

ECONOMIC AND SOCIAL COMMISSION
FOR ASIA AND THE PACIFIC
AND
WORLD METEOROLOGICAL ORGANIZATION

FOR PARTICIPANTS ONLY

WRD/TC.44/4.7

31 January 2012

ENGLISH ONLY

Typhoon Committee
Forty-fourth Session
6-11 February 2012
Hangzhou, China

Progress Report for North Western Pacific Tropical Cyclone Ensemble
Forecast Project (NWP-TCEFP)

(Item 4 of Technical Conference)

(Submitted by World Meteorological Organization)

ACTION REQUIRED:

This Committee is invited to:

Review the progress and result of
questionnaire on NWP-TCEFP project

APPENDIX:

Progress Report for North Western Pacific Tropical Cyclone
Ensemble Forecast Project

ESCAP/WMO Typhoon Committee - 44th session, Hangzhou, China

Progress Report
for
North Western Pacific
Tropical Cyclone Ensemble Forecast Project

31 January 2012

World Weather Research Programme
Tropical Cyclone Programme

World Meteorological Organization

1. Introduction

At the 42nd session of the ESCAP/WMO Typhoon Committee (Singapore, 25-29 January 2010), it was suggested that the Tropical Cyclone Programme (TCP) and the World Weather Research Programme (WWRP) of WMO jointly implemented the North Western Pacific Tropical Cyclones Ensemble Forecast Project (NWP-TCEFP) in the Typhoon Committee region. In October 2010, NWP-TCEFP was officially launched in the Committee region as a collaborative effort between WMO and the Committee.

This project aims to explore the utility of ensemble forecast products through THORPEX interactive Grand Global Ensemble (TIGGE) and thus promote application of the products the operational forecasting of tropical cyclones. It is closely linked with the Typhoon Landfall Forecast Demonstration Project which is also developed as a TCP/WWRP joint project and is implemented with Shanghai Typhoon Institute of the China Meteorological Administration (CMA) as the lead agency. In view of the significance of the ensemble forecast in improving forecast performance in our region, Working Group on Meteorology (WGM) of the Committee decided to include NWP-TCEFP in its 2011 Annual Operating Plan (AOP) to implement jointly with WMO.

2. Project implementation

The TCEFP Website was set up and is maintained by Meteorological Research Institute (MRI) of the Japan Meteorological Agency (JMA). TC ensemble forecasts of major NWP centers have been distributed to the Typhoon Committee Members on a near real-time basis. The website is password protected and has been accessible at <http://tparc.mri-jma.go.jp/cyclone/>. Usability of the website with ensemble products contained is examined through the feedback from the forecasters and researchers of the Committee Members. The website and products are improved/enhanced as needed based on the feedback. To this end, a survey is carried out on a regular basis by questionnaire which is programmed by WGM as one of the AOP actions. The first survey was conducted in December 2011 (see **Annex I**) and its results are presented in **Annex II**.

3. Progress to date

2009/12	Initial development of the project plan, including the Web development
2010/04	The first release of the Web site for the Project
2010/07	Minor update of the Web site <ul style="list-style-type: none">- “real time” page was implemented.- “Readme” page was updated.- Several issues remained, such as “introduction” page is not included, spotty map for strike probability
2010/10	Major update of the Web site <ul style="list-style-type: none">- “all center” ensemble track page was implemented- EPSgram-like strike probability plot for some cities was implemented
2010/10	WMO sent the letter to PRs of the Typhoon Committee Members on the Project and Web page
2010/11	Presentation of the Web site at the IWTC-6 in La Reunion
2011/08	Presentation of the Web site at the THORPEX GIFS/TIGGE WG meeting in Geneva
2011/12	TCS sent the questionnaire to the TC Members on the Web site
2012/01	TCS received the replies of the questionnaire from 13 TC Members

4. Plan of action for 2012 and beyond

The NWP-TCEFP will be updated based on the comments in the questionnaire from TC Members as early as possible. One of the major improvements will include surface wind speed and precipitation, considering regional data rather than global in consideration of the areas of WMO Severe Forecast Demonstration Project. At the THORPEX GIFS/TIGGE WG meeting (31 August – 2 September 2011), WG members are encouraged to contribute additional products to the Web site. One of the new products is related with tropical cyclone formation over the region.

Questionnaire

About

WMO North-western Pacific Tropical Cyclone Ensemble Forecast Project

Date : _____

Country : _____

1. Project homepage (<http://tparc.mri-jma.go.jp/cyclone>)

1.1 Users

What are the main users in your National Meteorological Hydrological Service (NMHS)?

- () Forecast section
 () Research section
 () Others ()

1.2 Frequency of visit to the Project homepage

How often does your NMHS visit this homepage?

