

# 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>

The National Weather Service  
Weather Prediction Center

# 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

<b>Potential Winter Storm Impacts</b>	
	<b>No Impacts</b> Impacts not expected.
	<b>Limited Impacts</b> Rarely a direct threat to life and property. Typically results in little inconveniences.
	<b>Minor Impacts</b> Rarely a direct threat to life and property. Typically results in an inconvenience to daily life.
	<b>Moderate Impacts</b> Often threatening to life and property, some damage unavoidable. Typically results in disruptions to daily life.
	<b>Major Impacts</b> Extensive property damage likely, life saving actions needed. Will likely result in major disruptions to daily life.
	<b>Extreme Impacts</b> Extensive and widespread severe property damage, life saving actions will be needed. Results in extreme disruptions to daily life.



# 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.



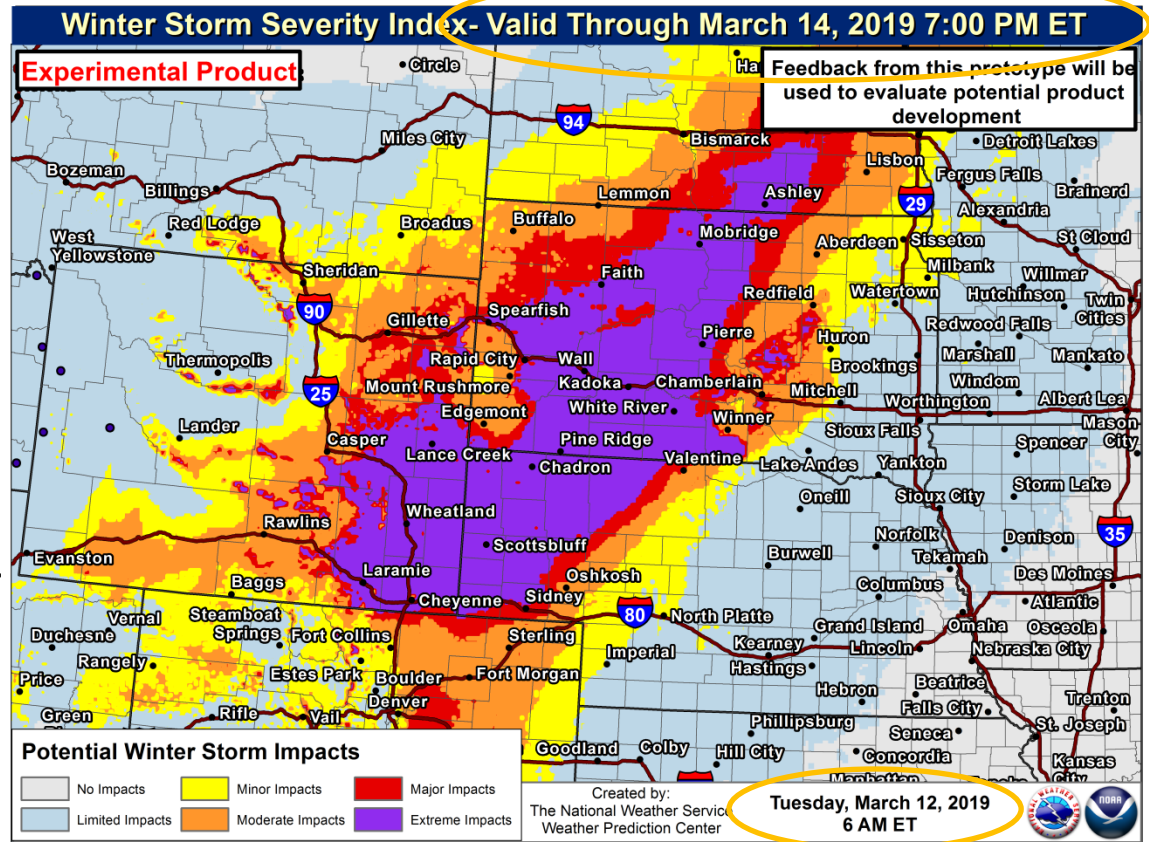
Website: <https://www.wpc.ncep.noaa.gov/wwd/wssi/wssi.php>

