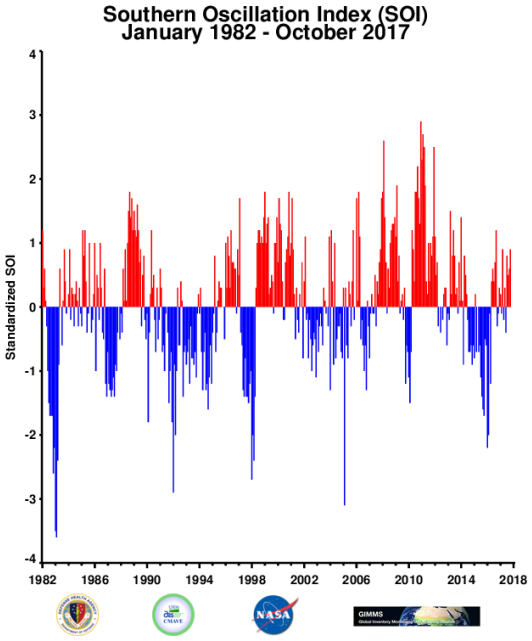
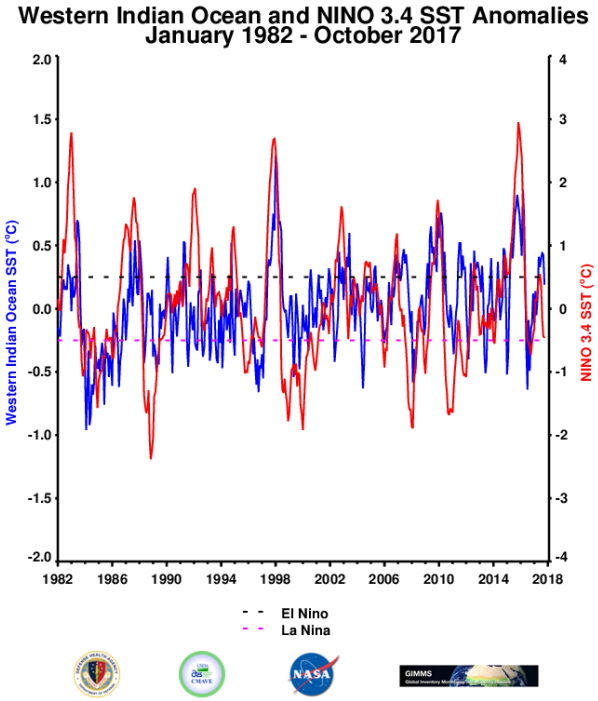
Rift Valley fever Monitor

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.

