

Precipitation Trends, Flooding, and Community Resiliency Program: Pilot Test II

RMC Research Corporation, Portsmouth, NH

I. Background

In fall 2011, RMC Research developed a survey to capture audience feedback on the SOS Presentation: *Precipitation Trends, Flooding, and Community Resiliency Program*, in development by the Nurture Nature Center in Easton, Pennsylvania. Surveys were developed as a follow-up to an earlier pilot test, and designed to provide feedback useful for further refinement of the program. Forty-three visitors completed surveys following presentations facilitated by various staff members over approximately two weeks.

II. Findings

1. Program Description

Participants were asked to select from a list of eighteen descriptors that best described the SOS Presentation.

“Interesting” (95%) and “informative” (84%) were the most commonly selected descriptors of the program. This was followed by the terms “engaging,” “important,” and “factual,” selected by 63%, 60% and 60% of respondents respectively.

Smaller numbers described the program as “clear” (49%), “motivating” (23%), “powerful” (21%) and “controversial” (16%). One person each selected “uninspired” or “authoritative.” Write-in comments, by one person each, included “amazing,” “cool,” “lacked enough specific scientific details,” “way good,” “aesthetically pleasing” and “relevant.” No participants selected “boring,” “scary” or “slow.”

The table below presents findings of the most common responses (selected by two or more audience members).

(n=43)	Number of Responses	Percent
Interesting	41	95%
Informative	36	84%
Engaging	27	63%
Important	26	60%
Factual	26	60%
Clear	21	49%
Motivating	10	23%
Powerful	9	21%
Controversial	7	16%

Old News	3	7%
Repetitive	3	7%
Biased	2	5%
Confusing	2	5%

2. How would you describe the main message of the program?

This question was posed to investigate how audiences were synthesizing the presentation which was composed of discrete data sets. Ten of the 43 respondents drew explicit connections between the content presented about climate change and increase in flooding. Another seven respondents each characterized the presentation as one of the following: a) a presentation about flooding, including simply awareness of it as a problem, in some cases as a global issue; b) simply noting that the presentation was about climate change; or c) that the issues presented required greater community attention. The remaining responses either offered praise for the presentation or very general responses about the content.

Connecting climate and flooding

- Understanding climate and flooding patterns is critical to preventing future flood damage.
- Informative on how increased temps increase rainfall and potential for flooding.
- Flooding is a complex issue related to climate, however there are certain actions that can be taken to prevent the issue.
- Climate change is an imminent danger that will impact precipitation levels and alter our communities.
- Our climate is changing more rapidly than it has in a long time – things? change will lead to increased rainfall and flooding.
- A clear and brief perspective on global climate change with a focus on water, flooding, and development.
- Global climate change and weather are affecting flood data and flooding levels which will decrease area of landmass in the world.
- How global climate issues affect and influence local weather patterns.
- Weather and climate change understanding is relevant on how we deal with environmental problems like floods and sustainability.
- There is an issue of climate and flooding and that everyone needs knowledge to form a solution.

Flooding

- To show the flooding trends in Easton and other areas around the world.
- Flooding and use of data.
- Significance and damage of flooding
- Flooding is a major problem.
- Flooding is very harmful and people should become more educated on it/its future.
- Awareness of flooding and natural phenomenon in Easton and around the globe.

- The program informs people on the dangers and reasons for flooding around the world.

Climate / Climate Change

- It was factual and eye opening on a worldly level. Although I do not know leaving here if there is anything I can do to help. It just gave a lot of information on climate/precipitation.
- How climate change affects our lives.
- Insight into climate change
- The climates, weather
- Showed climate change (perspective and actual).
- It's important to know about climate change and what to expect.
- Global warming is bad.

Importance of the Issues

- Things I never took time to learn and very important information to share with others.
- We need to pay attention to our water levels.
- The Earth is constantly changing and the water and air is something to pay close attention to.
- We have to pay more attention to the world.
- Being conscious of the Earth, climate, and how people affect them is of great significance.
- Take it seriously
- People need to be more aware of the environment.

Other

- The main message I believe was focused on predicting future weather patterns which is a very controversial topic so I would have liked to hear more about where and how they obtained that information.
- To protect the world
- Graphics on sphere are great – makes you think about problems on a global level.
- Enjoyed the program, look forward to more of them.
- Very good
- Water trends and how it affects the community.

3. Presentation of Key Science Content

Audience members were asked to indicate how satisfied they were with the presentation of key science content presented in the program. For each of the content areas, at least 95% of audience members indicated they were either somewhat or very satisfied. The strongest ratings were for the presentation of “how climate change is impacting flooding in some parts of the world” and “the difference between weather and climate” which received 84% and 79% responses of “very satisfied” respectively. Complete findings are presented in the table below.

Key Science Content	Not at all Satisfied	Somewhat satisfied	Very satisfied
How climate change is impacting flooding in some parts of the world (n=43)	0	16%	84%
The difference between weather and climate (n=43)	5%	16%	79%
The current and future precipitation trends (n=42)	5%	26%	69%
Impacts of flooding on people (n=42)	2%	31%	67%
The Science of Precipitation (n=43)	5%	30%	65%
How communities can think about resiliency in the face of flooding (n=43)	5%	37%	58%
How a computer model works (n=41)	5%	39%	56%

Participants also had an opportunity to offer comments about the presentation of each of these key science concepts. They included a mix of praise or comments that the information was clear, with suggestions for additional information, such as additional factors that influence precipitation could be included or more time spent discussing flood management. Complete responses follow.

The Science of Precipitation

- There are many more scientific factors that impact precipitation (the Coriolis effect, for example) that may have made the presentation more informative
- Great images
- Talked about everything
- I am a big fan of the water cycle
- Great use of changing maps

The difference between weather and climate

- Very clear
- Briefly explained

How climate change is impacting flooding in some parts of the world

- Population density vs. 1-m water level rise
- Showed how land use could change.
- Not specific places

How communities can think about resiliency in the face of flooding

- Very inspiring

- Clearly the presentation was not long enough for everything but flood management tools/tactics would have been an interesting component.
- Very clear and informative
- Some more specific examples would be helpful to me if I were a homeowner.
- Talked about forums and education.
- Need more on role of policy makers.
- Has there been any effort in Easton to move away from the river?

The current and future precipitation trends

- Data is fishy

How a computer model works

(no comments)

Impacts of flooding on people

- A number of people that these flooding areas affect.
- More visuals
- All that was said was there are impacts

4. Confusing Aspects or More Information Needed

Respondents were asked to describe anything that was confusing, or any information that they felt should have been included that was not in the program. Audience members offered a variety of specific requests for additional information, such as showing how the polar ice caps would melt, information about the source of data and weather predictions, and specific examples of climate changes, impacts and solutions. A few others asked for clarification about specific aspects of the visualizations, including whether the cloud cover was real time and the use of color. Three people indicated that additional information was needed about the discussion of computer models and another three people were looking for suggestions on what individuals can do. Finally, one person suggested that larger images could be shown on the sphere and another wondered about the work of the NNC.

Additional Information or Clarification Requested

- Show how the polar ice caps would melt.
- Case studies by area relating temperature/climate change, the impact and solutions.
- Real life effects would be more effective instead of #'s and % about flooding.
- Maybe how much oceans have risen in past 10/20 years, and what people are currently doing to combat this.
- More suggestions for floods.
- Future precipitation trends could have been described in more detail (with actual data being used to predict these trends) so that it is more clear what we are dealing with and more powerful in inspiring audiences to react.
- How you obtained the weather predictions?

