

Temporal variations in Heatwave in West Africa during 1950-2014

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Climatematch
Academy

Background

[Speaker
Zoom
video]

- What is Heatwave?
 - Prolonged periods of extreme heat characterized by abnormally high temperatures.
- Why do we need to care about Heatwave?
 - Significantly affect human health, agriculture, ecosystems, and infrastructure.
- How does Heatwave look like in West Africa?
 - The Sahel region in West Africa is particularly susceptible to extreme heatwave due to its semi-arid climate and proximity to the Sahara Desert.

 The New York Times

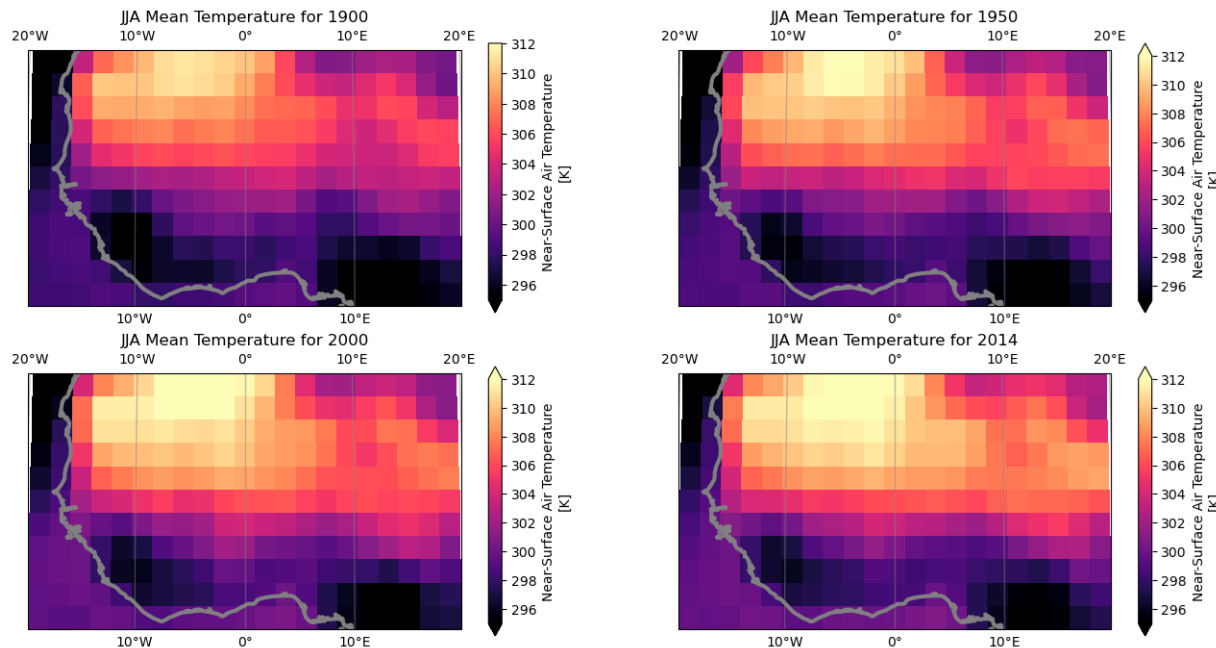
34 Killed in Algerian Wildfires as Heat Waves Parch Mediterranean Region

Algeria's government said that 10 of the dead were soldiers who were trying to rescue people from the fires, which have raged for days in a...

2 days ago



June, July and August Averaged Near-surface Air Temperature

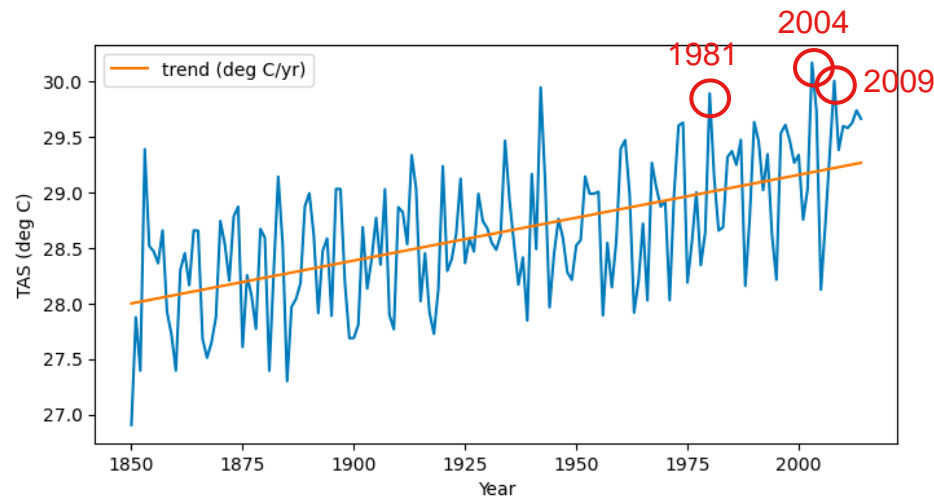


We used CMIP6 Data model named "MPI-ESM1-2-LR," and looked at the historical data.

