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1. **Purpose.** The purpose of this Supplement is to document Eastern Region (ER) policies and procedures for winter weather products in addition to the guidelines set in NWS Instructions 10-513 and 10-515 *WFO Winter Weather Product Specification* and *WFO Non-precipitation Weather Products Specifications*, respectively. In addition, the ER thresholds for issuing winter weather watches, warnings, and advisories are listed.
2. **Background.** Product inconsistencies between offices cause confusion and diminished customer confidence. In addition, the widespread use of computer graphics makes such inconsistencies more noticeable.
3. **Policy.** To maximize product utility, ER field offices must strive to issue an externally consistent suite of watch, warning and advisory (WWA) products. To accomplish this goal, forecasters must understand issuance thresholds, use the same interpretation of these thresholds, and collaborate with adjacent offices to reach a **consensus** on hazard type, timing, and magnitude. Consensus forecasting delivers more consistent products and usually yields more accurate forecasts.
4. **Issuance Procedures.**
 - 4.1 **Software.** All ER offices will use AWIPS Watch/Warning/Advisory (WWA) software as the primary issuance tool for all winter weather watch/warning/advisory products. Snowfall amounts will be included in the Area Forecast Matrices (AFM) and Point Forecast Matrices (PFM) through three periods (36 hours) but are not to be included in the Coded Cities Forecast (CCF) or State Forecast Tabular (SFT).
 - 4.2 **Triggering Procedures.** “Mid point values” of the forecast snowfall range will serve as the primary criterion for precipitation WWA issuances. Threshold amounts must be expected to be met or exceeded in 12 or 24 hours from the time precipitation begins.

Watches, warnings and advisories may also be issued based on public impact alone. For example, if a storm is not expected to reach warning criteria, but heavy, wet snow, or a mixture of snow, freezing rain and ice pellets will significantly affect rush hour or holiday transportation, commerce, or electrical power service a warning headline can be used. This rule especially applies during early and late season storms, and in locations where winter weather is rare. See Supplement ERS 03-2003 *Winter Storm Verification*, filed with NWS Instruction 10-1601, for details on verification based on public impact.

As a general rule in ER, winter storm outlooks are recommended when there is a 30% chance or greater of meeting/exceeding warning criteria; watches are recommended when there is a 50% or greater chance of meeting/exceeding warning criteria; and warnings are recommended when there is a 80% or greater chance of meeting/exceeding warning criteria.

For wind chill WWAs, the colder boundary of the forecast wind chill interval will serve as the criterion for issuance. Release of winter storm products and their updates should be timed to occur prior to scheduled news broadcast times.

4.3 Authorized Headlines. ER offices will only use the following general types of headlines in WSW segments:

- **Winter Storm Watch/Warning/Cancellation**
- **Blizzard Watch/Warning/Cancellation**
- **Winter Weather Advisory/Cancellation**
- **Lake Effect Snow Watch/Warning/Advisory/Cancellation**

4.4 Content of Segments. The four basic segment types (cancellation, warning, advisory or watch) may be subdivided into as many zone groupings as needed to address differing precipitation types or amounts across the forecast area. For cancellation segments, a UGC expiration time of one hour will be used. Forecasters must keep each segment's text brief and to the point. The basis of the warning (quantitative values and phenomena) should be included in the first sentence (e.g., "A quarter to one-half inch of freezing rain expected. Travel will be hazardous, with downed tree limbs and power outages possible.") **Localized extreme snowfall values should not be mentioned**, as most people will not observe the extremes. Reference to historical storms should be mentioned if confidence is high that a comparable event is unfolding; such references will be reserved for warning situations only.

4.5 Reporting storm events. Public Information Statements (PNS) will be the primary public product to summarize the latest winter precipitation, high wind or wind chill occurrences to the public, and should be done using the recommended format shown in Appendix E. A disclaimer must be appended on the PNS to note that the information within the PNS is UNOFFICIAL.

During an event, PNSs should be issued every three to six hours at a minimum, especially prior to scheduled news broadcast times. The mention of a few observed values for use in other products is permitted to support warning or advisory content.

4.6 Local issuance delays. Offices will not develop local policies which routinely mandate delays in issuing WWAs, e.g. never issuing a "Winter Storm Watch" for the third period or a "Winter Storm Warning" for the second period. Issuances should be based on science and forecaster consensus.

4.7 NWS Attribution. To identify the NWS as the information source, all **initial** advisory, watch, and warning segments should begin with "The National Weather Service...". Additionally, the segment should end with "Stay tuned to NOAA Weather Radio or your favorite media source of weather information for the latest updates."

