3	960	70	5.0	TY
21/18	14.5	137.3	960	70	5.0	TY
22/00	15.2	136.6	960	70	5.0	TY
22/06	15.8	135.8	960	75	5.0	TY
22/12	16.4	134.8	955	75	5.5	TY
22/18	16.9	133.8	955	75	5.5	TY
23/00	17.4	132.3	945	85	6.0	TY
23/06	18.0	130.9	945	85	6.0	TY
23/12	18.7	129.3	945	85	6.0	TY
23/18	19.4	127.7	945	85	6.0	TY
----------> Continue						

TY TOKAGE (0423)

12 Oct - 23 Oct

Date/Time (UTC)	Center Position Lat (N)	Lon (E)	Central pressure (hPa)	Max Wind (kt)	CI Number	Grade
Oct. 12/00	12.0	151.0	1004	-	-	TD
12/06	13.1	149.6	1002	-	-	TD
12/12	13.7	147.5	1000	-	-	TD
12/18	14.2	145.5	998	-	-	TD
13/00	14.3	143.9	994	40	2.5	TS
13/06	14.2	141.9	985	45	3.0	TS
13/12	14.0	140.4	985	50	3.0	STS
13/18	13.9	139.1	980	55	3.0	STS
14/00	13.8	138.3	980	55	3.0	STS
14/06	13.7	137.6	975	60	3.5	STS
14/12	13.7	136.6	970	65	4.0	TY
14/18	14.0	136.1	965	70	4.5	TY
15/00	14.5	135.6	955	75	5.0	TY
15/06	15.1	134.8	955	75	5.0	TY
15/12	15.5	134.4	955	75	5.0	TY
15/18	15.9	134.0	955	75	5.0	TY
16/00	16.6	134.0	955	75	5.0	TY
16/06	17.7	134.0	945	85	5.5	TY
16/12	18.4	133.0	940	85	5.5	TY
16/18	18.7	132.5	940	85	5.5	TY
17/00	19.3	131.8	940	85	5.5	TY
17/06	19.9	130.8	940	85	5.5	TY
17/12	20.3	130.1	940	85	5.5	TY
17/18	21.1	129.0	940	85	5.5	TY
18/00	21.6	128.1	945	85	5.5	TY
18/06	22.2	127.3	945	85	5.0	TY
18/09	22.7	127.0	950	80	-	TY
18/12	23.0	126.9	950	80	5.0	TY
18/15	23.3	126.9	950	80	-	TY
18/18	23.7	127.0	950	80	5.0	TY
18/21	24.2	127.1	950	80	-	TY
19/00	24.7	127.2	950	80	5.0	TY
19/03	25.3	127.5	950	80	-	TY
19/06	26.0	127.9	950	80	5.0	TY
19/09	26.7	128.3	950	80	-	TY
19/12	27.4	128.9	950	80	5.0	TY
19/15	28.2	129.6	950	80	-	TY
19/18	29.1	130.4	950	80	4.5	TY
19/21	30.1	131.3	950	80	-	TY
20/00	31.1	132.2	950	80	4.5	TY
20/03	32.4	132.7	950	80	-	TY
20/04	32.8	132.9	955	75	-	TY
20/06	33.4	133.9	955	75	4.0	TY
20/08	34.1	134.8	960	70	-	TY
20/09	34.8	135.7	970	70	3.5	TY
20/12	35.4	136.6	980	60	-	STS
20/15	35.7	138.3	985	50	-	STS
20/18	35.9	139.8	990	-	-	L
21/00	37.6	143.3	992	-	-	L
21/06	39.8	148.0	992	-	-	L
21/12	42.1	153.2	994	-	-	L
21/18	44.1	157.3	992	-	-	L
22/00	46.8	162.4	990	-	-	L
22/06	49.4	167.2	990	-	-	L
22/12	51.4	172.6	988	-	-	L
22/18	53.8	176.9	988	-	-	L
23/00	57.3	182.2	986	-	-	L
23/06						OUT
----------> Continue						
23/21	19.7	126.8	945	85	-	TY
24/00	20.0	126.0	945	85	6.0	TY
24/03	20.4	125.2	945	85	-	TY
24/06	20.8	124.5	945	85	6.0	TY
24/09	21.4	123.8	945	85	-	TY
24/12	21.8	123.2	945	80	6.0	TY
24/15	22.3	122.8	945	80	-	TY
24/18	22.8	122.4	950	80	6.0	TY
24/21	23.4	122.3	960	70	-	TY
25/00	24.2	122.1	970	70	5.0	TY
25/03	24.9	122.0	975	65	-	TY
25/06	25.3	121.9	985	60	5.0	STS
25/09	25.6	121.9	990	60	-	STS
25/12	26.1	122.3	992	55	4.5	STS
25/15	27.0	123.0	992	55	-	STS
25/18	27.6	123.7	994	50	4.0	STS
25/21	27.9	124.3	996	50	-	STS
26/00	28.5	126.0	996	45	3.5	TS
26/06	29.3	130.3	1002	-	-	L
26/12	30.3	134.4	1004	-	-	L
26/18	30.6	138.5	1006	-	-	L
27/00	31.5	141.9	1010	-	-	L
27/06						dissip.

TY MUIFA (0425)

13 Nov - 25 Nov

Date/Time	Center Position		Central pressure	Max Wind	CI Number	Grade
(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)		
Nov. 13/18	8.9	134.4	1004	-	-	TD
14/00	10.1	131.5	1004	-	-	TD
14/06	11.2	130.7	1000	-	-	TD
14/12	12.0	128.5	1000	-	-	TD
14/18	12.5	126.8	996	35	2.5	TS
15/00	12.2	126.0	996	35	2.5	TS
15/06	13.2	125.8	996	35	2.5	TS
15/12	13.9	125.3	996	35	2.5	TS
15/18	14.0	125.4	996	35	2.5	TS
16/00	14.1	125.4	994	35	2.5	TS
16/06	14.6	124.6	990	45	3.0	TS
16/12	14.4	124.0	990	50	3.5	STS
16/18	14.4	123.8	990	50	3.5	STS
17/00	14.5	123.7	985	50	4.0	STS
17/06	14.8	123.7	985	50	4.0	STS
17/12	15.1	123.8	975	55	4.5	STS
17/18	15.5	123.7	960	65	5.5	TY
18/00	15.6	123.7	960	75	5.5	TY
18/06	15.8	123.9	950	80	6.0	TY
18/12	15.9	124.1	950	80	6.0	TY
18/18	15.8	124.3	955	75	6.0	TY
19/00	15.5	124.3	960	70	5.5	TY
19/06	14.8	124.1	960	70	5.5	TY
19/12	14.3	123.7	965	65	5.5	TY
19/18	13.5	122.6	985	50	5.0	STS
20/00	12.8	121.5	990	45	4.5	TS
20/06	12.4	120.2	980	55	4.5	STS
20/12	12.5	119.5	980	55	4.5	STS
20/18	12.4	118.4	980	55	4.0	STS
21/00	12.1	117.2	980	55	4.0	STS
21/06	12.0	116.1	975	60	4.0	STS
21/12	11.9	115.2	965	65	5.0	TY
21/18	11.8	114.3	965	65	5.0	TY
22/00	11.5	113.7	965	65	5.0	TY
22/06	11.0	112.9	975	60	4.5	STS
22/12	10.8	112.7	975	60	4.5	STS
22/18	10.6	112.3	975	60	4.5	STS
23/00	10.6	112.2	980	55	4.0	STS
23/06	10.1	111.5	985	55	3.5	STS
23/12	9.9	110.8	985	55	3.5	STS
23/18	9.6	110.2	990	50	3.0	STS
24/00	9.0	109.2	990	50	3.0	STS
24/06	8.9	107.8	994	45	2.5	TS
24/12	8.6	106.2	998	35	2.0	TS
24/18	8.5	104.8	998	35	2.0	TS
25/00	8.4	103.8	998	35	2.0	TS
25/06	8.5	102.0	1000	35	2.0	TS
25/12	9.2	100.3	1004	-	-	TD
25/18	10.1	99.8	1008	-	-	TD
26/00						out

TS MERBOK (0426)

21 Nov - 23 Nov

Date/Time	Center Position		Central pressure	Max Wind	CI Number	Grade
(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)		
Nov. 21/18	15.6	124.9	1006	-	-	TD
22/00	15.6	123.6	1004	-	-	TD
22/06	15.7	122.5	1000	35	-	TS
22/12	15.4	121.7	1004	-	-	TD
22/18	15.7	121.3	1004	-	-	TD
23/00	16.0	121.0	1004	-	-	TD
23/06	17.0	120.0	1004	-	-	TD
23/12						dissip.

TS TALAS (0428)

9 Dec - 20 Dec

Date/Time	Center Position		Central pressure	Max Wind	CI Number	Grade
(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)		
Dec. 09/00	5.9	177.8	1006	-	-	TD
09/06	6.0	175.9	1004	-	-	TD
09/12	6.6	174.2	1004	-	-	TD
09/18	7.2	172.4	1004	-	-	TD
10/00	7.6	170.9	1004	-	-	TD
10/06	7.7	169.4	1000	35	-	TS
10/12	8.0	168.0	998	40	-	TS
10/18	8.4	165.8	998	40	-	TS
11/00	8.6	164.0	998	40	-	TS
11/06	9.1	161.8	996	40	2.5	TS
11/12	9.5	159.3	996	40	2.5	TS
11/18	9.7	157.3	994	40	3.0	TS
12/00	9.9	155.4	994	40	3.0	TS
12/06	9.9	153.0	994	40	3.0	TS
12/12	9.9	150.5	994	40	3.0	TS
12/18	9.9	149.0	994	40	3.0	TS
13/00	9.9	147.1	994	40	3.0	TS
13/06	10.2	145.1	994	40	3.0	TS
13/12	10.4	143.6	994	40	3.0	TS
13/18	10.8	142.2	994	40	3.0	TS
14/00	11.2	140.5	994	40	3.0	TS
14/06	11.3	139.2	994	40	3.0	TS
14/12	11.4	138.2	994	40	3.0	TS
14/18	11.3	137.2	994	40	3.0	TS
15/00	11.5	136.3	994	40	3.0	TS
15/06	11.8	135.6	996	35	3.0	TS
15/12	11.8	134.6	1000	-	3.0	TD
15/18	11.7	133.7	1000	-	2.5	TD
16/00	11.9	132.8	1000	-	2.5	TD
16/06	12.2	132.4	1000	-	2.5	TD
16/12	12.5	132.0	1000	-	2.5	TD
16/18	12.8	131.8	998	35	2.5	TS
17/00	13.2	131.6	996	35	2.5	TS
17/06	13.5	131.4	996	35	2.5	TS
17/12	13.8	131.4	996	35	2.5	TS
17/18	14.0	131.3	996	35	2.5	TS
18/00	14.3	131.1	996	35	2.5	TS
18/06	15.2	131.0	996	35	2.5	TS
18/12	16.3	131.0	998	35	2.5	TS
18/18	17.1	131.1	998	35	2.5	TS
19/00	17.9	131.1	998	35	2.5	TS
19/06	18.3	130.6	1000	-	-	TD
19/12	19.1	130.5	1004	-	-	TD
19/18	19.4	130.8	1004	-	-	TD
20/00	19.6	131.7	1004	-	-	TD
20/06	19.8	133.0	1004	-	-	TD
20/12						Dissip.

TY NANMADOL (0427)

28 Nov - 4 Dec

Date/Time	Center Position		Central pressure	Max Wind	CI Number	Grade
(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)		
Nov. 28/00	5.7	153.7	1006	-	-	TD
28/06	5.6	152.3	1002	-	-	TD
28/12	6.0	150.3	1000	-	-	TD
28/18	6.2	149.1	1000	-	-	TD
29/00	6.4	147.7	992	35	2.5	TS
29/06	6.8	146.0	992	35	2.5	TS
29/12	7.1	144.0	990	40	3.0	TS
29/18	7.7	143.1	985	45	3.5	TS
30/00	8.6	141.0	980	50	4.0	STS
30/06	9.5	139.0	975	60	5.0	STS
30/12	10.0	137.1	960	75	5.0	TY
30/18	10.7	135.2	955	75	5.0	TY
Dec. 01/00	11.7	132.8	940	85	6.0	TY
01/06	12.5	130.5	935	90	6.5	TY
01/12	13.1	128.7	935	90	6.5	TY
01/18	13.7	126.8	935	90	6.5	TY
02/00	14.3	125.0	945	80	6.0	TY
02/06	15.0	123.4	945	80	6.0	TY
02/12	16.0	122.1	955	75	5.0	TY
02/18	17.4	120.1	965	70	5.0	TY
03/00	18.1	119.2	970	60	4.5	STS
03/06	19.2	118.7	980	55	4.0	STS
03/12	20.2	118.2	985	50	3.5	STS
03/18	22.0	119.3	985	50	3.5	STS
04/00	22.6	120.7	992	45	3.0	TS
04/06	23.2	122.6	1000	-	2.5	L
04/12						dissip.

