

“Should I Stay or Should I Go?”

Determining Human Habitation Viability in US Coastal Cities due to
Climate Change and Sea Level Rise

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PSU MGIS Program Capstone Peer Review Presentation

Brief Background on why I find this subject interesting

The Problem as I see it and as described in literature

The Process to be used to examine the problem and literature that attempts to express that

The Data and Information

The expected Project Areas

A Timeline for the project and final presentation

Presentation

UM Professor, Harold Wanless: Casandra of South Florida

“With a six-foot rise in sea level, it would mean there is only 44% of the developed area still above normal high tide. Of that 44% left, 73% is less than 2 feet above sea level. South Florida has become an incredibly risky place to live.”

– EarthSky Podcast, February 25, 2011

Patterson, Lindsey. EarthSky Podcast. February 25, 2011. <http://earthsky.org/earth/harold-wanless-on-sea-level-rise-in-south-florida>



Photo of Prof. Harold Wanless: Progressive Radio Network. This Can't be Happening. Podcast. April 1, 2015. <http://prn.fm/this-cant-be-happening-04-01-15/>

Background

“If you’re not building a boat, then you don’t understand what’s happening here.” – Harold Wanless, quoted by Jeff Goodell, *The Water Will Come*



Welcome to Miami

Photo: Tourists wading on Miami Beach streets, 2015 <https://oursantaferiver.org/do-fish-swim-in-the-streets-of-miami-at-high-tide-answer-sometimes/>

Excessive flooding from seasonal and weather events (risk exposure)

The number of annual weather events has increased

Storms have become more extensive so their geographic impacts are more widespread

 this leads increased numbers of people being impacted –

Storms have also become more powerful leading to more severe impacts and prolonged recovery

The scales and resources for local response to events are often inadequate and overtaxed (risk response)

More people are being temporarily dislocated; oftentimes for extended periods (additional risk)

Population dislocations impact other regions taxing economic support and job resources

Problem



Image: National Academies of Sciences, Engineering, and Medicine. 2016. *Lessons Learned from the Fukushima Nuclear Accident for Improving Safety and Security of U.S. Nuclear Plants: Phase 2*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/21874>.



Image: Alexa Erickson. Fukushima radiation spikes to record levels: it's really time to shut down all nuclear power plants. February 12, 2017. <http://www.Collective-evolution.Com/2017/02/12/fukushima-radiation-spikes-to-record-levels-its-really-time-to-shut-down-all-nuclear-power-plants/>



Image: Kimberly Amadeo. The 2008 Financial Crisis: A Look at the Causes, Costs and Weighing the Chances of It Happening Again. Updated July 1, 2017. <https://www.thebalance.com/2008-financial-crisis-3305679>

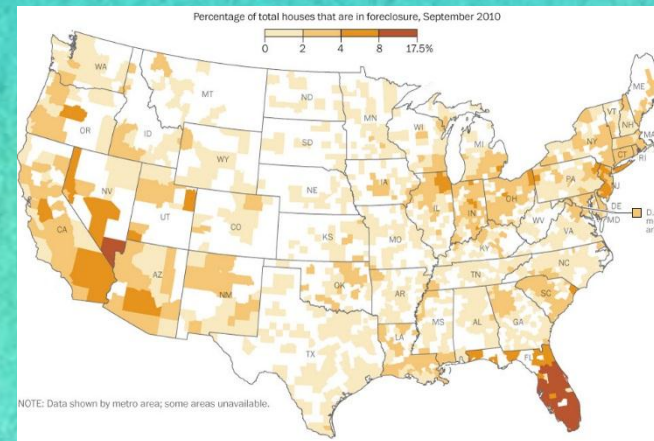


Image: SOURCE: Foreclosure data from CoreLogic | Cristina Rivero and Mary Kate Cannistra/The Washington Post - Oct. 19, 2010. <http://www.washingtonpost.com/wp-dyn/content/graphic/2010/10/18/GR2010101806640.html>

Problem



Image: Rebuild by Desing, The Big U. American Society of Landscape Architects. 2016 ASLA Professional Awards. 2016. <https://www.asla.org/2016awards/172453.html>



Image: How The Venice MOSE System Works. Nautilus. Maritime Works and Industrial Diving. No date. <http://www.nautilusvenezia.com/news/how-the-venice-mose-system-works.kl>



The Maeslant Barrier - Rotterdam

Image: The Maeslantkering Closed. World66. 2011. http://www.world66.com/europe/netherlands/lib/gallery/showimage?pic=europe/netherlands/new_waterway_storm



The Thames Barrier - London

Image: SOURCE: Visit Greenwich – Time After Time. Thames Barrier Information Center. No date. <http://www.visitgreenwich.org.uk/business/thames-barrier-information-and-conference-centre/>

