



Interpreting March-May seasonal forecasts for the Eastern Horn of Africa

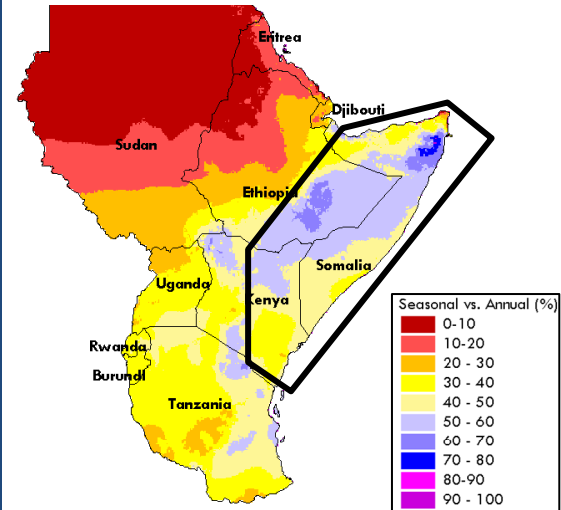
Key Messages

- Though forecasts are relatively weak, FEWS NET’s forecast analysis suggests that, in the **most-likely scenario**, March-May rainfall in the eastern Horn of Africa will be ten percent below-average and poorly distributed. A mediocre season would not be expected to have substantial negative impacts on crop and livestock production.
- In the **worst-case scenario**, rainfall will be 50-70 percent of average. This would severely affect rainfed crop production and pasture/water availability. There is a 1 in 6 chance that rainfall totals will be less than 70 percent of average.
- Given the impacts of extreme food insecurity and famine during 2011 on human health and household livelihoods, and the elevated probability of a poor March-May season in the eastern Horn of Africa, humanitarian partners should prepare contingency plans that could quickly address any disruptions to crop/livestock production and household food access that may occur.

Background

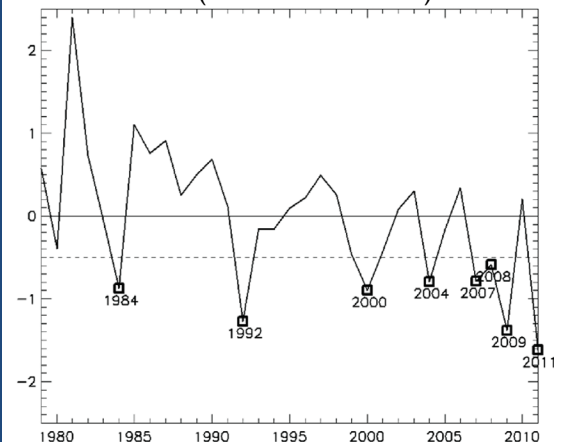
- The March to May season is the major rainfall period for pastoral and agricultural areas of northern Kenya, southern Ethiopia, and most of Somalia, accounting for 50-60 percent of annual rainfall in many parts of the sub-region (Figure 1). These rains are also critical for the secondary *Belg* season in Ethiopia.
- In recent years, drought during the March-May season has been increasingly common in the region’s eastern sector. An analysis of historical rainfall indicates eight poor seasons since 1979. Six of these seasons have occurred since 2000 (Figure 2).
- Between October 2010 and May 2011, rainfall in the region’s eastern sector was extremely poor. The resulting impacts on crop and livestock production were a key driver of IPC Phase 4 (Emergency) and IPC Phase 5 (Famine) during 2011.
- Outside of southeast Kenya, the October-December 2011 rainfall in the eastern Horn of Africa was generally excellent (Figure 3), supporting significant improvements in pasture compared to last year (Figure 4) and excellent crop harvests in southern Somalia. While famine is no longer present in the region, improvements in food security are fragile.

Figure 1. Average March-May rainfall as a percentage of average annual rainfall (Polygon represents the region’s eastern sector)



Source: FEWS NET/NOAA/USGS

Figure 2. 1979-2011 March-May rainfall in southern Ethiopia, central-eastern Kenya and southern Somalia measured by the Standardized Precipitation Index (SPI). Boxes show drought-affected seasons (those with SPI <-0.5).



