Sudan AgroMeteorological Bulletin

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

Sudan Meteorological Authority

Highlights

- During the first of July, the ITCZ over Sudan was northern average position. now around 18°N.
- Areas with heavier rainfall (over 80-100 mm) were found in West Equatoria, West and South Darfur with point values of 111.5 mm reported at Nyala .
- 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 Unity-Jonglei border ,Greater Kordofan and West Darfur .
- vegetation conditions are mostly on average in Southern and Western Sudan. above average vegetation development over the E Equatoria, N -Jonglei and Blue Nile . Conditions in SE Jonglei and parts of Upper Nile are reflecting the below normal rainfall departure to the average .

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

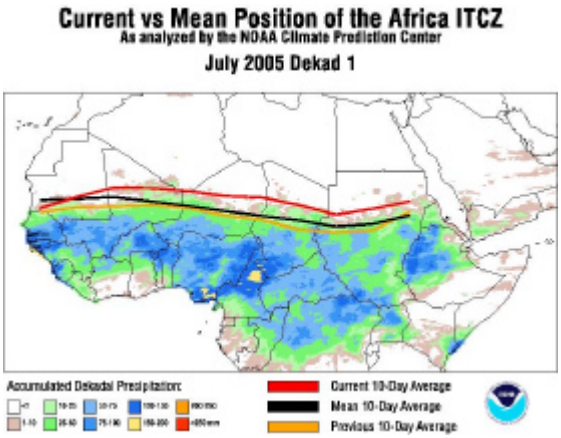

Fig 1a – Position of ITCZ over Africa in July Dek 1 2005 (red) compared to previous dekad (orange) and average position (black). Background is a rainfall map (Source : CPC-FEWS Net)

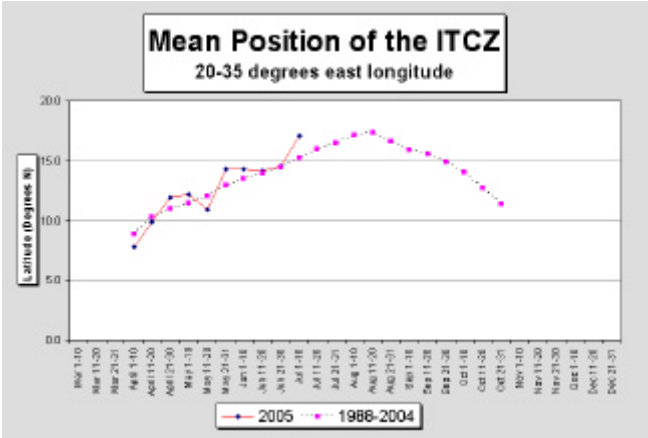

Fig 1b – Current latitude of the ITCZ position compared to the 15 year average. (Source : CPC-FEWS Net)

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 July, the ITCZ over Sudan was northern average position (see Fig 1a) ,hence the rains wide spread north of the usual as well during this period.
- In seasonal terms (Fig 1b), after a period of strong fluctuations about the average, the ITCZ position over Sudan has remained very stable since late June and move ripped north.

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.

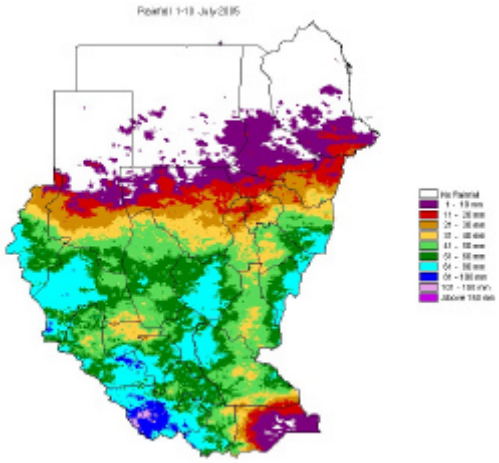

Fig 2a – Rainfall amounts (mm) 1-10 July 2005

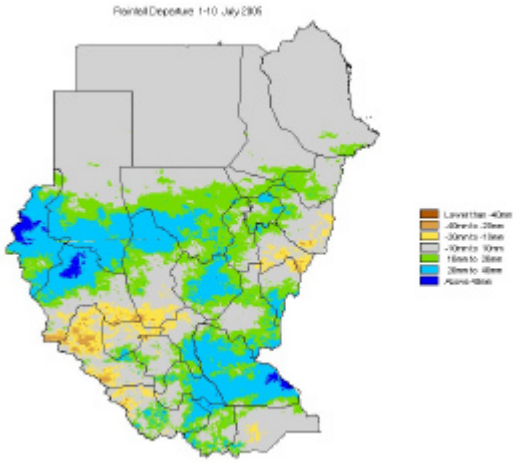

Fig 2b – Same as a difference from the average : yellows/ browns for rainfall deficit, greens/blues for rainfall surplus

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 West Equatoria. Other areas of heavy rainfall are in South Kordofan, parts of (Jongley ,Unity) , in the eastern border of the country (Gedaref, Sennar and Blue Nile States)West and South Darfur with point values of 111.5 mm reported at Nyala .

In contrast, very low and no significant rainfall occurred in(East Equatoria ,Gezira and Kassala) states.

