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Satellite and Weather Information for Disaster Resilience in Eastern Africa (SAWIDREA)

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Outlines

- Introduction to SAWIDREA East Africa implemented by ICPAC in Nairobi, Kenya.
- Current progress in the project implementation.
- Planned activities.
- Challenges.

Objectives and rational of SAWIDREA

- Hydro-Meteorological hazards account to 90% of the disasters in the region.
- These hazards are recurrent and trans-boundary in nature.
- They have significant socio-economical impacts.
- The droughts of 2008 and 2011 led the head of states in the region to issue a strong call to improve the early warning system for disaster risk management.
- SAWIDREA came as one of the responses to this call.

Components of SAWIDREA-ICPAC

- Enhance regional and national capacities in Numerical Weather Prediction (NWP) to provide skillful forecast.
- Applications of severe weather early warning in disaster risk management activities.
- Support the regional climate outlook forum (RCOF) as a venue of dissemination of weather and climate services.
- Support national meteorological and hydrological services.
- The overall goal is to improve the livelihood of the 293 M of East Africa.

Capacity building and coproduction

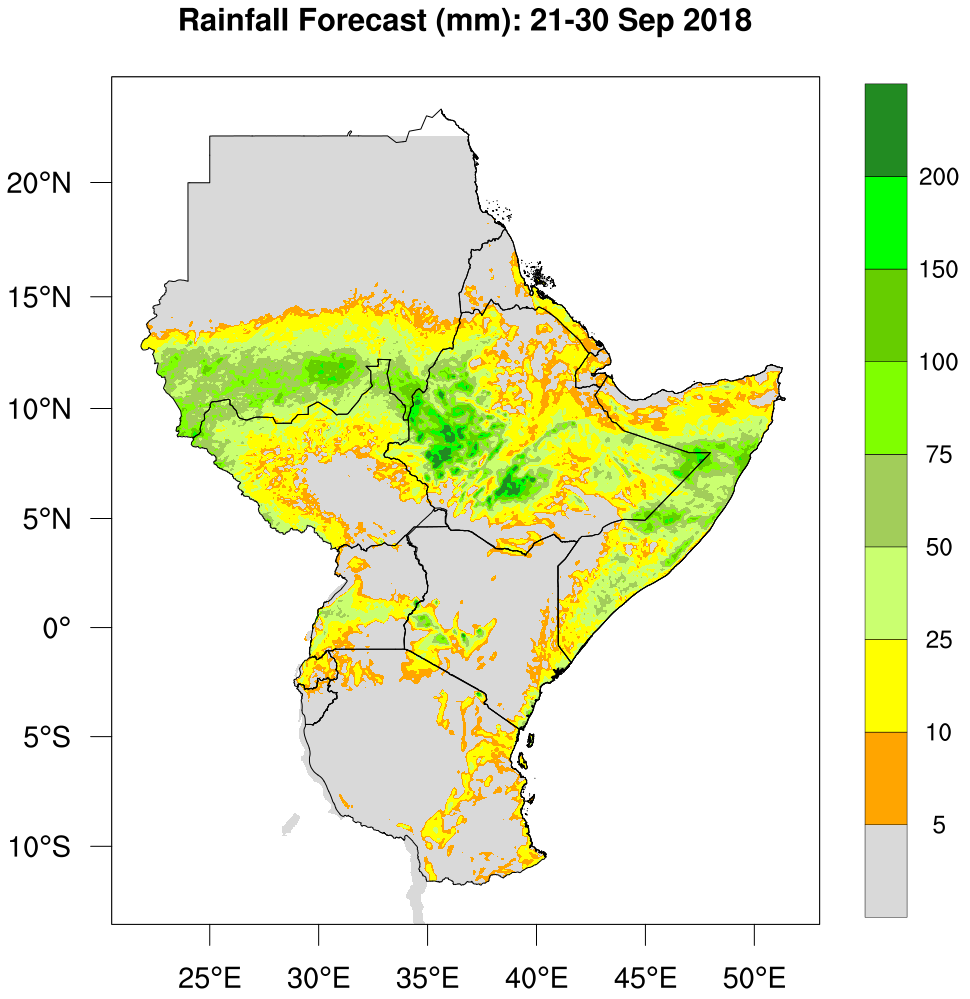
- Currently we have 3 experts from the member states (2 from Sudan and 1 from Uganda) in:
- NWP (Uganda)
- Hydrology (Sudan)
- And DRM (Sudan)
- A new batch will in October.

