

Climate, Health & Equity

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Initiatives

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Learning Objectives

1. Name two populations which are more vulnerable to impact of climate change.
2. Describe three ways climate change impacts public health.
3. Identify three ways Physician Assistants can act for climate solutions.

Ms. Anna Mae

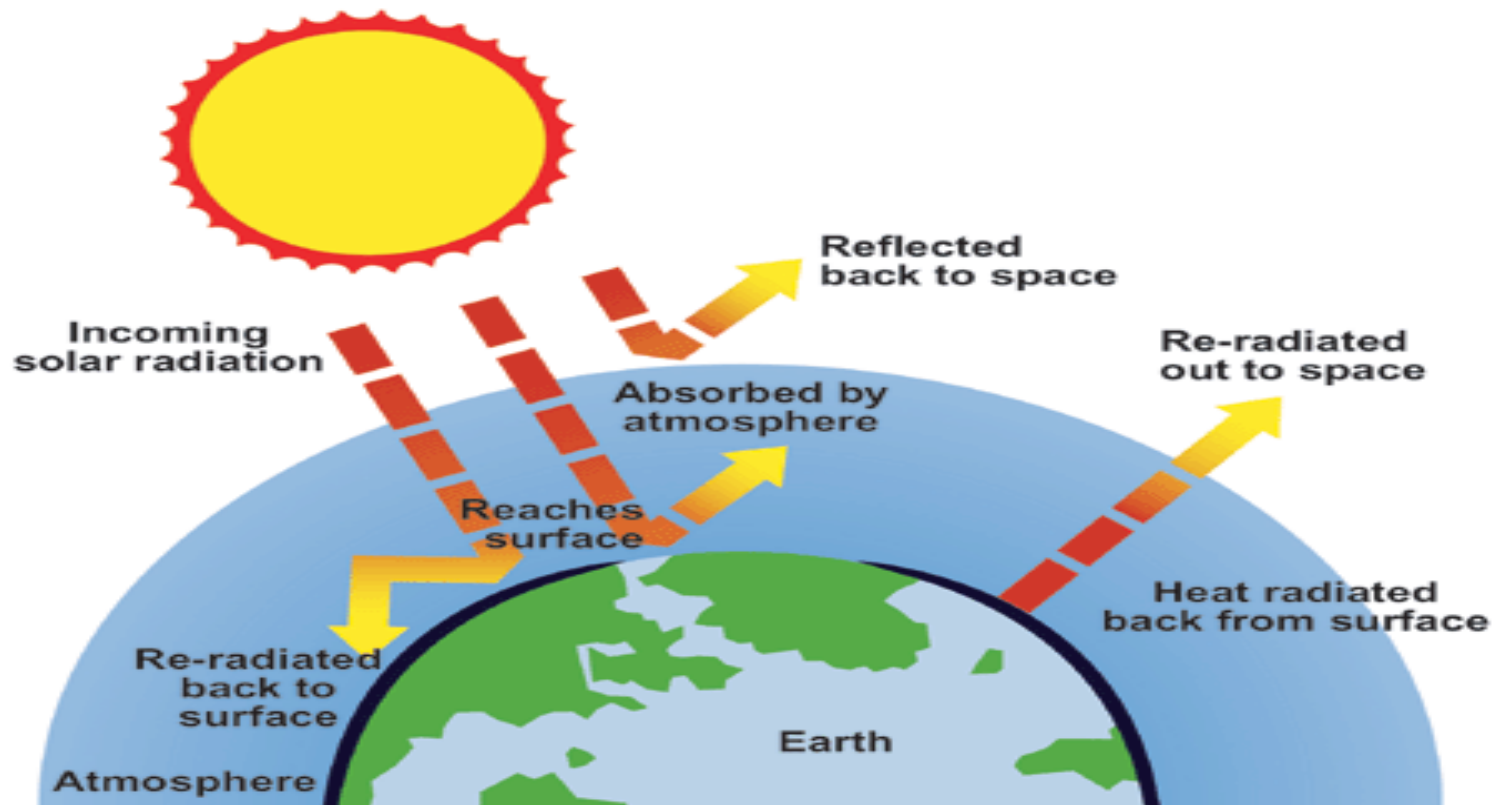
C.C- "I need a refill on my inhaler"

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.

