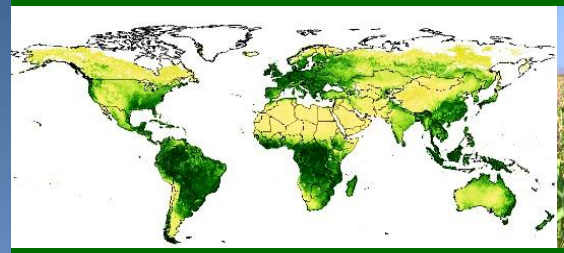


The Sudan Seasonal Monitor

The 2019 Growing Season in Sudan, Issue 03/Aug 2019

Sudan Meteorological Authority

WFP wfp.org | vam food security analysis

Overview

- Although the ITCZ fluctuated around its average ,August was characterized by a countrywide peak of rainfall as there were immoderate rains caused some hazards over limited areas .
- By late Aug all the country received average to above average rainfall.
- More than 600 mm registered south and south east of the country.
- Below average vegetation patterns caused by either water surplus or deficit.
- By late Aug, enough rain accumulated to allow the start of planting activities across the country.
- Continuous rains during August in most parts of the country with dry spells not exceeding 10 days.
- The pastoral areas of the country had a better season than the agricultural areas where we expect conditions to improve continuously during September.

Seasonal Progress of the Rainfall Season 2019

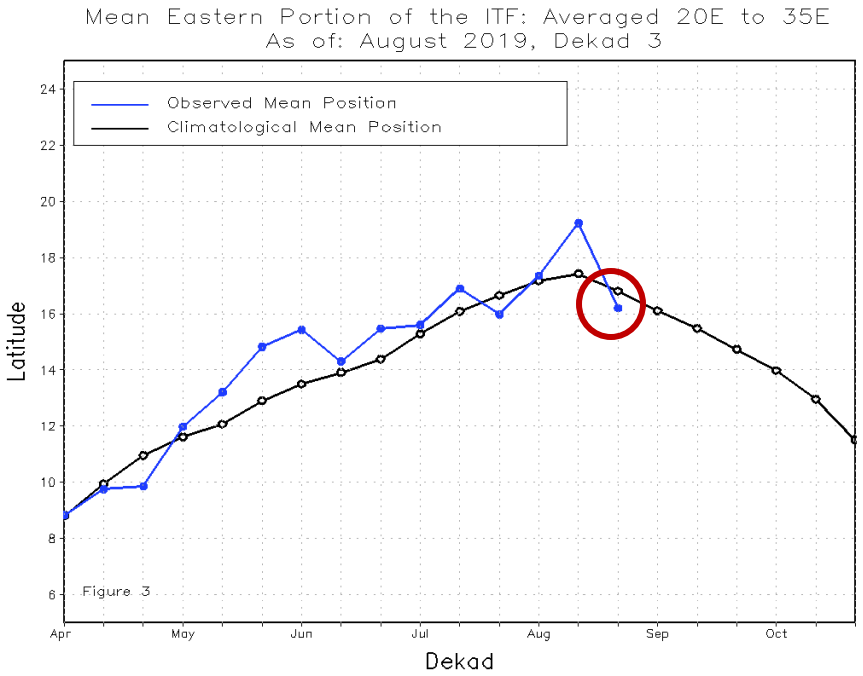


Fig 1a: Observed ITCZ Positions and the climatological mean positions by the end of August 2019

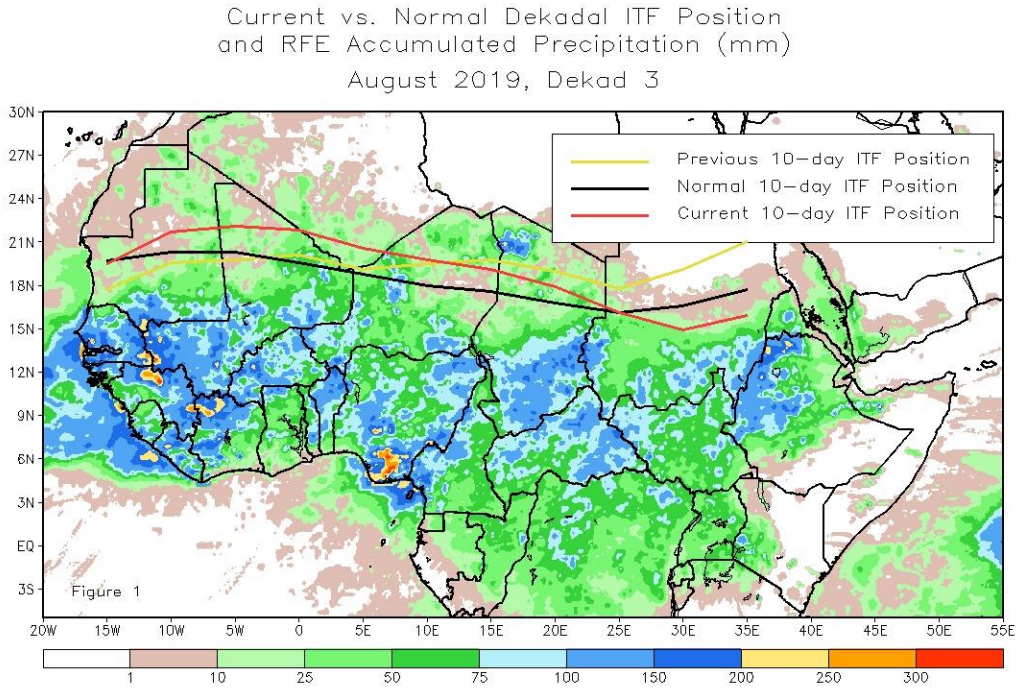


Fig 1b: ITCZ current , previous and average positions and accumulated precipitation (July 2019 Dekad 3)

- Rainfall in Sudan mostly results from humid air masses moving northwards from April to November. At their northernmost reach in August and retreating southwards from September; these humid air masses meet with drier warmer air to form the Inter-Tropical Convergence Zone (ITCZ).
- Since the rains fall south of the ITCZ, tracking the ITCZ through the season provides a quick evaluation of the seasonal progress of the rainy season and of its quality.
- From August 21-31, the ITCZ retreated southward along the country to be south of the climatological (normal) position and its position during the mid of August; this tends to be associated with drier than average conditions across the country during the last dekad *(Fig 1b)*.
- Figure *(Fig 1a)* shows the dekadal ITCZ position fluctuations across the country compared with normal and previous positions as well as the accumulated rainfall amounts by late Aug 2019.

Seasonal Rainfall in 2019

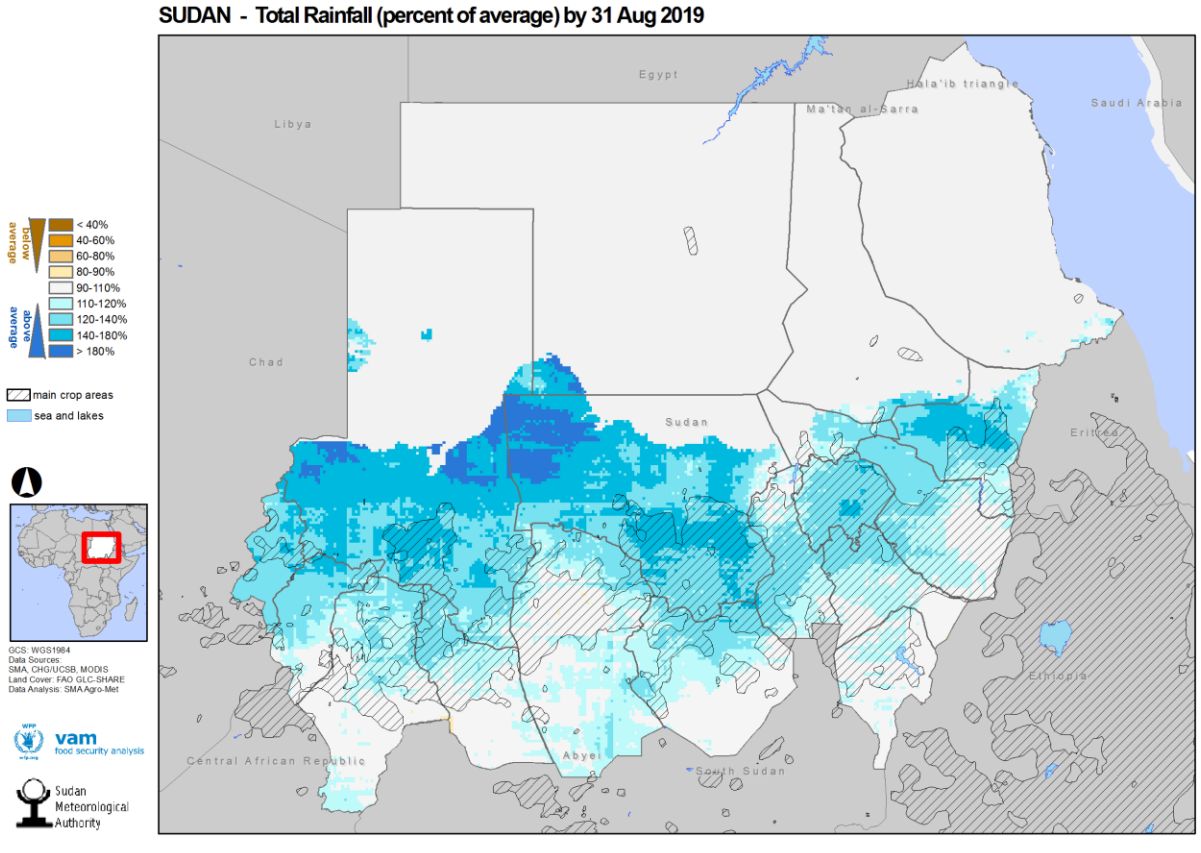


Fig 2a: Total Rainfall (percent of average) by 31 August 2019

- Normal to above normal total rainfall across the country by 31 of August (*Fig 2a*).
- The best conditions were observed north of the rain belt due to the positioning of the ITCZ far north during the first and second dekads of the month