Numerical Weather Prediction

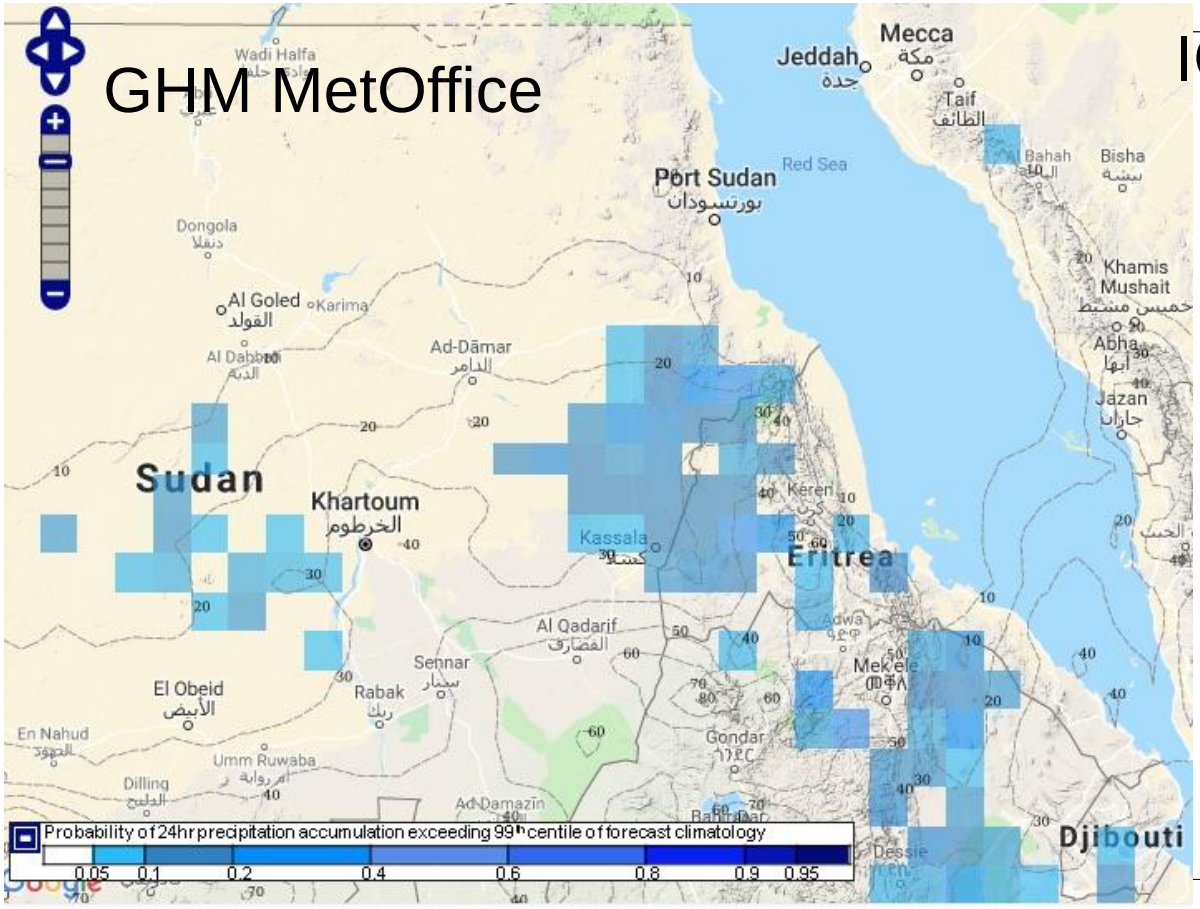
- To produce high resolution NWP (e.g. 3 – 4 km) (ongoing)
- Assimilation satellite data to improve NWP forecast (from RARS station) (in the pipeline pending installation of the station)
- Support NMHSs with equipment: computers and data-storage on 20 K Euro per-country (under procurement)
- Support the human capacity of NMHSs in NWP (ongoing)

