

Severe Weather Forecasting Demonstration Project (SWFDP)
Regional Subproject for Southeast Asia (SWFDP-Sea)
Regional Training Workshop on
Severe Weather Forecasting (GDPFS) and Warning Services (PWS)
(Quezon City, Metro Manila, Philippines, 2-13 June 2014)

Note for Exercise Sessions on Severe Weather Forecasting (GDPFS)

1. Introduction

The SWFDP-Southeast Asia - Training Workshop on Severe Weather Forecasting and Warning Services (Quezon City, Metro Manila, Philippines, 2-13 June 2014) has been designed to serve the dual purpose: (a) **train the forecasters** from NMHSs of developing countries and LDCs on making best use of the latest available global and regional NWP/EPS products in improving severe weather forecasts and warnings and (b) **train the trainers** - the trained forecasters after going back to their home countries are expected to impart training to their colleagues and young forecasters on what they have learnt during the workshop.

The training workshop consists of both theory (lectures) and practical (exercises). *The Severe Weather Forecast Exercises* will start during week-1 of the workshop (2-6 June, 2014) and it will continue for the next first three days of week-2 of the workshop (9-13 June, 2014) also. During these exercise sessions, participants are expected to practice what they have learnt during the lectures. The exercise sessions are intended to serve as “live” laboratory in testing some of the tools and products the participants have been exposed to. It will enhance participants’ familiarization with the products. They will practice on how to make best use of the real-time observations, radar products, satellite imagery, global and regional NWP and EPS products in nowcasting, very short-range, short-range and medium-range forecasting of severe weather (country forecasts/ site-specific forecasts). They will have an opportunity to work with the Daily Guidance Product (formally to be issued by RFSC Ha Noi for the NMHSs of participating countries of SWFDP-Southeast) as well. The draft templates of the RFSC Daily Guidance Product (for both short-range and medium-range) are attached to this note as **Annexure**.

The exercise sessions are mainly intended to cover for the following practical work:

- Use of real-time observations, radar and satellite products in nowcasting
- Use of radar and satellite, global NWP/EPS and LAM products in making short-range and medium-range severe weather forecasts
- Develop RFSC Daily Guidance Product towards the NMHSs for severe weather forecasting **(special exercise)**

2. The Templates of the RFSC Daily Guidance Product

The templates of the RFSC Daily Guidance Product consist of the following parts:

- **Part A:** Text; discussion by the forecaster, depiction of the expected evolution of the weather for next hours or days and comments about the more representative products that are used

with reference to figures included in the part B or to maps/charts clearly identified (model, parameter, level, forecast range).

- **Part B:** Maps; Figures; Charts or graphics coming from NWP (global or LAM) and EPS products.
- **Part C:** The assessment of the degree of confidence of the forecast by the forecaster.
- **Part D:** Risk & Probability Tables (for heavy precipitation and strong winds)- Risk Tables for Day1 and Day 2 (short-range), summarizing the risk of severe weather (for heavy precipitation and strong winds), and Probability Tables for Day 3, Day 4 and Day 5 (medium-range), summarizing the probabilities of precipitation and wind higher than a given threshold

In the evening of Tuesday (3 June, 2014), there will be discussion on the templates of Daily Guidance Product (see Annexure also). The participants are expected to give suggestions to improve the templates which will be used during the exercise sessions and will also be considered for implementation by RFSC Ha Noi in developing Daily Guidance Product towards the NMHSs during the Demonstration Phase of SWFDP-Southeast Asia which is expected to start later this year 2014.

3. Arrangement during the Exercise Sessions

During the exercise sessions, the participants shall be divided into five (5) Groups and each Group will consist of 5 forecasters:

- One Group will include forecasters from Cambodia, Lao PDR, Thailand, and Viet Nam and one or two forecasters from Philippines (PAGASA). This Group-1 will be specifically engaged in developing the RFSC Daily Guidance Product with consensus in addition to making country forecasts and/or site specific forecasts.
- The remaining four Groups will consist of the forecasters from Philippines (PAGASA) and they will be engaged mainly in preparation of country forecasts/location-specific forecasts by making use of the available tools and products.

Each Group will be provided with flip chart, color pencils, blank maps (to highlight the severe weather locations) and Risk/Probability tables (to fill out) that may be useful in preparing the country forecasts and site specific forecasts. The Group-1 will also be provided with the template of RFSC Daily Guidance Product.

The experts/lecturers will circulate among the participants assisting them in any way to access to the products and to help them in interpretation of the available products.

Each Group is expected to explain in their output forecast as to what product(s) and why (?) they have been used in making the country forecasts/location-specific forecasts. The Group-1 is also expected to explain the similar reasons while developing the RFSC Daily Guidance Product with consensus.

