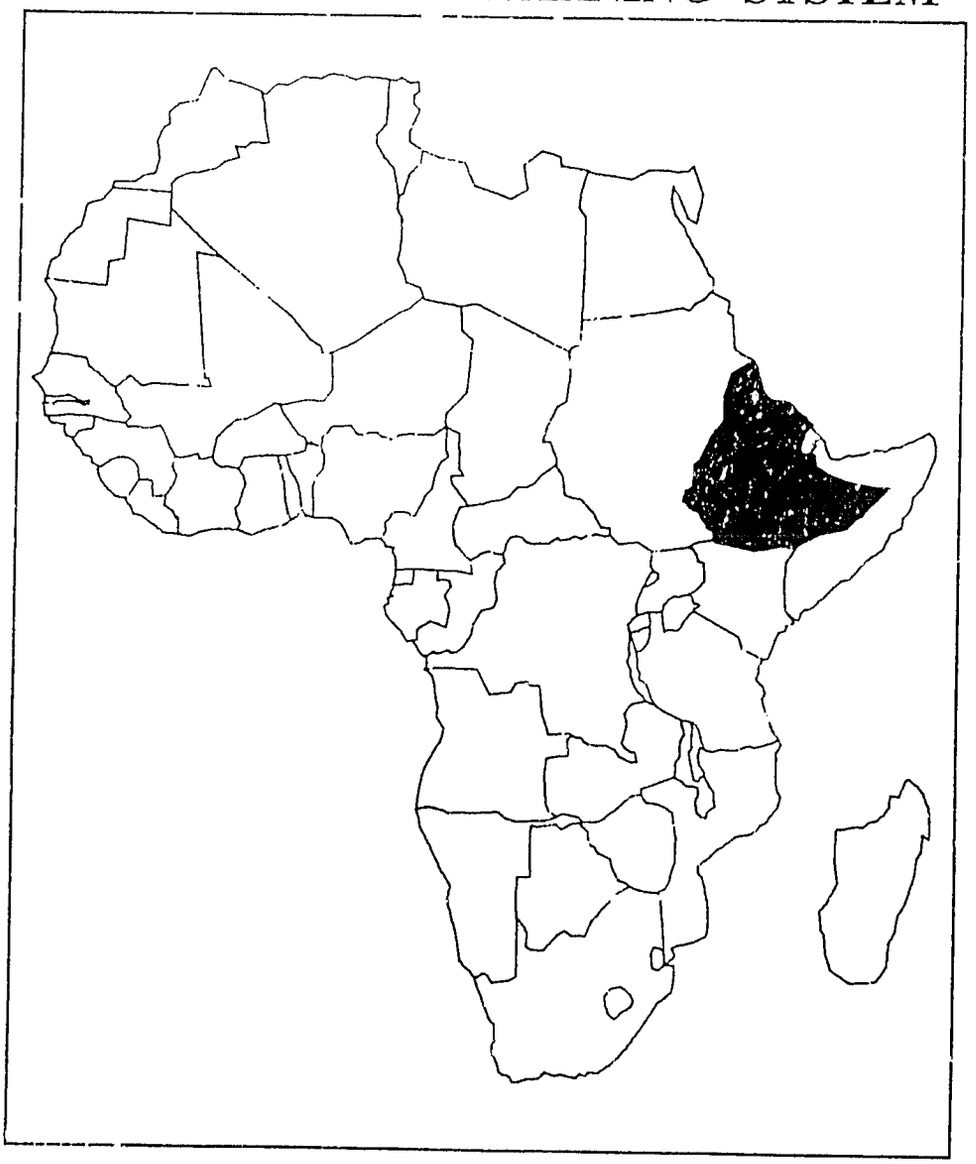
ETHIOPIA

Excellent Harvest Tempers Regional Vulnerabilities

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 (AID). 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**
- **Niger**
- **Sudan**

FEWS reflects the Africa Bureau's commitment to providing reliable and timely information to decision-makers within the Agency, within the seven 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 several types of publications. In addition, FEWS serves the AID staff by:

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

Please note that this is the last monthly Country Report that will be published in this format. A new reporting schedule and format are being prepared.

