



Climate Program Office Review

May 24-26, 2022

Pre-Recorded Presentation

Supporting Review Activity Area

#4: Integrated Information Systems, Risk Areas Initiative



CPO Risk Areas Initiative Overview

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Innovation, Integration and Transition

Overview



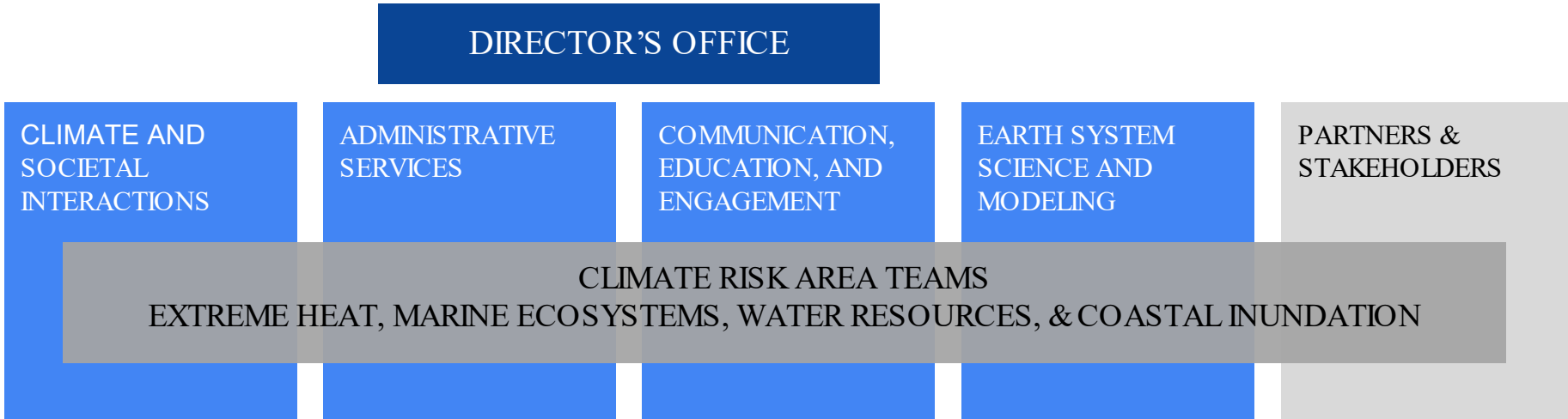
- Purpose of the Briefing:
 - Provide an overview of CPO's Risk Areas Initiative
- Context:
 - A key example of how CPO is pursuing integrated, interdisciplinary approaches to respond to societally-relevant needs for climate information.

- Motivation:
 - Climate science must use collaborative, interdisciplinary approaches in order to deliver the types of information decision makers require to make sound adaptation investments that reduce risk and improve resilience.
- Objectives:
 - Produce usable and actionable science to inform, support, and otherwise improve climate risk reduction and resilience;
 - Leverage CPO's portfolio in areas that are our strengths;
 - Foster more cohesion and synergy across CPO divisions and programs, especially between foundational science and societal interactions;
 - Simplify communication about CPO's goals in a more topical (rather than program-based) manner, emphasizing user-driven research and outcomes; and
 - Leverage and enhance partnerships inside & outside of NOAA.


We consolidated focus in 4 climate risk areas...