- Was the cloud cover real time?
- Some of the color changes red-blue seemed a little off by continent, as far as accuracy.

Computer Models

- How a computer model works
- I am confusing with a computer model.
- Everything was mostly clear; more explanation on computer model.

Behavioral Choices / What We Can Do

- I understood all, and the solutions at the end, maybe more about how we could contribute to them.
- What can we do to prepare?
- What can we do “today” and “now” to help with these issues? Give the audience more motivation to get active.

Other

- Pictures can be bigger on sphere.
- What the nurture nature program is doing.

5. Would you recommend this program to others?

The 40 people who answered the question indicated they would recommend the program to others.

Approximately 18 people indicated that they would recommend the program because it was interesting and/or informative. Some of the more detailed responses within this group included the following: “I would recommend the program because it was very informative and gave a great visual to important information,” “Very informative, easily accessible; engaging, almost fun to watch. Impactful to see the planet represented on the sphere like that. A rare opportunity,” and “I would recommend this program because it offers a comprehensive background on the climate issues affecting local and global weather patterns.”

In some cases they specified the types of people to whom they would recommend the program. These included students and teachers, particularly high school students; children and adults, community leaders, and both experts and newcomers to the material.

Eight people noted the information was important to know. A sampling of these responses includes the following: “People should be aware of some of these things,” “Information people need to know so they are not clueless like I was,” and “It is a global and local issue that we all need to be informed about.”

Six people offered praise for the Sphere; most frequently describing it as “cool,” or noted that it was a good opportunity to see the sphere.

Complete responses follow.

Interesting / Informative

- Informative, the sphere is really cool.

- Interesting, informative
- I would recommend the program because it was very informative and gave a great visual to important information.
- Interesting and engaging
- Interesting and informative
- It is very informative about flooding and very to the point. Doesn't include unnecessary information.
- I would recommend that because I learned something.
- To everyone it is informative and you can learn something.
- I would recommend this program to most students and teachers. Even people who enjoy science and the Earth. Or even people who would like to learn new things.
- Very informative, easily accessible; engaging, almost fun to watch. Impactful to see the planet represented on the sphere like that. A rare opportunity.
- For the expert: enjoyable as an initiative to raise awareness. To the uneducated: offers a balance between technical info vs. laymen that won't overwhelm.
- Children of a mature age as well as adults in the community to educate them on the world in which they live.
- It has great background information on the science of the Earth. Good for audiences with minimal knowledge on subject. Students – high school level.
- I would recommend this program because it offers a comprehensive background on the climate issues affecting local and global weather patterns.
- Good, informative, needs to be talked about.
- Interesting
- Informative and important information that is relevant to everyone in our society.
- It is a very interesting visual representation of the situation.

Audiences

- I'd recommend to other students people interested in environment.
- School field trips

Important Issue

- This is an important issue for community leaders to grasp.
- The public needs to be informed about these issues even if there is not as much detail as an environmental science course.
- Start to education on the Earth/flooding, etc.
- People should be aware of some of these things.
- Because it's good info to know.
- Information people need to know so they are not clueless like I was.
- It is a global and local issue that we all need to be informed about.

Sphere is Cool / Novel

- The sphere is cool and does a good job of showing the data.

- It was cool and interesting.
- This is something I guarantee you have never seen before. The sphere – great visual understanding.
- I thought it was a very neat opportunity to see the sphere.

Miscellaneous

- Great space/organization look forward to learning more!
- Know answers to questions people ask – not who can answer them.
- I would make this a floor program for my residents on college hill.

6. Do you have any other suggestions for the Nurture Nature Center about how to improve this program, the facilitation, the seating around the Sphere, or anything else that can help us improve the program?

Suggestions for NNC included additional information for this program such as more information on the effects of impermeable surfaces, for additional sphere programming and for exhibits and decoration around the room and building. Others suggested increasing the involvement of Lafayette and other students, general praise for the program, and the need to advertise the Center

Suggestions for NNC programming

- To do more and different topics.
- Many possibilities – updates; excellent TV programs covered summary of all floods; maybe someone could tape from TV.
- Maybe explain more about how impermeable surfaces increase flooding in certain areas.
- Do more fun things with the sphere.
- Some sort of exhibit around the room. Something hands on would be cool and engage younger generation (though that might be elsewhere).
- More décor within building. I understand that place is relatively new and still under construction.

Increase Involvement of Lafayette and Other Students

- Engage Lafayette students more in research/community work.
- Would be nice to see a stronger connection with Lafayette students.
- Get Lafayette more involved, host something at the school.
- Involve local schools e.g., high schools and colleges.

General Praise

- Keep up the good work and your speakers that explain as you go on.
- No, it is great the way it is.
- Not really, it's pretty novel.
- It was good and set up was good as well.

Advertise

- Have ads for this place.
- Further advertisement

Miscellaneous

- It's a little bit cold but I'm from the south it's A-OK.

III. Summary and Recommendations

Audiences responded very positively to the Sphere presentation; all of those who responded indicated that they would recommend the program to others. Respondents saw the presentation as appropriate for a wide range of ages, though particularly high school students and up, people with different knowledge levels and for community leaders.

Additional findings suggest that the presentation has come a long way in focusing in on the content and offering a coherent narrative. The most commonly selected descriptors included “interesting,” “informative” “engaging,” “important,” and “factual.” Just under half described the presentation as “clear.” Respondents indicated that the content areas which were most satisfactorily addressed included “how climate change is impacting flooding in some parts of the world” and “the difference between weather and climate” emerged as the strongest concepts presented.

RMC recommends continuing to focus the main message(s) of the presentation. Further refinement of the program can be made by attending to some of the suggestions for greater clarification or additional information offered by respondents, including the following:

- Continue to find ways to reinforce connections between evidence of climate change and flood risk.
- Provide specific examples or case studies of locations/communities where there might be increased flooding, what the local factors leading to increased flooding might be, as well as impacts of flooding in those areas and community responses
- Provide information on sea level rise in the last 10/20 years and the impacts and responses in different communities
- Provide more detail on current and future precipitation trends and the sources of data and nature of the predictions
- Provide more information on computer modeling
- Provide concrete suggestions of how people can get involved in the effort to alleviate flooding or flood damage; including both further opportunities for learning and things they can do in their homes and communities; consider suggestions appropriate to the context of the presentation, e.g. school group presentations, stand-alone presentations for the public, presentations followed by forums; and offer suggestions for both individual action and community resiliency

Natural warming cycle?

IT'S ALL POLITICAL.

Why don't people just get that the planet is warming?

OZONE HOLE?

FOUR-PART CLIMATE SERIES:

Weren't scientists warning us in the 1970s that an ice age was coming?

Aren't there bigger things to worry about?

If the planet is warming, then why is it so cold?

Why do so many scientists disagree?

What can I do anyway?

LECTURES AND QUESTION SESSIONS

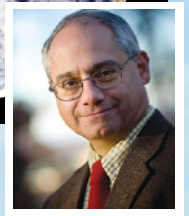
Dr. Sahagian, a climate expert from Lehigh University, will present the latest thinking and take any and all questions.