Since West Africa includes prime meridian, it is challenging to properly select the region of West Africa.

The area showing the high temperature increases over time!

Extreme heatwave events



TAS of ~ 0.01 deg C increases every year!

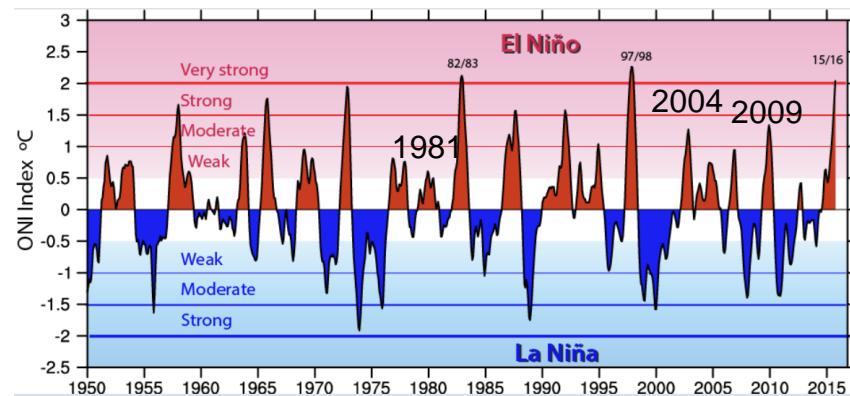


Image source: NCAR



How does El Niño relate to Heatwaves in West Africa?

During El Niño

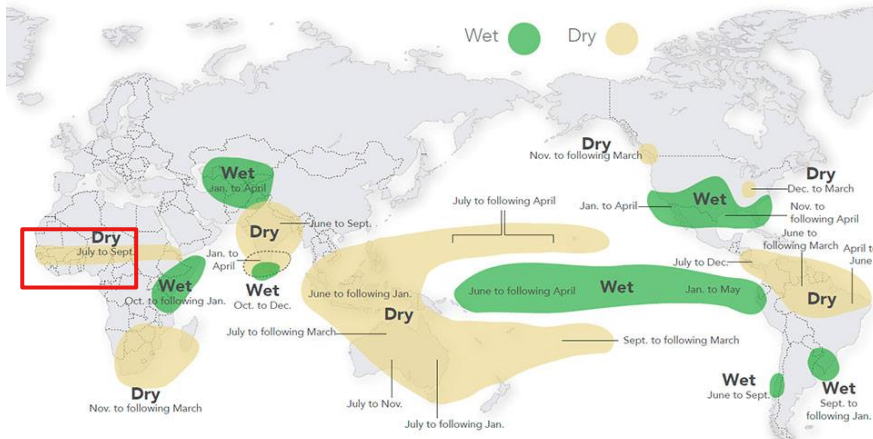


Image source: FAO

- El Niño brings warmer and drier conditions to West Africa.
- During El Niño, the ITCZ tends to shift southward, moving away from its usual position over West Africa.
 - As a result, the region receives less moisture and experiences drier conditions.
- The Harmattan winds, which blow from the Sahara Desert across West Africa, become stronger.
 - These winds are hot and dry, contributing to increased dryness and heat in the region.

Conclusion

- What would be the potential significance?
 - Improved understanding of heatwave trends and their relation to climate change could help predict future changes, allowing better preparedness and climate adaptation strategies to protect human health and food and water security in the region (Ceccherini et al, 2020).
- Societal impact?
 - Analyzing the impacts of increasing heatwave can quantify the public health burden and risks to agriculture, water resources, and ecosystem services, making the case for investments in heat adaptation and mitigation policies (Mitchell et al, 2021).
- What could be done more?
 - Synoptic forcings -- drivers of heatwave to affect West Africa (e.g., large-scale circulation)
 - Comparing our results with other data (e.g., ERA5, future scenario prediction?)



Thank you! :)

Climate Change is Real.

We are the first generation to feel the impact of climate change and the last generation that can do something about it. (Barack Obama)

Save the Earth!



[Speaker
Zoom
video]

