



# Famine Early Warning System Network (FEWS NET)



## Linking Climate Change to Early Warning and Food Security

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FEWS NET & USGS FEWS NET

# Outline

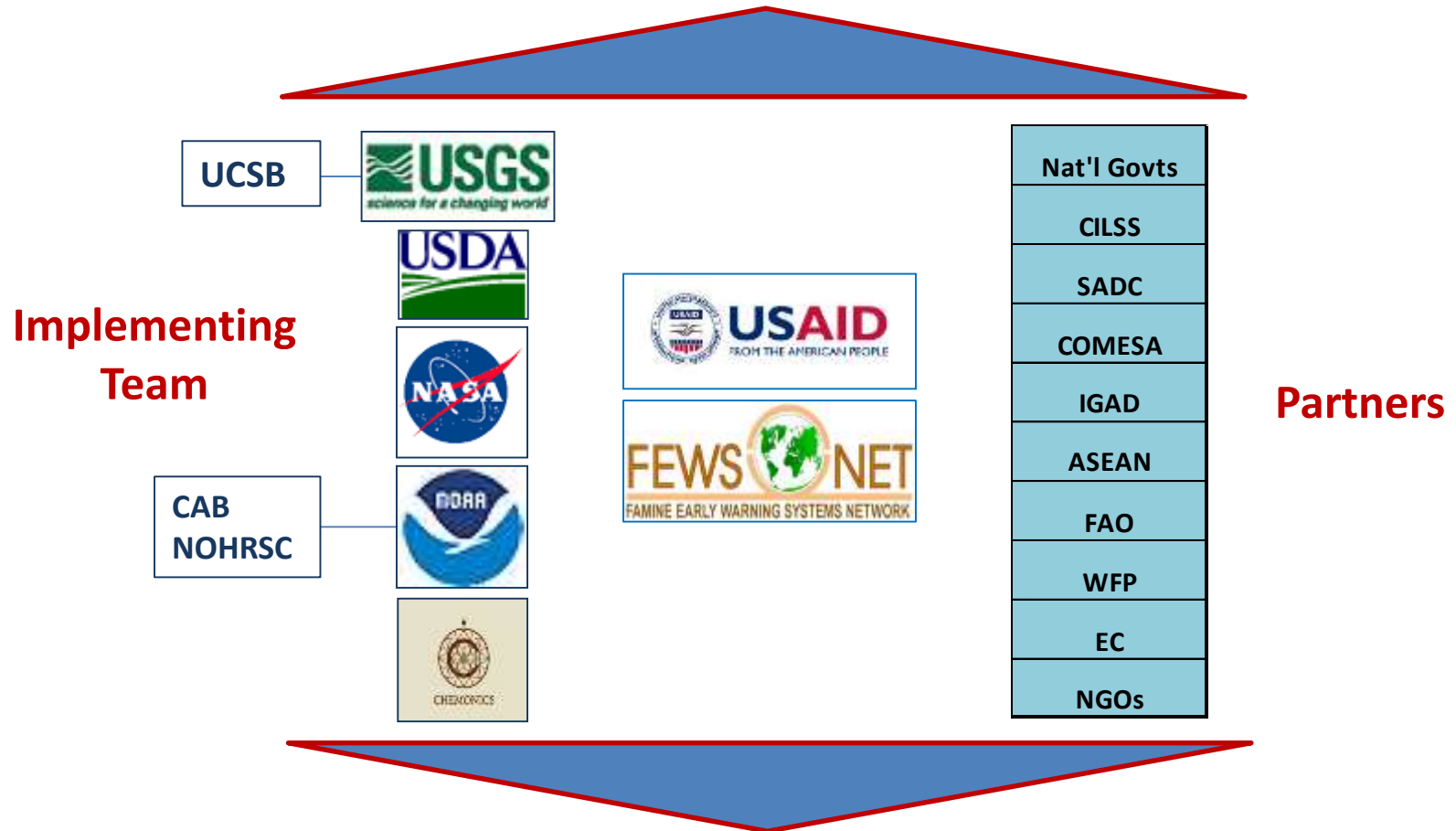
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**Why FEWS NET and climate?**

