The Winter Storm Severity Index (WSSI)

A Guide for Users

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Website: https://www.wpc.ncep.noaa.gov/wwd/wssi/wssi.php

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What The Winter Storm Severity/Impact Index Is

- **A tool** to assist NWS operational forecasters in maintaining situational awareness of the possible significance of weather related impacts based upon the current official forecast.
- **A tool** to help communicate a general level of potential societal impacts and their spatial distribution.

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What The Winter Storm Severity/Impact Index Is NOT

- It is not a specific forecast for specific impacts.
  - For example, a depiction of “moderate” severity does not mean schools will or have to close.
- It is not meant to be the sole source of information about a Winter Storm. It should always be used in context with other NWS forecast and warning information.
- The WSSI does not account for conditions that have occurred prior to the creation time. It only uses forecast information. Therefore during an ongoing winter weather situation, the WSSI will not be representative of the entire event.

Motivation – To Better Depict Aspects of Winter Storms

- Current NWS Procedures:
  - Winter weather Watches/Warnings/Advisories are raised based primarily on “yes/no” thresholds of accumulation and generally at the level of individual counties.
- Reality of Winter Weather:
  - Severity/impacts from winter weather are due to more than just amounts (one 5” snowstorm is not like the next 5” snowstorm) Great variation in weather conditions frequently occur with individual counties.

WSSI Scale

WSSI Descriptor	General Description of Expected Storm Severity Impacts
None	No snow or ice forecast. No potential for ground blizzard conditions.
Limited	Small accumulations of snow or ice forecast. Minimal impacts, if any expected. In general, society goes about their normal routine.
Minor	Roughly equated to NWS Advisory Level criteria. Minor disruptions, primarily to those who were not prepared. None to minimal recovery time needed.
Moderate	Roughly equated to a NWS Warning Level criteria. Definite Impacts to those with little preparation. Perhaps a day or two of recovery time for snow and/or ice accumulation events.
Major	Significant impacts, even with preparation. Typically several days recovery time for snow and/or ice accumulation events.
Extreme	Historic. Widespread severe impacts. Many days to at least a week of recovery needed for snow and/or ice accumulation events.

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WSSI Components

Snow Amount Index

PURPOSE: This component is designed to highlight areas in which impacts, especially transportation, could become overwhelmed due to either:

1) The total amount of snow.
2) The rate at which the snow is falling.

Prior to making calculations based upon the amount or rate of snow, climatology based factors are determined. Climatology is an important aspect to the level of impacts a winter storm brings. Those areas of the country less accustomed to snowfall will be less prepared to deal with snow, resulting in higher level of impacts compared to the same amount of snow in a snowier part of the country.

Snow Load Index

PURPOSE: This component is to highlight areas where the weight of the snow could result in damage to trees and powerlines. In general, the lower the snow-liquid ratio (SLR) is and the greater the total snow accumulation, the higher the index.

Blowing Snow Index

***PURPOSE*:** This component highlights areas where blowing/drifting snow is expected to occur and result in transportation related problems. In general, the blowing snow significance increases as the SLR and winds both increase. Prior blowing snow research indicates that in general it takes just under 20 mph of wind to start to move snow around.

WSSI Components

Ground Blizzard Index

PURPOSE: This component is to highlight areas where pre-existing snow combined with very strong winds results in ground blizzard conditions, which result in a significant impact to transportation.

Flash Freeze Index

PURPOSE: The component depicts severity primarily to transportation of situations where temperatures rapidly fall below freezing during or just after precipitation.

