



# Briefing Transcript

## Weather and Social Data to Inform Participatory Planning Initiatives

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### **Daniel Bresette**

Welcome to Friday, another week of working for the weekend in the books. Thank you for joining us today for the final online briefing in our Climate Adaptation Data Week miniseries. I'm Dan Bresette, the executive director of the Environmental and Energy Study Institute. At the beginning of the week, we set out to hear from experts from around the country about the importance of data and science in efforts to improve the resilience of coastal communities. These communities are already on the literal front lines of climate change, and they are developing and implementing innovative solutions that we at EESI want policymakers and the public to know all about. On Monday, we heard from two experts about data needs in the state of Washington. Tuesday, the topic was the use of vulnerability and sensitivity analyses to evaluate the risks to our parks. Wednesday was a presentation about cultural heritage sites. Yesterday, we followed up again with an expert working in Washington in the Pacific Northwest to bridge the gap between data, science, and decision making. If you were unable to join us yesterday or any other days this week, be sure to visit us at [www.eesi.org](http://www.eesi.org) for video recordings and written summaries.

Today we conclude our online briefing miniseries with *Weather and Social Data to Inform Participatory Planning Initiatives*. It's also the most difficult title of the presentations this week for me to pronounce, but I got it today. Next up, we'll turn back to our traditional briefing format to explore coastal resilience in greater depth in two areas: Alaska next Tuesday, April 21st, and on a date TBD, Puerto Rico and the U.S. Virgin Islands. When you visit our website you can sign up for our bi-weekly Climate Change Solutions newsletter to help stay informed and up-to-date with all of our briefings. Now, at the end of our briefing miniseries, I look back and realize how much I've learned on each topic so far. Hopefully you've learned a lot, too. Please take a moment to complete our survey to tell us what you think about this new miniseries format. Thanks to everyone who's already shared your feedback; it has been extremely helpful.

The topic today is Weather and Social Data to Inform Participatory Planning Initiatives. After our presentation, as is our custom, my colleague Amber Todoroff and I will co-moderate a discussion with our expert

speaker. You can participate, too, by following us on Twitter @EESlonline and sending us your questions that way. You can also send your questions by email to EESI@EESI.org. We've been getting some great questions, so I encourage everyone to continue that. Today our expert is Mary Austerman. Mary is the Great Lakes Coastal Community Development Specialist for New York Sea Grant. Using a community-driven needs assessment survey approach, she identifies and responds to priority issues of decision-makers in New York's Great Lakes region. Mary assists local leaders in land use planning, watershed protection, sustainable renewable energy discussion, and assisting communities and their efforts in preparing for hazards such as the impacts of climate change and coastal storms. Mary, on behalf of everyone online and at EESI, I welcome you to today's briefing. I really can't wait for your presentation, so I'll turn it over to you.

### **Mary Austerman**

Thank you very much for this opportunity. When this was offered to me, I really was excited to be able to participate in something like this. As Dan mentioned, I'm the Coastal Community Development Specialist for New York Sea Grant. I'm located in our Great Lakes region, and I'm here today to talk about how we've been integrating some weather and some social science data to help inform some post-flood planning practices in the region.

Before I get started, I do want to mention a little bit about New York Sea Grant. If you have not heard of it, we are one of 33 programs. We're all set up a little bit different, and in New York we are a partnership between NOAA, the State University System, and Cornell University. The extension program which I am part of is housed at Cornell University, and just a quick map to show you where we are all located. My office is in Newark, New York so those in Buffalo, Newark, and Oswego serve the Great Lakes region of New York State, and our downstate folks are servicing the Hudson Valley, New York City, and also our marine district on Long Island.

Jumping right into this presentation and this material, starting about 2014 our Associate Director, Dr. Cathy [inaudible] and I embarked on the social science endeavor to really look at how our communities were feeling about climate change, the terminology associated with climate change, the types of resources and tools and data that they may need to help inform adaptation planning in the region. As you can imagine, New York State is very diverse, not only in our topography and landscape, but also in our acceptance of different terminologies. In the Great Lakes region, climate change is not openly embraced, especially when we started this project. One of the things that we were learning about from our planners, community planners being county-level municipal folks like supervisors, mayors, code enforcement officers, also county Emergency Management, all of these folks didn't really love to talk about climate change or resiliency, but they did love to talk about weather trends. The first thing that we learned was being able to communicate with them where they were comfortable, but also exposing them to some of this terminology that may not be as normal or a commonality for them, so we were working on that to get them used to that.

