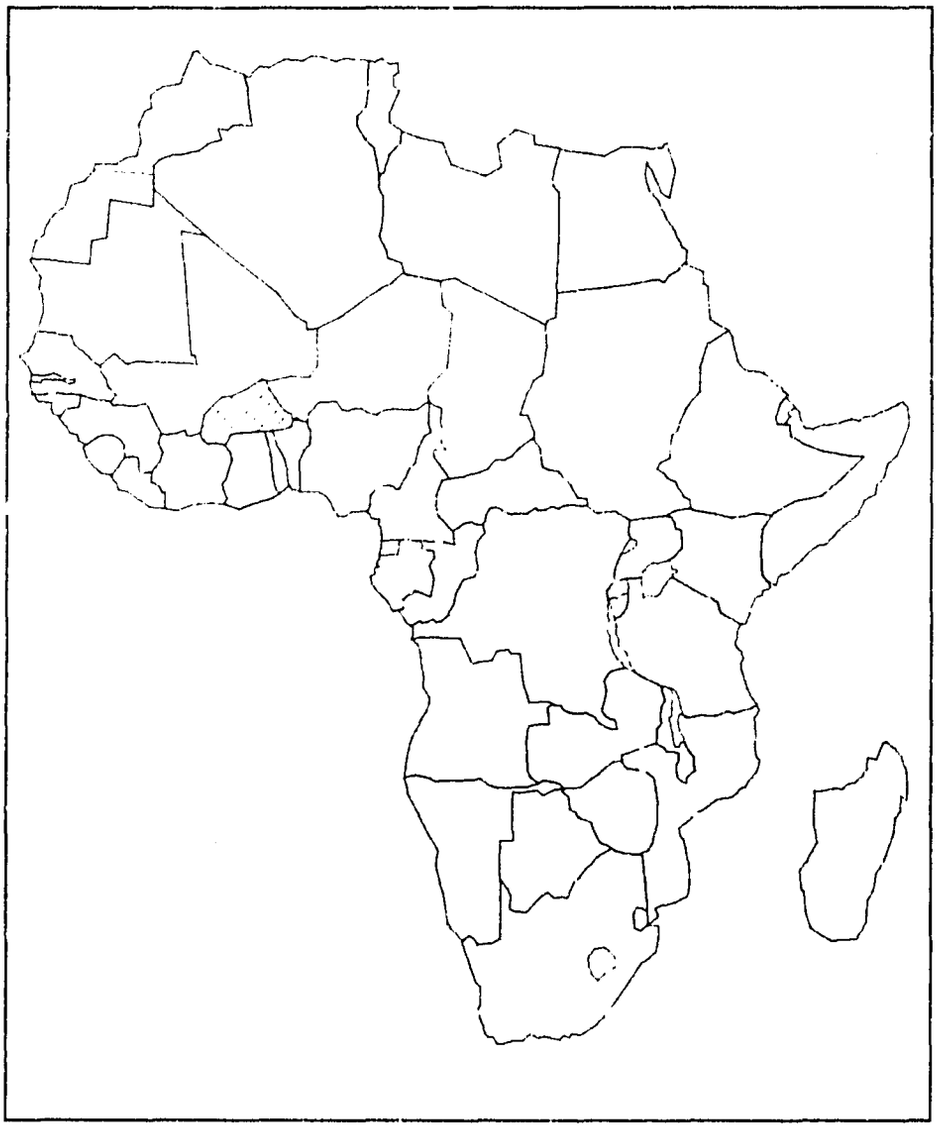
BURKINA

Public and On-Farm Stocks

FAMINE EARLY WARNING SYSTEM



Produced by the Office of Technical Resources - Africa Bureau - USAID

FAMINE EARLY WARNING SYSTEM

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.**

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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.

