Food and Agriculture Organization of the United Nations

Flood Response Preparedness

Presented by
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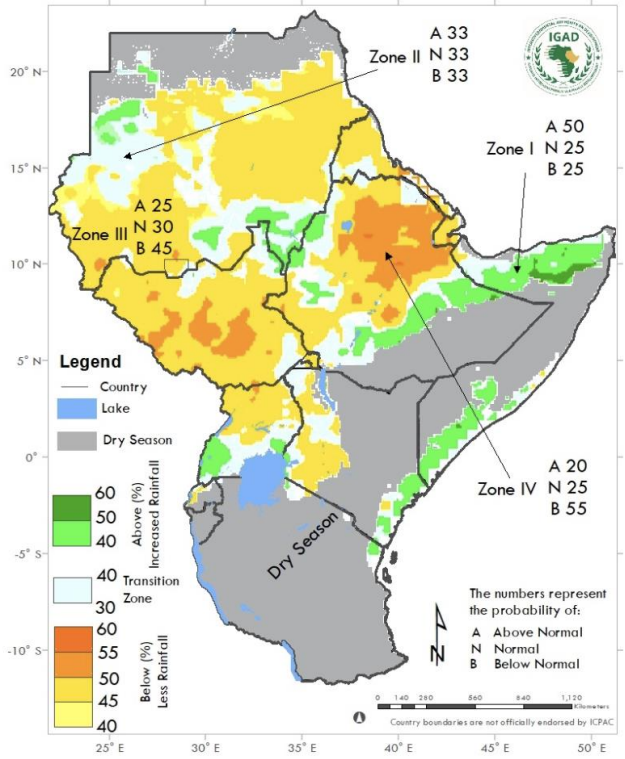
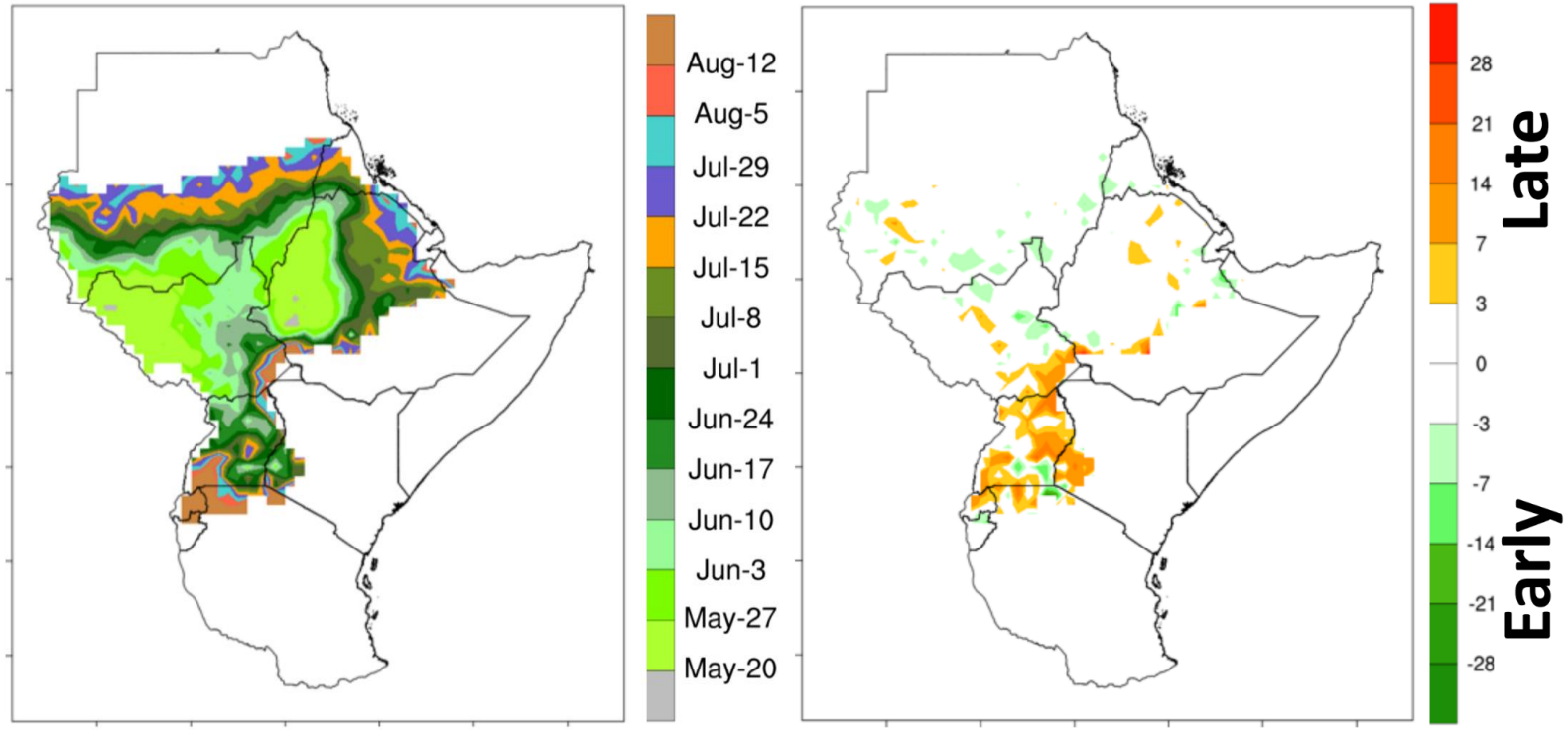
31 May 2023

Structure of presentation

- Weather forecasts (seasonal, monthly, weekly)
- El Nino and its likely impacts on the region and South Sudan
- Flood risk for South Sudan and associated impacts
- Flood preparedness actions recommended by FA

Seasonal Weather Forecast
(GHACOF 64, June to September 2023)

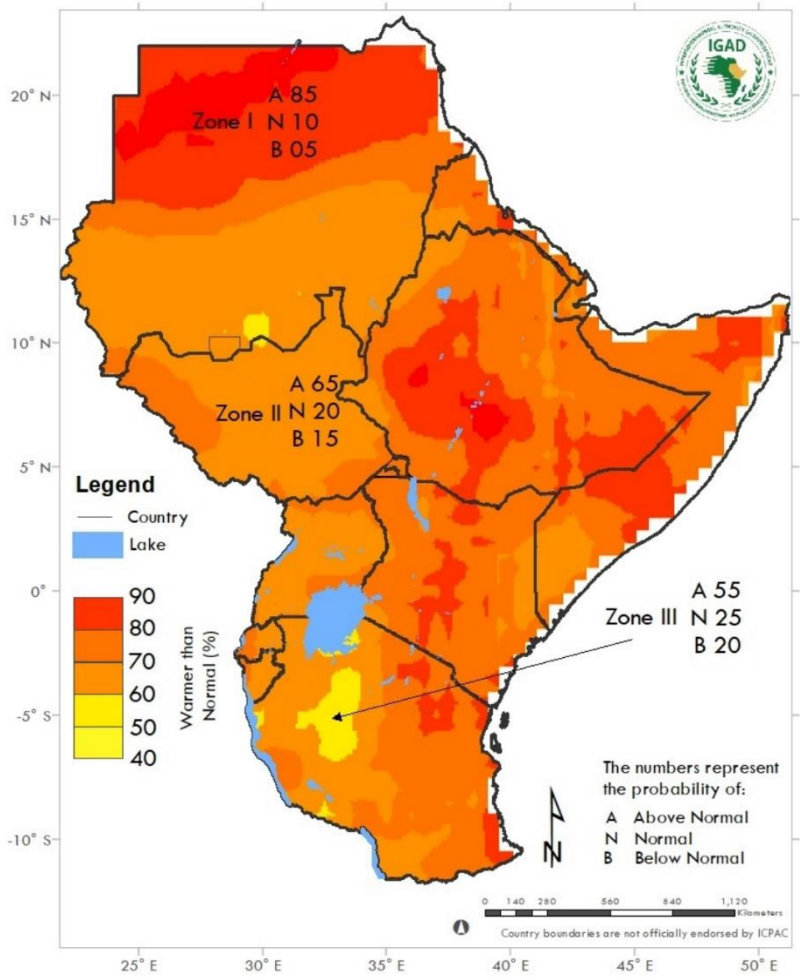




According to the latest report from ICPAC's GHACOF 64, South Sudan is likely to experience drier than normal rainfall conditions between June and September (a critical agricultural period); this is likely to impact on the quantity of food that will be available for harvest later in the year.

