

Products of the RSMC Tokyo - Typhoon Center

Naoko KOMATSU
Tokyo Typhoon Center
Japan Meteorological Agency (JMA)

JMA Workshop on WIS Implementation
18 – 20 November, 2014

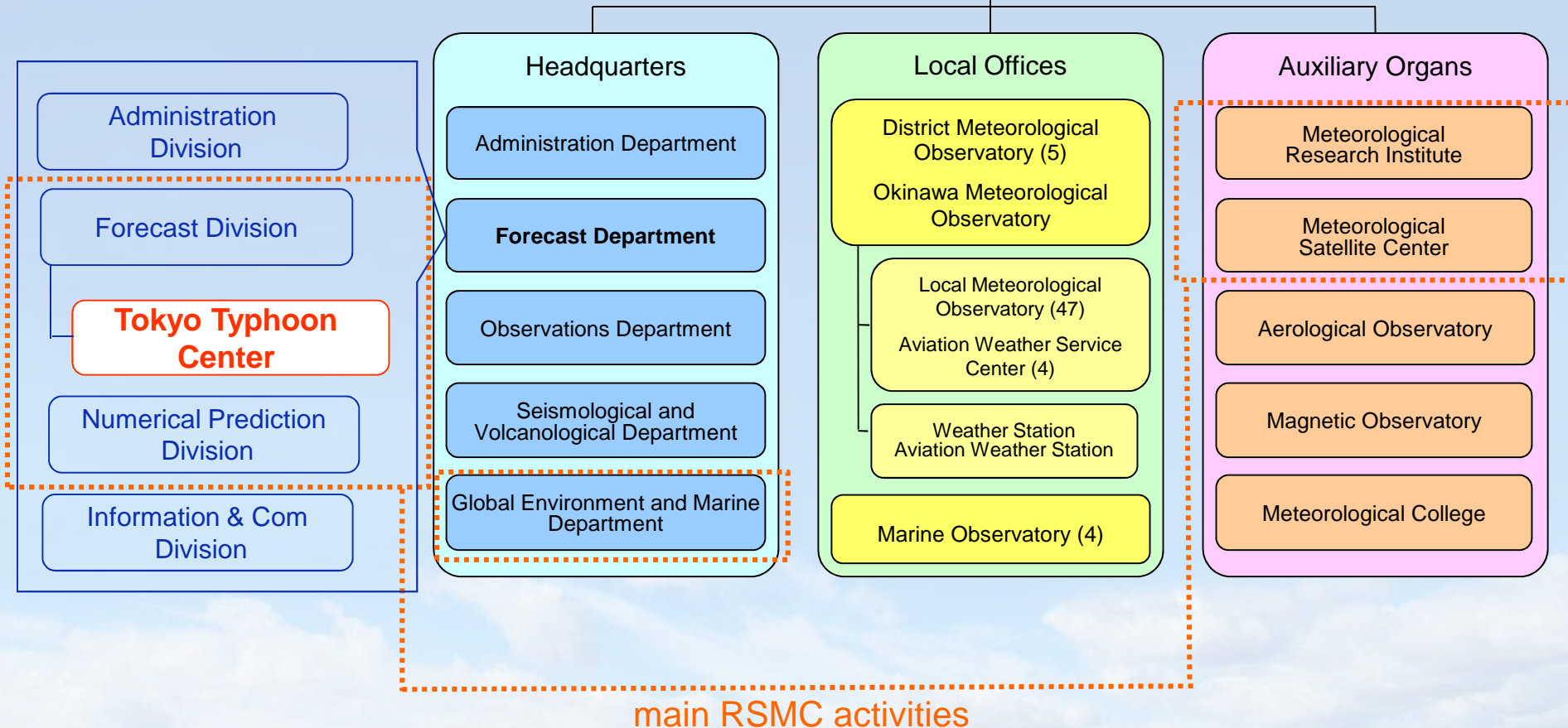
Organizational Structure of JMA



Director of RSMC Tokyo

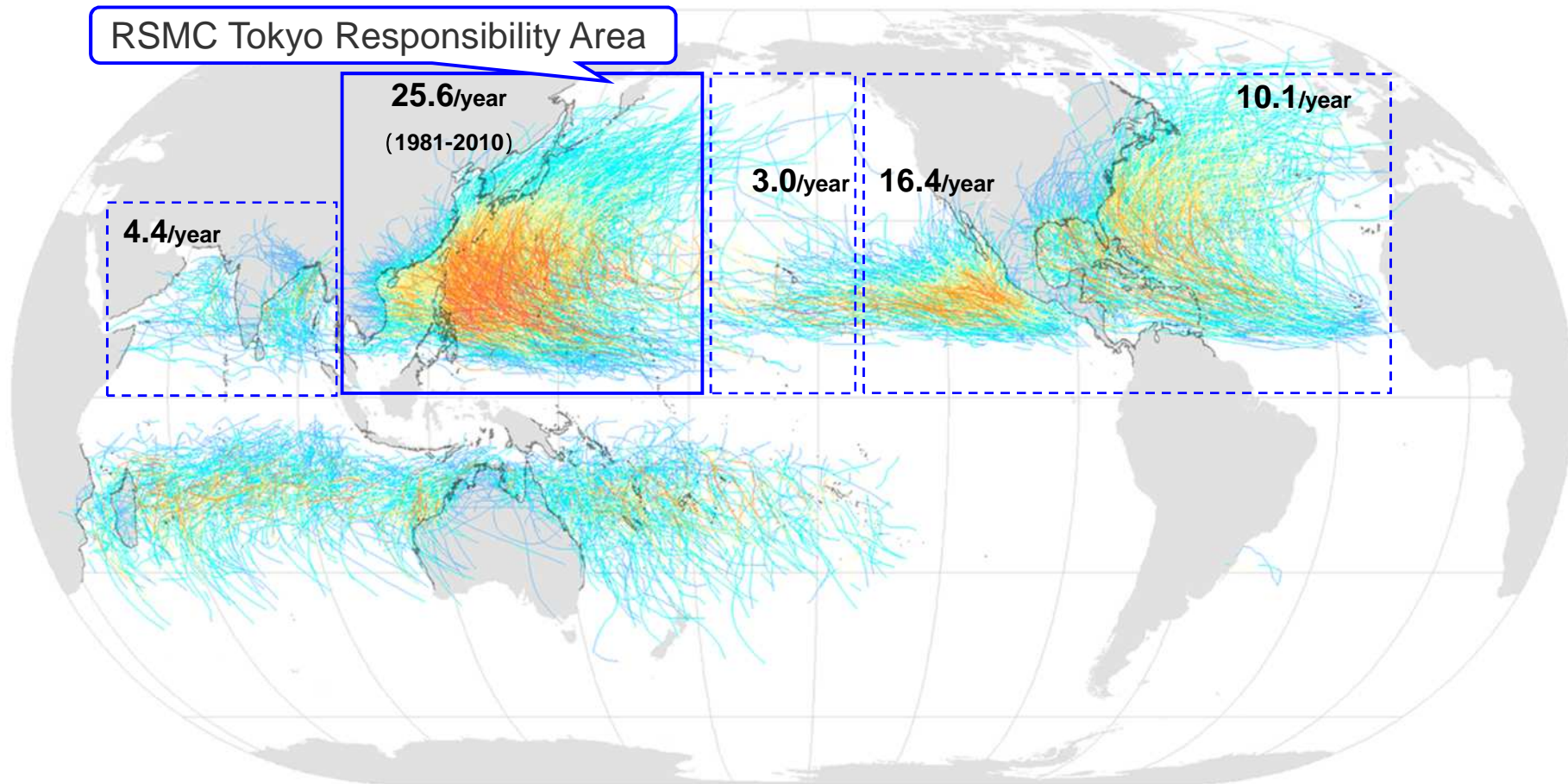
Director-General

Deputy Director-General



Tropical Cyclones, 1945–2006

RSMC Tokyo Responsibility Area



Saffir-Simpson Hurricane Scale:

tropical
depression

tropical
storm

hurricane
category 1

hurricane
category 2

hurricane
category 3

hurricane
category 4

hurricane
category 5

from Wikipedia

http://en.wikipedia.org/wiki/Tropical_cyclone

Major Activities of the RSMC Tokyo

● Dissemination of RSMC Products via the GTS

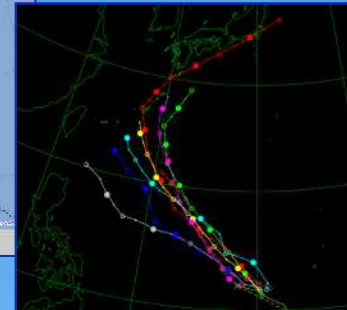
- RSMC Tropical Cyclone Advisory
- SAREP
- RSMC Guidance for Forecast
- RSMC Prognostic Reasoning
- RSMC Tropical Cyclone Best Track
- Tropical Cyclone Advisory for SIGMET (via AFTN)

```
WTPQ20 RJTD 030000  
RSMC TROPICAL CYCLONE ADV  
NAME TS 0901 KUJIRA (0901)  
