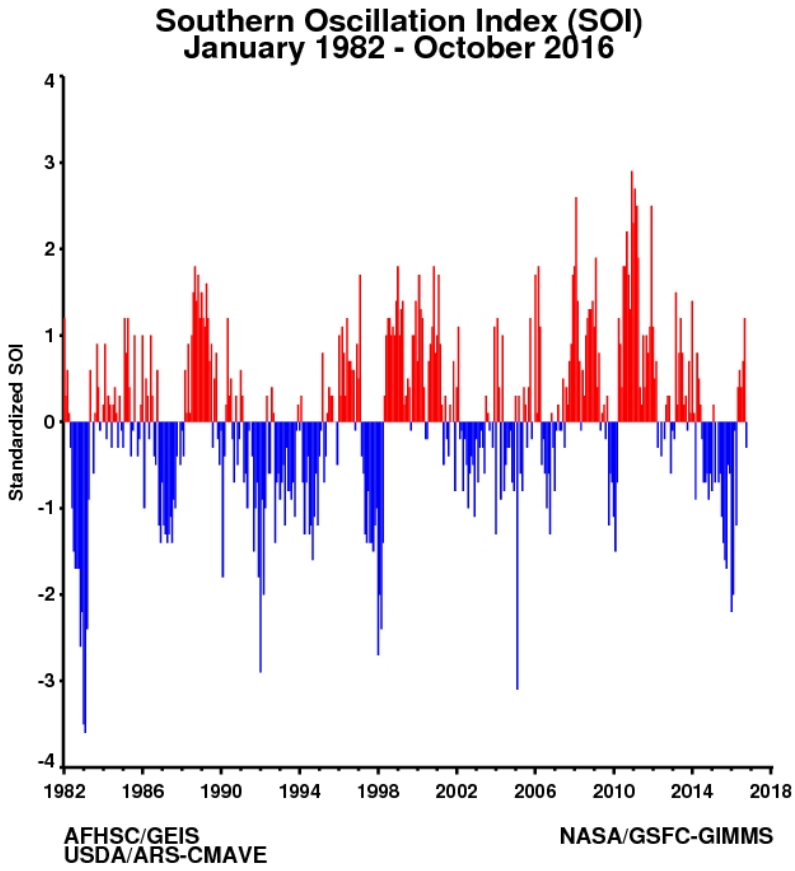
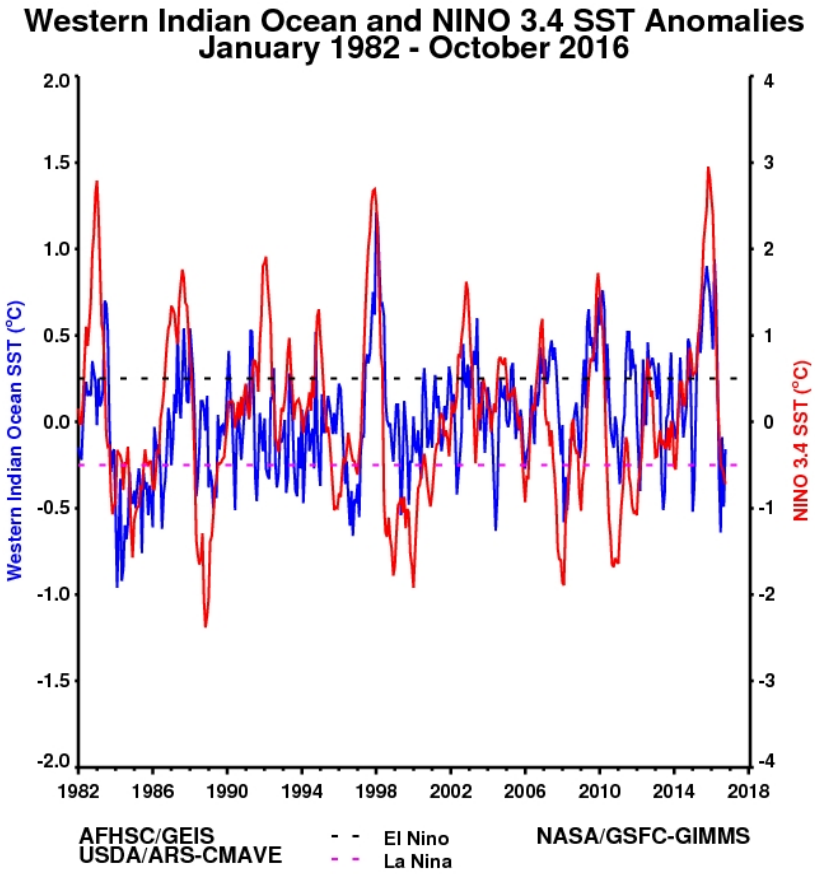
This section of the report will provide a rolling three month update on a monthly basis of the state of the climatic and ecological indicators used in monitoring areas at risk to RVF activity. These indicators include, global SST anomalies patterns, Equatorial Western Indian Ocean (WIO) and Eastern Pacific 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.