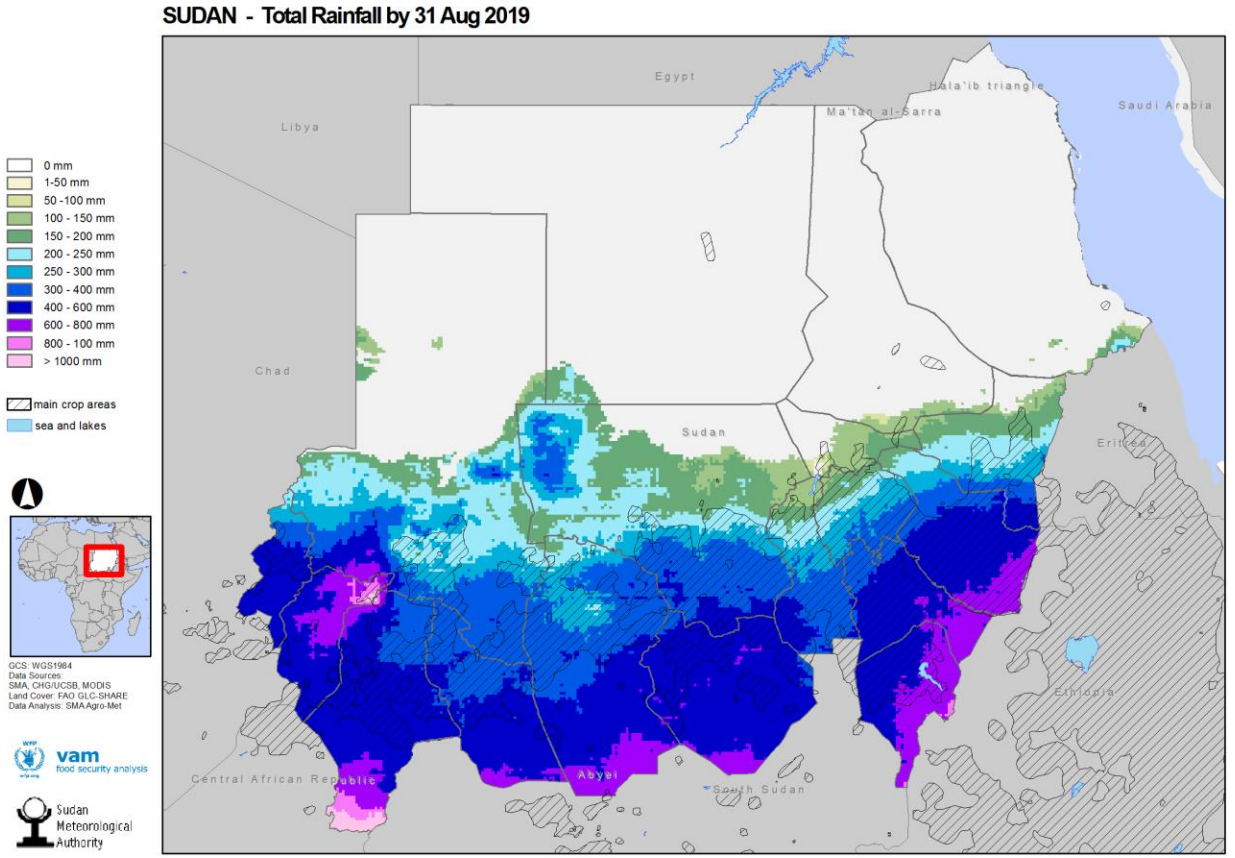


Fig 2b: Total amount of rainfall by late August2019

- By late August, more than 600 mm registered in the south of Gadaref, east of Blue Nile and south of Southern Kordufan and Darfur states and over wide parts of west Darfur state (*Fig 2b*). Total rainfall of (400 – 600) mm recorded at north Gadaref and Sennar states, south of White Nile states and south of North Kordufan, West Kordufan and East Darfur states.
- Total rainfall of (300 – 400) mm recorded across the central belt of the country, and less than 200 mm northward. (*Fig 2b*).

Vegetation Cover Status in 2019

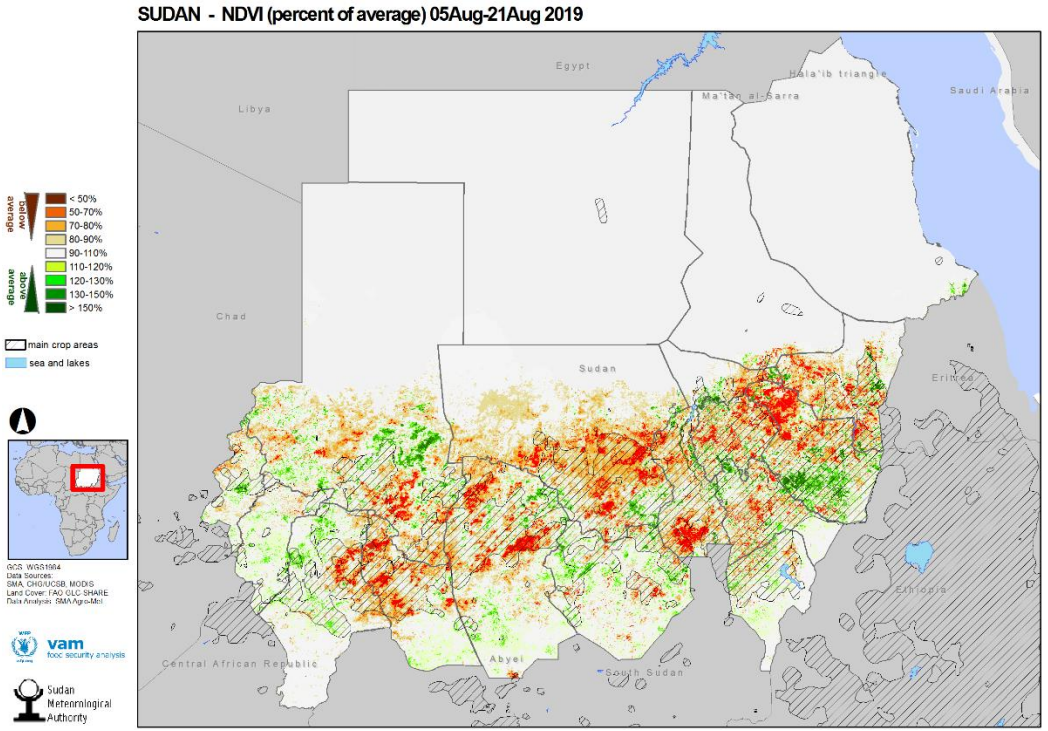


Fig 3a: Vegetation Conditions as NDVI Percent of Median 5-21 Aug 2019

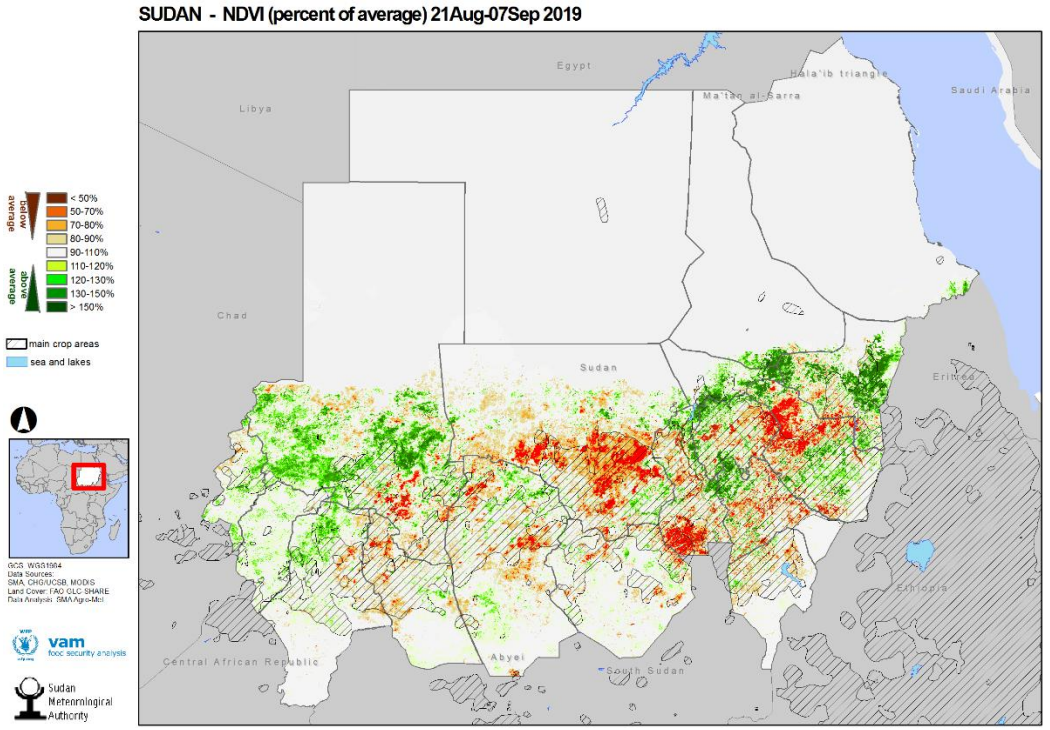


Fig 3b Vegetation Conditions as NDVI Percent of Median 21 Aug – 7 Sep 2019

Vegetation Cover Status in 2019

- Drier than average conditions during late July caused spreadwide deterioration in vegetation development in early and mid Aug across the country *(Fig 3a)* .
- Good vegetation performance noticed later across the eastern and western parts of the country as a result of appreciable rainfall amounts during early and mid Aug unlike the Northern Kordufan and the White Nile states with a disappointing vegetation performance due to the extremely higher than average rainfall during early and mid Aug *(Fig 3b)*.
- By 7th Sep best vegetation conditions noticed in Darfur region, Kassala, Jazeira and scattered areas in Gadaref and Sennar states *(Fig 3b)* .

