

NIGER

Favorable Crop Development

FAMINE EARLY WARNING SYSTEM



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The Famine Early Warning System (FEWS) is an Agency-wide effort coordinated by the Africa Bureau of the U.S. Agency for International Development (USAID). Its mission is to assemble, analyze and report on the complex conditions which may lead to famine in any one of the following drought-prone countries in Africa:

- Burkina
- Chad
- Ethiopia
- Mali
- Mauritania
- Mozambique
- Niger
- Sudan

FEWS reflects the Africa Bureau's commitment to providing reliable and timely information to decision-makers within the Agency, within the eight countries, and among the broader donor community, so that they can take appropriate actions to avert a famine.

FEWS relies on information it obtains from a wide variety of sources including: USAID Missions, host governments, private voluntary organizations, international donor and relief agencies, and the remote sensing and academic communities. In addition, the FEWS system obtains information directly from FEWS Field Representatives currently assigned to six USAID Missions.

FEWS analyzes the information it collects, crosschecks and analyzes the data, and systematically disseminates its findings through the following publications:

- **FEWS Country Reports** - produced monthly during the growing season, and bimonthly during the rest of the year (for more information on FEWS publications turn to the back inside cover of this report); and
- **FEWS Bulletins** - produced every ten days during the growing season.

In addition, FEWS serves the USAID staff by:

- preparing **FEWS Alert Memoranda** for distribution to top USAID decision-makers when dictated by fast-breaking events;
- preparing **Special Reports, maps, briefings, analyses, etc.** upon request; and
- responding to **special inquiries.**

FEWS Country Reports, Bulletins, Alert Memoranda, and other special studies are prepared for USAID's Africa Bureau by **Price, Williams & Associates, Inc.**

The work of the FEWS Field Representatives is coordinated by **Tulane University's School of Public Health and Tropical Medicine.**

NOTE: This publication is a working document and should not be construed as an official pronouncement of the U. S. Agency for International Development.