ANALYSIS  
PSTN 030000UTC 13.9N 124.4E  
MOVE NNE SLOWLY  
PRES 998HPA  
MXWD 035KT  
GUST 050KT  
30KT 120NM  
FORECAST  
24HF 040000UTC 14.8N 127.2E  
MOVE ENE 07KT
```

● Provision of a variety of Products via the Internet

- SATAID Service (WIS DAR)
- JMA Numerical Typhoon Prediction Website
- RSMC Tokyo - Typhoon Center Website

● Training / Publication



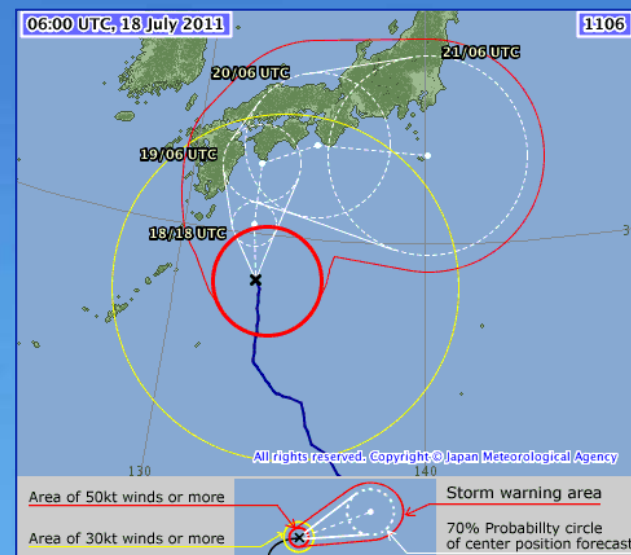
RSMC Products – TC Advisory

RSMC TC advisory (WTPQ20-25)

for 3-day forecast

issued within 50 minutes from observation times
at 00, 06, 12, 18 UTC

WTPQ20 RJTD 180600
RSMC TROPICAL CYCLONE ADVISORY
NAME TY 1106 MA-ON (1106)
ANALYSIS
PSTN 180600UTC 28.4N 133.2E GOOD
MOVE N 14KT
PRES 945HPA
MXWD 085KT
GUST 120KT
50KT 140NM EAST 90NM WEST
30KT 425NM EAST 300NM WEST
FORECAST
24HF 190600UTC 32.6N 132.8E 85NM 70%
MOVE N 10KT
PRES 950HPA
MXWD 080KT
GUST 115KT
48HF 200600UTC 33.5N 135.2E 160NM 70%
MOVE ENE 06KT
PRES 960HPA
MXWD 075KT
GUST 105KT
72HF 210600UTC 33.3N 140.1E 220NM 70%
MOVE E 10KT
PRES 975HPA
MXWD 055KT
GUST 080KT =