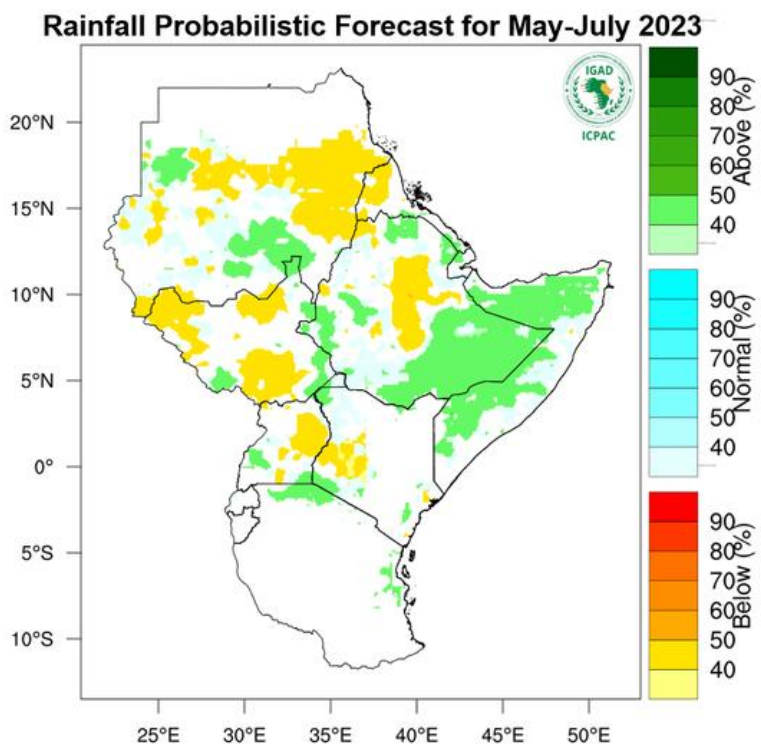
The onset of rainfall in the country will however be normal, with the exception of parts of Eastern Equatoria where it is likely to be late by up to a month.

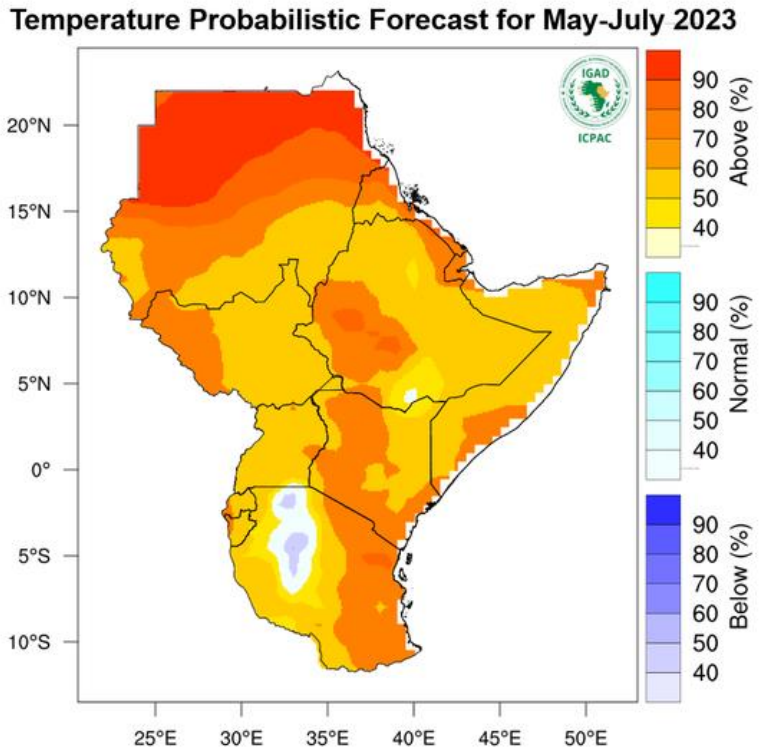
Seasonal Weather Forecast contd.
(GHACOF 64, June to September 2023)



According to the latest report from ICPAC's GHACOF 64, South Sudan is likely to experience above normal mean temperatures between June and September 2023.

Monthly Weather Forecast (May to July 2023)





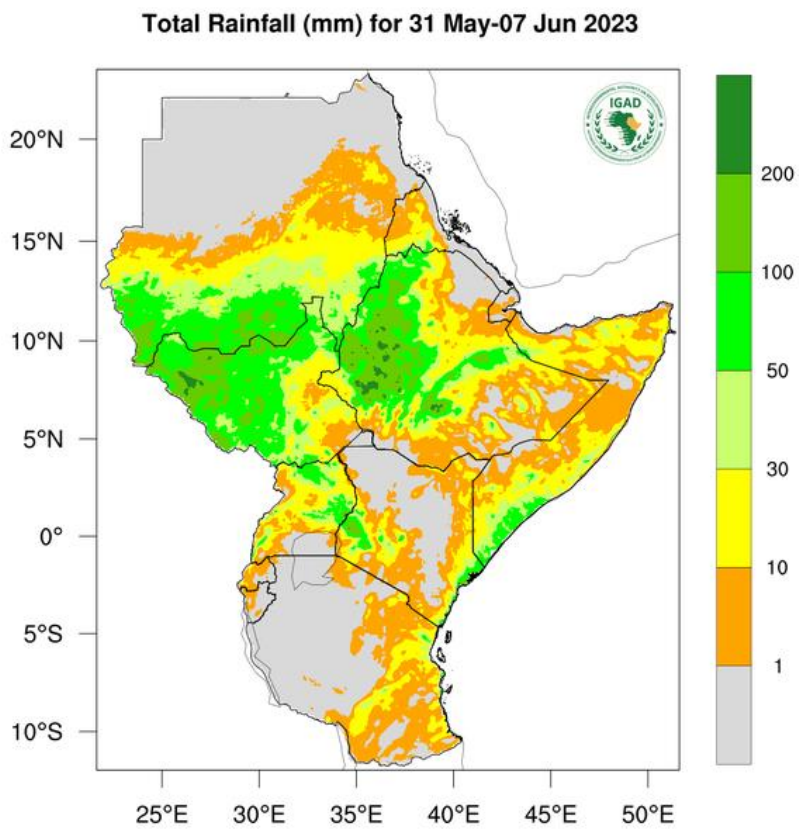
Drier than usual conditions predicted over parts of northern and southern South Sudan.