In departure terms, Great Darfur and Jongley registered more than the average rainfall, in contrast with West Bahr AL Ghazal ,Gedaref and Sennar amounts were markedly 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.

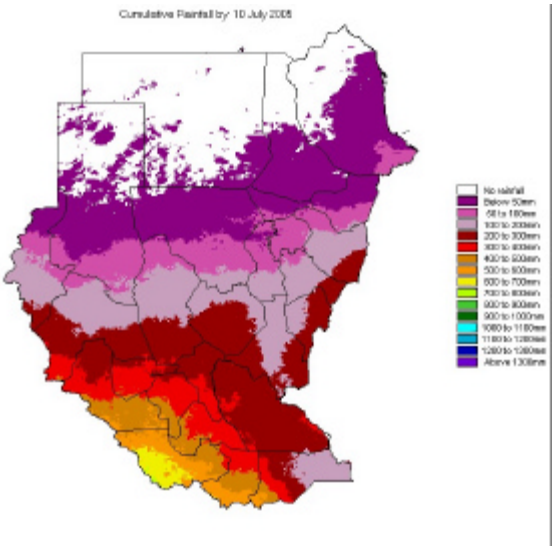

Fig 3a – Cumulative rainfall (Mar Dek1 – Current Dek)

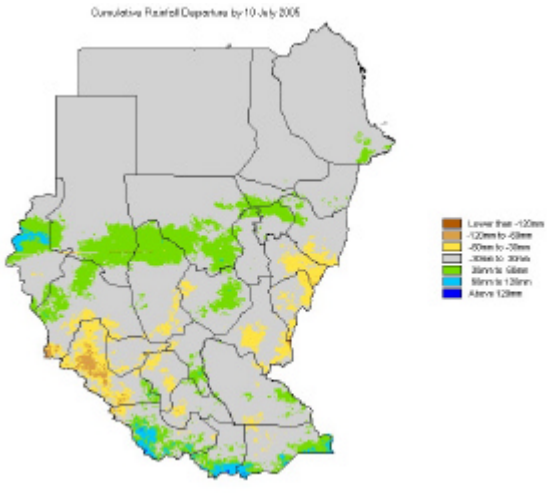

Fig 3b – Same as a difference from the average : yellows/ browns for rainfall deficit, greens/blues for rainfall surplus

The cumulative rainfall amounts (Fig 3a) display the usual organisation in latitude bands (as the rainfall moves north following the ITCZ). Currently, values approach 600 mm in West Equatoria and less than 50 mm up to 17°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 Unity-Jonglei border ,Greater Kordofan and West Darfur .No significant departure from last dekad in Lakes, Unity, Warab, (Upper- Blue) Nile, South of West Kordofan and West Bahr AL Ghazal.

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, new season vegetation development is registered in the central states, up to the borders of Blue Nile - Sennar, South and West Kordofan and South Darfur.

In Southern and Western Sudan, vegetation conditions are mostly on average (Fig 4b), with a pocket of well above average vegetation development over the E Equatoria, N -Jonglei and Blue Nile . Conditions in SE Jonglei and parts of Upper Nile are reflecting the below normal rainfall departure to the average .

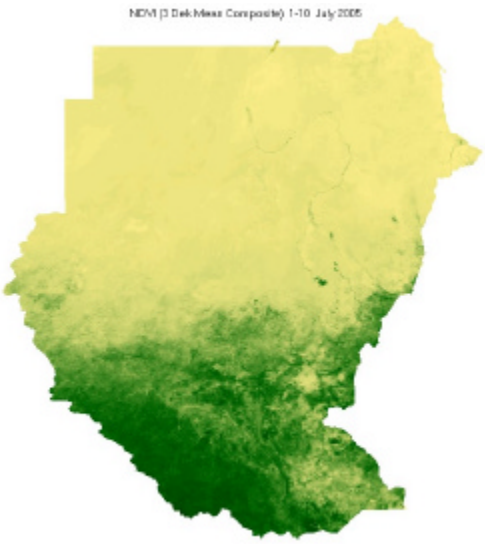

Fig 4a – NDVI 1-10 July 2005. Darker shades for denser vegetation, lightest shade for soil.

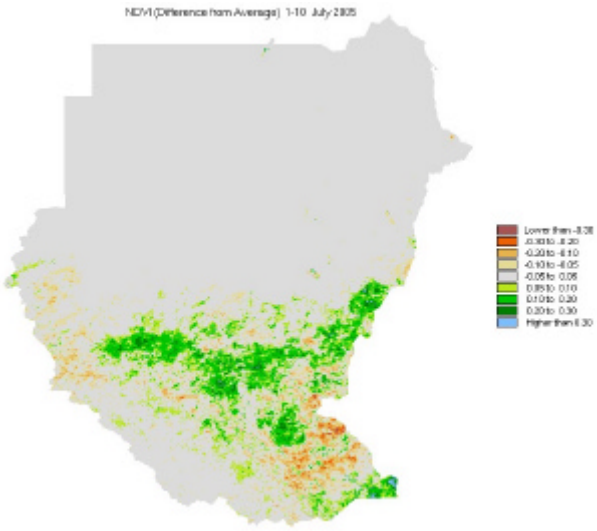

Fig 4b – NDVI difference from average at first of July 2005. Yellows/reds for below average vegetation development, greens/blues for above average

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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