Update on Winter Weather Initiatives

Partner Webinar
October 31, 2019

Stephen Baxter
Acting Winter Weather Program Lead
Outline

- **New** Update on Hazard Simplification
- **New** Experimental Winter Storm Outlook
- **New** Testing Winter Key Messages
- Ongoing Experimental Winter Storm Severity Index
- Ongoing Experimental Probabilistic Winter Precipitation Forecast
- Updated Outreach Materials
### Hazard Simplification Project: New Updates

<table>
<thead>
<tr>
<th>Previous Winter Products</th>
<th>Consolidated to</th>
<th>Winter Weather Advisory</th>
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<tbody>
<tr>
<td>Lake Effect Snow Advisory</td>
<td></td>
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<tr>
<td>Winter Weather Advisory</td>
<td>Consolidated to</td>
<td>Winter Storm Watch</td>
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<tr>
<td>Freezing Rain Advisory</td>
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<tr>
<td>Winter Storm Watch</td>
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<tr>
<td>Lake Effect Snow Watch</td>
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<tr>
<td>Blizzard Watch</td>
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<tr>
<td>Winter Storm Warning</td>
<td></td>
<td>No Consolidation due to stakeholder feedback</td>
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<tr>
<td>Lake Effect Snow Warning*</td>
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<tr>
<td>Ice Storm Warning</td>
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</tr>
<tr>
<td>Blizzard Warning</td>
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*Consolidated in all Regions during 2018/19 but reinstated for 2019/20 season. This will be utilized only in Eastern Region.*
Lake Effect Snow Warnings consolidated in all Regions during 2018/19 but reinstated for 2019/20 season. This will be utilized only in Eastern Region.

- Lake Effect Snow Warnings are being reinstated *only* in Eastern Region this upcoming winter!
- In Central Region, high impact lake effect and lake enhanced events will trigger Winter Storm Warnings.
Hazard Simplification Project

- An “Impacts” bullet has been added to the What, Where, When format for the winter weather products suite.
- Continuing to evaluate simplification options for advisories, special weather statements, and short term forecasts into a single winter weather message with the What, Where, When, Impacts bullet format.
Experimental Winter Storm Outlook (WSO)

- The WSO provides the probability of achieving hazardous snow/ice accumulations using WFO-specific Watch/Warning criteria as a proxy threshold.

- The WSO establishes the missing national scale “Outlook” product in the winter program, serving as a unifying outlook for both external messaging and internal collaboration for consistent and collaborative Winter Storm Watch issuance.

- 50+ percent chance of meeting warning criteria triggers enhanced coordination between WPC & affected WFOs.

- Public-facing product launches December 16, 2019!

Although related, there is not a direct tie between the Winter Storm Outlook and Winter Storm Watch Issuance by the WFOs.
Experimental WSO

Probability of snowfall or ice accumulations in excess of local WFO criteria for Days 1, 2, and 3.

Compared to...

WPC Probabilistic Winter Precipitation Forecast

Winter Storm Warning Snowfall Criteria
Experimental WSO

Here is an example of the collaboration process, resulting in consistent and accurate Winter Storm Watches.

Pre-Conference Call Watches

Winter Storm Outlook

Post-Conference Call Watches

WSO Webpage: https://www.wpc.ncep.noaa.gov/wwd/wso

WSO Product Survey: https://www.surveymonkey.com/r/ExpWinterStormOutlook

2019-2020 Winter Partners Webinar
Experimental WSO: Webpage

Coming December 16, 2019

- Clickable tabs
  - Loads WSO for Snow/ICE
  - Day Period tabs
- Dynamic Display
  - Can adjust transparency
  - Multiple basemap options
  - Adjustable zoom
- Map Overlays
  - Multiple overlays can be added to the map
- Print Image button
  - Creates a PDF of the map with your specifications
Testing Winter Key Messages

- Building on Success with Tropical Cyclones
  - Galvanize partners and media around consistent, coordinated message
  - Coordinated among operational units
  - Available as slide on WPC homepage and integrated into WFO & WPC messaging

Key Messages for Hurricane Michael

1. Life-threatening storm surge is likely along portions of the coasts of the Florida Panhandle, Big Bend, and Nature Coast, and a storm surge warning is in effect for these areas. Water levels will rise well in advance of the center of Michael, and residents within the storm surge warning area should finish preparations to protect life and property today.

