Application System for TC Analysis and its Usage

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National Typhoon Center/KMA
Outline

- KMA’s Application System for TC Analysis
- The Operational Process to issue TC information
- Practice on TAPS2 (KMA’s TIPS)
KMA’s Application System for TC Analysis
Operational TC forecast process

- **Real-time Observation Data for TC Analysis**
  - Satellite, Radar, Synoptic Chart, AWS, Wind Profiler

- **Application System for TC Analysis**
  - COMIS, WebSAS, WebFAS

- **Numerical Model for TC**

- **Application System for TC issuance**
  - TAPS2 (Web-based TIPS)

< Coverage for NTC’s TC operational forecast >
Satellite Observation and Analysis

- **Geostationary Satellite**
  - MTSAT-1R, Meteosat-7, FY-2D

- **Polar Orbit Satellite**
  - NOAA, FY-1D, QSCAT, METOP, AQUA, Terra

- **Satellite Image and Products for TC analysis**
  - Enhanced IR image (MTSAT)
  - Radius of Maximum Wind using MTSAT data
  - Atmospheric Motion Vector
  - Wind Speed (AMSR-E) and Direction (QSCAT, ASCAT)
  - TC Intensity Analysis using AODT and SDT
10 radars in Korea
produces composite radar images every 10 minutes
KMA has started to replace the old weather radar since 2004
- installed the new S-band radar at Osungsan to improve the data quality and monitor the severe weather in Jeolla Province in 2007
KMA-CMA-JMA weather radar data composite
- to extend the monitoring area of typhoon and meso-scale cloud system approaching to the Korean Peninsula
Automatic Weather Station

- **464 AWSs in Korea**
- collect data on precipitation, temperature, wind direction and wind speed every minute
  - installed in high mountains and on isolated islands and available to detect TC structure and intensity with rain
  - plays an important role in the preparation of the initial conditions for NWP models

Daily rainfall by TC NARI (16.Sep.2007)
Wind data up to 5 km is collected every 10-minute through the KWPN and then assimilated in the operational regional numerical model after the automatic quality control. It contributes to the prediction accuracy of heavy rain, heavy snow and typhoon track.
COmbined Meteorological Information System

- **Basic Meteorological Application System**
  - Real-time Data Acquisition & Distribution
  - Web-based Data Search & Display

- **Integrated Data Storage Pool**
  - Unified Data set of Whole Meteorological Data in KMA
  - Classified Data Store for Utilization Purpose

- **IT Infrastructure**
  - Common Development & Operation Environment
Web-based Satellite image Analysis System

- Including AODT algorithm ver. 6.3
- This system can access satellite DBMS on a real time basis as user-friendly system via KMA’s intranet and display lots of satellites’ data.
- This system provides various useful tools such as image overlay, image and graphic editing, and simple statistical function.

MTSAT(IR1, BT) + GTS(ship data)

<2007. 8. 3. 11:33UTC / 2007. 8. 3. 10:40~12:30UTC >
Web-based Satellite image Analysis System

- Products for Typhoon Analysis

  - MTSAT-1R’s infrared image (BT + AMV)
  - SST+AMV (MTSAT-1R’s water vapor)
  - Comparative Track with Other Institutes
  - AMSR-E’s NID image using microwave data
  - QSCAT Sea Wind + MTSAT-1R’s IR image
  - AMSR-E’s 89GHz Channel image
Web-based Satellite image Analysis System

- Typhoon position and intensity analysis

  Determination of center location

  Distance and direction from the center of typhoon to a specified geographical name

  menu selection for TC intensity

  typhoon center Selected by operator
Forecaster’s Analysis System

- **Forecaster’s Analysis System (FAS)**
  - The system was designed to query all kinds of weather information interactively on a single display and can easily overlay, combine, and animate different types of data and analysis.

