



Climate Change and Human Migration

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Climate Mobility Case, Part 1

- 11 yo female w history of asthma
- Walks into health center with mother seeking treatment for worsening wheezing, coughing, and shortness of breath
- Ran out of inhalers recently
- Exam: RR 14, diffuse mild wheezing, no respiratory distress, no retractions
- Social history:
 - Can't refill inhalers because she had to leave the town her pharmacy is located in
 - Hasn't been able to get in touch with her pediatrician to arrange a new prescription



Climate Mobility Case, Part 2

- 11 yo female w history of asthma, first seen a month ago.
- Returns today for scheduled follow-up visit.
- Breathing has improved.
- Mother reports increased irritability, poor sleep, frequent outbursts and crying spells
- Exam: well-appearing but quiet child
- Social history:
 - Living with relatives for now “while we figure out if we can afford to rebuild”
 - Attending new school, mother unsure if she has any friends



Topics for Today

- Climate Change Impacts
- Framing Mobility Decisions
- Pushes, Pulls, and Traps
- Terminology
- Case Studies
- Clinical Connections
- Discussion



Image: UN



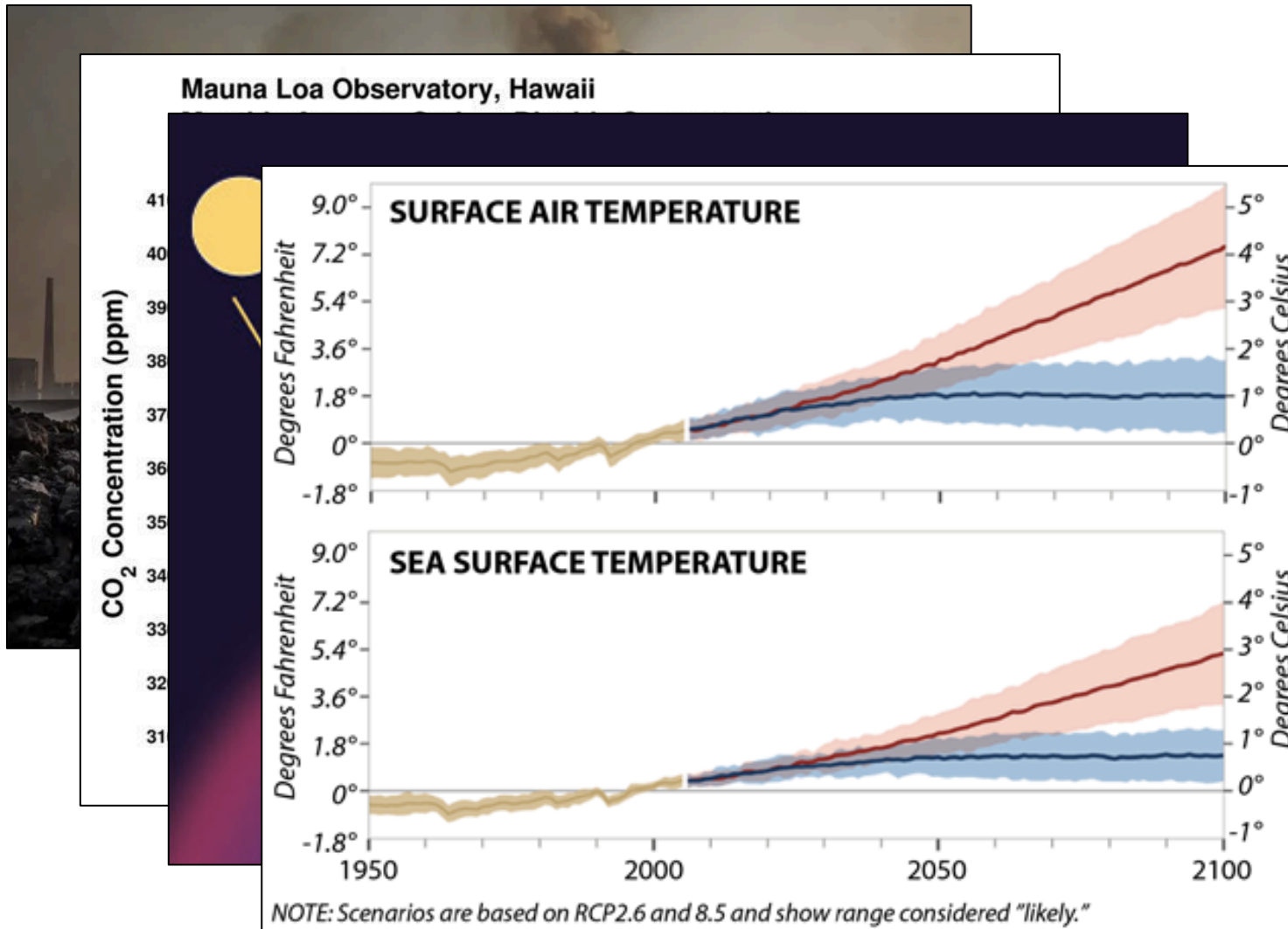
Climate Change

Mechanisms

Impacts



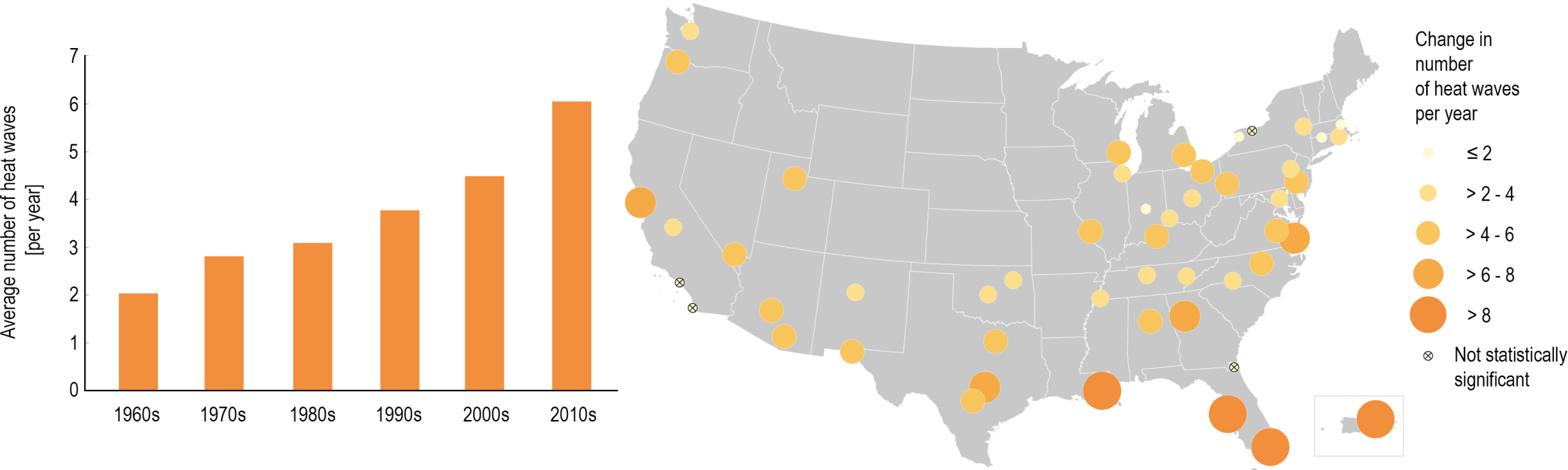
Mechanism

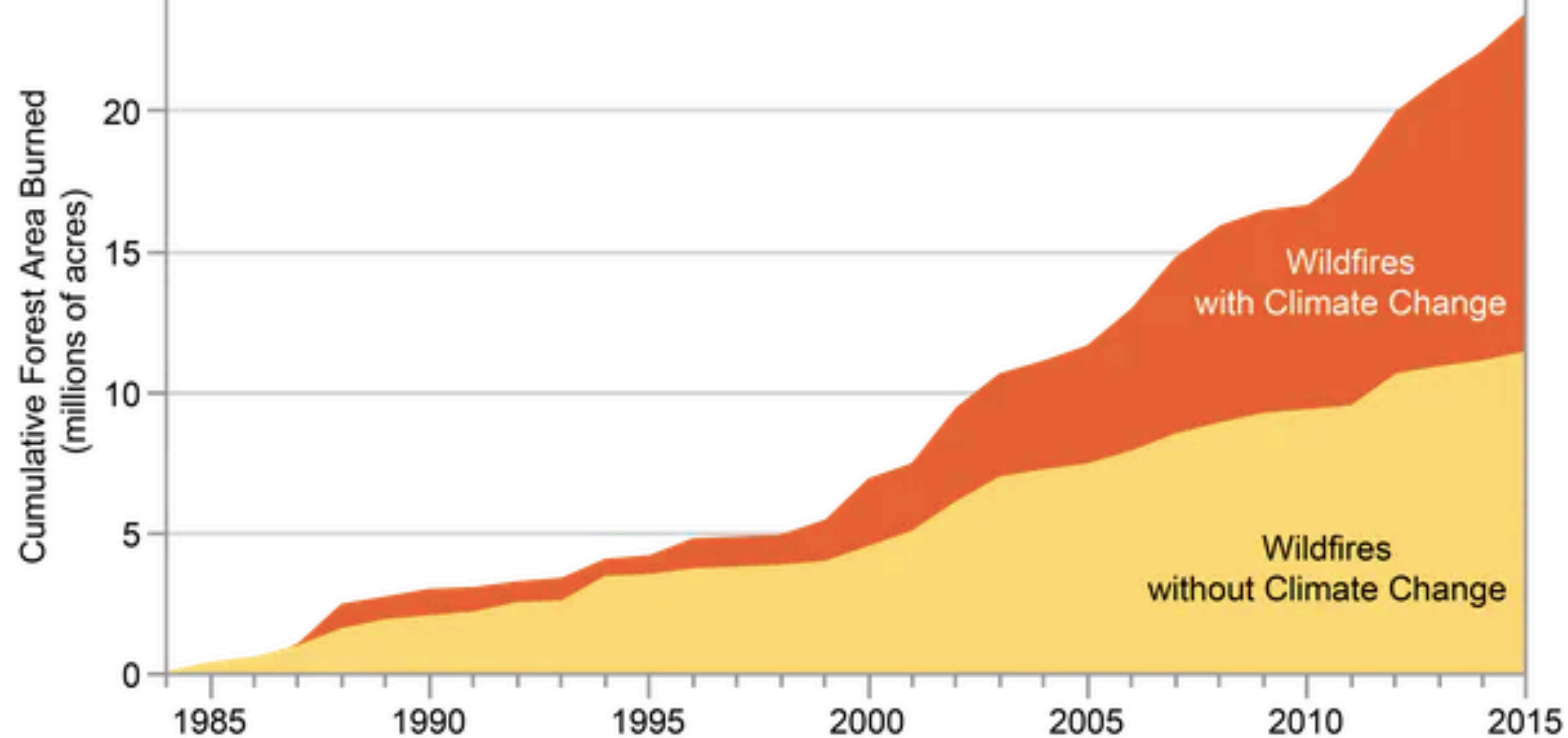


- Regional Warming
 - Heat waves
 - Biome alteration
- Extreme Weather
 - Flooding
 - Drought
- Hurricanes
 - Intensity
 - Rainfall
- Wildfire
- Sea Level Rise
- Ocean Acidification
- Plant impacts