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December 1988

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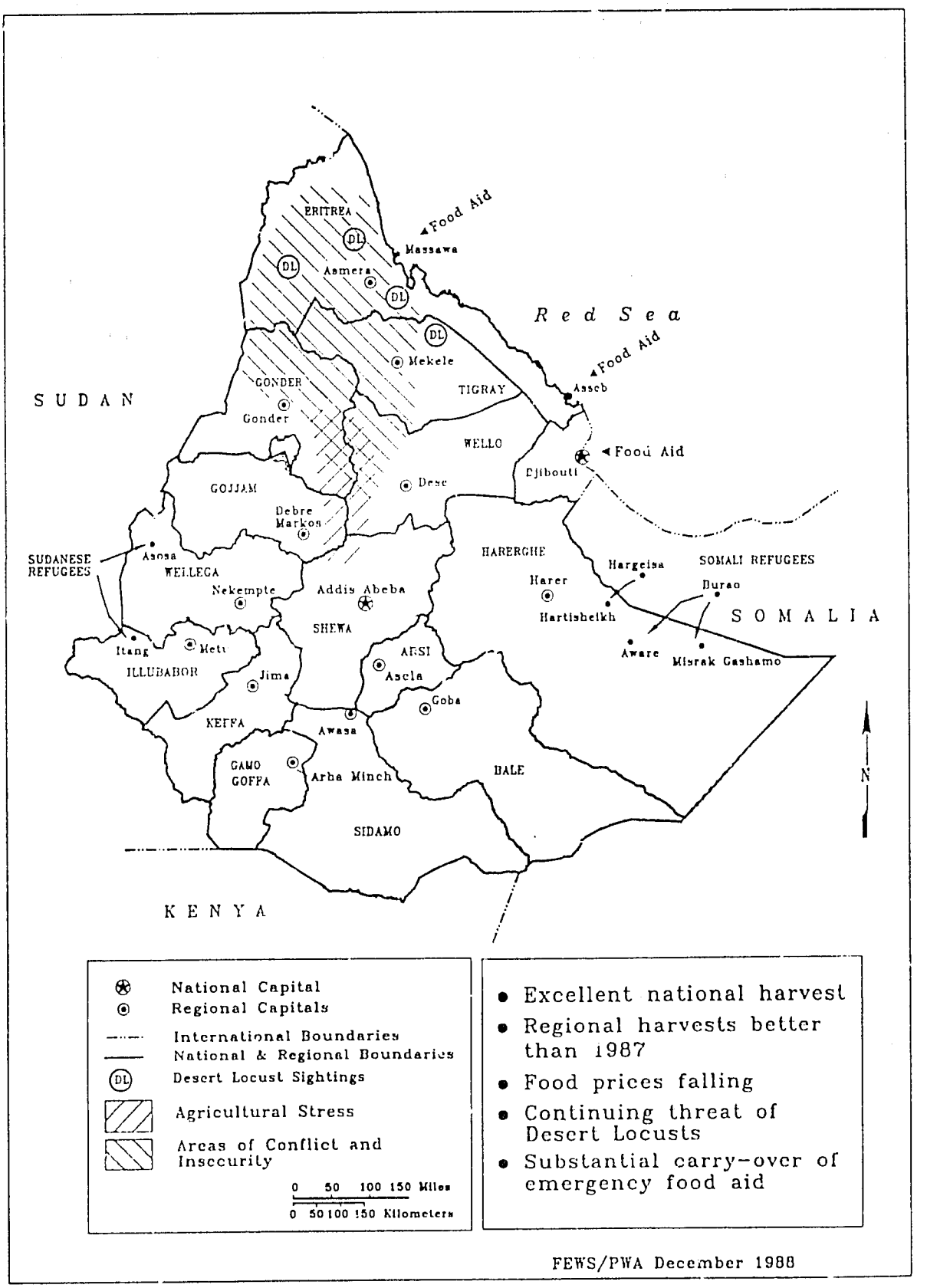
Map 1


ERITREA
Food Aid
Massawa
Asmera
DL
Red Sea
Food Aid
Mekele
GONDER
TIGRAY
Assab
SUDAN
Gonder
WELLO
Food Aid
Djibouti
GOJJAM
Desse
Debre Markos
SUDANESE REFUGEES
Asosa
WELLEGA
Nekempte
Addis Abeba
HARERGHE
Hargeisa
SOMALI REFUGEES
Harer
Burao
Hartisheikh
SOMALIA
SHEWA
Itang
Metu
ILLUBABOR
Jima
ARSI
Asela
Aware
Misrak Gashamo
Goba
KEFFA
Awasa
GAMO GOFFA
Arba Minch
BALE
N
SIDAMO
KENYA
National Capital
Regional Capitals
International Boundaries
National & Regional Boundaries
Desert Locust Sightings
Agricultural Stress
Areas of Conflict and Insecurity
0 50 100 150 Miles
0 50 100 150 Kilometers
• Excellent national harvest
• Regional harvests better than 1987
• Food prices falling
• Continuing threat of Desert Locusts
• Substantial carry-over of emergency food aid
FEWS/PWA December 1988

ETHIOPIA

Excellent Harvest Tempers Regional Vulnerabilities

Summary

At the same time that excellent rains were helping to reduce national vulnerabilities to famine due to the impact of drought, the increasing spread and intensity of warfare within Ethiopia was having the opposite effect on the regional level, particularly in the North. The better than average rainfall during the main *meher* agricultural season will insure one of the best national cereal and pulse harvests in recent history. Most regions will match or surpass their recent levels of food production. Rapidly falling food prices appear to confirm the estimates of an abundant harvest. Despite an inability to distribute all of the emergency food aid delivered to Ethiopia, no massive displacements of population occured during 1988. The irony of Ethiopia sheltering close to 750,000 refugees from Somalia and Sudan, most of whom arrived during 1988, reflects the quickness with which fortunes change in the fragile physical and social environments of the Horn of Africa. The proximity of warfare is replacing the cumulative impact of successive droughts as the primary feature of vulnerability to famine in northern Ethiopia.

Main Agricultural Season Events

Rains - After a slow start, Ethiopia's main rainy season proved to be a very good one, and thus similar to that of most other Sahelian countries in 1988. The generally good to excellent cumulative rainfall was well distributed over most of the country and provided sufficient moisture to meet most crop needs. Only in some parts of the West (see Maps 2 and 3) were rains below average. The late onset of rains in May and June in these and other areas adversely affected long-cycle (sorghum, maize) crop prospects. The exceptional rains of July and August, generated by the same systems that caused flooding in eastern Sudan and in Khartoum, waterlogged soils in northern and western Ethiopia. These rains led to local crop losses in Gonder, Tigray, and other scattered areas, and cut off access to refugee camps in the extreme western part of the country. Nevertheless, the losses in some areas due to waterlogging and lodging of crops were far off-set by increases in yields in neighboring areas due to the above-average rainfall. The war-torn areas of southern Eritrea and Tigray, as well as central and eastern Wello and northeastern Shewa especially benefited from better than average rains.