INITIAL RISK AREAS	RISKS ADDRESSED	SECTORS ADDRESSED AT REGIONAL & NAT'L SCALES	OAR GOALS & KEY LO PARTNERS
Extreme Heat	Temperature, Wildfire, Air Quality & Atmospheric Composition	Human Health, Built Environments, Transportation, Agriculture, Forestry, Land-Use Management, & Energy	Make Forecasts Better; Drive Innovative Science (NWS)
Marine Ecosystems	Ocean Temperature, Composition	Fisheries, Tourism, Coastal Management, & Transportation	Detect Changes in Ocean & Atmosphere; Explore Marine Environment; and Drive innovative science (NOS, NMFS)
Coastal Inundation	Precipitation, Storms Sea Level Rise, & Coastal Inundation	Coastal Management, Built Environments/Transportation, Emergency & Disaster Management, Water Resource Management, & Reinsurance	Detect Changes in Ocean & Atmosphere; Make Forecasts Better; & Drive Innovative Science (NOS)
Water Resources	Temperature, Precipitation, Drought, Wildfire, & Inland flooding	Water Resource Management, Emergency & Disaster Management, & Human Health	Detect Changes in Ocean & Atmosphere; Make Forecasts Better; & Drive Innovative Science (NWS)

Climate Risk Areas across CPO Divisions and with Partners




Climate Risk Areas Team Projects Overview



WATER RESOURCES

Strengthening the Resilience of Vulnerable Communities to Flooding in the Great Lakes Region




COASTAL INUNDATION

Towards a Visionary Agenda: Improving the Connection between CPO and NOAA's Coastal Inundation Efforts



EXTREME HEAT

Urban Climate Science for Heat-Healthy Cities
Cities as Urban Climate & Health Laboratories



MARINE ECOSYSTEMS

Science for Sanctuaries
Reinforce and Expand the Application of Climate Science in National Marine Sanctuaries Activities to Support NOAA's Stewardship Mission

Marine Ecosystem Risk Team (MERT) - Background



- **NOAA Vision:** NOAA's mission of science, service, and stewardship is directed to a vision of the future where societies and their ecosystems are healthy and resilient in the face of sudden or prolonged change.
- **MERT Goal:** Reinforce and expand the application of climate science in Office of National Marine Sanctuary (ONMS) activities to support NOAA's Stewardship mission, for resilient coasts, and the communities they serve.
- **Why Important:** [Climate is a major stressor to marine ecosystems and services](#). ONMS managers need information on climate & impacts on dependent communities to support their management and planning.
- **Why Now:** NOAA is making large investments in modeling infrastructure for ONMS management.
- **Budget:** New \$ Request; *Partner contributions*
FY20 = \$0.09 M; *Lvg \$0.09 M (ONMS, CPO/Assessments)*
FY21 = \$0.09 M; *Lvg \$0.09 M (ONMS, CPO/Assessments)*
FY22-24 = \$1.5 M; *Lvg \$4.09 M (OAR: CPO/ESSM and CSI Division, Ocean Acidification Program; NOS/NCCOS, IOOS, and ONMS)*



Team Members: Virginia Selz (lead, ESSM/COM Program Manager); Daniel Barrie (lead 2019-2020, ESSM/MAPP Program Manager); Zac Cannizzo (CPO-ONMS Visiting Climate Science/Climate Coordinator); David Herring (CEE Chief); Jennifer Dopkowski (CSI/CAFA Program Manager).

2021 Knauss Fellows: Noura Randle, Shae Green

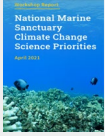
Former Members: Adrienne Antoine (2019-2020, CSI/CAFA Program Manager), Alison Stevens (2019-2020, CEE Communications Specialist), Todd Christensen (2019-2020, Directors Office, Program Analyst)

Resources: Watch first-ever ONMS Climate Video (Insert Link). See [MERT Briefing Sheet](#).

Marine Ecosystem Risk Team (MERT) - Accomplishments



MERT builds on the strengths of CPO programs, facilitating collaborative, cross-disciplinary research that connects NOAA Research and the external research community to address ONMS needs.

