

# CLIMATE & HEALTH EQUITY WEBINAR



*This project is sponsored by the Miami-Dade County Environmental Education grant program*



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CLIMATE RESILIENCE PROGRAM  
MANAGER, CATALYST MIAMI

## AGENDA

1:30PM-1:32PM – Welcome, Sea Level Solutions Center, FIU Institute of Environment, Life Sciences South Florida, and Catalyst Miami (Tiffany, Dr. Ramirez, & Mayra)

1:32PM-1:40PM – Quality of Life Poll (Marie)

1:40PM-1:55PM – Presentation on Climate and Health Equity (Dr. Holder and Mayra)

1:55PM-2:00PM – How Did We Do? Poll (Marie)

2:00PM-2:05PM – Demonstration of Smartphone Application and example of temperature data that are collected (Dr. Susan Jacobson)

2:05PM-2:29PM – Q&A OPEN FLOOR Discussion (Panelists: Melissa, Mona, Dr. Holder, Olivia; Moderator: Mayra)

2:29PM-2:30PM – Satisfaction Poll (Tiffany)

# LIFE SCIENCES SOUTH FLORIDA

- Tri-county coalition started in 2011
- Strategic goals
  - Support the rapid growth of the life sciences ecosystem in South Florida.
  - Recruit, retain, and develop talent in the region
  - Develop programs to increase STEM student and workforce development in the region
- LSSF STEM Undergraduate Research Symposium
- LSSF webinar series

Please visit us at:

- [lifesciencessf.org](http://lifesciencessf.org)
- Facebook @ Life Sciences South Florida
- Dr. Jenesis J. Ramirez | [jenramir@fiu.edu](mailto:jenramir@fiu.edu)



*Building power for a just, healthy, & sustainable Miami*

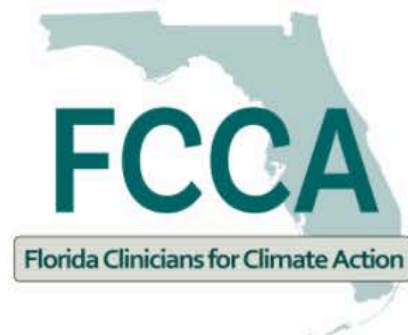
**CHEC MIAMI**

**Climate, Health, & Equity Coalition**

# MEMBERS

We aim to be a collaborative coalition that prioritizes Frontline community decision-making

**CATALYST**  
MIAMI



**The  
Miami  
Foundation**  
For A Greater Miami



**THE CLEO**  
INSTITUTE   
IT'S TIME FOR A CLIMATE CHANGE OF MIND

**FIU**  
Herbert Wertheim  
College of Medicine

**FIU**  
Sea Level  
Solutions Center

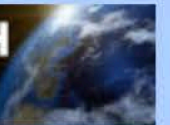
... and you!

# QUALITY OF LIFE POLL



**MARIE TREJOS**

SENIOR PROGRAM ASSISTANT,  
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# CLIMATE, HEALTH & EQUITY

**CATALYST**  
**MIAMI**



**MAYRA CRUZ**  
CLIMATE RESILIENCE PROGRAM  
MANAGER, CATALYST MIAMI



**DR. CHERYL HOLDER**  
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CO-CHAIR, FLORIDA CLINICIAN FOR CLIMATE ACTION

**FIU**

FLORIDA INTERNATIONAL UNIVERSITY

**Herbert Wertheim  
College of Medicine**



# Ms. Anna Mae

C.C- “I need a refill on my inhaler”

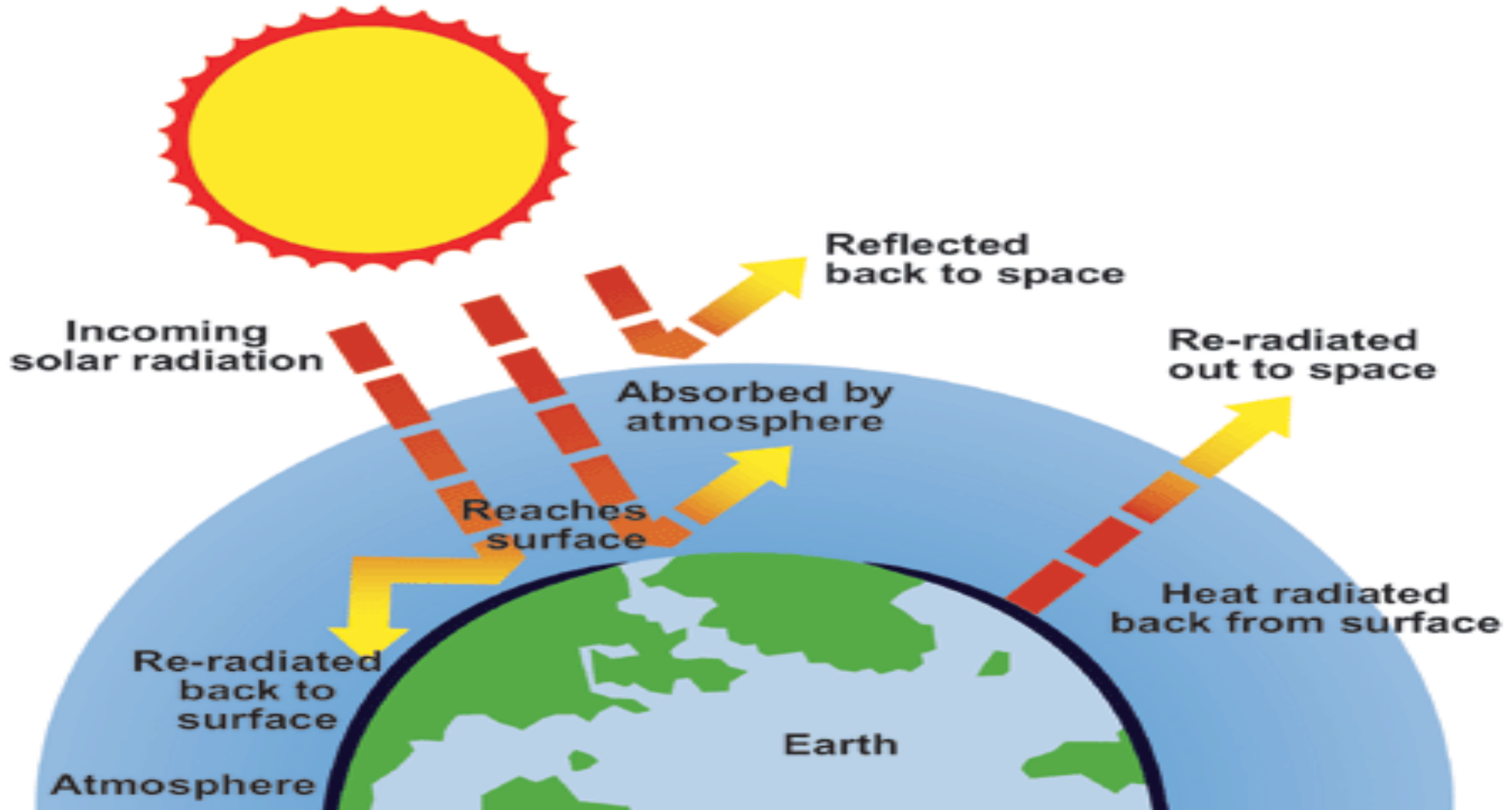
Ms. Anna Mae is a 64 y.o. African American non-smoking, woman living in Opa locka, FL with HTN, T2DM, HLD, Mild Intermittent Asthma, Obesity. Adheres to her meds- Lisinopril 20mg daily, Amlodipine 5mg daily, Metformin 1000mg twice daily, Pravastatin 80mg nightly, Aspirin 81 mg daily, Albuterol prn. She presented for an earlier visit for an albuterol refill. Asked that I complete her Florida Power and Light application form for reduction in her bill.

