Welcome!

Please join us for the ATOC Colloquium on **April 12, 2019** from **11:00am-noon** in **SEEC S228** featuring ATOC Graduate Students **Ren Smith, Kang Wang and Ryan Harp**. Come early for coffee starting at 10:45am, and lunch will be served after!

The Role of Radiation in Tropical Cyclogenesis > *Ren Smith*

Recent numerical modeling studies indicate that the timing of tropical cyclogenesis (the transformation from a tropical disturbance to a tropical depression) is extremely sensitive to the presence of longwave and shortwave radiation, suggesting that radiation plays a very active role in tropical cyclogenesis. However, little focus has been given to identifying when during tropical cyclogenesis radiation is most important. This talk will explore the sensitivity of tropical cyclogenesis to radiation in idealized simulations with different initial vortex strengths and also in a case study of Atlantic Hurricane Matthew (2016) to address this void. We find that radiation's primary role is to moisten the core of a disturbance, and after sufficient moistening has occurred over a deep layer and the winds are sufficiently strong at the surface, radiation no longer plays as significant a role in accelerating tropical cyclogenesis.

Northern Hemisphere Upper Troposphere "Dust Belt" from Improved CALIPSO Lidar Observations > *Kang Wang*

Here we use an improved global dust dataset derived from Cloud-Aerosol Lidar and Infrared Pathfinder Satellite observations, a global atmosphere model, and an air parcel trajectory model to characterize and understand upper troposphere dust source and transport. We identify distinct seasonal varying upper troposphere "dust belt" over northern hemisphere middle and high latitude with its strongest during March-April-May and show that the out-phased mid-level dust and westerly wind over source regions control it. We also find that Africa desert contributes the most (51.2%) for the upper troposphere "dust belt" in March-April-May and synoptic trough is the leading (42%) lifting mechanism.

Projecting Future Temperature-Driven Changes in Crime > *Ryan Harp*

Recent research has found consistent evidence of a robust connection between temperature and crime rates. Though a small handful of earlier studies have produced projections of changes in crime rates attributable to our changing climate, a novel methodology accounts for the seasonality of the temperature-crime relationship and allows for greater differentiation between various regions of the US. Projections will incorporate global climate model output at several time and temperature end points, as well as the various socioeconomic scenarios used by climate models, to characterize potential changes in crime and their uncertainty.

About the ATOC Colloquium

The Department of Atmospheric and Oceanic Sciences Colloquium is held **every other Friday** from **11:00 AM-noon** in **SEEC S228**. Colloquia will alternate between the following formats: (A) Full-length talk by a faculty member or invited speaker, (B) Three conference-length talks by graduate students. If you would like to nominate a speaker (including self), please email the ATOC Colloquium Committee Chair, Prof. Jan Lenaerts (jan.lenaerts@colorado.edu). Please visit www.colorado.edu/atoc/colloquium for further details and the upcoming schedule.