St. Augustine Wastewater Treatment Plant
(www.staugustine.com)

FLORIDA WATER & CLIMATE ALLIANCE WEBINAR

"Climate Change Impacts on Wastewater & Stormwater Management"

September 20, 2021

UF UNIVERSITY of FLORIDA Water Institute

FLORIDA Water & Climate Alliance

Agenda

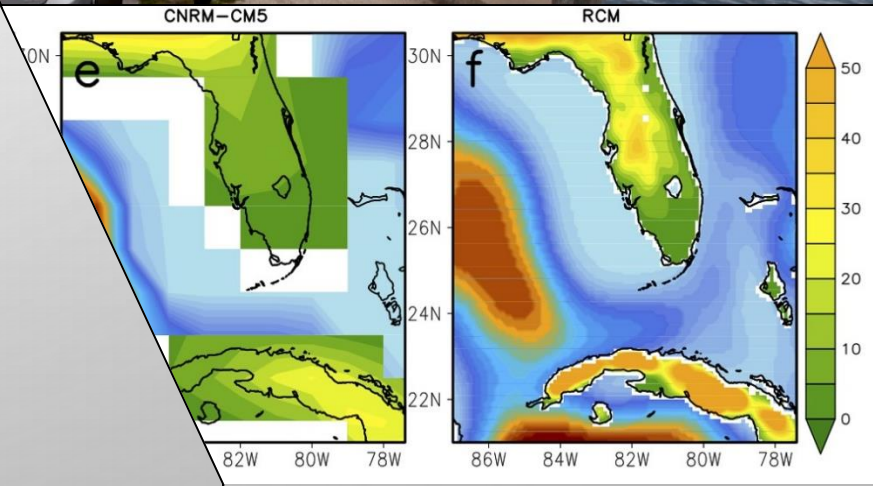
- Introduction to the Florida Water & Climate Alliance
- NASA ROSES Project: Monitoring of the 2021 Rainy Season Over Florida's Water Management Districts
  - Vasu Misra, Ph.D., Professor of Meteorology, Center for Ocean-Atmospheric Prediction Studies, Florida State University
- Climate Change Impacts on Wastewater & Stormwater Management
  - Jessica Beach, P.E., Chief Resilience Officer, City of St. Augustine; Tricia Kyzar, Spatial Analyst/ Project Manager, Wildwood Consulting Inc.
  - Steven Meyers, Ph.D., Chief Scientist, Center for Maritime and Port Studies, USF
  - Ebrahim Ahmadisharaf, Ph.D., Senior Research Associate, Resilient Infrastructure and Disaster Response (RIDER) Center, Civil and Environmental Engineering, FAMU-FSU
  - Michelle Irizarry-Ortiz, P.E., CC-P, Hydrologist, USGS Caribbean-Florida Water Science Center
  - Eva B. Vélez, P.E., Strategic Program Manager, Ecosystem Branch; Jason Engle, P.E., Chief of Water Resources Engineering Branch, US Army Corps of Engineers, Jacksonville District
- Q & A with audience and discussion

Logistics

- Webinar is being recorded
- Can be helpful to use “speaker view” (top right corner)
- Send your questions via chat to the host; they will get read during Q & A
- Send any announcements you have (new publications, webinars of interest, proposed legislation, etc.) in the chat – we will share
- Can receive Professional Development Hours for PE license

FLORIDA Water & Climate Alliance

A stakeholder-scientist partnership committed to the co-development of locally relevant and actionable climate science to support informed decision-making in water resource management, planning and supply operations in Florida



Our Vision:

