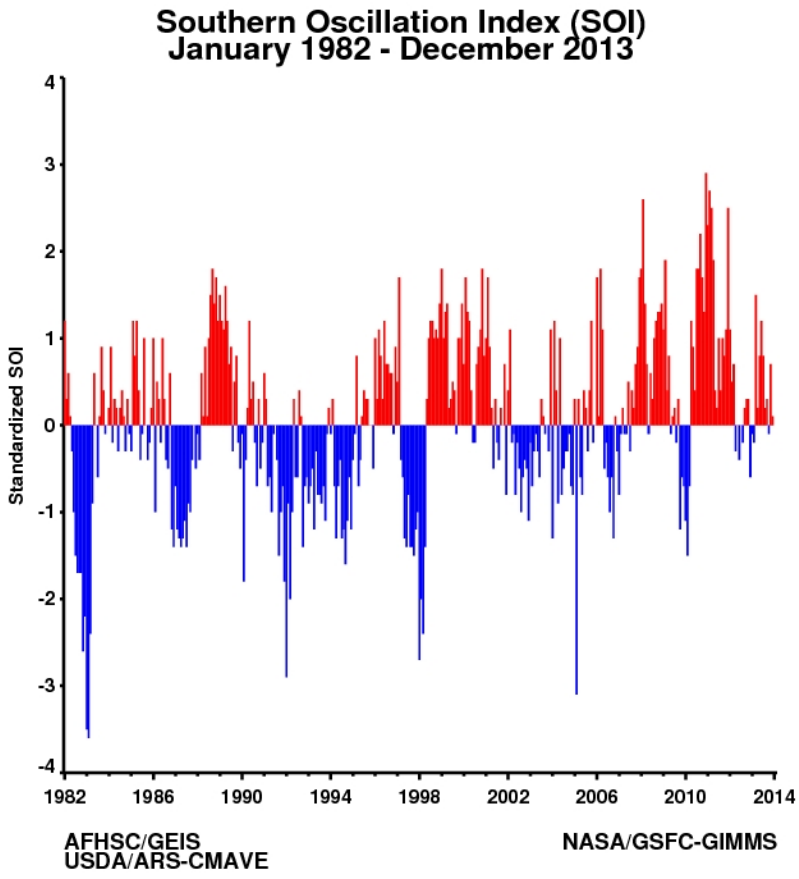
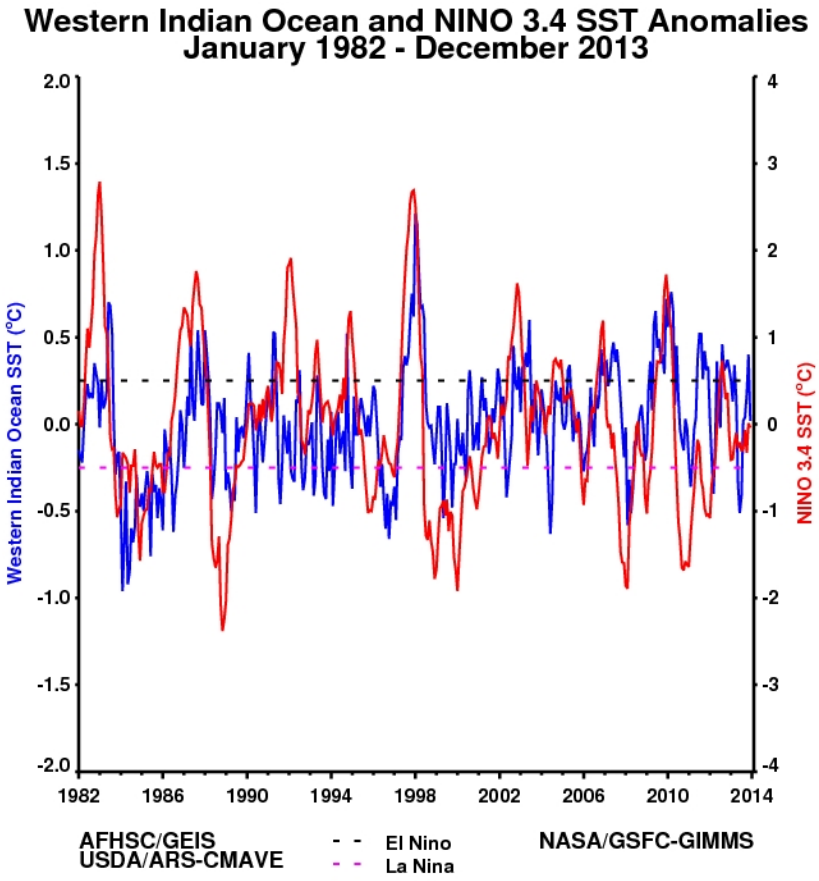
This section of the report will provide a rolling three month update on a monthly basis of the state of the climatic and ecological indicators used in monitoring areas at risk to RVF activity. These indicators include, global SST anomalies patterns, Equatorial Western Indian Ocean (WIO) and Eastern Pacific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

