Sudan Agromet Dekadal Bulletin

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Highlights

- **Northwards progression of rainy areas is in line with average,**
- **Though rainfall progressed significantly northwards, drier conditions prevailed this dekad –amounts were low and lower than average in particular in the East of the country.**
- **Significant and above average rainfall was only registered in the Bahr-El-Ghazal – Warab region (up to 60-80mm) and the West-South Kordofan borders (30-40mm)**
- **Vegetation development under way and on average in Southern Sudan (up to northern borders of Bahr-El-Ghazal, Unity and Jonglei), still responding to the good April rains. If drier conditions during May persist a detrimental effect may be noticed soon.**

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 progress of the rains

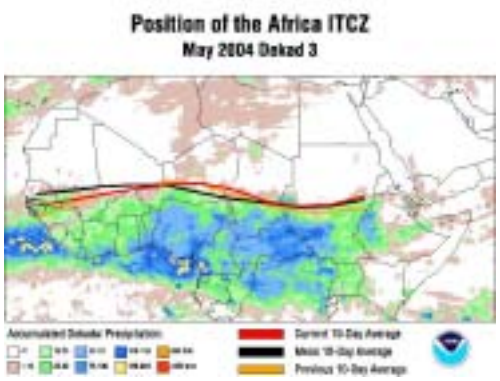

Fig 1a – Position of ITCZ over Africa in May Dek 2 2004 (red) compared to previous dekad (orange) and average position (black). Background is a rainfall map (Source : CPC-FEWS Net)

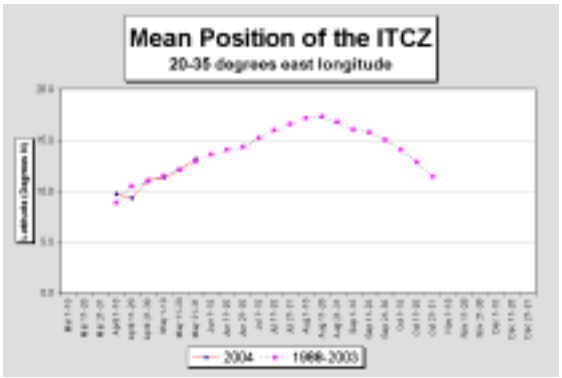

Fig 1b – Current latitude of the ITCZ position compared to the 15 year average. (Source : CPC-FEWS Net)

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 :

- The ITCZ is making its early season northwards movement. Its progress during the season and its current position are very similar to the 15 year average.
- Within Sudan its position is just slightly north of the average.

Rainfall Analysis - Dekadal Amounts and Frequency

10 day rainfall amounts produced by SAMIS at SMA/SEWS 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.

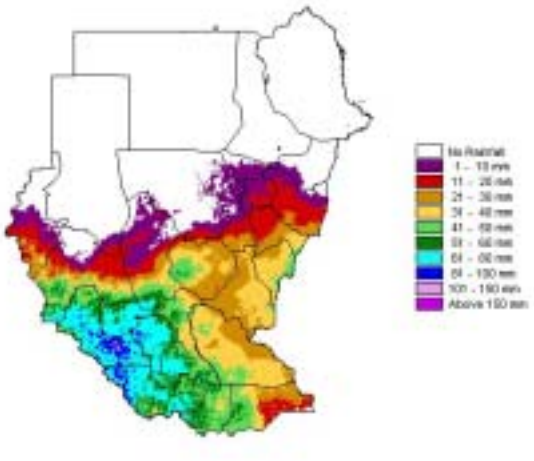

Fig 2a – Rainfall amounts (mm) 1-10 May 2004

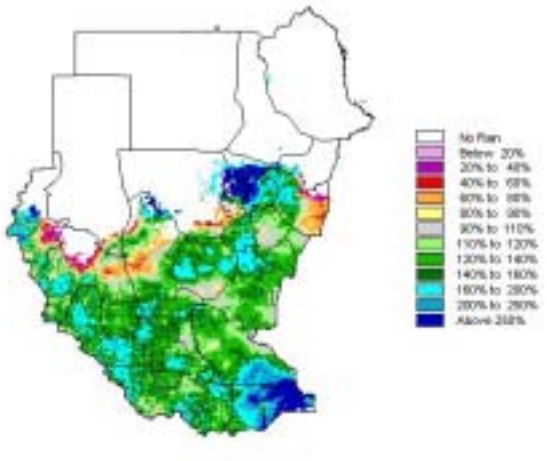

Fig 2b – Same but in relative terms : as % of long term average

Rainfall in this period kept extending northwards reaching 14°N (Fig 2a). In general, amounts were good all over Sudan – the SW of the country (Bahr-El-Ghazal, Lakes, W Equatoria) registered over 60mm, with amounts over 80mm to the west of Wau. To the East of the country amounts were lower, generally under 40mm. South Kordofan received plentiful rains and West Darfur and Gedaref states registered the first significant rains. In general, we saw the end of the dry conditions that predominated during the first 3 weeks of May.

Compared to the average, the amounts are above average all over the country, in particular SW Sudan (well above average values in usually dry regions may not be that significative).

Rainfall Analysis - Cumulative Amounts

Cumulative amounts are obtained by summing the dekadal estimates starting from Dekad 1 of March until present.