Climate 101: The Nature of Climate, Tuesday, January 24 — 7pm to 9pm

- Climate history- ever changing climate in a restless world
- Natural climate variability - what causes change
- What people do to affect climate- emissions and land use
- Greenhouse effect - how it works

Climate 102: A People Planet, Thursday, January 26 — 7pm to 9pm

- History of human activity
- Observations of global change since the industrial revolution
- Projections of future climate - IPCC and what its all about
- The "climate controversy" - fact and fiction



Dr. Sahagian

COMMUNITY ART WORKSHOP

Earth as Art: Examining Our Footprint from an Aerial Perspective

Saturday, January 21 — 10am to 1pm

Saturday, February 11 — 10am to 1pm

Art instructor and environmentalist Tom Maxfield will lead two hands-on, free public workshops exploring visions of land use as modern art that will culminate in the creation of a collaged painted mural to be on display at the Nurture Nature Center. Call to register or for more information.



VALLEY-WIDE FORUM

The Future of the Lehigh Valley: What Will Climate Changes Mean For Us?

Thursday, February 9 — 7pm to 9pm

- Global climate change and how it affects PA
- Projections of future climate impacts on PA climate
- Implications of climate change and land use on flooding potential in the Lehigh Valley.
- Discuss issues in your community.

All events to be held at the Nurture Nature Center.

To register, contact Kate Brandes at 610-253-4432

or kbrandes@nurturenature.org

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Nurture Nature Center's Climate Change Forum One Report by RMC Research Corporation, Portsmouth, NH

I. Background

RMC Research Corporation staff members developed a survey in early 2012 to capture participants' reflections of the February 9, 2012 public forum held at the Nurture Nature Center (NNC) in Easton, PA. The forum comprised a lecture with slide show and Science on a Sphere™ demonstrations on the local impacts of global climate change in Pennsylvania's Lehigh Valley, followed by facilitated small-group discussions among participants. Approximately 90 people attended the lecture and approximately 80 stayed for the discussion. Fifty-seven discussion participants completed the surveys. In the findings that follow, some responses contained more than one idea and appear in more than one category. No one was counted more than once in any given discussion, however.

II. Summary of Findings

1. Motivation for Attending

Slightly more than half (54%) of participants indicated that a professor had suggested they attended or that their attendance was required for a class.

A quarter (25%) indicated they had attended because they were interested in learning more about climate change, that climate change was an important topic, or because they were interested in environmental issues, as in: "my desire to provide a healthy ecosystem for my children."

Just under one-tenth (9%) reported they attended because they were facilitators or NNC volunteers.

Two attendees—4%—indicated they had attended specifically to hear Dr. Sahagian's presentation on climate change.

Another 9% gave other responses—they worked with an environmental organization, they teach climate change and were interested in community responses, they wanted to share ideas with others and learn what others think, or they wanted to know more about NNC programs. One participant thought the program was about "weather rather than climate change impact."

2. Greatest Value of the Forum

Fifty-two participants (91%) responded to an open-ended question about what they valued most about the forum.

The “discussion” and “openness of the discussion” merited the greatest number of responses (17).

Fourteen participants reported that they most valued the other people who showed up and the opportunity to share ideas, as in:

- *Being able to discuss and listen to others’ thoughts and opinions.*
- *Opportunity to share and learn other people’s ideas.*
- *Community initiative to come out, talk, and learn more.*
- *The fact that people from all over, of all ages, can share their thoughts.*
- *It was full of people I have not met before who cared enough to come!*
- *Meeting people from the community with similar interests*
- *Learning about other people’s opinions on the topic. Lecture was interesting, but individuals make change so their opinions are important.*
- *Giving community members change to talk about what they think is extremely valuable and not a normal occurrence.*

Dr. Sahagain’s presentation received nine responses, including details such as:

- *Powerful message.*
- *The perspective of climate scientists towards prioritizing initiatives and the importance of recognition that change has already occurred, as well as the projected amount of change.*

Seven people found the way the event was structured most valuable:

- *Format, small groups with bigger discussion; lecture prior to forum.*
- *The variety of options.*
- *The questions in the group discussion.*
- *Small group discussions, easier to voice opinions as opposed to large ‘town hall’ discussions.*

Three comments concerned the value of differences:

- *Diverse thoughts from peers in the community being shared to create positive outcomes.*
- *Difference in opinion.*
- *Many different ideas were presented.*

Two participants cited learning as the event’s greatest value:

- *Expanding knowledge beyond what I know.*
- *I learned a lot about the contamination in the air — the changes [in] climates.*

One person indicated he or she valued “the globe” most highly.

3. Expectations, Information, and Comfort Levels

Participants rated four statements according to whether they agreed, strongly agreed, disagreed, or strongly disagreed with them:

	Strongly disagree	Disagree	Agree	Strongly agree
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The forum matched my expectations.	2% (1)	4% (2)	72% (39)	22% (12)
The information presented is important for people like me.	4% (2)	2% (1)	54% (30)	40% (22)
I am better informed about climate issues in my community.	2% (1)	13% (7)	47% (26)	38% (55)
I felt comfortable voicing my opinions.	4% (2)		46% (25)	50% (27)

Respondents rated the importance of the information and increases in their knowledge of local climate change issues highly. Half of all respondents strongly agreed that they felt comfortable voicing their opinions—the highest rating among the four statements.

4. Changes in Understanding of Climate Change

Forty-four people (77%) answered an open-ended question about how the forum changed their understanding of climate change. A strong majority of respondents—24—indicated they were generally better informed or more aware of climate change as a result of the forum.

Within those 24, eleven respondents indicated their **overall understanding** was enhanced, as in:

- *Clearer picture of local changes by season.*
- *Gained an overall understanding of the issues.*
- *More aware of how soon these changes may affect us.*

Eight respondents indicated increased understanding of **local aspects of climate change**, as in:

- *The specifics covered during the PowerPoint put climate change easily into context.*
- *Increased vegetation issues; understanding of the pressing nature of climate change in my backyard.*
- *I was surprised to hear PA has the 3rd highest emissions in the US and 20th worldwide.*
- *I was unaware how bad PA was with greenhouse emissions.*
- *It helped me better understand why flooding occurs and what has been happening with snow in October.*
- *I am more aware of the issue, also a local climate trend might not necessarily reflect the world as a whole. I learned to look at Lehigh Valley with a different scope.*
- *I learned about the specific changes that will affect the valley. Before, I only knew about global changes.*

Finally, six respondents indicated they understood **specific scientific issues** better:

- *Details of A-2 and B[AU] emissions scenarios for northeastern USA, especially summer-winter contrasts.*
- *I just know that climate will change & I learned about phenology.*
- *I gained more of an appreciation for the variety of impact of climate change, and a bit more knowledge about its more granular aspects.*
- *I know new terminology and have a more realistic understanding of the issue.*

In addition, four respondents noted other, non-scientific points of learning, as in:

- *I understand how important community science education is.*
- *I learned from the opinion[s] of others during the Q&A component of the program.*
- *More people than I thought are concerned about this.*

Two respondents described his or her changed understanding in terms of action, for example:

- *I have a greater incentive to seek additional info at the local Lehigh Valley level.*

Twelve respondents indicated their understanding had not changed or they had not learned anything, as in:

- *My understanding remained largely the same.*
- *It didn't [change] but I am well informed but I like the focus on water issues as it is locally relevant.*
- *I didn't know what to expect. It's very important, but I didn't learn much new.*
- *Not much, we didn't talk a whole lot about local stuff just global stuff mostly.*
- *Did not, already knew a lot*

5. Community Preparedness

Fifty-three participants (92%) responded to a question about whether they believe their community is prepared for potential changes as a result of global climate change. The greatest number (68%) said they did not believe their community was prepared; 26% said they believed their community was prepared, and 6% answered “yes and no” — they believed their community was prepared in some respects but not in others.

