SWFDP - Southern Africa

QUARTERLY PROGRESS REPORT N° 2
for the period 1 April 2009 – 30 June 2009

4 December 2009

1 – Overview

1.1 Introduction

This report summarizes the individual second quarter reports submitted by the participating NMHSs in the SWFDP Regional Subproject which has expanded to include the entire region of southern Africa, covering the period for the second quarter of 2009 of the demonstration (i.e. April 2009 to June 2009).

The centres that participated in this period of the "SWFDP – Southern Africa" project include the following (see Fig. 1):

- NMHSs (14): Angola, Botswana, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Tanzania, Seychelles, South Africa, Swaziland, Zambia, Zimbabwe;

- Regional Centres (2): RSMC Pretoria, RSMC La Réunion;

- Global Products Centres (3): Exeter (Met Office UK), Washington (NCEP USA), and ECMWF.

Figure 1 - Map of the SWFDP - Southern Africa countries
(Note: Comoros has not yet indicated its participation)

For this second Quarterly Progress Report, 3 NMHSs reports have not been received, and among those submitted, some parts of the agreed feedback were not provided. Table 1 summarizes the information provided.

The information provided by the participating centres has been analysed with the aim to assess the utility and quality of the RSMC Daily Guidance, the relevance and the skill of the various NWP products, the pertinence of the severe weather warnings issued by the NMHSs and the improvement of the warning services they delivered to Disaster Management and Civil Protection Authorities, "DMCPA". The quarterly evaluation table is used to identify all severe weather events of the reporting period, that occurred (forecast or not), and forecast (occurred or not).

FEEDBACK RECEIVED FROM THE NMHSs				
Country	Quarterly report (Q2)	Quarterly evaluation table	Verification of warnings	Case studies
Angola				
Botswana	X	X	X	X
Comoros				
R.D. Congo				
Madagascar	X		X	
Lesotho	X	X	X	X
Malawi	X	X		
Mauritius	X	X°	X	
Mozambique	X	X		
Namibia	X	X		
Seychelles	X	X°		
South Africa	X			X
Swaziland	X			X
Tanzania	X	X		
Zambia	X			
Zimbabwe	X	X°		

Table 1 – Summary of the information received, noted by "X", from the NMHSs; " X° " indicates that the NMHS quarterly report did include any severe weather event.

1.2 News

The coverage of the RSMC Daily Guidance Products includes all 16 countries in the southern Africa region. The risk tables include indications of heavy rain and strong winds for all countries, while the free format discussion texts provide additional supporting information as well as indicate any other hazard (required by the Implementation Plan) that are anticipated. Forecasters are encouraged to provide feedback on the skill of the guidance provided by the RSMC.

A Web-based application and interface is being developed at RSMC Pretoria to facilitate the exchange of national warnings among the participating NMCs. The application will allow each NMC to maintain a log of its warnings in real-time, and the software will display the warnings on a drill-down regional map in a similar fashion as "Meteoalarm" for Europe.

As of mid-April 2009, an archive of RSMC guidance products (in chronological order) has been made available on the RSMC Web site (at bottom left of the homepage), extending back to 01 January 2008. This followed from a number of requests from SWFDP countries

for historical RSMC guidance products to enable / facilitate post-mortem evaluation activities. The archive is at present in a 'flat' format but it is hoped that a more user-friendly browse-able hierarchy of dates and times will be set up in the near future.

RSMC Pretoria and RSMC La Réunion have collaborated on making available to the SWFDP the outputs from the operational Météo-France limited area model "Aladin-Reunion" (10-km resolution), which covers the South-west Indian Ocean basin. These new products are now posted via a hyperlink on the RSMC Pretoria Web site for the use by the 16 NMHSs.

Collaboration with EUMETSAT continues on the use of the EUMETCast system to transmit additional MSG satellite products developed at RSMC Pretoria to countries using the MSG satellite data receivers. The RSMC Pretoria Daily Guidance products are now also broadcast in this way to mitigate Internet bandwidth problem that some countries continue to have in this region. This system is currently under trail.

The RSMC Pretoria Web page has been updated to include additional MGS-based satellite products, including rainfall estimations ("hydro-estimator, HE"), and an atmospheric stability diagnostic ("global instability index, GII"), for nowcasting of convective storms. The hydro-estimator products could also be used as input to flash flood guidance products as well as for the verification of rainfall predictions. These activities are being pursued.

2 - Summary of the severe weather events reported by NMHSs, 1 April 2009 to 30 June 2009

This second quarter of the SWFDP (1 April 2009 - 31 June 2009) is usually a transition period with regards to the weather in the southern part of Africa. It corresponds to the end of the rainy season and the predominance of dry and cold weather. With the reversal of the monsoon conditions over the eastern part of the Indian Ocean the tropical cyclone season ends. Indeed only one Tropical Storm called JADE was identified and tracked by the RSMC La Réunion from 03/04/2009 to11/04/2009 ; It caused severe damage when arriving to the eastern coast of Madagascar.