TS NORU (0429)

17 Dec - 23 Dec

Date/Time	Center Position		Central pressure	Max Wind	CI Number	Grade
(UTC)	Lat (N)	Lon (E)	(hPa)	(kt)		
Dec. 17/00	11.5	153.5	1006	-	-	TD
17/06	12.1	152.5	1004	-	-	TD
17/12	12.9	152.1	1004	-	-	TD
17/18	13.3	151.7	1004	-	-	TD
18/00	13.7	150.9	1000	-	-	TD
18/06	13.6	150.1	1000	-	-	TD
18/12	13.5	149.5	998	-	-	TD
18/18	13.4	148.5	996	35	2.5	TS
19/00	13.4	147.9	996	35	2.5	TS
19/06	13.9	147.4	996	35	2.5	TS
19/12	15.0	146.8	990	40	3.0	TS
19/18	16.4	146.3	990	40	3.0	TS
20/00	17.4	146.2	990	40	3.0	TS
20/06	18.8	146.3	990	40	3.0	TS
20/12	20.0	147.0	990	40	3.0	TS
20/18	20.9	147.8	990	40	3.0	TS
21/00	22.8	150.0	990	40	3.0	TS
21/06	24.5	153.0	990	40	3.0	TS
21/12	25.6	155.3	994	40	2.5	TS
21/18	26.9	158.3	994	40	2.0	TS
22/00	27.2	161.1	994	-	-	L
22/06	27.1	163.5	996	-	-	L
22/12	26.7	167.1	998	-	-	L
22/18	25.9	169.7	998	-	-	L
23/00	25.0	172.0	1000	-	-	L
23/06	23.9	175.0	1002	-	-	L
23/12						Dissip.

Position and Intensity Forecast Errors for Each Tropical Cyclone in 2004

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 SUDAL (0401)											
Apr	05/00	0	104	226	389	12	10	20	-5	-10	-15
	05/06	11	146	165	224	-5	-5	10	10	5	-5
	05/12	0	147	174	264	-10	-10	15	10	10	-10
	05/18	0	49	144	283	-5	-5	15	5	5	-10
	06/00	0	94	227	316	-10	0	10	10	5	-5
	06/06	0	64	253	362	-10	5	15	10	0	-10
	06/12	0	127	303	412	-10	10	15	10	-5	-10
	06/18	0	194	229	307	-5	10	15	5	-5	-10
	07/00	55	258	278	350	5	10	20	0	-5	-15
	07/06	11	240	291	291	10	10	20	-5	-5	-15
	07/12	0	133	183	249	15	15	25	-10	-10	-20
	07/18	22	124	152	351	20	25	25	-15	-20	-20
	08/00	11	62	146	410	5	15	10	-5	-15	-10
	08/06	11	44	180	378	0	10	5	0	-10	-5
	08/12	11	46	268	451	-5	5	0	5	-5	0
	08/18	16	80	286	439	0	5	5	0	-5	-5
	09/00	25	150	350	457	5	5	5	-10	-5	-5
	09/06	16	92	198	217	5	0	5	-10	-5	-5
	09/12	11	104	223	233	5	0	5	-10	-5	-5
	09/18	0	35	201	265	-5	-5	5	0	0	-5
	10/00	11	124	265	242	-5	-5	5	0	0	-5
	10/06	11	107	269	326	-5	5	15	0	-5	-10
	10/12	0	49	203	201	-5	5	20	0	-5	-15
	10/18	0	167	355	412	0	10	20	-5	-10	-15
	11/00	22	172	371	319	5	15	15	-5	-10	-10
	11/06	11	151	275	197	5	15	15	-5	-10	-10
	11/12	0	143	149	100	5	15	10	-5	-10	-10
	11/18	0	75	64	331	10	15	10	-10	-10	-10
	12/00	0	68	145	392	15	15	5	-10	-10	-5
	12/06	11	33	193	393	10	15	5	-10	-10	0
	12/12	0	90	220	439	15	10	0	-10	-10	0
	12/18	0	113	235	601	15	10	0	-10	-10	0
	13/00	11	108	286	579	15	10	0	-10	-10	0
	13/06	11	59	189	479	15	5	-5	-10	0	5
	13/12	0	76	300		10	0		-10	0	
	13/18	0	112	432		10	5		-10	-5	
	14/00	0	72	214		10	0		-10	0	
	14/06	11	129	310		5	-5		0	5	
	14/12	11	112			0			0		
	14/18	23	46			0			0		
	15/00	15	51			0			0		
	15/06	24	138			-5			5		
	15/12	0									
	15/18	80									
	16/00	11									
	16/06	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 OMAIS (0403)											
May	18/00	0	181.0	269	443	-6	0	-6	10	0	10
	18/06	11	110.0	159		-2	0		5	0	
	18/12	33	225.0	113		5	0		-5	0	
	18/18	31	257.0	257		5	0		-5	5	
	19/00	0	257.0	297		2	-2		0	5	
	19/06	11	235.0			6			-10		
	19/12	16	212.0			-10			10		
	19/18	55	294.0			-10			15		
	20/00	140	433.0			-16			20		
	20/06	11									
	20/12	56									
	20/18	101									
	21/00	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 CHANTHU (0405)											
June	10/18	46	189	393		0	-5		0	5	
	11/00	25	213	329		5	-16		-10	20	
	11/06	39	263			10			-10		
	11/12	59	170			0			0		
	11/18	89	296			-15			15		
	12/00	87	285			-16			20		
	12/06	49									
	12/12	22									
	12/18	32									
	13/00	24									

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 NIDA (0402)											
May	14/00										
	14/06	11	99	322	428	5	25	40	-5	-25	-35
	14/12	16	77	283	450	10	35	40	-10	-30	-35
	14/18	11	71	60	109	20	35	35	-15	-30	-30
	15/00	0	144	76	163	20	35	35	-15	-30	-30
	15/06	0	55	54	180	25	35	35	-25	-30	-30
	15/12	0	35	136	384	25	30	35	-20	-25	-30
	15/18	11	70	132	265	20	30	35	-20	-25	-30
	16/00	0	55	163	272	15	30	30	-15	-25	-25
	16/06	0	65	127	56	10	25	20	-15	-20	-15
	16/12	0	70	116	24	0	5	10	-5	-5	-5
	16/18	0	101	57	45	0	5	10	-5	-5	-5
	17/00	0	109	57	55	5	0	5	-5	0	0
	17/06	0	101	106	337	10	5	0	-10	-5	0
	17/12	0	110	170	494	0	0	0	-5	0	5
	17/18	0	15	114	478	0	0	-5	-5	0	5
	18/00	0	0	170	635	-10	-5	-15	5	5	20
	18/06	0	80	385		-10	-10		5	10	
	18/12	22	117	540		-5	-5		0	5	
	18/18	0	153	478		-5	-10		0	10	
	19/00	0	141	389		0	-10		0	15	
	19/06	0	118			0			5		
	19/12	0	247			0			0		
	19/18	15	176			-5			5		
	20/00	0	89			-10			15		
	20/06	0									
	20/12	33									
	20/18	48									
	21/00	22									

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 CONSON (0404)											
June	06/18	21	87			16			-10		
	07/00	0	69	283	949	15	20	30	-15	-20	-35
	07/06	15	99	450	1089	10	20	20	-10	-20	-20
	07/12	0	133	594	1272	15	20	15	-15	-25	-15
	07/18	11	133	771	1675	15	20	15	-15	-25	-15
	08/00	22	193	875	1838	10	15	0	-10	-20	0
	08/06	15	375	1180	2164	15	15	-12	-15	-15	15
	08/12	10	440	1163		-10	-5		0	0	
	08/18	0	278	769		-10	-10		0	10	
	09/00	11	354	970		5	-10		-20	0	
	09/06	11	285	749		5	-17		-15	15	
	09/12	10	254			5			-5		
	09/18	0	244			5			-5		
	10/00	0	325			12			-15		
	10/06	0	168			2			-5		
	10/12	0									
	10/18	11									
	11/00	22									
	11/06	11									

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 DIANMU (0406)											
June	13/12	55	274	319	313	0	30	35	0	-20	-20
	13/18	102	266	307	235	5	30	25	-5	-20	-15
	14/00	35	222	179	125	15	40	25	-10	-25	-15
	14/06	16	210	231	238	15	35	25	-10	-20	-15
	14/12	0	94	147	130	25	30	15	-15	-20	-10
	14/18	0	142	135	112	25	25	5	-15	-15	-5
	15/00	0	58	34	110	30	20	0	-20	-10	-5
	15/06	11	64	11	39	20	15	5	-10	-5	0
	15/12	0	68	72	127	15	0	0	-5	5	5
	15/18	0	64	260	343	5	-10	0	0	5	0
	16/00	22	123	260	377	-5	-20	-15	5	10	5
	16/06	0	167	258	301	-5	-10	-15	5	5	5
	16/12	15	156	236	190	-15	-10	-15	10	5	5
	16/18	15	183	235	149	-15	-5	-10	5	0	5
	17/00	39	151	99	32	-15	-5	-10	5	0	5
	17/06	11	130	60	118	-10	-10	-20	5	5	15
	17/12	11	25	98	138	0	-10	-15	0	0	10
	17/18	0	69	178	291	5	-5	-5	0	0	5
	18/00	15	137	213	472	0	-5	-5	0	0	5
	18/06	25	84	139	539	-5	-15	-10	5	10	15
	18/12	21	150	256	744	-10	-10	-20	5	10	25
	18/18	11	67	211		-10	-10		5	10	
	19/00	0	44	279		-5	0		0	0	
	19/06	0	59	113		-10	-5		5	5	
	19/12	0	46	227		0	-10		0	15	
	19/18	0	88			0			5		
	20/00	15	130			0			0		
	20/06	23	123			-5			10		
	20/12	0	68			-10			15		
	20/18	19									
	21/00	0									
	21/06	11									
	21/12	45									

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)
TY MINDULLE (0407)										
June 23/06	0	173	471	521	10	0	-15	-10	0	15
23/12	25	361	596	523	5	-5	-20	-5	5	20
23/18	191	409	591	401	0	-5	-15	0	5	15
24/00	11	271	348	290	-10	-20	-25	10	20	20
24/06	85	183	267	253	-15	-20	-20	15	20	15
24/12	44	148	180	223	-10	-20	-10	10	20	5
24/18	46	123	241	265	-15	-25	-5	15	20	0
25/00	65	122	195	212	-5	-15	5	5	15	-10
25/06	25	214	192	181	0	-5	10	0	5	-10
25/12	87	102	70	54	-5	0	5	5	0	-10
25/18	113	54	179	98	-10	5	10	10	-5	-15
26/00	31	100	178	158	-15	10	15	15	-10	-20
26/06	22	156	211	158	-10	10	20	10	-10	-20
26/12	21	133	122	44	0	10	20	0	-10	-20
26/18	24	137	151	70	10	15	15	-10	-15	-15
27/00	24	74	98	33	15	20	10	-15	-20	-10
27/06	48	25	88	103	0	10	-10	-5	-15	5
27/12	0	15	54	11	0	10	-10	-5	-15	5
27/18	11	15	42	103	5	10	-5	-10	-15	5
28/00	11	46	54	148	5	5	-10	-15	-10	10
28/06	0	11	33	204	5	-5	-10	-15	0	10
28/12	11	57	44	193	0	-15	-15	-10	10	15
28/18	0	61	33	261	-5	-20	-20	0	20	25
29/00	0	70	74	265	-10	-25	-15	5	20	15
29/06	0	177	312	552	-20	-25	-15	15	20	15
29/12	0	143	287	517	-20	-20	-15	10	15	15
29/18	0	149	261	492	-20	-25	-15	15	20	15
30/00	0	174	315	603	-20	-20	-10	15	15	15
30/06	11	197	382	642	-10	-10	-5	10	10	10
30/12	10	175	332	498	-10	-15	-5	5	15	10
30/18	21	54	194	629	0	0	5	0	0	0
July 01/00	0	32	222		0	0		0	5	
01/06	21	108	377		5	0		-5	5	
01/12	75	123	485		0	0		0	5	
01/18	113	124	297		0	0		0	5	
02/00	101	177			0			5		
02/06	37	101			0			5		
02/12	30	142			0			5		
02/18	22	152			0			5		
03/00	30									
03/06	49									
03/12	0									
03/18	73									

