More Detailed Notes

Rotation 1:
<u>SME Proposed Question</u>: *We heard in one of the presentations yesterday that one of the winter storms didn't meet the threshold of a "blizzard." Why was this an important distinction to make?*

While meticulous consideration and dissemination of event-based impacts is critical, it is equally as important to examine the impact the words used to communicate weather risk information have on the public. The ways in which people are impacted by the tangible hazards brought on by weather conditions are likely significantly correlated to the impacts sustained from the intangible words used to communicate their subsequent risks. For example, while we, as people with at least primitive meteorological knowledge, are well educated in the resemblance of flooding impacts that can result from hurricanes and heavy rain storms, members of the public with no such background will respond much differently to and be impacted much differently by the communication of flooding impacts classified under one of these terms. This is true for many reasons. The word "hurricane" has a theatrical connotation due to the dramatic impacts that hurricanes can and have had on millions of people all over the country. Hurricanes are well broadcast; they get a lot of media attention not just because of the hazards they cause, but because of the notoriety of impacts experienced from past events. And despite not every hurricane having the same impact on every affected area, their impacts are fairly universal in the sense that they bring on heavy rain, significant storm surge for coastal areas, and substantial flooding as a result of both of these. So, although not everyone experiences hurricane hazards, if a hurricane is being messaged, one would know, at least to some degree, what to expect. A heavy rain storm does not have the same, arguably "universal" perception. What is "heavy rain?" What makes the rain "heavy?" Why was this +3" rain storm a flooding concern and that +3" rain storm was not? What I consider to be "heavy rain" likely differs greatly from the person sitting next to me because it's descriptive, not definitive; it's based on perception for people outside the realm of science. So making the distinction between events and phenomena that may have similar elements/impacts/hazards is extremely important and it is how the aforementioned questions can begin to be answered. The challenge, however, is ensuring that our words are having an impact on the public such that they will not be impacted detrimentally by the hazards resulting from either a distinct storm type or a general type of storm. How we ensure this does not have a clear-cut answer. However, one thing that we can do is focus on communicating ways to prepare rather than nitty-gritty details of what to expect meteorologically so that we engage people through the information. Allow members of the public to become active participants in what is and what will be going on by giving advice and instruction on how best to prepare for the hazards that will be faced. Connect that preparation to the mitigation of detrimental impact so that we educate rather than confuse. Mitigate the confusion and inspire active preparation through preemptive education. **Pre-educate, re-educate, remind/revisit**. Deploy information and resources well in advance so that when the time comes, people know what needs to be done to prepare. Educate a second time well ahead of an event to sustain familiarity with the information. Then, just before

and/or during an event, revisit the preparation information so that people are well aware of what they need to do and how to do it. And, do this last step with minimal words. Less is more. Negative impacts will result from any high-impact event should the main message be overshadowed by unnecessary details.

Rotation 2:
<u>SME Proposed Question</u>: *Many presentations have shown graphics depicting images of temperature, wind and snow which varied by color range. How do you use color in your communication efforts?*

The use of color to convey information can create a plethora of challenges and complications. Colors can have culture-dependent implications and interpretations. There are accessibility challenges when it comes to disseminating color-coded information to those who suffer from color-blindness. And colors can be interpreted differently from person to person depending not just on culture, but on personal experience or perspective as well. But aside from issues created at a personal or cultural level, the use of color is also extremely difficult to coordinate across multiple sectors of the same profession. One color scale to express a meteorological threat may work for one community, but not another depending on the risk level of whatever the phenomena in question for that area. So, should colors be used in association with another variable? Do colors and words go well together? Maybe for some people, but not for everyone. Words can tend to add confusion. The more words you have to convey a message, the higher the likelihood of contaminating the message. And if the color scale used to convey risk for that same hazard also poses confusion, then all that results is confused, mis- or uninformed people who are more at risk than they were before. So would colors and numbers work? Probably not. Numerical scales can be misconstrued as well depending on the order in which the numbers are being used to convey the risk level. For example, some people may use the number 1 as the highest risk level where others may use 1 as the lowest. And again, adding color would likely just add confusion considering what colors mean to different people. Is there something truly universal that all people can relate to or find cohesively understandable? What about emotions expressed through emojis? In the medical field, when doctors ask their patients to rate the pain or discomfort that their symptoms are giving them, they show a scale ranked in faces. These faces typically range anywhere from a smiley face to represent minimal discomfort, to a sad or angry face to represent maximum discomfort. One could say that this is the one truly universal scale considering the fact that everyone has emotions. But even emotions aren't truly universal as one person's experience does not mimic another. Someone not frequently impacted by a flash flood is not going to have the same reaction to having their property damaged or destroyed as someone who has been through a similar experience before. Even people who frequently experience property damage from the same weather phenomena are not going to have the same feelings and reactions to the circumstances of their situation because those people are unique and have unique

perspectives and experiences. So really the best way to disseminate a message stems from understanding the knowledge level of the people we are communicating with. Understand their culture, their perspectives, what makes them vulnerable, etc. In this way, we may be able to better communicate risk and have it mean something to people rather than just cause confusion.

