Climate Conversations: From Data to Action

A Conversation Guide for Science Centers, Museums, and Their Communities to Leverage the US Fifth National Climate Assessment

Executive Summary

The Fifth National Climate Assessment (NCA5) provides the U.S. Government’s most up-to-date report on climate change impacts, risks, and responses. With analyses focused on 10 distinct regions of the country and a number of interrelated topics, the report provides a starting point for conversations about communities’ experiences of climate change and how communities can and want to respond. This guide from the Association of Science and Technology’s Seeding Action initiative provides suggestions for our network of science centers and museums—and other organizations committed to engaging the public—to facilitate discussions in various contexts, including on the museum floor, through dialogue and deliberation events, in workshops for teachers or students, and through activities with young children. We share sample activities, prompts, and additional resources that can be adapted to achieve a wide range of goals and ultimately contribute to a culture of action for planetary health. While the guide references specific elements of the NCA5 report, the recommendations and resources can be applied to conversations about climate change and community action more broadly.

Introduction

Every four years, the United States government conducts an assessment to update its understanding of the impacts of climate change. This Congressionally-mandated assessment describes the ways that different regions of the United States are already experiencing climate change, as well as the effects projected to change in the years to come. The Fifth National Climate Assessment (NCAS) was published in November 2023 by the US Global Change Research Program (USGCRP), a collaboration of 15 federal member agencies who work together to advance understanding of the changing Earth system.

The NCA5 report provides a basis for communities and decision-makers across the country to determine how they will prepare for and mitigate the impacts ahead. However, as a lengthy technical document, few people will have read and processed it in full, and even fewer will have had opportunities to do so alongside other community members with whom they could work to build a shared sustainable future. Yet we know that it’s valuable for members of the public to understand the causes, impacts, and potential responses to climate change. While understanding the challenges and solutions are not necessarily sufficient for sparking action, understanding is an important piece of a broad culture of hope and action.
This is where science centers, museums, and other public engagement networks come in—as institutions and organizations with extensive expertise, community relationships, and existing platforms, we have the potential to share key messages from reports like NCA5 and to support informed, inclusive action that promotes community and planetary health.

This document, Climate Conversations: From Data to Action, provides suggestions and examples to help public engagement practitioners translate the scientific findings of the NCA5 for their communities, and more importantly, to facilitate conversations that explore solutions. This resource builds on Seeding Action’s beta guide for science centers and museums communicating about planetary health topics by applying the general principles described there to the latest science on climate change, impacts, and action in the U.S.

About the NCA5

Every four years, the United States Global Change Research Program (USGCRP), which was established by Congress in 1990, is mandated to develop and coordinate a National Assessment, “a comprehensive and integrated United States research program which will assist the Nation and the world to understand, assess, predict, and respond to human-induced and natural processes of global change.” Each National Climate Assessment, including NCA5:

- Integrates, evaluates, and interprets findings of the program and discusses scientific uncertainties associated with the findings;
- Analyzes the effects of global change on the environment, agriculture, energy production and use, land and water resources, transportation, human health and welfare, human social systems, and biodiversity; and
- Analyzes current trends in global change, both human-induced and natural, and projects major trends for the next 25–100 years.

The process used by USGCRP to develop National Climate Assessments is designed to be rigorous, with over 750 volunteer experts contributing to NCA5 as chapter leads, authors, technical contributors, and review editors. In addition, NCA5 underwent an extensive multi-phase process of internal and external review from federal agency experts, the general public, and external peer review by a panel of experts established by the National Academies of Sciences, Engineering, and Medicine.

The process was also designed to be transparent and inclusive, with multiple opportunities for public participation to ensure that the final report represents the priorities and needs of decision-makers across the country. NCA5 incorporates Indigenous Knowledge, foregrounds issues of equity and justice, and prioritizes accessibility, for example by including a Spanish translation of the report for the first time.

As a result of this rigorous process, the report is authoritative, timely, relevant, policy neutral, and freely accessible to the widest possible audience. The publication of NCA5 provides an opportunity to engage the public in understanding the current state of climate change, and how we all can take action to improve planetary health.

The full report can be found at nca2023.globalchange.gov/
Getting Started

Gain familiarity with the content and strategies for sharing it

The best way to become familiar with the content of NCA5—and to determine which sub-topics you want to focus on—is to browse the full report online, especially starting with the Overview. The Report in Brief is also a helpful resource for those who require less detail. If you already know what general climate-related topic you hope to spark conversation on, you might consider scanning the Table of Contents and jumping to the most applicable topic(s) from the outset.

