

The Hawai'i Climate Change & Health Working Group

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East-West Center
May, 2018

All these people really seem to have it together

Imposter Syndrome

Reality

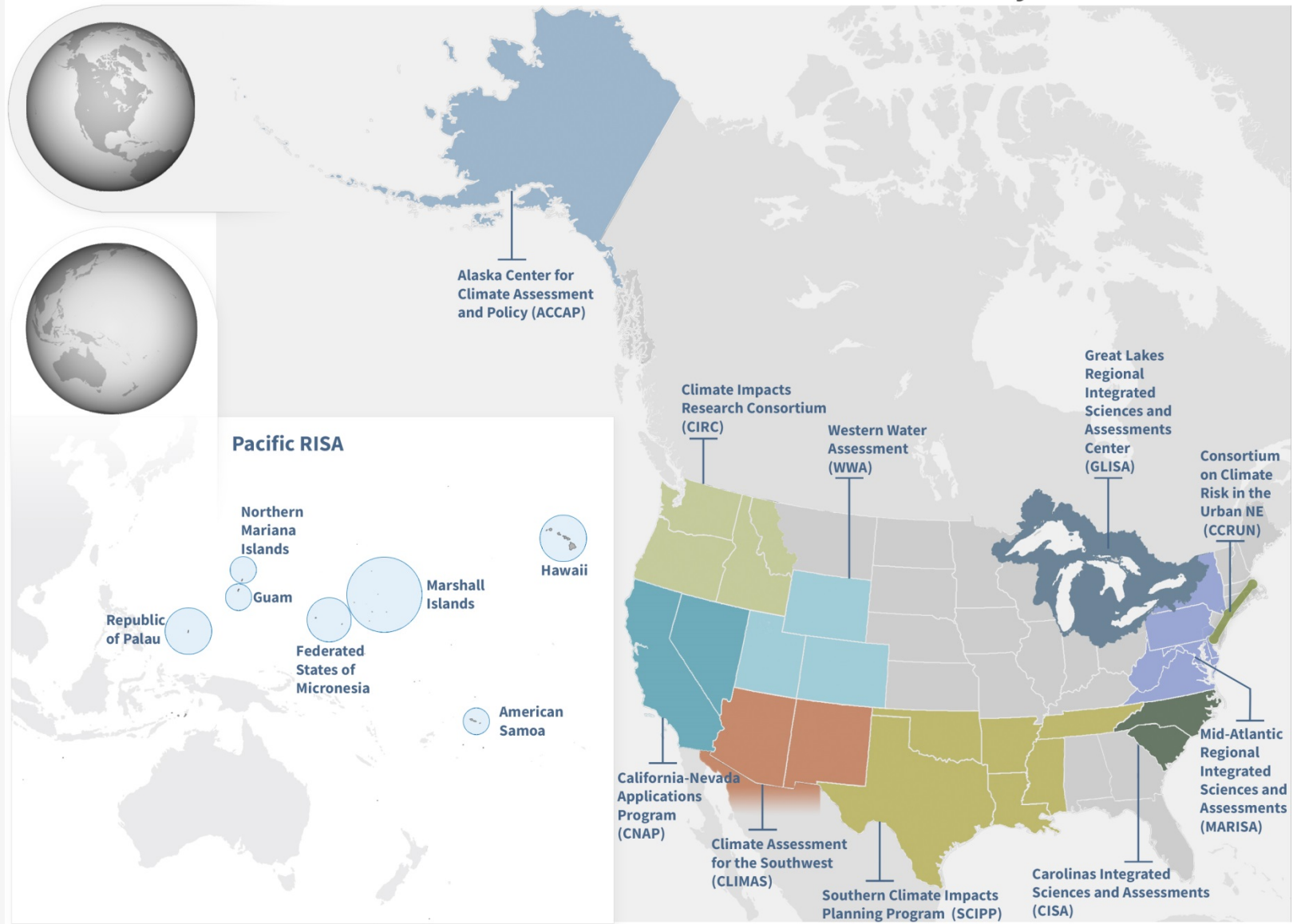
CHAINSAWSUIT.COM



What others know

National NOAA RISA Program

Currently Funded RISAs

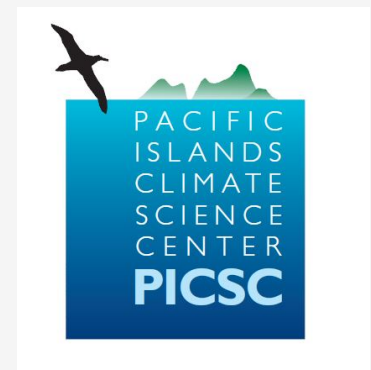
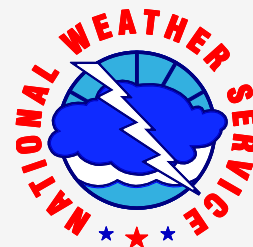


The National RISA Program

- National NOAA research grant
 - 11 regional currently funded programs
