Operational FEWS NET Products for Agricultural Monitoring around the Globe

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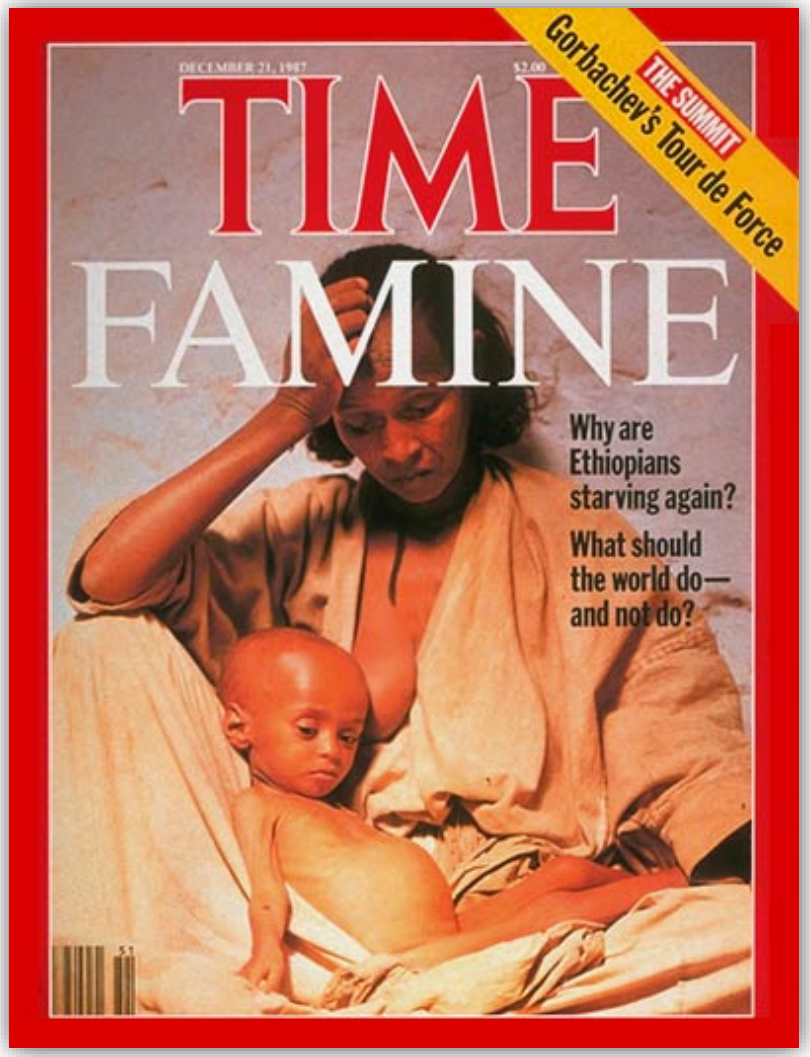
*Work performed under USGS contract [G10PC00044]

Food Insecurity

...the state of being without reliable access to a sufficient quantity of affordable, nutritious food.

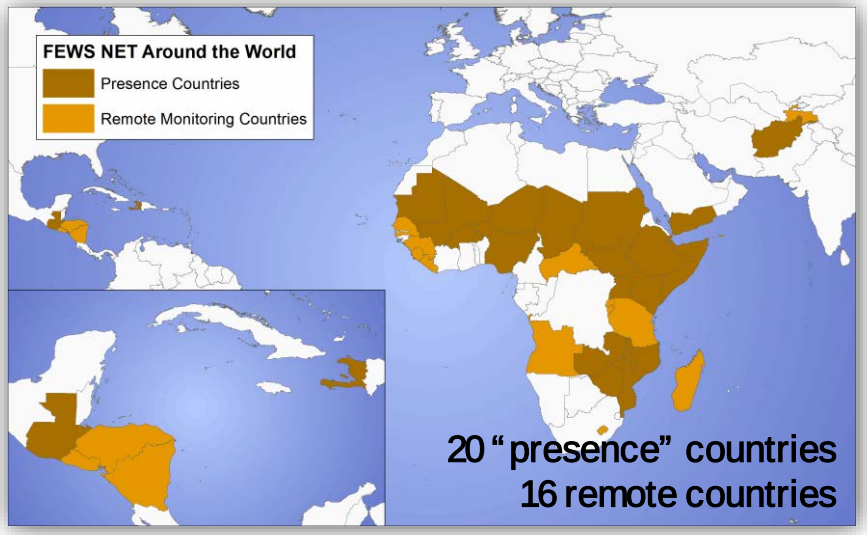


Early Warning System

USGS

What is FEWS NET?

Famine Early Warning Systems Network



*"..to ensure that appropriate… emergency food aid is provided to the **right** people in the **right** places at the **right** time and in the **right** way.."*

