Climate Resiliency Workgroup

March 21st, 2024

1:30 – 3:30 PM EST

Event webpage:
https://www.chesapeakebay.net/what/event/climate-resiliency-workgroup-meeting---march-2024

This meeting will be recorded for internal use to assure the accuracy of meeting notes.

Workgroup Actions

- Share the links to John Wolf's presentation materials. See links below:
  - Collaborative Marsh Adaptation Mapper
  - Deal Island & Wicomico Worksheet Maps
  - Middle Peninsula Worksheet Maps
  - Climate Resiliency Workgroup Meeting StoryMap
  - Crisfield, MD- 3D Mapping and Climate Change Communication
  - Ellicott City, MD- 3D Mapping and Climate Change Communication
  - Oxford, MD- Landscape Modeling to Assess Vulnerability to Sea Level Rise
  - Cambridge, MD- Using GIS for Time Travel
  - Landscape Visualization and Land Conservation Communication
- Jamileh Soueidan will email the workgroup to follow up on interest in being test-users for the 3D Visualization tools that John Wolf is developing.
- John Wolf, with coordination support from CRWG, will look into presenting the 3D flooding visualization to the Strategic Engagement Team to get feedback on potential applications of the tool.
- The CRWG leadership will coordinate with Elizabeth Andrews and Amy Freitag to determine the best strategy in soliciting input and feedback on their current community resilience efforts.

Partner-to-Partner Follow-up Actions

- Jim George suggested that John Wolf and his team look into how to potentially integrate the Marsh Adaptation Mapper into the Watershed Resources Registry.
- Elizabeth Andrews will potentially reach out to CRWG members to sit on an Advisory Committee for her Proactive Resilience Planning project.
- Jim George offered for Amy Freitag to use his name if she wanted to connect with Rachel Lamb from MDE, who is working on a climate vulnerability/EJ screening tool.

Minutes

1:30 PM **Welcome, Opening Remarks, and Announcements – Mark Bennett, Co-Chair (USGS), Jackie Specht, Co-Chair (MD DNR) and Julie Reichert-Nguyen, Coordinator (NOAA) [5 minutes]**

Focus of meeting:

- *Sharing partner efforts around building community resilience*
- *Providing feedback on resilience tools developed by the Chesapeake Bay Program GIS Team*

Workgroup Announcements:

- EPA recently released a Request for Applications for their Coastal Ecosystems Climate Resilience program. This opportunity aims to promote scientific progress towards the understanding of coastal ecosystem resilience by seeking applications proposing research to 1) characterize, quantify, and define indicators or metrics of resilience for various types of coastal ecosystems, especially those ecosystems that have climate mitigation and adaptation and/or blue (ocean-stored) carbon sequestration potential; and 2) develop methods and approaches to advance economic valuation of resilience benefits provided by coastal ecosystems. Applications will be due on May 1, 2024. An informational webinar will be held on April 1, 2024. Register for the webinar here, and for more information about the RFA, click here.
- Registration for the Chesapeake Community Research Symposium is currently open. The theme of the symposium is *Managing Water Quality for Living Resources in a Changing Climate*. For more information about the sessions and presentations and to register, click here.

1:35 PM **GIT-Funded Project Update: Understanding and Addressing the Impacts of Wetland Mowing to Facilitate Meeting the Chesapeake Bay Wetland Enhancement Goals (Pam Mason, VIMS) [20 Minutes]**

Pam Mason will provide an overview of the current GIT-Funded Project, focused on understanding impacts of wetland mowing on meeting the Chesapeake Bay' wetland enhancement goals. This effort includes gathering data to inform an understanding of the potential impact and extent of tidal wetland mowing across the entire Chesapeake Bay watershed. This project is one phase of a larger effort that will inform a long-term, multi-phase effort to reduce tidal wetland mowing and make progress towards the CBP's wetland enhancement goals and outcome

Summary

Pam provided an overview of the Wetlands Workgroup's current GIT-Funded project, which started last October. Clean Streams LLC was awarded the contract for the project, and the

Steering Committee is comprised of individuals from VIMS, US DoD, MD DNR, MDE, and DC DOEE. The project focused on mowed wetlands as ecosystem services of wetlands are severely diminished when they are mowed (e.g., less vegetation means less habitat and water quality benefits).