Numerical Weather Prediction

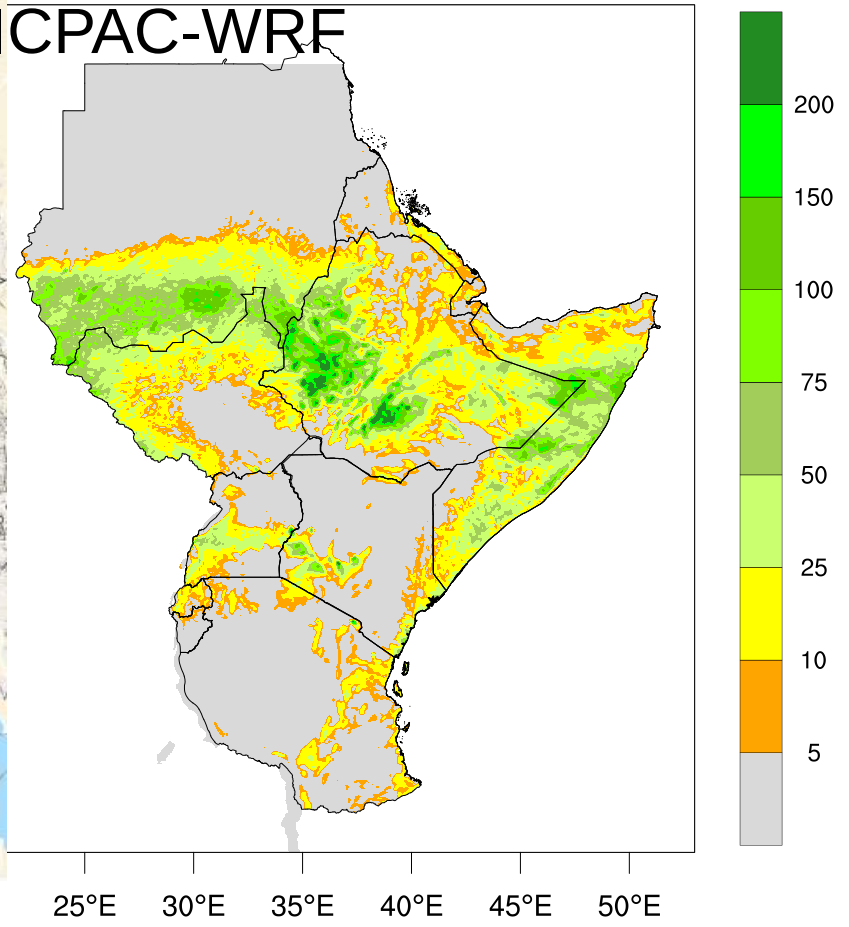
- ICPAC already runs NWP system (WRF) in 10 km resolution using CFS data
- Used for 10-days, monthly and seasonal bulletins
- We stared to experiment with the high resolution (4 km)



