

STATUS OF THE REGIONAL SUBPROJECT

PERIOD: 1 March 2007 – 31 May 2007

NMS: ZIMBABWE

1. HIGHLIGHTS OVER THE PERIOD

As indicated in the first quarterly report, the wind regime over Zimbabwe is generally weak such that severe weather events are consistently related to heavy rainfall events.

Historically, rainfall is by far the most important climate factor over the country and is highly seasonal, mostly received during the austral summer from about early October through to early April. Hence the review period was characterised by a significant decrease in rainfall activity over the country and ultimately the cessation of the main rainfall season. Thus, whilst rainfall activity continued up to about mid-April 2007, there were only 4 severe weather events in Zimbabwe during the entire review period. It is also projected that there may not even be a single severe weather event according to SWFDP criteria during the third quarter i.e. June – August 2007.

Despite the absence of significant weather, the regional and global guidance products available on the SWFDP have proven very useful. Thus, the guidance products are evaluated in this report mostly with regards weather forecasting in general, including specialised forecasts for aviation as well as Agromet forecasts for the occurrence and severity of ground frost over exposed surfaces.

2. OVERVIEW OF PRODUCTS

a. Usefulness of RSMC-Pretoria guidance

The South African Weather Service (SAWS) Regional Specialised Meteorological Center (RSMC) severe weather guidance has remained consistent for the most part. The short and medium range maps, risk tables and discussions of RSMC Pretoria are particularly used as a quick guide to severe weather over the subregion. The

risk maps were mostly blank because of the retreat of the main rain-bearing systems over the subcontinent. The weather discussion by the Forecaster also provides a useful starting point for a Forecaster coming on duty.

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

Localised heavy precipitation events still present a challenge to global models. Whilst most models predict the occurrence of precipitation, they still cannot deal adequately with amounts exceeding 50 mm at a local scale. Of the nearly 40 severe weather events that have occurred in Zimbabwe since the commencement of the Demonstration project, nearly half the events were localised – and quite a significant number were not forecast by the models suggesting need for higher resolution guidance.

ECMWF guidance still ranks quite high with the EPSgrams even more popular as Forecasters have come to understand them. Initially, there were challenges in their interpretation particularly the distinction between the Deterministic forecast, the ensemble and the control run for precipitation.

UK and NCEP products are also very useful and the variety allows for comparisons with the ECMWF for agreement. Of course, the synthesis of RSMC guidance, Global guidance and Forecaster experience has proven to be formidable.

3. PROJECT EVALUATION AGAINST SWFDP GOALS

SWFDP GOAL	IMPACT
To improve the ability of NMCs to forecast severe weather events	Zimbabwe reports positive success in this regard. The skill of weather forecasting (including severe weather forecasting) has shown great improvement since the commencement of the SWFDP in November 2006.

To improve the lead time of alerting these events	Increased forecast lead time with remarkable confidence remains the greatest asset of the SWFDP. Press Releases are disseminated some three to four days ahead of the event. Medium range forecasts have also become more accurate.
To improve the interaction of NMCs with Disaster Management and Civil Protection authorities before, during and after severe weather events	Zimbabwe reports improved interaction with the Civil Protection Unit as well as the Zimbabwe National Water Authority even in the absence of significant weather.
To identify gaps and areas for improvements	The gaps are being identified although some are not directly related to the project itself such as Internet speed and other infrastructure.
To improve the skill of products from Global Centres through feedback from NMCs	Feedback is being provided regularly through the evaluation forms and email postings to the project website. Model resolution and treatment of tropical convection at a local scale needs attention. This process is ongoing.

4. EVALUATION OF WEATHER WARNINGS (feedback from customer?, standardized questions to disaster authorities?)

The few weather warnings or advisories issued during the review period were well received by stakeholders. In the first quarter, there had been concerns on the content of a weather warning in that it didn't have all detail required for proactive disaster management. This has since been addressed and commended by the Civil Protection Unit and the media.