Start of the 2019 Season

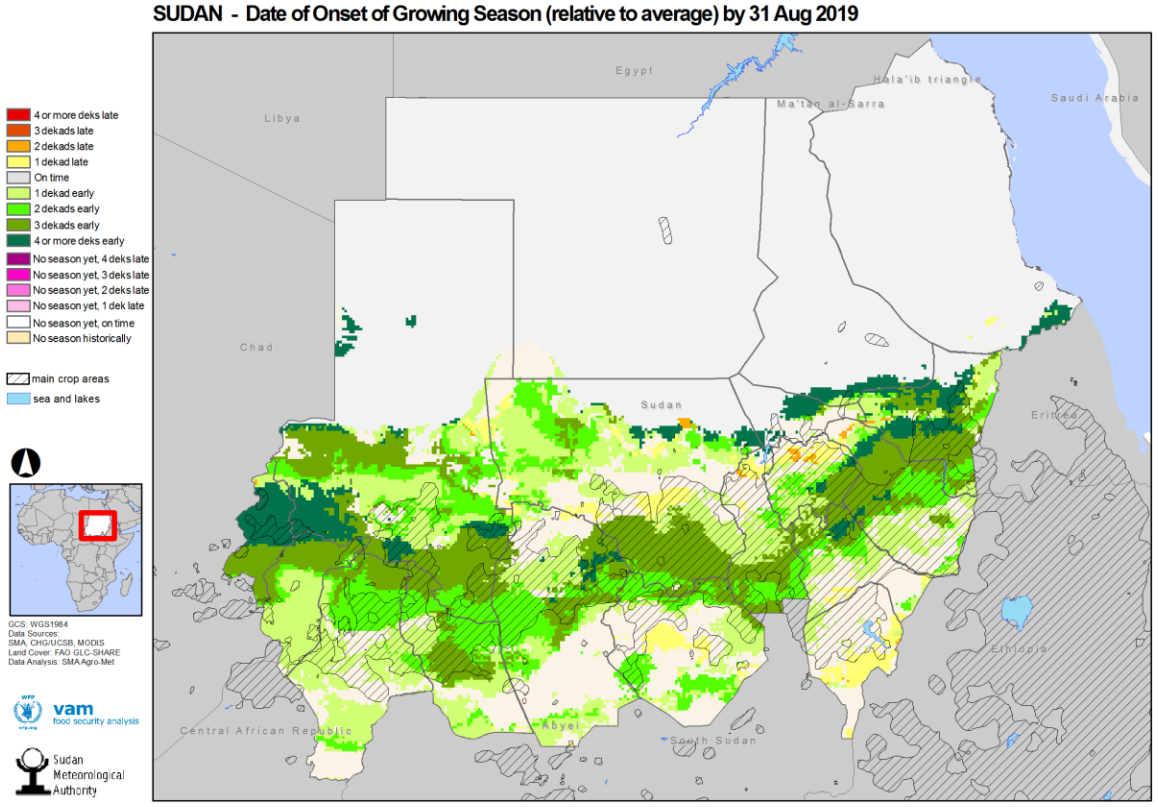


Fig 4a: Date of Onset of Growing Season (relative to average) by 31- Aug 2019

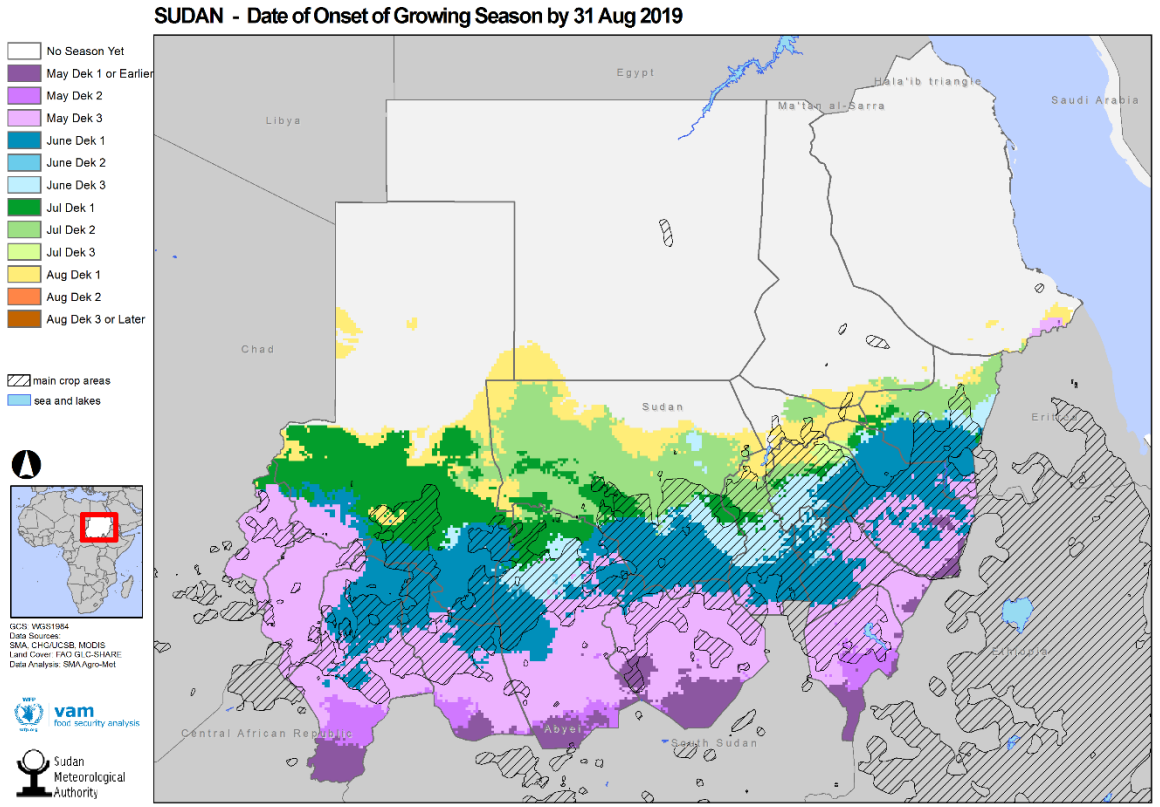
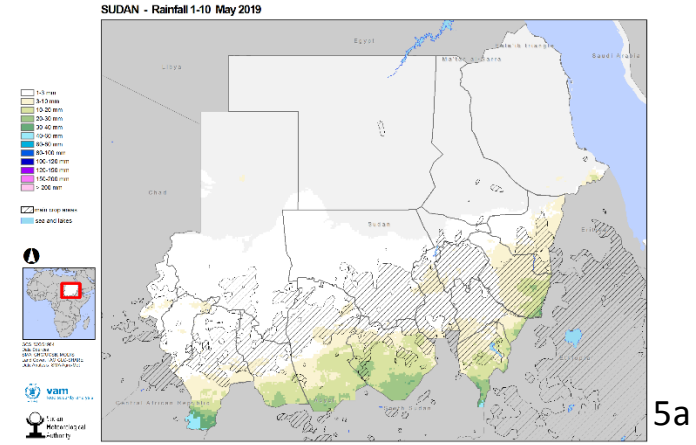


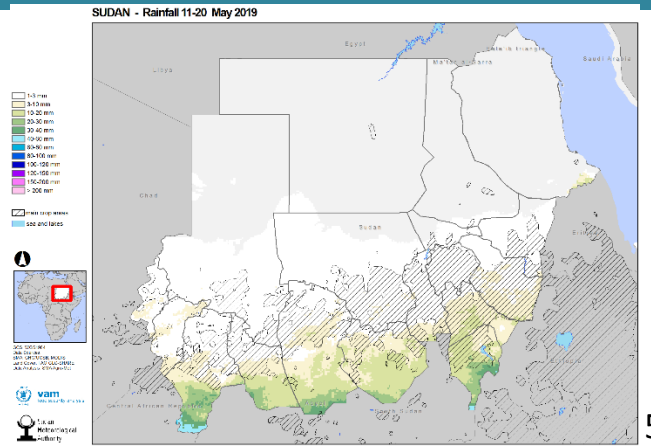
Fig 4b: Date of Onset of Growing Season by 31- Aug 2019

- Earlier than average start of growing season noticed across the central belt of the country and timely over most of the southern and southeastern parts matching the long stay of the ITCZ above to its normal position over these areas. *(Fig 4a)*.
- Start of the season takes place when enough rain accumulates to allow the start of planting activities *(Fig 4b)*.
- By late August, the growing season was well established across the production areas in Sudan as mid and late May representing the onset dates for wide areas south of the country and June to July for the central parts, while later by one dekad date noticed northerly. *(Fig 4b)*.

The 2019 Season: May



5a



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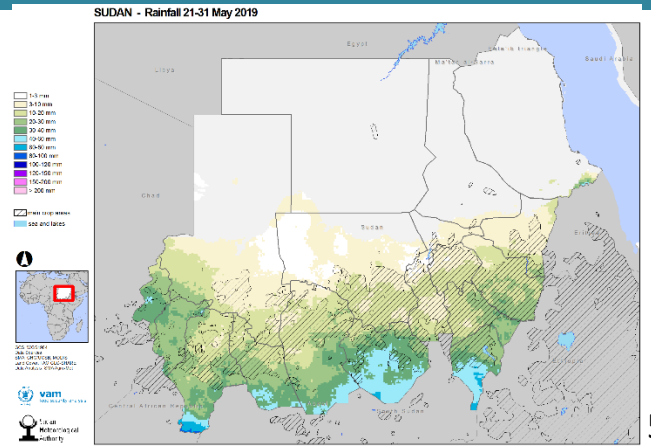

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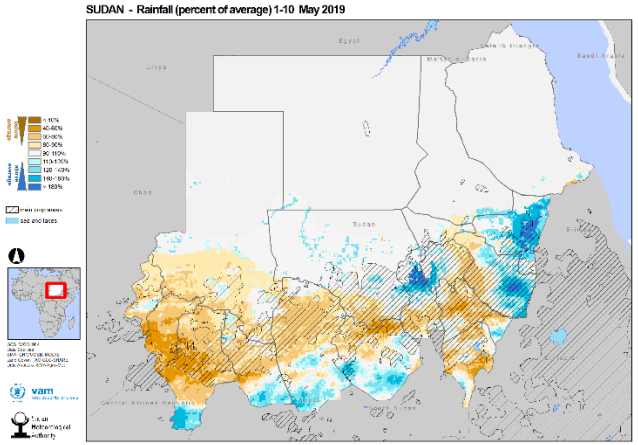

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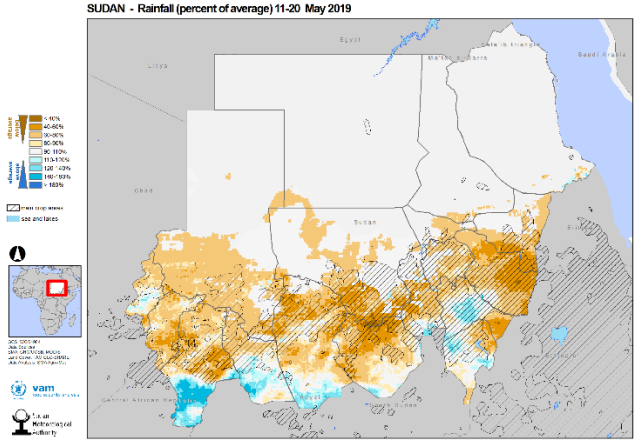

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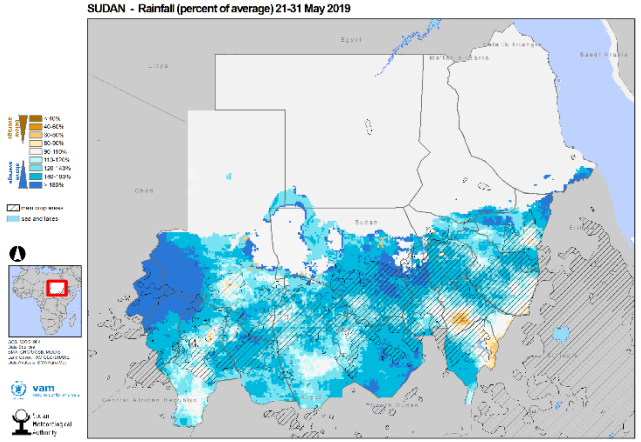


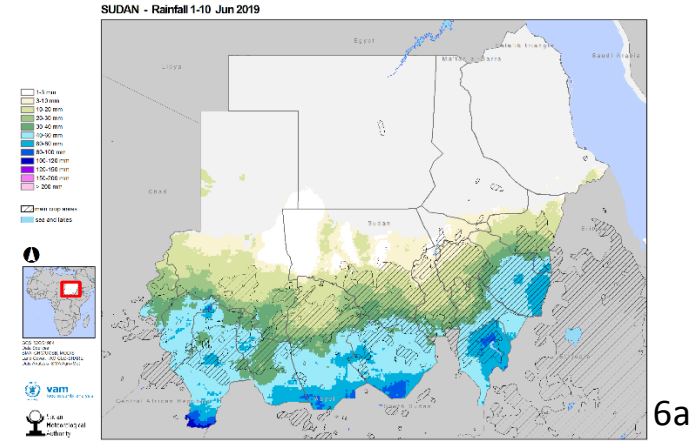
5f

(Fig 5a,b,c,d,e,f): Dekadal rainfall and percent of averages May-2019

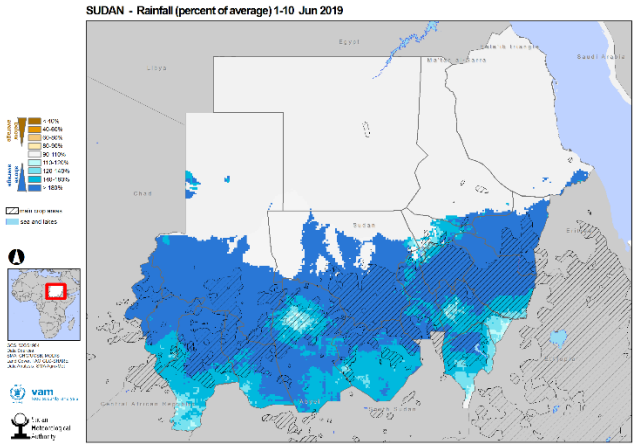
May 2019

Wetter than average conditions in dek1 May over Kassala, Gazira, north of W-Nile, east of Gadaref and small areas south of Kordofan and Darfur. Elsewhere; normal to drier conditions prevailed. Rainfall records of (20 to 50)mm registered over the most southern parts of the country *(Fig 5a,b)*. Drier than average conditions across the country in mid May especially over Gadaref and east of Kordufan region due to the low amounts of rain registered *(Fig 5c,d)*. Sharply wetter than average conditions prevailed in late May what may enhance vegetation cover and more development is expected with this modest rains exceeding 50 mm over the southern parts of the country and less northerly *(Fig 5e,f)*.

