Training for improved seasonal climate prediction over Ethiopia

January 11-15, 2021, Addis Ababa, Ethiopia

Introduction

Ethiopia's National Meteorology Agency (NMA), under the support of the International Research Institute for Climate and Society (IRI), through the project Adapting Agriculture to Climate Today, for Tomorrow (ACToday), is working together with the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) in East Africa to address the needs and demands of different stakeholders including governmental, non-governmental organizations and other non-state actors by conducting staff training to improve the generation of reliable, timely and accurate weather and seasonal forecasts.

An interactive training took place from January 11-15, 2021 in Addis Ababa, Ethiopia, with the participation of 26 NMA staff members selected from Regional Meteorological Service Centers and from the NMA Head Office, using local capacity and technical support from IRI and CCAFS East Africa.

Objectives

Training on weather forecasting tools and techniques is a fundamental requirement for meteorological services to improve the accuracy and reliability of weather and climate forecasts. These tools greatly support the generation and packaging of forecasts that are destined for public consumption.

The Next Generation (NextGen) multi-model approach is a systematic general approach for designing, implementing, producing and verifying objective climate forecasts. It involves the identification of decision-relevant variables by stakeholders, and analysis of the physical mechanisms, sources of predictability and suitable candidate predictors (in models and observations) for key relevant variables. In those cases, when prediction skill is high enough, NextGen helps select the best dynamic models for the region of interest through a process-based evaluation and automizes the generation and verification of tailored multi-model, statistically calibrated predictions at seasonal and sub-seasonal timescales.

The main objective of the training was to strengthen the capacity of NMA's staff in the application and use of the Python Climate Predictability Tool (PyCPT) to generate accurate seasonal forecasts. The specific training objectives were to:

- Strengthen the capacity of meteorologists at both regional and head offices of NMA
- Improve accuracy of seasonal forecasts
- Enhance packaging of weather forecasts using flexible information by improving the packaging of seasonal forecasts using flexible format information
- Access the predictability skill of the North American Multi-Model Ensemble (NMME) over Ethiopia in different seasons

The specific tools and areas of training included:

- Processing of dynamical forecasts using the PyCPT package, including software operation, the purpose of calibration and downscaling of model outputs
- Tailored forecasting for climate services, including a skills assessment of NMME models, comparison of non-calibrated models, flexible representation of forecasts, generation of real time forecasts, and data formatting and analysis packages

Outline of the workshop

Time	Activities	Responsible	Facilitator
08:30-09:00	Opening Remark	Mr. Fetene Teshome DG of NMA	Asaminew Teshome
09:00-09:15	On-going Seasonal forecasting projects in the region including PyCPT	Dr. Teferi Demissie (CCAFS)	
09:15-10:00	System configuration and installation of PyCPT on individual laptops	Jemal Supported by: Asaminew/Aderajow Sinegorgies/Bekele	
10:10-10:30	Tea/Coffee break	Training directorate	Diriba Muleta
10:30-12:30	System configuration and package installation of PyCPT on individual laptops	Adrajow Supported by: Jemal/Asaminew Sinegorgies/Bekele	
12:30-13:30	Lunch Break	Private	
13:30-17:30	Introduction to PyCPT tool	Asaminew Supported by: Aderajow/Jemal	

08:30-17:30	Describing the different components of PyCPT script and Generating Forecast and skill assessment of PyCPT product	Aderajow Supported by: Asaminew/Jemal	
Day Three: Continuation of day two			
08:30-17:30	Visualization and interpretation of products and skill assessments using PyCPT NB: Lunch break 12:30-13:30	Asaminew Supported by: Aderajow/Jemal	
Day Four: Assignment for individual experts			
08:30-17:30	Individual assignment and producing result	Asaminew/Aderajow/ Jemal	
Day Five: Assignment for individual experts			
08:30-17:30	Presentation of individual assignment	Individual experts from RMSC and NMA HQ	Asaminew Teshome

Key outcomes

At the end of the workshop, participants were expected to have the following skills:

- Independently install and operate PyCPT to calibrate CHRIPS forecasts
- Understand the principles of generating tailored forecasts for climate services
- Understand seasonal forecasting procedures and techniques by using the PyCPT tool
- Understand the whole process of the PyCPT scripts
- Exchange experience with their staff members regarding the PyCPT tool

Participants

Participants during climate prediction and seasonal forecast training in Ethiopia. Photo: A. Teshome (NMA)

No	Name	Department
1	Endeg Aniley	WARMSC/Bahir Dar
2	Hiwot Taye	WORMSC/Jimma
3	Lubaba Mohamed	EARMSC/Kombocha
4	Shimlis Shiferaw	Gambela RMSC/Gambela
5	Zerihun Bikila	ECORMSC/Adama
6	Gebreyohanes G/Silasie	Afar RMSC/Semera
7	Kefiyalew Ayele	SNNPR RMSC/Hawasa
8	Ashenafi Muluneh	Somali RMSC/Jijiga
9	Demissie Tadesse	SORMC/Balerobe
10	Sinegorgis Gurmu	NMA HQ/ICT
11	Bekele Kebebe	NMA HQ/MFEWD
12	Mesay Tolosa	NMA HQ/MFEWD
13	Bekalu Tamene	NMA HQ/MFEWD
14	Henock Hailu	NMA RMSCCD
15	Tamiru Kebede	NMA HQ/MFEWD
16	Ajebush Gochawu	NMA HQ/MFEWD
17	Deriba Muleta	NMA HQ/MEDTD
18	Chali Debele	NMA HQ/MFEWD
19	Asaminew Teshome	PyCPT coordinator
20	Jemal Seid	PyCPT coordinator
21	Aderajow Admasu	PyCPT coordinator
22	Dr. Teferi Demisse	PyCPT Coordinator
23	Fetene Teshome	DG of NMA
24	Kinfe Hailemariayam	DDG of NMA
25	Ahmedin Abdulkerim	NMA/PR
26	Hirut Alemu	NMA/PR