East Central FL Climate Indicators Brainstorm: Extreme Precipitation & Heat & Public Health

Overview

How should the East Central Florida plan and prepare for extreme precipitation and extreme heat?

Overview

We invite you to discuss how to plan and prepare for the following impacts in the east central Florida region:

1. Extreme Precipitation/ Severe Storms: How can we project, prepare, and plan for extreme precipitation and flooding impacts?

2. Heat and Public Health: How can we project, prepare, and plan for rising temperatures, extreme heat, and impacts to public health?

We want your input. We want to hear from a variety of perspectives, backgrounds, and disciplines. How are these indicators impacting your community, what kinds of data and tools do we have to estimate impacts, and how can we work together to develop strategies?

Note: MURAL (this software) works best in **Google Chrome** (v51 and above), Firefox (v46 and above), and the most recent version of Microsoft Edge.

Instructions

Under each indicator is a set of questions relating to:
(A) Data and monitoring for the indicator
(B) Impacts & Vulnerabilities
(C) Opportunities & Collaborations
(D) Priorities

We ask you to spend a few minutes thinking about each group of questions.

When you're ready to add your thoughts:
Click in the middle of a sticky note and start typing.

If there are no more blank sticky notes, then grab and drag one from the menu on the left.

Don't worry if you delete a sticky note, just type Ctrl-Z or click the rewind button in the top left of the mural.

You don't have to answer all questions!

About this Project

This is a collaborative effort between the East Central Florida Regional Resilience Collaborative (ECFR2C), Florida Climate Institute, Stetson University, University of Florida GeoPlan Center, and University of Florida IFAS Extension.

What are climate indicators?
Indicators are scientifically-based measurements that track trends and monitor changes in our climate and physical environment. Indicators provide a clear baseline of how the climate is changing in the region and help inform consistent climate planning and decision making.

Precipitation Data

Extreme Precipitation

1A Data and Tools

What data sources and/or tools are available to model future precipitation events?

- Changing precipitation needs to be incorporated into IDF design curves, but easier said then done
- https://floridadep-slip.org/
- The Floodmaster Tool (currently used in SRES Program) does do rain events, but not a prediction model.
- Climate Mapper - https://climatetoolbox.org/tool/Climate-Mapper
- Climate Toolbox Future Time Series - https://climatetoolbox.org/tool/Future-Time-Series
- David & Emily's presentations - data on trends

What precipitation events (100-year, 25-year 3 day, etc) does your organization use in planning & design?

- Depends upon the project, but 100, 50, 25, 10-yr, and mean annual
- At least 24hr extremes, and other longer term by consensus

What short-, mid-, and long-term climate scenarios and timeframes should this region plan for?

- Climate scenarios should have a similar time horizon as the projects being considered
- Our region should first determine if extreme precipitation projections are reasonable measurable, and then determine what timeframes can be planned for.
- Should at least match up with Legislature directives (2040 and 2070) and I believe 2100 for timeline.
- Climate scenarios should also consider the lifetime of our buildings and infrastructure designs (variable, 50-75 years)

Heat & Public Health

Heat Data

2A Data and Tools

What data sources and/or tools are available to model future heat events and at what scale?

- Health harms from climate change will overburden health care systems. The peer-reviewed literature indicates that people in the United States face far more than $820 billion in physical and mental health damages from burning fossil fuels and climate change related events each year
- CDC Public Health Tracknig tool: https://ephtracking.cdc.gov/DataExplorer/#/
- NOAA's National Integrated Heat Health Information System (NIHHIS)
- Low income and vulnerable populations like the elderly will be hurt first and worth.
- CDC's social vulnerability index
- NOAA
- Union of Concerned Scientists' Heat Index projections at the local (city/county) scale
- Global Heat Health Information Network https://ghhin.org/
- Military sources - from security & climate change panel

What heat and temperature thresholds should we be tracking? (i.e. days above 90, 100, 105)?

- Increases/decreases in average air/surface temperatures
- heat-related mortalities (correlated with other public health indicators)
- Min and max heat indexes
- Wet bulb globe temperature is very useful, dependent on location and exposure
- Number of nights with temps above 75 degrees
- Also, geographic differences in temperature to account for heat island effects or other disparities

What short-, mid-, and long-term climate scenarios and timeframes should this region plan for?

