**Severe Weather Forecasting Demonstration Project (SWFDP)**

**Regional Sub-project for West Africa**

 **Training Workshop on**

**Severe Weather Forecasting (Week 1) and Delivery of Warning Services (Week 2)**

(Lomé, Togo, 20-30 November 2018)

**Provisional Programme for Week-1 (20-24 November 2018)**

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| **Day 1: Tuesday, 20 November 2018** |
| 09:00-09:30 | **Registration** | All  |
| 09:30-10:00 | **Opening** * Welcome Remarks by local host
* Message by WMO
* Group Photo
 | DGMN-TogoMr Abdoulaye Harou (WMO) *All (30 min)* |
| 10:00-10:30 | *Coffee/ Tea Break* |  |
| 10:30-10:45 | * Strengthening capacity of NMHSs in improving forecasts and warnings through SWFDP
 | Mr Abdoulaye *(15 min)* |
| 10:45-11:00 | * SWFDP-West Africa Training programme and objectives
* The role of SWIFT and joint aims of SWIFT and SWFDP in this workshop
 | Mr Abdoulaye & Douglas Parkar *(15 min)* |
| 11:00-11:30 | **RSMC Dakar Website and portal for SWFDP-West Africa (Interactive Demonstration)** | Mr Sadobou Ba (to instruct)*(30 min)* |
| 11:30-12:30 | **Major hazards and forecasting capacity in West African countries**15 NMHSs will make short presentations (2-3 slides) on major hazards & national forecasting/warning capacity & verification activities (Benin, Burkina Faso, Cabo Verde, The Gambia, Ghana, Guinea, Guinea-Bissau, Ivory Coast, Liberia, Mali, Nigeria, Niger, Senegal, Sierra Leone and Togo) | All NMHs Abdoulaye & Sadibou (to facilitate)(*120 min)* |
| 12:30-13:30 | *Lunch Break* |  |
| 13:30-14:30 | **What are the major hazards and forecasting capacity in your country?**Short presentations …continue | All NMHSs |
| 14:30-14:45 | **Current weather discussion**  | NMHS-Togo  *(15 min)* |
| 14:45-15:30 | **Forecaster’s Handbook Elements*** Basic climatological framework
 | Elijah Adefisan *(45 min)* |
| *15:30-16:00* | *Coffee/ Tea Break* |  |
| 16:00-17:30 | * Synoptic dynamics and synoptic analysis based on NWP fields
 | Douglas Parker *(90 min)* |

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| **Day 2: Wednesday, 21 November 2018** |
| 09:00-09:45 | **SWFDP-Eastern Afr**i**ca – Practices & Experience*** Guidance product development process and interpretation of guidance product
* Case studies – lessons learned, success stories and failures
 | David Koros*(45 min)* |
| 09:45-10:30 | **SWFDP-Eastern Africa – Verification Experience*** Forecast verification process at RSMC Nairobi

SWFDP Evaluation form | David Koros *(45 min)* |
| 10:30-11:00 | *Coffee/ Tea Break* |  |
| 11:00-12:30 | Global NWP products for SWFDP-West Africa * NOAA/NCEP products through African Desk: an overview (access demo), interpretation and usage in forecasting
* ECC Canada – availability of data and products: an overview (access demo), interpretation and usage in forecasting
 | TBD – NOAA/NCEP*(45 min)*Andre Giguere *(45 min)* |
| 12:30-13:30 | *Lunch Break* |  |
| 13:30-13:45 | **Current weather discussion**  | DGMN-Togo *(15 min)* |
| 13:45-14:30 | * MeteoFrance – availability of data and products: overview (access demo), interpretation and usage in forecasting
 | Marjorie Bougeon *(45 min)* |
| 14:30-15:30 | **Forecaster’s Handbook Elements**Deep convection | Douglas Parker *(60 min)* |
| *15:30-16:00* | *Coffee/ Tea Break* |  |
| 16:00-17:30 | **Regional NWP/Limited Area Model (LAM) – Products and Services** Products and services available from regional centres including their interpretation and usage (e.g. case studies)* RSMC Dakar
* ACMAD
* AGRHYMET Regional Centre
 | Abdou Aziz Diop *(30 min)*Elijah Adefisan *(30 min)*TBD-AGRHYMET *(30 min)* |

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| **Day 3: Thursday, 22 November 2018** |
| 09:00-1030 | **Forecaster’s Handbook Elements*** Local weather
 | Douglas Parker  *(90 min)* |
| 10:30-11:00 | *Coffee/ Tea break* |  |
| 11:00-12:30 | **Nowcasting*** Nowcasting concepts, basics and challenges
* Satellite Nowcasting: Identifying convection initiation, lightening detection, and probability of severe weather including use of RDT products

