



Southern Sudan Special Agrometeorology Update



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HIGHLIGHTS

- Poor rainfall performance delays agricultural activities in southern Sudan
- Delayed yields from short season to impact on the duration of the hunger period
- Poor vegetation development to affect the livestock conditions
- Increased probability of normal to below normal forecast for southern half of southern Sudan

INTRODUCTION

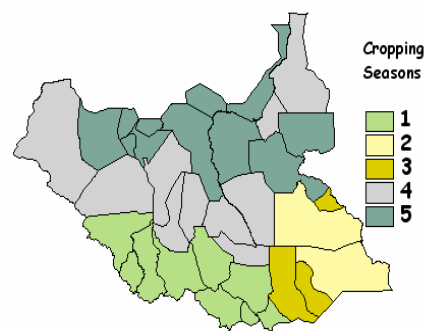
The Agro-meteorology bulletin is a report produced bi-monthly highlighting the agricultural season progress in Southern Sudan. The report emphasises mainly on the rainfall performance and its implication on agricultural production and rangeland. The performance of an agricultural seasonal has a huge impact on food security situation of households that are basically depend on agriculture.

on these patterns. This will allow the understanding of the current rainfall performance and its implications on agricultural production at the end of 2009. Figure 1, depicts the rainfall patterns in southern Sudan with Western and Central Equatoria experiencing two cropping season, in April-July and August-November. Southern parts of Jonglei and eastern parts of Eastern Equatoria experience rainfall from April-September. While western parts of Eastern Equatoria experience a mixed season in the low and highlands. Western Bahr el Ghazal, Lakes, Renk and parts of Jonglei have a single season from June to November. While northern Bahr el Ghazal, Unity, northern Jonglei and parts of Upper Nile States experience rainfall from June-September (Figure 1).

Rainfall Patterns of Southern Sudan

Southern Sudan experiences a number of rainfall patterns. Therefore, the analysis of the agricultural season performance in 2009 especially in rain-fed agricultural areas should be based

Figure 1. Rainfall Pattern



1. April-July and August-November season (Bi-modal rains with two cropping seasons)
2. April-September in (pastoral areas) – Limited single season especially in the more arid southern parts
3. Mixed seasons – Areas with two seasons in highlands and one season in lowlands

4. June-November/December – single season (Uni-modal)
5. June-September – single season (Uni-modal)

Rainfall Performance in 2009 in Southern Sudan

Considering the various rainfall patterns in Southern Sudan, parts of Western and Central Equatoria have just undergone their first agricultural season. At the same time, the second agricultural season is just commencing in the bi-modal rainfall areas and also the long season in most parts of southern Sudan with land preparation and sowing of seeds which should normally have taken place in May and June 2009. The 2009 rainfall has not progressed well with delayed onset of rainfall as well as low rainfall amounts to support the germination of staple food crops for

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Collaborating Government of Southern Sudan Institution

1. Ministry of Agriculture and Forestry. 2. Ministry of Animal Resources and Fisheries 3. Ministry of Health. 4. Southern Sudan Center for Census, Statistics and Evaluation. 5. Southern Sudan Relief and Rehabilitation Commission

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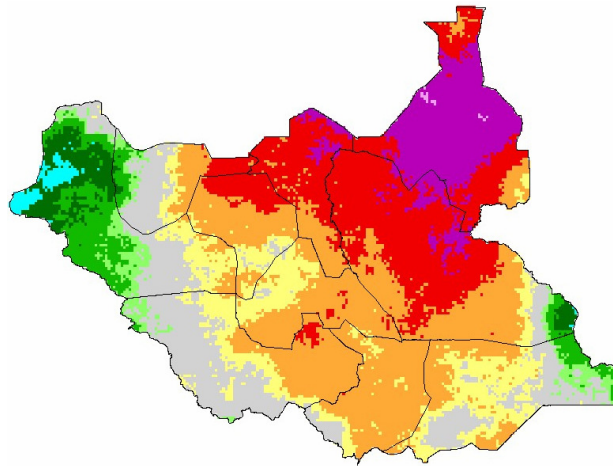


SIFSIA is a programme funded by the European Commission to build capacity in food security in Southern Sudan

Sudan Institutional Capacity Program: Food Security Information for Action (SIFSIA) is implemented by FAO. For more information/comments on the bulletin, please contact: Chan Chuol Lam, chol.chan@yahoo.com or Alex.tiangwaorimaria@hotmail.com / Tiberius.cinya2001@yahoo.com

most rural communities. All states have been affected except to a limited extent, Northern Bahr el Ghazal and Western Equatoria State. However, the situation requires close monitoring in the next couple of weeks taking into account the window for sowing of seeds (figure 5). Figure 2 shows the amount of rainfall received as of 20 June as a percentage of the average rainfall that should be received at this time of the year. Except for parts of Western Bahr el Ghazal and Western Equatoria, the rest of southern Sudan is nowhere close to the 100% mark of the rainfall that should have been received by June, 2009. The middle part of southern Sudan has received rainfall in the range of 60-80% in June, 2009 (Figure 2). Most of Jonglei and Unity State has received rainfall ranging from 40-60% and most of Upper Nile has received rainfall under 40% of what is expected. These statistics may have significant implications on agriculture if the rainfall does not improve in the next couple of weeks.

