

Monitoring of Mid Summer Drought in West Africa using Global Models

By

Gbuyiro S.O , Orji, B.N and A.O Ediang

Nigerian Met. Agency Lagos, Nigeria.

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INTRODUCTION / 1

- The Mid Summer Drought (MSD) or Little Dry Season (LDS) or August break is a phenomenon that generally occurs between late July and Mid August every year.
- This is any period during the Mid Raining Season when negative anomalies were observed in the seasonal rainfall pattern from June-August.
- Very important due to economic and health reason along the Coastal areas

INTRODUCTION/2

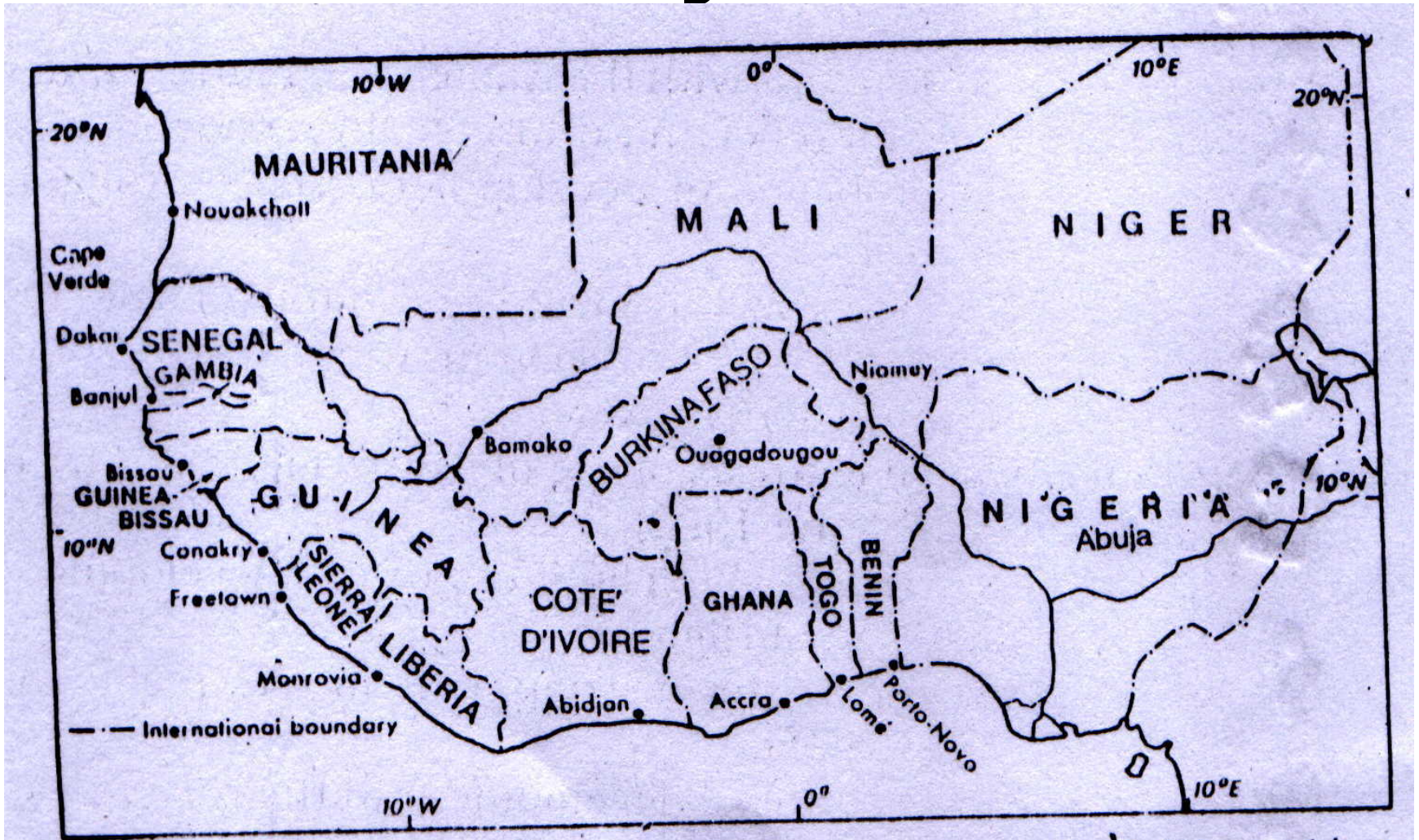
CAUSES ATTRIBUTED TO LDS

- (a) Deflection of the south westerly winds
 - (b) relative coolness of the sea
 - (c) Wind and moisture divergence associated with an equatorward shift of the Southern Hemispheric Anticyclone
 - (e) lower temperature both at the surface and in the upper air, with lower surface humidities and with a deeper surface layer of westerly winds.
 - (f) Subsidence – Inversion found in the 850-800 Hpa level
 - (g) Change in the wind driven ocean current with upwelling of cool water on the immediate shores of Gulf of Guinea
- ((Ireland (1961), Hamilton and Archbold (1945) Obasi (1974) and Ojo (1970) Adefolalu (1972) and Aribio (1989))

PROBLEMS WITH THE STUDY OF LDS

- Earlier investigators have used the parameters such as temperature, pressure, dew point, humidity, sea surface temperature and equivalent potential temperature to study the characteristics of LDS. But availability of the above parameters on surface and upper level charts as and when required has made the study on onset, persistence and cessation of LDS difficult and atimes its prediction inaccurate.

Study Area



Data and Method of analysis

- The data used consist of current and prognostic global model charts, as well as synoptic charts for the months of June to September(from MeteoFrance and UK global models) . Temperature, pressure and rainfall data (for July and August) were also extracted for Ikeja and some selected stations in the southern part of the country from 2000 -2003. The charts consist of : Mean sea level pressure chart (**MSLP**), 2m temperature chart and 850 Hpa level charts. The methodology consists of descriptive statistics as well as trend analysis for the historical rainfall records.