2. Everyone in the hurricane warning area along the Florida Gulf Coast should prepare for life-threatening major hurricane winds associated with the core of Michael. Hurricane force winds will also extend well inland across portions of the Florida Panhandle, southern Georgia, and southeast Alabama as Michael moves inland.

3. Heavy rainfall from Michael could produce life-threatening flash flooding from the Florida Panhandle and Big Bend region into portions of Georgia and South Carolina.

4. Michael is expected to produce heavy rainfall and flash flooding over portions of western Cuba during the next day or so.

For more information go to hurricanes.gov
Testing Winter Key Messages

Initiated for: **High-impact** scenarios that have a significant chance of travel disruptions or posing a hazard to life and property *and/or* **Significantly anomalous** events likely to generate substantial media attention.

**Common Trigger:**
- >500 mile long swath of >30% probability of local warning criteria being exceeded in the Winter Storm Outlook including at least one metropolitan area with at least 500,000 people
- Or, a similarly extensive swath of >50% probability, not necessarily encompassing a metro area
Questions so far?
Experimental Winter Storm Severity Index (WSSI)

- Winter Storm Severity Index:
  - Assists NWS forecasters in maintaining situational awareness regarding potential significance of weather related impacts based upon the current forecast
  - Enhances communication to external partners, media and general public of an event’s expected severity (e.g., societal impacts) and spatial extent
  - Provides winter storm “impact” info out to 72 hours
    - Includes meteorological & non-meteorological factors
    - Six levels of impact provided in color-coded scale
    - 24 HR breakouts

Output available here: https://www.wpc.ncep.noaa.gov/wwd/wssi/wssi.php

Provide feedback here: https://www.surveymonkey.com/r/Exp_WSSI_2019
Experimental WSSI

- **Goal of the Product**
  - Summarize multiple winter weather impacts from a storm into an easily consumable graphic
  - 72 Hour forecast
    - Data comes from the NWS National Digital Forecast Database (NDFD)
    - Updates every 2 hours
    - 24 HR breakouts

- **Summary graphic is a composite of the maximum impact from any of the six components**

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### WSSI Impact Description

#### Potential Winter Storm Impacts

<table>
<thead>
<tr>
<th>Impact Level</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td><strong>No Impacts</strong></td>
<td>Impacts not expected.</td>
</tr>
<tr>
<td><strong>Limited Impacts</strong></td>
<td>Rarely a direct threat to life and property. Typically results in little inconveniences.</td>
</tr>
<tr>
<td><strong>Minor Impacts</strong></td>
<td>Rarely a direct threat to life and property. Typically results in an inconvenience to daily life.</td>
</tr>
<tr>
<td><strong>Moderate Impacts</strong></td>
<td>Often threatening to life and property, some damage unavoidable. Typically results in disruptions to daily life.</td>
</tr>
<tr>
<td><strong>Major Impacts</strong></td>
<td>Extensive property damage likely, life saving actions needed. Will likely result in major disruptions to daily life.</td>
</tr>
<tr>
<td><strong>Extreme Impacts</strong></td>
<td>Extensive and widespread severe property damage, life saving actions will be needed. Results in extreme disruptions to daily life.</td>
</tr>
</tbody>
</table>
Experimental WSSI

WSSI consists of 6 different storm components

○ Snow Amount
  ■ Total amount or rate will heavily impact transportation system

○ Ice Accumulation
  ■ Combined effects of ice accretion and wind

○ Snow Load
  ■ Where weight of snow could result in damage to trees and power line

○ Blowing Snow
  ■ Identify where blowing snow may impact transportation

○ Ground Blizzard
  ■ Where pre-existing snow and strong winds combine to impact transportation

○ Flash Freeze (regional)
  ■ Identifies areas with potential for roads to become ice covered
Experimental WSSI: Webpage

- 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

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

2019-2020 Winter Partners Webinar
Recent Example - Putting it all together!