- 4.8 Best Practices. ER has instituted a Best Practices Program to promote WFO operational excellence through the sharing of both operational and training procedures, methods, and strategies common to superior performing programs. This document can be found at:

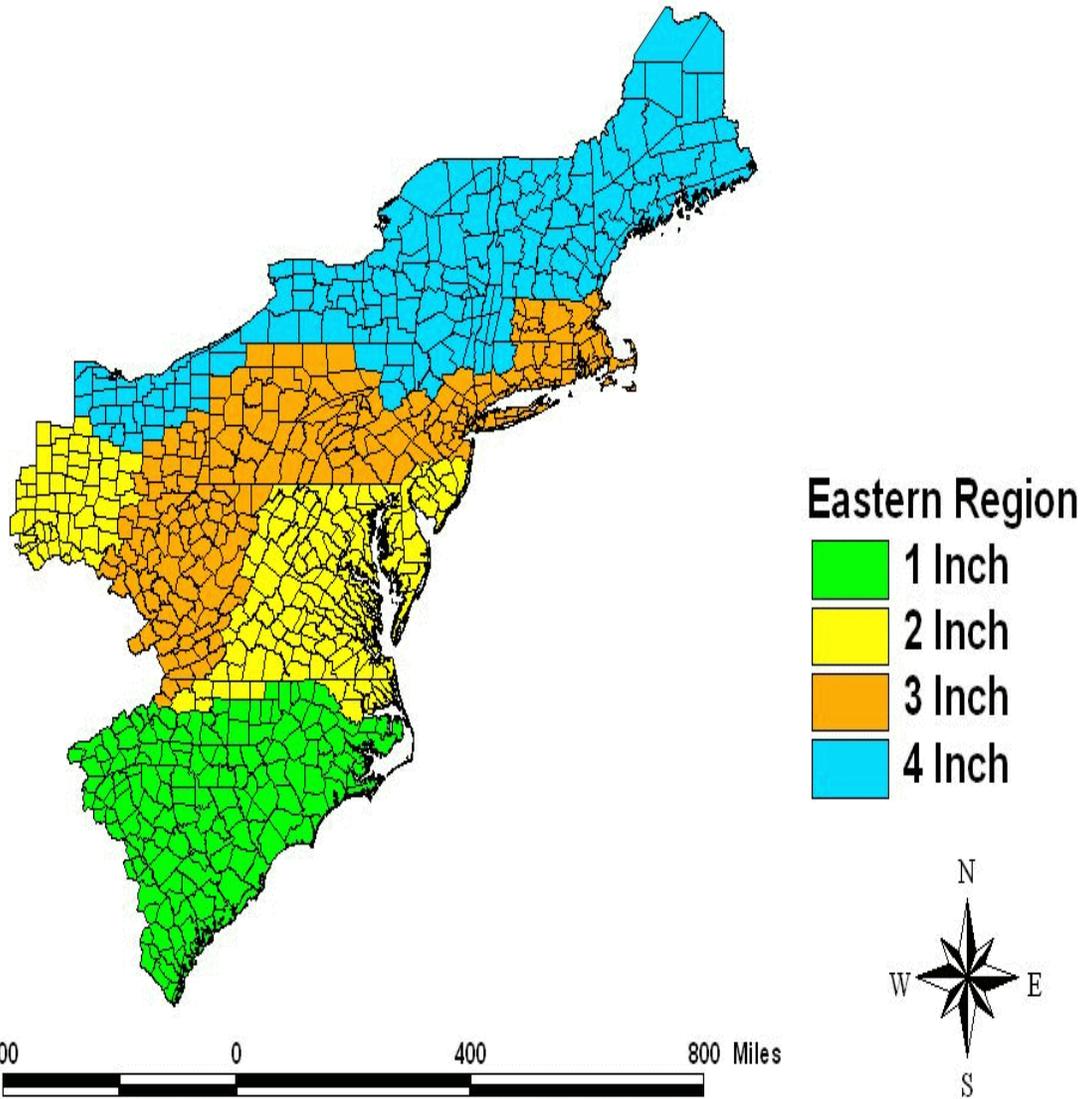
<http://www.werh.noaa.gov/msd/bestpractice/winter/index.htm>

All ER WFOs are expected to review and incorporate the documented winter weather best practices into their pre-season preparation activities (drills, training, etc) and operations.

