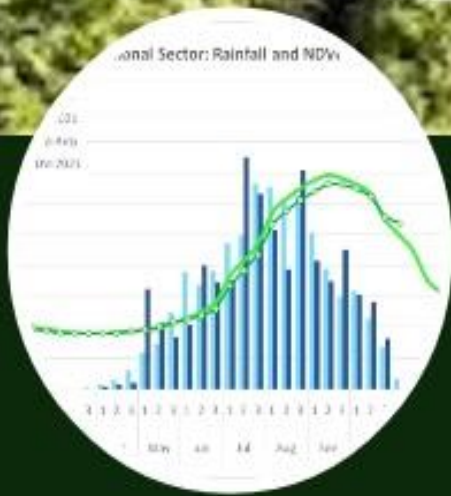


Sudan

Agromet Bulletin



Early Warning For Early Action

AgroMet Bulletin is a monthly report to monitor the rainfall and vegetation development over Sudan. For further information please contact AgroMet team through email provided below. Please feel free to distribute it through your network to who is interested in.

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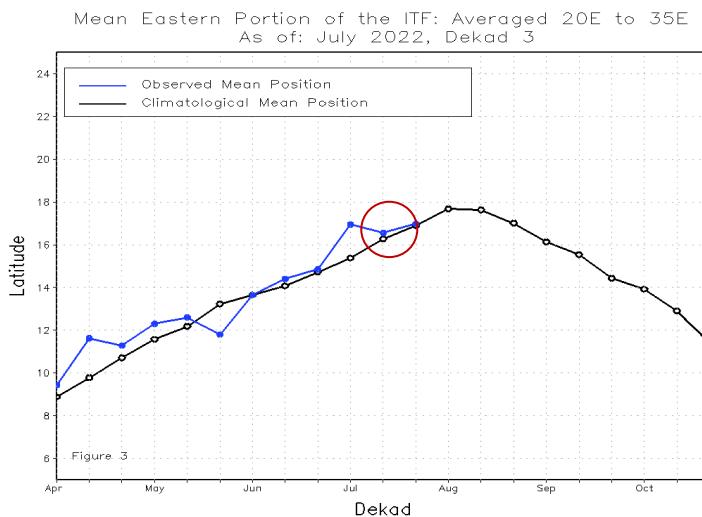
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Highlights...

- ❖ The fluctuation of the ITCZ around its normal position resulted in inconsistent rains during July-2022.
- ❖ By late July, most parts of the country received average to slightly higher than average rains except small areas east of South Kordufan and across Blue Nile state.
- ❖ During July, the western part of the country experienced better rainfall performance causing wetter than average condition unlike the eastern areas with a normal to moderately drier than normal conditions.
- ❖ The irregular dekadal rainfall distribution during July resulted in the areas of good and low vegetation development to be mixed and sharp deterioration is noticed over most parts of the production areas.
- ❖ Earlier than normal to normal onset dates of the growing season observed across the country except over some areas south east of the country.
- ❖ Long dry spells during July was restricted over the northern parts of the rainfall belt while dry spells not exceeding 6 days spread along the centrals and the southern areas.
- ❖ ICPAC Forecasts Update indicate an increase in the chances of above average rainfall conditions in most parts of Sudan during the period from Aug-Oct 2022.

ITCZ Movement:

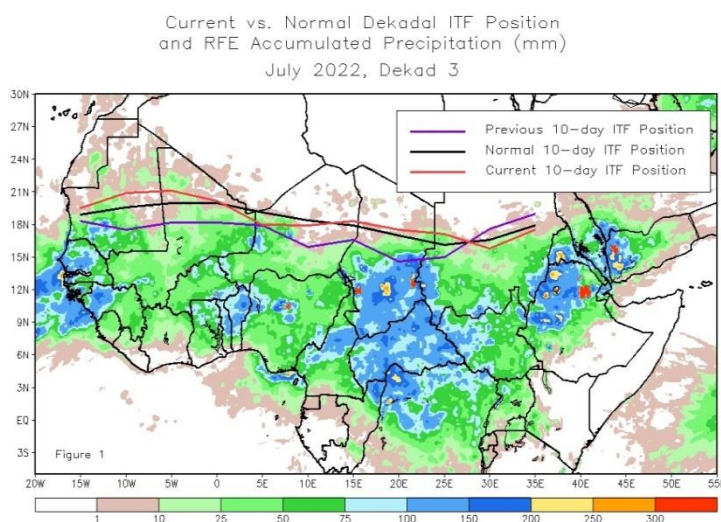
- (Fig 1a) is a time series, illustrating the latitudinal values of the eastern portions of the ITCZ, and its seasonal evolutions since April, 2022.
- (Fig 1b) shows the current position of the ITCZ compared to the climatological position during the 3rd dekad of July, and its previous position during the 2nd dekad of July.