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)
TS KOMPASU (0409)										
July 14/00	42	377	613	0	4	4		-5	-5	
14/06	33	294	339	0	0	6		0	-45	
14/12	0	46	0	0	-2			5		
14/18	35	98	0	0	-2			5		
15/00	46	56	0	0	-2			5		
15/06	0	39	0	0	-6			5		
15/12	0	0	0	0						
15/18	0	0	0	0						
16/00	11	0	0	0						
16/06	0	0	0	0						

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)
TS MALOU (0411)										
Aug. 04/06										
04/12										
04/18										

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)
TY MERANTI (0412)										
Aug. 04/12	0	219	601	812	22	20	5	-25	-20	-5
04/18	39	325	661	785	30	10	0	-30	-15	0
05/00	23	313	552	712	25	5	-10	-25	-5	10
05/06	15	154	252	506	15	-10	-20	-15	10	20
05/12	15	130	367	585	5	-15	-27	-5	15	30
05/18	15	131	273	388	-15	-25	-29	10	25	30
06/00	0	67	290	469	-15	-30	-36	15	30	35
06/06	15	131	302		-20	-25		20	25	
06/12	24	226	384		-10	-17		10	20	
06/18	0	128	203		-5	-9		5	10	
07/00	9	147	213		-10	-11		10	10	
07/06	15	261			-5			5		
07/12	36	173			0			5		
07/18	59	45			6			0		
08/00	0	34			4			-5		
08/06	42									
08/12	18									
08/18	26									
09/00										

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)
TY TINGTING (0408)										
June 26/00	35	135	390	597	0	5	10	-5	-10	-10
26/06	0	203	455	700	-5	5	5	0	-10	-10
26/12	34	163	326	449	-5	0	0	0	-5	-5
26/18	76	135	181	256	0	5	0	-5	-5	-5
27/00	24	139	74	193	-5	-5	-10	0	5	0
27/06	22	64	105	268	-5	-5	-5	0	0	-5
27/12	34	44	128	334	-5	-10	0	0	5	-5
27/18	79	101	24	141	-5	-10	-5	5	0	-5
28/00	22	64	88	236	-5	-10	-10	5	0	5
28/06	0	47	105	197	-15	-10	-15	5	0	5
28/12	40	109	172	244	-20	-5	-15	10	0	5
28/18	33	93	214	358	-15	-10	-20	5	0	10
29/00	11	151	203	410	-15	-20	-15	5	10	10
29/06	11	132	234	396	-10	-20	-15	0	10	10
29/12	10	112	207	249	-5	-15	-15	0	5	5
29/18	15	60	243	296	-5	-15	-15	-5	5	5
30/00	0	67	207	279	-10	-10	-15	5	0	5
30/06	0	101	155	312	-20	-15	-15	10	10	10
30/12	35	102	155	348	-20	-20	-20	10	15	15
30/18	0	145	214	354	-20	-20	-15	10	15	15
July 01/00	11	96	265	380	-10	-15	-15	0	10	15
01/06	31	74	179	0	-5	-10		0	5	
01/12	0	22	67	0	-10	-15		5	10	
01/18	22	38	149	0	-15	-15		10	15	
02/00	24	28	161	0	-15	-15		10	15	
02/06	28	65	0	0	-15			10		
02/12	19	83	0	0	-15			10		
02/18	44	84	0	0	-10			10		
03/00	57	236	0	0	-10			10		
03/06	30	0	0	0						
03/12	0	0	0	0						
03/18	11	0	0	0						
04/00	46	0	0	0						

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)
TY NAMTHEUN (0410)										
July 25/00	66	180	425		31	55		-30	-40	
25/06	31	211			39			-40		
25/12	11	137	311	264	45	45	20	-40	-35	-20
25/18	0	86	227	310	35	20	0	-25	-10	0
26/00	0	56	201	275	25	5	-5	-10	0	5
26/06	0	56	190	233	10	-5	-15	0	5	10
26/12	0	103	117	177	5	-15	-15	0	10	10
26/18	0	29	31	190	0	-15	-15	5	10	10
27/00	0	11	22	233	-5	-15	-15	5	10	10
27/06	0	61	135	135	-5	-10	-10	5	5	5
27/12	0	101	139	112	-10	-5	-5	5	5	5
27/18	0	69	131	79	0	5	5	0	-5	-5
28/00	0	30	124	139	0	5	0	0	-5	0
28/06	0	44	29	37	0	0	-5	0	0	0
28/12	0	31	38	129	0	0	-22	0	0	20
28/18	0	19	69	162	0	0	-26	0	0	30
29/00	0	70	96	200	0	-10	-31	0	10	35
29/06	9	61	117	257	-5	-15	-21	5	10	25
29/12	0	33	169	287	-5	-27	-18	5	25	20
29/18	0	88	171		-5	-21		5	25	
30/00	0	108	128		-5	-21		5	25	
30/06	49	35	70		-10	-21		5	25	
30/12	0	116	183		-22	-18		20	20	
30/18	0	106			-16			20		
31/00	15	78			-16			20		
31/06	0	64			-11			15		
31/12	22	55			0			0		
31/18	56									
Aug. 01/00	11									
01/06	21									
01/12	49									

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)
TY RANANIM (0413)										
Aug. 08/12	0	296	912	987	10	15	30	-10	-15	-25
08/18	0	353	747	812	-5	-5	0	5	5	0
09/00	33	321	545	597	-5	-10	-5	5	5	0
09/06	33	138	304	388	-10	-15	-5	10	5	0
09/12	66	146	219	370	-15	-10	-10	10	5	20
09/18	30	24	113	325	-10	-10	-15	5	5	35
10/00	0	23	60		-10	5		5	-5	
10/06	0	112	99		-10	0		5	0	
10/12	33	142	180		0	-10		0	20	
10/18	0	23	148		-5	-15		0	35	
11/00	11	108			0			0		
11/06	15	60			0			0		
11/12	0	150			-5			15		
11/18	0	69			0			20		
12/00	20									
12/06	0									
12/12	11									
12/18	59									

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)
TS MARAKAS (0414)										
Aug. 11/00	33	138	389		-5	4		5	-5	
11/06	11	152	232		0	8		0	-10	
11/12	10	122	179		2	6		0	-5	
11/18	15	143			2			0		
12/00	9	210			2			0		
12/06	0	24			0			0		
12/12	0	69			-2			5		
12/18	0									
13/00	0									
13/06	24									
13/12	21									

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)
TY CHABA (0416)										
Aug. 19/12	11	140	314	501	7	15	60	-10	-15	-55
19/18	44	60	175	473	-5	10	50	5	-10	-45
20/00	109	110	253	487	-5	20	50	5	-15	-45
20/06	0	262	451	588	-5	25	60	5	-20	-50
20/12	0	257	421	532	0	40	55	0	-35	-45
20/18	0	244	399	511	15	50	55	-15	-45	-40
21/00	0	318	468	637	20	50	60	-15	-45	-45
21/06	24	242	343	564	20	45	50	-15	-35	-35
21/12	0	172	312	428	35	45	45	-30	-35	-35
21/18	15	204	230	327	35	40	40	-35	-30	-30
22/00	25	146	193	250	35	40	40	-35	-30	-30
22/06	0	172	203	219	30	30	30	-30	-25	-25
22/12	11	101	59	73	-5	10	20	0	-10	-20
22/18	11	85	126	134	0	10	20	0	-5	-20
23/00	0	101	183	144	0	0	5	0	0	5
23/06	11	44	100	162	0	0	-10	0	0	10
23/12	0	138	124	143	0	0	-10	0	0	10
23/18	0	166	144	124	5	5	-10	-5	-10	15
24/00	0	94	133	152	5	0	-20	-5	0	15
24/06	0	63	120	164	0	-10	-25	0	5	20
24/12	0	47	46	95	0	-10	-20	0	15	20
24/18	0	85	157	276	0	-15	-15	0	25	10
25/00	0	99	186	250	-5	-25	-10	10	25	5
25/06	0	112	173	257	-10	-25	-10	10	25	5
25/12	0	82	143	145	-10	-20	-15	15	20	10
25/18	0	75	96	24	-15	-15	-15	25	10	10
26/00	0	91	92	56	-25	-15	-15	25	10	10
26/06	30	96	109	76	-10	0	0	15	5	5
26/12	0	86	41	112	-10	0	5	15	5	5
26/18	0	80	63	91	0	0	0	0	0	5
27/00	10	63	74	28	0	0	0	0	0	0
27/06	10	60	112	190	0	0	-5	0	0	5
27/12	10	59	132	162	-5	0	-10	5	5	15
27/18	0	91	103	181	0	5	-10	0	0	10
28/00	0	112	62	134	0	0	0	0	0	0
28/06	0	15	56		0	-10		0	5	
28/12	0	35	134		5	-10		0	10	
28/18	0	15	106		0	-10		0	10	
29/00	31	29	112		-5	-10		0	10	
29/06	15	65			-10			5		
29/12	19	58			-10			15		
29/18	15	79			-15			15		
30/00	0	69			-10			10		
30/06	0									
30/12	0									
30/18	0									
31/00	11									

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)
STS SARIKA (0419)										
Sep. 04/18	0	94			16			-15		
05/00	0	87	85		0	0		0	5	
05/06	0	146			0			0		
05/12	0	169			-5			5		
05/18	0	187			0			0		
06/00	0	64			-5			10		
06/06	0									
06/12	52									
06/18	104									
07/00	0									

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)
TS HAIMA (0420)										
Sep. 11/06	0	33			0			-5		
11/12	0	49			-2			5		
11/18	0	51			-8			15		
12/00	0	116			-8			10		
12/06	20									
12/12	10									
12/18	11									
13/00	0									

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)
TY MEGI (0415)										
Aug. 16/06	0	272	431	1349	5	20	22	-5	-25	-30
16/12	33	416	565	1566	5	15	10	-5	-20	-15
16/18	0	323	656	1689	10	15	10	-15	-20	-15
17/00	0	119	411	840	10	10	10	-15	-15	-15
17/06	0	100	108	295	0	15	5	0	-15	-10
17/12	10	207	77		0	10		0	-10	
17/18	0	210	161		-5	10		5	-10	
18/00	0	72	236		-5	6		5	-5	
18/06	0	141	233		5	1		-5	0	
18/12	0	235			0			0		
18/18	0	155			0			-5		
19/00	0	63			-5			0		
19/06	35	65			-10			5		
19/12	54									
19/18	42									
20/00	25									
20/06	0									

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)
TY AERE (0417)										
Aug. 20/00	124	274	370	538	0	0	0	0	0	0
20/06	87	117	391	572	5	0	5	-5	0	-5
20/12	11	274	481	617	0	0	-5	0	0	5
20/18	0	263	352	416	0	-5	0	0	5	0
21/00	0	229	291	342	0	-5	5	0	5	-5
21/06	0	127	257	316	-10	-15	-5	10	10	0
21/12	11	47	93	177	-5	-10	0	5	5	-5
21/18	0	66	54	152	-5	-5	-5	5	0	0
22/00	0	24	65	129	-5	5	0	5	-5	0
22/06	0	33	55	50	0	5	0	0	-5	0
22/12	0	57	60	307	0	5	-10	0	-5	10
22/18	0	23	15	254	0	0	-20	0	0	20
23/00	0	46	61	366	5	5	-15	-5	-5	25
23/06	11	103	75		5	5		-5	-5	
23/12	10	84	67		5	0		-5	0	
23/18	11	55	157		0	-5		0	0	
24/00	11	51	134		5	-5		-5	5	
24/06	15	23			-5			5		
24/12	15	82			-10			10		
24/18	15	142			-10			10		
25/00	0	210			-10			20		
25/06	0									
25/12	10									
25/18	23									
26/00	0									