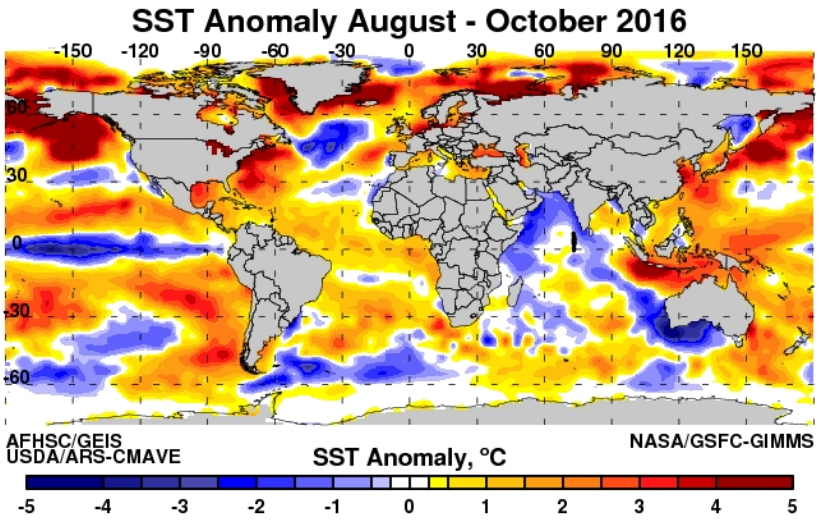
October 2017

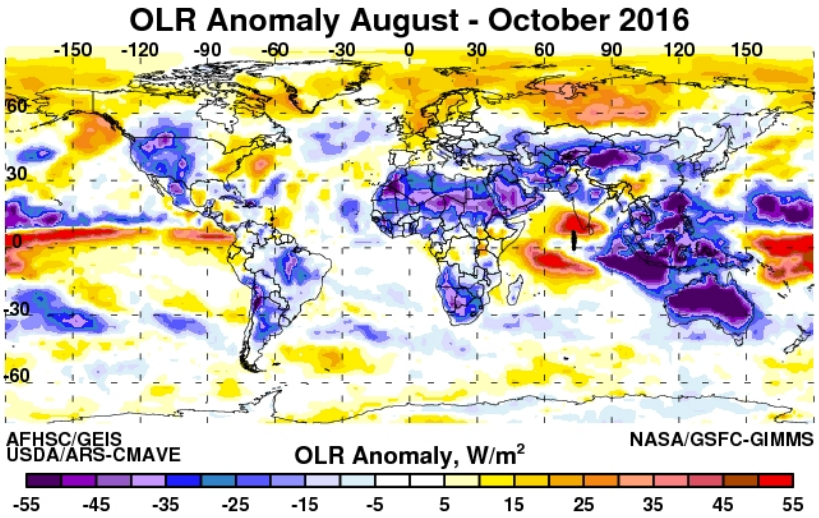
1. SOI and SST Indices





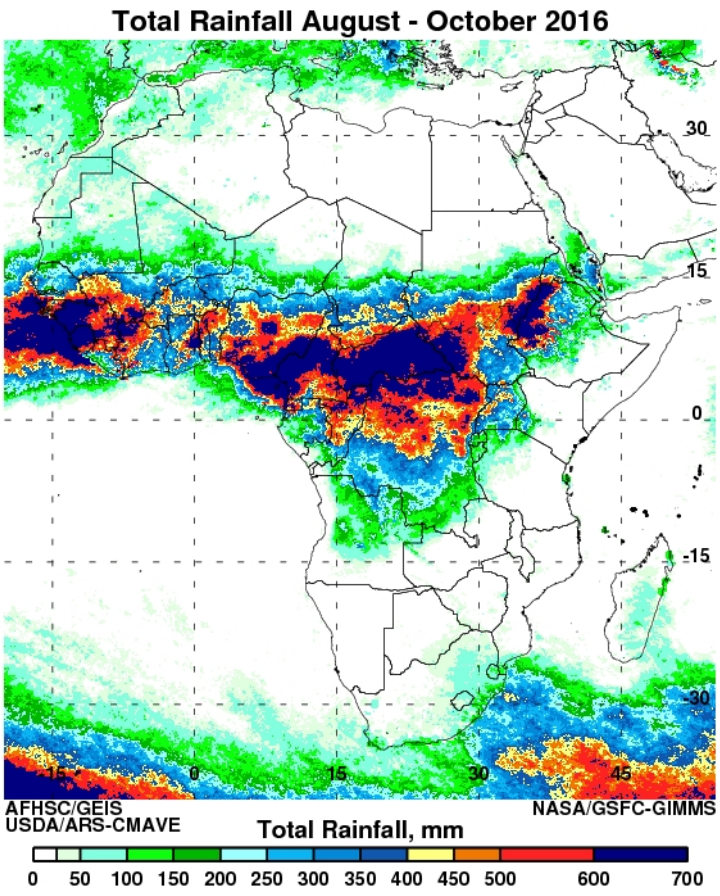
The SOI value has decreased to -0.3 in October from 1.2 in September this reflects the month variability in this transition period. The ocean temperature conditions show emergent La Niña conditions with negative sea surface temperature (SST) anomalies October stretching across most of the eastern and central equatorial Pacific Ocean monitoring regions except the eastern most NINO1&2 region where above normal SST conditions still persist: NINO 3.4 (-0.72°C), NINO 4 (-0.39°C), NINO3 (-0.43°C) and NINO1&2 SST (+0.36°C). Overall all the indicators during the last three months show the development of weak La Niña conditions. The SST anomalies in western Indian Ocean show negative anomalies in concert with the NINO indices at -0.16°C in October though reduced from -0.49°C in September. Overall, the coupled ocean-atmosphere system reflects ENSO-cold (La Niña) conditions, with current evidence indicating the persistence these conditions for the next 2-3 months. The multi-model forecast averages a continuation of weak La Niña conditions through December-February (DJF) 2016-17, and due to the present cooling the a majority of the models indicate a weak La Niña event to persist with 55% chance through the winter 2016-17 with NIN03.4 SST three month average anomaly values less than or equal to -0.5°C threshold of La Niña events.