Source: FEWS NET/USGS

Likely drivers of March-May 2012 rainfall

- A La Niña is a phenomenon characterized by cooler than usual sea surface temperatures (SSTs) in the eastern Pacific. Historically, the La Niña effect has had a limited impact on the March-May rains. However, in recent years, the SST gradient between the central and western Pacific has increased, with cooler SSTs in the central Pacific and warmer SSTs in the western Pacific. This shift appears to be intensifying the impact of La Niña conditions on March-May rainfall in East Africa, resulting in drier conditions during La Niña years.
- While a La Niña has been present in recent months, it is expected to dissipate by the end of April 2012, according to NOAA Climate Prediction Center forecasts released March 8th. La Niña weakened during February 2012, as near- to above-average sea surface temperatures emerged in the eastern equatorial Pacific Ocean.
- Tropical cyclone activity and the behavior of Indian Ocean SSTs could also contribute to erratic distribution of March-May rains over the eastern Horn of Africa.

Forecasts for March-May Rainfall

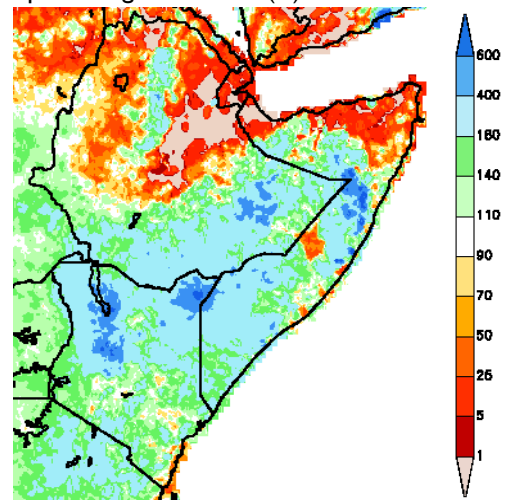
- ICPAC has recently released its Greater Horn of Africa Climate Outlook Forum Consensus Forecast for the March-May 2012 period. This forecast suggests an increased likelihood of below-average rainfall in the region’s eastern sector (Figure 5). The rest of the region, including the surplus producing cropping areas of western Kenya, western Ethiopia, Uganda, Sudan and South Sudan, are likely to receive normal rainfall.
- 1989 and 2001 were identified as analogue years. In both years, below-average rains were received in parts of eastern Kenya, south/central Somalia, and southern Ethiopia.
- The forecast for the eastern Horn is relatively weak and, as a result, uncertainty regarding the performance of March-May rains persists. However, ICPAC’s analysis converges well with other forecasts for this period.
- Ethiopia’s National Meteorology Agency and Kenya’s Meteorological Department have both released national level forecasts for the mid-February-May period that suggest below average rainfall and poor distribution over time and space in the eastern Horn.

Current assumptions for FEWS NET Outlook Analysis

Most-likely scenario

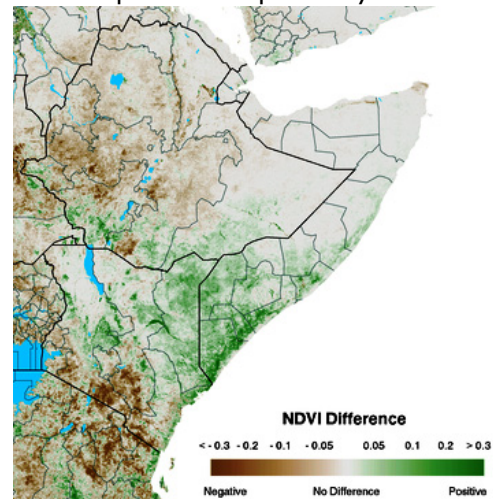
- FEWS NET’s assumptions for the most-likely scenario have become slightly more pessimistic since early February, with a below-average season now considered probable.
- Analysis of the ICPAC forecast for the region’s eastern sector, using the USGS [Forecast Interpretation Tool](#), suggests that in the most

Figure 3. October-December 2011 Rainfall as a percentage of normal (%)



