Adaptation in Florida: Experimenting with Methods to Map Vulnerability and Hazards

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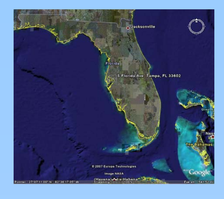
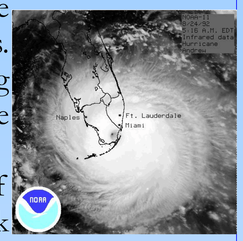


Overview:

Adaptation is the process whereby communities will adapt to climate effects and its impacts. Therefore, it is becoming a new area of expertise for climate experts.

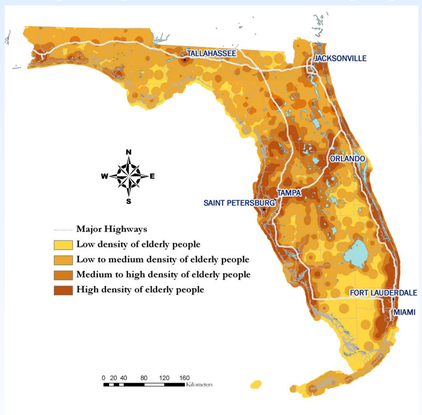


Since 1990, the State of Florida has been struck by approximately 15 hurricanes, most considered as Category 4.

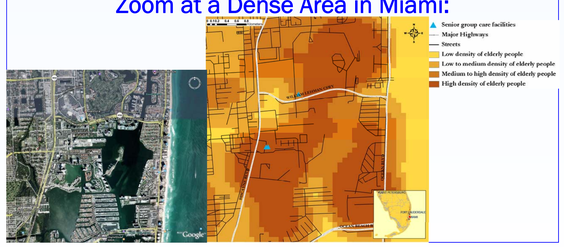
Sources: NOAA (http://www.nhc.noaa.gov/HAW2/english/history.shtml#1919)

Limitations:

The density maps varies considerably in consequence of the search radius and classification method used. For the Elderly Density data, I experimented two other different search radius: 10 km and 1 km, as shown below. For all other maps, the standard radius was 5 km. Thus, as the two maps show, different radius should be used for rural and urban areas. Smaller radius should be used at the city level, as shown in the zoomed map below. The zoomed area seems to be in wealthier neighborhoods, closer to country clubs and residential buildings that are probably being occupied by elderly wealth people.



Zoom at a Dense Area in Miami:



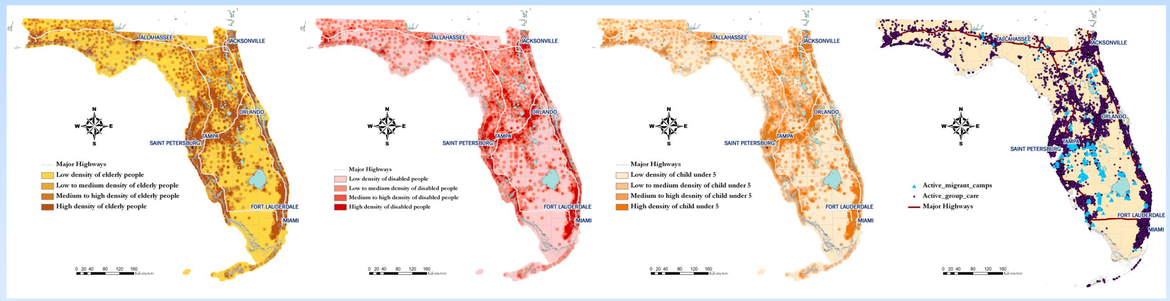
Research Goals:

1) Identify best techniques to map hazards and vulnerabilities in Florida;
2) Cross final information to create two final maps: vulnerability and hazards.

Vulnerability Maps: Elderly, Disabled, Under Age 5 Densities and Critical Facilities

Methods:

1) Demographic and critical facilities vector data for the whole State downloaded;
2) All census data were transformed using the Density Tool from Spatial Analyst and later reclassified. For all maps, I used Quantiles as classification method with 4 classes, 100 as cell size and 1 km search radius.

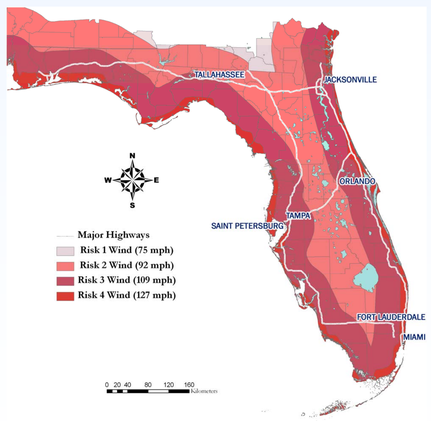


Harzard Maps: Wind Envelopes and Flood Zones

Methods:

1) Wind Envelopes and Flood Plains data for the whole State downloaded;
2) For the flood plains, I categorized the data based on the areas that are within or outside the SFHA—Special Hazard Flood Areas.

Hazard: Wind Envelopes

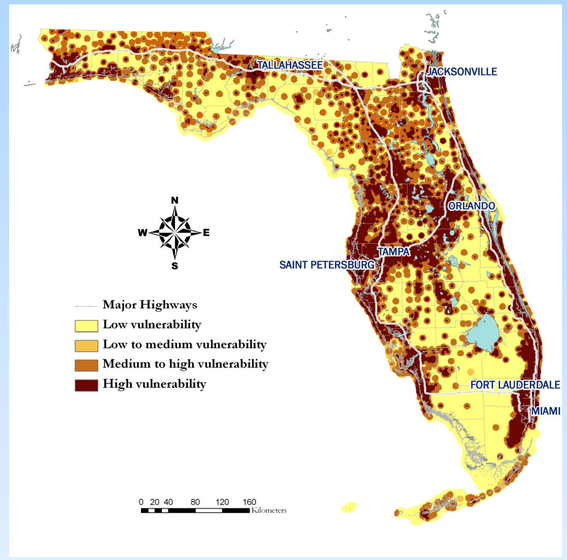


Hazard: Flood Zones

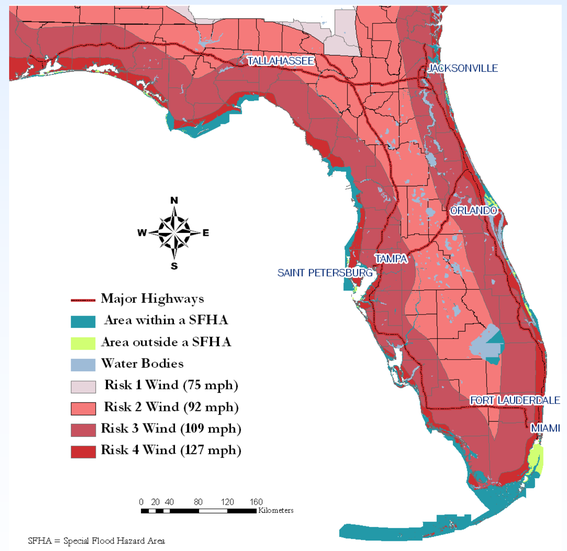
Final Maps:

The maps below are the combination of all the mapped vulnerabilities and hazards.

Total Societal



Combined Hazards



SFHA = Special Flood Hazard Area

Cartographer: Flavia Resende;
Map Projection: Albers Conical Equal Area;
Data sources: Florida Geographic Data Library
Coastal Risk Atlas—National Oceanographic and Atmospheric Administration