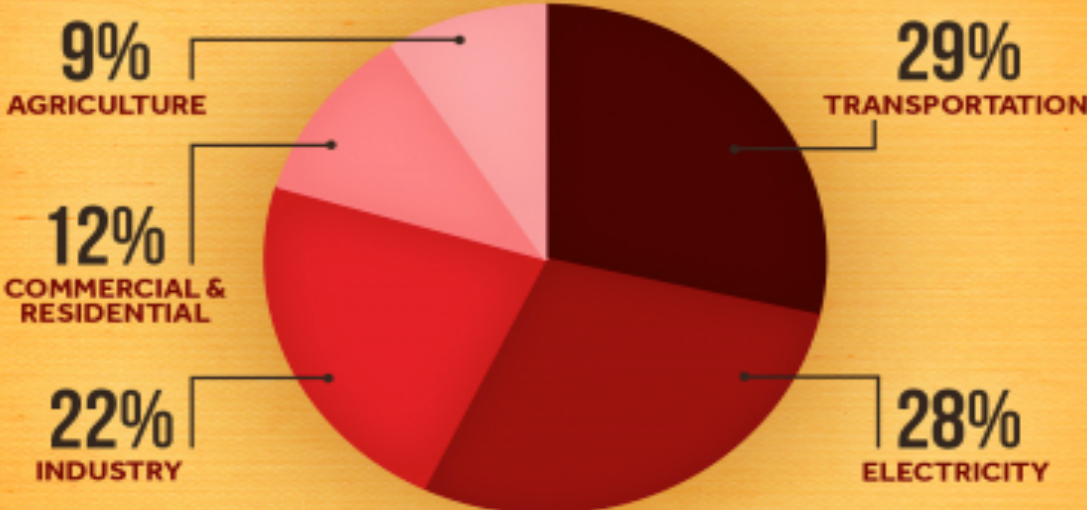


Global warming and the greenhouse effect



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 CO₂

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

1. Nearly 50% live in counties that violated ground level ozone standards.
2. Major employment in agriculture, manufacturing, and construction.
3. 55% live in Florida, California and Texas, three states already experiencing serious effects related to climate change:.

Median Household Income and Race, 2018

Racial Differences in Income are Substantial:

1 dollar



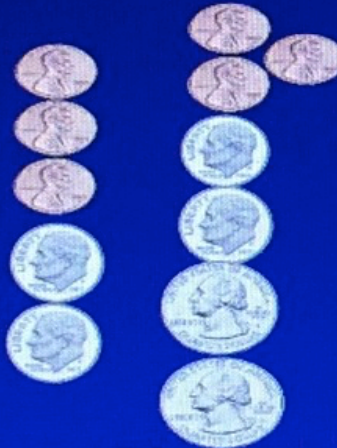
Whites

1.23 dollar



Asians

73 cents



Hispanics

59 cents



Am Indians*

59 cents



Blacks

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

• 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

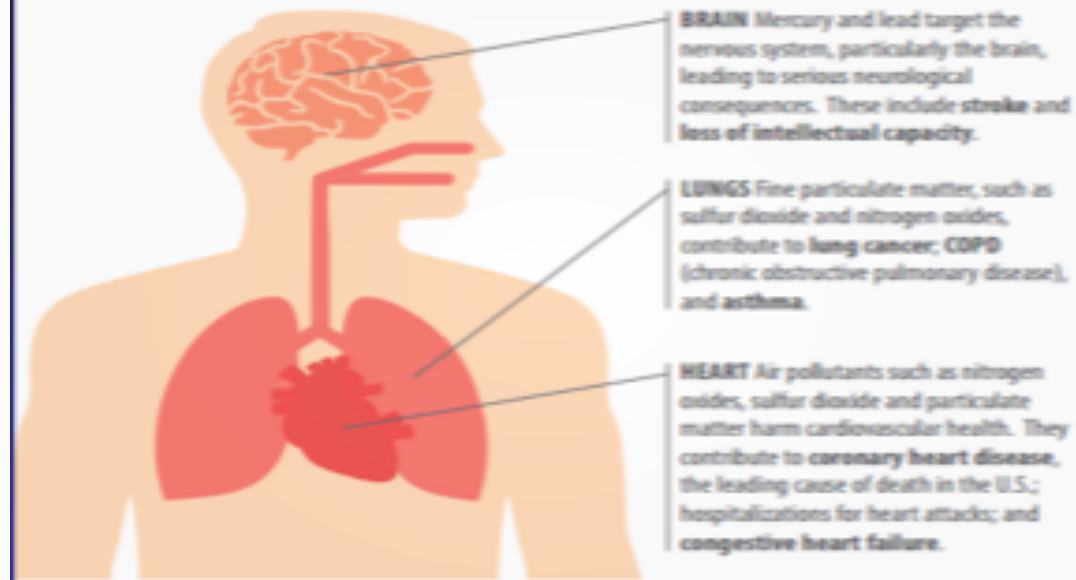
V

Vector-borne disease

E

Emotional Stress

Fossil Fuel Pollutant



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).
 - Sixty percent more pollen from ragweed.
 - Trees flower 3-5 weeks earlier.
 - Incidence of asthma
 - 1:9 African Americans and 1:7 in Hispanics



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_{2.5}) air pollution exposure is the largest environmental health risk factor in the United States. Here, we link PM_{2.5} exposure to the human activities responsible for PM_{2.5} 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_{2.5} 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_{2.5} 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