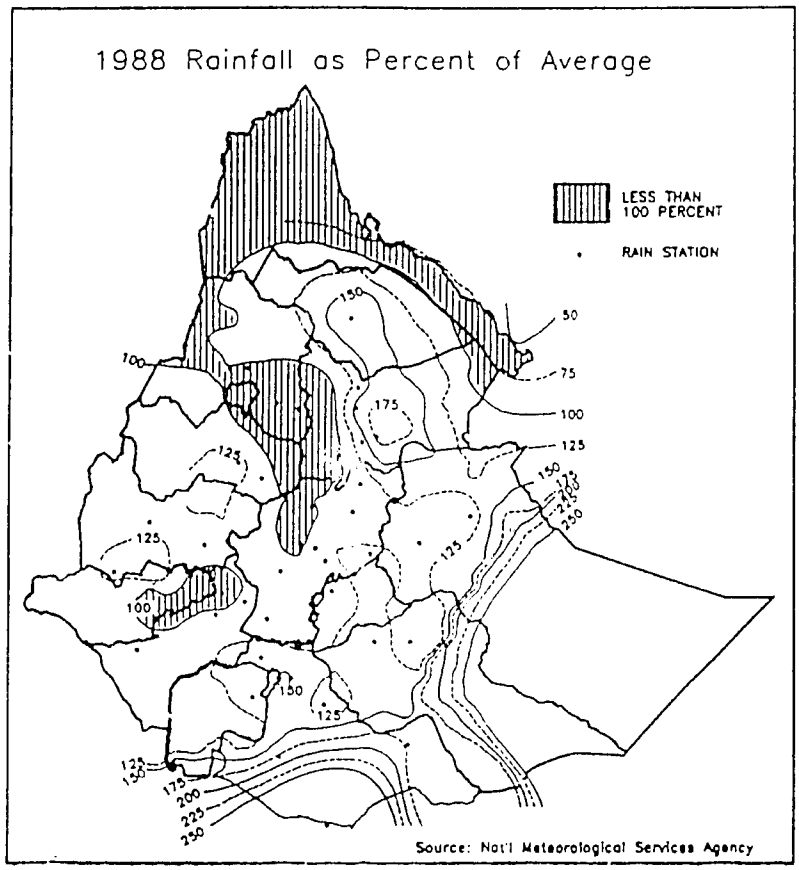
Warfare - The level of conflict between government and rebel forces rose in previously contested zones, and spread into new areas during the summer (see Map 1). Control over much of central and south-central Eritrea and north-central Tigray was contested, and major population centers changed hands several times. These areas suffered greatly both from the effects of the fighting and from their inaccessibility to the humanitarian assistance made available in areas clearly controlled by either the government or rebels. Conflict and general insecurity increased in both northern and eastern Gonder

and northern and western Wello. Large parts of each regions were inaccessible to relief operations throughout much of the year.

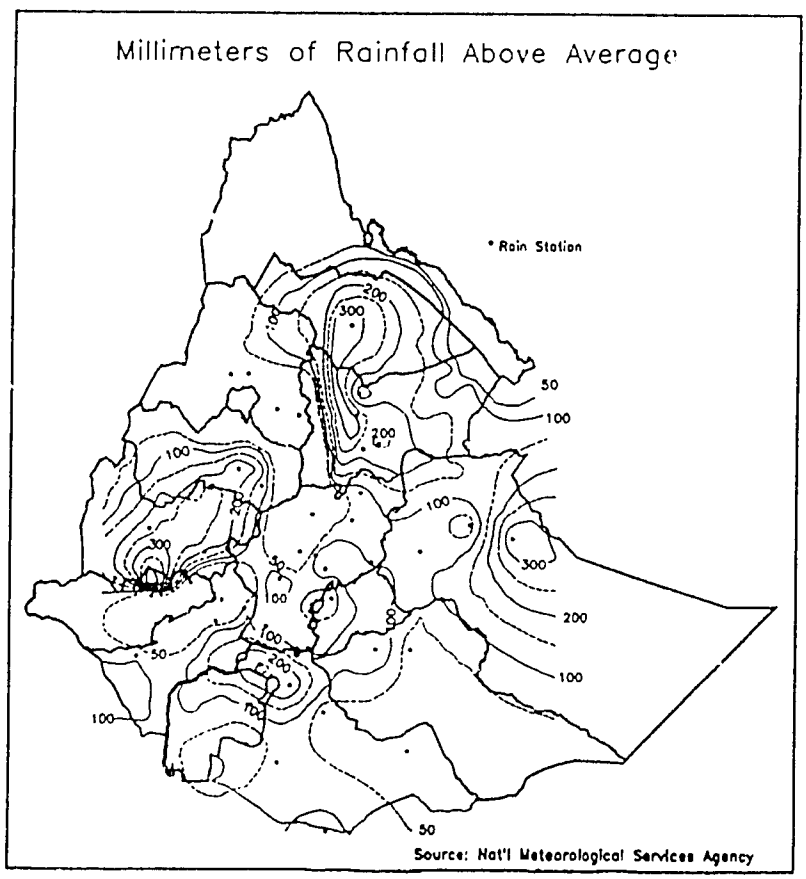
Emergency food distributions - The Government-ordered pull-out of the International Committee of the Red Cross (ICRC) and other Western NGOs and PVOs from northern Ethiopia in April put a severe strain on the organizational and logistic capabilities of the designated replacements, the RRC and other indigenous (largely religious) relief organizations. Nevertheless, through October, when free food distributions were to be cut back in response to the forthcoming harvest, more than 2,400,000 people per month in Eritrea, Tigray, Wello, and Gonder received food aid from these groups. On the rebel side as well, large numbers of people received substantial assistance throughout the year. It is likely that most of Tigray, northeastern Gonder, and northwestern Wello were worst served by the distributions, largely beacause of inaccessibility due to on-going conflict, rather than lack of food aid in-country. Distributions by both sides in Eritrea reached large numbers of people over much of the year.