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Favorable Crop Development

July 1988

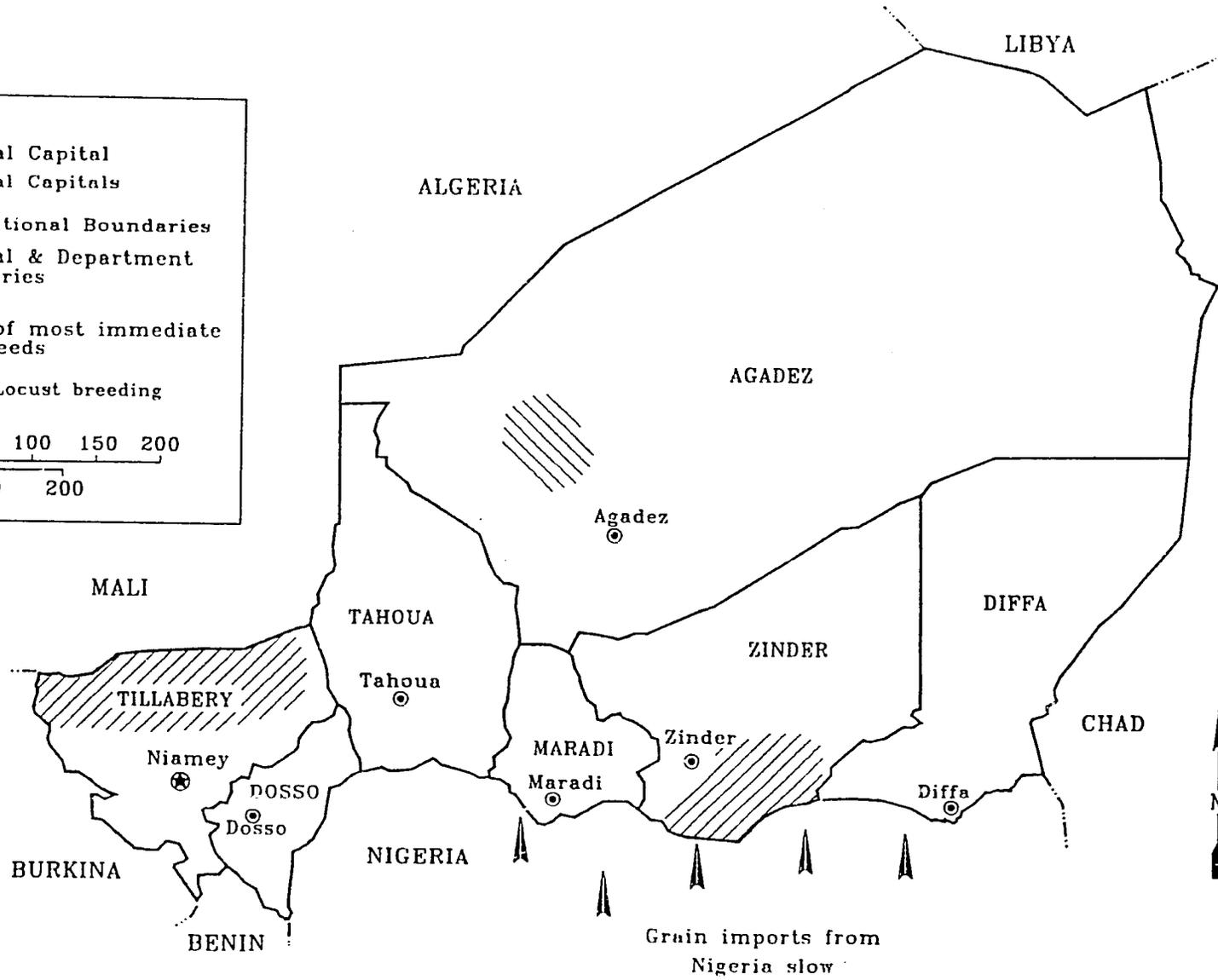
Contents

Summary	3
Regional Weather and Vegetation Conditions	3
Desert Locusts	7
Niger Agrometeorological Conditions	10
Food Aid Distributions	10
Cereal Prices	10

List of Figures

Map 1 Summary Map	2
Map 2 Rainfall Total	4
Map 3 Green-Up of Vegetation	5
Map 4 NDVI Composite Image	6
Map 5 Above and Below Average Vegetative Conditions	8
Map 6 Desert Locust Swarms	9

★ National Capital
 ● Regional Capitals
 - - - International Boundaries
 — National & Department Boundaries
 Areas of most immediate food needs
 Desert Locust breeding
 0 50 100 150 200
 0 100 200



Grain imports from Nigeria slow

Favorable Crop Development

Summary

Through the first twenty days of July, crop planting was on schedule and progressing well almost everywhere in Niger. The same is true of most of the Sahel. Free emergency food distributions will not reach the Food and Agriculture Organization (FAO) target of 101,000 metric tons (MT) until after the period of greatest need. Current information from the World Food Program and from USAID/Niamey suggests that only 40 to 50% of this amount will be available for distribution before the upcoming harvest. On the basis of increasing prices and the ratio of food deliveries to estimated needs, northern Tillabery Department may be in greatest need of such distributions. As in the rest of the Sahel, rains continue to favor locust and grasshopper breeding across a broad area of Niger. Survey and control operations are underway.