Heat Wave Characteristics in 50 Large U.S. Cities, 1961-2018

Heat Wave Frequency





The cumulative forest area burned by wildfires has greatly increased between 1984 and 2015, with analyses estimating that the area burned by wildfire across the western United States over that period was twice what would have burned had climate change not occurred. USGCRP, NCA4, Vol. 2



Photograph: Paul Kuroda/ZUMA Wire/REX/Shutterstock

RESEARCH

Open Access



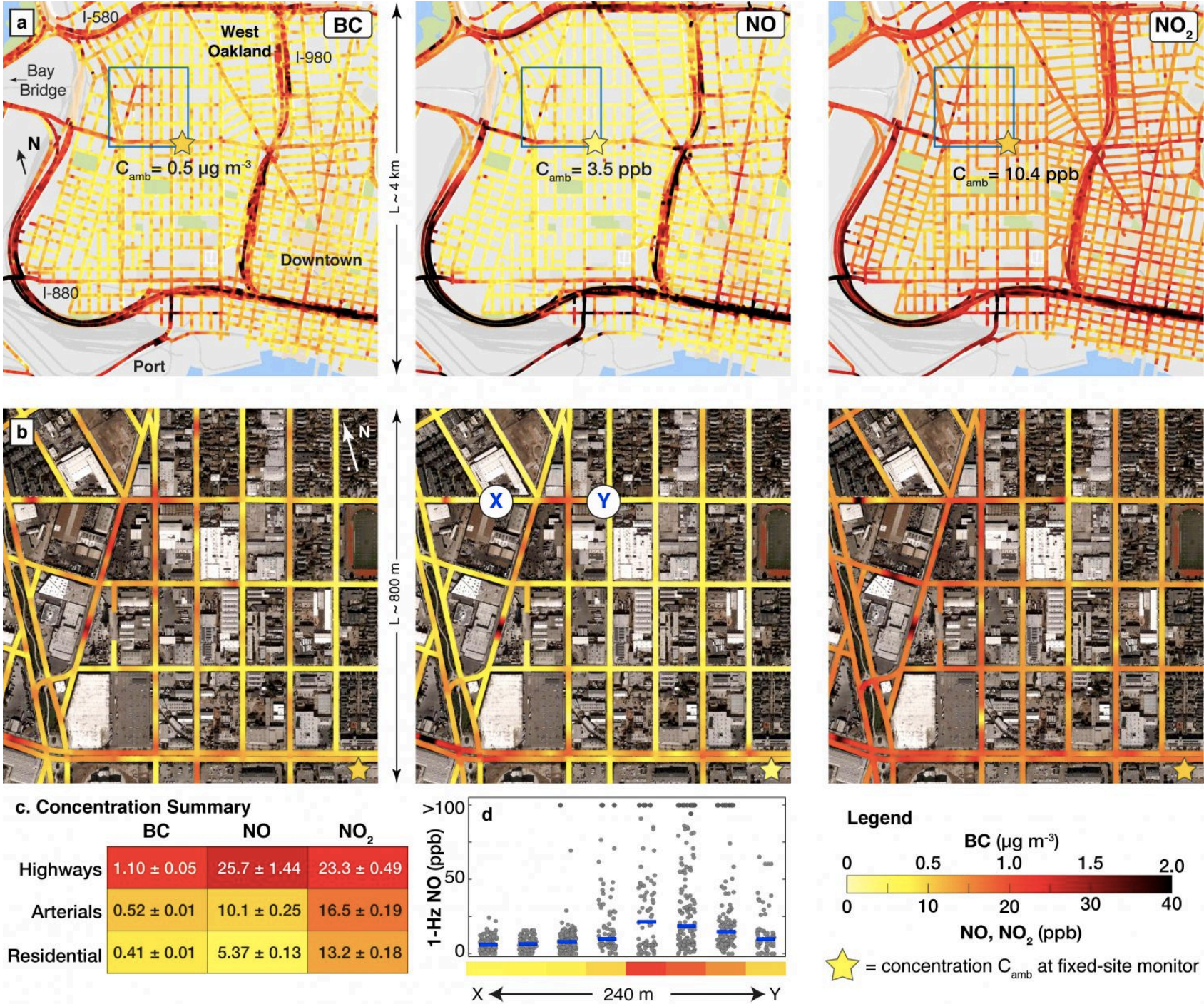
High-resolution mapping of traffic related air pollution with Google street view cars and incidence of cardiovascular events within neighborhoods in Oakland, CA

Stacey E. Alexeeff^{1*}, Ananya Roy², Jun Shan¹, Xi Liu¹, Kyle Messier^{2,3}, Joshua S. Apte³, Christopher Portier², Stephen Sidney¹ and Stephen K. Van Den Eeden¹

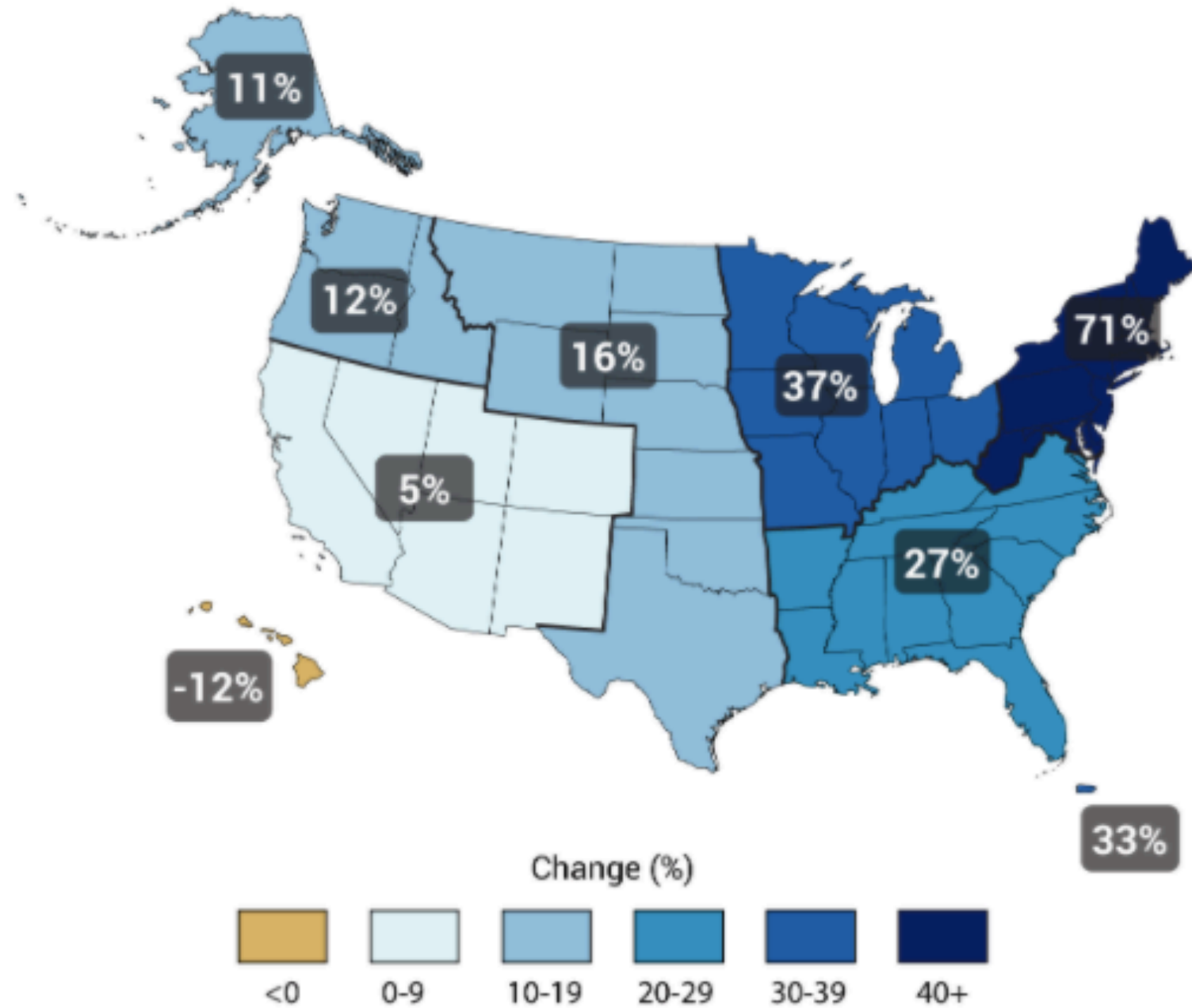
In addition to affecting long-term climate change, burning fossil fuels affects local air quality right now.

