Sudan Agromet Dekadal Bulletin

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Highlights

- **Northwards progression of rainy areas did not occur this dekad and their average position is South of the usual.**
- **Rainfall amounts were less than the previous dekad over most of Sudan and markedly below the average. An area between Warab and Bentiu received very little rainfall.**
- **Cumulative rainfall amounts are on or above normal in Southern Sudan, parts of Kordofan and White Nile. 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.**
- **Vegetation development under way and on average in Southern Sudan (up to northern borders of Bahr-El-Ghazal, Unity and Jonglei). Above average conditions are noted in the East Equatoria -Jonglei border. Conditions elsewhere may reflect delayed start of the season**

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 June Dek 1 2004 (red) compared to previous dekad (orange) and average position (black). Background is a rainfall map (Source : CPC-FEWS Net)

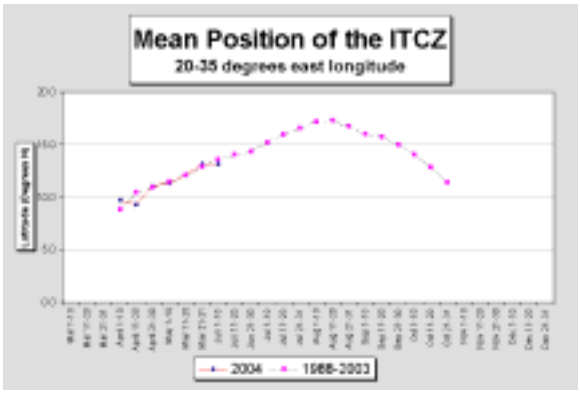

Fig 1b – Current latitude of the ITCZ position compared to the 15 year average. (Source : CPC-FEWS Net)

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 had been progressing northwards in line with the 15 year average. However, in this dekad it made no significative northwards progress (fig 1b).
- The current position is at about 13°N same as previous dekad but south of the average position. The Northwards progress of the rainy areas has stopped this dekad

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.

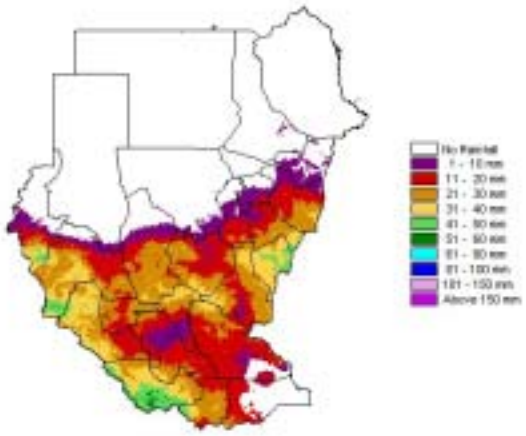

Fig 2a – Rainfall amounts (mm) 1-10 June 2004

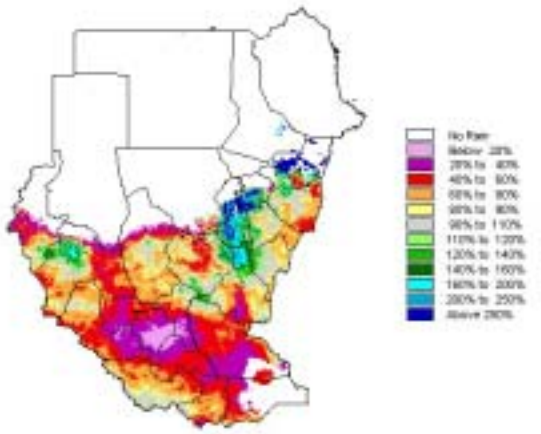

Fig 2b – Same but in relative terms : as % of long term average

Rainfall in this period did not progress Northwards because of the ITCZ lack of movement (see previous section). Over nearly all Sudan rainfall amounts were less than previous dekad.

Areas with higher rainfall (over 30mm) were found mostly along the Sudan south-western border, an area between Kadugli and Malakal and the Blue Nile state. Low rainfall (<10mm) was evident in a pocket between Warab and Bentiu, which will need to be monitored over the next dekads. Elsewhere rainfall was poor. The Southern parts of Gedaref may be on or approaching favourable rainfall conditions.