Results and Discussion

- **FOR 2000:** Using the model MSLP, Pressure build up which was evident by 17th July slackened by 19th over the greater part of eastern Guinea coast. By 25th pockets of anticyclogenesis of the St. Helena high was again noticed over the West African sub region. This also weakened on the 26th. From 28th July intense anticyclogenesis set in and persisted till 29th August. The periods 17 - 18th July and 25 - 26th July could be regarded as giving false start signals. The real onset of LDS was 28th July. This is about 10 days from the first period of false start. The actual chart gave Onset as 27-29th. At the 850Hpa level, temperatures were generally observed to be between 13-15°C from the equator to about Lat. 10 N from 21st of July. By 31st August it ranged from 15-17°C.

2000

850 Hpa

Onset long

Persistence

	10	0	10		10	0	10
lat 10	20	19	18		16	17	18
0	15	15	18		14	15	15
5	14	13	15		14	13	15

FROM 21/7

FROM 31/8 15-17 deg

Lat 5 to 10 S B/O 17-19 deg DUR 14 – 16

2M Level Chart B/O 26-28 deg DUR 22- 24

2002

850 Hpa

Onset

long

Persistence

lat

	10	0	10		10	0	10
10	19	18	19		16	16	17
0	16	16	17		15	15	16
5	15	14	15		13	12	14

FROM 16/7

FROM 21/9 INCREASE

MSLP 23/7 to 18/9

Lat 5 to 10 S B/O 17-20 deg DUR 12 – 16deg

2M Level Chart B/O 25-28 deg DUR 22- 25

2003 850 Hpa

		Onset		long	Persistence			
		10	0	10		10	0	10
	10	20	19	18		16	16	17
lat	0	16	16	17		16	15	17
	5	15	14	15		15	14	14
				FROM 13/7	FROM 22/8		INCREASE	

MSLP 21/7 to 19/8

Lat 5 to 10 S B/O 18-20 deg DUR 13 – 17 deg

2M Level Chart B/O 25-27 deg DUR 23- 25

CONCLUSION

This methodology of using global models has proved to be a very useful guide in monitoring the 2001-2003 LDS little dry season. The result of the models when available compared favourably with actual results. This methodology has proved to be a useful tool in monitoring and predicting LDS in the year 2005

THANKS FOR LISTENING

