



Building Climate Resilience for Health through the UCHAI Network

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U.S.-India Partnership for Climate Resilience
Workshop on Development and Applications of Downscaling Climate
Projections

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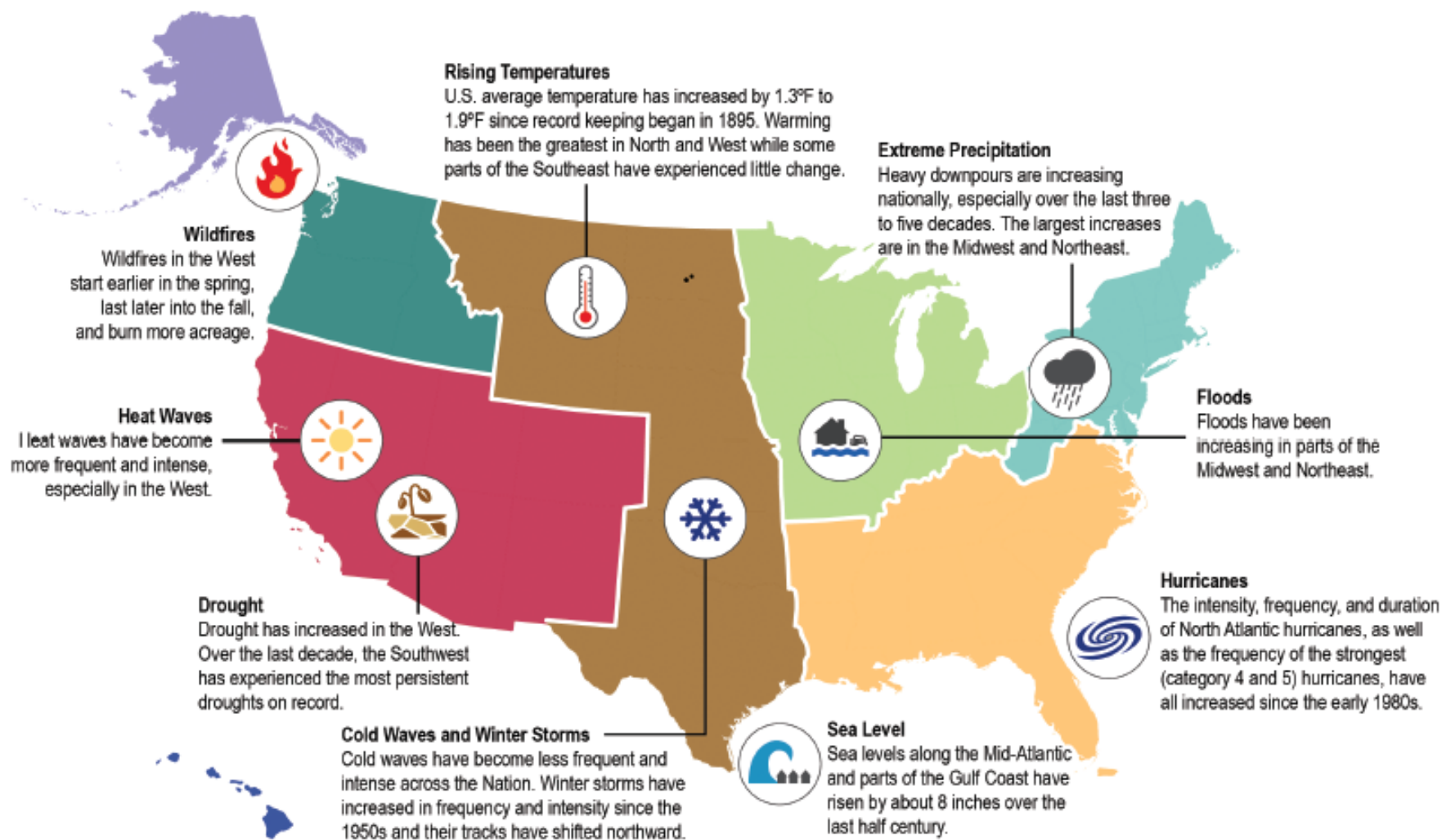
- **One of the 27 National Institutes of Health**
 - Located in Research Triangle Park, North Carolina
- **Wide variety of programs supporting our mission of environmental health:**
 - Intramural laboratories
 - Extramural funding programs
 - Disease Prevention
 - Clinical research program
 - National Toxicology Program
 - Public Health Focus