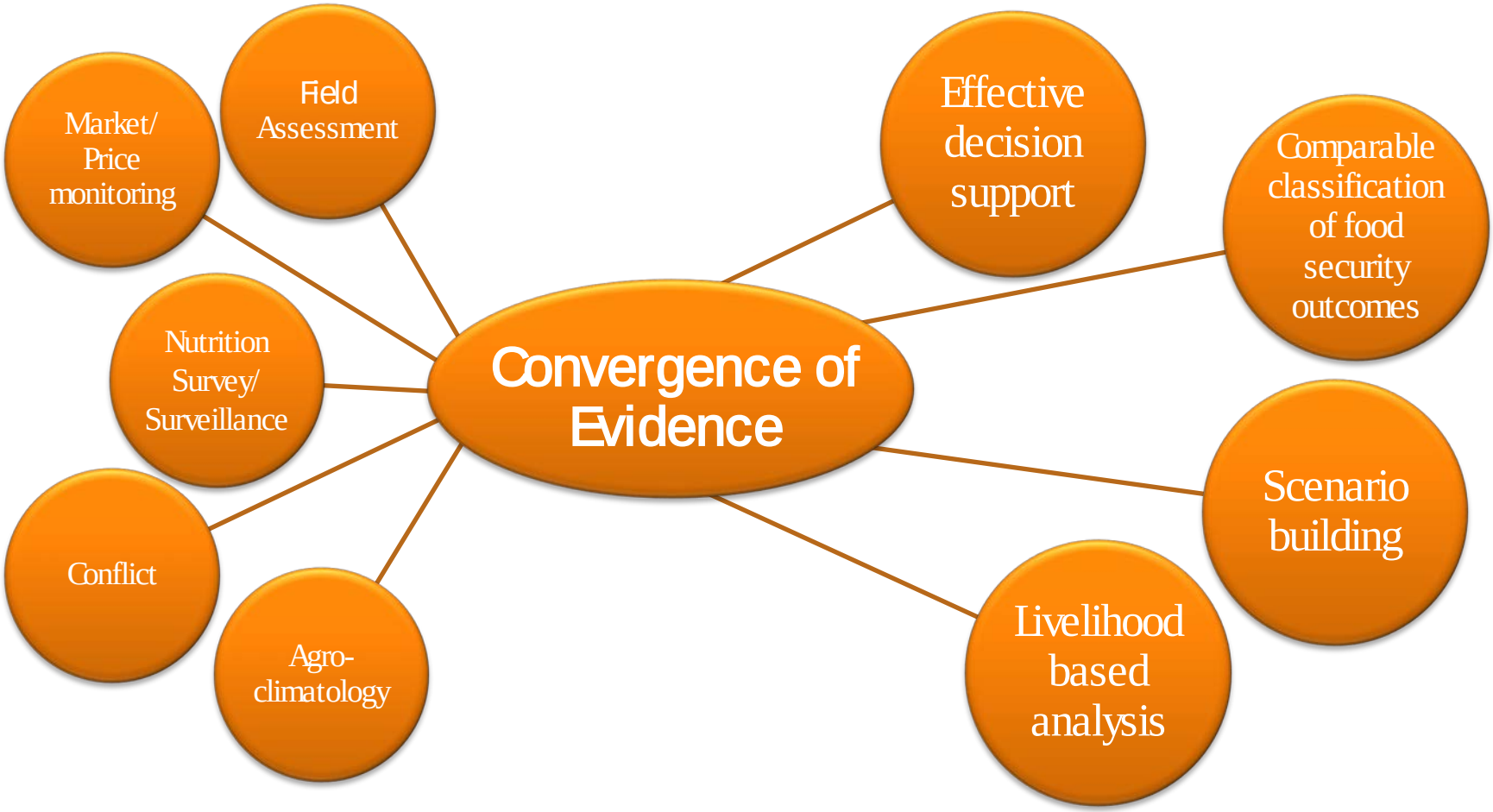
USAID FROM THE AMERICAN PEOPLE

FEWS NET FAMINE EARLY WARNING SYSTEMS NETWORK

CHEMONICS Kimetrica NASA NOAA USDA

USGS

FEWS NET Analysis Approach



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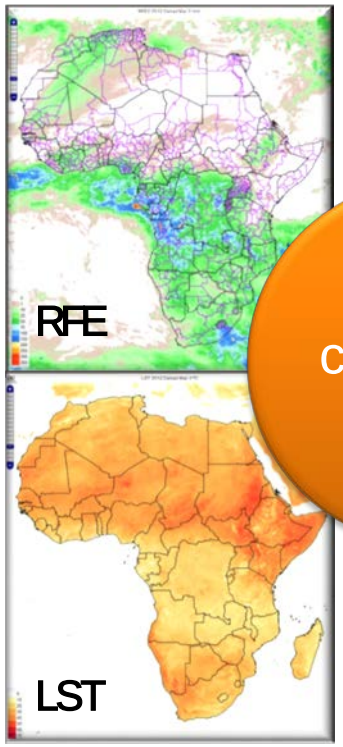
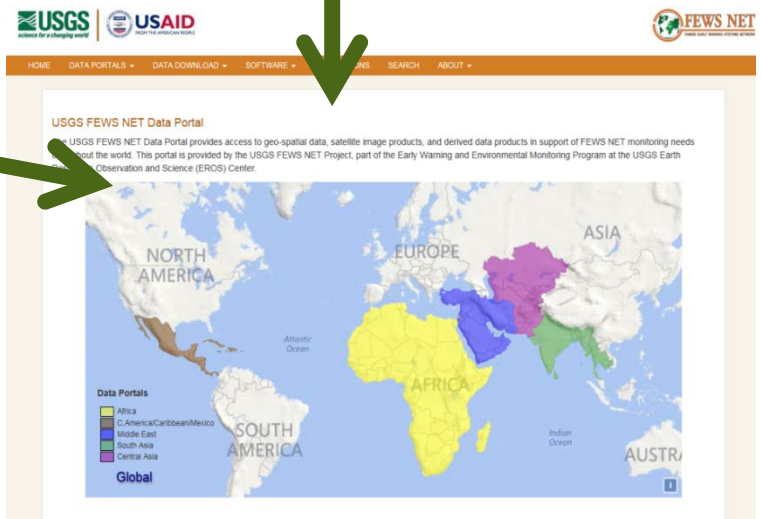
FEWS NET + GIS = Data Portal