Source: Developed by the DC Department of Health. ©2004.



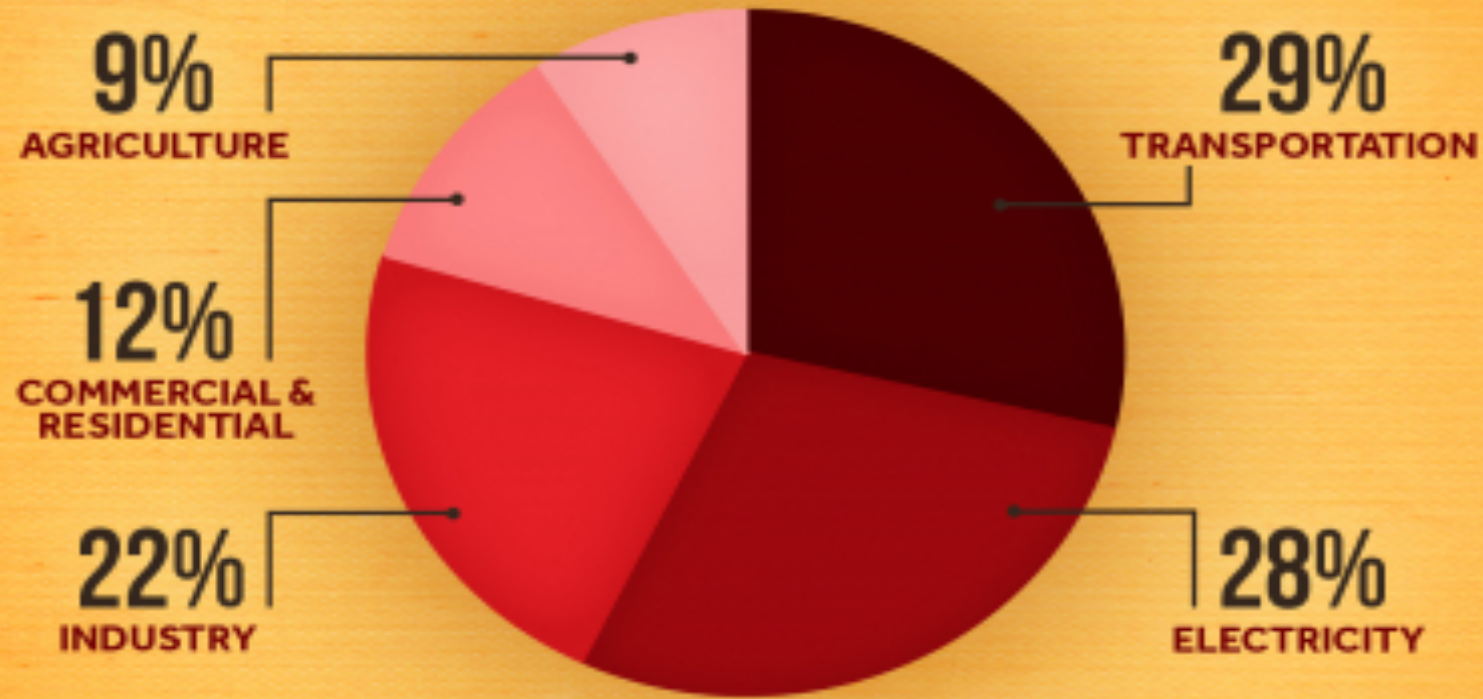


# Global warming and the greenhouse effect



# GREENHOUSE GAS SOURCES

## UNITED STATES EMISSIONS BY SECTOR



Source: U.S. EPA 2017 (released 2019)

CLIMATE  CENTRAL



# THE BIG PICTURE

In the atmosphere

**TOO MUCH** CO<sub>2</sub>

now traps

**TOO MUCH** heat

# Facts - Low Income & Minority Communities

- ▶ Exposed to particulate pollution at levels that are 35% (B) and 28% (H) higher, than white communities
- ▶ Live in homes with inadequate conditions at disproportionately high rates
- ▶ Experienced higher energy burdens than the average household in the same city

Protecting the Health of Vulnerable Populations with In-Home Energy Efficiency:

A Survey of Methods for Demonstrating Health Outcomes

Sara Hayes and Ronald Denson Jr. 10/19

## U.S. Latin Population

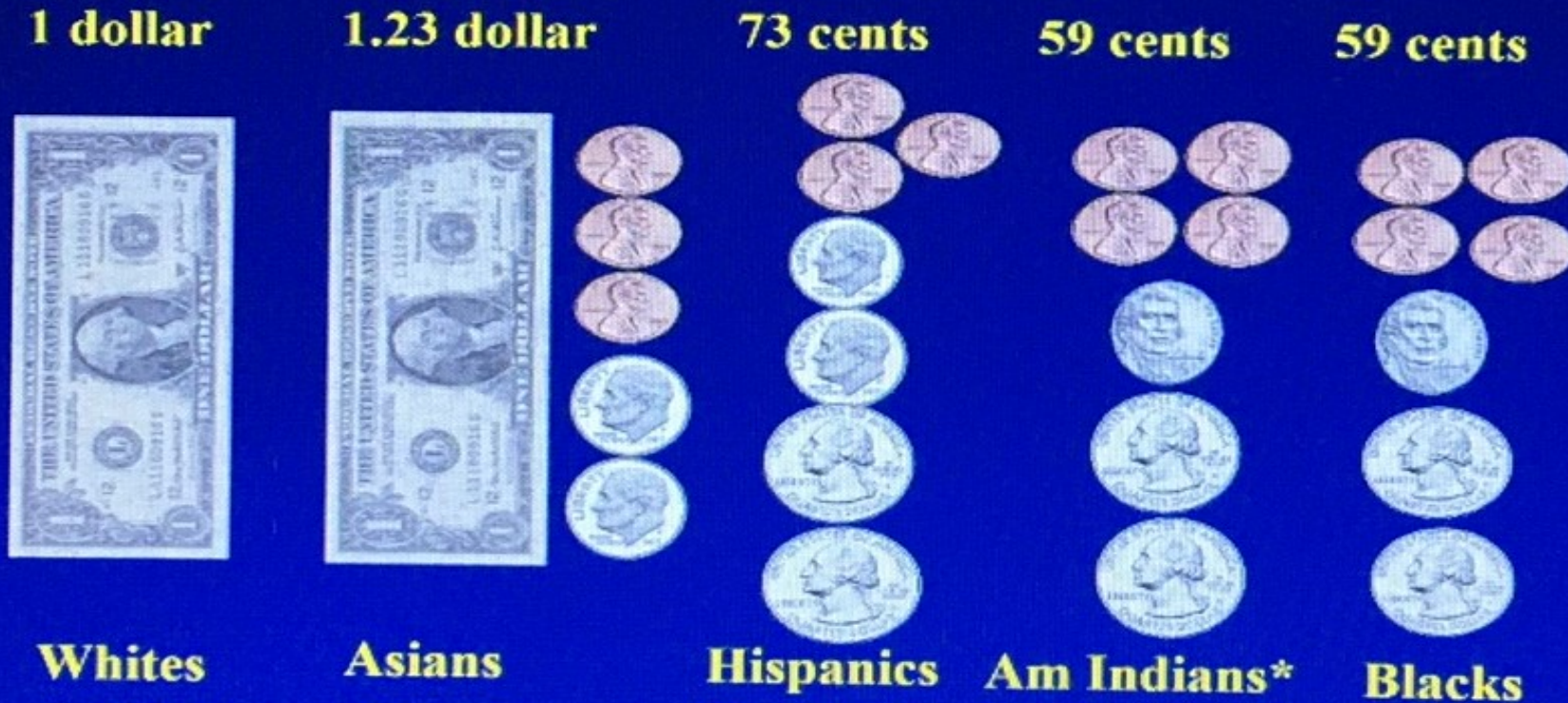
- Nearly 50% live in counties that violated ground level ozone standards
- Major employment in agriculture, manufacturing, and construction
- 55% live in Florida, California and Texas, three states already experiencing serious effects related to climate change

<http://www.nhmamd.org/index.php/nhma-media/nhma-in-the-news/233-northjerseycom-news-report-hispanics-disproportionately-impacted-byair-pollution>



# Median Household Income and Race, 2018

## Racial Differences in Income are Substantial:



U.S. Census Bureau, Semega et al., 2019; \* For 2017; US Census Bureau, ACS, 2017