 - 5 years, flexible, use-inspired climate research
 - RISA's have different research foci, but commonalities include:
 1. Interdisciplinary research that provides climate science and decision support to diverse stakeholders;
 2. Participatory approach – continual dialogue between researchers and end-users;
 3. Sustained relationships;
 4. Framed in decision-relevant contexts, “use inspired” science.



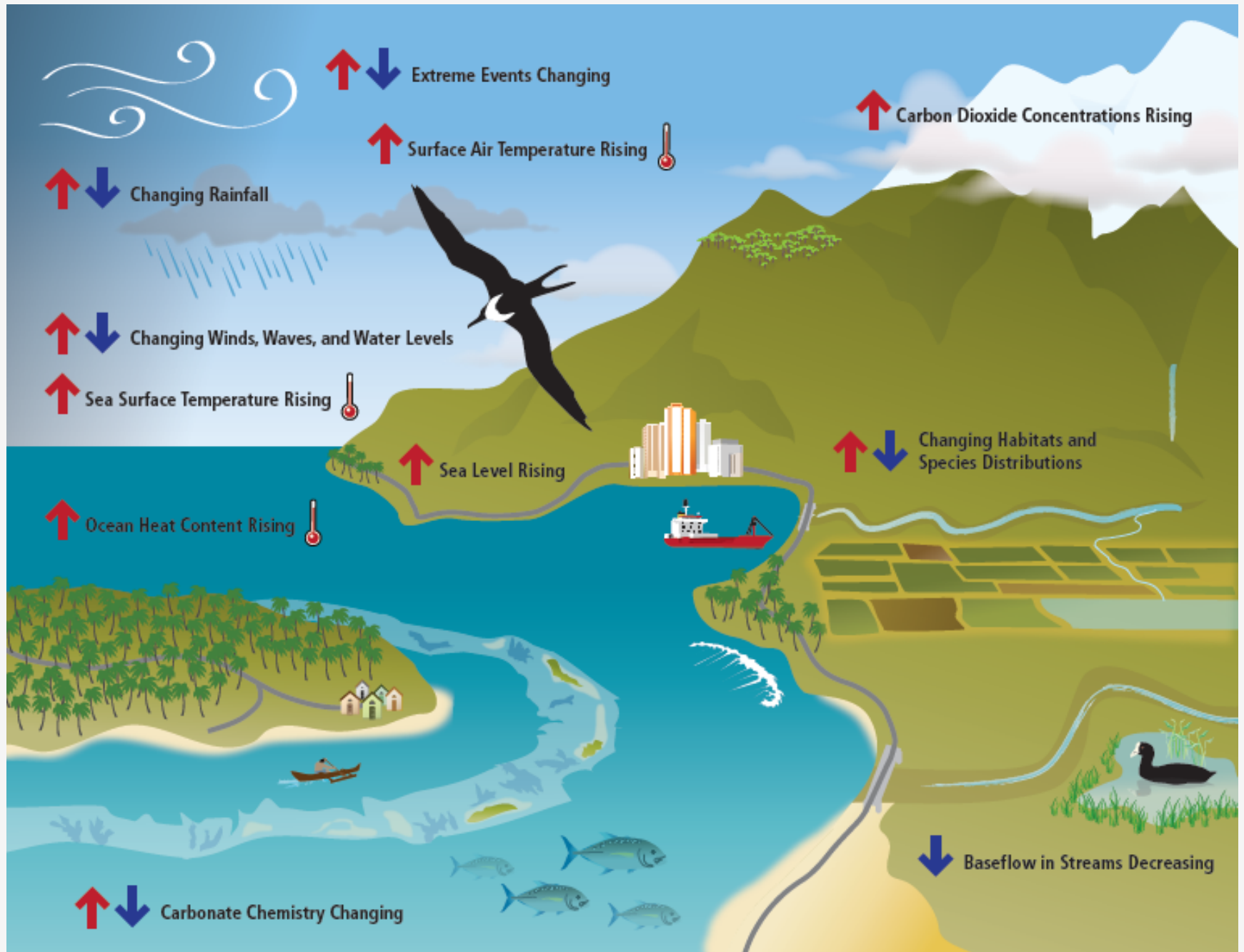
Pacific Regional Integrated Sciences and Assessments