Numerical Weather Prediction

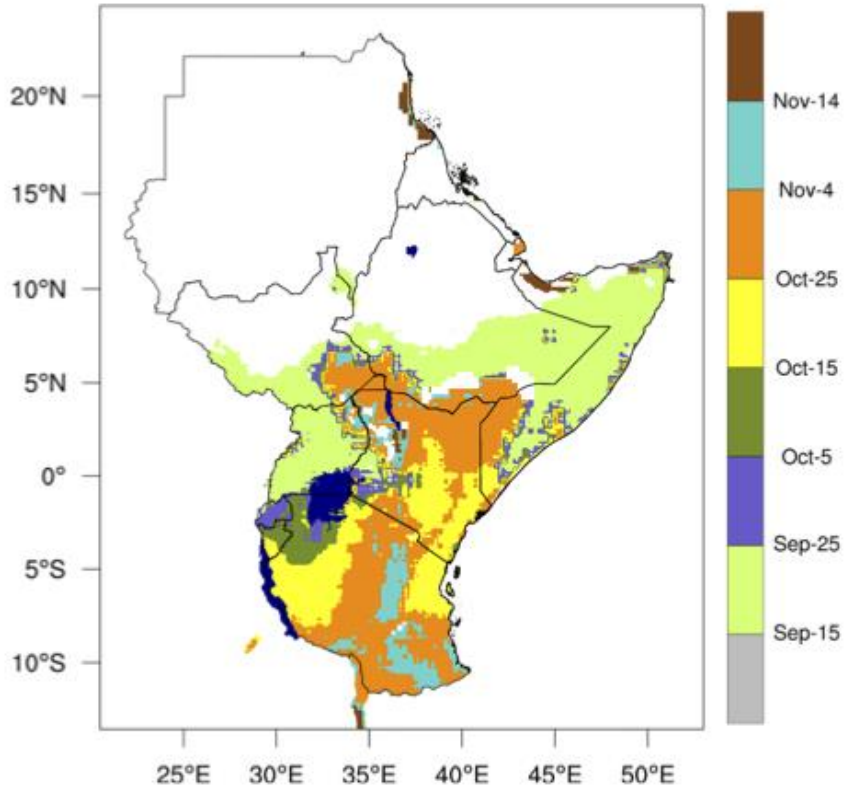


Rainfall Forecast (mm): 21-30 Sep 2018

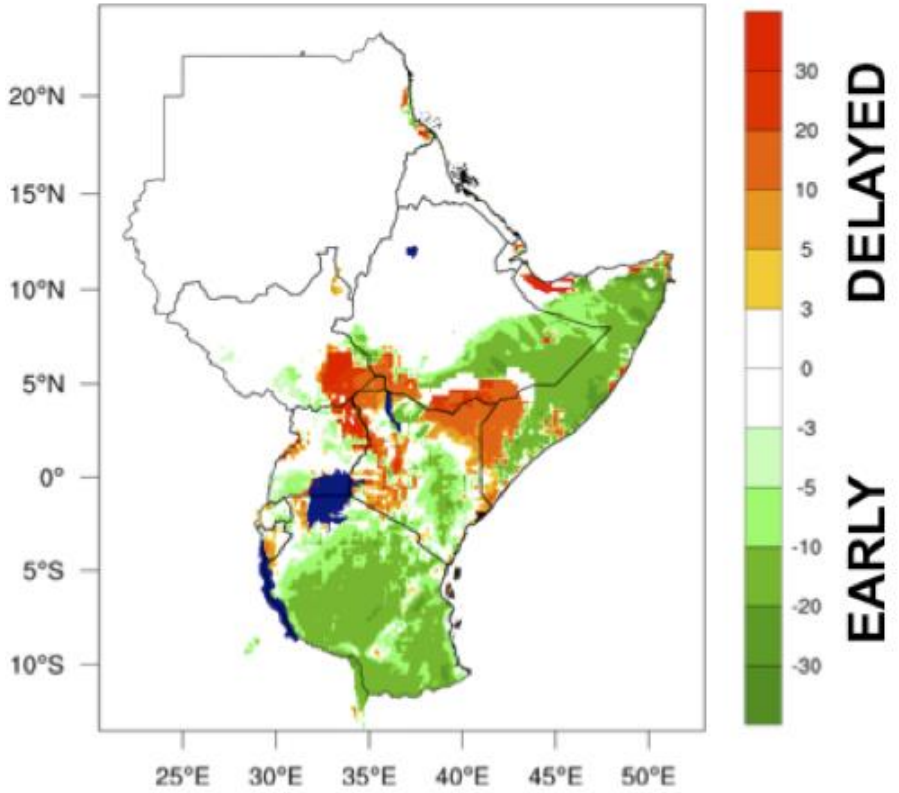


NWP in seasonal forecasting: onset