Appendix A

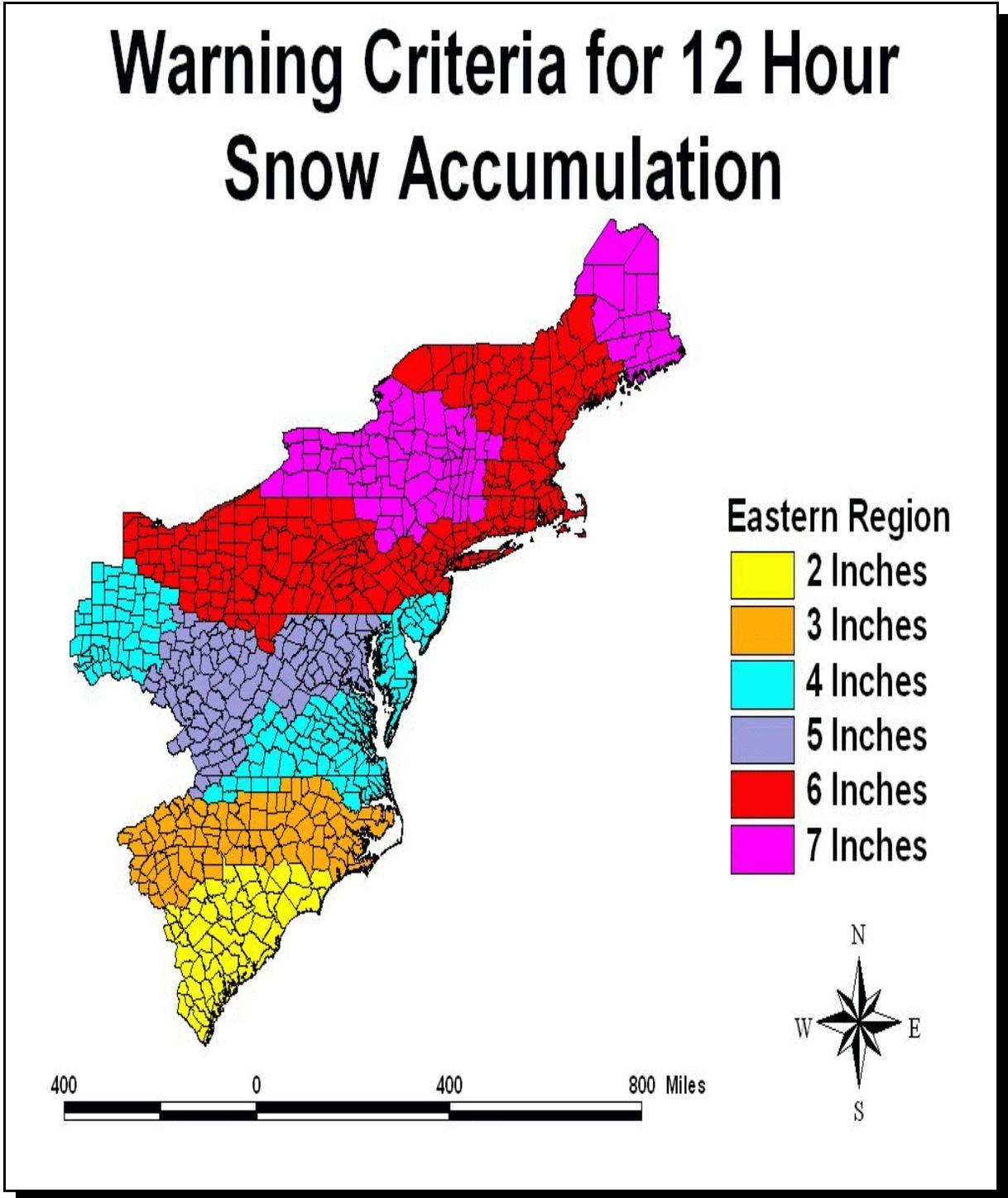
1. ER 12 HR Snow Advisory Criteria

Advisory Criteria for 12 Hour Snow Accumulation



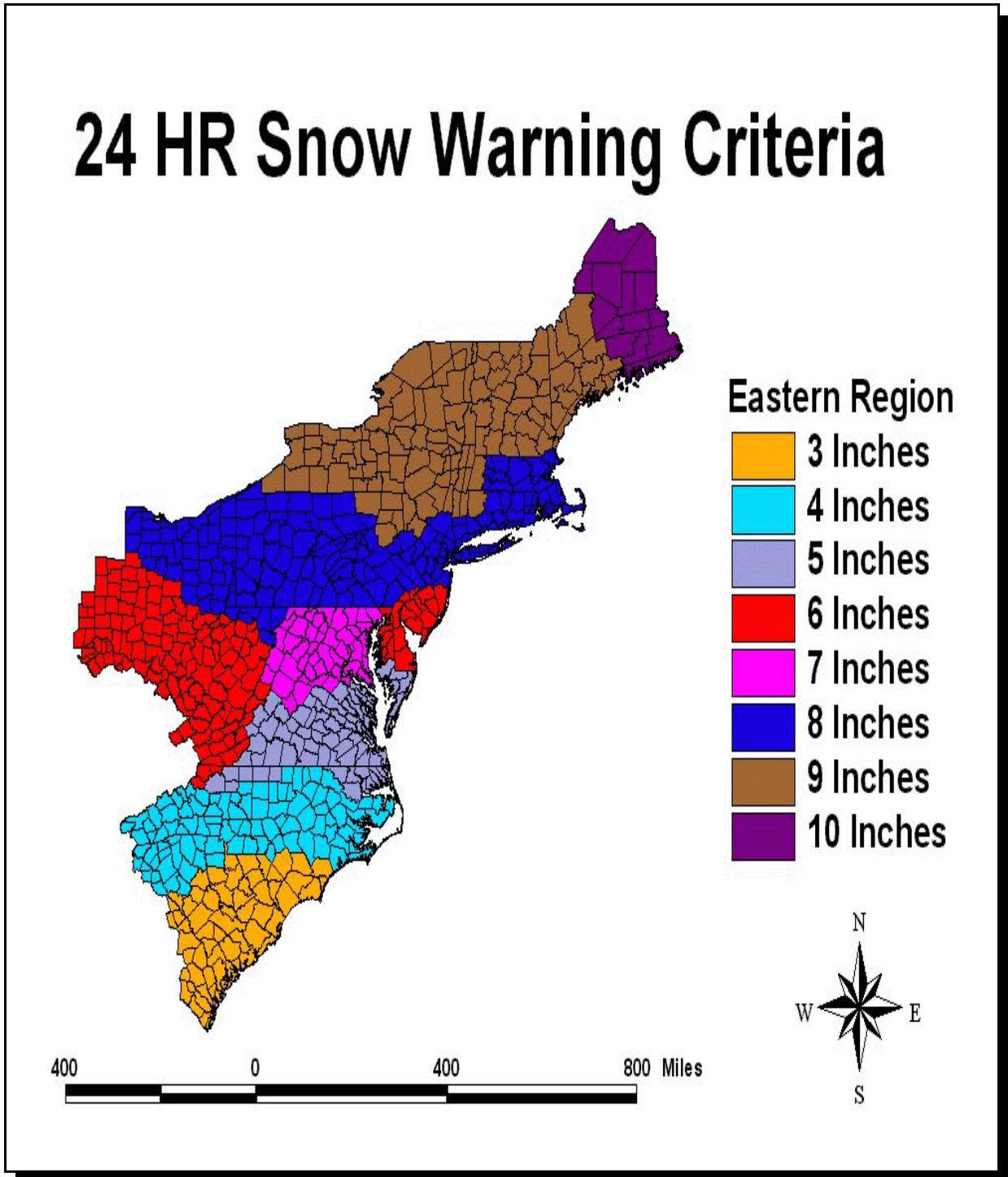
