Sudan AgroMeteorological Bulletin

SUDAN METEOROLOGICAL AUTHORITY **01-10 AUGUST 2005**

Sudan Meteorological Authority

Highlights

- During the first of August, the ITCZ over Sudan was northern average position. now around 18.8°N.
- Areas with heavier rainfall were found in Great Darfur with point value of 138.8 mm reported at EL Fasher .
- The significant departure to the average along the southernmost border of Sudan from West Equatoria ,Bahr EL Jabel to East Equatoria Other areas of significant rainfall can be seen in the West Darfur .
- In Southern and Western Sudan, vegetation conditions are mostly above average over Bahr-el-Ghazal – South Darfur region and in the Unity-Jonglei-Upper Nile-South Kordofan and Blue Nile state.

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

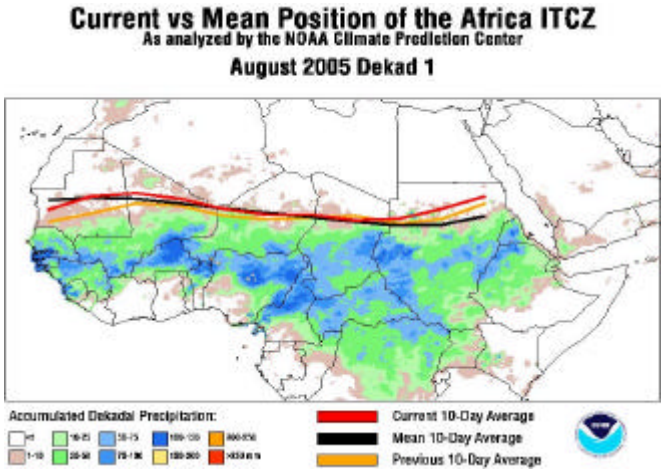

Fig 1a – Position of ITCZ over Africa in August Dek 1 2005 (red) compared to previous dekad (orange) and average position (black). Background is a rainfall map (Source : CPC-FEWS Net)

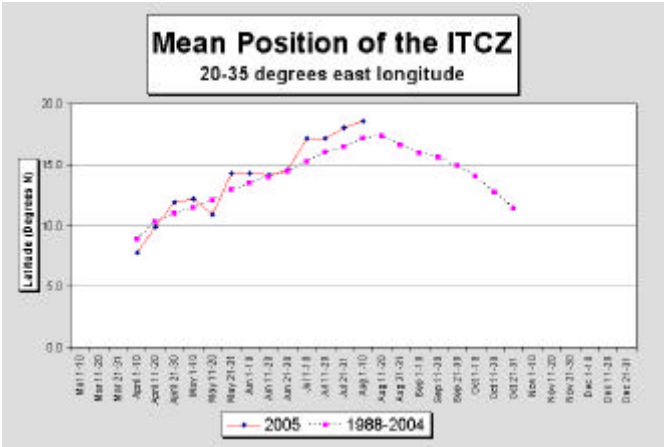

Fig 1b – Current latitude of the ITCZ position compared to the 15 year average. (Source : CPC-FEWS Net)

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 :

- During the first of August, the ITCZ over Sudan was northern average position (see Fig 1a) .
- In seasonal terms (Fig 1b), Since the mid - of July, the ITCZ over Sudan made remarkable progress northwards to positions well north of the average, now around 18.8°N.

- **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.

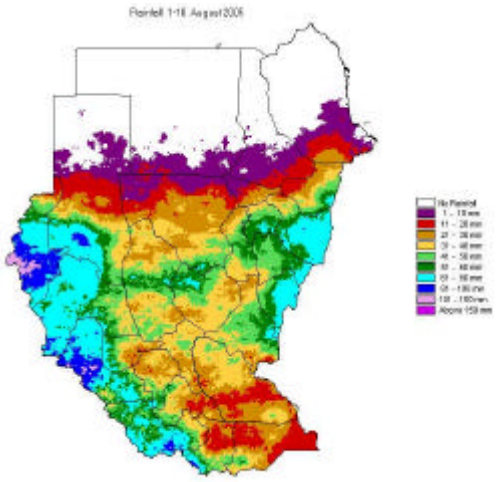

Fig 2a – Rainfall amounts (mm) 1-10 August 2005

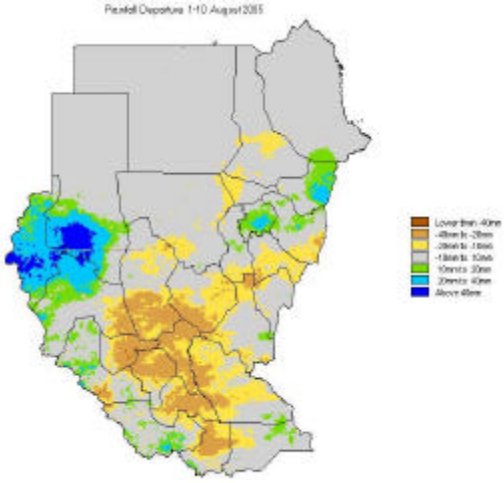

Fig 2b – Same as a difference from the average : yellows/ browns for rainfall deficit, greens/blues for rainfall surplus

In this dekad the ITCZ moved Northwards, the rainfall amounts were generally larger than previous dekad .Areas with heavier rainfall (over 80-100 mm) were found in Great Darfur with point value of 138.8 mm reported at EL Fasher . Other areas of heavy rainfall are in West(Bahr AL Ghazal –Equatoria) , in the eastern border of the country (Gedaref, Sennar and Blue Nile States).

In contrast, very low and no significant rainfall occurred in(East Equatoria , Jonegley and Bahr EL Jabel) states.

