



REPUBLIC OF KENYA

MINISTRY OF ENVIRONMENT, CLIMATE CHANGE & FORESTRY

KENYA METEOROLOGICAL DEPARTMENT

Dagoretti Corner, Ngong Road, P. O. Box 30259, 00100 GPO, Nairobi, Kenya

Telephone: 254 (0) 20 3867880-7, 0724 255 153/4

E-mail: director@meteo.go.ke, info@meteo.go.ke

Website: <http://www.meteo.go.ke> Twitter: [@MeteoKenya](https://twitter.com/MeteoKenya)

Ref. No. **KMD/FCST/6-2023/SR/06**

Date: **30 July 2023**

ANALYSIS OF EL NIÑO'S INFLUENCE ON WEATHER AND CLIMATE IN KENYA: A COMPREHENSIVE UPDATE

The Kenya Meteorological Department issues this update on the expected occurrence of El Niño phenomenon and its impact on rainfall in the country's climate during the October to December (OND) season. El Niño and La Niña events (collectively referred to as the El Niño–Southern Oscillation or ENSO) are driven by the changes in sea surface temperatures (SST) over the equatorial Pacific Ocean. During El Niño, SSTs in the central and eastern Pacific Ocean become warmer than average, while La Niña is characterized by cooler than average SSTs in the same regions. El Niño is often associated with heavy rains and floods during the OND season especially in East Africa.

The recent multi-year La Niña event is over. This was the third "triple dip" La Niña since 1950. ENSO has been in the neutral phase since March and has now transitioned to El Niño. The tropical Pacific atmospheric anomalies are consistent with weak El Niño conditions which are expected to strengthen in the coming months. Based on model predictions and expert assessment, there is a very high likelihood (approximately 90% chance) of El Niño to prevail during the remaining part of the year and may extend into early 2024.

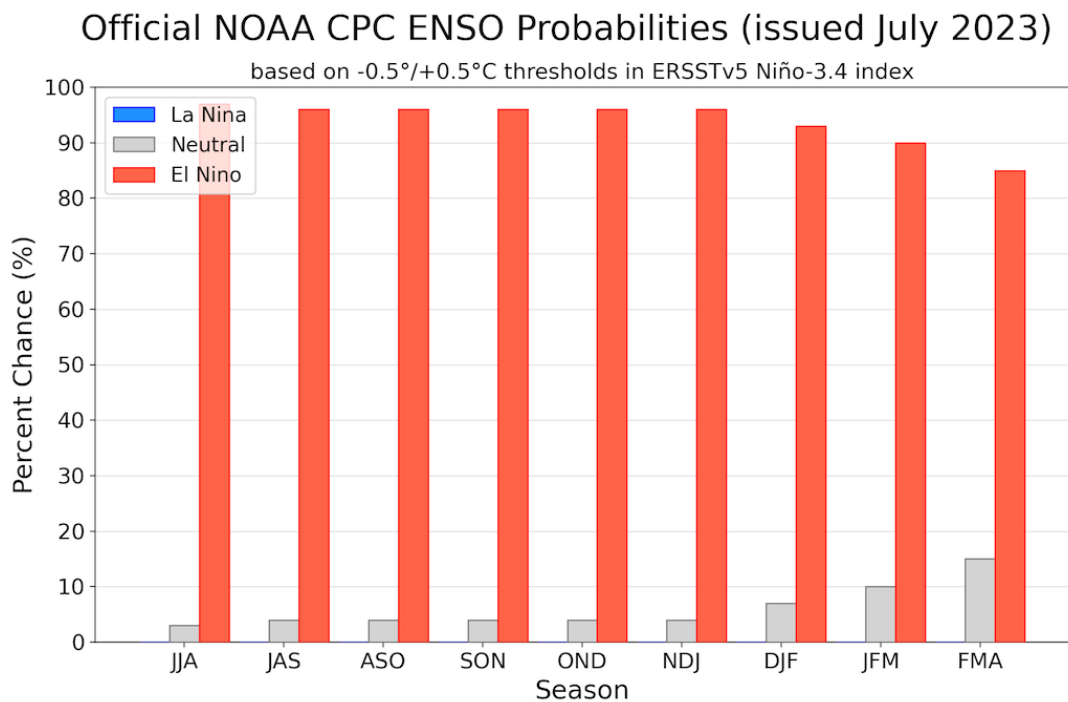


Figure 1: NOAA/CPC ENSO Forecast Graphic, courtesy of NOAA/CPC

El Niño effects are more pronounced during the OND season and are associated with above average rainfall over Kenya during this season. However, the outcome of the rainfall is determined by the strength of the El Niño and other drivers such as the Indian Ocean Dipole (IOD) as well as local factors.

IOD is defined by the difference in SSTs between the Western and Eastern parts of the Indian Ocean. A positive IOD is characterised by warmer than average SSTs over the Western Indian Ocean adjacent to the East African Coast and cooler than average SSTs over the Eastern Indian Ocean South of Indonesia. A negative IOD is characterised by cooler than average SSTs over the Western Indian Ocean and warmer than average SSTs over the Eastern Indian Ocean. A positive IOD is associated with above average rainfall in Kenya during the OND season. The IOD is currently neutral and is projected to become positive in August and remain positive in September and throughout the OND season.

A combination of El Niño and a positive IOD leads to above average rainfall during the OND season, as was the case in 1997. However, the effects of these two phenomena on the OND season vary from one year to the other. For example, 2015 was both an El Niño and a positive IOD year but the country did not experience as much rainfall as was experienced in 1997. A positive IOD on its own can also lead to above average rainfall in the country as was the case in OND 2019. KMD will continue monitoring the situation and issue updates on the expected conditions during the OND 2023 season.

NB: June, July, August and September (JJAS) 2023

Recent research has highlighted the significant influence of ENSO (El Niño-Southern Oscillation) conditions on the JJAS (June, July, August and September) season's rainfall patterns in Eastern Africa. Specifically, El Niño events during JJAS are more likely to result in below-average rainfall. Currently, most forecast models predict the development of an El Niño event during the JJAS season, indicating a higher probability of below-average rainfall.



Dr. David Gikungu
DIRECTOR OF METEOROLOGICAL SERVICES