What we did was these semi-structured interviews, as well as focus groups, to discuss this and come up with the findings. In addition to these general comments, we also presented them with different types of resources, data, and tools in their existing format to get information about their thoughts on the functionality of these materials, and also if there was something that they really would find useful, should it be customized for use in the Great Lakes, and then also some ideas about how those things could be customized. On the top left you'll see we have some climate data that we were able to work with the Northeast Regional Climate Center out of Cornell University to help come up with some of these interpretations of climate data. We gave them information in chart form, and then below that is the same information in a map format. We looked at how these climate data could be shared, what folks thought of that. Another type of tool that we shared with the participants of the focus groups was the idea of a vulnerability assessment to look at how climate impacts were affecting our communities and where they were most vulnerable.

This is the one that ended up hitting the top score, or was of greatest interest to the focus group participants. This is a coastal resilience index that was developed by the Gulf region post-Hurricane Katrina. You can imagine that in the Gulf region they're dealing with hurricanes, and while we do get some impacts from hurricanes or super storms in the Great Lakes, that's not the primary concern for our constituents.

From that, it was determined that we would work on this vulnerability assessment. One of the things that the group identified was the need to customize the content so that it could be focused on the types of climate impacts that our communities are concerned with. Some of those are coastal flooding, which I'll talk about in a little bit, flash flooding from precipitation, flash flooding from ice jams, ice storms, blizzards, and wind storms. It is

important to know that blizzards are different from Lake Effect. If you are from the region, they are different, and our communities felt very comfortable dealing with Lake Effect because it can happen any day. It was actually snowing this morning.

We put this team together to help us in all aspects. None of the work that I do can be done by myself, because I'm not an expert in everything. One thing I'm very good at is identifying expertise where I'm lacking so that we can really have a solid team to help move our efforts forward. On this particular team we had folks from the National Weather Service, the Northeast Regional Climate Center at Cornell, as I mentioned, different planning councils or regional planning councils, Department of State, the New York State Department of Environmental Conservation, emergency managers. We also had representatives from local municipalities, because I wanted the input of the intended end user as we went through this process. I also included some folks from Cornell University for some mapping assistance, and then emergency management and planning departments for different counties. While we were hoping to develop something that would work for our Great Lakes community, we had focus groups across Lake Ontario so we could be as representative as possible.

What we ended up with was our version of this vulnerability assessment. This is the front cover, the information will be shared with you afterwards, and the slides will be provided online, you can link to the PDF directly. What this does is actually look at those different types of weather events, but also looks at different sectors of the community and how those sectors of the community are impacted by these events. When I say sectors of the community, I'm talking about critical infrastructure and facilities, transportation routes, impacts to larger businesses, so the kinds of businesses that are essential, the ones where you need to go and get fuel and get food and things like that. Also, plans and agreements that a community has in place, also societal systems, so, what part of the community is important for the cultural aspects? These are things like churches and different types of community gathering groups.

Looking back a little bit at this whole data collection, what we decided to do was look at those different weather events, but we had to come up with attributes. We wanted to be able to allow the communities to have a consistency to say they were using this type of event with these metrics to rank themselves in these different areas of the community. This is a screenshot from the flash flood from heavy precipitation. For each event there is a benchmark, which is here, that has happened in our region in New York, and then there's also a credible worst-case scenario on the right. The credible worst-case scenario does not happen, but it's at least 50 percent worse than the benchmark. The idea is, as you're working through vulnerabilities you can look and see what has happened in the past and how those things could be intensified and the impacts could be worse. You can see, just for having precipitation, some of these metrics—and these are collected by the National Weather Service, so when we have these big events across the country and you hear about them going up in helicopters getting video and collecting data, this is how this is all reported and captured, and you can see at the bottom here how they even report on different types of damages. Of course, these are specific to the year, so the dollar estimates are from the year that the data was collected.