In this example looking at hyperlocal effects related to gas- and diesel-powered vehicles, problem areas include:

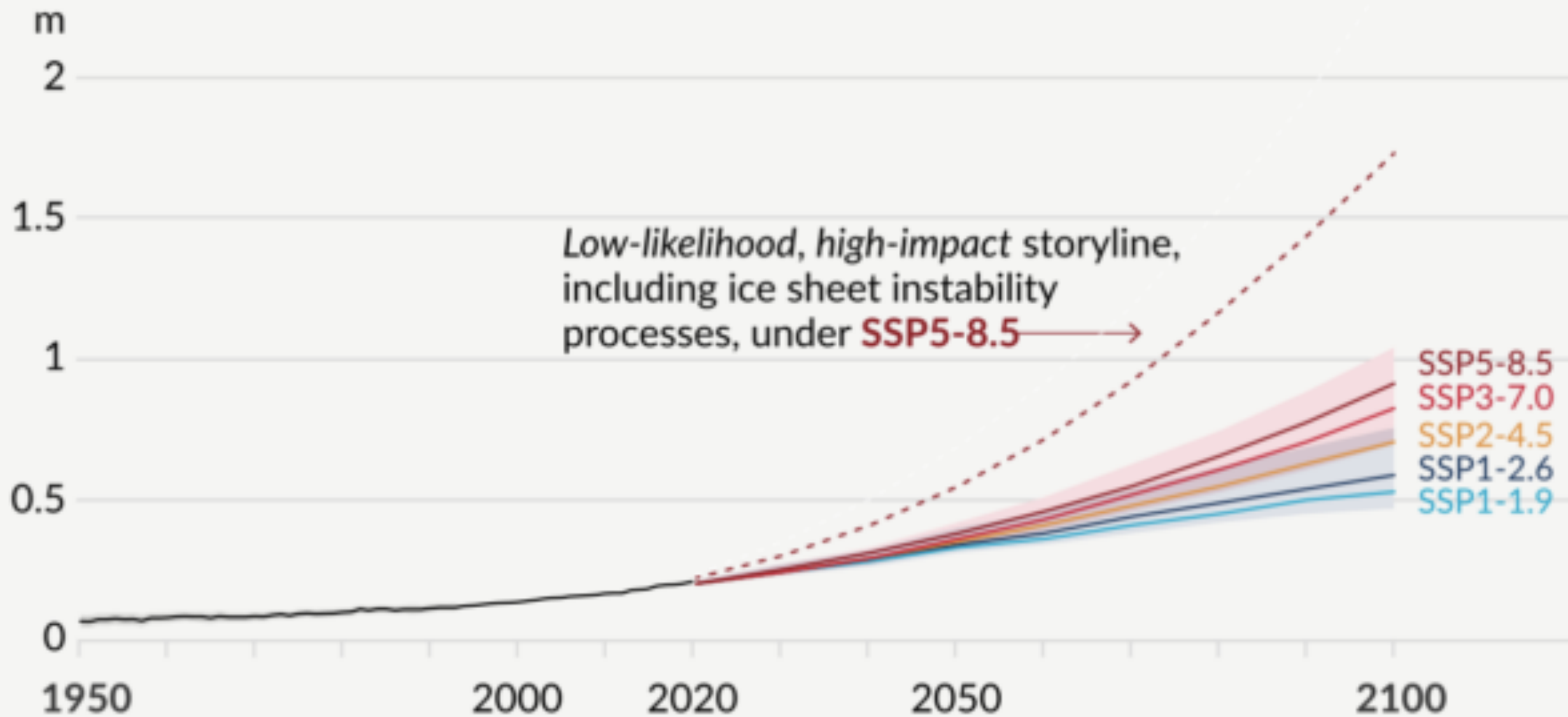
- Freeways
- Busy intersections
- Certain businesses
 - Drive through restaurants
 - Busy parking lots
 - Car dealerships
 - Light industry



Observed Change in Very Heavy Precipitation



d) Global mean sea level change relative to 1900





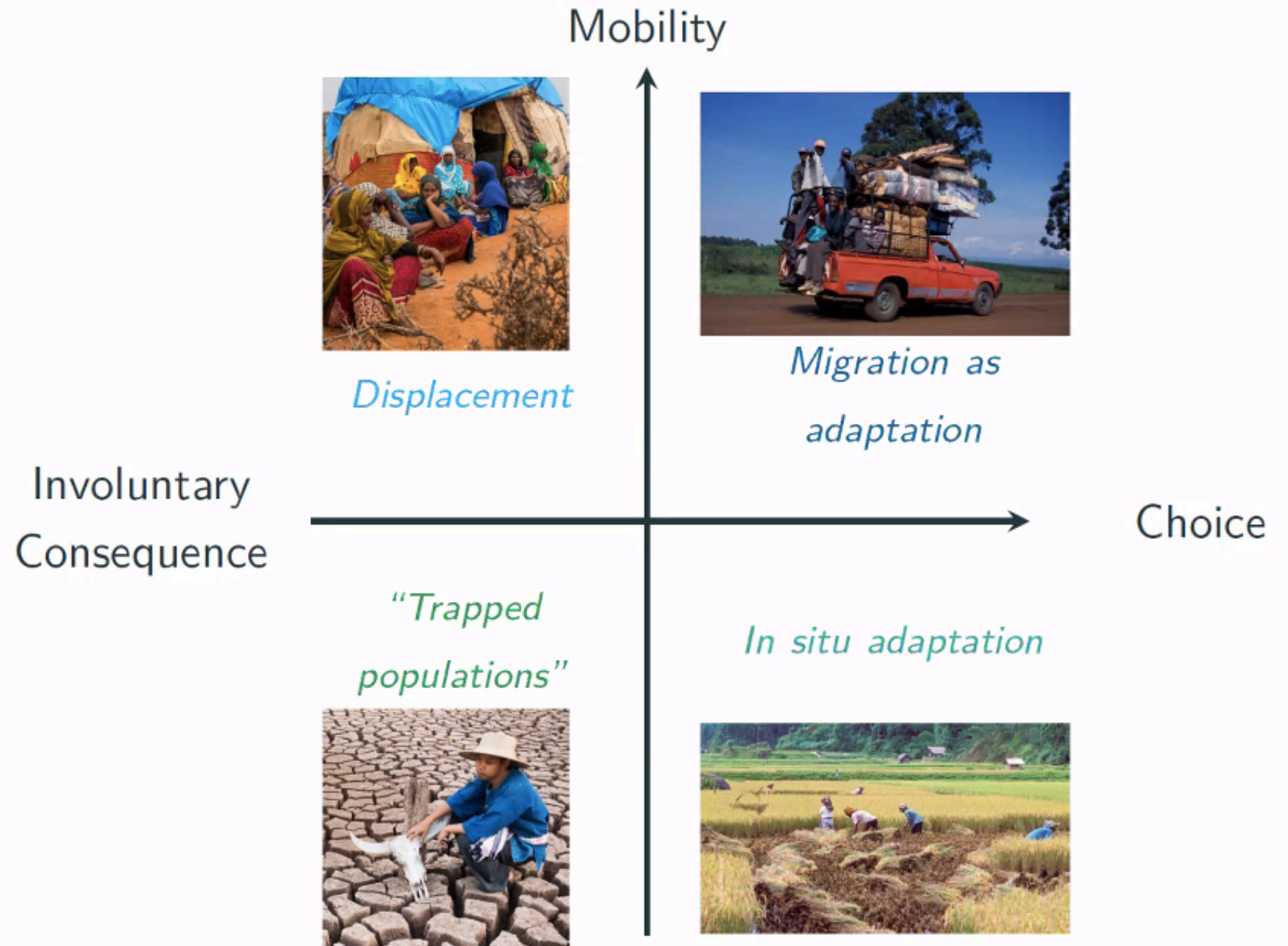
Mobility in a Changing Climate

Pushes, Pulls, Traps, and Choices



Stay or Go? Mobility, Immobility, & Agency

Figure Credit:
Helene Benviniste, PhD, MS
Harvard University Center
for the Environment
French Environmental
Fellow, 2021-2023



Push: Lethal Heat



“...Dr Zafar Zaidi of the Indus Hospital, that had been visited by around 460 heatstroke patients in recent days...”

- Dawn News

RESEARCH ARTICLE | CLIMATOLOGY

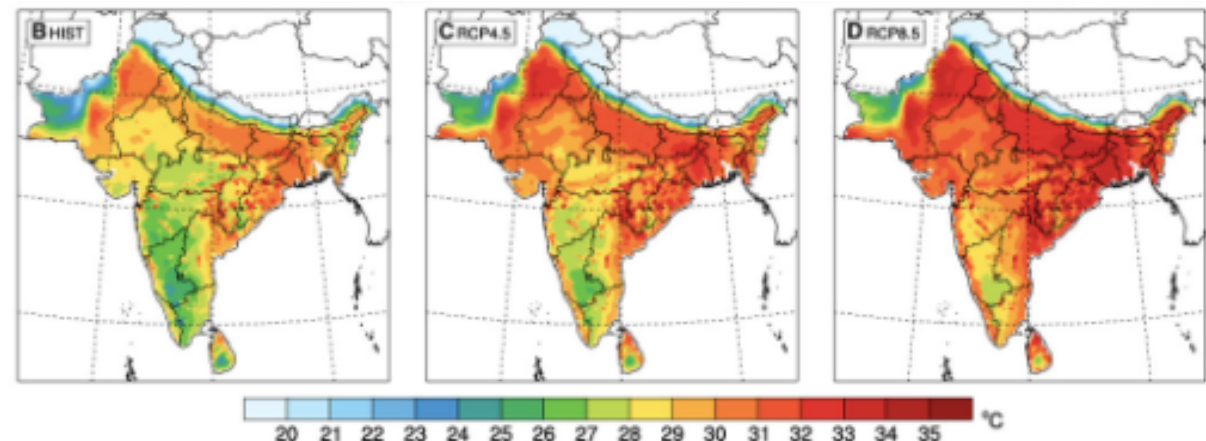
Deadly heat waves projected in the densely populated agricultural regions of South Asia