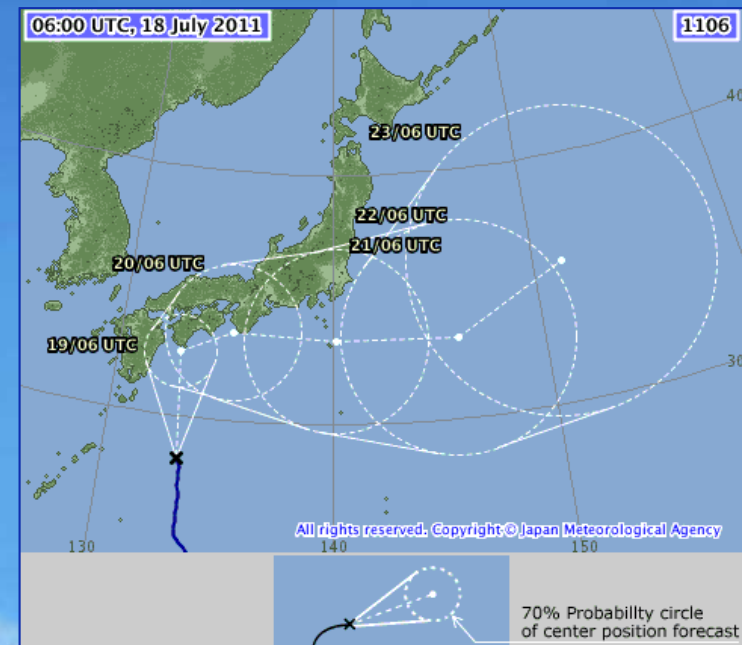
RSMC Products – TC Advisory

RSMC TC advisory (WTPQ50-55)

for 5-day track forecast

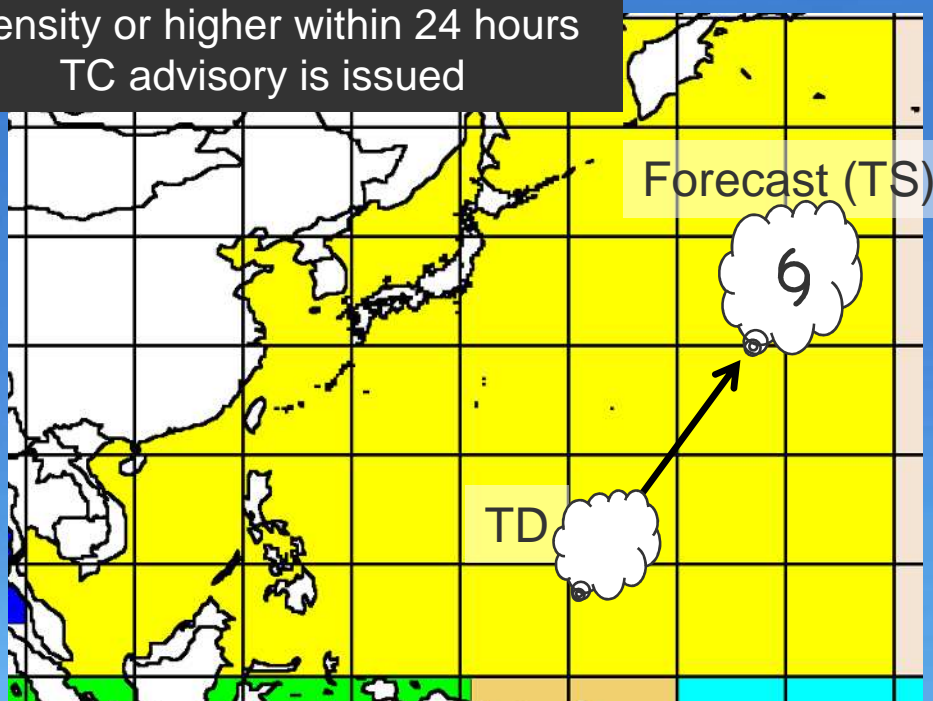
issued within 90 minutes from observation times
at 00, 06, 12, 18 UTC

WTPQ50 RJTD 180600
RSMC TROPICAL CYCLONE ADVISORY
NAME TY 1106 MA-ON (1106)
ANALYSIS
PSTN 180600UTC 28.4N 133.2E GOOD
MOVE N 14KT
PRES 945HPA
MXWD 085KT
GUST 120KT
50KT 140NM EAST 90NM WEST
30KT 425NM EAST 300NM WEST
FORECAST
24HF 190600UTC 32.6N 132.8E 85NM 70%
MOVE N 10KT
PRES 950HPA
MXWD 080KT
GUST 115KT
48HF 200600UTC 33.5N 135.2E 160NM 70%
MOVE ENE 06KT
PRES 960HPA
MXWD 075KT
GUST 105KT
72HF 210600UTC 33.3N 140.1E 220NM 70%
MOVE E 10KT
PRES 975HPA
MXWD 055KT
GUST 080KT
96HF 220600UTC 33.3N 145.8E 280NM 70%
MOVE E 12KT
120HF 230600UTC 35.8N 151.3E 375NM 70%
MOVE ENE 13KT =



RSMC Products – TC Advisory

When a TD is expected to reach TS intensity or higher within 24 hours TC advisory is issued



TC advisory for developing TDs Analysis & Forecast up to 24 hours ahead

ANALYSIS

PSTN 080000UTC 06.3N 147.5E POOR

MOVE WNW 07KT

PRES 1000HPA

MXWD 030KT

GUST 045KT

FORECAST

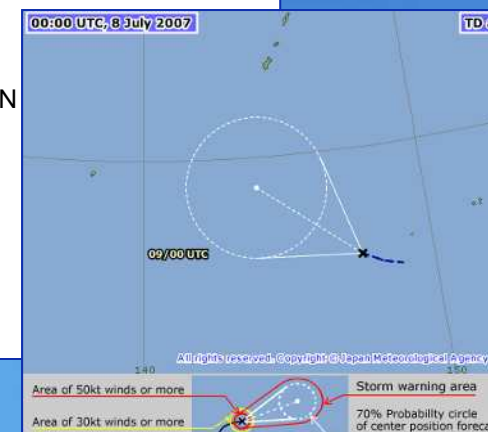
24HF 090000UTC 09.0N

MOVE NW 11KT

PRES 992HPA

MXWD 045KT

GUST 065KT =



34 kt > Max wind (MW)

