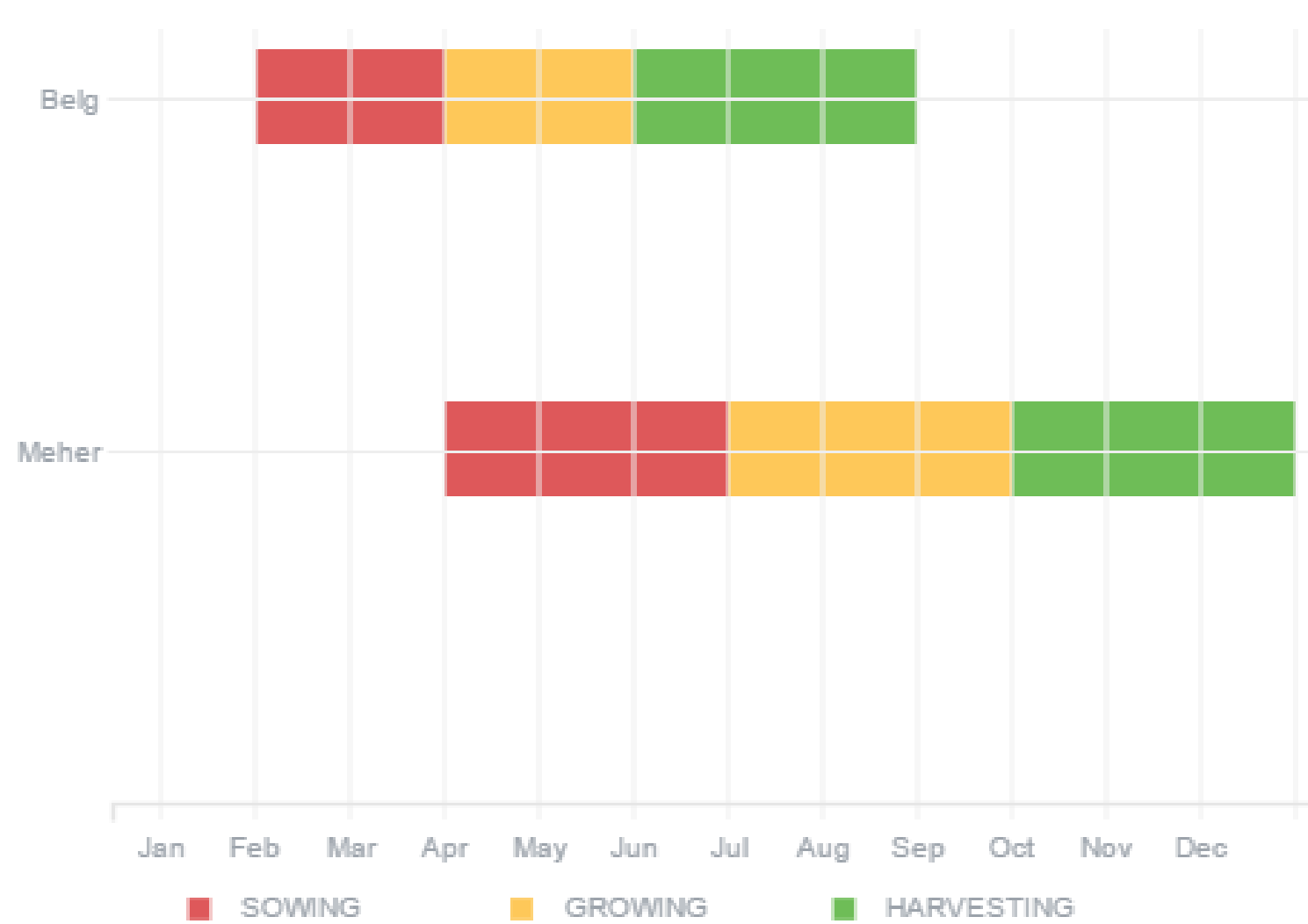


GIS Analysis of Climate Change Effects on Agriculture in Ethiopia

*Sara Amirazodi, Amanda Weigel, Dr. Robert Griffin
UAH Atmospheric Science Department*

Overview

This project demonstrates how climate data accessible through **The Partnership for Resilience and Preparedness (PREP)** can be used by planners, investors, and resource managers to incorporate climate risks into their decisions. The study focus is on three of Ethiopia's agriculture-based regional states which are particularly vulnerable to climate change: Tigray, Somali, and Gambela.