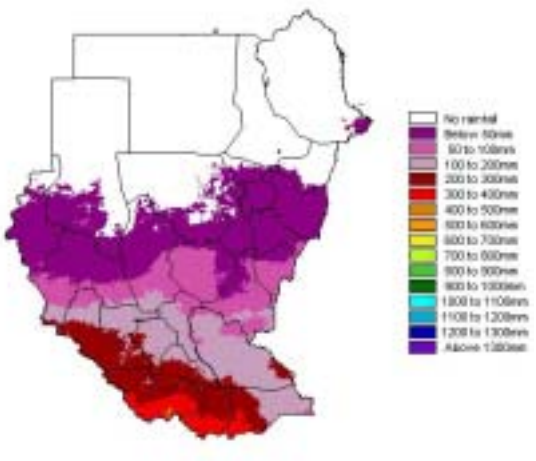

Fig 4a – Cumulative rainfall (Mar Dek1 – May Dek2 2004)

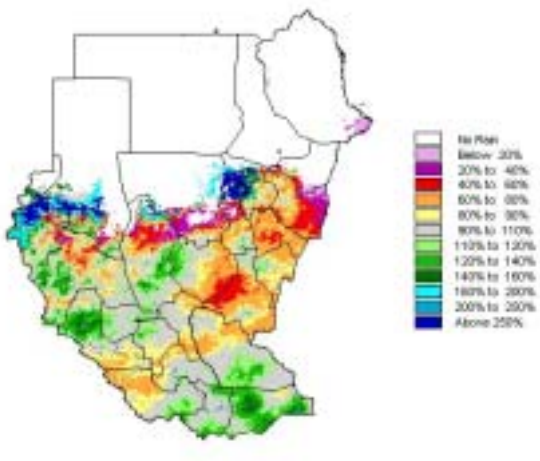

Fig 4b – Same but in relative terms : % of long term average

The cumulative rainfall amounts (Fig 4a) display the usual organisation in latitude bands (as the rainfall moves north following the ITCZ). Currently, values are reaching 400mm in southern most Sudan to less than 50mm up to 14°N.

Compared to the average scenario (Fig 4b), values are on or above normal in Southern Sudan – Bahr-El-Jbel, East Equatoria, Jonglei south and parts of Lakes and West Equatoria. Also in parts of W Bahr-El-Ghazal and in the southern half of West Kordofan above normal conditions prevail. However, a band of lower than average conditions extends from West Equatoria / W. Bahr-El-Ghazal border to the Upper Nile-South Kordofan border, where amounts so far are below the usual. It is however fairly early in the season – the situation should be monitored but can be quickly reversed in the next dekads. Elsewhere, early season comparisons to average have little significance.

Vegetation Analysis

Vegetation information is based on the NDVI, a satellite index related to vegetation amount and vigour. NDVI data is sourced from the Africa Data Dissemination Service and processed at SMA. We expect to have NDVI reception and processing capacity at SMA in the near future.

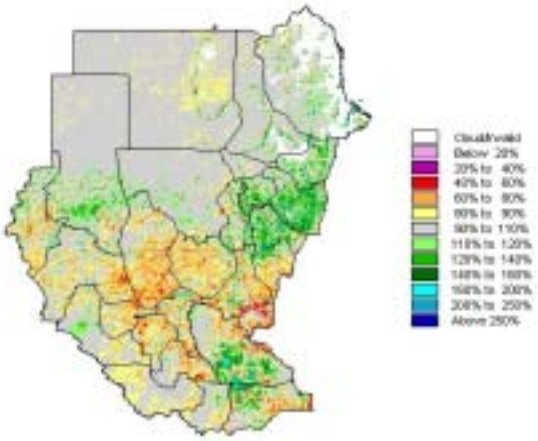

Fig 5a – NDVI 11-20 May 2004. Darker shades for denser vegetation, lightest shade for soil. (Source : ADDS).

Fig 5b – Same in relative terms : % of long term average (ADDS)

The NDVI for this dekad (Fig 5a) continued the early season trend of vegetation advancing northwards following the progress of the rains. Currently, new season vegetation development is only registered in the more southern states, up to the borders of West and North Bahr-El-Ghazal, Unity and Jonglei.

In Southern Sudan, vegetation conditions are mostly on or above average (Fig 5b), but declining a bit due to dry conditions during the first half of May. In a pocket over the E Equatoria-Jonglei border, vegetation development is well above average, in agreement with an area of above average rainfall (Fig 4b).

One can also see (Fig 5b) that vegetation development seems above average over Eastern Sudan (Sinnar, Gezira, Gedaref). This is not due to new vegetation development – last season was very productive in these areas and there is probably more vegetation material remaining than is the usual – and average amounts are quite low for this time of the season.

Acknowledgements

WFP Khartoum funded the installation of technical capacity and provision of training at SMA (Sudan Meteorological Authority) in the shape of SAMIS/SD – Satellite based Agro Meteorological Information System / Sudan. This is an operational system for the local production of satellite and station based rainfall and vegetation information for distribution to a wide range of local users. The system was prepared and installed by the TAMSAT group of the Department of Meteorology, Univ of Reading, UK. For information, please contact Dr. Rogério Bonifácio at : tamsat@rdg.ac.uk or rbonifacio@mail.telepac.pt

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