Asked to explain their answers, 81% added information. A preponderance of responses (27) described their communities as unprepared.

Thirteen of these 27 responses concerned a **lack of education**:

- *Despite the display of knowledge among tonight's participants, I believe there is massive ignorance, indifference, and denial here and around the country.*
- *I don't think enough people are educated or care.*
- *I don't think the community is properly educated yet to make appropriate decisions.*
- *A community needs to have a shared understanding of the problem and potential corrective actions.*
- *I think a large part of our community is unmotivated to learn more about today's leading issues*
- *Because people are not aware of this issue or they do not take this issue seriously to change.*
- *I think we as a society are still not understanding the impact of climate change - need more education.*
- *People are not educated on the issue.*
- *We don't have either knowledge, awareness, or community sense yet.*
- *In general, I believe community is under/mis informed on issues.*
- *Too much denial, apathy, or lack of education exists.*
- *Need more education for general public to take this seriously.*
- *Needs to be something everyone is aware of and prepared for - not nearly enough people know.*

Eight respondents pointed to preparation for the effects of climate change as a **low priority** in most people's minds:

- *I don't think in the economic climate, it is high on many people's priority list*
- *I live in a suburban environment where climate change is a very low priority.*
- *There is no talk about this topic in my town.*
- *Judging by the amount of people and the types of answers I don't think the majority is ready.*
- *Most Americans are unprepared. We as a nation are trying to avoid this issue.*
- *Not convinced that the majority really cares about this - how do we get the nay-sayers out?*
- *People can't change overnight there have been small initiatives but nothing has really taken flight.*

Another eight cited **other reasons** for their communities' unpreparedness:

- *We just keep digging ourselves into a hole.*
- *I feel most living in eastern/along flood plains will be opposed to relocating.*
- *I live in a flood plain so we do have systems, but there are many areas of life we are not prepared for.*
- *Because not everyone was here tonight.*
- *Community is the greater Lehigh Valley - no planning at that level*
- *Climate change is somewhat unpredictable, which makes it hard to prepare for.*
- *If it is, I don't know the plan*

Six respondents reported hope that **change is possible**, as in:

- *I'm busy at work trying to prepare people*
- *Because there are forums like these*
- *Easton has many opportunities to change itself.*
- *Community could do more to ready buildings for flooding and restrict people from building in the flood plain.*

And eight participants indicated their communities **were prepared**, as in:

- *I come from a relatively educated & resourceful community that lives on a river & 10 miles from the ocean, so we know a lot about flooding.*
- *I think people are eager to change from our abusive environmental history.*
- *I think these issues are increasingly in planner/engineers and people's plans/thoughts.*
- *People appear motivated to change for better good.*
- *The fact we have this [forum] shows that people are ready for change.*
- *There are many passionate people devoted to change but the challenge will be influencing others.*
- *Yes, but I think it is important to approach changes from a pragmatically motivated basis.*

6. Regional Effects of Climate Change

Participants were asked how they thought climate change would affect them locally. Forty-eight participants, or 84%, answered this survey question.

Sixteen people identified **increased flooding** as a future consequence, for the greatest number of responses. Several people elaborated or expanded on flooding, as in:

- *Flooding, changes in seasons, etc.*

- *Flooding; heat waves and their impact on the poor and the elderly.*
- *Increased flooding, more pressure to assist low-income areas during emergencies, such as 100 degrees F days in summer.*
- *Increased precipitation and deforestation already affects this area, along with rampant development.*
- *More flooding, health issues (more allergies, asthma, etc.), negative agriculture impacts*
- *More flooding - really bad in Easton. I don't really want to return to this region once school is over.*

Eight people identified **changes in weather**, as in:

- *Warmer/colder/wetter/dryer when it shouldn't be*
- *Sounds like the temperature is going to warm and more rainfall in winter. We have some control over climate change but we must act.*
- *Warmer winters, which is bad & boring.*

Two people cited **ecological consequences**, for example:

- *Loss [of] key native species, propagation of invasive or species not historically part of region; more storm water/flooding issues*

Two people suggested that local changes will unfold **predictably**:

- *Exactly the way that the models predict; they have been remarkably accurate thus far.*
- *It's probably carrying disastrous potential, faster than most predictions and coupled with economic instability peak oil issues. We need to get ready.*

Four people anticipated **social changes** as a result of climate change:

- *Bring us closer as a community & educate more people about climate change*
- *I think we may need some changes in policies.*
- *It will cause disruption in economical [sic] and social levels.*
- *It will force the community to belatedly address the issue.*

Four people registered **uncertainty**:

- *I do not know - it may not be knowable without further recording of actual temps and rain patterns - not computer models.*
- *Not sure.*
- *Not sure yet.*
- *To investigate - not sure.*

Thirteen people identified broad, non-specific effects.

6a. Value of Individual Forum Components

Fifty-four participants, or 82%, rated the components of the forum.

	Not at all valuable	Somewhat valuable	Very valuable
Lecture/Sphere presentation	2%	32%	67%

	(1)	(17)	(36)
Small-group discussion	2% (1)	24% (13)	74% (40)
Open floor discussion	17% (9)	62% (33)	21% (11)

Nearly one in five participants rated the open floor discussion as not valuable; this may be a consequence of the relative brevity of that section of the forum’s activity or the greater appeal of small-group discussion.

7. Follow-up Actions

Fifty-four people, or 82%, rated the likelihood of taking five specific actions.

	Not likely	Likely	Very likely	Not applicable
Learn more about climate change.	17% (9)	24% (13)	52% (28)	7% (4)
Contribute to conversations and share ideas with friends, family, or colleagues about climate change.	6% (3)	33% (18)	59% (32)	2% (1)
Attend additional forums on this or other topics.	20% (11)	44% (24)	33% (18)	2% (1)
Get involved in community planning or attend municipal meetings related to what was discussed today.	28% (15)	41% (22)	30% (16)	2% (1)
Re-visit the Nurture Nature Center.	13% (7)	24% (13)	59% (32)	4% (2)

It is notable that nearly three in 10 participants indicated they were not likely to get involved at the community or municipal level in climate change discussions or activities.

8. Improvements in the Forum Format or Content

Forty people, or 70%, made suggestions to an open-ended request for improving the forum.

