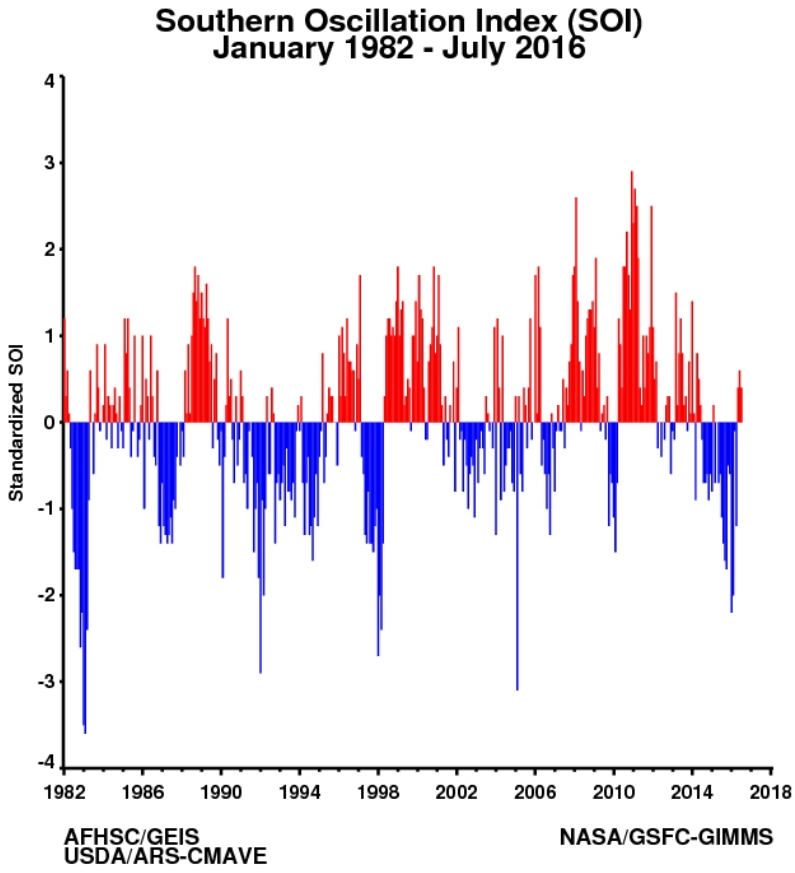
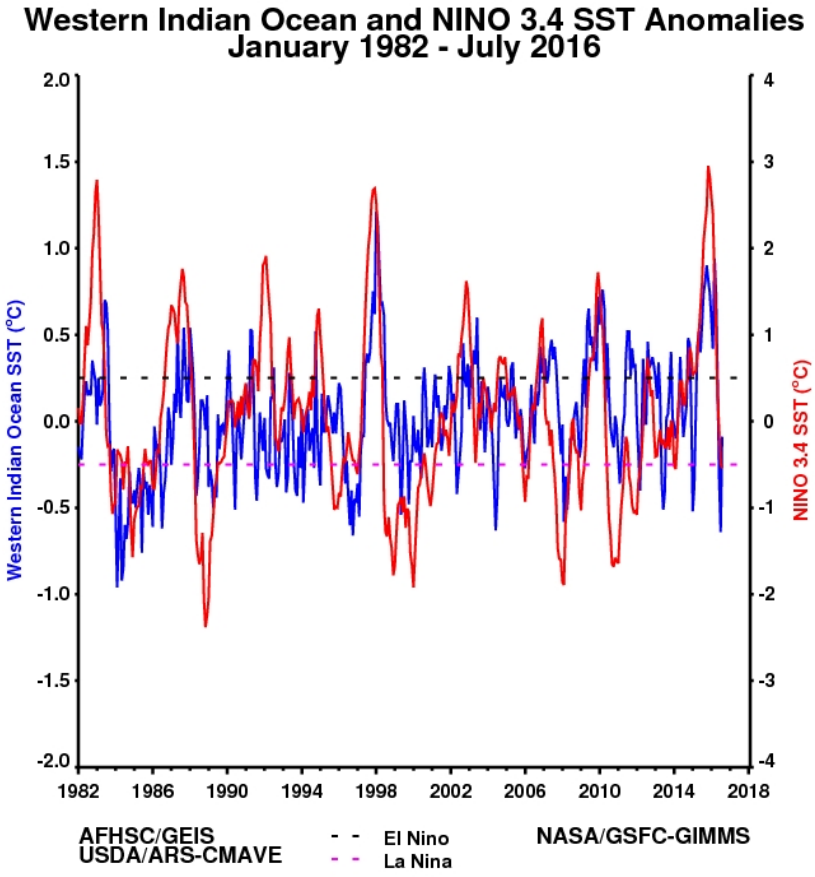
This section of the report will provide a rolling three month update on a monthly basis of the state of the climatic and ecological indicators used in monitoring areas at risk to RVF activity. These indicators include, global SST anomalies patterns, Equatorial Western Indian Ocean (WIO) and Eastern Pacific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