Figure 2. Cumulative Rainfall (% of Average) as of 20 June 2009



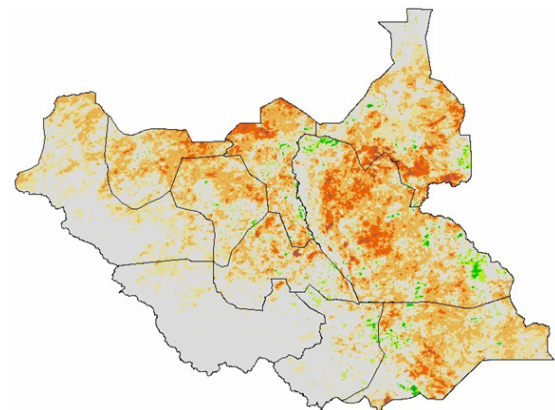
Legend for Fig 2

- No Rain
- Below 20%
- 20% to 40%
- 40% to 60%
- 60% to 80%
- 80% to 90%
- 90% to 110%
- 110% to 120%
- 120% to 140%
- 140% to 160%
- 160% to 200%
- 200% to 250%
- Above 250%

Legend for Fig 3

- Lower than -0.30
- 0.30 to -0.20
- 0.20 to -0.10
- 0.10 to -0.05
- 0.05 to 0.05
- 0.05 to 0.10
- 0.10 to 0.20
- 0.20 to 0.30
- Higher than 0.30

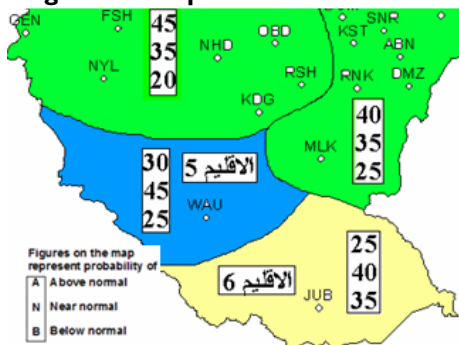
Figure 3. Normalized Difference Vegetation Index (NDVI) (% of Average) as of end of June 2009



Rainfall forecast for July, August & Sept 09

The rainfall forecast for July, August and September 2009, provides some indication of expected rainfall probabilities. The numbers for each zone indicate the probabilities of rainfall in each of the three categories, above-, near-, and

Figure 4. Rainfall Forecast for July, August and September 2009



below-normal. The top number indicates the probability of rainfall occurring in the above-normal category; the middle number is for near-normal and the bottom number for the below-normal category. Information in Figure 4 has been provided by the Sudan Meteorological Authority (SMA) and indicates that for parts of Western, Central and Eastern Equatoria States and parts of Jonglei and Lakes, there is an increased likelihood of normal to below normal rainfall. For Western and Northern Bahr el Ghazal, Warrap and Unity States, there is an increased likelihood of normal to above normal rainfall while northern parts of Jonglei and the entire upper Nile, there is an increased likelihood of normal to above normal rainfall. The performance of the rainy season in the next couple of weeks will determine the outcome

of the 2009 season and will be monitored.

NDVI Status

The Normalized Difference Vegetation Index (NDVI) is a measure of the greenness of the vegetation. It also provides an indication of the performance of the crops in an agricultural season. Figure 3 indicates the poor development of the vegetation compared to the average. This shows that as at the end of June, the 2009 rainy season has performed poorly and the current state of vegetation is far below what it should be in normal season. So far, only parts of Western Bahr el Ghazal, Western and Central Equatoria States indicate their vegetation having developed normally. The reduced moisture availability has implications on the performance and availability of pastures and ultimately affecting livestock conditions directly.