BURKINA

Northern Stocks Diminish/ Agricultural Prospects Good

July 1988

Contents

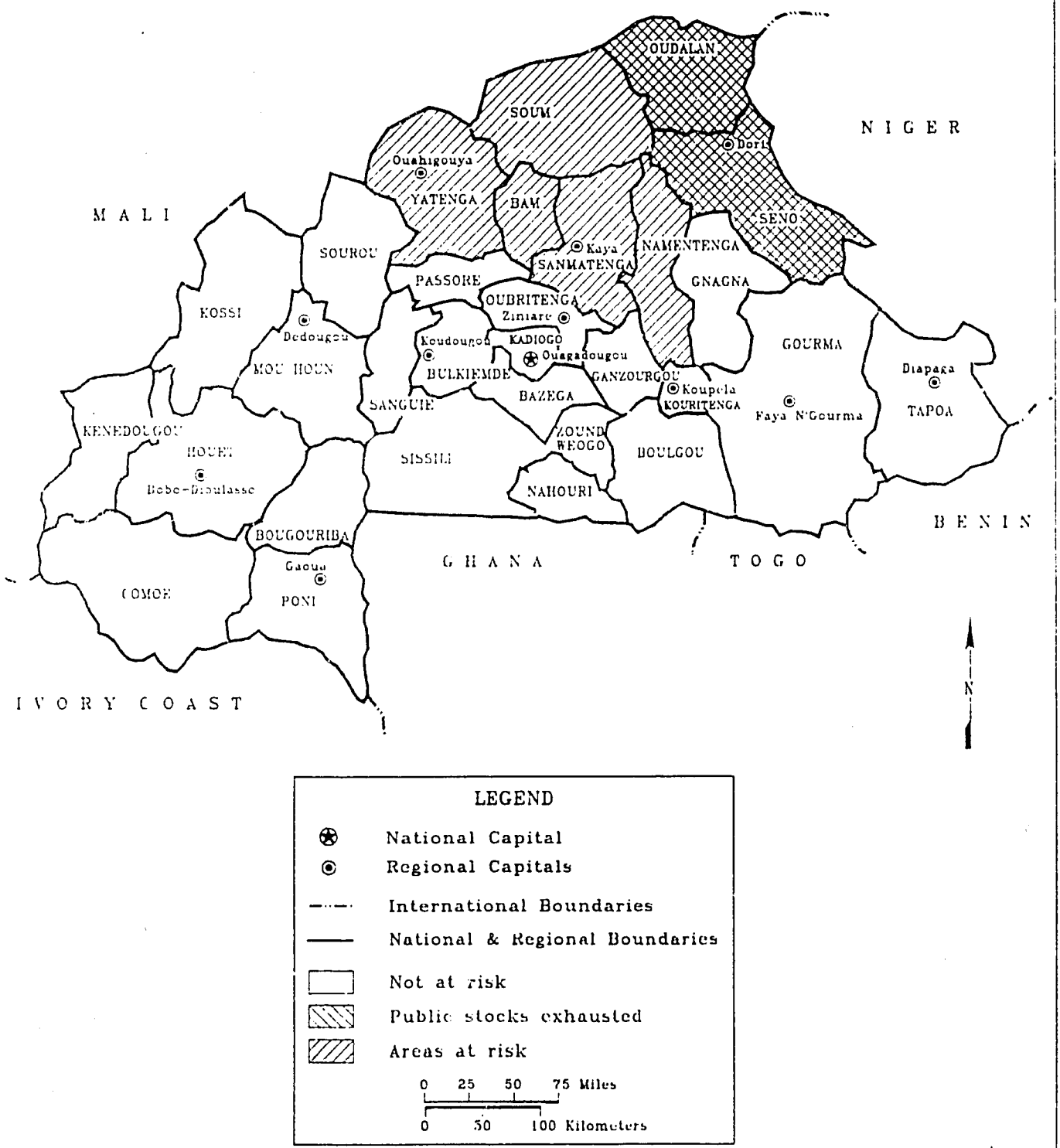
Summary	3
Rainfall and Vegetation in Burkina	3
Food Stocks in Burkina	3
Cereal Markets in Burkina	3
Regional Weather and Vegetation	5
Regional Desert Locusts	5