Regional Weather and Vegetation

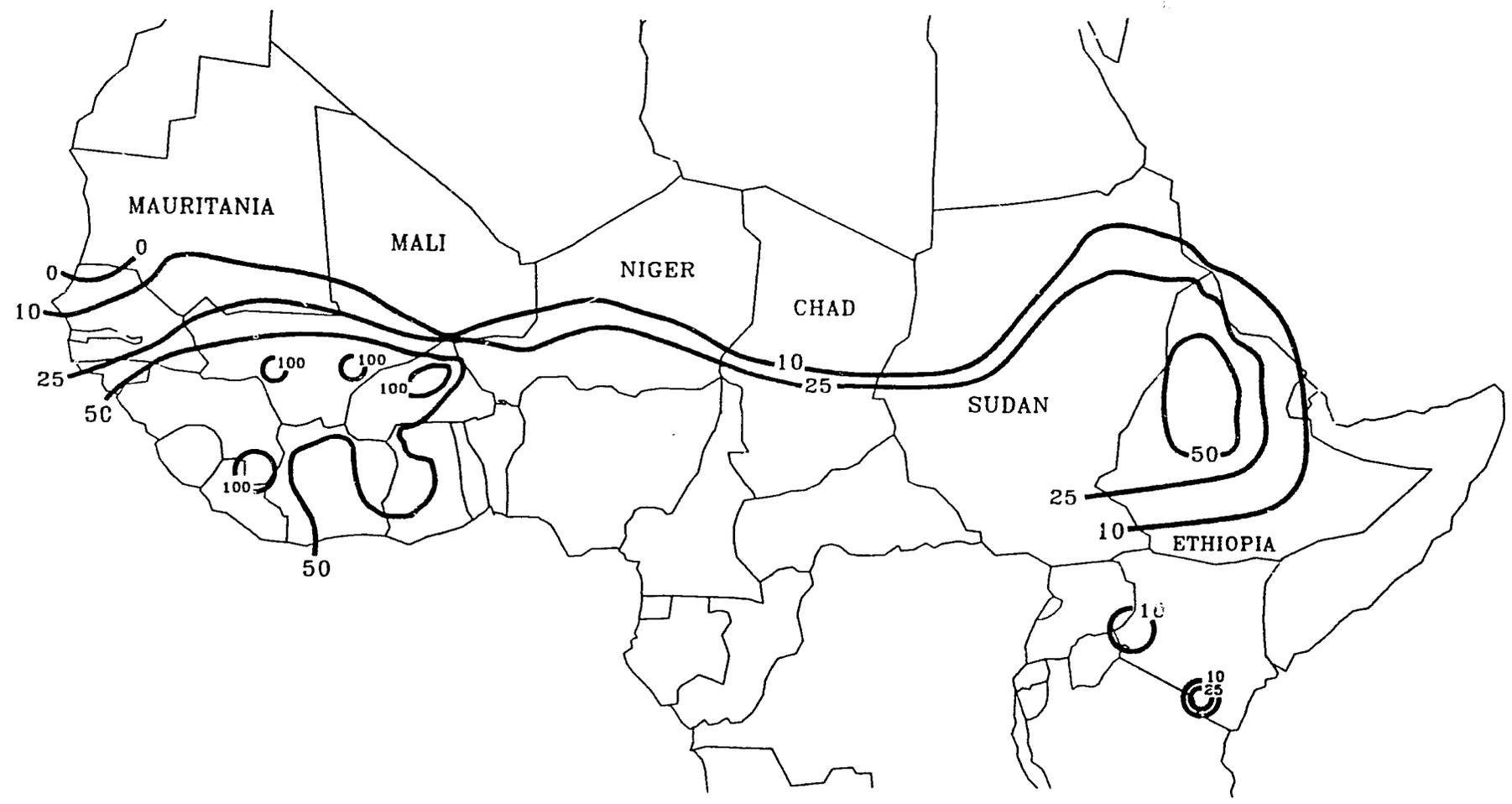
The rainy season appears to be progressing well over most of the Sahel and in Sudan (Map 2). Vegetative green-up is occurring north of a line running from Ziguinchor (see Map 3) to the Ferlo area of eastern Senegal, into the southernmost portions of Mauritania, through Nara and San in Mali, through Yako and Dori in Burkina Faso, from Tillabery in Niger south into Nigeria and back north to Diffa in Niger, along the 13.5° latitude in Chad and into Ethiopia. Map 4 shows the maximum vegetative level seen in each location over the period 1 May - 20 July 1988. The hills on the map represent higher vegetation levels, and the valleys, lower. The transition between the Sahel and Sudanian vegetation zones is clearly visible as one moves south from the countries monitored by FEWS (particularly Mauritania, Mali, Burkina, Niger, Chad, and Sudan; Ethiopia displays a more complex pattern).

Recent reports place the location of the Inter-Tropical Convergence Zone (ITCZ) at relatively high, if not record, latitudes (see inside back cover) for the middle part of July. With few exceptions outside of Mauritania, cumulative rainfall amounts across the Sahel generally exceed 80% of the 30-year average through mid July. Moist-soil planting is well underway in most places, with local exceptions in Mauritania, Mopti Region in Mali, northern Burkina, and scattered areas in Niger and in the northern Sahel of Chad.

In April, the United Kingdom Meteorological Office predicted that 1988 would be a very dry year in the Sahel, perhaps among the driest this century. This forecast was based on anomalous Atlantic sea surface temperatures. These anomalies disappeared rapidly in June, eliminating the basis of the forecast. Current rainfall reports, combined with findings that the ITCZ was farther north in July than

Rainfall Total (mm)