While it’s valuable to become comfortable with any content you might share as an educator, it is also helpful to recognize that you won’t be able to learn every possible point in the report before talking about it. One way of thinking about this (and explaining the gaps in your knowledge when they arise in conversation) is that science operates as a community, with specialists in different fields contributing different approaches and insights, and scientific knowledge—including the NCAP report—is the sum total of that community's work. No one individual is fully versed in everything. As a facilitator, acknowledging that there is information you don’t yet know provides an opportunity to model humility and demonstrate how you find relevant and reliable information on this topic.

In addition to reviewing the content that you expect to discuss, it can be valuable to orient yourself to relevant resources that you may share with people who want to learn more. See the Additional Resources section for a few specific ideas.

Beyond the content, it is equally important to be familiar with communication strategies for effectively sharing information in ways that inspire someone to learn more and find ways to participate in solutions. Seeding Action’s guide, Cultivating a Culture of Active Hope: Strategies for Science Centers and Museums to Invite and Inspire Planetary Health Action, provides a summary and examples of evidence-based strategies.
Art x Climate Gallery

Art x Climate is the first art gallery to be featured in the National Climate Assessment. The US Global Change Research Program issued a call for art with the understanding that, together, art and science move people to greater understanding and action. The call received more than 800 submissions, and the final collection features the work of 92 artists. Their work, which represents all 10 NCA regions, offers a powerful depiction of climate change in the United States—it’s causes and impacts, as well as the strength of our collective response.

The 92 works in the gallery highlight different perspectives, challenges, and solutions. As a result, they can serve as thought-provoking conversation starters, focal points, or supplements to a wide range of conversations about climate change impacts and solutions. The gallery includes a wide array of media including paintings, photography, quilting, sculpture, and site-specific installation. Pieces have been featured at the Climate Museum in New York City, the Exploratorium in San Francisco, and others. If you have questions about Art x Climate, please email Allyza Lustig, alustig@usgcrp.gov or Laurie Howell, lhowell@usgcrp.gov.

Know your audience

As in all conversations, the more you know about the person or people with whom you’re communicating, the more you’ll be able to engage in ways that help them feel heard and valued, build on their pre-existing understandings and perspectives, and motivate them to continue to engage with the issue. Although it’s not always possible to know much—or anything—about your audience, you can develop some informed predictions by considering:

- **What impacts and actions are most relevant and visible in your community?** Whether it’s coastal flooding, extreme heat, severe storms, or drought, reviewing the NCAS chapter devoted to your region is one way to identify impacts that will resonate with your community.
- **Who in your community is most affected by climate impacts? How are they affected? Where do they live? What are their identities and histories?** While you may be able to find resources on your specific community beyond the NCAS, many chapters in the report also have insights into these questions. For example, the regional chapters—as well as the Social Systems and Justice, Air Quality, Human Health, Transportation, and Tribes and Indigenous Peoples chapters—discuss various dimensions of equity and inequity.
- **What places, landmarks, or cultural traditions are important to your community? How do they relate to climate change?** Regional chapters and topic chapters, such as Coastal effects or Agriculture, may be helpful for clarifying connections to climate change.
- **What is the public sentiment regarding climate change and potential solutions?** The Yale Climate Opinion Map provides polling data at different levels of granularity, down to the county level.
Managing Climate Emotions

Many people have strong feelings about climate change and its impacts, and those emotions are often dynamic, shifting from day to day and context to context. Understanding the range of emotions that may accompany conversations about climate change is critical, as they can either support or inhibit participation in solutions. Depending on your goals and your audience, an NCA5-inspired conversation could even be entirely about emotions, processing how parts of the report, art generated alongside the report, and lived experiences make people feel.

When planning for and designing programs to support climate conversations, it can be helpful to think about the emotions that different types of information, prompts, or activities are most likely to evoke. For example, in general, information about causes and impacts, while important, might surface emotions that make hope and action difficult. Information about solutions and opportunities to participate in action, on the other hand, more often give rise to motivation and other emotions that are conducive to action. While all emotions have a place in climate conversations, as the conversation facilitator, you might consider an ideal emotional arc, especially which emotions you hope for people to leave with, and design the structure of the conversation accordingly.