List of Figures

Map 1	Summary Map	2
Map 2	Green-Up of Vegetation	4
Map 3	NDVI Composite Image	6
Map 4	Percent of Normal July Rainfall	7
Map 5	Above and Below-Average Vegetative Conditions	8
Map 6	Desert Locust Swarms	9

Map 1

Areas At Risk and Areas Where Public Stocks are Exhausted



Source: SAP FEWS/FFR
FEWS/PWA, August 1988

Northern Stocks Diminish/ Agricultural Prospects Good

Summary

Public stocks are reported to be exhausted in Oudalan and Seno Provinces. On-farm stocks should also be low by this time. The Government of Burkina (GOB) is taking action to maintain food availability in the northern provinces. The National Cereal Control Board (OFNACER) is reportedly in the process of releasing its stabilization stocks at below market prices in the north. Prospects for next year's grain supply appear good at this date. The 1988 agricultural season is progressing well. Rainfall data and vegetation appear generally at or above average. Desert Locusts are not currently a threat in Burkina.

Rainfall and Vegetation in Burkina

The overall agricultural season is evolving favorably for Burkina. Rainfall is above the 30 year (1951-1980) average at most rainstations in Burkina. Exceptions, in Mouhoun and Bobo-Dioulasso Provinces, have probably improved if cloud formations evident on recent weather images resulted in additional rainfall. Satellite imagery of vegetation shows above average (1982-1987) vegetation throughout Burkina (see Map 2). Agricultural prospects appear good in 1988 (see Map 2). Recent weather imagery indicates some rainfall in the Sahelian provinces of Soum, Oudalan and Seno. This rain should improve rangeland conditions in these areas.

Food Stocks in Burkina

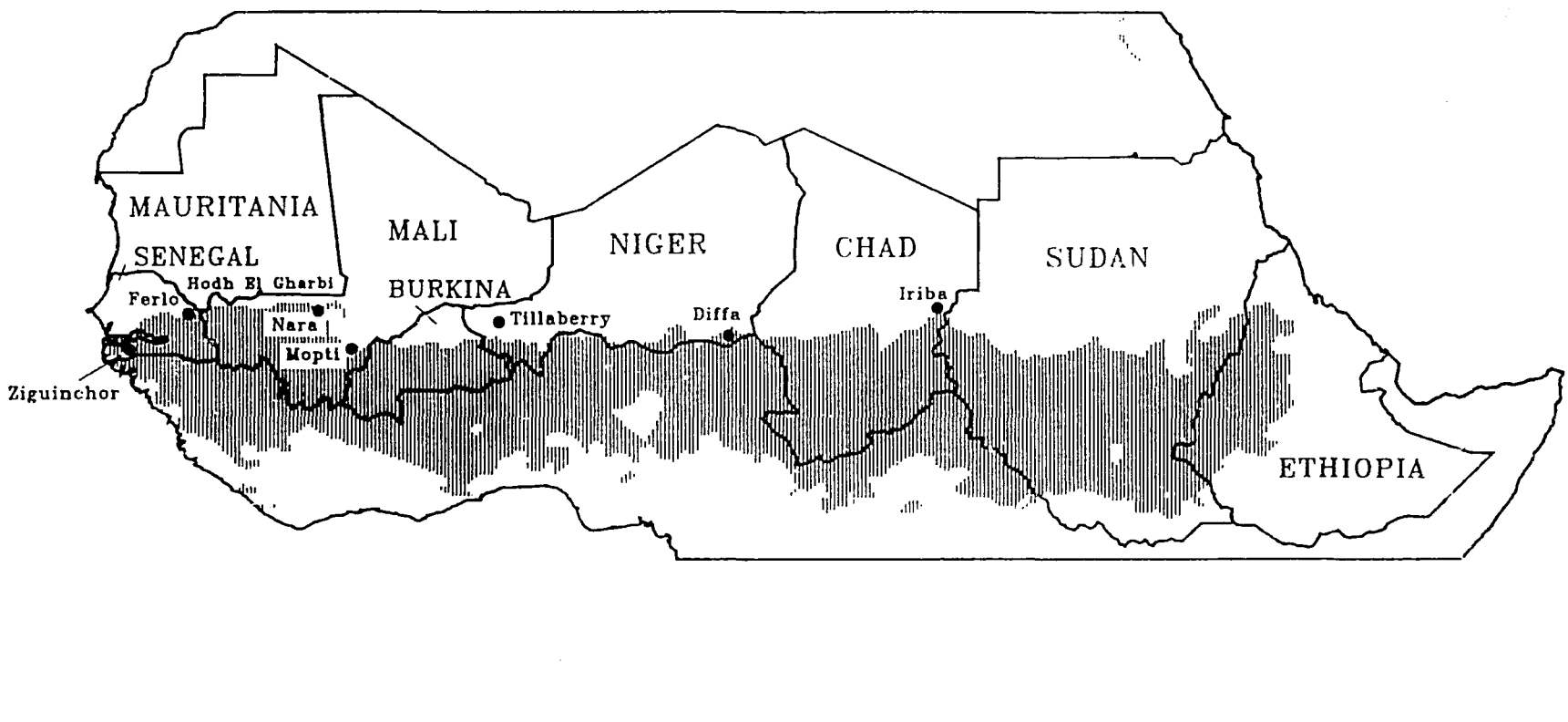
While stocks appear generally good in Burkina, the northern provinces are less well supplied. Reports from Dori, the provincial capital of Seno Province, indicate that National Grain Marketing Board (OFNACER) food stocks have been exhausted there. All 1,613 metric tons (MT) of OFNACER reserve stocks in the area have been distributed. Dori is the distribution center for both Seno and Oudalan Provinces. According to the Drought Early Warning System (SAP), there are no security stocks currently in Dori. Rains have washed out a key bridge near Dori, potentially complicating and delaying, resupply efforts.

