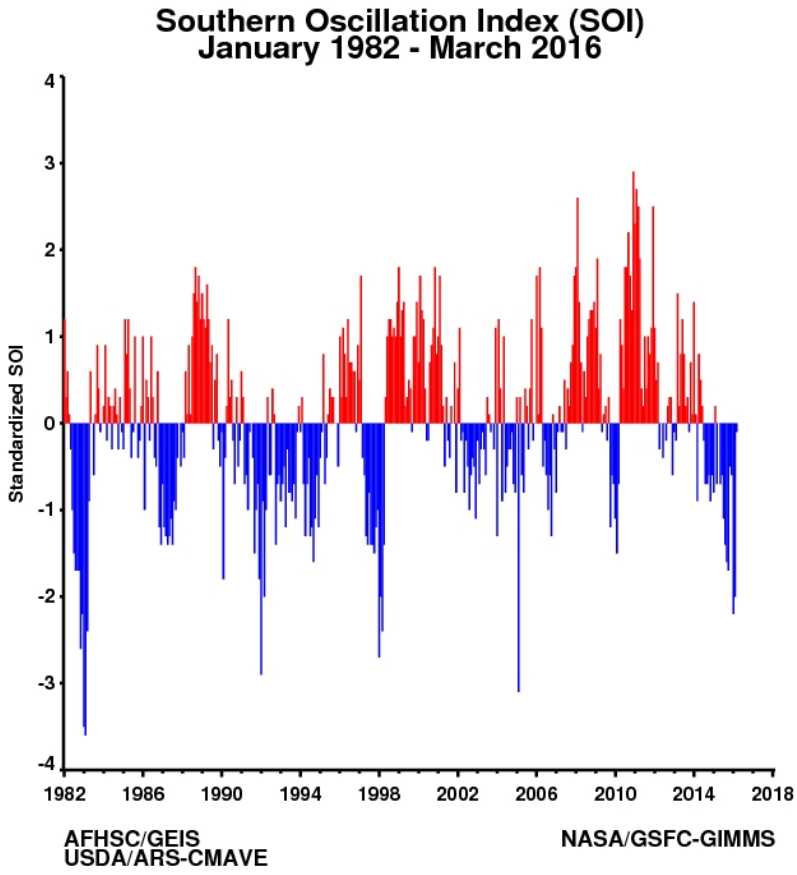
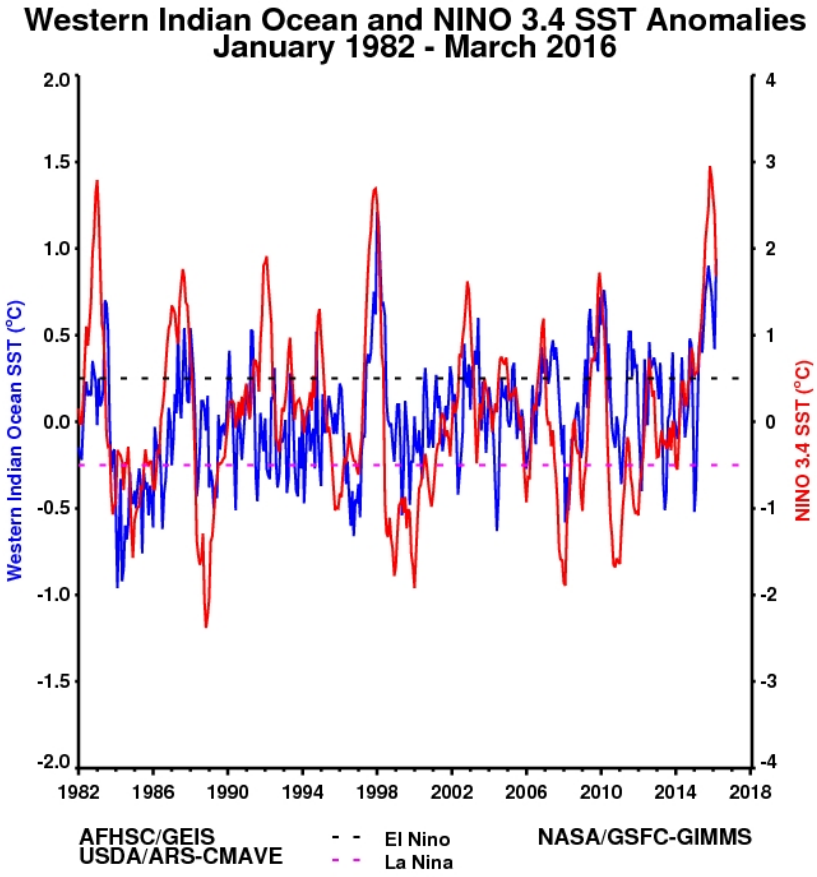
This section of the report will provide a rolling three month update on a monthly basis of the state of the climatic and ecological indicators used in monitoring areas at risk to RVF activity. These indicators include, global SST anomalies patterns, Equatorial Western Indian Ocean (WIO) and Eastern Pacific Ocean (EPO: NINO 3.4) SST anomalies, Southern Oscillation Index (SOI) and Outgoing Longwave Radiation (OLR) anomalies, Rainfall and anomalies, Normalized Difference Vegetation index anomalies and RVF risk map for Africa and the Arabian Peninsula.