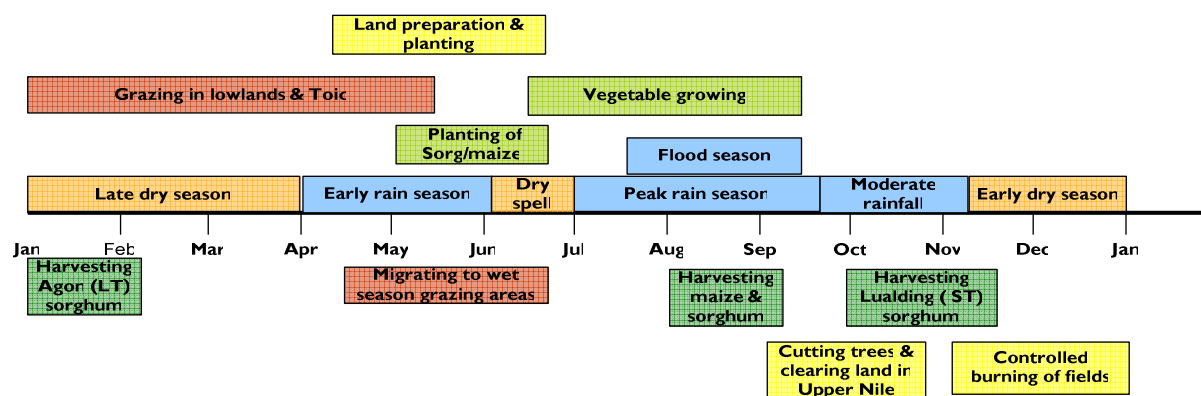
Implications of Continued Poor Rainfall Performance in 2009

The implications of poor rainfall performance will depend on a number of other factors in an agricultural season including of course the poor insufficient moisture to support optimal growth and development of a crop. The critical ones include the availability of seed for replanting, if the first sowing fails and the type of varieties of the various crops being planted. In sorghum, which is the dominant crop in southern Sudan, there are early, medium and late maturing crop varieties. If the rainy season delays, this means that the growing season has been reduced assuming that the season will end at the normal time. This means that the late maturing varieties if sown, may not have sufficient moisture for maturity. This limits the types of varieties that can be used for replanting. The other is the management of the field during the growing season in terms weeding and planting density. Possible implications are listed below:

- Delayed planting by up to one month is anticipated as dryness persists into late June. Key crops to be affected include sorghum, maize, groundnuts and sesame.
- Delayed planting implies that benefits such as green crop consumption, a key to ending the hunger season in August would be delayed further compounding the already precarious food security situation.
- Delayed planting also makes crops more vulnerable to the typical July-August dry spell, as it might find crops at a very young stage.
- Delayed planting also makes the crops vulnerable to the typical September flooding. It might find crops before fully maturing for harvest, thereby impacting of the production.
- Persistent dryness implies that return of livestock from dry season grazing areas to homesteads could delay due to lack of adequate pasture and water back home. This could compromise labor availability essential for land cultivation, weeding and other agricultural activities.

Figure 5

Cropping Calendar (NBEG, Warrap, Upper Nile & Jonglei)



SUMMARY OF AGRICULTURE SEASON BY STATE

Eastern Equatoria State:

The poor performance of the rains during the season has caused a delay in the maturity of crops and the harvest from the first season is expected to delay. Reports indicate that areas that had fairly good rains during April and May are expected to harvest some maize and short maturing sorghum and bulrush millet by mid August, 2009. Areas that were mostly dry during April and May are not expected to consume locally produced food until mid September thereby extending the hunger period. Only very few areas that had good harvests of sorghum in December/January, like Loronyo in Bur Payam and Lowoi in Kudo Payam of Torit County, are still food secure. These areas are expected to remain food secure until the next harvest of short or medium term maturing varieties in August-September. The April – July rains are critical for replenishment of pastures in the pastoral zone, namely; Kapoeta and Pibor counties. Livestock often rely on the replenished pastures between July and September before moving out to long distant grazing areas in the neighboring counties. This is especially so for Kapoeta County which is more arid than Pibor County. Insufficient pasture is likely and would trigger earlier than normal livestock movements to areas that are also affected by reduced rains, increasing conflict over grazing and water resources.

Warrap State:

As observed in figures 2 and 3, the delay in the rainfall is affecting the agricultural season resulting in poor availability of pastures and delayed commencement of agricultural activities. Figure 5 shows the timing of planting in Warrap state and it is clear that the sowing of crops has been delayed due to insufficient soil moisture. A continuation of these conditions may have serious implications on agricultural production. Agricultural seeds and hand tools were distributed to the partners and have been distributed to the farmers except only in a few Bomas. Despite the poor rainfall, framers are still expanding their cultivated lands and planting more crops in the hope that the rainfall situation will improve. At the same time, the rainfall forecast (Figure 4) is being observed closely. However, there were reports of emergence of worms which may affect some crops but they are not a threat at the moment.

Central Equatoria State:

Considering the seasonal patterns discussed (Figure 1), the agriculture is progressing positively in Greater Yei Counties of Lainya, Morobo, Yei and Kajo Keji although in Kajo Keji there was a dry spell in May and June 2009. The dry spell covered Juba County, Terekeka and part of Lainya County. Reports indicate that the crops grown using seeds distributed either by the Ministry of Agriculture or FAO through partners have dried up due to the drought which has affected the area. In Greater Yei, the second planting season is very close with crops such as maize,

sorghum, sesame and g/nuts expected to be planted starting in July.