The first goal of the project is to locate and quantify mowed, herbaceous tidal wetlands, with the deliverables being a map and methodology for locating mowed wetlands using satellite imagery. This includes locating and visiting four sites within Maryland and Virginia to collect several samples for their remote sensing data, delineating the wetland and finding the edge of non-wetland, and training an algorithm to find mowed wetland patches using satellite imagery. Pam provided satellite imagery and ground imagery for the sites to show what is or is not detected by a wetland through remote sensing.

The second goal of the project is to conduct a literature review and policy-maker interviews to ascertain state of regulations around wetland mowing, identify existing protection or education outreach programs and understand awareness of impacts of wetland mowing in MD and VA. Deliverables from this goal include a summary of laws and policies and a summary of the interviews. From the interviews, it was understood that current state regulations exist focus on limiting behaviors that could impact the ecosystem services of wetlands. Through these regulations, states could limit mowing behaviors. Pam mentioned that it will be interesting to read the full summary of these interviews and discuss with the Wetlands Workgroup what next steps should include (e.g., moderating wetland mowing).

The project team has completed the fieldwork, submitted the policy review document, completed interviews and drafted the findings, and are currently working on finalizing the remote sensed and machine learning analyses. The project information should be finalized before the October 2024 deadline.

Discussion

Julie asked if wetland mowing is mainly done on private lands and if there was an understanding as to why people decide to mow the wetlands. Pam responded that generally, it is more common on private lands; however, she mentioned that it does occur on public lands (e.g., colonial national park). She mentioned that a lot people might think the wetland area is a part of the lawn, which is why they might mow it. She also commented that access was another factor in mowing behavior, as residents did not want to walk through high marsh grasses. She did highlight that some of the people they talked to, when told that they were mowing wetlands, were excited to stop mowing them as it could bring some more nature/habitat back.

Kristin Saunders commented that she thinks the results of this project could lead to further social behavior change work to do targeted private landowner outreach and try to persuade people to not mow once we have the mapping complete.

Yi Liu also commented that carbon growth in wetlands can cause land to rebound which can help further protect the land from sea level rise, and that no mowing would be expected. Molly

Mitchell responded that it is true, but sea level rise is accelerating at a rate that will quickly take it beyond the ability of the marshes to keep pace. Yi agreed, saying that it is a challenge for nature-based solutions against sea level rise.

1:55 PM **GIT-Funded Marsh Adaptation Mapper Product Development (John Wolf, USGS and Julie Reichert-Nguyen, NOAA) [25 minutes]**
John will present on the pre-set mapping visuals he created for the GIT-Funded Marsh Adaptation Project workshop. These interactive visuals depict specific scenarios overlaying the datasets included in the mapping tool to aid in informed decision making. The project team for this effort is hoping to solicit feedback from the workgroup on what would be useful to incorporate for the visuals to increase utility.

Summary

Julie provided a brief overview on the GIT-Funded Marsh Adaptation Project and the development of the mapping tool. This tool integrated various metrics and data to inform selection of regional focus areas in Maryland and Virginia. While the tool was created for the project, there is an opportunity to make it more readily available for wider use, which is what the CBP's GIS Team is assisting with. Julie mentioned that they are hoping to get feedback from the workgroup on next steps for the mapper (e.g., features, user interface, etc.).

John then introduced the mapper and provided overview about its development. Over the course of about six month, they compiled data and metrics to integrate into two tiers within the tool. The first tier focused on regional datasets, which served to help screen for and identify regional focus areas, while the second tier incorporated local datasets for the focus areas and their priorities. All datasets in both tiers are grouped based on content (e.g., marsh health, boundary layers, partner engagement activities). Additionally, the mapper includes the marsh migration corridor envelope, which was created using the methodology developed by VIMS to assess marsh migration potential under different sea level rise scenarios.

John then discussed how there is ~70 datasets incorporated into the mapper, which while exploratory, could be overwhelming to end-users, which led to the development of pre-set mapper scenarios for both regional focus areas (Wicomico River, MD and Middle Peninsula, VA). These pre-set scenarios overlaid a handful of datasets at a time to help explain different aspects of the marsh adaptation planning process. John commented that this is more of an explanatory approach.