While it is difficult to judge how well needs were met, it is apparent that the worst-case scenarios envisioned in November 1987, forecasting massive displacement of people due to insufficient food alone, did not occur. The likely cause of the mis-estimation of the deficit is our collective inability

Map 2



Map 3



to correctly gauge the amount of on-farm stocks and agricultural production in the war-torn areas. It is likely, however, that the health and productive resources of hundreds of thousands of people in the North have been significantly diminished by last year's limited food supply. The continuing warfare in these areas exacerbates the food supply problem, and is itself the primary cause of famine.

Emergency food stocks - There will be a large carry-over of approximately 400,000 to 500,000 MT of emergency food aid stocks from 1988 into 1989. As of December 22 1988, over 1,002,000 MT of emergency food aid had arrived in country during 1988. Still afloat were 25,000 MT, and 61,000 MT are scheduled to arrive in 1989. The port situations at Asseb and Djibouti are worrisome, due to an inability to move food fast enough from the ports to inland distribution points. As of late December, Asseb had 184,000 MT in port facilities and another 25,000 at anchor. The average waiting time for ships at anchor in Asseb was 3 to 5 weeks. The off-take at Djibouti has been slow for months, and has left 18,000 MT of food aid in port. The risk of loss due to spoilage at both ports is significant and increasing with time.

Locusts - As in most other parts of Africa, there was no significant damage to food crops from locusts on the national scale. With most harvests underway, if not already completed, the likelihood of significant damage still to occur is almost nil. Limited local damage has occured in small areas of Eritrea and Tigray. In both of these regions, the worst infested areas were generally under control of rebel groups, a factor complicating locust control operations by the Desert Locust Control Organization. The Relief Society for Tigray (REST) reported infestations and damage to 2,500 to 3,000 hectares (ha) as of the beginning of November. The Eritrean Relief Association (ERA) reported 500,000 ha infested with locusts and armyworms on November 7. As is usual for December, most of the Desert Locust breeding activity is occuring farther north along the Red Sea coast of Sudan, and could move south in coming months. Invasions could also come from across the Red Sea. There is no significant or abnormal Desert Locust activity in Somalia or Kenya.

Refugee influxes - Large numbers of refugees continued to enter Ethiopia throughout the latter half of the year from both southern Sudan and northern Somalia (see Map 1). In the East, there were approximately 400,000 refugees from Somalia registered at camps in Hartisheikh (295,000) and in and around Aware (105,000) as of November 28, 1988. With the stabilization of the situation in northern Somalia, no further significant flows are expected. Although both lack of water and low food stocks have been problems throughout the year, they have been exacerbated rather than resolved by fundamental logistic and management problems in the administration of the relief effort. Recent malnutrition surveys have indicated a deterioration in child health in the camps. Until changes occur in the way relief assistance is administered to the camps, the situation there will remain volatile and unhealthy.

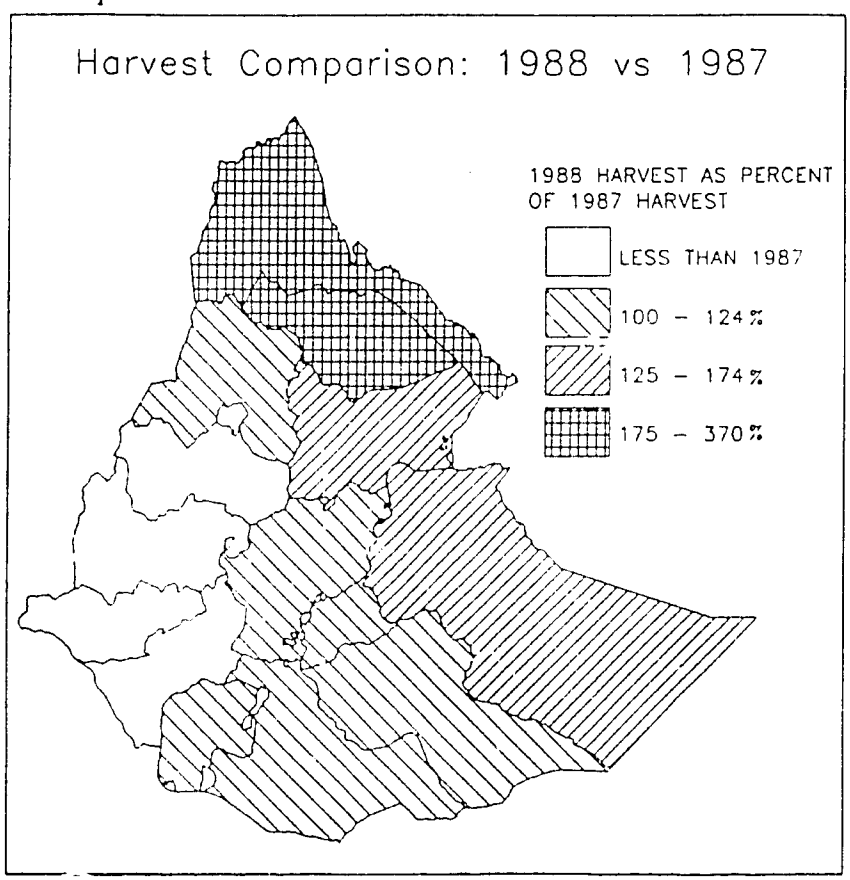
In the West, flows of southern Sudanese refugees have recommenced with the cessation of rains in Sudan. As of early December, new arrivals at refugee camps numbered 85 a day, slightly below earlier projections. There are indications that this may reflect massive loss of life en route to Ethiopia. The condition of new arrivals is much better than that of those arriving earlier in the year. Approximately 323,000 refugees are now registered in the camps at Itang, Fugnido, Dimma, and Asosa. Authorities are planning to provide supplies for approximately 420,000 during 1989. The problems of access to the camps due to heavy rains are now being resolved and food supplies have been adequate recently.