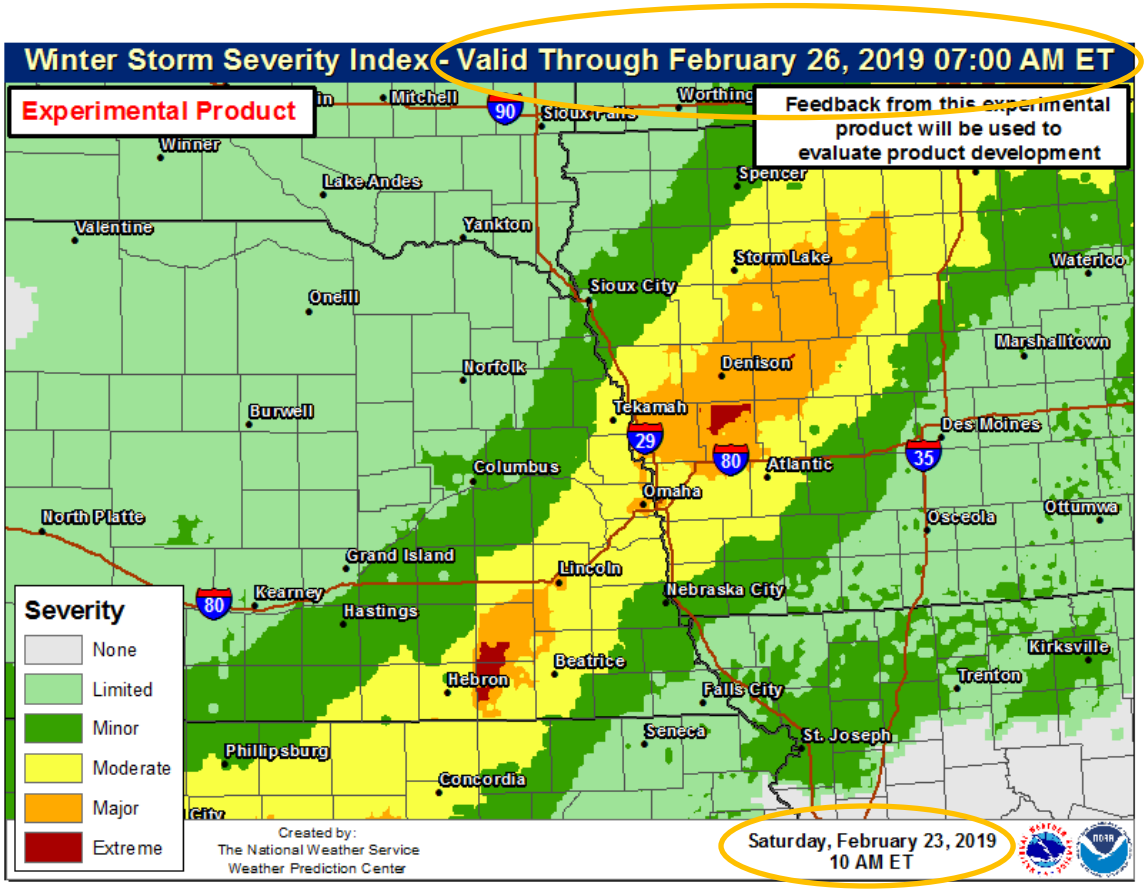
Ice Accumulation Index

***PURPOSE*:** This component was developed to account for the combined effects of ice accumulation and wind which can produce widespread tree damage, transportation shutdowns and utility problems.

WSSI – How to Interpret

The map on the right depicts the WSSI for expected winter weather occurring between 8 AM ET Feb 23 (time stamp at the bottom) to 7 AM Feb 26 (valid time at the top)

It does NOT indicate specifically when the weather will occur during the period. Refer to other NWS forecast data for that information