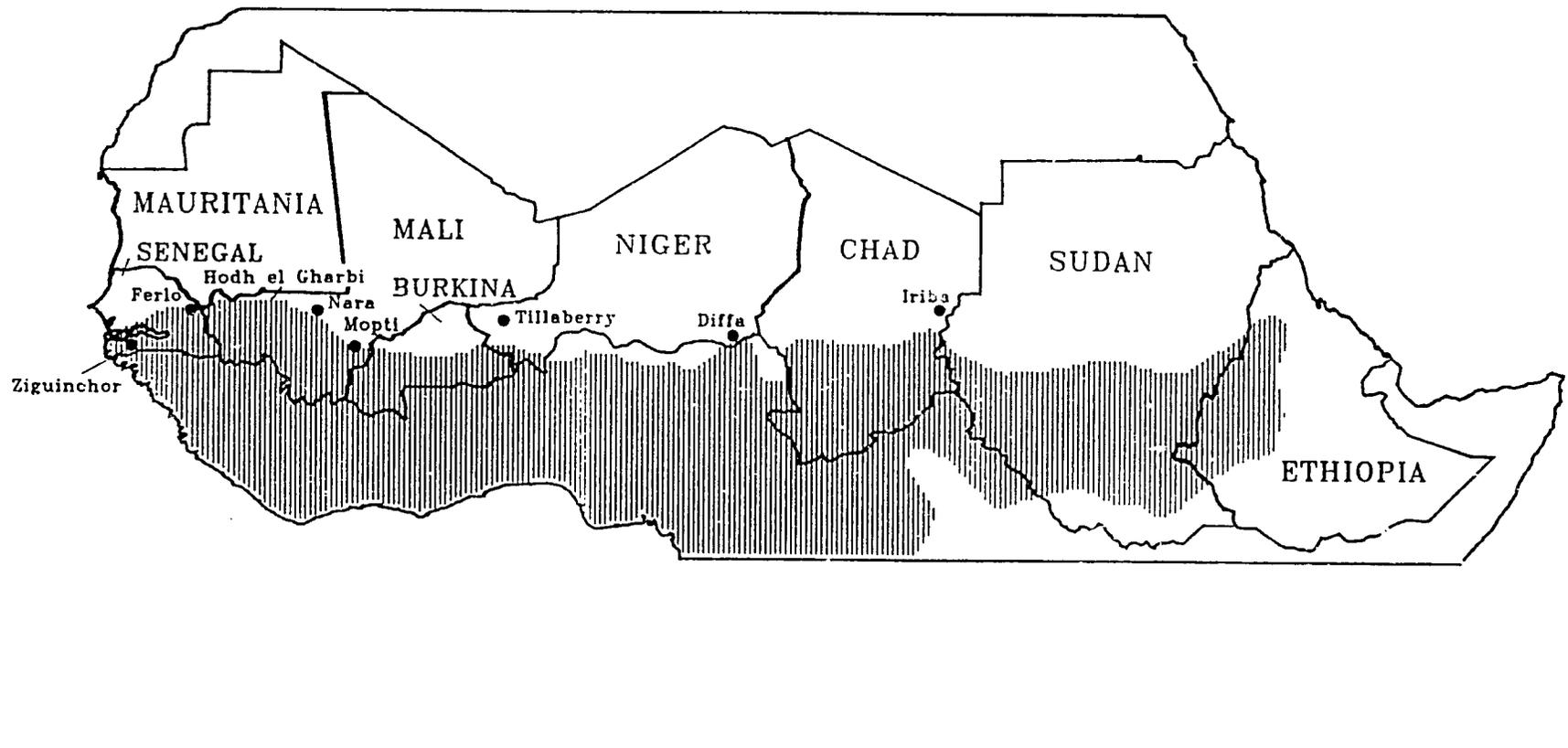
July 6-12, 1988



Source: JAWF assessments
FEWS/PWA, June 1988

Green-Up of Vegetation

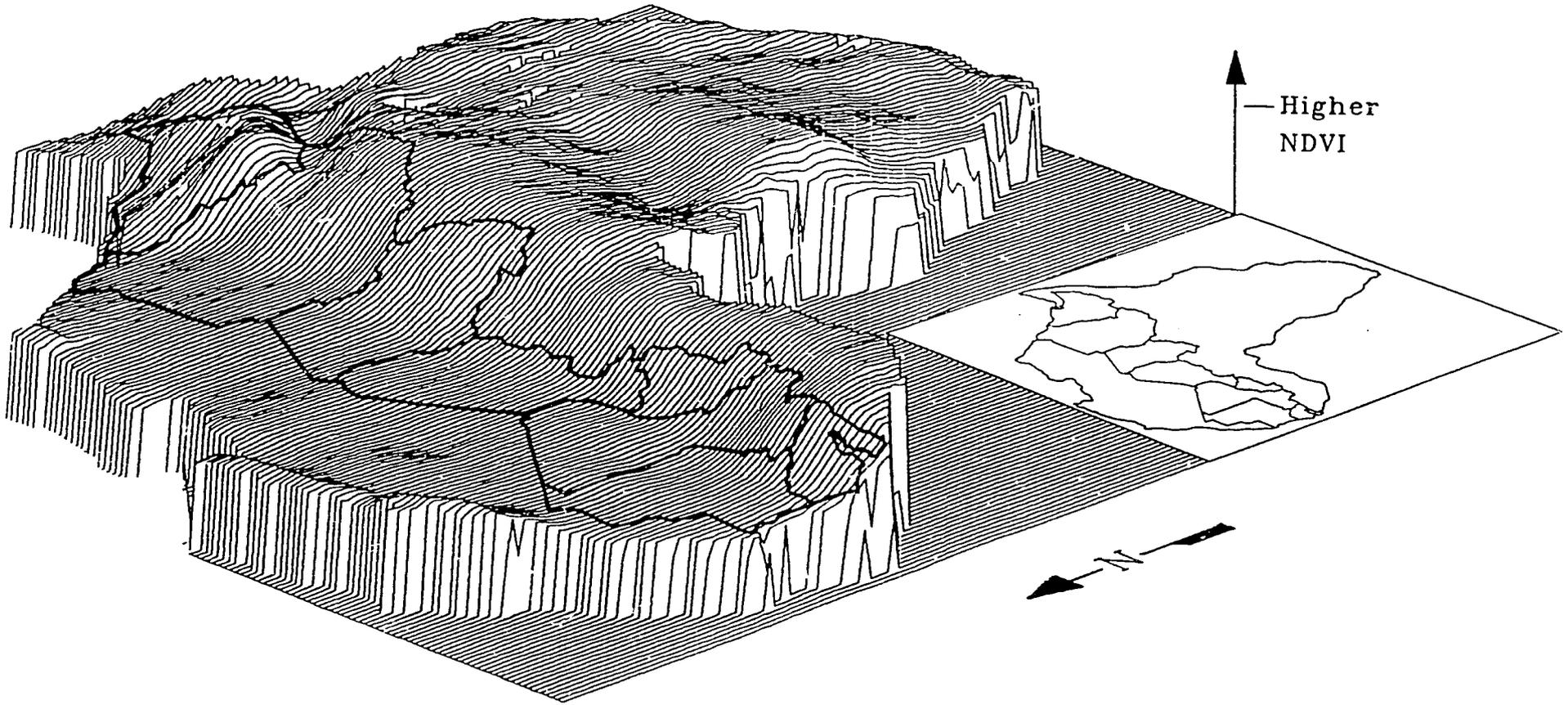
Between May 20, 1988 and July 20, 1988



Data were statistically generalized for presentation purposes

Source: NOAA/NASA AVHRR GAC Imagery
FEWS/PWA, July 1988

NDVI Composite Image May-Mid July



Source: NOAA/NASA GAC AVHRR
FEWS/PWA, July 1988

in any year since 1981, suggest that this forecast has been overtaken by events. There is, however, no guarantee that these good rainfall trends will continue until the end of the season.

During the first twenty days of July, vegetation was greening over most of the Sahel and along the Coast. The recent greening is reversing persistently below-average vegetative conditions within a triangle defined by San (Mali), Bobo-Dioulasso and Ouahigouya (in Burkina). Recent greening that may signal more favorable conditions for locusts is noted in Chad's Sahelian zone and in the Adrar des Iforas, extending eastward into Niger to northern Dakoro Arrondissement.

Most of the Sahel and the coastal countries display above-average vegetative conditions (based on the period 1982-1987, see Map 5). In the Sahel, these areas include:

- Kolda and Tambacounda regions in Senegal,
- south-central Hodh el Gharbi Region, especially around Kobenni in Mauritania,
- Kayes Region in Mali,
- most of southwest and eastern Burkina, notably including the Dori area,
- Birni N'Konni, Illela, Madaoua, and Magaria arrondissements in Niger,
- most of Chad south of 14.3° N, except for a pocket north of the town of Sarh and a second pocket southwest of Abou Deia Town, and
- North Darfur Province, North Kordofan Province, and the northern part of Central Region in Sudan.

There are a few areas where vegetative conditions are slightly below average. These include:

- a diminishing area in a triangle between San in Mali, and Dedougou and Ouahigouya in Burkina, and
- the area southwest of the town of Abou Deia in Chad.