Ethiopia Crop Calendar - Ethiopia's two grain growing seasons are belg and meher. Belg is the shorter season from February to April, and meher is the main season from May to September.

Impacts

This project's use of NASA Earth Observations aids the **Ethiopia Ministry of Agriculture and Natural Resources** and the **Ethiopia National Meteorology Agency** in their efforts to advance the local agricultural community's knowledge and understanding of their environment.



The agricultural sector in Ethiopia accounts for half of the country's GDP and 80% of its exports. Through implementation of eMODIS NDVI vegetation data, this study provides critical and actionable information to farmers.

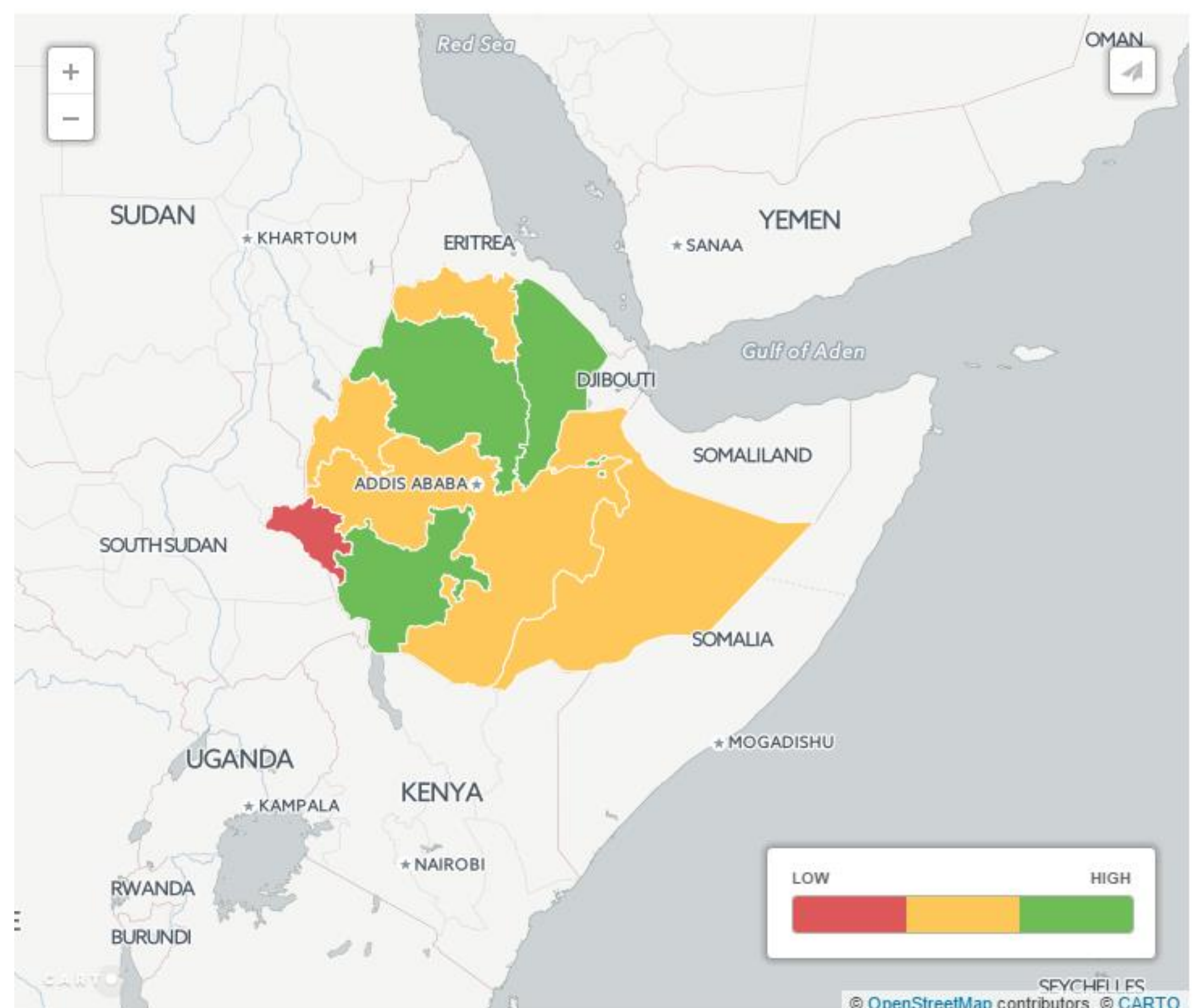
By comparing NDVI years and seasonal forecasts, researchers can begin to forecast threats to overall grain productivity for a region before yields are actually recorded on the ground.