March 2016

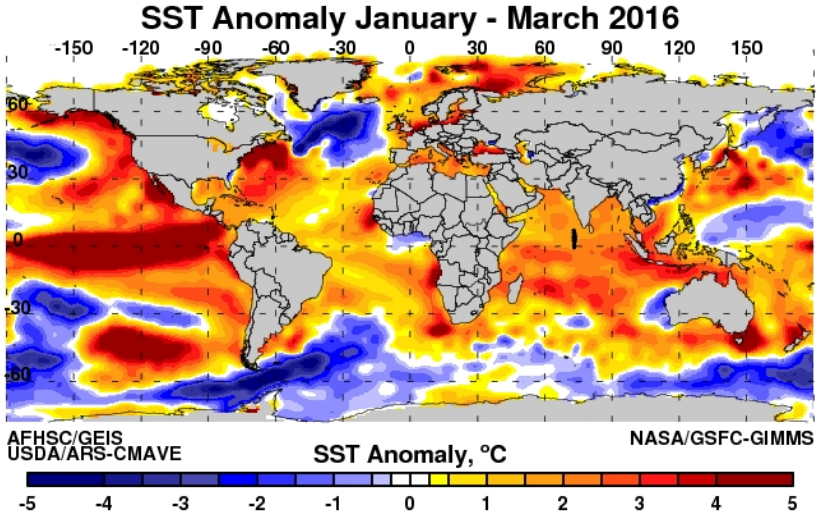
1. SOI and SST Indices

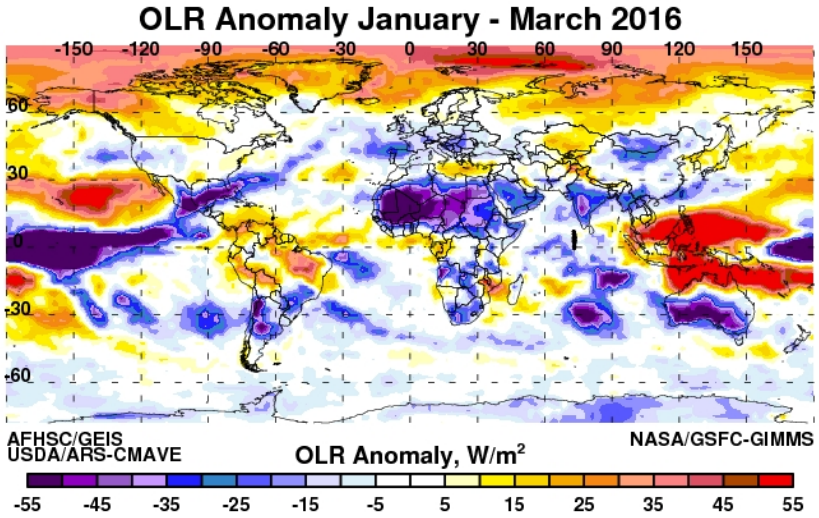




The SOI value continues a trend from high negative values towards normal with a value of -0.1 in March from -2.0 in February indicating the dissipation El Niño conditions. This is supported by the continued weakening of the positive SST anomalies basin wide over the central and eastern equatorial Pacific Ocean. After peaking in December-January, NINO 3.4, NINO 4, NINO3 and NINO1&2 SST indices have dropped below +1.7°C (+1.6°C, 1.34°C, 1.57°C and 0.93°C) respectively in March. The SST anomalies in western Indian Ocean have however increased from February +0.42°C to +0.94°C in March indicating continued warmer than normal conditions over this ocean basin as the long rains growing season starts in East Africa. The decreased above-average sea surface temperatures (SST) (below) in the central and equatorial Pacific region indicate that the strong El Niño is rapidly weakening. However, enhanced convection is still present over the central equatorial Pacific but has weakened east of the Date Line. Convection over the Indonesian basin continues to be suppressed. Collectively, these atmospheric and oceanic conditions reflect a weakening of the strong El Niño conditions. According to NOAA, a majority models indicate that El Niño conditions will weaken with a transition to ENSO-neutral conditions during the late spring or early summer. Subsequently, there is a 50% chance of La Niña conditions developing in the late summer/fall season. While there is both model and physical support for La Niña following a strong El Niño, considerable uncertainty remains especially during this transition period, but odds favor the chance of La Niña

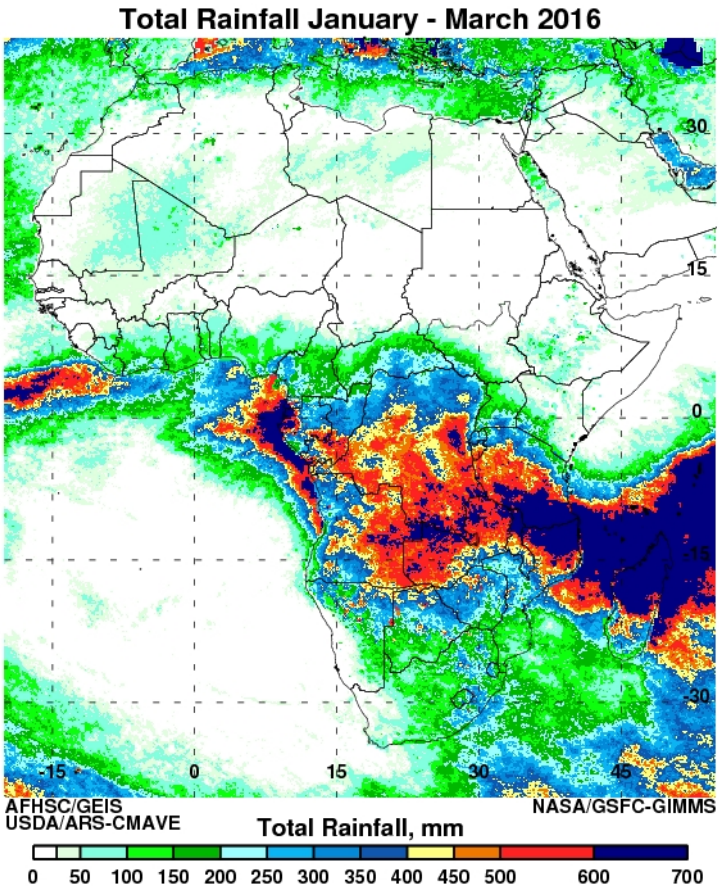
during the second half of the year.