Strongly persistent and significant below-average conditions are visible in Ethiopia's eastern Gonder, eastern Gojjam, western Wello, northern Shewa, and highland Harerghe regions. A further area of below-average NDVI is apparent in the area of Jongoli in Sudan. The lower NDVI seen in the latter area may be due to a high incidence of clouds during the period covered.

Desert Locusts

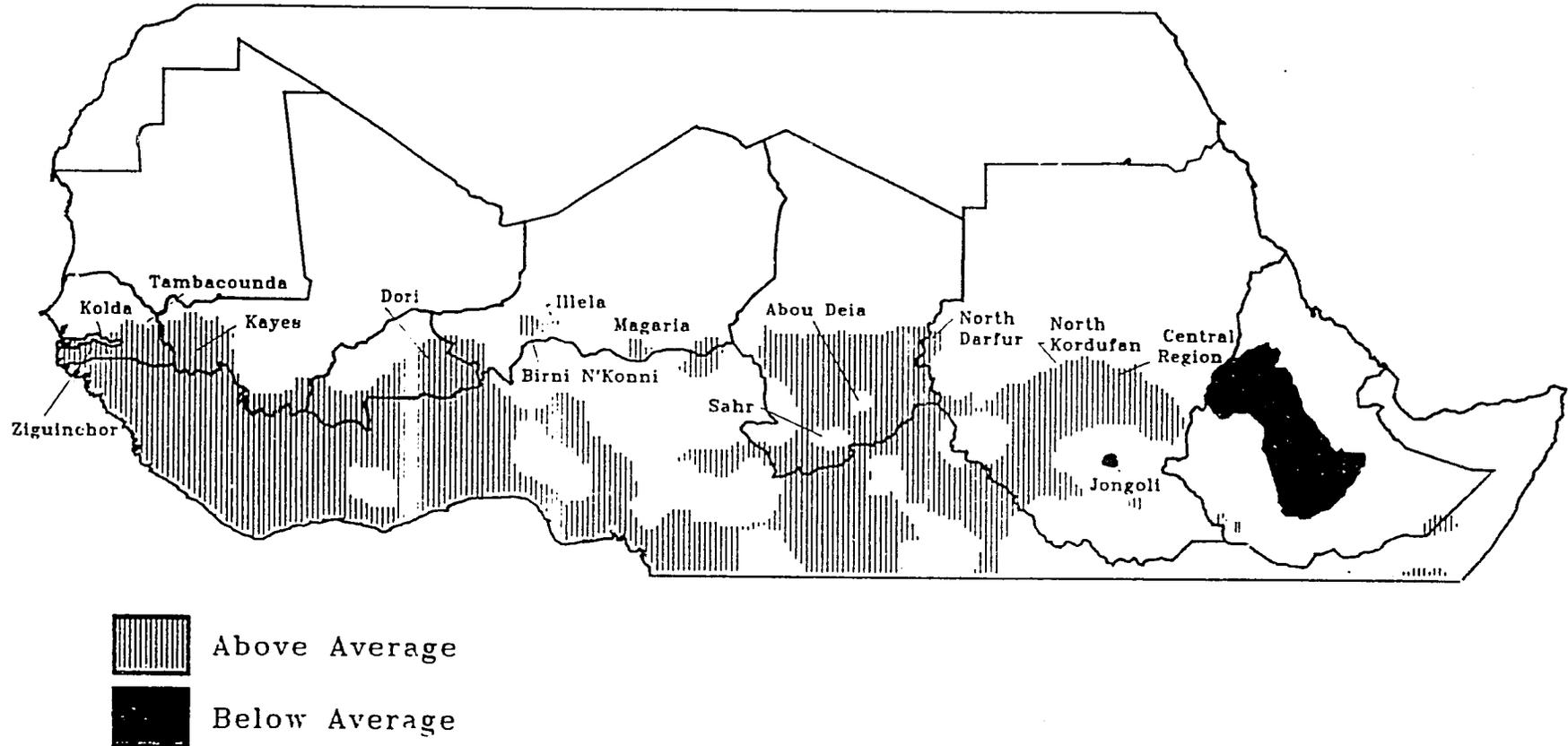
Large desert areas in all the Sahelian countries show above-average vegetative conditions this summer, reinforcing the likelihood that Desert Locusts will find favorable conditions in most of their traditional breeding areas. The most serious Desert Locust outbreaks currently being reported (shown on Map 6) are found:

- in west-central and east-central Chad, and bordering areas of Sudan, and
- west of Niger's Air Mountains.