In addition to having that for each of these events, we also then wrote up these narratives, because some people are number people and other people like to actually hear about what happened. The National Weather Service has an archive of data, and we went through and pulled out some of the narrative that was associated with that, and where there wasn't any narrative, we wrote that up. Again, you can see in that top blue box, how it does talk about what is worse than the benchmark, and then you can think through how that might be an impact. These pictures are all associated with these events, so that's how we integrated some of this data from the Weather Service.

Another thing that we also developed with a colleague at New York Sea Grant, Jessica Coonan, she and I worked on this Lake Ontario inundation mapping tool. I mentioned before that coastal flooding is one of the top impacts that our communities are facing. In recent years, it's their top priority. This tool allows the communities to actually zoom in parcel-level for all of Lake Ontario and look at these different water level scenarios. They don't have the ability to look at every inch, but they have the ability to look at these elevations. This is all land, but the parts that are orange would be inundated at 250 feet, the yellow ones would be impacted at 249.5 feet, and then these teal colors would be 249 feet. You can see this particular location has the risk of being flooded at a number of these water levels. The other thing I will note, 249 is the record high water level for Lake Ontario that was reached last year, and these numbers, these increments, were identified using information from our stakeholders.

I will also talk about how this ties into the project as well. This uses LiDAR data, elevation data, and also parcel information.

2017 was the first year that we had a record high flood in Lake Ontario, and with Cornell University, both the Department of Natural Resources and the Department of Biological and Environmental Engineering, we put together a flood survey to get the impacts from this event. This was a record event, it had never happened like this before. Lake Ontario has flooded, as the other Great Lakes have, but this flood lasted for about three months. People were not able to live in their homes, businesses were disrupted. This was a very huge deal for the communities. With these researchers we developed this survey to look at how people were impacted from the inundation. On their property, where was the inundation line, was it touching their foundation, was it actually in their house what kind of erosion was happening, and what the overall impacts were to their daily life. The other thing that happened is, we asked them to submit pictures for each of their properties. The purpose of this was to document the event, also to help the communities in future flood resilience planning efforts. The third goal of this was to help get information to validate existing flood risk modeling. That was a project that the Department of Biological and Environment and Environmental Engineering was working on, and this fed into that.

These are just some of the pictures that were provided in the survey. People had water in their living space, people reported carps spawning underneath their living rooms. Erosion, this is one of the things we couldn't track effectively because of the goals of our survey. The survey ended before the water receded enough to really know what some of the impacts were. We also had a lot of shoreline management structure damage along the entire shoreline. This particular property is an embankment of Lake Ontario, which many would think would be much more protected.

To wrap up, I want to pull this all together into a case study. What we did was take all of this stuff and we worked with the village of Sodus Point in Wayne County, New York. Here is Wayne County, and this is the village Sodus Point. This is one of the lowest-lying communities along Lake Ontario, and you can see at the top of this picture it has Lake Ontario frontage, but then going along the east that's Sodus Bay. That's the largest embankment of Lake Ontario. They are very connected to the water, and also very impacted by it: both by high and low water levels. These are just some of the impacts, just to show the kinds of response we got just from the Sodus Bay folks from the 2017 survey that we conducted. Using that vulnerability assessment, they looked at the water level scenarios for the coastal flooding. That inundation mapping tool that I mentioned, we used that map, and then they could look at where each of these facilities were on the map and whether or not they were impacted. As they filled it out, this is what it would look like. We used that information paired with this Community Resilience Building process that was developed by NOAA and the Nature Conservancy. This is a very public engagement-focused process, so we had this large workshop in the village. We were very proud of the participants that we had. About a third of the makeup of this group was either someone that lived in the village or worked in the village. Also, we had various levels of expertise ranging from federal government down to county, but also we had academics. We had New York State Department of Transportation, the Department of Environmental Conservation, so all of these groups that have some expertise were participating and in attendance.

You can see those maps that we developed here, and that was using that coastal flooding tool, and then what we did was identify what the assets were, or what features of the community were impacted by the high waters, how are they impacted, and how could that be improved in the future. We did this with breakouts, because our group was large and we were focused on different sectors of the community. This is what one of the filled-out matrices look like. We brought them all back to the big room and let everybody get sticky dots and vote on what actions they thought were most important for the village to consider, so you can vote across discipline here.