Rotation 3:
<u>SME Proposed Question</u>: *There has been an emphasis on travel and the importance of messaging risk as it pertains to travel especially in the presentations about the Buffalo Blizzard. Are there other impacts that should be communicated for extreme winter weather events? What are they and how should they be communicated?*

In any type of weather event, it is important to relay what is going to happen. Will there be any precipitation and if so, what type and how much? Will it be windy and if so, how windy? Will it be extremely cold and if so, just how cold? Will it be hot and if so, just how hot? There are countless questions that should be/can be answered that will describe the conditions that people can expect. But what good is this information if it is not understood how such conditions will impact people? A lot of times, we as scientists and experts in this field, can get caught up in the meteorological "why" of the answers to these questions. We forget that the public understanding/knowledge of what will/can cause these conditions to occur is extremely limited. All too often the message that we try to convey gets overwhelmed by jargon that pushes people away rather than pulls them in. So, instead of focusing on the "what" of an event, our communication needs to focus on being educational in reference to the impacts that will be or could be sustained as a result of the hazards that such conditions create. And this doesn't just mean list out all of the possible impacts that an event could have. Not every impact will apply to every individual or group. Likewise, some individuals or groups may not understand an impact unless it is explained further (ex.: tourists or people who just moved to the area who may be unfamiliar with impacts of the weather that is expected). Therefore, impacts need to not just be addressed, but explained. Take wind chill for an example. There are people out there who likely have no idea what "wind chill" means and therefore, have no idea how it can impact them. So a good way to communicate it is to provide a brief and simple explanation of what wind chill means and then shift the attention to how it can be impactful, who it is most impactful to, and why/how it is going to impact those people. Communicating risk in this way not only focuses on the message that we want people to retain, but it delivers that message in a way that provokes an actionable response. If we involve people by disseminating our message in a way that encourages them to be proactive, they will likely be more inclined to take proactive action for themselves, their families, communities, etc. But will all people be empowered to take action? For some vulnerable communities, it may be harder to encourage self efficacy. Those who are undocumented may be less inclined to respond to and act on such messages if they feel it could pose a detriment to their current circumstances. Many may feel it is worth the risk of their lives to stay in what could be a life threatening situation than risk being deported if they seek shelter in

the wake of a major weather event. So, one thing that could be done to mitigate this approach, since we care more about saving lives than immigration status, is to work with government officials to request that they make people aware ahead of time that they will not be responsible for presenting documentation should they go to a storm shelter for instance.

Rotation 4:

<u>SME Proposed Question</u>: *When you consider the use of words such as "lake effect snow", "wind chill" and "freezing rain", how can those be communicated into plain language? How can these be translated into other languages/cultures? Are there better ways to communicate these impacts?*

There are times when it can be hard to describe an event through any alternate wording other than its "scientific" title. For example, there really isn't a way to put "lake effect snow" into layman's terms because while there may not be a clear understanding of what lake effect snow is, there really isn't a simpler way to describe the phenomenon other than calling it what it is. If you wanted to describe wind chill in a simpler way, one may consider referring to it as the "feel-like" temperature. Then you could support this classification of temperature with statements like "You're going to need a coat because it is going to feel like…". But even this could pose an issue. How could someone who has never experienced temperatures of say -15 degrees know what that feels like? Sure one can infer that that is very cold and that multiple layers would be needed to withstand it, but can anyone really describe what that temperature feels like? Technically yes, if one has the personal experience to support their claim. But what -15 feels to one person is going to likely be much different than someone else. One way to combat this issue would be to describe the impacts of extreme cold on household and workplace power. Losing power in extreme cold would mean losing heat which would lead to uncomfortably cold living/working conditions. So, using the wellbeing of people to describe a phenomenon more simply is one way to communicate in plain language and explain impacts. But winter weather in general isn't the easiest thing to understand in general. Many of the hazards generated through winter weather are the same, but they can be created through many different weather conditions. And for some people who aren't familiar with many forms of winter weather (i.e. those with little to no experience with it) it can be even more difficult to understand not only the meteorological phenomena, but the hazards and impacts that come along with them. So how do you educate a community filled with people on both sides of the spectrum? And for communities where English is not the primary language, how are you supposed to translate something like "freezing rain" when Spanish speakers, for example, come from regions where that type of condition is not part of the climate? The answer, or at least part of the answer is education. Education is absolutely key in making sure that people understand the impacts that any type of weather, but especially winter weather can have. Another problem that we face a lot in this field is helping people understand the difference between a "high-impact" and "low-impact" event. If a place like Buffalo, NY gets lake effect snow frequently, what makes one storm different than

the next? Why did storm A dump 5' and storm B only accumulated 0.5'? In this situation, it is better to not focus on technical details, but rather provide a straightforward, factual message that directly communicates what people need to do based on the impacts of the storm at hand. It may be helpful to provide tangible impacts rather than give arbitrary numerical stats that don't mean anything to the general public.