34 kt ≤ MW < 48 kt

48 kt ≤ MW < 64 kt

64 kt ≤ MW

TD (Tropical Depression)

TS (Tropical Storm)

STS (Severe TS)

TY (Typhoon)

Other Products

Guidance for Forecast (FXPQ20-25)

NWP model predictions:

up to 84 hours ahead for GSM and 132 hours ahead for TEPS

✓ GSM predictions:
issued 3.5 hours after initial analyses
at 00, 06, 12, 18 UTC

✓ TEPS ensemble mean track predictions:
issued 4.2 hours after initial analyses
at 00, 06, 12, 18 UTC

```
FXPQ20 RJTD 131200
RSMC GUIDANCE FOR FORECAST
NAME STS 1419 VONGFONG (1419)
PSTN 131200UTC 34.5N 136.0E
PRES 985HPA
MXWD 55KT
FORECAST BY TYPHOON ENSEMBLE PREDICTION SYSTEM
TIME PSTN PRES MXWD
(CHANGE FROM T=0)
T=006 37.0N 139.7E -001HPA +001KT
T=012 39.2N 142.5E -006HPA +007KT
T=018 40.4N 145.1E -008HPA +018KT
T=024 42.1N 148.0E -007HPA +012KT
T=030 44.2N 151.1E -008HPA +011KT
T=036 45.9N 154.3E -007HPA +010KT
T=042 47.6N 158.2E -006HPA +009KT
T=048 49.1N 162.4E -004HPA +006KT
T=054 50.3N 166.9E -004HPA +006KT
T=060 50.8N 171.2E -003HPA +005KT
T=066 50.7N 175.9E -002HPA +003KT
T=072 50.2N 178.8W -001HPA +001KT
T=078 49.6N 173.2W -001HPA -004KT
T=084 49.4N 167.1W -002HPA -007KT
T=090 49.2N 163.0W -003HPA -008KT
T=096 49.1N 162.0W -005HPA -008KT
```

.....
.....

Other Products

SAREP (IUCC10) in BUFR Format

T1103,Sarika,18.9N,117.6E,2,2,3,2.0,2.0,348,15
EDA013,NAMELESS,15.3N,119.4E,4,,1.5,1.5,///,//

Dvorak CI-number (reported
at 00, 06, 12, 18 UTC)

issued a half to 1 hour after observations
at 00, 03, 06, 09, 12, 15, 18, 21 UTC

Result of early stage Dvorak
analysis (EDA) is shown.

TEXT Version is available on the NTP Website.

Prognostic Reasoning (WTPQ30-35)

issued at 00 and 06 UTC following
the TC advisory

WTPQ30 RJTD 130000
RSMC TROPICAL CYCLONE PROGNOSTIC REASONING
REASONING NO.21 FOR STS 1419 VONGFONG (1419)
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
NOTHING PARTICULAR TO EXPLAIN.
3.MOTION FORECAST
POSITION ACCURACY AT 130000 UTC IS GOOD.
STS WILL ACCELERATE FOR THE NEXT 24 HOURS THEN
DECELERATE.
STS WILL MOVE NORTHEAST FOR THE NEXT 48 HOURS.
4.INTENSITY FORECAST
.....

Other Products

Tropical Cyclone Best Track (AXPQ20)

issued one and a half month
after a TC dissipated

```
AXPQ20 RJTD 130200
RSMC TROPICAL CYCLONE BEST TRACK
NAME 1418 PHANFONE (1418)
PERIOD FROM SEP2806UTC TO OCT0800UTC
2806 11.0N 157.1E 1004HPA //KT 2812 11.6N 155.1E 1004HPA //KT
2818 12.2N 153.8E 1002HPA //KT 2900 12.7N 152.2E 1000HPA //KT
2906 13.0N 151.0E 998HPA 35KT 2912 13.4N 150.3E 994HPA 40KT
2918 13.9N 149.5E 990HPA 45KT 3000 15.2N 148.1E 990HPA 45KT
3006 16.4N 146.9E 990HPA 45KT 3012 16.4N 145.8E 985HPA 50KT
3018 16.6N 144.7E 980HPA 55KT 0100 16.9N 143.8E 970HPA 60KT
0106 18.1N 142.6E 965HPA 65KT 0112 18.4N 141.2E 955HPA 75KT
.....
```

Tropical Cyclone Advisory for SIGMET (FKPQ30-35)

issued 6 hourly for aviation via
the AFTN

```
FKPQ30 RJTD 061800
TC ADVISORY
DTG: 20141106/1800Z
TCAC: TOKYO
TC: NURI
NR: 28
PSN: N3330 E14500
MOV: NE 26KT
C: 980HPA
MAX WIND: 60KT
FCST PSN +6HR: 07/0000Z N3610 E14900
FCST MAX WIND +6HR: 65KT
FCST PSN +12HR: 07/0600Z N3940
FCST MAX WIND +12HR: 70KT
FCST PSN +18HR: 07/1200Z N4410
FCST MAX WIND +18HR: 70KT
FCST PSN +24HR: 07/1800Z N4950
.....
```

SATAID Service



JMA SATAID Service has been provided as WIS DAR since December 2011

DAR: Data Discovery, Access and Retrieval

ID and password required
(provided to each NMHS)