Action	FY20 - FY21	FY22 - FY24
Build understanding of ONMS manager needs	Convened 5 focus group discussions around regional and topical areas to hear from Sanctuary managers on obstacles to using climate information	Convening focus group discussion with Sanctuaries, NERRS, and NOAA offices to better understand needs and gaps in advancing Blue Carbon science
Increase <u>engagement</u> , <u>outreach</u> , <u>education</u> , and <u>training</u>	Held 7 climate-related learning exchanges for Sanctuaries, Facilitated week-long NESDIS/CoastWatch training for Sanctuaries; Led OAR's Session at Capitol Hill Ocean Week	Proposed Session at IMPAC5, <i>Potential</i> for joint NOS-OAR fellowship program
Develop and expand available <u>tools</u> and <u>data</u>	Supported National Marine Ecosystem Status Indicators , Facilitated ONMS inclusion in NMFS-OAR initiatives (Climate-Fisheries Initiative)	Supported National Marine Ecosystem Status Indicators , Facilitate ONMS inclusion in observing asset placement
Grow and translate climate information for place-based LMR management	Held Climate Science for Sanctuaries Workshop 	2 Competitive Joint Funding Opportunities: <ul style="list-style-type: none"> • 1 CPO-led; 1 NOS-led

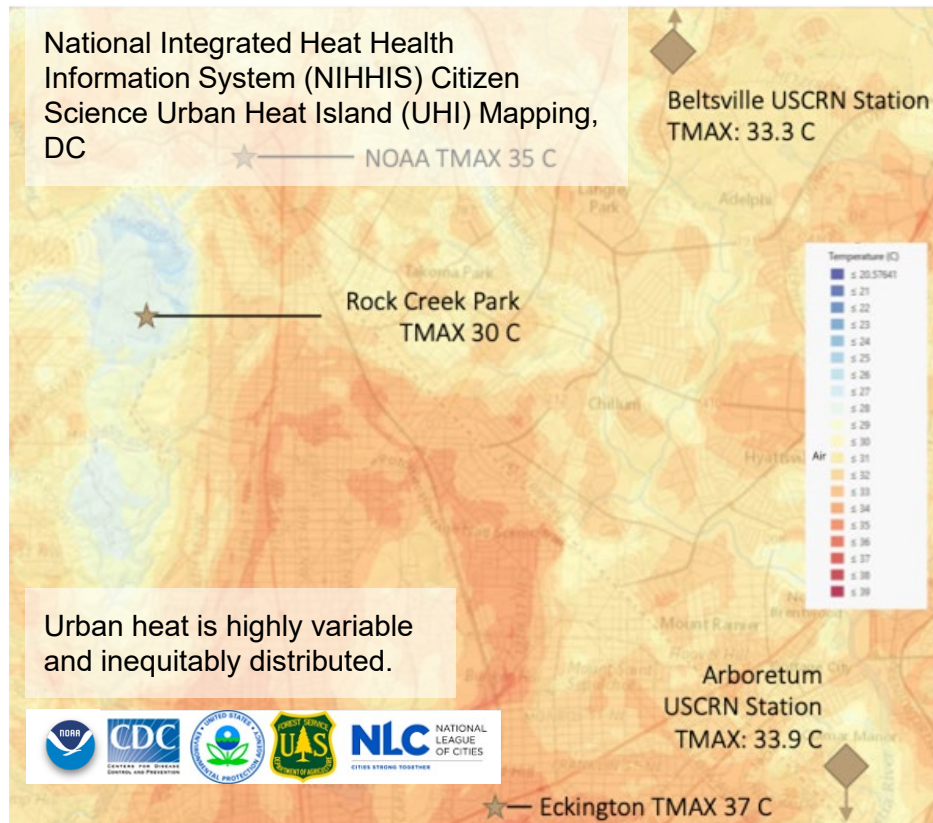
MERT demonstrates CPO's role as a large, dynamic, and broad organization that can help focus missions and be a binding agent for offices and programs across NOAA working on Climate.

