

# Disasters Psychiatry: Current Needs in Managing Climate Change

Joshua C. Morganstein, M.D.  
Member, APA Committee on the Psychiatric  
Dimensions of Disasters  
Associate Professor, Department of Psychiatry,  
Scientist, Center for the Study of Traumatic Stress  
Uniformed Services University,  
Bethesda, MD  
[joshua.morganstein@usuhs.edu](mailto:joshua.morganstein@usuhs.edu)  
<http://www.cstsonline.org/>  
[240-381-1192](tel:240-381-1192)

Lise Van Susteren, M.D.  
Founding Member, Climate Psychiatry Alliance  
Advisory Board, Center for Health and the  
Global Environment Harvard T.H. Chan  
School of Public Health  
Forensic & Adult Psychiatry,  
Private Practice & Consultation  
[lvs350@me.com](mailto:lvs350@me.com)  
<http://climatepsychalliance.org/>  
[301-787-1780](tel:301-787-1780)

Robin Cooper, M.D.  
Founding Member, Climate Psychiatry Alliance  
Private Practice, Adult Psychiatry  
Assistant Clinical Professor, Department of  
Psychiatry, University of California at San  
Francisco, CA  
[robincooper50@gmail.com](mailto:robincooper50@gmail.com)  
<http://climatepsychalliance.org/>  
[415-642-0144](tel:415-642-0144)

James C. West, M.D.  
SUSP Assembly Representative,  
American Psychiatric Association  
Associate Professor, Department of Psychiatry,  
Scientist, Center for the Study of Traumatic Stress  
Uniformed Services University,  
Bethesda, MD  
[james.west@usuhs.edu](mailto:james.west@usuhs.edu)  
<http://www.cstsonline.org/>  
[760-583-4915](tel:760-583-4915)

# Disclaimer

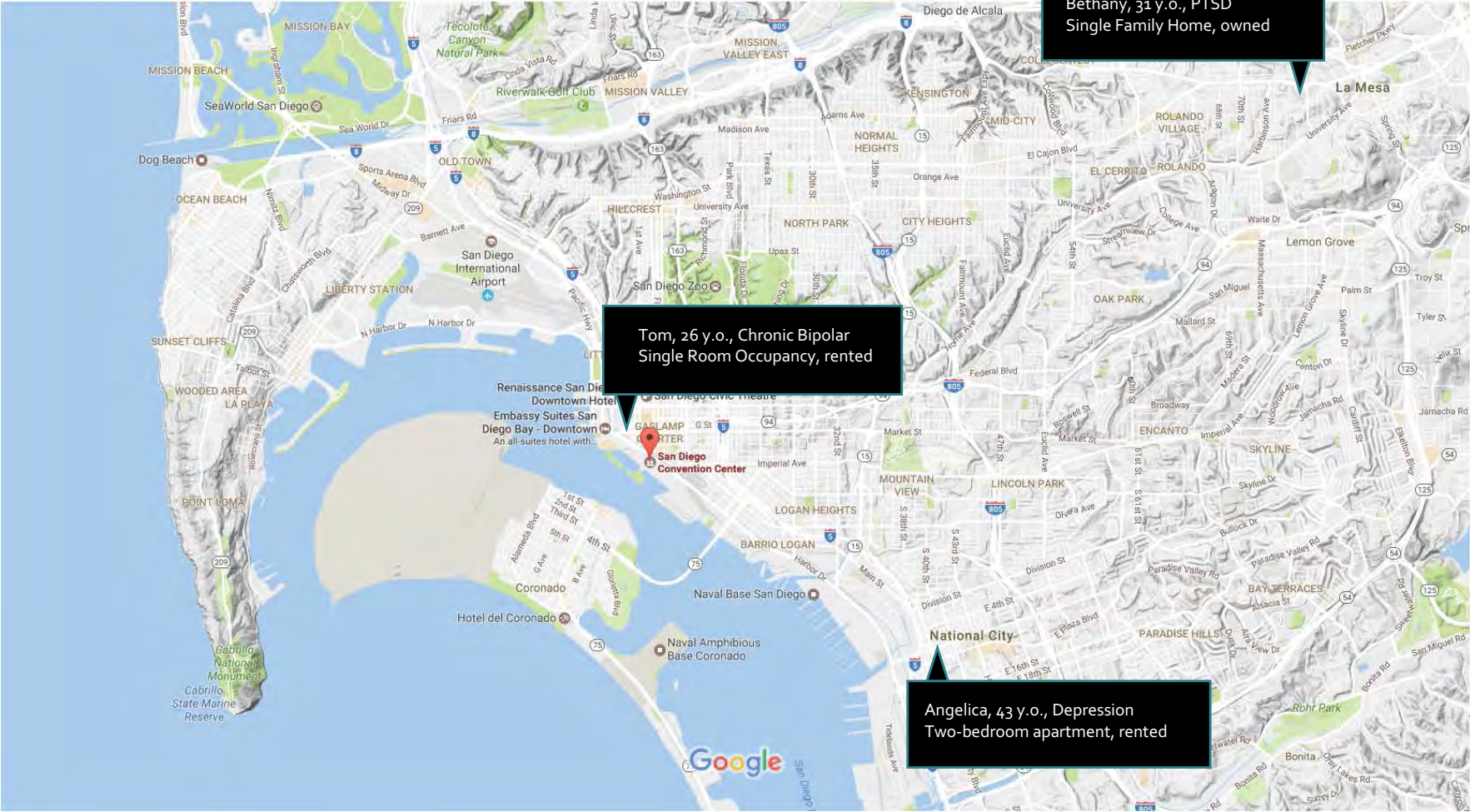
Ideas, attitudes, and opinions expressed herein are our own and do not necessarily reflect those of the Uniformed Services University, the U.S. Public Health Service, the Department of Defense, other branches of the US government, or organizations with which we are affiliated. No financial investment or conflicts of interest related to thoughts and information shared.

# Overview

- Didactic Content
  - Global Health Effects of Climate Change
  - Psychological & Behavioral Responses to Climate-Related Disasters
  - Populations with Increased Vulnerability
  - Preparing for and Responding to Disasters
- Small Group Case Discussions
- Mobile & Online Resources

# Small Group Cases

Google Maps San Diego Convention Center



Bethany, 31 y.o., PTSD  
Single Family Home, owned

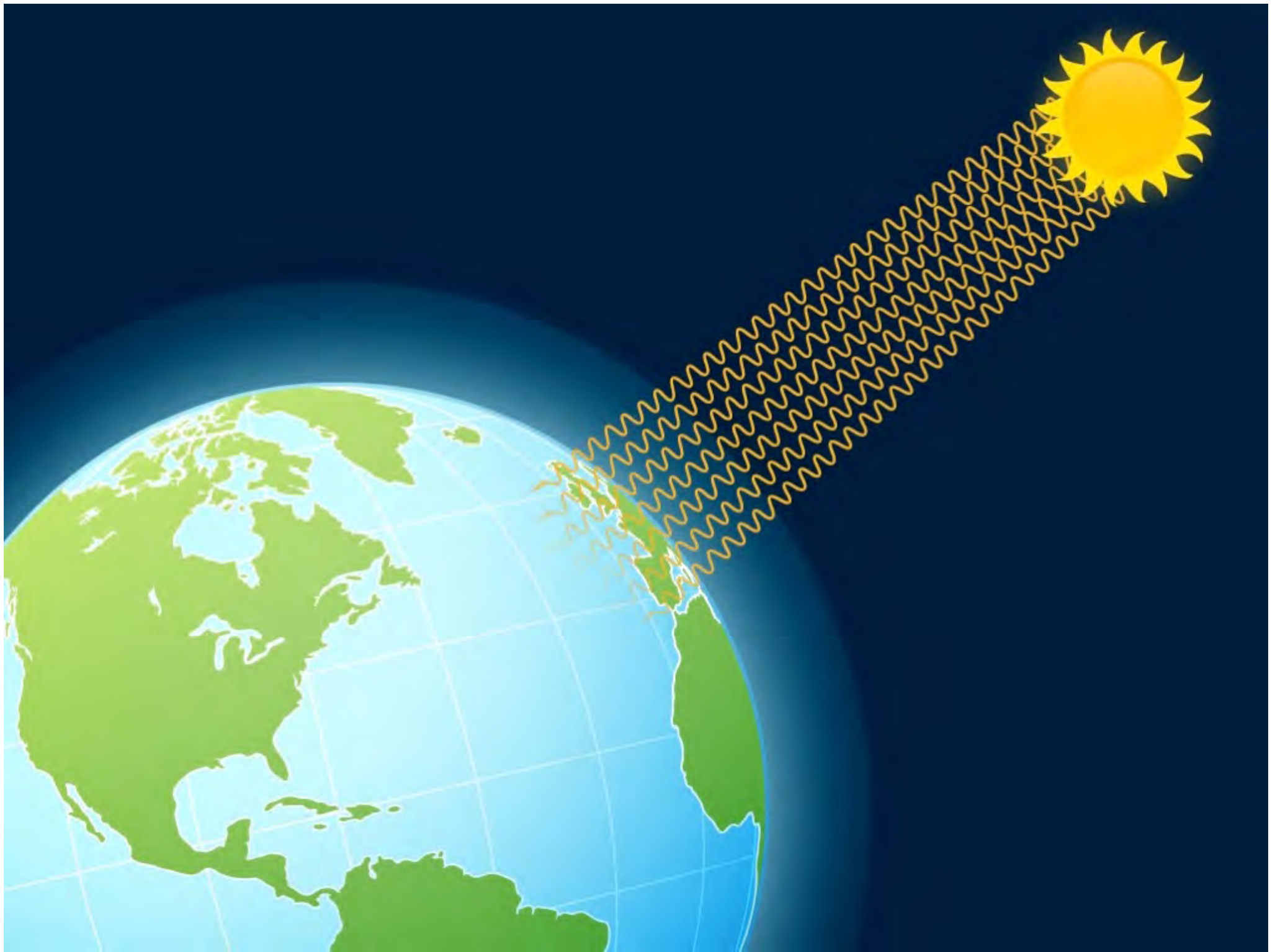
Tom, 26 y.o., Chronic Bipolar  
Single Room Occupancy, rented

