Earth & Space Project-Based Professional Learning Community





April Concurrent Session C1

Welcome!

As we wait to get started with today's online session:

- Wave! Please turn on your camera if you can
- **Rename your Zoom!** Please rename your Zoom window with your name and organization
- **Questions?** Feel free to type any questions you have into the chat
- **Recording?** Portions of this meeting will be recorded

Earth & Space Project-Based Professional Learning Community





Approachable Ideas to Address Extreme Weather

- Rebekah Domayer, Iowa Children's Museum, Coralville, IA
- Meghan Schiedel, Terry Lee Wells Nevada Discovery Museum, Reno, NV
- Stacey Forsyth, CU Science Discovery, Boulder, CO
- Sara Benson, Museum of Science, Boston, Massachusetts

IA, Coralville The Iowa Children's Museum

NAME(S): Rebekah Domayer, Education Program Manager

PROJECT DESCRIPTION: Our project is in collaboration with the Iowa City Community School District (ICCSD) and the State Hygienic Laboratory of Iowa in after-school programming to underserved elementary schools. This program will target grades kindergarten through 3rd. The after-school curriculum improvement will be on climate change and its effects on Earth and Iowa.





THE IOWA CHILDREN'S MUSEUM imagine • create • discover • explore



Above and Below Iowa Water: Climate Change Curriculum Unit for the Iowa Children's Museum







21st Century Afterschool Program at the Iowa City Community School District

Who we serve:

- Kindergarten through 3rd graders in four different schools within the district.
- Determined by the district, these schools are considered to have the most underserved and underrepresented populations compared to the rest of the elementary schools in the district.



IOWA CITY COMMUNITY SCHOOL DISTRICT

Child-Centered : Future-Focused

Our Plan



Expand our curriculum unit to include four activities that support the learning goal of local climate change in lowa by partnering with the State Hygienic Laboratory at the University of lowa (SHL). But how to we offer this virtually to our partnering sites?

- In one activity, students will learn about rivers around the state and what lives in a river by reading "Over and Under a Pond." Students will be expected to create a river scene that demonstrates and depicts what lives above and below a river. This activity is supported by the SHL by providing specimens they have collected in the rivers.
- In another activity, students will experience firsthand that climate change can have a direct impact on the environment but we can make solutions for that. Students will experiment with the use of plants to help eliminate erosion from occurring on shore lines of bodies of water during intense rain events and flooding.
- Allow for youth voice to be centered in these activities, asking throughout our virtual interaction about their thoughts on climate change!
- How do we make it relevant, especially since some of these students have never been to a river or have experienced a flood during their lives?

Our mascot, Pete the turtle!



ICM ACTIVITY #1

Theme: Above and Below Iowa Water (Engineering 101)

What You Need:

- Water scene template
- Markers
- Glue sticks
- Scissors
- Printed animals/plants

What You Learn:

Students will learn about what animals and plants live above and below water and that it is important to take care of our water.

What You Do:

- 1. Set up materials in a buffet-style set up.
- 2. Read the book "Over and Under the Pond" by Kate Messner to the students.
- 3. Students will use the water scene templates and add both animal and plant life above and below the water.
- 4. During this time, prompt the students to think about the relationships of the plants and animals. What if there was a factory or housing complex built right next to their water? How would that effect what lives near and under the water?
- 5. Climate change is due to human interaction with the environment. Climate change can be used as an umbrella term that covers a lot of things, but we are focusing solely on the effects of civic development near natural waterways which can lead to kill events by simply disrupting the environment with introducing pollution (noise and chemical) and other kinds of non-native wildlife.
- 6. Have students share their work with the rest of the group if time allows.

CHILDRens

FRAME WORKS



Protection Why does it matter? What's at stake

The story you're telling: We must protect people and places from being harmed by the issues facing our environment.

Strategically redirects thinking away from patterns such as: - Bottomless Grocery Store - Change Is Natural/Fatalism - Individualism - Nature Will Fix Itself - Nature Works in Cycles - Solution = Recycling Protection

Concepts and ideas included in this frame element:

- · We must protect and preserve the habitats and ecosystems we depend on.
- Showing concern for the welfare of others is the right thing to do.
- Stepping in to ensure the people's safety and wellbeing.
- · Sense of agency: protection means actively eliminating or reducing risks.
- Sense of urgency: let's be vigilant in shielding and safeguarding habitats and people from harm.

















We are still in the middle of the project but what we have learned so far.....



Together, we can make a turtle-y big change!



Rebekah Domayer Education Program Manager rdomayer@theicm.org 319-625-6255 ext 213



NV, Reno The Terry Lee Wells Nevada Discovery Mu



PROJECT DESCRIPTION: Creating a visitor experience (signage, exhibits, activities, and guests) in our invention gallery, Spark!Lab, to show the connection between global climate change and Northern Nevada's evolving fire season.