Food prices - Prices were high after the mediocre belg harvests, and remained high until the rains of July and August made a good harvest apparent. High prices may have contributed substantially to the forecast excellent harvest by spurring planting. The RRC reports that prices are falling everywhere, and particularly steeply in Eritrea, Tigray, Wello, and Northern Shewa. This would lend support to estimates of excellent harvests in these areas. Nevertheless, given the known food supply problems in some of these areas, there is obviously cause for caution in interpreting the significance of these figures.

Harvest Estimates

National harvest - An FAO Crop Assessment Mission is forecasting a grain and pulse harvest of 7,450,000 MT, composed of 7,050,000 from the main "meher" season, and 400,000 MT from the 1989 "belg" harvest. This would be 14% higher than last year's mediocre harvest, and 11% higher than the 4-year base period (1980/81-1983/84) used by FAO for comparison. The estimated peasant sector production of 6,340,000 MT (90% of the total production) will be third largest in recent history. Only 1979/80 and 1982/83 saw better harvests. The FAO Crop Assessment Mission estimates that the area planted to "meher" crops was 5% greater than in 1987 and 9% higher in yields. When the maize and sorghum crops were significantly affected by adverse weather conditions in some areas, farmers reacted by replanting with short-cycle crops (teff, pulses) which did extremely well in most areas.

Map 4



Regional harvests - Contrary to last year's harvest which was good in some regions and bad in others, the main 1988 agricultural season was generally excellent in most areas. The FAO Mission found no region in which the expected harvest could be categorized as bad. Indeed, in relative terms, the regions with the most fragile agricultural production conditions (Eritrea, Tigray, Wello, and Hararghe) showed substantial increases over 1987 production. They approached the production levels attained in the best years of the eighties (see Map 4 and Appendix 1). Delayed rains and sub-normal rainfall affected the normally well-watered regions of the West (Gojjam, Wellega, Ilubabor, Kefa), and production figures showed drops of up to 5% in their production compared to 1987. Sorghum and maize crops in Gonder and Gojjam were first hurt by delayed rains and late planting, and then later in the season by waterlogging. Maize and sorghum prospects in Shewa, Wello, Sidamo, and Arsi are, on the other hand, quite good. Wheat and barley production will be good in Wello, Hararghe, and Arsi. Teff and pulse production will be better than 1987 almost everywhere. Production increases over 1987 are most pronounced in Eritrea, Tigray, Wello, and northern Shewa, partially due to the extremely poor harvest in 1987 in these areas. Maize production in the west will be particularly decreased from 1987.

Food Balances and Relative Vulnerability

National food balance - Apparent ("status quo") per capita consumption of cereals and pulses during the FAO base period (1980/81-1983/84) is estimated at 143 kilograms (kg) per person. On a national level, the estimated net 1988/89 harvest of cereals and pulses will provide 130 kg per capita. The

1987/88 harvest yielded 117 kg per capita. The 1988/89 harvest will thus make a higher contribution to the diet than any harvest of the past five years, but still one that is lower than the four-year base period of 1980/81 to 1983/84.

Table 1

Ethiopia: 1989 Food Balance
('000 MT)

Food Sources and Needs				Food Balance
1989 Net Food Production		7200		
Drawdown of Food Aid Stocks		300		
		7500	7500	Available for Consumption in 1989
Cereals (130 KG/CAP)	6330			
Pulses (13 KG/CAP)	630			
Other Food in Cereal Equivalent	940			
1989 Consumption Requirement	7900		7900	1989 Consumption Requirement
(Population: 48,700,000)			400	Shortfall
		50	50	Anticipated Comm'l Imports
			350	Food Deficit in Cereal Equivalents

Source: FAO/GIEWS

The FAO food balance sheet shown here forecasts an import requirement of 400,000 MT for 1989, even after a drawdown of emergency food aid stocks (see Table 1). Much of this requirement derives from the substantial unmet food needs of Eritrea and Tigray. After commercial imports of approximately 50,000 MT of cereal equivalent are received during the year, there will still remain an unmet need for 350,000 MT.