The 2019 Season: June



6a



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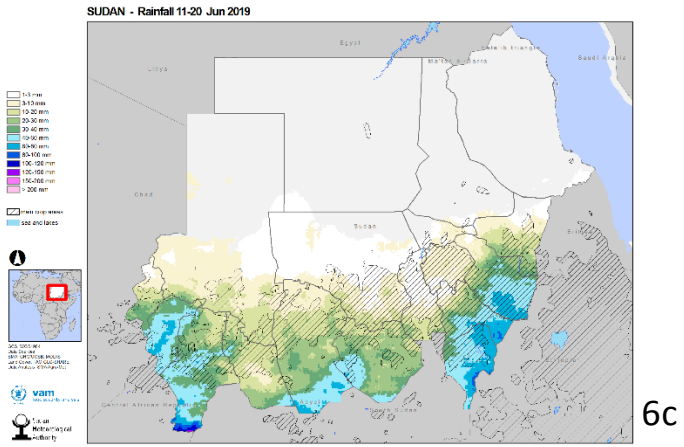

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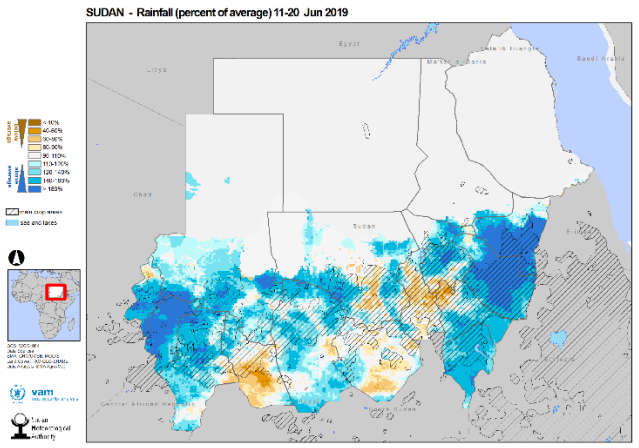

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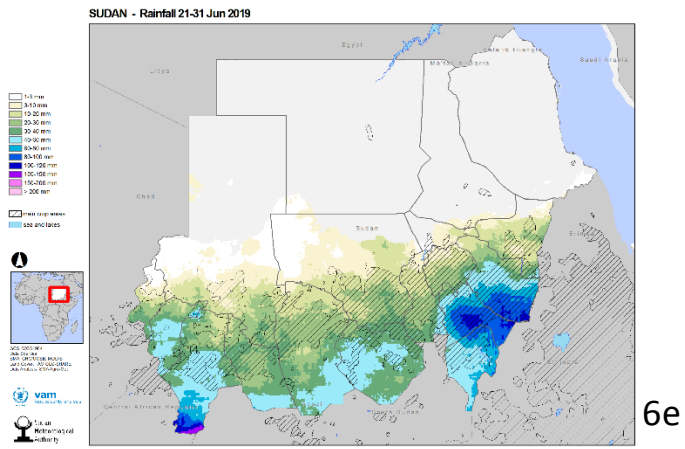

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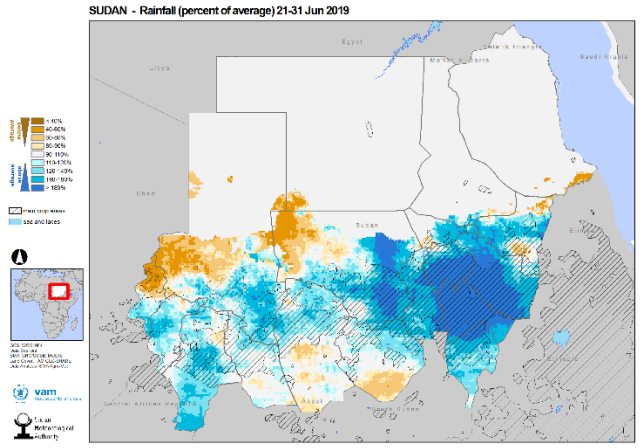


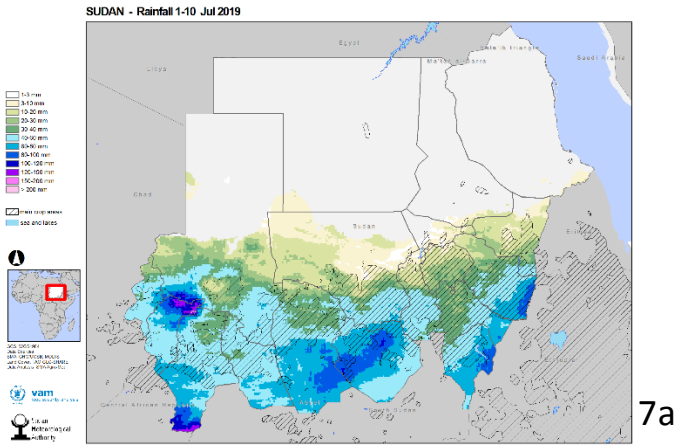
6f

(Fig 6a,b,c,d,e,f): Dekadal rainfall and percent of averages June-2019

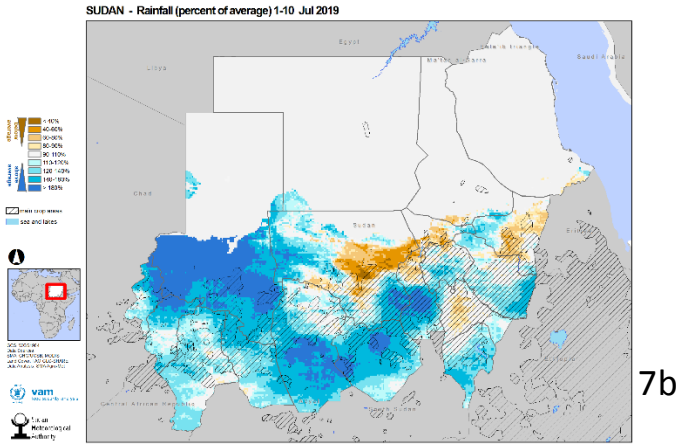
JUNE 2019

Sharply wetter than average conditions in dek1 Jun over the country as a result of appreciable rainfall amounts across the rain belt exceeding 60 mm over the most southern parts *(Fig 6a,b).* Mid Jun characterized by above average rainfall over the eastern and western parts of the country with dekadal rainfall not exceeding 100 mm with scattered areas of normal to drier conditions noticed *(Fig 6c,d).* Sharply wetter than average conditions prevailed easterly in late Jun due to the high rainfall registered there (> 100 mm), and normal to slightly higher rains elsewhere. *(Fig 6e,f).*

The 2019 Season: July



7a



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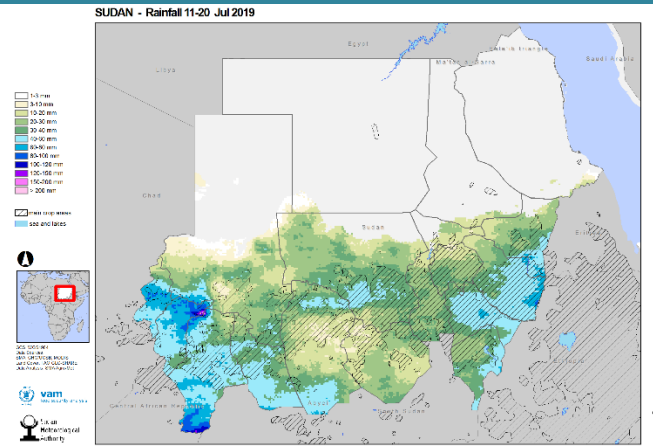

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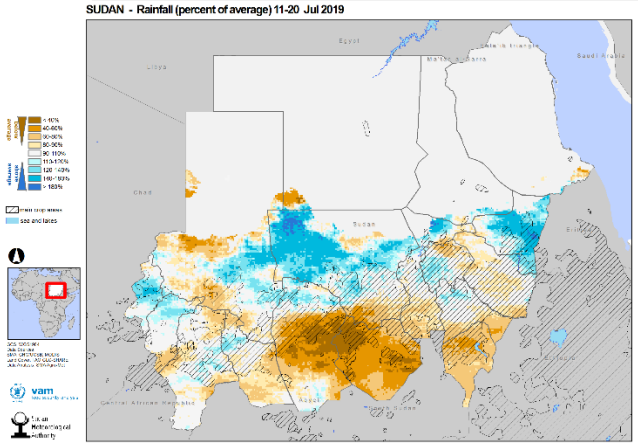

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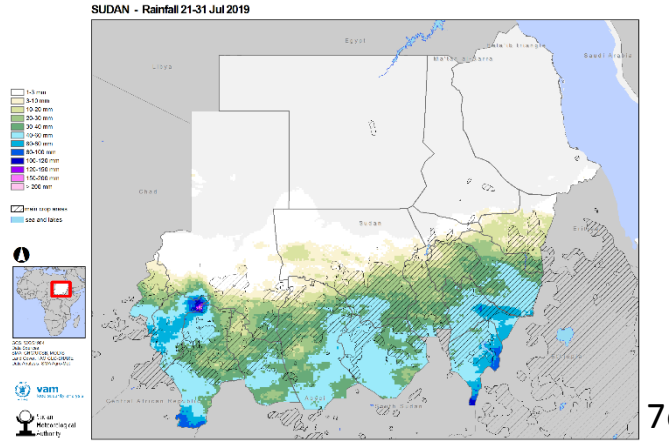

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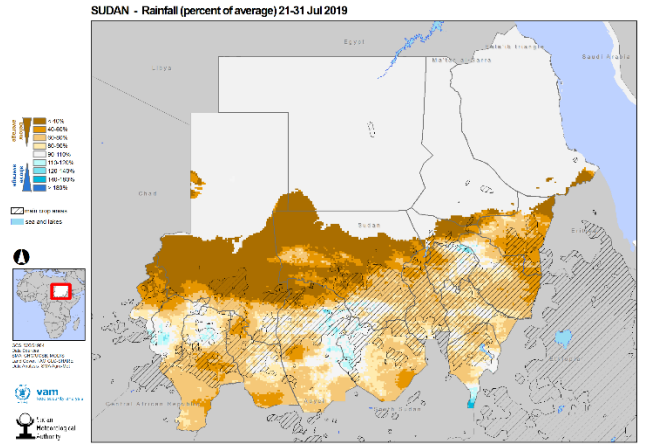


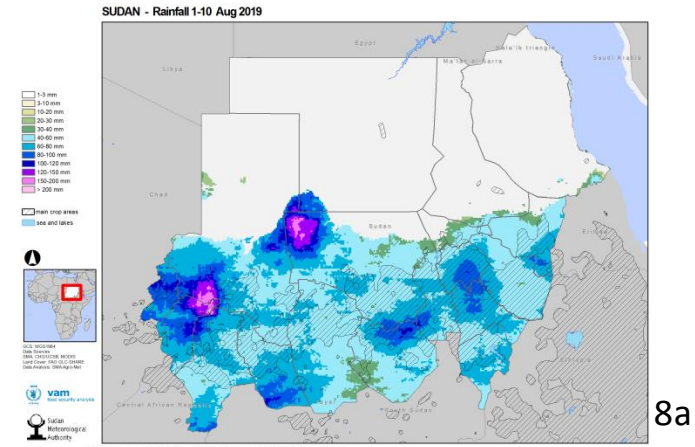
7f

JULY 2019

(Fig 7a,b,c,d,e,f): Dekadal rainfall and percent of averages Jul-2019

In early Jul, above than 100 mm registered south of the country and wetter than average conditions allocated south and west of the rainfall belt except some areas in Khartoum, Northern Kordufan and Kassala states *(Fig 7a,b)*. Normal to drier conditions in mid Jul showed by most of the rain areas the exceptions was Kassala and Northern Kordufan states with their good rains *(Fig 7c,d)* . Worst situations and completely drier than average conditions during late Jul, although low well spatially distributed rains noticed what may impedes vegetation development and pastures *(Fig 7e,f)* .