**FEWS NET climate research?**

**Addressing food security with climate  
information?**

# FEWS NET is a multi-agency food security monitoring and assessment effort



# What FEWS NET does

**Monitors 30+ countries**

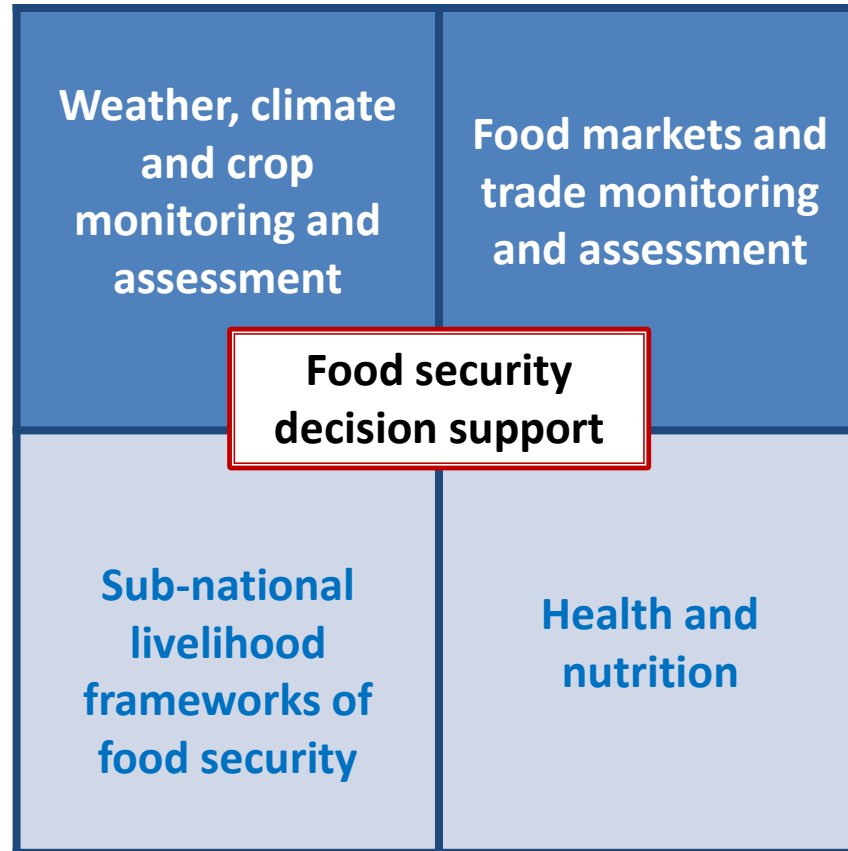
**Objectives:**

- Inform decision makers with **accurate, credible, timely, and actionable** food security information to prevent famine and mitigate food insecurity
- Strengthen the ability of **FEWS NET countries and regional organizations** to provide timely early warning and vulnerability analysis.

# Many factors are monitored, among which, weather and climate

- Real-time weather monitoring & early warning
- Crop assessments
- Livelihood adjustments & adaptations to climate trends

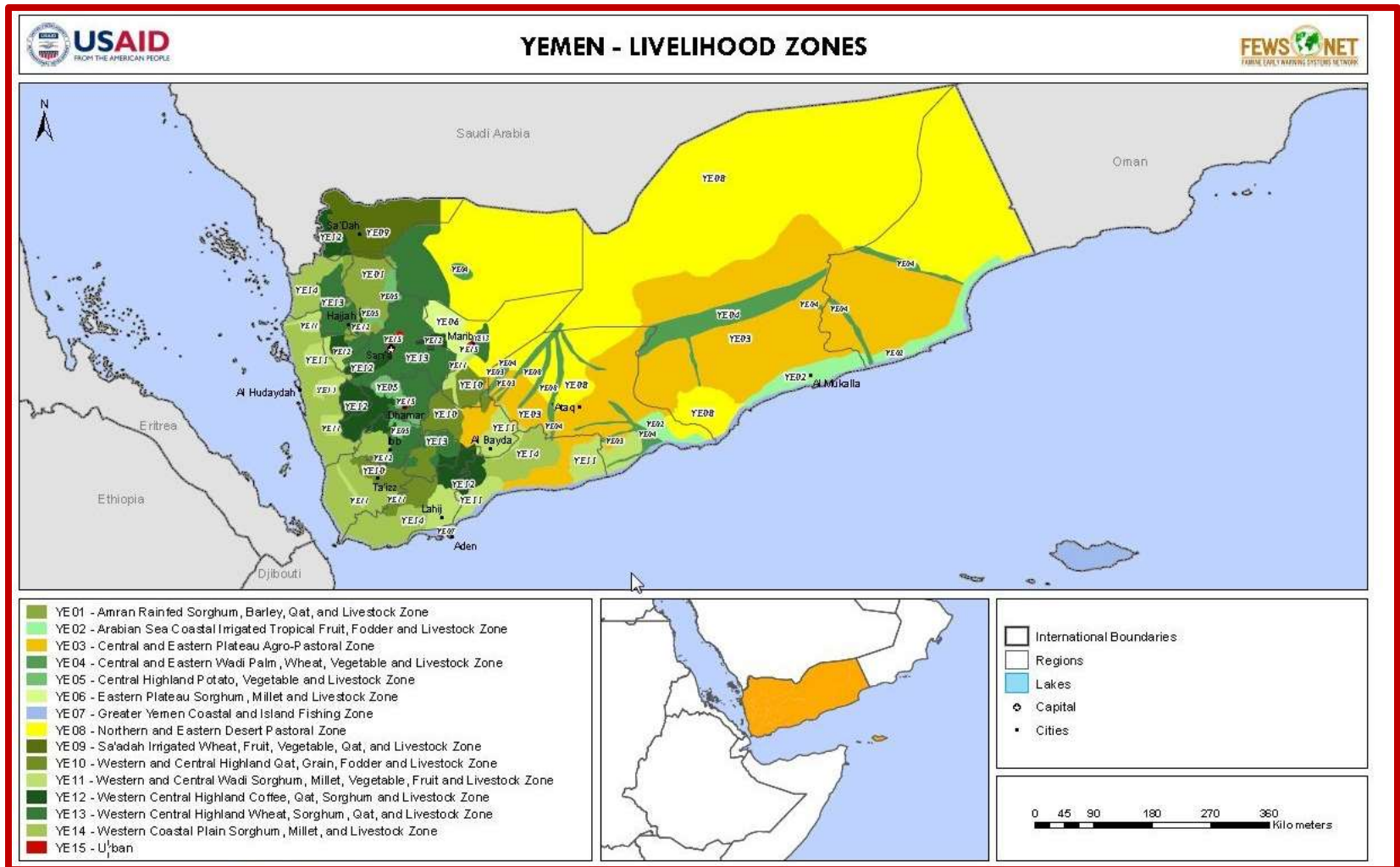
- How households produce income & food
- How households consume food & income
- Coping strategies



- Market pricing
- Analyses of market structure, value-chains, commodity trade
- Cross-border trade