The Pacific RISA

- Interdisciplinary team of PI's: Hydrology, climatology, phys. & social geography, resource economics, law & policy, psychology, decision science
- Building island resilience and freshwater resource sustainability under conditions of climate variability and change
- Dynamical and statistical downscaling of climate models
- Watershed modeling
 - Groundwater dynamics, ecosystem services, scenario planning
- Social network analysis
- State and territorial law and policy analysis
 - Freshwater, climate migration law
- U.S. National Climate Assessment & Pacific Islands Regional Climate Assessment

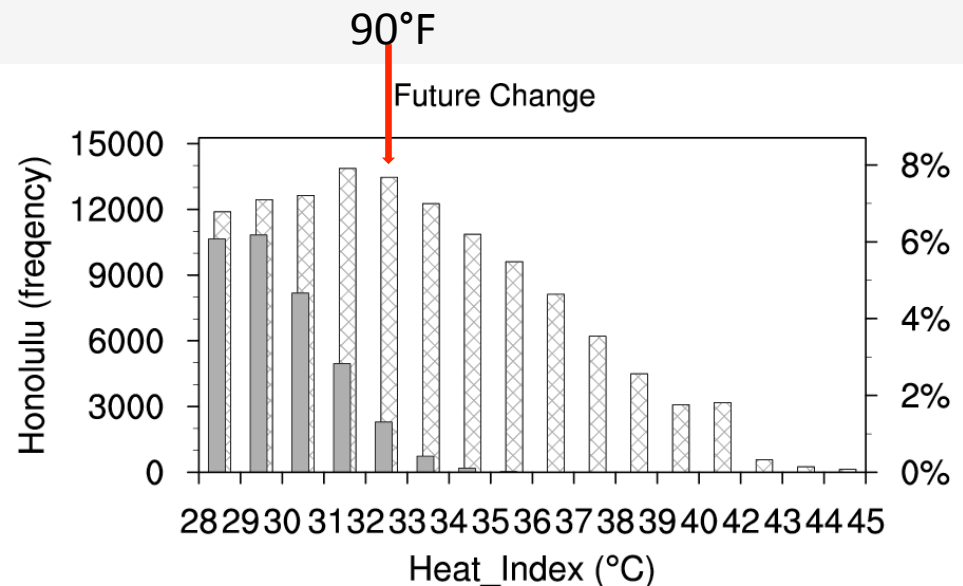
Indicators of a Changing Climate in the Pacific Islands Region



