

Radiative Impacts from Biomass Burning Aerosols and Potential Implications for Solar Energy

Osinachi Ajoku

Assistant Professor, Howard University

Satellite, Fire and Energy Conference

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@OsinachiAjoku

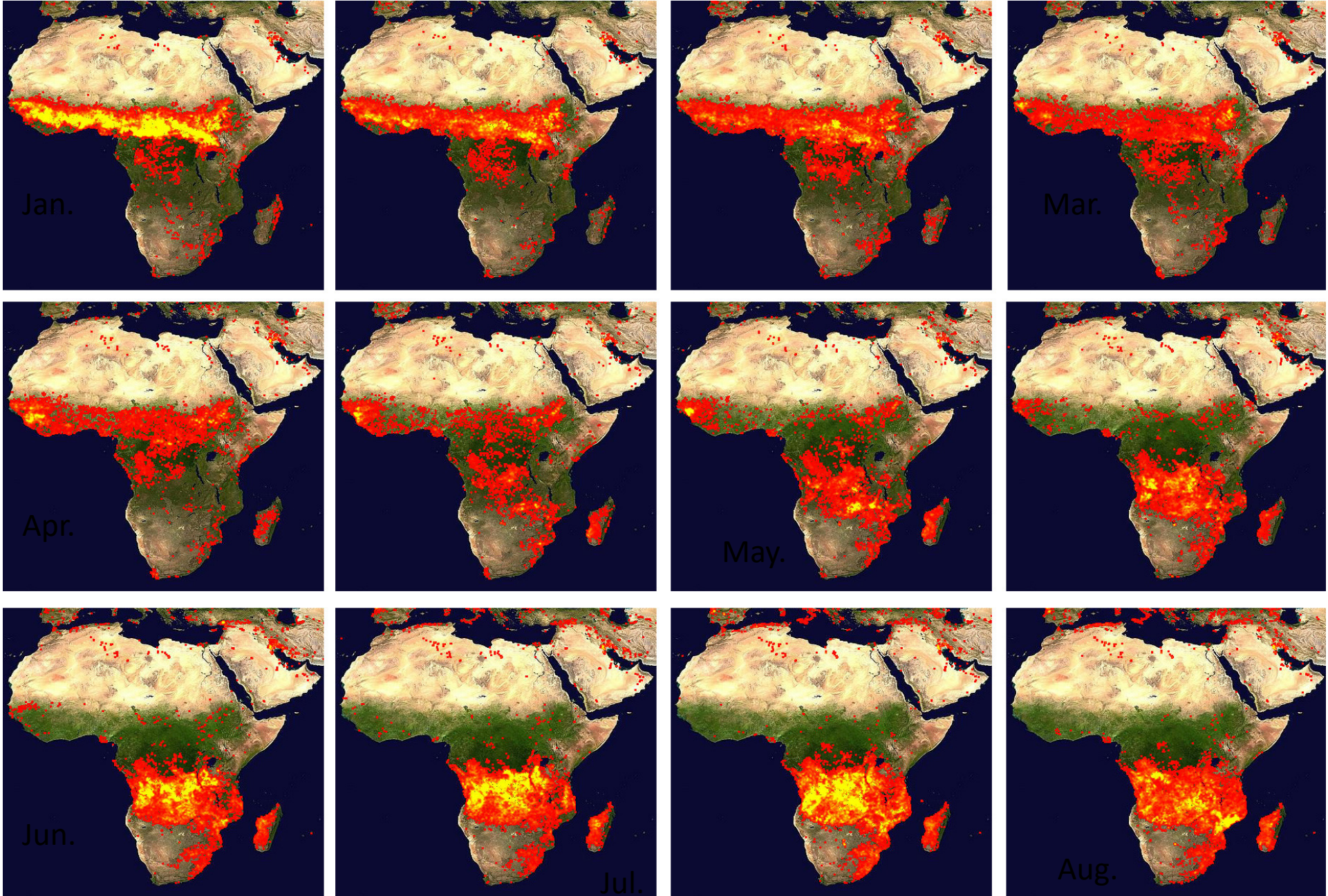
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www.Ajokuclimatelab.com