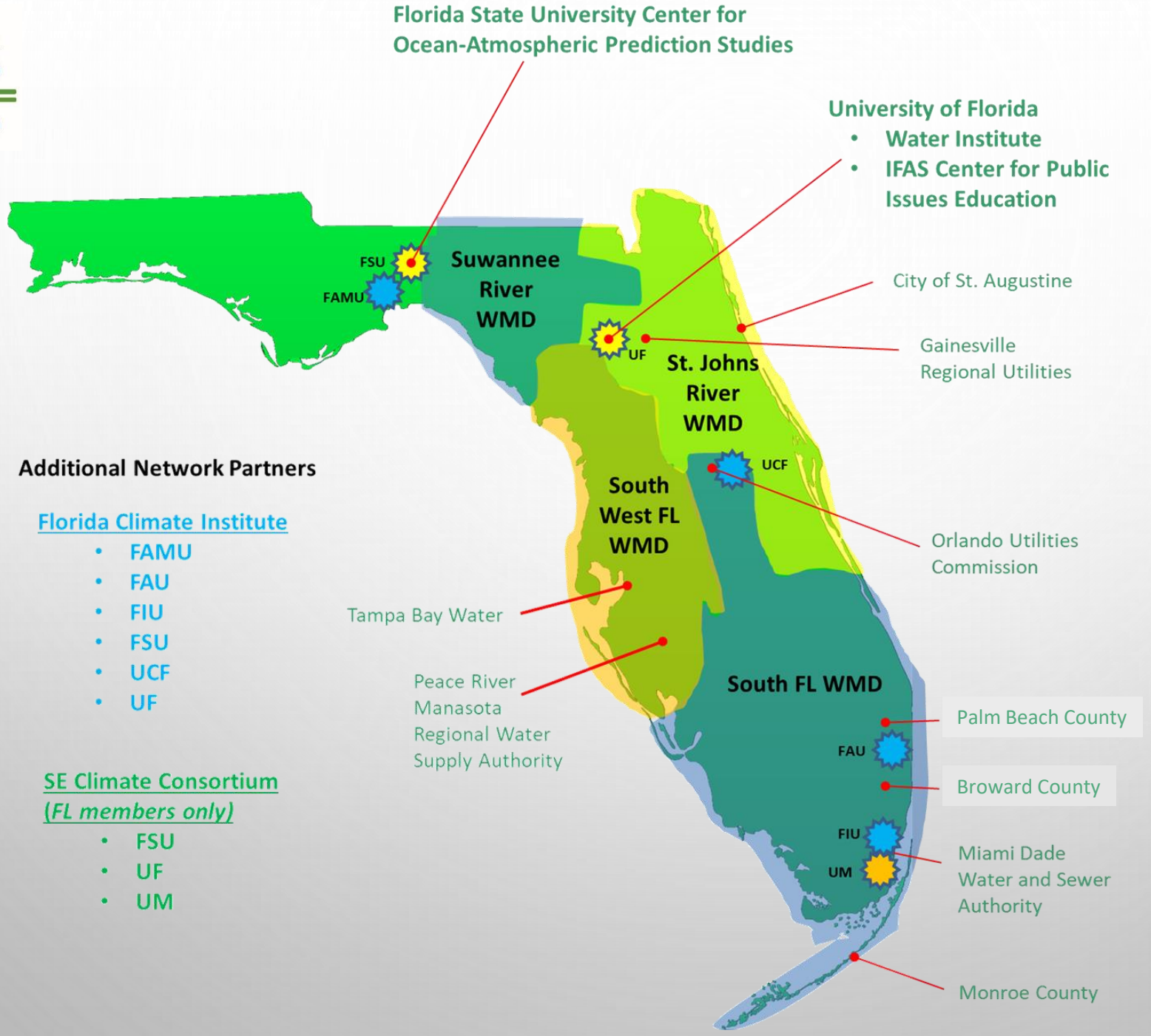
A climate-resilient water sector in Florida.

Our Mission:

Foster partnerships to co-develop and share actionable climate science, data and decision support that promotes sustainability in the water sector through applied research, learning and outreach.