Less serious, but still important, outbreak areas include:

Above and Below-Average Vegetative Conditions

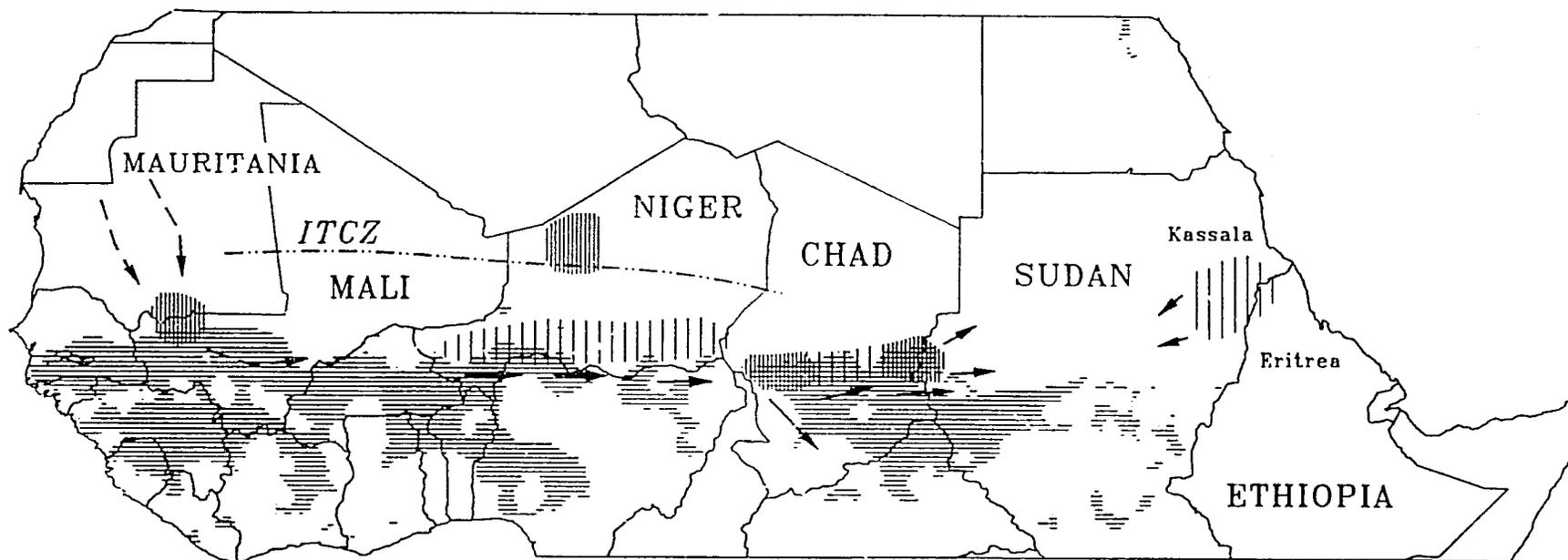
July 1-20, 1988 Compared to 1982-87



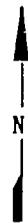
Data were statistically generalized for presentation purposes

Source: NOAA/NASA AVHRR GAC Imagery
FEWS/PWA, July 1988

Early July Desert Locust Swarms



-  Green-up from late June to mid July
-  Desert Locust swarms
-  Scattered and broken Desert Locust Swarms
-  Current movement of swarms and hopper bands



Source: Mission Cables; AID/OFDA/DLTF;
 NOAA/NASA AVHRR GAC Imagery; NOAA
 FEWS/PWA, July 1988

- the border area between western Mali and southern Mauritania,
- a long band across southern Niger, and
- the border area between Kassala Province in Sudan and Eritrea Region in Ethiopia.

The infested areas in Chad and western Sudan coincide with areas of recent vegetative green-up, which would imply a beneficial environment for locust development. As most of the locusts in Chad are in the fifth instar (fifth stage of larval/non-winged development), they will mature and start laying eggs by mid August. At that time, the position of the Inter-Tropical Convergence Zone (ITCZ) over eastern Chad and western Sudan will determine the direction in which the locusts will fly. If the ITCZ remains to the north, the accompanying winds will push the locusts to the north and west, into the desert and away from croplands. If the western end of the ITCZ swings south, the Desert Locusts will be funneled into generally advantageous winter breeding grounds in Ethiopia and Somalia. The infestations in northern Niger are important both because of their size and because of their inaccessible location, making control of the area difficult.

