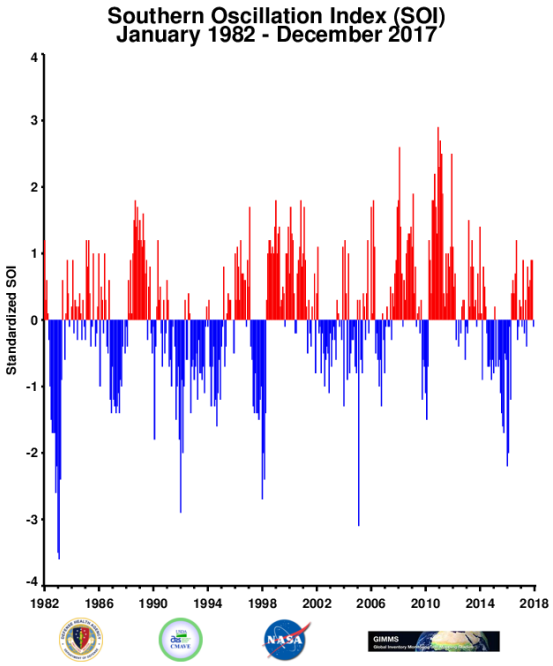
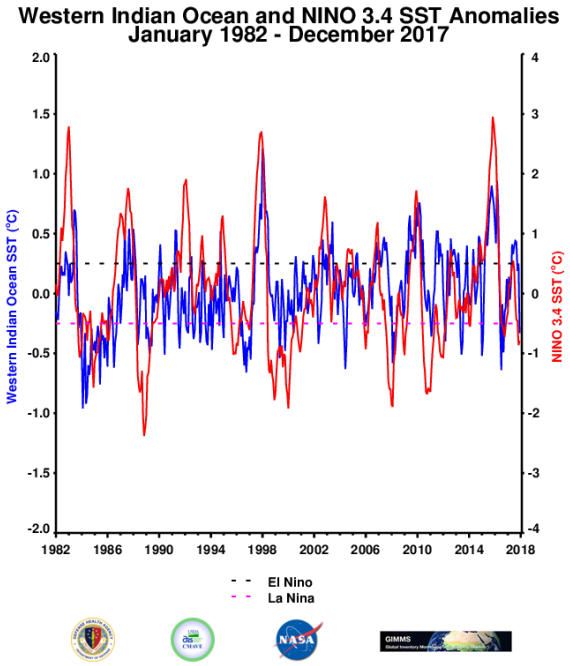
Rift Valley fever Monitor

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 2017

1. SOI and SST Indices



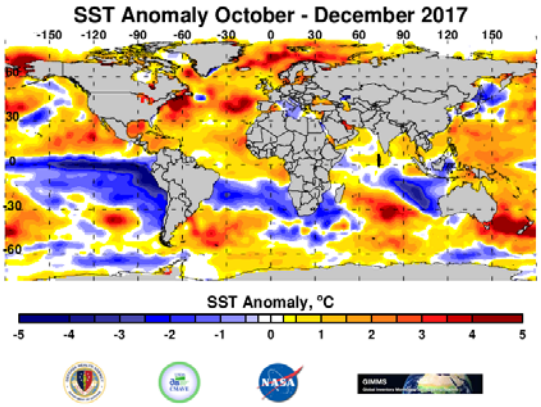


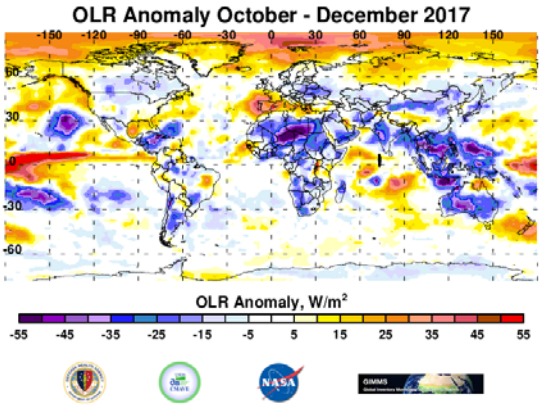
The SOI shows near normal values in December at -0.1 from 0.9 in November. However, this is temporary variation since the entire equatorial Pacific Ocean - atmosphere system in locked in and the La Niña conditions are peaking. Sustained positive SOI is correlated with colder than normal ocean temperatures in the eastern tropical Pacific Ocean typical of La Niña events.