- Water & sanitation conditions
- Health care
- Morbidity

# FEWS NET Food Security Monitoring Underlies the Livelihood Framework of Understanding



# Produce Comparable Assessments of Current Food Insecurity

**Assess:**

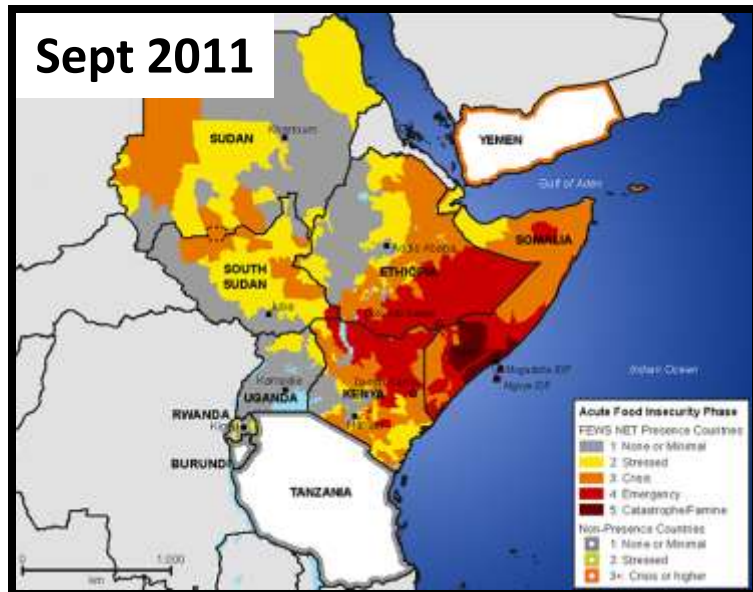
**Weather**

**Agriculture**

**Livelihood conditions**

**Food markets & trade**

**Health & nutrition**



**IPC Acute Food Insecurity Reference Table for Household Groups**

	Phase 1: No Acute Food Insecurity	Phase 2: Stressed	Phase 3: Crisis	Phase 4: Emergency	Phase 5: Catastrophe
<b>Summary Description</b>	Household groups do not experience short term instability; <b>-OR-</b> Household groups experience short term instability but are able to meet basic food needs without atypical coping strategies	Household group experiences short term instability; <b>-AND-</b> Household group food consumption is reduced but minimally adequate without having to engage in irreversible coping strategies	Household group experiences short term instability; <b>-AND-</b> Household group has significant food consumption gaps with high or above usual acute malnutrition; <b>-OR-</b> Household group is marginally able to meet minimum food needs only with irreversible coping strategies such as liquidating livelihood assets or diverting expenses from essential nonfood items	Household group experiences short term instability; <b>-AND-</b> Household group has extreme food consumption gaps resulting in very high acute malnutrition or excess mortality; <b>-OR-</b> Household group has extreme loss of livelihood assets that will likely lead to food consumption gaps	Household group experiences short term instability; <b>-AND-</b> Household group has near complete lack of food and/or other basic needs where starvation, death, and destitution are evident

# Linking Climate to Food Security

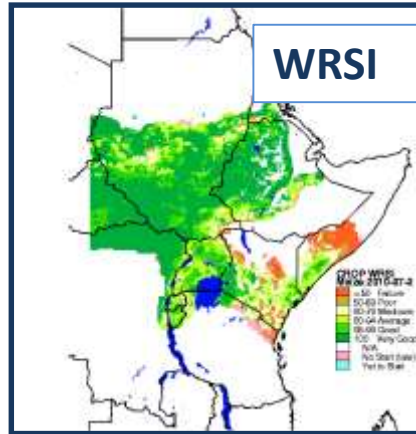
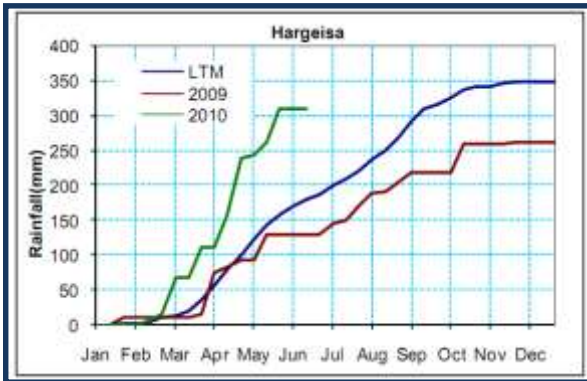
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1. Past climate patterns serve as a “norm”; in early warning, we assume **people can cope with “normal” weather**.
2. Recent patterns of climate explain much of a population’s **underlying vulnerabilities** to food insecurity.
3. Weather **anomalies** (in relation to recent climate patterns), may signal significant changes in food security.
4. **Droughts** are a key food security crisis; knowing if they are becoming more frequent, is important.

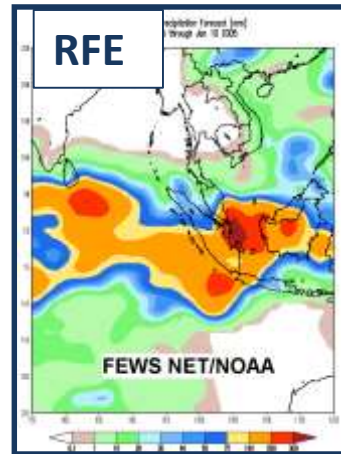
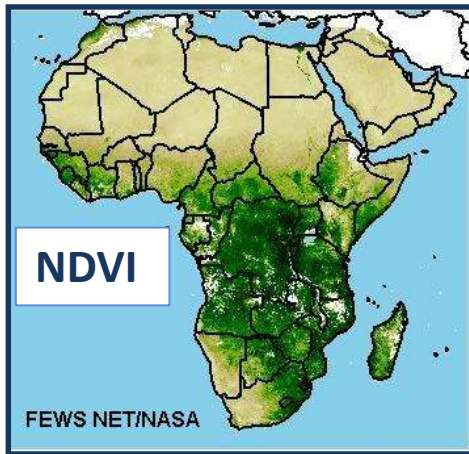
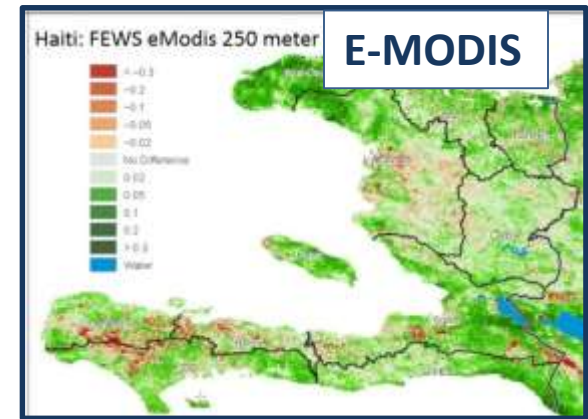