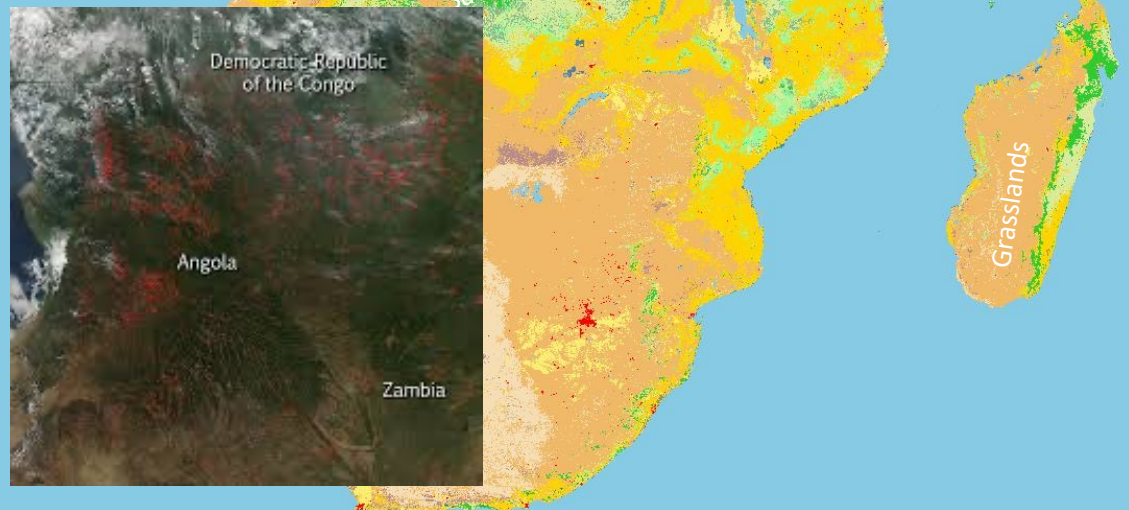
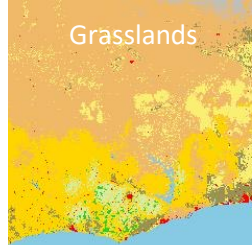
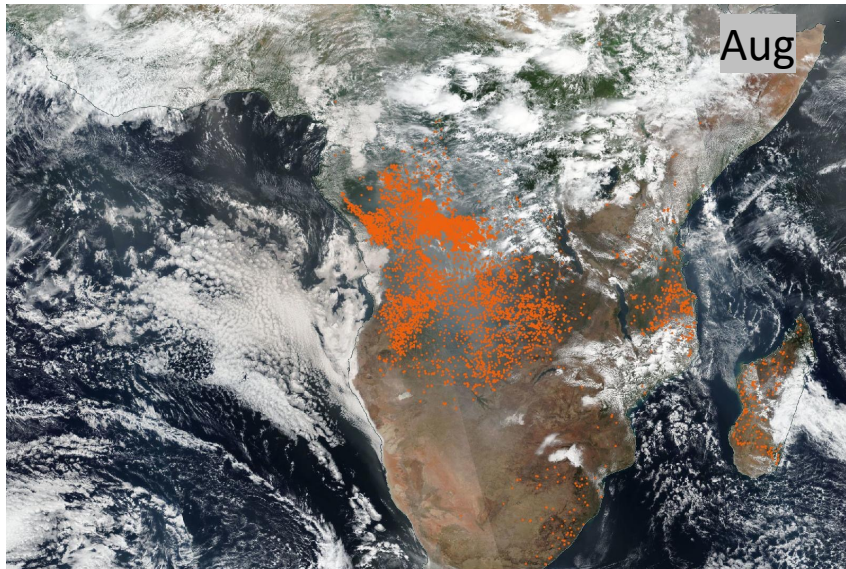
Osinachi Ajoku, PhD-Howard University