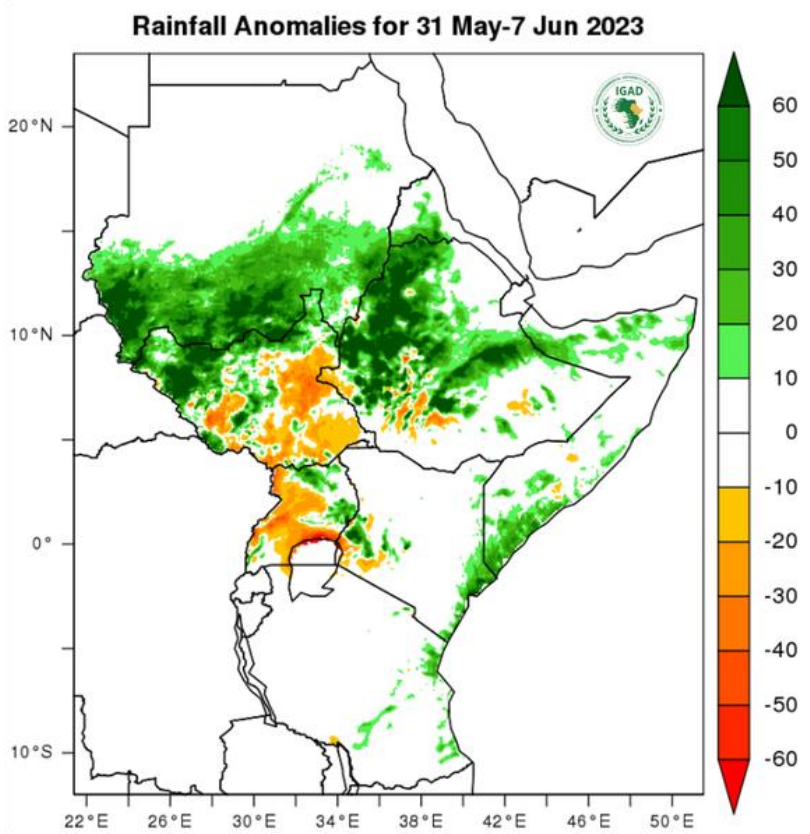
Usual conditions expected over central South Sudan.

Wetter than usual rainfall conditions expected over isolated parts of South Sudan.

Warmer than usual temperatures expected over western South Sudan.

Weekly Rainfall Forecast (31 May – 7 June)

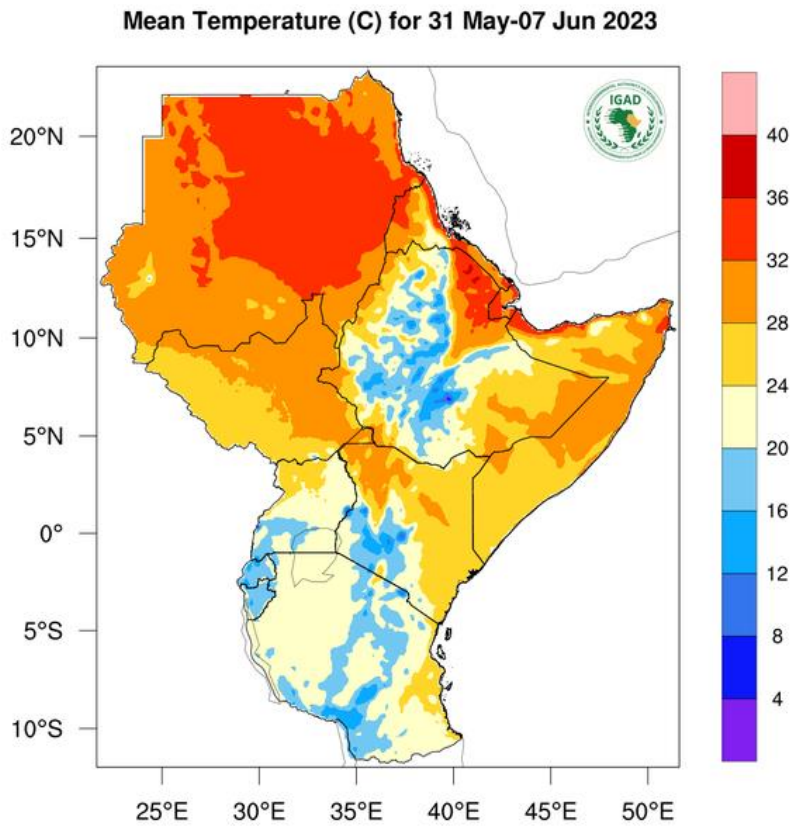


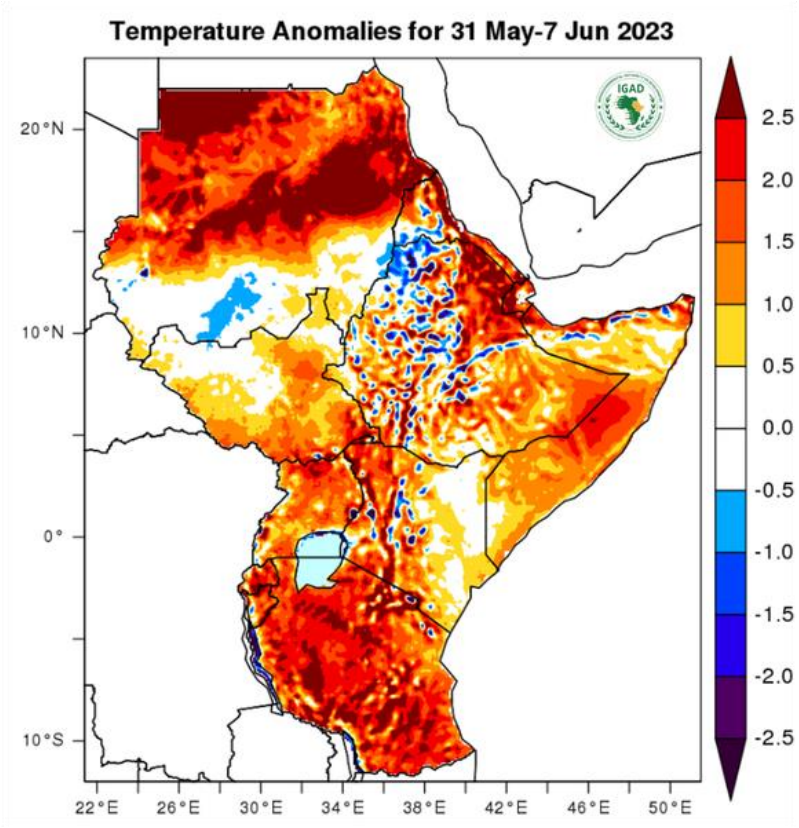


Moderate rainfall (50-200mm) expected over central to western South Sudan.

Light rainfall (less than 50 mm) south-eastern South Sudan.

Weekly Temperature Forecast (31 May – 7 June)