John then discussed how this mapper is being integrated into public facing data portals: Chesapeake Bay Targeting Tools Portal and Chesapeake Data (which will be launching in a few months). Chesapeake Data focuses on assisting end-users with finding resources; within the site, there is a climate resiliency component in their collections tab.

Discussion

Julie commented that it would be great to get input, as the project is in a phase that is exploring next steps for the mapper and communication of the findings. She reiterated that the project developed both an exploratory and explanatory way to share this data. The pre-set scenarios were created in response to feedback throughout the project that the information needed to be packaged in a way that was easy for end-users to utilize; these explanatory tools have helped end-users see the various datasets in a way that they are able to draw inferences about marsh migration potential in relation to marsh health, and it helped with discussions around strategies that can be implemented to support marsh migration.

She asked the workgroup about what features/ formats would be most useful for this mapper and to which audiences (e.g., planners, communicators, etc.). Pam Mason commented that she thinks that different features that end-users would prefer would vary according to audience. She added that more tech savvy folks might want a certain service, while others might want something simpler.

Kristin Saunders commented that she thinks this tool will be useful for folks in the land conservation space (e.g., land trusts, state and local agencies), who might be conducting proactive outreach for conservation purposes. She mentioned the idea of combining permanent protection with restoration, which is something that the Chesapeake Conservation Partnership has been talking about, particularly around outreach to private property owners. She sees an opportunity to use the mapper for land conservation efforts as it pertains to the potential land conversion with marsh migration. She added that this could be an opportunity to connect with local land planners who are developing comprehensive plans and may not even be thinking about marsh migration as a factor. She said that outreach with local and state planners could give insights into which format might be the most useful for the mapper.

John commented that in the past they have worked with applications like this, which reach a certain level of technical capabilities that end-users would prefer to just have the data rather than trying to predict all the different things that they could do with the mapper. He said an example of this is that the marsh migration corridor envelope layer is now accessible for open download so end-users can access the data. He commented that this discussion could inform what this tool could look like for end-users who might not have the GIS background. Julie commented that there is the potential to start with a simpler tool, like the explanatory scenarios, with the option for end-users to dive into more technical detail and download the data. Cassie Davis commented that she thinks a download option would be important as well.

Julie commented that while they only held a workshop for two focus areas, there were a total of six identified through the targeting effort, but they are hoping that they can gather resources and capacity to engage with the other focus areas. This has the potential to grow the mapping tool as they might have datasets that they would like to include. The mapper can be used as a starting point for these areas to help inform marsh adaptation projects.

Jim George commented that there is the Watershed Resources Registry, which was developed with EPA several years ago. They originally focused on a case in MD about road development, where they wanted to ensure that they adequately assessed environmental impacts. From this effort, they realized that it would be helpful for regulators and environmental organizations to have access to the same information during these conversations. Jim commented that he does not know if there is new information in this tool to include in the watershed resources registry. He added that it might be worth looking into what information from this tool could be added to the registry. John responded that Katheryn Barnhart is on detail to coordinate some of the watershed resources registry work from the various states and commented that it is a good suggestion. He said that they have been looking at how they might better integrate some targeting information into that registry. He added that within the registry, they have collections, which is grouping of data that is intended to be looked at in the context of a specific topic. He commented that they could look at a marsh adaptation collection within the registry. John said it was a good suggestion and they plan to follow up on it.

Cassie asked where this mapper is currently posted. John responded that it will be a standalone application, but findable through Chesapeake Data and the Chesapeake Bay Targeting Tools Portal. Julie commented that the goal is to publically publish the data, which has not been released yet, as the project is still ongoing. Jamileh posted the link to the mapper on the calendar page as well. She will share the links that John presented with the workgroup.

2:20 PM **Development of 3D Visualizations for Flooding (John Wolf, USGS) [20 minutes]**
John will present on the 3D visualizations he and his team created as communications products to better communicate climate change issues. These visualizations specifically depict flooding scenarios in Crisfield, MD, created by George Mason University as a part of a collaborative effort to conduct a Flood Adaptation Assessment for Enhanced Community Resilience. John is interested in soliciting feedback from the workgroup on how to improve the applications and identify folks who might be interested in being test users.