Onset of OND 2018



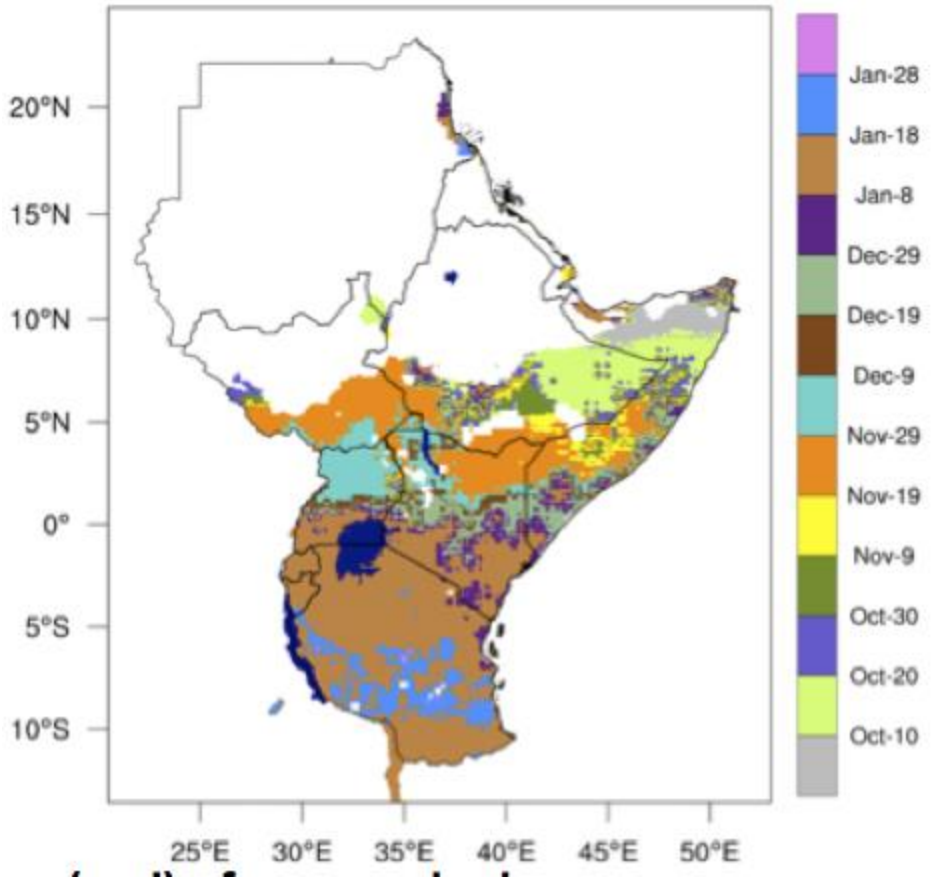
Anom. onset of OND 2018



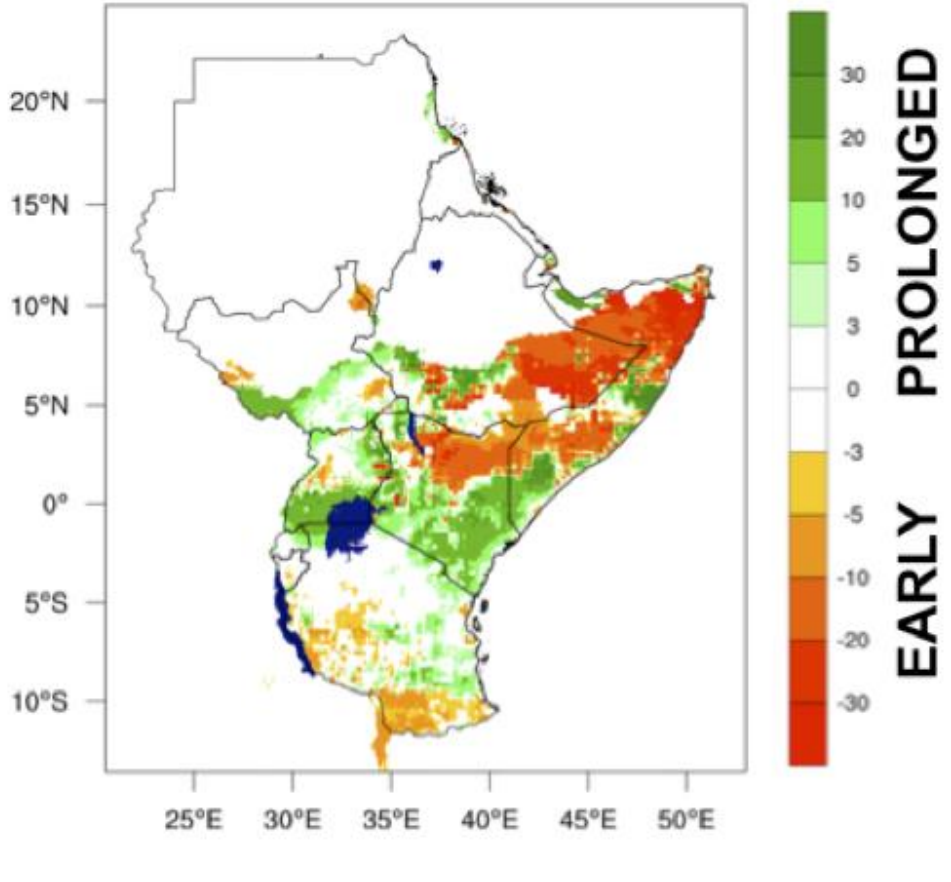
Acknowledgement to: Zewdu, Masilin and Anthony