The following list summarizes the highlights concerning severe weather events provided by the participating NMHSs in their respective quarterly reports. The order of the presentation below is by country, from west to east (see Figure 1 for reference).

Namibia

Frontal systems during winter period cause cold to very cold conditions over the Namibia's interior. However high pressure cells over Botswana causes offshore flow resulting in windy and very hot conditions along the Namib Desert and coastal areas during from May to June. During April and May a band of tropical moisture from Angola resulted in heavy downpours. Isolated thundershowers with hailstorms occurred over most parts of the country.

Zambia

This period corresponds to the end of the rainy season and beginning of the cold season. May and June experienced heavy downpours.

Malawi

During April heavy rains of more than 50mm in 24 hours associated with Inter-Tropical Convergence Zone (ITCZ) were reported especially in the northern half of the country. Localised heavy downpours occurred at Chintheche on the 2 April 2009 and over several places of the northern Malawi on the 22 April 2009. Floods affected some 256 households in some places during the first week. May and June were characterised by warm conditions most of the time. However very chilly weather associated with rain drizzle was experienced over some places in the country (situation locally known as Chiperoni). Very strong winds

(locally called Mwera wind) were also occasionally experienced over Lake Malawi. These weather conditions were due to cool and moist south-easterly winds induced by high pressure systems that were moving eastwards across southern coast of South Africa.

Zimbabwe
No severe weather events occurred over Zimbabwe during this period. The first half of this period corresponds to the post-rainy season with a rapid decrease in rainfall amounts and fair weather predominates. The second half (from mid-May to the end of June) marks the first half of the Zimbabwean cool season. The whole period can be described as one of fair weather in which no conditions fulfilling the severe criteria were reported or recorded. Although the NMS issued an advisory for very cold weather conditions at the end of June; maximum temperatures were not expected to fall to 10º C and below.

Botswana
No severe weather events were observed across Botswana during the April and May except for a hail storm that occurred on the first week of May. Nevertheless unexpected heavy rains accompanied by strong winds occurred between the 8 and 10 of June giving widespread heavy precipitation on the 9 June over the Central and Eastern parts of the country.

Tanzania
The months of April to June in 2009 had varied weather from wet to dry and cooler conditions in Tanzania. In the northern half of the country there are two rainy seasons: one of them gives long rains from March to May). In the central, western and southern part of the country there is only one rainy period from November to April. Southeasterly winds predominated for most of the early part of the period while southerly winds did for the latter part. Advisories/warnings for strong winds (20 to 25 knots) were issued from time to time for marine users and the Disaster Management Office.

Mozambique
During the period seasonable dry weather prevailed over much of Mozambique. Moderate rain (30 – 60mm in 24 hours) was observed over portions of northeastern province of Nampula (Angoche district) and central interior province of Manica (Espungabera). Nevertheless no major impact was observed for these two cases of moderate rainfall.

South Africa
Three severe weather events were reported during this period which corresponds to the arrival of the cold season in South Africa. On the 16/05/2009 strong winds hit the southern part of the country leading to very rough sea and gale-force winds along the southern coast. From the 08/06/2009 to the 11/06/2009 a convergence area resulting from low level moist air from the Indian Ocean and mid-level moisture from the tropics led to heavy rainfalls over Botswana and the northern part of South-Africa. During the week from the 22/06/09 to the 26/06/09 a series of cold fronts associated with an upper trough hit the country leading to. severe weather : strong gale-force winds, rough sea with damaging waves in the south of the country, heavy rain over the Cape area and snowfalls over several mountainous parts of the country.

Swaziland
During the above mentioned period the region is normally dry as expected and we had some significant low temperatures and occasional strong winds. However, whilst rainfall activity continued up to about early April 2009, there was no severe weather during that transition period.

Lesotho
Significant snowfall events with cold to very cold conditions were observed from 23 to 26 June with the lowest maximum temperature of 7.5 °C recorded on the 25 June over the

southern Lowlands of Mohale's Hoek and Mafeteng. During the same period, the Highlands over the southern district of Quthing were hit by snowfall causing loss of livestock.

Madagascar
The April-June period contains the last month (April) of the cyclonic season and the two first months (May and June) of the fresh seasons. The main event was the Tropical Cyclone JADE which concerned our country from 04 to 09 April 2009. It brought heavy rains and floods over most part of Madagascar and caused many casualties and important damages (9 dead and 6 injured people, 4 090 homeless, more than 2 000 damaged homes and schools). For this first part of the fresh season, wind originated from trade wind's predominance in our region was the main phenomenon to watch.

Mauritius
During April 2009 a tropical disturbance evolving to the south of Agalega intensified into a moderate tropical storm and named JADE on 5 April 2009. This tropical cyclone did not influence the Mascarene Islands directly, but increased atmospheric instability so that Mauritius experienced a few thunderstorms events. The cold air arrived over the Mascarenes earlier than in previous years between the end of April and the first days of May. Thereafter, winter was well established by mid-May. Heavy rain events occurred on the 21 April over the South, number of heavy showers occurred on the 13 May over the East and on the 16 May at Grande Providence, near the Centre.

