



Bounding spatio-temporal variability of sea salt aerosol in the coastal area of West Africa

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Abstract:

Extreme temperature events (ETEs) over Saudi Arabia, have been receiving special attention in recent decades due to their impacts on water resources, the energy sector, human health and crop yields. In this study, maximum temperature (T_{max}) data for the summer season (June-Aug) obtained from 27 meteorological stations in Saudi Arabia have been analysed for the period 1981-2017. Frequency analysis revealed that stations located in the Central, Northern and Coastal regions have a relatively higher number of summer ETEs. A composite analysis has been performed to assess the association between global circulations and ETEs in Saudi Arabia using global reanalysis data. It is found that the summer ETEs in Saudi Arabia are associated with a mid-latitude circumglobal wave-like (CGT) pattern. The upper level circulations associated with the ETEs in various regions of Saudi Arabia display a weak (e.g., Coastal region) to well-developed (e.g., Central region) CGT wave pattern in the mid-latitudes. The upper level anomalous high (low) pressure over Eurasia (Central Asia) coupled with the surface anomalous low (high) pressure anomalies assists the hot dry air from desert regions that favor the occurrence of ETEs in different regions of Saudi Arabia. A lead-lag relationship between 200 hPa geopotential height and ETEs in the Central region of Saudi Arabia reveals a strong association between mid-latitude circulation and ETEs. Moreover, an inverse relationship between T_{max} over Saudi Arabia and the El Nino Southern Oscillation (ENSO) is found. The ENSO modulates the regional T_{max} anomalies over Saudi Arabia through the upper level mid-latitude circulation.

Biography:

Akinyoola Julius Adekola is currently undergoing his PhD programme at the Department of Meteorology and climate science, Federal University of Technology, akure, Nigeria. He also working as a meteorologist at Department of Agriculture and Bioenvironmental Tengineering Technology, Rufus Fiwa Polytechnic, Owo, Nigeria. He has written many papers in reputed journals and has been also been a peer reviewer to some journals house



Publication of speakers:

- Akinyoola Julius Adekola et al; The Influence of Rainfall and Temperature on Total Column Ozone over West Africa, Jan 2017
- Akinyoola Julius Adekola et al; Dynamic response of monsoon precipitation to mineral dust radiative forcing in the West Africa region, Dec 2019
- Akinyoola Julius Adekola et al; Monitoring the spatio-temporal aerosol loading over Nigeria, Dec 2018
- Akinyoola Julius Adekola et al; Saudi-KAU coupled global climate model: description and performance, Sep 2017
- Akinyoola Julius Adekola et al; Multidecadal changes in the relationship between ENSO and wet-season precipitation in the Arabian Peninsula, Jun 2015

[2nd Edition of Challenges in Global Climate Change and Oceanography, Nov 17, 2021; Paris, France.](#)

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