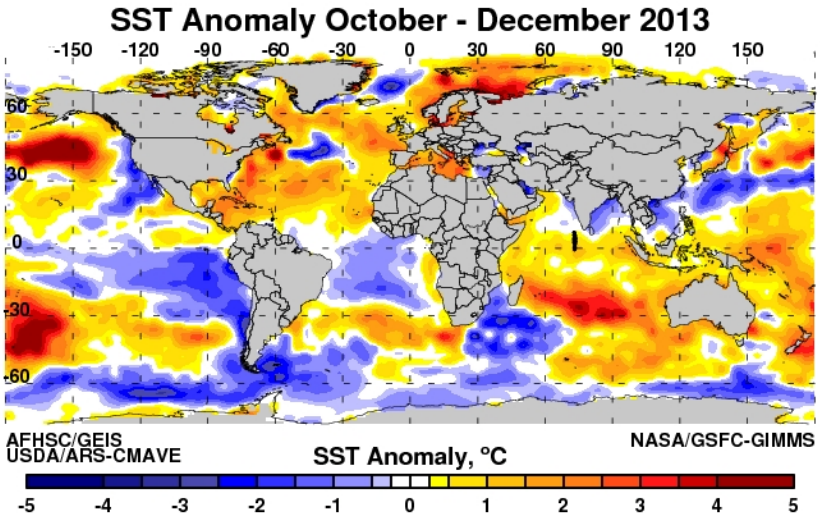
# December 2013

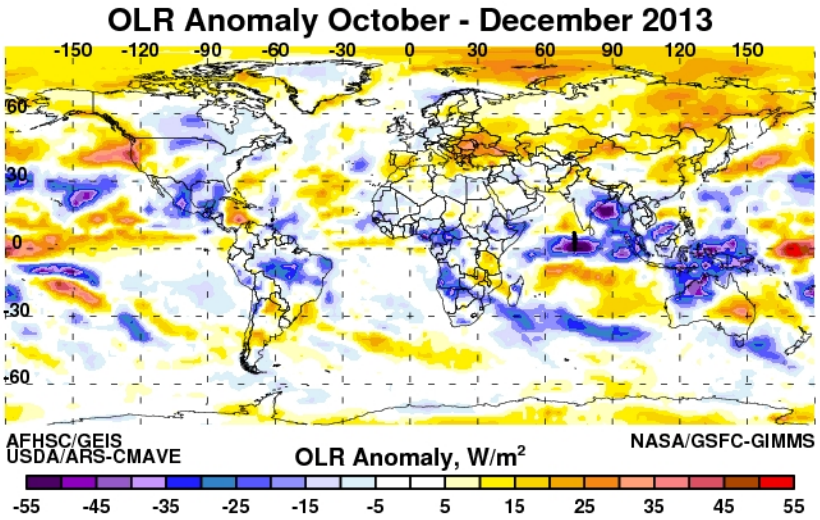
### 1. SOI and SST Indices





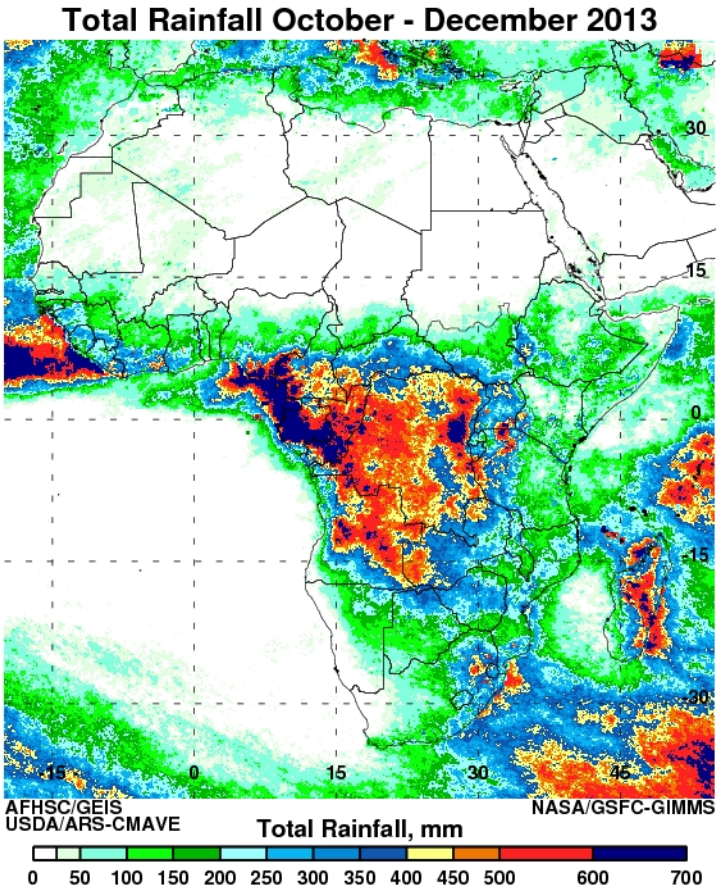

The SOI index decreased to 0.1 in December from 0.7 in November, exhibiting a fluctuation that is within the normal range of values that characterize neutral ENSO conditions. This is a pattern that continues to be exhibited by the SOI since the beginning of 2013. Correspondingly, December monthly SST anomalies in the **NINO3.4 SST** region are also near-normal with a slight negative value of -0.04°C and so are the **WIO SST** (0.02°C) anomalies indicating near normal conditions over these ocean basins. At the moment, all the atmospheric and oceanic indicators are in convergence with persistence of ENSO- neutral conditions. The latest statistical and coupled model forecasts continue to indicate that ENSO-neutral (Niño-3.4 index between -0.5°C and 0.5°C) will persist into the Northern Hemisphere spring 2014.

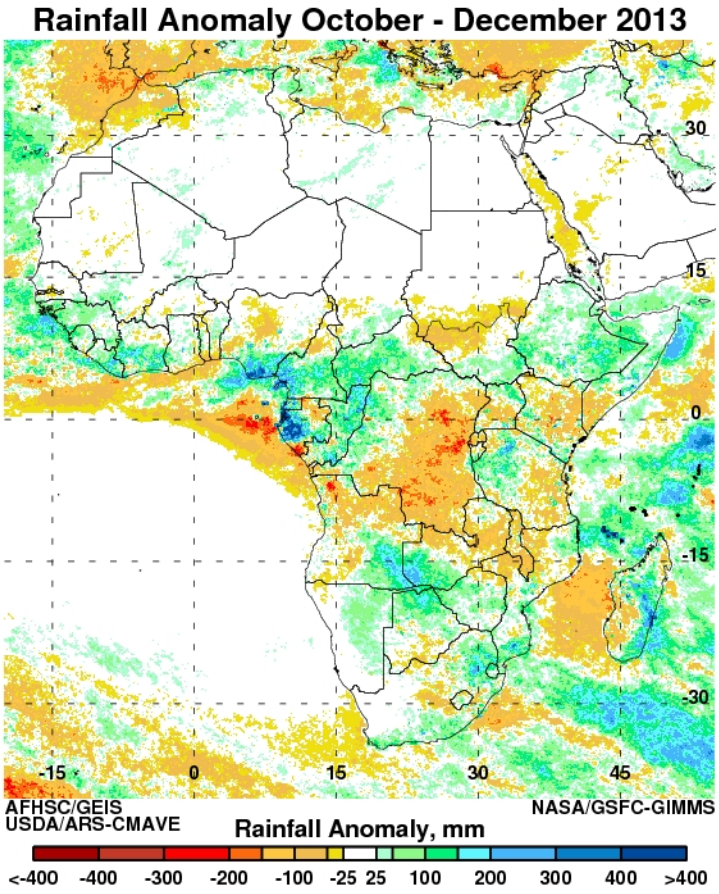



The eastern equatorial Pacific Ocean shows near normal SST in the region from 90°W to 160°W [NINO1.2 region] during the October - December period with SST anomaly values in the range of 0.0°C to -1.0°C. In contrast the entire western equatorial Pacific shows the persistence of above normal SST (0.5°C to 2.0°C) for the last three months. Accordingly, the entire equatorial Indian Ocean is also dominated by positive SST anomalies with a strong cell of persistent positive anomalies ~ +3.0°C located at 30°S east of Madagascar over the last few months. Other regions of significant anomalies include the north Pacific Ocean, north Atlantic, the Pacific Ocean off the California coast, and south Indian Ocean off the southern Africa landmass 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 SST anomaly patterns can be observed in the pattern of global convective activity illustrated by the OLR departure patterns here. During the October - December period, drier-than-average conditions are observed over the equatorial eastern Pacific Ocean between 180W and 120W, eastern Australia region and over California, which undergoing a severe drought at present with high positive