Summary

John presented on an ongoing effort around 3D mapping and climate communications, and was hoping to receive feedback on operationalizing some of the ideas. He highlighted how communication is an important tool to help residents feel connected to the Chesapeake Bay and that they matter when it comes to decision-making, which informs the place versus space discussion around environmental work happening at a regional level and management at a locality level. This led to exploring how they could create data-driven landscape visualizations.

The goals of the Climate 3D Visualizations were to: 1) improve people's understanding of the future with climate change by communication complex information more clearly; 2) convey what it might be like to experience climate change in the context of specific communities, to help build climate literacy and preparedness; and 3) spark the imagination, explore solutions, and inspire action. He highlighted that climate can be well suited for 3D visualizations, as it can make the topic pertinent to local interests, help visualize impacts, and connect it to the

stakeholder audience. The visualizations were built on LiDAR data, using the difference between digital elevation models and digital surface models to generate 3D data. Another key piece to creating these visualizations is incorporating building footprints (e.g., where structures emerge on the landscape).

He then showed an example in Oxford, MD, with what the landscape looks like at current sea levels. He then discussed that models like NOAA's Sea Level Rise Viewer can then be used to understand sea level rise impacts; in the example, he increased the inundation level with each time-step to visually show impacts. The next example he showed was a 3D model of Ellicott City, MD. They were using this model to communicate impacts from a flash flooding event. John then showed an example in Norfolk, VA, where Old Dominion University used 3D visualizations to understand impacts of sea level rise under various seawall scenarios.

John then reviewed work that he conducted using the flood modeling data generated through the collaborative project, "Flood Adaptation Assessment for Enhanced Community Resilience" in Crisfield, MD. The flood modeling scenarios examine the hazard (i.e., floodwater depth) and adaptation strategies (e.g., tide gates, berms, elevated roadways, board walks/ seawalls) to create flood maps of specific scenarios. The 3D visualizations show how buildings in Crisfield may be impacted by flooding in the specific scenarios that were generated. John commented that he looked into how this could be helpful for stakeholders and decision makers; he provided an example from the Beyond 2025 effort, as the recommendations in all of the small groups touched on local engagement. He commented that there is probably some communication products that can be similarly created to leverage data and modeling and mapping information to help inform efforts. He then mentioned that end-users have the ability to export this content to virtual reality, which can provide different viewpoints on where flooding occurs.

Discussion

John asked the group for feedback on places to leverage these tools for communication objectives or if there are other types of data (e.g., urban tree canopy) that users would like to see integrated. He mentioned that these tools are particularly useful in the climate space, as it can allow communication of what regions and localities will look like in the future under different projections.

Julie thanked John for the presentation and highlighted a number of positive comments in the chat. Sophie Waterman mentioned she would be interested in learning more about this effort. Julie commented that she would be happy to share a list of folks who would be interested in being a test end-user for the product. John added that there is a user-testing component of this to ensure that the tool is user friendly and to understand where these tools may be applied. Peter Tango commented that this tool is a powerful way to engage individuals through virtual reality.

Seann Regan commented that he thought this was an interesting approach and was wondering if john could send out the links to these projects so that people can explore on their own. Jamileh commented that she would email them out and upload them to the calendar page.

Katie Brownson commented that she was curious if there was a way to integrate land-use data to show the implications of the land-use change and increasing impervious surfaces on flooding levels. John responded that they could lay on impervious surfaces on to the "scene," but to understand impacts to the flooding levels, that would include a different kind of analysis. He added that there are flood models that incorporate impervious surfaces, and there is the potential to use this tool to visualize the results of another analysis. She commented that it would be an interesting application to show decision-makers the impacts of land-use decisions on flooding. John added that this is a way to communicate and illustrate the impacts of land-use change though. Kristin Saunders commented that she was thinking the same thing as Katie. Jamileh commented that in addition to land-use conversion to impervious, it would also be interesting to see if models incorporating nature-based solutions can be included as a layer to understand how they can mitigate flooding.