- **Web-based FAS (WebFAS)**
  - WebFAS can allow the users to easily use and access at any places.
Web-based Typhoon Analysis and Prediction System
Web-based Typhoon Analysis and Prediction System

Overlap with Weather Chart

Overlap with Satellite Data
Web-based Typhoon Analysis and Prediction System

Time-series of Analysis Data
- Maximum wind (m/s)
- Radius of 15m/s wind (km)
- Radius of 25m/s wind (km)
- Moving speed (km/h)

Central Pressure (hPa)

Time-series of Model Results
- Moving direction
Web-based Typhoon Analysis and Prediction System

Time-series of Forecast Error

Products for TC Analysis
Web-based Typhoon Analysis and Prediction System

Determination of TC Position

Radius of Maximum Wind
Web-based Typhoon Analysis and Prediction System

Model Consensus Data

Model Consensus Data

WMO Typhoon Committee Training and Research Coordination Group Workshop in Jeju, 2009
The Operational Process to issue TC information
Table of Contents

1 Typhoon Formation and Dissipation Notice
   - Cellular Phone Text Message Transmission

2 Typhoon Forecast Decision
   - Run TAPS2 (training version)
   - Basic Configuration
   - Observed Center Location Input
   - Track Forecast Decision 1 [Automatically input different weights]
   - Track Forecast Decision 2 [Manually input different weights]
   - Track Forecast Decision 3 [Evenly distribute the weights]
   - Track Forecast Decision 4 [Drawing forecast track on the map]
   - Intensity Forecast Decision
   - Wind Radius Setting
   - Confirmation of Forecast Decisions

3 Visualization and Dissemination
   - Run TAPS2 (operation version)
   - (When New Formation) Registration of the Typhoon
   - Basic configuration
   - Forecast Decisions Input
   - Editing and Dissemination
Cellular Phone Text Message Transmission

1. Access www.ppurio.com: User ID/Password

2. Prepare Notice Message
   - Formation Notice (e.g.): “Rammasun generated in the Philippine Sea 3 pm –NTC–”
   - Dissipation Notice (e.g.): “Rammasun evolved into extratropical cyclone 3 pm –NTC–”
     “Rammasun weakened to TD 3pm –NTC–”

3. Select the recipients: Select and check target group in the address book

4. Click ‘Send SMS’ (transmission)
Run TAPS2 (training version)  * TAPS (Typhoon Analysis and Prediction System)

1. Access to COMIS-3: User ID/Password
2. In ‘Typhoon’ menu of COMIS-3, click ‘TAPS2 (training version)’
3. Click ‘Run TAPS2 (training version)’

<http://intro.kma.go.kr>
Typhoon Forecast Decision

- Basic Configuration
  1. In the menu, select ‘Select Typhoon’
  2. Set Forecast Time Range/Intervals
     - 24H, 48H and 72 H is set as default. Select an appropriate gaps for special cases
       (e.g.: When typhoon entering emergency zone or when dissipation stage is included)
  3. Select Forecast Decision Time
     - Make sure to select the data base time, rather than the data announcement time, and then click
       ‘Find’ → A list appears at the bottom. (For instance, in the case of 00UTC data, select 9, not 10)
  4. Select Typhoon
     - Check the typhoon list displayed at the bottom, and click ‘Select Typhoon’
       * New typhoon’s entry could be available when registered in the TAPS2 operation version.
**Observed Center Location Input**

1. Select ‘Set Location’
2. Click ‘Satellite Data’
3. Select AMV (Atmospheric Motion Vector)/QSCAT (Wind Vector)
4. Click the analyzed center location in the map ➞ Latitude and longitude value is displayed automatically
5. Click ‘Back’
6. Input the noted latitude/longitude values and click ‘Apply’ ➞ The current location is displayed on the map.
7. (When modification needed) input new values, and then click ‘Apply’

* Refer to satellite analyses produced 00, 03, 06, 09, 12, 15, 18 UTC
Track Forecast Decision 1 (Automatically input different weights)

