



MET OFFICE SWFDP-RA 1 PROJECT REPORT

1. INTRODUCTION

- 1.1 The Met Office has been an active participant in the SWFDP-RA1 since the first preparatory meeting in Pretoria in August 2006. The Met Office's over-riding strategy in contributing to the project has been to build on existing operational capabilities and expertise. The total cost to the Met Office of supporting this initiative since August 2006 has amounted to around £30K.
- 1.2 The Met Office played a leading role in developing the initial training programme for SWFDP participants at SAWS, Pretoria in October 2006 and contributed two training staff (Ian Lisk and Paul Davies) to help in the delivery of this event. The training staff concentrated on delivering practically orientated training using historical case study examples to reinforce the learning. It was emphasized by the trainers that the re-analysis of severe weather events using all available data was essential in helping to develop an effective forecast process for the forecasting of future severe weather events. A dedicated 'MOODLE-based' e-learning website was also developed to reinforce and 'prolong' the learning and to make the training resources available to a far wider audience than just those who attended the training events.
- 1.3 Paul Davies of the Met Office also contributed extensively to the delivery of the final training event at SAWS, Pretoria in November 2007.
- 1.4 The Met Office contributed to both the pre-project planning meeting in August 2006 and the mid-term review meeting in Maputo in February 2007. The RSMC Pretoria guidance product, conceived at the first meeting and refined during the initial training event in October 2006 was based on a product used by the Met Office Operations Centre. The Met Office also contributed a paper describing methods of evaluating the effectiveness of warnings and forecasts.
- 1.5 In terms of products the Met Office was extremely pleased to see that the SA-12 model (initialised by Met Office UM background fields) received some excellent feedback for helping to fine tune forecasts at short lead times. The pre-existing Met Office Africa LAM also received favourable feedback.
- 1.6 The Southern Africa MOGREPS products designed and disseminated specifically for this project received very little in the way of feedback from the participating NMSs. This is disappointing although letters have been received by the Met Office from the participating countries PRs requesting that the MOGREPS products continue to be made available post-project. The apparent lack of use is thought to be because of the shorter forecast lead time (out to T+72) of these products rather than any issues relating to their accuracy.



2. SWFDP-RA1 SUCCESS STORY:

The Met Office regards the SWFDP-RA1 as a success and a model that could relatively easily and inexpensively be applied to other regions of the world. The project's success can be seen as being directly attributable to the following:

- 2.1 The establishment of a detailed project plan arrived at through the involvement of all the project stakeholders during the week long pre-project meeting in Pretoria in August 2006 and then fine-tuned at the mid-term review meeting in Maputo in February 2007;
- 2.2 Simplicity of implementation in that even specifically tailored products such as EPS precipitation threshold maps were based on already existing global centre capability;
- 2.3 The establishment of a rigorous and transparent project evaluation process incorporating agreed feedback processes and quarterly reports;
- 2.4 An expert, willing and relatively technologically advanced guidance centre providing regular, consistently structured guidance that aimed to focus on the 'areas of interest';
- 2.5 A dedicated project website from where all the project products, guidance materials and training/reference materials were easily linked to;
- 2.6 The development and running of two forecaster training events (supported by a dedicated e-learning website) designed to facilitate greater understanding, interpretation and use of NWP products;
- 2.7 The development and maintenance of an end to end forecast process that was designed to enable the cascade of deterministic and probabilistic model data from the three participating global centres to the RSMC Pretoria guidance centre for synthesis into a regional guidance product which in turn then went out to the participating NMSs. This cascade process or 'forecast funnel' as it is sometimes called, enabled regional and then local value to be added to the original 'raw' model products;
- 2.8 The availability of EPS probability forecast products out to T+120 and beyond. Indeed, it is the massive impact of the EPS products which stands out as being the over-riding success story of this project. The ability to quantify risk in terms of severity and spatial location of event for lead times in excess of five days simply wasn't possible before the project began. The clarity and resultant ease of interpretation (supported by the training events) of these products also resulted in them being very easy to introduce into operational forecast processes;
- 2.9 The involvement of WMO PWS and the national civil protection agency (CPA) representatives at the Maputo meeting facilitated better coordination and communication with the respective NMSs and CPAs and also helped to achieve greater visibility of the positive impacts of the project with national governments.



3. SUGGESTED IMPROVEMENTS:

Clearly there will always be areas where improvements can be made. From the Met Office point of view the following could have been done better:

- 3.1 Feedback from the NMSs on the skill and characteristics of the various model products on offer was not detailed enough. There were generalised comments about precipitation amounts often being poorly forecast and an underlying issue with the inability of any of the models to forecast convective gusts but very little in the way of objective analysis. This feedback is needed if improvements are to be made to the models in the future. There should therefore be a clearer responsibility on the part of the NMSs to routinely verify and feedback to the global centres on the performance of the individual global model products;
- 3.2 There were simply not enough severe weather event case studies and/or detailed documentation of severe weather events and/or documentary/testimonial evidence on how the SWFDP-RA1 has resulted in overall improvements in the forecasting of severe weather and consequent saving of lives when compared with previous years. From a Met Office perspective this evidence is vital if we are to convince our 'owners' that our involvement in projects such as these is both worthwhile and measurable. There is also the opportunity to use any such evidence to encourage resource mobilisation from other UK Government Departments such as the Department for International Development (DfID) and the Foreign and Commonwealth Office (FCO);
- 3.3 Clearer definition of the interaction and responsibilities between the assigned regional guidance centre and the regional TCAC are needed. There were apparently occasions when the RSMC Pretoria and RSMC La Reunion guidance differed significantly. Whilst realising that tropical storms fall outside of the scope of this project they do still of course result in heavy rains and strong winds! The RSMC La Réunion's Tropical Cyclone products form the authoritative guidance for the region, and really should not be challenged openly by RSMC Pretoria.
- 3.4 Access by ALL of the participating NMSs to reliable and fast broadband internet connectivity. The web-based nature of this project is both one of the project's primary strengths but also a major weakness. Addressing this underlying communication issue is therefore vital.

4. THE FUTURE:

- 4.1 In terms of additional future MOGREPS products the Met Office would investigate the addition of streamline winds aimed at diagnosing pronounced areas of convergence and also EPS-grams for a wider selection of locations rather than the two per country contributed this time. The Met Office is also looking to develop a more flexible and easy to maintain website to support a family of additional web-based forecast products;
- 4.2 Incorporating elements of the EUMETNET MeteoAlarm project into the SWFDP e.g. trialling a web-based regional map depicting hazard alert for the CPAs with links to the associated local warnings;
- 4.3 'Roll-out' of the SWFDP 'template' to other regions (in Africa and globally) and other applications e.g. regionalised aviation MET services;



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- 4.4 Increased application by, and coordination with other WMO departments and programmes i.e. Regional Associations, TCO, AeMP, ETR, PWS, DRR etc. This would add more specific customer focus and expertise and thus potentially help with those elements of the project that were hard to coordinate this time round e.g. warnings production and evaluation, contingency plans and interaction with the customer.

5. CONCLUSION:

The SWFDP-RA1 has achieved a great deal in a very short space of time and the processes put in place are now ingrained and are indeed to be expanded in southern Africa. The move from 'project' to operational 'programme' needs to be carefully managed though and appropriate service level agreements and back-up plans negotiated and agreed with all the stakeholders and it should be remembered that the global centres, as providers of model data, need to be included in this process.

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