STATUS OF THE REGIONAL SUBPROJECT

QUARTERLY REPORT OF THE REGIONAL SUBPROJECT

PERIOD: 1 March 2007 – 31 May 2007
NMS: **NATIONAL INSTITUTE OF METEOROLOGY (INAM – MOZAMBIQUE)**

1. HIGHLIGHTS OVER THE PERIOD

- During the period the heavy rainfall events continued to be the predominant feature but the period was also characterized by localized strong wind events.

- The most remarkable episode of heavy rain was the one observed at Maputo International Airport on the night of 12th and early hours of 13th April 2007 with an observed precipitation amount of 112, 2 mm in 6 hours, while Maputo Observatory located at about 5 kms distance observed 56 mm in 24 hours.

2. OVERVIEW OF PRODUCTS

a. Usefulness of RSMC-Pretoria guidance

RSMC-Pretoria guidance has already proven to be very useful with special reference to weather features that leads to heavy rain events in the southern part of the country. But, the same confidence is not attained in relation to the northern part of the country. There is a need to improve the consistence of the guidance issued by RSMC – Pretoria.

Overall, the guidance is well acceptable and performs quite well.

b. Usefulness of SWFDP NWP/EPS Products received from each global centre and RSMC UM-SA12

The SWFDP NWP/EPS products received from the global centres have been shown to be a very useful tool in forecasting severe weather events. The stability indices for forecasting convection perform quite well. The use of these new products have made possible to produce forecasts beyond the four to five days ahead usually done by the NMC. The UM-SA12 works very well despite its time output limitation (48 hours).

3. PROJECT EVALUATION AGAINST SWFDP GOALS

SWFDP GOAL	IMPACT
To improve the ability of NMCs to forecast severe weather events	The new products introduced by the SWFDP have boosted the forecasters' confidence in predicting severe weather events.
To improve the lead time of alerting these events	In the past INAM very rarely could issue alerts on severe weather events with a long advanced lead-time, with exception in cases of Tropical Cyclones. But now alerts

	are issued even with four days lead-time and that gives more time for carrying out a series of mitigation activities.
To improve the interaction of NMCs with Disaster Management and Civil Protection authorities before, during and after severe weather events	Interaction between INAM and the DMCPA has been existing for years and the Project had made it more effective and efficient. Before any predicted severe weather event the DMCPA are among the first authorities to receive the warnings and whenever necessary daily briefings are performed. This interaction continues during and even after the event. A good example was the attachment of two senior meteorologists to the DMCPA during the last rain season. The meteorologists attached to the DMCPA were able to take advantage of the various products available through the Project.
To identify gaps and areas for improvements	The models tend to underestimate the convective and localized precipitation, as well as strong winds. Nevertheless, the Severe Weather Indices have been tremendously useful.
To improve the skill of products from Global Centres through feedback from NMCs	Overall the models have a good skill but improvements are needed in forecasting localized severe events mainly those related to strong winds.

4. EVALUATION OF WEATHER WARNINGS

- **Feedback from the Public**

  It has not been easy to get a feedback from the public. This is meanly due to the absence of a regular mechanism through which the users could provide any official information on the accuracy and reliability as well as the lead-time of the warnings issued by the NMC.

- **Feedback from the DMCPA**
  No formal feedback has been received from the DMCPA. This is an exercise to be put in place for the next rainy season.

- **Feedback from the Media**
  One could say that there is no real feedback from the media.

5. SUMMARY (general comments, challenges, etc, details in Annex 1)

It is worth to acknowledge that improvements in forecasting and issuing warnings for severe weather events have been achieved through the implementation of the SWFDP. We greatly support the continuation of the dissemination of the different products beyond the Demonstration Phase.

In most of the cases is not easy to determine the wind speed since the strong winds events have happening in places where INAM does not have an observation station.

Finally, more training is needed, mainly in the field of EPS products.

6. **CASE STUDY** (Heavy Rainfall over Maputo – April 12th and 13th) (to be finalized).