Appendix A

2. ER 12 HR Snow Warning Criteria



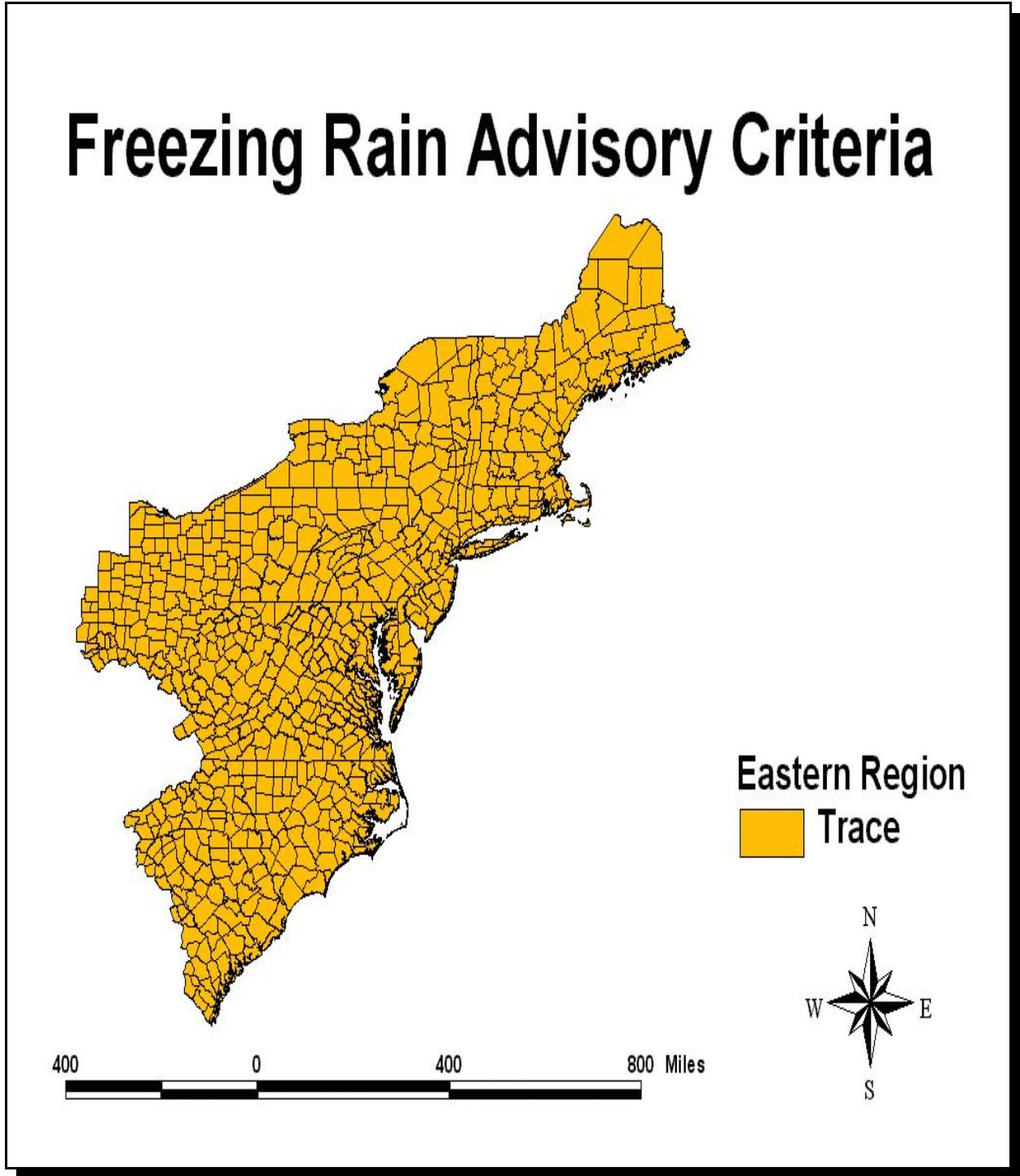
Appendix A

3. ER 24 HR Snow Warning Criteria