At the end, we came up with these resiliency actions. These are just a couple of examples. One was a communication strategy. When we had the flood in 2017, it was all over the news and everyone was talking about how horrible it was, and businesses were impacted in a very very bad way. Part of this was because even if the business wasn't flooded, people just got the impression that it was a really bad place to be, and of course no business would be open, but they were, so they put these communication strategies in place so that when the flood happened in 2019 they were able to have different messaging: "Yes, we're flooded, but we are open for responsible tourism."

Another example was this *Coastal Erosion Hazard Act*. This is one of the policies in New York. It is sometimes the jurisdiction of our Environmental Conservation Department, but some local municipalities have that jurisdiction, so the community was interested in seeing what that might look like, is it a benefit to them to have that or not. We went through it, investigated that a little bit for them, so that's just two of the examples of what came out of that workshop.

Quickly, some of the lessons learned. The first thing that is so important is to really research and figure out what the needs are, what the resources are, to help match with those needs, and how to overcome any barriers that you might be encountering. Collaboration is key. Like I said, I don't do any big project by myself. Having yourself aligned with people that have expertise in areas where you're lacking is crucial to any project. Integrating different types of processes and tools, different types of data, whether it's from social science or physical science, is really powerful. Even that process that I showed you, that Community Resilience Building process, I didn't love the way that it worked, so we worked with NOAA and Nature Conservancy on some ideas of how I might customize that, which leads to the next one: customize. Don't be afraid to change things. Changing things so that we can make them meet the needs of our end users is really important. Being adaptable. At the workshop, did everything work perfect? No. But, at the same time, we were able to be flexible and allow for those things that maybe didn't seem to be perfect to be an opportunity to get our client, in this case the villages Sodus Point, to the end point that they were happy with. The last thing is thinking about how to transfer. While this happened in Sodus Point, this process and all of these tools that I just discussed can be used anywhere along Lake Ontario.

### **Bresette**

That was a really great presentation Mary, thank you so much. That case study is such a great example that illustrates how data and information are actually different things and how you make that accessible to new audiences that need to know what you have to tell them. I am a New Englander, and I can confirm that many of our neighbors in upstate New York share our obsessive love of talking about the weather. Huge swaths of family gatherings are just remembering weather events. Your approach there makes a ton of sense.

Mary, you talked a lot about New York Sea Grant. Just as a reminder, we've heard more about Sea Grant this week, including Washington Sea Grant, so to our viewers who maybe missed Monday's briefing that featured Washington Sea Grant everything's available, including this presentation, will eventually be available online at EESI.org, and really I encourage everyone to consume the entire series. I think it all fits together really well, and tells such a great story of climate adaptation and data.

We're going to move to the Q&A portion, and before I introduce my colleague Amber I'm going to remind everyone that you can ask us questions by following us on Twitter @EESIOnline or sending us a note at EESI@EESI.org. Now my colleague, Amber Todoroff, she is on our policy team and she is going to get us started with Q&A. So, Amber, I'll turn it over to you.

### **Amber Todoroff**

Thanks, Dan, and thanks, Mary. The first question is: were there any kinds of data that you would have liked to have had but didn't, or would pursue for your next projects?

### **Austerman**

That's a really good question. Actually, at the start of this project the lake water level risk inundation mapping was not possible, and through the process that became available. I think that was one of the big pieces our communities are very focused on—I mean, they wake up in the morning, the first thing they do is check what's the water level today and what's the forecast look like. So, that was probably one of the biggest things. And we are working with other folks in the region about how we can enhance some of that modeling and make that more available in different formats, so that's probably the big one. Also, the climate projections have gotten more certain over the years and that's been helpful, too.

### **Todoroff**

You mentioned in the beginning that there are 33 Sea Grants. How do you guys collaborate, if you do collaborate?

**Austerman**

That's a great question. There is a lot of collaboration across the Sea Grant programs, both nationally and within the different regions. New York is part of three regions: Great Lakes, Northeast, and the Mid-Atlantic. Where I'm located, my primary group is the Great Lakes Sea Grant Network, and we do meet face-to-face every two years. We do a lot of collaborative projects, and are actually in the process of submitting a proposal right now about Great Lakes water levels. So, there's a lot of collaboration. We have leadership across the country, and also within the regions there are meetings, and so there is quite a bit of collaboration.