The southern Niger outbreak zone and the Mali-Mauritania area also contain areas of recent vegetative growth, but are not considered as great a threat as the outbreak areas in Chad and western Sudan. In southern Niger, the swarms are broken and scattered, making imminent gregarious behavior unlikely; in Mali and Mauritania, the individual infestations are small, making control a bit easier than in other parts of the Sahel.

Because the swarms in eastern Sudan and Eritrea are also broken and scattered and have been in dry areas with no vegetation, it is unlikely that those locusts will breed soon in great numbers. They should therefore pose little threat to this year's agriculture. Recent reports, however, indicate that Eritrea received torrential rains at the end of July. This may change the situation in that area.

Niger Weather and Crop Conditions

Rainfall reports indicate generally good conditions for planting and growth of crops in most agricultural areas. Local exceptions through mid-July included some parts of northern Tillabery and Tahoua Departments, northern Dakoro Arrondissement, and parts of Maine-Soroa Arrondissement. In general, however, the growing season is well underway.

Food Aid Distributions

Recent reports indicate that only about 40 to 50% of the emergency food aid required for free distributions will be distributed before the upcoming harvest, when it is most needed. Approximately 83,000 MT of aid destined for free distributions have been pledged, and less than 40,000 will likely be delivered before mid September. The locations of distributions completed to date are not yet known for about half of this amount, although both Tillabery and Zinder Departments will each have received at least 10,000 MT by the beginning of August. The recent jump in cereal prices (see below) in northern Tillabery Department may signal a continuing need for such aid.

Cereal Prices

Millet prices have remained generally stable in most parts of the country. They remain much higher than in 1986 and 1987, but much lower than early 1985 prices, which reflected the disastrous 1984 harvest. Early, unofficial price reports from northern Tillabery Department indicate that millet prices increased substantially in early June.

Key Terms

At Risk - FEWS Reports employ the term "at risk" to describe those populations or areas either currently or in the near future expected to be lacking sufficient food, or resources to acquire sufficient food, to avert a nutritional crisis (i.e., a progressive deterioration in their health or nutritional condition below the status quo), and who, as a result, require specific intervention to avoid a life-threatening situation.

Where possible, food needs estimates are included in the FEWS reports. It is important to understand, however, that no direct relation exists between numbers of persons at risk and the quantity of food assistance needed. This is because famines are the culmination of slow-onset disaster processes which can be complex in the extreme. The food needs of individual populations at risk depend upon when in the disaster process identification is made and the extent of its cumulative impact on the individuals concerned. Further, the amount of food assistance required, whether from internal or external sources, depends upon a host of considerations. Thus the food needs estimates presented periodically in FEWS reports *should not* be interpreted to mean food aid needs, e.g., as under PL480 or other donor programs.

ITCZ - The ITCZ is a warm, moist weather front which originates in equatorial regions and tends to move northward during the Spring and Summer in response to normal global weather patterns. As it oscillates northward, the ITCZ collides with cold air masses descending from Europe, producing the Sahelian rainy season. The ITCZ normally defines the northern limits of possible precipitation in the Sahel.

NDVI - Normalized Difference Vegetation Index (NDVI) images are created at the laboratory of the National Aeronautic and Space Administration (NASA) Global Inventory Modeling and Monitoring System (GIMMS). The images are derived from Global Area Coverage (GAC) approximately 4 km resolution images received from the Advanced Very High Resolution Radiometer (AVHRR) sensors on board the National Oceanic and Atmospheric Administration (NOAA) Polar Orbiting series of satellites. The polar orbiter satellites remotely sense the entire Earth and its atmosphere once each day and once each night, collecting data in 5 spectral bands. Bands 1 and 2 sense reflected red and infra-red wavelengths respectively, and the remaining 3 bands sense emitted radiation in 3 different spectral bands. The NDVI images are created by calculating:

$$(\text{infrared} - \text{red}) / (\text{infrared} + \text{red})$$

for each pixel from the daytime satellite passes. Since chlorophyll reflects more in the infrared band than in the red band, higher NDVI values indicate the presence of more chlorophyll and, by inference, more live vegetation. A composite of daily NDVI images is created for each 10-day period, using the highest NDVI value for each pixel during that period. This technique minimizes the effects of clouds and other forms of atmospheric interference that tend to reduce NDVI values. NDVI is often referred to as a measure of "greenness" or "vegetative vigor." The NDVI images are used to monitor the response of vegetation to weather conditions.