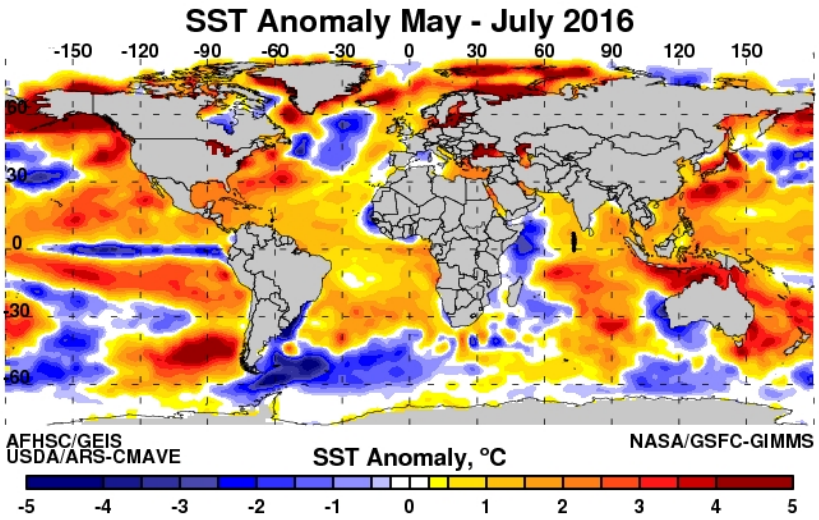
July 2017

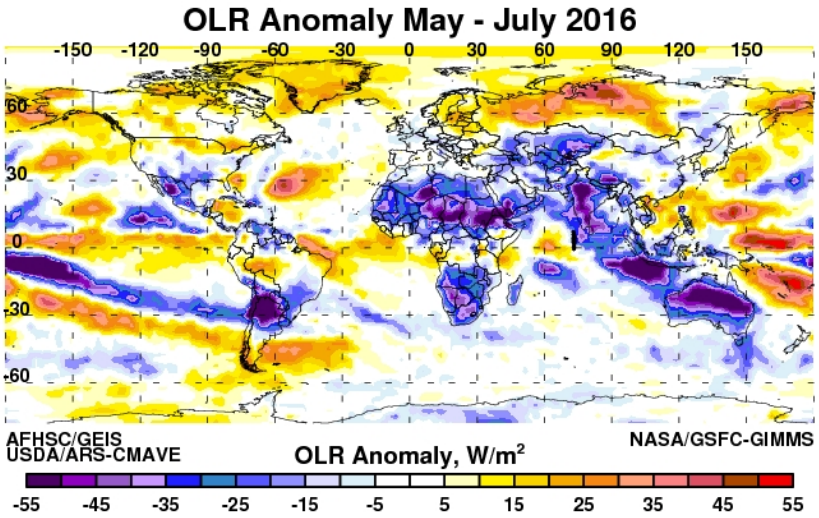
1. SOI and SST Indices





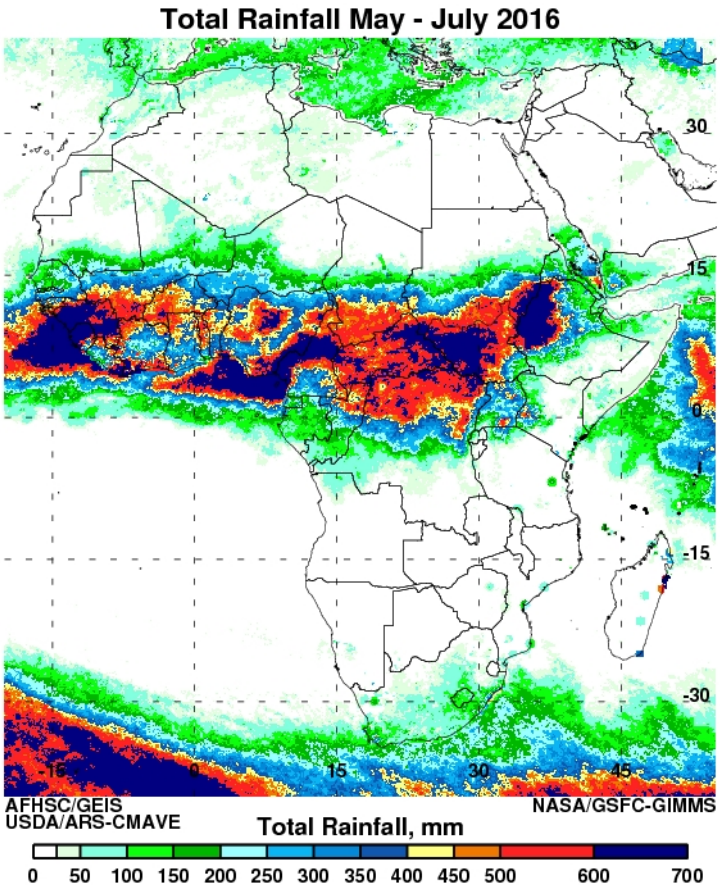
The SOI value is slightly positive and reflects near normal/neutral conditions at 0.4 in July, conditions that have prevailed since June. The oceanic indices also reflect these ENSO-neutral conditions with all indices except the western most NINO4 region: NINO 3.4 (-0.49°C), NINO 4 (+0.26°C), NINO3 (-0.48°C) and NINO1&2 SST (+0.17°C). ENSO neutral conditions are now dominant with signs of emergence of below normal SSTs in the eastern equatorial Pacific. The SST anomalies in western Indian Ocean have also plummeted too, declining to -0.64°C in July from -0.33°C in June in concert with the NINO indices. Collectively, these atmospheric and oceanic conditions reflect ENSO-neutral conditions. Overall, ENSO-neutral conditions are present and La Niña is favored to develop during the Northern Hemisphere fall 2016 (August - October), with a majority of the models indicating a 55-60% chance of La Niña during the fall and winter 2016-17.