FLORIDA Water & Climate Alliance

Members and Supporters of the Florida Water & Climate Alliance



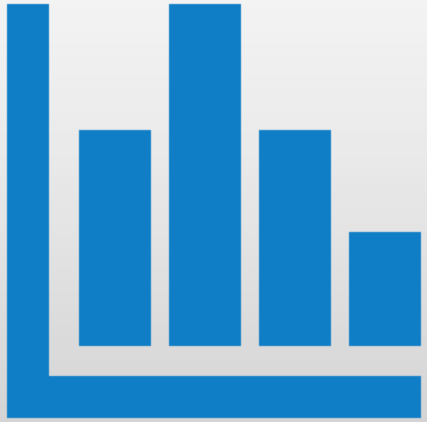
Additional Network Partners

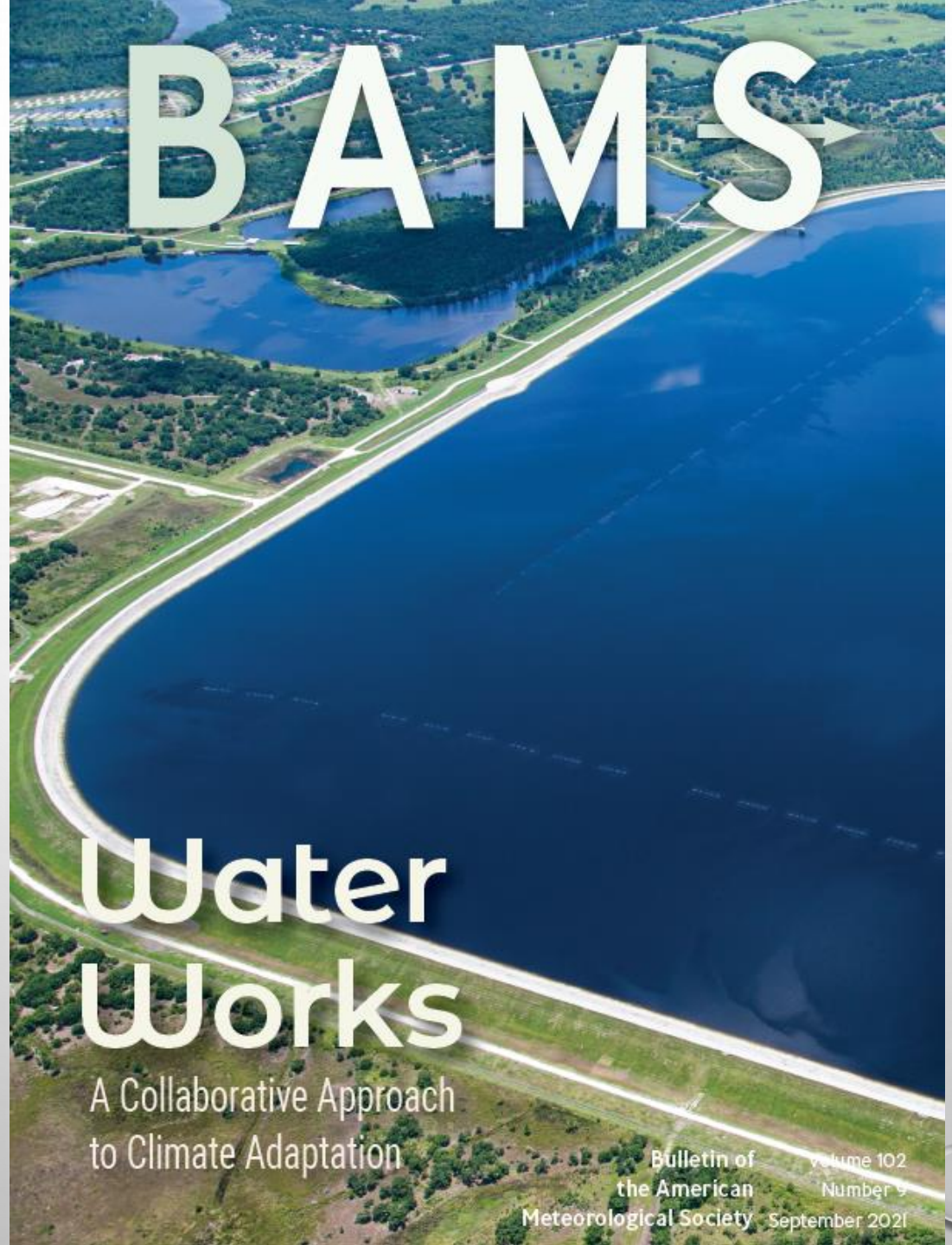
Florida Climate Institute
- FAMU
- FAU
- FIU
- FSU
- UCF
- UF

SE Climate Consortium
(FL members only)
- FSU
- UF
- UM

SOUTHEAST Climate Adaptation Science Center

POLL TIME!



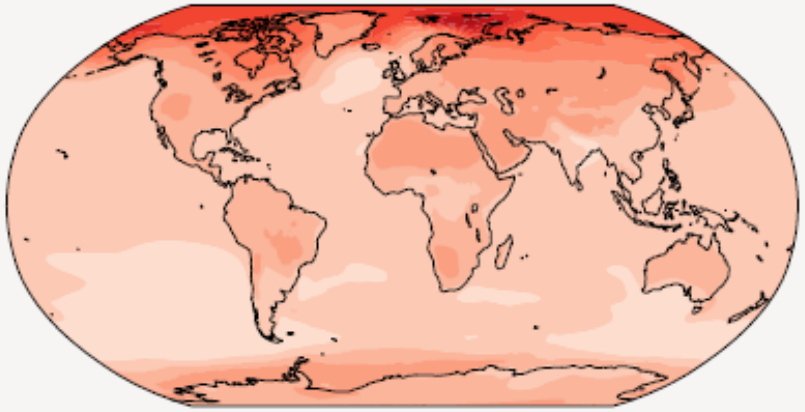

BAMS
Water Works
A Collaborative Approach to Climate Adaptation
Bulletin of the American Meteorological Society
Volume 102
Number 9
September 2021

INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE
SIXTH ASSESSMENT REPORT

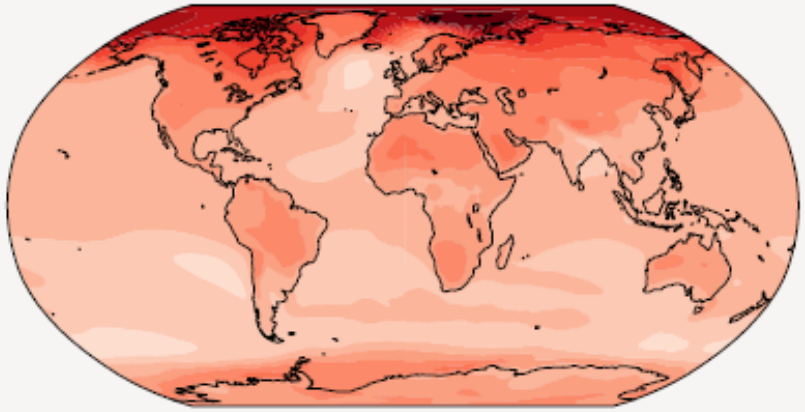
b) Annual mean temperature change (°C) relative to 1850-1900

Across warming levels, land areas warm more than oceans, and the Arctic and Antarctica warm more than the tropics.

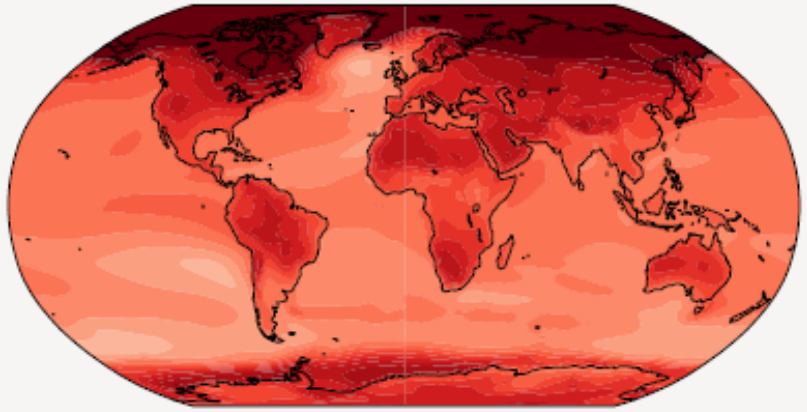
Simulated change at **1.5 °C** global warming

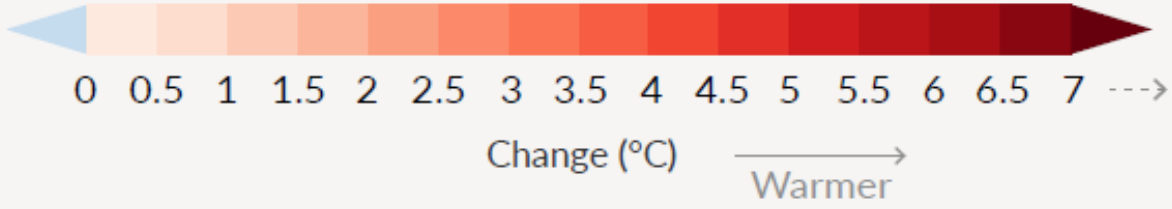


Simulated change at **2 °C** global warming



Simulated change at **4 °C** global warming

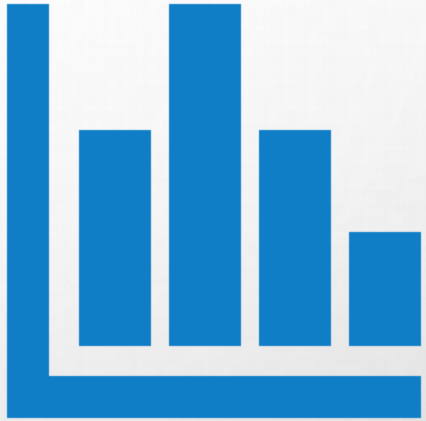




A.3. *"Human-induced climate change is already affecting many weather and climate extremes in every region across the globe. Evidence of observed changes in extremes such as heatwaves, heavy precipitation, droughts, and tropical cyclones, and, in particular, their attribution to human influence, has strengthened since AR5."* ***(SPM-10)***

