

# Sudan AgroMeteorological Bulletin

SUDAN METEOROLOGICAL AUTHORITY

11-20 AUGUST 2005



## Highlights

- In seasonal terms (Fig 1b ), Since frist July the ITCZ has been consistently further north than usual and this dekad it VSRsition approached the long term situations, now around 18.0°N.
- Areas with heavier rainfall were found in the Southwest (Bahr Al Ghazal – West Equatoria) with point value of 117.4 mm reported at Wau.
- The significant departure to the average along the southernmost border of Sudan from West Equatoria ,Bahr EL Jabel to East Equatoria and parts of Jonglei.
- Below average cumulative rainfall is seen in South Gedaref and Sennar as well as in Northern Bahr El Gazal and lower West Kordofan.
- In relative terms, vegetation conditions are mostly above average generally across the country, Below average conditions can be seen in small patches, particularly in East Equatoria, southern Uper Nile, Gedaref, Sennar-White Nile and upper South Kordofan.

## Rainfall Analysis – Seasonal Progress

Rainfall in Sudan and its seasonal distribution is mostly the result of the northwards movement of moist air masses, source of the rainfall. The Intertropical Convergence Zone (ITCZ) marks the northernmost extent of these humid air masses, where they meet with drier and warmer air. The rains follow some distance south of this border between air masses, so that tracking this ITCZ through the season provides a quick evaluation of the seasonal movement of the rains

**Current vs Mean Position of the Africa ITCZ**  
As analyzed by the NOAA Climate Prediction Center  
August 2005 Dekad 2

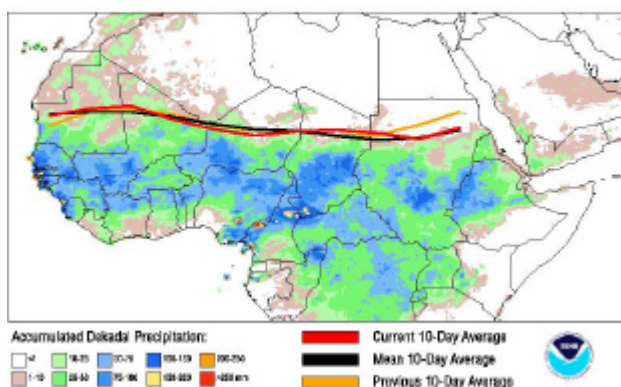


Fig 1a – Position of ITCZ over Africa in August Dek 2 2005 (red) compared to previous dekad (orange) and average position (black). Background is a rainfall map (Source : CPC-FEWS Net)

**Mean Position of the ITCZ**  
20-35 degrees east longitude

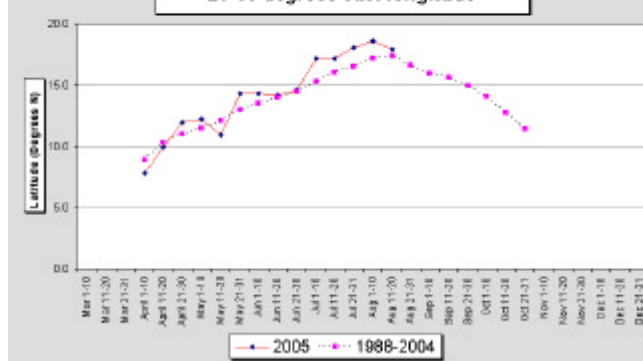


Fig 1b – Current latitude of the ITCZ position compared to the 15 year average. (Source : CPC-FEWS Net)

Note (fig 1a) how the ITCZ position marks the border between the (significantly) rainy and non-rainy rainfall areas. The way this position changes along the season can be described by the time series of its mean latitude (fig 1b). We can see :

- In seasonal terms (Fig 1b ), Since frist July the ITCZ has been consistently further north than usual and this dekad it VSRsition approached the long term situations, now around 18.0°N.
- During the second of August, the ITCZ over Sudan was south the perivous dekad position (see Fig 1a) .

## Rainfall Analysis – 10 Day Amounts

10 day rainfall amounts produced by SAMIS at SMA are based on a combination of METEOSAT satellite and synoptic gauge data. Rainfall climatology is similarly derived from a combination of historical data from the two sources.