<http://www.wis-jma.go.jp/cms/sataid/>

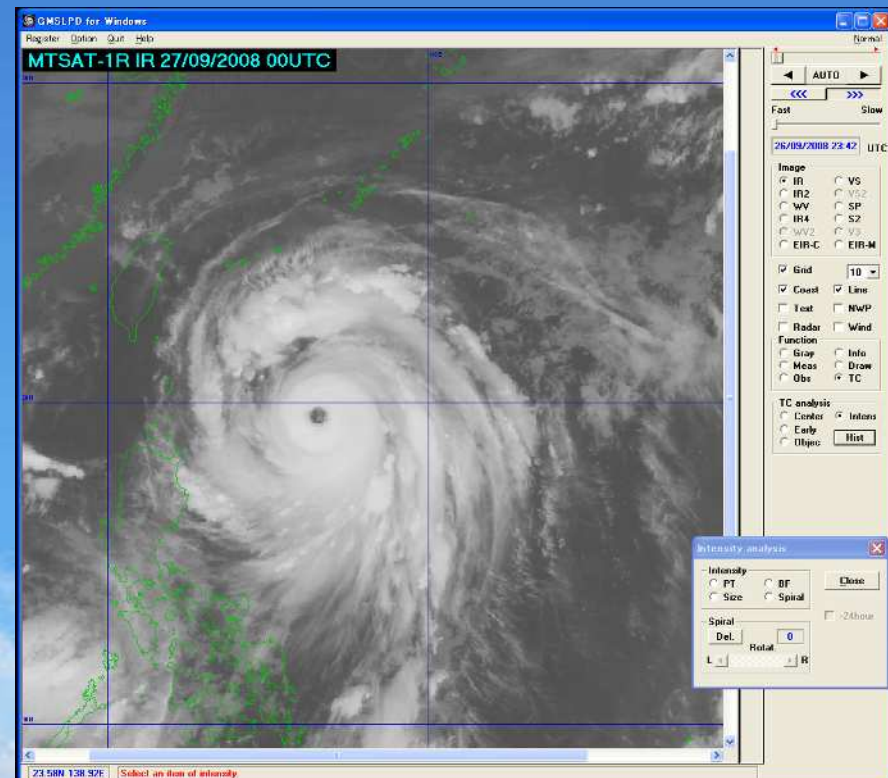
SATAID Service

- SATAID (**S**atellite **A**nimation and **I**nteractive **D**iagnosis)
- Originally developed by JMA's MSC as an application software to display satellite imagery and NWP data for training purposes
- Provided to NMHSs as a JMA's contribution to WMO-CGMS Virtual Laboratory for Training in Satellite Meteorology (VL).
- Today, used also as an operational tool for daily weather analysis including tropical cyclone monitoring at JMA's HQ and local offices
- Freely available to NMHSs and easy to install
- Equipped with lots of functions



SATAID Service

- Display (and overlay) satellite imagery and NWP data (and various observations i.e. SYNOP, SHIP, TEMP, Radar, Wind Profiler, ASCAT etc. if its format prepared)
- Use many functions: vertical cross-sectional chart, time-series chart, digital data output to CSV file.....
- **Very useful for TC position and intensity analysis !**

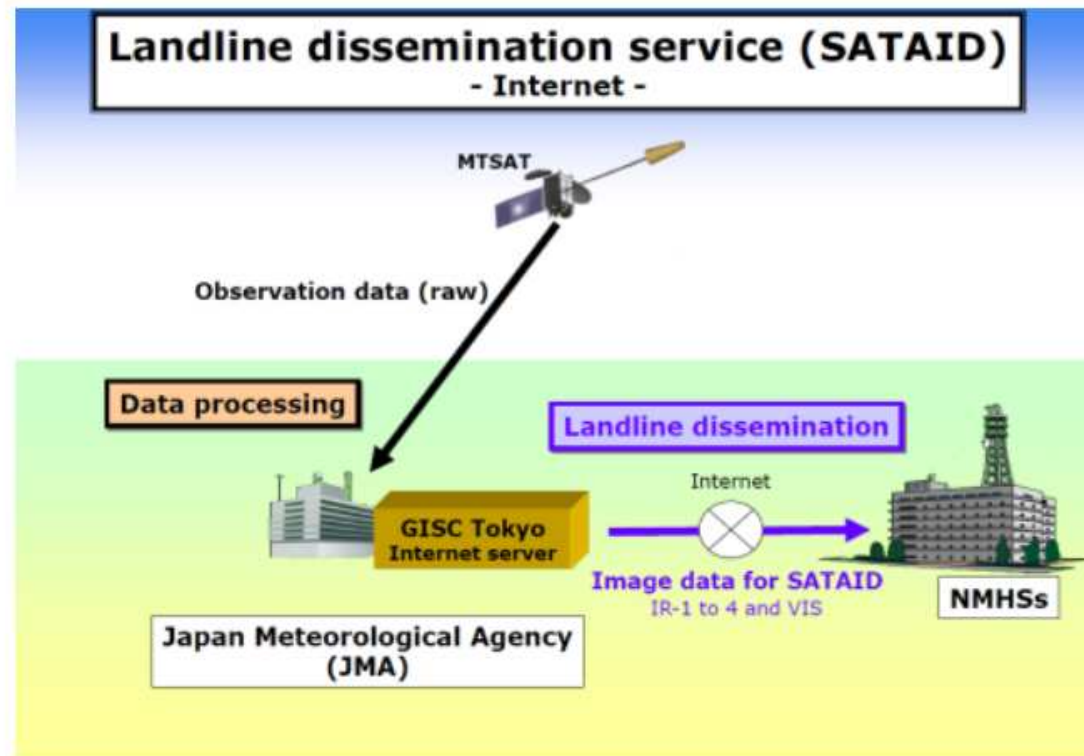


SATAID Service

Imagery dissemination services

Landline dissemination service (SATAID) - Internet (HTTPS) -

This service provides MTSAT's imagery converted for use with SATAID software by registered National Meteorological and Hydrological Services (NMHSs) through the Internet at no cost. Imagery for six areas in all observation channels is available about three minutes after observation.