 Eun-Soon Im^{1,*},  Jeremy S. Pal^{2,*} and  Elfatih A. B. Eltahir^{3,†}

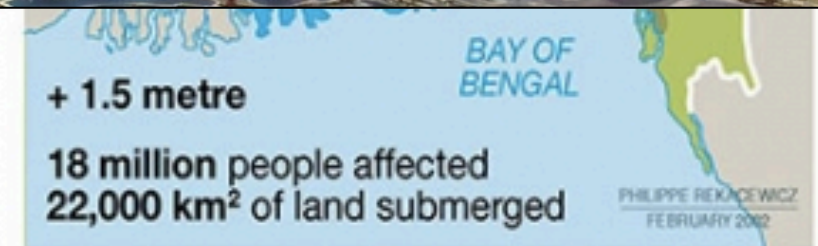
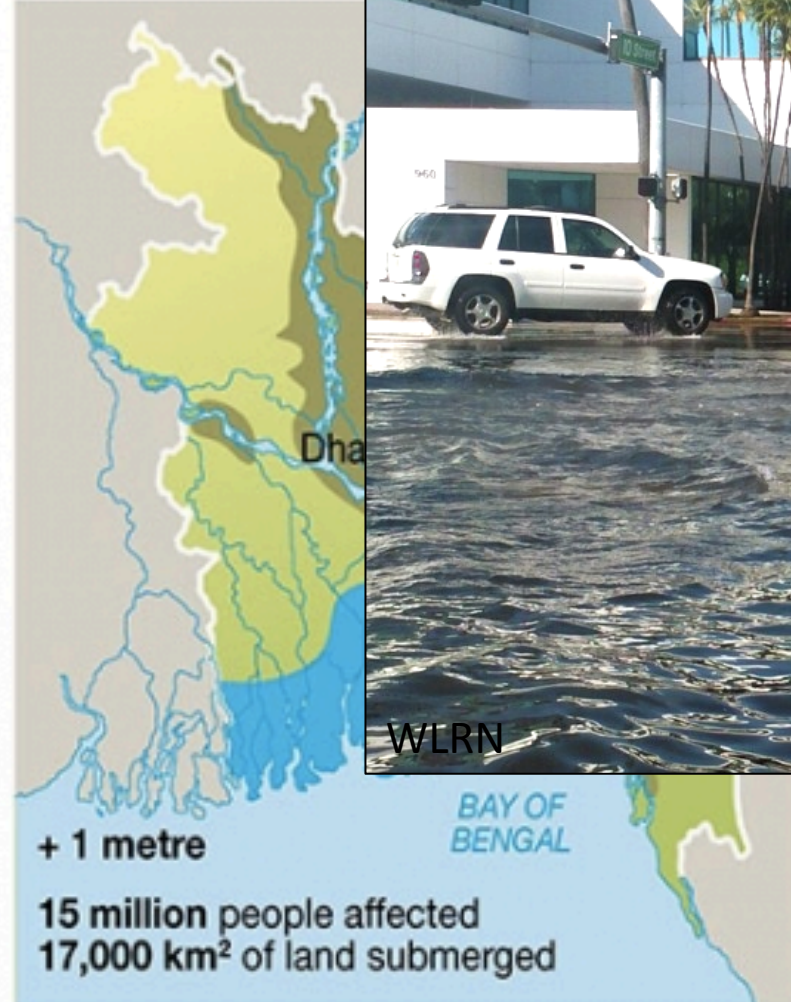
⁺ See all authors and affiliations

Science Advances 02 Aug 2017:
Vol. 3, no. 8, e1603322
DOI: 10.1126/sciadv.1603322

Projection: “...in Lucknow and Patna, which have respective current metro populations of 2.9 and 2.2 million, [wet bulb temperature] **reaches and exceeds the survivability threshold**” by the late 20th Century



Push: Sea Level Rise



Sources: Dacca University; Intergovernmental Panel on Climate Change (IPCC).

Push: Too Much Water



Reuters / Jason Reed



Push: Not Enough Water



Push: Agricultural Disasters

Farmer suicides soar in India as deadly heatwave hits 51 degrees Celsius

Sweltering country seeks the relief of the monsoon, but this year's downpour could be up to 11 days late as officials blame climate change

Ian Johnston Environment Correspondent | @montaukian | Friday 21 April 2017 10:27 | 20 comments



A shepherd drinks water on the dry bed of a reservoir that once supplied water to Latur in Marathwada

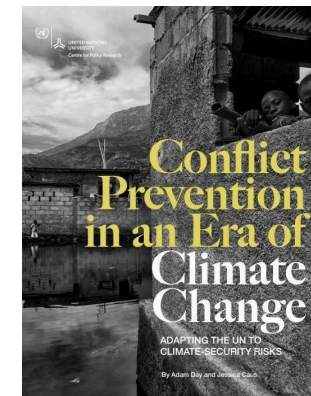
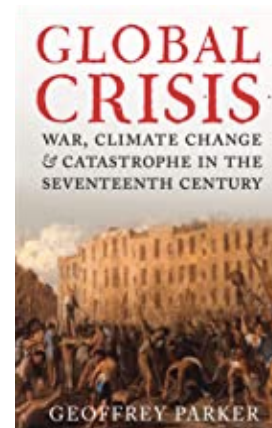
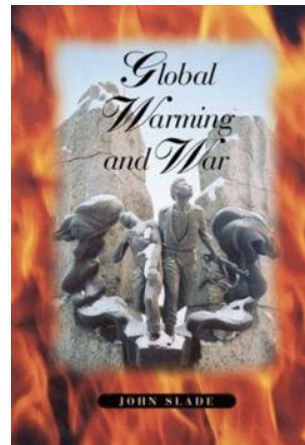
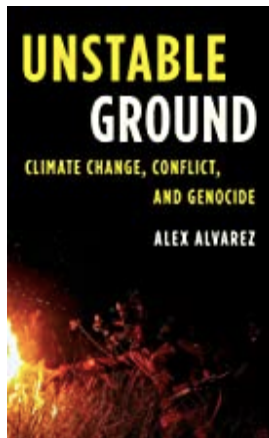
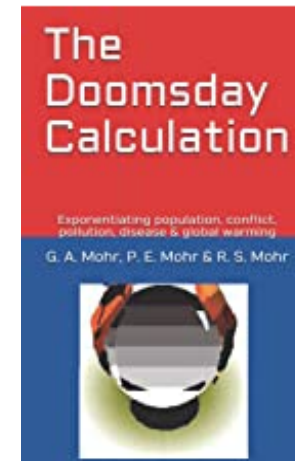
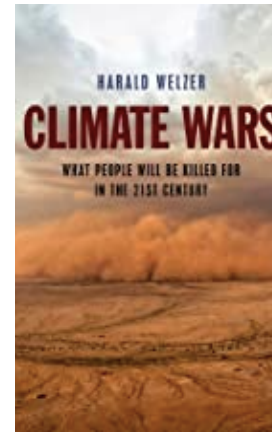
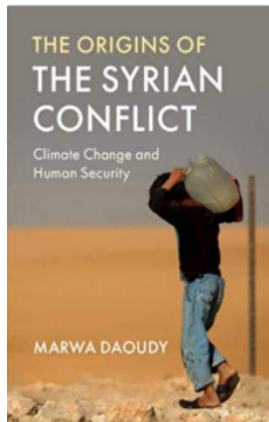
JANUARY 29, 2012