Overview

- Linkages between climate change and health: US as an analogy for India
- What does building resilience look like?
 - Two sides of climate-health adaptation coin
 - Scale and skill
- Introduction to Understanding Climate Health Associations in India (UCHAI) network

Major US Climate Trends



Significant Findings



Quantifies future increases in temperature-related deaths

- Confirms very high confidence in association between hotter- and colder-than-normal temperature and increased illness and death
- Quantifies the increase of thousands to tens of thousands of premature heat-related deaths projected in the summer due to climate change
- Assesses the impact of changes in tolerance to extreme heat on future deaths from heat



Confirms air quality impacts and provides likelihood for ozone, wildfire impacts

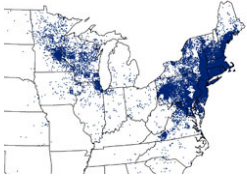
- Provides new likelihood assessment (likely) and high confidence that climate change will make it harder for any given regulatory approach to reduce ground-level ozone pollution, and that increased wildfires increase risk of premature death, adverse cardiovascular/respiratory outcomes
- Confirms high confidence that increases in airborne allergens will worsen allergy and asthma conditions and confirms indoor air health risks as significant emerging area



Connects changes in extreme events to increased exposure to health impacts

- Describes health impacts to extreme events with high confidence, including death, injury, or illness; exacerbation of underlying medical conditions; and adverse effects on mental health
- Identifies impacts to health from disruption of essential infrastructure
- High confidence that coastal flooding will impact vulnerable communities

Significant Findings



Provides likelihood of changing vector distribution, expands discussion of WNV

- Likely, high confidence in changing geographic and seasonal distribution of ticks carrying Lyme, and likely, medium confidence in increases in risk to human exposure
- Assessment of impacts of West Nile virus show very likely, high confidence in climate change influence on distribution, abundance, and prevalence of infection in mosquitoes



Details sources and pathways (drinking, recreational) of waterborne illness risk

- Disaggregates confidence and likelihood for changes in multiple water-related illnesses from *Vibrio* bacteria, marine harmful algae, freshwater harmful algae, and runoff sources
- Describes health impacts of water infrastructure damage or failures



First assessment of rising CO₂, climate on quality (nutritional value) of food

- Describes impacts of pathogens, toxins, and chemical contaminants in US food chain
- Assesses the large body of research establishing very likely, high confidence that nutritional value of food crops, such as wheat and rice, will decrease as rising levels of atmospheric CO₂ reduce concentrations of protein and essential minerals in most species