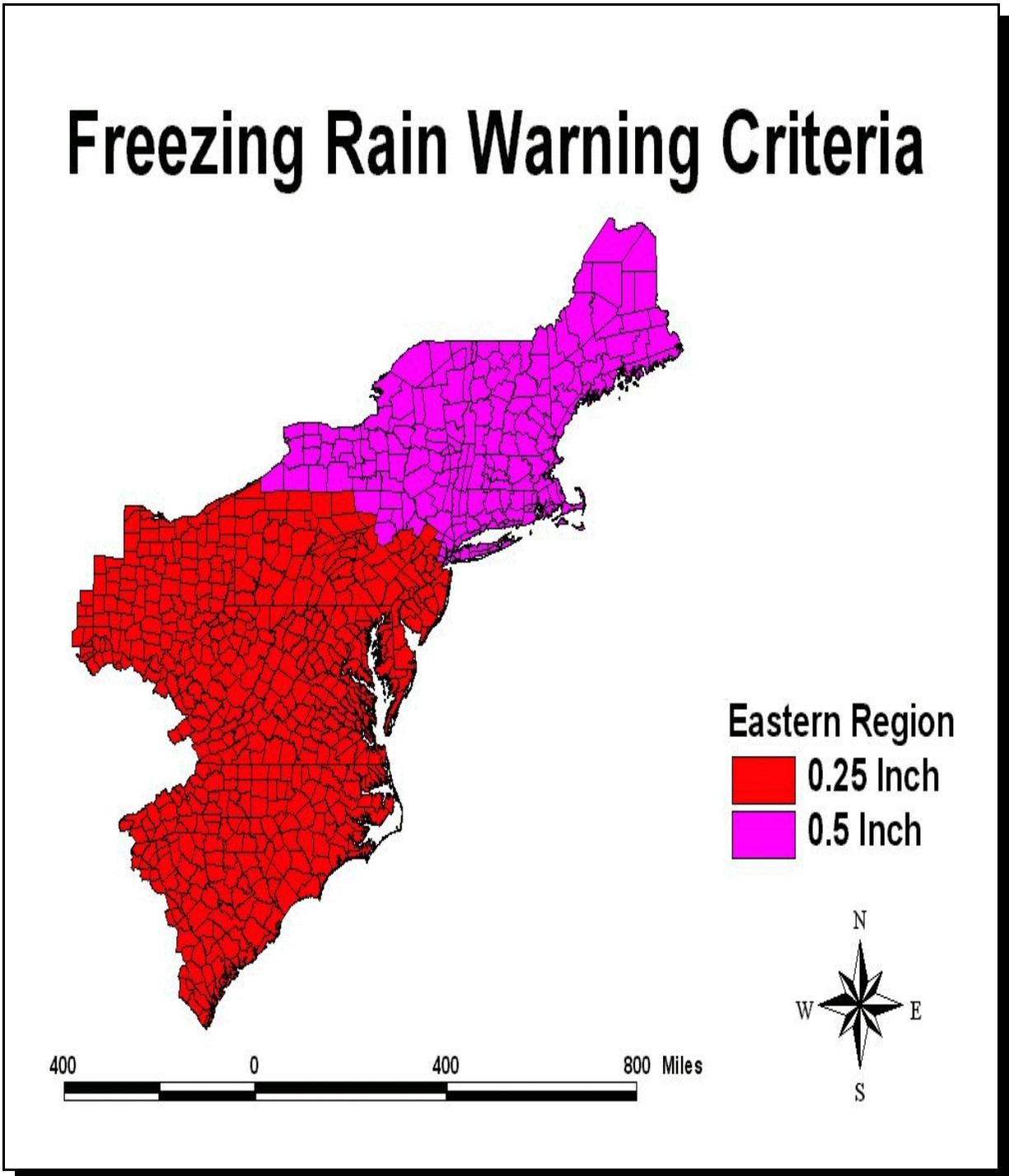
Appendix A

4. ER Freezing Rain Advisory Criteria



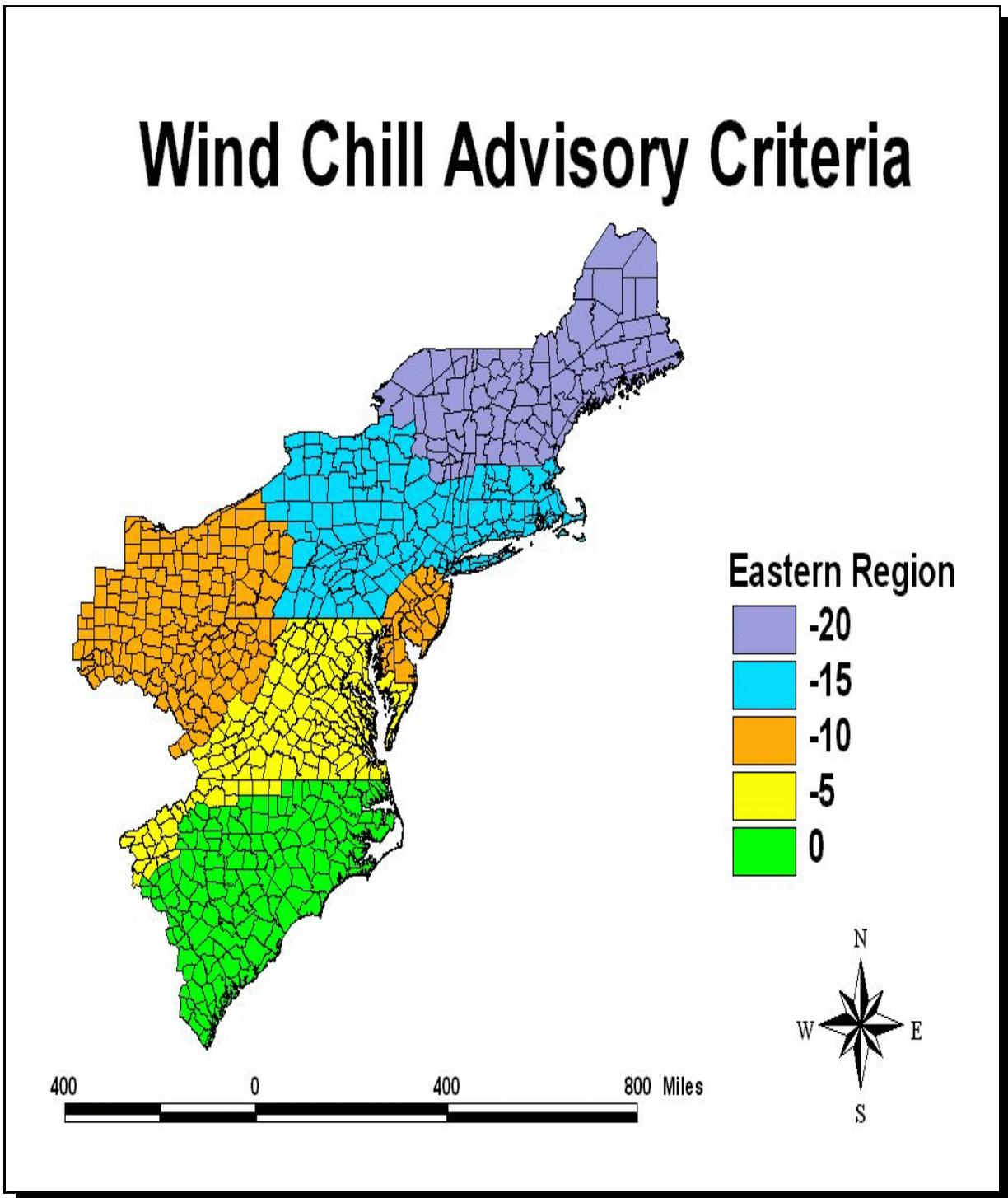
Appendix A

5. ER Freezing Rain Warning Criteria