NWP in seasonal forecasting: cessation

Cessation of OND 2018



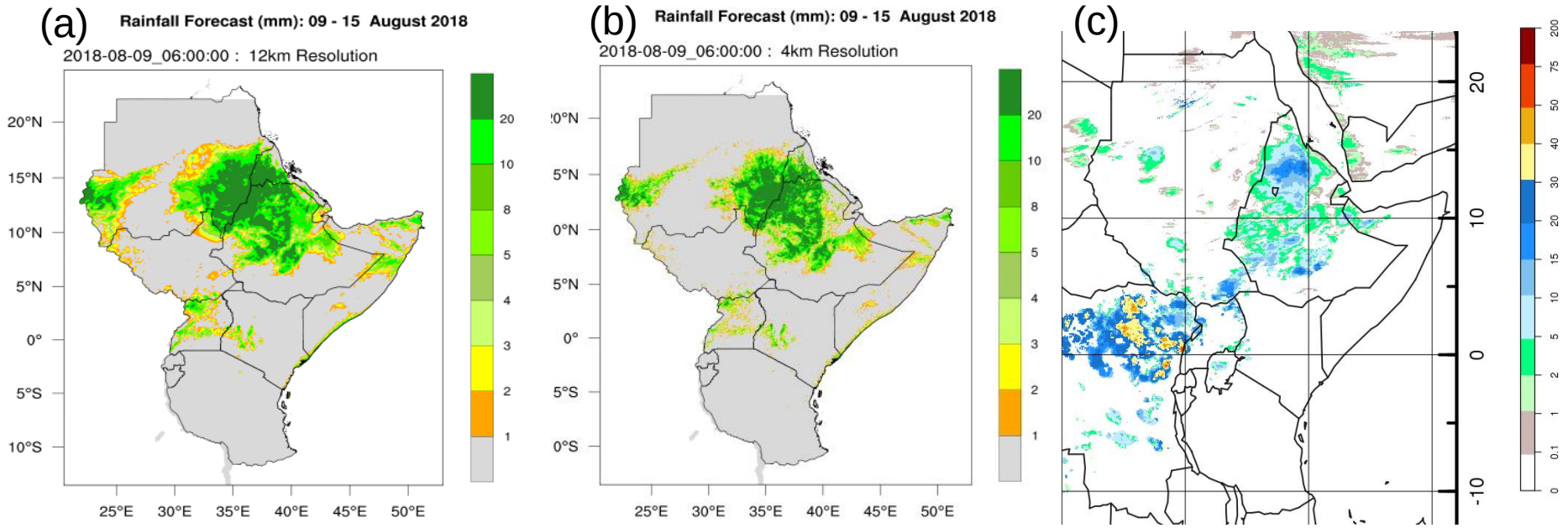
Anom. cessation of OND 2018



Acknowledgement to: Zewdu, Masilin and Anthony

High resolution NWP experiment

- Experimenting with high resolution of 4 and 12 km from WRF

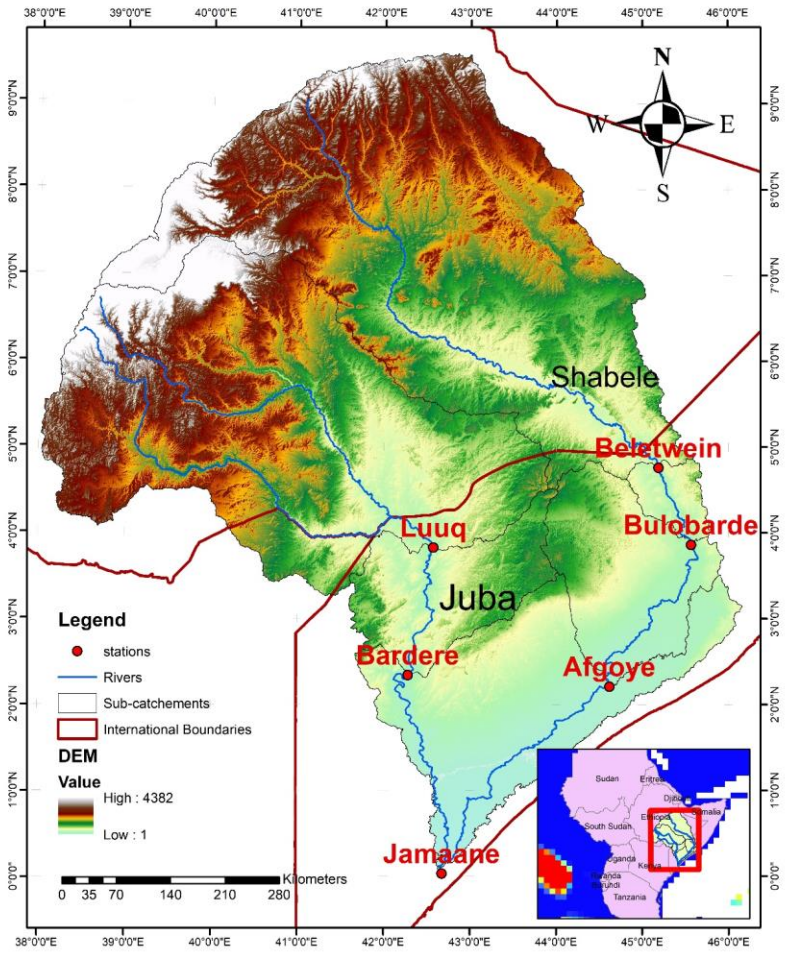


Rainfall of August 9, 2018 from (a) 12 km (b) 4 km (c) TAMSAT

Acknowledgement to: M. Ssemujju and A. Mwanthi

Hydrological and flood forecasting

