

ATS/CIRA Colloquium

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Assessing United States county-level exposure to tropical storms and investigating the association between tropical storm exposure and community-wide mortality risks

Hosted by Michael Bell

Friday, Jan. 26, 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

Hurricanes and tropical storms can cause substantial economic and human health impacts. These impacts occur through a number of hazard pathways, including severe winds, rain, flooding, and tornadoes. In the United States, hurricane impacts are often assessed at the county level, often the level at which health and economic data are available. I will describe results from assessing hurricane exposure in U.S. counties by distance and four hazard-specific metrics to measure how well exposure classification agrees across metrics. Further, I will describe our results from using these exposure metrics to assess community-wide mortality risks associated with tropical storms in the U.S. While risks of accidental deaths from tropical storms (e.g., drowning, carbon monoxide poisoning) have been well-documented, much less is known about risks for more common causes of mortality (e.g., cardiovascular, respiratory). We conducted the first multi-year, multi-state epidemiological study to estimate the relative risks (RRs) of community-wide all-cause, cardiovascular, respiratory, and accidental mortality associated with tropical storm exposure in the United States (US). For each exposure metric, we modeled the association between community-level storm exposure and daily death counts in 78 large eastern US communities, 1988–2005, for a window from two days before to seven days after the storm's closest approach. Under wind-based exposure metrics, we found substantially elevated risk for all mortality outcomes considered, with highest risk typically on the day the storm was closest. These estimated associations may be dominated by extremely high risks during the few most severe storms (e.g., Andrew [1992], Katrina [2005]), a hypothesis we continue to explore.

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