

**ATS/CIRA Colloquium**

**Walker Ashley**

**Visiting ATS from Northern Illinois University**

**Hazardous Convective Weather in a Changing World**

**Hosted by Russ Schumacher**

**Friday, March 23, 2018**

**ATS room 101**

**Discussion will begin at 11:15 a.m.**

**Refreshments will be served at 10:45 a.m. in the weather lab**

Recent extreme weather events reveal that we are increasingly vulnerable to weather hazards despite advances in science and technology. For instance, catastrophic tornadoes and tornado outbreaks in the past decade have produced tens of billions of dollars in damage and killed hundreds of people.

When it comes to future disasters, will societal exposure overshadow potential climate change-driven shifts in severe storm risk? What kind of severe storm impacts can we expect in a world undergoing both rapid environmental and societal change? What are some of the potential solutions to the contentious and multifaceted problem of weather and climate disaster policy?

Broadly, I will examine how changes in the severe storm climatology and human-built landscape are driving weather disaster potential in the United States. Initially, I will summarize implicit efforts assessing possible changes in 21st century atmospheric ingredients supportive of hazardous convective weather. Thereafter, I will describe results from explicit efforts using high-resolution, convection-permitting models to simulate the parent storms of these hazardous events. I will then assess where, and to what extent, growth in the human-built landscape has led to increased disaster potential and, moreover, how future human-built landscape changes will influence disaster likelihood this century. Using a Monte Carlo framework, I will reveal how the spatial character of the human-built environment influences disaster frequency and magnitude. Results from these simulations provide a basis for policy discussion focused on mitigating future disaster impacts through thoughtful land-use planning.

Link to colloquia page: <https://www.atmos.colostate.edu/colloquia/>