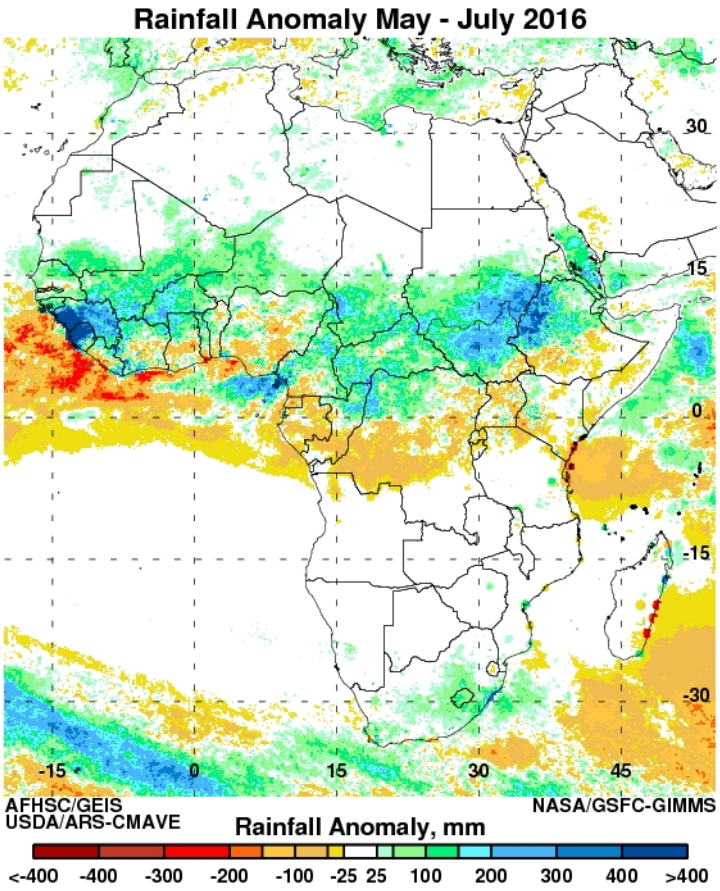




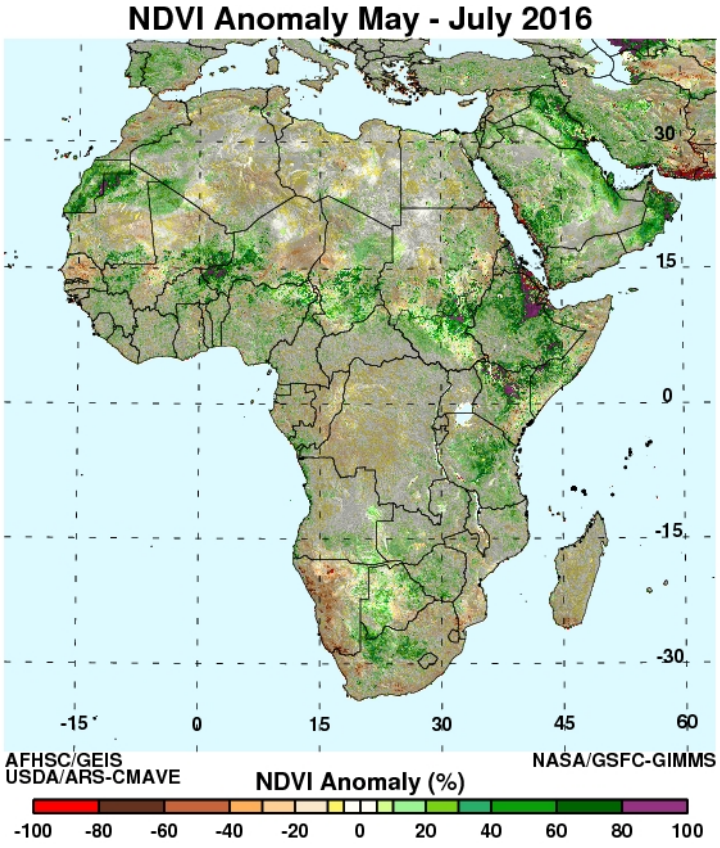
The central equatorial Pacific Ocean seasonal SSTs have decreased (three month values: <-1.0°C) along the equator indicating the emergence of ENSO cold conditions. The region from 30°S to 10°S in the southwestern Pacific Ocean still has below-normal SSTs persisting during May 2016 to July 2016 period. 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 of equatorial Indian Ocean is still anomalously warm with but with departures reduced to ~ +0.5°C to +2.0°C in the central and southern equatorial Indian Ocean. However, the areas off the East African coast and the western Australian coast are now developing a strong 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. 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