Regional food balances - Based solely on what cereals and pulses have been made available by the 1988 meher season harvest, and including a projection of 400,000 MT of 1989 belg season production, current regional food balances are much improved over last years' (see Table 2). Only in Gonder, Gojjam, Ilubabor, Keffa, and Wellega did per capita production drop between 1987/88 and 1988/89. Substantial increases are found in the regions that require them the most (Eritrea, Tigray) and other regions (those not shaded on Table 2). Nevertheless, a darker side of the current picture is found in Table 3. When current net per capita production from this year's excellent harvest is compared with base period per capita production, it is clear that the trend over time has declined. Between increases in population, social and economic disruption due to warfare, drought, and many other factors, food production is not keeping up (see Maps 5 and 6). Only in Arsi, Bale, Harerghe, Keffa, and Sidamo is current per capita production above that of the base period. In many regions, which include some of the most vulnerable areas of Ethiopia, per capita production between the base period and 1988/89 has substantially declined. Gonder decreased from 172 kg of cereal and pulse production per capita during the base period to 98 in 1988/89. The same is true of Gojjam (209 to 184), Wello (177 to 91), and Shewa (180 to 151). Such trends are disturbing in their implications for the future, and appear to be confirmed by recent studies of food production in Ethiopia.

Table 2

CAUSE FOR OPTIMISM ?

Increase in Net Per Capita Cereal and Pulse Production between 1987/88 and 1988/89

Region	1988/89	1987/88
ARSI	283	262
BALE	66	62
ERITREA	51	14
GAMO GOFA	47	45
GOJJAM	184	191
GONDER	98	100
HARERGHE	80	60
ILUBABOR	122	132
KEFA	126	132
SHEWA	151	138
SIDAMO	72	61
TIGRAY	79	41
WELLEGA	113	119
WELLO	91	59

Notes: Population estimates derived from May 1984 Census. Production figures for both years from FAO/GIEWS.

Issues affecting food balances and vulnerability - The substantial carry-over of relief stocks (400,000 to 500,000 MT) already in, or soon to be delivered to, the country can either be stored or consumed. Beyond the logistic difficulties involved in each of these courses of action, some basic policy-level choices will have to be made by the GOE and donors. What is an appropriate level of stocks that will allow feeding programs to continue with some security? What level of free distributions is needed from these stocks to meet continuing needs? Many non-governmental organizations involved in the relief effort would like to see a level of at least 100,000 MT left for free distribution. On the other hand, the stocks were given in the expectation that they would be consumed during 1988, and donors may not wish to support another on-going source of food aid outside of existing programs. In the same vein, the eventual stock level of the Agricultural Marketing Corporation (AMC) will be an important feature of the national and regional food pictures. The AMC retained approximately 450,000 MT in its stocks last year, but is reportedly drawing down stocks now to leave only 300,000 MT this year, thus adding 150,000 MT to grain available for consumption. Finally and perhaps most significantly, the 1989 food balance exercise will not be able to take into account the amount of existing on-farm stocks either nationally or regionally. As we have seen during 1988, this is a significant feature of food needs analyses, and one which may render any conclusions built without it inaccurate.

Table 3

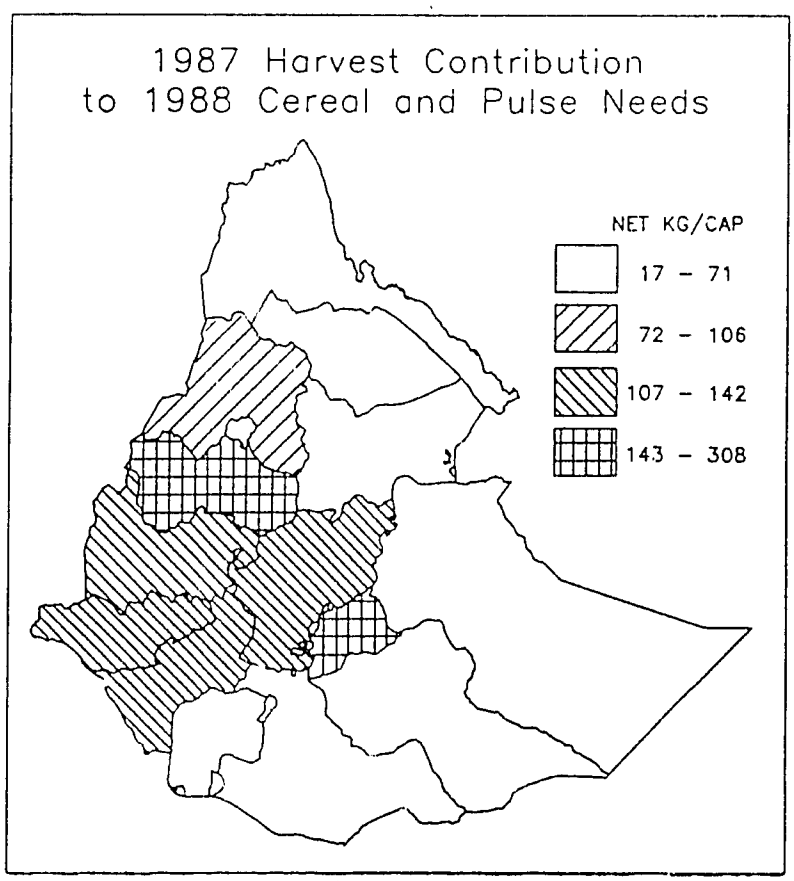
CAUSE FOR PESSIMISM ?

Declining Per Capita Cereal and Pulse Production

Region	1988/89	1980/81-1883/84
ARSI	283	247
BALE	66	60
ERITREA	51	64
GAMO GOFA	47	68
GOJJAM	184	209
GONDER	98	172
HARERGHE	80	79
ILUBABOR	122	158
KEFA	126	108
SHEWA	151	180
SIDAMO	72	34
TIGRAY	79	85
WELLEGA	113	149
WELLO	91	177

Notes: Population estimates derived from May 1984 Census. Production figures for both periods from FAO/GIEWS. Base period is 1980/81-1983/84.