ENA = Eastern North America

CLIMATE QUIZ



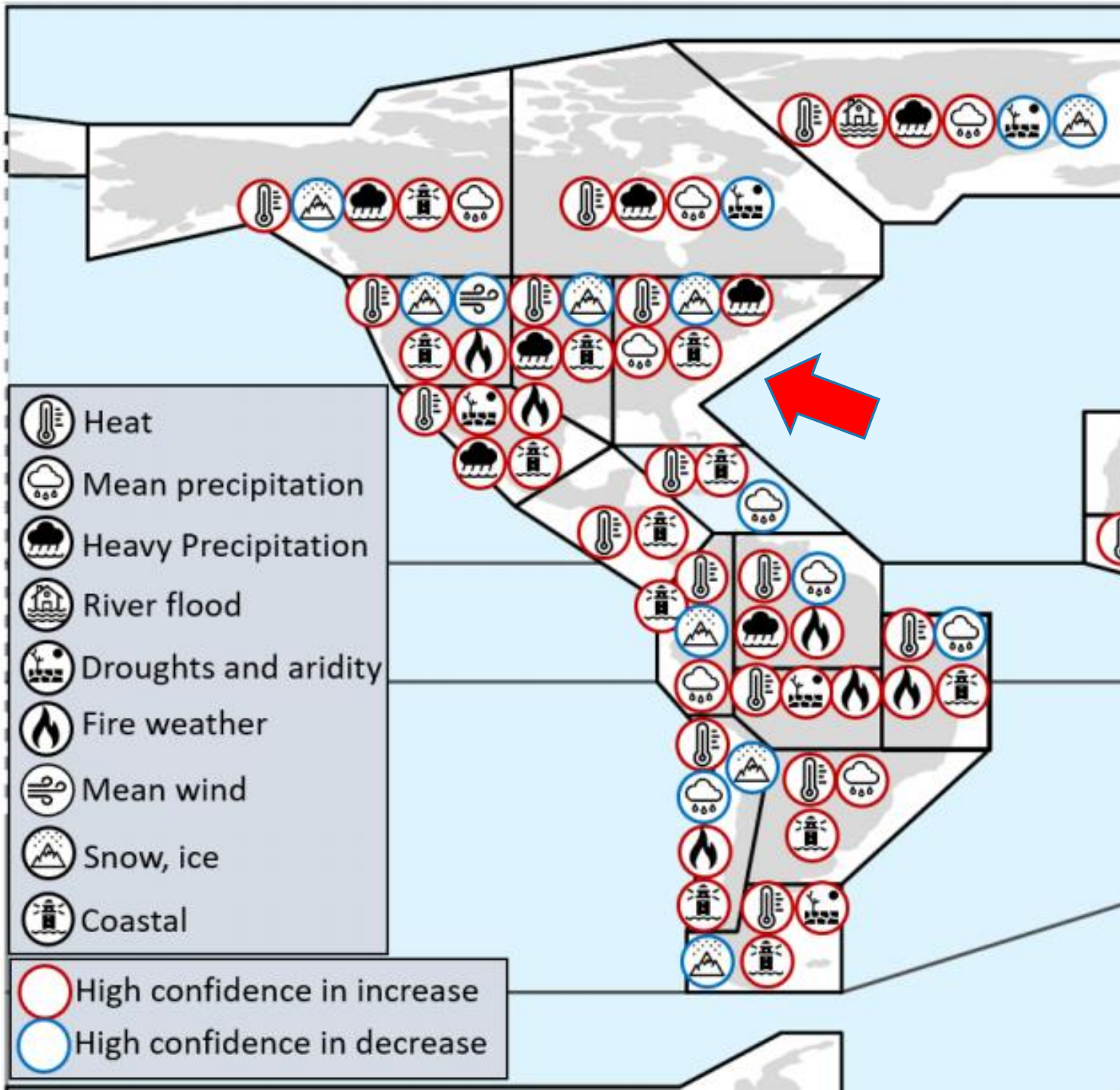
CID PROJECT

Climate-impact drivers

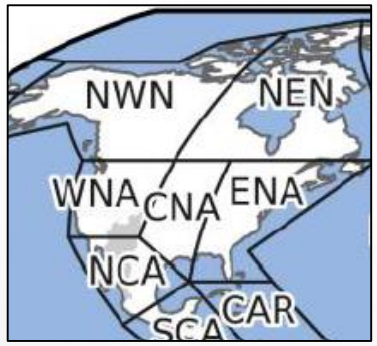
Changes by 2050 in ENA

- Heat increase
- Heavy precipitation increase
- Mean precipitation increase
- Coastal increase
- Snow, ice decrease

