Programme of the WCRP/APARC School on "AI for Climate & Weather Forecast"

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Day 1 Convener: Dr. Mohamadou A. Diallo/XX YY

Monday, 24th November 2025		
Time (UTC/GMT)	**Title**	**Speakers**
Introductory Session		
08:45 - 09:00	**Arrival & Registration**	**All**
09:00 - 09:05	**General opening of the AI4Climate' Purpose, prospective outcomes & schedule**	Dr. Mohamadou A. Diallo (FZJ, Germany)
09:05 - 09:10	**Welcome Words**	Prof. Mohamed M. Fall (AIMS, Senegal)
09:10 - 09:30	**Introduction to World Climate Research Programme (WCRP)**	Dr. Hindumathi K. Palanisamy (WMO/WCRP, Swissland)
09:30 - 09:50	**Introduction to Atmospheric Processes and their Role in Climate (APARC)**	Prof. Amanda Maycock (University of Leeds, UK)
09:50 - 10:10	**Introduction to Forschungszentrum Jülich**	Prof. Michaela I. Hegglin (FZJ, Germany & UREAD, UK)
10:10 - 10:30	**Introduction to AIMS Senegal**	Dr. Coura Balde (AIMS, Senegal)
10:30 - 11:00	**Short tea and coffee break**	
Climate Services and Information Session		
11:00 - 11:25	**Overview Climate Change, Hazards and Extreme events**	Dr. Victor Ongoma (University Mohammed VI Polytechnique, Morocco)
11:25 - 11:50	**Climate Services and Successful stories of Early Warnings in Africa**	Dr. Masilin Gudoshava (IGAD/ICPAC, Kenya)
11:50 - 12:15	**ESP/UCAD intro+African Climate Dynamic and Monsoon Circulation**	Prof. Amadou T. Gaye (ESP/UCAD, Senegal)
12:15 - 12:35	**Towards green hydrogen development in Africa: potentials, opportunities and challenges**	Dr. Solomon N. Agbo (FZJ, Germany)
Panel Discussion		

Monday, 24th November 2025		
Time (UTC/GMT)	**Title**	**Speakers**
Introductory Session		
08:45 - 09:00	**Arrival & Registration**	**All**
12:35 - 13:15	**1. Capacity building for climate services: Successful stories of Early Warnings,** **2. Lessons learned from Global North to foster partnership with Global South**	Dr. Masilin Gudoshava Prof. Amadou T. Gaye Dr. Victor Ongoma Dr. Solomon N. Agbo
13:15 - 14:45	Lunch break	
Hands-on Python for Mini-projects		
14:45 - 16:30	**Presentation of Hands-on Python using case studies on jupyter-notebook for the Mini project throughout the whole week:** **A. Downscaling using Deep learning** **B. Short Range prediction using convolutional and Graph Neural Networks** **C. African Monsoon onset & Dynamics** **D. Origin of Climate Change from Paleo-to-present day climate**	Prof. Robert Mbiake (University of Douala, Cameroon) Prof. Maria Molina (University of Maryland, USA) Prof. Jonathon S. Wright (Tsinghua University, China) Dr. Redouane Lguensat (PSL/IRD, Sorbonne University, France)
16:30 - 17:00	Short tea and coffee break	
17:00 - 18:00	**Self-introduction of the Trainees**	In-person Trainees
18:00	End of the Day 1 and Bus to the Hotel	

Day 2 Convener: Prof. Bertrand Tchanche/XX YY

Tuesday, 25th November 2025		
Time (UTC)	**Title**	**Speakers**
Networking-Insights		
09:00 - 10:00	**Global South Inclusion Task team (GSITT) in WCRP**	Dr. Anna Sorensson (University of Buenos Aires, Argentina)

Weather and Climate Modeling Session		
10:00 - 10:30	**Introduction to Climate System Modelling**	Prof. Hyacinth Nnamchi (GEOMAR, Germany)
10:30 - 11:00	**Atmospheric Reanalysis Products: What They Are and How to Use Them**	Prof. Jonathon S. Wright (Tsinghua University, China)
11:00 - 11:45	**Short tea and coffee break**	
Climate, Weather and Air Quality Session		
11:45 - 12:10	**From Air pollution to Climate change: Same sources**	Prof. Robert Mbiake (University of Douala, Cameroon)
12:10 - 12:35	**Ozone impact on the environment and society in the context of climate change.**	Prof. Michaela I. Hegglin (FZJ, Germany & UREAD, UK)
12:35 - 12:55	**Atmospheric pollution, Observations and Health Risk Assessment**	Dr. Bertrand Tchanche (Alioune Diop University, Senegal)
12:55 - 13:15	**Forecasting and Reanalysis from the NASA Global Modeling and Assimilation Office: available products, data access, and use cases for AI/ML**	Dr. Carl A. Malings (NASA/Morgan State University, USA)
13:15 - 14:45	Lunch break	
Panel Discussion		
14:45 - 15:30	**1. Observational Gap, Current limitations & future needs for constraining weather and climate data that aids for informed decision-making for societal benefits** **2. How climate change is impacting Africa and its air quality (aerosols, O3, dust gusts,...) ?**	Prof. Jonathon S. Wright Prof. Hyacinth Nnamchi Dr. Masilin Gudoshava Prof. Robert Mbiake Prof. Bertrand T. Fankam Dr. Anna Sorensson Dr. Carl A. Malings Dr Eric Nizeyimana (Univ. Rwanda)
Evaluation Tools		

15:30 - 16h30	**ESMValTool for Climate Model Visualization**	Dr. Birgit Hassler (DLR, Germany)
16:30 - 17:15	Short tea and coffee break	
Talk + Hands-on Python for Mini-projects		
17:15 - 18h00	**ESMValTool for Climate Model Visualization**	Dr. Bettina Gier (University of Bremen, Germany
18:00	End of the Day 2 and Bus to the Hotel	