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)
TY SONGDA (0418)										
Aug. 28/00	31	233	428	464	12	10	35	-10	-10	-25
28/06	0	112	253	214	0	-5	40	0	5	-20
28/12	0	98	214	88	-15	-10	25	15	10	-10
28/18	0	65	160	88	-25	-15	15	20	10	-5
29/00	0	87	54	144	-20	0	15	15	0	-5
29/06	0	123	109	113	-20	15	15	15	-5	-5
29/12	0	133	91	84	-10	15	15	10	-5	-5
29/18	0	39	31	33	0	15	15	0	-5	-5
30/00	21	46	152	11	20	25	25	-10	-10	-10
30/06	11	108	101	125	35	25	25	-15	-10	-10
30/12	0	107	135	159	30	25	15	-15	-10	-5
30/18	0	53	125	243	25	20	15	-10	-10	-5
31/00	0	97	53	201	10	10	0	0	0	5
31/06	0	94	142	89	0	0	-10	5	5	10
31/12	0	57	61	76	0	-10	-10	5	10	10
31/18	0	79	127	148	0	-10	-10	5	10	10
Sep. 01/00	0	109	142	220	0	-10	-10	5	10	10
01/06	0	64	146	334	10	0	10	0	5	-5
01/12	0	109	196	381	0	0	10	5	5	-5
01/18	0	117	190	436	0	0	10	5	5	-5
02/00	0	99	280	502	0	0	10	5	5	-5
02/06	0	103	304	512	0	10	10	5	-5	-5
02/12	0	103	357	546	5	15	10	0	-10	-5
02/18	22	147	419	616	5	15	10	0	-10	-5
03/00	0	181	489	689	10	20	10	0	-10	0
03/06	11	241	485	675	20	20	5	-10	-10	5
03/12	11	229	456	712	10	5	0	-5	0	5
03/18	0	217	485	638	10	5	-5	-5	0	10
04/00	0	213	328	610	10	5	0	-5	0	5
04/06	0	190	326	803	10	0	-5	-5	5	5
04/12	10	223	295	1033	5	0	-15	0	5	15
04/18	0	145	303	1032	5	-5	-20	0	10	25
05/00	0	39	201		5	0		0	10	
05/06	10	145	553		0	-5		5	10	
05/12	0	73	712		-10	-10		10	15	
05/18	0	72	238		0	-10		5	20	
06/00	0	9			5			0		
06/06	0	29			5			0		
06/12	0	126			0			10		
06/18	10	166			-5			15		
07/00	0									
07/06	0									
07/12	0									
07/18	17									

TY MEARI (0421)

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)
Sep. 20/18	11	57	113	210	9	15	35	-10	-20	-30
21/00	35	68	154	207	12	15	35	-5	-15	-30
21/06	0	70	201	270	5	15	30	0	-15	-25
21/12	33	70	183	325	5	10	25	0	-10	-20
21/18	11	99	210	408	0	20	25	-5	-15	-20
22/00	0	190	280	583	5	25	25	-5	-20	-20
22/06	15	79	74	287	10	25	15	-10	-20	-10
22/12	11	79	62	240	5	20	10	-5	-15	-5
22/18	0	77	137	380	15	20	10	-10	-15	-5
23/00	0	39	190	367	15	20	10	-10	-15	-5
23/06	0	64	181	236	15	10	10	-15	-10	-10
23/12	0	38	170	195	15	5	10	-15	-5	-10
23/18	0	57	273	206	5	-5	0	-10	0	-5
24/00	0	100	344	209	0	-10	-5	-5	5	0
24/06	0	123	233	144	-5	-5	0	5	5	0
24/12	0	201	195	145	-10	-5	-5	10	5	5
24/18	0	135	170	104	-10	-5	-10	10	5	10
25/00	0	145	166	105	-10	-5	-15	10	5	15
25/06	0	137	141	156	0	5	-10	0	-5	10
25/12	0	111	105	332	10	10	0	-10	-5	5
25/18	0	64	126	543	10	5	-5	-10	0	10
26/00	11	68	304	746	10	0	-5	-10	5	10
26/06	0	30	263	806	5	-10	-20	-5	10	20
26/12	15	59	367	1071	0	-10	-30	0	10	25
26/18	0	67	440	1283	-5	-15	-34	5	15	30
27/00	0	102	458		-5	-10		5	15	
27/06	0	126	516		-10	-20		10	20	
27/12	0	135	702		-10	-25		10	20	
27/18	0	87	513		-10	-19		15	15	
28/00	10	67			0			5		
28/06	0	122			5			-5		
28/12	11	92			0			0		
28/18	0	272			-4			5		
29/00	0									
29/06	0									
29/12	21									
29/18	0									

TY TOKAGE (0423)

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)
Oct. 13/00	0	422	612	836	5	20	5	-5	-15	0
13/06	0	390	595	773	0	10	15	0	-5	-10
13/12	0	388	558	678	0	5	20	0	0	-10
13/18	0	148	186	207	-5	-5	10	5	5	-5
14/00	0	24	85	64	5	-5	10	0	5	-5
14/06	0	78	68	133	0	5	10	0	-5	-5
14/12	0	35	118	148	0	10	10	0	-5	-5
14/18	0	60	94	144	0	10	10	0	-5	-5
15/00	0	140	194	274	-15	0	-5	10	0	5
15/06	0	154	157	133	-5	-10	-20	0	5	10
15/12	0	133	140	112	0	-10	-20	0	5	10
15/18	0	70	164	225	5	-5	-15	-5	0	5
16/00	0	70	146	293	5	-10	-10	-5	5	5
16/06	0	84	67	186	0	-15	-10	0	5	5
16/12	0	64	126	209	-10	-20	-10	5	10	5
16/18	0	68	153	448	-10	-20	-10	5	10	5
17/00	0	56	74	452	-15	-15	-5	10	5	0
17/06	0	91	261	898	-10	-5	0	5	0	0
17/12	0	126	358	1105	-10	0	-20	5	0	15
17/18	0	15	299	952	-5	5	-25	0	-5	20
18/00	0	15	416		0	10		0	-5	
18/06	0	54	203		5	10		-5	-5	
18/12	0	82	419		5	-15		-5	10	
18/18	0	87	286		5	-20		-5	15	
19/00	0	128			5			-5		
19/06	0	112			0			0		
19/12	0	185			-15			10		
19/18	0	104			-10			5		
20/00	0									
20/06	0									
20/12	0									
20/18	0									

TY MA-ON (0422)

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)
Oct. 04/06	0	201	247	245	2	5	35	0	-5	-30
04/12	39	316	280	247	-5	0	40	5	0	-30
04/18	15	329	336	256	-5	10	50	5	-10	-35
05/00	25	278	314	211	0	20	50	0	-15	-35
05/06	0	152	260	81	-5	20	40	5	-15	-25
05/12	0	228	367	168	0	35	40	0	-25	-30
05/18	0	202	268	378	15	50	35	-15	-35	-30
06/00	0	241	226	642	25	50	25	-20	-35	-20
06/06	24	181	290	1039	20	30	10	-15	-20	-5
06/12	0	143	361	1234	30	25	-25	-20	-20	20
06/18	0	126	324	969	30	15	-22	-20	-15	15
07/00	0	104	561		25	5		-20	-5	
07/06	0	167	121		10	0		-10	0	
07/12	0	156	167		10	-20		-10	15	
07/18	10	118	341		-5	-17		-5	10	
08/00	0	105			-15			5		
08/06	0	102			-10			5		
08/12	0	158			-25			20		
08/18	0	202			-22			15		
09/00	0									
09/06	0									
09/12	0									
09/18	67									

TY NOCK-TEN (0424)

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)
Oct. 16/12	11	90	74	125	0	20	15	0	-20	-15
16/18	11	35	67	167	-10	10	5	10	-10	-5
17/00	0	16	80	104	0	10	15	5	-10	-10
17/06	22	35	157	111	5	0	0	-5	0	0
17/12	0	74	92	25	5	-5	0	-5	5	0
17/18	0	31	89	189	5	-5	5	-5	5	0
18/00	0	35	99	254	5	5	0	-5	0	0
18/06	0	109	172	396	-10	0	-5	5	0	5
18/12	0	141	224	486	-10	0	-5	5	0	5
18/18	11	134	178	211	-10	0	-5	5	0	5
19/00	0	25	113	206	0	-5	-5	0	0	5
19/06	0	105	209	194	0	-5	-5	0	5	0
19/12	0	56	184	187	0	-5	0	0	5	0
19/18	0	33	140	128	5	-5	0	0	5	0
20/00	0	127	244	239	-10	-10	5	5	10	-5
20/06	11	170	225	248	-10	-10	5	10	5	-5
20/12	0	155	177	286	-10	-5	5	10	5	-5
20/18	0	178	177	294	-10	-5	5	10	5	-5
21/00	0	104	100	217	-5	10	10	5	-10	-10
21/06	11	40	63	289	-5	10	10	0	-10	-10
21/12	0	0	196	388	5	15	15	-5	-15	-10
21/18	0	55	207	403	-5	5	0	5	-5	0
22/00	0	42	193	413	5	5	-20	-5	-5	10
22/06	0	32	213	478	5	5	-35	-5	-5	20
22/12	0	33	217	463	5	10	-32	-5	-5	20
22/18	11	100	314	678	5	10	-24	-5	-5	15
23/00	0	112	373	781	5	-10	-21	-5	5	15
23/06	0	154	394		5	-25		-5	15	
23/12	0	133	354		5	-32		0	20	
23/18	0	90	457		0	-29		0	20	
24/00	0	164	490		-20	-26		10	20	
24/06	0	70			-20			10		
24/12	0	51			-27			15		
24/18	0	59			-24			15		
25/00	10	77			-6			5		
25/06	15									
25/12	0									
25/18	35									
26/00	22									

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 MUIFA (0425)										
Nov. 15/00	35	195	134	255	-9	-10	15	15	10	-15
15/06	155	148	95	222	-5	-5	30	5	5	-25
15/12	125	148	124	195	-5	5	30	0	0	-25
15/18	60	142	170	201	2	25	30	-5	-15	-25
16/00	15	76	126	178	0	25	25	0	-25	-20
16/06	0	78	295	450	0	35	25	0	-30	-20
16/12	0	201	464	522	17	42	25	-10	-35	-15
16/18	0	183	321	282	30	37	7	-15	-30	-5
17/00	0	189	295	140	25	30	-5	-25	-25	5
17/06	0	99	187	55	35	30	5	-30	-25	-5
17/12	0	46	92	156	30	25	5	-25	-20	-5
17/18	0	49	112	201	25	5	5	-20	-5	-5
18/00	0	22	230	413	0	-20	-5	5	20	5
18/06	0	40	429	533	0	-15	0	5	15	0
18/12	0	160	437	524	-5	-15	10	10	15	-5
18/18	0	209	290	322	-20	-10	10	20	10	-5
19/00	0	287	440	334	-20	-5	15	20	5	-10
19/06	0	333	455	437	-10	0	5	10	0	-5
19/12	0	277	449	406	-10	10	5	10	-5	-5
19/18	0	140	204	254	-5	10	5	5	-5	-5
20/00	0	79	135	363	0	20	10	0	-15	-10
20/06	0	84	226	502	5	10	5	-5	-10	-10
20/12	0	92	230	433	15	10	5	-10	-10	-10
20/18	0	64	174	364	20	17	6	-15	-20	-15
21/00	0	131	350	351	10	5	0	-5	-5	-5
21/06	0	109	335	203	-5	-5	-9	5	0	5
21/12	0	189	323	102	-5	-10	-13	10	10	15
21/18	0	175	241	77	-5	-15	-13	5	10	15
22/00	0	223	187	139	-5	-10	-13	5	5	15
22/06	0	178	35	330	-10	-14	-15	5	10	15
22/12	0	120	188		-10	-18		5	20	
22/18	0	40	302		-15	-18		10	20	
23/00	0	162	462		-15	-18		10	20	
23/06	0	148	440		-14	-15		10	15	
23/12	22	202			-18			20		
23/18	25	203			-13			15		
24/00	109	233			-13			15		
24/06	89	227			-15			15		
24/12	132									
24/18	45									
25/00	70									
25/06	25									
25/12	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 NORU (0429)										
Dec. 18/18	11	116	243	285	0	-5	-9	5	10	10
19/00	22	125	157		-10	-10		15	15	
19/06	11	164	393		-10	-10		15	15	
19/12	0	122	262		-10	-14		15	15	
19/18	0	68	145		-10	-14		15	15	
20/00	0	105			-10			15		
20/06	0	243			0			0		
20/12	0	178			-4			0		
20/18	10	167			-4			0		
21/00	39									
21/06	0									
21/12	60									
21/18	0									