# Progression of products used to assess weather and climate impacts...

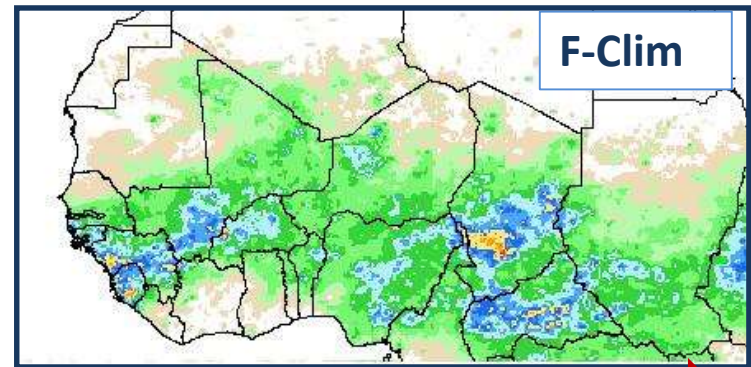
## Station data



**Extremely high resolution, almost real-time crop monitoring**



**Multiple-source rainfall estimation**



1980s

1990s

2000s

present

# Progression in Weather and Climate Impact Questions FEWS NET Asks...

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**80s:** Was the rainy season anomalous?

**Late 80s:** Was vegetation growth anomalous?

**Mid-90s:** What outlook should we have on the upcoming rainy season?

**2000s:** Is crop development/yield anomalous?

**Mid-2000s:** Are droughts becoming more frequent?

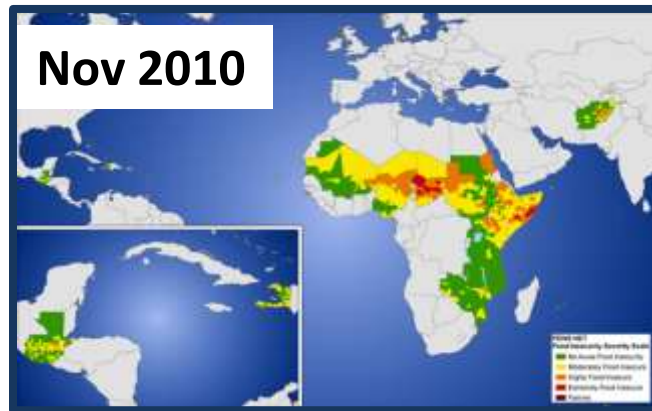
**Present:** Is climate change underway, and what might its food security impacts be?

# Therefore, FEWS NET's Interests in Climate Change

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1. Climate variability and climate change may **alter crop growing conditions** in some of the most food-insecure countries of the world.
2. Widespread food insecurity must also be addressed with pro-active developmental measures: **adaptation planning**.
3. Can FEWS NET's climate resources identify specific sub-national zones most threatened by climate change, and **help to inform & prioritize adaptation activities?**
4. Continuous monitoring of climate variability and climate change is a key to understand **current and predicted food security**

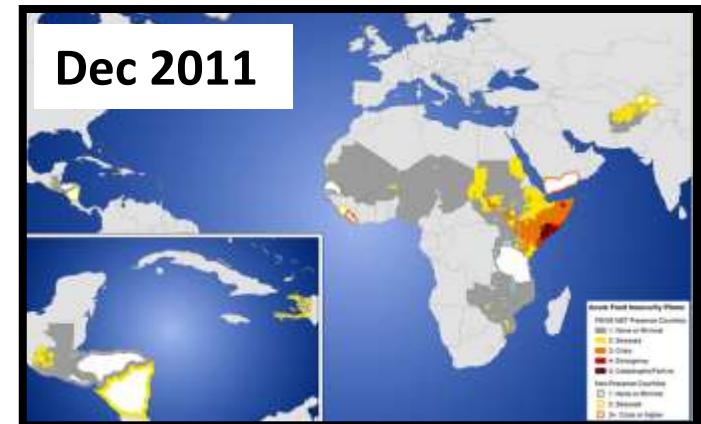
# Forecasting Future Food Insecurity



Assess likely  
shocks and



drivers of  
vulnerability



Incorporating weather and climate-related shocks and vulnerabilities into food insecurity forecasts:

**Next week's rainfall:**

--- weather forecast

**Seasonal outcome:**

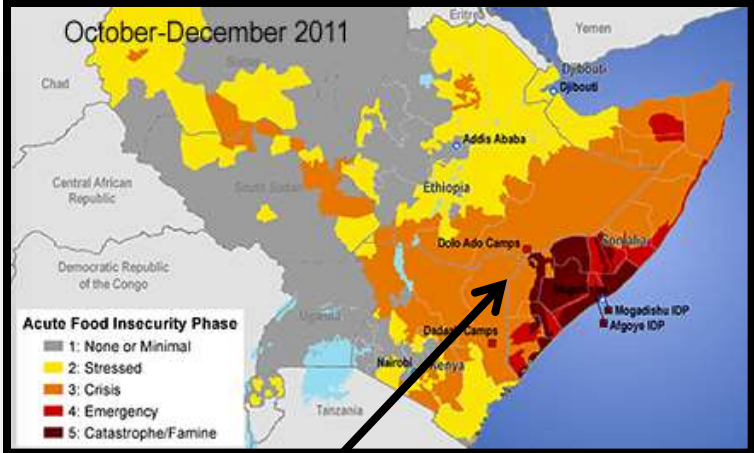
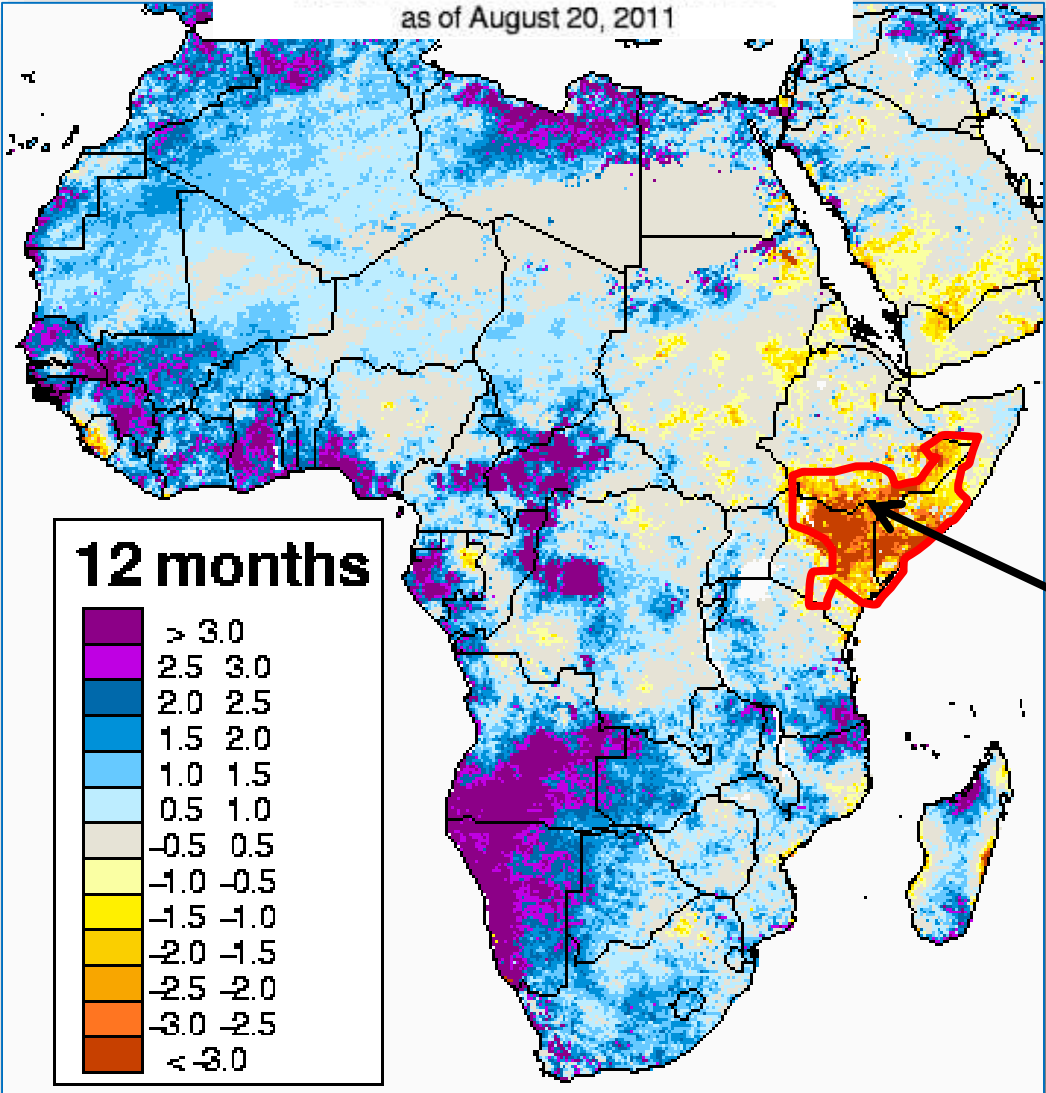
--- climate outlook forum