Acknowledgements

We would like to thank The Partnership for Resilience and Preparedness (PREP) and collaborating partners who supported this project.

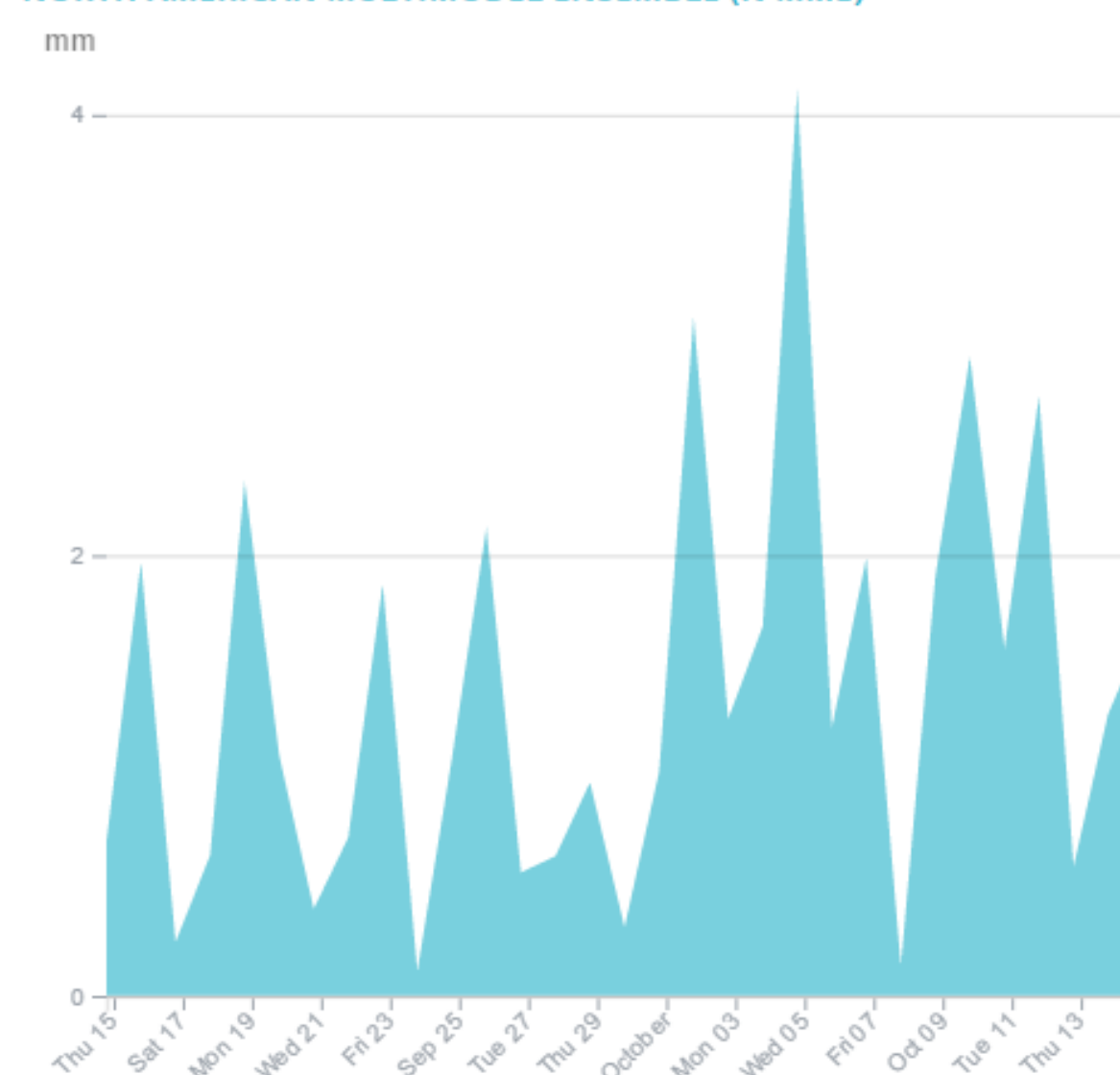
Results

Agricultural regions were analyzed using Climate Hazards Group InfraRed Precipitation with Station (CHIRPS) rainfall data, EROS Moderate Resolution Imaging Spectroradiometer (eMODIS) vegetation data, and North American Multi-Model Ensemble (NMME) seasonal forecast data provided by NASA SERVIR's ClimateServ viewer.