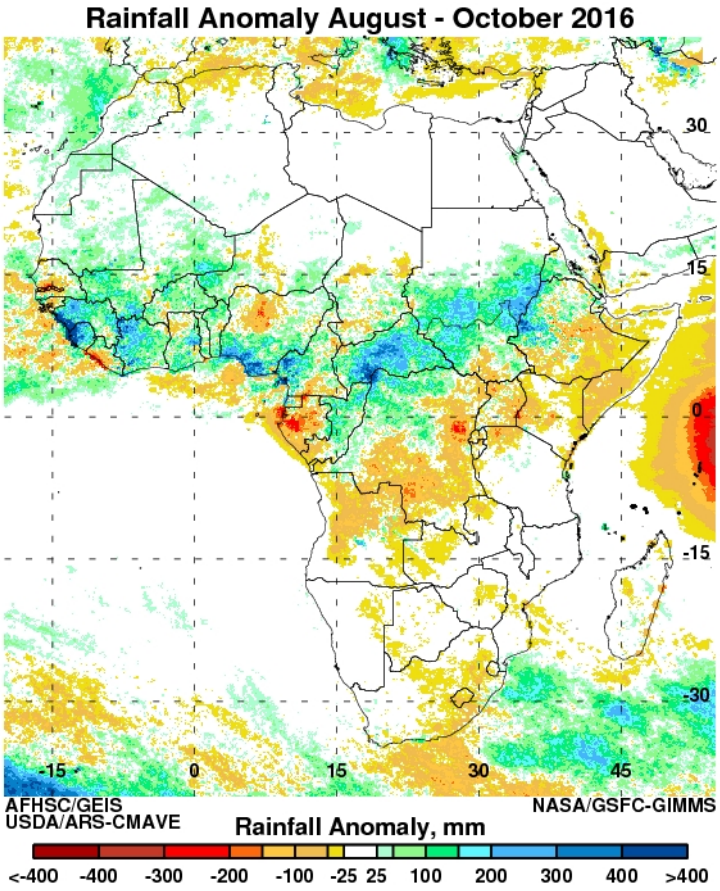




The central equatorial Pacific Ocean seasonal SSTs have continued to decrease (three month values: <-1.0°C) along the equator indicating the emergence of ENSO cold conditions. The region from 30°S to 10°S in the southwestern Pacific Ocean still has below-normal SSTs persisting during August 2016 to October 2016 period. The western Pacific Ocean around the Indonesian basin now shows widespread above normal SSTs indicating the start of reversal of ocean and atmospheric circulation across the equatorial Pacific Ocean. A large portion western equatorial Indian Ocean is now anomalously cold off the East African coast with departures ~ -0.5°C to -2.0°C including in northwestern Indian Ocean extending into southwestern Australia region with a pronounced cold pool. 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. In general characteristic pattern of cold ENSO SST anomalies are evident globally. 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

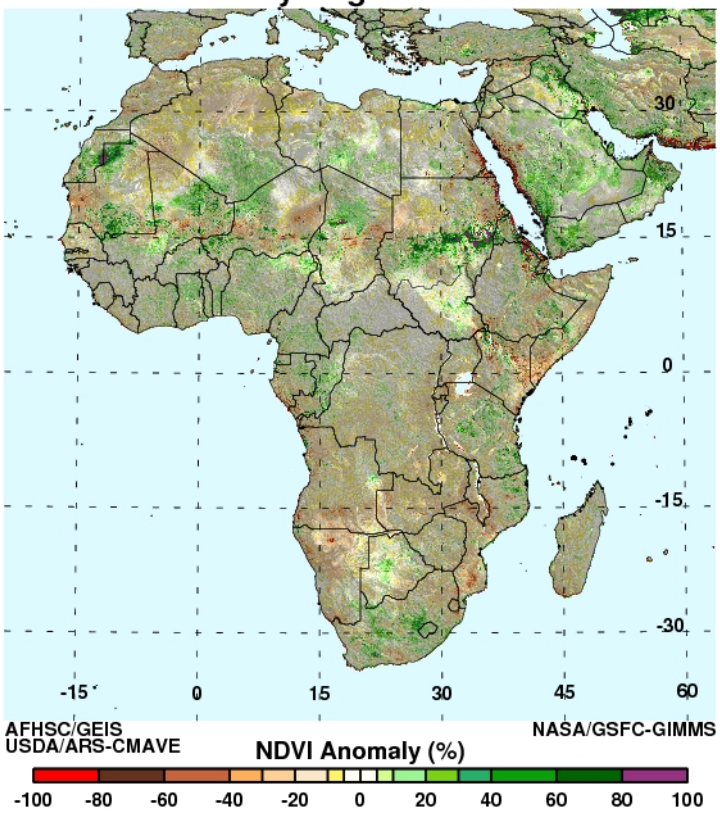
convection is shown by shades of blue. Some impacts from the current SST anomaly patterns can be observed in the pattern of global convective activity illustrated by the OLR departure patterns here. During the August 2016 to October 2016 period, drier-than-average conditions (>+55W/M2) are prevailing over the central to eastern equatorial Pacific Ocean basin. The entire western Pacific including Australia and the Indonesian basin show large negative OLR anomalies indicative of convective activity. Drier the normal conditions are prevailing over extreme northern hemisphere including Alaska, Canada, Eastern Europe with extreme values over northern Russia (>+45W/M2) continue to persist. Negative departures in OLR north-equatorial eastern Pacific Ocean have now diminished in areas, however Mexico, western and southwestern US show persistent negative OLR anomalies indicative continued convection and precipitation conditions in this region. Negative OLR anomalies continue to dominate North Africa and Middle East and India extending southeastwards into Southeast Asia. The western equatorial Indian Ocean basin extending into eastern Africa shows positive OLR anomalies indicating reduced convective activity. Accordingly, southern 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 the early phase of cold ENSO events. Monthly and weekly anomalies can be found here. Rainfall and associated anomalies (below) for Africa from August 2016 to October 2016 show rainfall concentrated over the northern Congo basin/CAR and the belt to the immediate north of the equator with maximum values of 700mm. Areas of above normal rainfall (+50 to 300 mm) are limited to Central Africa Republic, South Sudan, western Ethiopia and equatorial western Africa with values at +300mm over the three month period. These rainfall patterns are persisting from the JAS period.