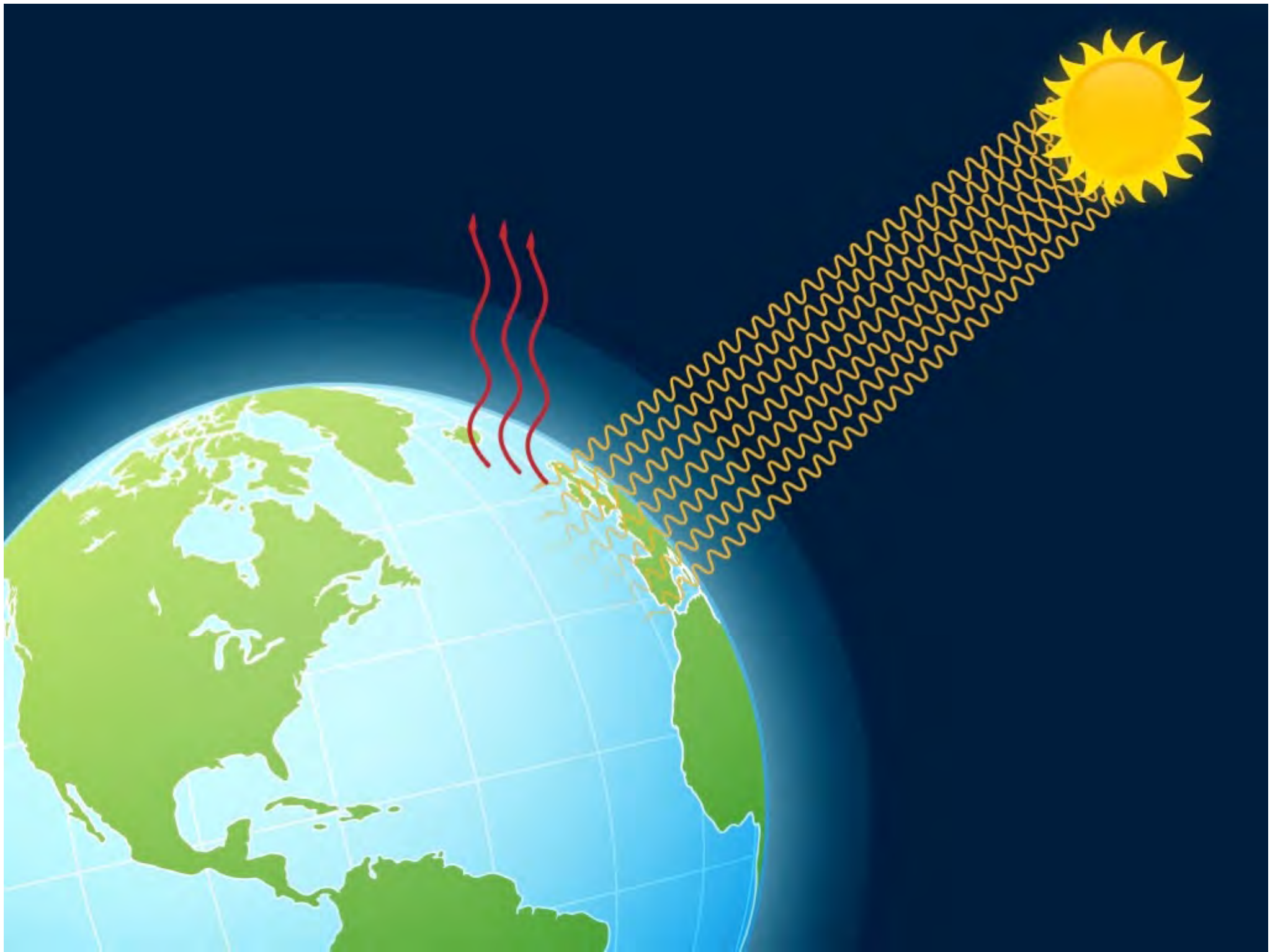
Angelica, 43 y.o., Depression  
Two-bedroom apartment, rented

# CLIMATE CHANGE: THE BIG PICTURE

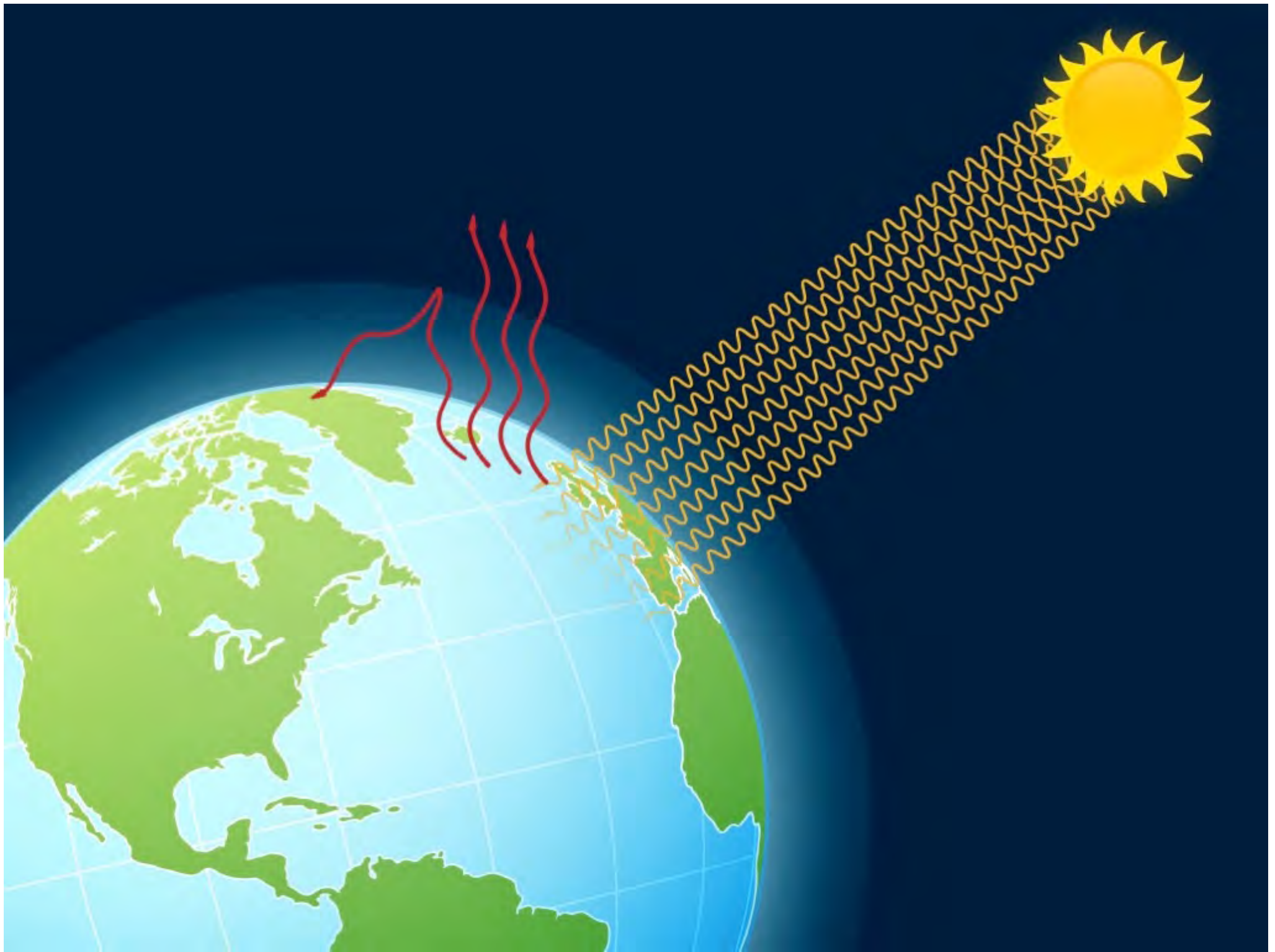
Lise Van Susteren, M.D.

“ANCIENT SUNSHINE”