A number of other specialised forecast products such as frost forecasts (i.e. ground minimum temperatures), fire-weather forecasts, fog forecasting and ten-day forecasts which are outside the scope of the SWFDP have also been improved in terms of accuracy and relevance – according to feedback from users of this

information. A lot more guidance is thus available to Forecasters for frost forecasting for example.

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

Zimbabwe continues to receive positive feedback from various stakeholders with regards accuracy and timeliness of weather forecasts and warnings. This can be largely attributed to the SWFDP. In this regard, the availability of this wide range of products should be maintained beyond the duration of the Demonstration Project. Zimbabwe has engaged each of the participating Global Products Centers and RSMC Pretoria by requesting for availability of products beyond the Demonstration Project. If the benefits of the SWFDP were to be discontinued, weather forecast services would retrogress and the gains made so far would come to naught.

Accessibility of model guidance from the various websites has improved remarkably. However, significant challenges remain with regards the local Internet connection which tends to slow the forecast process but efforts are in progress to upgrade the connection to broadband or satellite connection. Disruptions to the forecast process also result from power blackouts which sometimes lead to Internet servers being unavailable.

Surface and upper-air observations are also a significant challenge over the southern Africa region. In many cases they are not complete and they also communication problems delay their transmission. Satellite pictures from Meteosat Second Generation are also erratic and this compounds the challenges in the Forecast Process. Surface based observations and remote sensed observations are the basis in any Forecast Process. Their incompleteness or delay has significant impact on the timeliness and accuracy of weather forecasts.

Despite the foregoing, by far the greatest impact of the SWFDP is the increased accuracy of weather forecasts in general an improved lead-time of alerting of significant weather events to Government, Civil Protection and Disaster Management Authorities and the media.

6. **CASE STUDY** (PowerPoint Presentation to include guidance products (RSMC and NWP), satellite imagery, warnings issued, impact evidence etc)

The following case study relates to a winter rainfall event that was correctly forecast to occur on the 2nd of June 2007 (just outside the review period) although it was not a severe weather event by SWFDP criteria. It is a significant event as it occurred during the dry season when thunderstorms seldom occur. The following press release was issued on 30 May 2007, some 3 days ahead of the event. A NW-SE cloud band was projected to bring precipitation to Zimbabwe on the 2nd of June 2007. The cloud band was forced by an upper trough and a surface ridging high was forecast to enhance low-level convergence.

30 May 2007

PRESS RELEASE: RAINS FORECAST

There are strong indications for winter rains to affect the southern districts of the country over the weekend. An organised cloud system is expected to affect the country from Saturday (2nd June) with considerable thunderstorm activity over much of the country although the most affected should be Matebeleland South, Masvingo and southern Midlands where rainfall amounts of up to 20 mm are possible. These rains are, however, expected to be short lived and should have cleared the country by Monday. In their wake ground temperatures overnight should fall significantly resulting in incidences of moderate frost particularly over exposed surfaces. Areas such as Matopos, Kezi, West Nicholson, Gweru, Marondera and Nyanga are particularly susceptible to ground frost.

Widespread rainshowers and thunderstorms affected the country during the forecast period although the amounts recorded were below 50 mm. A separate PowerPoint presentation details the guidance provided by the centers.

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 (convective or synoptic)		(mm/24hrs)	Amount predicted	Usefulness (1-4) 4 is best	List by centre		
05/03/07		Mesoscale	67855	57.5mm	<20mm	3	NCEP	No	
30/03/07 to 31/03/07		Synoptic	67775 Harare, Logan park 67951	128.2mm 71.5mm 86.9mm	20 to 40mm	4	ECMWF RSMC (Pretoria)	Yes	
02/04/07		Mesoscale	67867	60.8mm	>20mm	4	UKMO	No	
07/04/07		Mesoscale	Mutare 67773	59.5mm 53.2mm	>20mm	4		No	