

## SWFDP REGIONAL SUBPROJECT IN RA I

### QUARTERLY PROGRESS REPORT N° 3 for the period 1 June 2007 – 31 August 2007

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#### 1 – Introduction

- 1.1 – This report summarizes the feedback from the participating NMHSs in the SWFDP Regional Subproject in RA I (South-eastern Africa) during the third quarter of the demonstration phase (1 June 2007 to the 31 August 2007).
- 1.2 – The sources of information used to prepare this report are detailed in the “Introduction” section of the first Quarterly Progress Report (August 2007).

#### 2 – Summary of the Severe Events reported from the NMHSs

2.1 – During this third quarter of the demonstration period no severe weather event fitting the SWFDP criteria occurred over the relevant geographical area. During this region’s winter season the weather is rather dry with significant events consisting of cold spells and morning ground frost reported in Botswana and Zimbabwe. A few heavy precipitation events were recorded at the end of July and beginning of August in Madagascar. Nevertheless, a short-lived winter wet period gave precipitation at the beginning of June in Zimbabwe and a few rain showers and thunderstorms occurred during July and August in Tanzania. A rather important rainfall occurred at mid-July in Mozambique but just one strong wind event was recorded in Maputo at the very beginning of June.

2.2 – No tropical storm or tropical cyclone was recorded by NMHS La Réunion during this quarter over the relevant geographical area.

2.3 – With no heavy rainfall events reported Table 1-a remains void, while Table 1-b only contains the one strong wind event over Mozambique.

Heavy Precipitation								
Botswana		Madagascar		Mozambique		Tanzania	Zimbabwe	TC
from	to	from	to	from	to	from	to	
		02/06/07						
		28/07/07						
		06/08/07						
none		10/08/07		none		none		none

*Table 1-a: Recorded heavy precipitation according to the NMHSs reports.*

Strong Wind						
Botswana		Madagascar		Mozambique		Tanzania
from	to	from	to	from	to	TC
none				01/06/07	none	none

*Table 1-b: Recorded strong winds according to the NMHSs reports*

### **3 –Evaluating the performance of warnings**

3.1 – The common way to evaluate the performance of the warnings by means of the probability of detection (POD) and false alarm ratio (FAR) indices has been commented in the first quarter’s progress report. Nevertheless it does not make sense to compute statistics when the events are scarce, which is the case for this third quarter period.

### **4 – The performance of warnings issued from the NMHSs**

#### **4.1 – NMHS Botswana**

No severe weather event (heavy precipitation or strong wind) reported.

#### **4.2 – NMHS Madagascar**

Madagascar reported 4 severe weather events corresponding to heavy precipitation (rainfall greater than 50 mm/24 h) associated with synoptic scale weather systems. Nevertheless none of them resulted in damage and no warning was issued from the NMHS.

#### **4.3 – NMHS Mozambique**

Mozambique reported only 1 severe strong wind event which uprooted trees in the area of Maputo on 1<sup>st</sup> June 2007.

#### **4.4 – NMHS Tanzania**

No severe weather event (heavy precipitation or strong wind) reported.

#### **4.5 – NMHS Zimbabwe**

No severe weather event (heavy precipitation or strong wind) reported.

### **5 – Summary of RSMC Pretoria Daily Guidance for Severe Weather Events**

5.1 – Owing to the dry condition that were experienced during this 3<sup>rd</sup> quarter of the SWFDP experimentation , no forecasts of heavy rain were issued in the forecasting guidance during this period. Accordingly, Tables 2-a, 2-b, 3-a, which summarize RSMC forecasts, remain void.

Number of days when medium or high risk of heavy precipitation were notified in the RSMC regional short range guidance				
Country	Day 1 Risk		Day 2 Risk	
	Med.	High	Med.	High
Botswana	0	0	0	0
Madagascar	0	0	0	0
Mozambique	0	0	0	0
Tanzania	0	0	0	0
Zimbabwe	0	0	0	0

Table 2-a.