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# WSSI – How to Interpret

The map on the right depicts the WSSI for expected winter weather occurring between 6 AM ET Mar 12 (time stamp at the bottom) to 7 PM Mar 14 (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

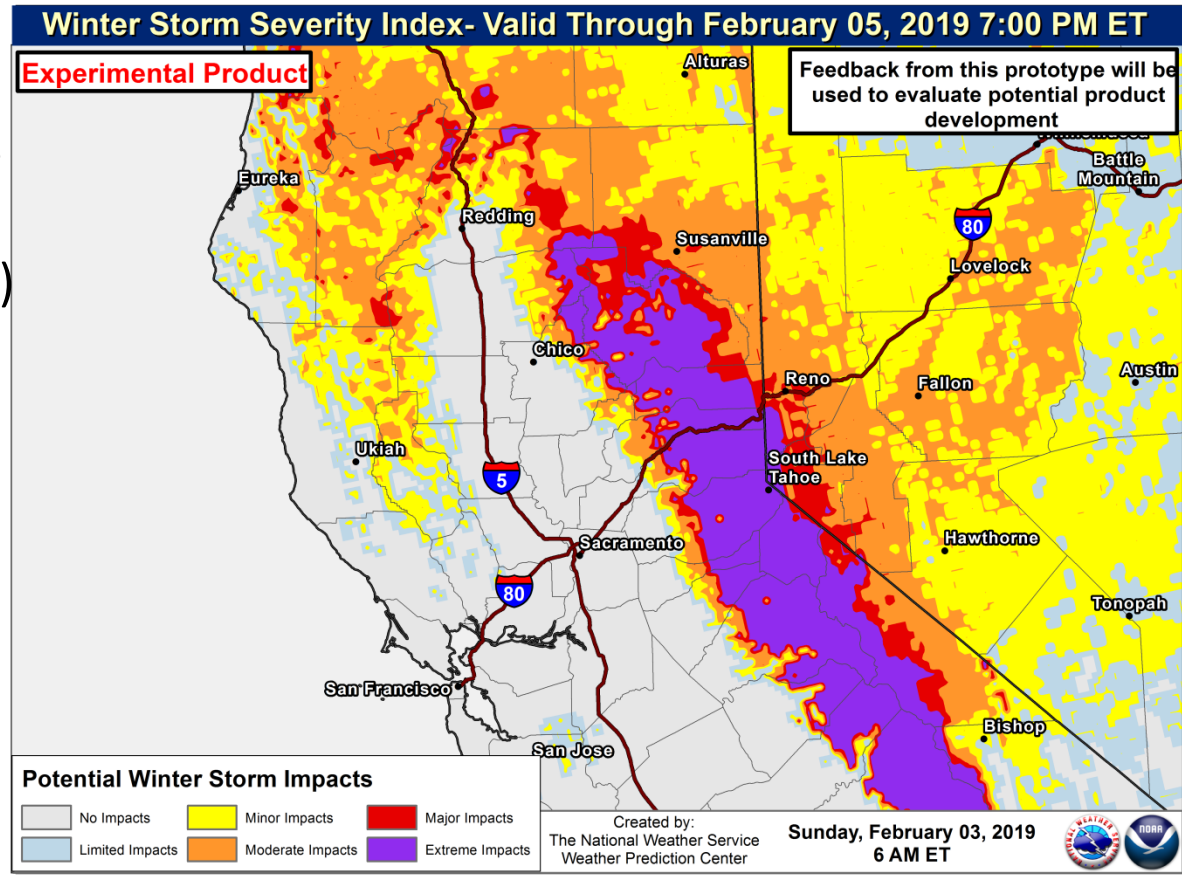




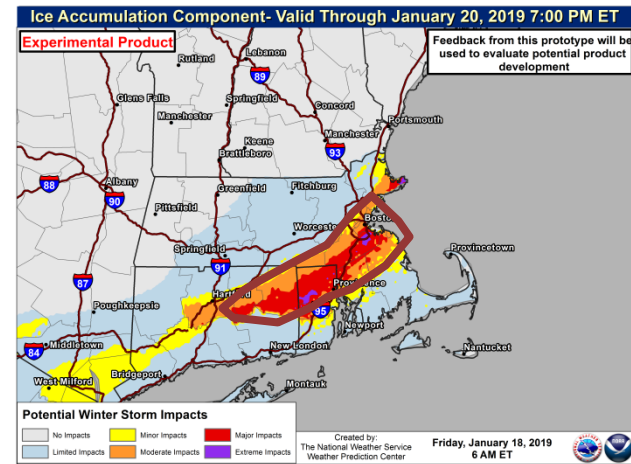
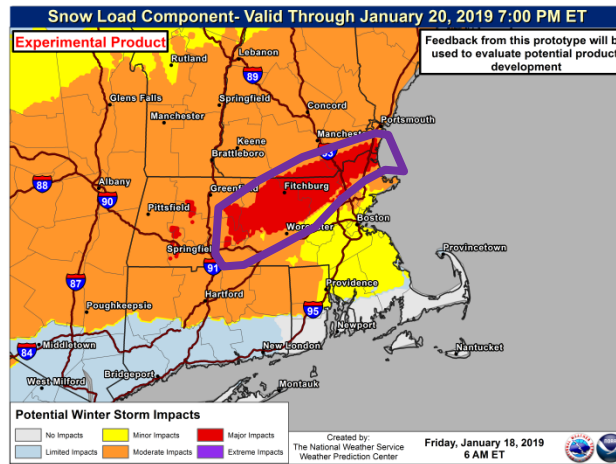
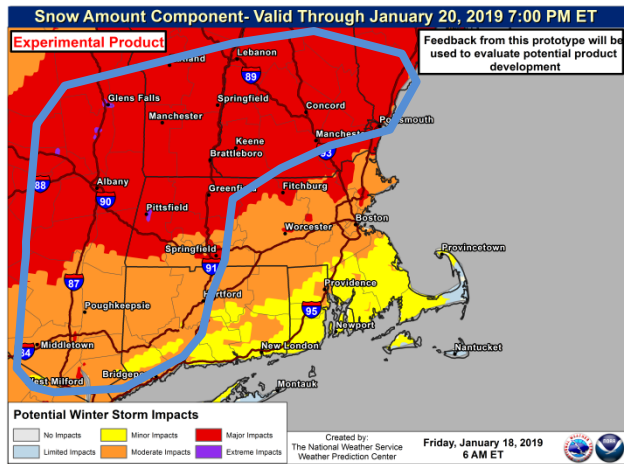
# WSSI – How to Interpret