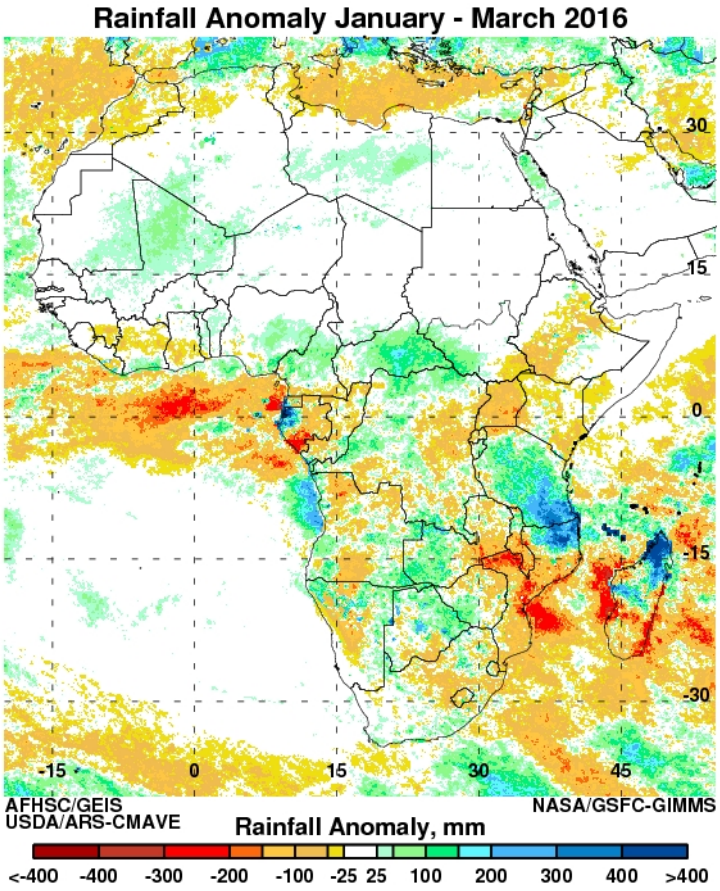




The central equatorial Pacific Ocean continues to show pronounced above normal seasonal SSTs (three month values: >+2.0°C to +5.0°C) except for the region from 30°S to 10°S in the southwestern Pacific Ocean with below-normal SSTs during the January 2016 to March 2016 period. The western Pacific Ocean east of the Indonesian basin shows normal to below normal SSTs indicating the continued reversal of ocean and atmospheric circulation across the equatorial Pacific Ocean, even though the magnitude and areal extent of the negative anomalies is weakening. The entire equatorial Indian Ocean is still anomalously warm with but with departures reduced to ~ +0.5°C to +2.0°C in western equatorial Indian Ocean and off the western Australian coast. Other regions of significant anomalies include the north Pacific Ocean, north Atlantic, equatorial Atlantic off the West African coast, the Pacific Ocean off the California coast, southwest Atlantic Ocean off Argentina and Brazil which show significant positive and negative anomalies on the order of -/+1.0°C to -/+2.0°C. Outgoing Longwave Radiation (OLR) anomalies are used here as a proxy for tropical deep convection (rainfall). Reduced convection is shown in yellow to light brown and brown shades and increased/intense convection is shown by

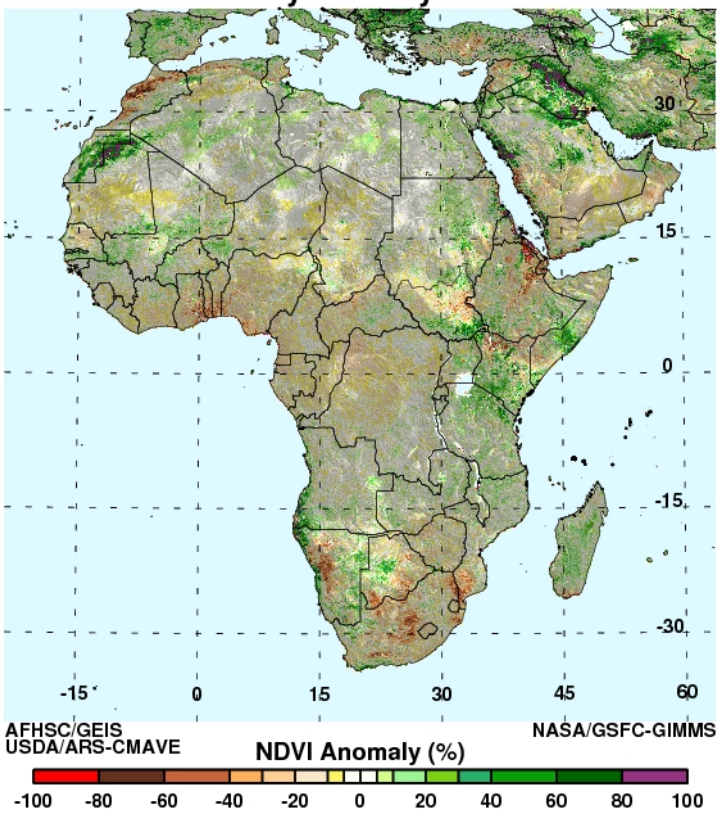
