A New Focus on Wind Chill

Post Storm Survey

Extreme Cold

Project Mentors

Matt Taraldsen
MGIS Candidate, U of MN
SCSU Meteorology Alumnus

Amanda Graning
Senior Forecaster
National Weather Service; Duluth, MN

Student Team Members

Jeff Wetter
Klint Skelly
Ashley Heath
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Elaine Quinn
Brandon Riendeau
Josh Wurster

Quick Look Back in Time

2007

The Idea

A Survey

- Feedback - Insight into Decision Making & Understanding
- Not a critique of the forecast accuracy
- Available through variety of web-based outlets
- Not National Weather Service Centered

Needed A Partnership

- Amanda Graning – NWS Duluth
- Matt Taraldsen - Sophomore at SCSU
  - NWS Student Volunteer – 2007

From Idea ⟶ to Action

Motivation

"Need a process by which WFO [Weather Forecast Offices] can systematically gather local customer input and local research results … and turn that information into improved products and services"

Ray Wolf – Science and Operations Officer NWS WFO Davenport, IA

Goal

Improve communication & effectiveness of winter weather information and threat by gaining insight into perceptions and decision making processes related to hazardous winter weather.

From Idea ⟶ to Action

Developed *Plan of Action* *(November 2007)*

- Online Survey
  - no budget, convenient
  - Survey link available for 3 days following a winter storm
    (defined as a storm that requires a NWS "Warning")
  - SCSU will host the Survey
    - Passes SCSU Approval Board
    - Partners (NWS) would link to this site

Mike Bettwy, Matt Taraldsen
Amanda Graning, Amy Bettwy

How it Worked

St. Cloud State University

Post Storm Survey

- Home
- TAKE SURVEY
- About Us
- Past Results
- PSS Partners

Questions?
E-mail Sarah at:
poststormsurvey@gmail.com

Welcome to the Post Storm Survey Homepage

Hello! My name is Sarah Stalker and I will be administering the Post Storm Survey for the upcoming winter season. A little about myself. I am a senior meteorology major at St. Cloud State University. I am originally from Hudson, WI and have lived in St. Cloud, MN for four years now.

The objective of this Post Storm Survey (PSS) will be to gain insight into decision-making related to hazardous winter weather. This information will be vital for the weather forecasting community in learning to better communicate the threat of hazardous weather. The responses to this survey will be kept confidential, and will be used to help improve winter weather forecasts. This research is one of the critical tools in bridging the gap between the weather community and users.

How Does it Work?

After a winter weather event occurs that requires any type of "warning" issued by the National Weather Service, a PSS team member will activate a link to the survey on the PSS homepage. Then, once a survey has been activated for 3 days following a storms end, it will be taken off the PSS homepage by a PSS team member. If there are no surveys available to take, the site will state to check back after the next storm.

Can I Take the Survey?

The survey will be available online after a winter storm ends for anyone to take at. The survey has been designed to be completed in just a few minutes. Simply click the link that pertains to the winter weather event that affected you. The survey will be active for 3 days after a winter storm. A link to this site will be found on numerous weather related websites that have partnered with the project. This site is managed by St. Cloud State University and will be updated regularly as new winter storms affect the upper Midwest.

**** To access survey please click tab on left ****

St. Cloud State University

- Home
- TAKE SURVEY
- About Us
- Past Results
- PSS Partners

Questions?
E-mail Sarah at:
poststormsurvey@gmail.com

Take Your Survey

The survey is available up to 3 days after the warning has expired.

North Dakota, South Dakota Minnesota, Wisconsin, Michigan, New York, Pennsylvania, New Jersey
Winter Storm Warning
3/22/11—3/24/11
Click the Link Below to Take Survey
https://www.surveymonkey.com/s/7HQRQ7L
Survey Ends 3/27/11

Wisconsin, Michigan, New York, Pennsylvania, New Jersey
Winter Storm Warning
3/24/11—3/26/11
Click the Link Below to Take Survey
https://www.surveymonkey.com/s/7HQRQ7L
Survey Ends 3/29/11

- Following a Winter Storm, A link to the Survey becomes available here.
- The link is active for 3 days.

The Past Survey Questions

1. Where do you get weather information on a regular basis?
2. Where did you get your weather information during the storm?
3. Based on the forecast; what did you feel was the primary weather threat from the storm?
4. Based on the forecast, do you feel that this was a climatology "usual" storm?
5. Based on the forecast, what special preparations did you take for this storm?
6. How did you alter your daily routine during this storm?
7. If you did alter your daily routine, what specifically made you do so?
8. If you did not alter your daily routine, what convinced you alterations were not necessary?