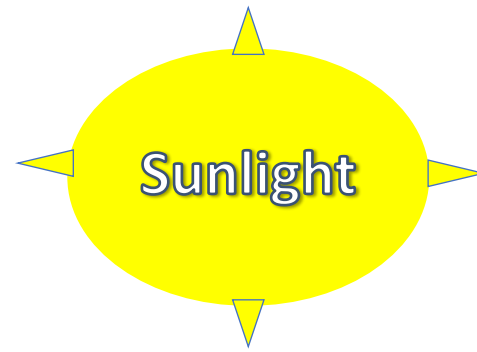


- Postdoctoral Experience
 - ASP Fellow, NCAR
- Education
 - California State university, Dominguez Hills (B.S. Geology)-2011
 - University of California, Riverside (M.S. Geoscience)- 2014
 - Scripps Institution of Oceanography (PhD) – 2020
- Current Research/Endeavors:
 - Impacts of BC on WAM
 - Aerosol-precipitation-land cover feedbacks
 - Connecting inner city communities with climate change
 - Advancing DEI in academia
- Personal Goals
 - Diplomacy
 - Research professor (**DONE!**)
 - Revamping the education system
 - Taking over the world



<https://earthobservatory.nasa.gov/images/5800/2005-fire-patterns-across-africa>





TOA