4. Why Exercise on developing RFSC Daily Guidance Product?

As mentioned above, Group-1 (consisting of forecasters from all five participating countries) will be involved specifically in developing the Daily Guidance Product in addition to developing country forecasts/site specific forecasts. During this special exercise, the forecasters are expected to learn from each other through sharing their country climatology of severe weather events, local knowledge, national forecast wisdom and experience. The purpose of this exercise is to enhance the capacity of forecasters in understanding the issues associated with development of regional forecast and to improve regional forecast skill through collaborative exercise that may be useful in developing Daily Guidance Product towards the NMHSs for severe weather forecasting. The forecasters will learn how to develop Daily Guidance Product with consensus and how this Daily Guidance Product can be made useful for the NMHSs. In addition, as the forecaster from RFSC Ha Noi will also be part of the Group-1, the exercise also aims to better his role as a regional forecaster. He is also expected to play a lead role in the Group-1 during similar exercise sessions on developing Daily Guidance Product during first three days of week-2 of the workshop. He is also expected to share his knowledge and experience gained at the workshop with his fellow forecasters at RFSC Ha Noi to help in further improving the RFSC Daily Guidance Product.

5. Exercise Sessions and Expectations

On Wednesday (4 June, 2014):

In the morning of Wednesday, there will be “*Severe Weather Forecast Exercise 1*” on Radar Nowcasting and very short range forecasting after the lecture on “Nowcasting using Radar products and very short range forecasts of severe weather” by Mr. Wong (HKO). The participants are expected to learn on how to make use of the radar products in combining with NWP models in nowcasting of severe weather. In this exercise, the participants could be asked to sketch the movement of the radar echoes 1-3 hours on a local blank map which could be verified a few hours later on.

In the evening of Wednesday, there will be another “*Severe Weather Forecast Exercise 2*” on use of NWP and EPS products in severe weather forecasting just after the lectures on NWP/EPS products and Probability charts. Each Group will prepare medium-range forecast (country forecasts/location specific forecasts). They can use blank maps to highlight the areas of severe weather and fill out the Probability Tables for Days 3 to 5. The Group-1 will also develop the RFSC Regional Guidance Product for medium-range (i.e. Day 3, Day 4 and Day 5) as per its template.

On Thursday (5 June, 2014):

In the morning of Thursday, there will be “*Severe Weather Forecast Exercise 3*” on use of NWP and EPS products in severe weather forecasting. Each Group will prepare both short-range and medium-range forecast (country forecasts/location specific forecasts). They can use blank maps to highlight the areas of severe weather and fill out the Risk Tables for Day 1 & 2 and Probability Tables for Days

3 to 5. The Group-1 will also develop the RFSC Regional Guidance Product for both short-range (i.e. Day 1 & 2) and medium-range (i.e. Day 3, Day 4 and Day 5) as per their template.

In the later morning of Thursday (5 June, 2014), the participants will explain their forecasts using some of the products that they have been exposed to, for example; upper air charts, vorticity, meteograms, stability indices or other forecast products. Each Group will have an opportunity to explain their forecasts using selected products and referring to their map sketches or Risk/Probability Tables during their presentations in the session "Reports by the participants". Each of the Group will be asked to verify the consensus and their own forecasts from that day and the previous day. They will be asked to explain the forecasts, their process and how well they did (or not).

On Friday (6 June, 2014):

In the morning of Friday, there will be "*Severe Weather Forecast Exercise 4*" on Satellite Nowcasting and very short range forecasting. The participants are expected to learn on how to make use of the satellite imagery/products in combining with NWP models in monitoring and nowcasting of severe weather. The purpose of this exercise is to increase the participants' familiarization with the products that they have been exposed to. Each Group will also prepare short-range forecast (country forecasts/location specific forecasts). They can use blank maps to highlight the areas of severe weather and fill out the Risk Tables for Day 1 & 2. The Group-1 will also develop the RFSC Regional Guidance Product for short-range (i.e. Day 1 & 2) as per its template.

In the later morning of Friday (6 June, 2014), the participants will explain their forecasts using some of the products that they have been exposed to, for example; upper air charts, vorticity, meteograms, stability indices or other forecast products. Each Group will again have an opportunity to explain their forecasts using selected products and referring to their map sketches or Risk/Probability Tables during their presentations in the session "Reports by the participants". Each Group will be asked to verify the consensus and their own forecasts from that day and the previous days. They will be asked to explain the forecasts, their process and how well they did (or not).

At the end of the day on Friday, following the lecture on "Verification" by Mr. Rick Jones, there will be a "*Severe Weather Forecast Exercise 5*" on verification of forecasts. The participants will verify the Friday day 1 forecast and the day 2 forecast from the day before (and any other verification they can make). They are expected to present their results as well.

Week-2: On Monday Tuesday & Wednesday (9-11 June, 2014):

During first three days of week-2 of the workshop (i.e. on Monday, Tuesday & Wednesday), the participants will continue "*Severe Weather Forecast Exercises 6, 7 and 8*" respectively, on use of the radar products, satellite imagery, NWP and EPS products in severe weather forecasting. Each Group will prepare both short-range and medium-range forecast (country forecasts/site specific forecasts) as usual. The Group-1 will also continue to develop RFSC Regional Guidance Product for both short-range (i.e. Day 1 & 2) and medium-range (i.e. Day 3, Day 4 and Day 5) as per their template. The forecaster from RFSC Ha Noi is expected to play lead role during these exercise sessions.