Agro-climatology Data

GIS

Modeled Products



http://earlywarning.usgs.gov/fews

USGS

FEWS NET Operational Products

152 operational products

Daily

- Global Forecast System (GFS) Rainfall 1-day and 7-days forecast
- Potential evapotranspiration (PET)
- AFWA/NOAA Snow Depth
- EROS and NOHRSC snow water equivalent (SWE) and anomalies
- 30-day rain/dry days and anomalies
- Malaria based on Rainfall Estimate (RFE) anomaly
- Current (RFE) and forecast (GFS) 6-days precipitation
- Runoff and anomaly
- Moisture index (MI) (10-day window)
- Soil water index (SWI) (10-day window)

Pentadal (5 days)

- *eMODIS Normalized Difference Vegetation Index (NDVI) with Anomalies 250m (10-day composite)*
- FEWS NET TRMM IR precipitation (FTIP) rainfall estimate
- Start Of Season (SOS)
- Crop soil water index
- *Water Requirement Satisfaction Index (WRSI)*

8-days

- Vectorial Capacity (VCAP) Model - Malaria
- MODIS Snow Cover Extent
- Merged MODIS Snow Cover Extent and AFWA Snow Depth

Dekadal (10 days)

- RFE and anomaly
- Malaria from RFE anomaly
- MI and SWI
- Basin Excess Rainfall Map (BERM)
- Inter-tropical front (ITF) position
- Standardized Precipitation Index (SPI)
- *Seasonal Evapotranspiration (ETa) Anomaly*
- SOS
- Crop soil water index
- Water Requirement Satisfaction Index (WRSI)
- Temperature products (average and anomalies)

Monthly

- *Climate Hazards Group InfraRed Precipitation with Stations (CHIRPS)*
- *Evapotranspiration (ETa) Anomaly*

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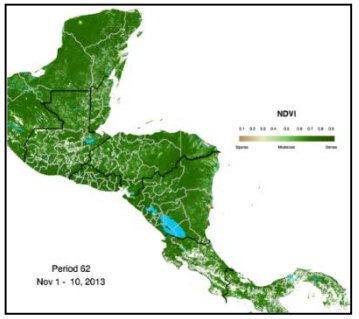
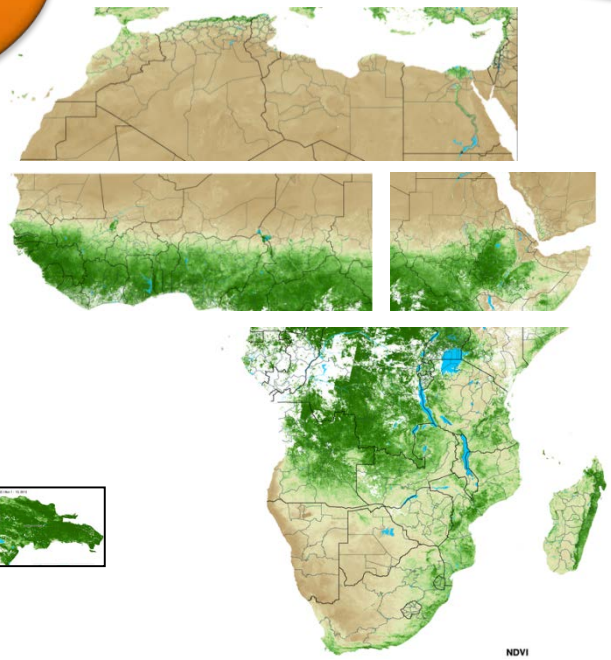
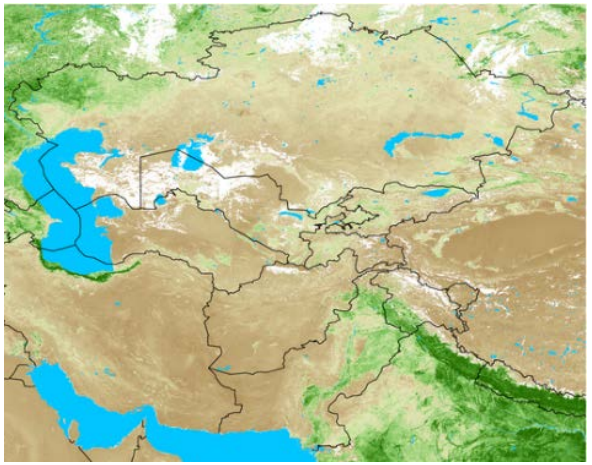
eMODIS NDVI