Heat, energy, and public schools in Hawai'i

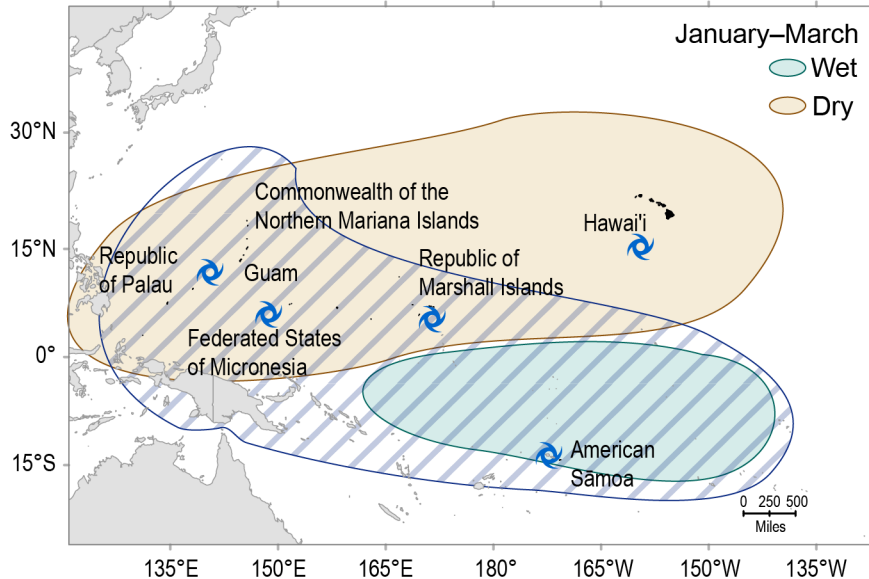
- Temperatures reached record highs at least 25 times during the school year in 2015
 - Students and teachers with heat exhaustion
 - Trade wind frequency decreasing; ocean temperatures increasing
- 94% of public schools do not have air conditioning
 - Electrical systems too old to handle the extra load
 - AC at all schools would cost ~\$1.7 billion in addition to extra electricity costs (already the nation's highest)