Atm Warming

Atm Warming

Surface Cooling

Surface Cooling

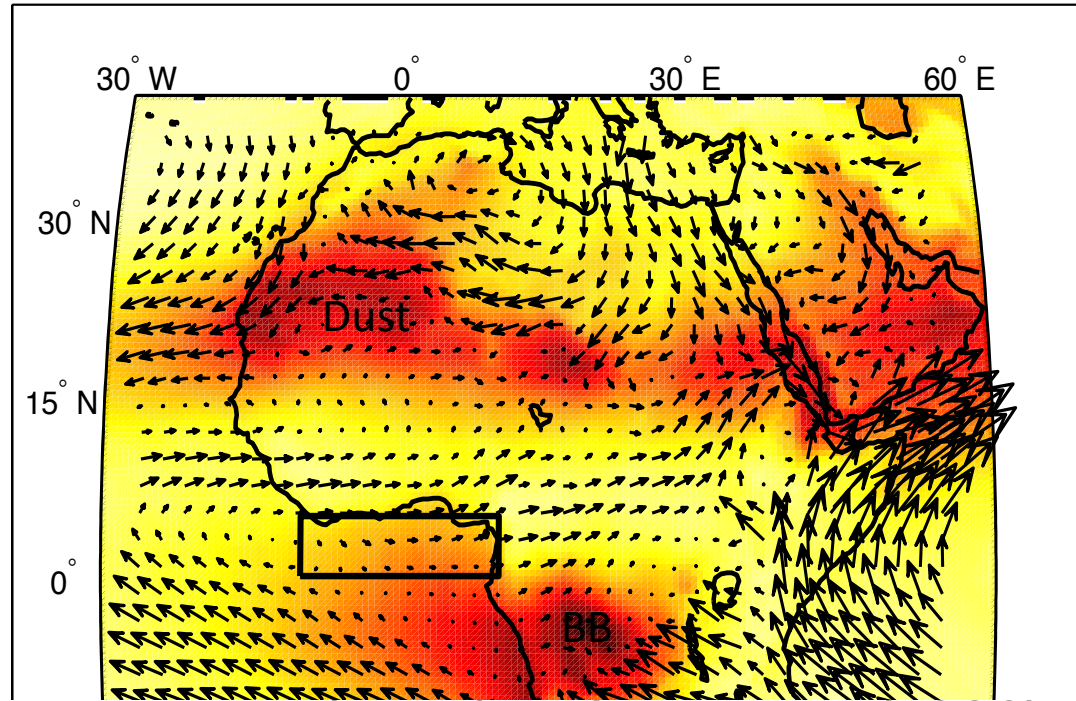
29 C / 84 F

22 C / 70 F

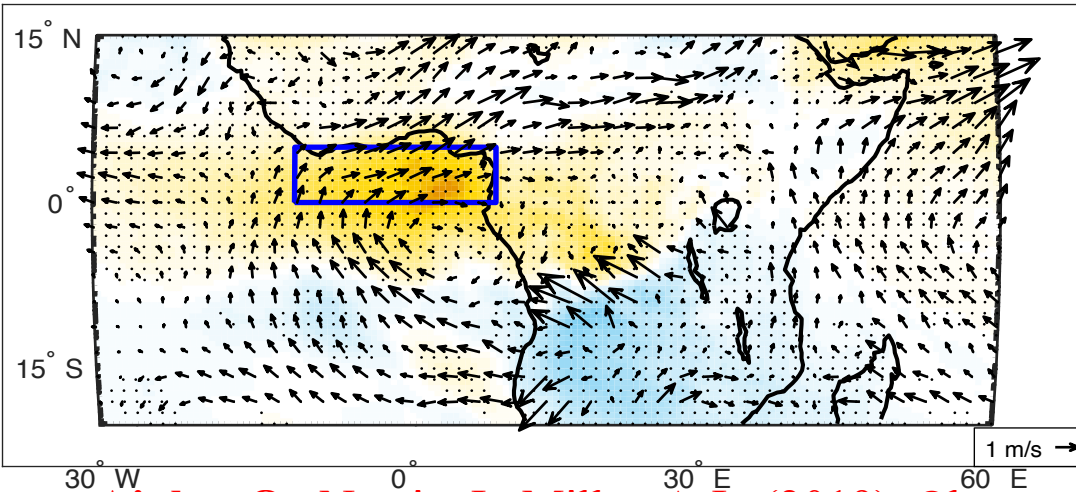
Ocean



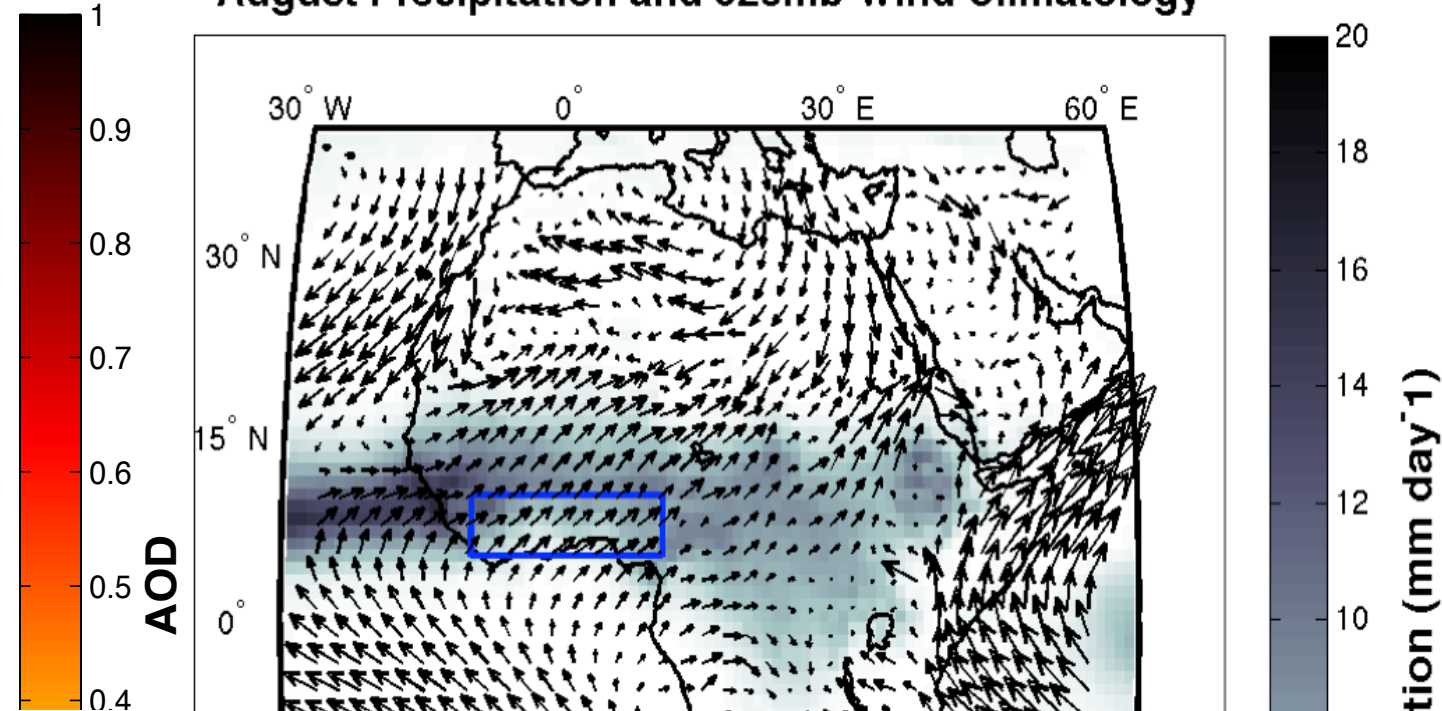
August AOD and 850mb Wind Climatology



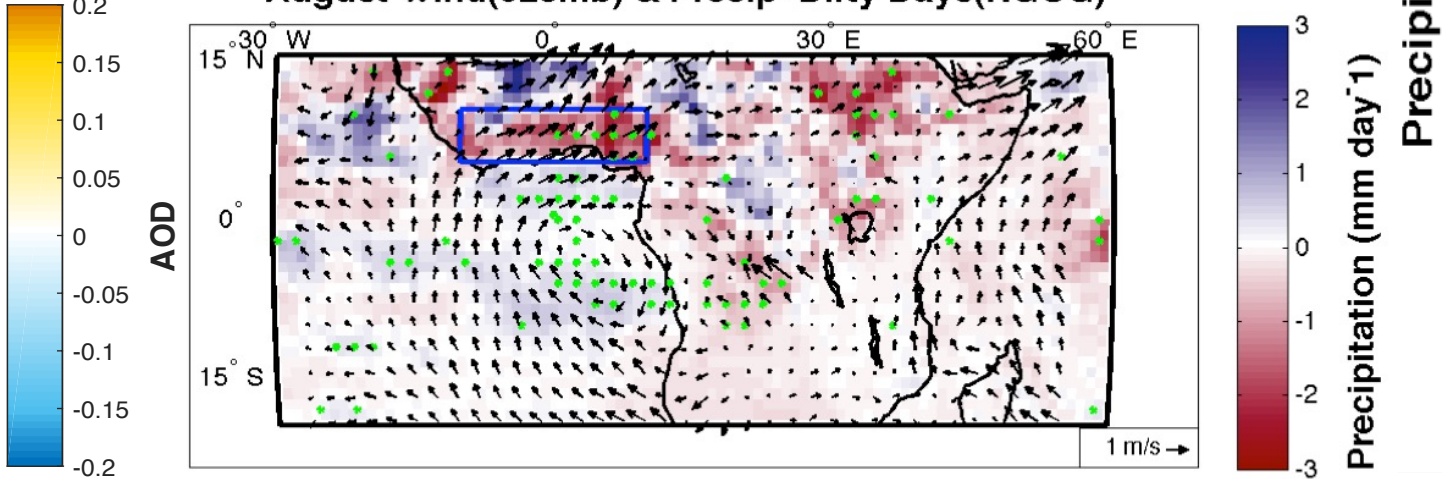
August Wind(850mb) & AOD-Dirty Days(NGOG)