Seychelles
April is usually the month of the monsoon reversal and the weather is characterized by light and variable winds. This corresponds to the end of the rainy season and the cyclone season is officially over. During May precipitation decreases and the drier period of the year begins with only a few rainy days. June continue to be relatively dry month; Southeast Trade winds are well established and a few showers occur preferably before the dawn.

3 – Performance of the RSMC Daily Guidance

An evaluation system for the RSMC Daily Guidance maps against satellite rainfall as measured using the Hydro-estimator system running at the RSMC is currently being tested. Once this proves to be a viable method, it will be used to attempt verification of the rainfall areas on the guidance maps since the beginning of this project. (Note: no change from Q1.)

4 – Comments about the RSMC Daily Guidance and NWP Products

4.1 – General assessment of the usefulness of SWFDP support

The RSMC Web site is still the main means of communicating the SWFDP products prepared by the global and regional centres for use by the 16 NMHSs. Some modifications were made to the Web site to accommodate changes requested at the RTIT meeting in February 2009.

The NMHSs participating in the SWFDP were asked to give their general comments about the usefulness of the "RSMC Daily Guidance for Severe Weather Forecasting" product issued by RSMC Pretoria, and the NWP guidance from various participating global and regional centres. In addition, for each event reported in their "Quarterly Evaluation Table", they were also asked to give a rating (from 1 to 4) to quantify the usefulness of the SWFDP support. The synthesis of their assessment is given in the Table 2.

USEFULNESS OF SWFDP SUPPORT									
Country		Guidance usefulness				NWP/EPS usefulness			
	Mark	1	2	3	4	1	2	3	4
	Nb. events								
Angola									
Botswana	2*			1	1			1	1
Comoros									
R.D. Congo									
Madagascar	?								
Lesotho	7			2	5				7
Malawi	9		6	3		-	-	-	-
Mauritius	6	-	-	-	-	-	-	-	-
Mozambique	2			1	1			2	
Namibia	7		1	2	4		1	2	4
Seychelles									
South Africa	3*	-	-	-	-	-	-	-	-
Swaziland									
Tanzania	22	1	7	2	5		2	13	7
Zambia									
Zimbabwe									
Total	58	1	14	11	16		3	18	19

Table 2 – Evaluation of the usefulness of SWFDP support during the severe weather events reported by the participating countries.1 = misleading; 2 = not useful; 3 = useful; 4 = very useful; - = absence of rating.
(in column 2 indicates that the number corresponds to the number of severe weather days).*

4.2 – Usefulness of RSMC Daily Guidance

According to the ratings given in the left part of Table 2, the NMHSs are rather satisfied with the RSMC Pretoria Daily Guidance ("useful" to "very useful" predominate), that it helped forecasters to assess the synoptic situation to issue warnings and reinforce their confidence in their own forecasts.

All the NMS continued to be satisfied with the RSMC Daily Guidance. During this period with the abatement of severe weather, the guidance continued to be used for day-to-day routine forecasting. It is incorporated into the daily routines by many forecasting centres as a starting point for the discussions about the evolution of the large scale features of the atmosphere over their country. Lesotho emphasizes the advantage of having a view about of the meteorological situation five days ahead to improve the lead time of the warnings. Nevertheless Botswana mentioned that severe weather warnings cannot be issued just by looking at the Daily Guidance. It is also important to point out that island countries located in the south-western Indian Ocean (Madagascar, Mauritius, Seychelles) were very satisfied with the information provided on the sea state and the wave heights.

4.3 – Usefulness of METEOSAT Next Generation Satellite (MSG) products

In 2008, following the outcome of the first phase of the SWFDP (southeast Africa), the RSMC Pretoria Web site has incorporated MGS products that estimated cumulative rainfall amounts, i.e., the "hydro-estimator". These products have increased in number, and as well a diagnostic product has been added, i.e., the "global instability index "GII". They are

primarily used for tracking and "nowcasting" convective storms in real-time, especially those of rapid onset and with the potential to develop into severe thunderstorms. At the present time, not all participating NMHSs have functioning MSG receive stations and/or the suitable software application that carries out local processing.

4.4 - Usefulness of SWFDP NWP/EPS Products and RSMC UM-SA12

The ratings that appear in the right part of the Table 2 indicate the usefulness of NWP model products that are available through the SWFDP portal and show the continuing high degree of satisfaction expressed by the NMHSs. Forecasters appreciate to be able to access large-scale medium-range deterministic and probabilistic forecasts provided by the Global Centres, high-resolution refinements and details in the model fields given by the limited area models and the chronological evolution of the model parameters through the EPSgrams in longer lead-times.