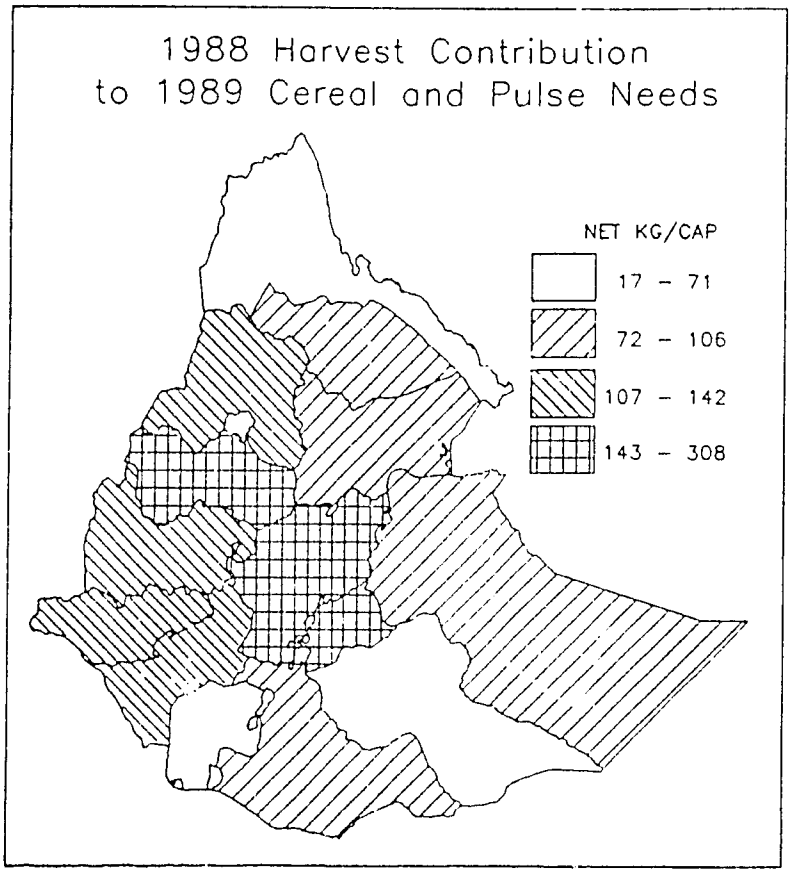
Map 5



Changing Regional Vulnerability - The Ethiopia Vulnerability Report published by FEWS in June 1988 noted several highly vulnerable areas: Eritrea, Tigray, eastern Gonder, eastern Gojjam, western Wello, northwestern Shewa, the lowlands and slopes of northeastern Shewa and central Wello, the agricultural highlands of Harerghe and Bale, and pastoral areas of Bale and Sidamo. In most of the agricultural zones of these highly vulnerable areas, there is now less vulnerability, if judged solely by the availability of food stocks, because of the relatively good

harvests of 1988. Possible exceptions to the lowered vulnerability may include the rain-shadow area that lies generally astride the eastern Gonder and western Wello border, as well as the lowlands of eastern Gojjam and northwestern Shewa. These are the same areas that received less rain than average during 1989 (see Map 3), and some also suffered from torrential rains, waterlogging and flooding. Unfortunately, the Gonder and Wello areas are also on the edge of the spreading conflict, and so are highly vulnerable to food shortages, if only due to social and economic disruption. The same overriding vulnerability due to warfare applies to almost all of Eritrea and Tigray regions, despite some of the best harvests in recent years. The lowlands and slopes of northeastern Shewa and central Wello received very good rains that profited crops and pastures in those areas. They will be less vulnerable in 1989 than during 1988. As can be seen on the rainfall maps (Maps 2 and 3), the agricultural and pastoral areas of Harerghe, Bale and Sidamo benefited from good rainfall, and probably go into the Fall and Winter with less vulnerability due to relatively better cereal availability, and good grass cover and water availability.