# Four Major Impact Categories

## 1. Direct Impact

- Extreme Heat
- Air Pollution
- Extreme Weather

## 2. Spread Disease

- Insects & Vectors

## 3. Disruption of water and food supply

- Contaminated Water
- Contaminated Food
- Hunger & Malnutrition

## 4. Disrupt Emotional Well Being

- Emotional stress





# How Climate Change Can Impact Health

**H**

**Heat illness**

**E**

**Exacerbate heart  
and lung conditions**

**A**

**Asthma**

**T**

**Traumatic injury**

**W**

**Water and  
foodborne illnesses**

**A**

**Allergies**

**V**

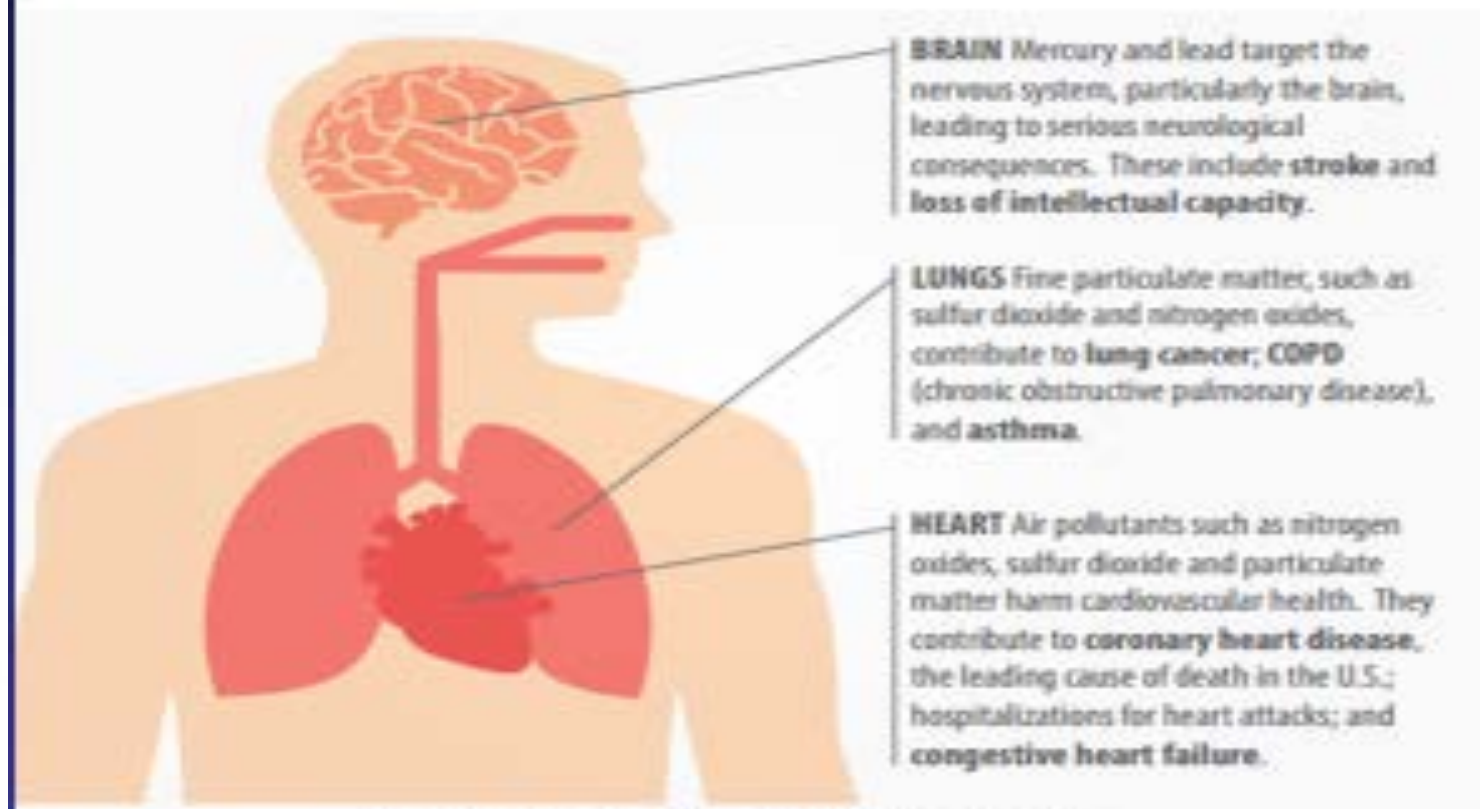
**Vector-borne disease**

**E**

**Emotional Stress**



# Fossil Fuel Pollutants



Health Effects of Fossil Fuel Pollutants

Current Range

Projected Range ca. 2100

# Adverse Effects on Lungs

- Extreme heat also contributes to elevated levels of ground-level ozone (a component of smog), which results in short-term decreases in lung function and damages lung tissue
- Elevated ground-level ozone also increases the incidence of asthma-related hospital visits and premature deaths

Confalonieri et al., 2007





# Asthma

## High CO2 Causes:

- Increase ground level ozone (fog)
- 60% more pollen from ragweed
- Trees flower 3-5 weeks earlier
- Incidence of asthma
- 1:9 African Americans and 1:7 in Hispanics

[www.stateoftheair.org](http://www.stateoftheair.org)



# **Inequity in consumption of goods and services adds to racial–ethnic disparities in air pollution exposure**

**Christopher W. Tessum, Joshua S. Apte, Andrew L. Goodkind, Nicholas Z. Muller, Kimberley A. Mullins, David A. Paoella, Stephen Polasky, Nathaniel P. Springer, Sumil K. Thakrar, Julian D. Marshall, and Jason D. Hill**

## **Abstract**

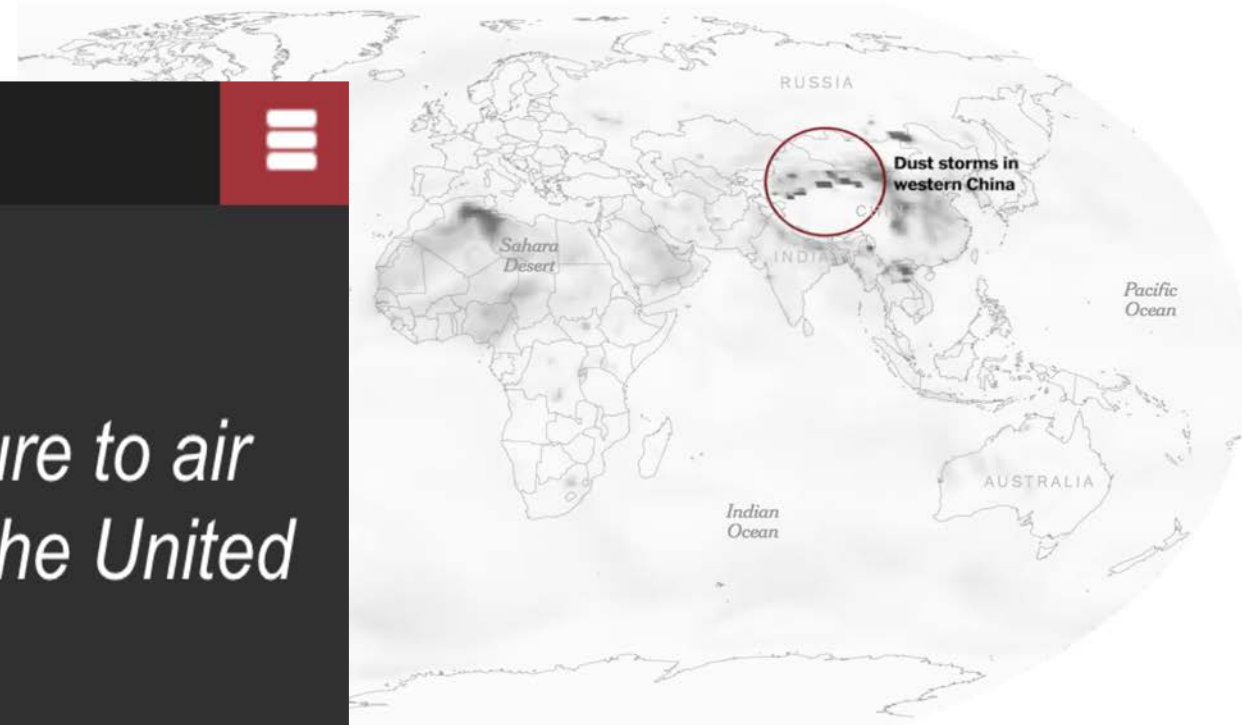
Fine particulate matter (PM<sub>2.5</sub>) air pollution exposure is the largest environmental health risk factor in the United States. Here, we link PM<sub>2.5</sub> exposure to the human activities responsible for PM<sub>2.5</sub> pollution. We use these results to explore “pollution inequity”: the difference between the environmental health damage caused by a racial–ethnic group and the damage that group experiences. We show that, in the United States, PM<sub>2.5</sub> exposure is disproportionately caused by consumption of goods and services mainly by the non-Hispanic white majority, but disproportionately inhaled by black and Hispanic minorities. On average, non-Hispanic whites experience a “pollution advantage”: They experience ~17% less air pollution exposure than is caused by their consumption. Blacks and Hispanics on average bear a “pollution burden” of 56% and 63% excess exposure, respectively, relative to the exposure caused by their consumption. The total disparity is caused as much by how much people consume as by how much pollution they breathe. Differences in the types of goods and services consumed by each group are less important. PM<sub>2.5</sub> exposures declined ~50% during 2002–2015 for all three racial–ethnic groups, but pollution inequity has remained high.