There are a number of resources to support educators in navigating their audience’s diverse emotions:

- **Climate Mental Health Activities**, a resource created by the CLEAN Network and Climate Mental Health Network. Includes activities that explore the relationship between climate and mental health, focusing on accessible, youth-friendly resources.
- The **“Gen Dread” newsletter**, which its authors describe as “the clearing house for new, old, and emerging ideas to strengthen our emotional intelligence, psychological resilience, and mental health while we’re in this planetary pickle.”

Even if you don’t intend to focus your group’s conversation on climate emotions, recognizing that emotions are an inseparable part of learning about and acting on climate change, and being prepared to validate and support the emotions that arise will increase your preparedness and effectiveness as a facilitator.

Articulate your goals

Explicitly articulated goals can guide decisions about whether to structure your interaction and how, what content to share or emphasize, and what questions to ask. While there are many possible and useful goals for conversations about climate change, asking yourself to what end? can help ensure a well thought-out purpose and approach.

For example, if you initially articulate a goal to help your local community understand the greatest local risks from climate change, asking to what end? might reveal that you want them to understand so that your community can make evidence-informed decisions, for example about infrastructure and preparedness measures they may want to invest in. With this ultimate goal in mind, you might frame the findings differently than you would if you were solely considering the goal of understanding, for
example by emphasizing the types of solutions available and what they take to implement. Similarly with this clarified goal of informing decisions in mind, you may ask different questions of the person or people you’re speaking with, to encourage brainstorming and reflection on what it would look like to implement different solutions locally. And you might provide concrete examples of local action already underway, or suggestions for ways to learn more or get involved in those actions.

**Example Goals for Climate Conversations**

While many of these are related, each could suggest different approaches to an interaction:
- Build an understanding of the causes and/or impacts of climate change
- Contextualize modern climate change relative to Earth’s history
- Raise awareness of actions taking place locally and how more people can play a role in them
- Help people recognize that our actions today will positively impact the future
- Provide inspiration that helps generate new ideas for solutions
- Facilitate collective brainstorming about possible community-level actions
- Help people understand others’ perspectives on local challenges and opportunities, to surface tensions and areas of agreement
- Build consensus on community policy priorities
- Provide space for people to process climate-related emotions and experiences
- Facilitate reflection that helps people see themselves as the type of person who participates in climate action
- Motivate people to learn more or explore different types of climate action
- Build a sense of community around the desire for more local climate action

Some goals will be better suited to particular types of interactions, or interactions with particular audiences. Others are long-term prospects, unlikely to be achieved in a single interaction or even a full-day program. Taking into account the types of interactions you expect to have, you can calibrate your expectations and consider the ways that the specific interactions you’re planning might fit into longer-term goals and your audience’s dynamic understandings, perspectives, and actions.

This guide assumes that simply translating the NCA5 contents is not the *end goal*, but instead that sharing this information is intended to help communities reflect, process, brainstorm, and ultimately, engage in more robust and inclusive climate action.

**Specific Contexts for Climate Conversations**

The subsequent sections of this guide cover four specific contexts within which the NCA5 can be used as a starting point for conversations that inform and inspire participation in solutions:
- **Informal Conversations on the Museum Floor** (p. 8): Considerations and strategies for informal conversations about climate change, including NCA5 findings, that might arise on the museum floor, especially if your institution has an exhibit on a planetary health topic.
- **Dialogue & Deliberation Events** (p. 10): Guidance for hosting a structured and facilitated community conversation about the findings and priorities for action.
- **School Field Trips and Teacher Professional Development Workshops** (p. 13): Suggestions for activities that can be modified based on the learners’ background knowledge and the topics that the educator or students want to explore.
- **Activities for Young Kids and Families** (p. 16): Activity ideas for helping young children and families connect with nature and lay the foundation for a lifetime of meaningful, age-appropriate planetary health action.
Informal Conversations on the Museum Floor

There are many opportunities to leverage NCA5 to engage individuals or small groups in informal conversations about action to address climate change, especially if your science center or museum has an exhibit or program that addresses the topic, or a related one, such as biodiversity loss, weather, or ocean health. These conversations are often spontaneous and short interactions, and as such require you to engage with an open mind and be prepared to follow the visitor’s lead.