Ocean temperatures also continued to cool in most NINO regions from November to December, particularly in the NINO1&2 region just west of Ecuador and Peru (0°-10°S, 80°-90°W) where the anomaly continued a downward trend -1.52°C in December from to -1.15°C in November. The NINO3.4 and NINO4 regions remained negative to various degrees, with NINO3.4 slightly increasing from -0.86°C to -0.79°C and NINO4 increasing from 0.18°C to -0.26°C. The NINO3 region continued to cool, decreasing from -1.05°C to -1.12°C. Temperatures have drastically cooled western Indian Ocean, where the anomaly went from +0.25°C in November to -0.33°C in December, which is an indicator of a cold pool developing

in the western equatorial Indian Ocean off the East Africa coast. Overall, the indicators show the ocean-atmosphere system is in full La Niña mode and persisting. This shift is reflected in the latest observations and climate model predictions, where a weak to moderate La Niña is forecast to continue (exceeding ~85-95%) through the Northern Hemisphere winter 2017-2018, with a transition to ENSO-neutral most likely during the mid-to-late spring.

2. Global SST and OLR Anomalies

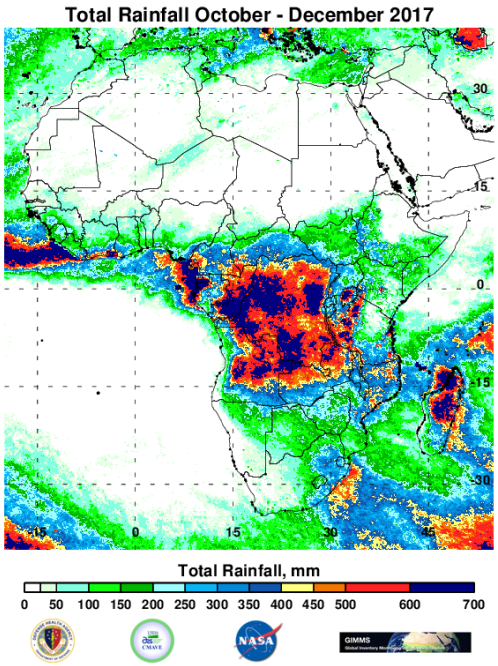


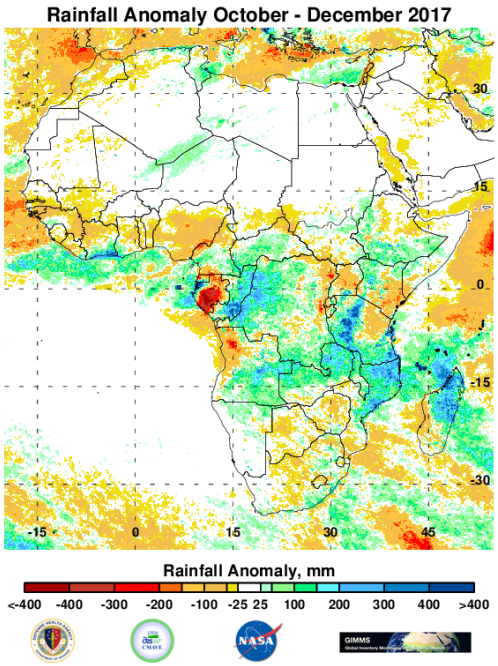


The November - December SST anomalies show a sustained cooling in the equatorial Pacific Ocean over, with cumulative temperatures exceeding 3.5°C colder than normal along the equator off the South American coast. Western Indian Ocean temperatures cooled slightly but remained above normal especially in the southern sector east of Madagascar. The southeastern Indian Ocean cold anomaly observed in July-November also persists with a maximum value of 3.5°C below normal. The Atlantic and Indian Ocean basins surrounding southern Africa are dominated by negative SST anomalies leading to suppressed convection over the sub-continent. Monthly and weekly SST anomalies can be found here.

