



Spring rains in the eastern Horn of Africa are projected to begin late this year and be substantially lower than normal.

From March - May, the rains are expected to total only 60 to 85 percentage of the average rainfall in this region. This is a significant deterioration compared to earlier forecasts.

Lower rain amounts would have significant impacts on crop production, rangeland regeneration for livestock, and replenishment of water resources.

This would put greater stress on the region, particularly Somalia which is still recovering from a famine [declared last year](#), as well as Kenya and Ethiopia which also experienced a severe food crisis. An increase in food insecurity and in the size of the food insecure population is likely.

The State Department [released a statement](#) on this forecast and their intent to provide additional funding to aid refugees and drought-affected communities.

Famine Early Warning Systems Network

The rainfall projections were completed by the [Famine Early Warning Systems Network](#) (FEWS NET), which helps target more than \$1.5 billion of assistance to more than 40 countries each year. FEWS NET monitors high risk areas of the developing world with the most food insecurity, identifying critical situations in which food aid will be needed.

FEWS NET is sponsored and led by the U.S. Agency for International Development (USAID) Office of Food for Peace. Implementing partners include the U.S. Geological Survey (USGS), Chemonics International, Inc., National Aeronautics and Space Administration (NASA), National Oceanographic and Atmospheric Administration (NOAA), and the U.S. Department of Agriculture (USDA).

USGS Science

The USGS led the climate analysis for the recent FEWS NET rainfall projection.

"Rainfall projections were estimated by looking very closely at all the prior droughts from March - May since 1979 in the eastern Horn of Africa," said USGS scientist Chris Funk, who led this research. "We found that sea surface temperatures in the western/central Pacific and the Indian oceans are key drivers of rainfall during that time period. So we compared sea surface temperatures from past years to March 2012, and developed an updated rainfall forecast for this spring season."

Climate modeling analysis was done in collaboration with others, including Greg Husak and Joel Michaelsen with the [Climate Hazards Group](#) at the University of California, Santa Barbara, as well as Bradfield Lyon at [The International Research Institute for Climate and Society](#)

. Lyon's research identified the important role of the Pacific Ocean in recent droughts.

The USGS also contributes [satellite remote sensing data and analysis](#) of vegetation and rainfall to support FEWS NET activities throughout the world. Remote sensing from space allows scientists to provide rapid, accurate assessments of a broad range of environmental and agricultural conditions. A newly completed [vegetation monitoring system](#) allows FEWS NET analysts to track conditions across all of Africa in tremendous detail.

"The concerning picture that emerged from FEWS NET climate monitoring services was that despite the good rains of the past winter, the situation east Africa has deteriorated very rapidly,

to a point that the water deficits and vegetation health looked as bad as this time last year," said Funk.

Link between Sea Surface Temperatures and Rainfall

As the globe has warmed over the last century, the Indian and central/western Pacific oceans have warmed particularly fast. USGS scientists found that the warming of these oceans affects rainfall over large areas of the Horn of Africa.

The resulting warmer air and increased humidity over the Indian and Pacific oceans produce more frequent rainfall over the oceans. The air then rises over the equatorial Indian and Pacific oceans, and flows westward, descending over Africa. Since the air has already lost moisture from rainfall over the oceans, this leads to decreased rain amounts in parts of eastern Africa. Trends toward increased frequency of drought that we are seeing now appear likely to continue into the future as warming continues.

"Essentially, our research has progressed to the point where we can recognize fairly well the climate patterns linked to the recent droughts, and we hope this helps identify potential bad seasons in advance to raise awareness," said Funk.

More Information

[Learn more](#) about USGS science helping to save lives in Africa.

[Listen](#) to a podcast interview on FEWS NET and USGS research in Africa.

Photos

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