Keep in mind that your conversation will probably last five minutes or less. In these brief encounters, it is unlikely that you will have the opportunity to fully educate, explain, or convince. Instead, it is more realistic to simply aim to have a positive interaction about a challenging subject, open the door for more discussions in the future, build trust, and decrease polarization, all of which will plant the seeds for active hope. One strategy for inviting someone into conversation on climate change, as on many other issues, is to lead with an open-ended question. The box below provides example questions.

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Open-ended questions can help start and steer a conversation.

Example questions that prompt reflection and invite someone to share their perspective:
- What were your ideas about climate change before you came here today?
- What is something you heard or read in the last week about climate change?
- What was the most interesting thing you learned from the exhibit?
- What about climate change are you most concerned about?
- What do your friends think about climate change? Why do you think that is?
- What do you think is the most important thing for high school students to know about climate change? How about elementary age kids?

Example questions that explore areas of interest for deeper learning:
- What are you still wondering about?
- Why do you want to learn more about climate change?
- What is the most confusing thing to you about climate change?

Example questions that invite conversations about causes and impacts:
- Why do you think we’re in the situation we are in?
- Who do you think is/will be impacted the most by climate change?
- What kinds of changes have you noticed in your local environment?

Example questions that encourage an exploration of solutions:
- What kinds of climate solutions do you think are most important?
- What kinds of climate solutions do you want to learn more about? How could you go about learning about those?
- What do you think you could do that would have a positive impact? Why?
- What kinds of things could your community do that would have a positive impact? What would it take to make those things happen?
- If you were the President, what would you do to address climate change?
- How would you describe the world you want for yourself and your family 20 years from now?
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We know that the term *climate change* can prompt sometimes visceral reactions and shut down discussion, including for certain political or ideological groups. Because it’s important to open the door for conversation, we encourage you to think about the language that will best resonate with your audiences and goals. For many, that’s framing a conversation about *nature or the environment*. For others, it may be leaning in to issues that are front-of-mind locally, such as flooding, extreme heat, or wildfires. The various *topic chapters* (e.g., *Energy Supply, Delivery, and Demand* or *Air Quality*) in the NCA5 can provide a starting point and inspiration for highlighting different dimensions and invoking language that will best suit your audience and goals.
Dialogue & Deliberation

Dialogue & Deliberation is a set of approaches centered around facilitated conversations that bring community members together to discuss a local topic and potential options for addressing it. Dialogue allows people to share their perspectives on a topic and deliberation provides an opportunity to examine options and make actionable decisions. While the two can be carried out separately, they are more powerful when combined, and the distinction between the two may not always be clear. Some goals of Dialogue & Deliberation are including diverse voices in the conversation, enhancing mutual understanding and empathy between participants, and producing actionable, equitable solutions.

New to Dialogue & Deliberation? See ASTC’s Dialogue & Deliberation Toolkit for more on this approach.

Identifying and Framing the Topic for Dialogue & Deliberation

Wherever possible, early and substantial community input about the topic(s) and goal(s) will increase the effectiveness of this approach. For these purposes, your community might include local community groups, advocacy organizations or coalitions, local government agencies or elected officials, school districts, or businesses. Each of these entities can provide different perspectives to consider at this point in the process and can provide connections to additional communities of interest.

In general, a good topic for Dialogue & Deliberation is one that is agreed to be of concern for a broad cross-section of the community, but some aspect of the issue or the potential solution is disputed. Often, a good topic can be formulated as “What should we do?”

- **What** – there are multiple options available, for which there are different trade-offs
- **Should** – there is a values judgment to be made, not a single clear correct answer
- **We** – the problem and the solution are collective in nature
- **Do** – there is an action to be taken and the information shared during the process can influence which action is chosen

Because NCA5 covers many multifaceted challenges and potential solutions, the report provides a starting point for Dialogue & Deliberation on a range of topics. The following examples demonstrate ways that the broad question “What should we do?” can be operationalized, leveraging NCA5 analyses and summaries:

- If you’re in a drought-prone area, the question “What policies should our state implement to mitigate the effects of drought?” may be a priority for the community. The Water chapter may be a helpful starting place, providing an evidence base for such a conversation.
- For those in coastal areas, the community may want to discuss the question “What conservation or restoration actions should our county take to improve the health of our coastal ecosystem?” The Blue Carbon and Coastal Effects chapters may be helpful starting points for this discussion.
- If your community includes many farms, the group might ask “What policies will ensure the resilience of our local farms amidst changing and extreme weather patterns?” The Agriculture chapter might be an especially helpful resource.
Designing Dialogue & Deliberation for Climate Conversations

Once you have articulated a clear goal for what you hope to accomplish through Dialogue & Deliberation, this goal can guide you in designing your event. For example, you’ll want to think carefully about who is invited to join in the discussion, what you can do to ensure that those invited can participate, and how the event is facilitated.