Map 6

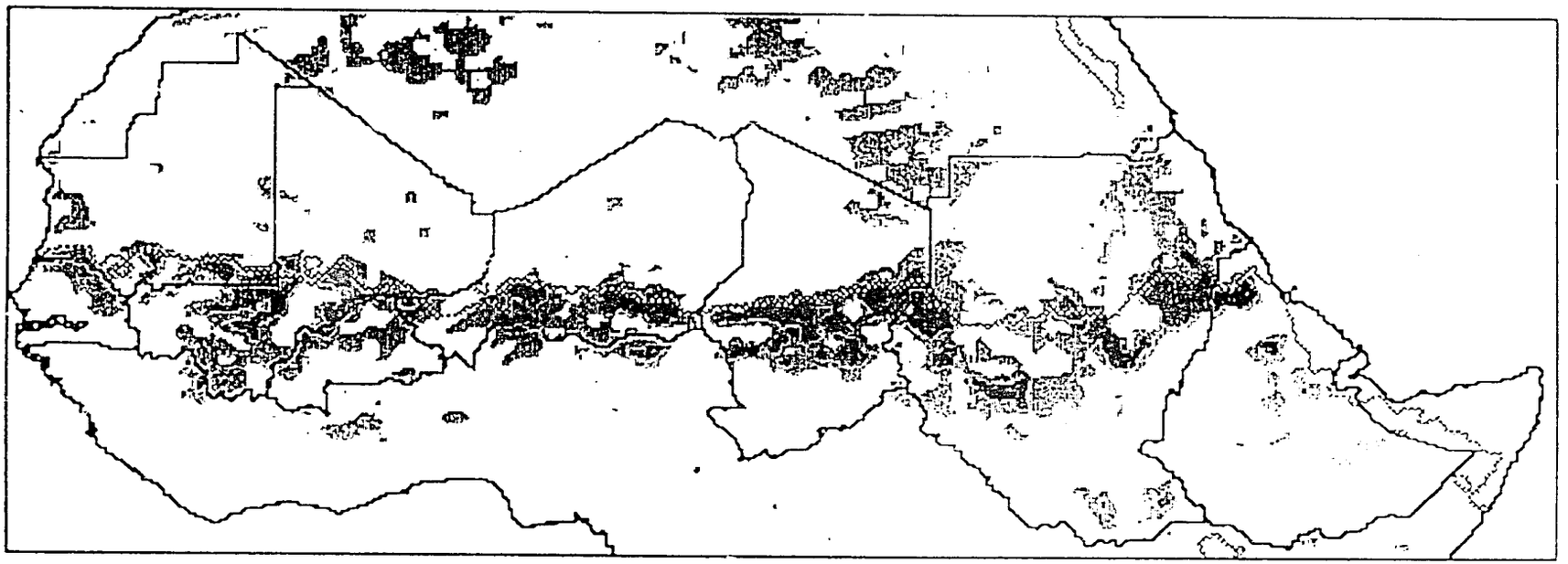


Regional Summary

From Mauritania east to Ethiopia, the FEWS-monitored countries report excellent rainfall (in terms of recent history) during the 1988 growing season. Satellite imagery showed vegetative potential to be very good, and in some areas better than the historical (1982-1987) maximum (see Map 7). While estimates vary, record production can be expected in Sudan, Chad, Niger, and Mali. Production is expected to be good or better in Ethiopia and Burkina. The only exception to this good agricultural year may be Mauritania, which is the only country where predictions of significant (at a national level) locust damage might be borne out. Mauritania, however, is a grain-importing nation even in the best of years.

The areas of greatest vulnerability currently lie where war and civil strife limit access to food. There is a famine among displaced people in and around the Southern Region of Sudan. In Ethiopia, civil war in Eritrea and Tigray continues to make populations there extremely vulnerable to famine. Elsewhere, vulnerable populations are more localized.

Regional NDVI Greater than Historical Maximum



Areas where 1988 NDVI reached levels significantly higher than the 1982-87 record

····· Historic northing of the 0.2 NDVI contour (which corresponds very closely with the 1988 contour)

Appendix 1: Cereal and Pulse Production Trends

REGION	1988-89	1987-88	FAO Base Period	
ARSI	1921000	1865777	1593275	Population
	640	576	463	Gross Cereals & Pulses ('000 MT)
	283	262	247	Net Kg Per Person
BALE	1163000	1129739	964737	Population
	90	83	68	Gross Cereals & Pulses ('000 MT,
	66	62	60	Net Kg Per Person
ERITREA	3022000	2934876	2506228	Population
	180	49	190	Gross Cereals & Pulses ('000 MT)
	51	14	64	Net Kg Per Person
GAMO GOFA	1443000	1400859	1196259	Population
	80	74	95	Gross Cereals & Pulses ('000 MT)
	47	45	68	Net Kg Per Person
GOJJAM	3751000	3642225	3110267	Population
	810	819	766	Gross Cereals & Pulses ('000 MT)
	184	191	209	Net Kg Per Person
GONDER	3377000	3278826	2799943	Population
	390	386	566	Gross Cereals & Pulses ('000 MT)
	98	100	172	Net Kg Per Person
HARERGHE	4810000	4670713	3988540	Population
	450	332	370	Gross Cereals & Pulses ('000 MT)
	80	60	79	Net Kg Per Person
ILUBABOR	1114000	1081993	923965	Population
	160	168	172	Gross Cereals & Pulses ('000 MT)
	122	132	158	Net Kg Per Person
KEFA	2832000	2750422	2348715	Population
	420	428	299	Gross Cereals & Pulses ('000 MT)
	126	132	108	Net Kg Per Person
SHEWA	9352000	9081273	7754925	Population
	1660	1473	1642	Gross Cereals & Pulses ('000 MT)
	151	138	180	Net Kg Per Person
SIDAMO	4382000	4254743	3633324	Population
	370	305	145	Gross Cereals & Pulses ('000 MT)
	72	61	34	Net Kg Per Person
TIGRAY	2785000	2704773	2309733	Population
	260	132	230	Gross Cereals & Pulses ('000 MT)
	79	41	85	Net Kg Per Person
WELLEGA	2863000	2780625	2374506	Population
	380	390	417	Gross Cereals & Pulses ('000 MT)
	113	119	143	Net Kg Per Person
WELLO	4210000	4088099	3491020	Population
	450	286	725	Gross Cereals & Pulses ('000 MT)
	91	59	177	Net Kg Per Person

Notes: Population estimates derived from May, 1984 Census
All production figures from FAO/GIEWS. Base Period = 1980/81-1983/84.

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 Intertropical Convergence Zone (ITCZ) is where the high pressure system originating in equatorial regions of the Atlantic (the St. Helena's High) collides with the Azores High descending from the north. The ITCZ tends to move northward during the spring and summer in response to normal global weather patterns. The position of 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). These images are derived from Global Area Coverage (GAC) imagery (of approximately 4 km resolution) 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.