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. The October - December 2017 OLR anomalies show drier than average conditions throughout the eastern equatorial Pacific coincident with the cooling ocean temperatures, with a maximum anomaly of -55 watts per square meter in the western equatorial Pacific. In the higher latitudes drier than normal conditions persist, particularly in northern Canada and eastern Russia. Conversely, OLR anomalies in Indonesia and Australia are negative indicating wetter than average conditions. OLR anomalies also indicate wetter than average conditions in most of Africa, the Middle East, southern Asia, the western United States, Central America, and the southern portion of South America.

3. Seasonal Rainfall and Cumulative Rainfall Anomalies



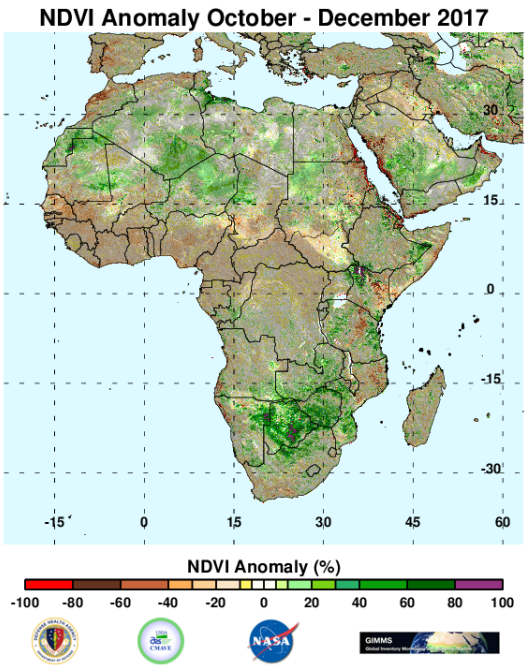


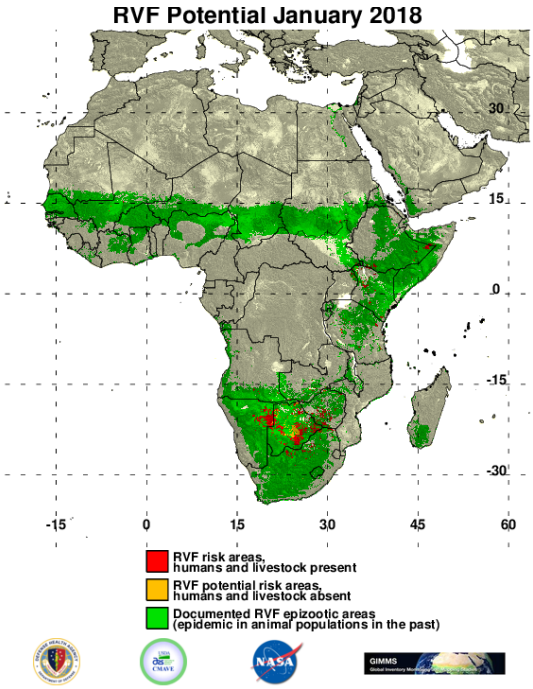
Total rainfall in Africa from October to December 2017 is now centered around the equator, with maximum totals of 700mm persisting from southern Nigeria to eastern Congo DR. Seasonal totals were near normal in most of the region, however pockets of above normal rainfall were located in western Congo DR, southern Ethiopia/northwester Kenya, western Tanzania south into Zambia, Malawi and northern Mozambique and central Angola.

4. NDVI anomalies and RVF Risk Map

October - December 2017 NDVI anomalies for Africa were closer to normal over most of the continent, with areas of greener than normal conditions persisting northwestern Kenya, eastern Tanzania, and from northeastern Namibia through most of Botswana and northern South Africa, southern Zimbabwe, and southern Mozambique.

The RVF risk map in this report 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 of RVF vectors. During October - December 2017, the RVF persistence model identifies very small areas at risk projected for January 2018 scattered throughout the northwestern Kenya - southwestern Ethiopia transboundary region. Small areas of risk are also identified in northeastern Tanzania, NW Namibia, Botswana and a large area of southern Zimbabwe. Given the persistent elevated rainfall conditions in these areas enhanced surveillance is advised areas in December.





https://www.ars.usda.gov/southeast-area/gainesville-fl/center-for-medical-agricultural-and-veterinary-entomology/docs/rvf_monthlyupdates/