Aware

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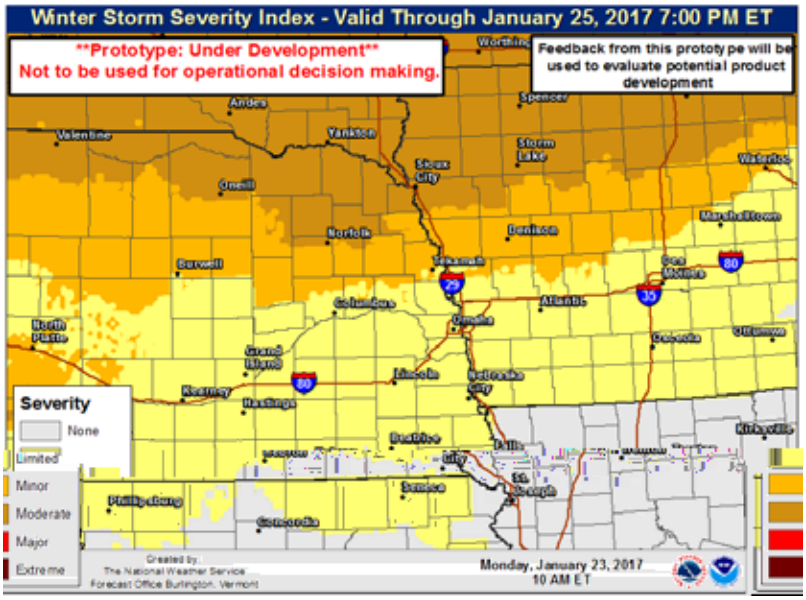
Winter Storm Severity Index (WSSI) Prototype Spotlights Winter Impacts

By NWS News Staff, Silver Spring, MD

The Winter Storm Severity Index Prototype (WSSI) is a new tool helping NWS forecasters stay aware of possible winter storm impacts based on the current official forecast. The WSSI also helps communicate these impacts to users such as the media and the public.

The WSSI is created with Geographic Information Systems (GIS) mapping software by screening NWS gridded forecasts from the National Digital Forecast Database (NDFD) for elements that have the highest impacts on society.

The prototype system combines NDFD information with additional datasets to produce a tool NWS field offices can use to better communicate potential societal impacts to Emergency Managers. The WSSI also is used to help the media and public identify areas that may experience a larger number or more significant impacts.



Example of WSSI output for WFO Omaha County Warning Area

The system is made up of sub-component algorithms that use meteorological and non-meteorological data to determine a level of potential societal impact based on specific characteristics of winter storms. Each of the components produce a 1 to 5 value equating to potential impact. The final WSSI value is the maximum value from all the sub-components. The 5-level descriptors are None, Limited, Minor, Moderate, Major/Extreme. The system looks at these subcomponents:

- Snow Load Index
- Snow Amount Index
- Ice Accumulation
- Blowing Snow Index
- Flash Freeze Index
- Ground Blizzard Index

This winter, 15 NWS Weather Forecast Offices have been testing and gathering feedback on the WSSI by posting it on local web pages, in social media, and in partner and user briefings.

Making Sense of Rush Hour During a Winter Storm

*By **Jim Kramper**, WCM, NWS St. Louis, MO*

NWS helped the Missouri Department of Transportation reduce the impact of a rush hour winter storm.

In the St. Louis Metropolitan Area, much like similar metropolitan areas around the United States, it doesn't take much winter weather to turn the daily commute into a nightmare. To help combat this problem, the NWS St. Louis office has worked closely with the St. Louis District of the Missouri Department of Transportation (MoDOT) to supply Decision Support Services before a winter storm arrives.

NWS St. Louis recently tested these new efforts. In the early morning hours of January 5, 2017, NWS St. Louis office forecast a winter storm for its warning area. Only 1-2 inches of snow was expected but the temperatures were forecast to be around 20 degrees, and the snow was expected to fall from 3 am to 8 am—the heart of the morning rush. This is a recipe for disaster!

NWS Lead Forecaster Kevin Deitsch worked with MoDOT St. Louis District Traffic Management Center to ensure they knew how to access and interpret NWS temperature and radar information. MoDOT also is able to interact on NWSChat to ensure their understanding of weather conditions as they change. According to the MoDOT plow dispatcher, this information was used to focus resources where the heaviest snowfall was falling and helped the crews decide when and what chemicals to put on area roadways. The plow dispatcher was able to relay the information directly to plow drivers.

While the morning commute was slow, with multiple accidents, NWS Decision Support Services were instrumental in helping improve conditions compared to previous similar winter events.

Using Decision Support During Major Flooding Event

*By **Alex Tardy**, WCM, NWS San Diego, CA*

Starting the week of January 16, NWS San Diego began alerting partners of a high confidence significant winter storm which could bring significant high wind and flooding. The WFO sent several partner emails followed up by live GoTowebinars.