Sixteen people had suggestions about the forum **format or logistics**, particularly the amount of time:

- *A handout copy of the presentation slides would be helpful and appreciated.*
- *Don't give a presentation at night in the dark*
- *Have the lecture in the discussion room.*
- *Slide background not glaring white; more questions*
- *Encouragement to attend Climate 101 & 102*
- *A larger general discussion, not just sharing of ideas*
- *Put the pretzels into the paper bowls (quieter); Hershey Kisses = great*

- *More time for free discussion.*
- *Allow for more time to discuss alternatives outside the box.*
- *A bit more discussion time, or time for rebuttal.*
- *More time for discussions (maybe twice as long).*

Four people had suggestions concerning **the lecture**:

- *Be sure speaker speaks a bit more slowly and doesn't stand in front of slides.*
- *I would have enjoyed hearing more from the presenter. He was rushed.*
- *More questions for speaker*
- *Intro presentation needs to be more simplified. Better explanation of figures & charts is necessary. Don't assume ANY concept is obvious or well-known by the audience. Community members are not necessarily well versed in science topics!!*

Seven people offered suggestions about **the questions posed** in the small-group discussion and the audience:

- *Additional question related to food/ecology*
- *Get more questions & discussion with authorities*
- *Get more people to attend that aren't believing in it or are passionate.*
- *More elected officials (Sal Punto)*
- *Open up for more people...may need larger venue though.*

9. Other Climate Series Events Attended

Six people (10%) indicated they had attended Climate 101

Six people (10%) indicated they had attended Climate 102

Three people (5%) indicated they had attended both Climate 101 and 102

Two people (4%) indicated they had attended the Community Art Workshop

10. Willingness to Provide Further Information

Sixteen people (31%) offered contact information in order to be interviewed about their reflections on the forum.



March 8, 2012

**Summary Report for Community Decision Makers
Nurture Nature Center Forum
The Future of the Lehigh Valley:
What Will Climate Change Mean for Us?**

This report summarizes the results of a community forum on climate change in the Lehigh Valley held at Nurture Nature Center (NNC) on February 9, 2012. The report synthesizes the perspectives of a diverse public audience on the topic, and reveals that a majority of forum attendees feel that climate change is an issue that should be addressed at the local level. This report is designed for local decision-makers and other stakeholders to provide them with detail about the concerns and priorities of the local community related to climate change.

NNC's mission is to help communities address local environmental risks through science, art, and dialogue. With support from the National Oceanic and Atmospheric Administration (NOAA)¹, NNC hosted a community forum on climate change in the Lehigh Valley at its Center in Easton, Pennsylvania. Over 90 people attended the event and about 80 participated in the dialogue. This forum was part of a four-part series on climate change hosted by NNC. The four-part series began with two lectures from Dr. Sahagian, a climate expert from Lehigh University, on global climate change. The lectures were titled *Climate 101: The Nature of Climate* and *Climate 102: A People Planet*. These lectures were followed by the community discussion forum. An art-based workshop that focused on land use concluded the four-part series. This report will summarize the results of the forum only.

The forum provided an opportunity for discussion about community-specific issues related to climate change at a local level, particularly flooding. The program helped to educate

¹ Financial support for this project under award NA10SEC0080020 is from the National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Commerce. The statements, findings conclusions, and recommendations are those of the author(s) and do not necessarily reflect the views of the National Oceanic and Atmospheric Administration (NOAA) or the U.S. Department of Commerce.

community members about climate and flooding and to gather and share with area decision-makers their meaningful feedback, including concerns and priorities about localized climate change. About thirty of the participants were in attendance because a professor had suggested they attend the forum as part of a class assignment. Other attendees were interested in learning more about climate change or discussing the issues with community members.

Participants understood that their feedback would be summarized in a report that would be delivered to decision-makers in their community. This report, compiled by NNC, contains a summary of the community responses during the forum as well as results from a survey conducted by RMC Research Corporation, an independent project evaluator funded through the NOAA grant.

Program Format

The forum began with a short presentation by Dr. Sahagian that summarized his previous Climate 101 and 102 lectures and then described climate change on a regional level. After a short question and answer session, the attendees were seated at tables of 5 or 6 for a facilitated discussion of two multiple choice questions. A table facilitator trained by NNC was seated at each table to help ensure that participants followed established dialogue rules, and to record the general substance of the discussion at each table. Although the questions were multiple choice, participants were given the option of writing a separate answer if the multiple choice options were not one the participant wanted to choose. Participants were asked to think quietly about the question for a couple minutes and then hold a conversation at their table for about ten minutes before answering the question. Following the deliberation, table facilitators summarized their table's discussion to the larger audience. The program concluded with a short open floor period, in which participants were invited to share whatever they wanted relevant to climate change and flooding.

The first question posed, with answers, was:

Is it the responsibility of the local community to address climate change?

- a. No, this is not a local issue, but a global one
- b. Yes, each person or community should do what they can
- c. No, I don't believe climate change is a pressing issue
- d. No, regulations need to be made on the state and federal level
- e. Other.

The second question, with answers, was:

If we can expect wetter conditions in the future and therefore more flooding, how do you think local communities should prepare? (Please rank the following from 1 (lowest priority) to 5 (highest priority))

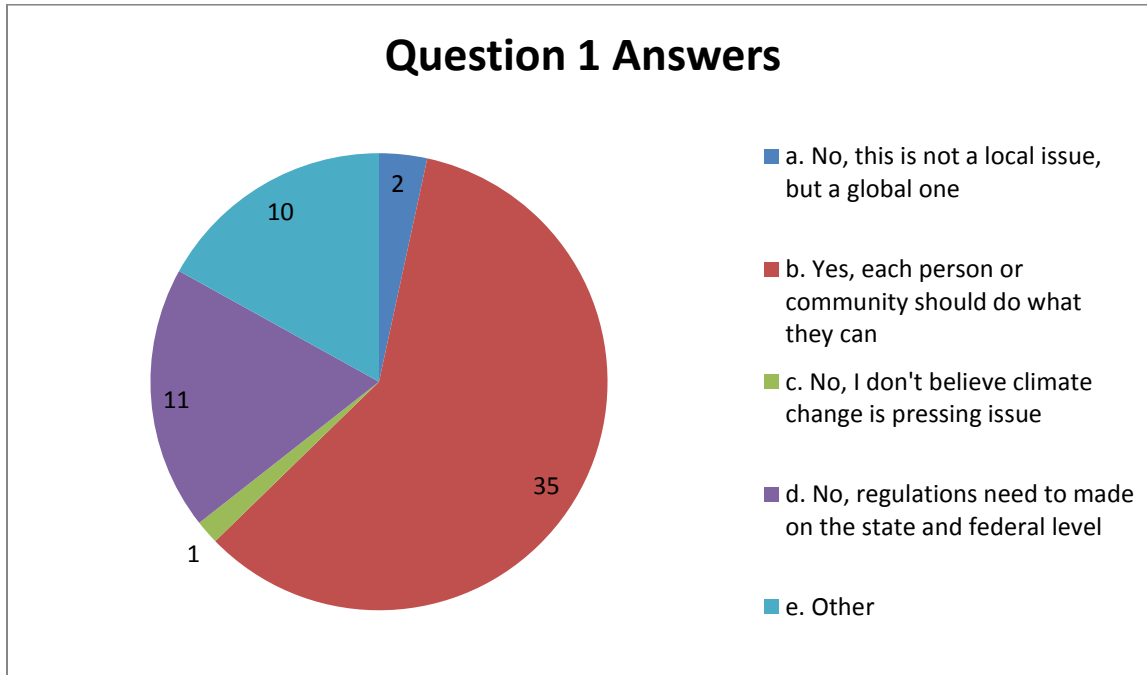
- a. Design and build infrastructure to accommodate increased storm water
- b. Develop better flood warning and preparedness systems
- c. Restrict building in the floodplain

- d. Better protect existing housing in the floodplain
- e. Other

Community Response to Questions Posed

Participant responses to questions 1 and 2 are shown below.