Kristin Saunders recommended that this work be brought to the Strategic Engagement Team to mull over applications. Julie added that she and Jamileh have already been meeting with this team to understand how they can support the CRWG's communication and outreach needs, and she mentioned that she could loop John in on these conversations as well. Joe Galarraga commented that it was great to work with John on the Crisfield effort. Alex Gunnerson commented that the 3D visualizations could be very powerful for illustrating inequities and how climate change is exacerbating environmental justice challenges.

Peter Tango commented that they should call John's approach of 3D visualizations linked to virtual reality to engage local communities the "Vanguard" idea in the communications arena. Joe Galarraga commented that this has good potential as a communication tool, but also cautioned that it could be a "hard pill to swallow" for some communities and that he thinks it is important to approach communities with this technology in a way that is sensitive. It could be scary to see a whole community underwater. Julie agreed and commented it is something to consider when this information is presented to people. Peter Tango also added that the real application of social science is in understanding how people learn and applying cognition science to increase effective insight into scenario options for planning for the future of the Chesapeake Bay and its watershed. Joe commented that he thinks the tool has great use with local government and practitioners

Yi Liu asked if any flood models such as HEC-RAS were used in the 3D mapping. John responded that he believed the project team (including George Mason University) used HAZUS. He added that they used a custom ArcGIS Pro Flood Toolbox they developed that incorporates both the hazard and mitigation options.

2:40 PM ***Proactive Resilience Planning:*** **Developing Protocols for a Community-Led, Iterative Approach to Adaptation Planning Using "Lessons Learned" from Other Communities and Projects (Elizabeth Andrews, UVA) [20 Minutes]**
Elizabeth will present on her research examining international approaches to climate change adaptation, such as Cuba's "Tarea Vida" and the Netherlands' "Room for the River" program, as well as examples from communities in the U.S., in order to find proven, real-world pathways to great community resilience. The goal is to develop case studies for inclusion in a Best Practices Guide for Virginia localities for engaging in community-led resilience planning, including recommended tools, protocols and funding sources.

Summary & Discussion

Elizabeth presented on her research around understanding how to conduct effective community resilience and adaptation work and development of a best practices and proactive planning guide for local governments in Virginia. She highlighted that they are approaching adaptation as an iterative process that is revisited frequently as conditions change and is different for every community. The final product will be published through Sea Grant. She also commented that she will be pulling together an advisory committee, which she might reach out to CRWG members to sit on.

The guide they are developing uses a community centric adaptation-planning framework. This model addresses community engagement and equity at every step of model. The framework includes seven steps: assessing risks and vulnerability, establishing community priorities, evaluating options and strategies, developing an adaptation plan, selecting and seeking funding, implementing the plan, and evaluating, measuring, and adjusting the plan. Within the guide they are developing, they have an introduction that addresses what resilience is and that community centric adaptation planning is community specific, keeps equity at the forefront, and can be a step-by-step process. She added that they also included the need to identify community "tipping points" and a timeline and Virginia specific background issues. The guide then includes a section for each of the seven steps in the framework, and each section contains a description of the step, best practices, community engagement and equity concerns, helpful tools and resources, challenges and pitfalls, innovative ideas, case studies, and funding sources.

She then briefly reviewed each of the seven steps with the specific content that is included in the guide's sections. She highlighted the challenge with the tools and resources portion for the first step/section (assessing risk and vulnerability). She presented an extensive list of risk and vulnerability tools they have already compiled. However, with so many tools out there, she asked the workgroup what tools they thought would be best to include, with considerations around what would be most helpful to local governments and ones that might not be user friendly for the general public. She commented that she could see the 3D visualization tool John presented being helpful to a planner. In the chat, Julie Reichert-Nguyen commented that she uses the NOAA Sea Level Rise Viewer and AdaptVa quite a bit.

She then posed a series of discussion questions to the workgroup to help inform the effort. The first question asked the workgroup about what best practices they should include in the guide. The second question asked for suggestions around how to determine community "tipping points." And the last question asked if folks knew of case studies and/or lessons learned that would be helpful to include for any of the seven steps. Julie commented that we could send out a separate email to gather input around this as well to ensure that the entire membership has an opportunity to comment.