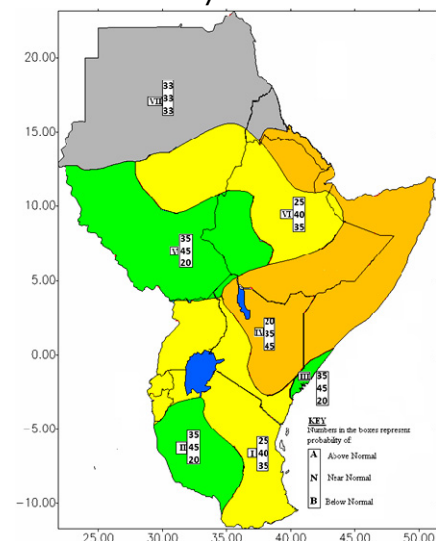
Source: FEWS NET/NOAA

Figure 4. Vegetation Index February 20-29, 2012 compared to the previous year



Source: FEWS NET/USGS

Figure 5. ICPAC GHACOF30 Consensus forecast for March-May 2012

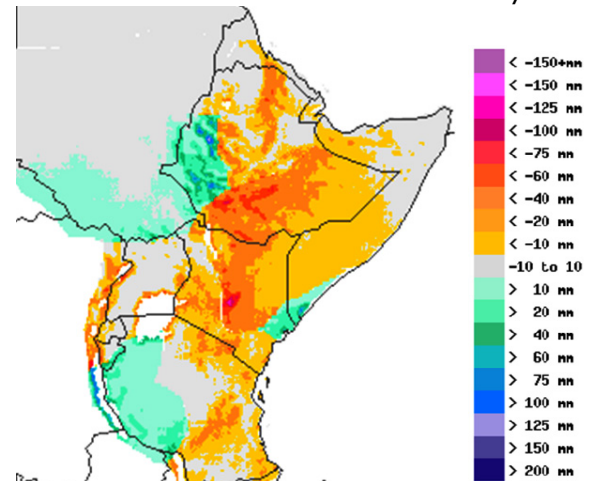


Source: ICPAC

likely scenario (50th percentile) rainfall will be 90 percent of the long-term average. This is equivalent to deficits of 10-40mm (Figure 6). As the resolution of this forecast is relatively coarse, higher or lower rainfall amounts can be anticipated in localized areas.

- FEWS NET also assumes that the distribution of rains will be poor over time and space.
- As a point of comparison, March-May 2011 rainfall was one month late and less than 50 percent of average across much of northern Kenya, southern Oromia region of Ethiopia, and Bakool, Gedo, and Juba regions of Somalia.
- FEWS NET assumes average March-May rains are in eastern Tanzania, Uganda, Burundi, Rwanda, Sudan and South Sudan, and parts of central and northwest Ethiopia. Above-average rains are likely in western Tanzania, western Ethiopia and South Sudan.

Figure 6. Most-likely rainfall anomalies based on Forecast Interpretation Tool analysis of the ICPAC GHACOF30 Consensus forecast for March-May 2012



Worst Case Scenario

- Based on an analysis of the ICPAC forecast using the Forecast Interpretation Tool, there is a 1 in 6 chance that March-May rainfall totals will be less than 70 percent of average. When compared to a normal year¹, the likelihood of a poor March-May season has increased by 30 percent.
- Therefore, in the worst case scenario, FEWS NET assumes that rainfall will be 50-70 percent of average. As in the most-likely scenario, poor distribution over both time and space would be expected.

Impacts on crop and livestock production

Southern/Central Pastoral Zones of Somalia

- **Most-likely scenario:** As the previous season (Oct-Dec) was above average in these pastoral zones, March-May seasonal rainfall totals that are 90 percent of normal rainfall will have limited negative impact. Water and pasture availability will be expected to remain average, as would herd migration flows.
- **Worst case scenario:** High mortality among newborn sheep and goats would be expected during and following kidding/lambing between late March and early April. This would reduce milk availability. Animal trekking distance to water sources and grazing areas will increase, negatively affecting livestock body condition and disease resistance. Livestock in Juba and Gedo will migrate to riverine areas where the risk of both trypanosomiasis and tick-borne diseases are high.

Southern Rainfed Cropping Zones of Somalia

- **Most-likely scenario:** In Shabelle and Bay regions, the country's grain basket, harvests would be expected to be near the 1995-2011 Post-War Average (PWA) since farmers in these areas mostly practice early and dry planting and would therefore be less affected by a poor start of season. In the more marginal rainfed cropping zones of Hiran, Bakool, Gedo and Juba, delayed and erratic distribution of rains would likely reduce planting and crop harvests. These marginal cropping zones are the areas that also experienced below-average cereal production during the 2011/12 *Deyr* season.
- **Worst case scenario:** If rains are significantly below-average, crop production would be well below the 1995-2011 *Gu*-season PWA due to reduced planting, moisture stress, and the impact of crop pests. Poor agricultural prospects would likely have a negative effect on rural labor demand and wages.