Many NMHSs are accustomed to work with outputs form different models, which enable them to assess the spread of the predicted solutions through a "poor-man's" ensemble forecast. Nevertheless NMHS Lesotho mentioned some difficulties to look very rapidly at various Web sites. The island countries (Madagascar, Mauritius, Seychelles) would appreciate to obtain products from a fine mesh model with a better coverage than the UM-SA12, i.e., extending further to the east of the south-western Indian Ocean. Small sized countries would need to have enlarged (zoom-in) charts available on the Web portal but it is important to mention that such improvement would imply some development work at the RSMC(s).

5 – Project evaluation against SWFDP goals

5.1 - To improve the ability of NMCs to forecast severe weather events

All the participating NMHSs agree that the use of SWFDP products and RSMC Daily Guidance contributed to improve the quality of both day to day and severe weather event forecasting and helped to improve the confidence of the forecasters. Many NMHSs noted a real and positive change in the opinion the various users have about the pertinence of the warnings.

5.2 – To improve the lead-time of alerting these events

All the NMHSs indicated that SWFDP products allowed them to improve the lead-time of providing alerts to these events. Thanks to the medium-range deterministic and probabilistic forecasts, several events were detected and tracked 5 days in advance.

5.3 – To improve the interaction of NMHSs with DMCPAs before, during and after severe weather events

The present SWFDP Regional Subproject provides an opportunity to establish (for several NMHSs) or to strength (for most of them) links with their national DMCPA. The setting up of formal processes to get feedback from DMCPAs and the organization of a meeting after each severe event have become now current tasks in Seychelles and Madagascar. There is also some progress in the establishment of a Disaster Management Authority in Swaziland.

5.4 – To identify gaps and areas for improvements

The following difficulties were mentioned in a number NMHSs reports:

- reducing the delay for the dissemination toward the media,
- making the verification of the warnings (partly due to the absence of observations in several areas),
- performing near real time feedback toward the RSMC,

- gathering feedback from the public.

Many NMHSs pointed out that strong wind events are generally not very well forecast by the models and stressed that large scale forecasts need to be downscaled to give local values of the parameters. They also mentioned difficulties to nowcast severe events without radar images despite the use of satellite images.

5.5 – To improve the skill of products from Global Centres through feedback from NMCs
It seems that there is no significant progress with regards to this activity. Maybe the difficulty lies in the lack of a clear definition of the information that is required by the Global Centres and the identification of the people this information has to be addressed to. Nevertheless, among the small number of severe weather events that were reported during this second quarter some NMHSs documented interesting produced case studies which can be helpful to assess the behaviour of the various models.

6 – Evaluation of weather warnings

6.1 - Feedback from the public
Informal feedback with several categories of users shows that le public generally noted some improvement of quality of the forecasts issued by the NMHS. In Zimbabwe the NMS has continued with its user assessment survey launched during the preceding quarter; preparation of such survey is also considered in Botswana and Seychelles. In Madagascar comments from the public point out the need make comparison with well known severe weather events from the past when issuing warnings. In Mozambique several outreach activities have been carried out in schools and rural areas that are likely to be affected by severe weather events.

A comprehensive review of the information provided by the NMHSs and recommendations on important PWS aspects of SWFDP are given in the Annex 2 to this document.

6.2 – Feedback from DMCPAs
Although there exists no systematic feedback from the DMCPAs in all the countries, the participation in SWFDP encouraged the NMHSs to develop closer relationships with this category of users:

- In Malawi Mauritius, Zimbabwe Tanzania Namibia and Seychelles Islands the relationships are rather good;
- In Swaziland, the process of establishing a DMA is going on;
- In Madagascar, a questionnaire has been prepared to obtain feedback rather good,
- In Botswana, the dissemination of warnings to the regional or district disaster managers has improved; the NMS also decided to hold a training workshop for thesef users.
- In Mozambique, the communication between NMS and DMCPA through channel of focal points is working perfectly.
- In Lesotho, the relationship is getting stronger as a benefit from the second week of the training session in Pretoria.

6.3 – Feedback from the media
Most of the NMHSs do not have formal feedback but maintain nevertheless good relationships with the media. The recognition by the media of the improvement of the forecasts is very encouraging. As a consequence meteorologists are more often asked to give special interviews for the radio or the television especially in Botswana, Lesotho and Seychelles. In Zimbabwe the public relation desk which become operational in the first

quarter continue to work with the media and organized a half day workshop to inform about the WMO media kit.

6.4 – Objective Verification by the NMCs A summary of the verification efforts reported for the second quarter of the extended SWFDP is shown in the Table 3.

Of the 13 countries for which 2nd Quarter reports were received (at the time of this writing), 4 included a full contingency table verification and 9 did not. Given that the second quarter was inactive in many countries, contingency tables were not needed in 6 of the 9 countries. For the other two countries, South Africa and Malawi, enough events were reported that the contingency table analysis should certainly have been carried out. South Africa reported 91 severe weather events. As a rule of thumb, the CT should be done and scores calculated whenever there are more than 5 events reported. If the period is relatively inactive, then it is most useful to ignore correct negatives, compute only boxes a, b, and c of the table, then compute the scores which include only a, b, and c, hit rate, false alarm ratio, threat score, and frequency bias for the severe weather occurrence category.