THE TERRY LEE WELLS NEVADA DISCOVERY MUSEUM

Located in Downtown Reno, NV We are an all-ages hands-on science center In our 10 years we have had over 1.2 million visitors



COMMUNICATING CLIMATE CHANGE TO DIVERSE AUDIENCES



What is Fire Season?!?

And how do we teach it without scaring the crap out of our visitors?

Why is this topic important to us?

- Poor air quality
- Record land loss
- Straining of community resources
- Project: Camp at The Discovery
- Our role within our community



Managing internal project management.

- Set and manage expectations
- Assigning and understanding roles
- Ask questions
- Conflict happens and that's ok



How have we approached such a serious topic?

Games...obviously



Group based firefighting game



Shape based puzzle game

TRUST YOUR FLOOR STAFF! (TEAM BASED INQUIRY)

Who sees your visitors the most? Who interacts with your visitors the most? Where do most of the actual good ideas come from? Who is going to test these ideas out for you?



Working with community experts and shareholders

Contributing community partners

- University of Nevada, Reno
 - Spencer Eusden
 - Cienna Ajir
- Bureau of Land Management
- Jennifer Diamond
- City of Reno Fire Dept
- US Park Service



Waterfall Fire 2004

Identifying community shareholders and experts

- Our organization's role in the community
- Shareholders live who in your community
- Opportunity to signal boost agencies
- Sage on the stage vs guide on the side.





CO, Boulder University of Colorado Boulder



Science Discovery

UNIVERSITY OF COLORADO BOULDER

Name: Stacey Forsyth

Building Community Resilience in the Aftermath of Wildfire

Goal: Engage youth and their families in climate science research and environmental restoration efforts at a local site recently impacted by wildfire.

Key Partners: Cal-Wood Education Center Nature Kids Lafayette





Above. Intact and burned areas of CalWood's forest. Left. Drone image of Cal-Wood forest following the 2020 Cal-Wood wildfire.

Fire Ecology Field Course







Community Engagement Event (Fall 2021)



Marshall Fire (Dec 30, 2021)







Focus on the Community's Needs



- Consider impacts to mental health & well-being
- Provide opportunities to reflect, grieve, express hopes, concerns, etc.
- Provide opportunities to engage in environmental action

New Partnerships & Plans







MA, Boston Museum of Science, Boston

NAME(S): Sara Benson

PROJECT DESCRIPTION: This project will be to develop a locally focused deliberative forum around climate change and extreme heat in Greater Boston. We will work with community groups and civic partners to develop local materials about extreme heat using real life stories and stakeholders, community science collected data, and a strong call to action.





Museum of Science.



Climate Hazard Resilience Forum: Extreme Heat

Plan A

- Introduction to the topic
- Perspectives
- Strategies
- Discuss and Decide
- Share out

Jeremy works on the public health department's emergency preparedness team. His primary concern is keeping people safe during natural disasters. During extreme heat events, Jeremy's team works to keep people in cool areas, particularly those who lack access to air conditioning or who are more susceptible to the impacts of heat. In the summer, (#3 rt partnei COOL THE CITY e supplies to shelters. and community Plan B

Public Health Official

install shade structures along miles of husy sidewalks and in parks. With a 15 percent increase the number of city trees and new shade structures neighborhoods, the city will fund a sun. These shade programs will compliment a gran program for cool roofs that use plants or light-colore and busin ards. A separate grant program ives include rebates for new construction and renovation of existing residential and commercia educe the urban heat island effe program will provide homeowners

people's health and well-being during heat waves by keeping them cool and prepared. programs, limits on outdoor activities, and increasing access to air conditioning.

Resilience

ECONOMIC ***

ECONOMIC **** More resilient electricity and

transportation infrastructure is critical

Trees cost money to plant, maintain, and water but provide other economic benefits. like increasing real estate values. Strategies to modify roofs and other hard surfaces range from inexpensive coatings to green roofs that require substantial construction and expense. Shade structures also vary in cost depending on size and materials used.

PROTECT INFRASTRUCTURE

COOL THE CITY

Cool the City involves various actions to

reduce outdoor temperatures or create

shade, such as planting trees and other

vegetation to provide shade and cooling

and building shade structures.

changing hard surfaces to be more reflective,

Protect Infrastructure involves solutions that to economic activity. However, protecting and upgrading electricity limit the impact of extreme heat on roads. grids, roads, and other infrastructure electricity grids, and buildings. These solutions involves expensive construction that include replacing transformers and power can be very disruptive to residents. lines; building power plants and more energy efficient buildings; repairing bridges, roads, Building energy efficient buildings can require extensive construction but and runways; and protecting infrastructure saves money in the long run. from heat-related threats like wildfires.