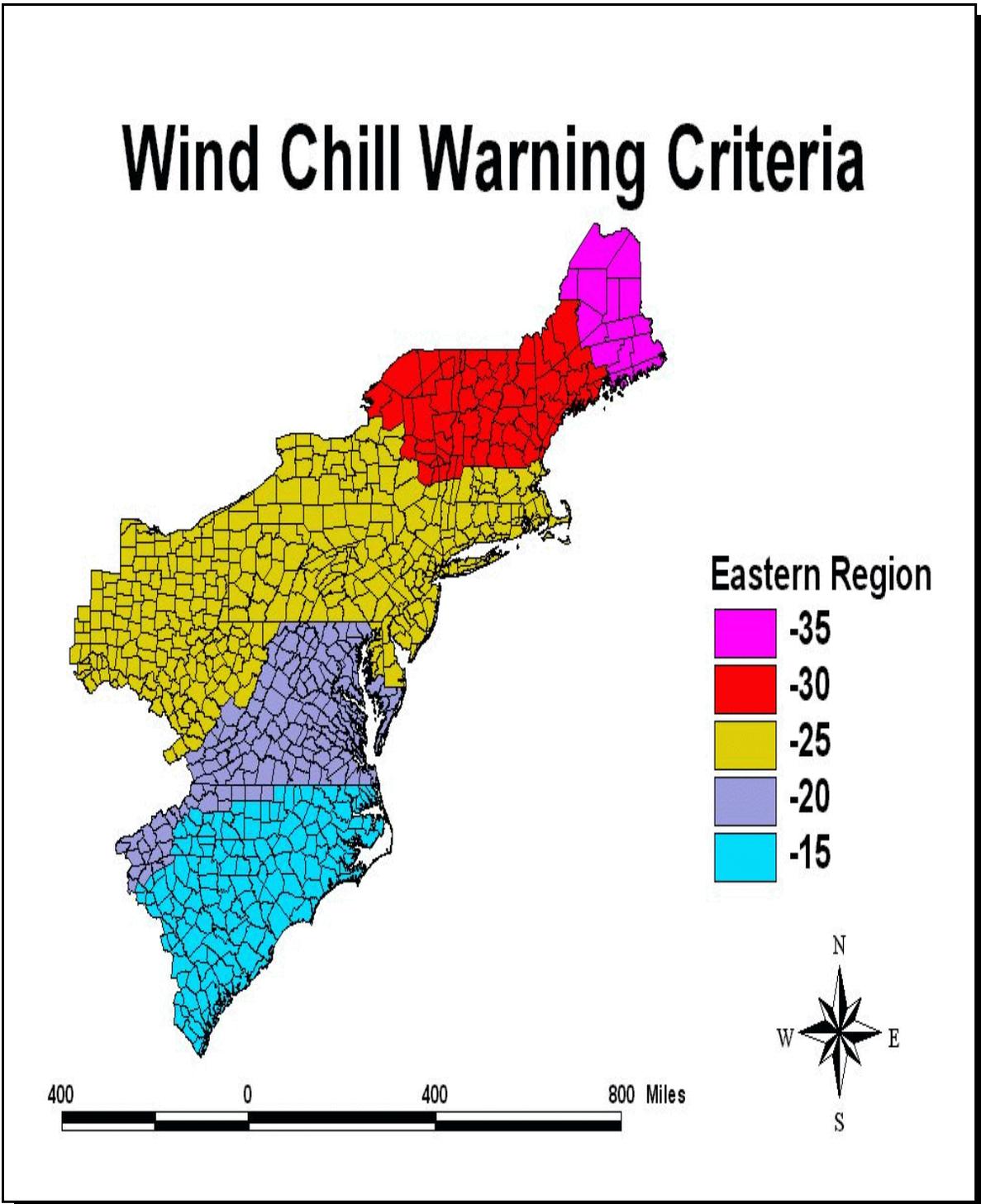
Appendix A

6. ER Wind Chill Advisory Criteria



Appendix A

7. ER Wind Chill Warning Criteria



Appendix B.