A couple of NMHSs added the 2nd quarter events to the list compiled in the first quarter, and recomputed the table and scores on the full sample. This is a good idea, particularly when there are few events. The recomputed tables can be compared with what was obtained for the previous quarter to see if any significant changes occurred.

The contingency table and score computation needs to be tightened up in several ways, to improve its value. If the following suggestions are followed, the results will be more useful to all users of the verification results, and will result in improved tracking of benefits of the project.

1. Definition of the event: This remains the largest problem. From the datasets submitted, it seems there is a tendency to list all observations which exceed the threshold as separate events. The event should be defined according to the region(s) for which forecasts are normally valid, and the valid time and area for which the forecast is valid should be clearly stated when the forecast is issued. A hit is recorded if there is at least one observation in the valid area during the valid period. One example is Lesotho: 7 events are listed, all on the same day. Unless these were the subject of different location-specific forecasts, then they count as one event. If any observations occur outside of the stated valid area, then a missed event is recorded. Note that it is thus possible to record a hit and a miss on the same day.

2. Definition of correct negatives. Since the forecast valid period is 24h, one correct negative should be recorded for each predefined forecast region where no extremes are observed and none forecast. Example: Zimbabwe uses 6 predefined forecast regions. If severe weather is observed in one of these regions, and none is forecast or observed in the other 5, then 5 correct negatives are recorded. If severe weather is forecast for one region and it occurs in another, then a false alarm, a missed event and 4 correct negatives are recorded for that day. Correct negatives are problematic in verification of severe weather; therefore it is acceptable to ignore them altogether, especially if there are relatively few occurrences during the verification period.

3. Definition of the event: parameter. The contingency table is a versatile tool; all severe weather events can be recorded in one table. However, each variable should be assigned to a separate event. That is, a forecast of extreme precipitation accompanied by strong winds counts as two separate events. A hit can be scored for both events ONLY if both are mentioned explicitly in the forecast. If the strong winds aren't mentioned and they occur, then it is a miss for strong winds. If there are many occurrences of a single type, then it is useful to compute a CT separately for that type of severe weather.

Country	Event definition	N	Contingency Table			Data included?	Comment
			Included?	Scores	Analysis		
Botswana	By observation	242 (raw) Q1 and Q2	Yes – combined with Q1	Yes	Comparison with Q1	Yes	Needs weighting procedure – one event per day
Madagascar	N-S division for high wind, not given for precip	211 Q1 and Q2 91 (wind)	Yes- for both winds and precip	Yes	Yes - good	No	Includes CT for thresholds of guidance – well-analysed
Lesotho	Included only observed events	7 (all snowfall and cold	Yes	No	No	Yes	Needs to show non-events too (1 per day) and false alarms
Malawi	Not region specific	9	No	No	No	Yes	Enough cases to do CT
Mauritius	By day	6 (50 mm); 2 (100 mm)	Yes, for both thresholds (no correct negatives)	Yes	No, but few events	No	
Mozambique	By observation	2	Not needed	N/A	N/A	Yes (1 miss and 1 hit)	
Namibia	By observation	7 (all on one day)	No (probably not needed)	N/A	N/A	Yes	Not clear on predicted vs observed location of event
Seychelles	None	0	Not needed	N/A	N/A	N/A	Admitted to no verification activity
South Africa	Not stated – only percentages of each type	91	No	No	No	No	Promised CT verification 2 weeks after report submitted
Tanzania	By day	22	No	No	No	Yes	
Swaziland	None	0	Not needed	N/A	N/A	N/A	
Zambia	None	0	Not needed	N/A	N/A	N/A	
Zimbabwe	None	0	Not needed	N/A	N/A	N/A	

Table 3 – Summary of the objective verification performed by the NMHSs during the second quarter of the SWFDP.

4. Need for weighting. Whenever multiple events are recorded on a single day and correct negatives are considered, the entries of the CT must be divided by the number of events on that day. This is to keep the scoring fair since only one non-event can be recorded per region per day. E.g. Botswana, as shown in the workshop, the table entries for days when 3 events occurred should be divided by 3; if four events occur, divide by 4 etc. Then the total number of events recorded will equal the total number of days in the verification period.

7 - List of the case studies prepared by the NMHSs

During this first quarter 8 case studies were prepared by 3 NMHSs :

- **Botswana**:
  Heavy precipitation on the 9 June 2009.

- **Lesotho**:
  Snowfall warning for the Highlands issued on the 30 April 2009,
  Very cold weather warning issued on the on the 15 May 2009,
  Very strong wind warning issued on the on the 27 May 2009,
  Very cold weather warning issued on the on the 07 June 2009,
  Very cold weather warning issued on the on the 20 June 2009.

- **Swaziland**:
  Good strong wind and cold spell forecast issued on the 24 June 2009 for the 26 June 2009.

