Temporal and Spatial pattern of Vulnerability to Flash-Flood in Texas

Team 4

Who we are

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Team Member:

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Outline

Introduction & Research motivation

Objective/Hypotheses

Dataset & Technical solutions

Working Plan

Expected Outcomes

Introduction & Research motivation

- Flash-Flood
  - Difficult to monitor
    - Rapid
    - Small-scaled
  - Hazard
- Vulnerability
  - Risk = Hazard * Exposure * Vulnerability
  - Easy to control

Objective/Hypotheses

- Hourly-Damage
  - In temporal pattern (in one year)
  - In spatial pattern (among cities)
  - Comparison of peak values
    - Lower terrain -> high vulnerability
    - Rainy season -> high vulnerability

Dataset & Technical Solution

- Dataset
  - Data provided by authority agency
    - E.g. TX_Flashflood2000-2019
- Technical Solution
  - Python
    - ArcPy programming

Working Plan

- Phase 1: Average damage calculation
  - Develop a set of algorithm to calculate the average hourly damage of each flashflood
- Phase 2: Classification
  - Classify the results based on their disaster level.
- Phase 3: Eliminate interference
  - Compare the results with the exposure of corresponding event.
    - City scale, population density, GDP, etc.
- Phase 4: Summarize & conclude
  - Develop a set of parameter and indices that could represent the vulnerability.

Expected Outcome

- Algorithms
  - Calculate hourly-damage caused by certain disasters.
- Statistics
  - Parameter and indices that could represent the level of vulnerability.

Thanks for Your Attention!
Any Question?