Invite List
- Who is (or will be) most impacted by planetary health issues in your community?
- Are there important subgroups of your community (e.g. different cultures, neighborhoods, faiths, etc) who should be prioritized?
- Who can make or influence the decisions that you care about (if you are trying to surface consensus for a specific solution)?
- Should you hire external facilitators to support the event? This can be an especially good idea if your museum staff has very different demographics than your target audience or if the issue is particularly contentious.

Accessibility
- Will your target audience(s) be able to easily access the location through available transportation and will they feel comfortable and welcomed there?
- What day and time are you holding the event (with consideration for common working hours in the community, school holidays, religious observances, etc.)?
- Will you provide childcare or an alternate activity for those too young to participate?
- Will you provide food for participants (especially if this is an after-work event)?
- Will you pay participants a stipend for their time and participation?
- Will you provide translation services for languages in your community?

Design
- Who in your community should be involved in the co-design of your event?
- What background information do the participants need, and what is the best way to provide it? (e.g. written “homework” in advance, a talk from an expert at the start)
  - What can you do to make sure your participants embrace any prework and have the skills, resources, and time to complete it?
  - Is there any misinformation or disinformation in your community that needs to be addressed?
- Can you include different options for people to participate in the ways that are most comfortable and effective for them (e.g., verbal discussion, written feedback, drawings or crafts, anonymous voting, etc.)?
- Can (and should) you provide a digital version or component (which can broaden participation, but also lead to shallower engagement)?
  - How are you ensuring that limited access to highspeed Internet and computing resources aren’t limiting participation of key communities?
- What training will you need to provide to the facilitators (internal or external)?
- How will you evaluate success?
- How will you capture the outcomes of the event, and how will they be disseminated to the participants and to others in the community?
○ Are there decision-makers who might be informed or influenced by the outcomes of this event, and if so, how can you best communicate with them?
○ What are the advantages and disadvantages or involving the local media in your event?
● What actions can be taken as a result of the event, and who will lead them?

A sample agenda for a Dialogue & Deliberation event can be found in the Appendix.

If you're interested in inviting an NCA5 author to contribute to your Dialogue & Deliberation—for example, by providing insights to help frame the topic, or by serving as a presenter at an event, contact Laurie Howell: lhowell@usgcrp.gov
Field Trips and Teacher Professional Development Workshops

Content from NCA5 can serve as a complement to concepts covered in formal education, providing opportunities for museum and science center practitioners to incorporate it into their school field trip and teacher professional development programming.

One way of doing this is by using some or all portions of the Learning Cycle, which has five phases for helping people understand complex ideas. The phases can be used in combination, independently, or alongside other activities. For more on the Learning Cycle, see the BEETLES resource from the Lawrence Hall of Science.

1. **Invitation:** Invite learners to think about why they care about this topic (climate change generally, its local impacts—leveraging a regional chapter of the report—or a particular facet of climate change—leveraging a national topic chapter), how it is connected to their life, and what they already know about it. You might pose a prompt or series of prompts, depending on how much time you have, and have participants respond in pairs. The open-ended question list in the Informal Conversations on the Museum Floor section can serve as a menu from which you can select and adapt one or a few questions that align with your goals and context.

   You might provide sticky notes and encourage participants to write one response to the prompt on each sticky note. Then have them meet in groups of 3–5 and organize their sticky notes into categories. Each group can share their categories and reflections that emerged as they categorized their ideas.

2. **Exploration:** Create an opportunity to explore a new facet of the topic. One way of doing so is to introduce the Art x Climate gallery.

   In small groups, participants can choose a piece of art that can serve as a starting point for reflection and conversation. Prompts could include:
   - If you had to create a headline for this image, what would it be?
   - How does this image make you feel? Why?
   - What questions does this image spark for you?

   Following small group discussions, large group conversation can be stimulated with prompts like:
   - What was that experience like?
   - What surprised you?
   - How did your group members respond to the prompts in ways that were different from each other? In ways that were similar?