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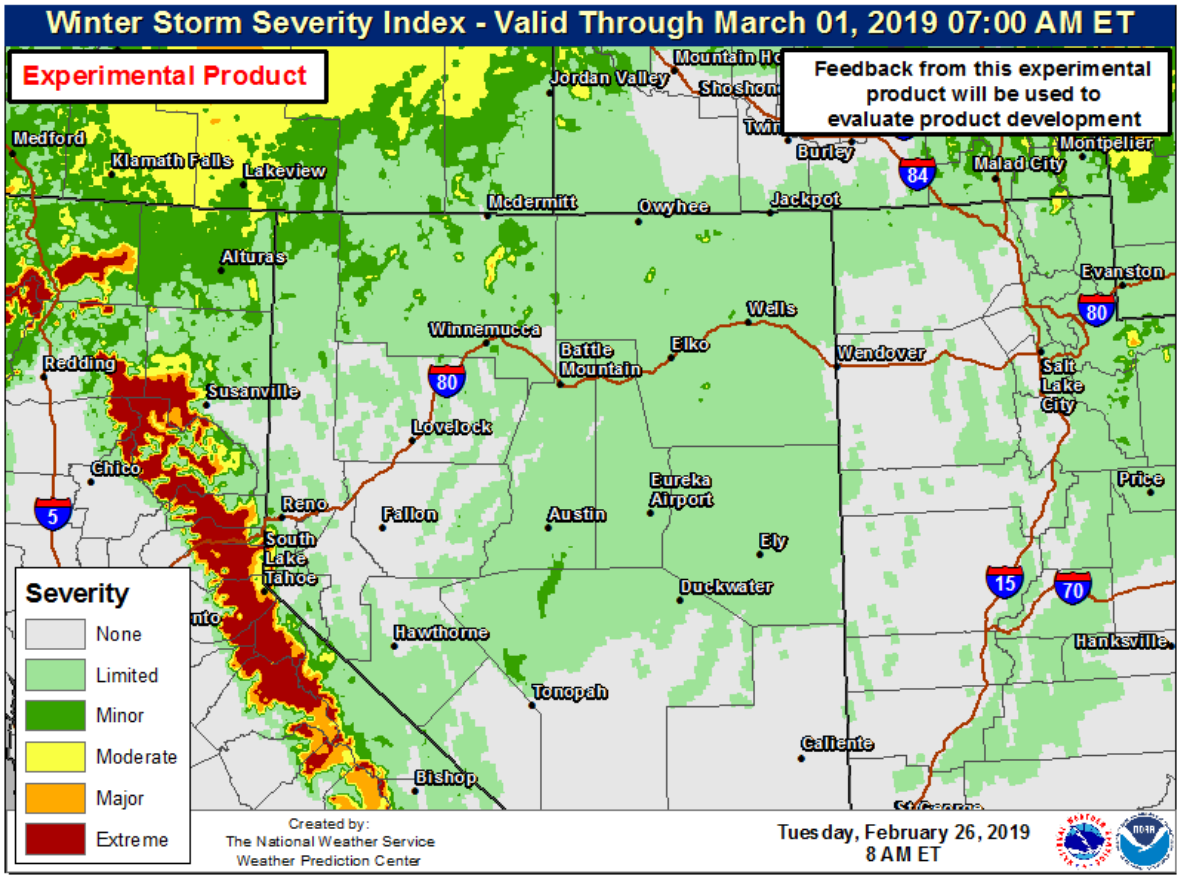
WSSI – How to Interpret

The areas where the most significant winter weather is expected are denoted by the yellow (Moderate), orange (Major) and dark red (Extreme) colors.

To understand what is the underlying cause of the final severity depiction, refer to the individual WSSI component maps