Demographic Information: Gender, Age, Occupation, Commute Time, Education Level, Trained Weather Spotter

Survey Publicity is Key

Articles & News Stories

- Over a dozen media interviews!
- Many workshops and Conferences
- Minneapolis Star Tribune

  http://www.startribune.com/local/34968514.html?elr=KArksUUUU
- Minnesota Public Radio Story
- SCSU Alumni Magazine
- NWS Peak Performance Newsletter
- Duluth News Tribune
- Saint Cloud Times

Utilized Facebook and Twitter

- Communicating with partners
- Gain Visibility
- Additional Dissemination

It all began with....

Project Partners 2009

Then grew to over 12 States by 2011

Participating States 2010

Participating States 2011

Past Post Storm Survey Events

2007-2012

>40 Winter Storms!

>8500 Responses!

- Winter 2007-2008:
  3 Events (test season), 500 Responses
- Winter 2008-2009:
  12 Events, 2500 Responses
- Winter 2009-2010:
  12 Events, 3100 Responses
- Winter 2010 -2011:
  13 Events, 1600 Responses
- Winter 2011-2012:
  900 Responses

Results for EACH storm broken down by NWS area coming Soon!!!

Preliminary Results

- **Road Conditions!**
- Respondents react to non-meteorological indicators (school closings, road conditions, etc.)
  - *Snowfall Totals do not link to travel conditions*
- TRENDING snow amounts and timing communicates uncertainty – people get it!
- People do pay attention to "Warnings"
- The type of warning is poorly understood

Results Continued

- As event unfolds, media becomes crucial. They are the voice!
- MANY Mixed messages/conflicting numbers = confusion
- Notable differences in responses between urban/rural locations and various regions of Plains.
- Differences in events that were busts and surprises…adds confidence to final results
- World of data at fingertips, everyone is their own meteorologist

Where do we go from here?

- Consider 5 years and nearly 9,000 responses a great success!
- Want to utilize the structure and partners have established
- Keep focus on Winter weather hazards

Post Storm Survey

Extreme Cold

New Focus:
Wind Chill/Extreme Cold

- 10-year average of extreme colds deaths in the US is 27
  - 29 extreme cold deaths in 2011
  - 34 extreme cold deaths in 2010
  - 33 extreme cold deaths in 2009
  - 44 extreme cold deaths in 2008

Source: http://www.nws.noaa.gov/os/hazstats/cold11.pdf

DULUTH (WCCO) — "*Duluth Police say the body of a 95-year-old man was found outside his retirement home Wednesday morning.* Officer Jim Hanson says the elderly man left the retirement home, where he and his wife lived, at 9:40 p.m. Tuesday. "

Duluth News Tribune – "A Duluth bar won't be held legally responsible for the death of a 22-year-old man who wandered out into the frigid North Shore winter last year and froze to death."

https://dps.mn.gov/divisions/hsem/weather-awareness-preparedness/Pages/winter-storms.aspx

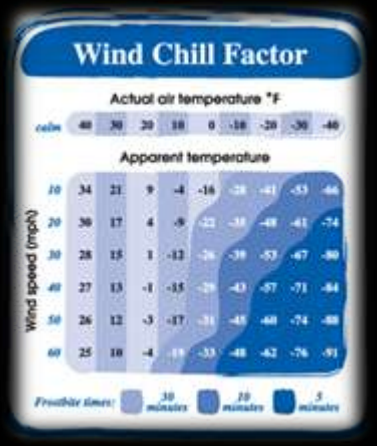
New Focus:
Wind Chill/Extreme Cold

- NWS Issues Wind Chill Advisories & Warnings
  - Criteria Varies by Region
  - Experimental Extreme Cold Warnings
    - Tested in 2011-2012 for upper Midwest areas
    - Not continued this year
    - Future?
      - Hazard Simplification Project - NWS is looking at simplifying Watch/Warning/Advisories

- Survey will provide VERY valuable customer input for future of Cold Products
  - No other surveys of this type.
    What type of cold/wind chill products do users want??