Climate-driven heat peaks may shrink wheat crops

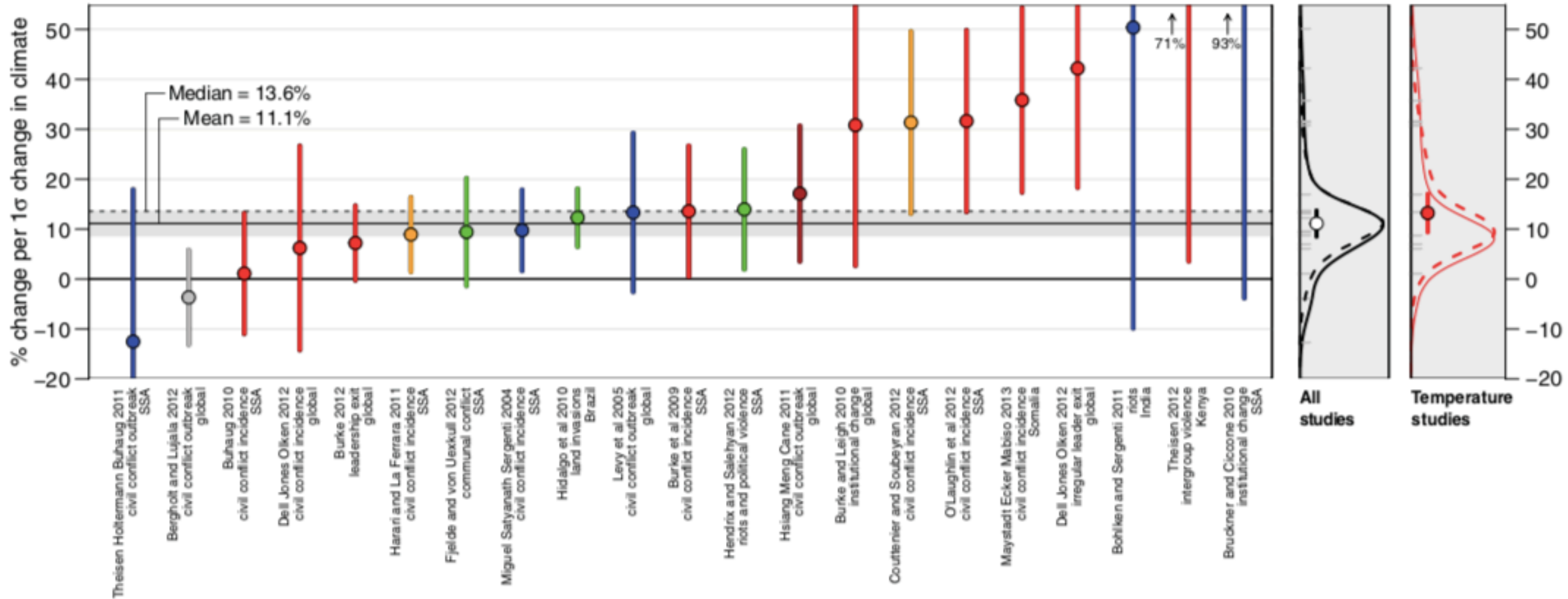
by Marlowe Hood



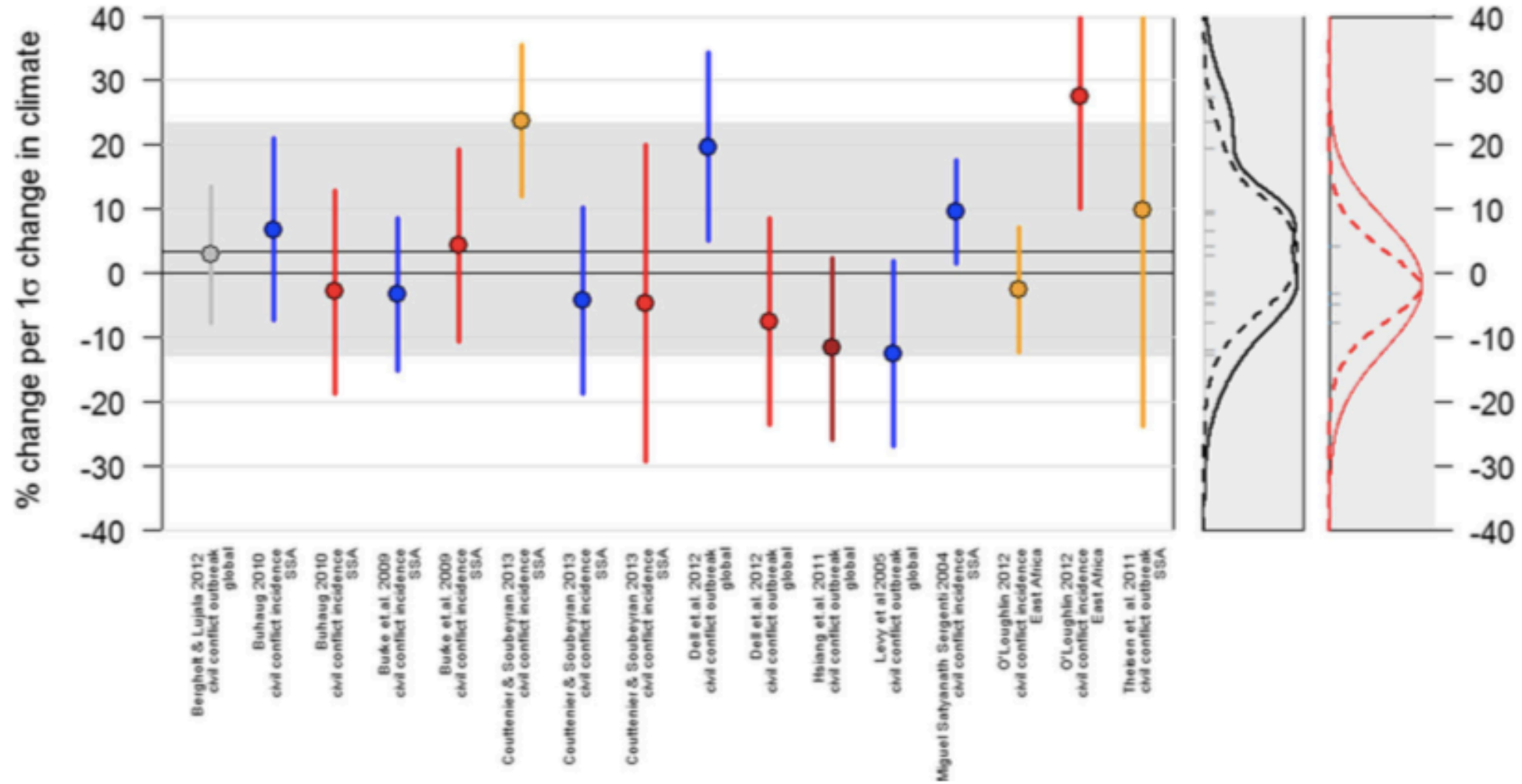
Push: Political instability and conflict



Inter-group Conflict (Hsiang et al, 2013)



Response (Buhaug et al, 2014)



Trap: Militarized borders



India – Bangladesh Border Fence



Mexico – Guatemala Border

Trap: Too Poor to Migrate



“A smuggling journey from Agadez in the Niger to Libya or to Europe... would be priced at about \$2,000 to \$3,000”
- U.N.O.D.C.

Difficult Choices: Loss of Community



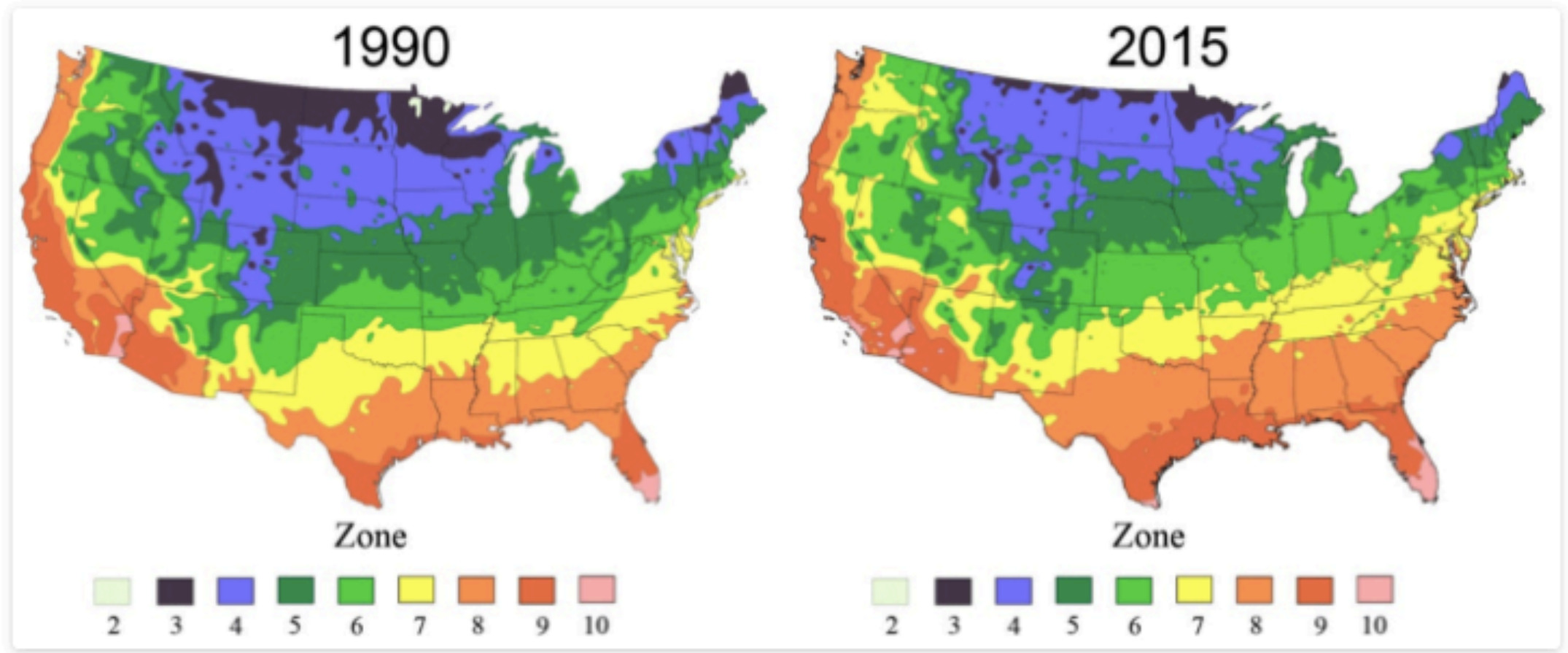
“I have thought about moving to another state, but this is my community.”

“We have been doing everything we can to stay here because I wanted my daughter to graduate with her friends.”

“...leaving was never an option. Home is where families are. All my family's here. My work is here. My life is here. Having to get up and move would be stressful all over again, like starting out from zero.”