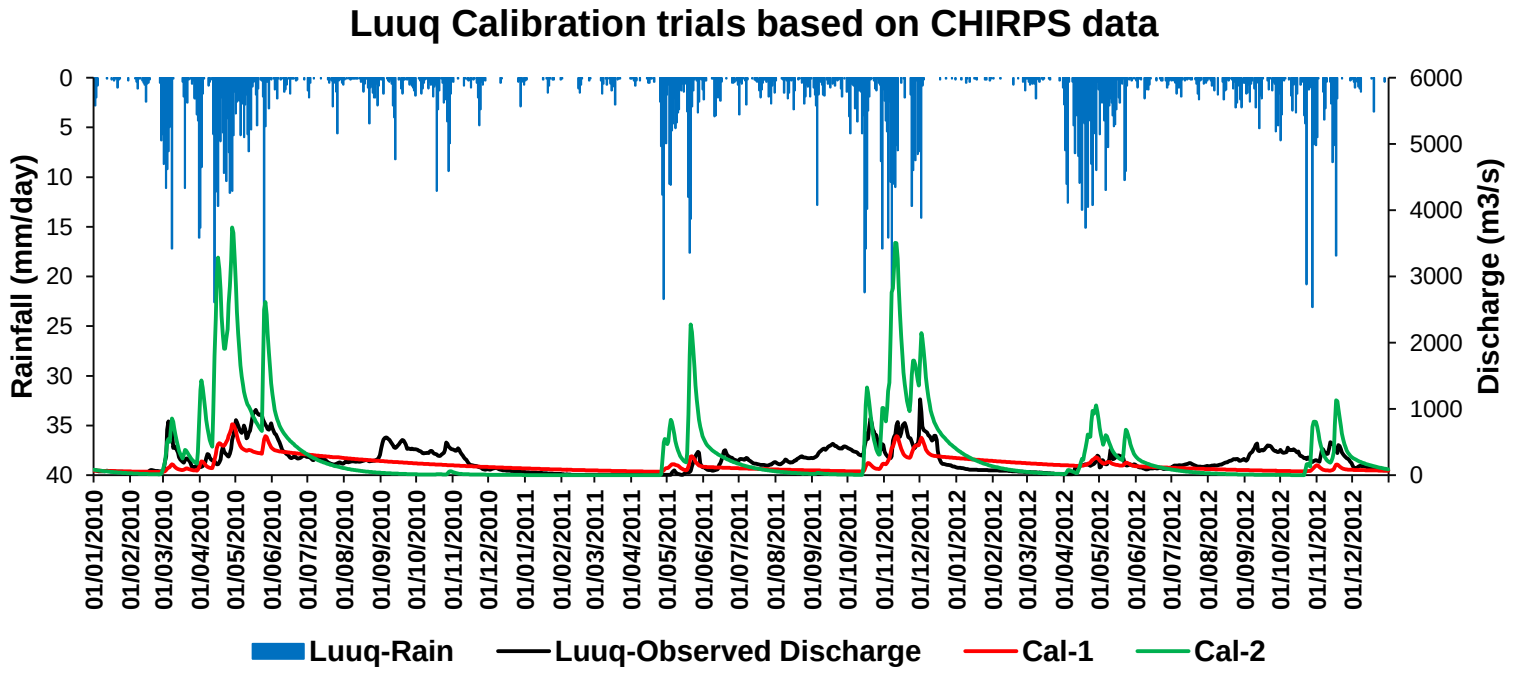
- Study area is a trans-boundary river basin between Ethiopia and Somalia, named Juba and Shabele.
- The total Area of Juba-Shabele basin is about 0.5 M square Kilometer.
- satellite gridded precipitation has been used to simulate stream flow for a catchment called Juba-Shabele



Juba and Shabele catchments

Capacity building in Hydrology

- Satellite data for precipitation (RFE and CHIRPS) and potential evapotranspiration from FWES Net