Heat Index Change, 2080-2099, RCP8.5
Zhang et al. 2017

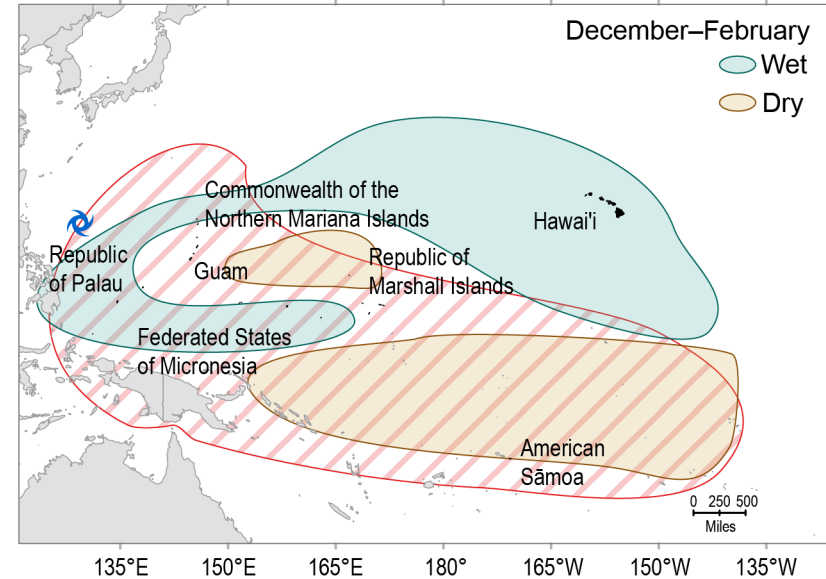


El Niño: Food & Water Security

El Niño Climate Impacts



La Niña Climate Impacts



Kruk & Keener, draft figure for NCA4

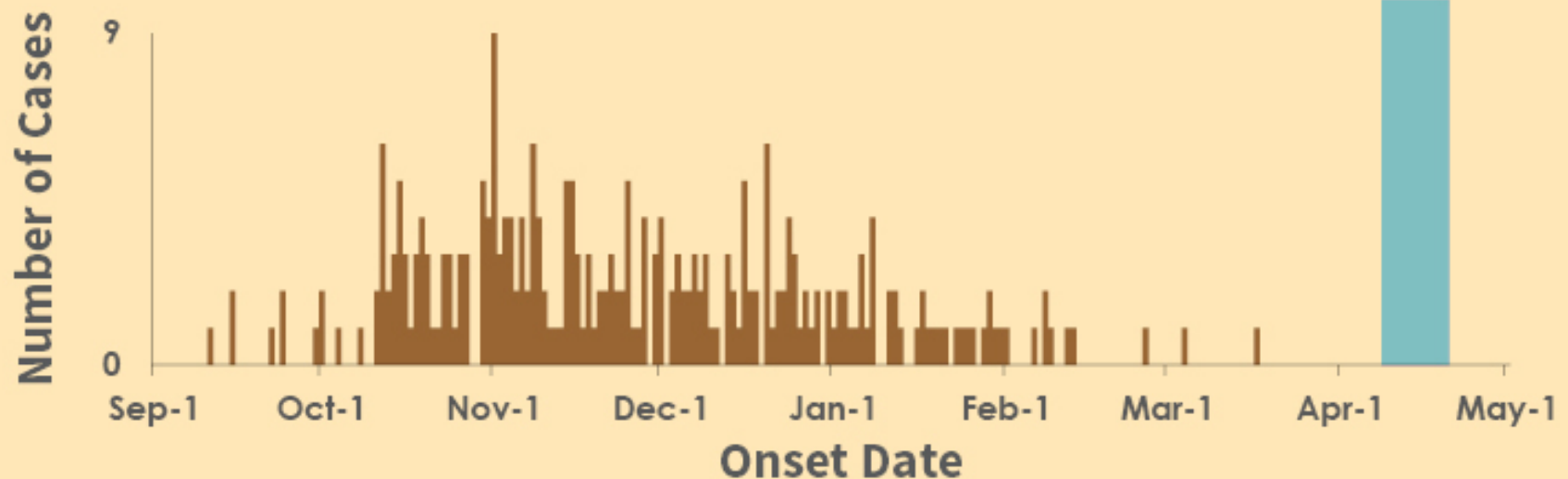
Increased Tropical Cyclone Frequency Low Sea Levels
High Sea Levels


- Driest period on record from 2008-2012
- Hawaii is 99% groundwater dependent, and baseflows have declined over the past 100 years
- Declining size of fish in Pacific fisheries
- Record cyclone season in Hawaii in 2015
- Wildfire burns ~8000 acres of Hawaii every year for the past decade


Dengue Fever on Hawai'i Island


As of April 20 2016

Total number of confirmed cases 263



 = Cases no longer infectious to mosquitoes

 = Cases likely still infectious to mosquitoes

 = Illness that began during this time may not yet be reported to/confirmed by HDOH

(HDOH preliminary data - subject to change pending new information)

The Perceived Non-Immediacy of Climate Risk

- Not interested in climate impacts on health when they immediate necessities like vector control are de-funded
- How to put health policies in place that look forward – climate disasters can cut islands off quickly (Puerto Rico)
- Planning for health needs of Pacific Island migrants to HI and other states and territories
 - Though the medical issues climate migrants bring might not be directly caused by climate change, they present new problems to medical professionals in destination communities

Origins of the Hawai'i Working Group

- Hawaii Public Health Association (HPHA) Survey, Fall 2014
 - 58% of public health professionals were “very concerned” about the potential impacts of climate change and health on Hawai'i residents
 - 66% thought that the impacts of climate change and health in Hawai'i had received “little to no attention”
- Initially convened in August of 2015 (HCR 108, SD1)
 - To help the State consider and plan for the impacts of climate change on human health
 - Develop preliminary findings and recommendations for policymakers
 - Report to the Twenty-Eight HI State Legislature in 2016

Working Group Composition

15 people representing:

- Federal
 - Centers for Disease Control & Prevention (CDC)
 - U.S. Pacific Command (PACOM) Surgeon
- State
 - Department of Health
 - Office of Environmental Quality Control
- NGO/Non-Profit
 - Hawai'i Public Health Association
 - East-West Center/Pacific RISA
 - The Pacific Islands Health Officers' Association (PIHOA)
 - Hawai'i Public Health Institute
 - Hawai'i Primary Care Association
- Academia/Professional
 - UH-Manoa Dept. of Family Medicine & Community Health, JABSOM
 - UH-Manoa School of Law

Topics Covered at Meetings

- State and regional disease surveillance and monitoring
- Water and food security
- Vector-borne infectious diseases
- Respiratory/pulmonary effects
- Cardiovascular effects
- Mental and behavioral health, at-risk communities
- Climate justice, migration, and health
- Strategies and funding priorities



Recommendations to the Hawai'i State Legislature for 2016

REPORT TO THE
TWENTY-EIGHTH LEGISLATURE

STATE OF HAWAII

2016

PURSUANT TO HOUSE CONCURRENT RESOLUTION 108, SD1:
Requesting the convening of a climate change and health working group to assess the scope and risks of climate change on the health of Hawai'i's residents and to develop a strategic plan to address climate change risks to health statewide.