1. Select 'Forecast Decision'
2. Click 'Weight Assessment' → Weight application table in the order of forecast performance is displayed.
3. Select/click the application case number → the weight is entered automatically.
   - Select the weights for 24H, 48H, 72H, respectively
4. Check the weights and click 'Apply Weight' → The ensembled track is displayed on the map.
**Typhoon Forecast Decision**

- **Track Forecast Decision 2 (Manually input different weights)**
  1. Select ‘Forecast Decision’
  2. Input each different weight manually
  3. Click ‘Apply Weight’ → The ensembled track is displayed on the map.
Typhoon Forecast Decision

- Track Forecast Decision 3 [Evenly distribute the weights]
  1. Select ‘Forecast Decision’
  2. Click ‘Multi-Ensemble’ → The weights are distributed to be the same for each.
  3. Click ‘Apply Weight’ → The ensembled track is displayed on the map.
Typhoon Forecast Decision

- Track Forecast Decision 4 (Drawing forecast track on the map)
  1. Select ‘Forecast Decision’
  2. Select ‘Typhoon Track’
  3. Select the model that he’d like to refer to → The track forecast of the model is displayed on the map.
  4. Review the forecast trend of the model by changing ‘Analysis Time’
  5. Click ‘Manual Decision’
  6. Select ‘Time Radius’ → A distance circle expected after 24H, 48H and 72H if Typhoon moves at the current speed is displayed.
  7. Click on the expected location in 24H, 48H, 72H respectively → When he clicks the each, the concerned forecast is displayed as a track.
     - If he clicks the chosen location and drag it, the track is modified.
Intensity Forecast Decision

1. Select ‘Forecast Decision’
2. Select ‘Intensity Forecast’
3. Select the model that he’d like to refer to → The intensity forecast of the model is displayed as a graph.
4. Decide/manually input the center pressure value → Center wind speed and Intensity are automatically calculated.
5. Check the calculated wind speed value and make an adjustment (if necessary)
6. Click ‘Apply’ → Decided intensity is displayed on the graph.
7. Click ‘Close’
Wind Radius Setting

1. Select ‘Set Radius’
2. Select AMV (Atmospheric Motion Vector)/QSCAT (Wind Vector) → displayed on the map.
3. Set the observed strong wind (15m/s) radius
   - After clicking ‘15m/s’ tap, click and drag the arrow (red/yellow). Then, the value is automatically filled.
   - Red arrow: radius adjustment, Yellow arrow: exceptional radius adjustment
4. Set the observed storm (25m/s) radius
   - After clicking ‘25m/s’ tap, follow the same direction as that of strong wind radius.
5. Input the strong wind (15m/s) radius at each forecast time (24H, 48H, 72H)
   - 15R (radius), 15R/D (exceptional direction), 15R/Ex (exceptional radius)
Confirmation of Forecast Decisions

1. Expand the table of ‘Forecast values’ to show all items
2. Make additional modification of the forecast values and finally confirm them
3. Take notes of the confirmed forecast values → Deliver it to the assistant forecaster for visualization
   - (Latitude, Longitude, Center Pressure, Center Wind Speed)
   - (15R: strong wind radius, 15R/D: exceptional direction (16 directions), 15R/Ex: exceptional radius)
   - (25R: storm radius, 25R/D: exceptional direction (16 directions), 25R/Ex: exceptional radius)
Run TAPS-2 (operation version)

1. Access to COMIS-3: User ID/Password
2. In ‘Typhoon’ menu of COMIS-3, click ‘TAPS (operation version)’
3. Click ‘Run TAPS-2’
Visualization and Dissemination