Proceedings of the National Academy of Science of the U.S. <https://doi.org/10.1073/pnas.1818859116>

# ***New Research Links Air Pollution to Higher Coronavirus Death Rates***

**The New York Times**

**A Year of Fine Particulate Pollution**



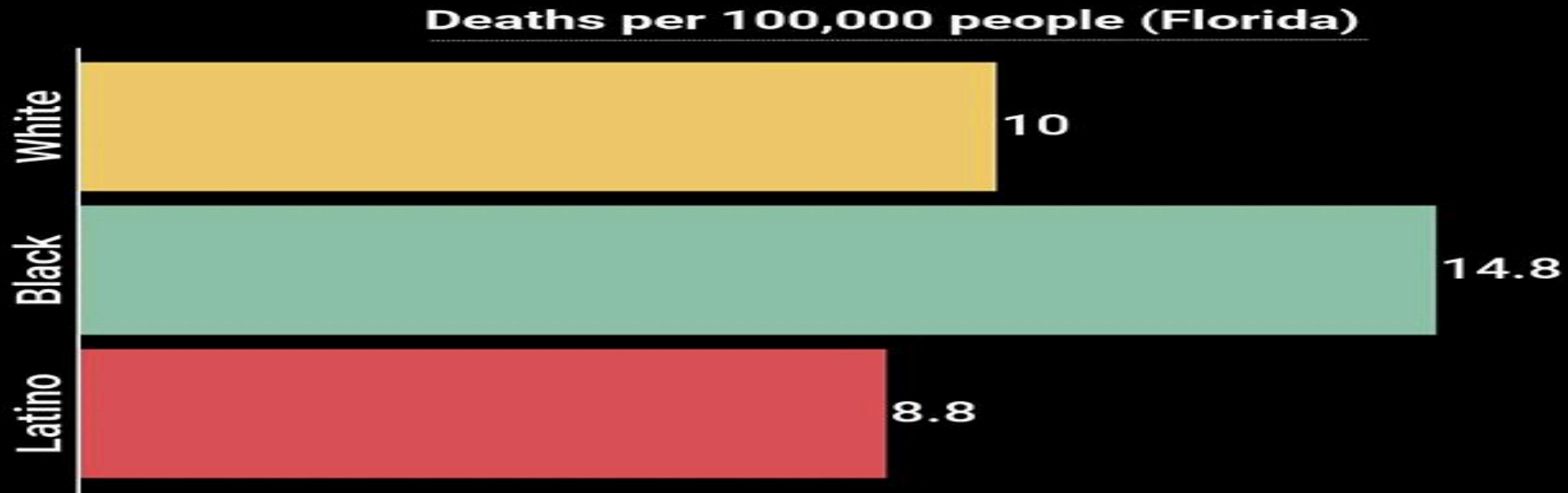
## **COVID-19 PM<sub>2.5</sub>**

*A national study on long-term exposure to air pollution and COVID-19 mortality in the United States*



IV. COVID-19 and Race/Ethnicity

In Florida, **1 in 6,750** Black residents have died from COVID-19. In comparison, **1 in 10,000** white residents have died from COVID-19.



Source: APM Research Lab (The Color of Coronavirus) May 26





## BUSINESS



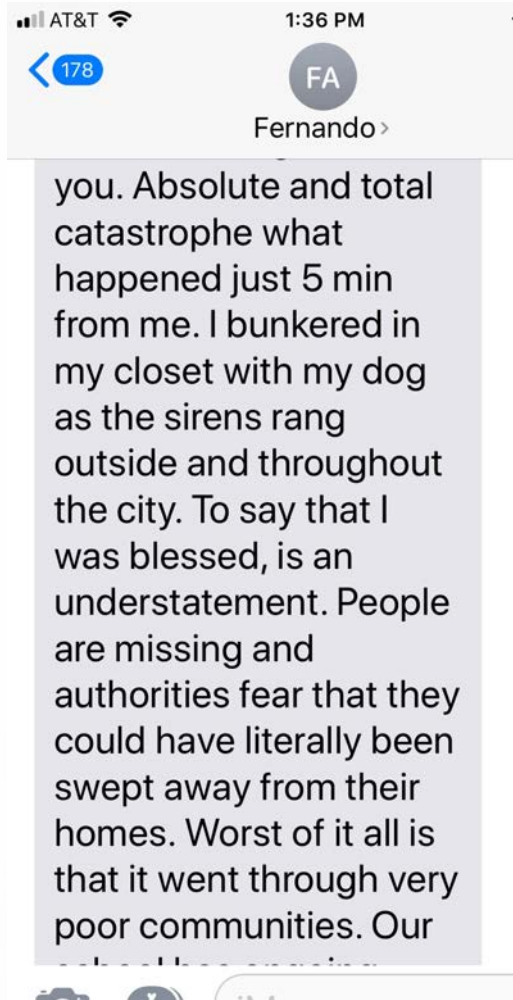
### BUSINESS

## **Landscaping company faces \$16,000 federal fine after 100-degree hot death of worker**

Olin Landscaping, a Nokomis-based company, faces over \$16,000 in fines after one of its workers literally dropped dead in extreme heat last August while the company worked on a Venice, FL house



# Beauregard, Alabama



# Sandra Faye Twiggs – April 2018

- Judge Marlene Ehrlich said “I am not here to talk about your breathing treatment” to 59yo Ft. Lauderdale woman during her appearance for an arrest over an argument she had with her daughter. The argument began over a fan!
- She died three days after her release

<http://sunshinestateneews.com/story/what-if-sandra-faye-twiggs-were-your-mother>

<https://youtu.be/PqBJ7A1ctRY>

The Effects of Air Pollution and Temperature on COPD Nadia N. Hansel, Meredith C. McCormack, and Victor Kim COPD. 2016 Jun; 13(3): 372–379.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4878829/>



# Mental Health and Temperature

- Higher temperatures during heat waves have been linked to increases in the risk of violence between “intimate partners,” such as spouses

<https://www.sciencedirect.com/science/article/pii/S0048969718324446>

- Climate change affects mental health in a variety of direct, indirect, and overarching pathways—disproportionately affecting those most marginalized

Hayes, K, Blashki, F et al, Climate change and mental health: risks, impacts and priority actions 2018  
[nlm.nih.gov/pmc/articles/PMC5984805/](https://pubmed.ncbi.nlm.nih.gov/pmc/articles/PMC5984805/)

# Mental Health

- Puerto Rico Se Levanta (“Puerto Rico Rises”): From Denial and Passivity to Action and Hope

Carissa Cabán-Alemán, MD

August 2, 2019

Climate Change, Disaster Psychiatry

<https://www.psychiatrictimes.com/climate-change/puerto-rico-se-levanta-puerto-rico-rises-denial-and-passivity-action-and-hope>



# Maria

- 32 yo G2P2 post-partum by nine months, undocumented worker from South Dade presented for entry into primary care. She was encouraged to see a doctor by support group leader. She was s/p Zika infection with post partum depression and obesity.