- Slight retreat for the ITCZ (average location) during the last dekad of July to be near to the climatological position and so during mid July, unlike the early July above average location of the ITCZ which is clear in its implication on rainfall amounts (Fig 1a);

Fig 1a: Observed ITCZ Positions and the climatological mean positions by late of July 2022

Source: Climate Prediction Centre (CPC)



- Random movement for the ITCZ during late July around its previous and climatological positions, to become below them across the centrals and the eastern parts of the country, while sharp northerly movement noticed westerly to become above to its average position and the previous one giving a chance for higher rainfall amounts (Fig 1b);

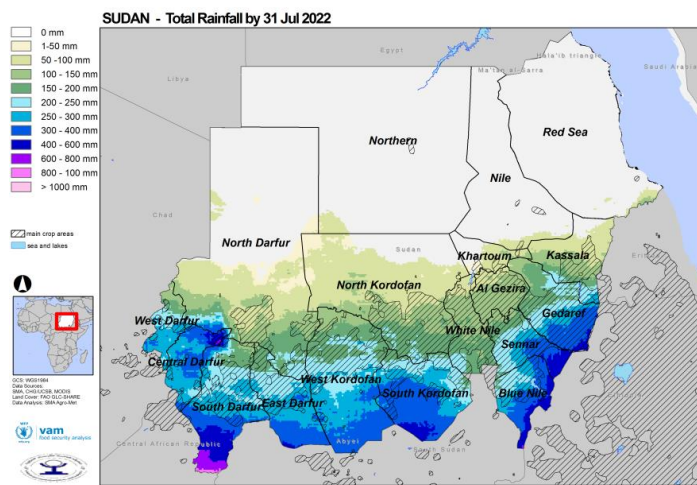
Figure 1b: ITCZ position during the last dekad of July compared to the previous and the long-term average position. Source: Climate Prediction Centre (CPC)

2022 Rainfall:

The following is the analysis of 2022 rainfall season by the end of July; situation assessment in terms of rainfall amounts, rainfall as percentage of averages and start of season.

Total Rainfall Amounts:

During 2022 rainy season, the high amounts of total rain were confined to the south eastern, south western and southern parts of the country decreasing northerly. Considerable rainfall amounts registered by the end of July over most parts of the country, although, some states have unpromising appearance (Blue Nile and South Kordufan) (Fig 2).

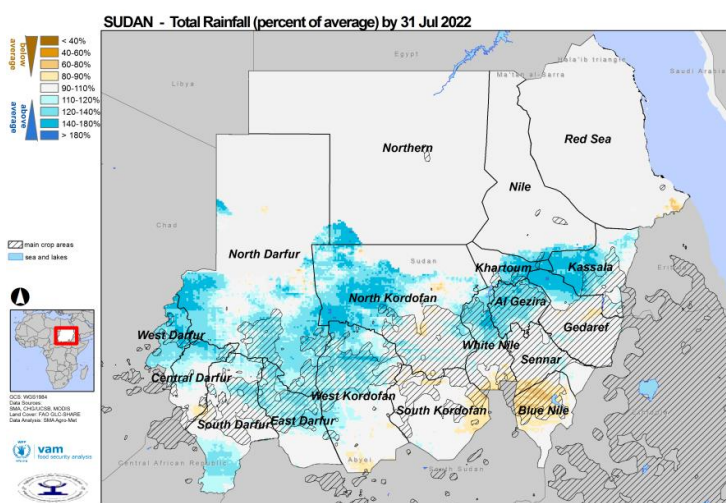


- By late July 2022, total rains of about (400-600) mm observed over small areas along the south eastern borders of the country and more south of Southern Darfur state (Fig 2);
- Rainfall of about (200-400) mm registered across the southern part of the country while less than 200 mm recorded northerly (Fig 2);

Figure 2: Total rainfall over Sudan by July2022. **Source:** Sudan Agromet Information System (SAMIS).