Raw Notes

Session 1- Didn't meet the threshold of a "blizzard," why was this an important distinction to make?

- Words⬜impacts
    - Choice of words can have an effect on the actions taken by the public
    - For example: What is the difference between "hurricane" and "heavy rain storm"? ⬜ people respond more to hurricane rather than rain storm because of the dramatics of the language
        - How do we convey threat when headlines and their wording are so response-dependent?
            - Focus on how to prepare rather than what to expect so that people are able to actively participate and engage with the information
            - Is less more or is more more?
                - Role of media communication
                - Don't overwhelm
                - Make sure that the information is out ahead of time (pre-educate then re-educate closer to time of impacts)

Session 2- Images of temperature, wind and snow which varied by color range. How do you use color in your communication efforts?

- How does this affect color blind people?
- How can colors be interpreted differently by different colors?
- Colors can be difficult to collaborate amongst different platforms- what works for one region may not work for another
    - Same information gets conveyed differently and leads to misunderstanding
- Colors vs. words?
    - More confusion when words are involved vs maybe a numerical scale that can be associated with the colors
        - Numerical scales can be misconstrued as well considering the reversed order that some people use (one as high vs one as low)
    - Colors associated with damage level- for example: tornado damage scale in a color-based format
        - But what colors work for some groups and not others?
- Colors, words, and numbers- the more information you have, the higher chance of confusion or taking away from the main message
    - Know the knowledge level of the people- what are people comfortable with? What are people familiar with?

- o Who is more vulnerable? People who travel vs people who are residents of an area?
    - There needs to be an educational outreach process to define what these categories mean- colors, numbers, text: what works better for people as a whole?
- ● Emotion is universal
    - o Emojis for risk level?
        - Works in the medical field for pain or symptom relay- patients asked to rate their pain based on how it is making them feel
            - ● But even then, emotions can be subjective
                - o Human experience plays a huge role in how people react to and understand information

Session 3- Emphasis on travel- are there other impacts that should be communicated for extreme winter weather events? What are they and how should they be communicated?

- ● Scientific jargon takes away from the message
    - o Impacts need to not only be addressed, but explained.
        - Wind chill- what is it? Why is that an impact? How is it going to impact people? Who is it going to impact more than others?
- ● Hazard vs. impact?
    - o Actionable message- response and personal efficacy
        - Protective actions can help to encourage people to proactively respond to a threat
    - o Vulnerable communities may not feel empowered based on their situations- undocumented people may be afraid to act and may feel it is more dangerous for them to respond rather than risk staying in a possibly detrimental situation
        - Open communication ahead of time with these people to say "your safety is more important-you will not be responsible for presenting documentation"
- ● Many problems are passed off as communication issues- it is easier to blame a nonexistent communication issue than the lack of response because there is the issue of measuring the "why" of why there was no response
- ● Winter storm additional impacts:
    - o Power
    - o Ice

- ▪ Experience makes a huge difference- winter storm can be interpreted much differently (snow storm, ice storm, both?)
- ● Important to remember who the audience is
  - ○ Responsibility should not fall solely on that national weather service for communication of weather impacts

Session 4- When you consider the use of words such as "lake effect snow", "wind chill", "freezing rain" , how can those be communicated into plain language? How can these be translated into other languages/cultures? Are there better ways to communicate these impacts?

- ● Wind chill- "feel like" temperatures
  - ○ You're going to need a coat because it is going to feel like …"
  - ○ Use graphics as well
  - ○ Utility- how is power affected by extreme cold and how does that relate to the wellbeing of people

- ● Winter hazards aren't necessarily the easiest to understand. What is freezing rain?
  - ○ For those who are originally from a place where winter weather is not included within the climate, how do you communicate winter impacts to people and how do you educate people on what those hazards are
  - ○ If English speakers don't understand something, how is that supposed to be translated to someone who speaks another language

    - ▪ Education is extremely important
  - ○ If winter events are really frequent, how do people differentiate a "high-impact" event from a "low-impact" event that contains the same precipitation type?

    - ▪ Straight forward messages that clearly and directly tell people what to do or what not to do are most effective

- ● Tangible impacts rather than numerical stats
  - ○ "How long will it take for my finger to fall off if I am outside in this level of cold?"
  - ○ "Unprecedented"- is it really?

    - ▪ Over-warning

    - ▪ High awareness and panic

    - ▪ How do we let people know "we are serious this time"

    - ▪ Do tags like "considerable" help?

More Detailed Notes

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