Early indicators of success and mutual partner benefits:


- Partnerships between ONMS and other NOAA offices/programs that advance workshop recommendations
- Number of other NOAA offices/programs involved/invested
- ONMS-led Climate Plan; America the Beautiful; Formulation of formal ONMS Climate Team
- ONMS current/planned investments to increase climate capacity in staffing, observations, outreach and education (e.g. Federal Climate Coordinator position)

- **NOAA Vision:** “Resilient human communities and economies [that] maintain or improve their health and vitality over time by anticipating, absorbing, diffusing and adapting to change.”
- **EHRT Goal:** Improve evidence, tools, data, and resources to support municipal decision-making for healthy communities in a changing climate.
- **Why Important:** 89% of Americans are projected to live in cities by 2050 (UNDP), yet most of our cities currently exacerbate environmental health issues such as urban heat islands and poor air quality. Chief Resilience/Heat Officers, Emergency Managers, and others request more Federal support in evolving and growing their cities healthfully and equitably in a changing climate.
- **Budget:** FY21 = \$0.58 M; Lvg \$0.47 M
Request: FY22 = \$0.90 M; Lvg \$1.68 M
FY23-27 = \$6.50 M Lvg

TBD



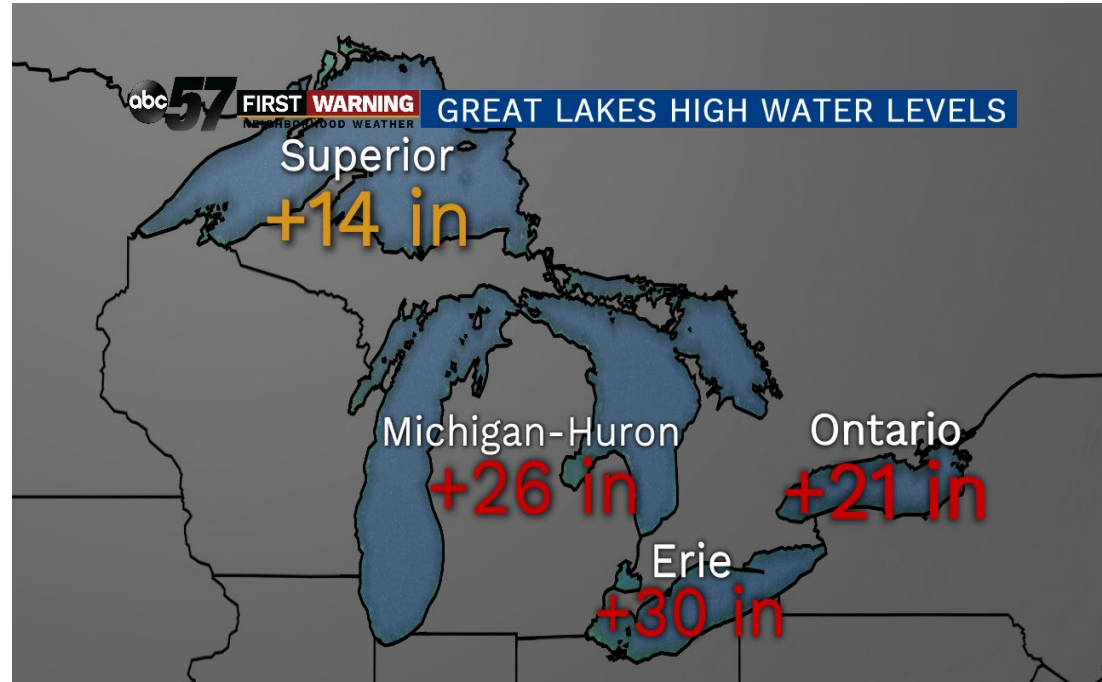
The EHRT Project follows an Integrated Information System Approach, leveraging NIHHIS throughout.