¹ Normal year defined by the 1979-2011 climatology

Southern Irrigated/Riverine Cropping Zones of Somalia

- **Most-likely scenario:** In riverine areas of Juba, a delay in the onset of March-May rains will be beneficial given ongoing off-season maize harvests. In riverine areas of Shabelle, better irrigation infrastructure and a forecast of near normal March-May rainfall in both Shabelle and the Ethiopian highlands, which feed the Shabelle River, mean that access to water is not expected to be a significant limitation on crop production.
- **Worst case scenario:** In riverine Juba, assuming that July/August *Hagaa* rains and the subsequent off-season harvest are average, major crop production deficits would not be expected. In riverine areas of Shabelle, due to the issues raised above, below-average rainfall in Somalia will not be a major constraint to crop production assuming average rainfall over the Shabelle river catchment area in Ethiopia. However, if rainfall in the highlands of Ethiopia is also poor, planted area and harvests could be significantly below average.

Northern/Northeastern Pastoral Zones of Kenya

- **Most-likely scenario:** Despite above-average October-December short rains, higher than usual temperatures in January and February have resulted in rapid depletion of pasture, browse and water resources, and distances to water sources have started to increase in many areas. Considering that recovery is fragile, erratic rains are likely to moderate improvements in pastoral household food security, and could lead to earlier than usual migrations and an early start of the lean season.
- **Worst case scenario:** A rapid decline in livestock body conditions, leading to significant reduction in expected milk availability, would be likely to occur. Conflicts over resources could limit access to markets and livestock prices would be expected to decline due to poor body conditions and increased distress sales. Newly born kids, lambs, and calves would be culled to save lactating livestock, or die due to longer than usual trekking distances.

Southeast Marginal Cropping Areas of Kenya

- **Most likely scenario:** The October-December season is the main cropping period for this area, accounting for up to 70 percent of annual production. In 2011, these rains ceased earlier than usual in most areas, leading to below normal harvests, and in some areas, significant crop losses. Household stocks are therefore very low, and are likely to remain at low levels even if the March-May rains, and the subsequent harvest, are close to normal.
- **Worst case scenario:** Poor long rains will be the third or fourth poor season in many areas of the southeast and would result in a very poor July/August harvest.

Southern and Southeastern Pastoral and Agropastoral Zones of Ethiopia

- **Most-likely scenario:** Following average to above-average October-December rains in most areas, pasture/browse conditions are average, though dry season water shortages have already emerged. A late start of season and erratic rainfall would likely exacerbate these issues, particularly at the peak of the lean season in March/early April and in localized areas of Bale and Borena Zones in Oromia and Fik, Degahabur, and southern Korahe/Gode Zones in Somali region where rains were less well distributed and pasture conditions are poorer.
- **Worst-case Scenario:** Poor rainfall would result in critical shortages of pasture and water in most areas, leading to increasingly unusual movements of livestock, the possibility of increased livestock mortality, and reduced water for human consumption. Milk availability will be constrained by poor body conditions.

Conclusions

- In general, forecasts for March-May rainfall in the eastern Horn of Africa remain uncertain. However, FEWS NET's forecast analysis suggests that, in the most-likely scenario, March-May rainfall in the eastern Horn of Africa will be ten percent below-average and poorly distributed.
- A mediocre season, as described in the most-likely scenario, would slow recovery in the region, but would not be expected to have substantial negative impacts on crop and livestock production.

- In the worst-case scenario, rainfall will be 50-70 percent of average. This would severely affect rainfed crop production and pasture/water availability. There is a 1 in 6 chance that rainfall totals will be less than 70 percent of average. When compared to a normal year, the likelihood of a poor March-May season has increased by 30 percent.
- Given the impacts of extreme food insecurity and famine during 2011 on human health and household livelihoods, and the elevated probability of a poor March-May season in the eastern Horn of Africa, humanitarian partners should prepare contingency plans that could quickly address any disruptions to crop/livestock production and household food access that may occur.
- FEWS NET will update its forecast analysis over the coming months, incorporating new monitoring information and updated seasonal and short-term forecasts.