The 2019 Season: August



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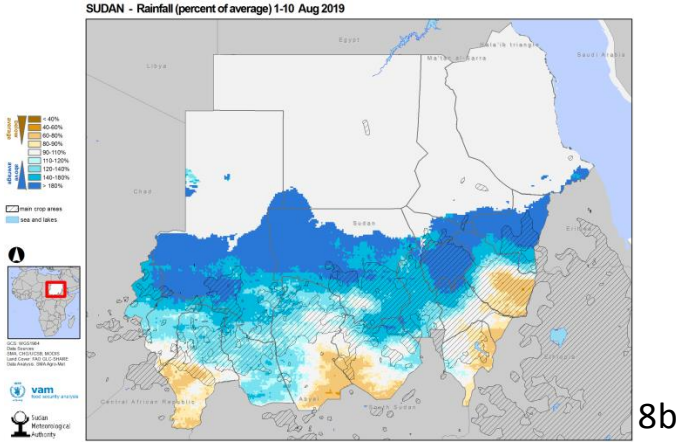

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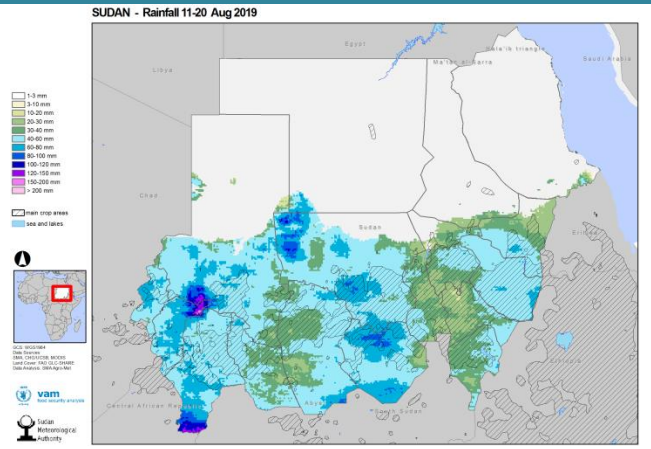

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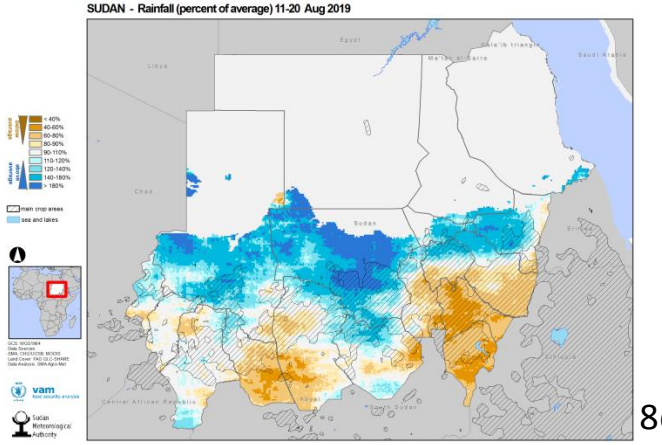

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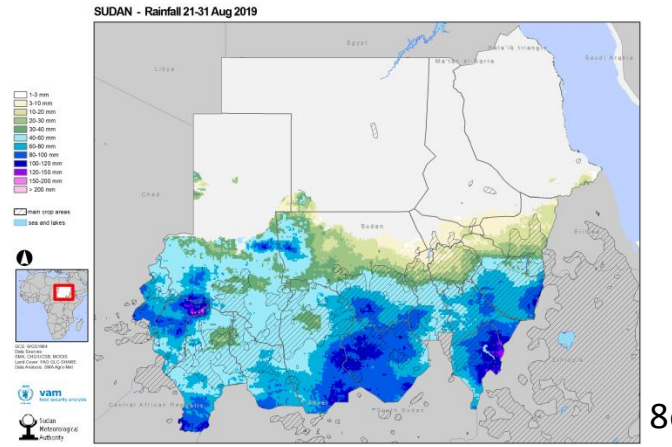

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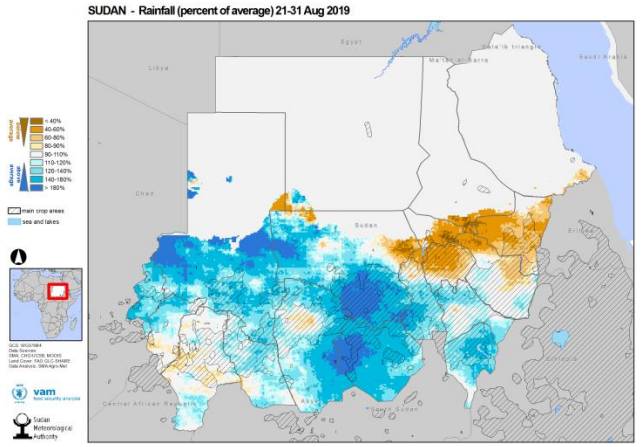


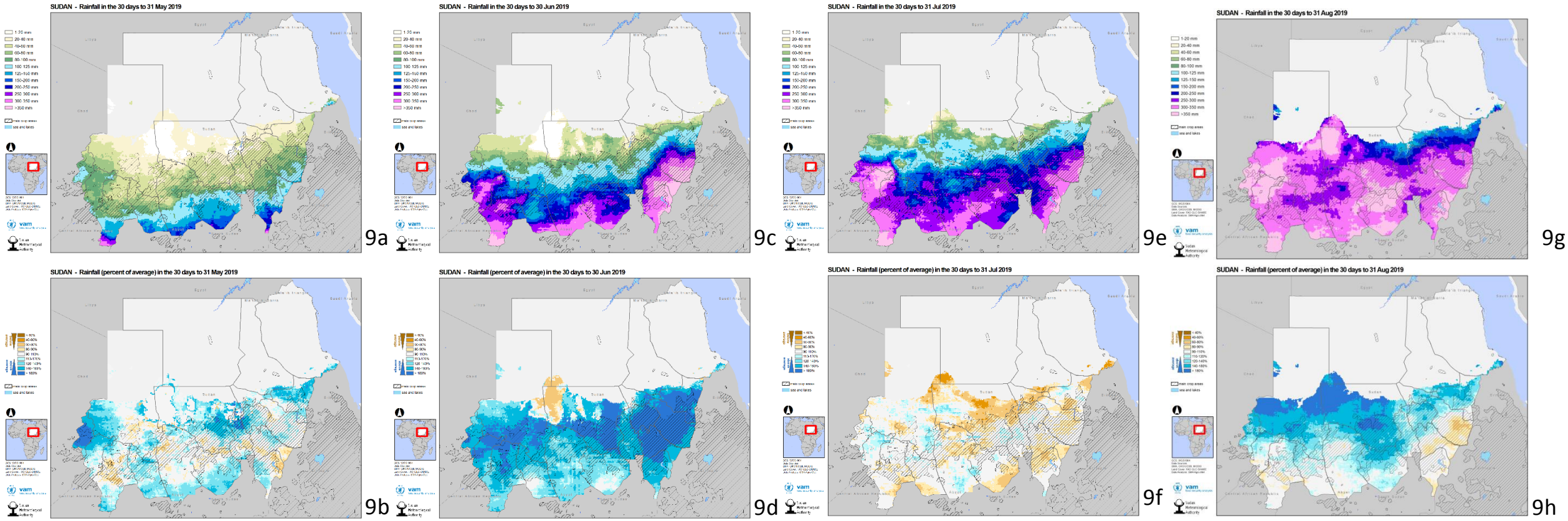
8f

(Fig 8a,b,c,d,e,f): Dekadal rainfall and percent of averages Aug-2019

AUGUST 2019

Early Aug was the most wetter than average dekad with highest rainfall amounts that caused some hazards over some scattered areas *(Fig 8a,b).* Wetter than average to normal conditions in mid Aug noticed in most of the northern and central parts of the country unlike the southern and south eastern parts with moderate drier condition *Fig 8c,d).* Worse situations and drier than average conditions during late Aug noticed in Kassala and Jazeira states. higher rainfall records registered across Southern Kordufan and Northern Darfur what may impedes vegetation development and pastures by mid to late Aug*(Fig 8e,f)* .

The 2019 Season: Month by Month



(Fig 9a,b,c,d,e,f,g and h): Monthly rainfall and percent of averages Season2019

MAY: Adequate rainfall amounts recorded to give normal to slightly wetter conditions during May across the country with some scattered areas showed drier conditions *(Fig 9a,b).*

JUNE: Jun characterized by above average rainfall over the country with monthly rainfall exceeding 350 mm south east of the country and 300 mm across the southern areas and good spatial distribution of rainfall noticed *(Fig 9c,d).*

JULY: Normal to drier than average conditions prevailed in Jul in spite of the northward extension of the rain belt what may tauten vegetation development. Some progress is expected with appreciable rains during Aug *(Fig 9e,f).*

AUGUST: More than 300mm of rains received during Aug by most of the country with good spatial and temporal distribution, the exception was some areas east of the country with normal to slightly lower than average monthly rainfall caused by dryness conditions during late Aug*(Fig 9g,h).*