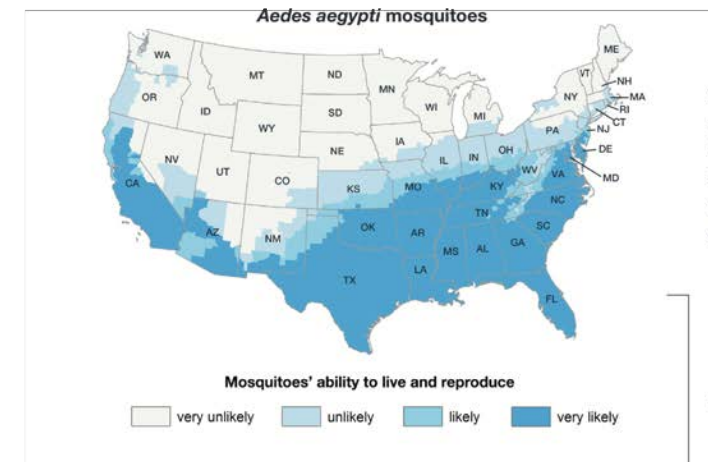


# Vector Borne Diseases

- <https://www.cdc.gov/dotw/zika/index.html>



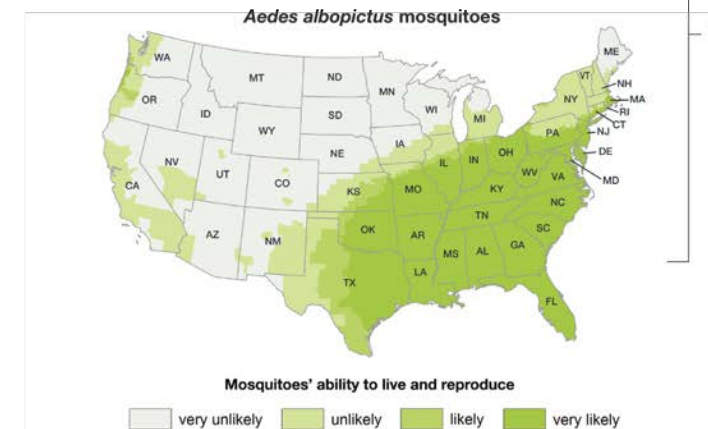
## ESTIMATED potential range of *Aedes aegypti* and *Aedes albopictus* in the United States, 2017\*



*Aedes aegypti* mosquitoes are more likely to spread Zika, dengue, chikungunya, and other viruses than other types of mosquitoes such as *Ae. albopictus* mosquitoes.

These maps DO NOT show

- Exact locations or numbers of mosquitoes living in an area
- Risk or likelihood that these mosquitoes will spread viruses



These maps show

- CDC's best estimate of the potential range of *Ae. aegypti* and *Ae. albopictus* in the United States
- Areas where mosquitoes are or have been previously found

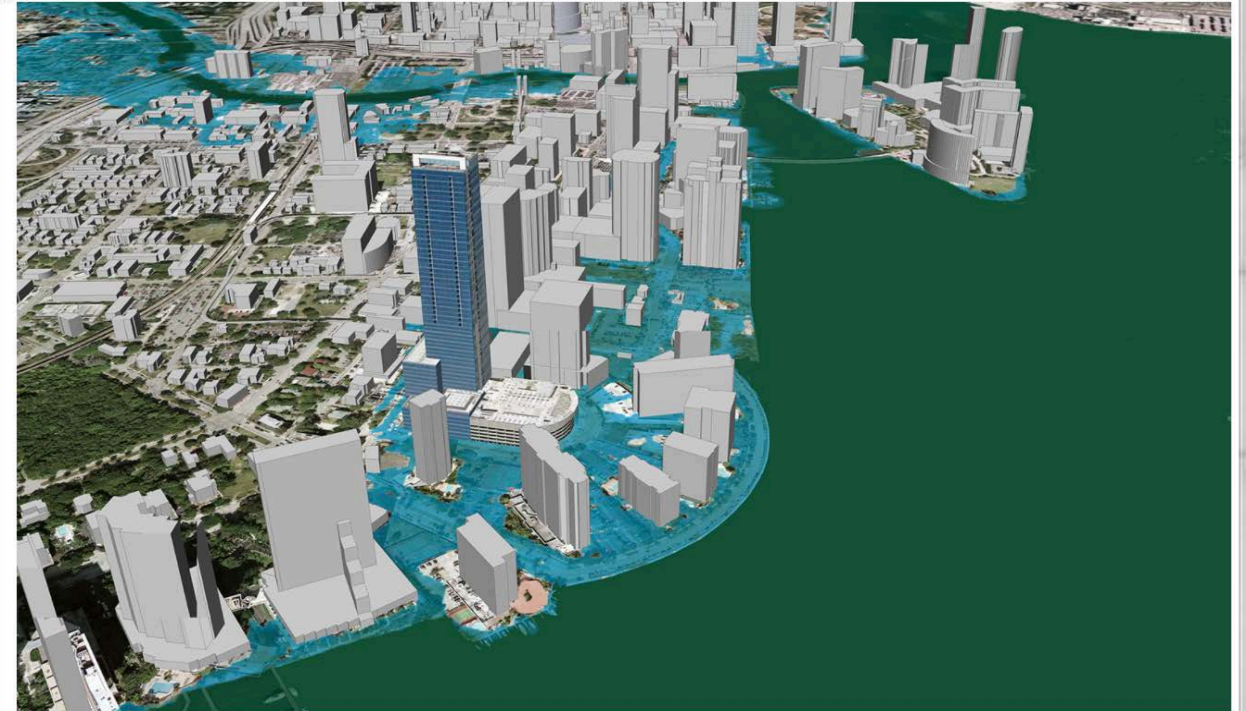
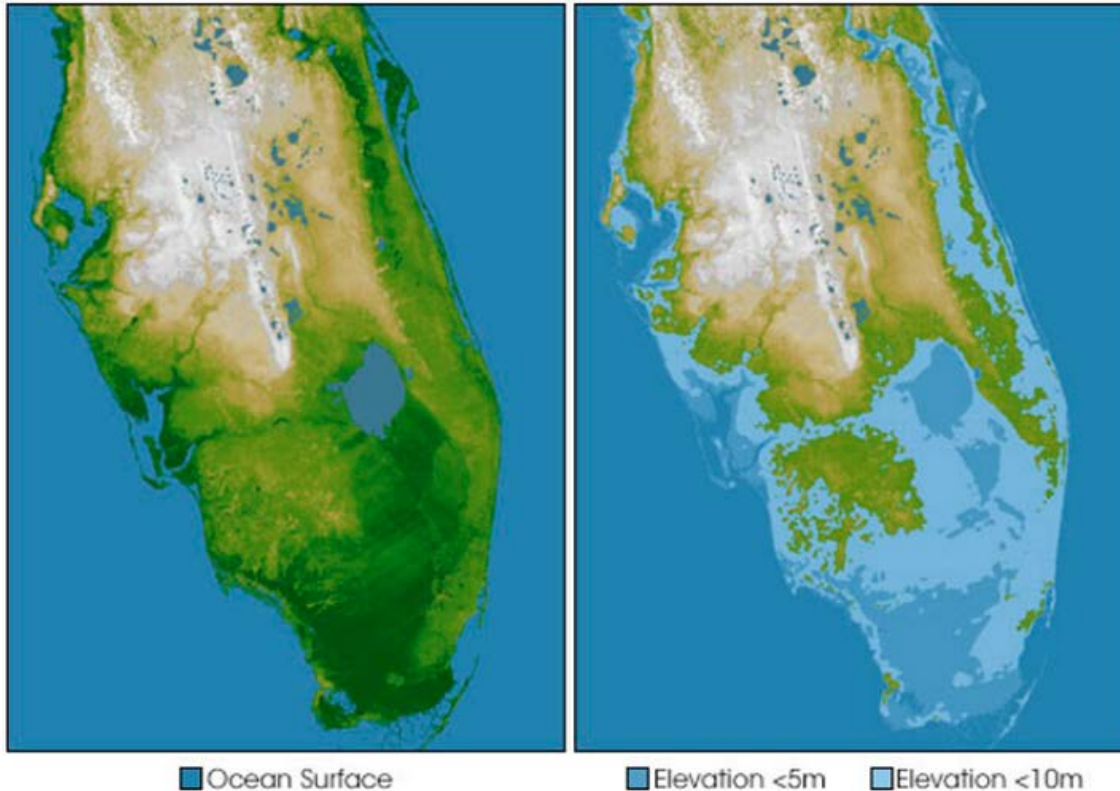
\* CDC has updated the estimated range maps for *Ae. aegypti* and *Ae. albopictus* mosquitoes by using a model that predicts possible geographic ranges for these mosquitoes in the contiguous United States. The model used county-level records, historical records, and suitable climate variables to predict the likelihood (very low, low, moderate, or high) that these mosquitoes could survive and reproduce if introduced to an area during the months when mosquitoes are locally active. Maps are not meant to represent risk for spread of any specific disease. (See Johnson TL et al. Modeling the environmental suitability for *Aedes (Stegomyia) aegypti* and *Aedes (Stegomyia) albopictus* (Diptera: Culicidae) in the contiguous United States. *Jrl Med Entomol.* Sept. 2017;[ahead of print].)