- () always when a tropical cyclone exists
 () always when a tropical cyclone is approaching my country
 () sometimes when a tropical cyclone exists
 () sometimes when a tropical cyclone is approaching my country
 () only occasionally
 () have not visited the Homepage

1.3 Pages of most frequent visit (choose up to 3)

Ensemble

- () all centers – tracks
 () all centers – strike probability plots
 () all centers – strike probability plots at certain times
 () all centers – time series of strike probability at certain city
 () individual centers – tracks
 () individual centers – strike probability plots
 () individual centers – strike probability plots at certain times
 () individual centers – time series of strike probability at certain city

Deterministic

- () all centers – tracks

None

()

1.4 Usability of the homepage

- () Very useful
- () Useful
- () Partly useful
- () Not so useful
- () Not useful at all

1.5 Comments on the homepage

Please comment, if any, on the homepage such as possible improvements, new products and future expectations.

--

2. Ensemble forecast in general**2.1 Do you use ensemble forecast products from any other sources for TC forecasting?**

- ☐ Yes
☐ No
☐ No, but plan to use in the future.

2.2 If yes, please specify the sources.**2.3 Do you think ensemble forecast improves the TC forecast performance?**

- ☐ Yes
☐ Uncertain
☐ No
☐ No, but probably yes in the future.

2.4 Do you find any difficulties in using ensemble forecast?

- ☐ Yes
☐ No

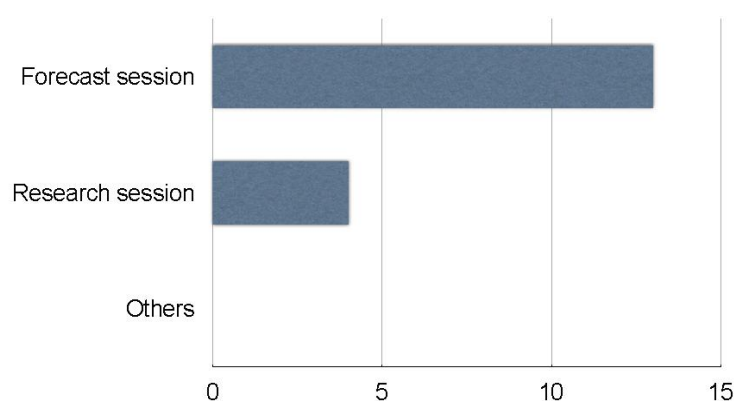
2.5 If yes, please choose the reason.

- ☐ Training is necessary to use ensemble forecast
☐ Facilities are not enough (PCs, etc.)
☐ Internet communication is not good
☐ Others ()

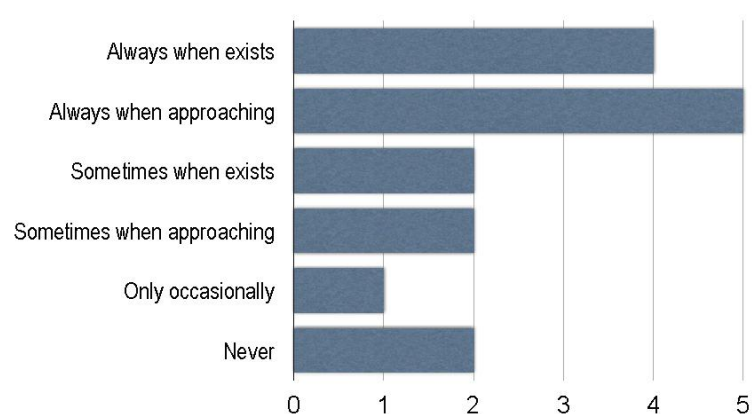
Results of the questionnaire on NWP-TCEFP sent in December 2011