August Precipitation and 925mb Wind Climatology

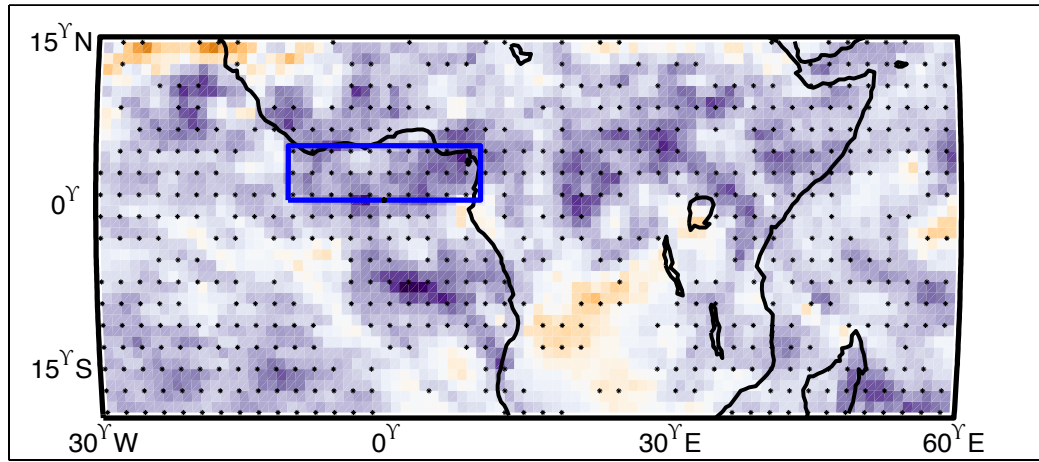


August Wind(925mb) & Precip -Dirty Days(NGOG)

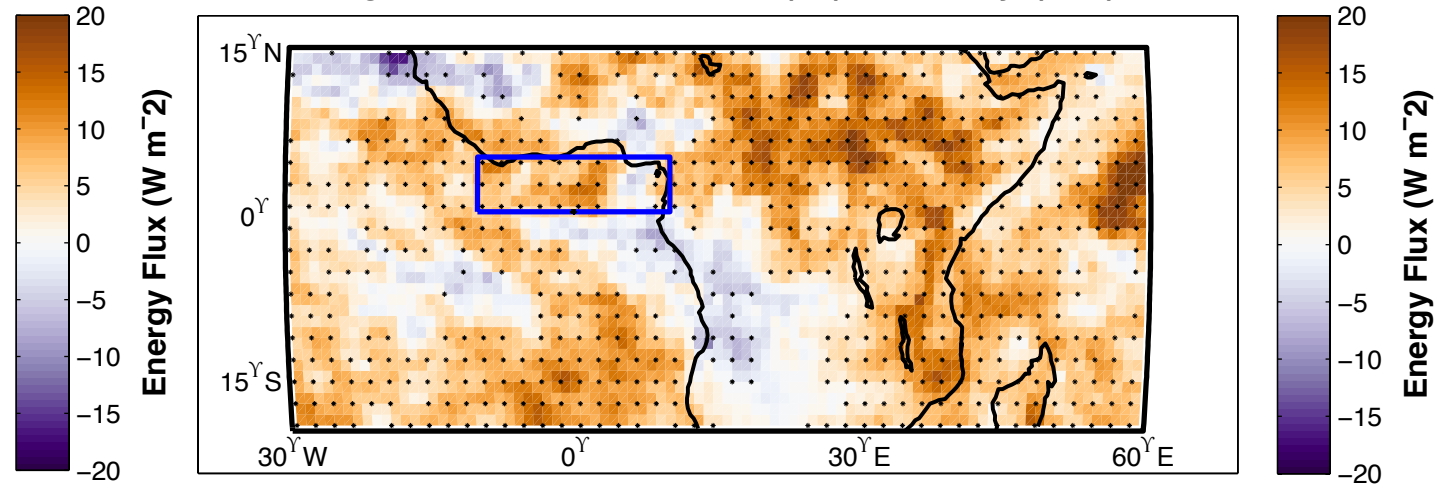


Ajoku, O., Norris, J., Miller, A.J., (2019). Observed Monsoon Precipitation Suppression Caused by Anomalous Interhemispheric Aerosol. *Climate Dynamics*, DOI: 10.1007/s00382-019-05046-y.