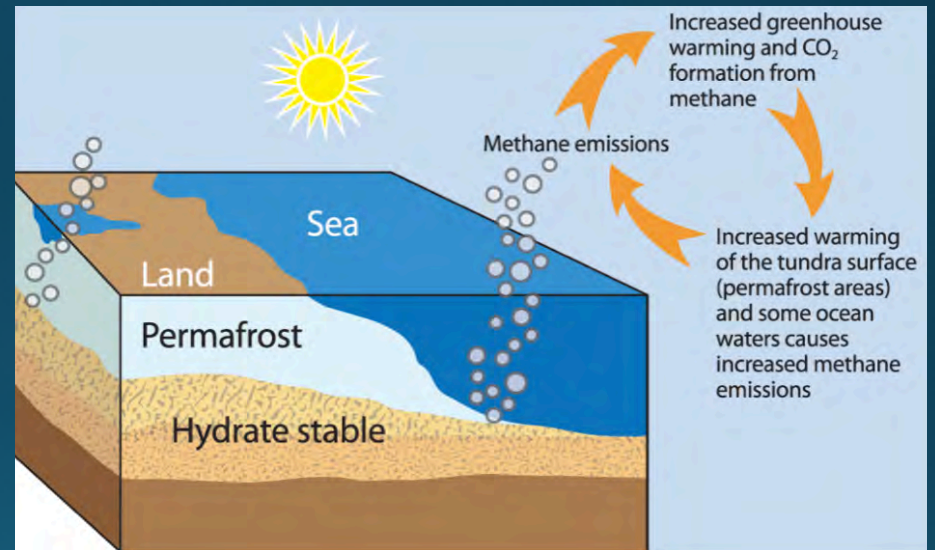


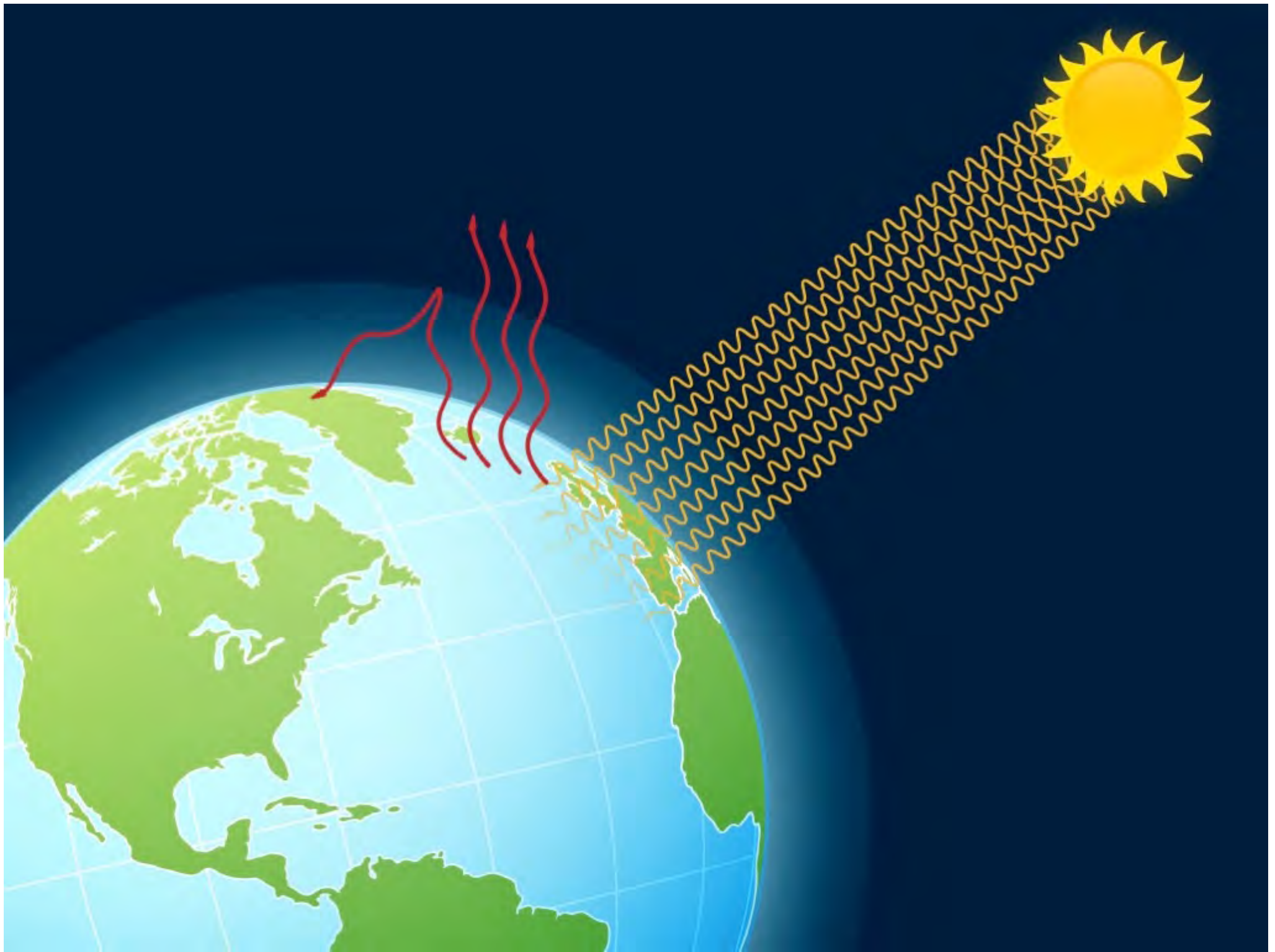


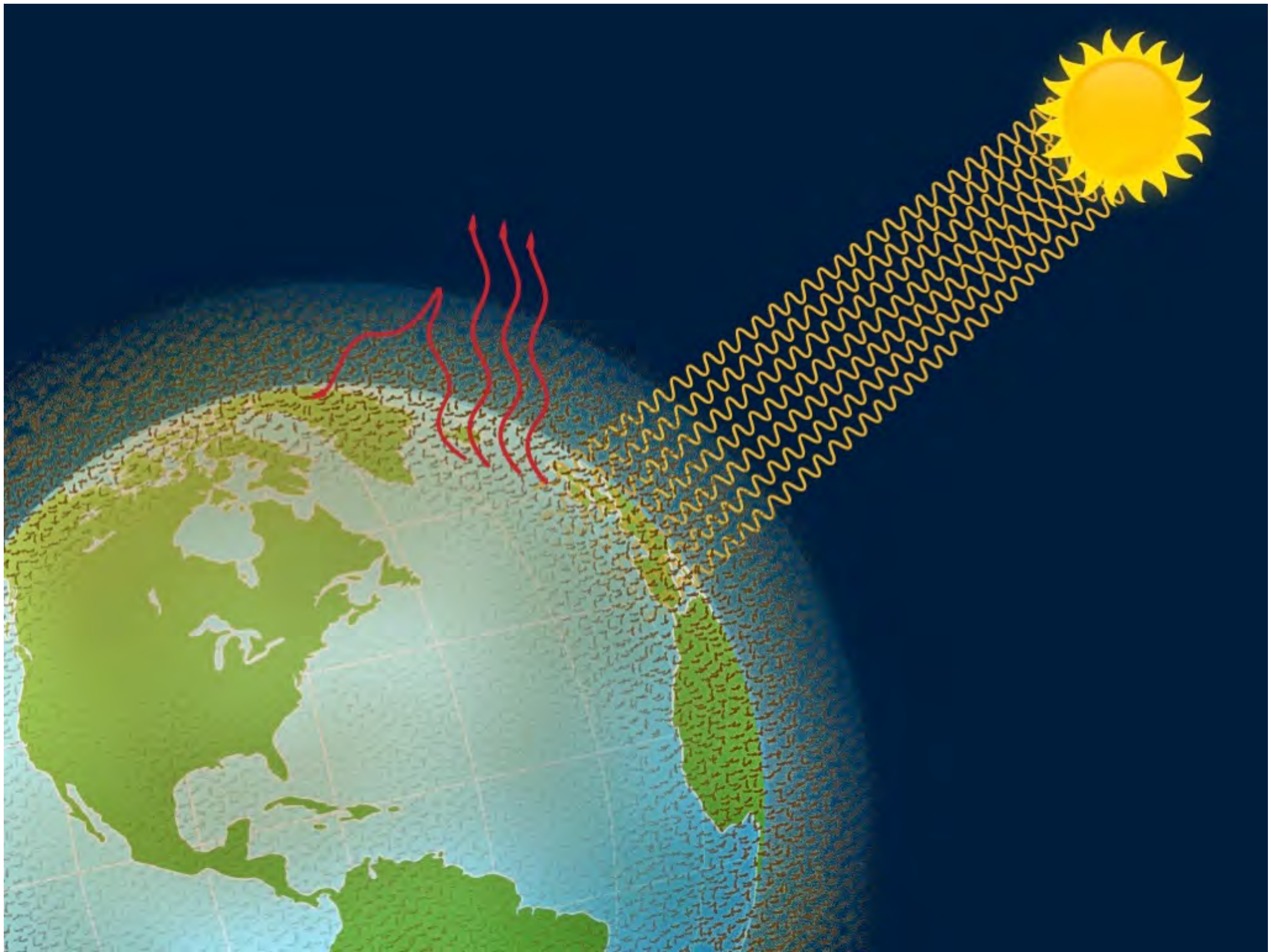


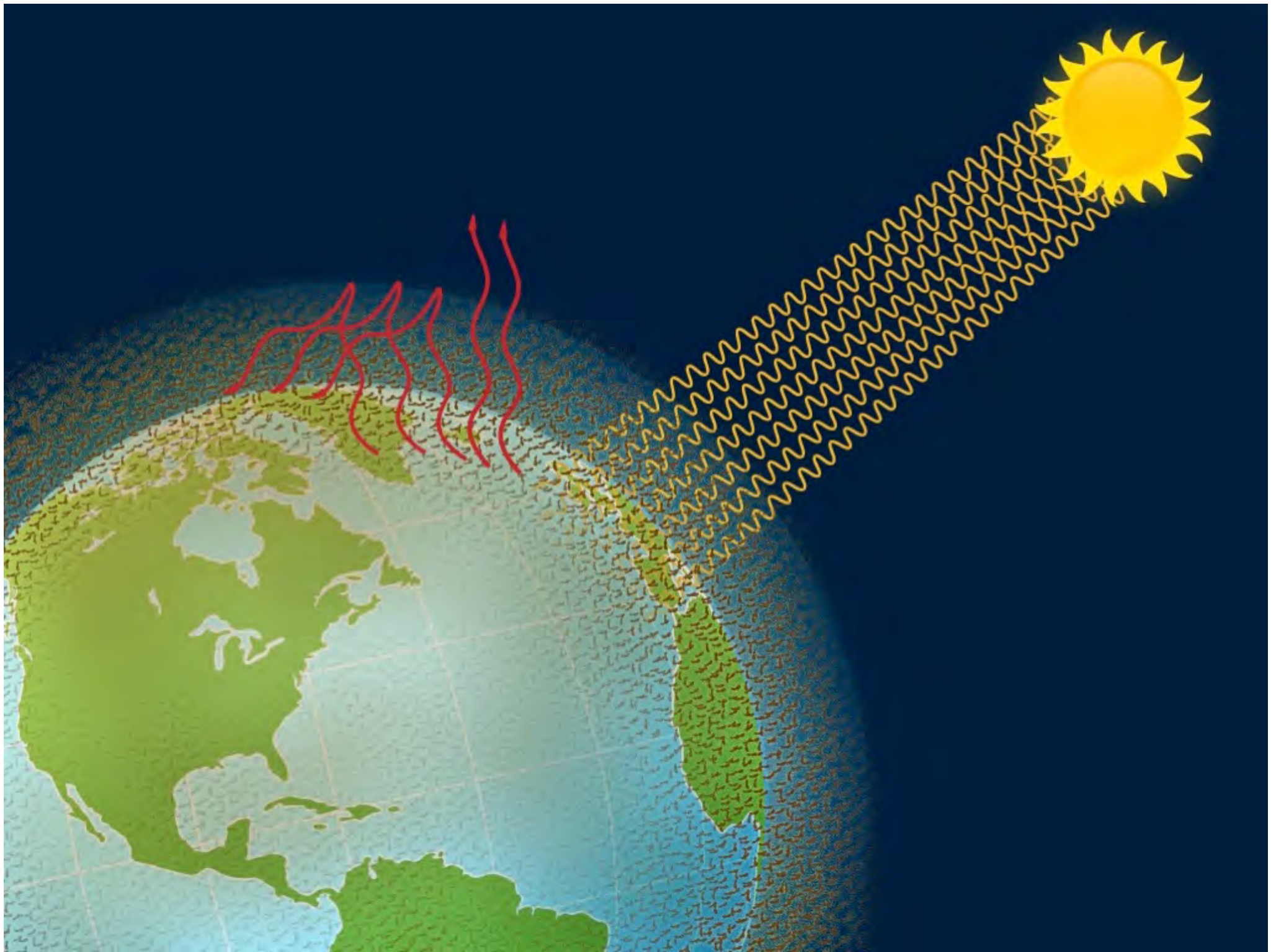
CO<sub>2</sub>

CH<sub>4</sub>



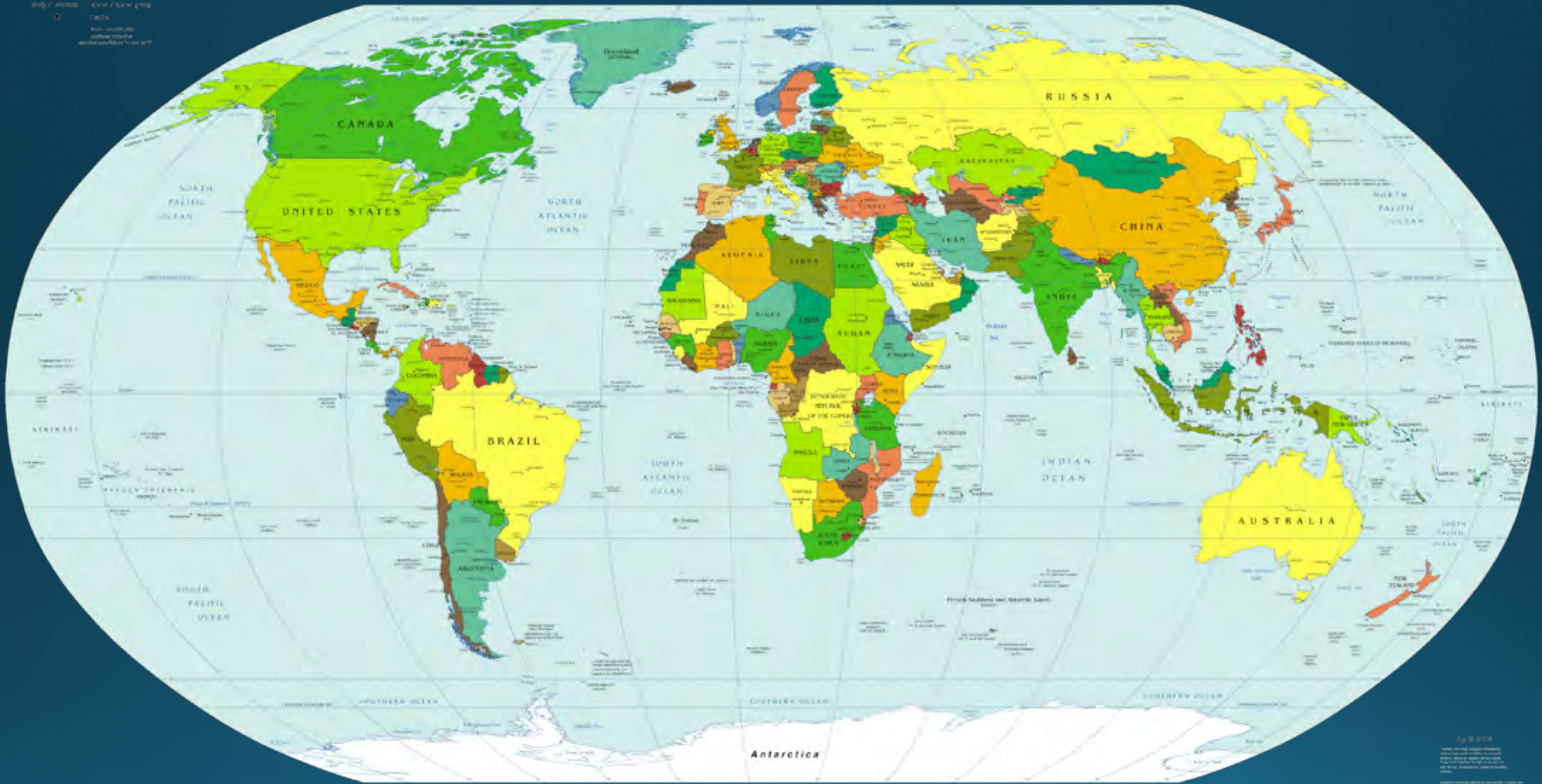






# Political Map of the World, April 2006

©2006  
Territorial  
study / analysis  
v  
Cadastral  
Public Information  
Information  
and Statistics Service of the Republic of Serbia



1:250,000,000  
Scale 1:250,000,000  
Scale 1:250,000,000  
Scale 1:250,000,000  
Scale 1:250,000,000

# Extreme weather events

*increasing in frequency and intensity*

Hurricanes  
Tornadoes  
Blizzards  
Heat Waves

# ...Floods







# FIRES



# HEAT WAVES

Heat related illnesses  
