**Severe Weather Forecasting Demonstration Project**

**Regional Subproject for West Africa (SWFDP-West Africa)**

**Training Workshop on Severe Weather Forecasting and**

**Delivery of Warning Services**

(Lomé, Togo, 20-30 November 2018)

**CONCEPT NOTE**

1. **Summary**

At the kind invitation of the Government of Togo, the WMO Secretariat has planned for the first SWFDP-West Africa Training Workshop on Severe Weather Forecasting and Delivery of Warning Services to be held in Lomé, Togo, during 20-30 November 2018. The workshop is being organized with funding support from Climate Risk & Early Warning Systems (CREWS) Initiative (<https://www.crews-initiative.org/en>) and in collaboration with the Global Challenges Research Fund (GCRF) African Science for Weather Information and Forecasting Technology (GCRF African-SWIFT) project (<https://africanswift.org/>).

1. **SWFDP Introduction**

The WMO Severe Weather Forecasting Demonstration Project (SWFDP), since its inception in 2006, has been successfully strengthening capacity of National Meteorological and Hydrological Services (NMHSs) in developing countries, least developed countries (LDCs) and Small Island Developing States (SIDS) to deliver improved forecasts and warnings of severe weather to save lives and livelihoods, and protect property and infrastructure. This is achieved through SWFDP’s “cascading forecasting process” with contributions from the advanced global centres. The main objectives of SWFDP are:

1. to improve the ability of NMHSs to forecast severe weather events;
2. to improve the alert lead time for these events;
3. to improve engagement of NMHSs with users especially disaster management and civil protection authorities (DMCPA) and media etc., for a better delivery of public weather services (PWS) and warnings and for improved decision- making;
4. to identify gaps and areas for improvement through feedback from NMHSs.

The SWFDP started in 2006 involving just 5 countries (Botswana, Madagascar, Mozambique, United Republic of Tanzania and Zimbabwe) in south-eastern Africa. Later, in 2008 it was expanded to include all 16 countries in Southern Africa. Currently, the SWFDP involves and benefits over 75 developing countries, LDCs and SIDS in eight sub-regions with contributions from various advanced global and regional centres and support from development partners and donors. The project is mainly funded through extra-budgetary resources. The eight SWFDP sub-regions include: Southern Africa, South Pacific, Eastern Africa, South-East Asia, Bay of Bengal (South Asia), Central Asia, West Africa and Eastern Caribbean.

The SWFDP has improved the lead-time and reliability for alerts and warnings about high-impact events such as heavy precipitation, strong winds and high waves. It has been strengthening the engagement of NMHSs with users including the media, Disaster Management and Civil Protection Authorities (DMCPAs) and local communities for improved disaster risk reduction (DRR) and decision-making by users. The project has also benefitted various socioeconomic sectors, including agriculture, fisheries, aviation, and maritime transportation. More information about SWFDP can be found on WMO website at the following link: <http://www.wmo.int/pages/prog/www/swfdp/index_en.html>

1. **SWFDP-West Africa**

While noting the significant development and progress of the first SWFDP regional subproject implemented in the south-eastern region of Africa in 2006, the World Meteorological Congress during its fifteenth session (Cg-XV, 2007) decided that SWFDP concept should be expanded and implemented throughout Africa and to other WMO Regions especially in developing countries. Subsequently, the development of SWFDP in Eastern Africa in RA I (Africa), started in 2010.

In February 2015, the RA I (Africa), at its sixteenth session (Praia, Cabo Verde), requested WMO Secretary-General and the Commission for Basic Systems (CBS) to consider expanding the severe weather forecasting programme to the rest of Africa, starting with West Africa. Accordingly, in the same year, the WMO Secretariat initiated the process to respond to regional requirements, with seed funding from Korea Meteorological Administration (KMA). For this purpose, in May 2015, a mission to Senegal Meteorological Service (ANACIM) was carried out to gather information on the operational capacity of ANACIM and to discuss how the Regional Specialized Meteorological Centre (RSMC) Dakar could further benefit from the SWFDP and play its role within the project. Later, in November 2015, a technical workshop on severe weather forecasting and warning services in Western and Central Africa was organized to learn about operational capabilities of countries in the sub-region in preparing and delivering forecasts and warnings; to train the participants on the use of severe weather forecasting products and public weather services; and to develop an outline of the Regional Subproject Implementation Plan (RSIP).

In September 2017, a technical Planning meeting on the implementation of SWFDP in West Africa was organized in Abidjan, Ivory Coast to develop the first draft of the RSIP. The meeting was attended by representatives of NMHSs in the sub-region in addition to attendance and contributions by potential global and regional centres. The meeting reviewed and updated the RSIP to develop subproject activities with appropriate time frames.

In 2016, the development of a project website was initiated at RSMC Dakar. Further website enhancements were completed in 2018 to make the project web portal operational before starting its demonstration phase in early 2019. The password-protected RSMC Dakar web portal can be accessed at: <http://rsmc.anacim.sn/en/user/login>