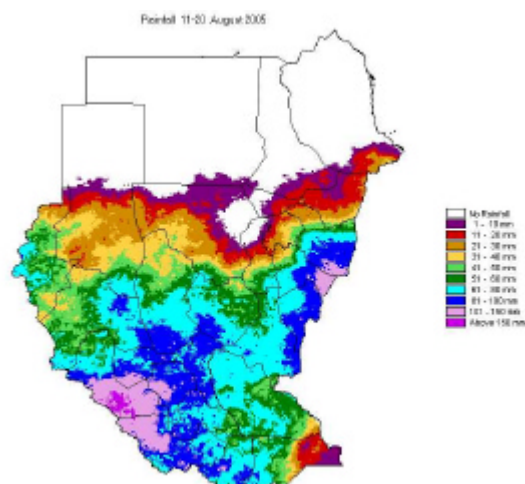


Fig 2a – Rainfall amounts (mm) 11 – 20 August 2005

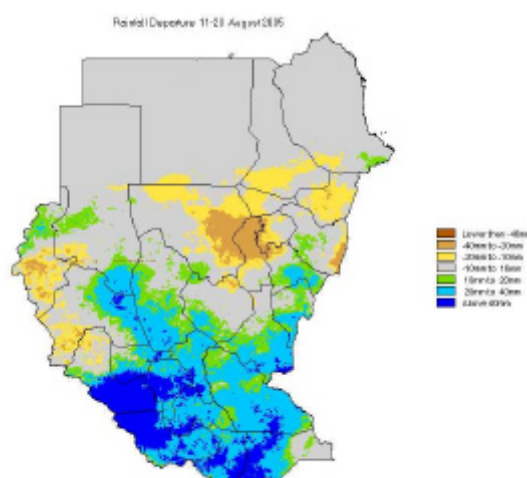


Fig 2b – Same as a difference from the average : yellows/ browns for rainfall deficit, greens/blues for rainfall surplus

In this dekad the ITCZ moved Northwards,

In this dekad the rainfall amounts were generally larger than previous dekad, except over Darfour and North Kordofan / White Nile. Areas with heavier rainfall (over 80-150 mm) were found in the Southwest (Bahr Al Ghazal – West Equatoria) with point value of 117.4 mm reported at Wau. Other areas of heavy rainfall are in the eastern border of the country (Gedaref, Sennar and Blue Nile States).

In contrast, lower rainfalls occurred in East Equatoria, North Kordofan, EL Gezira and Kassala states and in particular northern White Nile was very dry (no rainfall at Ed Dueim). In North Darfour rainfall returned to normal levels compared to the very wet previous dekad.

In relative terms, southern parts registered well above average rainfall, in particular West Bahur EL Gazal – West Equatoria and Bahr El Jebel. In contrast, in North Kordofan, White Nile and lower west Darfur amounts were below the average.

In general conditions for crop development are suitable across the country but Northern White Nile will need decent rainfalls next dekad.

## Rainfall Analysis – Cumulative Amounts

Cumulative amounts are obtained by summing the dekadal estimates starting from Dekad 1 of March until present. The climatological cumulative are likewise derived by summing the dekadal climatological estimates over the same period of time.

The cumulative rainfall amounts (Fig 3a) display the usual organization in latitude bands (as the rainfall moves north following the ITCZ). Currently, values are now exceeding 1000mm in the Yei region (West Equatoria) and less than 50 mm up to 20°N.

In relative terms, significant above average departures (Fig 3b) are evident along the southernmost border of Sudan from West Equatoria, Bahr El Jebel to East Equatoria and parts of Jonglei. Other areas of above average rainfall can be seen in Great Darfur and in areas of Kassala-Khartoum.

Below average cumulative rainfall is seen in South Gedaref and Sennar as well as in Northern Bahr El Gazal and lower West Kordofan. These deficits are not considered significative because they happen above crop water requirements and conditions have been fairly wet over the past 30 days.

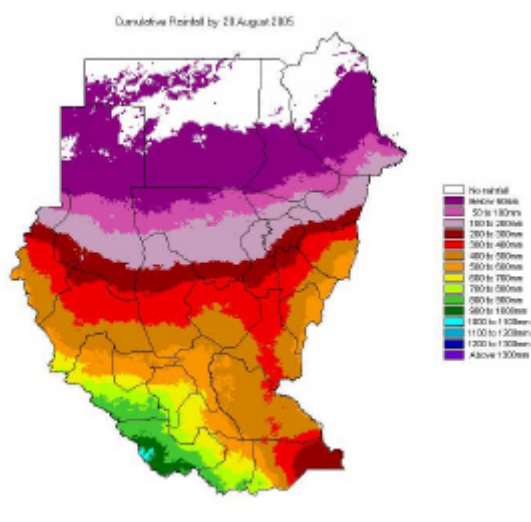


Fig 3a – Cumulative rainfall (Mar Dek1 – Current Dek)