Africa
Central America
Central Asia

Pentadal







2001 -
current

250 m

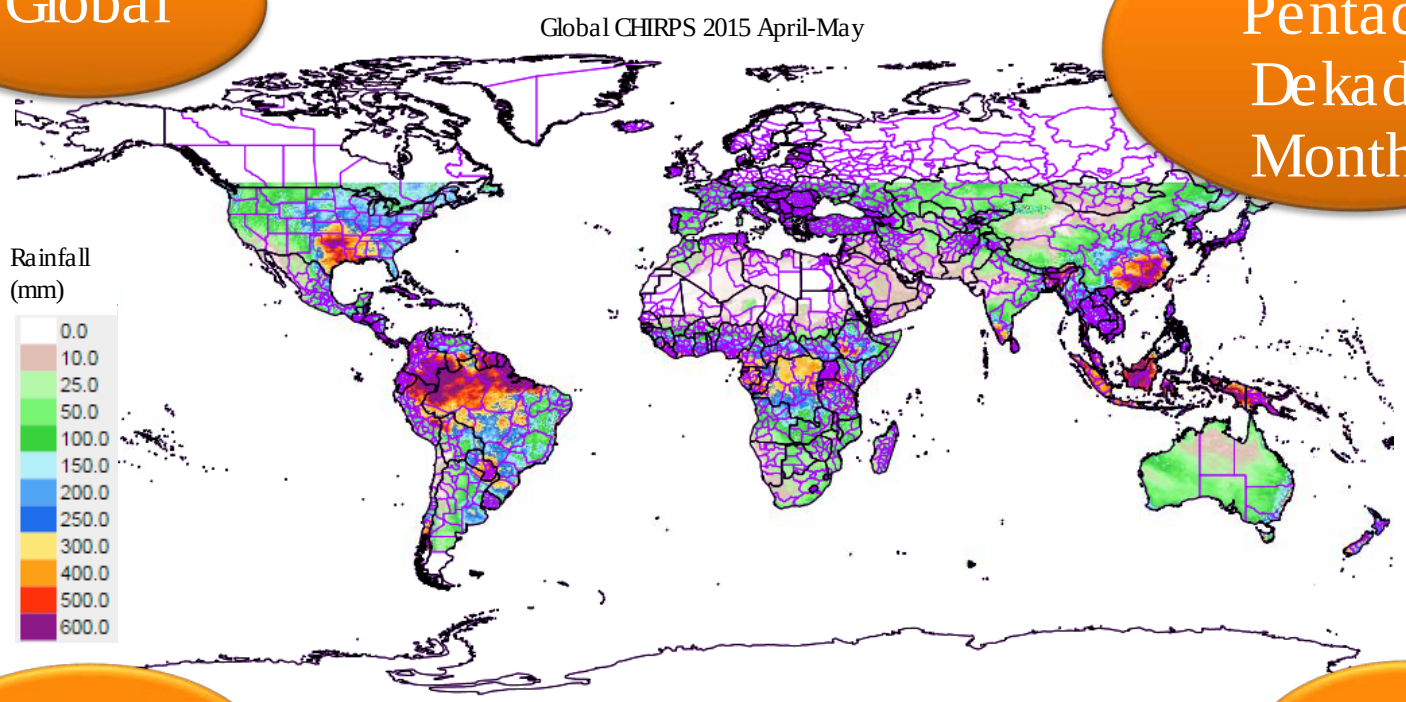
Source: FEWS NET Data Portal

USGS

CHIRPS (Precipitation)

Global

Daily
Pentadal
Dekadal
Monthly



1981 -
current

Source: UCSB Early Warning eXplorer (EWX)