Total Rainfall as Percentage of Average:

By late July-2022, above average total rains noticed across the western and the north eastern parts of the country, while average rainfalls prevailed elsewhere with slightly lower than average total rainfall recorded in Blue Nile and east of South Kordufan state (Fig 3).



- By late July, Al Gezira, Kassala, east of Khartoum and north of White Nile and Gedaref states and the western parts of the country showed wetter than average conditions (Fig 3);
- The eastern part of North Kordufan states, Sennar and south of Kordufan region and Gedaref state experienced normal conditions (Fig 3);

Figure 3: Total rainfall percentage from average by July2022over Sudan. **Source:** (SAMIS)

July Rainfall Amounts:

During July-2022, good rains received by the southern parts of the country and Kassala state, highest rainfall records registered south of Darfur and Kordufan region, east of Gedaref, Blue Nile and Sennar states decreasing northward to give modest amounts of rains across the central to low rainfall amounts over the northern parts of the rainfall belt (Fig 4).

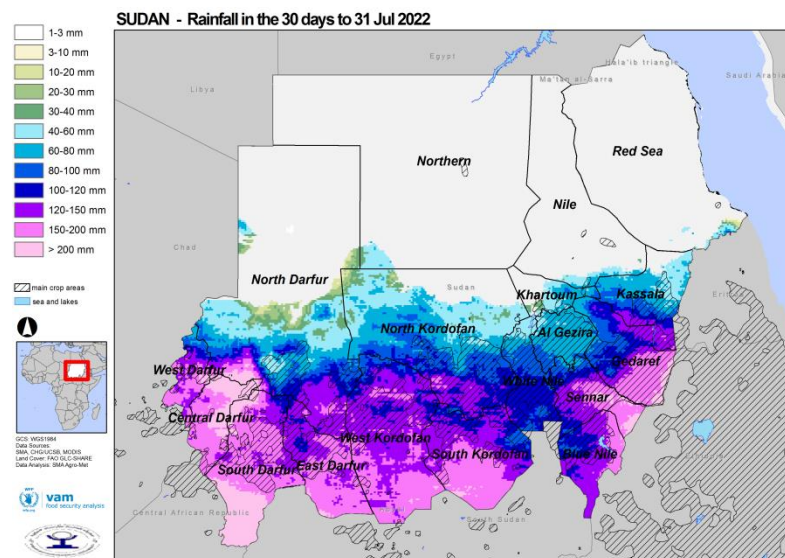


Figure 4: July 2022 rainfall amounts over Sudan. **Source:** (SAMIS)

- During July 2022, highest rainfall records exceeding 200 mm registered north of Central Darfur and south of Southern Darfur states (Fig 4);
- Moderate rainfall (100-200) mm recorded across the southern parts of White Nile state, Kordufan and Darfur regions, over the eastern parts of Gedaref and Sennar states and across Blue Nile state (Fig 4);
- The lowest amounts of rain (20-100) mm observed northerly (Fig 4);

July Rainfall as Percentage of Average:

(Figure 5) shows the interpretation of July 2022 rainfall amounts as a percentage from the average. Considerable rainfall performance noticed during July across the western parts of the country, west of Kassala and east of Khartoum unlike the eastern parts of the country which showed worst conditions and slightly drier than average wetness conditions observed by some scattered areas (Fig 5).

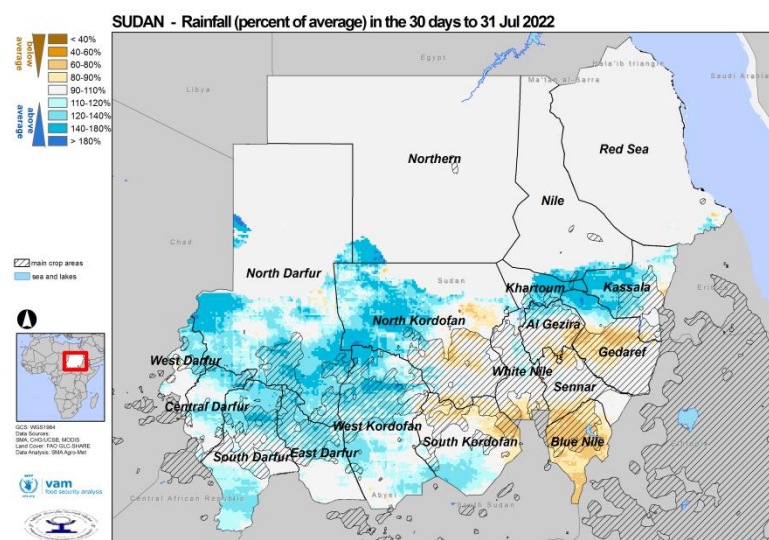


Figure 5: July2022 rainfall as percentage of average over Sudan. **Source:** Sudan Agromet Information System