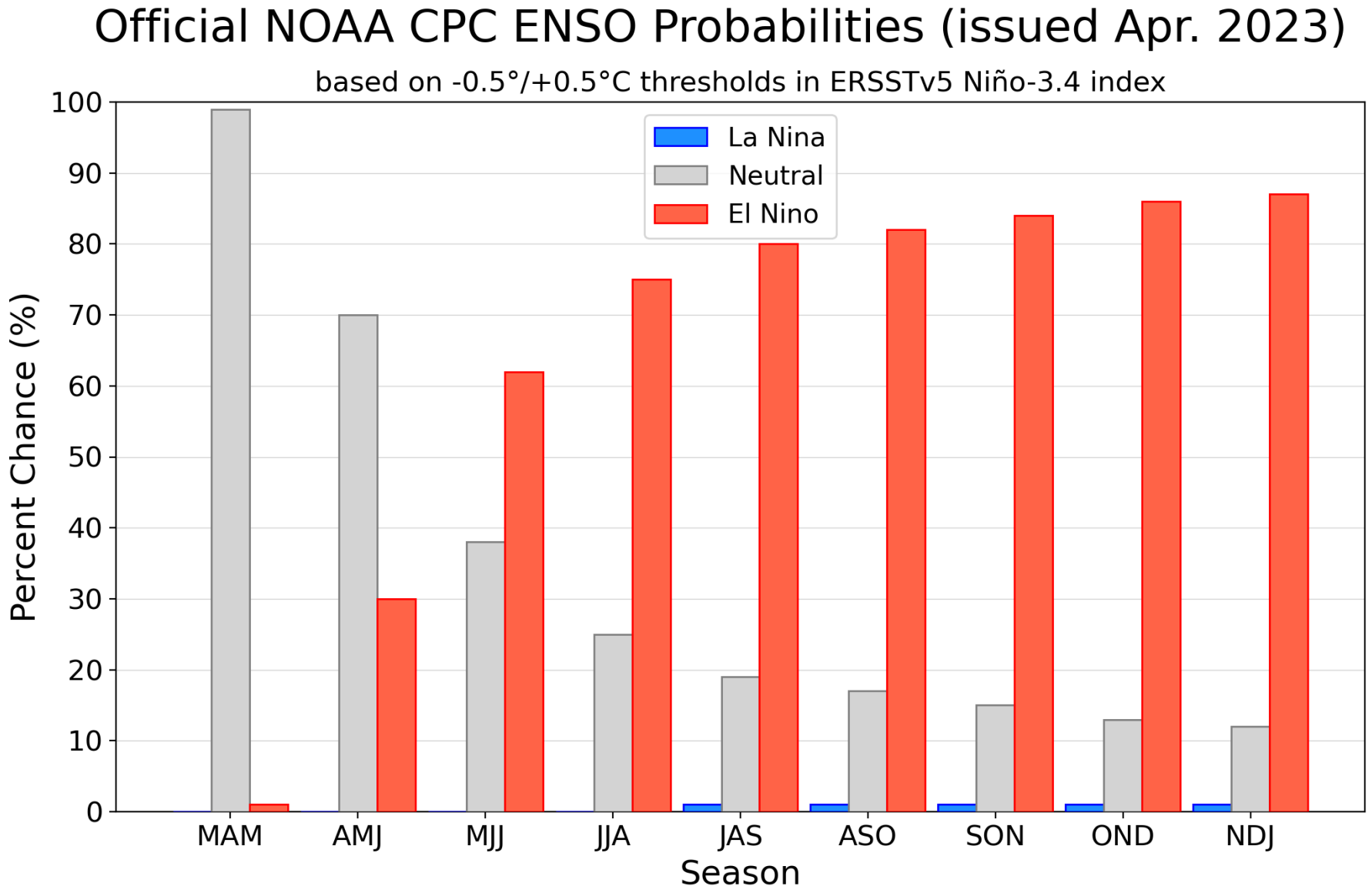


Moderate to high temperatures (20 - 32℃) South Sudan.

Warmer than usual temperatures predicted over most parts of South Sudan.

El Nino Impacts on South Sudan

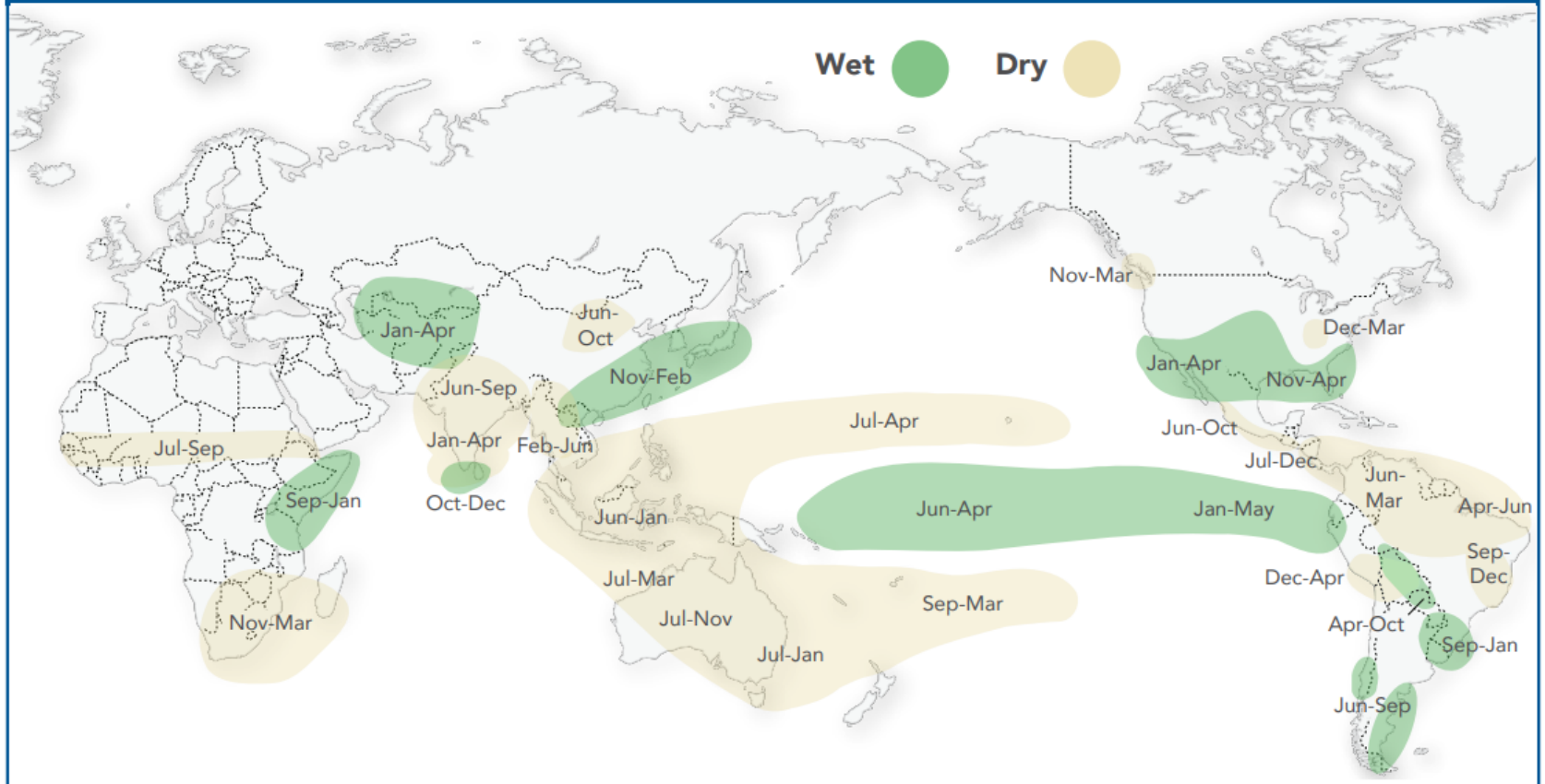
High Probability of an El Nino Developing in the Coming Months



Source: IRI

FAO-GIEWS' El Nino Impacts Map Suggest "No Direct Impacts" on South Sudan

Map 1: Typical precipitation patterns under El Niño conditions (teleconnection)

