

ANNUAL JOINT WMO

Technical Progress Report on Global Data-Processing and Forecasting System and related Research Activities on Numerical Weather Prediction for 2007

Submitted by

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1. Summary of highlights

The main activities carried out by the National Institute of Meteorology (INAM) of Mozambique were characterized by the consolidation on use of the Ported Unified Model installed in 2006. This system has input data from UK Met Office and run automatically. The outputs are different meteorological parameters at 10 km of spatial resolution and these assist the meteorologists on issuing of daily and medium range weather forecast for the public, shipping and aviation. In the field of telecommunication INAM continue to use the mobile phone system of short message system (sms) for data exchange between Maputo Office Centre and the Meteorological Stations existing countrywide.

By beside, INAM has continued to use severe weather forecast demonstration project (SWFDP) products for issuance of extreme weather events warnings such as heavy rains and strong wind.

The main constraint is the absence of operational Research Division that contribute for none existing research activities not only on numerical weather prediction models but also on calibration and development of model to be applied in weather forecasting and research.

2. Equipment in use at the Centre

Actually, the National Institute of Meteorology runs two weather forecasting centres, one performs weather forecast for aviation and another one is more concentrated on the public weather service and for shipping. The Aviation Centre is equipped with Satellite Distribution System (SADIS). This system is used for data exchange used by aircrafts like aerodrome forecasts and routine meteorological observations.

The two Forecasting Centres are equipped with the Messir Comm system connected to the Global Telecommunication System (GTS). From this system the data is exchanged to the Messir Vision in order to be displayed and used for operational purposes.

There are two Doppler Weather Radar displays that allow the forecasters to access different radar products for monitoring the weather systems.

In 2005 was installed the meteosat second generation receiver. The system is connected with three computers, one that receives data from the antenna and sends to the second for processing and then the processed data is visualized in the third computer.

3. Data and Products from GTS in use

The Centre receives data and products from different sources. Operational numerical weather prediction products from World Area Forecast Centre London/ Washington, and from European Centre for Medium Weather Forecast (ECMWF). These provide different parameters like total precipitation, vertical velocity, convergence, relative vorticity, temperature, wind, wind speed, relative humidity, streamlines, geopotential, pressure, sea level pressure. T4 charts are also received from WAFC's. Bulletins such as SYNOP, METAR, SPECI, TAF, SIGMET, AIREP, AMDAR, TEMP's, PILOT's, CLIMAT Data, CLIMATE TEMP, and GRIBS are also received.

4. Forecasting system

The Centre issues weather forecasts for public, maritime and aviation using several numerical weather forecast products mentioned in paragraph 3. Moreover, the daily and five days forecast are performed using GFS products from NOAA, deterministic forecast from ECMWF. With the establishment of Severe Weather Demonstration Forecast Project (SWDFP), INAM started to issue heavy rains warnings with two or three leading time. These warnings are very useful not only for heavy rain monitoring but for hydrological (river evaluation or urban flash flood) and agriculture (crop monitoring).

The rainfall season forecast is another important forecast provided by INAM to the decision makers in the fields of health, agriculture, water authorities and disaster management agencies. It assists them to prepare the contingency plan as form of preparedness for an eventuality of any natural disaster related to hydrometeorological phenomena. The seasonal outlook is performed in collaboration with Meteorological Services in Southern region, International Research Institute, and Drought Monitoring Regional Centres of Nairobi and Gaborone.

6. Plans for the future (next 4 years)

6.1. Development of the GDPFS

6.1.1. The major change expected is the implementation of a regional NWP model suitable for Mozambique.

6.1.2. Through verification Of the model output enhance the model configuration, parameterization scheme, terrain configuration for each sub region so that the nexting process can be usefully.

6.2. Planned Research Activities in NWP, Nowcasting and Long-range Forecasting

Training for new meteorologists in the field of NWP and also for the actual staff will take place in the NWS and at RSMC's that cooperates with Mozambique meteorological services.

6.2.1. Nowcasting still a challenge for the public and aviation weather. Although Radar and satellite have improved the monitoring of the hazardous phenomenon. The NWP can enhance the capability of a NWS in the issuance of early warnings if instability indexes are used. The aim of the working groups is to analyze and define the model parameters that give a better guidance to the operational forecasters.

6.2.2. Due to the geographical location, Mozambique is prone to tropical cyclones and wind storms associated to cut-off lows and upper level troughs. These features can easily be identified by model and if forecasted in advance, the impacts can be mitigated. Long-range forecast plays a role in the issuance of early warnings to the disaster management authority.

6.2.3. There is a need of understanding of the EPS techniques used by other meteorological centers to make them useful and gradually implement in the regional models.

7. References

The list of GTS products you can find in the Corobor webpage given below and the other three websites you find the GFS products used for weather forecasting

www.corobor.com

www.cpc.ncep.noaa.gov

www.ecmwf.int/products/forecats/d/charts/medium/special/swdfp/det/

www.weathersa.co.za/RSMC

www.wxmaps.org/pix/af.vv.

Yours faithfully,

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