CS264451-F  
February 16, 2018



U.S. Department of  
Health and Human Services  
Centers for Disease  
Control and Prevention

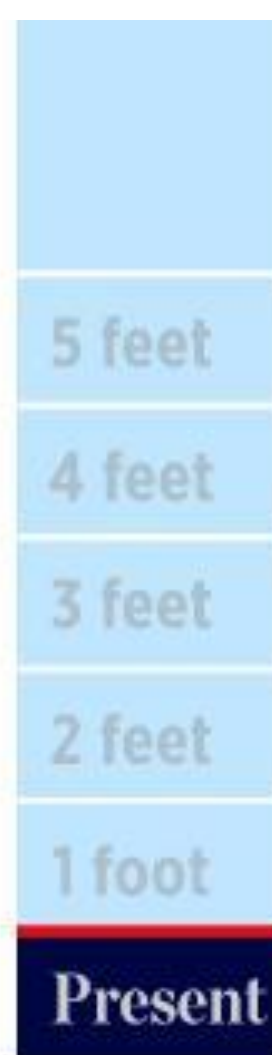
# Sea Level Rise South Florida



Projected sea level rise of three feet along Miami's coast by 2030.(Courtesy Architecture 2030)

[www.miamiherald.com/news/nation-world/national/article172347252.html](http://www.miamiherald.com/news/nation-world/national/article172347252.html)





Go to:  
**Miami-Dade**

# Sea Level Rise

1. Saltwater intrusion into water supply
2. Pressure on sewer system-push wastewater back into streets.( MDC- 1000 septic tanks)
3. Nuclear waste- 9 nuclear plants within 2 miles of coast
4. Flooding (bacterial contamination, mold, safety, etc.)

<https://sealevelrise.org/risks>

<https://slsc.fiu.edu/resources/eyes-on-the-rise/index.html>



# What Clinicians Can Do:

## Listen & Learn

- Follow literature on health & climate
- Learn about the eight ways that climate is affecting our health now
- Look for case studies within your practice. Notice when climate-induced factors (e.g., heat, allergies, vectors) affect your patients
- Document patient stories or trends you see in your practice as they relate to climate and health

## Educate

- Educate your patients
- Talk to patients about climate & health
- Educate your community
- Give talks or lectures

## Speak Out

- Join a sign-on letter
- Tell your lawmaker that climate solutions are good for our health
- Do an interview with the media to talk about climate and health
- Submit a letter to the editor or an Op-Ed

## Walk the Talk

- Go green in your own office by following the easy guide at [MyGreenDoctor.org](https://www.mygreendoctor.org)

## Get Involved

- Become a Clinician Climate Educator
- Join a FCCA committee, such as Research, Education or Government Affairs
- Attend our events, or participate in
- Join PSR (Physician for Social Responsibility)

# Key Points

- All Americans vulnerable to health impact of climate change, but some of us are more likely to be harmed than others
- The health impact is happening now, whether you know it or not
- Action taken now can prevent many of these harms
- Healthcare practitioners must help prepare our communities

# SOLUTION THEMES

- Green spaces & infrastructure
- Healthy homes
- Education & awareness
- Healthcare access and quality
- Increased funding for these solutions
- Personal financial security
- Address economic, racial, & social inequality
- Clean energy & solar energy
- Affordable housing
- Improved mass transit

# TOP CONCERNS

do these solutions make sense given our top concerns? are any missing?