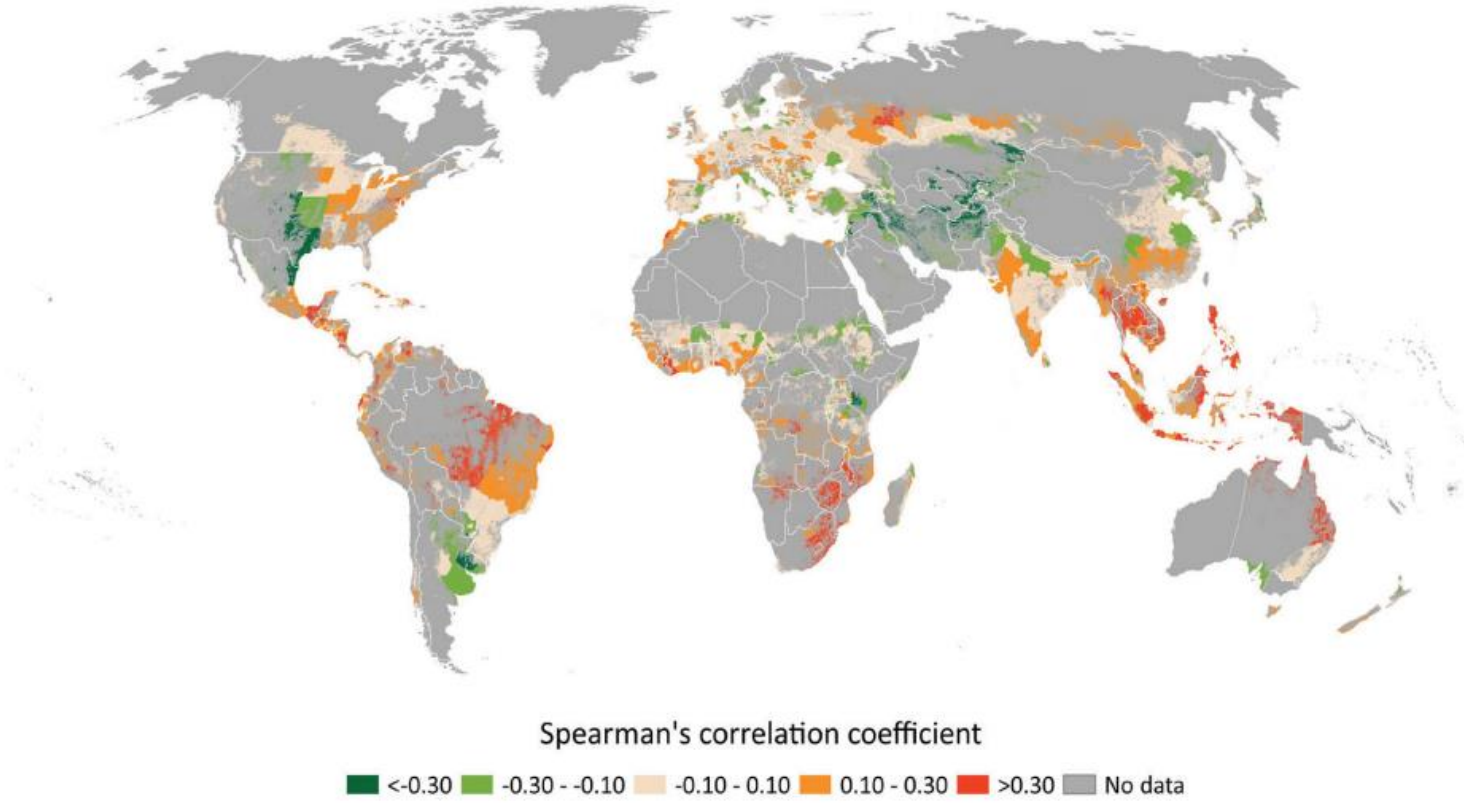


Note: Teleconnection in atmospheric science refers to climate anomalies being related to each other at large distances (typically thousands of kilometres).
Source: IRI. 2023. *ENSO Resources*. International Research Institute for Climate Prediction, Lamont-Doherty Earth Observatory, Columbia Climate School - Columbia University. Palisades, New York, 2023. https://iri.columbia.edu/our-expertise/climate/enso/.

Source: FAO-GIEWS

Though FAO-GIEWS' El Nino Impacts on Vegetation Conditions Map Suggests Slightly Below Average Agriculture Stress Index System (ASIS) during El Nino Years in South Sudan

Map 2: Correlation between vegetation conditions in croplands and El Niño events

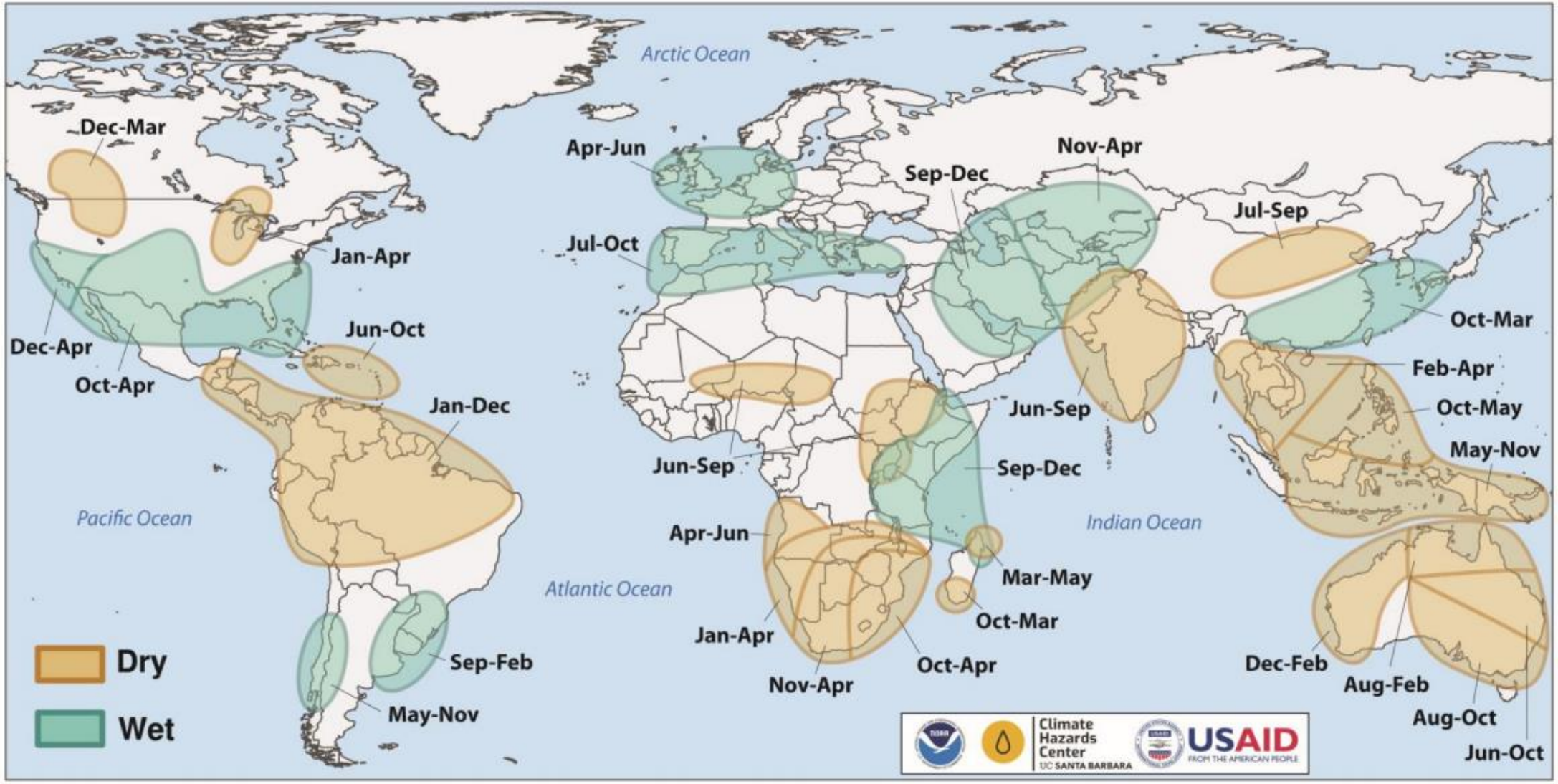


Note: The map illustrates the correlation (using Spearman's Correlation) between a vegetation index (Agricultural Stress Index) and El Niño Southern Oscillation index (ENSO) over cropland areas. Orange and red colours infer stressed vegetation conditions due water scarcity, while green areas represent healthier vegetation conditions, reflecting the effects of above-normal rainfall due to El Niño events. Areas depicted in the beige colour indicate no correlation with El Niño events.

Source: Authors' own elaboration based on the data (1980–2022) from FAO and NOAA, 2023. https://origin.cpc.ncep.noaa.gov/products/analysis_monitoring/ensostuff/ONI_v5.php. Map is modified to comply with the United Nations map No. 4170 Rev. 19, 2020.