Significant Findings



Presents an important emerging area: increased mental health consequences

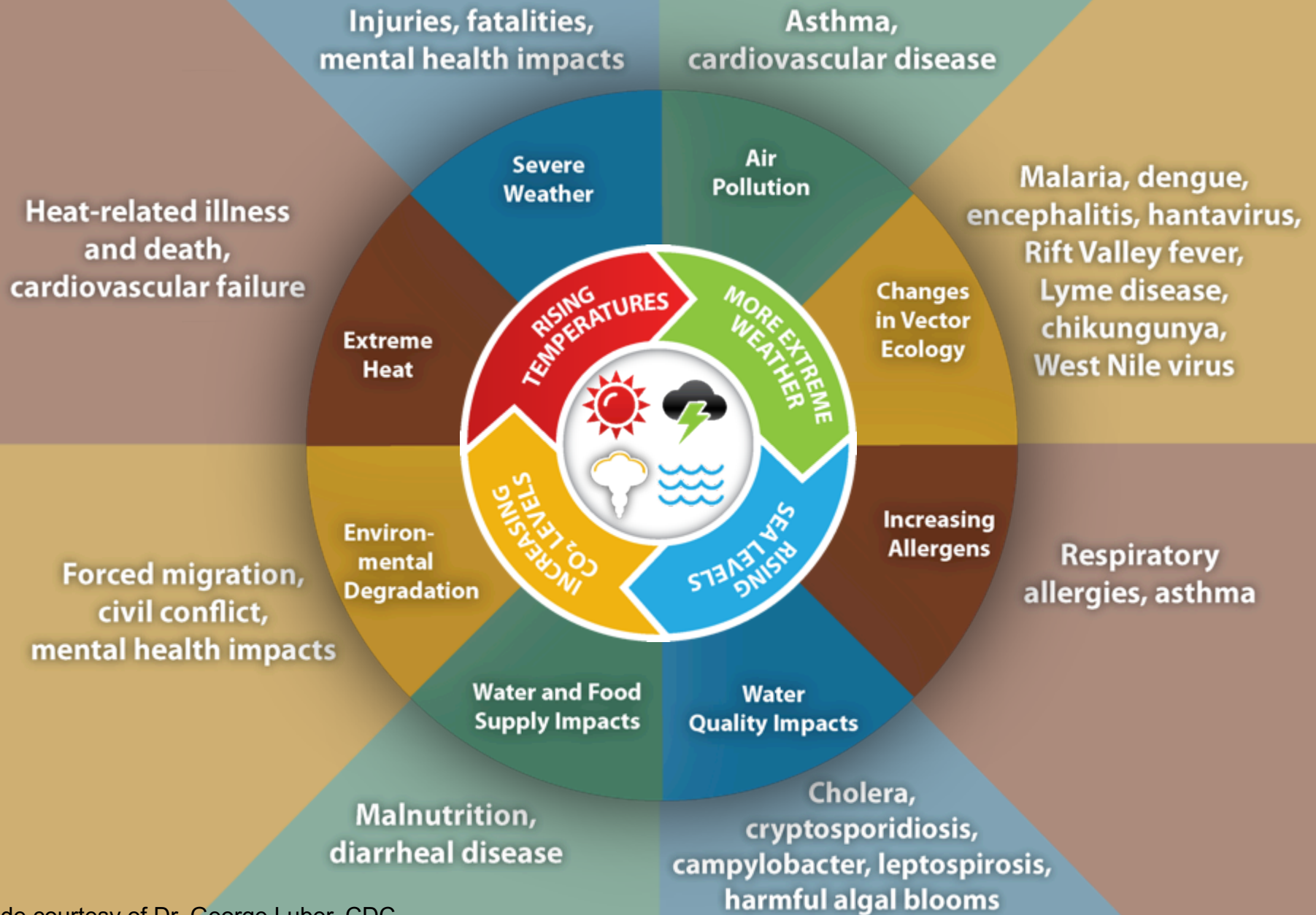
- Confirms Very High Confidence in extreme weather and climate related impacts including post-traumatic stress disorder (PTSD), depression, and anxiety, often at the same time
- Introduces issue of mental health impacts from the real and perceived threats of climate change and risks of heat exposure to people with pre-existing mental health illnesses or prescription medications



Details the ways in which climate change affects the health of us all

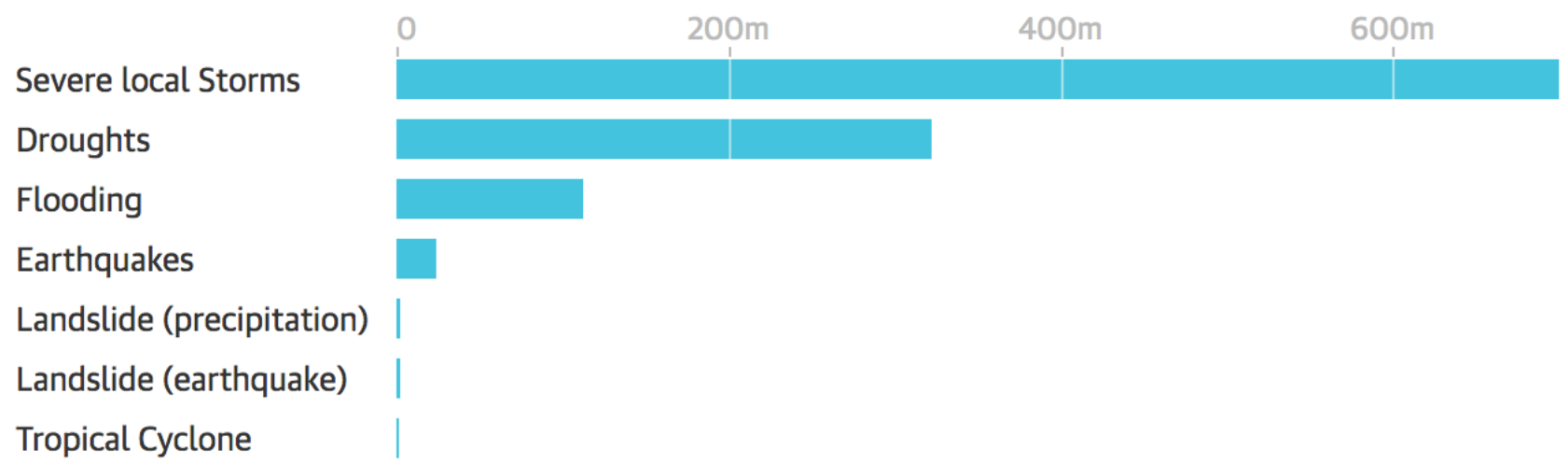
- People experience different inherent sensitivities to the impacts of climate change at different ages and life stages. For example, the findings confirm with very high confidence the very young and old are particularly sensitive to climate-related health impacts.