Main Characteristics

Basic Information

Dissemination method	Internet (HTTPS)
Disseminated data	Imagery for SATAID software

Features

Time resolution	Every 30 minutes for the Northern-hemisphere imagery, and every hour for full-disk
Type of imagery	Rectangular imagery divided into six areas
Timetable	http://www.jma.go.jp/jma/jma-eng/satellite/introduction/timetable_hr_sa.pdf
Necessary equipment	PC/workstation, SATAID software and Internet connection

Conditions

Limits on user	NMHSs
Registration	Needed: registration introduction
Charge	Free

How to use the landline dissemination service (SATAID)

NMHSs wishing to receive imagery for SATAID software through the landline dissemination service (SATAID) need a PC/workstation and a broadband Internet connection. Please [register](#) with JMA.

http://www.jma.go.jp/jma/jma-eng/satellite/nmhs/dssm_GISC_SATAID.html

SATAID Service

SATAID Program

Home | Data for SATAID | **The SATAID Application** | Manual | Terms of Use | Help Desk

SATAID Service

provided by DCPCs of JMA.

★ Download

To download SATAID application, please click file link below.

[gmslpd_ver292.zip](#)
(zip format: 9.2Mbytes)

To download SATAID data download tool, please click file link below.

[SATAID_data_download_tool.zip](#)
(zip format: 14.6Mbytes)

To know how to install and to use SATAID application, please click [Manual](#).

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<http://www.wis-jma.go.jp/cms/sataid/app/download/>

SATAID Service

Data

Home **Data for SATAID** SATAID Application Manual Use conditions Help Desk

SATAID Service

provided by DCPCs of JMA.

★ North of Central

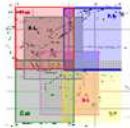
This page shows [NC: North of Central] area data and shows files of the last [72] hours.

Data is divided into two parts. If you need..

- ✚ Satellite imagery and NWP products data, please proceed to [Satellite imagery and NWP products data part](#)
- ✚ Observation data, please proceed to [Observation data part](#)

If you need to change period whose data is shown...

✚ please change the value in the next box: Show data files of the last hours



To confirm data area definition, please click and see right figure:

Satellite imagery and NWP products data

IR1 channel	IR2 channel	IR4 channel	Water Vapor	Visible	NWP products
IR20120706.Z0230	I220120706.Z0230	I420120706.Z0230	WV20120706.Z0230	VS20120706.Z0230	GS120705.Z18
IR20120706.Z0200	I220120706.Z0200	I420120706.Z0200	WV20120706.Z0200	VS20120706.Z0200	GS120705.Z12
IR20120706.Z0130	I220120706.Z0130	I420120706.Z0130	WV20120706.Z0130	VS20120706.Z0130	GS120705.Z06
IR20120706.Z0100	I220120706.Z0100	I420120706.Z0100	WV20120706.Z0100	VS20120706.Z0100	GS120705.Z00
IR20120706.Z0000	I220120706.Z0000	I420120706.Z0000	WV20120706.Z0000	VS20120706.Z0000	GS120704.Z18
IR20120705.Z2330	I220120705.Z2330	I420120705.Z2330	WV20120705.Z2330	VS20120705.Z2330	GS120704.Z12
IR20120705.Z2300	I220120705.Z2300	I420120705.Z2300	WV20120705.Z2300	VS20120705.Z2300	GS120704.Z06
IR20120705.Z2230	I220120705.Z2230	I420120705.Z2230	WV20120705.Z2230	VS20120705.Z2230	GS120704.Z00
IR20120705.Z2200	I220120705.Z2200	I420120705.Z2200	WV20120705.Z2200	VS20120705.Z2200	GS120703.Z18
IR20120705.Z2130	I220120705.Z2130	I420120705.Z2130	WV20120705.Z2130	VS20120705.Z2130	GS120703.Z12
IR20120705.Z2100	I220120705.Z2100	I420120705.Z2100	WV20120705.Z2100	VS20120705.Z2100	GS120703.Z06
IR20120705.Z2030	I220120705.Z2030	I420120705.Z2030	WV20120705.Z2030	VS20120705.Z0930	GS120703.Z00
IR20120705.Z2000	I220120705.Z2000	I420120705.Z2000	WV20120705.Z2000	VS20120705.Z0900	
IR20120705.Z1930	I220120705.Z1930	I420120705.Z1930	WV20120705.Z1930	VS20120705.Z0830	

All MTSAT imagery (VIS, IR, IR2, WV, 3.8μm), NWP and Observation data of the last 3 days are available

SATAID Service

Data Area

★ Data for SATAID

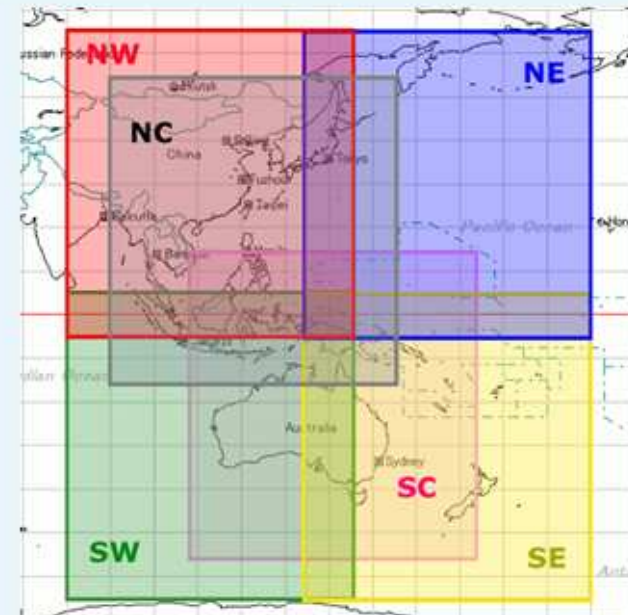
Before using these data, please check [use conditions of SATAID Service](#)

Area

Data sets of six areas are provided in this service. Please select Area Name from menu bar when you download data.

Definition of areas and information is indicated by right figure and table below.