Responses to Question 1:

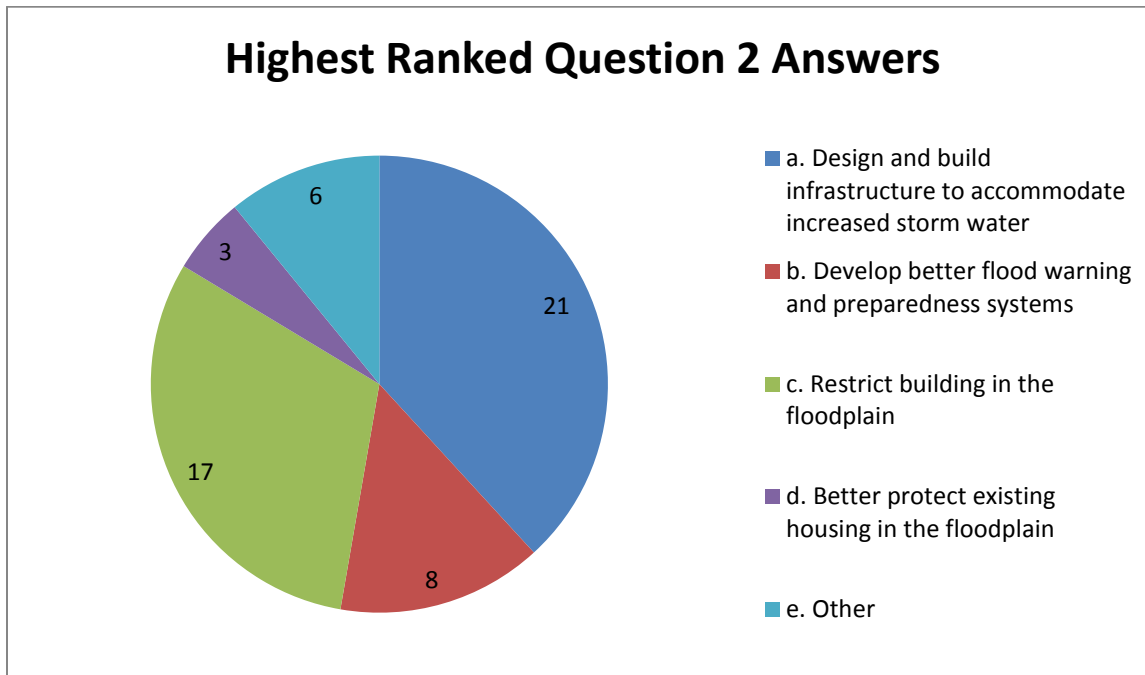


A few people answered both b and d. For those answering other, the responses were as follows:

- Not an individual effort alone, nor government alone, but as local communities, is the only way to do this and those community efforts include government and individual roles.
- Starting locally will only solve part of the problem. Adapt at local level, mitigate at global level.
- Let's have global, national, state, local and individual action. We need actions at all scales.
- This is a local issue as well as a global one.
- Option b with the addition that federal and state agencies provide a vision of what needs to be done, educate all of the problem, and establish or recommend goals for the nation, state, and community.
- It is a local issue; however regulations should be implemented specific to the local regions.

- Every person should have an awareness, but people/companies making decisions involving CO2 and fossil fuels have the most power.
- Must be both local and large scale changes must be made.
- The concept of manmade climate change is so divisive that workable solutions via energy policy and smart growth issues should be based on economic principles rather than on political issues (i.e.: IPCC positions).
- It is the responsibility of all levels of society/government to take a role in addressing climate change (individual, local, state, federal, etc.).

Responses to Question 2:



For those answering other, the responses were as follows:

- Encourage those in the floodplain to move.
- Get people to learn all of the above. And use permaculture strategies to increase the ability of the soil and landscape to absorb and store water for drought; direct water to where it's useful. Get government to respond to this with community.
- All of the above.
- Educate the public of the projected future flooding concerns.
- Educate public of importance – make compelling case for change! Establish right priorities.
- Restore existing floodplains.

Survey Results as Summarized by Independent Project Evaluator, RMC Research Corporation

The next section of this report comes directly from a report by independent project evaluator RMC Research Corporation, which summarized the results of a survey that was given to participants at the conclusion of the forum. Fifty-seven discussion participants completed the surveys.

1. Community Preparedness

Fifty-three participants (92%) responded to a question about whether they believe their community is prepared for potential changes as a result of global climate change. The greatest number (68%) said they did not believe their community was prepared; 26% said they believed their community was prepared, and 6% answered “yes and no”—they believed their community was prepared in some respects but not in others.

Asked to explain their answers, 81% added information. A preponderance of responses (27) described their communities as unprepared.

Thirteen of these 27 responses concerned a **lack of education**:

- *Despite the display of knowledge among tonight's participants, I believe there is massive ignorance, indifference, and denial here and around the country.*
- *I don't think enough people are educated or care.*
- *I don't think the community is properly educated yet to make appropriate decisions.*
- *A community needs to have a shared understanding of the problem and potential corrective actions.*
- *I think a large part of our community is unmotivated to learn more about today's leading issues*
- *Because people are not aware of this issue or they do not take this issue seriously to change.*
- *I think we as a society are still not understanding the impact of climate change - need more education.*
- *People are not educated on the issue.*
- *We don't have either knowledge, awareness, or community sense yet.*
- *In general, I believe community is under/mis informed on issues.*
- *Too much denial, apathy, or lack of education exists.*
- *Need more education for general public to take this seriously.*
- *Needs to be something everyone is aware of and prepared for - not nearly enough people know.*

Eight respondents pointed to preparation for the effects of climate change as a **low priority** in most people's minds:

- *I don't think in the economic climate, it is high on many people's priority list*
- *I live in a suburban environment where climate change is a very low priority.*
- *There is no talk about this topic in my town.*

- *Judging by the amount of people and the types of answers I don't think the majority is ready.*
- *Most Americans are unprepared. We as a nation are trying to avoid this issue.*
- *Not convinced that the majority really cares about this - how do we get the nay-sayers out?*
- *People can't change overnight there have been small initiatives but nothing has really taken flight.*

Another eight cited **other reasons** for their communities' unpreparedness:

- *We just keep digging ourselves into a hole.*
- *I feel most living in eastern/along flood plains will be opposed to relocating.*
- *I live in a flood plain so we do have systems, but there are many areas of life we are not prepared for.*
- *Because not everyone was here tonight.*
- *Community is the greater Lehigh Valley - no planning at that level*
- *Climate change is somewhat unpredictable, which makes it hard to prepare for.*
- *If it is, I don't know the plan*

Six respondents reported hope that **change is possible**, as in:

- *I'm busy at work trying to prepare people*
- *Because there are forums like these*
- *Easton has many opportunities to change itself.*
- *Community could do more to ready buildings for flooding and restrict people from building in the flood plain.*

And eight participants indicated their communities **were prepared**, as in:

- *I come from a relatively educated & resourceful community that lives on a river & 10 miles from the ocean, so we know a lot about flooding.*
- *I think people are eager to change from our abusive environmental history.*
- *I think these issues are increasingly in planner/engineers and people's plans/thoughts.*
- *People appear motivated to change for better good.*
- *The fact we have this [forum] shows that people are ready for change.*
- *There are many passionate people devoted to change but the challenge will be influencing others.*
- *Yes, but I think it is important to approach changes from a pragmatically motivated basis.*

2. Regional Effects of Climate Change

Participants were asked how they thought climate change would affect them locally. Forty-eight participants, or 84%, answered this survey question.