SWFDP-West Africa currently involves 15 countries in the sub-region including Benin, Burkina Faso, Cabo Verde, The Gambia, Ghana, Guinea, Guinea-Bissau, Ivory Coast, Liberia, Mali, Nigeria, Niger, Senegal, Sierra Leone and Togo. The project mainly focuses on improving forecasting and warning services for hazardous weather including especially African monsoon-induced heavy rain, strong winds, and high waves by making the best use of products such as Numerical Weather Prediction (NWP), Ensemble Prediction System (EPS) and satellites. The products for SWFDP-West Africa are made available from NWP Centres in Canada, France, UK and USA. The subproject is to be managed by a Regional Subproject Management Team (RSMT) which consists mainly of the designated representatives of the participating NMHSs and contributing global and regional centres. Generally, the designated representatives (or focal points) from the NMHSs are Directors or senior forecasters of their respective national forecasting offices. The RSMT is normally chaired by the lead regional centre and is responsible for reviewing and updating the RSIP. Capacity development of the operational forecasters and public weather services (PWS) staff is a salient feature of SWFDP, and is achieved by improving their skills on NWP interpretation and making the best use of the available NWP products and satellite-based information and improved forecasts and warnings. More information about SWFDP-West Africa including its draft RSIP is available on WMO website at the following link:

<http://www.wmo.int/pages/prog/www/swfdp/SWFDP-WestAfrica.html>

1. **SWFDP-West Africa Training Workshop (20-30 November 2018)**

At the kind invitation of the Government of Togo, the WMO Secretariat has planned for the first SWFDP-West Africa Training Workshop on Severe Weather Forecasting and Delivery of Warning Services to be delivered in Lomé, Togo, during 20-30 November 2018. The workshop is being organized with funding support from the Climate Risk and Early Warnings Systems (CREWS) Initiative (<https://www.crews-initiative.org/en>) and in collaboration with Global Challenge Research Funds (GCRF) African Science for Weather Information and Forecasting Technology (GCRF African-SWIFT) (<https://africanswift.org/>). In the West Africa region, CREWS initiative aims to strengthen regional entities to engage with national hydrometeorological agencies in the region to improve risk information and early warning services at national level. The GCRF Africa SWIFT project is a 4-year programme aimed at building African research capability in support of weather prediction services, and SWIFT shares many of SWFDP’s goals in improving the tools and skills of African weather prediction services.

The provisional training programme for the SWFDP-West Africa workshop has been jointly developed by WMO and GCRF African-SWIFT in consultation with contributing lecturers. The experts from contributing global and regional centres (e.g. ECCC, MeteoFrance, NOAA/NCEP, RSMC Dakar, ACMAD, AGRHYMET Centre) as well as from GCRF African -SWIFT (i.e. University of Leeds, the Federal University of Technology, Akure, Nigeria, ACMAD, Kenya Meteorological Department) will contribute to the workshop as lecturers. Participants from Kenya will share their practical experience of the successful SWFDP project in Eastern Africa. The provisional training program has been made available on the WMO website at the following link: <http://www.wmo.int/pages/prog/www/DPFS/Meetings/RAI-WA-SWFDP_Lome2018/DocPlan.html>

*4.1 Workshop Format and Participation*

The two-week SWFDP-West Africa workshop will be a blend of both theory and practical sessions. Week 1 of the workshop (20-24 November 2018) will focus mainly on forecasting techniques, interpretation of NWP products and satellite-based information, and its best use in severe weather forecasting. Week 2 (26-30 November 2018) will mostly cover PWS aspects e.g. determining service delivery gaps in the participating countries, dissemination channels, Impact-based forecast and warning services (IBFWS), introduction to the Common Alerting Protocol (CAP) standard for dissemination of warnings, and working with the media and with DMCPAs.

The workshop will be attended by operational forecasters and public weather services (PWS) staff from 15 NMHSs in the sub-region. Generally, from each NMHS (except the host), there will be two participants including one operational forecaster and one PWS staff. However, the workshop will be attended by several participants from the host country. Operational forecasters will attend the entire duration of the workshop while PWS staff will only participate in Week 2 of the training dedicated to service delivery. Several PWS and Agromet staff as well as representatives of stakeholder organizations including DMCPAs, agriculture, and media will also attend Week 2 of the workshop.

Additionally, during Week 1 of the workshop, it will be attended by 21 participants involved in African-SWIFT. The SWIFT participants will include forecasters, academics, researchers and lecturers from the SWIFT African partner countries (Senegal, Ghana, Nigeria, Kenya).

The operational forecasters from NMHSs have been requested to complete a few on-line e-learning courses prior to the workshop. The web links for these courses have been made available in the provisional program for Week 1 (20-24 November 2018) which can be accessed through the following link: <http://www.wmo.int/pages/prog/www/DPFS/Meetings/RAI-WA-SWFDP_Lome2018/DocPlan.html>

*3.2 Workshop Objectives and Aims*

The main objective of the workshop is to develop capacity of the NMHSs in NWP usage and forecasting techniques and to enable the SWFDP-WA to move to its next level i.e. the demonstration phase which is likely to start in early 2019. The workshop will also bring SWIFT forecasters and researchers together to learn and develop standard forecasting techniques, which will be developed in the SWIFT Testbeds in 2019.

From the SWFDP, SWIFT and PWS perspective, the workshop will, mainly:

* Introduce the available NWP and Guidance product through SWFDP-West Africa to the participants and develop their capacity regarding the use of these products in forecasting;
* Prepare the NMHSs for the demonstration phase of SWFDP-West Africa to start in early 2019;
* Prepare SWFDP participants for the collaborative forecasting activities to be conducted in the program;
* Introduce forecasters to the latest techniques for West African synoptic forecasting and nowcasting;
* Introduce researchers to the challenges and methods of operational forecasting;
* Apply these techniques to new case studies, which will encourage forecaster-researcher dialogue;
* Develop training tools (PowerPoint and practical exercises) which can be used in future training events and programmes;
* Engage the forecasters and PWS staff with users (e.g. from DMCPAs, media, agriculture) to improve the delivery of warnings and services;
* Improve dissemination of warnings through various channels of communication including websites and social media;
* Introduce impact-based forecasting and warning (IBFW) services.

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