<https://www.nytimes.com/interactive/2021/09/07/us/oregon-wildfires.html>

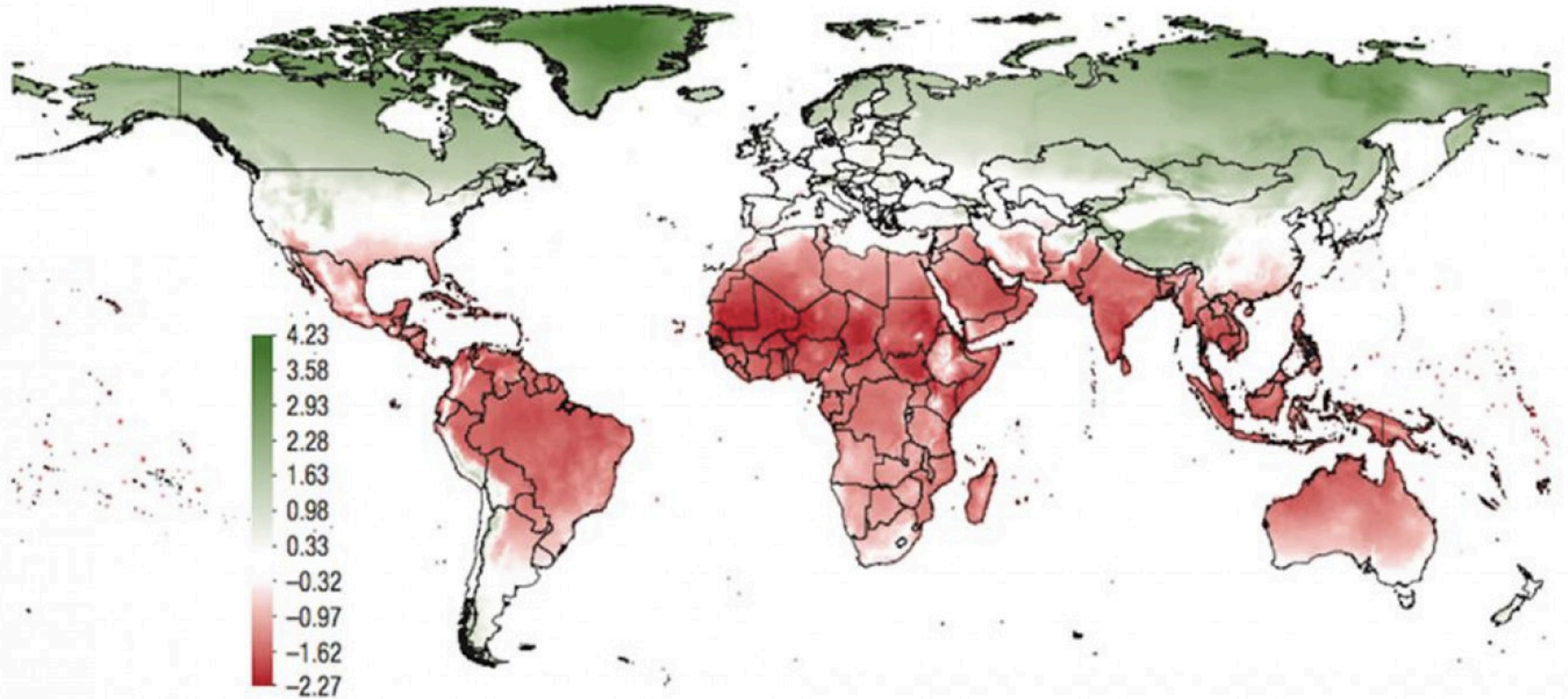
Pull: Longer growing seasons at high latitudes



Plant Hardiness Zones, 1990 and 2015. Images from USDA and Arbor Day Foundation.

Pull: Economic Opportunity

1. Effect of a 1°C Increase in Temperature on Real per Capita Output at the Grid Level



A woman wearing a patterned headscarf and a light-colored long-sleeved shirt is sitting on the ground, holding her hand to her face in a gesture of distress. Two young children are sitting next to her. One child, a girl with long dark hair wearing a pink shirt, looks directly at the camera with a sad expression. The other child, a boy with short brown hair wearing a grey jacket, is looking down. They are surrounded by debris and what appears to be a damaged wall in the background.

Refugee or Migrant?

Word choice matters.

Terminology

Refugees? Migrants?

Asylum? Opportunity?

Refugees

1951 Convention Relating to the Status of Refugees:

A person who “owing to well-founded **fear of being persecuted** for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country of his nationality and is unable or, owing to such fear, is unwilling to avail himself of the protection of that country; or who, not having a nationality and being outside the country of his former habitual residence, is unable or, owing to such fear, is unwilling to return to it...”



Belgian refugees fleeing after the German invasion of their country in 1940.
Image: AP

Migrants

UN Convention on the Rights of Migrants:

‘The term 'migrant' in article 1.1 (a) should be understood as covering all cases where the decision to migrate is taken freely by the individual concerned, for reasons of 'personal convenience' and **without intervention of an external compelling factor**’.



Distress Migration

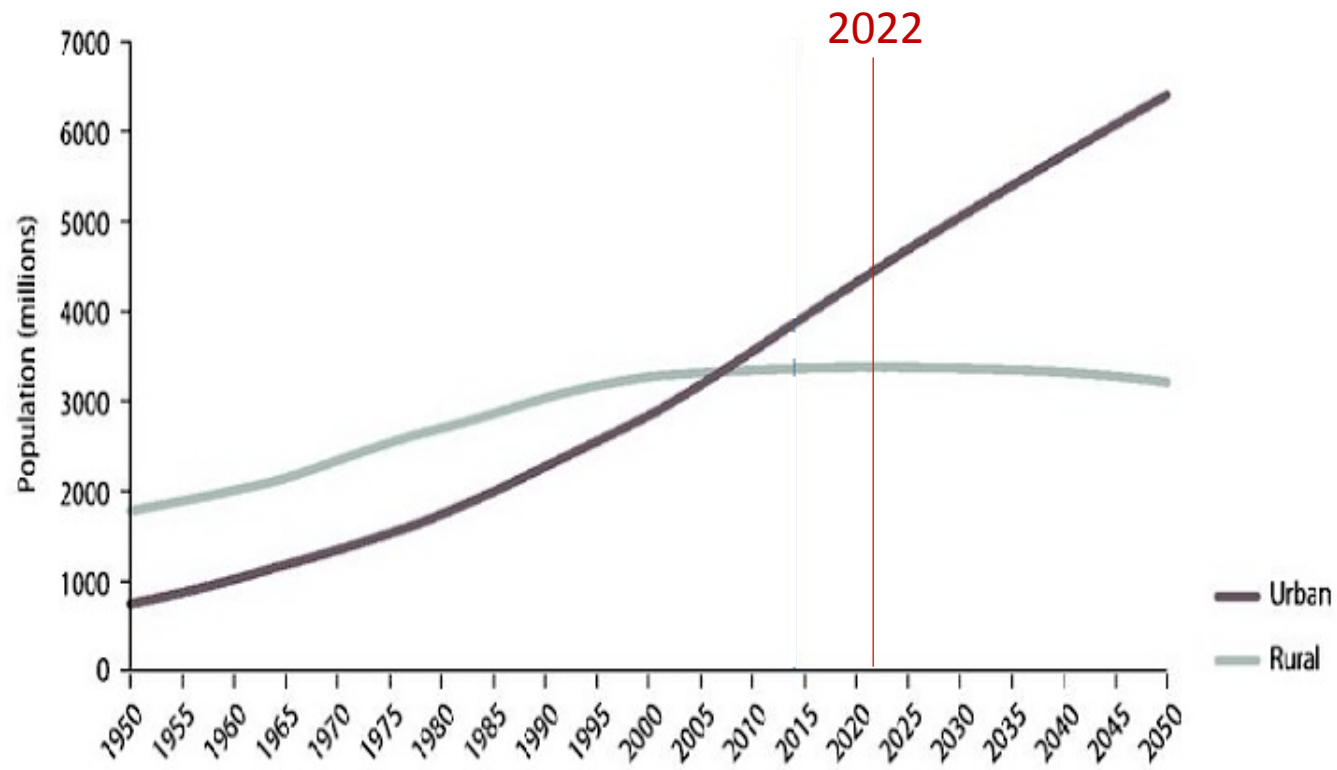
UN Food and Agriculture
Organization:

“...migratory movements made in conditions where the individual and/or the household perceive that **the only viable livelihood option** for moving out of poverty is to migrate. Such distress is usually associated with lack of livelihood options, given the limited economic and employment opportunities, as well as drought, crop failure and food insecurity....”



