

## EXECUTIVE BRIEF: La Niña and Food Security in East Africa September 2010\*

### Key messages

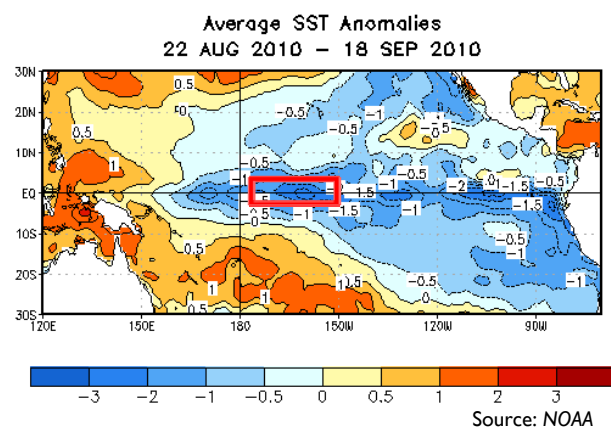
- The September 2010 Greater Horn of Africa Climate Outlook Forum (GHACOF) confirmed the presence of a moderate to strong La Niña event based on the cooling of sea surface temperatures (SST) in the central Pacific Ocean. The event is expected to continue at least into early 2011, with significant food security implications through the year.
- La Niña events are associated with drier-than-normal conditions during the October-December rainy season in the eastern sector of East Africa, and with wetter-than-normal conditions in the western and northern sector (Sudan, western Ethiopia, and western parts of Kenya). At this time, there is about a 50-60 percent chance that the La Niña event will also result in poor March-May rains in the eastern sector of the region.
- The impacts of a La Niña event are a major concern for cropping areas dependent on October-January production, such as the southeastern marginal agricultural areas of Kenya, the Somali region of Ethiopia, southern Somalia, and northern Tanzania. In these areas, poor rains could cause significantly below average or failed harvests, and also affect labor opportunities, food availability, prices, and income beginning in February 2010 with the short rains harvest.
- In pastoral areas, including Somalia and the northeast pastoral areas of Kenya, poor October-December rains could lead to rapid depletion of resources, livestock clustering in permanent water points and limited dry-season grazing areas, and reduced livestock productivity and value, thereby gradually reversing substantial recent food security gains. Failure of the March to May 2011 rains would have major implications on agricultural and pastoral production throughout the eastern sector of the region.
- The impacts of a La Niña event in the northern and western sector of the region are likely to be less severe. Above-average rains could improve crop and livestock conditions, though they could also increase the risks of flooding, soil erosion, and seasonal disease prevalence.

### Understanding La Niña

A La Niña event has been officially declared by both the World Meteorological Organization (WMO) and the National Oceanic and Atmospheric Administration Climate Prediction Center (NOAA/CPC). La Niña events are operationally defined using the Oceanic Niño Index (ONI), the three-month running mean values of sea surface temperature (SST) departures from average in the Niño 3.4 region of the central Pacific (Figure 1). NOAA defines La Niña as the condition whereby the ONI is less than or equal to -0.5 degrees Celsius in the Niño 3.4 region.

Current conditions in the Niño 3.4 region indicate rapid cooling of SSTs. Various SST model forecasts indicate that, based on expected SSTs of -1 to -1.5 degrees, the La Niña

**Figure 1.** Sea Surface Temperature Anomalies in the Niño 3.4 region of the central Pacific, August-September 2010



\* Note: This Brief updates the 'La Niña and Food Security in East Africa' Executive Brief issued in August 2010.

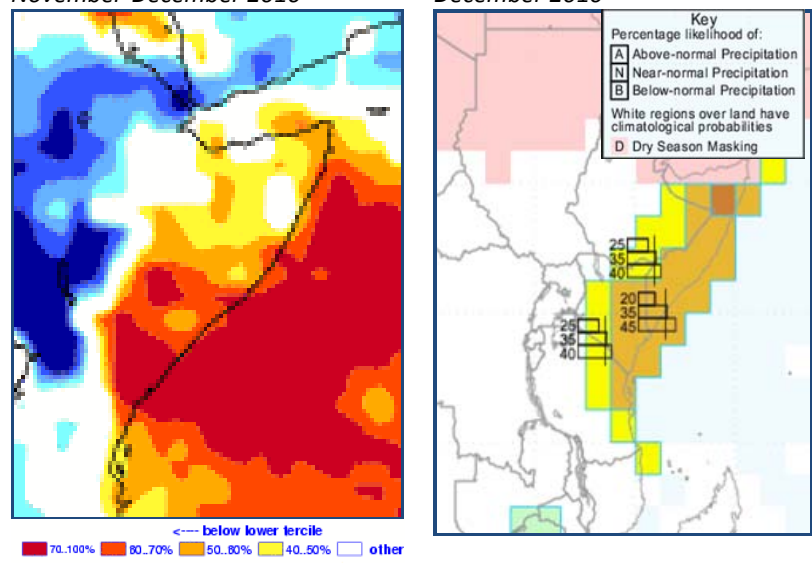
event that began in June 2010 is likely to last for 9 to 12 months.

La Niña events are generally associated with drier-than-normal conditions in the eastern sector of East Africa, and with wetter-than-normal conditions in the western and northern sector of the region. The magnitude of these precipitation impacts depend on two key factors: the intensity of the La Niña event and the response of the neighboring Indian Ocean SST anomalies, which has a significant impact on rainfall patterns across East Africa. Although the La Niña event is considered to be moderate/strong at this time, the severity of the event continues to depend on the response of SSTs in the Indian Ocean. Warm SST in the Indian Ocean would moderate the precipitation impacts of the La Niña in East Africa, whereas cooling temperatures could exacerbate the trends described above. SSTs in the Indian Ocean continue to be dynamic and transitory, and therefore it is difficult to estimate at this time how they may impact the progress of the La Niña event.