Number of days when medium or high probability of heavy precipitation were notified in the RSMC regional medium range guidance						
Country	Day 3 Probability		Day 4 Probability		Day 5 Probability	
	60 %	80 %	60 %	80 %	60 %	80 %
	Botswana	0	0	0	0	0
Madagascar	1	0	0	0	0	0
Mozambique	1	0	0	0	0	0
Tanzania	2	0	3	0	0	0
Zimbabwe	0	0	0	0	0	0

Table 2-b.

Number of days when medium or high risk of strong wind were notified in the RSMC regional short range guidance				
Country	Day 1 Risk		Day 2 Risk	
	Med.	High	Med.	High
Botswana	0	0	0	0
Madagascar	0	0	0	0
Mozambique	0	0	0	0
Tanzania	0	0	0	0
Zimbabwe	0	0	0	0

Table 3-a.

Number of days when medium or high probability of strong wind were notified in the RSMC regional medium range guidance						
Country	Day 3 Probability		Day 4 Probability		Day 5 Probability	
	60 %	80 %	60 %	80 %	60 %	80 %
	Botswana	0	0	0	0	0
Madagascar	0	0	0	0	0	0
Mozambique	0	0	0	0	0	0
Tanzania	0	0	0	0	0	0
Zimbabwe	0	0	0	0	0	0

Table 3-b.

5.2 – The Table 3-b shows that only a very few days of heavy precipitation with a probability of 60 % were predicted in the medium-range over Madagascar, Mozambique and Tanzania but were not subsequently predicted in short-range.

5.3 – The Table 4-a and Table 4-b which list the critical periods based on the short-range RSMC Daily Guidance i.e. from the point of view of the forecaster at RSMC Pretoria, are void due to the absence of predicted severe event. These table are maintained here only for sake of consistency with the other quarterly reports.

Heavy Precipitation high risk forecast									
Botswana		Madagascar		Mozambique		Tanzania		Zimbabwe	
from	to	from	to	from	to	from	to	from	to
none		none		none		none		none	

Table 4-a: High risk heavy precipitation events according to RSMC Daily Guidance.

Strong Wind high risk forecast									
Botswana		Madagascar		Mozambique		Tanzania		Zimbabwe	
from	to	from	to	from	to	from	to	from	to
none		none		none		none		none	

Table 4-b: High risk strong wind events according to RSMC Guidance.

5.4 – The usefulness of the RSMC Daily Guidance and products is summarized in the Table 5. It shows that RSMC guidance was very useful in order to issue warning for the unique strong wind event which occurred in Maputo even though no severe event was predicted at medium-range or short-range (according to the tables issued from RSMC Pretoria).

Value of the Daily Guidance	Botswana	Madagascar	Mozambique	Tanzania	Zimbabwe
Total number of events	0	4	1	0	0
Unavailable information					
Misleading	0	0	0	0	0
Not useful	0	2	0	0	0
useful	0	2	0	0	0
Very Useful	0	0	1	0	0
% Useful-Very useful	0	50%	100 %	0	0

*Table 5 : Value of the RSMC Daily Guidance according to reports from NMHSs*

## **6 – General Comments about the Products**

### **6.1 – Usefulness of RSMC Daily Guidance**

6.1.1 – The RSMC Pretoria Daily Guidance for the next five days was prepared daily by the forecasters of the South African Weather Service National Forecast Centre and disseminated according to the set deadlines. Products from the global centres (deterministic models and ensemble products) play a critical role in their analysis process.

6.1.2 – All the NMCs appreciate the Pretoria Daily Guidance which helps forecasters in their day to day routine forecasts, even though no severe weather event was predicted.

6.1.3 – The Pretoria Daily Guidance has become more and more familiar and practical to the forecasters of the participating NMCs. This one was very helpful on issuing warnings in the case of the strong wind event in Maputo.

### **6.2 - Usefulness of SWFDP NWP/EPS Products and RSMC UM-SA12**

6.2.1 – The range of products is extremely valuable to aid the forecasters of RSMC Pretoria during their analysis of the current and expected weather situation. The variety of model products aid the forecasters in decision making particularly in situations where they differ from each other. The ensemble prediction products played an important role in identifying the winter storms over Southern Africa well in advance and thereby alerting the forecasters early of potential severe winter storms approaching. This helped in issuing advisories days in advance to disaster management structures.