- (When New Formation) Registration of the Typhoon

1. Click ‘New Registration’
2. Enter the concerned information to ‘Typhoon Registration’ window and save
   - 3. List of progressing typhoons is displayed in the ‘Select Typhoon’ window.
Basic Configuration
1. Select ‘Select Typhoon’
2. Check the Forecast Time Range/Intervals
   - 24H, 48H and 72H is set as default. Select an appropriate gaps for special cases
     (e.g.: When typhoon entering emergency zone or when dissipation information is included)
3. Select the Forecast Decision Time
   - Make sure to select the data base time, rather than the data announcement time,
     and then click ‘Find’ \(\Rightarrow\) A list appears at the bottom.
     (For instance, in the case of 00UTC data, select 9, not 10)
4. Select Typhoon
   - Check the typhoon list displayed at the bottom, and click ‘Select Typhoon’.
Forecast Decisions Input

1. Receive the forecast decision notes from the assigned forecaster
2. Input the ‘Typhoon Number’, ‘Assistant Forecaster’s Name’ and ‘Forecaster’s Name’
3. Set the announcement time
   - Set the time by minute (e.g.: in the case of 00UTC data, 10:00)
4. Fill the forecast values
   - Input [Latitude, Longitude, Center Pressure, Center Wind Speed]
   - Input [15R: strong wind radius, 15R/D: exceptional direction (16 directions), 15R/Ex: exceptional radius]
   - (70%R) values for 24H, 48H, 72H are fixed from the statistics and automatically adopted.
   - [Intensity level, Size level, Direction, Speed and Location expression] is automatically displayed.
   - When dissipation stage is included, only input Longitude, Latitude and Center Pressure for it

Visualization and Dissemination
5. Input Remarks
- Check the default text (e.g.: “No. 22 typhoon [DOLPHIN] is submitted by Hong Kong and means a dolphin.”)
- Input the optional remarks below depending on the cases
  (Case 1) “Next information will be announced 22 pm.”
  (Case 2) “The typhoon is expected to be weakened to TD within 72 hours, and the next information will be announced 22 pm.”
  (Case 3) “The typhoon is expected to evolve into extratropical cyclone within 72 hours, and the next information will be 22 pm today (16).”
  (Case 4) “The typhoon was weakened to TD 21 pm, and the information on No. 22 typhoon [DOLPHIN] is closed here.”
  (Case 5) “The typhoon evolved into extratropical cyclone 21 pm, and the information on No. 22 typhoon [DOLPHIN] is closed here.”

6. Click ‘Apply’ → 7. Displayed automatically
### Visualization and Dissemination

#### Editing and Dissemination

1. Select the above ‘Edit Track Map’
2. Click each forecast track point and neighboring city → Position information is automatically displayed.
   - When he clicks it again, the information disappears.
3. Click other city points needed to be displayed → names are displayed. (toggle)
4. Drag and arrange the text bars
5. Click ‘Load the Previous Map Domain’ → The domain selected in the previous typhoon information is displayed.
   - Map Area Adjustment: Press Ctrl key + Click and move the map
   - Map Size Adjustment: Press Ctrl key + Roll the mouse wheel
Visualization and Dissemination

6. Arrange the position of Index [Left, Right, Up, Down]
7. Click ‘Preview’ → PDF window appears.
8. Print out and check on the printed material
   - Essential checking point: storm radius (25m/s), position information, typhoon name, remarks, dissipation information, forecaster’s name, announcement time etc.
9. Additional Modification
   - Correct errors or finally confirm the result
Visualization and Dissemination

10. Click ‘Save’
   - Assign the folder to save the result into
11. Click ‘Dissemination’ ➔ send the information to the public by fax and internet
12. Check the result on the web
   - KMA homepage (www.kma.go.kr), KMA English homepage (web.kma.go.kr/eng)
   - COMIS-3(mis.inf.kma.go.kr), NTC homepage (typ.kma.go.kr)
   - METSKY(metsky.kma.go.kr): User ID/Password
13. Print out the information and bind it
Practice on TAPS
Launching TAPS