including stroke

Dehydration

Sensitivity to psychotropics

The relationship between hot weather and crime is linear -- as it gets hotter, people get more aggressive



*4% between individuals*

*14% between groups*

# Extreme climate conditions

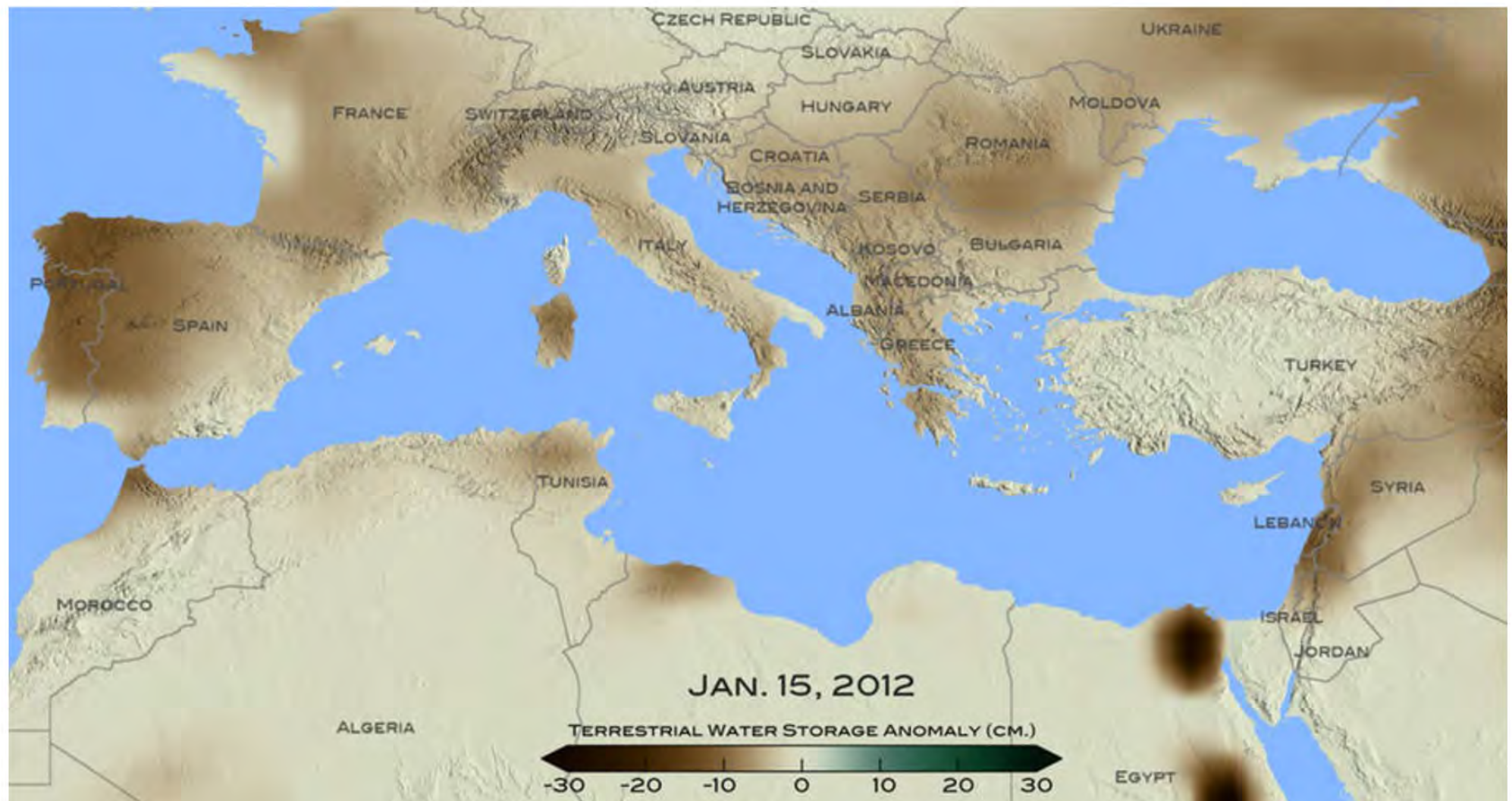
Global rise in temperature, drought, sea level rise

# NASA Finds Drought in Eastern Mediterranean Worst of Past 900 Years



A new NASA study finds that the recent drought that began in 1998 in the eastern Mediterranean Levant region, which comprises Cyprus, Israel, Jordan, Lebanon, Palestine, Syria, and Turkey, is likely the worst drought of the past nine centuries.