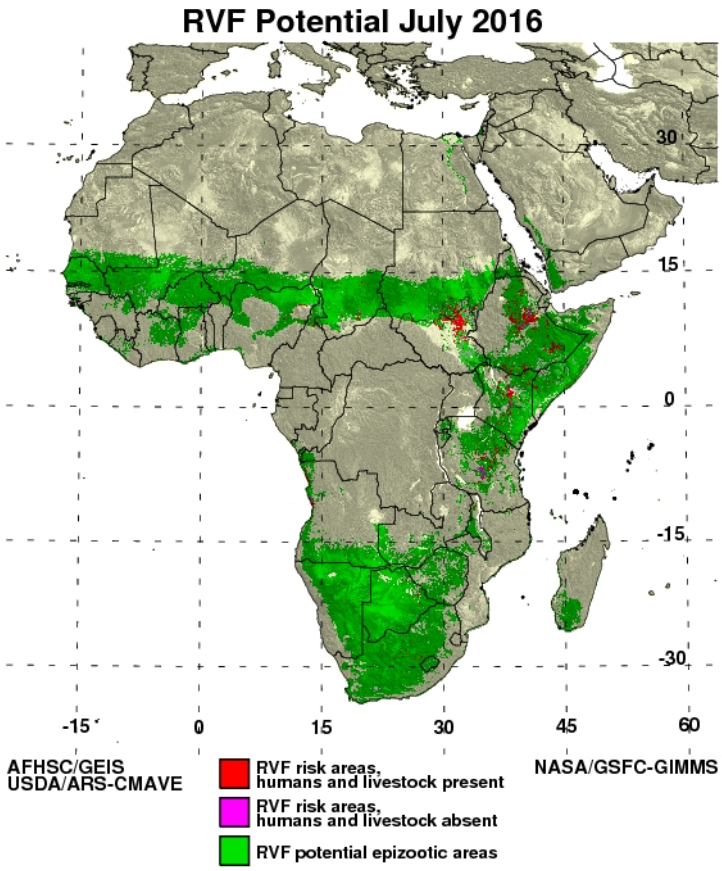
SST anomaly patterns can be observed in the pattern of global convective activity illustrated by the OLR departure patterns here. During the May 2016 to July 2016 period, drier-than-average conditions (>+55W/M2) are still prevailing over the western Pacific Ocean basin covering immediately to east of the Indonesian basin, however, the western half including Australia show large negative OLR anomalies indicative of convective activity. Drier the normal conditions are prevailing over extreme norther hemisphere including Alaska, Canada, Eastern Europe into northern Russia. Negative departures in OLR extending from the eastern Pacific Ocean through Mexico into southwestern and southern US are indicative continued convection and precipitation conditions. Negative OLR anomalies continue to dominate North Africa and Middle East and India extending southeastwards into Southeast Asia. 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 ENSO events. Monthly and weekly anomalies can be found here. Rainfall and associated anomalies (below) for Africa from May 2016 to July 2016 show rainfall concentrated over the northern Congo basin 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 western Sahel with values at +300mm over the three month period.





Cumulative NDVI anomalies for Africa for May 2016 to July 2016 show positive anomalies concentrated in parts of Western Sahara, Sudan/South Sudan border, northeastern Kenya/Somalia/Ethiopia border, Botswana 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 May 2016 to July 2016, the RVF persistence model identifies areas at risk in some areas of norther Kenya, Tanzania, South Sudan, Ethiopia 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. The above normal NDVI conditions over western Saudi/Arabia and Yemen also require enhanced surveillance over this region.


NDVI Anomaly May - July 2016
30
15
0
-15
-30
-15
0
15
30
45
60
AFHSC/GEIS
USDA/ARS-CMAVE
NASA/GSFC-GIMMS
NDVI Anomaly (%)
-100
-80
-60
-40
-20
0
20
40
60
80
100


RVF Potential July 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