   The gallery can facilitate this activity because the images contained within it vary on so many dimensions—while some depict hopeful futures, others depict frightening ones. At the same time, their subjects intersect with a wide range of topics, from wildfire to environmental justice.
to marine life. If you’re designing a lesson around a specific topic (e.g., climate change and oceans), you might select artworks that most directly relate to that topic for this activity.

Further, the artworks can offer an inviting on-ramp to additional conversation because they engage affective and creative thought processes in ways that more traditional conversations about climate-related data don’t. Similarly, they collectively convey the message that there aren’t necessarily black and white answers to questions about how our society should respond to climate change—just as artworks show a range of perspectives and dimensions, and they leave the door open for different interpretations, so do societal responses to climate change and related issues.

3. **Concept Invention:** Provide learners with the opportunity to learn something new, to construct their own understandings and make sense of the information. You might accomplish this by assigning a reading from the NCA5 report and providing prompts for discussion in small groups.

Depending on your goals for the session, you might assign the group to read a specific chapter or section of a chapter, or you might break into smaller groups and allow each group to determine what they will read. While any chapter of the report could be well-suited for this exercise, you might especially prioritize the chapter about your region. For groups with less familiarity with climate change, the Overview chapter may be a better starting place. For groups with some familiarity with climate change, the two response chapters, Adaptation and Mitigation, may be especially fruitful, as they lay the groundwork for participants to engage with solutions. And for those with more background knowledge or specific interests, the National Topics and Focus On (cross-cutting topics) sections could provide opportunities for deeper learning.

If there is not enough time for groups to read or skim an entire chapter, you can choose a subsection of a chapter or 1–2 figures from select chapters for the same activity. You may also provide prompts (e.g., What is the most important thing you read? What’s the most surprising thing? How does this chapter make you feel? What questions are you left with?).

Yet another option is to look for coverage of the NCA5 in your local media outlets or in a national outlet, and share an article or video clip that covers or comments on the report instead of the report itself. The report was first published on November 14, 2023, so searching for pieces on or shortly after that date will likely be most fruitful.

After students have completed the reading or viewing, many of the open-ended questions in the Informal Conversations on the Museum Floor section would be well-suited to the discussion portion of this exercise. You might also consider questions to help learners process new information, such as:

- What is your main takeaway from this section?
- What confused you in this article?

Following the group discussions, bring the whole group back together. Give each group a couple of minutes to share the most important ideas from their discussions.
4. **Application:** In this phase, participants are invited to think about how they can personally apply new information. Potential categories for applications might include:
   a. Things I Can Do in My Own Life,
   b. Things My Community or School Can Do,
   c. People and Places I Can Share Climate Change Information and Solutions With,
   d. Things I Still Want to Learn More About
   e. Other Ideas

One way to structure an application activity is to create stations around the room for the different categories listed above (or similar ones that align with your audience and goals). For example, you might write the category labels on flip charts and place them in different spaces. Invite participants to add ideas to sticky notes and place them in the corresponding category. Another option is to create a worksheet with space under each category for individuals or groups to brainstorm potential actions.

For either structure, you might encourage people to shift from a generative brainstorming mindset to a pragmatic, planning one by asking them to indicate which 1 or 2 actions they are most energized about and would like to do. Follow-up prompts to help individuals or groups follow through on their intentions could include:
   a. When might you be able to do (or start) this action?
   b. Who else do you want or need to be involved?
   c. What challenges might arise? How will you work to overcome those challenges?

5. **Reflection:** Help learners to reflect on the learning experience and how they learned. Ask them to write, draw, or just think on their own about what the experience was like for them, what helped them best process new information and come up with ideas for action, and what did not help. Did they notice when they were the most engaged or least engaged? Have individuals share their reflections with the group. Close by asking how this reflection might influence the ways that individuals choose to engage with climate change in the future—and how they might engage others in a similar conversation. For programs with K-12 teachers, this conversation might focus on components of the phases described above that they may adapt and use with their students.
Activities for Young Children & Families

For children 8 years and younger, the report and associated materials can still provide an opportunity to increase learners’ sense of connection to and love for our planet, which will help lay a foundation for lifelong participation in meaningful action to promote planetary health.