Abbr.	Area Name	Latitude	Longitude	Sum of Size
NC	North Central	55N-15S	90E-155E	1.7GB/3day
NW	Northwest	65N-5S	80E-145E	1.6GB/3day
NE	Northeast	65N-5S	135E-200E	1.5GB/3day
SC	South Central	15N-55S	107.5E-172.5E	1.2GB/3day
SW	Southwest	6N-65S	80E-145E	1.1GB/3day
SE	Southeast	6N-65S	135E-200E	1.0GB/3day



SATAID Service

Data Specification

Specification

Data of each area includes 1) Satellite Imagery of MTSAT, 2) NWP Products and 3) Observation Data. Specification of these data is shown in table below.

Satellite Imagery of MTSAT	
List of the channel	Infrared channel-1 (IR1)
	Infrared channel-2 (IR2)
	Water Vapor (WV)
	Infrared channel-4 (IR4)
	Visible imagery (VIS)
Interval	half-hourly (North)
	hourly (South)
Size	2-4 MB/file
NWP Products	
Resolution	1.25 x 1.25 deg
Forecast hour	up to 48 hours
Initial time	00, 06, 12, 18UTC
Interval	4 times/day (around 04, 10, 16, 22UTC)
Size	4 MB/file

Observation	
SYNOP	
Interval	hourly
Size	100-150KB/file (map time)
	20-60 KB/file (other)
SHIP	
Interval	hourly
Size	20-30 KB/file
METAR	
Interval	hourly
Size	180 KB/file
TEMP (A, B)	
Interval	12 hour/day, basically
Size	100 KB/file
ASCAT sea-surface wind	
Interval	Once/day
Size	6 MB/file

- ✧ Data are stored for 3 days.
- ✧ Data format is all for SATAID.

SATAID Service

[Home](#)[Data for SATAID](#)[The SATAID Application](#)[Manual](#)[Terms of Use](#)[Help Desk](#)

SATAID Service

provided by DCPCs of JMA.

★ SATAID Service Terms of Use


Users agree to abide by the following SATAID Service terms of use:

- ∴ Observational data in SATAID format should not be redistributed to any third party. Such data include METAR, SYNOP, SHIP, TEMP and ASCAT sea-surface wind types.
- ∴ EUMETSAT copyright credit must be given by displaying the words "copyright (year) EUMETSAT" on each ASCAT sea-surface wind product.
- ∴ MTSAT imagery and NWP products provided under the SATAID Service are defined as essential by Resolution 40 of the twelfth Congress of WMO (Cg-XII).



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RSMC Tokyo - Typhoon Center Website

気象庁
Japan Meteorological Agency

Japanese

Access Links Site Map

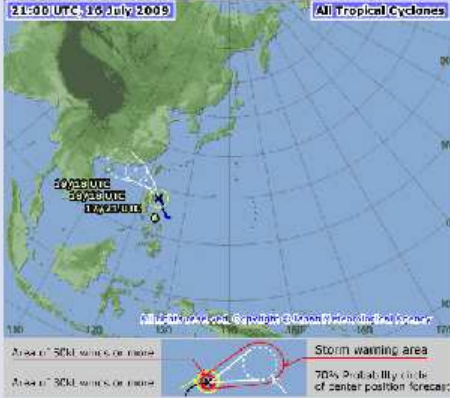
Home	News Release	Weather/Earthquake	User's Guide	Mission	For NMHSs
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[Home](#) > [For NMHSs](#) > RSMC Tokyo - Typhoon Center

RSMC Tokyo - Typhoon Center

Welcome to RSMC Tokyo - Typhoon Center

RSMC Tropical Cyclone Information



The Regional Specialized Meteorological Center (RSMC) Tokyo - Typhoon Center provides information on tropical cyclones in the western North Pacific and the South China Sea, including present and forecast positions as well as the movement and intensity of tropical cyclones.

Please note that information issued by the RSMC Tokyo - Typhoon Center represents neither official analysis/forecasts nor warnings for the areas concerned. Such official information is issued by the National Meteorological Services of individual countries.

Operational TC information are available !

[Notes on RSMC Tropical Cyclone Information](#)

- [Names of Tropical Cyclones](#)
- [Climatology of Tropical Cyclones](#)
- [Best Track Data](#)
- [Annual Report on Activities of the RSMC Tokyo - Typhoon Center](#)
- [Technical Review](#)
- [About RSMC Tokyo - Typhoon Center](#)

Best Track Data, Annual Report, Technical Review etc. are available !

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

Training on the TC Analysis and Forecast

Attachment Training at RSMC Tokyo



1. The Satellite Analysis and SATAID
2. Tropical cyclone analysis (Dvorak)
3. Tropical cyclone forecasting
4. Storm surge
5. Quantitative precipitation estimation (QPE) and quantitative precipitation forecast (QPF) etc

JICA Group Training Course “Reinforcement of Meteorological Services”

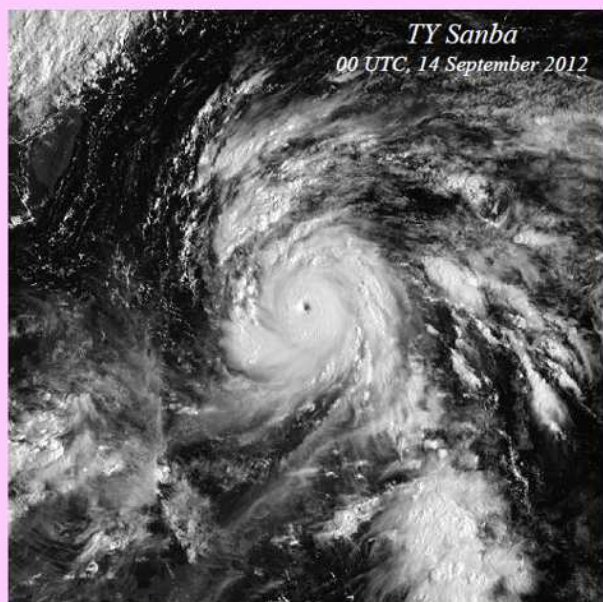


1. The Satellite Analysis and SATAID
2. Tropical cyclone analysis (Dvorak) etc

Publication

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

Annual Report on the Activities of the RSMC Tokyo - Typhoon Center 2012



PDF version available on website

RSMC Technical Review

RSMC Tokyo-Typhoon Center

Technical Review

The RSMC Tokyo - Typhoon Center publishes **the Technical Review** to introduce recent improvements in operational meteorological services and research related to tropical cyclones.