- Run TAPS-2 (training version)
  1. Access to COMIS-3 at http://intro.kma.go.kr: User ID/Password
  2. In ‘Typhoon’ menu of COMIS-3, click ‘TAPS (training version)’
  3. Click ‘Run TAPS-2’
Example 1: Formation (No. 1)
- 15KST, July 15th, 2008
(When New Formation) Registration of the Typhoon (it’s not available)

1. Click ‘New Registration’
2. Enter the concerned information to ‘Typhoon Registration’ window and save

→ 3. List of progressing typhoons is displayed in the ‘Select Typhoon’ window.
Basic Configuration

1. Select ‘Select Typhoon’
2. Check the Forecast Time Range/Intervals
   - set 24H, 48H and 72 H as default.
   - Make sure to select the data base time, rather than the data announcement time, and then click ‘Find’ → A list appears at the bottom.
4. Select Typhoon – Check the typhoon list displayed at the bottom, and click ‘Select Typhoon’.
   - Click ‘Y’ button in a new window (renew the previous data)
Forecast Decisions Input

1. Receive the forecast decision notes from the assigned forecaster and click ‘forecast information’
2. Input the ‘Typhoon Number’, ‘Assistant Forecaster’s Name’ and ‘Forecaster’s Name’
3. Set the announcement time: 16KST, July 15th, 2008
   - Set the time by minute
4. Fill the forecast values
   - Input [Latitude, Longitude, Center Pressure, Center Wind Speed]
   - Input [15R: strong wind radius, 15R/D: exceptional direction (16 directions), 15R/Ex: exceptional radius]
   * [70%R] values for 24H, 48H, 72H are fixed from the statistics and automatically adopted.
   * [Intensity level, Size level, Direction, Speed and Location expression] is automatically displayed.
5. Input Remarks
- Check the default text (“No. 7 typhoon [KALMAEGI] is submitted by North Korea.”)
- Input the optional remarks as below
  (Case 1) “Next information will be announced 22 pm today(15).”

6. Click ‘Apply’  7. Displayed automatically
**Example 1**

- **Editing and Dissemination**

1. Select the above ‘Edit Track Map’
2. Click each forecast track point and neighboring city → Position information is automatically displayed.
   - When you click it again, the information disappears.
3. Click other city points needed to be displayed → names are displayed. (toggle)
4. Drag and arrange the text bars
5. Click ‘Load the Previous Map Domain’ → The domain selected in the previous typhoon information is displayed.
   - Map Area Adjustment: Press Ctrl key + Click and move the map
   - Map Size Adjustment: Press Ctrl key + Roll the mouse wheel
6. Arrange the position of Index (Left up)
7. Click ‘Preview’ → PDF window appears.)
* (8. Print out and check on the printed material)
  - Essential checking point: storm radius (25m/s), position information, typhoon name, remarks, dissipation information, forecaster’s name, announcement time etc.
* (9. Additional Modification)
  - Correct errors or finally confirm the result
Example 1

10. Click ‘Save’
   - Assign the folder to save the result into
     * (11. Click ‘Dissemination’ \(\rightarrow\) send the information to the public by fax and internet (it’s not available))
     * (13. If you use operation version, you can check the result on the web.)
   - KMA homepage (www.kma.go.kr), KMA English homepage (web.kma.go.kr/eng)
     COMIS-3(mis.inf.kma.go.kr), NTC homepage (typ.kma.go.kr)
     METSKY(metsky.kma.go.kr): User ID/Password
Example 2: Anticipation of Dissipation (No.14)
- 21KST, July 18th, 2008
Example 2

- Basic Configuration
  1. Select ‘Select Typhoon’
  2. Check the Forecast Time Range/Intervals
     - set 24H, 48H and 72 H as default.
  3. Select the Forecast Decision Time: 21KST, July 18th, 2008
     - Make sure to select the data base time, rather than the data announcement time,
       and then click ‘Find’ → A list appears at the bottom.
  4. Select Typhoon – Check the typhoon list displayed at the bottom, and click ‘Select Typhoon’.