**Bresette**

We are starting to get some questions online, so thanks to everyone who's submitting them. Our first question is, how is your Lake Ontario inundation model different from the NOAA Digital Coast's modeling for their Lake Level Rise? I'm not familiar with that, so I apologize to the good people at NOAA if I butchered its name, but could you tell a little bit about what you're doing and how that's different?

**Austerman**

Full disclaimer, I am not the mapper, but I can explain the best that I can what some of the differences are. I believe that the person is asking about the Lake Level Viewer that NOAA has developed for all of the Great Lakes, and it's available on NOAA's Digital Coast. It's a fantastic tool, but the purpose of that didn't help our communities that wanted to be able to look at flood risk at the parcel level. It didn't allow you to zoom in all the way to parcel level, and so in a pinch and because we had the expertise through Jessica, we were able to make that happen with this other tool. But we are in discussions with NOAA about future collaboration on some of these inundation mapping tools. There are a lot of tools that are similar, but it's like a wise person once told me, you don't hammer a nail in the wall with a screwdriver. You have different tools for different applications.

**Bresette**

The next question has two parts. One, what is the reference for portraying lake level as 249+ feet? And then the second part is, does subsidence play a role on Lake Ontario?

**Austerman**

249 was of interest because while we were developing the inundation mapping tools we had not hit a water level of 249. We had been close, but not quite there, and so the communities had already experienced what it was like to have these other water levels, and they were interested to look at what could happen at the next level. Also, when we were talking about, if we're going to look at future scenarios that haven't happened yet, what do you want? What would be helpful there? So, that's where that 249 and a half and 250 came from.

As far as subsidence, with the Great Lakes, it's a bathtub. It is impacted by wind that can cause seiche in one area or embayment, but once the water is here it takes a very long time for the water to recede. So, when you saw those pictures that I showed, that's what it was like for a couple of months at least.

**Bresette**

I asked this question to some of the folks who work for Washington Sea Grant, because you have neighbors to the north as well. What is the collaboration like with New York Sea Grant and your partners in Canada? You obviously share the Great Lakes split between the two countries. What is that like, and do you have any success stories about how your agency has effectively collaborated with your Canadian partners?

**Austerman**

Yes, actually. We partner in a lot of different areas. One of the most popular areas is fisheries, but recently through these flooding events, the Cornell group and myself collaborated with folks in Canada on the survey. When we first did our survey, we had a very specific set of goals, and we also had limited capacity. We knew we couldn't just leave the survey open, because who's going to analyze the data? That was one of the things, and also why would we need to collect it for that long? We worked with them, shared our survey with them, and they have been implementing it over the last couple years as well. We do stay in touch for different things, but definitely the partnership between the researchers at Cornell and those in Canada has really been strengthened.

**Bresette**

That's great, that's really great to hear. Amber, I think you have a question.

**Todoroff**

I found some of those pictures to be very shocking, especially the fact that they were inundated for three months. Has there been a lot of talk about retreat? It's a very controversial subject in a lot of communities, but how is that approached in these community discussions?

**Austerman**

There has been a lot of work. There are two large state-driven initiatives underway right now. In 2019, the governor started this Resilient Economic Development Initiative that made \$300 million available to the shoreline to help identify these key priority projects that would benefit public areas and infrastructure, so that's been going on. Our Department of State is launching a Lake Ontario Coastal Community Planning Initiative sometime this year. Those are two huge things that are going on, and what was the last part of your question?

**Todoroff**

Just how the communities have been talking about retreat and if so?

**Austerman**

You're right, that's a very sensitive topic. That is one of the things that a group of us on another project are going to be talking about is what are some of these less popular actions, and what kinds of things would have to happen for those actions to really be an option? At this point it's not anything that's being welcomed, but people are starting to talk about it.

**Bresette**

How does the participatory public process differ from the other ways that you might engage the community? How else do you approach community members on a regular basis? You've described a case study that was specifically targeted to accomplish a goal, but what may be some other goals that you have with respect to community engagement?