### Rainfall forecast in East Africa

According to the ECMWF and IRI forecasts, the short rains (October–December) in the eastern sector of the East Africa region are likely to be significantly below normal (Figure 2), adversely affecting the short-rains dependent areas (pastoral and marginal agricultural areas), which are also highly vulnerable to climatic variations such as drought and floods. La Niña conditions typically result in a significant delay to the rains in the eastern sector and overall erratic and below-average performance of the rains. Furthermore, the prospects for the 2011 March to May rains may be impacted by La Niña conditions, depending on the intensity and duration of the event. It is significant to note that four of the last six October–November–December La Niña events in East Africa resulted in poor March to May rains the following year.

**Figure 2.** ECMWF and IRI Forecasts for October–November–December  
*ECMWF Forecast October–November–December 2010*  
*IRI Forecast October–November–December 2010*



In the northern and western sector of the region, La Niña conditions are expected to cause above-normal rains during the *mehar* season (June–September). Rains may also extend into December 2011, but with an increased risk of flooding in flood-prone areas.

### Food security implications for East Africa

#### Eastern sector

Many parts of the region are still recovering from the devastating effects of several consecutive seasons of poor rainfall between 2007 and 2009. However, food security has recently improved across the region due to the above-average October to December 2009 rains, attributed to the El Niño event, which led to above-average harvests in some cropping areas and improvements in pastoral conditions. Further improvements have taken place after above-average March to May 2010 rains in most areas, leading to enhanced rangeland conditions (pasture, browse, and water availability) in pastoral areas, and increased food supplies in cropping areas. Following the main season harvests beginning in July, food availability for most countries in the region is expected to increase toward the end of the year with corresponding declines in food prices.

The impacts of a La Niña event from August into 2011 in the eastern sector of the East Africa region could include the following:

- Significant February 2011 crop harvest deficits, including potential crop failure, in southeastern Kenya, Somalia, and northern Tanzania.
- Reduced rangeland resources (water and pasture) in key pastoral areas in the Horn of Africa between October 2010 and March 2011.
- Possible reduction in 2011 long rains agricultural production, depending on the severity of the La Niña event.

In pastoral areas, below-average rains could reverse substantial food security gains exhibited by marked improvement in environmental and food security indicators through most of 2010. At present, grazing resources are expected to be sufficient through the onset of the rains in late October, and herd sizes are expected to recover due to increased conception rates for all livestock species. However poor October to December rains would lead to rapid depletion of resources and clustering of livestock in limited dry-season grazing areas. This in turn would cause degeneration in livestock productivity, especially in central Somalia, parts of northeast Kenya, and the Somali region of Ethiopia, where recent droughts resulted in severe environmental degradation. The survival rates of young calves, kids and lambs could also be in danger if the next rains fail. The beginning of the pastoral recovery process is fragile and a six-month dry spell, through the onset of the long rains in late March, would undermine recent food security gains.

In cropping areas, the impacts of a La Niña event are a major concern for areas dependent on October-January production, such as the southeastern marginal agricultural areas of Kenya, the Somali region of Ethiopia, and southern Somalia. Impacts could be experienced in early 2011 as the harvests begin. In these areas, poor October to December rains could cause significantly below normal or even failed harvests, which would affect labor opportunities, prices, and income beginning in February 2010 with the short rains harvest.

The possibility that the La Niña event could result in below-normal March to May rains in the region is an additional concern that would have more far-reaching and significant consequences. Two consecutive seasons of poor rainfall would result in further deterioration of rangeland and cropping conditions, and higher levels of food insecurity throughout the eastern sector of the region.

#### **Northern and western sector (Sudan, western Ethiopia, and western Kenya)**

The impacts of a La Niña event in the northern and western sector of the East Africa region are likely to include the following:

- Favorable agricultural production prospects in Sudan and Ethiopia during the *meher* (June-September) season.
- Increased likelihood of flooding, particularly if rains continue beyond September.

Normal to above-normal rainfall in these regions would result in improved crop production through the end of the year. Cereal availability at the household level would therefore likely increase, leading to improved food and income from on-farm employment and sales of crops. In pastoral areas, above-normal rains over the rest of the season would also improve access to water, pasture, and milk.

However, above-average rains, particularly if the rains continue beyond September, could increase the risks of flooding, flood damage, soil erosion, and seasonal susceptibility to disease (malaria and waterborne diseases) associated with high malnutrition during the rainy season. Given the poor state of irrigation infrastructure and poor road networks, heavy rains would likely result in transport disruptions and problems with irrigation infrastructure, especially along the Nile River in both Ethiopia and Sudan. Excess rainfall would also disrupt access to markets, further reduce grain supplies, and restrict humanitarian access to food insecure populations. Nonetheless, though the immediate impact of floods could be serious, floods normally bring fertile soils, and increased soil moisture will allow the possibility of off-season recessionary farming, and supplementary food and income sources early next year.

In western parts of Kenya, above-normal October-December rains in the grain basket could be detrimental to long rains output, in the event that heavy rains impede harvesting or delay drying of the harvested grain. Heightened pre- and post harvest losses or contamination of harvested output could severely affect the national long rains output prospects.

The progress of the La Niña event, as well as trends in SSTs in the Indian Ocean, should be closely monitored to determine potential impacts on food security in the region.