2015 Preliminary Report and Recommendations from the Hawai'i Climate Change & Health Working Group

PREPARED BY
DEPARTMENT OF HEALTH
STATE OF HAWAII
DECEMBER 2015

- Climate Change is projected to **increase/exacerbate already-existing public health problems**.
- A major challenge will be to measure & analyze/interpret key health indicators to determine changing health trends that are attributable to climate change conditions.
- Disparities in health impacts are projected for **already vulnerable populations** —elderly, poor, young, ill, marginalized populations, as well as specific at-risk groups (outdoor workers).
- Get DoH dedicated **resources** to lead effort: Climate Change/ environmental epidemiologist and a Climate Change health planner/ coordinator.
- Develop and implement improved **disease surveillance** for major projected Climate Change threats in order to link climate indicators to health impacts and to provide early warning.
- Support more climate **monitoring** stations in Hawaii and the Pacific
- Develop and implement CDC BRACE framework in Hawaii - request technical support and support from CDC
- Develop close **coordination** with other Climate Change stakeholders. Align coordination for climate change and health with 6 targeted goals for the Hawaii ALOHA Plus Challenge, for 2030

Overall findings

- A major focus for health should be on **comprehensive and coordinated** adaptation strategies by Hawai'i's public health system and related services, engaging scientists/researchers, planners, and policymakers to support adaptation to changing environmental challenges and conditions
- The Hawai'i State Department of Health should have increased **dedicated fiscal and personnel resources** to lead efforts addressing development of climate change and health issues
- Protections against both **infectious and chronic** climate-associated disease threats should be strengthened

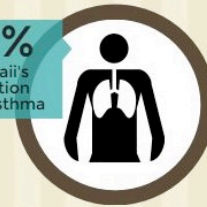


Outreach

Connecting Climate Change, Our Health and Our 'Aina

With increasing global, n... evidence showing impac... climate change and heal... adverse affects towards... Hawaii's residents

11.1%
of Hawaii's
population
have asthma



The National Resources
Defense Council (NRDC)



Air temperatures are
likely to increase by 4-7



With sea levels rising
worldwide, dislocation
and loss of land along the
coast line is expected to
increase. With this, the
public health impacts to
the general population
will be less water and
food security ease.

Why Should We Care About Health and Climate Change?



Climate Change is
happening now and
its impacts will only
increase



Health impacts from
climate change will
affect us all directly
and indirectly



Climate change
cannot be prevented,
but we can adapt to
the changes with
education and action

Sources

<http://www.nrdc.org/health/climate/hi.asp>

<http://climate.nasa.gov/>

<http://health.hawaii.gov/hhs/hawaii-health-survey-2012/>

2015 Preliminary Report and Recommendations from the Hawai'i Climate Change & Health Working Group

A Collaboration of

Hawaii Climate Change and Health
Working Group

Hawaii Public Health Association

Hawaii State Department of Health

Infographic Developed by Shelby Wardle, Hawaii Pacific University

Climate
Change
Impact



Increased Heat



Increased Rain
& Flooding



Rising

Climate change
impacts on your
community



the weather on hot days,
on frail neighbors and
sure to stay hydrated

and other
(pa.gov),
(electric.com),
(gov)



nit animal-based food and
lead eat a more plant-based
to save on resources required
for growing food

nts and
ighborhood's
ness plan in
her disasters



**PECT AND
CT THE 'AINA**

After the release...