Important Note: Please do the following e-learning courses by 15 November 2018 prior to the workshop:<http://www.wmo.int/pages/prog/amp/pwsp/Nowcasting.htm>Please click on "Proceedings" at the bottom to see detailed introduction of application of Nowcasting techniques.Estimation propagation of MCC/MCS (about 30 minutes):<https://www.slideserve.com/overton/the-propagation-of-mesoscale-convective-complexes> | Douglas Parker *(45 min)*Marjorie Bougeon & Abdou Aziz Diop *(45 min)* |
| 12:30-13:30 | *Lunch Break* |  |
| 13:30-13:45 | **Current weather discussion**  | DGMN-Togo *(15 min)* |
| 13:45-14:30 | **Atmospheric instability and practical use of specific products and indices in diagnosis of deep convection and severe weather*** K-Index, Total Totals Index, Lifted Index, Vertical Velocity, CAPE, Precipitable water, Theta-E etc.
 | TBD - NOAA/NCEP(*45 min)* |
| 14:30-15:30 | **Practical Session: Satellite Nowcasting** (Lecturers may consider dividing trainees into several groups for exercise) | Marjorie Bougeon and Abdou Aziz Diop to lead)Douglas Parker (to assist) *(60 min)* |
| 15:30-16:00 | *Coffee/ Tea break* |  |
| 16:00-17:30 | **Practical Session: Severe weather forecasting for Short-range** * Preparing forecasts for Day 1 & Day 2

(Lecturers may consider dividing trainees into several groups for exercise) | Abdou Aziz Diop and David Koros (to lead)Other lecturers (to assist) *(90 min)* |

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| **Day 4: Friday, 23 November 2018** |
| 09:00-10:30 | **Combining nowcast, NWP forecast & conceptual models*** Concept models for heavy rain with examples
* Blending of nowcast and NWP forecast
 | Marjorie Bougeon *(90 min)* |
| 10:30-11:00 | *Coffee/ Tea break* |  |
| 11:00-12-30 | **Introducing model output verification methods: contingency tables and scores** (Lecture 45 minutes, practical 45 minutes) (The participants will be able to carry out contingency table verification with the help of the tools used in the session, and will understand the meaning of the most useful scores)Important Note: Please following e-learning course on forecast verification by 15 November 2018 prior to the workshop. <https://eumetcal.eu/links/> Please click on "Verification module" to take the course on above website. Participants should complete the introductory module and the module on Categorical forecast verification --- about 2 hours work | Andre Giguere *(90 min)* |
| 12:30-13:30 | *Lunch Break* |  |
| 13:30-13:45 | **Current weather discussion**  | DGMN-Togo *(15 min)* |
| 13:45-15:00 | Verification of forecast * Verifying forecasts and warnings
* SWFDP verification tasks (probability of detection, false alarm ratio etc.) (theory and hands-on session)
 | David Koros (to instruct) Andre Giguere (to assist) *(75 min)* |
| 15:00-15:30 | SWFDP database and submission of Progress Reports* Demonstration of SWFDP data base for submission of progress reports
 | Abdoulaye Harou*(30 min)* |
| 15:30-16:00 | *Coffee/ Tea Break* |  |
| 16:00-17:30 | **Practical session:** Case studies over West Africa | Douglas Parker*(90 min)* |

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| **Day 5: Saturday, 24 November 2018** |
| 09:00-10:30 | **Practical session:** Case studies over West Africa | Douglas Parker*(90 min)* |
| 10:30-11:00 | *Coffee/ Tea Break* |  |
| 11:00-12:30 | **Practical session:** Case studies review/verification | Douglas Parkar*(90 min)* |
| 12:30-13:30 | *Lunch Break* |  |
| 13:30-15.30 | **Practical session:** Case studies review/verification (continues…) | Douglas Parkar*(120 min)* |

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| 15:30-16:00 | *Coffee/ Tea Break* |  |

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| 16:00-17:15 | **Discussions about SWFDP-West Africa:** Expectations and Way forward | All Abdoulaye Harou (to facilitate) *(75 min)* |
| 17:15-17:30 | **Closing of workshop** (remarks by the host, WMO and participants) | All *(15 min)* |

**Lecturers:**

Mr André Giguère - ECC Canada

Ms Marjorie Bougeon - MeteoFrance

TBD - NOAA/NCEP

Mr Abdou Aziz Diop - RSMC Dakar

Mr Sadibou Ba - RSMC Dakar

TBD - AGRHYMET

Dr Douglas Parker-University of Leads (GSRF African-SWIFT)

Mr Elijah Adefisan – FUTA/ACMAD (GSRF African-SWIFT)

Mr David Koros – RSMC Nairobi (KMD) (GSRF African-SWIFT)

Mr Abdoulaye Harou – WMO Secretariat

**Important Note for Trainees on pre-workshop e-learning Courses:**

All the trainees are required to complete a few e-learning courses (as mentioned above within the training programme) before coming to the training workshop. The objective of the e-learning courses is to assist the trainees to have better preparation and to refresh their knowledge prior to the workshop.