ANNEX VI.1

Evaluation Table

DATE	SWFDP Evaluation Form Event Nr (If Applicable)	Weather Type	Location	Observed amount (rainfall or wind speed)	RSMC Guidance		Which NWP/EPS forecast product(s) used by NMC	Local Warnings issued	Impact
Dd/mm/yy		Mesoscale rainfall or synoptic scale rainfall or strong winds (covective or synoptic)		(mm/period or KTS)	Amount predicted	Usefulness (1-4) 4 is best	List by centre		No major impacts.
6/03/2007	1	Mesoscale rainfall	Quelimane (Centre)	64mm/24hrs	50mm/24hrs	1 Only the guideline issued on the 6th managed to pick this heavy rain episode. Too late for issuing a warning	ECMWF, ALAM, NCEP, UM SA12	No	No major impacts.
8/03/2007	2	Mesoscale rainfall	Beira (Centre)	58,3mm/24hrs	50mm/24hrs	4	ECMWF, ALAM, NCEP, UM SA12	Yes	No major impacts.

10/03/2007	3	Mesoscale rainfall	Montepuez (North)	59,2mm/24hrs	>50mm/24hrs	4	ECMWF, ALAM, NCEP, UM SA12	Yes	21 classrooms were left roofless; 285 with their roofs affected and 90 houses completely destroyed.
18/03/2007	4	Strong winds (wind storm)	Chokwe & Guija (South)t	N/A	>20kt	4	ECMWF, ALAM, NCEP, UM SA12	Yes	1 primary school & 1 rural hospital were left roofless (leaving 10 patients without a shelter); 873 mud hats had their thatched-roofs destroyed.
29/03/2007 & 30/03/2007	5	Synoptic scale rainfall	Maputo Xai-Xai Inhambane	59,7mm/24hrs 73,6mm/24hrs 70,0mm/24hrs	>50mm/24hrs	4	ECMWF, ALAM, NCEP, UM SA12	Yes	1 person dead; 3 with minor injuries; 67 houses destroyed; 32 classrooms destroyed.
1/04/2007	6	Mesoscale rainfall	Beira Quelimane (Centre)	138,4mm/24hrs 75,6mm/1hr	50mm/24hrs	2	ECMWF, ALAM, NCEP, UM SA12	Yes	120 families homeless; 692 people in Beira received support in terms of food supply.
5/04/2007	7	Synoptic scale rainfall	Angoche (North) Pebane (Centre)	139,3mm/24hrs 60,7mm/24hrs	>100mm/24hrs	4	ECMWF, ALAM, NCEP, UM SA12	Yes	No major impacts
8/04/2007	8	Mesoscale rainfall & strong winds	Xai-Xai (South)	90,3mm/12hrs	50-75mm/24hrs Surface wind >30kt	3	ECMWF, ALAM, NCEP, UM SA12	Yes	4 people dead after a boat sinking.

12/04/2007 & 13/04/2007	9	Mesoscale rainfall & strong winds	Maputo (Airoport) Maputo (Headquarters) Panda (South)	112,2mm/6hrs 55,7mm/24hrs 106,3mm/12hrs	30-50mm/24hrs 30-50mm/24hrs	1	ECMWF, ALAM, NCEP, UM SA12	Yes	Few roads partially destroyed.
22/04/2007	10	Mesoscale rainfall & strong winds & hail.	Changalane Mapulanguene (South)	58,6mm/24hrs 46,7mm/24hrs	50mm/24hrs	4	ECMWF, ALAM, NCEP, UM SA12	Yes	1 person dead; 12 injured; 30000 banana trees uprooted; 110 houses completely destroyed; 458 partially destroyed;1 classroom destroyed.
28/04/2007	11	Strong winds	Vilankulo & Inhambane	N/A		4	ECMWF, ALAM, NCEP, UM SA12	No	1 rural hospital destroyed;
29/04/2007	12	Strong winds	Nampula	N/A		4	ECMWF, ALAM, NCEP, UM SA12	Yes	1 person dead; 26 classrooms destroyed; 183 houses destroyed.
04/05/2007 to 06/05/2007	13	Mesoscale rainfall	Pebane (Centre)	56,8mm/24hrs & 53,3mm/24hrs	>50mm/24hrs	4	ECMWF, ALAM, NCEP, UM SA12	Yes	No major impacts.