Impact of Climate Change on Human Health



Climate Health Threats in India

1.2 billion people in India are acutely exposed to natural disasters



Guardian graphic | Source: Verisk Maplecroft

Climate, extremes and health in India



What does resilience look like?

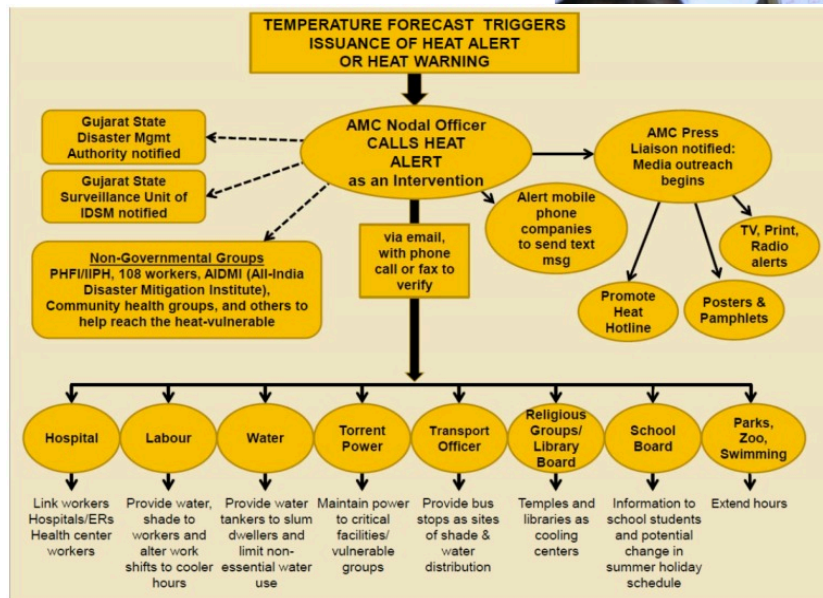


Communities adapt to extreme weather conditions in India

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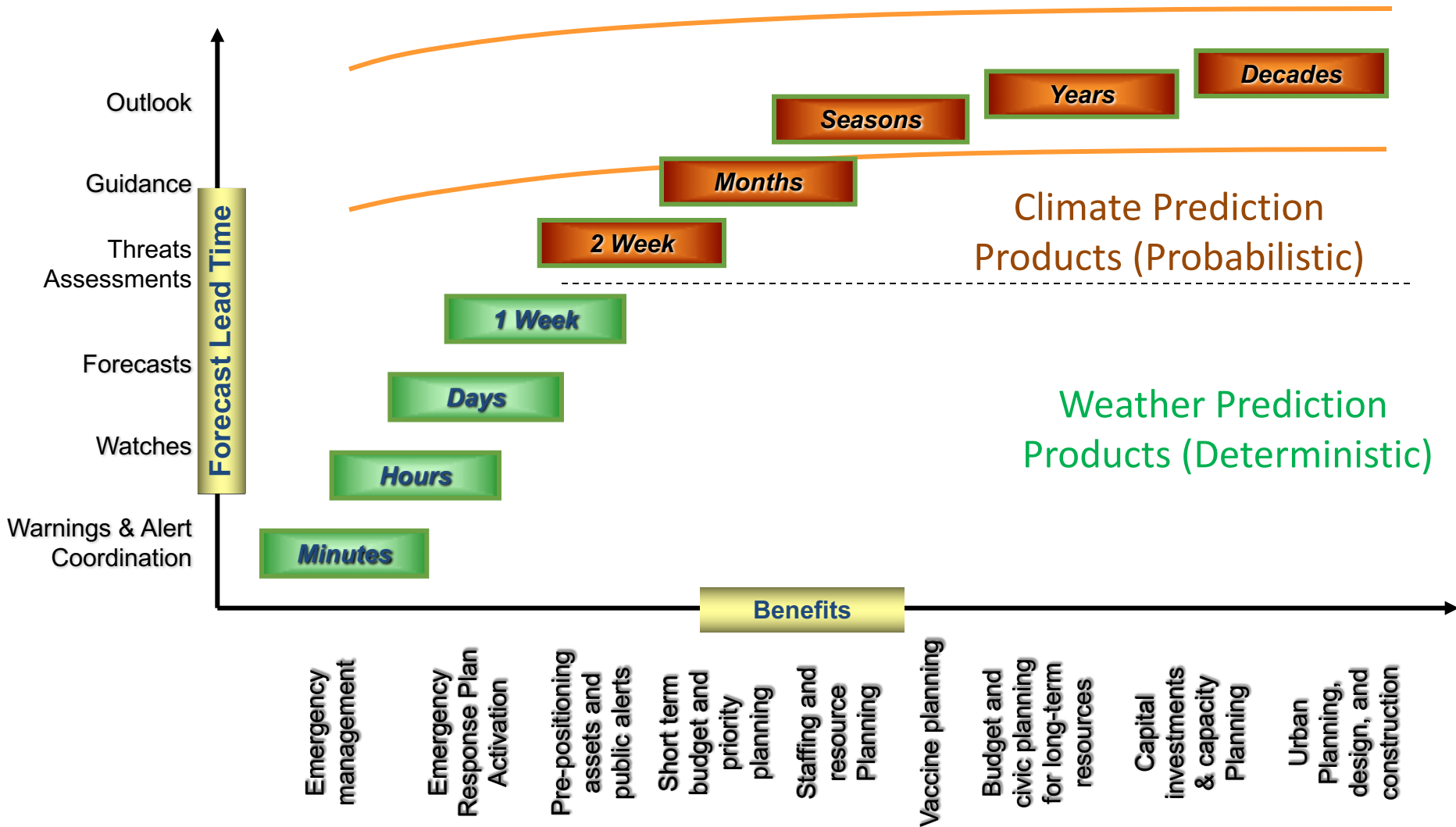
... dia, came together to set up a rain water harvesting and a piped water supply to the village. (Photo: UNDP)