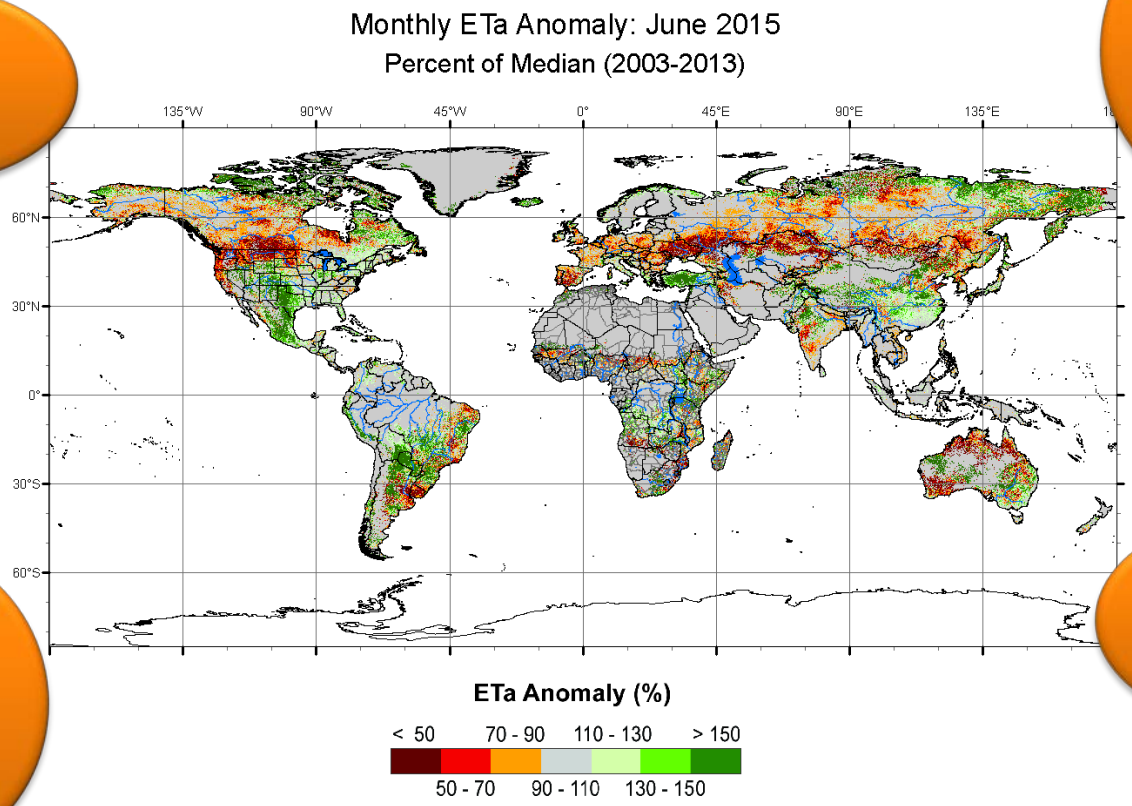
5 km

USGS

Seasonal ETa Anomaly

Global

Dekadal
Monthly



2003 -
current

1 km

Map Produced by USGS/EROS

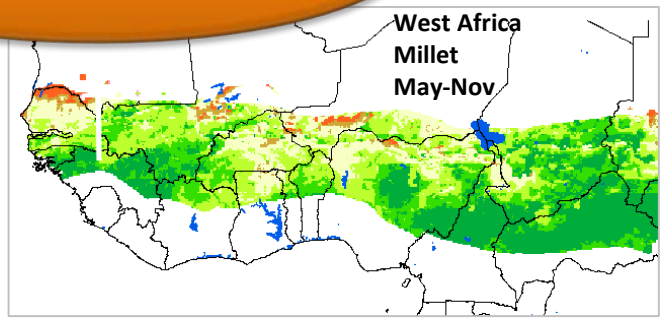
Source: FEWS NET Data Portal

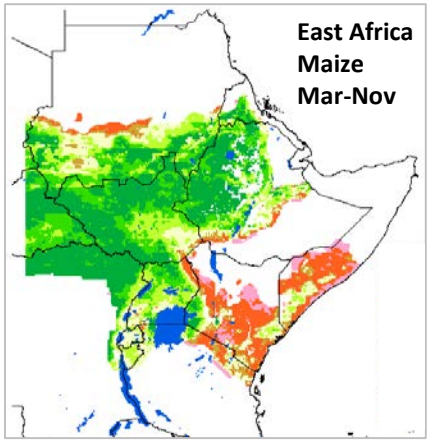
USGS

Water Requirement Satisfaction Index

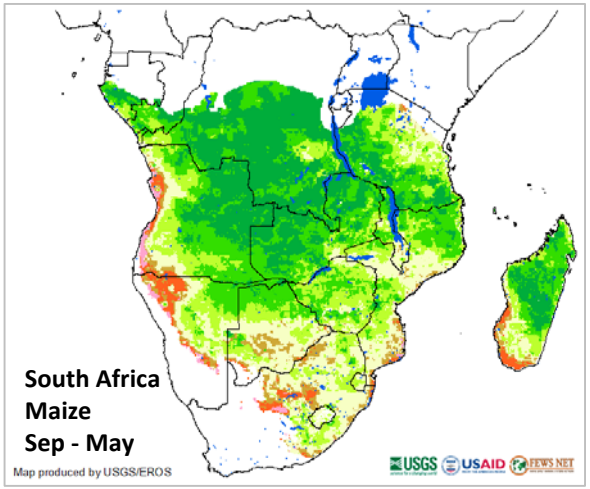
Africa
Central America

Dekadal
Pentadal





< 50 Failure
50-59 Poor
60-79 Mediocre
80-94 Average
95-99 Good
100 Very Good
No Start (late)
Yet to Start



Dekadal WRSI
Africa Croplands
End of Season
2014

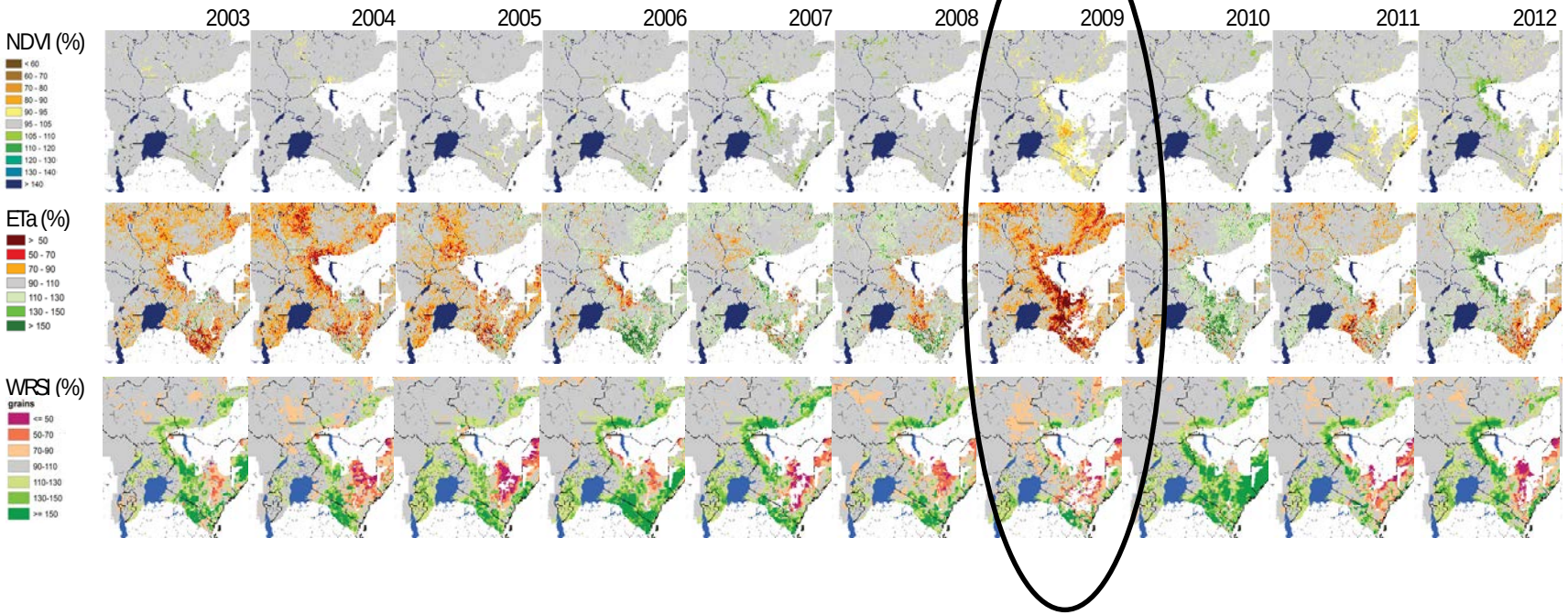
2001 -
current

10 km

Source: FEWS NET Data Portal

USGS

Time Series of Anomaly Maps for NDVI, ETa, and WRSI in Eastern Africa 2003 - 2012



Values > 110% (105%) are above normal and Values < 90% (95%) are below normal.