Fig 12.11

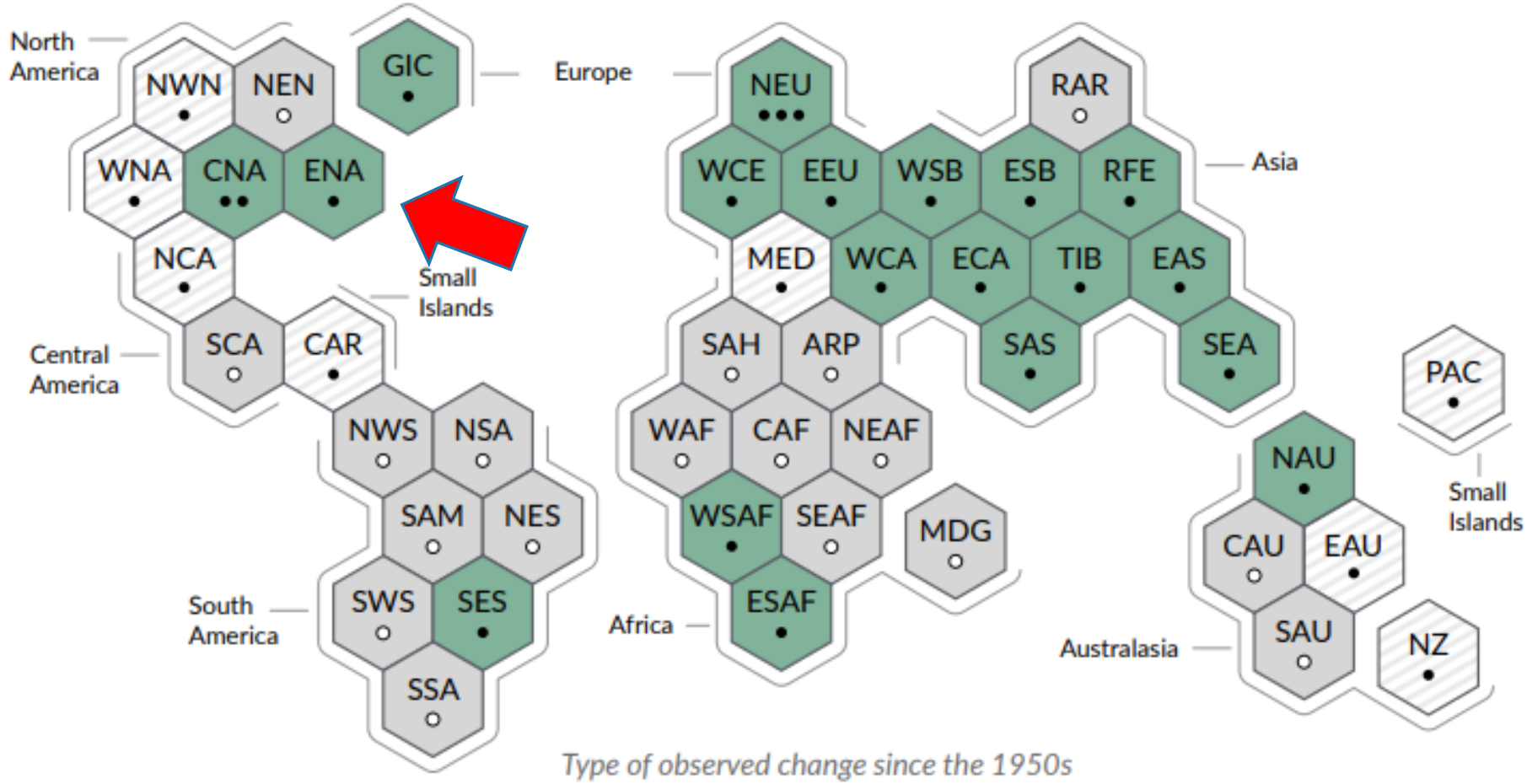


Heavy Precipitation



ENA = Eastern North America

b) Synthesis of assessment of observed change in **heavy precipitation** and confidence in human contribution to the observed changes in the world's regions



Type of observed change
in heavy precipitation

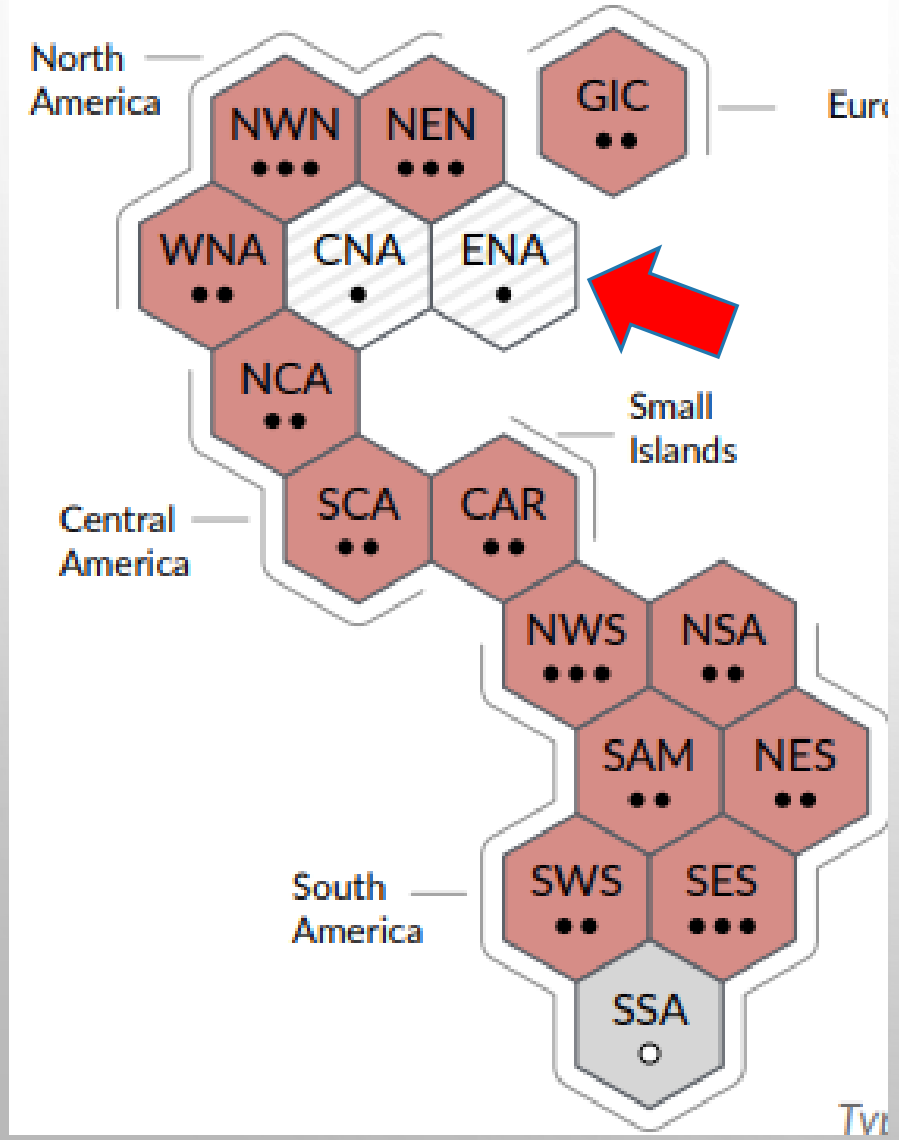
- Increase (19)
- Decrease (0)
- Low agreement in the type of change (8)
- Limited data and/or literature (18)