- Darfur and west of Kordufan region and the western part of Kassala and the eastern part of Khartoum states are the most wetter than average areas during July 2022 unlike the eastern states with their bad humidity regime performance especially Blue Nile and east of Southern Kordufan states (Fig 5);

July Dekadal Rainfall & Percentage of Average:

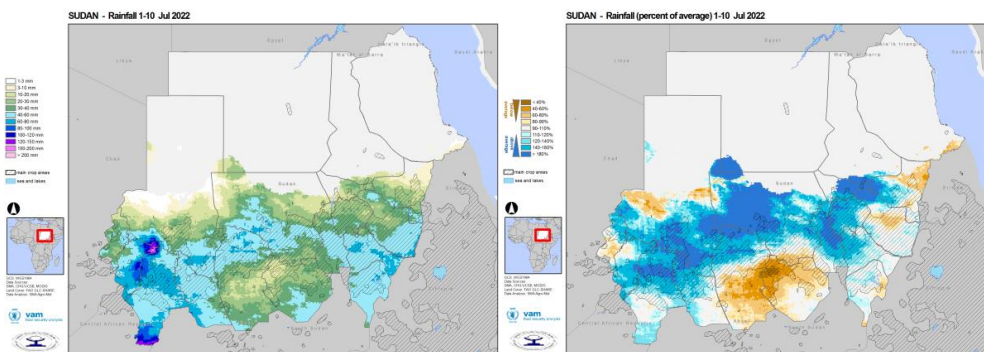


Figure 6: Early-July 2022 rainfall & percentage of average. **Source:** (SAMIS)

In early July, more than 80 mm rainfall records registered over scattered areas in Central and South Darfur states and (40-80) mm registered across the southern and central parts except the Kordufan region which showed sharply drier than average conditions (<40) mm, unlike the rest of the country and average to extremely wetter than average conditions noticed, except scattered areas along the eastern borders (Fig 6);

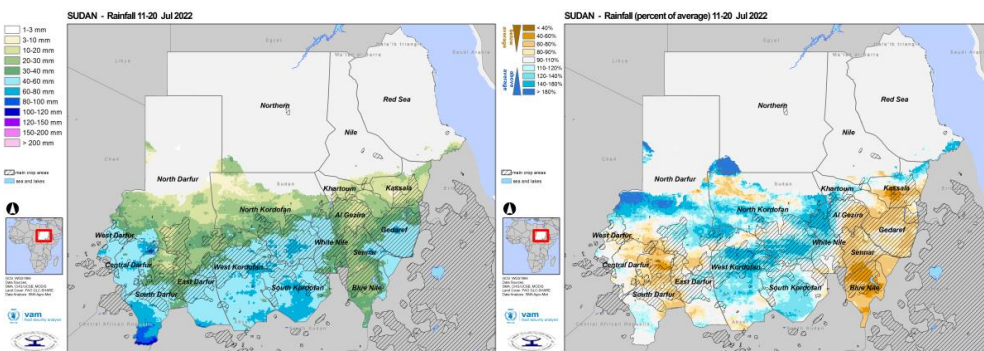


Figure 7: Mid-July 2022 rainfall & percentage of average. **Source:** (SAMIS)

Unpromising situation showed by dek2_July rainfall, as slight to moderately drier than average conditions noticed across the eastern and western areas although modest rains not exceeding 60 mm registered and less northerly, while good rains received by the southern parts of Kordufan region resulted in wetter than average condition (Fig 7);

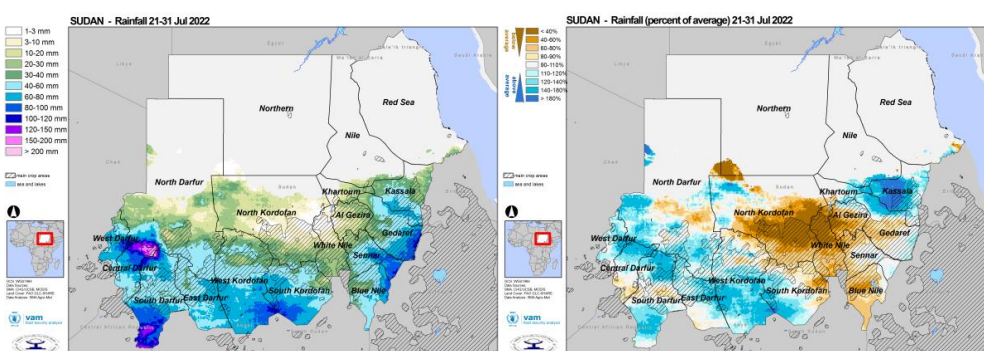


Figure 8: Late-July 2022 rainfall & percentage of average. **Source:** (SAMIS)