**For 2025 climate patterns?**

--- climate change assessment

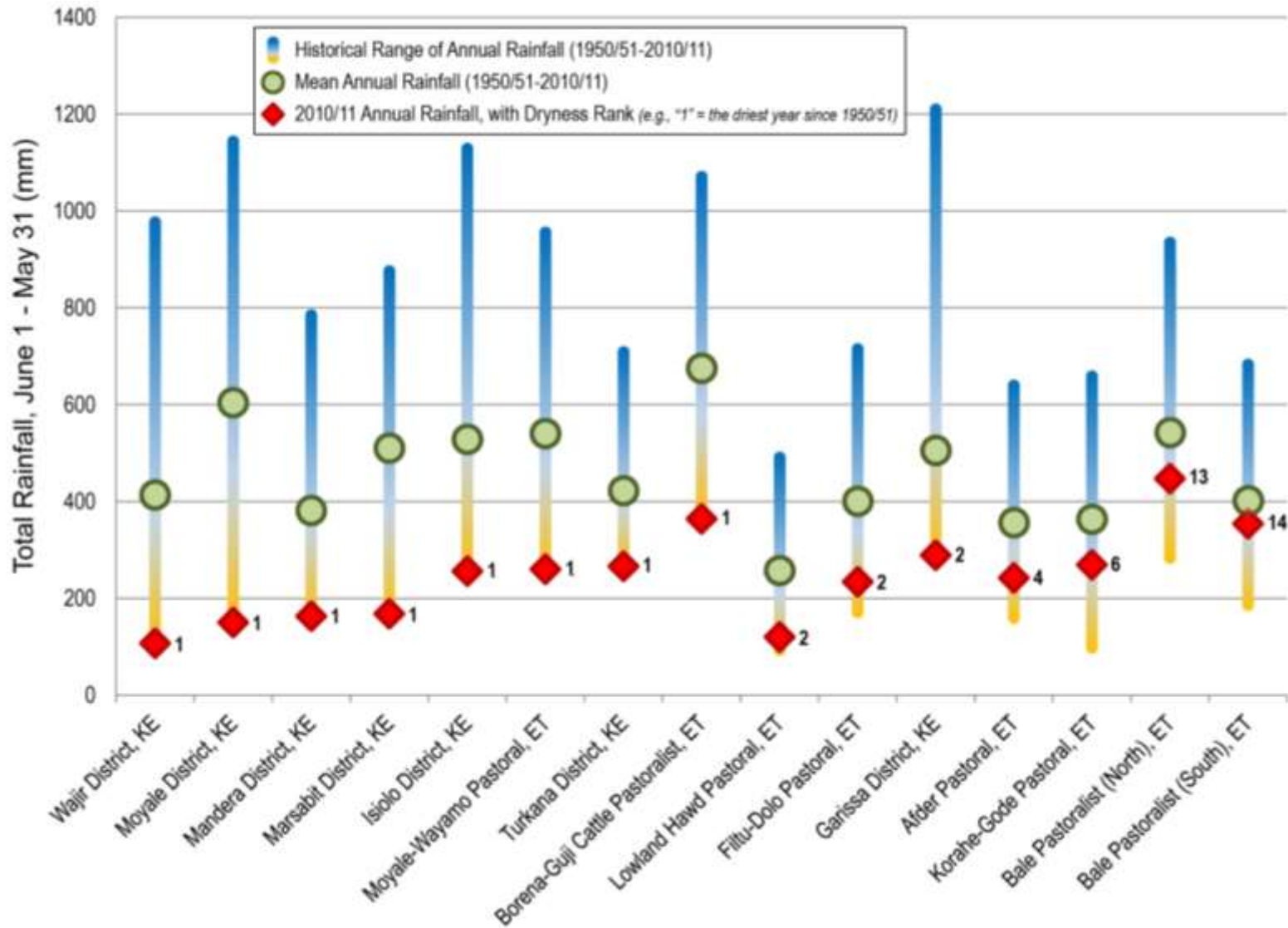
# Linking Food Insecurity Crisis to East Africa Drought

Africa Standardized Precipitation Index (SPI)  
for the indicated accumulation periods  
as of August 20, 2011

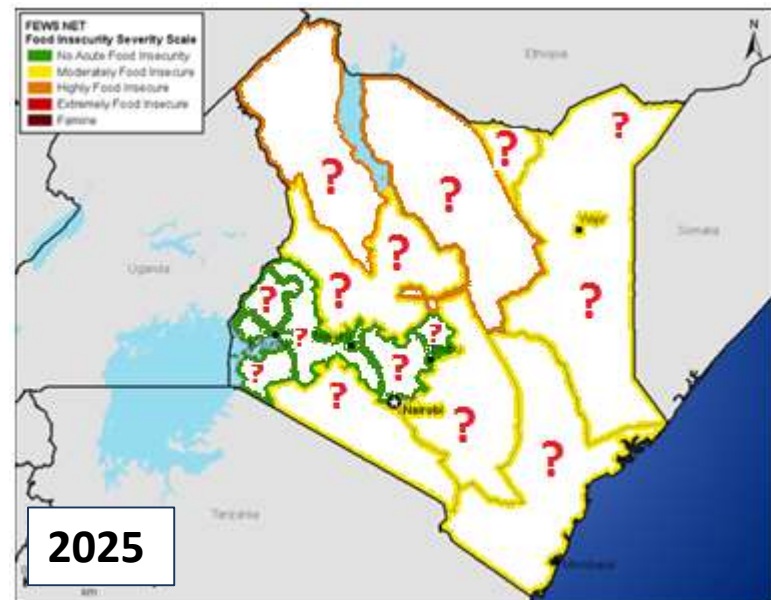
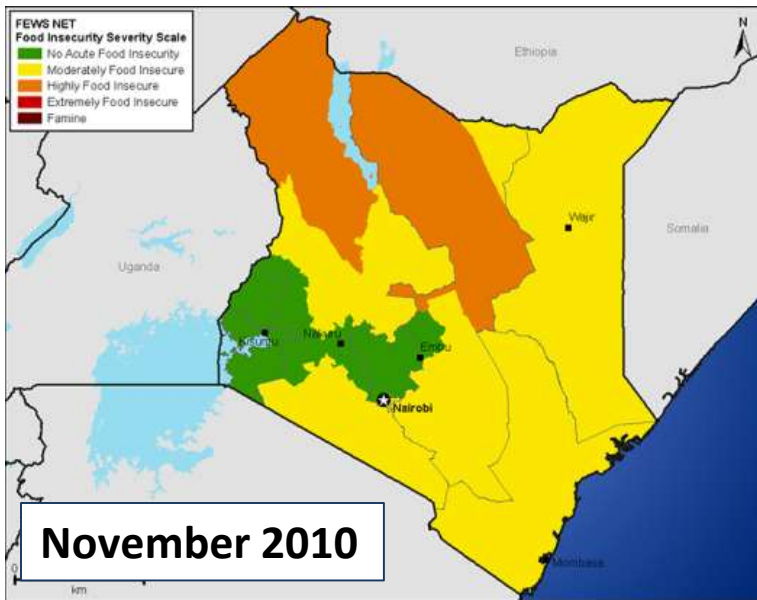