Compared to the average, the amounts are below average all over the country, except in the East of the country (Gedaref, Sennar, White and Upper Nile States) and parts of SW Sudan.

Rainfall Analysis - Cumulative Amounts

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

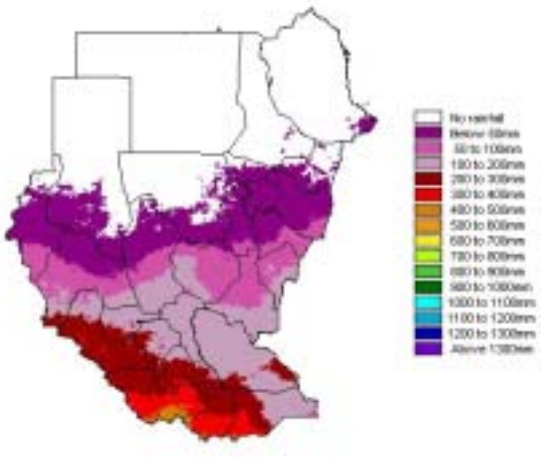

Fig 3a – Cumulative rainfall (Mar Dek1 – Current Dek)

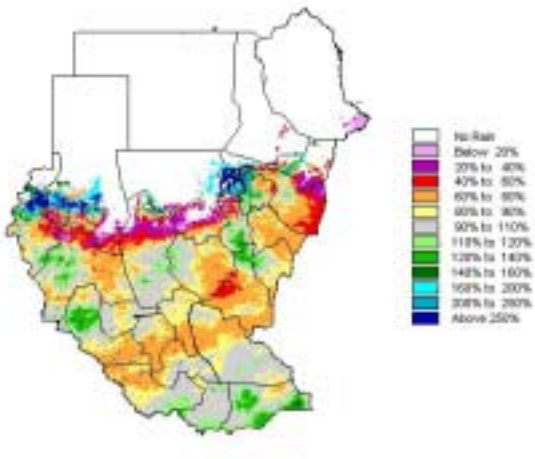

Fig 3b – Same but in relative terms : % of long term average

The cumulative rainfall amounts (Fig 3a) display the usual organisation in latitude bands (as the rainfall moves north following the ITCZ). Currently, values are reaching 500mm in southern most Sudan to less than 50mm up to 14°N.

Compared to the average scenario (Fig 3b), values are on or above normal in Southern Sudan – Bahr-El-Jbel, East Equatoria, South Jonglei and parts of Lakes and West Equatoria. Also in parts of W Bahr-El-Ghazal, southern half of West Kordofan and West Darfur on or above normal conditions prevail.

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.

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.

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Fig 4a – NDVI 1-10 June 2004. Darker shades for denser vegetation, lightest shade for soil. (Source : ADDS).

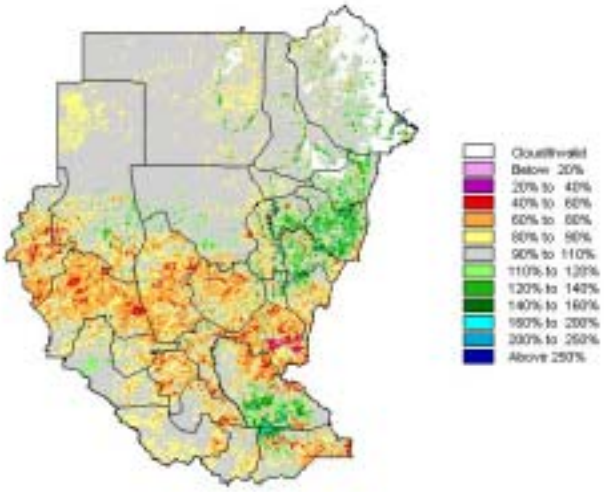

Fig 4b – Same in relative terms : % of long term average (ADDS)

The NDVI for this dekad (Fig 4a) 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 average (Fig 4b), with a pocket of well above average vegetation development over the E Equatoria-Jonglei border, in broad agreement with an area of above average rainfall (Fig 4b).

In general conditions are declining a bit due to dry conditions in May and the first dekad of June. Conditions in Upper Nile may be reflecting a delayed start relative to the average season.

One can also see (Fig 4b) 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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