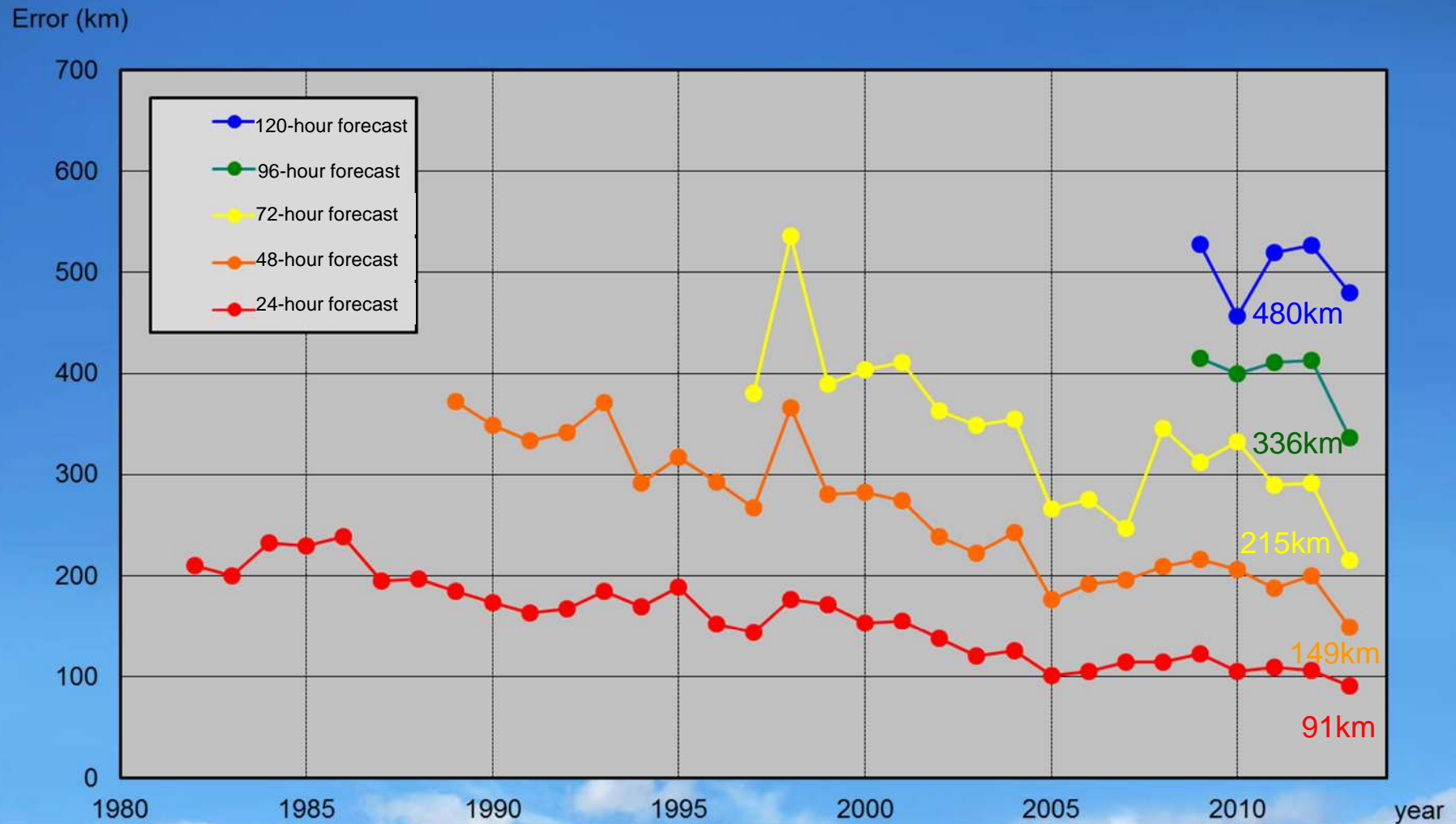
No.16 (March 2014)	
Algorithm and validation of a tropical cyclone central pressure estimation method based on warm core intensity as observed using the Advanced Microwave Sounding Unit-A (AMSU-A)	Text [PDF 0.6MB]
Development and Verification of a Tropical Cyclone Intensity Estimation Method Reflecting the Variety of TRMM/TMI Brightness Temperature Distribution	Text [PDF 0.6MB]
No.15 (March 2013)	
Cloud Grid Information Objective Dvorak Analysis (CLOUD) at the RSMC Tokyo - Typhoon Center	Text [PDF 0.6MB]
No.14 (March 2012)	
The Inactive Typhoon Season of 2010	Text [PDF 1.0MB]
JMA's Storm Surge Prediction for the WMO Storm Surge Watch Scheme (SSWS)	Text [PDF 0.5MB]
No.13 (March 2011)	
Estimation of Tropical Cyclone Intensity Using Aqua/AMSU-E Data	Text [PDF 0.7MB]
Quantitative Precipitation Estimation and Quantitative Precipitation Forecasting by the Japan Meteorological Agency	Text [PDF 3.4MB]
No.12 (March 2010)	
THORPEX - Pacific Asian Regional Campaign (T-PARC) Summary	
DLR Falcon Dropsonde Operation in T-PARC and Analysis of the Environment Surrounding Typhoons	Text [PDF 0.1MB]

Articles of Technical Review are seen on the RSMC Website:

Thank you



Annual Mean Position Errors of Track Forecasts (1982-2013)



Annual means of position errors