**Epicenter of drought for the past year**

# 2010/11 Rainfall Compared to Historical Totals since 1950/51 in Select Pastoral Areas of Kenya and Ethiopia



# What can We do Now, to Enhance Food Security in 2025, in Kenya, Ethiopia, ---- ?



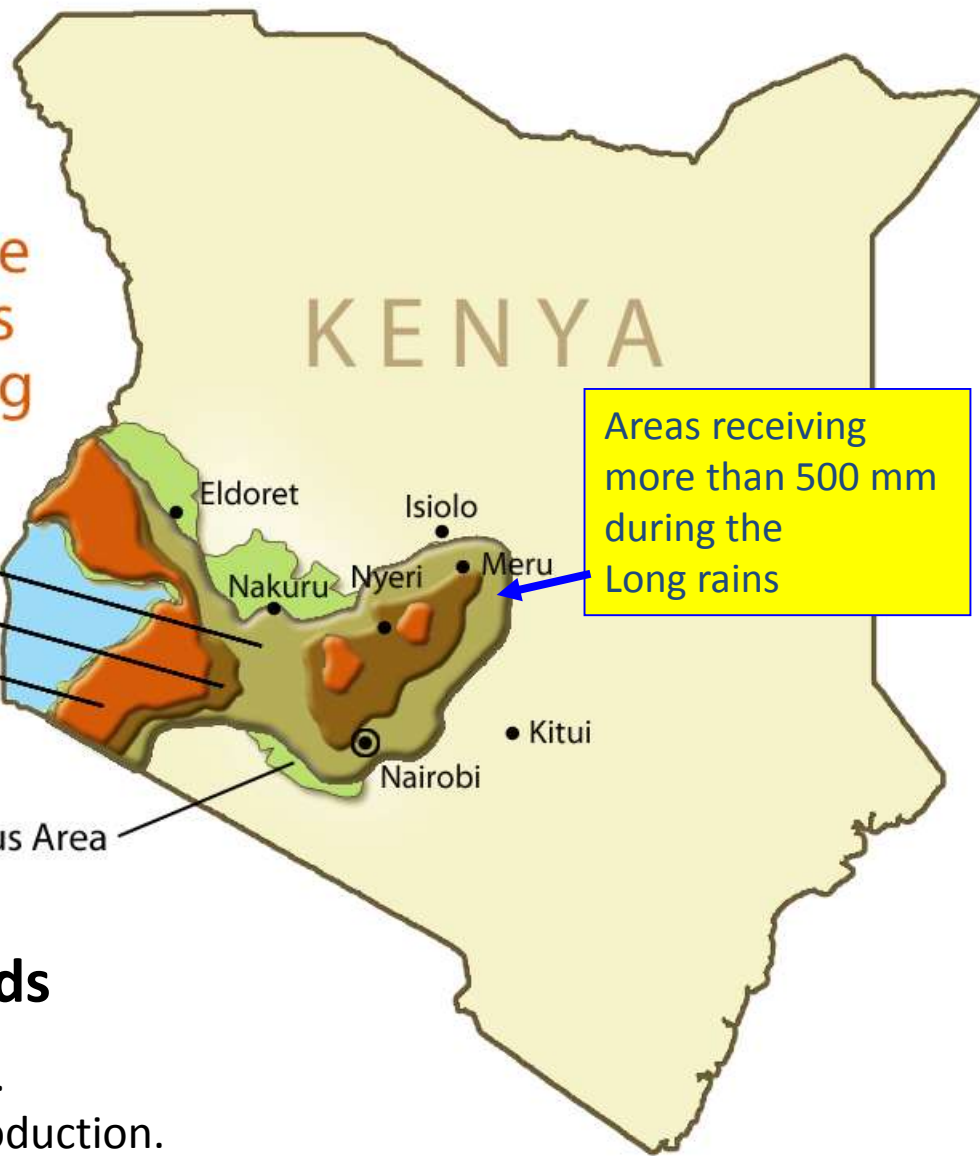
Next: FEWS NET work to-date

Productive  
crop areas  
shrinking

1960 - 1989  
(observed)  
1990 - 2009  
(observed)  
2010 - 2039  
(predicted)