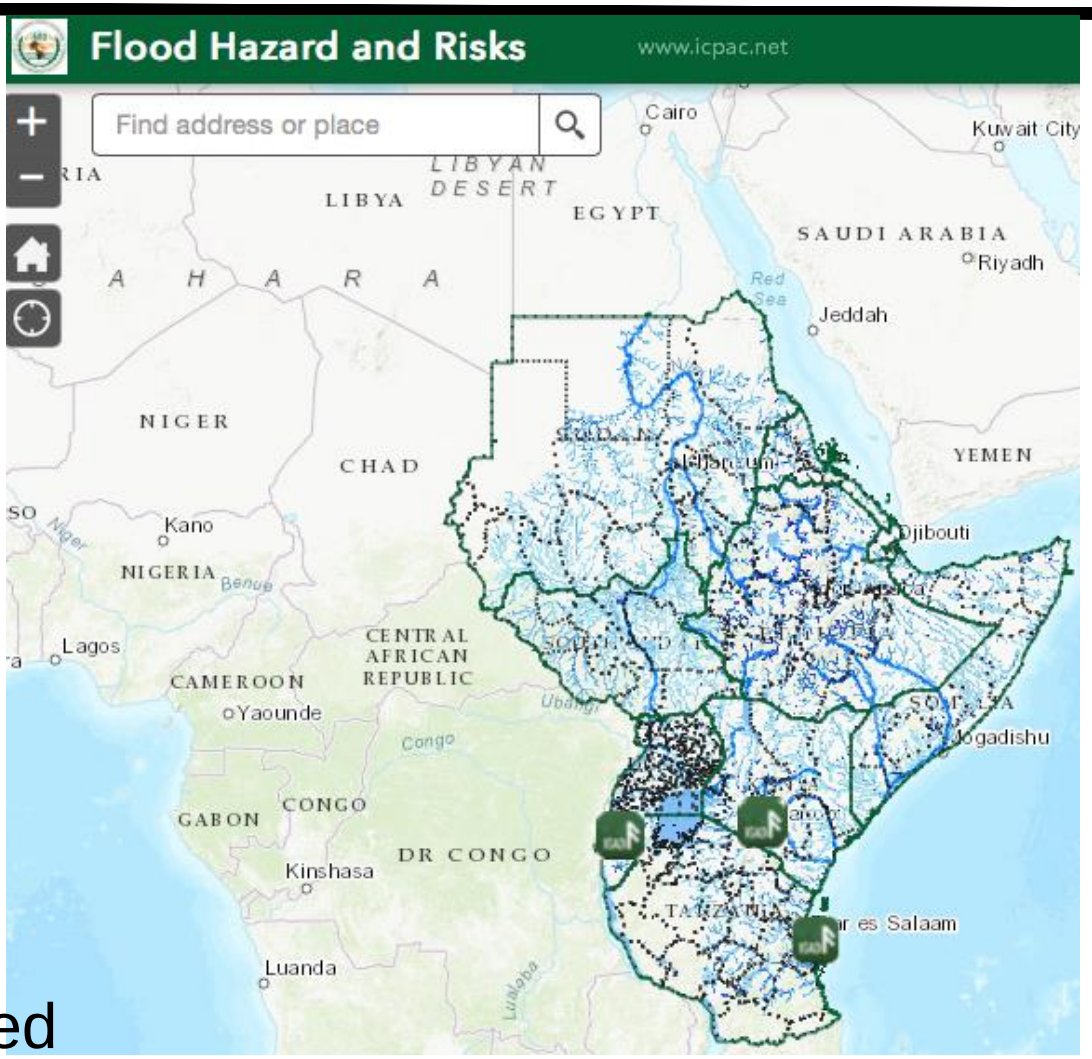
Acknowledgement to: A. Abdelkareem M. Hassan

Coproduction in DRM

- Adding data of the administration levels in Sudan to ICPAC Geoportal

Coproduction in DRM

- Flood hazard map over ICPAC region



Acknowledgement to: Hafsa Ahmed

Capacity building planned activities

- Three workshops in training of trainers to build and support the human capacity of the NMHSs (November 2018, March 2019, September 2019)
- Continue the attachment program in NWP, DRM and Hydrology to cover the rest of the member states
- Provide technical support to the NMHSs
- Experiment on increasing the resolution of NWP produce by ICPAC
- Run in-house data assimilation cycle using satellite data

Challenges

- NWP: limitation in computing power and data-storage capacity. A new HPC system in the way, which may help to easy the problem.
- Hydrology: data availability from the study site in Juba and Shabele. The work going on to install automatic hydrological stations in the two sites.
- A major and constant challenge is the continuity beyond the project life. Something we all have in consideration during the implementation.

Thank you for your attention!