Joe Galarraga commented on the question around "tipping points." He highlighted the Crisfield project that John touched on in the previous presentation. He said he found the effort interesting in the fact that the "tipping point" framing did not resonate with stakeholders when they conducted community engagement. When they asked the stakeholders "at what point do you think "x" strategy should be explored" he commented that the question was often flipped around to them, since they were the experts in the topic. He said that it was helpful in conversations around transitional periods to use a framework of adaptation pathways and thinking about things in short-, medium- and long-term goals. He said the thought that the "tipping points" was also a difficult thing for stakeholders to talk about, so laying it out in this adaptation pathways framework helped to ease into the conversation around different solutions and strategies in the near and long-term. Elizabeth commented that it was interesting to hear the conversation framed in these short-term/long-term goals as opposed to having a prescriptive timeline.

Jim George commented about feedback they have heard from local governments around the tools and resources. He mentioned that they would like a decision to be made from the information gathered from the tools. He commented that it is not so important about what the tool is, but that it is important to have some sort of certainty that everyone is using something consistent. He commented that he thinks there should be some sort of vetting process for everyone to agree on tools and resources. Jim then commented on the discussion question around "tipping points." He highlighted an example of work done around managed retreat and the politicians in the area did not act on the research findings. They commented that they needed a plan for when a storm event displaces people, because that is when there will be some sort of transition. He said that there should be emergency plans in place with means for the communities to relocate if necessary. He underscored that they did not seem interested in identifying or predicting "tipping points" for when communities would consider managed retreat. Peter Tango commented in the chat that this type of planning is not unlike what happened for Hurricane Katrina – living below the levee system had gone on for decade when Katrina happened and then displacement followed. He wondered how much was pre-planned for the response and how much was pure emergency response. He added that he imagines that there is probably a study that examined the case. Elizabeth appreciated the first comment about tools, as she is a lawyer by training and not the best suited for picking tools. She agrees that there needs to be a vetting process. Jim commented that the vetting process should include a mix of stakeholders including local and state level and that the process should be conducted state by state.

Elizabeth commented that these questions would also be helpful to bring to a Virginia Coastal Zone Management meeting, highlighting that Will Isenberg with CZM was on the CWRG meeting call. She mentioned that it would be helpful to engage with these sorts of groups to see if common themes emerge in responses to the questions she posed.

3:00 PM **NOAA National Centers for Coastal Ocean Science Community Vulnerability Assessments (Amy Freitag, NOAA) [20 Minutes]**
Amy will present on NCCOS's current effort to develop Community Vulnerability Assessment Portfolios for disadvantaged communities. This portfolio seeks to identify and work with local partners in communities that are disproportionately impacted by climate change to assess community climate vulnerability.

Summary

Amy presented on the Baltimore Area Climate Vulnerability Assessment conducted through NOAA's National Centers for Coastal Ocean Science (NCCOS). She highlighted six steps in the development of a Climate Vulnerability Assessment Portfolio: engagement, indicator development, assess vulnerability and hazard, assess risk, conduct place-based research, and develop and release products. Currently they are on step two (indicator development) for this portfolio. She highlighted that reached out to a number of people who are CRWG members or attend meetings to get feedback on resilience research needs for the first step (engagement). The project will then develop GIS layers that can be layered on top of each to ask questions around community resilience, which will be included in the products released at the end.

The assessment portfolio development process uses a community climate vulnerability framework, which seeks to understand three main pillars: social and structural vulnerability, climate hazard, and relative risk. These are then layered on top of each other to target specific at-risk communities or community assets.

She quickly reviewed the project scope and geography of the regions included in the assessment as well as the partners they are working with (i.e., MD DNR and MD Sea Grant). She reviewed the identified research needs, which were categorized into four main categories based on the conversations that took place in the engagement stage of the project. These categories include land-use planning, better risk assessments, retreat and migration, and better human population data. Some of the top research questions focused on evaluating impacts of natural infrastructure and restoration and understanding "tipping points."