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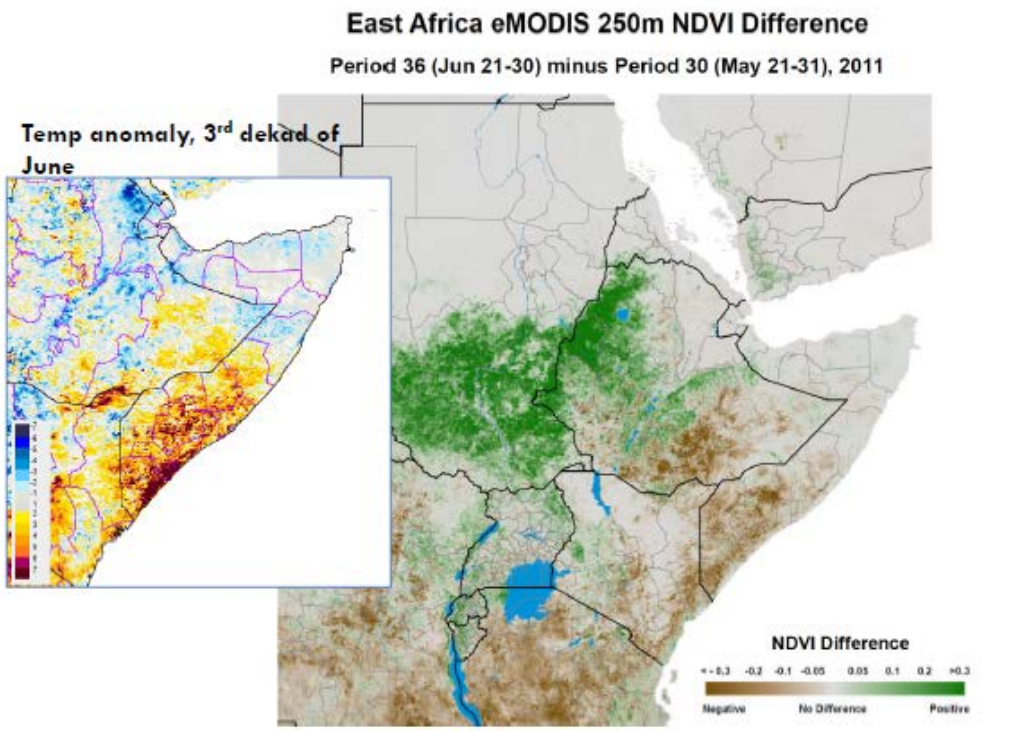
Famine in Southern Somalia 2011

Most likely scenario (July – December 2011)

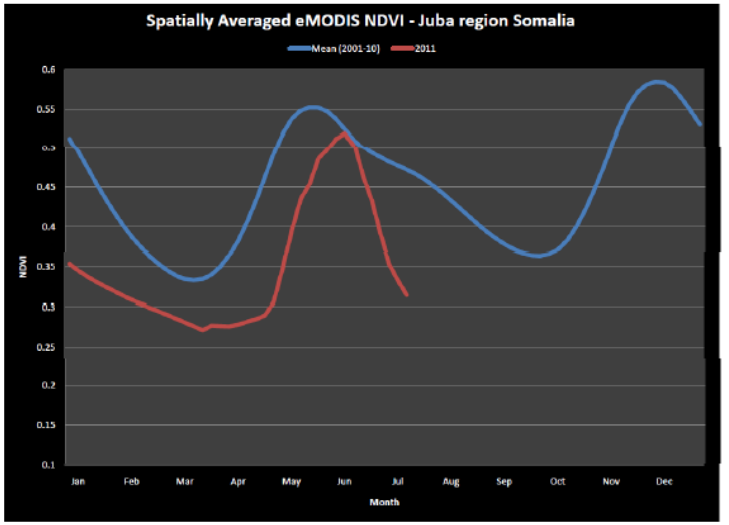
Below-normal Pasture availability



FAMINE EARLY WARNING SYSTEMS NETWORK & FOOD SECURITY AND NUTRTION ANALYS

Most likely scenario (July – December 2011)