shades of blue. Some impacts from the current SST anomaly patterns can be observed in the pattern of global convective activity illustrated by the OLR departure patterns here. During the January 2016 to March 2016 period, drier-than-average conditions (>+55W/M2) are fully enhanced over the western Pacific Ocean basin covering the Indonesian basin, as well as drier the normal conditions are prevailing over southern Europe, Canada, Caribbean region, northern South America and southeastern Africa. The severe drought conditions in western US (Californian) have eased up as shown by the negative departures in OLR extending from the eastern Pacific Ocean through Mexico into southwestern and southern US. Enhanced cooler than average conditions (-50W/M2) are observed over central to eastern equatorial Pacific and just east of the Date Line. Negative OLR anomalies dominate North Africa and Middle East, India and southern China. Accordingly, southwestern Africa and the southern half of South America show negative OLR anomalies suggesting enhanced convective activity. These patterns of depressed and enhanced convective activity coincide well with the patterns of SST departures and reveal certain impacts often associated with El Niño. Monthly and weekly anomalies can be found here. Rainfall and associated anomalies (below) for Africa from January 2016 to March 2016 show rainfall concentrated south of the equator with a maximum centered around 15°S. Areas of above normal rainfall (+50 to 200 mm) are limited to Tanzania with maximum values at +400mm.