New Focus:

Wind Chill/Extreme Cold



- Research on Wind Chill Affects Limited to Healthy Adults
  - Basis for current NWS Wind Chill Warning Criteria

However,

"Because of their unique physiology, children are more susceptible to temperature extremes and their health effects. Children are less able to regulate their body temperature compared with adults." DisasterReady@aap.org

- 50% cold related injuries happen to people over 60
- More than 75% cold related injuries happen to males

https://dps.mn.gov/divisions/hsem/weather-awareness-preparedness/Pages/winter-storms.aspx

New Focus:
Wind Chill/Extreme Cold

- Past Student Involvement
  - Matt Taraldsen (2007 – 2010)
  - Sarah Stalker (2010 – 2011)
  - Josh Wurster (2011 – 2012)

- The project has grown to be much more than what a single student can handle

- In September, Matt and Amanda spoke to the SCSU meteorology classes to recruit new students for the future of the PSS

- Selected students for new PSS Team
  - We developed roles that students expressed interest in

Past Data Analysis
Question Development/Web
Public Relations/Liaison
Data/Results

Meet The 2012-2013 Post Storm Survey Team!

Elaine

Jeff

Ashley

Sara

Klint

Brandon

All Students in the Earth and Atmospheric Science Department at Saint Cloud State University

The 2012-2013 Post Storm Survey Team

Past Data Analysis

- Dive into the >8500 responses already collected
- Break down data by event & NWS forecast area
- Distribute data/graphs to each NWS office
  - Webpage with results listed by event

Elaine

Brandon

The 2012-2013 Post Storm Survey Team

Question Development/Web

Ashley

Jeff

- Seek out existing research on effect of cold/wind chills on public safety
- Refine the survey questions towards wind chill
  - Overseen by
    - Amanda Graning, National Weather Service DLH
    - Carol Christenson, Warning Coordination Meteorologist
    - Matt Taraldsen, PSS Creator, MGIS Candidate, U of MN
    - Professor of Communications, Suzanne Stangl-Erkens
    - Was*is Community
- Set up & Maintain Survey Host Website
  - *http://studentweb.stcloudstate.edu/wejeo904/index.htm*

The 2012-2013 Post Storm Survey Team

Public Relations / Liaison

Klint

- Get the Word out!
  - Social media, Print/TV media and interviews
- Will target vulnerable populations to extreme cold
  - schools, day cares, nursing homes, homeless shelters and programs.
- Act as communicator while survey is active

The 2012-2013 Post Storm Survey Team

Data/Results

- Analyze Survey Results immediately after an event.
- Share data/results with all partners

Sara

How it Works

- *Following an exceptionally cold period that requires a Wind Chill Advisory or Wind Chill Warning to be issued by your local National Weather Service office, this short online survey will be available for 3 days*

  Find a link to the Survey at

  http://studentweb.stcloudstate.edu/wejeo904/index.htm or

  http://www.crh.noaa.gov/dlh/?n=weatherandsociety

- *Members of PSS team will activate and de-activate the Survey(s) on the PSS Homepage*
- *Students from SCSU will Advertise and communicate with the partners when a survey is active*
  - *Email/Facebook/Twitter*

** Although this is not a National Weather Service produced survey, the responses and findings will greatly enhance our services and ability to convey weather threats in the future.*

How to Become a Partner

1. Provide a Link to the Post Storm Survey:

   http://studentweb.stcloudstate.edu/wejeo904/index.htm

   or

   http://www.crh.noaa.gov/dlh/?n=weatherandsociety

1. Send an email to let team you are participating:

   poststormsurvey@gmail.com

That's it!!

Want to go even further?

- Help us get the word out!!
  - Recruit partners in your area
  - EM, Media, Schools, Nursing Home, City Officials, etc.
  - Find logos, brochures, Media tools on homepage
- Many Tools and Templates can be found on homepage

Questions??

PSS Survey Team: poststormsurvey@gmail.com
Amanda (project mentor): Amanda.Graning@noaa.gov
Matt (Project mentor): taral002@umn.edu

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- Phil Shumacher

References

- http://www2.aap.org/disasters/extreme-temps.cfm
- https://dps.mn.gov/divisions/hsem/weather-awareness-preparedness/Pages/winter-storms.aspx
- Climatic Heat Stress and Exercising Children and Adolescents (AAP)
- Drought and Health (Centers for Disease Control and Prevention [CDC])

- Extreme Temperature Exposure (AAP)
- Winter Storms and Extreme Cold (Federal Emergency Management Agency)
- Winter Weather: Take Steps (CDC)