6.2.2 – The various deterministic and probabilistic NWP model products, which are made available via the RSMC Pretoria dedicated Web site to the NMC's, were still very helpful to the forecasters in their routine forecasting duties. During this dry season no model had difficulties in resolving synoptic scale features. Nevertheless NMHS Madagascar reported

some difficulties to use model output from the Limited Area UM-SA12 to forecast localized weather.

6.2.3 – EPSgrams appear as an invaluable tool because of their ability to give a medium range outlook for various parameters at a single location. They prove to be very efficient to depict very well the episodes of cold temperatures during this winter.

## **7 – Project evaluation against SWFDP goals**

7.1 - To improve the ability of NMCs to forecast severe weather events: Despite of the lack of severe weather events the daily use of SWFDP products (both RSMC Daily Guidance and NWP outputs) helped to improve the forecast and boosted forecaster's confidence.

7.2 – To improve the lead-time of alerting these events: The use of SWFDP products enabled to improve the lead time for the strong wind case in Mozambique. In Zimbabwe, it was possible to issue alerts for hard frost 3 or 4 days ahead and then to allow to take protection.

7.3 – To improve the interaction of NMHSs with DMCPAs before, during and after severe weather events: This quarter without severe weather event was not favorable to strength the links between NMHSs and DMCPAs. Nevertheless in Zimbabwe the cooperation remained strong and NMHS participated in outreach programs directed toward vulnerable communities in order to prepare the upcoming rainy season.

7.4 – To identify gaps and areas for improvements: The most important remark concerns the weakness of the model to forecast strong winds. From a technical point of view problems of Internet speed and power blackout have been mentioned in Zimbabwe.

7.5 – To improve the skill of products from Global Centres through feedback from NMCs: There was no real feedback during this quarter but all the NMHS but NMHS Madagascar appreciated the global model as well as the UM SA12 limited area model which describe synoptic features of the evolution of the atmosphere.

## **8 – Evaluation of weather warnings**

8.1 - Feedback from the public: As important severe weather events did not occur, there is no special feedback from the media for this quarter.

8.2 – Feedback from DMCPAs: Despite of the lack of severe weather events there were several actions took place. In Botswana, the Disaster Management Office undertook a country wide tour to help improve public awareness on severe weather and to solicit the public's view on these issues; In Tanzania an exchange of views was organized to discuss the usefulness of the warnings and the way to improve their efficiency.

8.3 – Feedback from the media: No feedback.

8.4 – Verification by the NMCs: No verification owing to the lack of severe weather events.

## **9 – Conclusions**

9.1 – Over the region concerned by the SWFDP, this third quarter of the experimentation phase was characterized by the predominance of the dry winter season and the lack of heavy rainfall events over the relevant geographical area. There was also no tropical cyclones or storms over the western part of the Indian Ocean.

9.2 – From a technical point of view, some NMHSs continue to mention difficulties to access to Internet or to insure a good working order of their equipments and noted the lack of meteorological radars.

9.3 – All the NMHSs appreciate the RSMC Pretoria Guidance and the models products which allow to improve the quality of the forecasts and to increase their lead time even for events other than heavy precipitation or strong wind during this dry winter season (cold spells, ground frost, generalized fog).

9.4 – Despite the absence of severe weather events several NMHSs took advantage of this break to strength their links with respective DMCPA service in order to improve the preparedness of the vulnerable communities in the perspective of the forthcoming rainy season.

9.5 – With nine months of experience of the experimentation phase of the SWFDP, all the NMSs involved in this project emphasised the positive contribution of the support implemented in RSMC Pretoria to help perform their respective daily forecasting and warnings services. The forecasters gained a real experience and increased their confidence in the practical use of model fields and are now ready to continue to apply this way of working beyond the end of the demonstration phase.