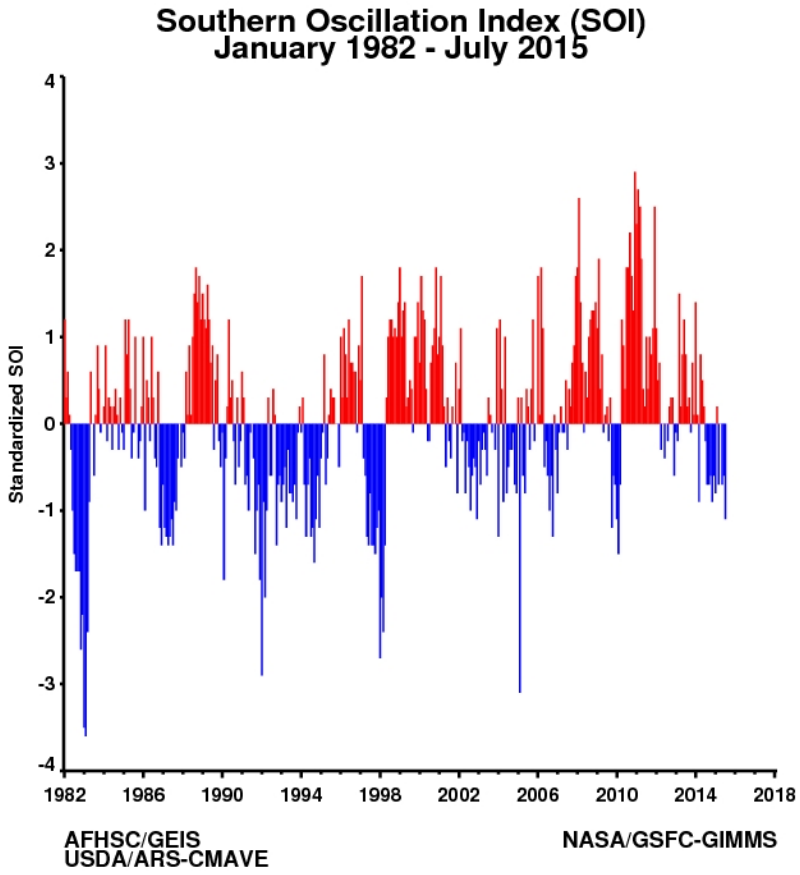
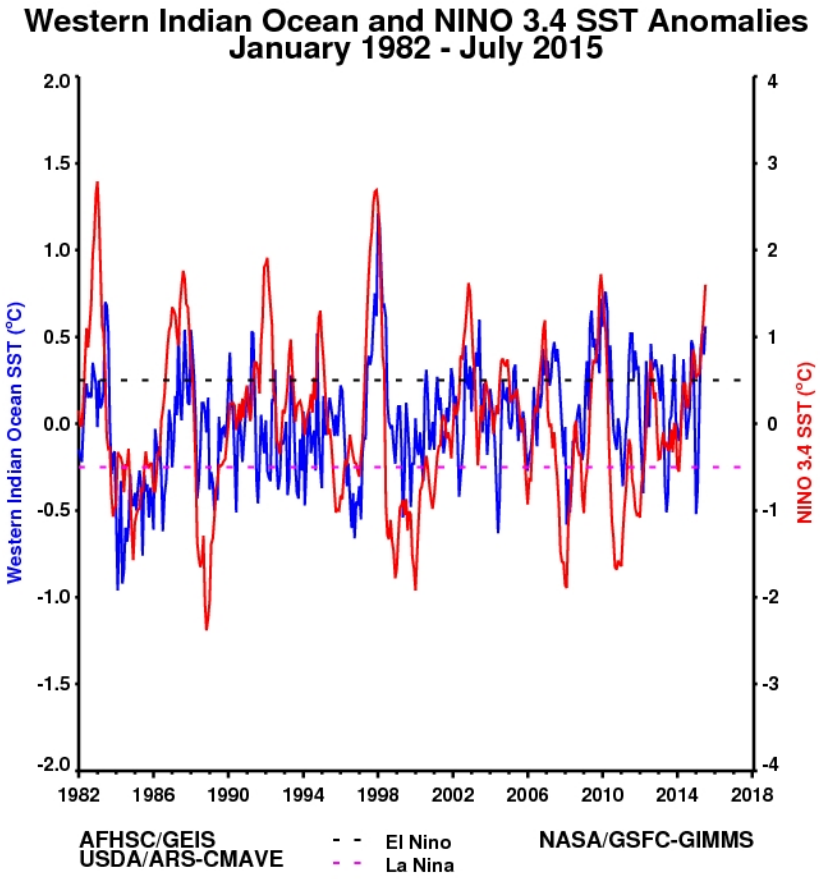
This section of the report will provide a rolling three month update on a monthly basis of the state of the climatic and ecological indicators used in monitoring areas at risk to RVF activity. These indicators include, global SST anomalies patterns, Equatorial Western Indian Ocean (WIO) and Eastern Pacific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

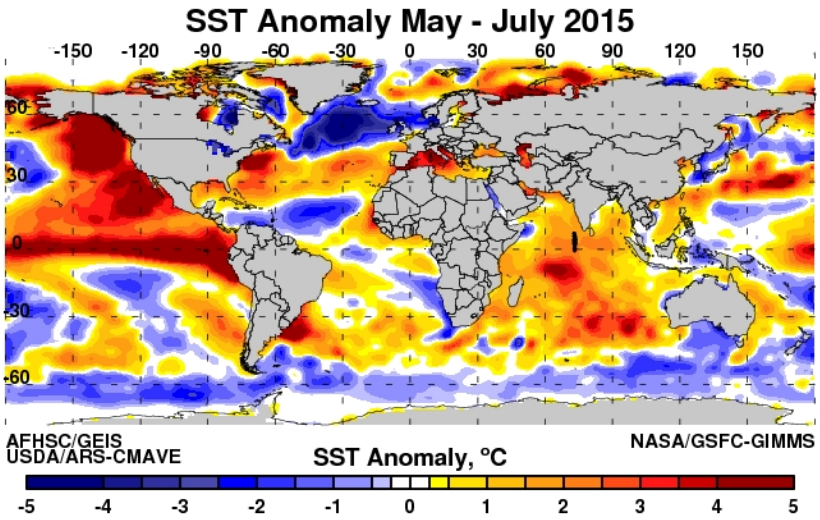
July 2015

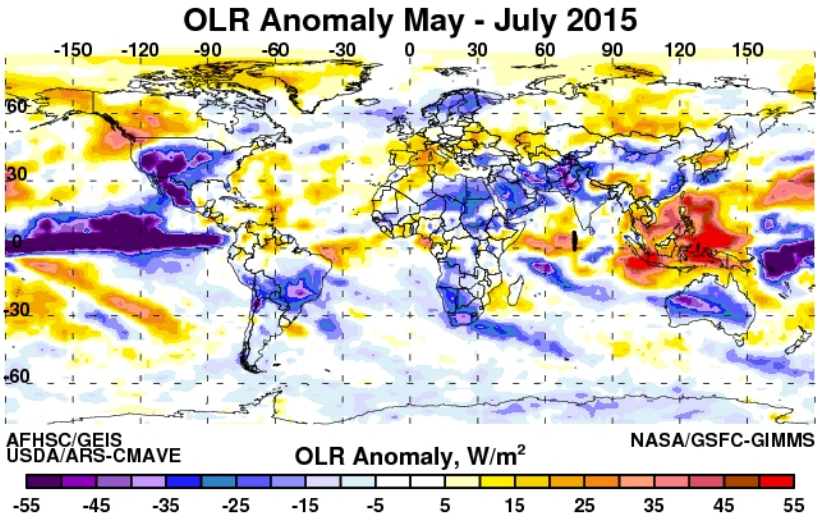
1. SOI and SST Indices





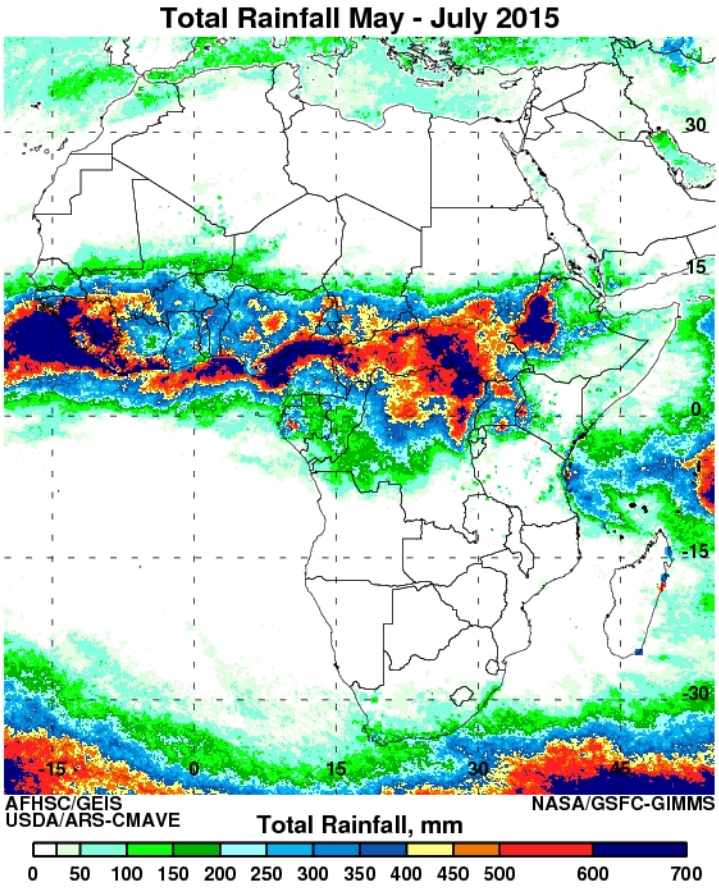
The SOI index continued to tumble with a value of -1.1 in July from -0.6 in June, suggesting a strengthening of El Niño conditions. This is supported by