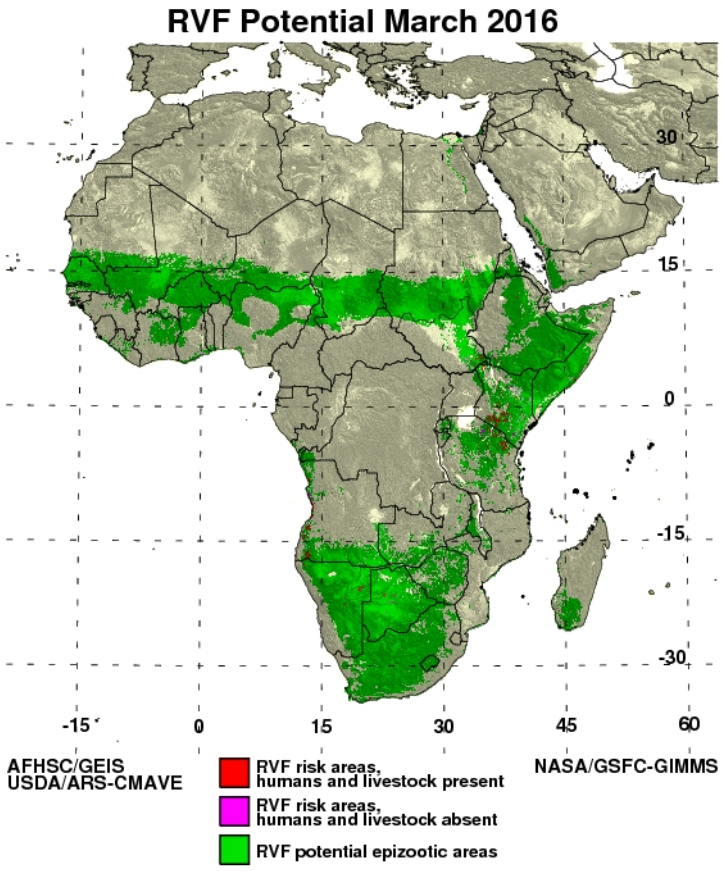




Cumulative NDVI anomalies for Africa for January 2016 to March 2016 show positive anomalies concentrated in parts of central Somalia, northern-western Kenya/South Sudan, southern Kenya and northern Tanzania. The RVF risk map below was derived from thresholding NDVI anomaly data to detect areas persistent of above normal NDVI. Periods of widespread and prolonged heavy rainfall lead to flooding of dambos and anomalous green up in vegetation, creating ideal ecological conditions for the emergence RVF vectors. For the period January 2016 to March 2016, the RVF persistence model identifies areas at risk in central Somalia and isolated areas of Kenya and Tanzania which have received above normal rainfall over the last three months. Given the elevated rainfall conditions that have prevailed in parts of East Africa continued surveillance is advised in these areas. We therefore suggest enhanced surveillance activities be carried out in northern and southern Kenya, Tanzania and central Somalia. Rainfall in the southern sector is approaching and surpassing the 2006/2007 season. The above normal rainfall conditions during this period could lead to outbreaks of other vector and water-borne diseases as is being reported by outbreaks of cholera in Tanzania and Kenya. The recently reported Rift Valley fever outbreak in Kabale district, southwestern Uganda falls out of the potential epizootic region, but is an area that had received persistently above normal rainfall since October 2015.

NDVI Anomaly January - March 2016




RVF Potential March 2016
30
15
0
-15
-30
-15
0
15
30
45
60
AFHSC/GEIS
USDA/ARS-CMAVE
RVF risk areas,
humans and livestock present
RVF risk areas,
humans and livestock absent
RVF potential epizootic areas
NASA/GSFC-GIMMS