Confidence in human contribution
to the observed change

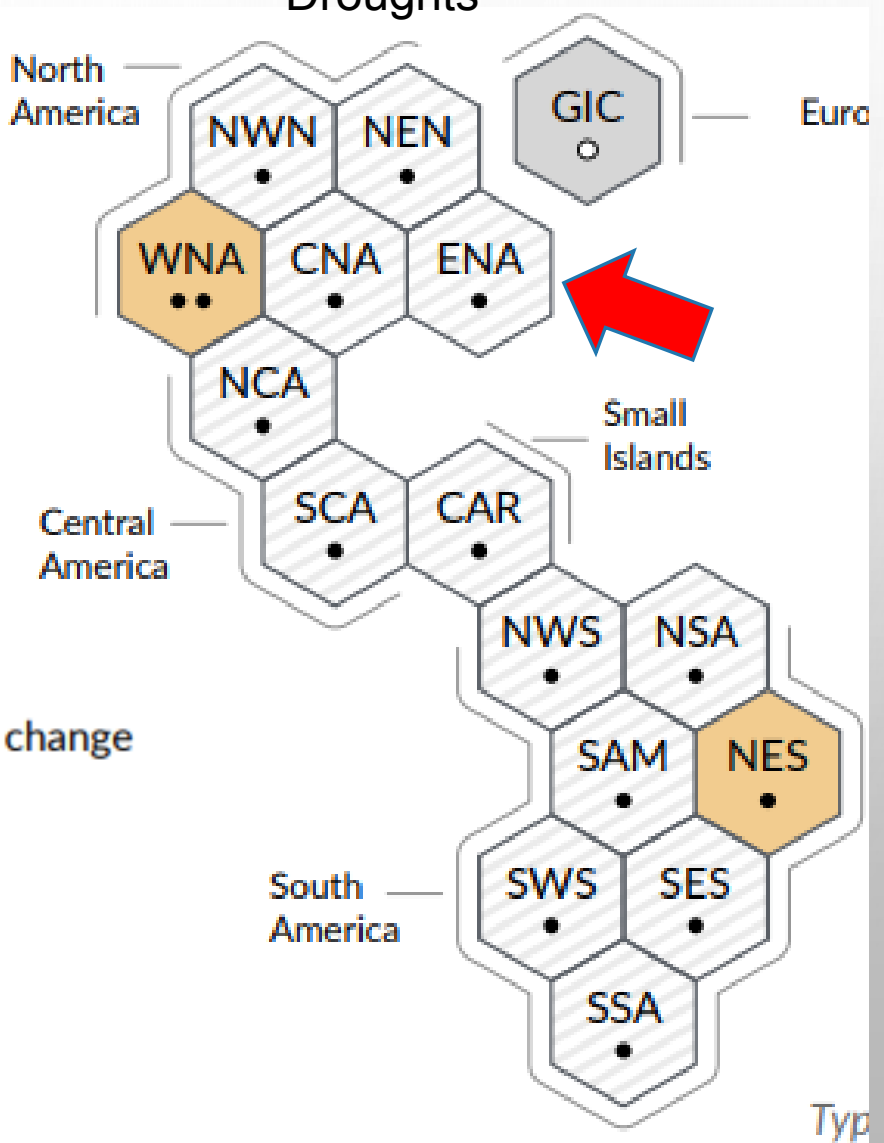
- ●●● High
- ●● Medium
- ● Low due to limited agreement
- ○ Low due to limited evidence