continued anomalous increase in positive SSTs in NINO 3.4, NINO 4 and NINO1&2 monitoring regions which have tremendously warmed over the last two months with values of +1.67°C, 1.0°C and 2.87°C respectively in July. The western Indian Ocean basin has continued the warming pattern with the WIO SST index at +0.56°C in July from +0.40°C in June indicating continued warmer than normal conditions over this ocean basin. The persistent above-average sea surface temperatures (SST) (below) in the central equatorial Pacific region indicate that El Niño conditions are present and significantly strengthening. Enhanced convection is amplified over the central and eastern equatorial Pacific and suppressed convection over the Indonesian basin is fully entrenched. Collectively, these atmospheric and oceanic features reflect an ongoing and strengthening El Niño conditions. Currently a majority of model forecasts predict El Niño conditions (90% chance) through Northern Hemisphere winter 2015-16, and around an 85% chance it will last into early spring 2016. The current conditions will continue to strengthen and last through the rest of 2015 with a favorable chance of a strong warm event. The consensus forecast is for a significant El Niño in excess of +1.5°C in the Niño-3.4 region(3-month values of the Niño -3.4 index +2.0°C or greater) during the peak period in December - January. In some locations, certain impacts often associated with El Niño may appear during the Northern Hemisphere through the summer 2015 season.