The time scales of climate and health decisions

- Emergency Response (minutes-hours)
 - Severe storms
- Short-term Forecasts (1-10 days)
 - Weather/air warnings: Heat, air quality, pollen, severe storms
 - Water quality, coastal water alerts
- Medium-term Forecasts (seasonal-interannual)
 - Infectious disease early warnings
 - Weather-climate outlooks: heat, storms, precipitation
- Long-term Forecasts (decadal)
 - Infrastructure planning
 - Health system long-term planning;

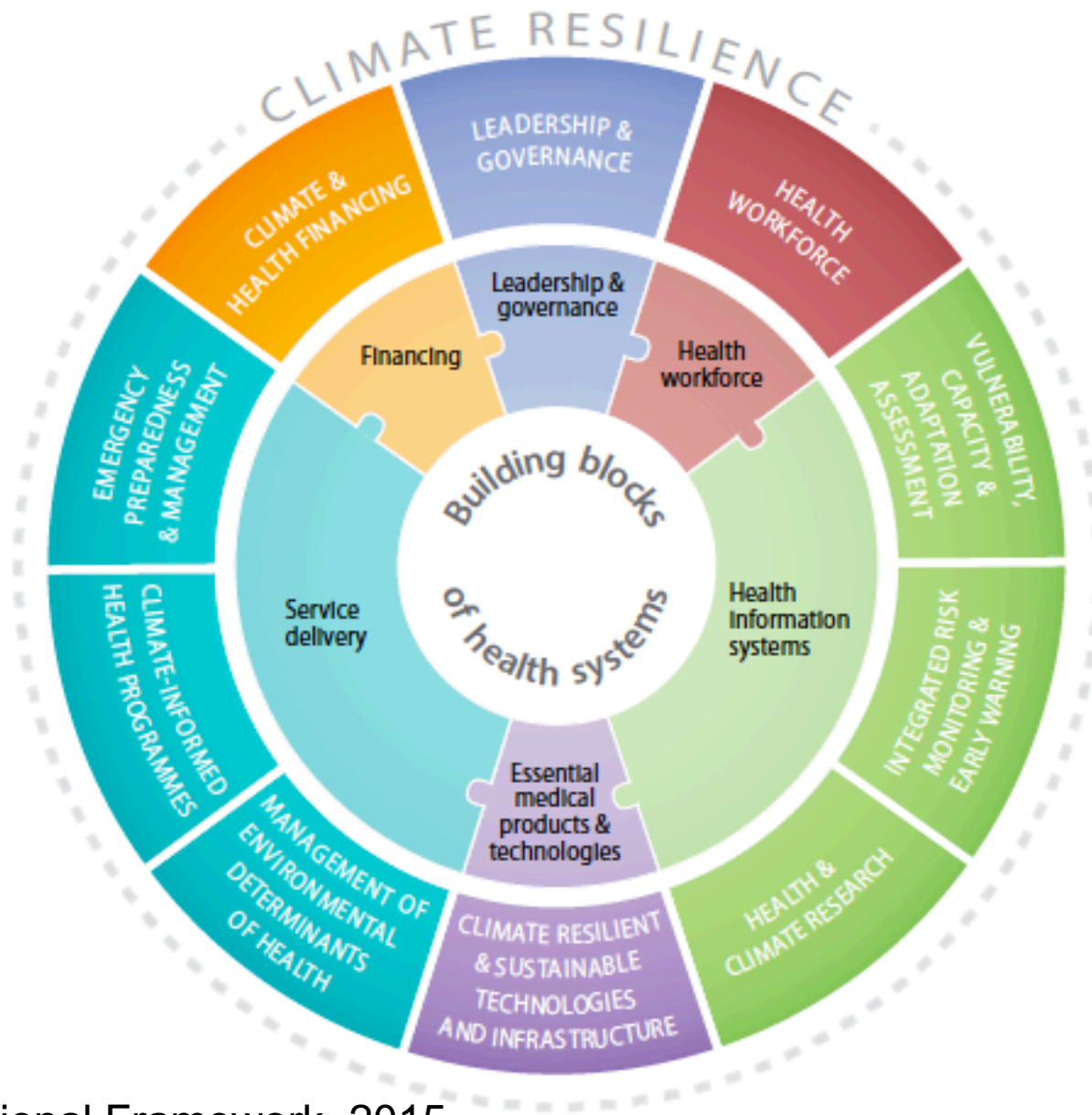
Seamless Forecast Products for Health



Elements of health system resilience I: Mainstreaming climate thinking into public health

- Reducing health disparities; addressing basic public health needs
- Physician and other health care provider training
 - Recognition of imported or emerging infectious diseases