October 2017

1. SOI and SST Indices

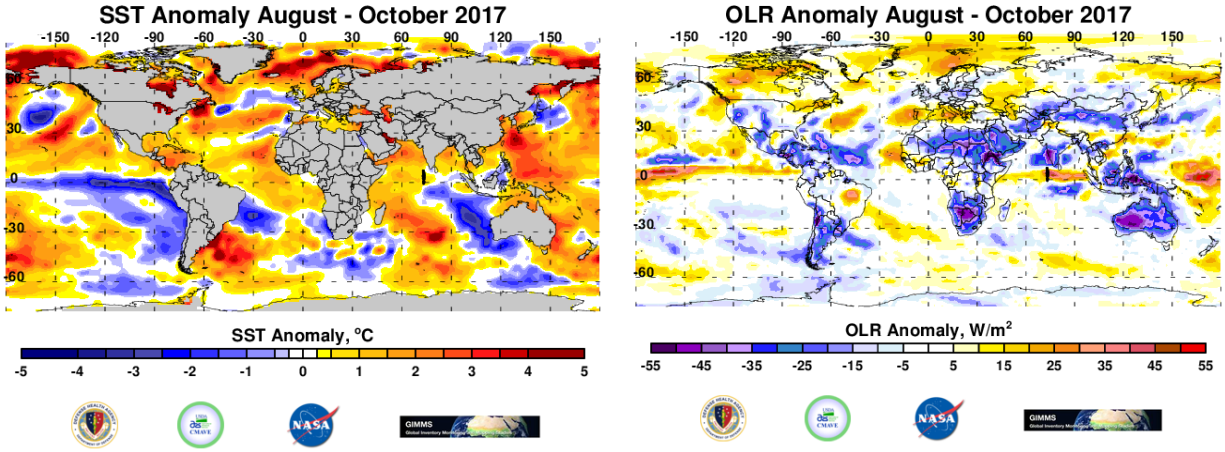




The SOI rose from 0.6 in September to 0.9 in October, indicating a shift toward La Niña conditions is occurring. Sustained positive SOI is correlated with colder than normal ocean temperatures in the eastern tropical Pacific Ocean typical of La Niña events. Ocean temperatures also continued to cool in most NINO regions from September to October, particularly in the NINO1&2 region just west of Ecuador and Peru (0°-10°S, 80°-90°W) where the anomaly went from -0.67°C in September to -1.34°C in October. The NINO3.4 and NINO4 regions cooled slightly, with NINO3.4 decreasing from -0.43°C to -0.46°C and NINO4 decreasing from 0.00°C

to -0.11°C. The NINO3 region warmed slightly but remained cooler than normal, increasing from -0.68°C to -0.64°C. Temperatures also decreased in the western Indian Ocean, where the anomaly went from +0.43°C in September to +0.19°C in October. Overall the indicators show the ocean-atmosphere system is shifting from ENSO-neutral to La Niña conditions. This shift is reflected in the latest climate model predictions, where a weak La Niña is forecast to continue (~65%-75%) through the Northern Hemisphere winter.

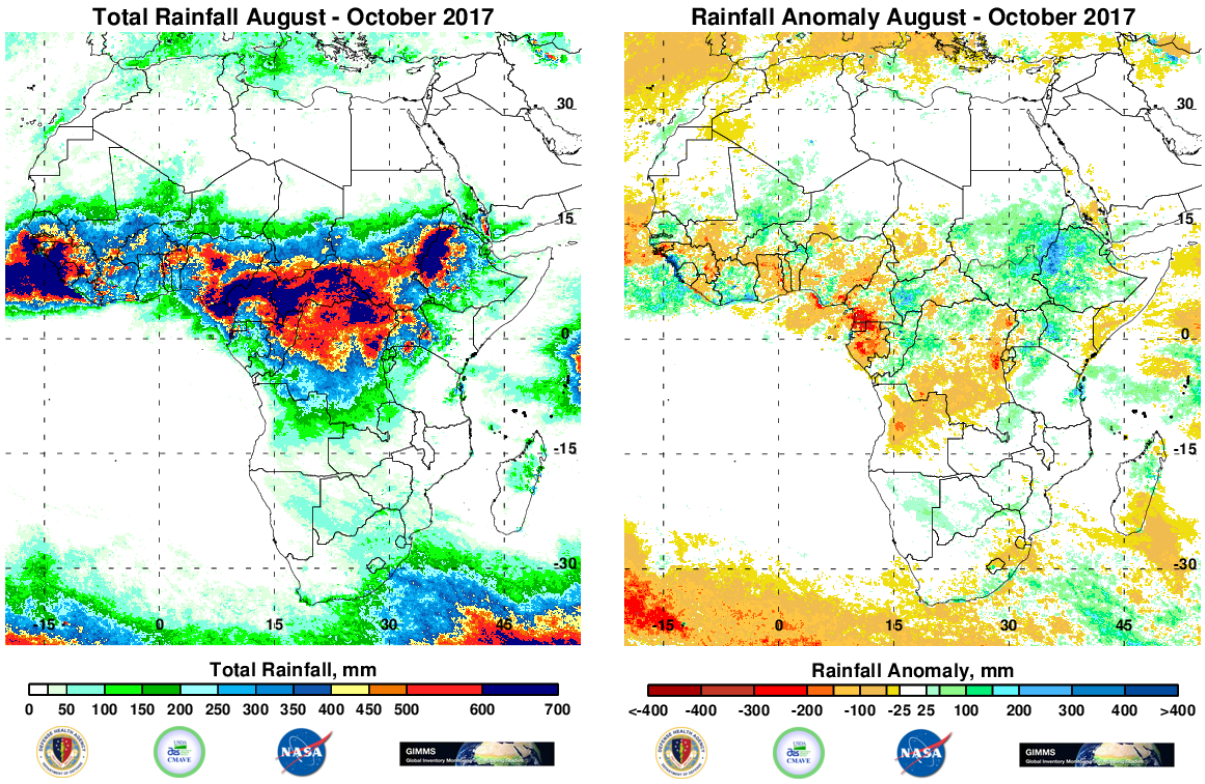
2. Global SST and OLR Anomalies



The August-October SST anomalies show an increased cooling in the equatorial Pacific Ocean over July-September, with temperatures approaching 3.5°C colder than normal along the equator off the South American coast. Western Indian Ocean temperatures cooled slightly but remained above normal. The southeastern Indian Ocean cold anomaly observed in July-September also persists with a maximum value of 3.5°C below normal. Monthly and weekly SST anomalies can be found in https://www.esrl.noaa.gov/psd/map/clim/sst.shtml.