Urbanization

Urban and rural population of the world, 1950–2050



European Commission





Case Studies

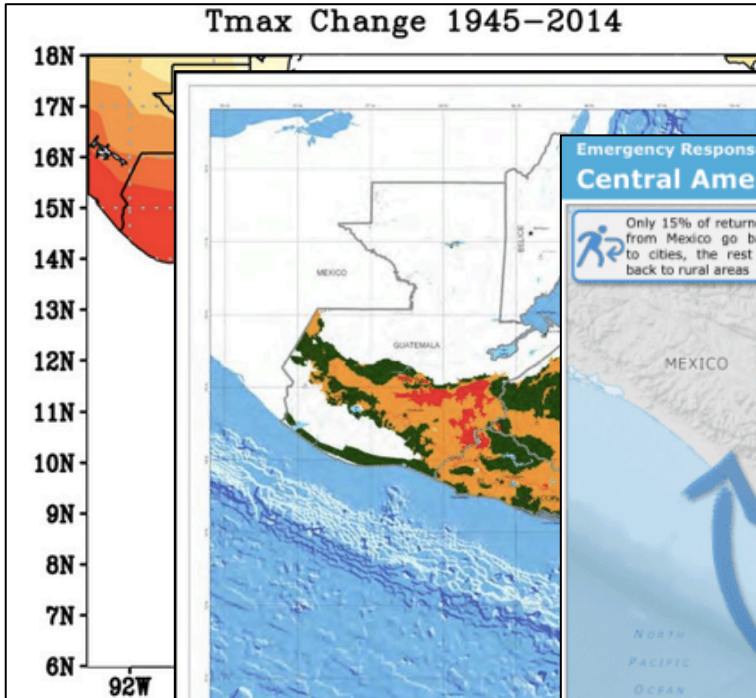
Latin American Dry Corridor

Domestic United States



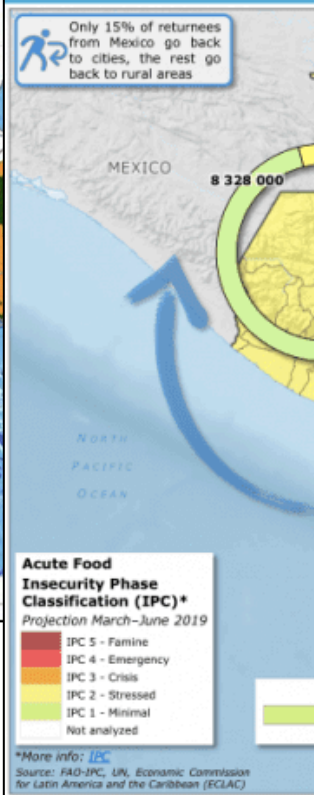
Latin American Dry Corridor

Tmax Change 1945–2014

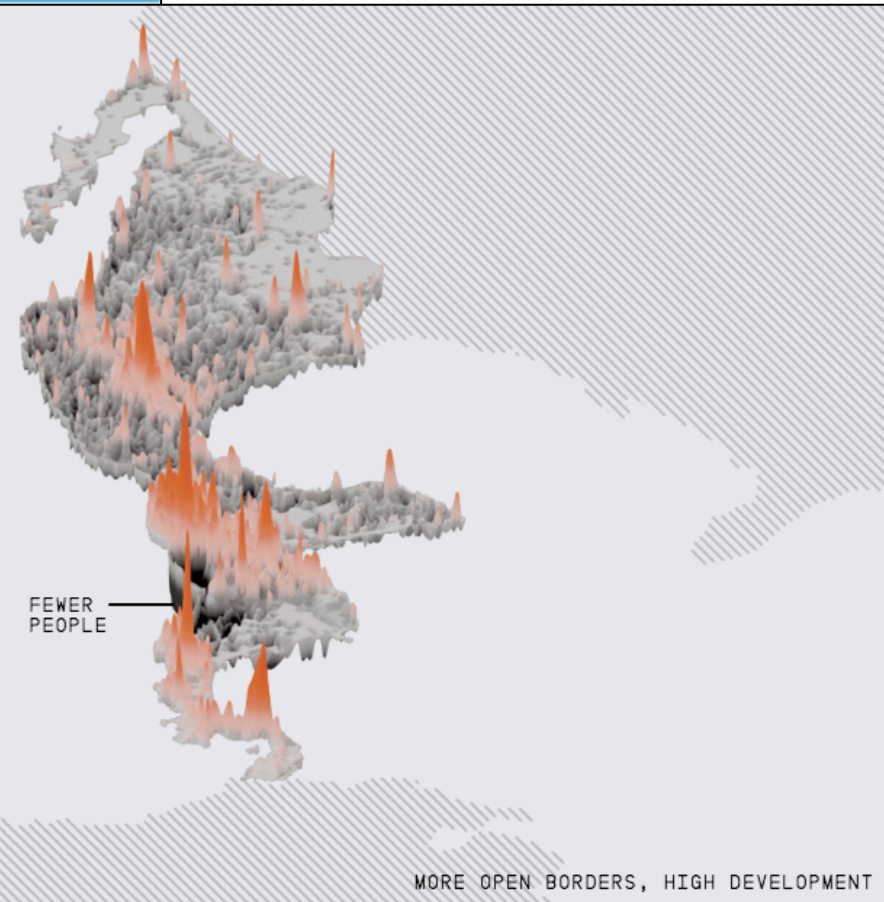


CORREDOR SECO
CENTROAMERICA

Emergency Response Coordination Centre (ERCC) – DG ECHO Daily Map | 03/06/2019
Central America | Food Insecurity in the Dry Corridor

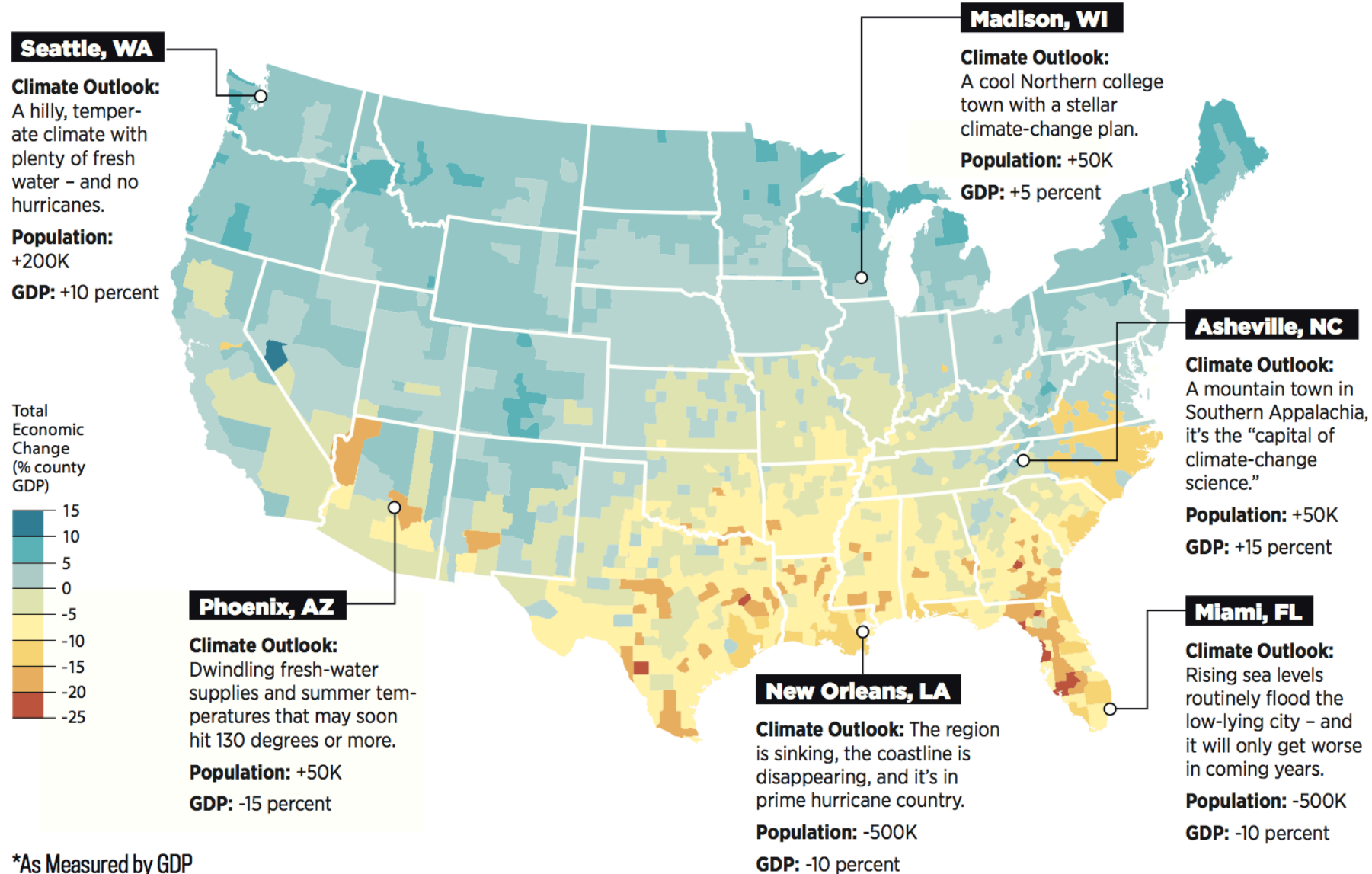


As the climate changes,
drought and food insecurity
drive rural residents in
Mexico and Central America
out of the countryside.



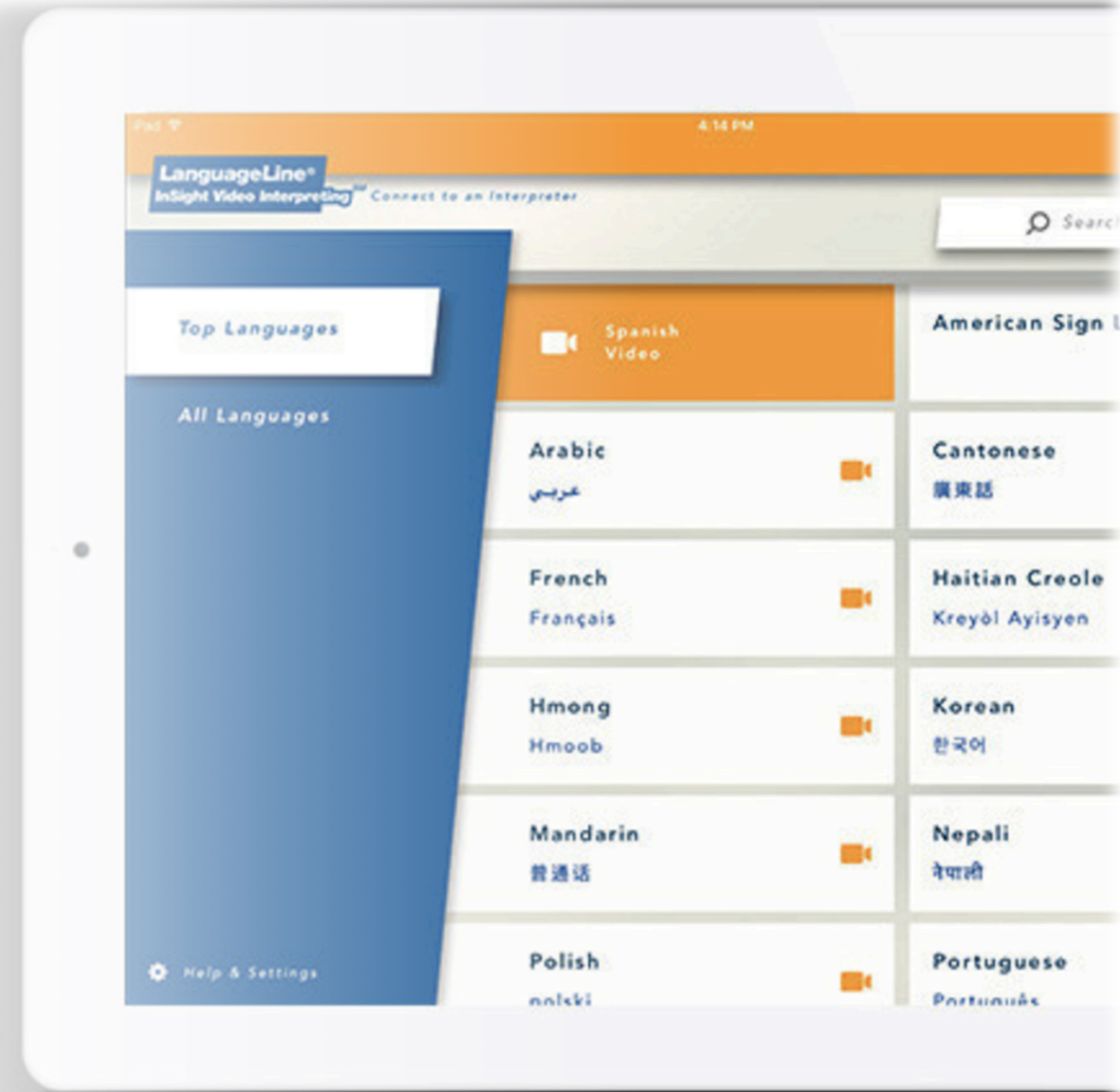
The Winners and Losers of Climate Migration^{*}