- Perhaps match the timeframes of the other indicators or Scenarios.
- Focus on mid-century, as end of century is too gar for people to grasp

1B Impacts & Vulnerabilities

What impacts have you noticed in your local community and/or professional area of practice?

- Severe shoreline erosion
- Sunny Day flooding on the rise after brief rains. Longer ponding.
- Limitations of home insurance options and higher expense for what is available
- More tarps on roofs! Especially in LMI communities
- outdated FEMA maps - inability to get flood insurance based off of this

How to determine people and places most affected by extreme precipitation?

- Severe repetitive loss properties, gaps in flood insurance
- Repetitive loss data, rainfall data from different areas of the community, compare data with identified socially vulnerable areas
- Need to have localized conversations and prioritizations
- Need more work to be done to mine cloud data - weather stations
- Precip also impacts public health

What are the greatest threats to your community from extreme precipitation events?

- safety during heavy precipitation
- Flooding impacts to transportation network
- flooded critical infrastructure such as roads and access to critical facilities
- Flooded pump stations and electrical vaults
- Displaced/fleeing wildlife comes in conflict with community that doesn't understand them
- Good point on the left! More water mocassins.
- Growing water damange (and mold) in houses with previous damage / no ability to pay for repairs

Heat Impacts

2B Impacts & Vulnerabilities

What impacts have you noticed in your local community and/or professional area of practice?

- Uptick in number of persons installing cooling roofs/glazed windows
- More discussion of heat hazards, heat resilience plans, chief heat officers as designated position

How to determine people and places most affected by extreme heat?

- Identification of neighborhoods with substandard housing w/o air conditioners/windows that open etc.
- Health data on location of health care visits for heat.
- Tree canopy analyses
- Urban heat island affect
- Analysis of pervious vs impervious land areas (use land cover data)
- NOAA's National Integrated Heat Health Information System (NIHHIS)
- Need to know who does not have A/C - Volusia County Prop Appraiser tracks this
- Need to know if heat increases will be gradual/ linear or exponential
- Need hospitalization data showing heat-related causes -- at a more granular level than county
- How to track heat issues for homeless persons and those who do not go to hosptal
- Need equity lens to heat impacts, particularly with rising energy costs for cooling and lack of A/C
- Need research into the upper thresholds of physical heat adaptation (study seattle heatwaves)

What are the most significant heat threats for communities in this region?

- Impact of temperature on tourism.
- Impacts on ability of construction/landscape workers reducing productivity and days worked.
- Limiting the ability of childeren and elderly to play/exercise outdoors. Especially at recess
- Increased algal blooms in surface waters
- impacts to agricultural industry (damage to crops/different growing seasons)
- impacts to roadway infrastructure
- Impacts to low-income households, with energy cost burden, who may not be able to cool homes sufficiently, esp at night
- Impacts of heat on recreation, sports, kids in outdoor environments
- MENTAL health impacts (not being able to go outside)
- Adequate cooling in public school system (indoors and outdoor spaces)
- Impact on individuals/ low-income families and communities utilizing the metro/bus system
- ECONOMIC impacts from decrease tourism and industries that rely on outdoor workers
- Extreme heat events are most dangerous - as people cannot adapt quickly. Need better prediction & warnings
- Will population growth exacerbate impacts?
- climate migration. will heat decrease pop growth (in long term?
- impacts to biodiversity, and active times - ex: nocturnal species and warming nighttime; diurnal species and active hours

Precipitation Opportunities

1C Opportunities & Collaborations

Who else should be at the table to help tackle preparing for extreme precipitation in the region?

- FL DEP - water quality NRCS - soil health and erosion
- County commissioners and city councils should reject developer's plans in flood prone areas if water mgmt district fails to
- Volunteers can help build living shorelines and participate in other low physical risk construction solutions
- Retailers of passive or active flood barriers or flood damage-resistant building materials
- Developers need to focus on infill projects to minimize detruction of protective habitats like mangroves
- Waste management and parks and rec departments to clear debris from storm systems/infrastructure before heavy rainfall
- Environmental Defense Fund internships, and other NGOs/ non-profit
- Partner with homeowners who are vulnerable to flooding and do flood insurance education
- state legislators
- Need experts to provide advice and guidance for planning and how to use data to be more proactive (esp when data is inconclusive)
- Stephanie Murphy's office is looking to fund hyper-local projects

Any funding opportunities available to address these impacts?