Action	FY20 - FY21	FY22 - FY23
Build understanding of decision-maker needs through <u>interviews</u> , <u>surveys</u> , <u>workshops</u> , etc...	AGCI Workshop, interviews with UHI CoP practitioners, webinar surveys, CISA planner interviews 	Urban heat sessions at IAUC, NIHHIS National. Ongoing interviews and potential RFI
Increase urban climate and health <u>engagement</u> , <u>outreach</u> , <u>education</u> , and <u>training</u> through CoP	NIHHIS cohort calls, UHI CoP Webinar Series following Climate.gov Steps to Resilience, GHHIN & NASA training	NASA ARSET training on SoVIs, potential challenge / hackathon, Interagency Heat BCA harmonization
Develop and expand available <u>tools</u> and <u>data</u> for decision-making	UHI maps and data + NOAA VizLab visualizations and story maps	GFDL urban downscaling postdoc, CI pre-field task to understand and integrate urban obs landscape
Grow and translate the <u>evidence</u> base through <u>community-based research</u>	FY21 Competition funded 5 <u>community heat observing and mitigation</u> planning projects at \$1.25M over 2 years	Continuations and a new FY23 competition to develop <u>community climate labs</u> , integrating many obs, AEROMMA collaboration potential

Water Resources Risk Team (WaRT) - Background



- **NOAA Weather, Water, Climate Board Common Goal.** To transform weather, water, and climate information service delivery to better meet and support evolving societal needs... NOAA and its partners will build on existing successful programs to foster an integrated approach to water information systems and services.
- **WaRT Goal:** Bolster Great Lakes water utility capacity to address climate-related hazards and social inequity through a portfolio of activities.
- **Why Important:** There are over 12,000 water utilities in the region, each serving populations from 10,000 to 1 million +; Over \$175 billion will be required through 2030 to maintain and upgrade water, wastewater and stormwater infrastructure. Twenty percent of the world's surface liquid fresh water is held in the Great Lakes and provides drinking water to 40 million US and Canadian citizens. From 1901 -2015 there has been a 10% increase in the region's precipitation, more than double the rate for the nation.




Budget: FY20 = \$10K; leveraged \$265K
FY21 = \$221K; leveraged \$35K
FY22 = \$160K;

Water Risk Team (WaRT) - Examples of Accomplishments



The Water Risk Team relies on its team member's interdisciplinary training along with a large number of partners (from stakeholders to NOAA staff) to address regional climate resilience through a portfolio of activities.

Activity Goals	Accomplishments	Partners
Characterize Needs.	2 workshops w/ reports, 3 webinars, 4 webinar/listening sessions & 1 academy 	NOS/OCM, NESDIS/NCEI, Water Research Fdn (WRF), EPA, GLISA, Sea Grant, UMN, Milwaukee Metro Sewage District, etc.
Design Actionable Information	Create companion guide to Am. Plan. Assoc. "Community GLR Planning Guide" to include flooding and empower vulnerable comms. to create resilience	American Planning Association
Improve Application	Research Grant - Co-prod Climate Knowledge and Sustained Engagement in the GL in Support of Stormwater Mngmt Adaptation - U MI '22	NOAA, U MI, Huron River Watershed Council, City of Ann Arbor, GLISA
Generate Next Generation Educational Opportunities	1 Lapenta intern, 1 research assistant (with D Gronewold U MI; 1 Sea Grant award with student involvement	National Sea Grant, U MI, Minnesota, Illinois-Indiana, Pennsylvania Sea Grants, Purdue, etc.

Coastal Inundation Risk Team (CIRT) - Background



- **NOAA Vision:** NOAA's mission of science, service, and stewardship is directed to a vision of the future where societies and their ecosystems are healthy and resilient in the face of sudden or prolonged change.
- **CIRT Goal:** Targeted investments in support of NOAA's larger mission to protect coastal communities from flooding and inundation.
- **Why Important:** The US coastal zone is home to a large portion of the US population and a huge economic driver for the country.
- **Why Now:** There is concern about how coastal inundation has changed over time and what future risk looks like. CIRT is focused on coastal inundation from multiple sources of flooding in the context of climate variability and change. Meaning, how several causes of flooding, in addition to a changing climate and sea level, impacts coastal communities.
- **Budget:** New \$ Requests;
 - FY20 = \$0
 - FY21 = \$70k; Leveraged ~\$12K (from CEE and GOMO)
 - FY22-FY23= Requested: \$2.2M/year; Approved: TBD