- **South Africa**:
  Strong winds leading to very rough sea and gale-force winds on the 16 May 2009

8 – Conclusions

During this second quarter the number of severe weather events expectedly decreased significantly with respect to preceding quarter. This corresponds to the end of the rainy season in the region, and the establishment of winter weather conditions for the most southern parts and mountainous areas of the SWFDP region.

All the participants agreed on the usefulness of the RSMC Daily Guidance and NWP guidance products for severe weather forecasting. It is important to note that island countries are particularly satisfied with the information that is provided on sea-state and wave height when severe weather occurred.

All the NMHSs overall appreciate the NWP guidance products that are available through the RSMC Web site for routine forecasting. A few NMHSs (Lesotho, South Africa) mentioned some difficulties to consult rapidly all the available information but it seems that the problem lies in the way the output from various models can be visualized on the forecaster's desk. In addition, progress is expected to be gradual as forecasters gain increasing familiarity and confidence in the use of the new products.

Small countries expressed a request for the possibility zooming the model fields in order to get a better view of the fields over small area. It is important to recall first that zooming can

be efficient only if the fields are provided as grid point data (while products available on the RSMC Web site are images of the fields), and secondly that zooming cannot provide more detail or better accuracy than the resolution of features resolved by the model.

Many NMHSs agree that SWFDP support allowed them to improve significantly the lead time of alerting severe weather events, but it is necessary to keep in mind that the associated uncertainty also increases with time. This is the reason why forecasters in NMHS South Africa explain that they generally try to maintain a good balance between 'alerting' the public and DMA with as large a lead-time as possible; but to temper this with reference to forecaster confidence.

It is also important point out that in the comments related to warnings and warning services, the reports from the NMHSs do not employ consistently (or ill-defined) terminology that is used for different types of alerting messages (early warning, advisory, warning, alarm, alert …). The specific word(s) used should clearly qualify an alerting message, and should give clear indications on both the severity of the event, the lead-time, and where they exist also the emergency level with well defined associated protective measures. Lead time for issuing a specific alerting message always depends on the protective measures DMCPA and users have to invoke, or advised to take, in order to mitigate the disastrous consequences of the expected severe event.

During this second quarter the decrease of severe weather occurrences over the SWFDP region should have been an opportunity to think about the organizational relationships between the NMHSs and their users, and it seems that some improvement has been achieved in establishing contacts with the media and general public. It would have been opportune to review the entire severe weather season.

It seems that there is no significant improvement with regards to the feedback from the NMHSs toward the Global Centres intended to improve the skill of their products (SWFDP Goal 5). While feedback of substance is highly desirable, Global centres would also appreciate any additional surface observational data (over and above data already made available on the GTS) for inclusion in their NWP verification activities of surface parameters. Clearly at training sessions expert lecturers from the Global Centres meet the forecasters from the participating countries face-to-face; such infrequent events offer a real opportunity to discuss the performance of the numerical models, including their shortcomings with help of well documented case studies.

Finally, for the completeness of the future SWFDP Quarterly Progress Reports, all NMHSs' quarterly reports should follow closely the agreed format in the SWFDP - Southern Africa Regional Subproject Implementation Plan, including the Quarterly Evaluation Table (all severe events). It is particularly important to understand the definition of what is a single severe weather event. See section 6.4 (Verification), where this is clearly stated and described.

The third quarterly report covers the period from 1 July to 30 September 2009, and is due on 31 October 2009.