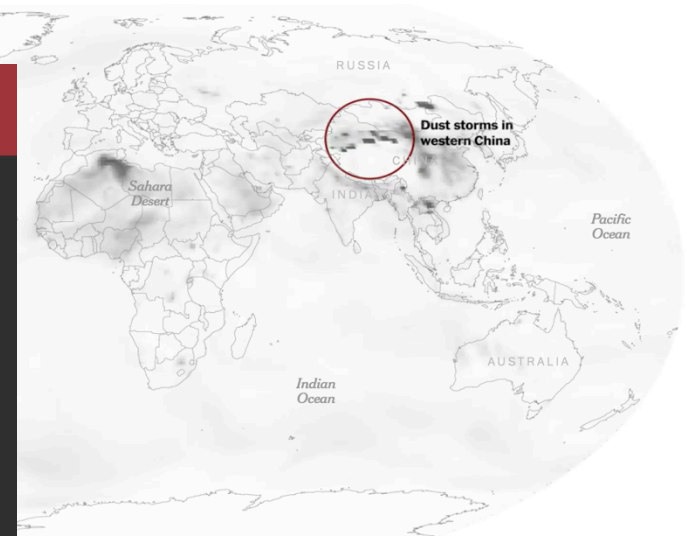
The New York Times

A Year of Fine Particulate Pollution

 HARVARD UNIVERSITY

COVID-19 PM_{2.5}

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

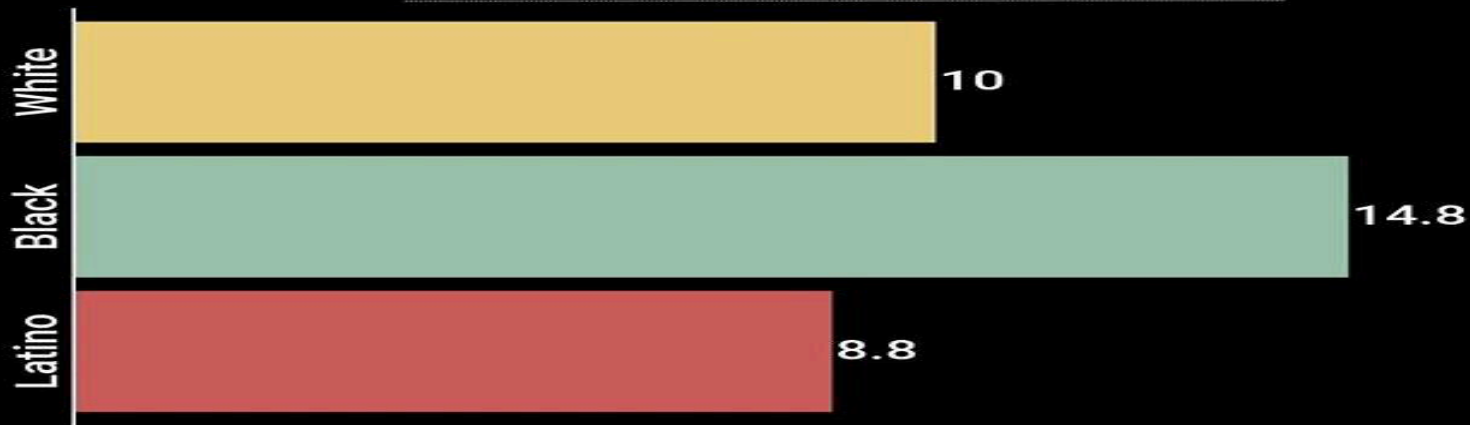




IV. COVID-19 and Race/Ethnicity

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.

Deaths per 100,000 people (Florida)



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



BUSINESS

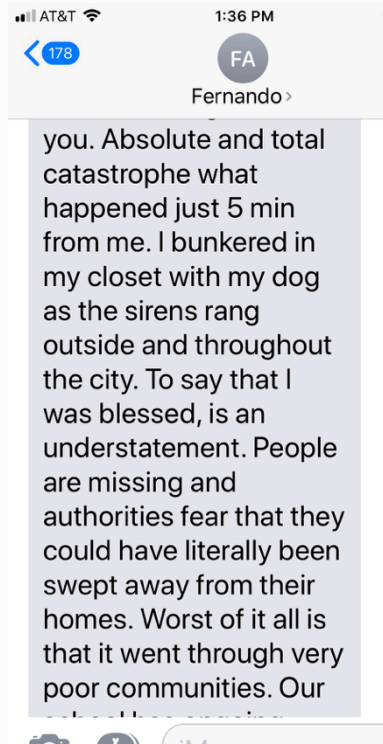


BUSINESS

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://sunshinestatenews.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/35111111/)

Mental Health

1. 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>

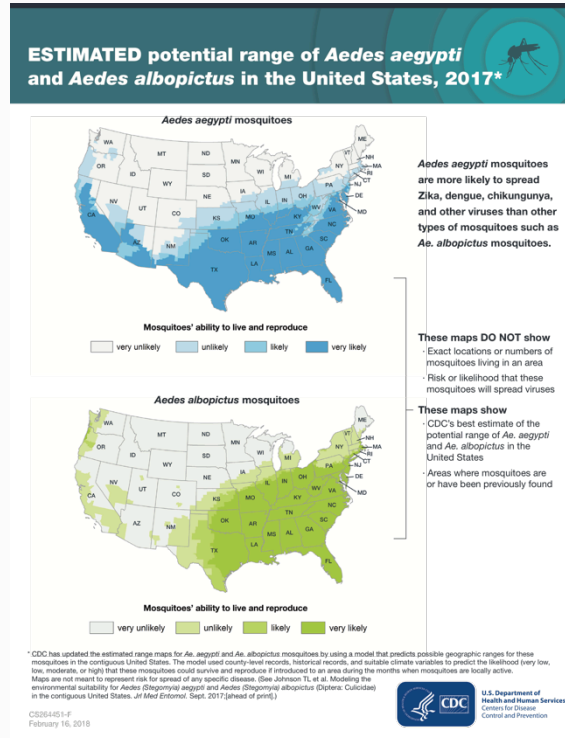
Maria

- 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.