 - Risk factors for heat illness
 - Resilience- for providers too!
- Anticipation of immigrant health issues
- Health care facility resilience and hardening
- Governance, coordination, training exercises

FIGURE 3: Ten components comprising the WHO operational framework for building climate resilient health systems, and the main connections to the building blocks of health systems



Elements of health system resilience II: Enhanced capacity for use of climate/weather information

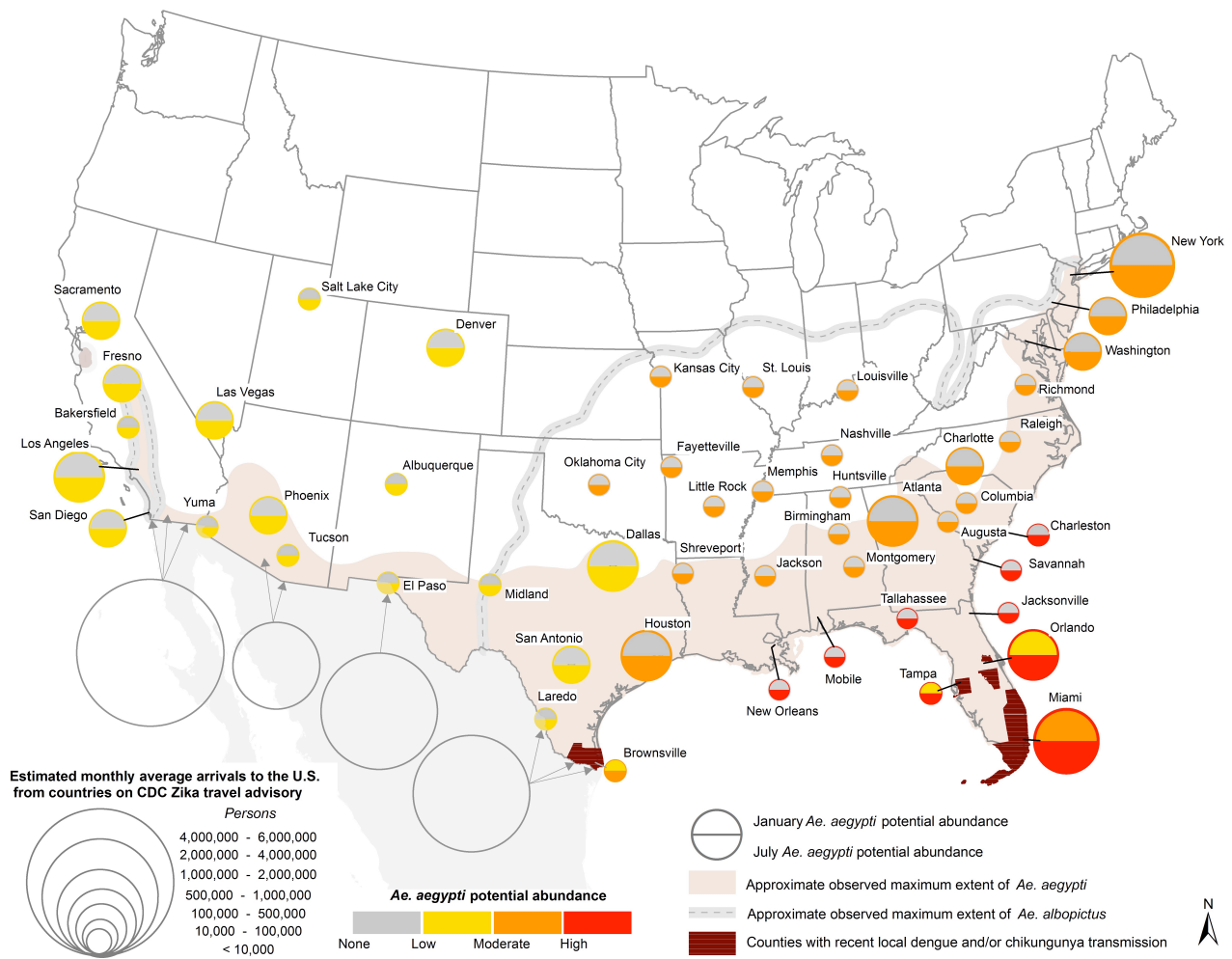
- Risk and vulnerability assessments
- Visualization and mapping exercises
- Early Warning Systems
 - Partnership with Meteorological/Climate Services
- Governance, coordination, training exercises
 - Incorporation into climate adaptation planning