Source: FAO-GIEWS

FEWS NET' El Nino Impacts Map Suggest Below-Avg Rains

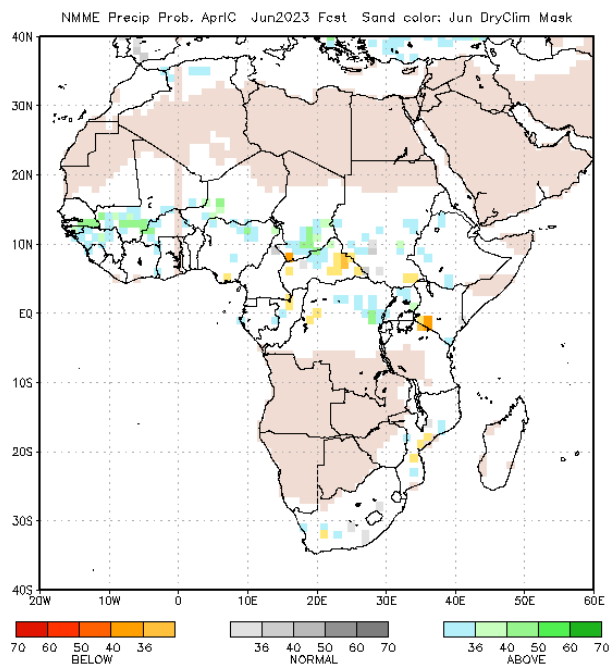


Source: FEWS NET

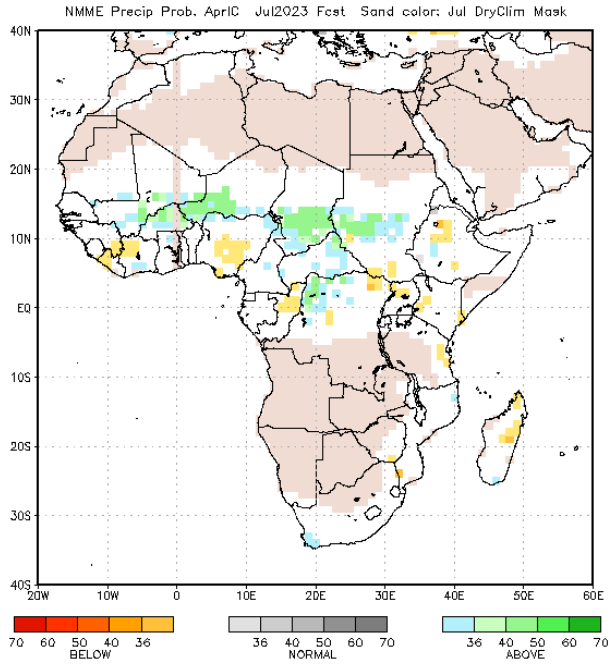
What do Currently Available Forecasts Suggest?

NOAA forecasts suggest Average to Below-Average Rains

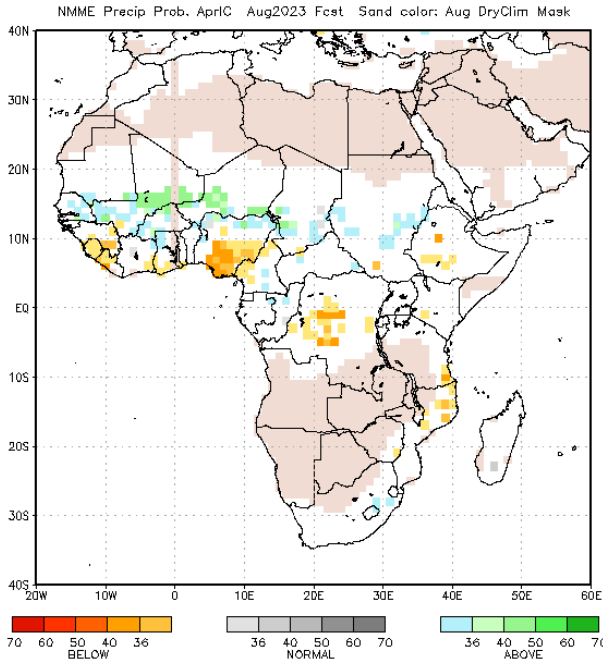
June



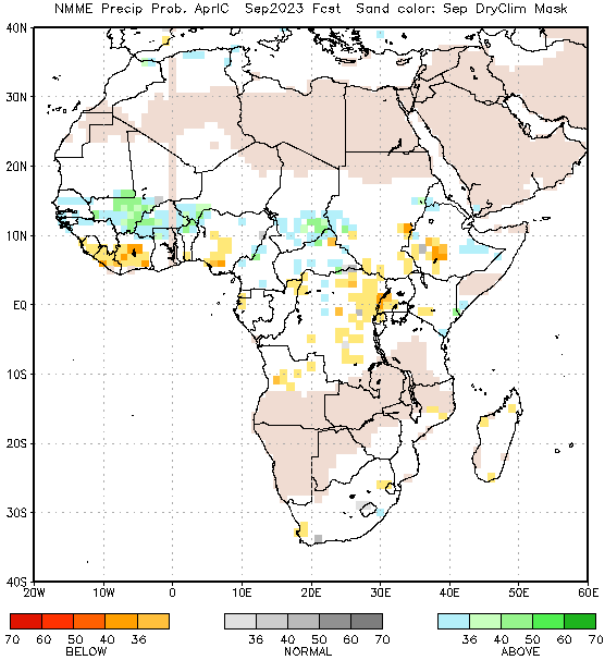
July



August



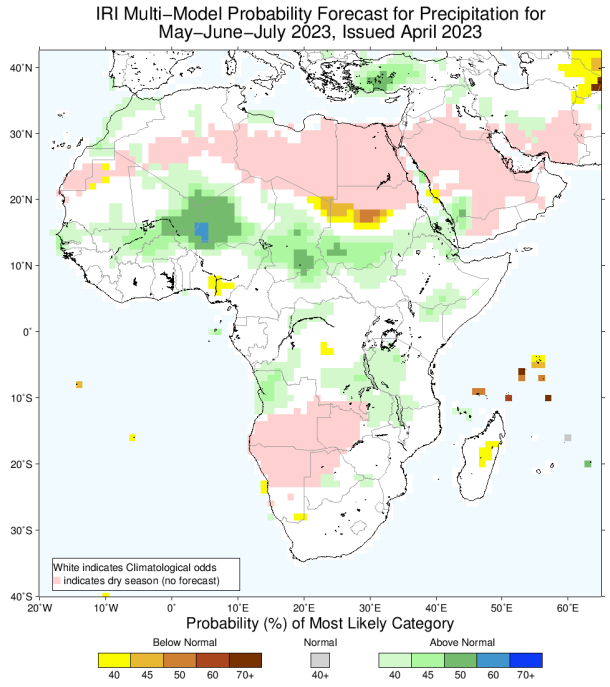
September



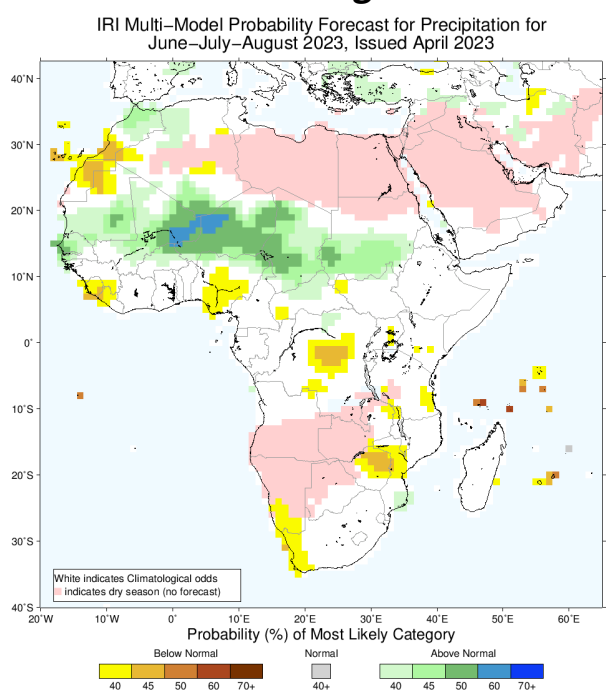
Source: NOAA

IRI forecasts show Above-Average Rains in Northern Areas, Mostly Average Rains Elsewhere