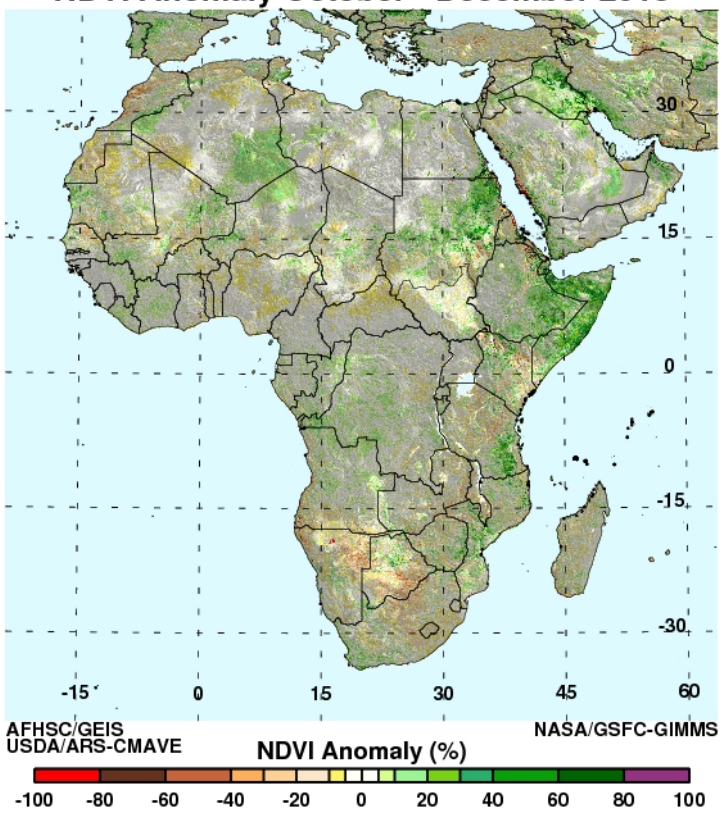
OLR anomalies (+50W/M$^2$). Convective activity continues to be prevalent over parts of Southeast Asia, propagating westwards to India, parts of the Horn of Africa, equatorial West Africa, SW Africa and with a large cell of convective activity located over Central America (-50W/M$^2$) and Amazonia. These patterns of depressed and enhanced convective activity coincide well with the pattern of SST departures. Monthly and weekly anomalies can be found here. Rainfall and associated anomalies (below) for Africa from October to December 2013 show rainfall concentrated from ~5$^o$N southwards indicating a shift of the rainfall producing mechanisms into the southern hemisphere. Areas of above normal (+50 to +250mm) rainfall are now scattered in several isolated locations including over the Gulf of Guinea, SE Ethiopia and northern Somalia and parts of southern Africa.

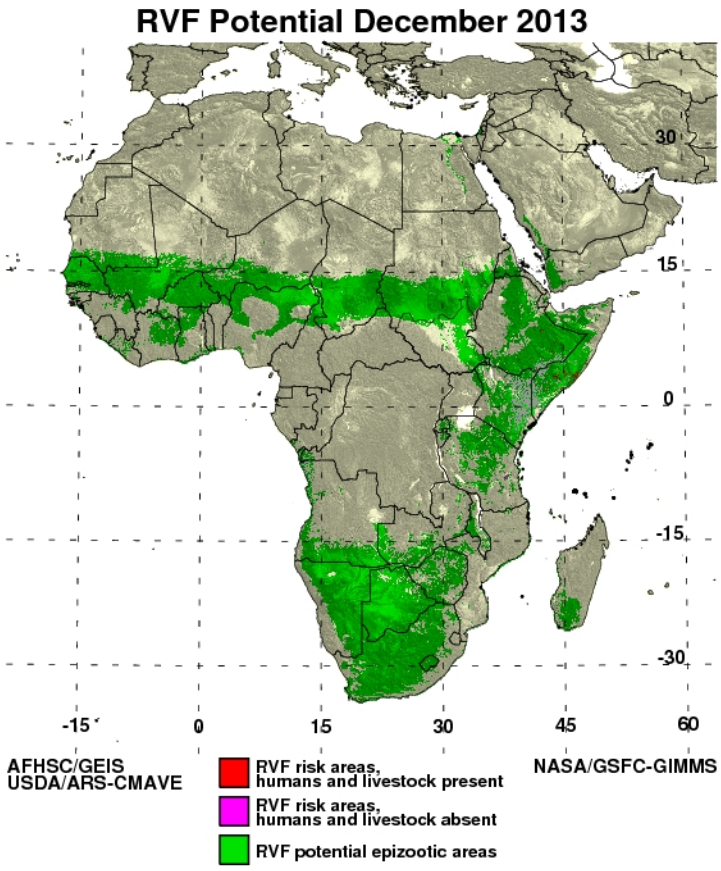





Cumulative NDVI anomalies for Africa for October - December 2013 show positive anomalies concentrated over the Horn Africa from the above normal rainfall from over the last 3 months. The RVF risk map below was derived from thresholding NDVI anomaly data to detect areas persistent of above normal NDVI. 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 October to December 2013, the RVF persistence model to identify isolated areas in central Somalia where ecological conditions would support the emergence of RVF vectors. These should be the regions of focus at this time given the above-normal rainfall and NDVI conditions.

## NDVI Anomaly October - December 2013




RVF Potential December 2013
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