Assessing exposure to hurricanes and other tropical storms for epidemiological research

Drexel University Environmental and Occupational Health Research Seminar

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Motivation

Assessing exposure

Hazard-specific metrics

- Distance from the storm
- High winds
- Rainfall
- Flood events
- Storm events

Distance from storm

[Intro to best tracks]

Distance from storm

[Importance of interpolating tracks]

Wind exposure

[Reminder of best tracks, intro to Willoughby model]

Wind exposure

[Factors of doing the modeling (transfering from surface to gradient and back, etc.), other applications of the model]

Rain exposure

[Intro to NLDAS-2 data]

Rain exposure

[Showing how to ID date of closest approach]

Rain exposure

[Showing map from hurricaneexposure]

Flood and tornado events

[Intro to NOAA Storm Events]

Flood and tornado events

[Figure from `hurricaneexposure`]

Agreement between exposure metrics

Agreement on intensity

[How we measured this]

Agreement on intensity

[What we found]

Agreement at the county level

[How we measured this]

Agreement at the county level

[What we found]

Discussion

Software

Software as a research product

[Open science, ROpenSci, influence of example packages]

Software as a research product

[Coursera specialization, book]

Project software

[list of software, availability through CRAN, GitHub]

Sharing exposure data

[`hurricaneexposure`, `hurricaneexposuredata`, web page]

Modeling storm winds

[stormwindmodel]

Working with NOAA Storm Events

[noaastormevents]

Dealing with time zones

`[countytimezones]`