Scarce rainfall observed over the northern parts during late July while higher records exceeding 80 mm recorded along the borders. Kassala state showed severely wetter than average conditions unlike North Kordufan, White Nile, Blue Nile, Gazira and north of Gedaref and Sennar states with a slight to extremely drier than average conditions prevailed (Fig 8);

Start of Growing Season 2022:

(Figure 9a,b) shows the start of the growing season 2022 relative to average dates and dates of onset in Sudan relatively.

Normal to earlier than normal growing season onset across the centrals and the southern parts of the country, unlike the south eastern and south western part parts which showed slight delay during this season 2022 (Fig 9a). Early May is the onset date over most of the southern parts of the country and late start by mid May south east of South Kordufan state followed by a long dry spell observed. A new onset should be defined to monitor the growing season perfectly. Gedaref, Kassala state and the central parts of Kordufan and Darfur regions acquired their onset during June while early and mid July are the onset dates over the northern parts of the rainfall belt (Fig 9b).

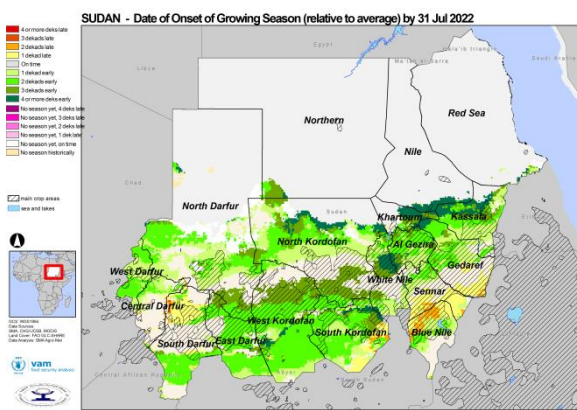


Figure (9a)

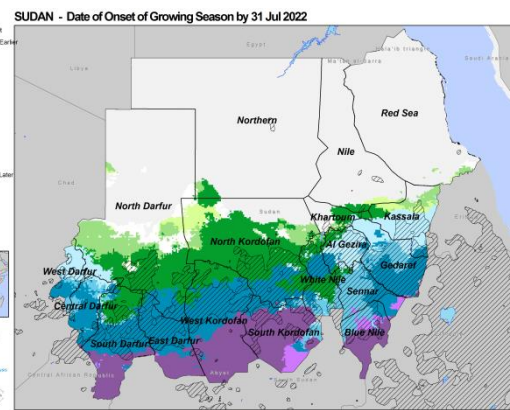
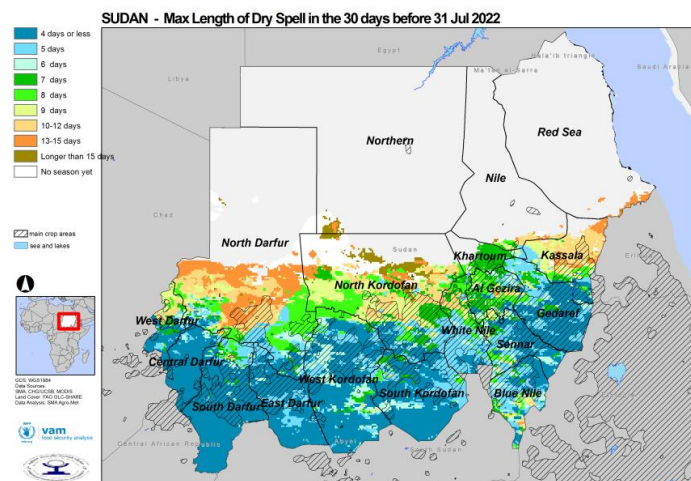


Figure (9b)

Figure 9(a, b): Dates of Onset by late July. **Source:** Sudan Agromet Information System (SAMIS)