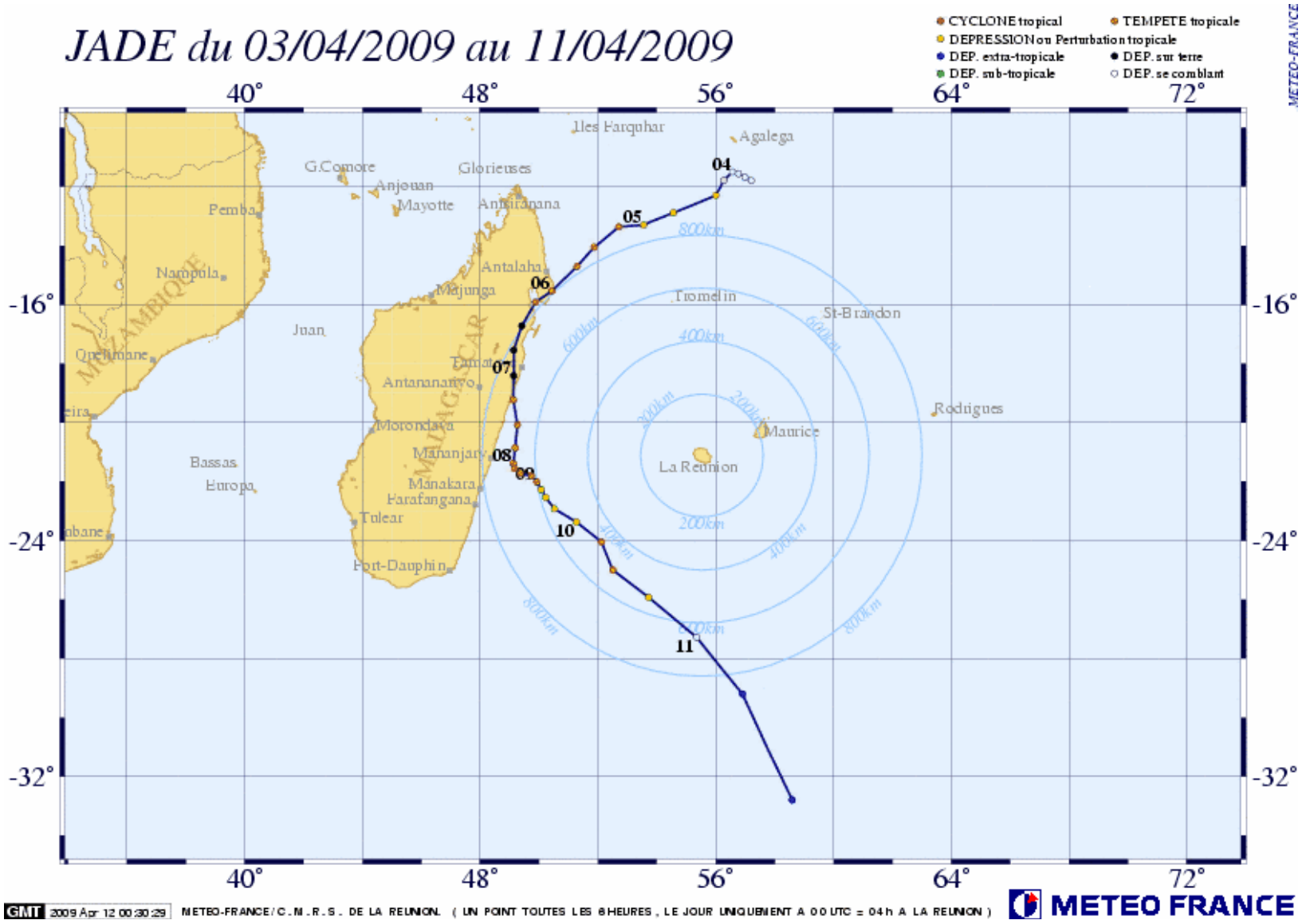
Annexes

Annex 1 – Track of the Tropical Cyclones "Jade"

Annex 2 – Second Quarter Summary of the Public Weather Services (PWS)

ANNEX 1 - TRACK OF THE TROPICAL CYCLONE JADE IN THE EASTERN INDIAN OCEAN – SEASON 2008-2009

N°	Name of the system
12	JADE



ANNEX 2 - Second Quarter Summary of the PWS and DRR assessments (April-June 2009)

	Public Feedback	Media Feedback	Comments by C/PWS
Botswana	Following the press release issued to the media on the 5th June, the authority of the DMS in weather matters in Botswana is now assured .The public trust in the DMS in general has been enhanced as more positive feedback continue to reach the DMS offices right across the country. Getting feedback on the impact of the warnings issued will not be an insurmountable challenge for the DMS. However, no efforts will be spared in trying to quantify all the feedback received through the use of user-assessment surveys.	DMS continues to enjoy good relations with the media especially radio and Television who are our regular clients. Feedback from the media has also been positive and encouraging .Newspapers have now shown more interest in the good work the DMS is doing as indicated by the ever-growing demands for interviews and answers .	**Public feedback:** It is most encouraging to know of the increasing trust of the public in DMS. **Recommendation:** Continue the good work. It is now a good time to start the survey mechanism to record public feedback. **Media feedback:** comments above also apply to the media. **Recommendation:** Continue to build and strengthen the positive relationship with the media. **General Recommendation:** Bring cases for both media and public feedback to Pretoria in November to share with others.
Lesotho	Overwhelming response from peers in other Ministries because in the past people	NO formal survey has been done but the Met Service has gained recognition and is	**Public feedback:** This response is most encouraging. **Recommendation:** Lesotho

	used to think we the NMHS was only guessing the forecast for the but now people believe in the Service and have acknowledged that this kind of skills are rare and deserve better rewards especially when the forecasters have to work odd hours. After every extreme weather event the public will always phone the Met. office as to what to expect next and when to expect it. The public has developed trust and feels the Service is committed to its work.	popular with most local radio stations. Now and again NMHS gets invited for live interviews as to what people can expect for the next coming season	should try and get some formal surveys done even among the government departments and record these feedbacks formally. The experience should be shared with other countries in the November workshop. **Media feedback:** The media response is also encouraging. **Recommendation:** Formal contacts as well as informal ones as are obviously the case are highly encouraged to give the whole relationship a more business-like arrangement.
Madagascar	Public are interested in the warnings of events and they would like the Met Service to compare these events with other well-known events which occurred in their location. Some tour operators complain and want more precision, they assess that the severe weather conditions (rainfall, wind, wave) tend to be over-forecast.	No formal feed-back	**Public feedback** **Recommendation:** Such feedback as those from tour operators should be taken seriously in the verification process and if they are persistent, they should be reported to the November workshop for discussion. **Media feedback recommendation:** The Met Service should take the first step towards media and be proactive in enquiring about their views and not wait until some feedback is provided.