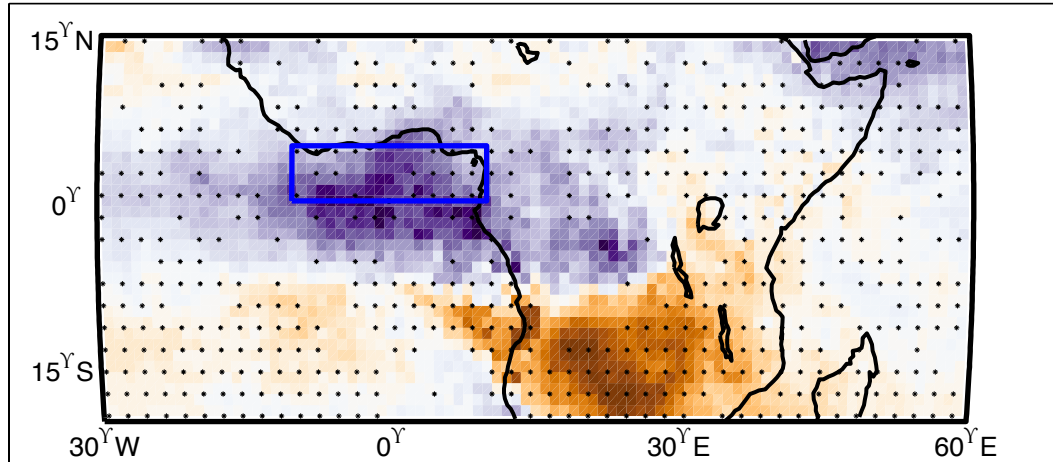
August Observed Sfc SW Flux (All)–Dirty Days(95%)



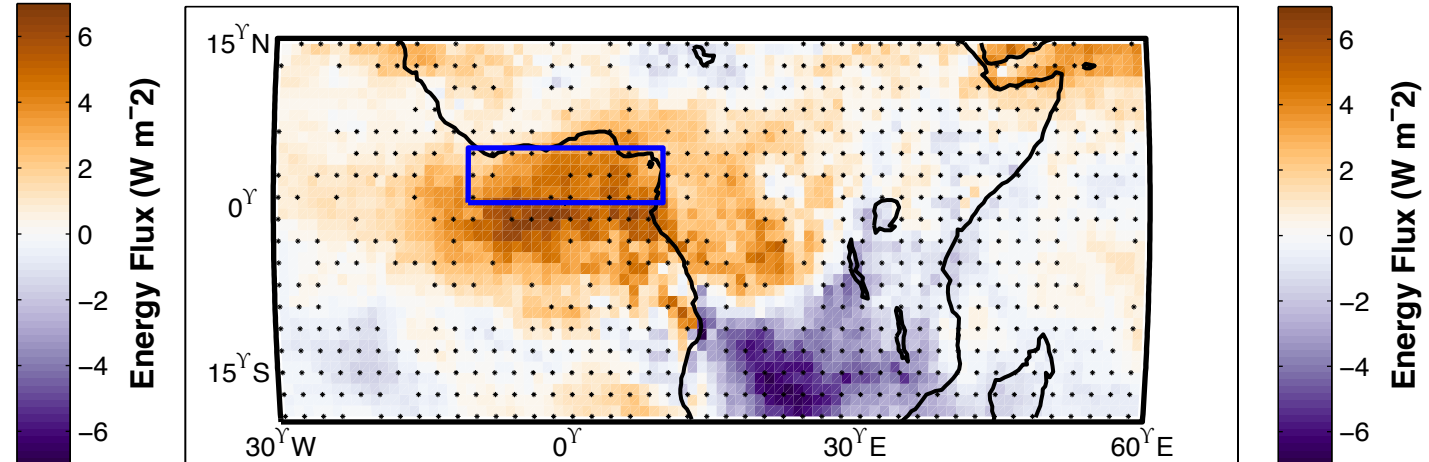
August Observed Sfc SW Flux (All)–Clean Days(95%)



August Observed Sfc SW Flux (Aerosol)–Dirty Days(95%)