# HOW DID WE DO? POLL



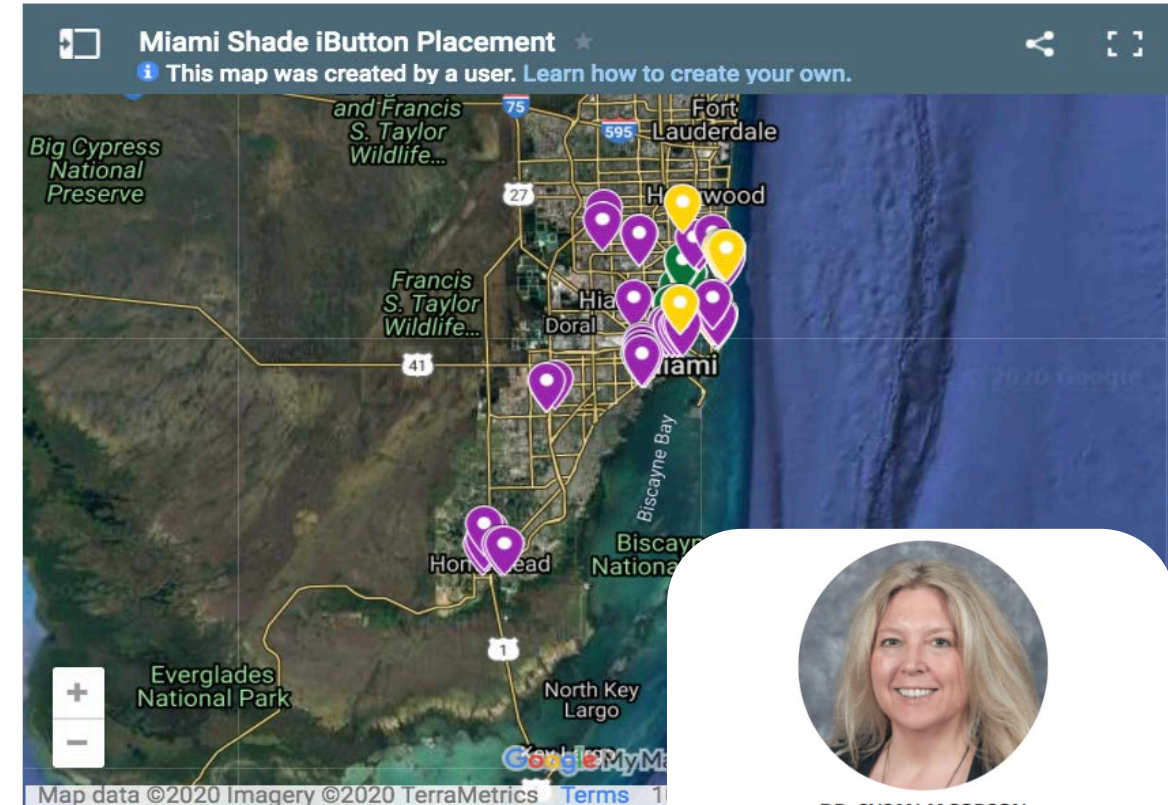
**MARIE TREJOS**

SENIOR PROGRAM ASSISTANT,  
FLORIDA INTERNATIONAL UNIVERSITY,  
SEA LEVEL SOLUTIONS CENTER, INSTITUTE  
OF ENVIRONMENT



# CITIZEN SCIENCE PROJECT

<http://miamistories.net/>



**DR. SUSAN JACOBSON**

ASSISTANT PROFESSOR, DEPARTMENT  
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COMMUNICATIONS, ARCHITECTURE AND THE ARTS,  
FLORIDA INTERNATIONAL UNIVERSITY

## IBUTTON DEPLOYMENT FORM



**Web Link:**

<https://bit.ly/2N0bimM>

A smartphone screen displays a web browser with the URL "form.jotform.com". The page has a light blue background. At the top, there is a logo that says "MIAMI SHADE" in pink and blue. Below the logo, the title "iButton Deployment Form" is followed by a paragraph of instructions: "Use this form to document when the iButton is deployed into the field. You should fill this out as soon as you install it so that we know the correct time period for collecting heat data." A link "Read the instructions." is provided. The form contains three main sections: "iButton Project Number" with a text input field (example: 23), "iButton ID Number (sticker on button)" with a text input field (example: 23), and "iButton Deployment Date and Time" with a date picker (mm-dd-yyyy) and a time picker (at, with hour and minute dropdowns and an AM/PM selector). The bottom of the screen shows standard mobile navigation icons.



# SIGN-UP HERE!

*Sign-up to participate in upcoming citizen science heat monitoring events here:*



<https://bit.ly/miamishade>



# OPEN DISCUSSION PANEL



**MAYRA CRUZ**  
CLIMATE RESILIENCE PROGRAM  
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**MELISSA BALDWIN**  
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IT'S TIME FOR A CLIMATE CHANGE OF MIND

  
**FCCA**  
Florida Clinicians for Climate Action

  
**LifeSciences**  
SOUTH FLORIDA  
technology • talent • research

**FIU** | Institute of  
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**CLIMATE & HEALTH  
EQUITY WEBINAR** 

1. **How can we integrate or approach this dialogue in our workplace to increase awareness?**
2. **What are the top 3 health problems caused by climate change?**
3. **What are some possible solutions to deal with extreme heat while maintaining social distancing for those with no air at home?**
4. **What are current plans to address inequity related to climate and health in South FL?**
5. **What policy actions can be taken to alleviate the social inequity of climate change, especially related to health disparities?**
6. **What are the best ways we can impact climate change from a personal and/or community wide level?**
7. **What are the expected impacts of sea level rise on FL's millions of septic tank systems?**
8. **How can we work to integrate climate change curriculum into med school, nursing school, PA programs, etc.?**
9. **How could climate change exacerbate impact on low income communities or where minorities are dominant?**

## SUBMITTED QUESTIONS

# SATISFACTION SURVEY

*Sign-up to participate in upcoming citizen science heat monitoring events here:*



<https://bit.ly/miamishade>



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# PLEASE TAKE OUR CLIMATE AND HEALTH EQUITY COALITION SURVEY

Healthcare Professional Survey



[bit.ly/chec1](https://bit.ly/chec1)

Community Member Survey



[bit.ly/chec2](https://bit.ly/chec2)

Public Sector Survey



[bit.ly/chec\\_3](https://bit.ly/chec_3)



# THANK YOU!