Scientists reconstructed the Mediterranean's drought history by studying tree rings as part of an effort to understand the region's climate and what shifts water to or from the area. Thin rings indicate dry years while thick rings show years when water was plentiful.





# Air pollution linked to...

- Asthma, Autism, Autoimmune disorders
- Dementia and Neurodegenerative diseases:  
(Alzheimers, Parkinson's, ALS)
- In the ER: *Significant increases in panic attacks  
and threats to commit suicide*

For a more comprehensive review:

<http://www.mdedge.com/clinicalpsychiatrynews/article/133804/schizophrenia-other-psychotic-disorders/hold-your-breath>

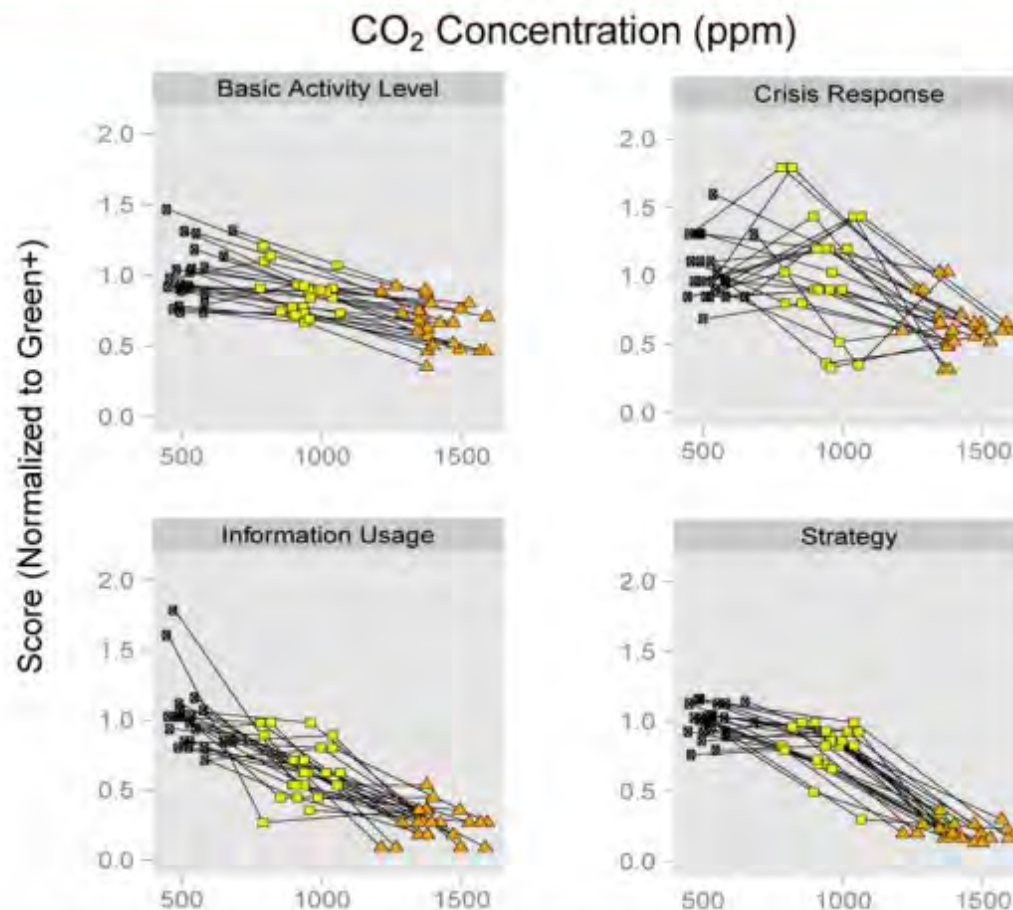


# Rising temperature and rising CO<sub>2</sub>: growing food insecurity



- *T: 10% reduction for every 1 degree C*
- *CO<sub>2</sub>: associated with declining levels of zinc, iron, and magnesium in wheat, maize and soy*

# How CO2 Levels Affect Human Cognition



Normalized cognitive function scores by participant and corresponding CO<sub>2</sub> levels in their cubicle. The Green+ case had CO<sub>2</sub> in the 500 ppm range due to high levels of outside air. It was compared to office settings in the 930 ppm range (yellow squares) and in the 1400 ppm range (orange triangles).

■ Green+ ■ Medium CO<sub>2</sub> ▲ High CO<sub>2</sub>

# Infectious Diseases

Zika

Malaria

Lyme Disease

Dengue Fever

Chikungunya

Melting Siberian permafrost...