Cereal Markets in Burkina

The Government of Burkina (GOB) has released 5,500 MT of grain to be sold in the northern provinces at 40 CFA Fr. per kilogram, which is 50% below the reported market prices. Privately held commercial cereal stocks have started to reappear in the markets of northern provinces. This improved availability can be at least partially attributed to the progression of the present agricultural season and to the OFNACER plan to sell stabilization stocks below market prices. This may be the strongest indication that grain merchants feel the worst of the pre-harvest shortage is over.

Green-Up of Vegetation

Between May 30, 1988 and July 31, 1988



Data were statistically generalized for presentation purposes

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

While grain shortages exist in some of the northern provinces (particularly in Seno Province), food availability in Burkina can be expected to improve if the growing season continues as it has begun. The most difficult problems facing the GOB are those concerning the logistics of moving cereal stocks to the areas were they are needed.

Regional Weather and Vegetation

The rainy season appears to be progressing well over most of the Sahel and in Sudan. Vegetation should now be greening up just north of the shaded area on Map 2. Map 3 shows the maximum vegetative level seen in each location over the period May 1 - July 20, 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).

The Inter-Tropical Convergence Zone (ITCZ) was still at higher latitudes than usual by the end of July. Cumulative July rainfall for FEWS-monitored countries showed a generally favorable pattern (see Map 4). Southern Mali, western Burkina, the eastern half of Niger and all of Chad showed above-normal rainfall. Western Sudan showed slightly below-average rainfall for July, a fact that would raise some concern were it not for satellite imagery showing average to above-average vegetation. Of some concern is an area of below-normal rainfall in central Ethiopia. All of Mauritania, some of Mali, and western Niger show slightly below-average cumulative rainfall. Moist-soil planting is well underway in most places.

Late July/early August rainfall was widespread, and occasionally heavy and persistent, throughout the countries monitored by FEWS (with the exception of Mauritania). Of special concern is the very heavy rainfall in north and central Ethiopia, including the normally dry Red Sea Coast. Much of northern Ethiopia received over 100 millimeters between July 27 and August 2. Areas in central Ethiopia, previously of concern due to below-average vegetative conditions are covered by clouds in the most recently available images. A strong upsurge in NDVI now, would not necessarily reflect a favorable outlook for long-growing-season sorghum and maize. Heavy rainfall was evident far north of usual in Sudan, causing severe flooding in Khartoum. Rains were also especially persistent in Mali.