Heat Waves and Drought

Heat Waves



Droughts



Low agreement in the type of change

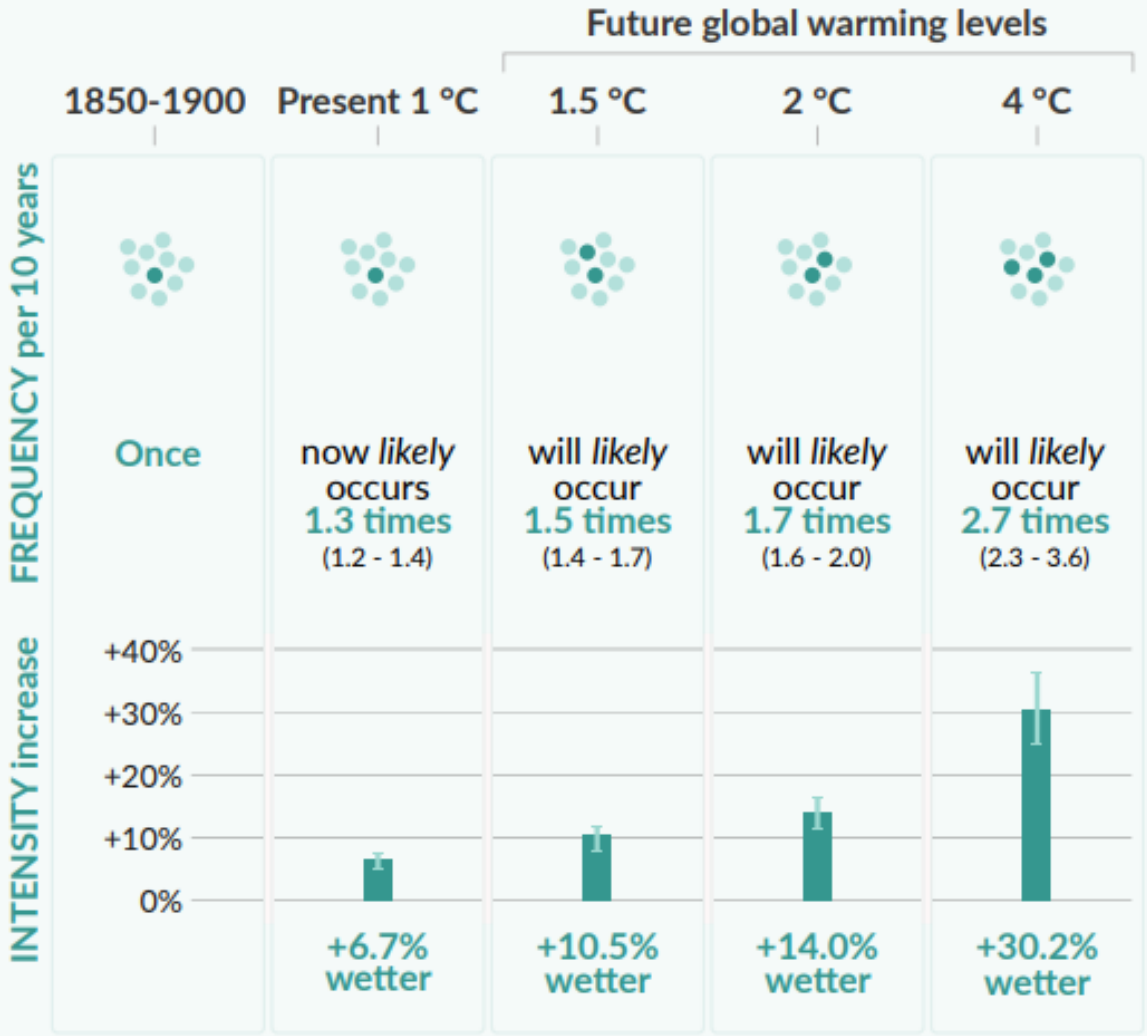
Confidence in human contribution
to the observed change

- ●●● High
- ●● Medium
- ● Low due to limited agreement
- ○ Low due to limited evidence

Heavy precipitation over land

10-year event

Frequency and increase in intensity of heavy 1-day precipitation event that occurred **once in 10 years** on average **in a climate without human influence**



Agricultural & ecological droughts in drying regions

10-year event

Frequency and increase in intensity of an agricultural and ecological drought event that occurred **once in 10 years** on average **across drying regions in a climate without human influence**