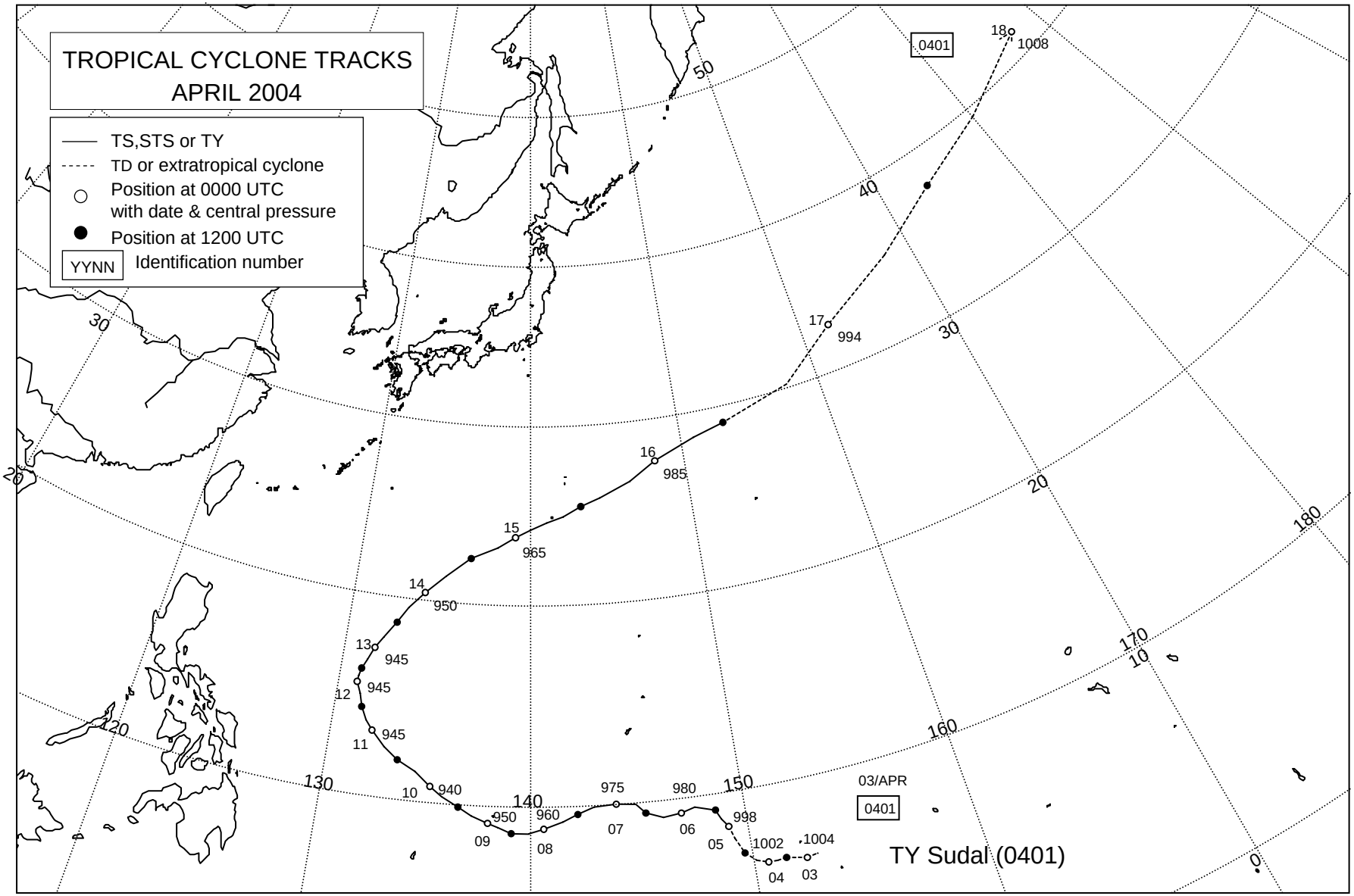
Date/Time	Center Position				Central Pressure			Max. Wind		
(UTC)	T=00(km)	T=24(km)	T=48(km)	T=72(km)	T=24(hPa)	T=48(hPa)	T=72(hPa)	T=24(kt)	T=48(kt)	T=72(kt)
TS MARBOK (0426)										
Nov. 22/06										

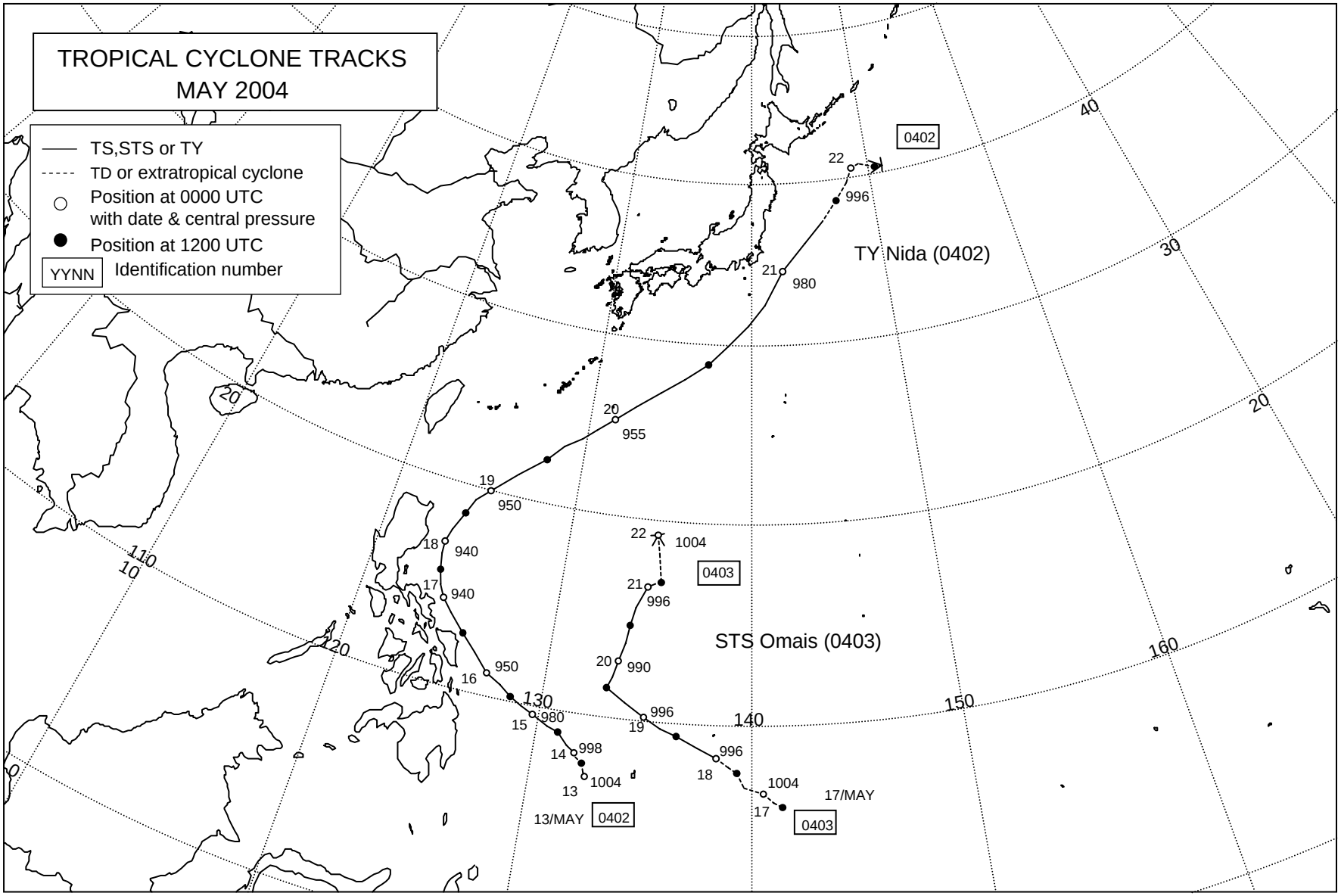
Date/Time	Center Position				Central Pressure			Max. Wind		
(UTC)	T=00(km)	T=24(km)	T=48(km)	T=72(km)	T=24(hPa)	T=48(hPa)	T=72(hPa)	T=24(kt)	T=48(kt)	T=72(kt)
TY NANMADOL (0427)										
Nov. 29/00	0	119	357	456	0	30	20	5	-20	-10
29/06	0	176	397	422	5	35	20	-5	-25	-10
29/12	0	44	400	549	20	35	10	-20	-25	-5
29/18	0	309	579	708	15	30	5	-10	-20	-5
30/00	0	240	432	541	30	20	0	-20	-10	5
30/06	0	163	338	426	20	10	-15	-15	-5	15
30/12	0	145	330	383	10	-5	-20	-5	5	20
30/18	0	200	443	378	10	-15	-20	-5	10	20
Dec. 01/00	0	121	371	291	-10	-15	-22	5	15	25
01/06	0	131	191		-10	-15		10	15	
01/12	0	120	207		-15	-15		10	15	
01/18	0	65	280		-10	-5		5	5	
02/00	0	39	264		0	-7		5	5	
02/06	0	218			-5			5		
02/12	0	192			-5			5		
02/18	0	269			-5			5		
03/00	0	229			-2			0		
03/06	0									
03/12	0									
03/18	0									
04/00	0									

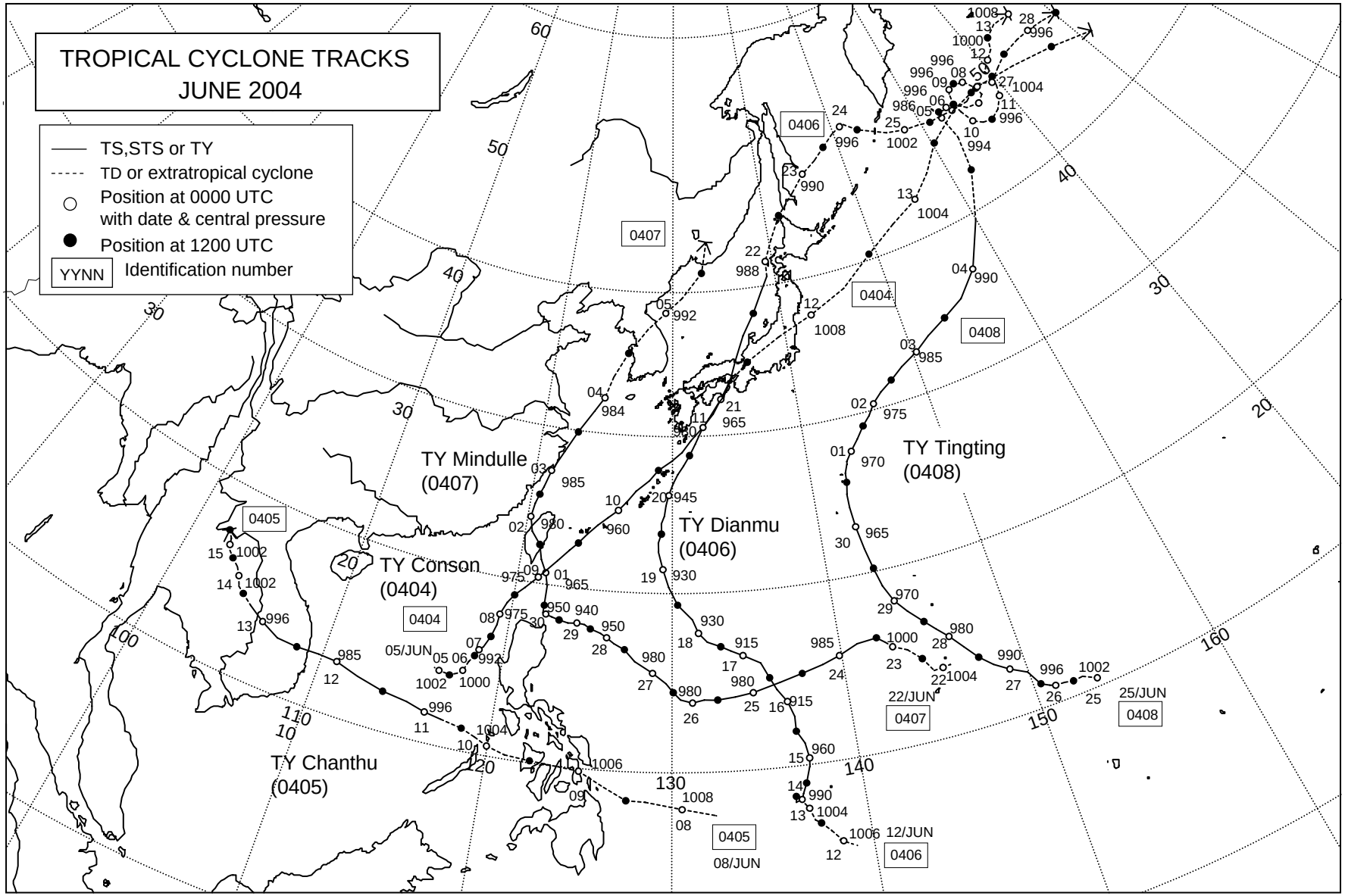
Date/Time	Center Position				Central Pressure			Max. Wind		
(UTC)	T=00(km)	T=24(km)	T=48(km)	T=72(km)	T=24(hPa)	T=48(hPa)	T=72(hPa)	T=24(kt)	T=48(kt)	T=72(kt)
TS TALAS (0428)										
Dec. 10/06										
10/12	25									
10/18	25									
11/00	0	121	196		2	-4		0	5	
11/06	16	133	282	277	-9	-19	-24	10	20	25
11/12	77	219	411	375	-9	-19	-24	10	20	25
11/18	56	128	154	301	-14	-24	-24	15	25	25
12/00	0	175	207	342	-14	-24	-24	15	25	25
12/06	25	162	192	245	-19	-24	-26	20	25	30
12/12	22	203	124		-14	-19		15	20	
12/18	56	148	313		-14	-19		15	20	
13/00	45	186	368		-14	-19		15	20	
13/06	40	137	194		-14	-16		15	20	
13/12	31	179			10			-10		
13/18	22	60		109	-4		-13	5		15
14/00	22	62		55	-9		-11	10		15
14/06	64	25		167	-11		-11	15		15
14/12	102			55			-11			15
14/18	122		241	171		-13	-11		15	15
15/00	0		246	223		-11	-11		15	15
15/06	0		206	245		0	0		0	0
15/12										
15/18										
16/00										
16/06										
16/12										
16/18	11	83			4			-5		
17/00	24	44			4			-5		
17/06	49	46			4			-5		
17/12	100	55			2			-5		
17/18	186	182			2			-5		
18/00	149	61			2			-5		
18/06	22									
18/12	25									
18/18	22									
19/00	34									