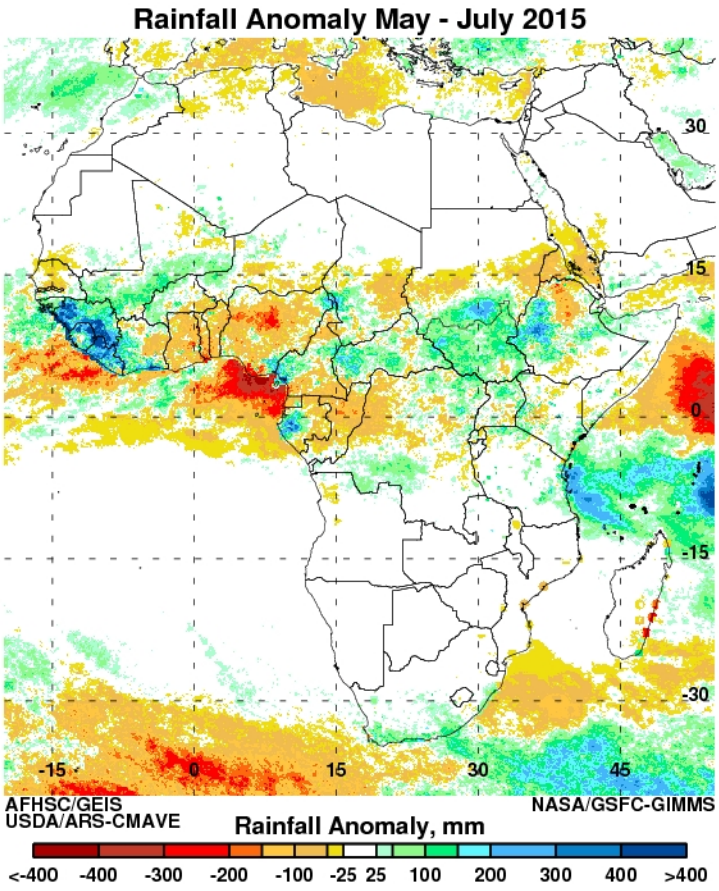




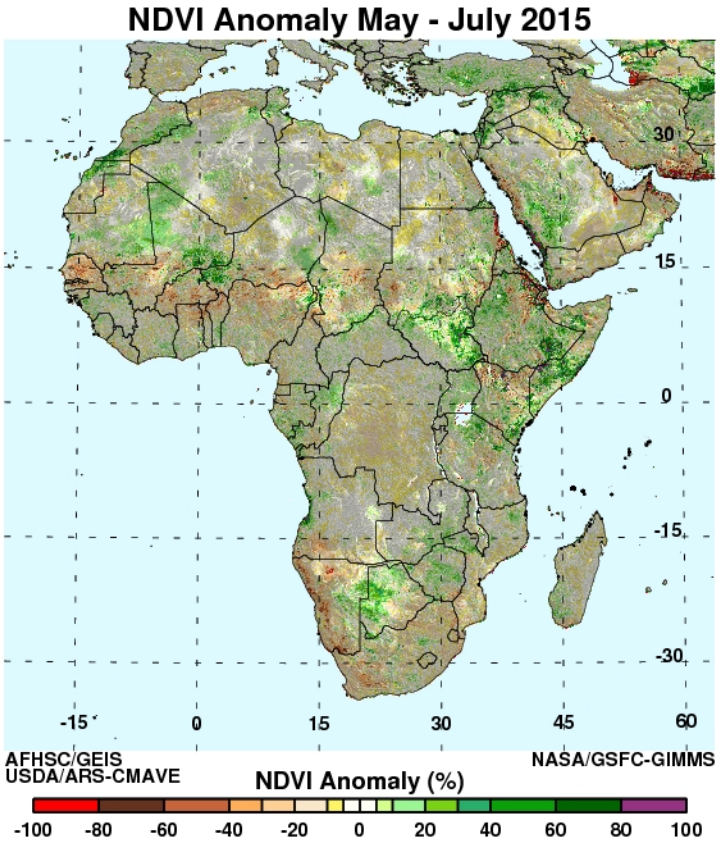
The central equatorial Pacific Ocean continues to show pronounced above normal seasonal SSTs (three month values: >+1.0°C to +5.0°C) except for the region from 30°S to 1°S (off the South American coast) with below-normal SSTs during the May 2015 to July 2015. The western Pacific Ocean especially the region of the Indonesian basin shows below normal SSTs indicating a reversal of ocean and atmospheric circulation across the equatorial Pacific Ocean. The entire equatorial Indian Ocean is anomalously warm with departures of ~ +1.5°C in western equatorial Indian Ocean and as high as +3.0°C (3-month values) in the southern Indian Ocean 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

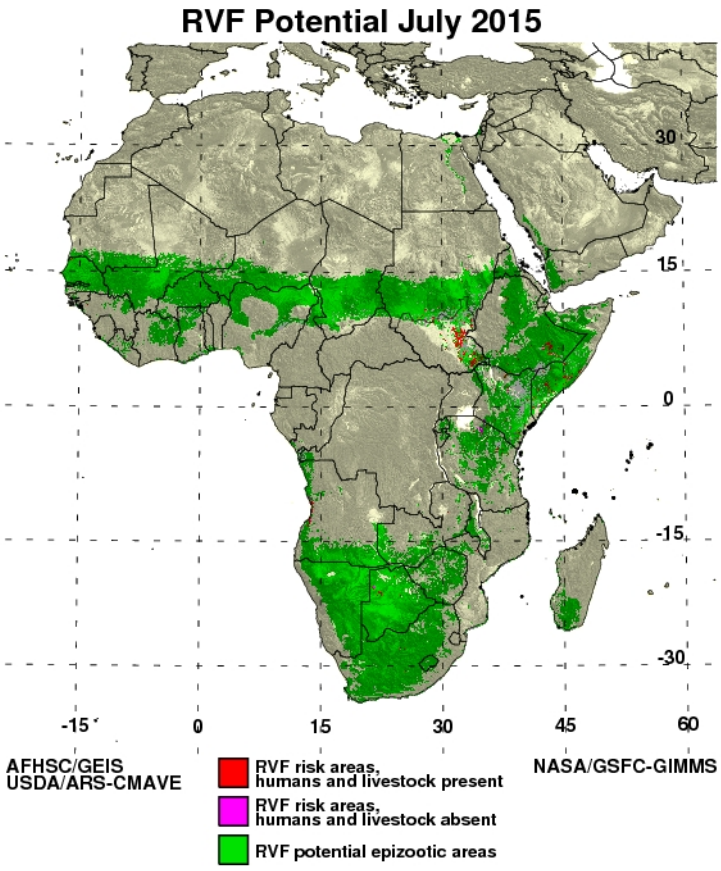
here. During the May 2015 to July 2015 period, drier-than-average conditions (>+35W/M2) are now enhanced over the western Pacific Ocean covering the Indonesian basin, as well as drier the normal conditions are prevailing over Alaska, western Canada and northern Russia. The severe drought in western US (Californian) have eased up as shown by the negative departures in OLR extending from the eastern Pacific Ocean 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. This band extends northern through Mexico into southern and eastern US. Convective conditions continue to persist over India between 70°E and 90°E, eastern Sahel (Sudan), parts of East Africa, central South America covering most of the eastern Amazon Basin. 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 May 2015 to July 2015 show rainfall concentrated over equatorial Africa with a maxima between the equator and 15°N. Areas of above normal rainfall (+50 to 200 mm) are limited to parts of coastal West Africa, the northern Congo basin, the Sudans, parts of western and coastal Kenya, Tanzania and Ethiopia.





Cumulative NDVI anomalies for Africa for May 2015 to July 2015 still show positive anomalies concentrated in South Sudan, northwestern and eastern Ethiopia, Somalia and parts of eastern Kenya. 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 2015 to July 2015, the RVF persistence model identifies areas in South Sudan and eastern Ethiopia, and isolated parts of central Somalia where ecological conditions would support the emergence of RVF vectors. Enhanced surveillance is advised in these areas especially in the next three months (September October and November 2015). The above normal rainfall conditions could lead to outbreaks of other vector and water-borne diseases elsewhere.


NDVI Anomaly May - July 2015
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 2015
30
15
0
-15
-30
-15
0
15
30
45
60
AFHSC/GEIS
USDA/ARS-CMAVE
NASA/GSFC-GIMMS
RVF risk areas, humans and livestock present
RVF risk areas, humans and livestock absent
RVF potential epizootic areas