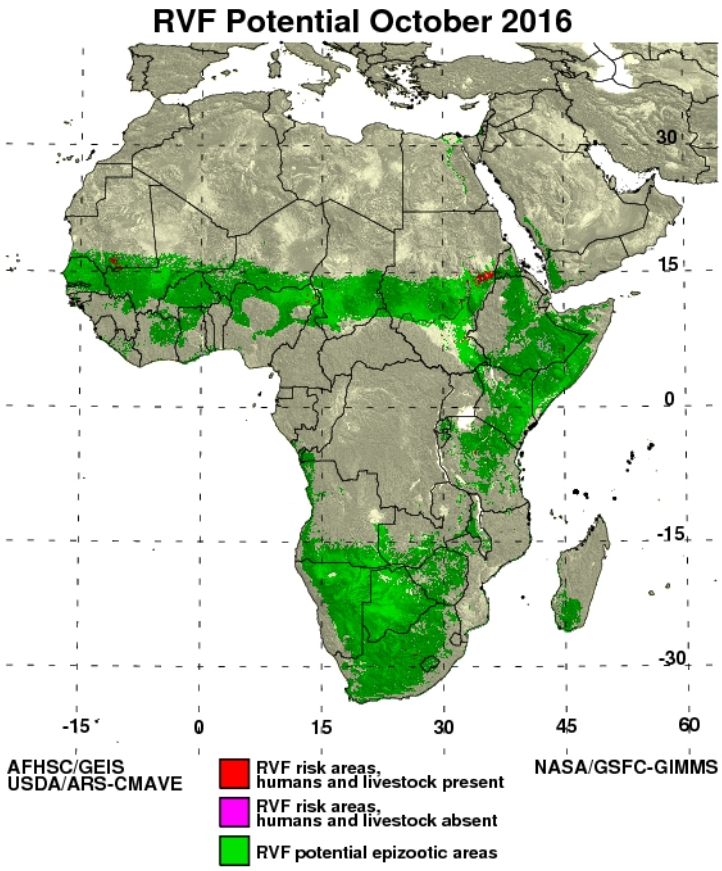

Total Rainfall August - October 2016
30
15
0
-15
-30
-15
0
15
30
45
AFHSC/GEIS
USDA/ARS-CMAVE
NASA/GSFC-GIMMS
Total Rainfall, mm
0 50 100 150 200 250 300 350 400 450 500 600 700



Cumulative NDVI anomalies for Africa for August 2016 to October 2016 show a patchwork of positive anomalies concentrated across the Sahel region and western Saudi Arabia and Yemen. 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 August 2016 to October 2016, the RVF persistence model identifies areas at risk in some areas of southern Mauritania, Chad, northeastern Nigeria, eastern Sudan and western Saudi Arabia which have received above normal rainfall over the last three months. Given the elevated rainfall conditions that have prevailed in these countries, continued surveillance is advised in these areas. There have been reported outbreaks of RVF in Niger and Mali in the last two months.

NDVI Anomaly August - October 2016




RVF Potential October 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