During the first thirty days of July, vegetative conditions were above average over most of the Sahel (see Map 5). The most important exception is Mauritania, particularly along the Malian border. Slightly below-average vegetation there and no better than average vegetation elsewhere in Mauritania are worrisome.

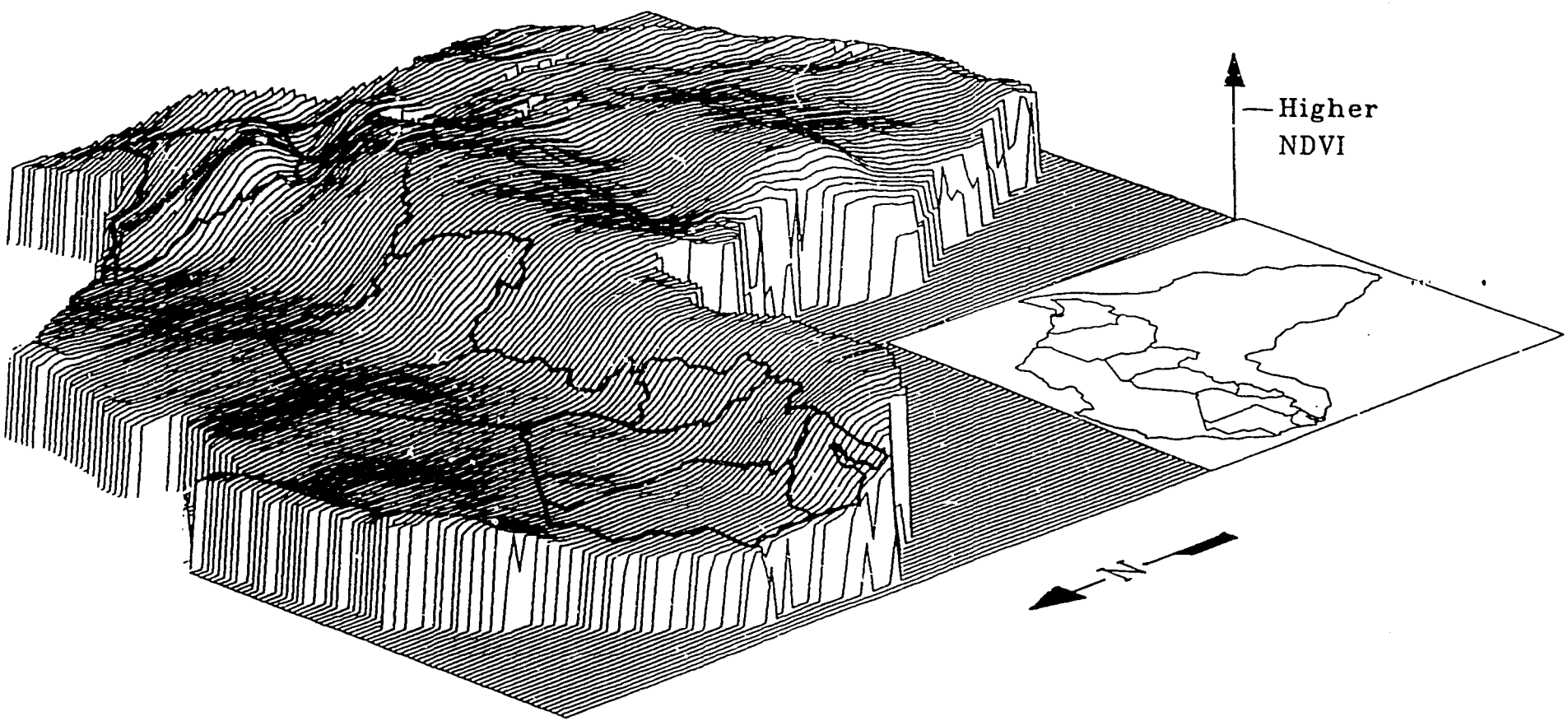
Regional Desert Locusts

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. However, an overall late start in the locust breeding cycle may limit the number of generations to two, instead of the three expected. Little new information is available. The most serious Desert Locust outbreaks remain (shown on Map 6):