Sixteen people identified **increased flooding** as a future consequence, for the greatest number of responses. Several people elaborated or expanded on flooding, as in:

- *Flooding, changes in seasons, etc.*
- *Flooding; heat waves and their impact on the poor and the elderly.*
- *Increased flooding, more pressure to assist low-income areas during emergencies, such as 100 degrees F days in summer.*
- *Increased precipitation and deforestation already affects this area, along with rampant development.*
- *More flooding, health issues (more allergies, asthma, etc.), negative agriculture impacts*
- *More flooding - really bad in Easton. I don't really want to return to this region once school is over.*

Eight people identified **changes in weather**, as in:

- *Warmer/colder/wetter/dryer when it shouldn't be*
- *Sounds like the temperature is going to warm and more rainfall in winter. We have some control over climate change but we must act.*
- *Warmer winters, which is bad & boring.*

Two people cited **ecological consequences**, for example:

- *Loss [of] key native species, propagation of invasive or species not historically part of region; more storm water/flooding issues*

Two people suggested that local changes will unfold **predictably**:

- *Exactly the way that the models predict; they have been remarkably accurate thus far.*
- *It's probably carrying disastrous potential, faster than most predictions and coupled with economic instability peak oil issues. We need to get ready.*

Four people anticipated **social changes** as a result of climate change:

- *Bring us closer as a community & educate more people about climate change*
- *I think we may need some changes in policies.*
- *It will cause disruption in economical [sic] and social levels.*
- *It will force the community to belatedly address the issue.*

Four people registered **uncertainty**:

- *I do not know - it may not be knowable without further recording of actual temps and rain patterns - not computer models.*
- *Not sure.*
- *Not sure yet.*

- *To investigate - not sure.*

Thirteen people identified broad, non-specific effects.

3. Follow-up Actions

Fifty-four people, or 82%, rated the likelihood of taking five specific actions.

	Not likely	Likely	Very likely	Not applicable
Learn more about climate change.	17% (9)	24% (13)	52% (28)	7% (4)
Contribute to conversations and share ideas with friends, family, or colleagues about climate change.	6% (3)	33% (18)	59% (32)	2% (1)
Attend additional forums on this or other topics.	20% (11)	44% (24)	33% (18)	2% (1)
Get involved in community planning or attend municipal meetings related to what was discussed today.	28% (15)	41% (22)	30% (16)	2% (1)
Re-visit the Nurture Nature Center.	13% (7)	24% (13)	59% (32)	4% (2)

It is notable that nearly three in 10 participants indicated they were not likely to get involved at the community or municipal level in climate change discussions or activities.

Conclusions

During the facilitated discussion, more than half of program participants felt that climate change is the responsibility of the local community. When asked about preparing for flooding, most participants ranked designing and building infrastructure to accommodate increased storm water and restricting

building in the floodplain highest among the choices given. Survey results of participants showed that the majority of people did not believe their communities were prepared for climate change, primarily because of lack of education. When asked about regional effects of climate change, increased flooding and changes in weather were most often noted. When asked about follow-up to the forum, over forty percent said they would get involved in community planning or attend municipal meetings related to climate change in their community, almost sixty percent planned to contribute to conversations and share ideas with friends, family or colleagues about climate, while over fifty percent said they would learn more about the topic.



“Extreme Weather” – Moving from Risk to Readiness”
Nurture Nature Center Forum II
Report by RMC Research Corporation, Portsmouth, NH
April 2, 2012

I. Background

The March 15 forum on *“Extreme Weather” – Moving from Risk to Readiness (Lessons Learned from Irene, Lee and More)* for emergency preparedness professionals held at Nurture Nature Center attracted 31 participants from areas in the Delaware and Lehigh Valleys. The forum included a 40-minute presentation of *“Rising Waters,”* a Science on a Sphere production developed by the Nurture Nature Center to highlight local flooding effects that can be anticipated as part of global climate change. The forum also featured a talk by the Northampton County Emergency Services director and a presentation on new technology, such as forecasting tools, inundation mapping, and communication aids, for emergency managers and first responders.

II. Summary of Findings

1. Greatest Value of Forum

Asked what they valued most about the forum, 19 of 30 respondents, or 63% of those who completed surveys, answered. The greatest number (6) said they valued the information about the weather and notification capabilities, particularly information available through the National Weather Service, cited by two. Four respondents said they valued “all topics” or the whole program. Two identified the overview as most valuable. The five single responses identified specific elements of value, such as the sphere, the program’s specificity to emergency managers’ needs, and the opportunity to share knowledge with colleagues at home.

2. Expectations and Information

Participants rated five statements according to whether they agreed, strongly agree, disagreed or strongly disagreed with them. As indicated in the table below, all respondents agreed or strongly agreed that the program met their expectations. Forty-three percent of respondents strongly agreed that the information presented was important for people like them (96% agreed or strongly agreed) and 40% strongly agreed that the sphere presentation enhanced their understanding (97% agreed or strongly agreed). Equally high percentages of respondents agreed or strongly agreed with statements about the presentation’s enhancing their understanding of local impacts of climate and weather changes and about other strategies for dealing with weather-related emergencies.

Table 1

	Strongly disagree	Disagree	Agree	Strongly agree
a. The program matched my expectations.			69% (20)	31% (9)
b. The information presented is important for people like me.	3% (1)		53% (16)	43% (13)
c. The Science on a Sphere presentation enhanced my understanding of the conditions for precipitation and the potential for increased flooding in our area.	3% (1)		57% (17)	40% (12)
d. The program enhanced my understanding of the local impact of changes in weather and flooding.	3% (1)		83% (25)	13% (4)
e. The program helped me consider other strategies for dealing with weather-related emergencies.	3% (1)		70% (20)	27% (8)

3. Changes in Emergency Planning

Asked about changes in emergency planning that would be important to initiate, 18 of 27 respondents, or 67% answered. The overwhelming response was more public education and awareness, cited by 10 respondents, or 37% of those who answered surveys.

Four respondents identified data sources, especially “the cool stuff that NWS/NOAA has.” One of these four also mentioned encouraging his township to work more closely with Northampton County for training and resource sharing. Three respondents identified better notification, planning, and resource use, and one identified efforts to get more people to volunteer and participate during emergencies.

4. Changes in Technology

Asked what changes in technology would be important to have available, 21 out of 30 respondents, or 70%, answered. Two respondents reported the existing system as very good.

Four respondents identified greater use of websites both dedicated for responders’ use as well as social media sites such as Facebook and Twitter; three also identified greater cell phone use; and one suggested that everyone have and “use a NOAA weather radio.” Individual responses (6) covered a range of topics, for example:

- *Expanded GIS to local level*
- *Monitoring not just on major rivers and tributaries, but also more local and moderate sized tributaries*

- *Regionalization of water rescue resources*

Four respondents wrote broadly about access to information, as in:

- *[Need] another way to access data, maps, radar besides internet – need redundancy*
- *Enhanced technology for better communication and predicting operability throughout EMS organizations*

One respondent wrote he is “Still thinking about it.”