In departure terms, Great Darfur and Gezra registered more than the average rainfall, in contrast with north Bahr AL Ghazal ,South of West Kordofan Unity ,Warabs ,Lakes and Bahr EL Jabel amounts were below the average.

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.

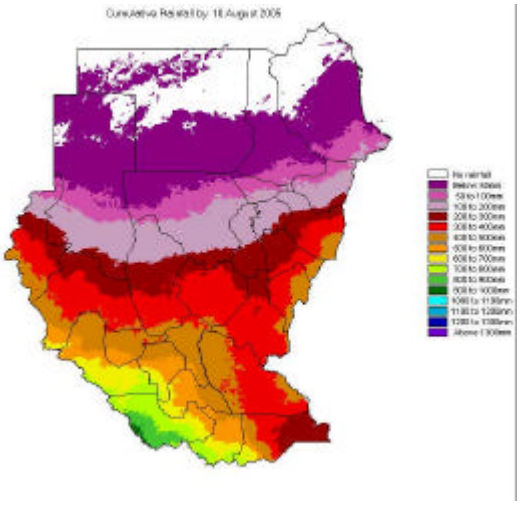

Fig 3a – Cumulative rainfall (Mar Dek1 – Current Dek)

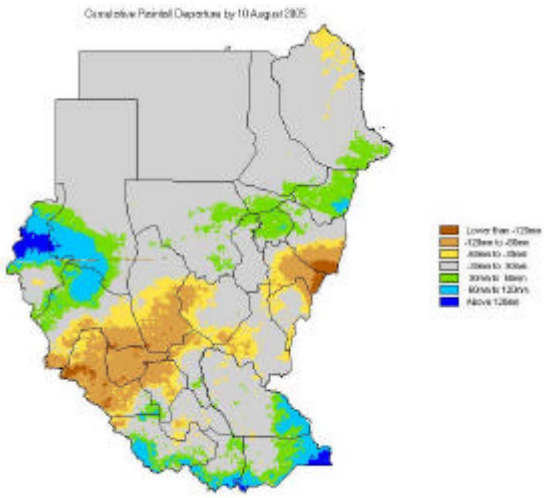

Fig 3b – Same as a difference from the average : yellows/ browns for rainfall deficit, greens/blues for rainfall surplus

The cumulative rainfall amounts (Fig 3a) display the usual organization in latitude bands (as the rainfall moves north following the ITCZ). Currently, values approach 700 mm in West Equatoria and less than 50 mm up to 18°N.

The significant departure to the average (Fig 3b) is evident along the southernmost border of Sudan from West Equatoria ,Bahr EL Jabel to East Equatoria, Other areas of significant rainfall can be seen in the West Darfur .No significant departure in Lakes, West and South Bahr AL Ghazal, Warab, South Gedaref , Sennar and South of West Kordofan.

Vegetation Analysis

Vegetation conditions reflect the rainfall situation : areas of below average rainfall match in general terms the areas of below average vegetation status.

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 the borders of Blue Nile - Sennar, South and West Kordofan and South –west Darfur.

In Southern and Western Sudan, vegetation conditions are mostly above average (Fig 4b) over Bahr-el-Ghazal – South Darfur region and in the Unity-Jonglei-Upper Nile-South Kordofan and Blue Nile state. Below average vegetation development is only noticeable in Sennar and another in southern Gedaref ,parts of West and East Eguoria .

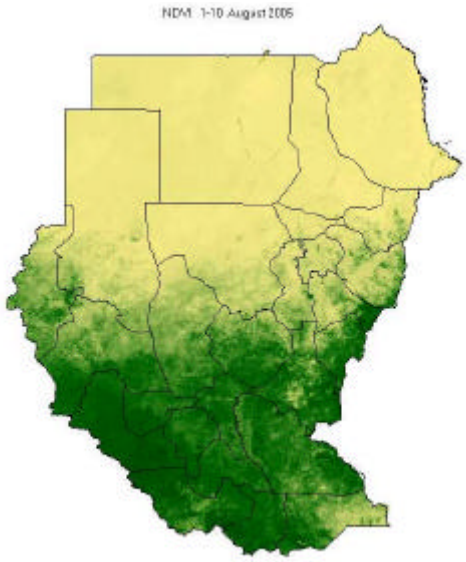

Fig 4a – NDVI 1-10 AUGUST 2005. Darker shades for denser vegetation, lightest shade for soil.

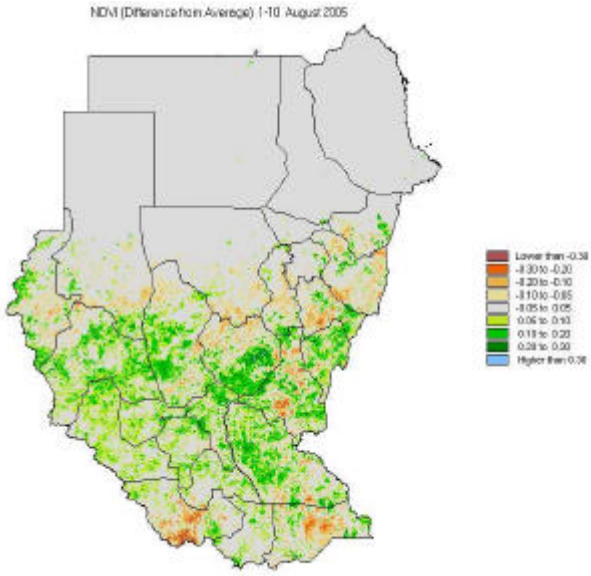

Fig 4b – NDVI difference from average at first of AUGUST 2005. Yellows/reds for below average vegetation development, greens/blues for above average

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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