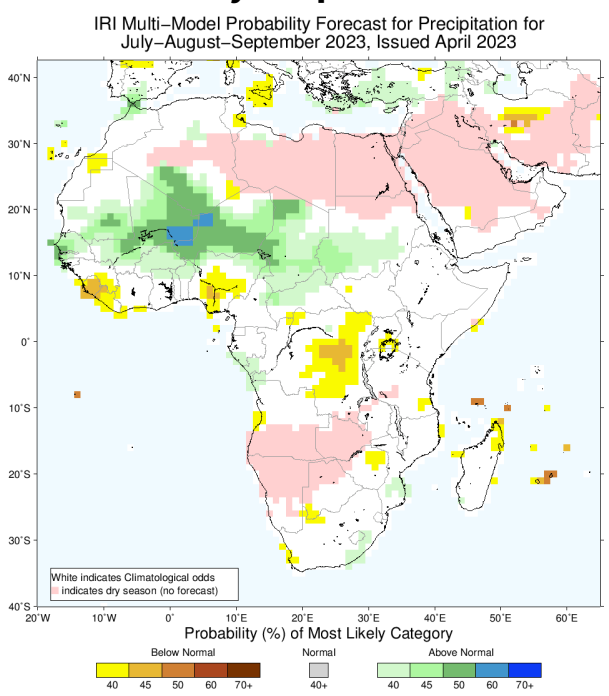
May - July



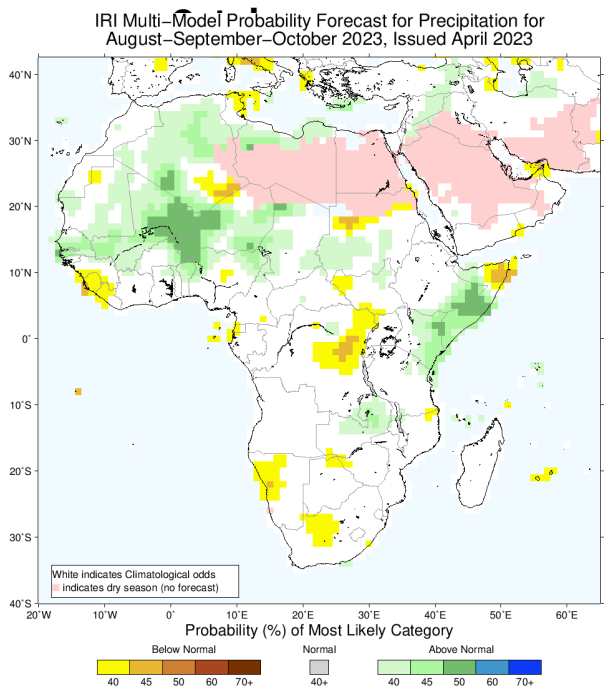
June - August



July - September



August -

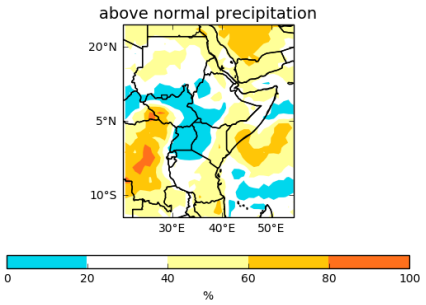


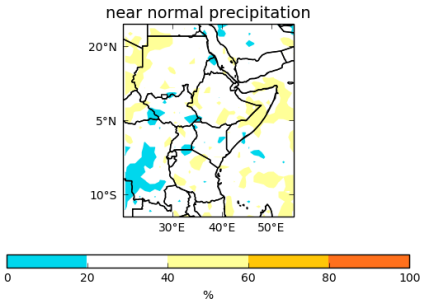
Source: NOAA

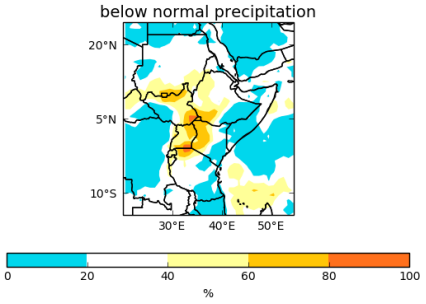
UK MET show Above-Avg Rains in Southwestern Areas, Below-Average Rains in Northern and Eastern Areas