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

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



# WSSI – How to Interpret (Example)



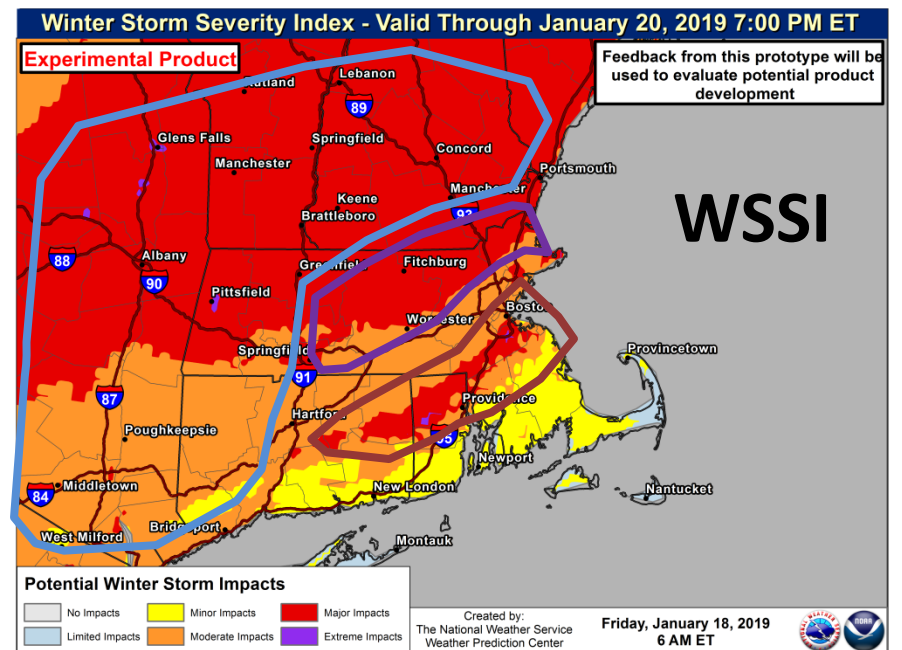
Bottom Right: WSSI depiction of all threats.

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.



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

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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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### Experimental Winter Storm Severity Index (WSSI) | Prototype Dynamic Display

Feedback from this experimental product will be used to evaluate product development. The WSSI does not depict official warnings, and should always be used in context with official NWS forecasts and warnings. Because this product is experimental, it may not update in a timely fashion. Always check the creation and valid times. For more information, please refer to the following links: [Product/Service Description Document](#), [WSSI Users Guide](#), [Internal Resources Page \(NWS Access Only\)](#)

Please provide us your feedback [here](#).

Overall Impact | Snow Amount | Snow Load | Ice Accumulation | Flash Freeze | Blowing Snow | Ground Blizzard

Overall Impact: Maximum impact from any of the components.

Days 1-3 | Days 1 | Days 2 | Days 3

Select Zoom Area: CONUS [Print Map]

Winter Storm Outlook - Effective Through FRI March 15, 2019 01:00 AM ET

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Map Overlays

- NWS County Warning Area Boundaries
- FEMA Boundaries
- State Boundaries
- Urban Areas
- River Forecast Center Boundaries
- Counties Boundaries
- NWS Public Forecast Zones
- ARTCC/FIR

Download Latest WSSI in GIS Format:  
[Download Data in KML](#)  
[Download Data in SHP](#)

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# WSSI – Website

- Clickable tabs
  - Loads WSSI components upon click
  - Day Period tabs
- Revised definitions
- Zoom to WFO
  - Dropdown Box
- Print Image button
  - Creates a PDF of the map with your specifications
- Variety of basemaps
  - Switch Basemap dropdown button
- Links to GIS Data

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[SWITCH BASEMAP]

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Change image opacity: 100%

**Map Overlays**

NWS County Warning Area Boundaries <input type="checkbox"/>	River Forecast Center Boundaries <input type="checkbox"/>
FEMA Boundaries <input type="checkbox"/>	Counties Boundaries <input type="checkbox"/>
State Boundaries <input type="checkbox"/>	NWS Public Forecast Zones <input type="checkbox"/>
Urban Areas <input type="checkbox"/>	ARTCC/FIR <input type="checkbox"/>

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# WSSI – Website

- Map overlay options
  - Toggled via checkbox

- CWA
- FEMA
- State
- RFC
- Counties
- Public Forecast Zones
- ARTCC
- Metro Areas