Maximum Length of Dry Spell in 30 days before 31 Aug 2019

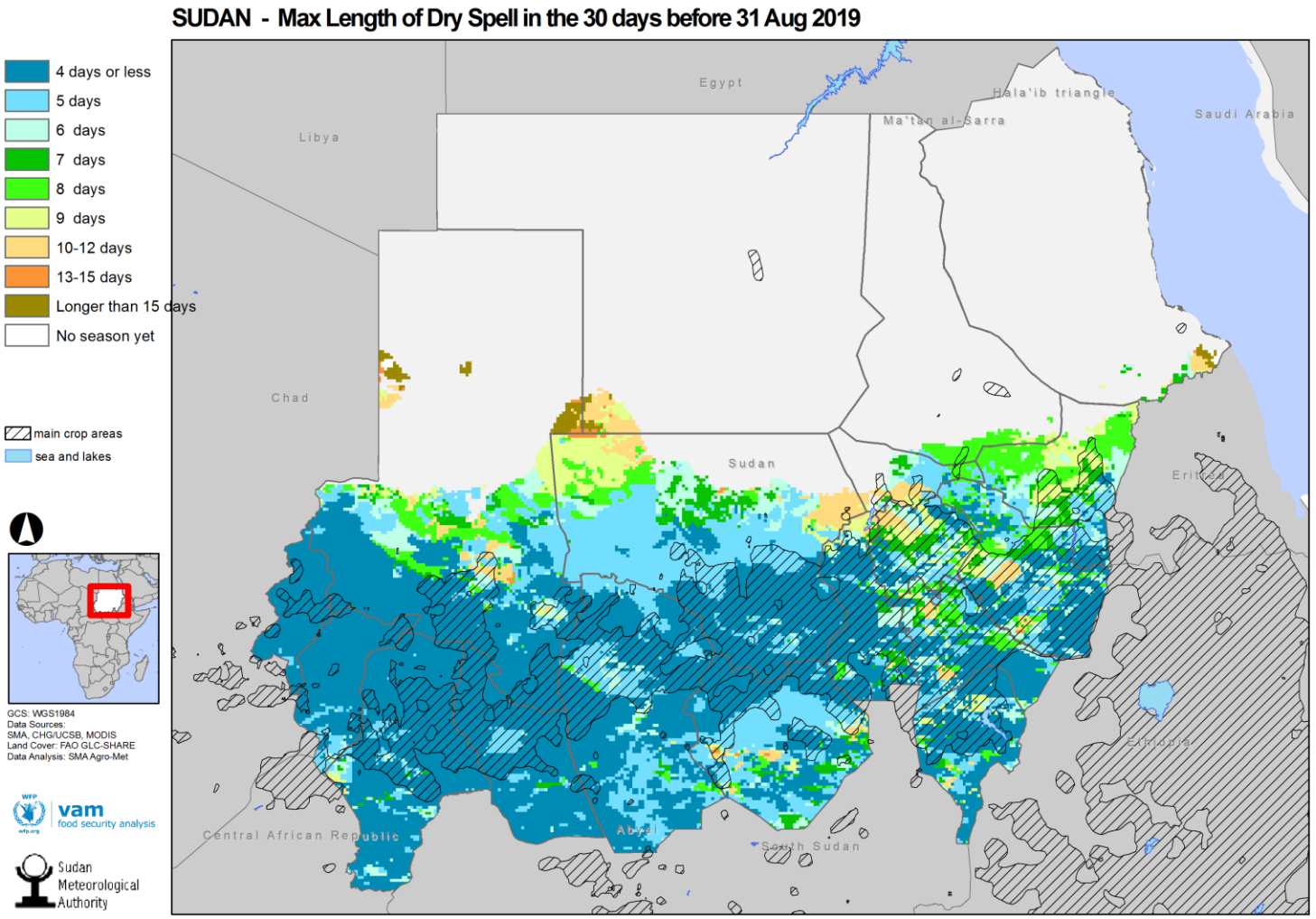
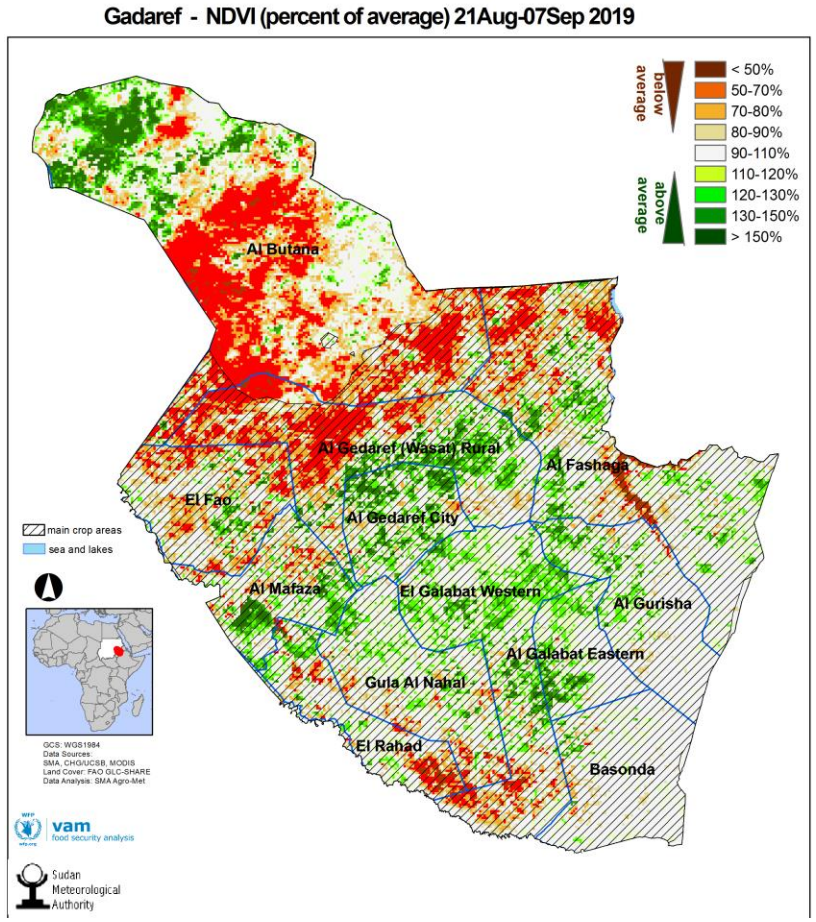


Fig 10: Maximum Length of dry spell in 30 days before 31 Aug-2019

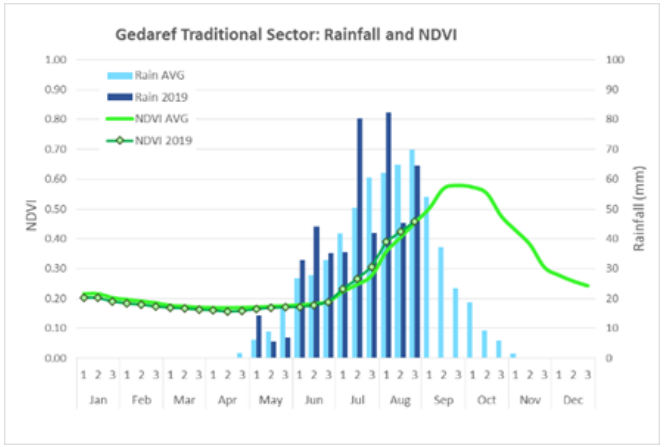
- Continuous rains during August in most parts of the country with short periods of dry spells, exceeding 5 days only in some areas north of the rain belt and scattered small areas in Southern Kordufan state and east of the country *(Fig 10)*.
- The eastern part of the country experienced longer dry spells not exceeding 10 days what may slightly affect vegetation development *(Fig 10)*.
- Rainfall with shorter length of dry spells prevailed across most of the southern parts of the country especially the Southern Darfur state *(Fig 10)*.
- Longer dry spells noticed north of the rain belt where they experienced some dry conditions during late Aug what may affect the cropping season there unless adequate rains received in Sep *(Fig 10)*.

Gadaref: 2019 Season Assessment

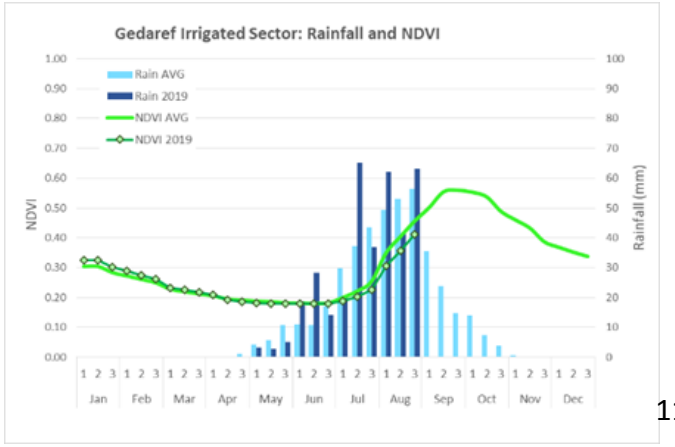


11a

Fig 11a: NDVI Percent of average Aug-2019



11b



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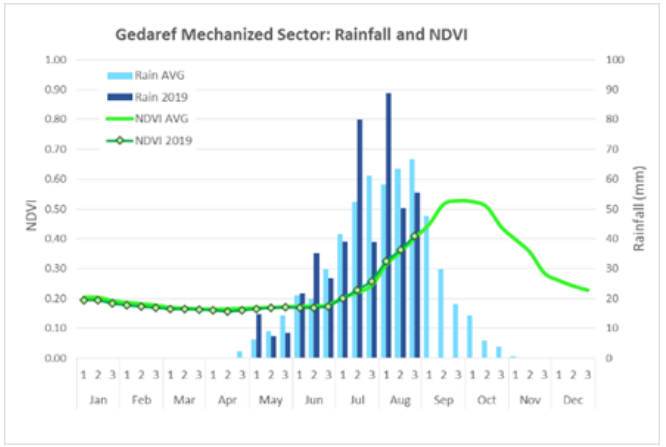

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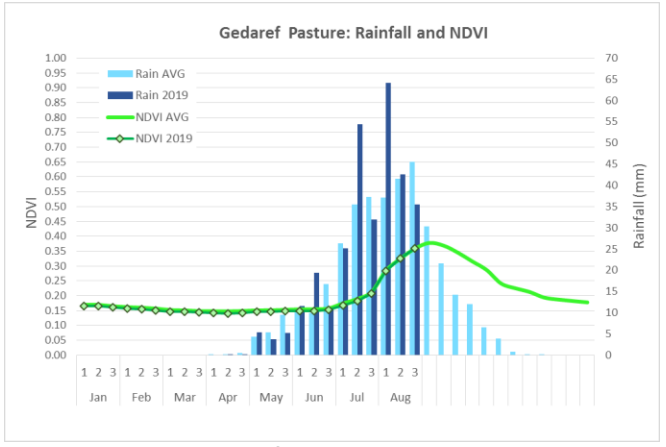
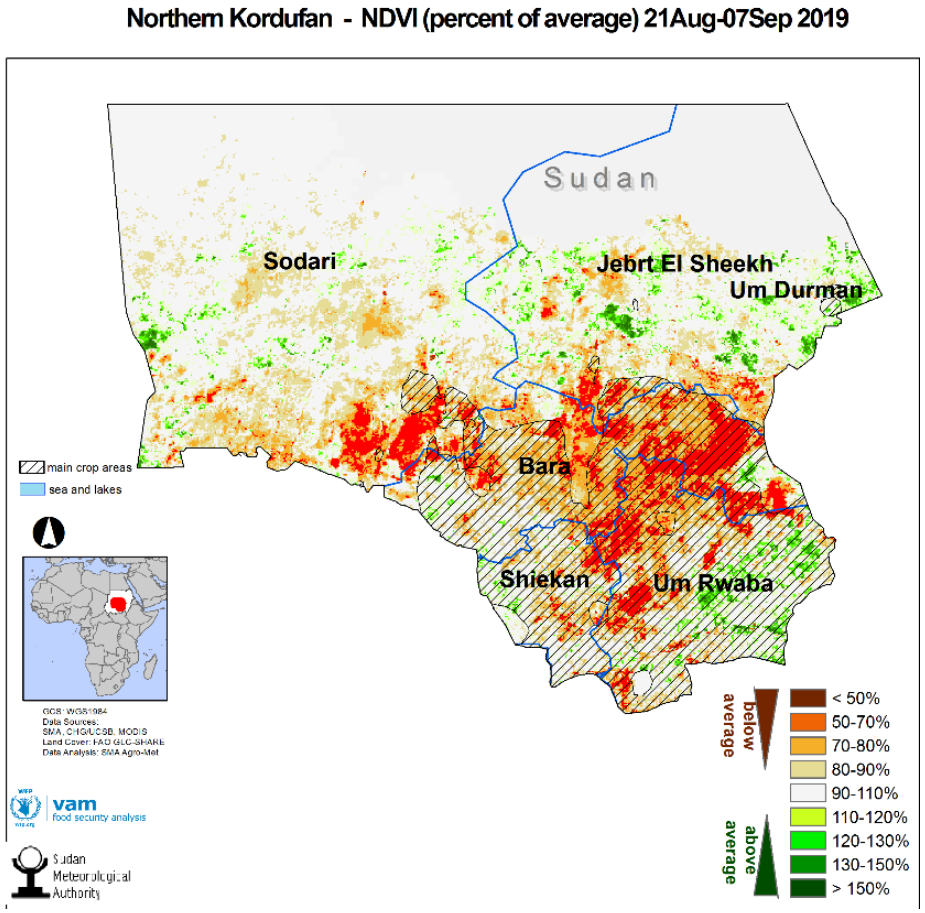


11e

Fig 11b,c,d,e: Agricultural and Pasture Sectors: Rainfall and NDVI by Aug-2019

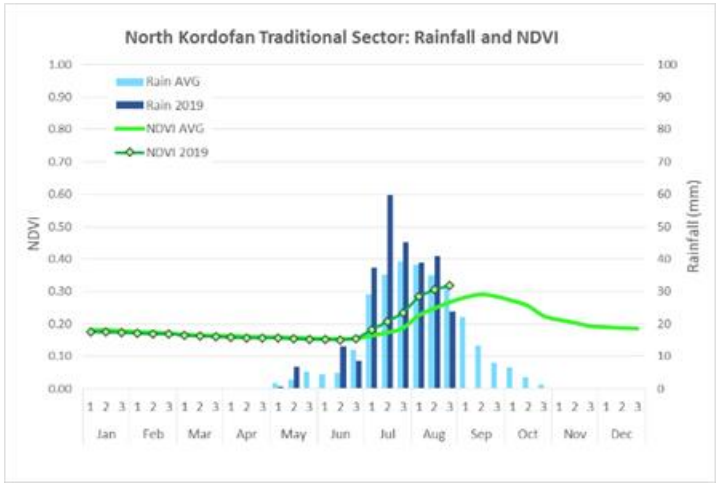
- By early Sep, Albotana and the north west of Algadaref Wasat are the worst areas in the state with a significant deterioration in vegetation cover as a result of below average rains during late August *(Fig 11a)*.
- The rest of the state showed average to above average vegetation condition, more progress is expected with more rains in Sep *(Fig 11a)*.
- Few dekads in Jul and Aug registered extremely above average rainfall while most of the season characterized by average to slightly below average rains over different sectors as shown in *(Fig 11b,c,d,e)*.