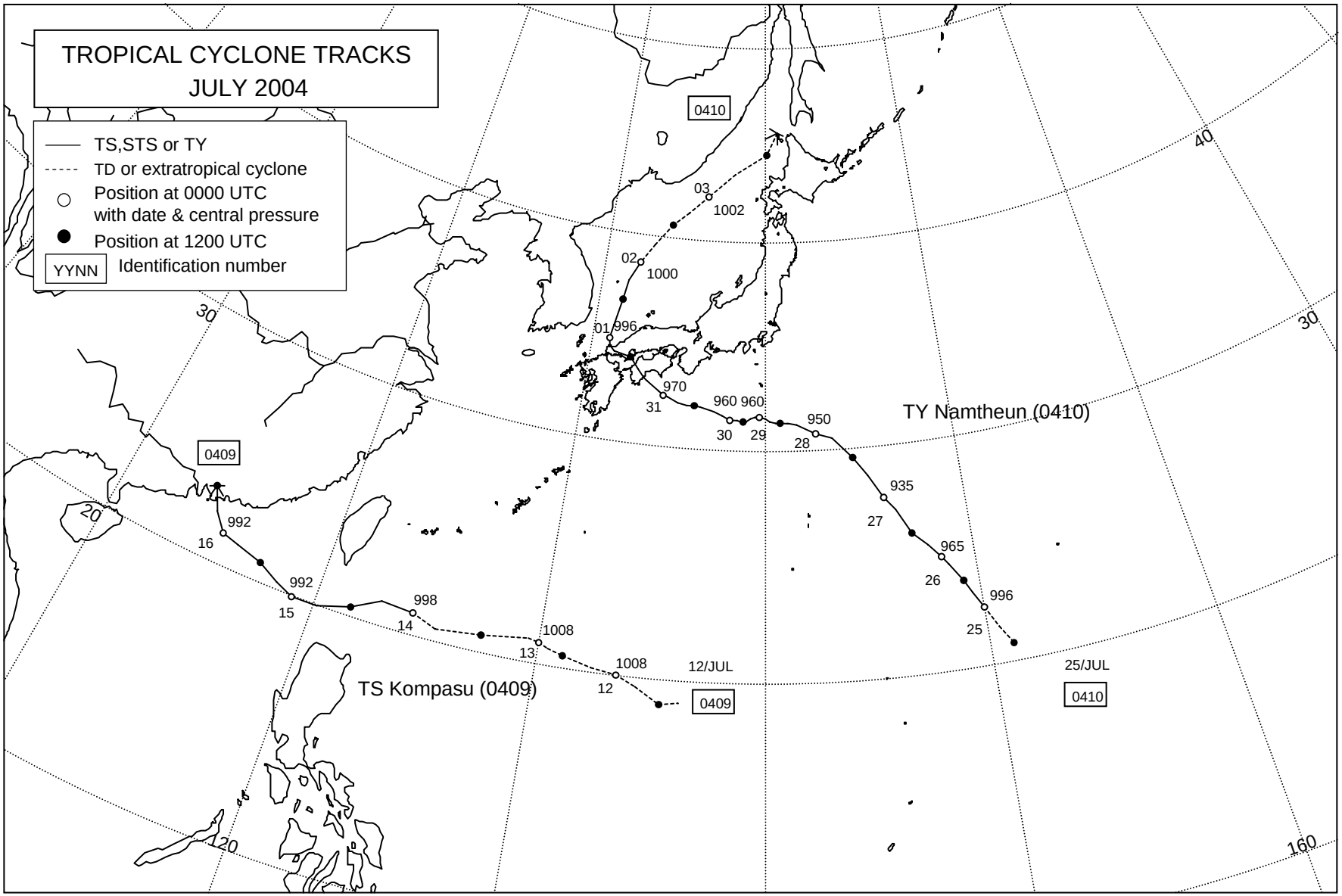
Appendix 3

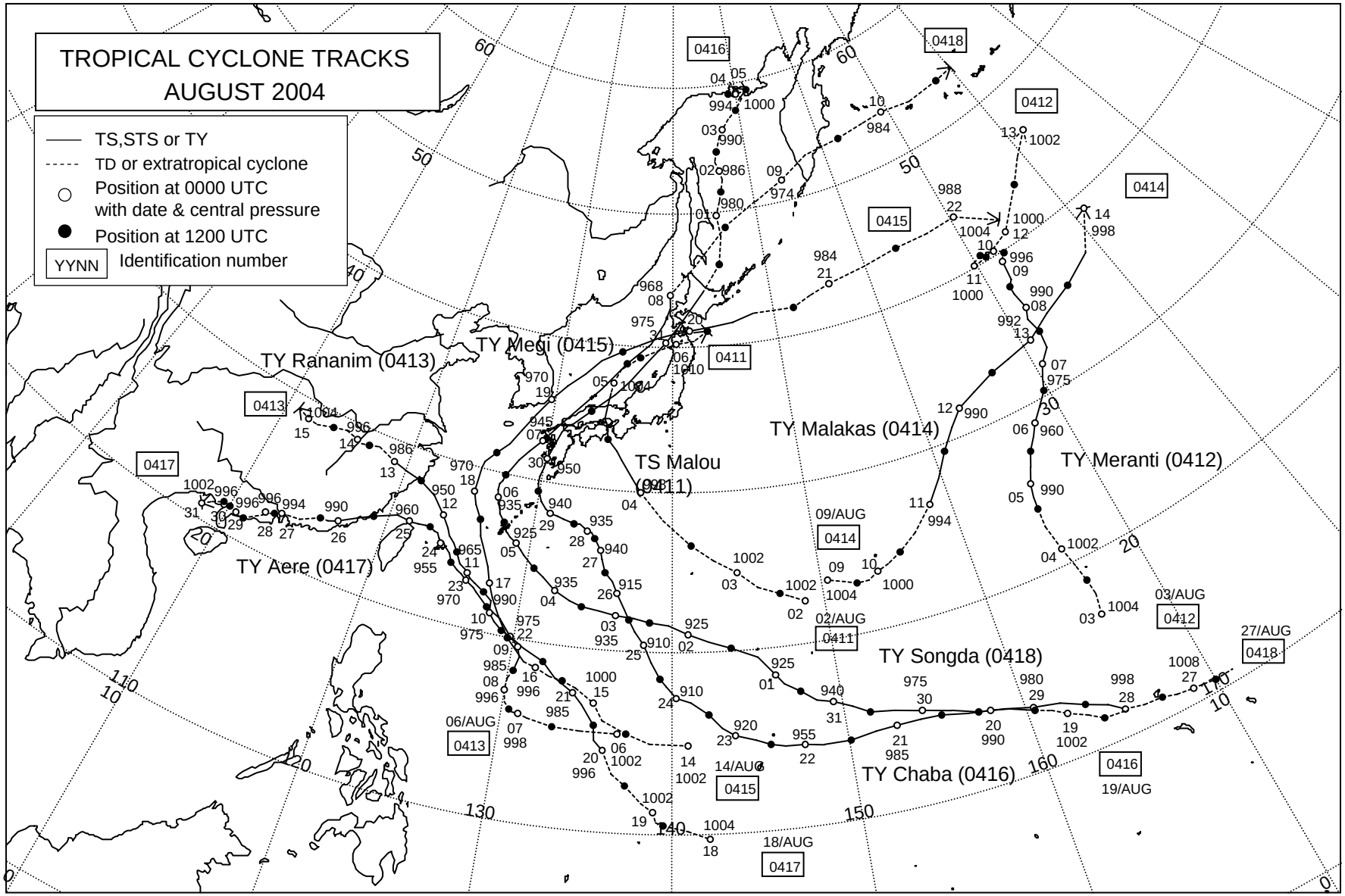
Tropical Cyclone Tracks in 2004

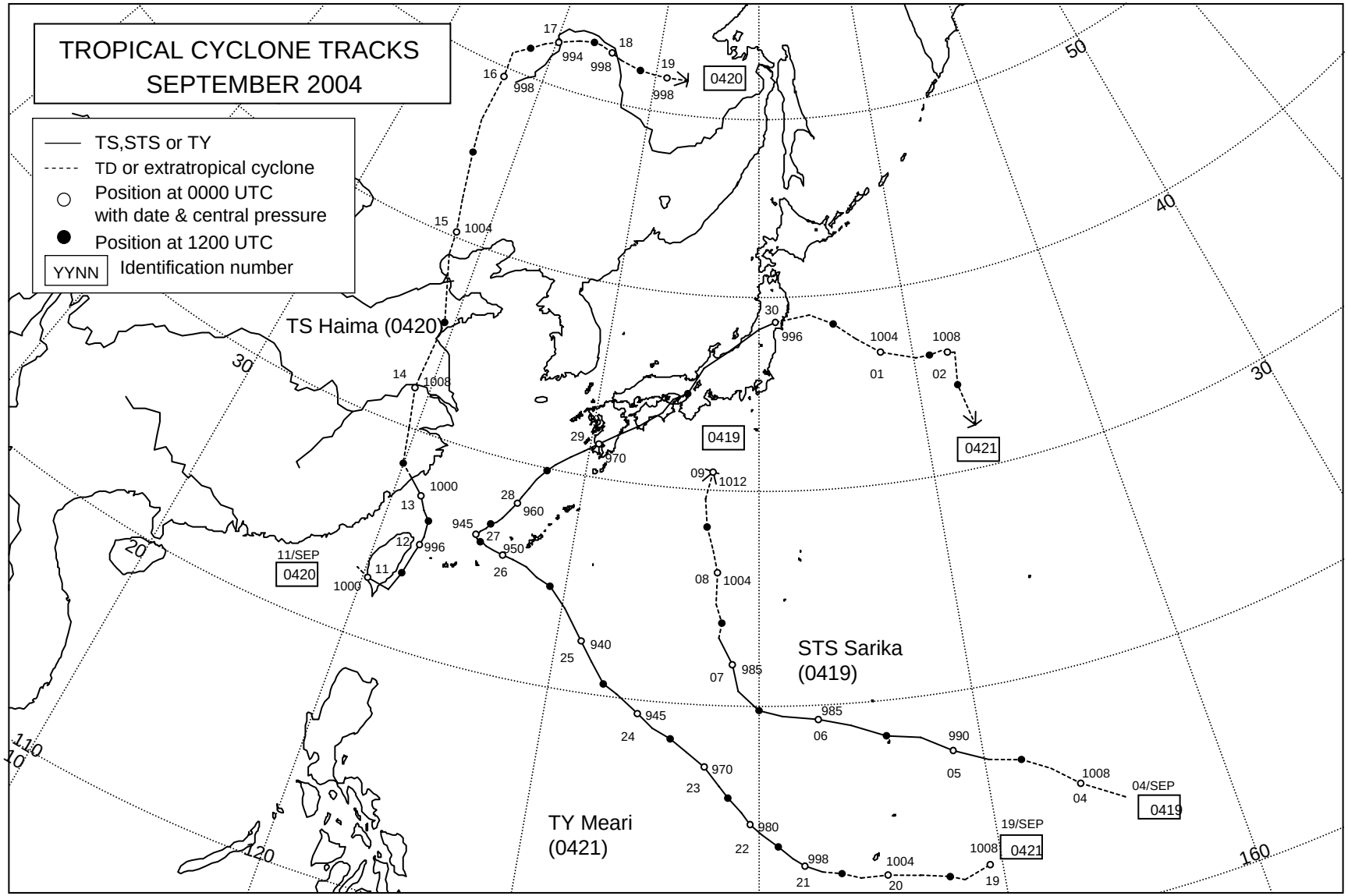


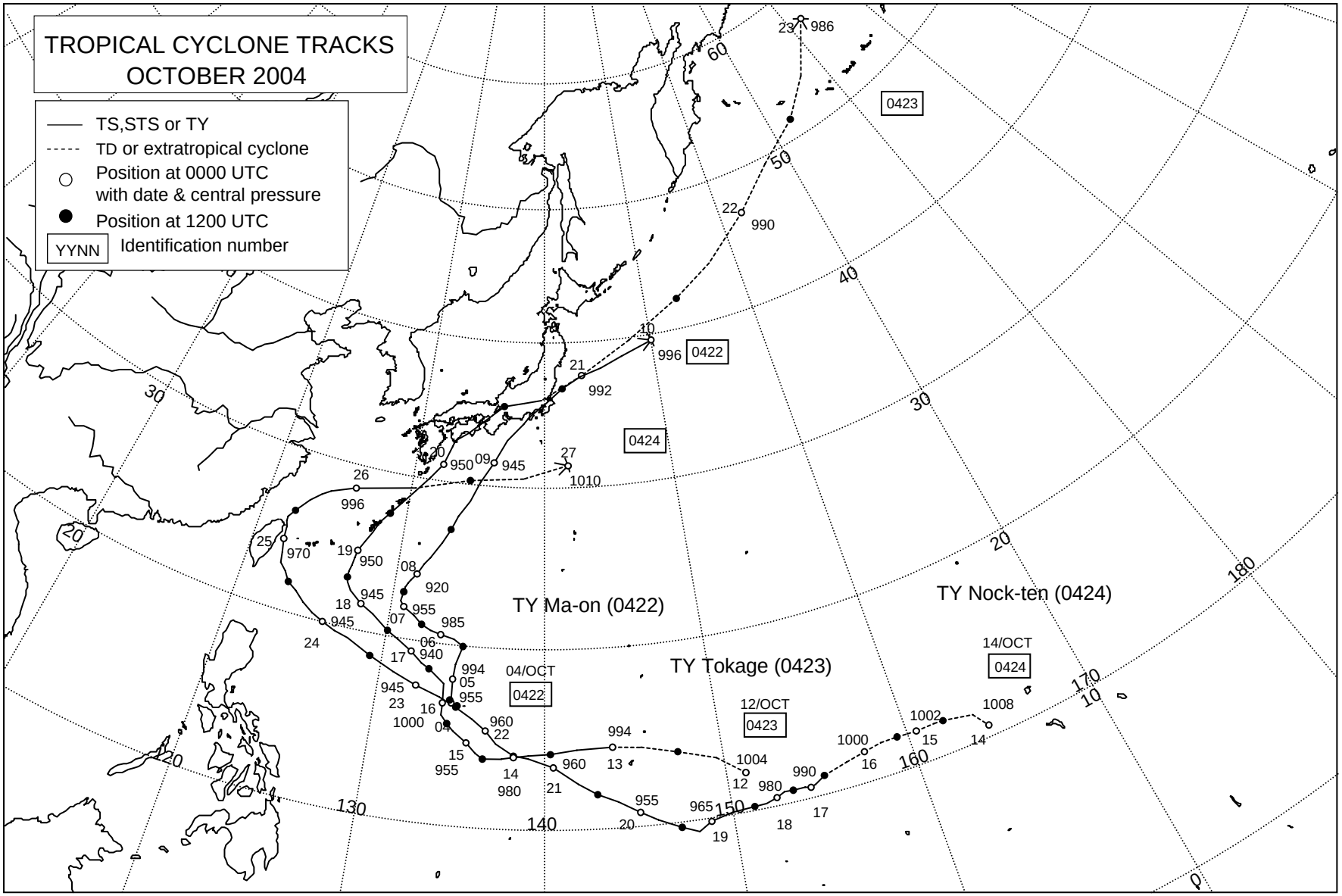

TROPICAL CYCLONE TRACKS
MAY 2004
TS,STS or TY
TD or extratropical cyclone
Position at 0000 UTC
with date & central pressure
Position at 1200 UTC
YYNN Identification number
TY Nida (0402)
STS Omais (0403)
0402
0403
22
996
21
980
20
955
19
950
18
940
17
940
16
950
15
980
14
998
13
1004
13/MAY
0402
22
1004
0403
21
996
20
990
19
996
18
996
1004
17
17/MAY
0403
10
20
110
120
130
140
150
160
20
30
40

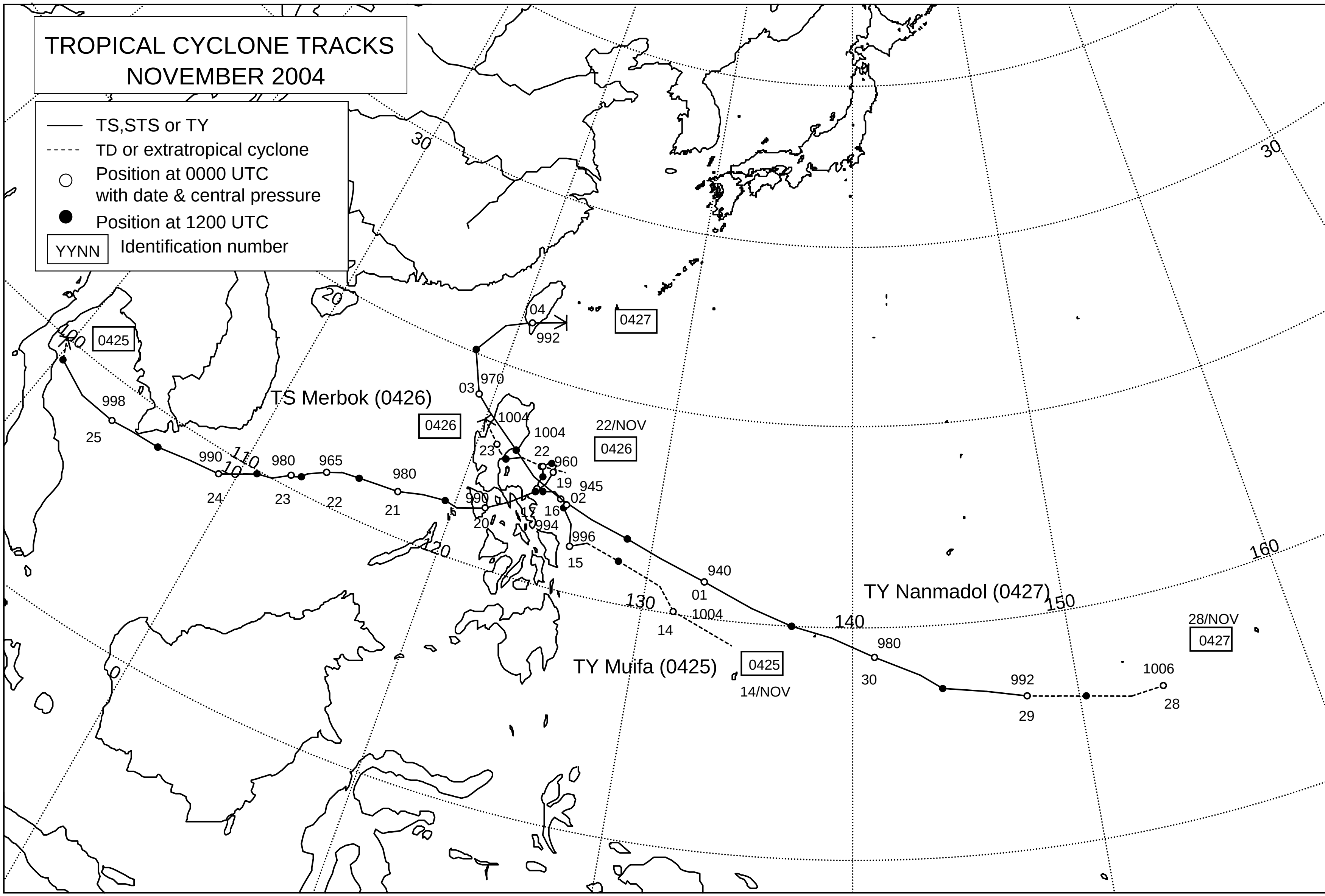

TROPICAL CYCLONE TRACKS