Day 3 Convener: Prof. Hyacinth Nnamchi/XX YY

Wednesday, 26th November 2025		
Time (UTC)	**Title**	**Speakers**
Predictability and Regional Attribution Session		
09:30 - 10:00	**Weather and Climate Predictability and Prediction**	Dr. Marisol Osman (University of Buenos Aires, Argentina)
10:00 - 10:30	**Overview of Artificial Intelligence for Weather and Climate Prediction: Advantages and Limitations**	Prof. Maria Molina (University of Maryland, USA)
10:30 - 11:00	**Short tea and coffee break**	
Hazards and Extreme Events Session		
11:00 - 11:30	**AI-driven Weather Forecasting and Climate Projections: Example Applications**	Prof. Maria Molina (University of Maryland, USA)
11:30 - 12:00	**Monitoring and Subseasonal predictability of heat waves in West African cities over recent decades**.	Dr. Cedric Garcial Langue (LSCE, France)
12:00 - 12:30	**African Monsoon Circulation: Processes and impacts on society**	Dr. Cheikh N. Fall (ESP/UCAD, Senegal)
Panel Discussion		
12:30 - 13:15	**3. Current challenges in predicting African monsoon** **4. Record breaking weather extremes in recent climate: causes and impacts (How climate change is impacting Africa**	Dr. Marisol Osman Prof. Maria Molina Prof. Jonathon S. Wright Dr. Cedric Garcial

	Sub-daily to decadal variability: causes and impacts on regional climate (MJO, ENSO, QBO, PDO, IPO, extremes etc.))	Langue Dr. Cheikh N. Fall
13:15 - 14:45	Lunch break	
Hands-on Python for Mini-projects		
14:45 - 16h15	**Mini project: Hands-on Python on jupyter-notebook with a case study**	Prof. Jonathon S. Wright (Tsinghua University, China)
16:15 - 16:45	Short tea and coffee break	
16:45 - 18h00	**Mini project: Hands-on Python on jupyter-notebook with a case study**	Dr. Redouane Lguensat (PSL/IRD, Sorbonne University, France)
18:00	End of the Day 1 and Bus to the Hotel	

Day 4 Convener: Prof. Robert Mbiake/XX YY Online

Thursday, 27th November 2025		
Time (UTC)	**Title**	**Speakers**
ML/AI for Weather & Climate Prediction Session		
09:30 - 10:15	**Climate storylines for actionable regional climate information (Data & methods)**	Prof. Theodore G. Shepherd (UREAD/FZJ, UK)
10:15 - 11:00	**Advanced and Applied Neural Networks in weather and climate forecasting**	Prof. Maria Molina (University of Maryland, USA)
11:00 - 11:30	**Short tea and coffee break**	
Climate Services and Information Session		
11:30 - 12:00	**Statistical Downscaling: Methods and Latest Advances (incl. AI or not?)**	Dr. Redouane Lguensat (PSL/IRD, Sorbonne University, France)
12:00 - 12:30	**Introduction to Artificial Integrated Forecast System model (Anomoi): Cases study on medium-range forecasting (AIFS), regional modelling (stretched vs. Lam), and probabilistic models (crps & diffusion).**	Mr. Mario Santa Cruz López (ECMWF, Reading)
Panel Discussion		

12:30 - 13:15	**5. Is Africa well prepared in terms of capacity building (i.e. infrastructure, cloud, GPU, strong academic ecosystem, training, legislations) to ensure it does not miss out on the AI revolution?** **6. What role should young people play and what strategy should they adopt to meet the high demand for local AI-based solutions (health, agriculture, energy, climate, fintech)?** **7. Introduction to tools for larger data gathering & manipulation (Shell, Python, jupyter, NCO libs, ecodec-python, xarray,...)** **8. Data acquisition (SPARC Data, CMIP6, CCMI2, Reanalyses, Observations)** **9. Introduction to Data analysis tools (Pangeo, ESMValTool (Birgit Hassler), Google Earth Engine, AI/ML for downscaling)**	Prof. Theodore G. Shepherd Prof. Maria Molina Dr. Redouane Lguensat Dr. Mohamadou Diallo Dr. Bettina Gier Mr. Mario Santa Cruz López Dr. Birgit Hassler Dr. Hannah Wangari Kimani (Kenya Meteorological Department)
13:15 - 14:45	Lunch break	
Hands-on Python for Mini-projects		
14:45 - 16:15	**Neural Network Mini project: Hands-on Python on jupyter-notebook with a case study**	Prof. Maria Molina (University of Maryland, USA)
16:15 - 16:45	Short tea and coffee break	
16:45 - 18h00	**Neural Network Mini project: Hands-on Python on jupyter-notebook with a case study**	Prof. Maria Molina (University of Maryland, USA)
18:00	End of the Day 1 and Bus to the Hotel	

Day 5 Convener: Prof. Maria Molina/XX YY

Friday, 28th November 2025		
Time (UTC)	**Title**	**Speakers**
Panel Discussion		
09:30 - 10:30	- **Climate Change, impact and resilience measures** - **Regional downscaling efforts for Africa (e.g. CORDEX?)** - **Food-energy nexus**	All participants Dr. Joyce Jelagat (Gender and Climate Expert (NORCAP), Kenya)

	- Which discussion topics would participants like to provide as an input on? **- African perspective of gender balance and equity in Climate Science**	
10:30 - 11:00	**Short tea and coffee break**	
Presentation of Mini-Projects		
11:00 - 13:15	**Mini-Projects & Wrap-up**	All Trainees
13:15	End of the Day, Lunch Break & Free time	