Recommended Public Information Statement (PNS) Format For Winter Reports

GENERIC FORMAT:

<u>Column</u>	<u>Field</u>
1-23	Location Name (left justified)
24	Blank
25-29	Reported Value (right justified)
30-31	Blank
32-35	Time [hhmm] 12-hr Clock (local time, leading zero omitted/right justified)
36	Blank
37-38	AM or PM
39	Blank
40-44	Date [DD/MM] (leading zero omitted from DD/right justified)
45-46	Blank
47-69	Local Use/Comments

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NOUS41 KGYX 231533
PNSGYX

PUBLIC INFORMATION STATEMENT
SPOTTER REPORTS
NATIONAL WEATHER SERVICE GRAY ME
1030 AM EST SAT NOV 23 2002

THE FOLLOWING ARE **UNOFFICIAL** STORM TOTAL SNOWFALL ACCUMULATIONS/IN INCHES/ FROM THE STORM SYSTEM THAT AFFECTED NEW ENGLAND NOVEMBER 22-23. APPRECIATION IS EXTENDED TO HIGHWAY DEPARTMENTS...COOPERATIVE OBSERVERS...SKYWARN SPOTTERS AND THE MEDIA FOR THESE REPORTS. THIS SUMMARY IS ALSO AVAILABLE ON OUR HOME PAGE AT [HTTP://WWW.ERH.NOAA.GOV/ER/GYX/INDEX.HTML](http://www.erh.noaa.gov/er/gyx/index.html)

***** SNOWFALL REPORTS *****

LOCATION	STORM SNOWFALL (INCHES)	TIME/DATE OF MEASUREMENT	COMMENTS
MAINE			
...ANDROSCOGGIN...			
AUBURN	2.5	555 AM 1/27	
POLAND	2.4	700 AM 1/27	
TURNER	2.0	700 AM 1/27	
LIVERMORE FALLS	1.5	700 AM 1/27	
...CUMBERLAND...			
BRIDGTON	2.7	830 AM 1/27	WINDY
GRAY	2.4	700 AM 1/27	
NORTH SEBAGO	2.0	700 AM 1/27	
GORHAM	1.4	700 AM 1/27	
NEW HAMPSHIRE			
...CARROLL...			
TAMWORTH	3.2	700 AM 1/27	
NORTH CONWAY	1.3	700 AM 1/27	
...COOS...			
BERLIN	3.0	700 AM 1/27	

NWS ERS 02-2003 OCTOBER 31, 2003

DIXVILLE NOTCH	2.5	700 AM	1/27
LANCASTER	2.3	700 AM	1/27
YORK POND	2.1	700 AM	1/27
NORTH STRATFORD	2.0	700 AM	1/27

***** SLEET REPORTS *****

LOCATION	STORM SNOWFALL (INCHES)	TIME/DATE OF MEASUREMENT	COMMENTS
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MAINE

...ANDROSCOGGIN...

AUBURN	1.5	555 AM	1/27
DURHAM	0.7	700 AM	1/27
TURNER	0.5	700 AM	1/27
LIVERMORE FALLS	0.2	700 AM	1/27

NEW HAMPSHIRE

...CARROLL...

TAMWORTH	1.2	700 AM	1/27
NORTH CONWAY	0.5	700 AM	1/27

***** FREEZING RAIN *****

LOCATION	ICE ACCRETION (INCHES)	TIME/DATE OF MEASUREMENT	COMMENTS
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MAINE

...ANDROSCOGGIN...

DURHAM	0.50	700 AM	1/27
AUBURN	0.25	555 AM	1/27
POLAND	0.25	700 AM	1/27
TURNER	0.05	700 AM	1/27

...CUMBERLAND...

GRAY	2.00	700 AM	1/27
NORTH SEBAGO	1.50	700 AM	1/27

***** MAXIMUM WIND GUSTS *****

LOCATION	WIND GUST (MPH)	TIME/DATE OF GUST	COMMENTS
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MAINE

...ANDROSCOGGIN...

LEWISTON	45	555 AM	1/27
TURNER	41	700 AM	1/27

...CUMBERLAND...

PORTLAND	28	700 AM	1/27 JETPORT
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NEW HAMPSHIRE

...COOS...

MOUNT WASHINGTON	122	630 AM	1/27
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Appendix C.

Winter Weather Recommendations

Two reviews were conducted in response to the March 4-7, 2001 winter weather event in Eastern Region:

- *Eastern Region Comprehensive Review of the March 4-7, 2001 Northeast Snow Storm*

This document was written by ERH MSD and SSD and chronicles the events' evolution and impact. The write-up includes a synoptic overview, meteorological statistics, storm evolution, model guidance review, review of forecast services, storm impacts, coordination and dissemination, user response/feedback, and findings and recommendations.