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 August-October 2017 OLR anomalies show drier than average conditions throughout the 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.

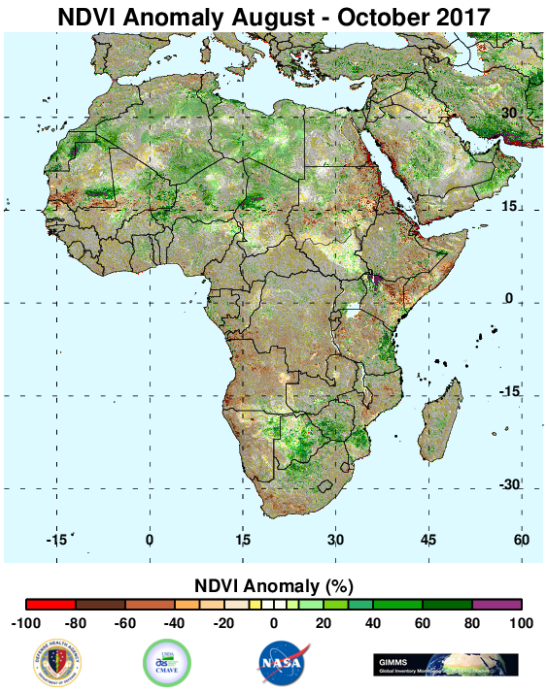
3. Seasonal Rainfall and Cumulative Rainfall Anomalies

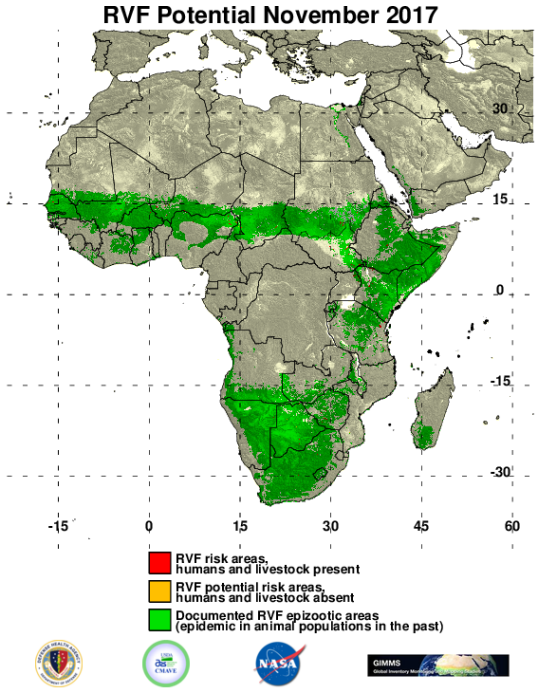


Total rainfall in Africa from August-October 2017 remained heaviest just north of the equator, with maximum totals of 700mm persisting from west Africa east to Sudan and northwestern Ethiopia. Seasonal totals were near normal in most of the region, however pockets of above normal rainfall were located in the Sudan/Ethiopia border region, western Kenya, western Central Africa Republic, and along the coast in Guinea, Sierra Leone, and Ivory Coast.

4. NDVI Anomalies and RVF Risk Map

August-October 2017 NDVI anomalies for Africa were closer to normal than in the preceding three months, with areas of greener than normal conditions persisting in Western Sahara, southeastern Mauritania, along the Mali/Niger border, east central Chad, 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 August-October 2017, the RVF persistence model identifies very small areas at risk scattered throughout the Sahel in central Mali, along the Burkina Faso/Niger border, northeastern Nigeria, southern Sudan and central Ethiopia. Small areas of risk are also identified in eastern South Sudan southeast to western Kenya and northeastern Tanzania. Given the persistent elevated rainfall conditions in these areas enhanced surveillance is advised.

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