ENSURE SAFETY

Ensure Safety involves solutions that protect These solutions include cooling centers, heat warning systems, community wellness check

ECONOMIC *** Running cooling centers and wellness check programs requires substantial resources and many people, though volunteers and donations can reduce costs. Reducing heat-related illness can prevent expensive hospital visits. Air conditioning and utility assistance programs can be guite expensive depending on their size. Outdoor work day limits could impact construction, landscaping, and other outdoor businesses

cannot affo <u>rd a</u> / will build : rovide relii	Step 3. Make Your Resilience Plan			
eate coole all shade-t	COOL THE CITY		No ENSURE SAFETY	
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rfacing. Th	Resilience Plan B	Resilience Plan B	Resilience Plan B	
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Goals

- Localize the previous extreme heat forum
 - Focus on the Boston area community
- Education
 - Dangers of extreme heat, the urban heat island effect, solutions to heat, and the inequalities of extreme heat
- Community Engagement
 - Community collected data
 - Community and partner voices
 - Community tested and youth focus groups
- Call to Action
 - Citizen/community science opportunities

Introduction to the Topic

- Wicked Hot Boston Data • Jul + Aug 2019 50 Citizen Scientists Ο \circ 10 routes • 3 cities - Boston extreme heat background packet
 - Jamaica Plain Grove Hall Pranklin Park Bellevue Mt Hope Clarendon Hill



Perspectives and Strategies:

- Perspectives from real community groups and civic partners
- Resilience strategies occurring in the boston area





Prepare for heat guide Keep cool and healthy in the heat

Keep cool and healthy in the heat with these multilingual resources.



Cool off with Boston Centers for Youth & Families (BCYF) Aquatics

BCYF offers aquatics and cooling centers for residents who need to take a break from the heat.



Resources to stay cool this summer

View resources that are available to help you stay cool this summer.

Institution	Title/Department
Boston Gov	Climate Resilence Project Coordinator
Boston Gov	Manager, Greenovate Boston Communications
Boston Harbor Now / Stone Living Lab	Cabot Education and Community Engagement Program Manager
Brookline Goov	Economic Development Director
Cambridge Gov	Cambridge Biosafety Committee
Climate CREW	Program Manager, Communities Responding to Extreme Weather (CREW)
Charles River Watershed Association	Charles River Watershed Association
Girls Inc / Beach Sisters	Beach Sisters Fellow
Greenroots	Climate Justice Organizer
Harborkeepers	Executive Director
ISeeChange	Writer
Metropolitian Area Planning Council	Clean Energy and Climate Planner II
Mystic River Watershed Association	Deputy Director
Mystic River Watershed Association	Climate Resiliency Manager
Mystic River Watershed Association	Engagement Manager
Neighborhood of Affordable Housing (NOAH)	Executive Director
Neighborhood of Affordable Housing (NOAH)	Coordinator of Community Engagment
Northeastern University	Professor Dept. of Marine and Env Science
Northeastern University	Grad student
Science Museum of Virginia	Chief Scientist
SciStarter	Digital Community Manager
Town of Arlington	Environmental Planner, Conservation Agent

Call to Action: 🔌 ISEE CHANGE

Document climate change on ISeeChange

Share photos and stories to help solve problems.

Sign up and start posting today

www.iseechange.org 🖷 🗯 🐝 ISEE CHANGE





₿ 92.77 °F v ...see weather & 1 more detail

5th heat wave this year I think. How do you want my area to change? Retrofitting commercial roof space in the built environment with solar panels, vegetative roof, or reflective paint.

This is unusual.

Heat, Plants & Trees

Sam Harrington • ISC City of Miami • 8 months ago I would love to see that around here too. There's so much opportunity on our roofs!

Add a comment...



₿ 90.95 °F v ...see weather & 4 more details

6:44 PM Driving in Boston. Some people out walking and a Red Sox game in the area, but very humid, hazy and hot!

This is unusual.

Heat, Skies & Air

Add a comment...



₿ 91.9 °F × ...see weather & 5 more details

It was far too hot out today. I usually take my lunch break outside on the deck but that seemed like a dangerous choice with a heat index of 112. I was able to walk to the grocery store after work (15 minutes each way) because it had cooled down a bit but it definitely still felt hot. Usually by this hour the AC is off and I'm asleep, not tonight, it keeps turning on and i keep hoping to be cool enough to sleep.

l'his is	unusual.			
Heat				

Add a comment...

UBMI

Changes and Lessons Learned:

- Shifted timelines to accommodate youth voices
- Self facilitated forum to be more accessible for classrooms, museums, and staff
- Made sure there were both in person and online materials for easy access



Thank you! sbenson@mos.org

Resources:

https://www.nisenet.org/climatechange https://www.mos.org/climatechange https://www.nisenet.org/forum-extreme-heat https://www.nisenet.org/catalog/public-forums-manual https://www.iseechange.org/

Session Resources

Additional Resources

- https://www.nisenet.org/climatechange
- <u>https://climateinterpreter.org/</u>
- <u>https://www.mos.org/climatechange</u>
- <u>https://www.nisenet.org/forum-extreme-heat</u>
- <u>https://www.nisenet.org/catalog/public-forums-manual</u>
- <u>https://www.iseechange.org/</u>

Thank You





This material is based upon work supported by NASA under cooperative agreement award numbers NNX16AC67A and 80NSSC18M0061. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the view of the National Aeronautics and Space Administration (NASA).