Winter Storm Outlook

Experimental Winter Storm Severity Index

Key Messages

Historic October Snow for the Northern Plains

Forecast Information

- Widespread heavy snow across the Dakotas into northwest Minnesota tonight into Saturday.
- Historic October snowfall totals are expected across portions of central and eastern North Dakota, where snowfall totals of 12 to 24 inches with higher amounts are expected.
- Blowing snow also expected, with blizzard conditions possible.

Impacts

- Travel will become difficult to impossible through Saturday.
- Downed lines and some power outages expected.
- Agriculture and livestock likely to be impacted.

For more information, visit www.wpc.noaa.gov and www.weather.gov
WPC issues probabilistic snowfall products that communicate the uncertainty associated with the forecast in addition to the expected (or most likely to occur) amount.

Near real-time example of a 24-hour snowfall forecast:

- Low-end amount (90% chance)
- High-end amount (10% chance)
Experimental Probabilistic Winter Precipitation Forecast (PWPF)

- Goal: Provide customers and partners a range of snowfall and icing amounts to better communicate forecast uncertainty during winter weather events
- 46-member ensemble (45 models + WPC)
  - Expert first guess forecast provided by WPC; WFOs add local knowledge
- Significant model diversity contributes to a range of possible outcomes
Experimental PWPF

- No additional sites added in 2019-20.
- Plan for operational transition is in progress.
- One key issue is defining national and local roles in generating probabilistic snow and ice forecasts.
NWS Winter Seasonal Safety Campaign

- NWS Winter Seasonal Safety Campaign launches on December 1 (first day of meteorological winter)
- Contains content on winter hazards including infographics, social media plans, presentations and videos
- Encourage partners to use and share this information
- See: https://www.weather.gov/wrn/winter_safety
Updated Outreach Materials

“Sneaky” Winter Hazards

The winter season brings many weather events that can “sneak” up on you. These are weather hazards that cause big impacts and make travel difficult without making big news.

Safety Tips:
- Slow down
- Don’t use cruise control
- Leave plenty of distance between you and other vehicles

Snow Squalls

There is a long history of deadly traffic accidents associated with these intense snow events that are accompanied by strong winds and a quick reduction in visibility.

Safety Tips:
- Avoid or delay motor travel until the squall passes
- Reduce your speed, turn on your headlights and hazard lights, and try to exit the road

What’s a Blizzard?

Blowing snow
35+ MPH winds
≤1/4 mi visibility
For 3+ hours

Did you know that falling snow isn’t necessary for a blizzard? A blizzard that results from snow that has previously fallen is called a ground blizzard.
Update on Winter Weather Initiatives

Contributors:
Greg Carbin
Greg Gust
Michelle Hawkins
Bryan Jackson
Josh Kastman
Danielle Negele
Jim Nelson
Dan Petersen
Jeff Waldstreicher

Links:
WPC PWPF page:
https://www.wpc.ncep.noaa.gov/pwpf/wwd_accum_probs.php

Local office Experimental PWPF page:
https://www.weather.gov/btv/winter

Experimental WSSI:
https://www.wpc.ncep.noaa.gov/wwd/wsi/wssi.php

Experimental WSO Webpage:
https://www.wpc.ncep.noaa.gov/wwd/wso

Experimental WSO Product Survey:
https://www.surveymonkey.com/r/ExpWinterStormOutlook

Questions? Michelle.Hawkins@noaa.gov or Stephen.Baxter@noaa.gov