NIHHIS: US Pilots and International Network



The NIHHIS Network is composed of international knowledge-sharing partnerships and U.S. local pilots, but all address shared questions.

Zika risk mapping- importance of human travel



Opportunities and Challenges for Climate-Health Adaptation for India

OPPORTUNITIES

- High level awareness of urgency of climate change action in policy makers
- High and growing climate/meteorology capacity
- Good weather/climate data availability

CHALLENGES

- Relatively low priority on CC within the health sector
- Low capacity for applying weather and climate information
- Limited availability of health data

Understanding Climate and Health Associations in India

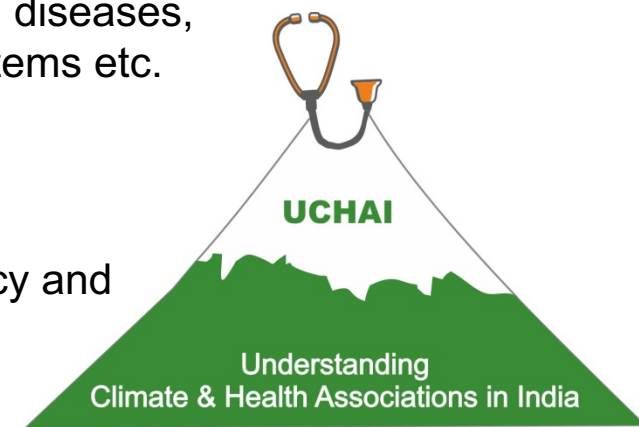
Community of Practice

Vision of the UCHAI Community of Practice

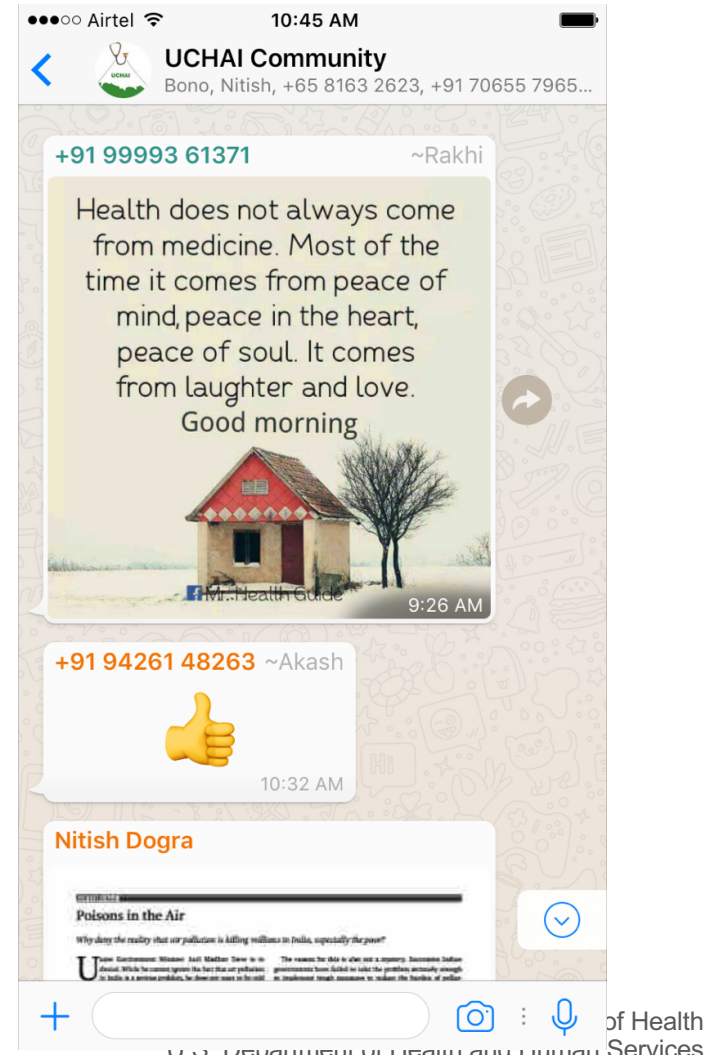
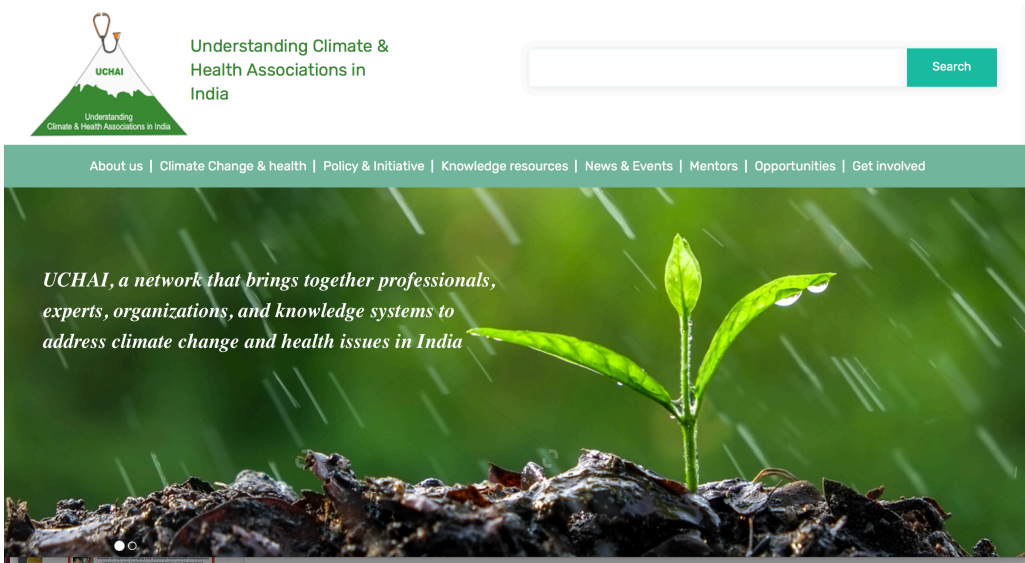
- India's health sector has capacity to adapt to climate change and its health impacts.

Goals of the UCHAI Community of Practice

- Training
 - Train-the-trainer workshops, curriculum, training modules, Web portal
- Research
 - Extreme heat and weather events, climate-related diseases, vulnerable populations, capacity of the health systems etc.
- Development of Tools
 - Including Heat Action Plans, Predictive Models
- Community Engagement
 - Stakeholder/public participation to increase efficacy and impact of adaptation strategies.



Elements of the UCHAI Community



Conclusions

- Momentum is building for strengthened public health systems and climate services for health
 - Improved health monitoring and health information systems
 - Improved meteorological records and short term forecasts
- UCHAI provides one platform for sharing best practices and conducting training and capacity building
- Partnership with meteorological community is foundational to providing data and tools and building capacity in the health sector in India



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THANK YOU!

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<http://www.niehs.nih.gov/geh>
<http://toolkit.climate.gov/>



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