JUNE 2004
TS,STS or TY
TD or extratropical cyclone
Position at 0000 UTC
with date & central pressure
Position at 1200 UTC
YYNN Identification number
TY Mindulle
(0407)
TY Conson
(0404)
TY Chanthu
(0405)
TY Dianmu
(0406)
TY Tingting
(0408)
0405
0404
0407
0406
0408
05/JUN
08/JUN
12/JUN
22/JUN
25/JUN

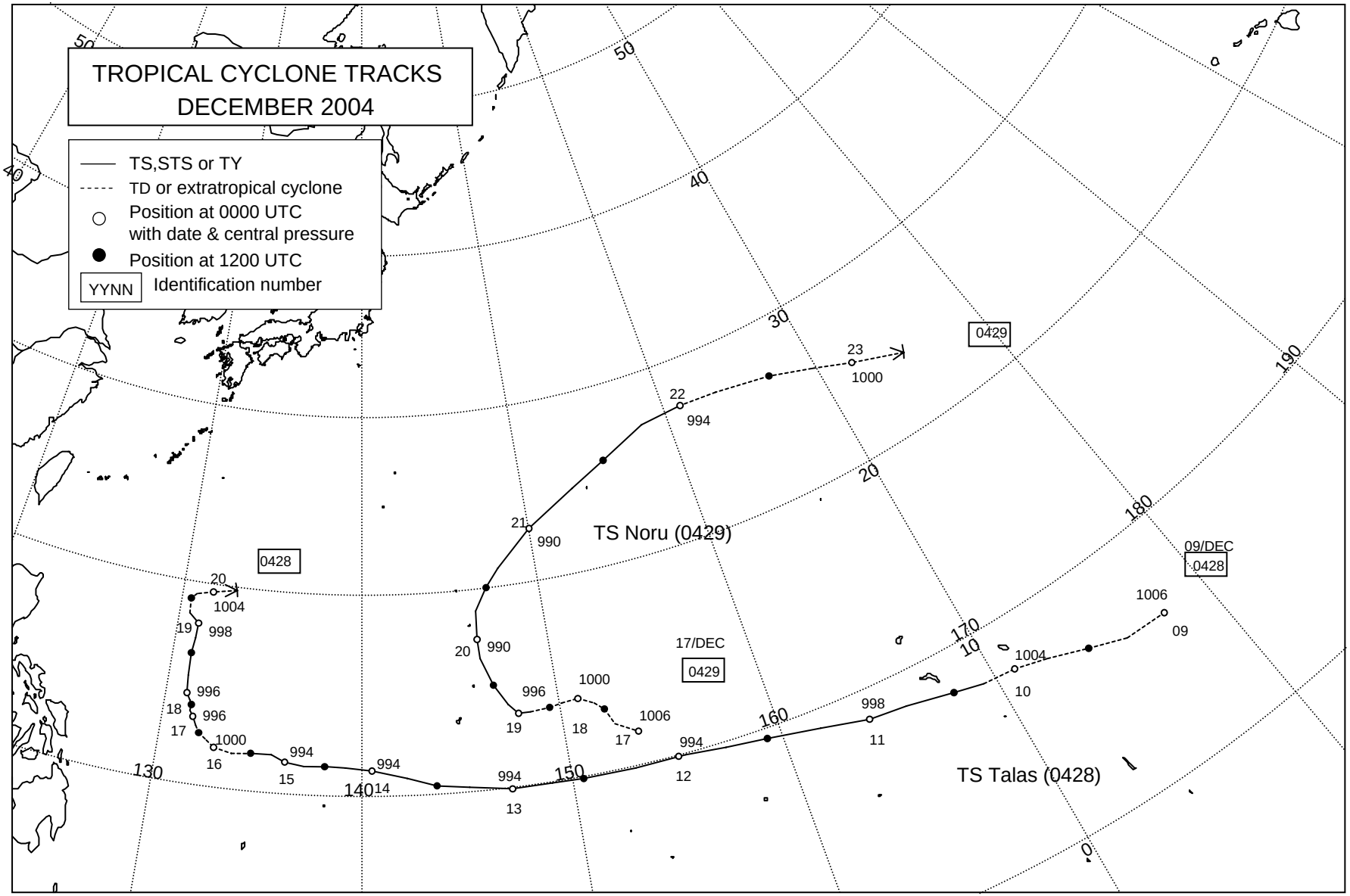

TROPICAL CYCLONE TRACKS
JULY 2004
TS,STS or TY
TD or extratropical cyclone
Position at 0000 UTC
with date & central pressure
Position at 1200 UTC
YYNN Identification number
0410
0409
TY Namtheun (0410)
TS Kompasu (0409)
12/JUL
25/JUL
1002
1000
996
970
960
960
950
935
965
996
992
992
998
1008
1008
30
40
20
120
160