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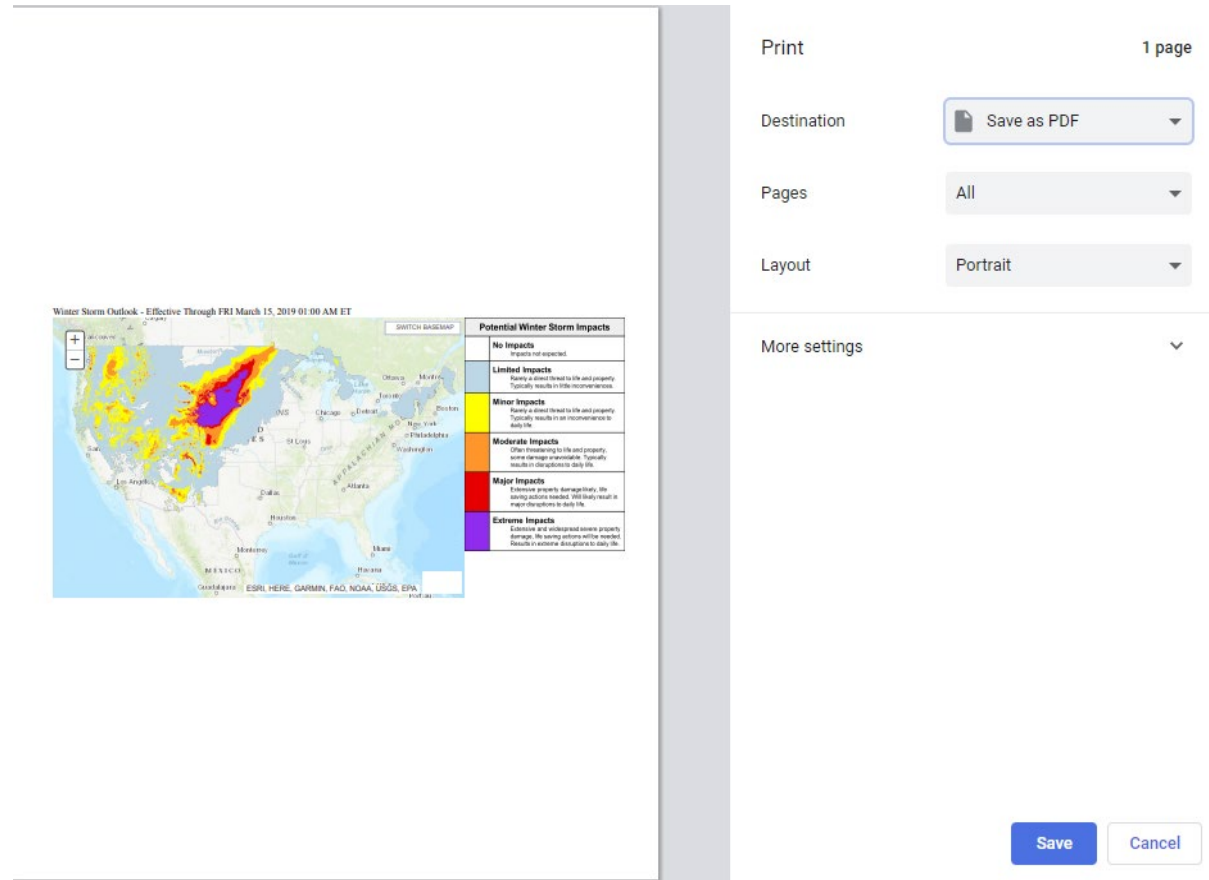
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# WSSI – Website Print Button

- When you click the print button the image on the right will be displayed.
- Make sure to change destination to 'Save as PDF'
- Portrait layout option works better than landscape



Water Storm Outlook - Effective Through FRI March 15, 2019 01:00 AM ET

Potential Winter Storm Impacts

Impact Level	Description
No Impacts	Impacts not expected.
Limited Impacts	Minor impacts to life and property. Typically results in minor inconveniences.
Minor Impacts	Minor impacts to life and property. Typically results in minor inconveniences to daily life.
Moderate Impacts	Other than to life and property, some damage unavoidable. Typically results in minor inconveniences to daily life.
Major Impacts	Extensive property damage likely, life threatening conditions possible. Significant results in major disruptions to daily life.
Extreme Impacts	Extensive and widespread severe property damage. Life saving actions will be needed. Results in extensive disruptions to daily life.

Print 1 page

Destination Save as PDF

Pages All

Layout Portrait

More settings

Save Cancel