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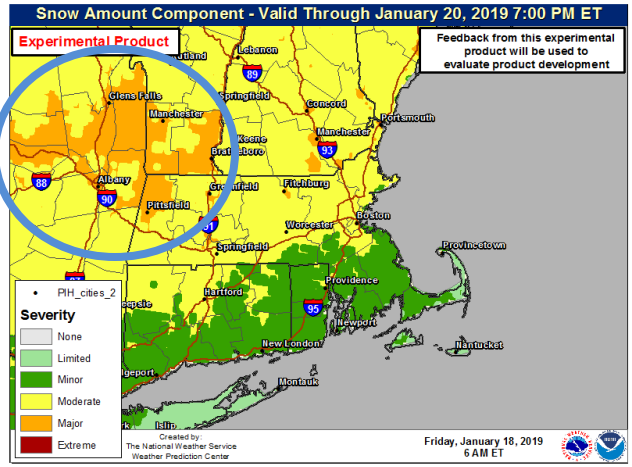
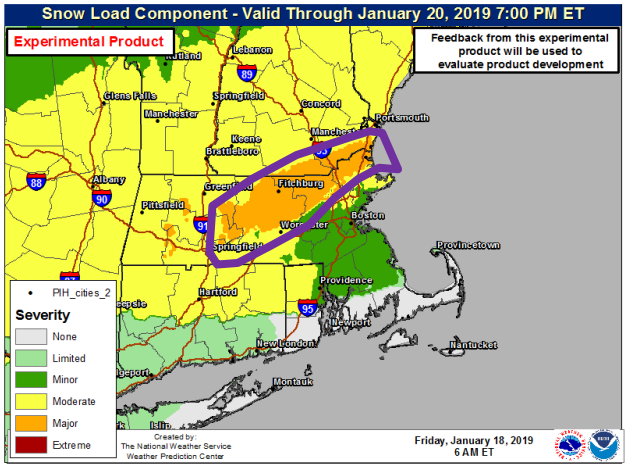
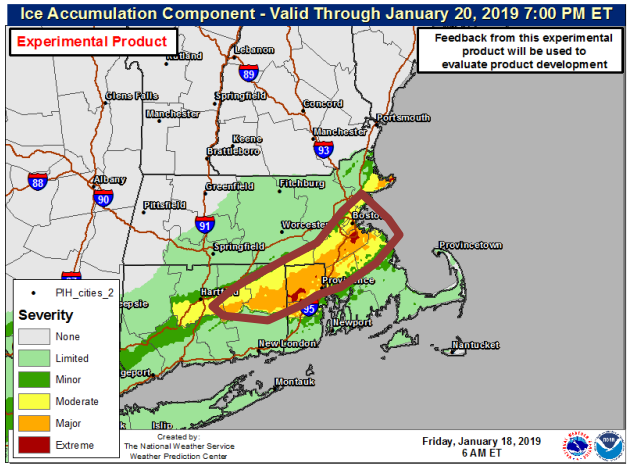
WSSI – How to Interpret (Example)







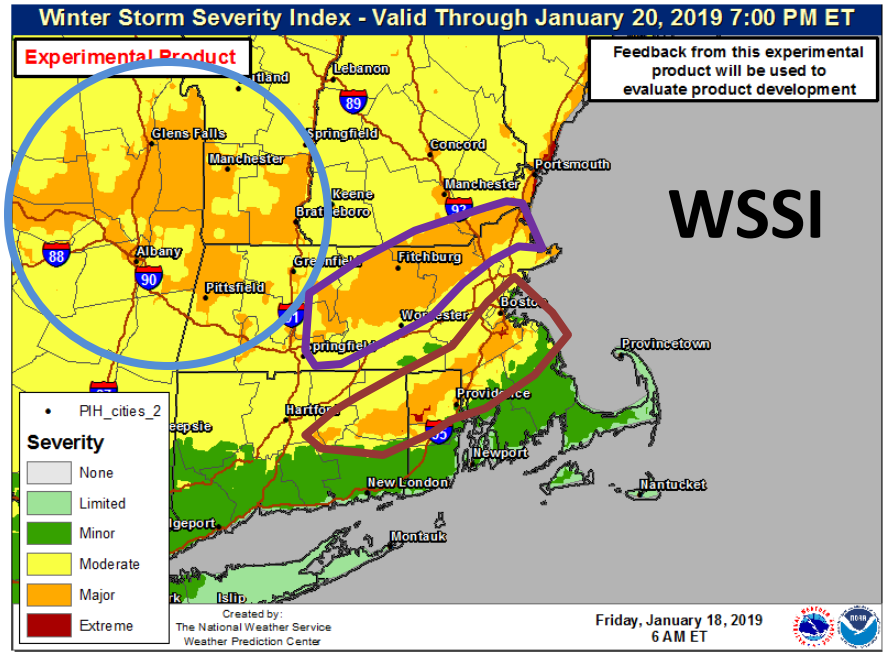
Bottom Right: WSSI depiction of all threats.

Top Left: The snow amount component matches the total WSSI around southern VT, western MA and NY.

Top Right: The ice accumulation component matches the WSSI for southeastern MA and northern RI.

Top Middle: The snow load component matches the WSSI for central MA and southeast NH.

Final interpretation: Expect the primary impacts to come from ice accumulations across northern RI northeastward toward Boston, MA. Expect impacts to come from heavy snowfall for VT and NY. There is a major threat for impacts from snow load across central MA through southeast NH.