Northern Kordufan: 2019 Season Assessment

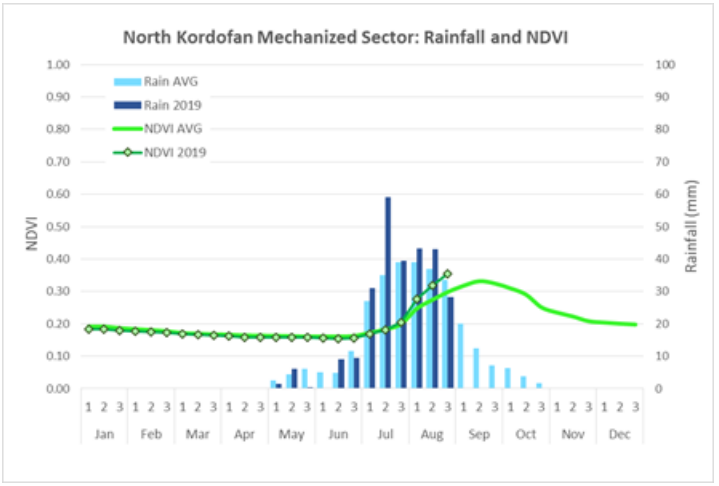


12a

Fig 12a: NDVI Percent of median/average Aug-2019



12b



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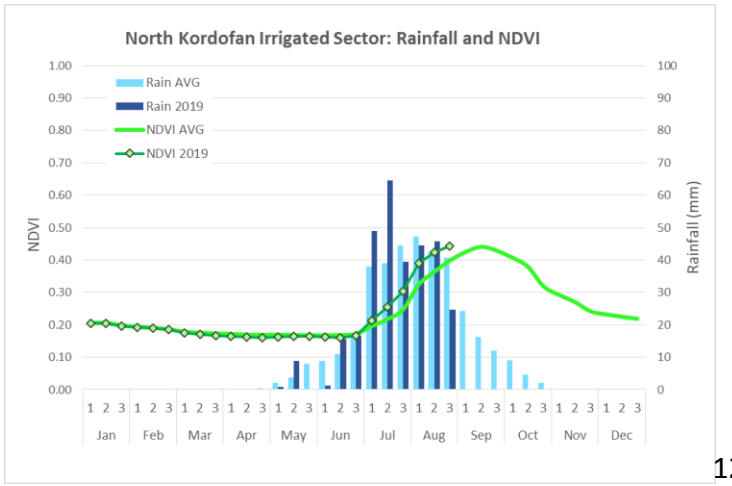
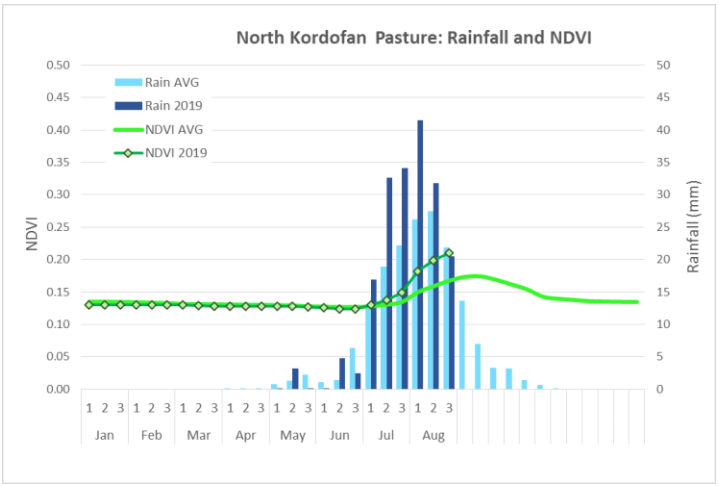


12c

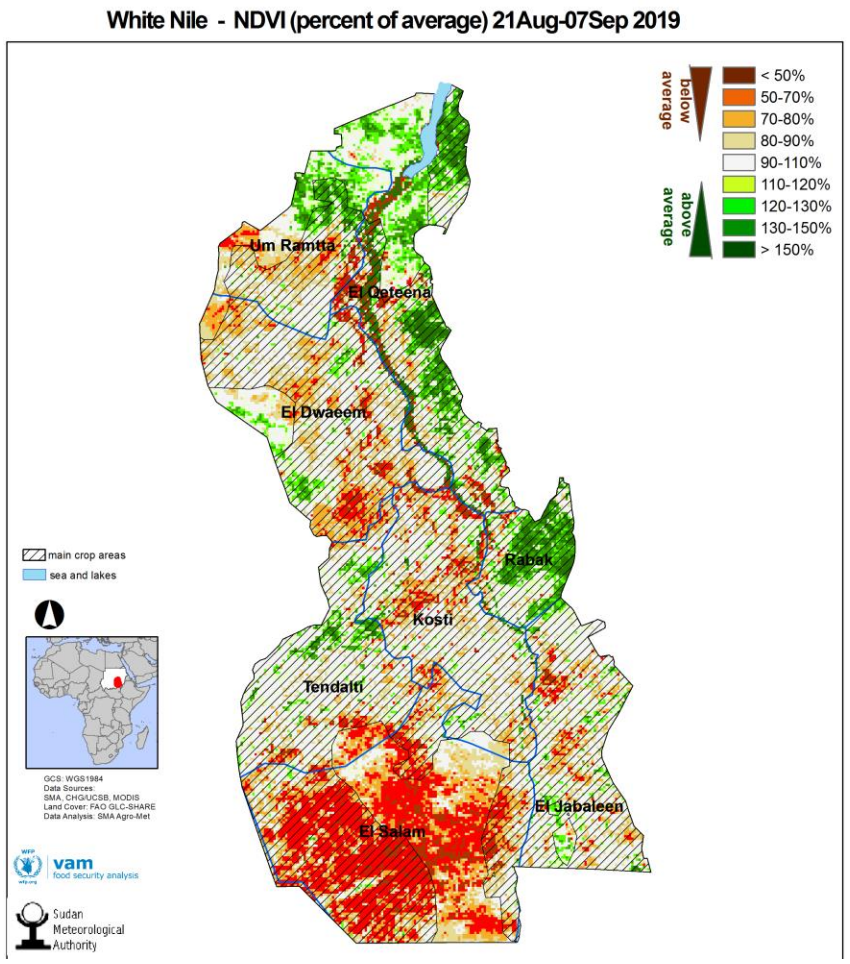


12e

Fig 12b,c,d,e: Agricultural and Pasture Sectors: Rainfall and NDVI by Aug-2019

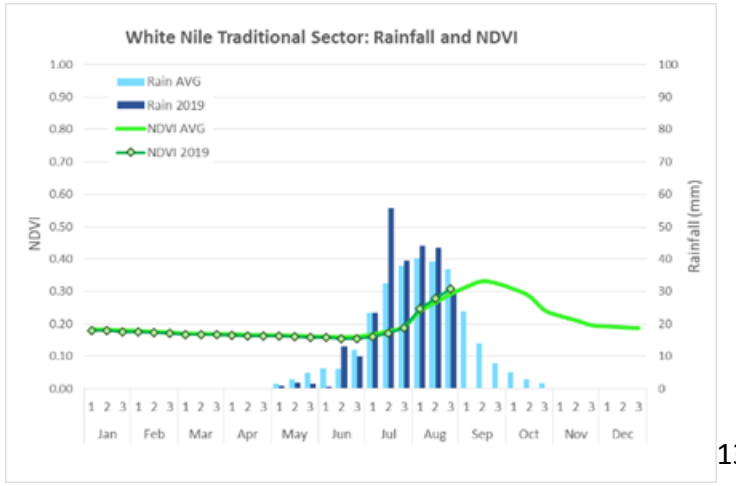
- In contrast to Gedaref, a significant deterioration in vegetation in Bara and South Sodari locality was caused by a significant increase in rainfall during August in North Kordofan State. However, all over the state, it enjoyed moderate growth rates of just over average *(Fig 12a)*.
- From early July, fair distribution of rainfall with some water surplus in some dekads especially over the pasture sector what implies noticeable progress in vegetation cover *(Fig 12b,c,d,e)*.

White Nile: 2019 Season Assessment

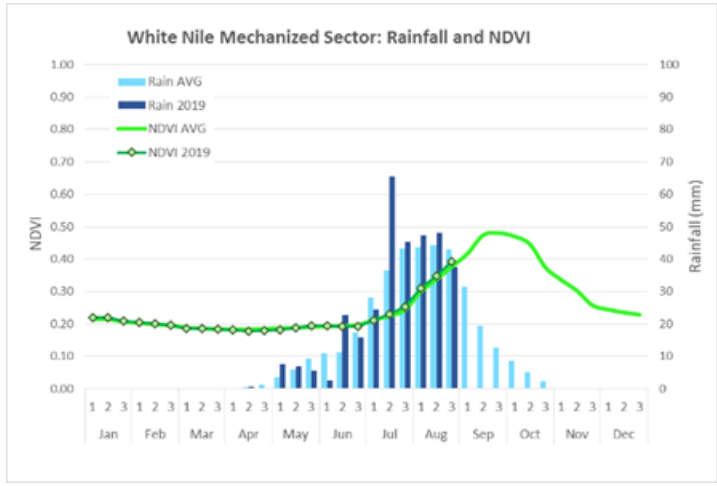


13a

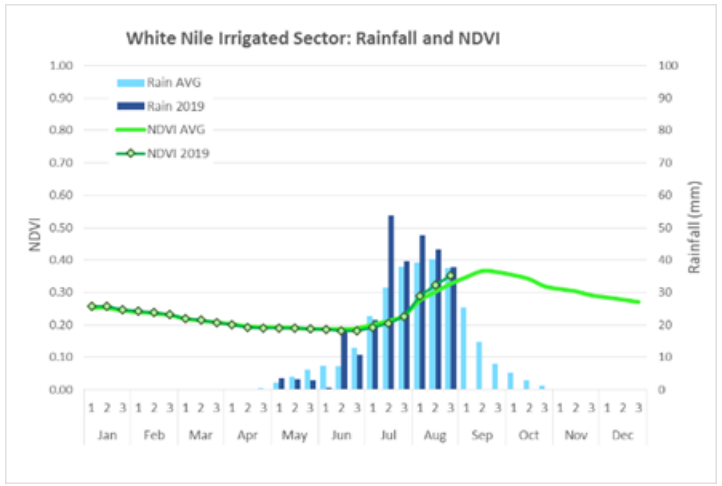
Fig 13a: NDVI Percent of median/average Aug-2019



13b



13d



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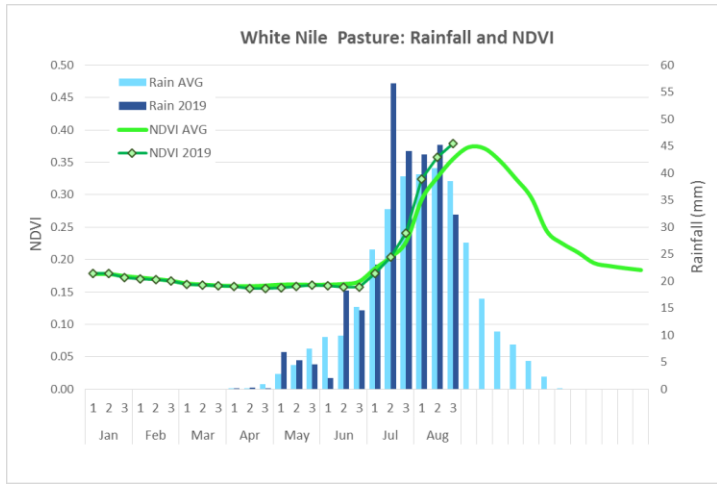

13e

Fig 13b,c,d,e: Agricultural and Pasture Sectors: Rainfall and NDVI by Aug-2019

- Decrease in vegetation development in south of the state as a result of scarcity of rain during the second decade of August. Promising conditions for improvement in the position of pasture and agriculture in September due to the appreciable rainfall during the third decade of August and more if additional irrigation potential is available *(Fig 13a)*.
- Moderate amounts of rainfall throughout the season did not exceed the normal except in a few dekads that resulted in fluctuation in the state of vegetation cover, safe situation in pastoral areas except some areas south of the state *(Fig 13b,c,d,e)*.