Team Members: Sandy Lucas (ESSM/CVP Program Manager), Dan Barrie (ESSM/MAPP Program Manager), LuAnn Dahlman (CEE Science Writer and Editor), Meredith Muth (NIDIS Regional Drought Information Coordinator) and Bhaskar Subramanian (CSI/AdSci).
External *ad hoc* member: Emily Smith (GOMO)

Engagement with: National Sea Grant Office, National Ocean Service, National Weather Service, NOAA Laboratories, NOAA Water Team

2021 Knauss Fellows: Shae Green (CPO/CEE), Alma Vazquez-Lule (GOMO)

Former Members: Adrienne Antoine (Lead, 2019-2020, CSI/COCA Program Manager)

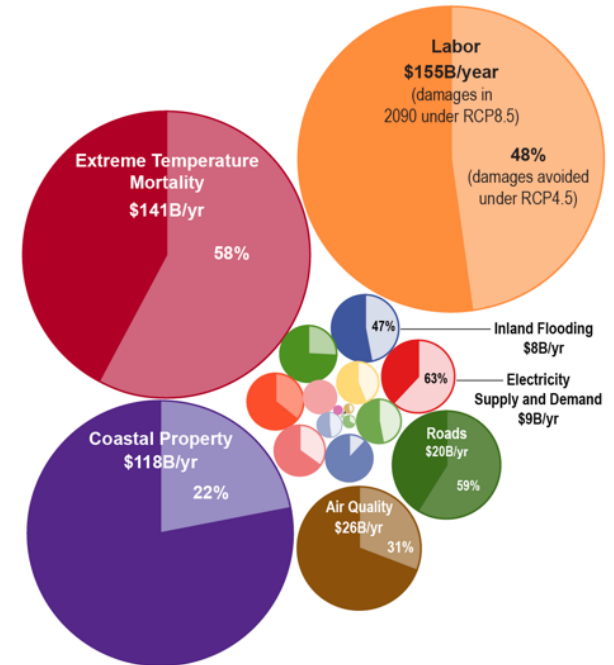
Coastal Inundation Risk Team (CIRT) - Accomplishments



CIRT - Build a climate-focused cross-CPO research agenda in the context of other cross-NOAA strategies and activities around coastal inundation in order to meet the demand for more on-the-ground engagement and capacity building for coastal decision makers.

Action	FY20 - FY21	FY22 - FY24+
Coordinate and Highlight CPO Investments	Story Map Article Coastal Inundation: Research and Engagement Highlights from the NOAA Climate Program Office (Jack Barker, 2020 Bill Lapenta Intern)	Coordinate program investments across CPO
Increase Capacity-Building Partnerships	Funded \$45K for project: "Convene Citizen/Community Scientists to Advance Mapping of Coastal Inundation" at WHOI Sea Grant	Continue the engagement of: citizen science pilot projects to help communities visualize impacts from inundation; and engage coastal coordinators about tools and information on sea level rise in the Gulf Coast
Develop CPO Research Agenda to Facilitate NOAA's success	Convene discussions across CPO's ESSM and CSI Programs (CVP, MAPP, AdSci)	Future workshop is planned; funding is secured (\$25K)
Participate in the Alignment of Research Across NOAA* (*NOS-CPO co-led with CIRT members support)	CIRT Members engaged in the development of the Coastal Inundation at Climate Timescales White Paper (in final review, public release will follow)	Anticipated: 1 or more Competitive Funding Opportunities

- Climate risks and impacts are only going to increase as is the need for holistic information to increase the efficacy of adaptation and improve resilience
- CPO will continue to pursue teaming and other cross-disciplinary collaborative approaches to develop and enable the production of this information with partners



The total area of each circle represents the projected annual economic damages under a higher warming scenario (RCP8.5) in 2090 relative to a no-change scenario (NCA4).



Thank you!