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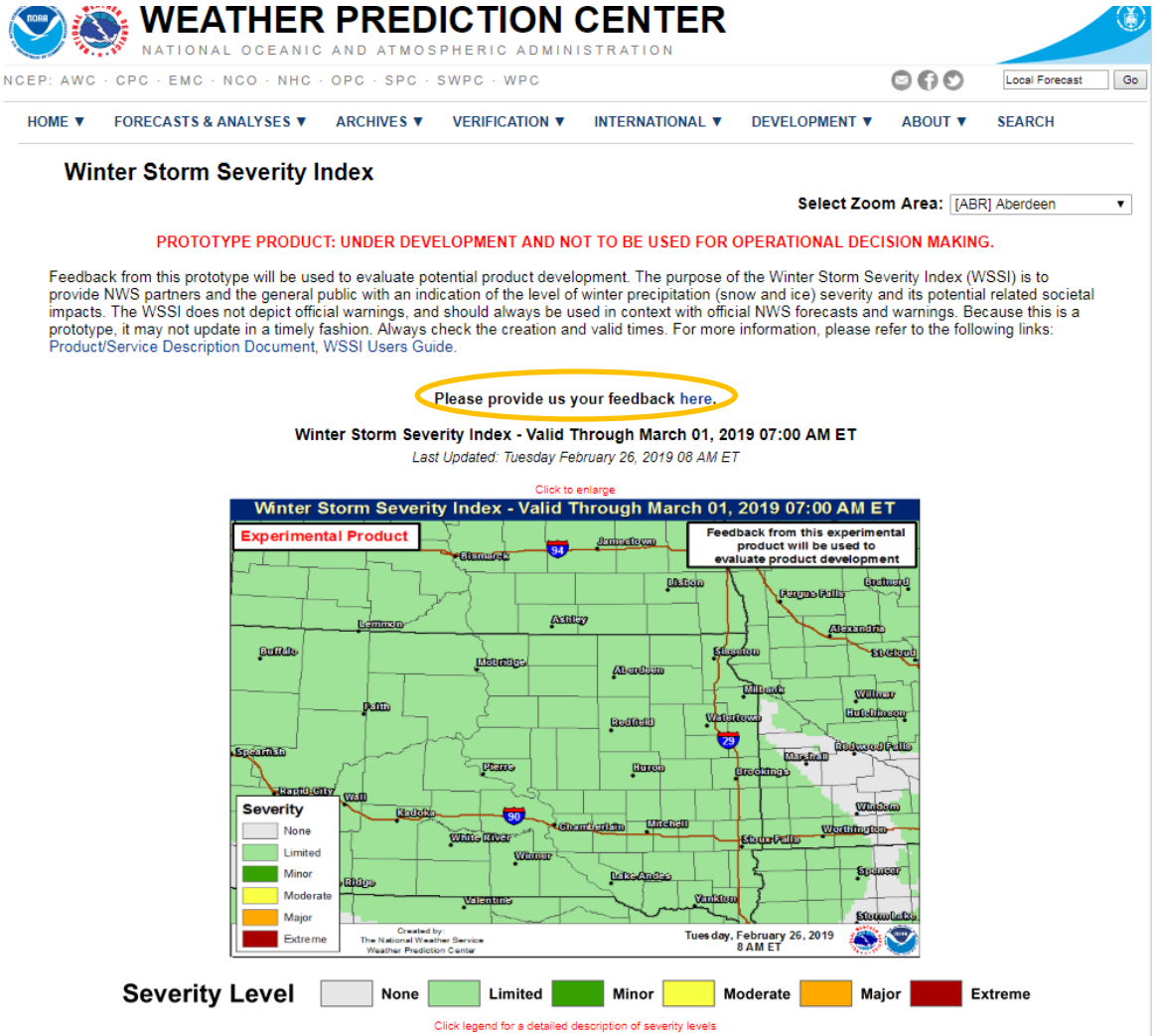
WSSI – Please Provide Feedback

We want to hear from you regarding this experimental product.

Does it meet your needs?

Does it need improvements?

Please click on the survey link (as highlighted) on the WSSI Project webpage.



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