San Diego media stations such as KPBS, NBC7 and CW6 taped interviews highlighting the potential for significant rainfall and the impact to the 6-year drought.

WFO San Diego informed partners this would be the most significant storm since 2010 when flooding and wind damage also impacted the region.

The first weather system Thursday and Friday, January 19-20, brought wind gusts over 60 mph to

Flooding near WFO San Diego, CA

coastal cities and heavy rainfall and mountain snow. Chula Vista opened its Emergency Operations Center after fallen trees blocked roads and injured school kids; in all Chula Vista reported 599 damaged or downed trees costing 1.2 million for clean up. San Diego reported 125 tree related calls, most of which for trees that had fallen on vehicles or buildings. The San Diego River reached 12 feet, its highest level since December 2010 when it reached 14 feet and 29 high water rescues occurred in the city on January 19, 2017. San Diego County had reported $10 million

Another storm hit on Sunday, January 22 and lingered into January 23-24. This was a pure atmospheric river with intense rainfall of 3 to 4 inches in less than 6 hours across Orange and western Riverside Counties, spilling into Palm Springs and northern San Diego County. EMs performed several high water rescues and sadly there were two drownings. Snow levels in this event briefly rose above 7,500 feet but colder air allowed for an additional 1 to 2 feet of snow above 5,500 feet. Total snowfall accumulation between January 19-23 totaled up to 60 inches in the San Bernardino mountains.

This final weather system also brought high winds of 40 to 50 mph to coastal cities. Storm total precipitation with the series of Pacific storms ranged from 2 to 6 inches on the coast, 3 to 8 inches across the interior valleys, and 6 to 12 inches in the mountains.

Later in the week, on January 26, following warmer weather, an avalanche occurred on Mt Baldy at the intersection of the San Bernardino and San Gabriel Mountains requiring helicopter rescues of 2 hikers just before strong Santa Ana winds developed. Southern California has received 150 to 250 percent of normal precipitation in 2016-17; many locations are near their seasonal normals. Over the past 2 months, the drought has improved 1 to 2 categories.

Video Technology Helps Inspire Students to be Weather Ready

*By **Audrey Rubel**, Regional Communications Manager, NWS Alaska Region*

Building a Weather-Ready Nation (WRN) offers many opportunities for Outreach. When Sheryll Orbase, a teacher at Pacific Northern Academy in Alaska asked WFO Anchorage WCM Louise Fode to talk to the students about weather preparedness, Fode looked for a way to inspire the kids to be weather ready. She started by inviting them to visit the Anchorage WFO.

Orbase explained to Fode that as part of the school curriculum, the students were investigating severe weather, how it can affect people, and how to respond. When Louise learned of these goals, she asked Orbase to apply for Pacific Northern Academy to become a WRN Ambassador, since the school's goals matched WRN objectives.

After learning more about the school's mission and philosophy, and understanding the emphasis the school places on participation, communicating clearly, and working with others, Fode and Orbase felt having the students create educational videos would provide a valuable learning experience.

Pacific Northern Academy students in Alaska learn how the NWS collects data from upper air balloons to predict dangerous weather.

After creating the videos, the students wanted to share them online, not only to teach weather preparedness, but also to inspire other children to be proactive. Fode created a Facebook post to bring attention to the videos. The videos support the school's mission of teaching students to become critical thinkers, leaders and active citizens of the 21st Century, and demonstrate how children are an integral part of our Weather-Ready Nation.

Strengthening Core Partner Relationships and IDSS Training Seminars

*By **Jamie Enderlen**, Meteorologist, NWS Chicago, IL*

On January 27 and February 10, NWS Chicago offered a half-day Impact-based Decision Support Services (IDSS) communications training seminar at its office and via video conference. The training included a presentation about clear communication, a winter weather panel discussion with partners and a communication training exercise. The goals of the training were to:

- Strengthen core partner relationships
- Empower the NWS staff to become more capable and comfortable when providing in-person briefings
- Help ensure intra-office consistency in the relay of IDSS

NWS Chicago staff engage with local partners to share how NWS IDSS messaging is interpreted and gain feedback on IDSS briefing content and delivery.

The group, comprised of NWS Chicago employees and five partnering agencies, discussed communication techniques, conference call content, decision thresholds, winter weather concerns, and messaging graphics. The discussion helped forecasters and partners obtain a mutual level of understanding regarding winter weather and messaging techniques, as well as fostering ideas for more clear and effective IDSS in the future.

The program closed with a Communication Exercise. Forecasters were given a shift change briefing about a fictional winter storm expected that afternoon. The forecasters then went through a rotation where they provided 5-minute one-on-one briefings to each of the five partners based on scenarios and questions relevant to the individual partners.

Partners then provided written, confidential feedback about the delivery, relevance, brevity, and focus of the individual forecasters' briefings. The diverse training methods allowed partners and the NWS Chicago team to learn, discuss and then practice clear communication techniques all in 4 hours. Forecasters and partners alike commented that the training was beneficial and that they walked away feeling energized and in-sync with each other.

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