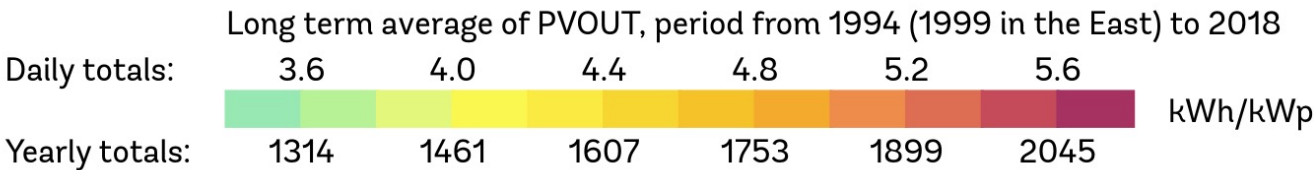
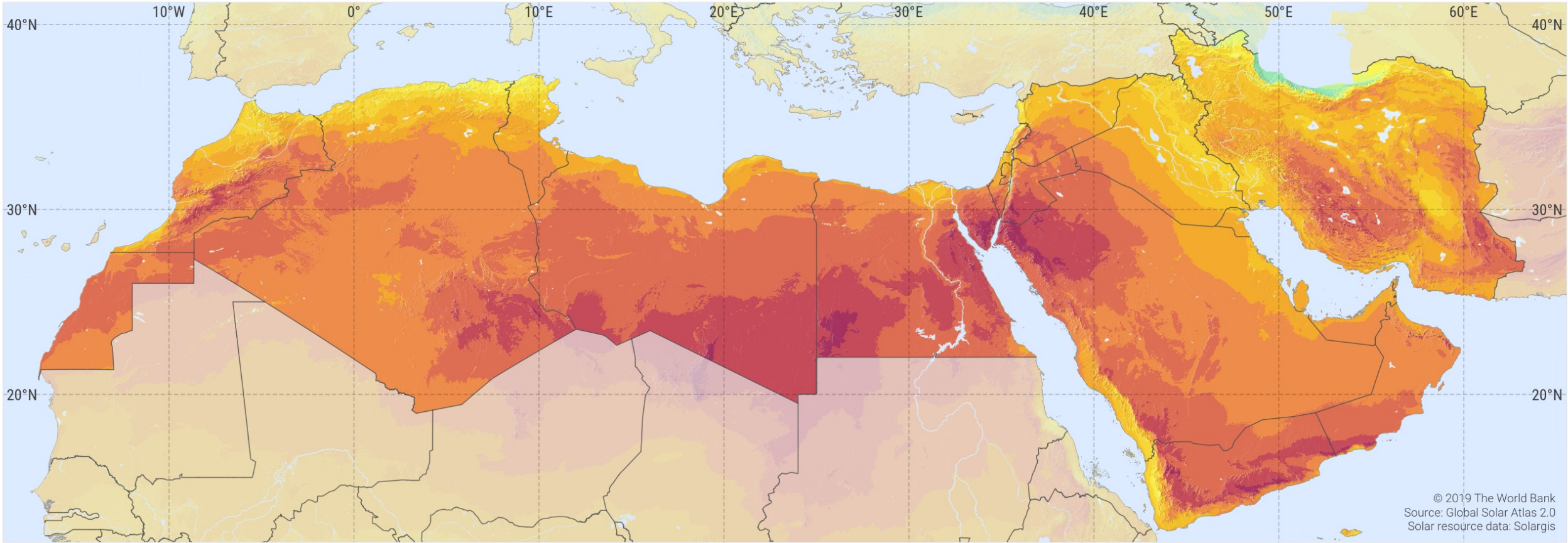


August Observed Sfc SW Flux (Aerosol)–Clean Days(95%)



Here, we compare flux anomalies as to how much is influenced by the presence of aerosols. Over our box region, aerosols account for ~50% of the reduction in surface SW radiation (during dirty conditions). More importantly, the reduction due to aerosols match where we see changes in SST (a driver of monsoon rain).

PHOTOVOLTAIC POWER POTENTIAL
MIDDLE EAST AND NORTH AFRICA



According to the International Energy Agency (IEA), [Africa has 60% of the world's best solar resources](#), but only 1% of solar generation capacity.