- Paper minimizing impacts of VBD and climate in Hawaii
- Climate change could increase migration, potentially, increasing the costs of service to additional at-risk populations in receiving communities in Hawai'i
- “The expected migration of populations that contain infectious persons as a result of sea-level rise is a different matter that is related to climate change. **Existing public health policies and medical services are adequate to sufficiently cope with this level of influx and prevent significant outbreaks.**” *Canyon and Burkle (2017)*
 - ...Does it? Trouble meeting current needs
 - Zero people in vector monitoring division
 - HI has 3-7 days of food. Medical supplies?
 - Containing health shocks during a disaster

Infectious Pathogens, Agents, and Diseases Matched With Current Status in Hawaii With Forecasted Vulnerability by 2050

Infection	Current Status and Forecasted Vulnerability by 2050
Mosquitoes	<i>Aedes albopictus</i> , <i>Ae. aegypti</i> , <i>Ochlerotatus japonicus</i> , <i>Wyeomyia mitchellii</i> , <i>Culex quinquefasciatus</i> , <i>Ae. vexans nocturnus</i> present. Climate change is not expected to change vector composition or distribution
Dengue	Disease intermittent. Vectors present. May become intermittent due to increased travel
Chikungunya	Disease not present. Vectors present. May become intermittent due to increased travel
Zika	Disease not present. Vectors present. May become intermittent due to increased travel
Malaria	Disease not present. Vectors not present. Likelihood not expected to change
West Nile virus	Disease not present. Vectors present. Likelihood not expected to change
Cholera <i>Vibrio vulnificus</i> and <i>V. parahaemolyticus</i>	Disease not present and not expected to change due to climate change
Melioidosis	Pathogen not present. Effects of climate change are unpredictable
<i>Cryptococcus gattii</i>	Pathogen not present, but likely to increase if introduced. Introduction and spread will not be due to climate change
Salmonellosis	Pathogen present but seasonal and effects of climate are unpredictable
Cryptosporidiosis	Pathogen present but should decline
Giardiasis	Pathogen present but effects of climate change are unpredictable
Leptospirosis	Effects of climate change will likely change pattern of incidence
<i>Campylobacter</i>	Unlikely to increase due to climate change
<i>Staphylococcus aureus</i>	Unlikely to increase due to climate change
Gastroenteritis: adenovirus, enterovirus, norovirus GI/GII	Effects of climate change on abundance or distribution are unpredictable; insufficient data
Arsenic	Highly localized and not expected to change due to climate change
Polluted runoff	Common and not expected to change due to climate change
Ciguatera	Common and unlikely to increase because seas here are already warm
Paralytic and diarrhetic shellfish poisoning	Associated with temperate climates and colder coastal waters and are not a concern in Hawaii
Toxic algal blooms	Nontoxic blooms exist in Hawaii and the introduction of toxic varieties would not be associated with climate change

Canyon and Burkle (2017). Health Security in Hawaii by 2050: The Physical Effects of Climate Change. *J. Homeland Security and Emergency Mgmt.* DOI: 10.1017/dmp.2016.73

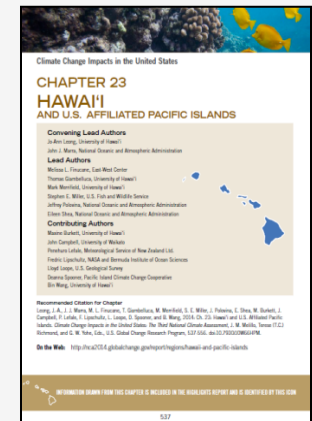
PIRCA Products

Climate Change and Pacific Islands: Indicators and Impacts (2012)

- Full Report
- Case Studies
- Executive Summary
- NCA Pacific Islands chapter (2014)



PIRCA.org



Next PIRCA (www.pirca.org)

- Developed in coordination with 4th US National Climate Assessment Chapter – contains more regionally relevant info and case studies
- Update to the 2012 report
- Stronger USAPI inclusion than 2012 report
- Online formats; easy to access
- Anticipated release in 2018



New Sector: Pacific Island Climate and Health Indicators

- Key questions:
 - What health-related decisions are stakeholders making now or likely to make in the future that are impacted by climate variability and change?
 - What data are currently being collected, and what research, tools, and information are needed to support climate and health assessments?
 - Which technical climate variables should be continuously tracked to support preparedness efforts?
- Are there white papers, reports, data, or peer-reviewed publications we can promote?

Health and climate adaptation stories?

www.PacificRISA.org

www.PIRCA.org

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