Crop Surplus Area

Areas receiving  
more than 500 mm  
during the  
Long rains

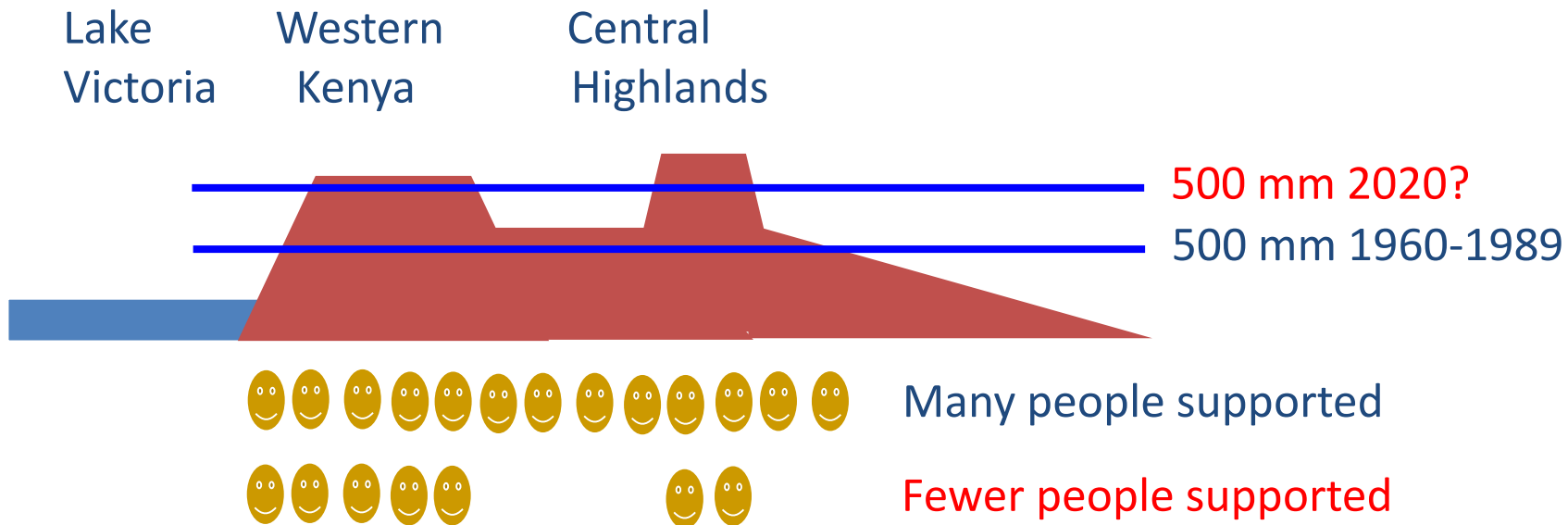


## Kenya Climate Change Trends

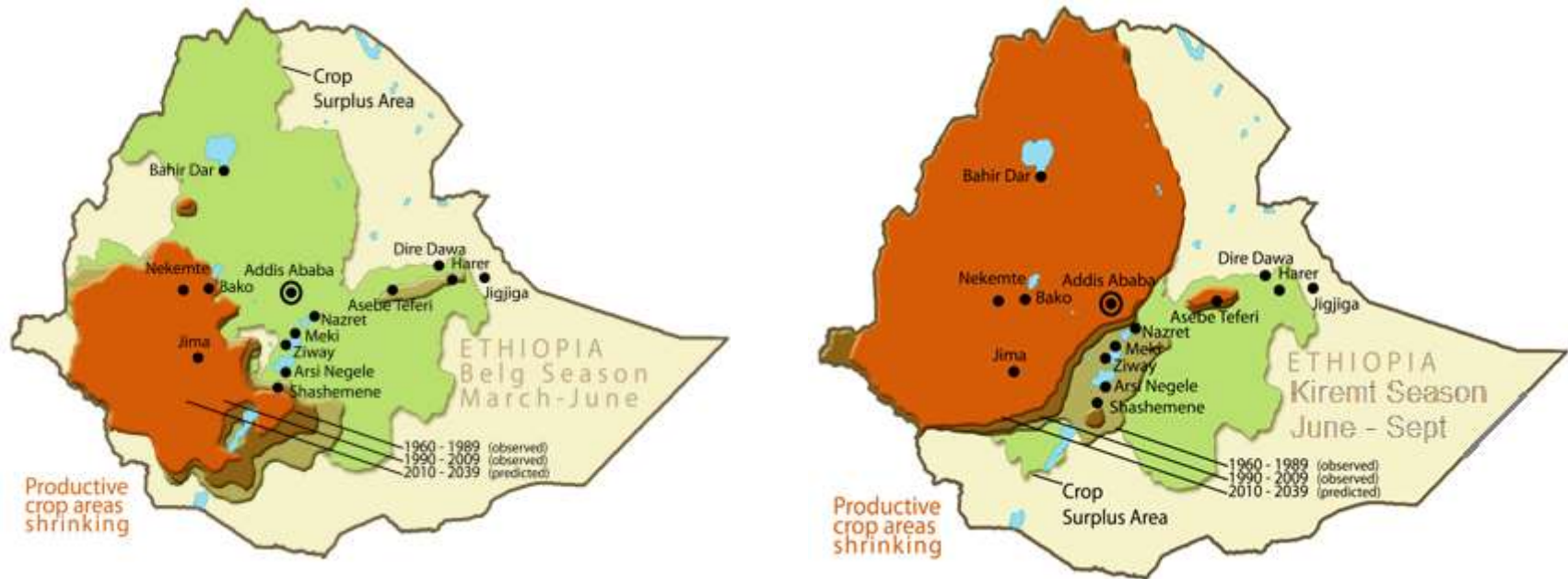
1. Caused by warming Indian Ocean.
2. Possible decline in Agriculture Production.
3. Worsening the current food insecurity situation and aggravated by increasing consumption demands.



# Kenya - Shrinking rains and topography



# Ethiopia - Shrinking Rains caused by a warming Indian Ocean



Declining rainfall amounts is observed due to the disrupted moisture transport from the “**warmer-than-normal**” southwest Indian Ocean

# Key Findings

FEWS NET provide a unique **viewpoint for understanding** the implications of climate change on food security.

The same **historical climate record** that serves as a primary early warning reference for seasonal food security monitoring is used to assess potential climate change impacts.

**Detailed analyses of observed climate trends** are combined with diagnostic ocean-atmosphere studies, and these are used to develop interpretations of GCM scenarios and their **implications for future patterns** of precipitation and temperature.

**In Eastern Africa**, such studies reveal **trends towards warmer/drier climate** condition and increases in the relative **frequency of drought** - associated with **increase in food insecurity**.

# Conclusion | East Africa Scenario's

1. **FEWS NET climate change trend analysis indicate declining rainfall and warmer than normal surface temperatures which has direct and adverse impacts on agricultural areas in highly food insecure areas of East Africa.**
  - **Highlight need for concert efforts in developing comprehensive and readily available climate datasets to support climate trend analysis, especially in the data-sparse food insecure regions.**
  - **There is need to introduce innovative ideas to improve farming practices in the region to guarantee better yields and livestock production which takes into the projected climate change trends.**

# Conclusion | Development Programs

## 2. Inform Short- & Long-term Development Programs

- **Improve basic meteorological/climatic observational network in food insecure regions for better weather/climate hazards monitoring and forecasting.**
- **Development program should be informed by current trends and casual factors (transient and chronic) and targeted at increasing resilience of chronically food insecure populations.**
- **Inform decision makers with timely early warning and food security outlook minimizes the high cost of responding to emergencies (prevention is cheaper than responding to emergencies)**