

ATS/CIRA Colloquium

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Visiting ATS from the University of Colorado

Atlantic hurricanes and outgoing longwave radiation over Africa: From seasonal predictions to climate change projections

Hosted by Nick Davis

Friday, Nov. 11, 2016

**ATS room 101; Discussion will begin at 11:15 am
Refreshments will be served at 10:45 am in the weather lab**

The climatological distribution of outgoing longwave radiation (OLR) over Africa is characterized by strong meridional gradients between the very high OLR over northern Africa due to the hot and cloud-free Sahara Desert, very low OLR over central Africa due to the Intertropical Convergence Zone (ITCZ), and moderately high OLR over southern Africa—also due to a region of strong descent within the global Hadley circulation. Previous analyses of the interannual variability of this tripole structure in OLR have implicated a role for the strength and structure of the Hadley circulation over the African/eastern Atlantic region in modulating Atlantic seasonal hurricane activity. Indeed, the meridional structure of OLR over Africa appears to be an excellent predictor of the annual number of named tropical storms in the Atlantic basin due to its robust, highly detectable signal and strong mechanistic connections to multiple factors known to influence tropical cyclone formation including the ITCZ, African easterly jet (AEJ), easterly waves, and more generally the overall vigor of the Hadley circulation just upstream of the main development region. More recently, it has also been shown that observed trends in the OLR field over Africa during the satellite era are a predicted regional response to global anthropogenic radiative forcing. This observed and simulated trend since 1979, which projects strongly onto the pattern of interannual OLR anomalies associated with active hurricane seasons, is predicted by global coupled models to continue through the 21st century with implications for future hurricane climate. In this talk, I will give an overview of these recent studies of the OLR field over Africa as a regional manifestation of the Hadley circulation and its relationship to Atlantic hurricane activity.

Link to colloquium videos and announcement page: <http://www.atmos.colostate.edu/dept/colloquia.php>