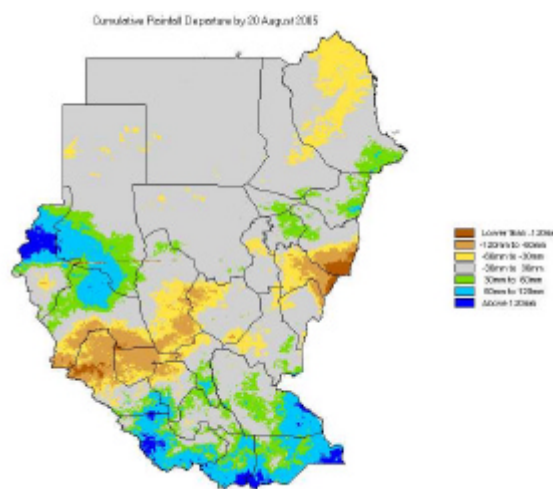


Fig 3b – Same as a difference from the average : yellows/ browns for rainfall deficit, greens/blues for rainfall surplus

## Vegetation Analysis

The NDVI for this dekad (Fig 4a) continues the trend of vegetation advancing northwards following the progress of the rains. Currently, season vegetation development is registered up to Kassala, El Gazira, White Nile, lower North Kordofan and lower North Darfur.

In relative terms, vegetation conditions are mostly above average generally across the country, particularly in Sennar-Blue Nile-northern Upper Nile regions, Jonglei, Unity, lower South Kordofan and parts of West Kordofan and Greater Darfur.

Below average conditions can be seen in small patches, particularly in East Equatoria, southern Upper Nile, Gedaref, Sennar-White Nile and upper South Kordofan. Conditions over West Bahr-el-Gazal are due to dense cloudiness during this dekad, not to poor vegetation development.

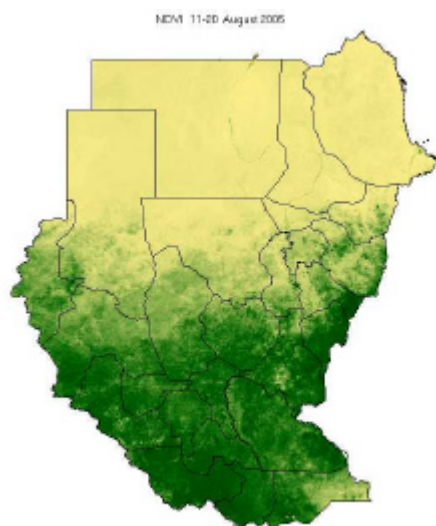


Fig 4a – NDVI 11 – 20 AUGUST 2005. Darker shades for denser vegetation, lightest shade for soil.

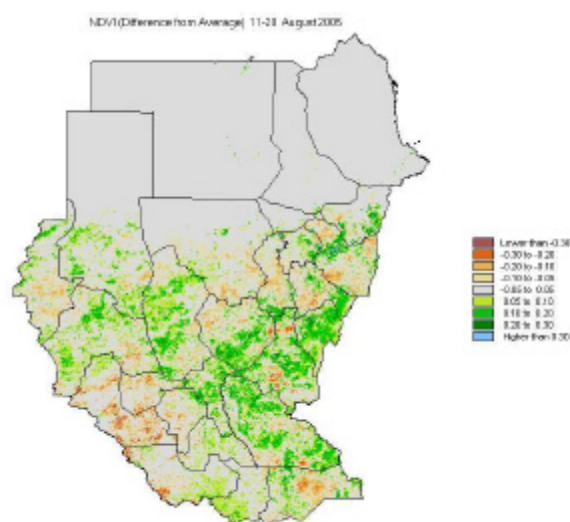


Fig 4b – NDVI difference from average at second of AUGUST 2005. Yellows/reds for below average vegetation development, greens/blues for above average

## **ACKNOWLEDGEMENTS**

This Bulletin is issued twice a month (after the first and second 10 day periods of the month) and complements/updates a larger monthly Bulletin prepared in cooperation with the Sudan Early Warning System and originates from a 2002 capacity building initiative of the World Food Programme (WFP) to improve the range and quality of the monitoring information available to the institutions involved in humanitarian assistance in Sudan.

This initiative led to the installation at the Sudan Meteorological Authority of a system to process meteorological station and satellite data into a range of rainfall, vegetation and crop related information products. This system – SAMIS (Satellite based Agro-Meteorological Information System) – developed by the TAMSAT group (Univ of Reading, UK), has been fully operational at SMA since 2003.

SMA expects to develop further the range and quality of the products available over the course of the next seasons.

SMA would like to thank the major providers of the satellite data, TAMSAT group, University of Reading , UK (METEOSAT) and FAO/ARTEMIS (SPOT-VGT).

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