![Image of TAPS-2 interface]

Example 2
Example 2

- Observed Center Location Input
  1. Select ‘Set Location’
  2. Click ‘Satellite Data’
  3. Select AMV (Atmospheric Motion Vector)/QSCAT (Wind Vector) or Get the analysis position from COMIS
  4. Click the analyzed center location in the map ➔ Latitude and longitude value is displayed automatically
  5. Click ‘Back’
  6. Input the noted latitude/longitude values and click ‘Apply’ ➔ The current location is displayed on the map.
  7. (When modification needed) input new values, and then click ‘Apply’
Track Forecast Decision 1 (Automatically input different weights)

1. Select ‘Forecast Decision’
2. Click ‘Weight Assessment’ → Weight application table in the order of forecast performance is displayed.
3. Select/click the application case number → the weight is entered automatically.
   - Select the weights for 24H, 48H, 72H, respectively
4. Check the weights and click ‘Apply Weight’ → The ensembled track is displayed on the map.
5. Check ‘Termination’ button at 72H forecast and Fill the forecast values
Example 2

- Track Forecast Decision 2 [Manually input different weights]
  1. Select ‘Forecast Decision’
  2. Input each different weights manually
  3. Click ‘Apply Weight’ → The ensembled track is displayed on the map.
  4. Check ‘Termination’ button at 72H forecast and Fill the forecast values
Example 2

- Track Forecast Decision 3 [Evenly distribute the weights]
  1. Select ‘Forecast Decision’
  2. Click ‘Multi-Ensemble’ → The weights are distributed to be the same for each.
  3. Click ‘Apply Weight’ → The ensembled track is displayed on the map.
  4. Check ‘Termination’ button at 72H forecast and Fill the forecast values
Example 2

- Track Forecast Decision 4 (Drawing forecast track on the map)
  1. Select ‘Forecast Decision’
  2. Select ‘Typhoon Track’
  3. Select the model that you’d like to refer to  →  The track forecast of the model is displayed on the map.
  4. Review the forecast trend of the model by changing ‘Analysis Time’
  5. Click ‘Manual Decision’
  6. Select ‘Time Radius’  →  A distance circle expected after 24H, 48H and 72H if Typhoon moves at the current speed is displayed.
  7. Click on the expected location in 24H, 48H, 72H respectively  →  When you click the each, the concerned forecast is displayed as a track.
    - If you click the chosen location and drag it, the track is modified.
  8. Check ‘Termination’ button at 72H forecast and Fill the forecast values
Intensity Forecast Decision

1. Select ‘Forecast Decision’
2. Select ‘Intensity Forecast’
3. Select the model that you’d like to refer to ➔ The intensity forecast of the model is displayed as a graph.
4. Decide/manually input the center pressure value ➔ Center wind speed and Intensity are automatically calculated.
5. Check the calculated wind speed value and make an adjustment (if necessary)
6. Click ‘Apply’ ➔ Decided intensity is displayed on the graph.
7. Click ‘Close’
Wind Radius Setting

1. Select ‘Set Radius’
2. Set the observed strong wind (15m/s) radius
   - After clicking ‘15m/s’ tap, click and drag the arrow (red/yellow). Then, the value is automatically filled.
   - Red arrow: radius adjustment, Yellow arrow: exceptional radius adjustment
3. Set the observed storm (25m/s) radius
   - After clicking ‘25m/s’ tap, follow the same direction as that of strong wind radius.
4. Input the strong wind (15m/s) radius at each forecast time (24H, 48H, 72H)
   - 15R (radius), 15R/D (exceptional direction), 15R/Ex (exceptional radius)
Editing and Dissemination