One way to engage young learners is to share images in the NCA5 Art x Climate gallery. You can search for art by a local or regional artist or choose an image that resonates with a particular group of children. For example, the many colors and animals in Spencer Frazer’s painting *Stream of Consciousness* provide opportunities for young children to identify the animals they know and talk about the ones they love the most. Youth entries like *Underwater Watercolor* by Olivia D. and Carolina D., which use vivid colors and expressive animals, can be coupled with questions like “How does this animal make you feel?” or “What do you and your family do to help the planet?” to spark conversations that help children feel connected to a wide range of life forms.

All children, including those who are pre-literate, can also build this sense of connection to our planet by making their own art. Several studies have demonstrated that nature-related art experiences can contribute to outcomes like confidence, self-esteem, agency, and nature connectedness, especially for children from marginalized backgrounds. For example, you might show a few images and then encourage kids to draw their own, to express how the images make them feel. If you’re able to bring the group outside, they might draw what they’re observing. Even with minimal structure, experiences like these can create positive outdoor experiences, which play an important role in the development of an identity and habits that encourage lifelong action.

Importantly, you can consider a wide range of art forms that might work for your audience or leave the art form open to the participating children, including forms like dance, music, stories, plays, photography, cartoons, or collages. Rooting the representations in nature while allowing learners’ choice in how to make the representation supports their agency.

There are a number of ways to modify and build on this general concept of nature-inspired art to increase its power—for example, children can be asked to explain their art, which serves as an invitation to express relevant aspects of their identity, viewpoints, and emotions. They could also be encouraged to collaborate with other children or with caregivers on their artwork, which provides opportunities to articulate ideas and discuss ways they might relate to or be in conflict with others.’

For more ideas on using art prompts and activities to help learners process their emotions related to climate change, see Creative Therapies for Climate Emotions, a guide developed by Eliya-Quaye Constance with the Climate Mental Health Network.

If you used this guide for inspiration or guidance, we would love to hear from you. How did the guide influence your work? How might a future guide be even more helpful? Your feedback will ensure that future Seeding Action resources are aligned with your priorities. Please send us a note at info@seeding-action.org.
Acknowledgments

This guide was written by Rose Hendricks, with feedback from other staff members at the Association of Science and Technology Centers (ASTC). We are grateful to Richard Kissel, Andy Stoiber, Haley Crim, and Craig Strang for substantive contributions.

About Seeding Action

Seeding Action catalyzes and supports science centers, museums, and public engagement networks as they cultivate a culture of hope and action to improve community and planetary health. With leadership and backbone support from the Association of Science and Technology Centers, Seeding Action is building relationships within and beyond the science center field, facilitating the co-creation of contents and programs, supporting institutional capacity-building, and conducting research, all of which is designed to build individual and community agency and support widespread participation in planetary health solutions.
Additional Resources

One potential outcome of a conversation on climate change and solutions is that the visitor, participant, student, or teacher may want to learn more. Depending on their particular interest, this list serves as a starting point for deeper investigation.

For people who want to learn more about NCA5

In addition to the full report, the USGCRP has published companion materials that may be helpful for diverse informal learning contexts:

- **Art x Climate Gallery**: Art × Climate is the first art gallery to be featured in the National Climate Assessment. The US Global Change Research Program issued a call for art with the understanding that, together, art and science move people to greater understanding and action. The call received more than 800 submissions, and the final collection features the work of 92 artists. Their work, which represents all 10 NCA regions, offers a powerful depiction of climate change in the United States—its causes and impacts, as well as the strength of our collective response.
- **NCA5 Interactive Atlas**: This site taps into the power of maps and stories to share information from NCA5.
- **NCA5 Companion Podcast** is a limited series that introduces the report, showcases the perspectives of NCA5 authors and staff, and demonstrates how the Assessment can help inform decisions.
- **NCA5 Webinars**: 30–60-minute recordings providing the key points from each chapter.