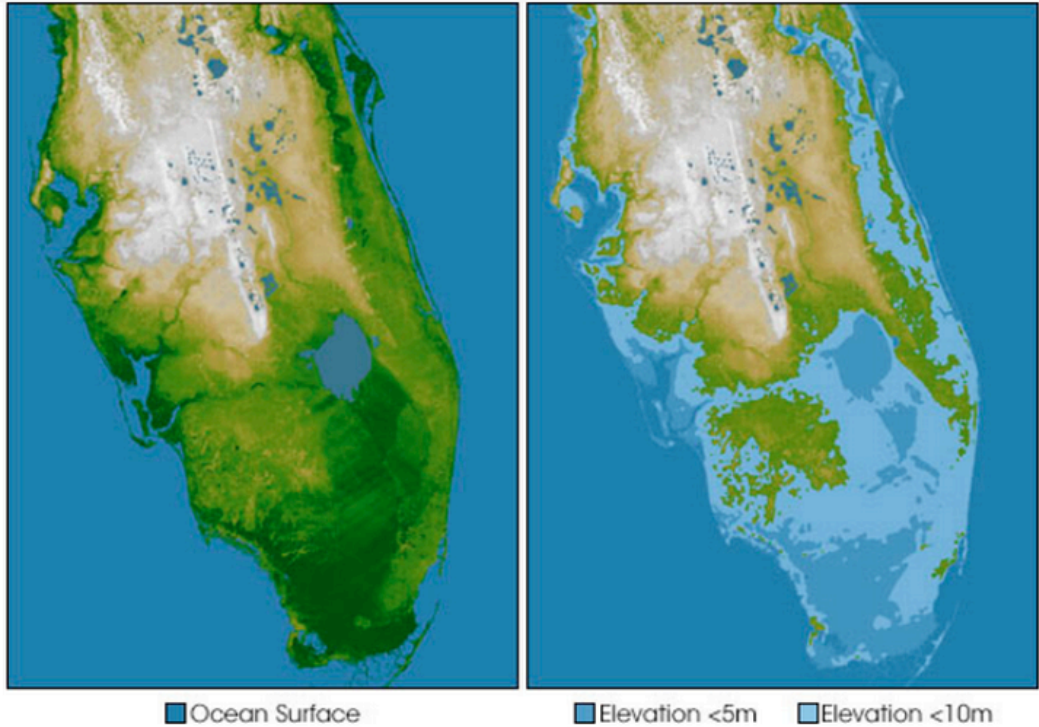


Vector Borne Diseases

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



Sea Level Rise www.miamiherald.com/news/nation-world/national/article172347252.html



Sea Level Rise

1. Salt water intrusion into water supply.
2. Pressure on sewer system-push waste water 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