TROPICAL CYCLONE TRACKS
AUGUST 2004
TS,STS or TY
TD or extratropical cyclone
Position at 0000 UTC
with date & central pressure
Position at 1200 UTC
YYNN Identification number
TY Rananim (0413)
TY Megi (0415)
TS Malou (0411)
TY Malakas (0414)
TY Meranti (0412)
TY Aere (0417)
TY Songda (0418)
TY Chaba (0416)
0411
0412
0413
0414
0415
0416
0417
0418
06/AUG
0413
14/AUG
0415
18/AUG
0417
02/AUG
0411
09/AUG
0414
03/AUG
0412
19/AUG
0416
27/AUG
0418


TROPICAL CYCLONE TRACKS
SEPTEMBER 2004
TS,STS or TY
TD or extratropical cyclone
Position at 0000 UTC
with date & central pressure
Position at 1200 UTC
YYNN Identification number
TS Haima (0420)
STS Sarika
(0419)
TY Meari
(0421)
0420
0419
0421
11/SEP
04/SEP
19/SEP
10
20
30
40
50
110
120
160


TROPICAL CYCLONE TRACKS
OCTOBER 2004
TS,STS or TY
TD or extratropical cyclone
Position at 0000 UTC
with date & central pressure
Position at 1200 UTC
YYNN Identification number
TY Ma-on (0422)
TY Tokage (0423)
TY Nock-ten (0424)
0422
0423
0424
04/OCT
12/OCT
14/OCT


TROPICAL CYCLONE TRACKS
NOVEMBER 2004
TS,STS or TY
TD or extratropical cyclone
Position at 0000 UTC
with date & central pressure
Position at 1200 UTC
YYNN Identification number
TS Merbok (0426)
TY Nanmadol (0427)
TY Muifa (0425)
0425
0426
0427
22/NOV
28/NOV
14/NOV
30
20
10
0
100
110
120
130
140
150
160


TROPICAL CYCLONE TRACKS
DECEMBER 2004
TS,STS or TY
TD or extratropical cyclone
Position at 0000 UTC
with date & central pressure
Position at 1200 UTC
YYNN Identification number
TS Noru (0429)
TS Talas (0428)
0428
0429
17/DEC
09/DEC
50
40
30
20
10
0
130
140
150
160
170
180
190

Appendix 4

Monthly and Annual Frequency of Tropical Cyclones

Monthly and annual frequency of tropical cyclones that attained TS intensity or higher in the western North Pacific and the South China Sea for 1951 - 2004

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
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
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
Ft1Ft1HF 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
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 =

Notes:

a. Underlined is 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. Date(YY), hour(GG) and minute(gg) are given 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 and 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 as 'N', 'NNE', 'NE', 'ENE' etc.
SpSpSp	:	Speed of movement.
PPPP	:	Central pressure.
VmVmVm	:	Maximum sustained wind.
RdRdRd	:	Radii of 30knots and 50knots wind.

octant	:	Eccentric distribution of wind given in 8 azimuthal direction as 'NORTH', 'NORTHEAST', 'EAST' etc.
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
50KT 40NM
30KT 240NM NORTHEAST 160NM SOUTHWEST
FORECAST
24HF 160000UTC 14.7N 113.7E 110NM 70%
MOVE WNW 11KT
PRES 965HPA
MXWD 070KT
48HF 170000UTC 16.0N 111.0E 170NM 70%
MOVE WNW 07KT
PRES 970HPA
MXWD 065KT
72HF 180000UTC 19.5N 110.0E 250NM 70%
MOVE NNW 09KT
PRES 985HPA
MXWD 050KT =

(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 is fixed.

b. Symbolic letters

i i	:	'20', '21', '22', '23', '24' or '25'.
YYGGgg	:	Initial time of the model in UTC.
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 hectopascals.
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 T 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.

YYGGgg : Time of observation submitting the data for analysis. Date(YY), hour(GG) and minute(gg) are given in UTC.

nt nt : Serial number of the tropical cyclone in order of the time of its formation in the year. Given in '01' - '99' irrespective of TS attainment in intensity.

LaLaLa : Latitude given in 0.1E

Qc : Quadrant of the earth. 1:N/E, 2:S/E, 3:S/W and 4:N/W.

LoLoLoLo : Longitude in 0.1E.

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:	YYGGgg NLaLa.LaLa ELoLoLo.LoLo
FCST MAX WIND +12HR:	WWW KT
FCST PSN +18HR:	NIL
FCST MAX WIND +18HR:	NIL
FCST PSN +24HR:	YYGGgg N LaLa.LaLa E LoLoLo.LoLo
FCST MAX WIND +24HR:	WWW KT
NXT MSG:	yyyymmdd/time Z=

Notes:

a. Underlined is fixed.

b. Abbreviations

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

C	:	Center 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) are given in UTC.
yyyymmdd/time	:	Year(yyyy),month(mm), data(dd), hour and minute (time) are given 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 as 'N', 'NNE', 'NE', 'ENE' etc.
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:	161800 N3150 E15855
FCST MAX WIND 12HR:	50KT
FCST PSN +18HR:	NIL
FCST MAX WIND 18HR:	NIL
FCST PSN +24HR:	170600 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 is fixed.

b. [1)] REMARKS is given optionally.

c. Symbolic letters

MMM	:	Month in UTC. Given as 'JAN', 'FEB', etc.
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	2.5x2.5 degrees	1.25x1.25 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	(00 and 12 UTC) 0, 6, 12, 18, 24, 30, 36, 48, 60 and 72 hours	(00 and 12 UTC) 0 to 84 every 6 hours In addition (12 UTC), * 96, 120, 144, 168 and 192 hours ** 90 to 192 every 6 hours
Frequency (initial times)	Twice a day (00 and 12 UTC)	Twice a day (00 and 12 UTC)

Area	Whole globe		Whole globe
Resolution	2.5x2.5 degrees		1.25x1.25 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,Cl) 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	(00 and 12 UTC) 24, 48 and 72 hours In addition (12 UTC), 96 to 192 every 24 hours * 96 and 120 only	(00 and 12 UTC) 0 hours * 00UTC only	(00 and 12 UTC) 0 to 84 every 6 hours In addition (12 UTC), 96 to 192 every 12 hours
Frequency (initial times)	Twice a day (00 and 12 UTC)		Twice a day (00 and 12 UTC)

Area	Whole globe
Resolution	2.5x2.5 degrees
Levels and elements	Surface (P) 1000hPa(Z) 850hPa (T,U,V) 500hPa (Z) 250hPa (U,V) *Above GPVs are ensemble mean and standard deviation of ensemble forecast memers.
Forecast hours	Every 12 hours from 0 192 hours
Frequency (initial times)	Once a day (12 UTC)

Notes: Cl : cloud cover (total)
P : pressure reduced to MSL
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 (GRIB)	Observational data
Contents	GOES-9 data (GRIB) Equivalent black body temperature	Tropical cyclone related information (BUFR) •Position, etc.	• Significant wave height • Prevailing wave period • Prevailing wave direction Forecast hours: 0, 6, 12, 18, 24, 30, 36, 42, 48, 54, 60, 66, 72 78, 84 (00 and 12 UTC); 96, 108, 120, 132, 144, 156, 168 ,180 and 192 hours (12 UTC)	(a) Surface data (SYNOP, SHIP) (b) Upper-air data (TEMP, parts A-D) (PILOT, parts A-D)
Frequency (initial times)	4 times a day (00, 06, 12 and 18 UTC)	4 times a day (00, 06, 12 and 18 UTC)	Twice a day (00 and 12 UTC)	(a) Mainly 4 times a day (b) Mainly 2 times a day

Appendix 7

User's Guide to the attached two CD-ROMs

1) These CD-ROMs should not be reproduced and not be provided to any third party.
2) The source should be properly acknowledged in any work obtained with these CD-ROMs.

JMA does not accept liability for any direct and/or indirect loss or damage to the user caused by the use of the software, data or documents in these CD-ROMs.

Preface

These CD-ROMs contain all the texts, tables, charts of this report and GOES-9 satellite images of the tropical cyclones that attained TS intensity or higher in the western North Pacific and the South China Sea in 2004. This document is a brief user's guide for the CD-ROMs. The CD-ROMs were mastered in ISO-9660 format.

Directory and File layout

```
[Disk 1]
 |------ar405eng.exe (Acrobat Reader Installer)
 |------Readme.txt (belief explanation about the CD-ROM)
 |------TopMenu.exe (Start menu setup program)
 |------Users_Manual.htm (user's manual of a satellite image viewer)
 |------Annual_Report
          |---Text (text of Annual Report 2004 in PDF)
          |---Figure (figures for MS PowerPoint)
          |---Table (tables for MS Excel)
          |---Appendix (appendixes for MS Excel, PowerPoint)
 |------Programs
          |---Gmslpd
                |--Gmslpd.exe (Viewer; tropical cyclone version in English)
                |--Gsetup.exe, etc. (Setup program, etc.)
 |------Satellite_Image_Data
          |---2004_1 (3-hourly GOES image data)
          |---2004_2 (3-hourly GOES image data)
                    :
          |---2004_10 (3-hourly GOES image data)
 |------Users_Manual
          |--Gmanual.doc (User's Manual for MS Word)
 |------Andata
          |--Best2004.txt (Best track data for the year 2004)
```

[Disk 2]
|------ar405eng.exe (Acrobat Reader Installer)
|------Readme.txt (belief explanation about the CD-ROM)
|------TopMenu.exe (Start menu setup program)
|------Users_Manual.htm (user's manual of a satellite image viewer)
|------Programs
        |---Gmslpd
            |--Gmslpd.exe (Viewer; tropical cyclone version in English)
            |--Gsetup.exe, etc. (Setup program, etc.)
|------Satellite_Image_Data
        |---2004_11 (3-hourly GOES image data)
        |---2004_12 (3-hourly GOES image data)
                :
        |---2004_29 (3-hourly GOES image data)
|------Users_Manual
        |--Gmanual.doc (User's Manual for MS Word)
|------Andata
        |--Best2004.txt (Best track data for the year 2004)

How to use these CD-ROMs

When you set the CD-ROM, start menu will be presented automatically with a panel which has “Annual Report 2004”, “Satellite Images”, “About CD-ROM” and “Close” buttons and a file list box for some introductory documents. Choose and click a button or file which you want to see and follow instructions on your display. Please note that “Annual Report 2004” and satellite image data from Sudal(0401) to Namtheun(0410) are included in “Disk 1”, and satellite image data from Malou(0411) to Noru(0429) are included in “Disk 2”.

Required hardware/OS for the CD-ROMs are:

Hardware : DOS-V, NEC PC-9800 Series or their compatible
OS : Microsoft Windows Ver. 3.1 or later

< Annual Report 2004 >

Annual Report 2004 is prepared in the following two formats: ”PDF files” and “MS Word/Excel/PowerPoint files”.

- PDF files:

Click the “Annual Report 2004” button in “Disk 1” to open the annual report 2004 in PDF. If you can not open the PDF file, install ‘Adobe Acrobat Reader’ with its installer (ar405eng.exe) in the file list box on a start menu window, and try again. ‘Adobe Acrobat Reader’ (or ‘Adobe Acrobat’) is required to view PDF files.

- Word/Excel/PowerPoint files:

Original figures and tables prepared with Microsoft Word, Excel or PowerPoint are stored in Annual_Report folder of the CD-ROM “Disk 1”.

< Satellite Images >

- Installation of a program for displaying satellite images:

Click the “Satellite Image” button to run a setup program (Gsetup.exe) of a satellite image viewer. If you follow some instructions, the viewer ‘Gmslpd.exe’, which is a program for displaying satellite images, will be installed into the hard disk of your computer and a list of the tropical cyclones in 2004 is displayed in the ‘Selection window’ of satellite images for tropical cyclones.

- Displaying satellite images:

Choose a tropical cyclone from the list and click the name, and 3-hourly satellite images for the tropical cyclone will be displayed. You can display the track of the tropical cyclone superimposed on the satellite image and measure the intensity of the tropical cyclone using Dvorak's technique.

- User’s manual for the viewer:

Besides the above functions, the viewer has many useful ones. See the User's Manual (Users_Manual.htm or /Users_Manual/Gmanual.doc) for further detailed operations.

- Explanation of satellite image data

Period : From Generating Stage to Weakening Stage of each tropical cyclone.
Images : Infrared images (00, 03, 06, 09, 12, 15, 18 and 21UTC)
Visible images (00, 03, 06, 09 and 21UTC)
Range : 40 degrees in both latitude and longitude.
(The image window moves following a tropical cyclone's track so that the center of a tropical cyclone is fixed at the center of the image window.)
Time interval : 3-hourly
Resolution : 0.08 degrees in both latitude and longitude.
Compression of file : Compressed using 'compress.exe' command of Microsoft Windows.

< About CD-ROM >

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

< Close >

Click the “Close” button to close start menu window.

< File list box >

You can open document files from a file list box on the start menu window. Choose a file and click the “Open” button or double click the file name.

For further information, please contact the following address:

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