Problem – feats of wonder

Survey of residents exposed to flood events

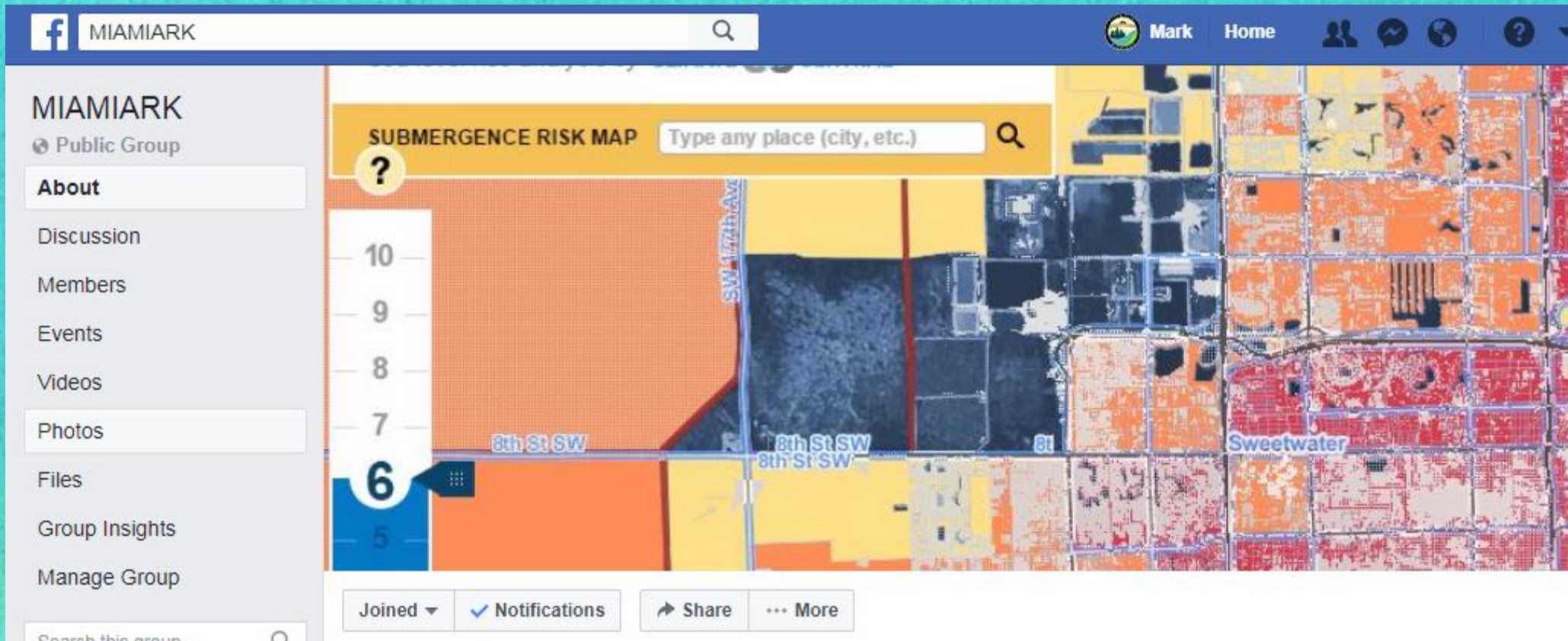
Survey conducted through online, social media tools: this can enable widespread contributions, and word of mouth participation through sharing.

Collect experience and opinion information about participants' exposure to flood events

Allow respondents to self-identify their level of exposure, and their current and long term response to that exposure

Use location information to gauge significance of push-pull phenomenon of areas where flooding is identified, and to areas where evacuations or migrations are indicated.

Process



Process

About This Group

Description

[Edit](#)

First phase of the migration from South Florida that will result from rising seas and ground water. Create a figurative platform for planning a way out of the area. Identify responsibilities, resources, subject matter experts, vested interests and other people who will operate like Moses and Aaron to safely coordinate and plan for the Exodus out of South Florida (#SoFlaEx).

Partner with local and regional organizations to reach their membership with the survey; as well as
To consider and make use of the data they have compiled on “retreat as a response”

The Climate Leadership Engagement Opportunities – CLEO

Southeast Florida Regional Compact on Climate Change

MIT Before It’s Too Late – BITL

FIU Eyes on the Rise



Process



Use of survey and historical location information to create regional analysis of significant factors

- Nature and frequency of flood events

- Persistence of flood and inundation after an event

- Collateral impacts affecting continued habitation: infrastructure and economics

- Likelihood of evacuation or migration

Use of Census data to plot low economic demographic areas

Publicly available SLOSH and SLR modeling tools to identify low-lying and flood prone areas

- Sea Level Scenario Sketch Planning Tool (<https://sls.geoplan.ufl.edu/>)

FEMA FIRM information (this is the primary resource in Community Rating System scores)

Data and Information - 1

Self-reporting of flood events: crowdsourcing application, VGI (volunteer GIScience)

Title: “Crowdsourcing Flood and Sea Level Rise Events”

Proposal for a Citizen Science, crowdsourcing application for documenting Flood and Sea Level Rise events on iOS and Android. w(H)@R [read: whater]

Abstract to be submitted to ESRI Developer Summit, March 2018.

Collects and aggregates locations of water inundation due to rainfall, weather, and tidal events; as well as Sea Level Rise. Enables tracking over time and location. App provides user ability to record longitude and latitude of reported flooding; a tagged picture of the event; and a user-reported, approximate depth of the event. Allows for time and date stamping; as well as local weather snapshot for the event record.

Data and Information - 2

Focus on 3 Geographic Areas:

South Florida - working

Texas and Northern Gulf Coast - expected

Atlantic Barrier Island region: Georgia to Virginia - anticipated

Project Areas

- Issue and conduct pilot surveys
- Broadcast and roll out widespread surveys
- Collect and analyze results
- Crowdsourcing application presentation of w(H)@R [read: whater]
- Align reporting areas to historical flood events for three study areas
- Present survey findings as representation of potential migration attitudes by demographics
- January/February 2018
- March – August 2018
- July – September 2018
- ESRI Dev Summit. March 2018.
- May – August 2018
- Presentation at South Florida GIS Expo
October 2018

Timeline

Literature

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Questions?