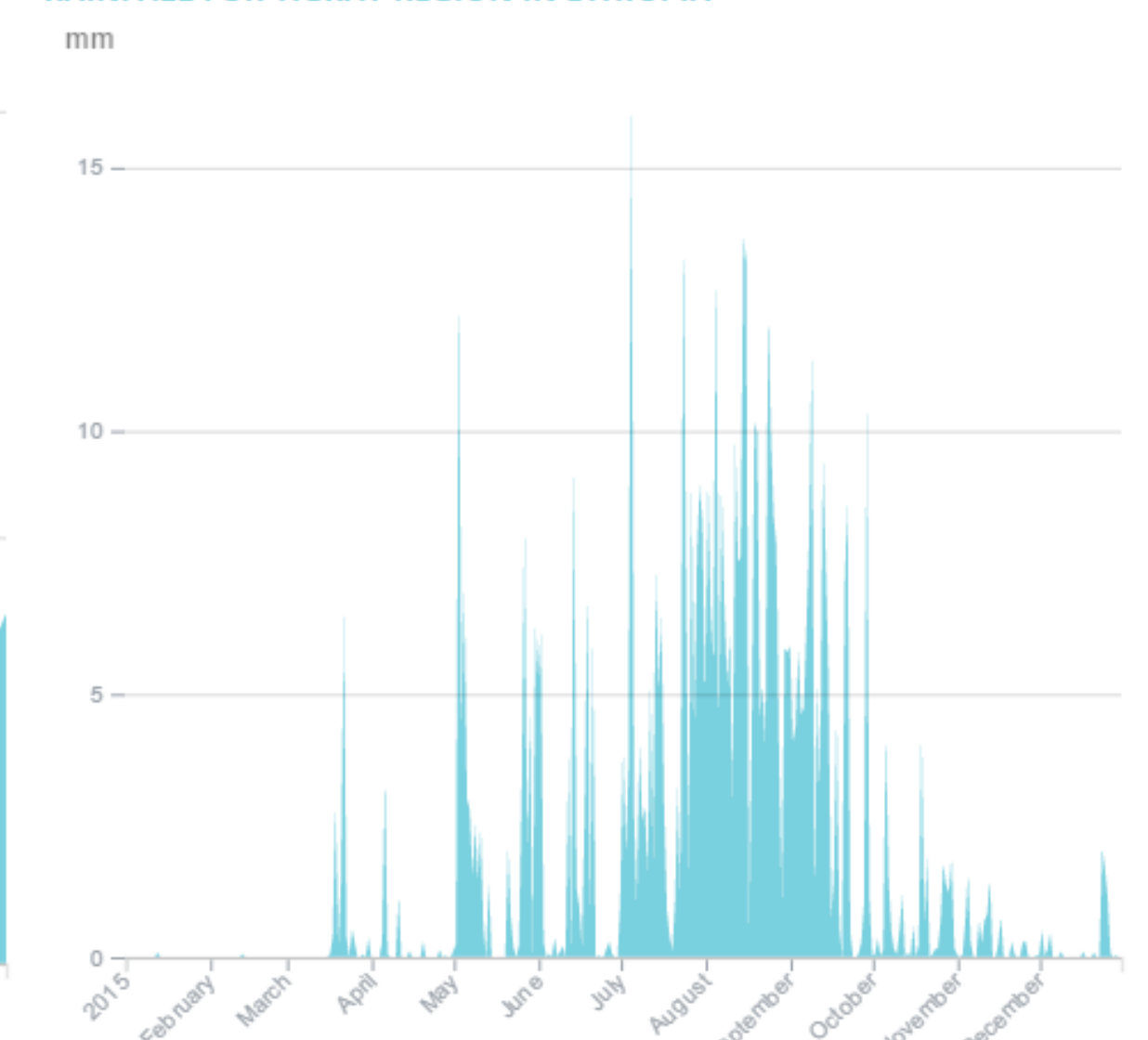
Gambela, Ethiopia – In the map above, high, medium and low terciles are shown for forecasted 2016 grainsetting seasonal precipitation compared to 17-year historical data.

NORTH AMERICAN MULTIMODEL ENSEMBLE (N MME)



Somali, Ethiopia – seasonal forecast

RAINFALL FOR TIGRAY REGION IN ETHIOPIA



Tigray, Ethiopia – CHIRPS rainfall