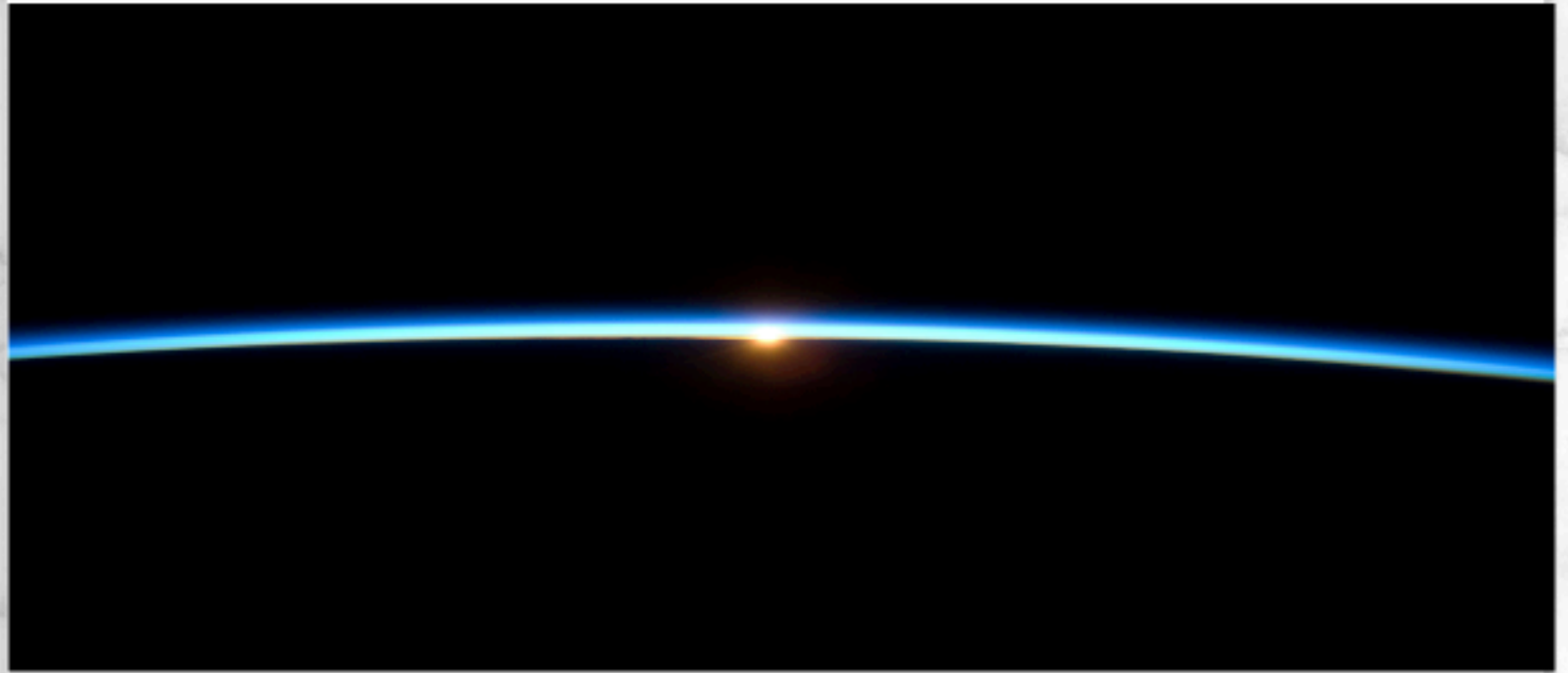
• Get Involved

- 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

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

Thin Line



Learning Objectives

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CLIMATE IMPACTS HEALTH

PROBLEM

- Climate change is harming our health now.
- Everyone is affected, but some people are more vulnerable.
- If we do nothing, these health threats will increase.

IMPACTS

Eight Impacts Four Categories:

- **Direct Impact**
 - Extreme Heat
 - Air Pollution
 - Extreme Weather
- **Spread Disease**
 - Insects & Vectors
 - Contaminated Water
 - Contaminated Food
- **Disrupt Food Supply**
 - Hunger & Malnutrition
- **Disrupt Well Being**
 - Emotional stress



H E A T W A V E

- Heat illness
- Exacerbate heart and lung conditions
- Asthma
- Traumatic injury
- Water and foodborne illnesses
- Allergies
- Vector-borne disease
- Emotional stress

SOLUTIONS

- Clean energy reduces harmful pollution and protects the climate.
- Active transportation: biking, walking & public transit promote healthier lifestyles.
- Eating less red meat is good for the planet and good for our health.

www.FloridaClinicians.org
www.MS2CH.org

Engage. Educate. Advocate.