Maximum Length of Dry Spell July_2022:

The southern parts of the country and the southern states experienced consecutive rains during July and dry spell length not exceeding 4-5 days with 6-8 days observed over scattered areas, while longer dry spell noticed across the northern part of the rainfall belt (Fig 10);



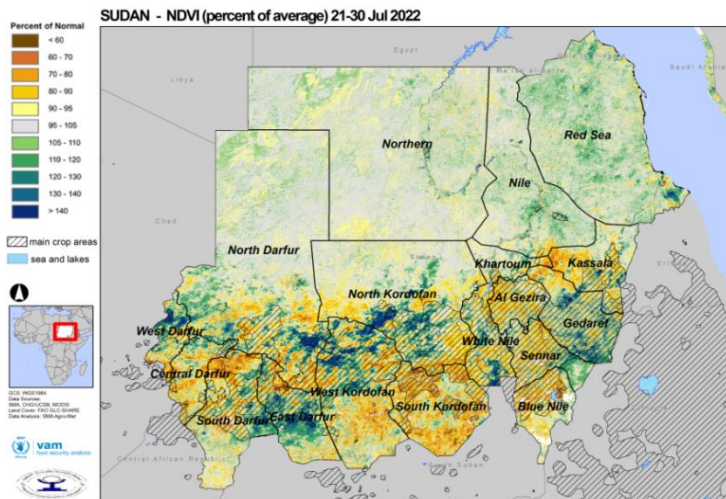
- During July 2022, consecutive rains noticed in Gedaref, Southern and Central Darfur and Eastern Kordufan states with less than 6 days dry spell length (Fig 10);
- Longer dry spells occurred in most parts of North Darfur, North Kordofan, Jazira, Kassala, Blue Nile and Khartoum states (Fig 10);
-

Figure 10: Maximum Length of Dry Spells in July_2021. **Source:** (SAMIS)

Normalized Difference Vegetation Index (NDVI):

Normalized Different Vegetation Index (**NDVI**) is a widely used index to assess the crops development during the rainy season. Normalized Different Vegetation Index (**NDVI**) percent of average is used to assess the vegetation cover progress compared to the average.

NDVI as Percent of Average by Late July 2022:

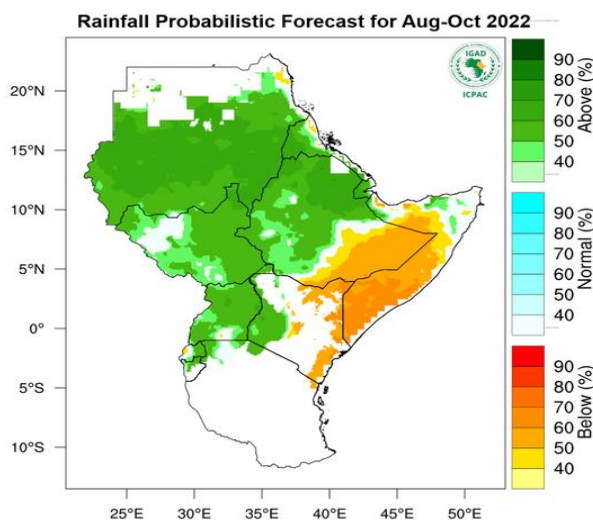


The irregular distribution of July dekadal rainfall and an inadequate rainfall received during late July, spiked in the greening level and drive it to mostly below normal progress across the production area with small areas showed better vegetation development performance south of (Gedaref and Western Kordufan) states and over scattered areas west of Kordufan region (Figure 11);

Figure 11: NDVI as percentage of average 21-30July 2022. Source: Suomi NPP VIIRS (eVIIRS).

Greater Horn of Africa Climate Outlook Update (GHACOF 61)

The importance of the JJAS season in Sudan is that it contributes to more than 80% of the annual rainfall. Getting precise and updated information on the seasonal climate is prerequisite for policy makers to develop short and medium-term socio-economic decisions.



ICPAC August to October forecast shows strong chances of wetter than normal conditions in most northern parts of the Greater Horn of Africa. As a result, Djibouti, Eritrea, most of the northern parts of Ethiopia, South Sudan, Sudan, western Kenya and most of Uganda are likely to receive more rain than usual. The highest chances for drier conditions are for eastern (Ethiopia and Kenya) and across Somalia (Figure 11);

Figure 11: Rainfall Forecast for August – October 2022. Source: ICPAC