I Summary of the responses

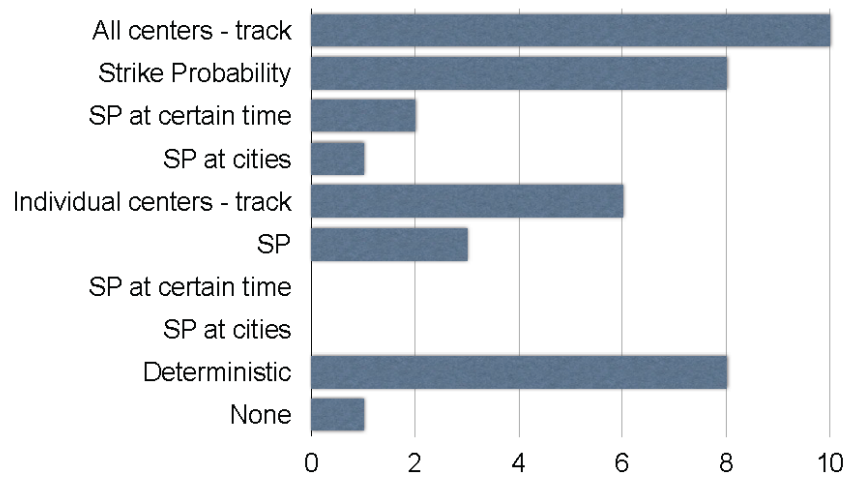
1.1 Main Users



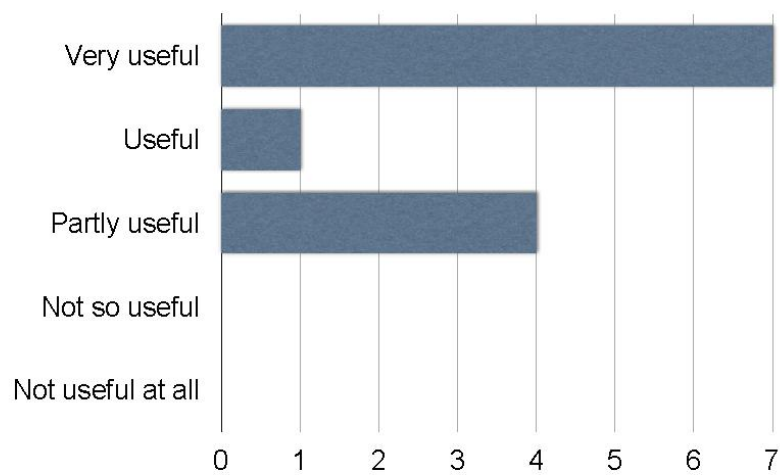
1.2 Frequency of Visit



1.3 Pages of visit



1.4 Usability



II Answer to the individual comments

As of 13 January 2012, responses were received from the 13 Members - Cambodia, China, Hong Kong (China), JMA, KMA, Macao (China), Malaysia, Laos, Philippines, Singapore, Thailand, USA and Viet Nam.

- (a) *"To provide the data by txt format for users' convenience to better use the ensemble products"*
- ➔ The txt format data is available in the web. Please click "Parsed Text" in the left-lower part of the page.
- (b) *"Please provide the Warning Area for each Cyclone to be hit and affected"*
- ➔ For this purpose, we present an additional guidance for the forecasters – strike probability. We hope it will be of some help to your needs.
- (c) *"We suggest to the project please develop data related to the source of NCEP, STI, KMA and MSC."*
- ➔ Our understanding of this comment is that plots are sometimes missing from some centers. We are trying to get all centers' data, however, currently the data in the CXML format is experimental mainly for research use.
- (d) *"The update period of some individual models always delay. If possible, the improvement of the update frequency will make the page more efficient."*
- ➔ As above, the data in the CXML format is actually not for operational use but for research. So the data delivery is not in real time. Nevertheless, we will try to arrange with all centers for earlier provision of data.
- (e) *"Increasing the description of elements will make it more user-friendly."*
- ➔ "At this moment, we provide "Help" button on the page by which users will know how effectively use the page.
- (f) *"Due to different PC platforms, if possible, please consider to make the page universal to all popular web browsers."*
- ➔ In these days it is getting more difficult to make the page universal, but if you have any difficulties to access the page, it is appreciated if you would provide the information on the "universal form" more in detail.

- (g) *“As TD or higher intensity also a threat to Malaysia, I would like to suggest for the strike probability selection of place/town, perhaps to include some major towns in Malaysia like Kudat, Sandakan, Kota Bharu and Kuantan”*
- ➔ Yes, we will increase the number of target cities to include these cities in the future updates.
- (h) *“It would be better if the tracks could be updated faster, preferably within 9 hours after the respective model run.”*
- ➔ Please see (d).
- (i) *“More legends could be put on the page, for example, explaining the meaning of different colors on the track, for easier reference by users.*
- ➔ As in (e), we believe “Help” button will meet your requirement.
- (j) *“Many data for the model prediction and centers’ forecast are omitted. Firstly the data aggregation in realtime is needed to enhance the availability of this homepage.”*
- ➔ Please understand that the provision of CXML from operational centers is for research purpose, thus the CXML data is normally available 7 – 12 hours after the initial time. Some centers do not always provide the ensemble data in CXML format. We never omit the forecast CXML data and will ask all the centers to provide the ensemble data surly in CXML format.
- (k) *“By weather forecasters discussion, for further improvement, we would like to have some specific information such as: 5 days forecast, an area of 50 kts winds or more, storm warning area and 70 percent probability cycle (circle?) of center position forecast.”*
- ➔ (5 day forecast) At this moment the forecast range is up to 4 days. We may extend it to 5 days or longer after careful examination of its usefulness as the range is easily changeable by a parameter.
 - ➔ (area of 50 kts winds or more) To display the intensity information of ensemble forecasts is a major challenge at the next update including for strong wind and heavy precipitation.

- ➔ (storm warning area) At this stage, we hope that you will refer to the strike probability for estimation of the potential warning area.
 - ➔ (70 percent probability circle of center position forecast) Although we do not have a plan of showing probability circle but present the strike probability maps in 4 days and individual times.
- (l) *“Ensemble data is routinely acquired for direct use in the ATCF. Ensemble data are overlayed or used in the ATCF with other data for forecast production. As such, the Project homepage is considered alternative data site and not used as the primary source for ensemble data.”*
- ➔ We will be happy if the homepage is used as an alternative data site for ATCF.