A look at the movement of wealth and people among American cities by 2080



Clinical Connections

Challenges Facing Distress Migrants
Refugee Health
Access to Care
Language Services
Trauma Informed Care
Long Term Stabilization



Specific Health Challenges Facing Distress Migrants

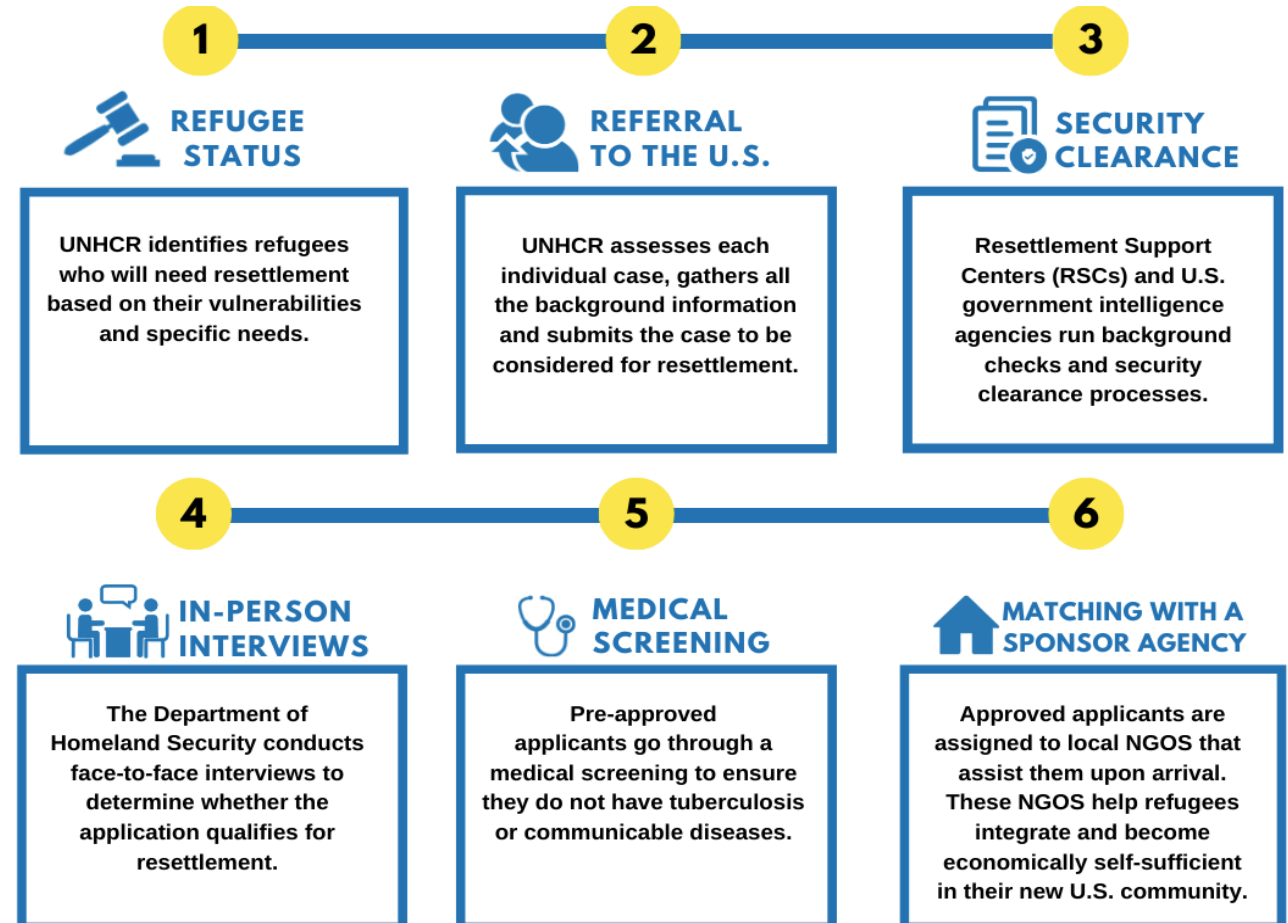
Misconceptions about causes of migration may affect decisions by healthcare providers

- Labeling as a "refugee" (may assume access to services that are unavailable)
- Labeling as economic migrants (may fail to screen for trauma or recognize mental health impacts of recent events)

Lack of dedicated services

- Refugee resettlement services are limited to refugees meeting the UN legal definition Item 6 →

US Refugee Resettlement Process



Access to Care

UNHCR Position:

“Health is a fundamental human right for all, including refugees. Making it possible for refugees to access healthcare is a top priority for UNHCR. According to the 1951 Refugee Convention, refugees should have access to the same or similar healthcare as host populations.”



Language Services

Title VI of the Civil Rights Act of 1964 requires recipients of Federal financial assistance to take reasonable steps to make their programs, services, and activities accessible by eligible persons with limited English proficiency.

- U.S. Dept of Health and Human Services

In a clinical setting, this means:

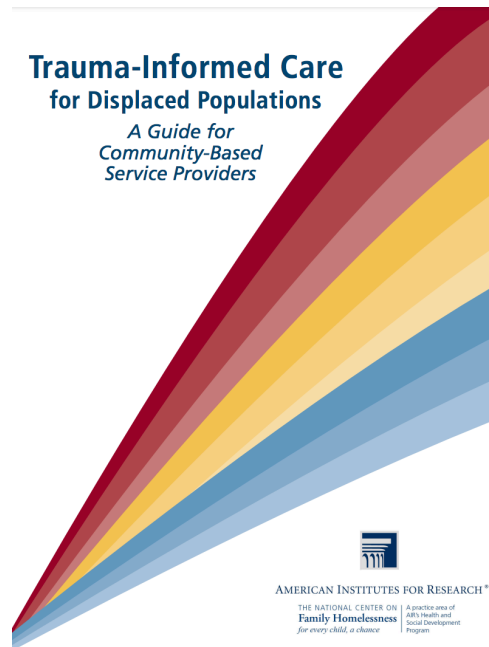
- Have access to interpreters
 - in person, by phone, or by video
- Offer interpreters to all patients with limited English proficiency
- Do not:
 - assume patients understand you
 - rely on family members by default
 - rely on your own partial competency with another language



Trauma Informed Care

Trauma-Related Considerations In Distress Migrants

- Disaster events
- Loss of connection to community
- Experiences during migration
- Interpersonal violence
- Difficulty assimilating into new setting
- Lack of social supports / community in new setting
- Ongoing legal or safety concerns
- Fear of re-traumatization
- Ongoing financial distress



<https://www.air.org/sites/default/files/downloads/report/Trauma-informed-care-for-displaced-populations.pdf>

Core Principles of Trauma-Informed Care

Understanding Trauma and its Impact	Understanding traumatic stress and recognizing that many current behaviors and responses are ways of adapting to and coping with past traumatic experiences.
Promoting Safety	Establishing a safe physical and emotional environment where basic needs are met, safety measures are in place, and provider responses are consistent, predictable, and respectful.
Supporting Control, Choice, and Autonomy	Helping people regain a sense of control over their daily lives. Keeping people informed about all aspects of the organization and allowing them to drive goal planning and decision-making.
Sharing Power and Governance	Sharing power and decision-making across all levels of an organization, whether related to daily decisions or when reviewing and establishing policies and procedures.
Ensuring Cultural Competence	Respecting diversity within the program, providing opportunities for consumers to engage in cultural rituals, and using interventions specific to cultural backgrounds.
Integrating Care	Maintaining a holistic view of consumers that understands the interrelated nature of emotional, physical, relational, and spiritual health and facilitating communication within and among service providers and systems.
Healing Happens in Relationships	Believing that establishing safe, authentic, and positive relationships can be corrective and restorative to trauma survivors.
Recovery is Possible	Understanding that recovery is possible for everyone regardless of how vulnerable they may appear; instilling hope by providing opportunities for consumer involvement at all levels of the system; and establishing future oriented goals.



Long-term Stabilization

Goal: integrate patients into a community so that they can develop self-sufficiency, a supportive community, and access healthcare effectively.

Approach:

- Connect with primary care provider
- Community health centers can provide excellent multidisciplinary support
- Connect with local NGOs or agencies for additional support

Key Points

Climate Effects

- Heat
- Drought
- Fires
- Flooding
- Storms
- Sea Level Rise

Pushes, Pulls, Traps, and Choices

- Climate-related disasters
- Long-term changes in sea level, ecosystem, agricultural productivity
- Political Instability / Conflict
- Border and immigration policies
- Economic draws / pushes / traps
- Choices about prioritizing community, employment, etc.

Key Points

Terminology

- Refugees
- Migrants
- Distress Migration
- Be aware of domestic / local effects (eg. regional urbanization) that may not be widely reported

Implications for Patient Care

- Recognizing need
- Language services
- Trauma informed care
- Connecting with long-term providers in primary care and the wider community



Discussion

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Image: John Dal / ClimateVisua