For people who want to learn more about climate science

- **NASA Climate Change**: NASA’s leading climate change website provides accurate, accessible, and actionable information about our rapidly changing climate, from the global perspective of NASA.
- **The Carbon Almanac: It’s Not Too Late**: Book and website that provide credible and authoritative information on carbon and its impact on the climate that is easy to access, share, and understand.
- **Our Climate Our Future**: a collection of educational resources on climate science, climate justice, and climate solutions. Highlights include short videos on the science of climate change and case studies of young people and their families taking action.
- **Climate Science, Risk & Solutions: Climate Knowledge for Everyone**: A site that summarizes the most important lines of evidence for human-caused climate change. It confronts the stickier questions about uncertainty in projections, engages in a discussion of risk and risk management, and concludes by presenting different options for taking action. The goal of the site is to prepare users for more effective conversations with communities about values, trade-offs, politics, and actions.
For people who want to learn more about teaching climate

- **Climate.gov Teaching**: Resources for informal or formal settings on various dimensions of climate change and energy. One way to filter for solutions-oriented materials is to include only results that address the Climate Literacy Principle “Humans Can Take Action.”
- **North American Association for Environmental Education (NAAEE)**: an association dedicated to strengthening the field of environmental education and increasing the visibility and efficacy of the profession.

For people who want to learn more about how they can participate in action

- **What can I do?** Pamphlet by Rebecca Solnit: Everybody’s practical guide to what they can do against climate chaos and for a just and thriving natural and human world. Also available on nottoolateclimate.com.
- **In This Together: Connecting with Your Community to Combat the Climate Crisis**, by Marianne E. Krasny, is a detailed account of the roles that individuals can play in a wide range of solutions, especially done in ways that foster community connection to increase impact.
- **The Climate Action Handbook: A Visual Guide to 100 Climate Solutions for Everyone** by Heidi A. Roop, provides succinct information and sources for a range of actions that individuals can do.
- **Community Science**: ASTC program and website with guidance for community members to collaborate with each other, scientists, science engagement practitioners, and others to advance community priorities through scientific research, technological innovation, and more.
Sample Dialogue & Deliberation Agenda

Example Agenda for a 2-3.5h Dialogue & Deliberation Event

- Introduction (20–45 minutes)
  - Discuss agenda and set expectations (5–15 minutes)
    - For most people in the room, this is probably their first Dialogue & Deliberation event. As you discuss the agenda, make it clear that you value the voices of everyone in the room and want them to actively participate.
    - Consider collaboratively setting some group norms with the participants about how they will interact with one another. This is particularly important if you are inviting groups with very different perspectives.
  - Provide background information (15–30 minutes)
    - Give participants all the information that they would need to fully participate in this conversation and avoid assumptions about what “everyone already knows”. Each NCA5 chapter has “Key Messages.” You might consider including the Key Messages from the Overview chapter and Key Messages from one or more topic chapters (e.g., your region plus the specific topic that the event focuses on).
    - This information could be provided by someone from your organization, a community member, a scientist, or a local government official. Because NCA5 authors live and work in communities across the country, you may find a local author to join the event and share some of the information. Alternatively, you might consider the community’s history and priorities, and the topic of the event, and choose a messenger or a group of messengers who are likely to be trusted in this context.

- Interaction (80–140 minutes)
  - Ice breakers (5–20 minutes)
    - Your participants should be split into groups small enough to enable active participation from everyone (2–10 people). Allow the participants time to introduce themselves and say a bit about the perspective they’re bringing to the conversation. If possible, each table should have a facilitator, but “floating” facilitators may be used if you have limited capacity.
  - Discussion (30–60 minutes)
    - Provide questions for the participants to discuss. These should be questions that relate to the overall “What should we do?” question for your event and draw out personal experiences and opinions to encourage mutual understanding. You may want to start with questions that are less controversial and/or less technical to allow participants to get comfortable before digging in.
    - There are pros and cons to recording or taking notes during the discussion phase, as it will allow you to capture more ideas but may also make participants less comfortable in sharing honestly. Consider the power dynamics in the room—and how controversial the topic may be for your audience—in making this decision.
  - Idea Capture (15–30 minutes)
    - Guide participants to get more concrete about their ideas by writing, drawing, voting, or other methods. This will be a key source of information from your
event, so consider what type of information is most important to you, your community, and any decision-makers you hope to influence.

- Sharing (15–30 minutes)
  - Each small group should have an opportunity to share their thoughts and reflections with the group as a whole. This sharing could be done by a group member or a facilitator.

- Conclusion (10–15 minutes)
  - Next Steps (5–10 minutes)
    - Provide a clear outline for what will happen after this event, who is leading those actions, when and how participants can expect to hear from you, how their opinions will make an impact, etc.
  - Feedback (5 minutes)
    - Offer a form or survey, anonymous if possible, to collect participants’ feedback on the event, what worked, and what could be improved in the future. Also plan to stick around after the formal conclusion for informal feedback and reactions.