Upper Nile:

The state is experiencing poor rainfall performance, similar to other neighboring States. The state has only received rainfall in the range of 20-40% of what should have been received by June, 2009 (Figure 2). During this month of June a total of 92.9 mm rainfall was received. This is far less than what was received during the same period in 2008 which was recorded as 155 mm. The rainfall in 2009 has been observed to be late and erratic. The delay in rainfall has affected the sowing of field crops. The impact of the poor rainfall was observed during a visit to some Payams in Panyikango County (Thothim, Pakang and Panyidway) by a joint team from SMOA and FAO to monitor seeds and tools distribution to targeted beneficiaries. It is important to further observe the performance of the rainfall based on the forecast for the months of July, August and September 2009 provided by the Sudan Meteorological Authority (Figure 4).

Northern Bahr El Ghazal State:

Reports from the State indicate that there is reduced and delayed rainfall in 2009 compared to the same time last year. In 2008, the rains started in early May compared to late June in 2009. By June last year, 450.6 mm of cumulative rainfall had been received compared to 235.2 mm in 2009, a drop of almost 50%. However, with the amount of rain received, the farming communities are intensively engaged in

land preparation and planting. Farmers using animal traction are having a greater advantage as they are able clear larger pieces of land in a short time. Provision of agricultural inputs by FAO and partners to returnees, IDPs and vulnerable host communities throughout the state has been timely and complete. However, the delay in rainfall will affect the sowing time and harvests. The unfolding of the July, August and September rainfall forecast is being monitored closely.

Western Bahr El Ghazal State:

Most parts of the State has received rainfall as expected as indicated in figure 2. These areas should be experiencing a better season compared with most parts of the southern Sudan. However, the eastern parts of the state are reported to have experienced long dried spells through out May and June 2009 and as a result, delaying planting activities. When the rains re-started, farmers planted some crops assuming that the rainy had commenced. These crops that were planted during the initial rains wilted during the dry spell. However, there are a number of crops growing and the growing field crops observed include long maturity of sorghum and groundnuts, cassava and sorghum.

Jonglei State:

The State is in the category of June to November Agricultural season (Figure 1). So far, the State has received rainfall ranging from 40-60% of normal. Reports indicate that while farmers had planted anticipating a normal season, the crop is showing signs of moisture stress and beginning to wilt. Reports also indicate that the general situation of livestock is deteriorating in Jonglei state due to outbreak of East Coast Fiver disease which kills many cattle in Bor County, however, no assessment have been carried out yet to determine mortality rates. Jonglei State is also one of the states that has been affected by poor vegetation development (Figure 3) leading to poor availability of pastures. If the rainfall situation does not improve, the condition of livestock will deteriorate as a result of non-availability of pastures. The crops will also suffer leading to poor agricultural production for communities that depend on own production. The inter and intra ethnic conflicts already afflicting Jonglei state will be exacerbated if the performance of rains in the coming seasons continues to be poor.

Unity State:

The State has not received significant rainfall, a situation similar to adjacent states such as Warrap and Upper Nile (Figure 2). The state has only received rainfall in the range of 40-60% of what should have been received by June, 2009. There is a definite delay in the rainy season. However, land preparation is reported to have started in most parts of the State. Satellite imagery indicates that the State is not doing very well in term of vegetation development (Figure 3). The brown patches indicate that the vegetation is much poorer than it should be in a normal season. Related to the vegetation condition, reports indicate that animal condition is still very poor in area where vegetation cover is insufficient.

Lakes State:

The State has not received significant rainfall (Figure 2) although it is doing better than Upper Nile and Warrap. Land preparation has also started and planting is likely to be started as the season improves in terms of rainfall performance. Although parts of the State are still dry, the vegetation cover in most parts of the State is doing very well as compared to Unity and Northern Bahr El Ghazal State. Therefore, pasture condition has reasonably improved in the State.

Western Equatoria State:

The State is one of the States that has not been affected adversely is so far as rainfall performance is concerned. With good rainfall performance, crops are expected to be doing well and expected to give good yields assuming input availability were not a hindrance. However, it is reported that agricultural activities were hindered in LRA affected areas in the State.

Planned and Ongoing Assessments

A multi-Agency team composed of Government and UN Agencies including FAO, WFP, UNICEF are currently undertaking a Rapid-Assessment of the progress of the agricultural season and overall food security situation in five states considered to be affected by poor rainfall performance. These are EES, Upper Nile, Jonglei, Warrap and NB el Ghazal.