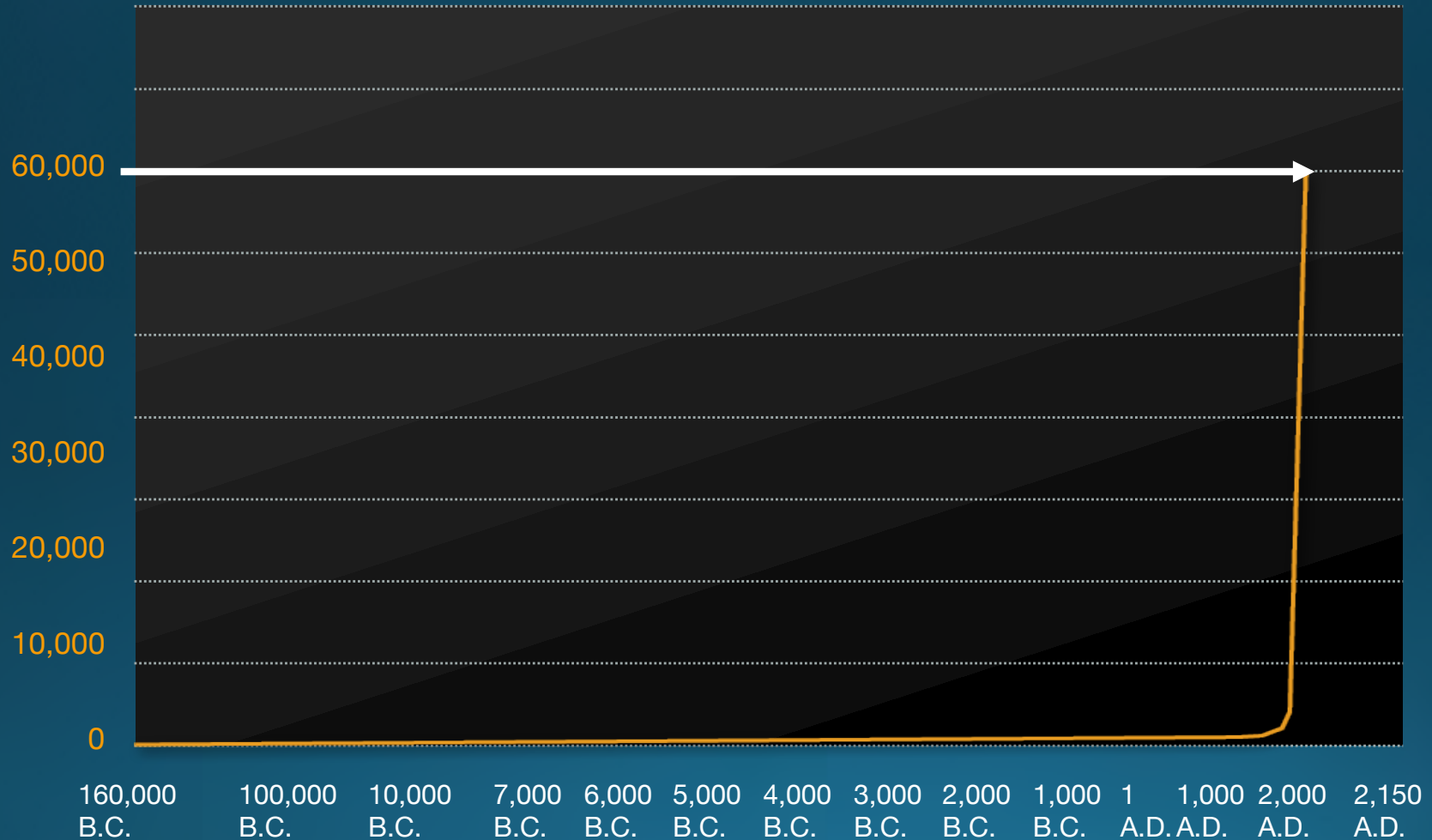
# Impacts on Ecosystems

Oceans

Biodiversity

# Species Loss

— Species Loss

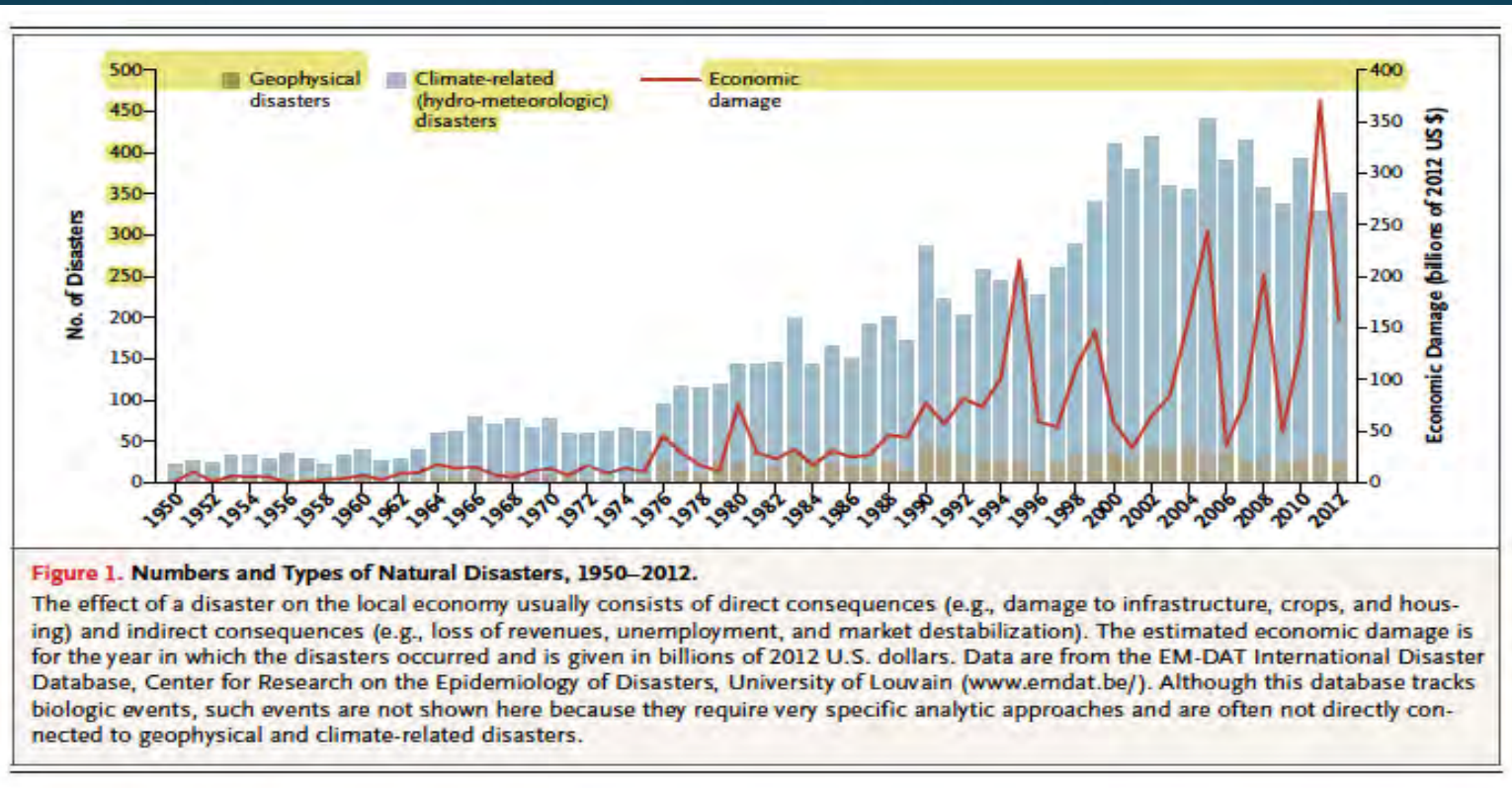


Source: Population Division of the Department of Economic and Social Affairs at the United Nations Secretariat, World Population Projections to 2150, (United Nations, NY, 1998).

# INDIVIDUAL AND COMMUNITY RESPONSE TO DISASTERS

Joshua C. Morganstein, M.D.

# Number and Type of Climate-Related Disaster



Leaning, J., & Guha-Sapir, D. (2013). Natural disasters, armed conflict, and public health. *The New England Journal of Medicine*, 369(19), 1836–1842.

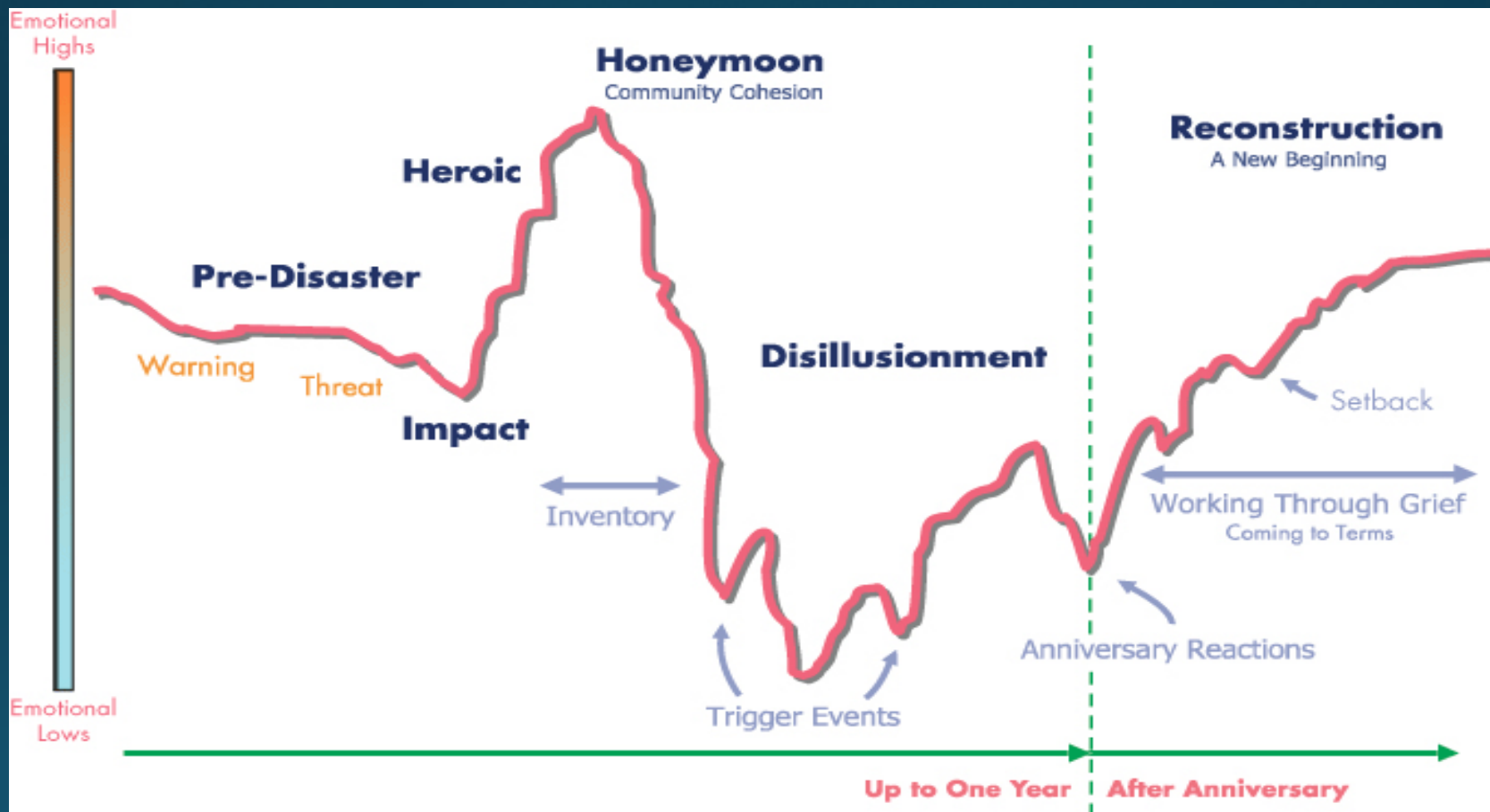
# Psychological & Behavioral Responses to Disasters



Ursano, R.J., Fullerton, C.S., Weisaeth, L., Raphael, B. (Eds.). (2007).  
*Textbook of Disaster Psychiatry*. London, UK: Cambridge University Press



# Phases of Disasters



# SMALL GROUP BREAKOUT #1

(10-12 min)

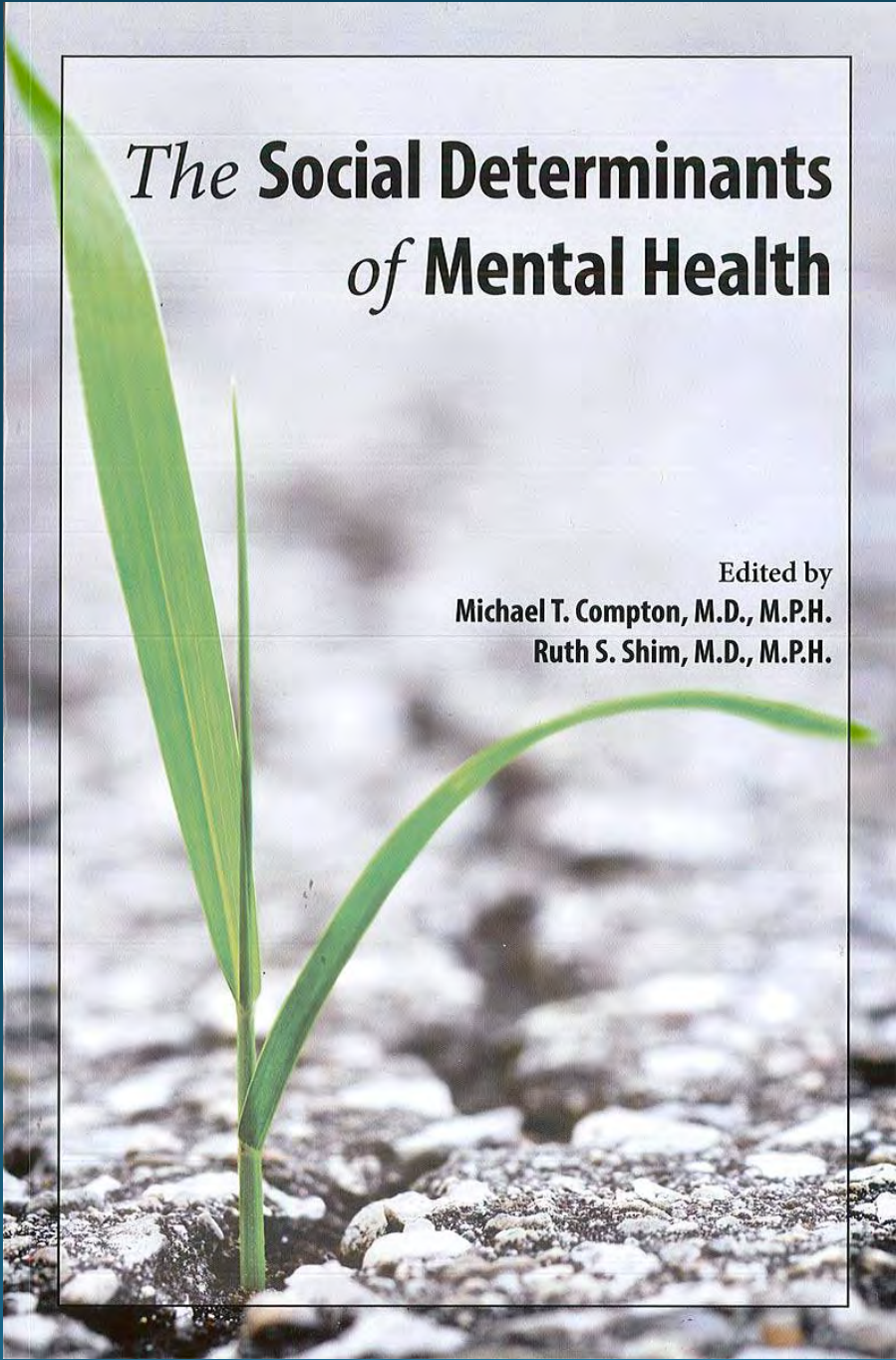
The region experiences a 0.5 degree average temperature rise over the next two years.