May - July

Probability of tercile categories May/Jun/Jul Issued April 2023

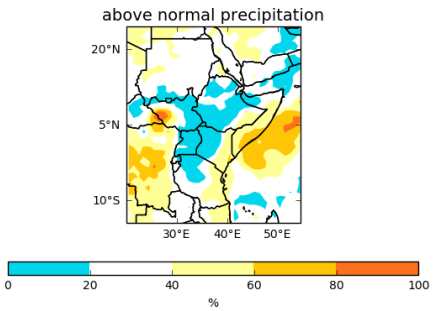


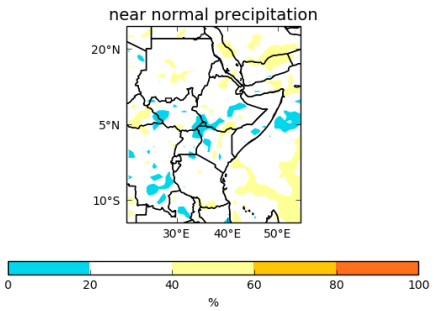


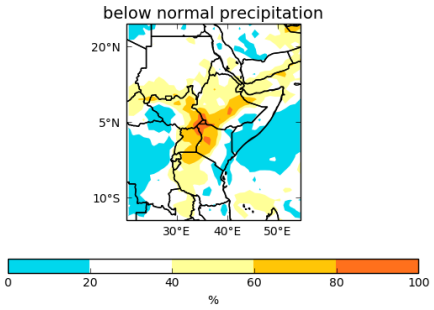


June - August

Probability of tercile categories Jun/Jul/Aug Issued April 2023

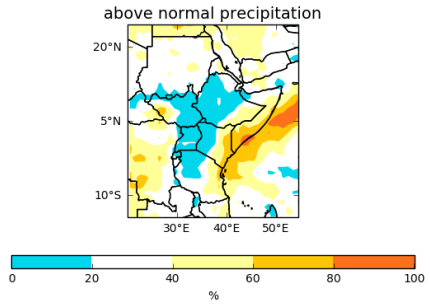


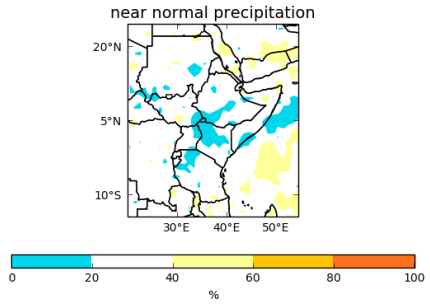


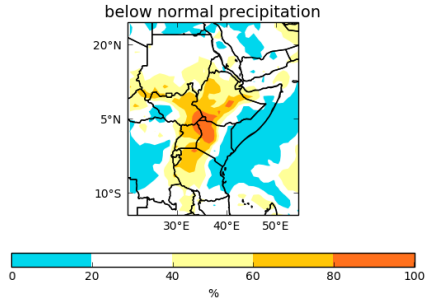


July - September

Probability of tercile categories Jul/Aug/Sep Issued April 2023



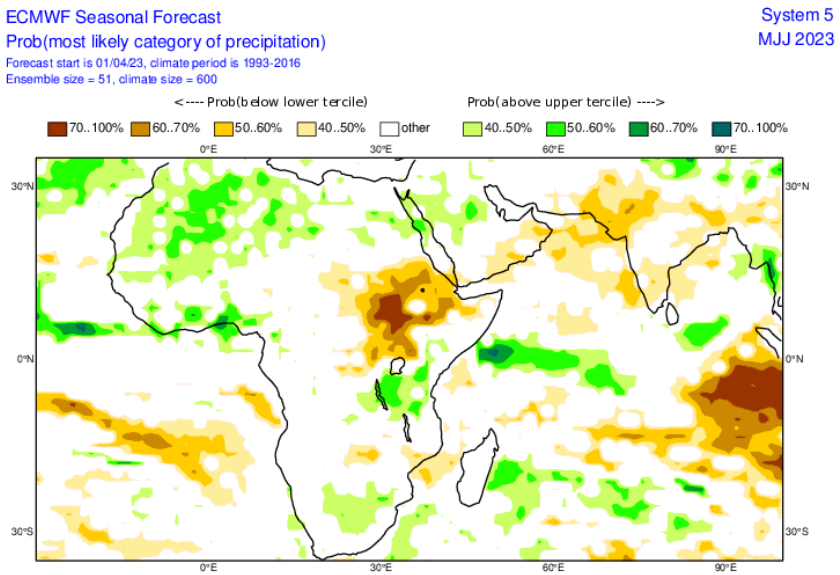


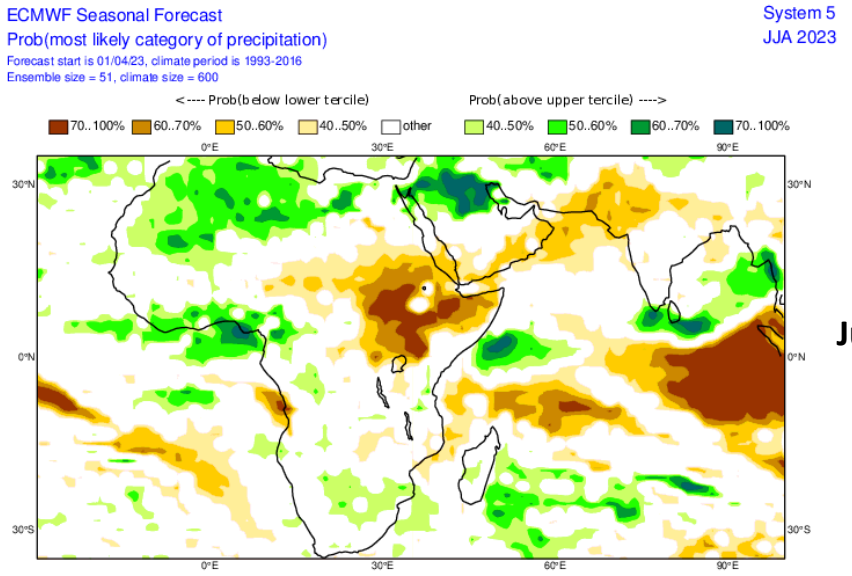


Source: UK MET

ECMWF Shows an Increased Probability of Below-Average Rains

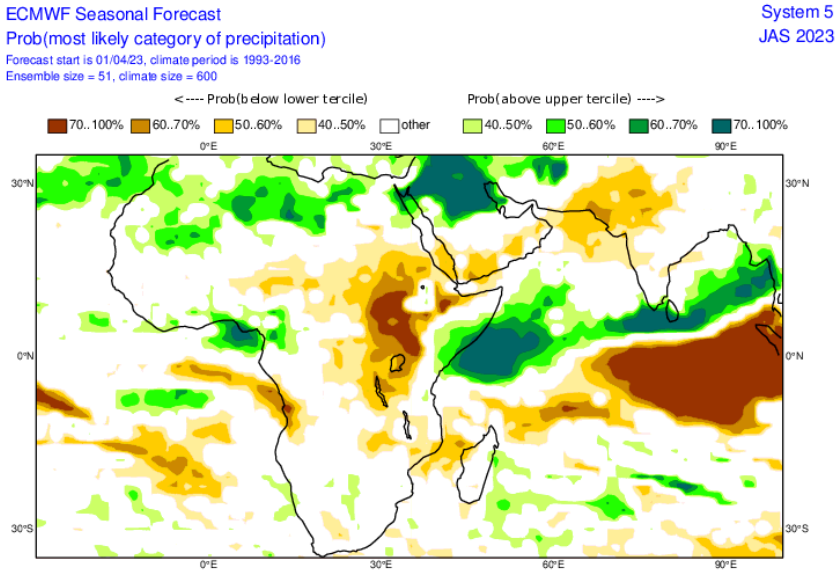
May - July

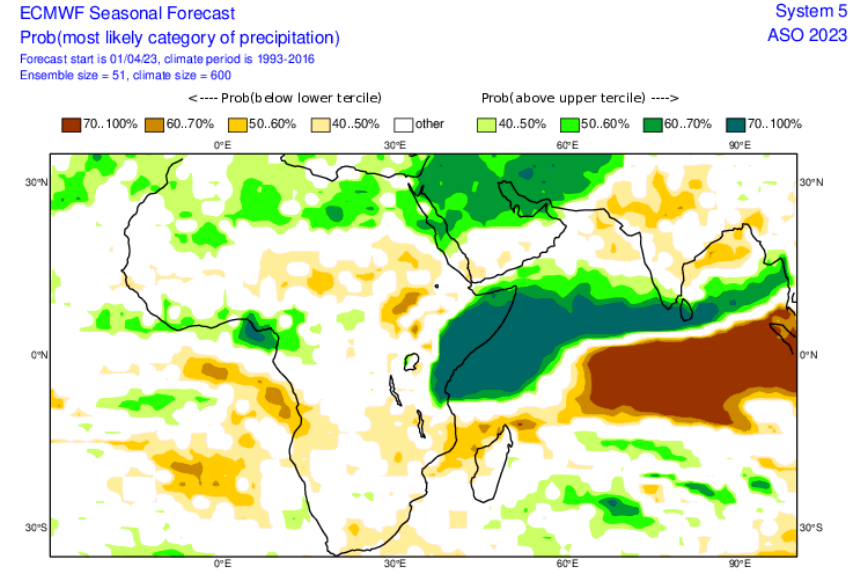




June - August

July - September





August - October

Source: ECMWF

Flood Risk for South Sudan

- Most of the flooding in South Sudan occurs because of river overflow into adjacent lands
    - Excessive rainfall usually exacerbates the situation
- The El Nino phenomena is forecast to commence in June 2023, and is likely to substantively impact East Africa from September 2023 to January 2024, with the effects lasting beyond this period
- South Sudan will suffer flooding because of the increased rainfall predicted in the Lake Victoria Basin, whose waters will find their way into South Sudan via the River Nile, and the areas along the River Nile are likely to flood e.g. in Jonglei and Upper Nile in particular. **Note that Lake Victoria is the main source of water for the White Nile, along with Lake Kyoga and Lake Albert in Uganda, and that floodwaters from the River Nile are the main source of flooding in South Sudan**.
- The heavy rains currently being received over the basin of Lake Victoria, the main source of water of the White Nile River which crosses South Sudan, are keeping the lake levels near their historical record. If rains continue at above-average levels in these upstream areas, the continuation of the succession of unusually widespread floods, which affect South Sudan since in 2019, is likely.

Impacts of the floods (Seasonal/El Nino)

- Displacement of populations living along the rivers and in the flood prone lowlands.
- Displacement of livestock and their likely migration to non-flooded locations where there is a likelihood of conflict between the pastoralists and the host community.
- Loss of crops, leading to a further increase of the cereal deficits in the flood prone counties / locations.
- Disruption of markets functionality and (re)supplying. This will also affect the population’s access to markets to buy commodities because of limited physical movement.

Mitigating the impacts of floods

- *Preparedness*: Government and other relevant partners to send out early warning advisories about the impending risk of flooding and asking that communities in lowlands move to higher ground where they can safely conduct their livelihood activities e.g., farming, cattle keeping etc.
- *Climate-smart agriculture*: Introduce crops such as rice in locations where farmlands are likely to suffer from heavy flooding.
- *Rehabilitation / construction of flood control infrastructure*: There is need to invest in rehabilitation and construction of dykes in locations that are most affected by river flooding.
- In locations that are likely to suffer from drier conditions, introduce perennial crops such as cashew nuts, cassava, sisal, date palms etc. that can provide food. Also include fast maturing crops.
- Provision of fishing kits and training on fish preservation to reduce post-harvest losses and increased income for the fisher folk as well as for communities living around locations with access to fishing grounds.
- Pre-positioning of inputs and other humanitarian supplies in common logistical hubs across the country.

Thank you.

Reflections / Questions / Feedback / Additions / Deductions / Discussion …