Malawi	The public generally continue appreciating the weather forecasts. There were very few severe weather warnings issued during the period. The warnings were mainly on the expected cold spells and strong winds over Lake Malawi. The users of the Lake really appreciate the warnings of the expected occurrence of strong winds over the Lake during the months of May and June	There was generally no feedback from the Media for the period due to few severe weather events.	**Public feedback recommendations:** These feedbacks should be documented formally, through a survey. **Media feedback recommendations:** It is understandable that media is not too interested unless severe weather occurs but the quiet time is a good time to put in place coordination with them.
Mauritius	No severe weather warnings were issued during this period. NMHS is now working on a feedback form to be used to collect feedbacks from the general public. This form may be used as from next summer	Nil. NMHS is still working to build relation with the media. A workshop with the media people has been proposed.	**Public feedback and recommendations:** Excellent news about the survey form. **Media feedback and recommendations:** Workshop is an excellent idea.
Mozambique	Different means are now being implemented at NMS Mozambique to get feedback from the public, such as user survey designed specifically to farmers, sailors, aviation and to the media. Outreach activities have been carried out at schools, rural areas and also at some of the most prone to severe weather	Following the recommendations a workshop involving the media and the forecasters, was planned to take place during December 2009,	*(no comments due to late submission of report)*

	communities, during the joint simulation (of flooding, tropical cyclone and wind storms) with the DMC PA.		
Namibia	Difficulty to assess the feedback from the public, as no survey has been done yet.	There were interests from the media, during the period when hailstorms and below freezing level conditions.	*(no comments due to late submission of report)*
Tanzania	Mostly positive and appreciative of advisories issued. TMA is continuing to improve on the gaps identified from customer's feedbacks	No report.	**Public feedback and recommendations:** The customer feedback is of great importance and it is good that TMA is taking it seriously. This should be shared at the November workshop. **Media feedback and recommendation:** TMA needs to take a pro-active approach to the media and not wait to be approached by them.
Seychelles	Again it still remains one on one through telephone, no surveys done yet, but is planned.	We do communicate better now, and in cases of major event approaching we hold interviews or give press releases.	**Public feedback:** Quiet times are the best times to start new activities. **Recommendation:** start the surveys. **Media feedback:** Encouraging progress. **Recommendation:** Use the

			media beyond hazardous events; they can be a good instrument for public education and outreach as well.
South Africa			
Swaziland	There are a number of specialized forecast products such as fire-weather forecasts, fog forecasting and seven-day forecast have also improved in terms of accuracy and relevance. There are a number of forest companies that the NMC provides with weather forecast and warnings. They depend on the daily forecast for their operations and planning. The general feeling from the companies is that the NMS's weather forecast has improved significantly	The NMS has a good relationship with the media but not very often do we get feedbacks from the media. The NMS is working toward establishing good links with the media. These days the NMS is getting heeps of praises for providing more accurate weather forecasts and warnings timely with a good lead time, say four days	**Public Feedback:** The feedback as given is more that from the stakeholders with special forecast needs rather than the general public. Still, it is good to know that the general feeling is that forecasts have improved. **Recommendation:** Try to get a more quantified assessment done with clear indicators as to the improvement of the forecasts. **Media Feedback:** **Recommendation** Encouraging reaction from the media but need to work more proactively to get the media feedback especially in case of high impact or severe weather.
Zambia	There is no formal method put in place to get feedback from the public apart from a few comments from few individuals.	The press especially the private TV stations appreciated the accuracy and timeliness of the forecasts issued for the May and June	*(no comments due to late submission of report)*

		rains.	
Zimbabwe	The NMS has continued with its user assessment survey that was launched in the first quarter.	The public relations desk which became operational in the first quarter of 2009 continued to engage the media and organised a half day media workshop to launch the WMO media kit in preparation of the WCC-3. Severe weather and disaster management issues were topical at this workshop. Thereafter meteorological personnel were given a fair amount of coverage in both the print and electronic media	**Public Feedback: Recommendation** Share the survey and its results with other SWFDP participating countries (good opportunity will be during the workshop in Nov in Pretoria). **Media Feedback: Recommendation** Continue with using all opportunities to feed stories on weather and related issues to the media, including interviews especially during quiet times when they look for stories to fill in news programmes.

Overall observations and recommendation

From the analysis of the reports for the second quarter, it seems that some improvement has been achieved in establishing contacts with the media and general public. This was a quiet period and a good time to work on materials and plans to establish these linkages in preparation for the busy quarter ahead. There is still work to do on the side of NMSs and it is hoped that those countries that have indicated plans to do survey work will indeed start doing this soon.