- *NWS Eastern Region Major Storm Media Relations Team Report*

This document provides discussion and recommendations in three areas: operational approaches Eastern Region forecasters should keep in mind when entering a major storm threat; suggestions regarding how to work with the media before and during major storms; implementation recommendations.

This Appendix highlights the primary recommendations that emerged from these two reports.

Recommendation 1. Consider other approaches to conveying snowfall information. WFO Mount Holly, NJ began issuing an experimental snowfall probability table for various snow amounts during the 2001-2002 winter season. WFO Buffalo, NY has developed a similar approach – Probabilistic Quantitative Snowfall Forecast (PQSF).

Recommendation 2. If snow is forecast to begin or continue beyond the third period, descriptive terms such as “LIGHT,” “HEAVY,” or “ADDITIONAL ACCUMULATION(S)” should be used rather than a quantitative amount. Quantitative snow forecasts will not be included in the four-to-seven day forecast section. If a snow event is forecast to end within the 36-hour period, a storm total amount will be included in the final period when snow is forecast to end. Also, a headline may be used to highlight the expected storm total snowfall amount.

Recommendation 3. Historical storm references should only be used when winter storm warnings are in effect and forecast confidence is high. While these references can be beneficial to customers and partners by allowing them to put the expected storm into perspective, historical references associated with low confidence forecasts and/or winter storm watches can be misleading and difficult to back away from.

Recommendation 4: Offices should strive to get any updates and changes to standing winter storm watch/warning products out one hour before the main news hours within their media markets.

Recommendation 5: WFOs should strive to issue Public Information Statements with snowfall accumulations reports from around their CWA at least every 3 to 6 hours.

Appendix C.

Winter Weather Recommendations (Continued)

Recommendation 6. Confidence in NWP model solutions should be higher if:

- model initialization fits well with observed data
- models are converging toward a consensus solution
- Dprog/Dt evaluations show a consistent, observed data supported, trend in solutions²
- model diagnostics reveal that model solutions are handling physical processes well
- model solutions are well supported by forecaster's conceptual understanding of the atmosphere which has been gained from experience.

B. Model output should be but one tool used in the forecast process. Model output solutions should not be used alone in determining a forecast. This "perfect prog" approach, or accepting model solutions as fact, will lead to errors when the model solutions are off regarding location, timing, and intensity of the event at hand. **Climatology and sound meteorological reasoning must be considered along with the model solutions.** This is especially important when forecast confidence is low.

Recommendation 7. Forecast strategies when confidence is low:

- have especially sound meteorological reasons for forecasting a relatively rare event, especially in the most climatologically unfavorable areas;
- increase forecast specificity for the more climatologically favored areas and for areas where forecast confidence is high. Expand specificity to less climatologically favorable areas as forecast confidence increases.

Recommendation 8. Definitive, quantitative, and specific wording should be reserved for warning situations.

Recommendation 9. For watch situations, qualification of the impact is necessary. Referring to the "potential" for quantitative results is advised. Less specificity regarding timing and locations of the event is appropriate.

Recommendation 10. For outlook periods, only qualitative terminology should be used. For winter threats, numerical amounts are generally not appropriate. Phrases such as "chance of heavy snow" or "significant snowfall possible" would be appropriate. Additionally, an outlook should be issued to address strong public interest in a potentially significant event. Generally, at least two WFOs should agree before outlooks are issued.

Recommendation 11. During the warning phase of large scale winter snow events, concentrate wording on amounts most likely to affect the largest area, not solely on maximum amounts expected. For example, mentioning widespread 6" to 1' accumulations with localized areas of up to 3' possible would be better than concentrating only on the extreme, but less likely to occur, impact of the event, i.e., the 3' snowfall.

Recommendation 12. NCEP's CPC issues a 3-14 day "Threat Assessment" weekly. WFOs need to provide input to the draft threat assessment process to ensure that local input is shared with CPC. Eastern Region has a procedure in place to convey such input to CPC. All WFOs should follow this procedure if they desire to provide input to a developing major storm threat days in advance.

Appendix C.

Winter Weather Recommendations (Continued)

Recommendation 13. HPC's 3 to 7 day extended forecast discussion has a wide audience. Whenever HPC is considering introducing a major storm threat into the discussion, they should conduct a conference call with the potentially affected WFOs to ensure that the local input of the WFOs are considered.

Recommendation 14. Since HPC's deterministic Day 3 QPF graphical product often covers an outlook time period, care should be taken with its preparation. Conservative amounts must be depicted within this deterministic product. Also, consideration should be given to the development of a probabilistic QPF graphical product for Day 3 and beyond time periods.

Recommendation 15. The guidelines for the amount of specificity in our issuances should apply to all written, verbal, and graphical communications. Written would include WFO AFDs, outlook/watch/warning products, ZFPs, RDFs plus NCEP guidance products. Verbal communications refers to all media contacts.

Recommendation 16. WFOs should work with partners and customers to determine adequate and optimum lead times and factor this information into the decision making process.

Recommendation 17. While striving for greater lead times and event detection, attention must be given to the threat of increasing false alarm rates. For low confidence situations, reduce the lead time for high levels of specificity in the forecasts.

Recommendation 18. Only refer to historical storms if confidence is high that a comparable event is unfolding; such references will be reserved for warning situations only.