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

NDVI Composite Image

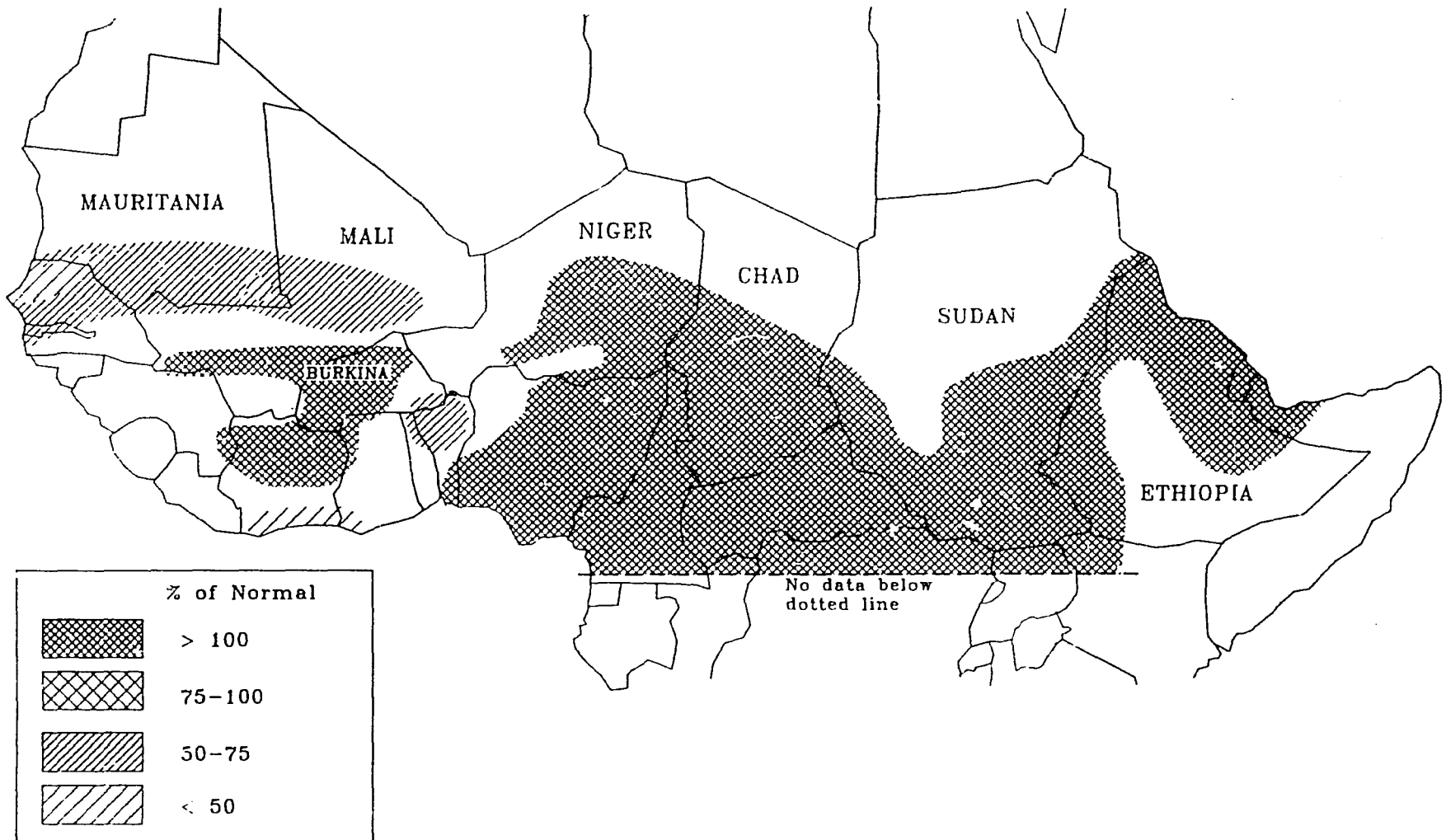
May–Mid July



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

Percent of Normal July Rainfall

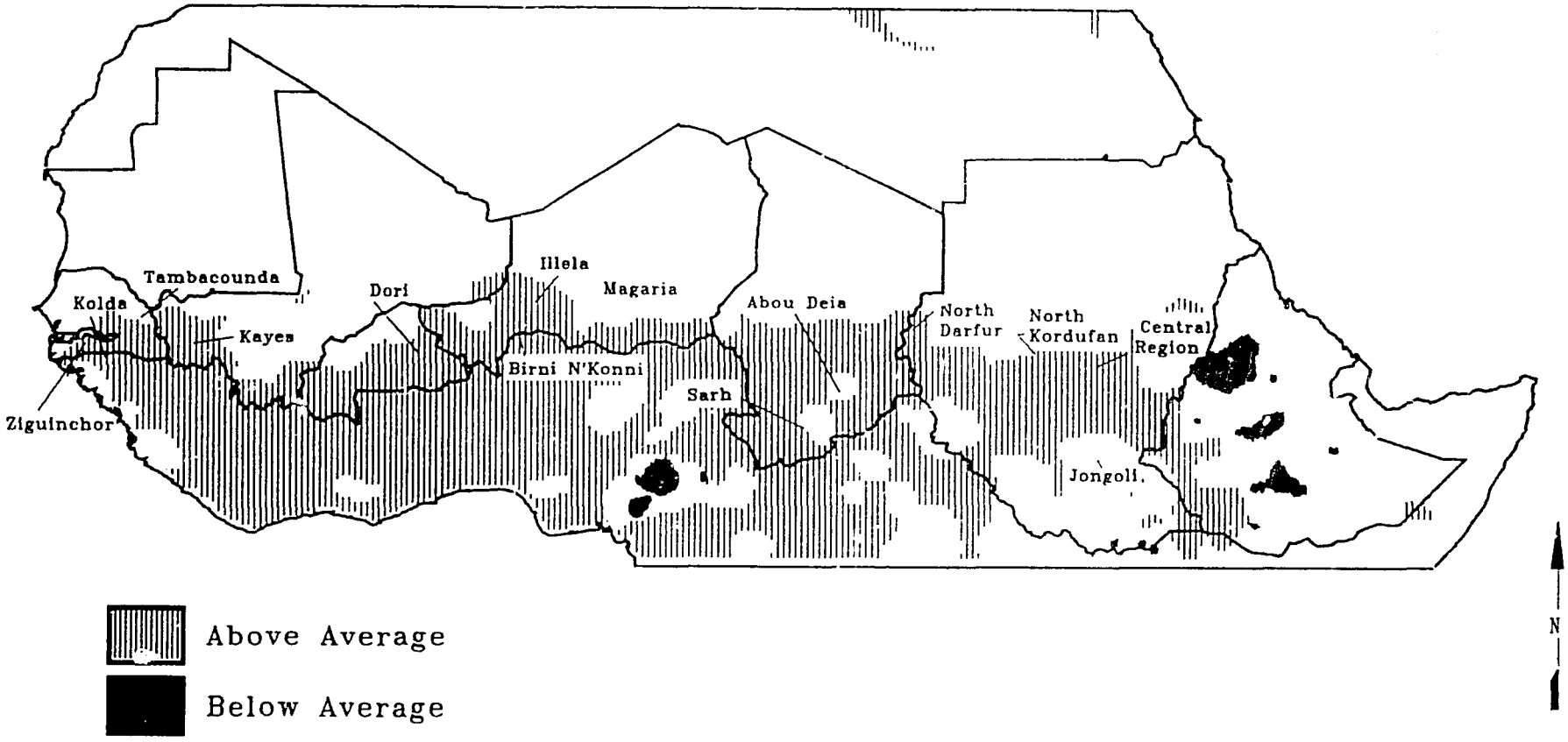
Based on a Thirty Year Average



Source: JAWF assessments
FEWS/PWA, July 1988

Above and Below-Average Vegetative Conditions

July, 1988 Compared to 1982-87

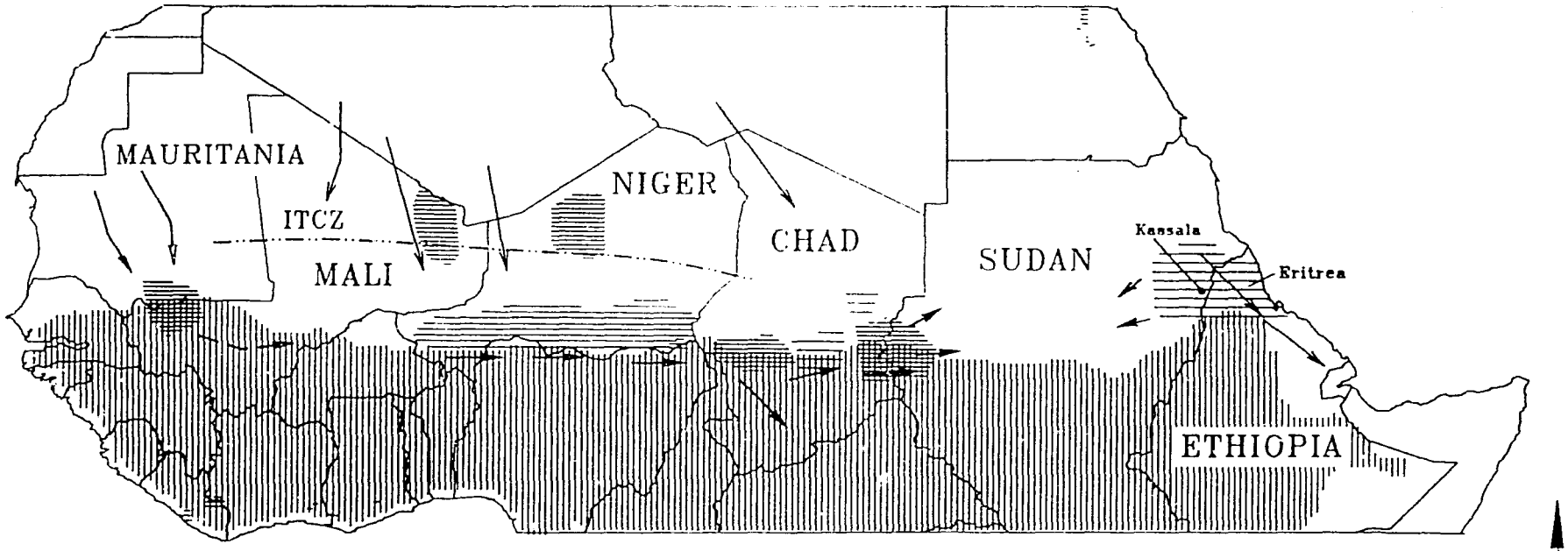


Data were statistically generalized for presentation purposes

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

Desert Locust Swarms

To August 10



Vegetation index of 0.1 or above, July 1–31

Major Desert Locust sightings

Scattered and broken Desert Locust Swarms

Recent movement of swarms and hopper bands

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

Less serious, but still important, outbreak areas include:

- west-central Chad,

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; these latter areas might become very important later in the season.

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 were broken and scattered and had been in dry areas with no vegetation, they were thought to be of little threat. Recent rainfall, particularly in the summer breeding areas on the Red Sea Coast, could significantly improve locust feeding and breeding conditions in Eritrea and lead to a significant threat to both Sudanese and Ethiopian agriculture.

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. Rainfall generally occurs 100 to 300 kilometers south of the ITCZ.

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.