1. What are some climate impacts of such a change in temperature?
2. What potential impacts will these have on the patient(s) life and health?

# VULNERABLE POPULATIONS

Robin Cooper, M.D.

Poor people bear the brunt of climate change impacts while contributing little to the causes

A photograph of a young green plant with two leaves growing out of a crack in a concrete sidewalk. The background is a blurred, light-colored surface, possibly a beach or a paved area. The plant is the central focus of the image.

# *The* **Social Determinants of Mental Health**

Edited by  
**Michael T. Compton, M.D., M.P.H.**  
**Ruth S. Shim, M.D., M.P.H.**

# Social Dimensions of Climate Change

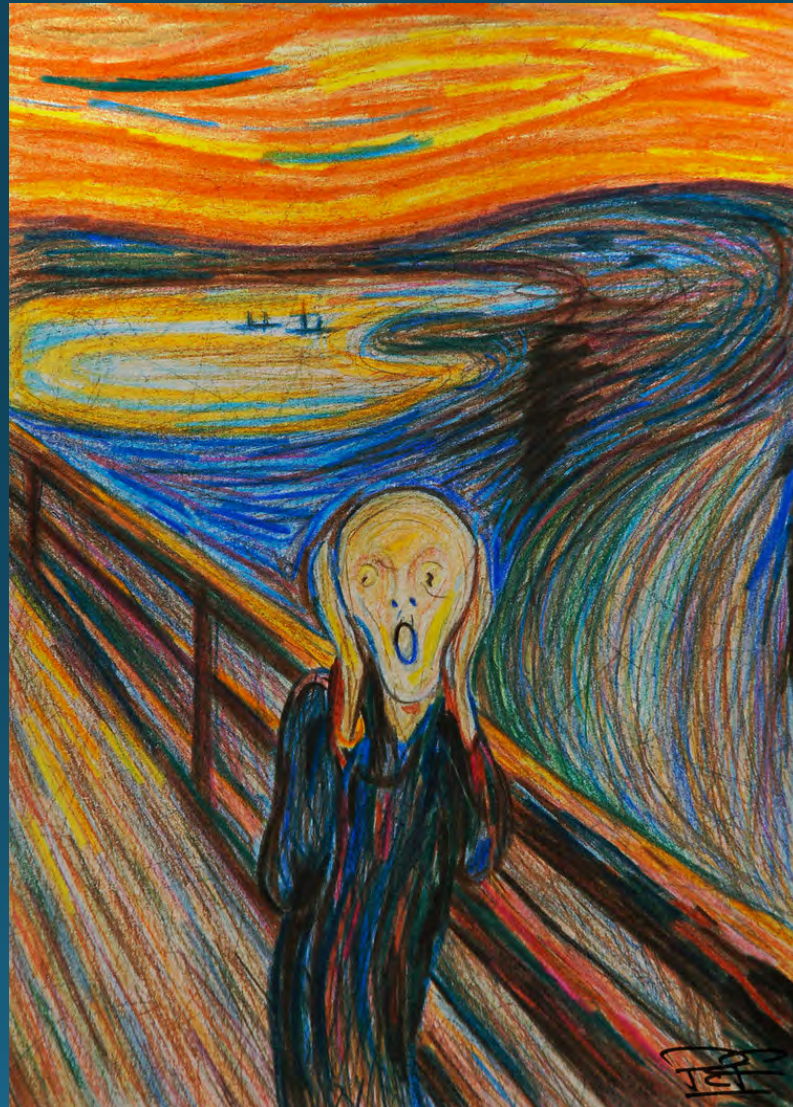
Vulnerability ↔ Resiliency

- Exposure Vulnerability
- Population Sensitivity
- Adaptive Capacity

# Populations of Concern



# Mentally Ill and Substance Abuse



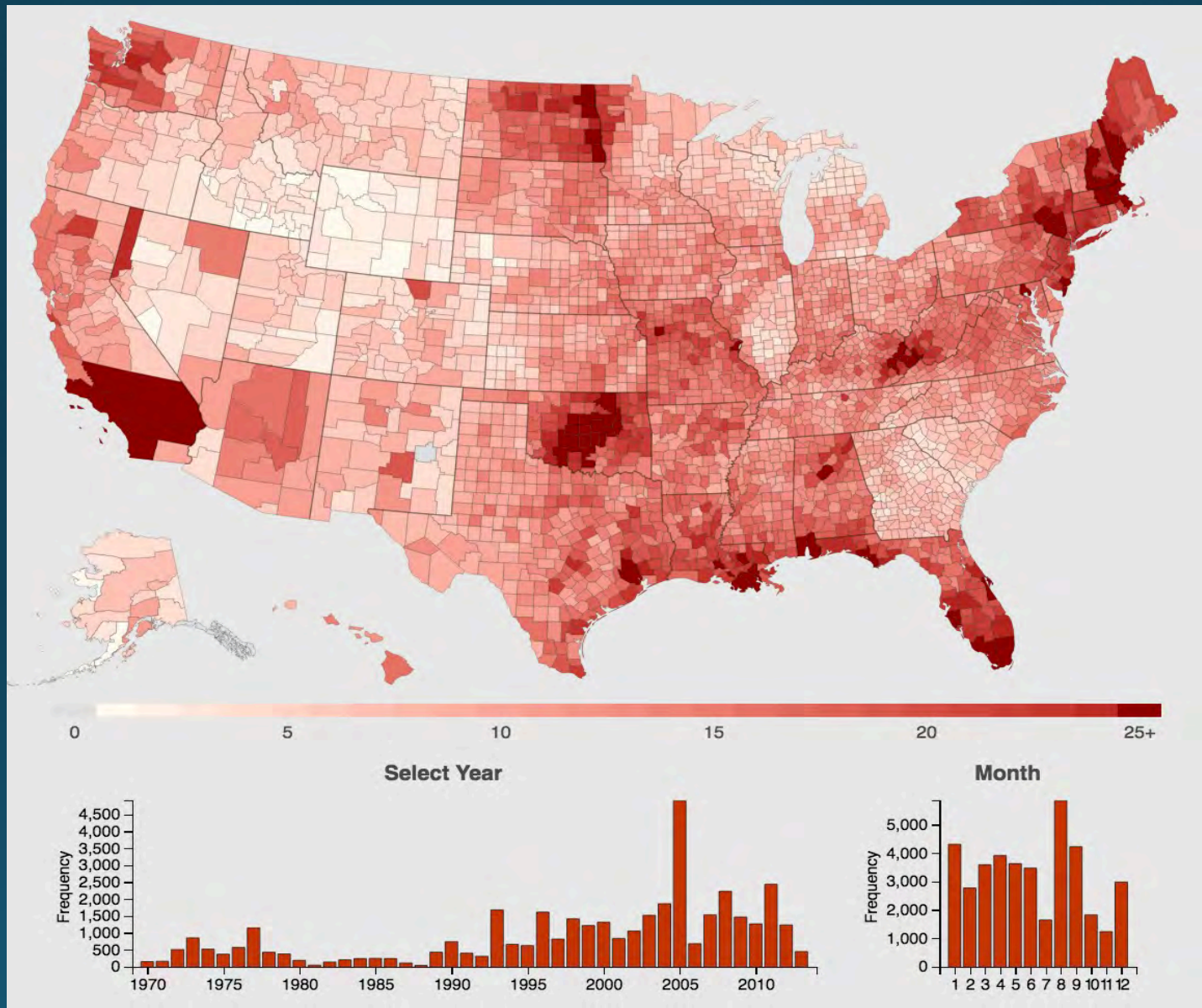
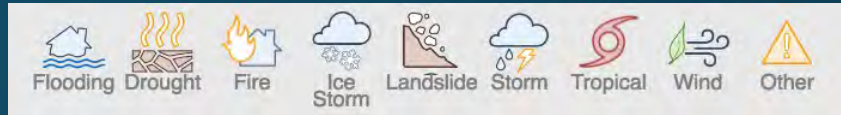






# PREPAREDNESS & RESPONSE FOR DISASTER EVENTS

Joshua C. Morganstein, M.D.