- FEMA BRIC program with potential for increased funding from Infrastructure Bill.
- See 6.2 (Page 82) in this report: https://floridadep.gov/sites/default/files/AdaptationPlanningGuidebook.pdf

What plans and programs (local, state, federal levels) should address these impacts?

- New developments should be required to use LID and pervious parking solutions
- New projects should be required to have an Envision review (https://sustainableinfrastructure.org/about-isi/)
- Local Mitigation Strategies should address these impacts
- Perhaps deeper or larger retention ponds and drainage swales.
- Conduct vulnerability assessment to locate critical public infrastructure in repetitive loss areas and assess impacts/needs
- NEed whole city planning - using green spaces for stormwater management and for vulnerable populationss
- SJRWMD rules and regulations guide grey and green infrastructure improvements - getting better but still need improvements

Heat Opportunities

2C Opportunities & Collaborations

Who else should be at the table to help tackle preparing for extreme heat events in the region?

- Medical Professionals
- Representatives of tourism/hospitality industry.
- School officials
- Construction industry representatives
- Emergency Response Planners
- Arborists. If planting trees for shade is a solution they could help explain which trees would be most durable, especially if agricultural zones change with climate.
- Extension, FSA, other agriculture groups (representing ag workers)
- Utility companies
- Development Community
- Housing planners, FHFC program managers, local housing authorities, construction industry
- Public transit system to provide shading in bus stops, sidewalks, other highly occupied outdoor areas
- Partner with Disney to do tourism & heat impacts study
- City building officials - what is the role of building code/ practices for cooling homes
- Partner with Universities & others for data collection. But fist need to identify priority data points
- Orange County & Duke Energy - mobile cooling pos

Any funding opportunities available to address these impacts?

- Arbor Day Foundation Tree Planting Programs
- municipal green bonds for energy efficiency upgrades

Best practices or models for planning for and responding to extreme heat events?

- US EPA Urban Heat Strategies: https://www.epa.gov/sites/default/files/2017-05/documents/reducing_urban_heat_islands_ch_1.pdf
- misting fans like at the theme parks :)
- utility and/or non-profit programs for LMI households to receive a/c upgrades or new systems
- Counties hiring a Chief Heat Officer
- Modification of utility cut-off policies during extreme heat events.
- Cooling stations in public spaces, especially near transit stations/bus pick-ups or along multi-use paths used by persons without vehicle
- Extreme Heat Resilience Alliance (Adrienne Arsht-Rockefeller Foundation Resilience Center)
- Louisville Heat Management Study/ Urban Heat Island Study
- I hate to say it, but perhaps scheduled rolling brownouts or blackouts
- Community-Informed Heat Relief Report (Georgetown Climate Center)
- Increasing tree canopy
- UrbanHeatATL https://urbanheatatl.org/
- Heat Action Planning Guide for Phoenix, AZ
- Promote infill development and reduce conversion of greenspaces and increase tree preservation
- Urban Land Institute (ULI) Heat Mitigation resources

Precipitation Priorities

1D Priorities

What is the highest priority need to plan and prepare for extreme precipitation?

- 👍 Development in flood plains, Changes to National Flood insurance Program
- Modifcation of stormwater design standards to incoporate future conditions.
- Road infrastructure modification as increased duration and amount can inundate critical roadways (like during and evacuation).
- Determining infrastructure changes needed to deal with increases in extreme trends
- Even for inland communities!
- Lots of unknown - need input from experts for planning purposes
- How to best adapt to changes in precip and how do we plan for extremes?

Heat Priorities

2D Priorities

What is the highest priority need to plan and prepare for extreme heat and public health impacts?

- Ensuring that local emergency management plans provide for cooling centers.
- Planning and implementing tree canopy and other heat island effect mitigation measures.
- identification of populations most impacted by heat
- analysis on impacts to the energy grid in extreme heat events (projected out to assess increased consumption with increases in heat)
- More granular hospitalization data to track heat related illnesses
- Need to look into utility policies and practices and how it impacts low income persons
- Need to integrate multi-hazard assessments when proposing mitigation projects (how could homes be vulnerable to both heat + flooding, and how will that affect mitigation strategy)
- Safety regulations for farmworkers and other outdoor workers
- communication & outreach about dangers of heat (before) and warning system during event
- Quantifying public health impacts of heat in DOLLARS to make case for mitigation & ROI

Open Comments

Open Comments: Please use this space for additional input or thoughts not associated with the questions above. Thanks!