1. Select the above ‘Edit Track Map’
2. Click each forecast track point and neighboring city ➔ Position information is automatically displayed.
   - When you click it again, the information disappears.
3. Click other city points needed to be displayed ➔ names are displayed. (toggle)
4. Drag and arrange the text bars
5. Click ‘Load the Previous Map Domain’ ➔ The domain selected in the previous typhoon information is displayed.
   - Map Area Adjustment: Press Ctrl key + Click and move the map
   - Map Size Adjustment: Press Ctrl key + Roll the mouse wheel
6. Arrange the position of Index [Left up]
7. Click ‘Preview’ → PDF window appears.
   * (8. Print out and check on the printed material)
   - Essential checking point: storm radius (25m/s), position information, typhoon name, remarks, dissipation information, forecaster’s name, announcement time etc.
   * (9. Additional Modification)
   - Correct errors or finally confirm the result
Example 2

10. Click ‘Save’
   - Assign the folder to save the result into
   * (11. Click ‘Dissemination’ \(\rightarrow\) send the information to the public by fax and internet (it’s not available))
   * If you use operation version, you can check the result on the web.
   - KMA homepage (www.kma.go.kr), KMA English homepage (web.kma.go.kr/eng)
   - COMIS-3 (mis.inf.kma.go.kr), NTC homepage (typ.kma.go.kr)
   - METSKY (metsky.kma.go.kr): User ID/Password
Example 3: Termination (No. 27)
- 18KST, July 20th, 2008
Example 3

- Basic Configuration
  1. Select ‘Select Typhoon’
  2. Check the Forecast Time Range/Intervals
     - set 24H, 48H and 72 H as default.
     - Make sure to select the data base time, rather than the data announcement time,
       and then click ‘Find’ → A list appears at the bottom.
  4. Select Typhoon - Check the typhoon list displayed at the bottom, and click ‘Select Typhoon’.

![Image of software interface with numbered steps 1 to 4]
Forecast Decisions Input

1. Receive the forecast decision notes from the assigned forecaster and click ‘forecast information’
2. Input the ‘Typhoon Number’, ‘Assistant Forecaster’s Name’ and ‘Forecaster’s Name’
3. Set the announcement time: 18:30 KST, July 20th, 2008
   - Set the time by minute
4. Check ‘Termination’ button at 00H forecast (now) and Fill the analysis values
   - When dissipation stage is included, only input Longitude, Latitude and Center Pressure for it
5. Input Remarks
- Check the default text ("No. 7 typhoon [KALMAEGI] is submitted by North Korea.")
- Input the optional remarks as below
  (Case 5) The typhoon evolved into extratropical cyclone 18 pm, and the information on No. 7 typhoon [KALMAEGI] is closed here

6. Click ‘Apply’ → 7. Displayed automatically
1. Select the above ‘Edit Track Map’
2. Click each forecast track point and neighboring city ➔ Position information is automatically displayed.
   - When you click it again, the information disappears.
3. Click other city points needed to be displayed ➔ names are displayed. (toggle)
4. Drag and arrange the text bars
5. Click ‘Load the Previous Map Domain’ ➔ The domain selected in the previous typhoon information is displayed.
   - Map Area Adjustment: Press Ctrl key + Click and move the map
   - Map Size Adjustment: Press Ctrl key + Roll the mouse wheel
6. Arrange the position of Index [Left up]
7. Click ‘Preview’ → PDF window appears.
   * Print out and check on the printed material
     - Essential checking point: storm radius (25m/s), position information, typhoon name, remarks, dissipation information, forecaster’s name, announcement time etc.
   * Additional Modification
     - Correct errors or finally confirm the result
10. Click ‘Save’
   - Assign the folder to save the result into
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   - KMA homepage (www.kma.go.kr), KMA English homepage (web.kma.go.kr/eng)
   - COMIS-3 (mis.inf.kma.go.kr), NTC homepage (typ.kma.go.kr)
   - METSKY (metsky.kma.go.kr): User ID/Password
Thank You