



International Civil Aviation Organization

**Seventh Meeting of CNS/MET Sub-Group of APANPIRG and  
Tenth Meeting of CNS/ATM IC Sub-Group of APANPIRG**

Bangkok, Thailand, 15 – 21 July 2003

**Agenda Item 10: Implementation of ICAO Warning Systems –  
Tropical cyclone advisories and warnings**

**RECENT DEVELOPMENT OF TCAC TOKYO**

(Presented by Japan)

**SUMMARY**

This paper provides information on recent development of TCAC Tokyo.

**1. INTRODUCTION**

1.1 Ten years have passed since Tropical Cyclone Advisory Center (TCAC) Tokyo of the Japan Meteorological Agency (JMA) started its operations in 1993. Throughout this decade TCAC Tokyo has been providing meteorological watch offices, *inter alia*, with information on analysis and prognosis of tropical cyclones (TC) in the western North Pacific and the South China Sea.

**2. IMPROVEMENT OF TROPICAL CYCLONE 24-HOUR FORECASTS**

2.1 Operational track forecasts for 26 TCs which attained Tropical Storm intensity or higher in 2002 were verified against the best track data prepared by JMA. The annual mean error of 24-hour forecasts of center positions was 138km, which was the smallest since TCAC Tokyo started its operations (See Fig.1). This is mainly explained by the improvement of initial fields of numerical weather prediction models of JMA.

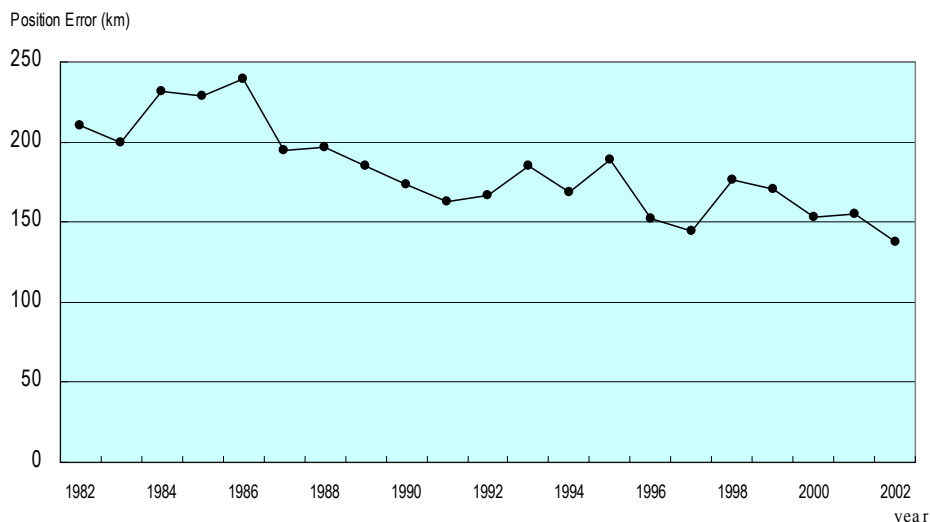


Fig. 1 Annual mean of 24- hour forecast position errors.

### 3. BACKUP OPERATIONS OF GMS-5 WITH GOES-9

3.1 In order to avoid interruptions caused by malfunctions Geostationary Meteorological Satellite 5 (GMS-5) would encounter in picturing the earth, the National Oceanic and Atmospheric Administration (NOAA) of the United States and JMA jointly established a backup procedure of GMS-5 with Geostationary Operational Environmental Satellite 9 (GOES-9) for continuous observations over the western Pacific from the space. After the technical and administrative procedures between the two countries, the backup operations started successfully on 22 May 2003. The backup operations will continue until the start of the operations of Multi-functional Transport Satellite 1R (MTSAT-1R).

### 4. TC ADVISORIES AND WARNINGS FOR AVIATION

4.1 A new standard format for TCA messages, as well as the new template for the content and order of elements in SIGMET messages, was recommended in Amendment 72 to Annex 3, which became applicable on 1 November 2001.

4.2 On 1 January 2003, TCAC Tokyo changed the format of TCA messages to follow the new standard. There are a few points not exactly in accordance with the example of a TCA given in Annex 3:

- a) The content of the lines of "FCST PSN + 18 HR" and "FCST MAX WIND + 18HR" is "NIL" (See Fig. 2), because JMA does not make 18-hour forecasts. At present JMA does not have a plan to start the 18-hour forecasts of TC position and intensity.
- b) "TD" (Tropical Depression) is used in the line of "TC" when the forecast maximum wind of a TD for next 12 or 24 hours is 34kt or more (See Fig. 2 right), because such a TD has not yet given a name.
- c) The content of the line of "TC" consists of the category, 4 digit number, name and 4 digit number in brackets of the TC, eg "TS 0302 KUJIRA (0302)" (See Fig.2 left). This expression is employed as the common format with the line of "NAME" of a TCA message issued by JMA as Regional Specialized Meteorological Center (RSMC) Tokyo - Typhoon Center. The format of RSMC TCA (See Fig.3) is defined in the Meteorological Component of the Typhoon Operational Manual (WMO/TD-No.196).

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FKPQ30 RJTD 121200
TC ADVISORY
DTG:      20030412/1200Z
TCAC:     TOKYO
TC:       TS 0302 KUJIRA (0302)
NR:       11
PSN:      N1005 E15220
MOV:      W 06KT
C:        990HPA
MAX WIND: 45KT
FCST PSN +12HR: 130000 N1020 E15050
FCST MAX WIND +12HR: 50KT
FCST PSN +18HR:  NIL
FCST MAX WIND +18HR: NIL
FCST PSN +24HR: 131200 N1040 E14905
FCST MAX WIND +24HR: 55KT
NXT MSG:   20030412/1800Z
=
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FKPQ30 RJTD 100600
TC ADVISORY
DTG:      20030410/0600Z
TCAC:     TOKYO
TC:       TD
NR:       04
PSN:      N0740 E15940
MOV:      NNW 10KT
C:        1000HPA
MAX WIND: 30KT
FCST PSN +12HR: 101800 N0830 E15850
FCST MAX WIND +12HR: 35KT
FCST PSN +18HR:  NIL
FCST MAX WIND +18HR: NIL
FCST PSN +24HR: 110600 N0910 E15750
FCST MAX WIND +24HR: 40KT
NXT MSG:   20030410/1200Z
=
```

Fig. 2 Samples of TCA messages.

WTPQ20 RJTD 250000  
RSMC TROPICAL CYCLONE ADVISORY  
NAME TY 0122 PODUL (0122)  
ANALYSIS  
PSTN 250000UTC 18.5N 155.1E GOOD  
MOVE WNW 09KT  
PRES 930HPA  
MXWD 095KT  
50KT 150NM  
30KT 300NM  
FORECAST  
24HF 260000UTC 21.0N 153.7E 100NM 70%  
MOVE NNW 07KT  
PRES 930HPA  
MXWD 095KT  
48HF 270000UTC 26.0N 156.5E 180NM 70%  
MOVE NNE 14KT  
PRES 935HPA  
MXWD 090KT  
72HF 280000UTC 33.0N 162.0E 250NM 70%  
MOVE NNE 20KT =

## 5. ACTION PROPOSED

- 5.1 The Meeting is invited to note the information provided in this paper.

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Fig. 3 A Sample of RSMC TCA messages.