She then reviewed the layers that are being considered for Maryland, and she requested workgroup feedback on whether there are other datasets or layers available that they should be considering. For social vulnerability, they are using a Social Vulnerability Index 2020 based on census data, asymmetrically downscaled population data from EPA and forecasted population data to 2100 from census and EPA. For structural vulnerability, they are looking at

data around schools, farms, places of worship, shoreline inventory, zoning, and stormwater. They found data sources from a variety of agencies; however, they are missing comprehensive data for stormwater. She did mentioned that Chesapeake Conservancy will be releasing better stormwater models in June, so they may have a data source for it then. For natural resource vulnerability, they included information on ecosystem services and marsh protection potential from MD DNR. For combined flooding, which was an identified risk, they have stormwater modeling and storm surge modeling. They also have sea level rise projects from MD DNR's 2ft sea level rise vulnerability projection; she highlighted that she would like feedback from the group on whether this is the right model to use. For the next risk, urban heat, they are drawing on information generated by previous NOAA urban heat analyses, as well as incorporating local work conducted by municipalities around observed heat. They also plan on incorporating remotely sensed data on tree canopy. The combined analyses will assess impact of natural infrastructure and restoration on culturally valuable sites and determine policy and engineering thresholds of vulnerability and risk layers visualized.

Discussion

Julie thanked Amy, stating that this is a great work in trying to connect resilience efforts with communities. She commented that there were many great presentations today, and it would be potentially helpful to plan a focused follow-up meeting where members and interested parties can attend and provide greater insights to inform these community resilience efforts. She added that we could connect with the Local Leadership Workgroup and Strategic Engagement Team at the Bay Program as well. Elizabeth Andrews, Seann Regan, and Amy Freitag all commented that this it would be a great idea.

Jim George commented that there was a law passed in Maryland that requires some sort of screening tool for climate vulnerability that takes into account environmental justice. He stated that this work seems closely aligned with that effort, and mentioned that Rachel Lamb with MDE is working on that. He was wondering if Amy has been in touch with Rachel about this already. Amy mentioned that she had not connected with Rachel on this specifically and added that many people now are using EPA's EJ Screen. Jim George commented that this tool is specifically climate vulnerability. Jim offered for Amy to use his name to connect with Rachel on this. John Wolf added in the chat that EPA has added climate information to EJ Screen.

3:25 PM **Opportunities, Partner Announcements and Wrap-up [10 Minutes]**

- Maryland Sea Grant is holding a webinar on **March 26th, 2024 from 1:00 PM – 2:00 PM** titled "Marsh Monitoring with Drones: *An Introduction*." Unoccupied aircraft systems (UAS), such as drones and other remote sensing technologies, offer exciting opportunities to view and monitor ecosystems, including tidal wetlands. But site and software access, flight customization, and expenses can make it difficult for fledgling flight missions to get off the ground. This webinar will highlight regional drone marsh monitoring work across four sites and share our speakers' experiences of the benefits and practicalities of using drones in their research. Join us to learn about the challenges and opportunities

that come with using drones in wetland research, ask questions of some experts, and to get to know who is doing what with drones on our Chesapeake Bay coasts! Register for the webinar here!

3:30 PM Adjourn

Next workgroup meeting will be a joint meeting with the Modeling and Urban Stormwater Workgroups being held on April 4th, 2024

Attendance

First Name	Last Name	Affiliation
Amy	Freitag	NCCOS
Angie	Wei	UMCES
Caitlin	Bolton,	COG
Cassie	Davis,	NYS DEC
Debbie	Herr Cornwell	MDP
Dede	Lawal	CRC
Elizabeth	Andrews	UVA
Jackie	Specht	MD DNR
Jamileh	Soueidan	CRC
Jim	George	MDE
Joel	Carr	USGS
John	Wolf	USGS
Joseph	Galarraga	TNC
Julie	Reichert-Nguyen	NCBO
Karinna	Nunez	VIMS
Kate	McClure	MD Sea Grant
Katherine	Rainone	MWCOG
Katie	Brownson	USFS
Ken	Hyer	USGS
Kristin	Saunders	UMCES
Molly	Mitchell	VIMS
Olivia	Devereux	Devereux Consulting
Pam	Mason	VIMS
Peter	Tango	USGS
Seann	Regan	NOAA/NCCOS
Sophie	Waterman	CRC
Stephanie	Letourneau	
Will	Isenberg	VA CZM
Yi	Liu	