Outlook for the 2019 Season

- Seasonal forecasts are available from a variety of sources.
- Predictions from the ICPAC (IGAD), ECMWF and from SMA and from the CPC/NOAA, all point to on or above average rainfall in Sudan for the key period of the season, June to September except some areas east and west of the country.

The GHA region rainfall outlook for June – September 2019 season

- The regional consensus rainfall outlook for June to September 2019 season indicates increased likelihood of above normal rainfall over much of the northern sector of the region *(Fig 14a)*

Mean temperature outlook for June – September 2019 season

- Increased likelihood for above to near normal mean temperature in northern parts of Sudan (Zone I), normal mean temperature in zone II and colder than normal mean temperature in zone IV *(Fig 14b)*.

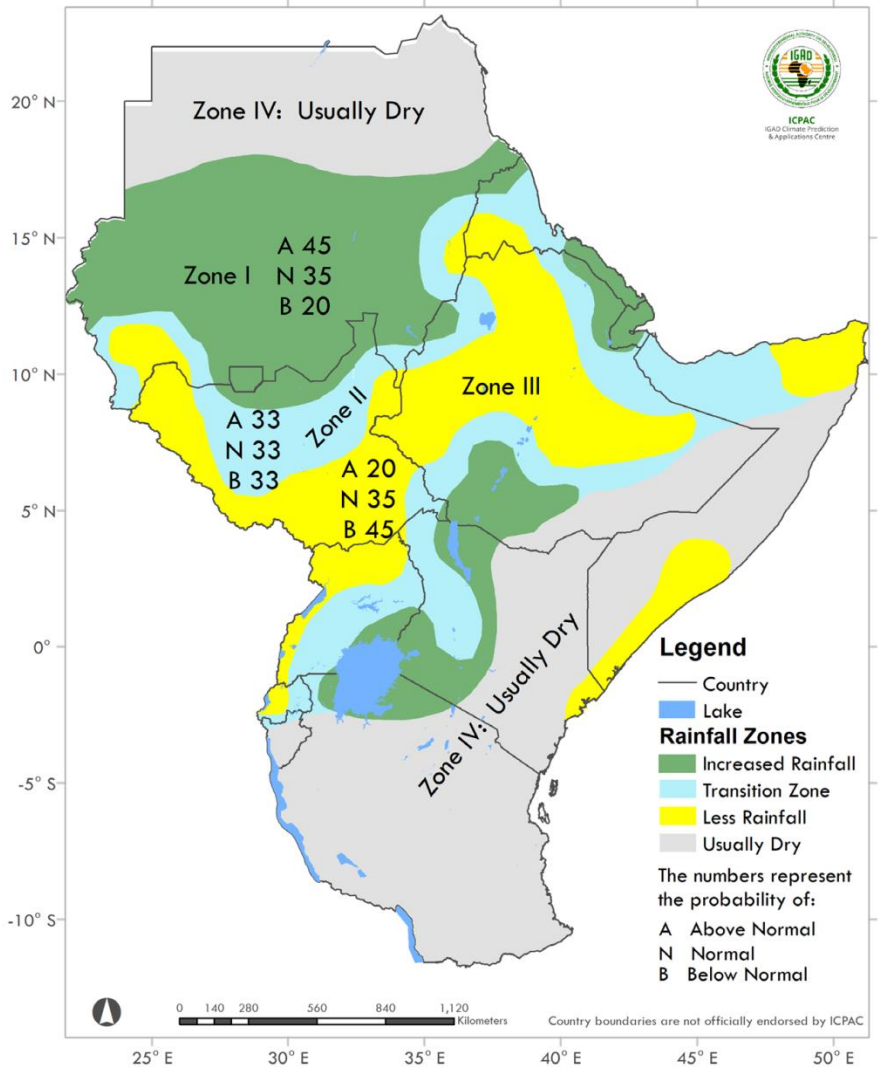

Figure 14a: The GHA region rainfall outlook for June – September 2019 season

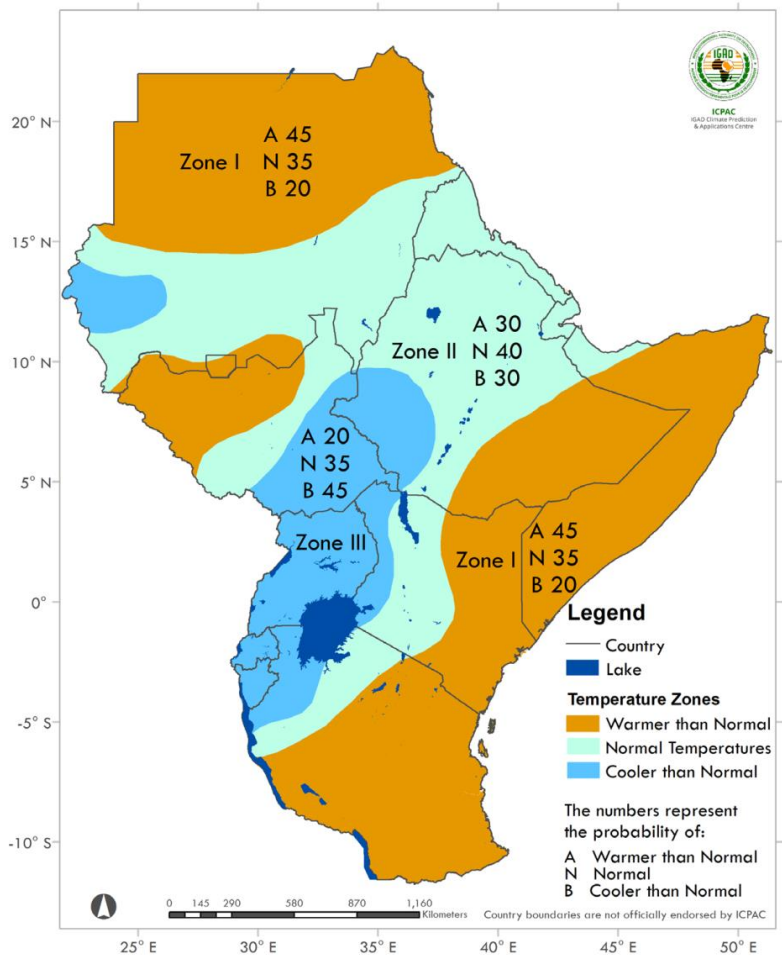

Figure 14b: Mean temperature outlook for June – September 2019 season

SMA Outlook for the 2019 Season

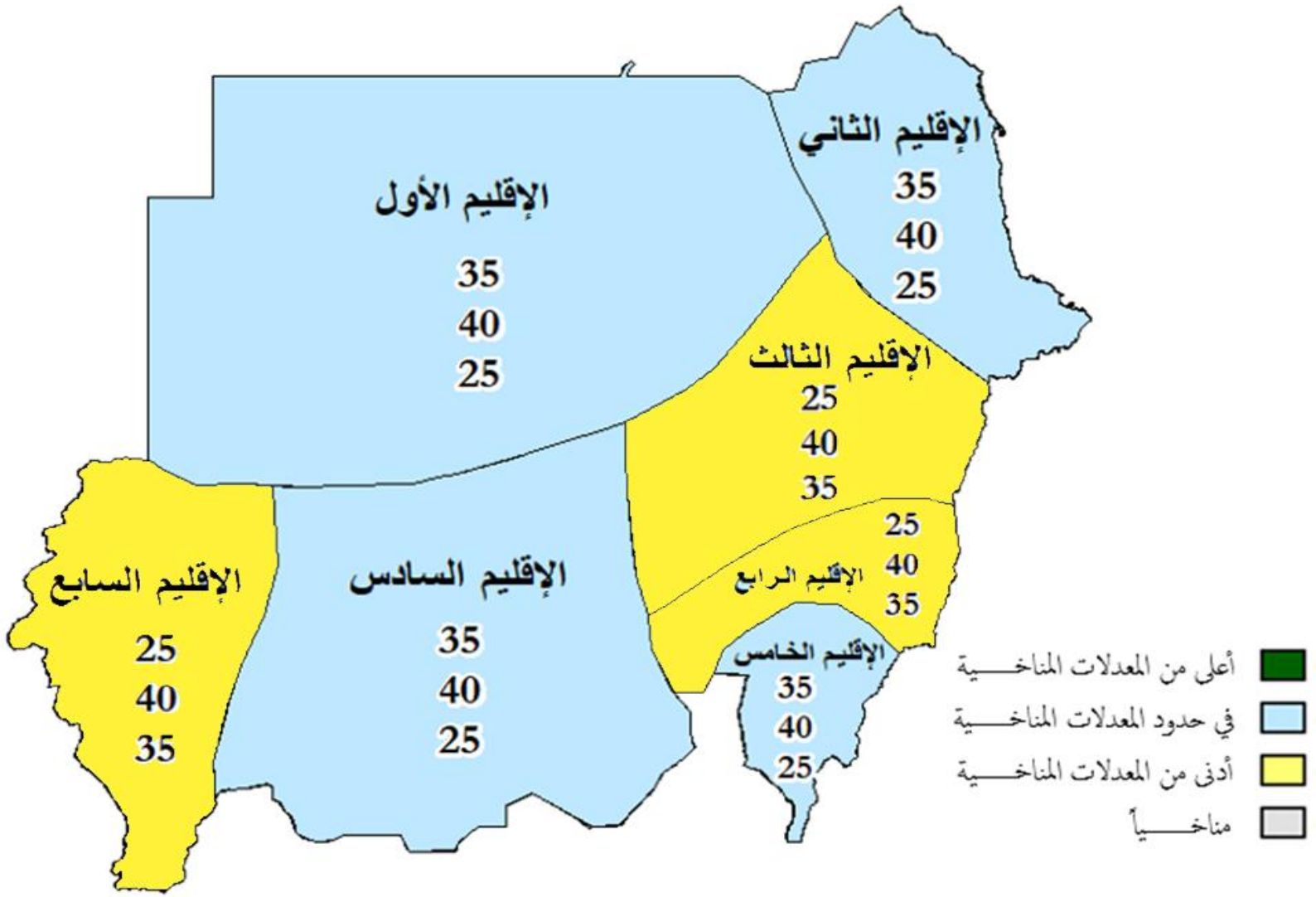

Figure 15: JJAS 2019 rainfall seasonal Prediction

SMA JJAS Seasonal Rainfall Forecast

- SMA seasonal rainfall prediction indicates; Zone I,2,5 and 6 is predicted to experience Normal to Above Normal rainfall.
- Zones 3,4 and 7 will be Normal to Below Normal rainfall. *(Fig 15)*.

THANK YOU

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