**Austerman**

Everything I have right now is really bottom-up driven. We have our top-down focus areas and objectives, but for the work that I do and my Sea Grant counterparts do, typically our niche is being that connection and making sure that we're involving the public, the stakeholders, to the extent that is really needed for the project. To be honest with you, I can't think of anything that I have going on that is any different.

**Bresette**

How was Cornell selected to be involved in your work? There are a lot of universities in the upstate area, and I was wondering what led Cornell to be such an important part of your work and how you ended up being housed there.

**Austerman**

Cornell is our land-grant university in New York, and the Sea Grant programs are affiliated with the land grants. Being part of extension, there are things and opportunities at Cornell that we're able to take advantage of and participate in. This whole relationship with this particular researcher, Dr. Scott Steinschneider, that all stemmed from Engage Cornell, which is this opportunity that faculty can really help get their students involved with local issues. The idea of lake levels came up, the researcher and I had never met, we happened to be sitting next to each other. It was really a perfect storm, and the two of us have been working well together and collaborating on a lot of things. It's one of those things when it works, just keep going with it.

So, for this water level situation, he had the expertise of a modeling piece, I had the expertise and the community engagement piece, and so the two of us were able to work well. Also, with the inclusion of the Department of Natural Resources for surveying and things like that.

**Bresette**

Very cool. Amber, I think you have the last question for today.

**Todoroff**

I was really interested in one thing you said about how some people are more receptive to storytelling and others are more receptive to data. How did you guys distribute the story? How has that been received generally, the storytelling versus the data? There hasn't been a lot of talk about storytelling in weather events in this event series so far.

**Austerman**

So far, it's going very well. One of the things that I'm very interested in is getting some work on that in the future get some video clips of people actually describing their experiences. It's very powerful. I think a lot of times you can look at what happened, but when you hear how somebody was impacted it really hits home. We have a story map that has some of the data that was more open-ended about, we were afraid we were going to lose power so we had to shut our power off, and you couldn't live in her house for months, and so some of those things are in this story map that we put together. It's interesting to see people's responses to the stories—who doesn't love to hear a story—but I think people are really connecting on a personal level to those aspects, so they're going well. But still, people want to know [inaudible] behind those events as well, so I think the marrying of the two works really well.

**Bresette**

That's cool, that's really interesting. I think having videos would be really powerful, not just hearing the stories, but seeing. Part of storytelling, right, is that you get to see somebody tell the story and read their emotions, and that's a really cool idea.

I think we're going to end it there. This was really an excellent presentation today, Mary. Thank you so much for joining us and sharing your work with us, and your experience with us. I think the storytelling question was a great way to wrap up a week of storytelling about climate and adaptation data, so you really ended up on a great note, so thank you very much for that.

Just a couple quick things before we sign off for the day. The first is a reminder that next Tuesday we will have our next coastal community resilience briefing; we're going to be looking at coastal communities of Alaska, that's Tuesday the 21<sup>st</sup>. Please stay tuned for an announcement later, we're going to be looking at the U.S. Virgin Islands and Puerto Rico. That will be our last one of this briefing series, and obviously they have another set of stories to tell, and we'll need to hear them to have a more rounded picture of all of these issues.

Let me also just say thanks again for the just briefing miniseries. It's a lot of work that goes into it, and so let me just thank Amber for all of the work she put in, Anna, Amaury, Dan O'Brian, Sydney, Abby, Ellen Vaughan, our policy director. It took a lot of work to pull this off, and I think it went really well. If you would like to validate that thinking that it went really well, I invite you to take our survey. Please share any feedback or suggestions about how we might do better. I don't think we'll do another briefing miniseries in the near future because I think Amaury will have a thing or two to say about that, but I think this went really well, and it's fun to have a deeper dive with our panelists and be able to have a longer presentation and a more conversational style. So, please fill out our survey.

Thanks again for everyone. Mary, I hope you have a great weekend, and congratulations on all your great work, and thanks for such a great presentation. And to our audience and all of those who submitted questions, thanks for your attention this week. I hope you learned a lot, and I hope we'll see you back online for the next EESI briefing, and eventually hopefully we'll see you in person when we resume our work on Capitol Hill in person. Thanks again everyone, and we'll go ahead and end there.



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