Rapid pasture depletion



FAMINE EARLY WARNING SYSTEMS NETWORK & FOOD SECURITY AND NUTRTION ANALYSIS UNIT

USGS

FEWS NET
FAMINE EARLY WARNING SYSTEMS NETWORK

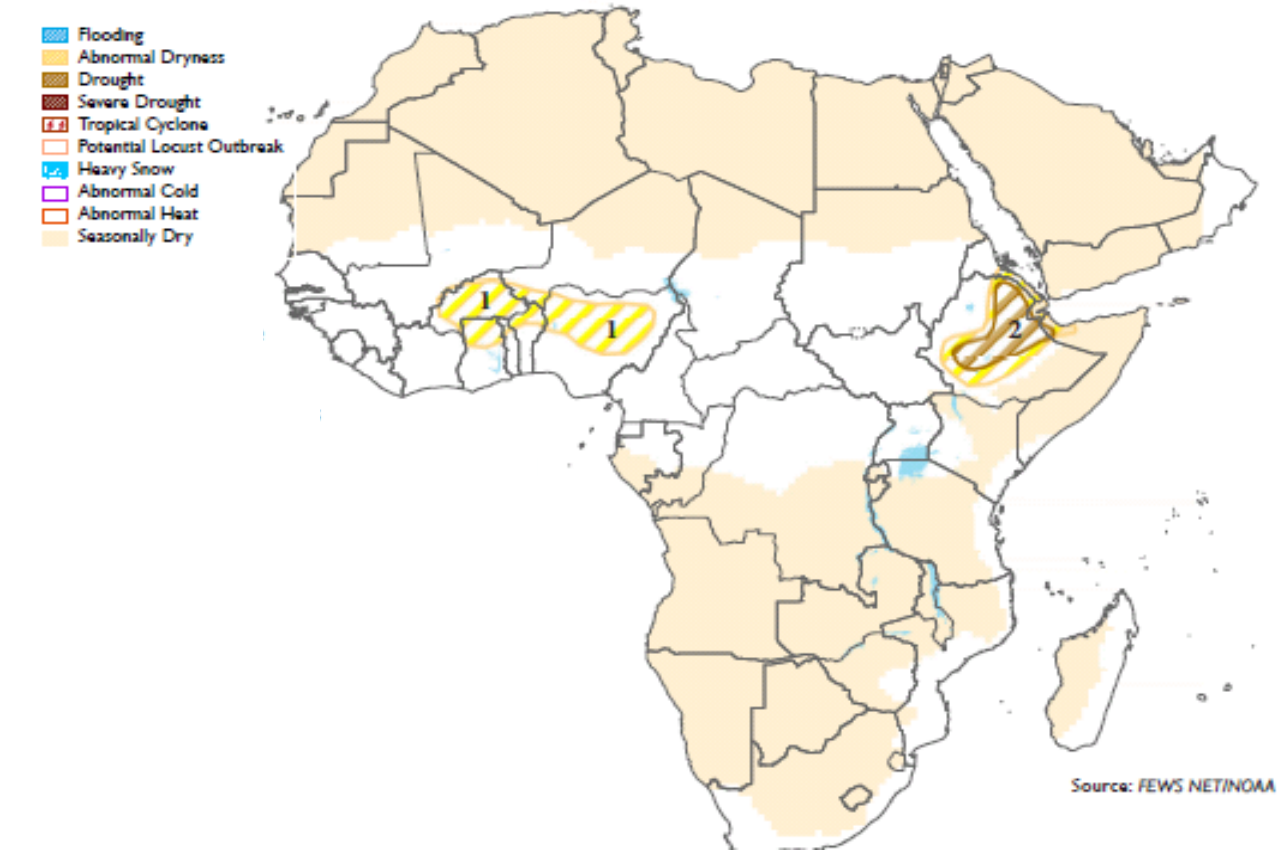
NOAA

Global Weather Hazards Summary

June 19-25, 2015

Rainfall remains below average across parts of West Africa, Latin America, Ethiopia, and Djibouti

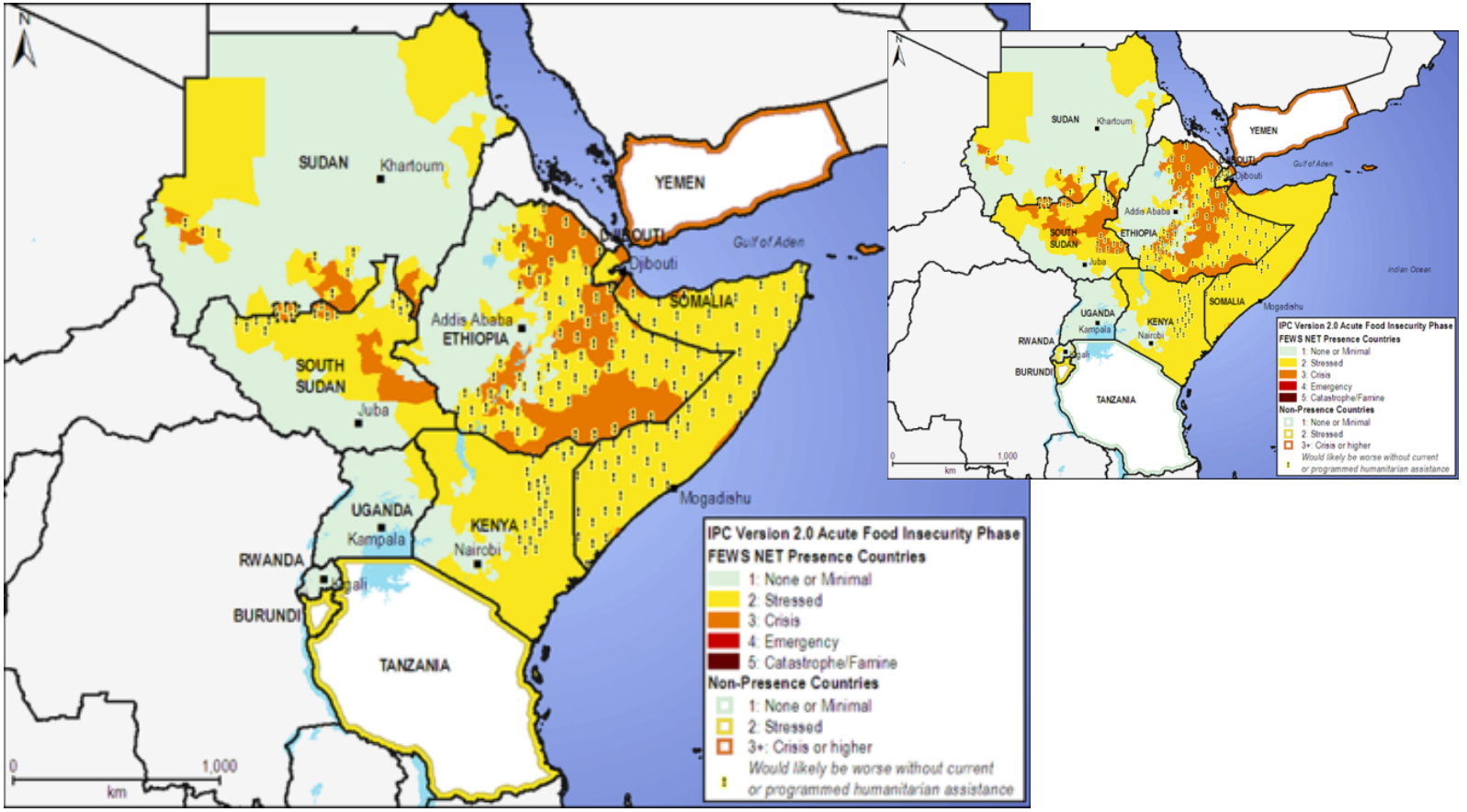
Africa Weather Hazards



USGS

FEWS NET Food Security Outlook

Estimated food security conditions, 1st Quarter 2013 (January-March 2013)
Estimated food security conditions, 2nd Quarter 2013 (April-June 2013)