FEMA designated disasters from 1970-2013 visualized by Accenture Technology Labs at <http://www.disasterviz.com/>

<https://health2016.globalchange.gov/>



## THE IMPACTS OF CLIMATE CHANGE ON HUMAN HEALTH IN THE UNITED STATES

A Scientific Assessment

U.S. Global Change Research Program

Select a state/territory:

District of Columbia

[Learn more about climate impacts on health](#)

[Find climate and health resources in your state](#)

[Learn what EPA is doing to take action on climate](#)

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### Curriculum Recommendations for Disaster Health Professionals

#### Disaster Behavioral Health

**Authors**  
Brian W. Flynn, EdD, MADM, USPHS, Ret., Associate Director, Center for the Study of Traumatic Stress, Adjunct Professor, Department of Psychiatry, Uniformed Services University of the Health Sciences  
Joshua C. Maguen, MD, CDE, USPHS, Scientist, Center for the Study of Traumatic Stress, Assistant Professor, Department of Psychiatry, Uniformed Services University of the Health Sciences

**Target Audience:** Educators and trainers working with health professionals  
**Purpose:** To plan education and training activities on behavioral health factors in disasters

**Introduction**  
The world has long been aware that a wide variety of extreme events produce psychological, social, and biological sequelae that today we label with terms such as stress, trauma, grief, and bereavement. These consequences are visited upon individuals, families, workplaces, schools, communities, and nations. They can result from a wide variety of causal factors that are both natural, human-generated or a combination of both.  
For the purposes of this document, focus will be on the general topic of exposure to disasters. Disasters are defined as extreme events in which needs of the impacted population and/or area exceeds the local response and recovery resources and external resources must be utilized. Disasters can include such naturally occurring events such as floods, hurricanes, fires, tsunamis, epidemics, and pandemics. They can also be human generated in terrorism, war, community unrest, mass shootings, and industrial accidents. Some disasters involve both natural and human-generated elements. Examples include a plane crash caused by wind shear, a flood caused by a dam collapse, or a wildfire sparked by an arsonist.  
The field of disaster behavioral health continues to evolve following the classic paradigm of synergistic interactions among research, training, and services (Figure 1). Fundamentally the questions driving the field are:

- What do we know about the individual and collective impact of disasters?
- What approaches and interventions, to accomplish what, provided by whom, and in what contexts are most efficacious?
- How can we ensure that those involved in disaster preparedness, response, and recovery have the knowledge and skills necessary to produce optimal results?

**Figure 1**

<https://www3.epa.gov/climatechange/impacts/health-assessment.html>

<https://ncdmph.usuhs.edu/Documents/BehavioralHealthRecommendations-201401.pdf>

# Disaster Mental Health Preparedness & Response Mobile Resource

- SAMHSA Behavioral Health Disaster Response app (Free)
  - Pre-event preparation, on-the-ground assistance, post-event resources, more
  - Share resources (like tips for helping survivors cope) with others
  - Find local behavioral health services
  - Self-care support for responders



# Clinical Practice

- What's your role?
  - Clinical care, consultant, responder
- What does your practice need?
  - Partnerships, record systems
- How to help your patients?
  - Family / school / work emergency plan
  - emergency "go kit"
  - trusted sources of info
  - "do and don't" to manage exposure



# Psychological First Aid (PFA)

Landmark article:

*Five Essential Elements of Immediate and Mid-Term Mass Trauma Intervention: Empirical Evidence*

*Psychiatry, 70(4), 2007*

Authors: Steven Hobfoll plus 19 others

Very diverse/credible authors

## The Five Elements:

Sense of Safety

Calming

Sense of Self- and Community Efficacy

Connectedness

Hope / Optimism





# Psychological First Aid Mobile Resource

- PFA Mobile app (Free)
  - Summaries of the 8 core PFA actions
  - Match PFA interventions to specific stress reactions of survivors
  - Get mentor tips for applying PFA in the field
  - Self-assess to determine your own readiness to conduct PFA
  - Assess and track victims' needs to simplify data collection and referrals



# Biopsychosocial Interventions

- Psychoeducation / Normalization
  - Expected reactions and when to seek help
  - “Normal reaction to an abnormal stressor”
- Social Support
  - Use and build support networks
- Optimize Sleep & Enhance Calming
  - Sleep Hygiene/Meds, Diaphragmatic Breathing, Progressive Muscle Relaxation, Visual Imagery

# Communication is a behavioral health intervention

Disaster behaviors have very real life and death implications.

## *Risk & Crisis Communication*

- Open, honest, timely, ongoing
- Build credibility, trust, collaboration

The Science of Science Communication...  
Know your audience. Talk so people understand.

Covello, V. T. (2003). Best practices in public health risk and crisis communication. *Journal of Health Communication*.

Fischhoff, B. (2013). The sciences of science communication. *Proceedings of the National Academy of Sciences of the United States of America*, 110 Suppl 3, 14033–14039.

# SMALL GROUP BREAKOUT #2

## (18-20 min)

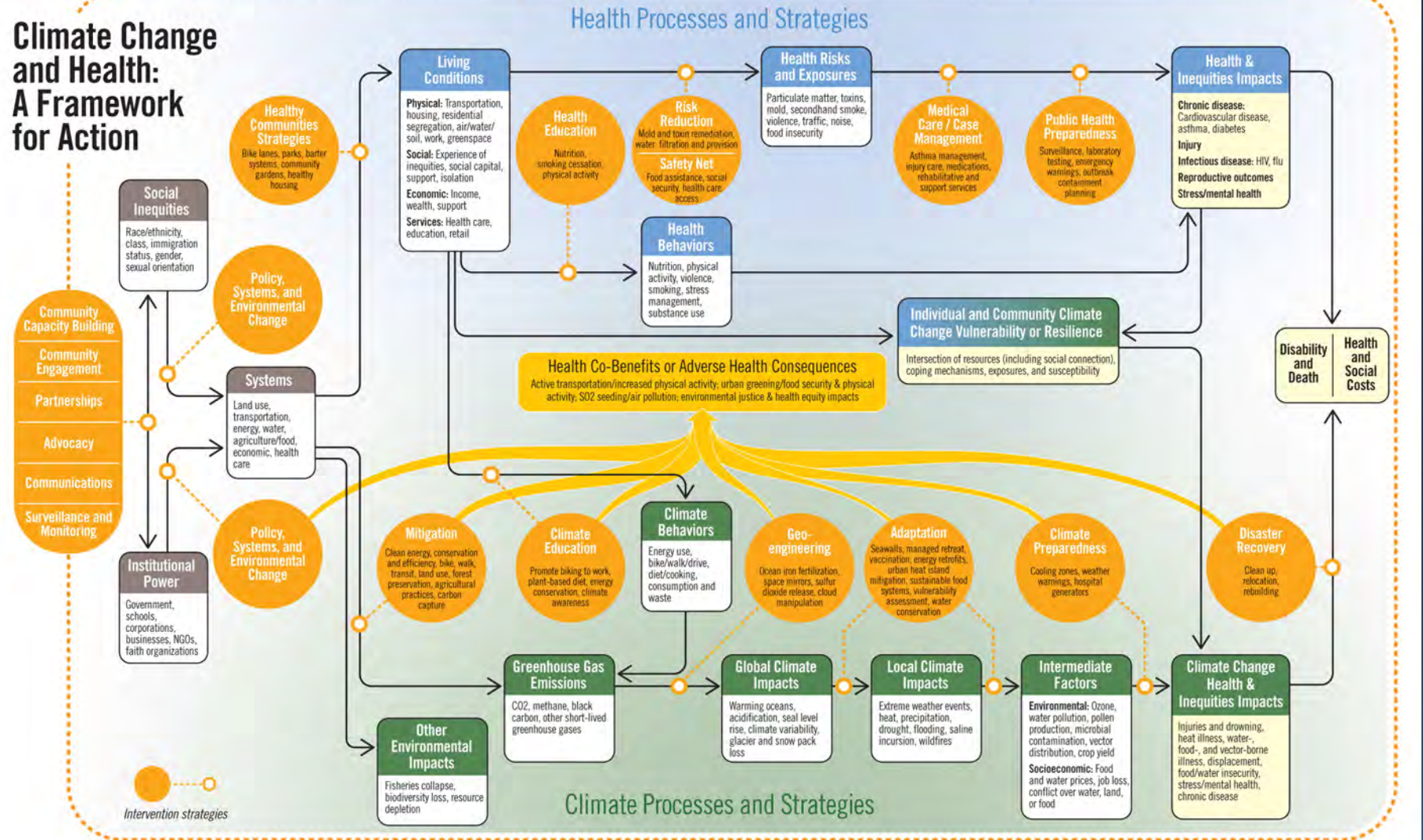
A category 4 hurricane is approaching our coastal city with predicted sustained winds of 125 mph and a predicted storm surge of 7 feet.

1. What concerns do you have for your patient in the days leading up to the storm?
2. What concerns do you have for your patient after the storm?
3. What action steps you could take as a psychiatrist to help the patient and/or larger community?

CLOSING THOUGHTS

# What Can We Do?

## Climate Change and Health: A Framework for Action



# Strategies & Levels of Intervention

**Individual Patient  
Management**

**Systems of Care**

**Public Health  
Advocacy**

# Organizations & Resources

- American Psychiatric Association Disaster Committee & District Branches
  - <https://www.psychiatry.org/psychiatrists/practice/professional-interests/disaster-and-trauma>
  - <https://www.psychiatry.org/about-apa/meet-our-organization/district-branches>
- American Psychiatric Association Position Statement on Mental Health and Climate Change
  - <https://www.psychiatry.org/File%20Library/About-APA/Organization-Documents-Policies/Policies/Position-2017-Mental-Health-Climate-Change.pdf>
- Climate and Health Assessment: Mental Health and Well-Being
  - <https://health2016.globalchange.gov/mental-health-and-well-being>
- Curriculum Recommendations for Disaster Behavioral Health Professionals
  - <https://ncdmph.usuhs.edu/Documents/BehavioralHealthRecommendations-201401.pdf>
- Medical Society Consortium on Climate & Health
  - <https://medsocietiesforclimatehealth.org/>
- Health Care Without Harm
  - <https://noharm.org>
- Climate For Health
  - <http://climateforhealth.org>
- Physicians for Social Responsibility
  - <http://www.psr.org>
- Carbon Footprint Calculator
  - <http://www.nature.org/greenliving/carboncalculator/>



QUESTIONS