5. Value of Individual Forum Components

Twenty-nine respondents rated the components of the forum. Table 2 shows over 80% rated the presentations as by the county Emergency Management Services Director and the National Weather Service as very valuable; slightly fewer respondents, 66%, thought the Rising Waters presentation was very valuable.

Table 2

	Not at all valuable	Somewhat valuable	Very valuable
a. “Rising Waters” Science on a Sphere presentation		34% (10)	66% (19)
b. County EM Services Director presentation		17% (5)	83% (24)
c. National Weather Service Presentation		17% (5)	83% (24)

6. Clarity of Presentation and Additional Information

No respondents indicated that there was anything confusing about the “Rising Waters” presentation. Asked what additional information would have been helpful as part of the Emergency Managers’ forum, seven of 30 respondents, or 23%, answered. Three noted that the program was good as is. The other four offered specific suggestions:

- *Possibly a hand-out covering the things presented (a take home version)*
- *It would have been nice to have more concentration on the Northern Hemisphere*
- *More local info on first presentation*
- *Where local flooding took place as in what towns and change was done by it*



April 11, 2012

**Summary Report of
Nurture Nature Center Forum for Emergency Management Personal
Extreme Weather: Moving from Risk to Readiness**

This report summarizes the results of a forum for emergency management professionals held at Nurture Nature Center (NNC) in Easton, PA on March 15, 2012. The forum on “*Extreme Weather*”—*Moving from Risk to Readiness (Lessons Learned from Irene, Lee and More)* attracted 31 participants from areas in the Delaware and Lehigh Valleys. This report is designed for leaders of the Emergency Management community and other stakeholders to provide them with details about the concerns and priorities of the emergency managers related to flooding and the possibility of more extreme weather events resulting from a changing climate.

NNC’s mission is to help communities address local environmental risks through science, art, and dialogue. With support from the National Oceanic and Atmospheric Administration (NOAA)¹, NNC hosted this forum. Participants understood that their feedback would be summarized in a report that would be delivered to emergency manager leaders. This report, compiled by NNC, contains a summary of the emergency manager responses to a question posed during the forum as well as results from a survey conducted by RMC Research Corporation, an independent project evaluator funded through the NOAA grant.

Program Format

The forum program began with a presentation called Rising Waters on NNC’s Science on a Sphere exhibit, which shows the conditions for precipitation and looks at current and future trends of flooding. Emergency Managers were then provided an opportunity for discussion

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about related planning and technology needs on a local level. Following that discussion, there were two presentations: one by the Northampton County Emergency Services Director on local emergency manager information and the second by the National Weather Service on the latest technology available in flood warning and awareness systems, including forecasting tools, inundation mapping, and communication aids, for emergency managers and first responders.

Emergency Manager Discussion of Planning and Technology Needs

During the discussion component of the program, one question was posed to attendees concerning local planning and technology needs. Participants were asked to think quietly about the question for a couple minutes and then hold a conversation at their table for about ten minutes before answering.

The question was: **As your community prepares for future flooding events, what changes in emergency planning and/or technology do you think would be important to have?**

Responses included:

- Reactivate the Burlington Delaware River USGS Gage for vital information necessary to make important evacuation discussions.
- We need to provide opportunity for improved individual and family flood preparation.

As a community, there must be a consistent method of warning, identification of flood prone areas, local shelters, pre-flood evacuation, identify community partners, look for local/neighborhood leaders – the local preparation must emphasize that when it is time to evaluate – we will provide a place to go, a means to get there and keep you informed of what is going on in the area during the duration of the event. We will also be attempting to get local communities to sponsor CERT.

- Alternative methods of information gathering. Better methods to educate the public on dangers and proper behavior during events.
- Preparing better enforcements/regulations (outreach). More wells and sewer gauges.
- Improved access to the weather forecasts and data. Example: Some of the private websites have more info than NOAA (such as Weather underground).

Notification to the public (ex. Rev. 911).

- Get the community to understand that all problems and issues are not the responsibility of the local municipality.
- Radio communications between agencies.
- A well prepared notification system. Know your flood levels and where to evacuate first. Keep municipal folks informed and county level personnel.
- Use of technology to increase public/private awareness of planning/response/recovery.
- The use of text messaging as an alert system.
Utilize electronic billboards from private businesses.
More reliable alerts among news agencies.

- Community education.
Technology is sound.
- From a township that has many volunteer agencies need overall better good communication and cooperation between all the emergency responders. Also, to get more people involved in a voluntary and volunteering way.
Better staff communication.
More self-reliance.
- More public awareness education.
More 'digested' information for general public probability.
Rate of rise forecasts in simple terms. More shelter planning and education.
- The general public needs to have more education in planning for a flood, both their homes and family. They need to heed the warnings. Planning and zoning need to identify and govern flood prone areas in a manner to reduce future damage.
- Historical data.
Projections both aerial and visual.
Public education.
Flood insurance information for businesses and homeowners.
- Social media.
Telematics – receiving/sending information.
Increased mitigation funding.
Increased 'green' solutions.
- Better notification systems
Interagency communication and coordination both at the agency and county levels.
More first responders trained in awareness/operations/technician levels for water rescue.
Regionalization of personnel and equipment.
- Better local monitoring of rainfall, additional water flow monitoring.
Better notification options.
- Lehigh and Northampton counties should form a B1-county EMA/response division to better respond to problems in the entire Lehigh Valley Area.
- My community is not in any floodplain, except for a small area surrounding a dammed stream/swamp. Communication is always the most important aspect of planning/mitigation.
Intra-agency notification re: current operations can prevent unintended gaps in coverage for rescue and evacuation scenarios.
- Bucks County-Noxamixon Township – Our largest challenge during any activation is maintaining effective communications.

I'd love to see our community participate fully in the NWS "Weather Ready" Community Certification Program. Our exposure along the river proper is minimal, but we have several active tributaries, and it would also be helpful for other kinds of weather emergencies.

But if I could ask for one overarching change, I'd love to just POUND on people about buying, learning to use, and then actually using (on a regular basis) a S.A.M.E. programmable NOAA weather radio. Having them aware of the NWS online hydrographic stream gauges would also really help.

We did this year institute active social media presences on Twitter (@noxemawxcomm) and Facebook, which proved incredibly effective during the earthquake, Irene/Lee and October snowstorm and subsequent power outage events. Strongly recommend this, along with formalizing SMS/Text message networks through online services such as celly.com, because texting survives, along with other data services, even when cellular voice networks go down. This was a critical element of our public outreach during these events.

Survey Results as Summarized by Independent Project Evaluator, RMC Research Corporation

The next section of this report comes directly from a report by independent project evaluator RMC Research Corporation, which summarized the results of a survey that was given to participants at the conclusion of the forum. Thirty discussion participants completed the surveys.

1. Changes in Emergency Planning

Asked about changes in emergency planning that would be important to initiate, 18 of 27 respondents, or 67% answered. The overwhelming response was more public education and awareness, cited by 10 respondents, or 37% of those who answered surveys.

Four respondents identified data sources, especially "the cool stuff that NWS/NOAA has." One of these four also mentioned encouraging his township to work more closely with Northampton County for training and resource sharing. Three respondents identified better notification, planning, and resource use, and one identified efforts to get more people to volunteer and participate during emergencies.

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