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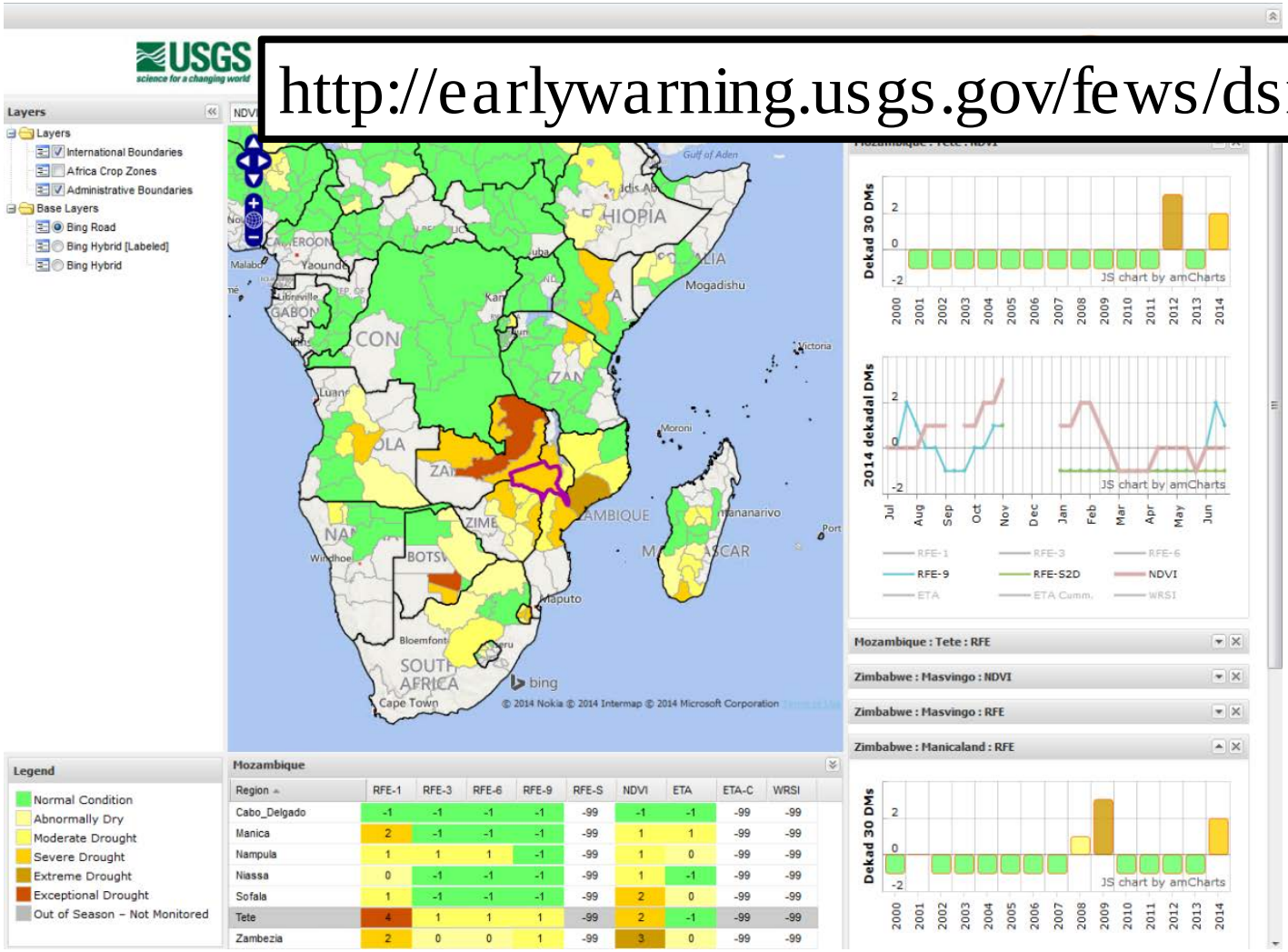
Drought Status Monitor (DSM)

http://earlywarning.usgs.gov/fews/dsm/index.php



Region	RFE-1	RFE-3	RFE-6	RFE-9	RFE-S	NDVI	ETA	ETA-C	WRSI
Cabo_Delgado	-1	-1	-1	-1	-99	-1	-1	-99	-99
Manica	2	-1	-1	-1	-99	1	1	-99	-99
Nampula	1	1	1	-1	-99	1	0	-99	-99
Niassa	0	-1	-1	-1	-99	1	-1	-99	-99
Sofala	1	-1	-1	-1	-99	2	0	-99	-99
Tete	4	1	1	1	-99	2	-1	-99	-99
Zambezia	2	0	0	1	-99	3	0	-99	-99

USGS

GIS plays an important role for FEWS NET and in making life-saving decisions.

USGS

Thank You

Questions?
Comments ?

Get your data at
http://earlywarning.usgs.gov/fews
for your drought analysis

USGS